

NetVisor UNUM High Capacity User Guide

Arista Networks

www.arista.com

NetVisor UNUM High Capacity User Guide, version 2022.6.3.2 PDOC-00237-01

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Introduction

Introduction

Arista NetVisor UNUM[™] Unified Management, Automation, and Analytics Platform Software is an application portal originally developed by Pluribus Networks.

Arista NetVisor UNUM is an agile, multi-functional web management portal that enhances the intrinsic automation of the Unified Cloud Fabric architecture. It combines an elastic big data database and intelligent analytics engine with an intuitive and consistent user interface that allows seamless navigation across fully integrated management and analysis modules.

Arista NetVisor UNUM liberates network operators from the complexity of provisioning and operating a complex network, or groups of networks, by automating the complete network life cycle from implementation to operation and optimization, enabling intent-based network operations with vastly reduced deployment times.

Arista NetVisor UNUM - Unified Automation, Management and Analytics

Deploy, Manage, Visualize Multiple Sites from ONE Pane of Glass



Arista UNUM Management Platform

Introduction (cont'd)

Arista NetVisor UNUM enables the network administrator to extract analytical value from the telemetry data reported by the network switches powered by the NetVisor OS network operating system.

Once data is collected, Arista NetVisor UNUM relies upon a modern search engine database infrastructure to store, aggregate, filter, correlate and visualize vast amounts of data in real-time as well as with a powerful time machine functionality.

The Arista NetVisor UNUM portal provides a collection of feature-rich applications that manages and orchestrates the gathering and presentation of network analytics using various types of collectors and reporting software.

The UNUM applications rely primarily on features of the NetVisor OS, such as vFLOWs, mirrors, and connections statistics, and can also provide analytics in a non-Arista environment.

At a high-level, Arista NetVisor UNUM supports the following deployment scenarios:

- NetVisor OS as a mirror switch; an out-of-band switch is configured as a mirror in either an existing Arista-switched network or a non-Arista-switched network.
- NetVisor OS as an inband switch; stats are pulled directly from configured switches such as connections, vports, ports, tunnels and, vflow-stats.
- Collectors gather network analytics and feed data into the Arista NetVisor UNUM analytics store(s):
 - The Collector uses the vREST API to gather the analytics data from NetVisor OS.

Arista NetVisor UNUM manages the following applications:

- **Common Infrastructure** a centralized portal launches other applications, provides authentication to the corporate directory (using LDAP), and provides configuration of standard settings.
- **Insight Analytics** this application provides reporting and Search capabilities on data collected from Arista NetVisor UNUM collectors.
- **Switch Analytics** Switch Analytics contains a feature-rich set of management tools providing Traffic Monitoring and Notification services with exceptional drill-down capabilities.
- **Fabric Manager** Fabric Manager contains a feature-rich set of management tools providing configuration tools for Layer 1, Layer 2, and Layer 3 services as well as Security, Monitoring, Analytical, and Service features.

Glossary of Arista NetVisor UNUM and Arista NetVisor OS Terms

To review the Glossary of Arista NetVisor UNUM and Arista NetVisor OS Terms, please refer to to the HTML document.

Specifications Arista NetVisor UNUM High Capacity Appliance

Customers without an ESXi infrastructure or limited compute resources can purchase a Pluribus Networks tested and validated, turnkey appliance with UNUM pre-installed. Simply rack, stack, and power on. UNUM is ready to go.

CPU	32 vCPU (16-core) per server
Memory	256 GB per server
Local SSD	1920 GBper server
Shared NFS SSD	960 GB required for HA
VMWare ESXi Hypervisor	6.7, 7.0
Client Requirements	Google Chrome (Version 44+) Mozilla Firefox (Version 39+)
NIC	Dual 10G Base-T NIC
High Availability (HA)	Yes
Rack Dimensions	1ru Base/Medium, 2ru High Capacity

UNUM High Capacity Appliance Specifications

Software Requirements & Specifications

Specifications provided are operational requirements to use UNUM virtual machines. Values do not include ESXi resource requirements.

	vCPU (cores)	RAM	Storage
UNUM Base Capacity VM 4	8vCPU (4-core)	64 GB	480 GB SSD
UNUM Base Capacity VM — Archive Viewer ^{1,3,4}	8vCPU (4-core)	64 GB	480 GB SSD
UNUM Medium Capacity VM ⁴	8vCPU (4-core)	64 GB	960 GB SSD
UNUM Medium Capacity VM — Archive Viewer 1,3,4	8vCPU (4-core)	64 GB	960 GB SSD
UNUM High Capacity VM Cluster 2,4	Special	Special	Special
UNUM High Capacity VM — Archive Viewer 1,3,4	Special	Special	Special

¹ UNUM Archiver requires the Archiver license and a shared NFS SSD storage to store daily analytics snapshots.

² The High Capacity VM cluster runs on four servers. Direct software download for existing servers is not supported, dedicated hardware needs to be purchased. See the Hardware Requirements and Specifications table.

³ Customers wishing to use UNUM Archiver will require resources for a second VM (provided with the license).

*All UNUM virtual machines require ESXi 6.7.

UNUM Virtual Machines - Software Requirement & Specifications

Arista NetVisor UNUM Fabric Manager Scalability Matrix

	UNUM Base Capacity VM/Appliance	UNUM Medium Capacity VM/Appliance	UNUM High Capacity VM Cluster/Appliance
Maximum Netvisor One Switches	55	55	140
Maximum Adaptive Cloud Fabrics 5	10	10	10
Maximum Netvisor ONE Switches per Fabric 4	32	32	128 leafs per super fabric ⁵
Syslog Records 1	Up to 7 Days	Up to 30 Days	Up to 60 Days
Port Stats 2,6	512	768	1536
Tunnel Stats 2,6,7	256	384	768
vFlows Stats 2,3,6	2560	3520	7040

¹ Records storage is a rolling first-in first-out window of both flow (nvFlow) and switch analytics records.

² Numbers provided are aggregate values of active stats captured. To get a per switch value of active stats captured, divide the value provided by the total number of switches being managed by UNUM. For example, if the UNUM Base Capacity VM is managing 24 switches total, then 512 / 24 = 21 port stats per switch (rounding down).

³Local(switch) vFlows. Divide by number of switches to get fabric level vFlows, for example in an 8-node fabric, 2560 divided by 8 would be 320 fabric wide vFlows.

⁴Maximum fabric size of 32 switches is a Netvisor ONE limitation but is listed here for convenience. UNUM supports a number of fabrics and switches, up to the maximum amount of either switches or fabrics. For example, one fabric of 32 nodes, two fabrics of 24 and 26 nodes, three fabrics of 12, 18, and 20 nodes or five fabrics of 11 nodes each for the UNUM Base Capacity virtual machine.

⁵ Super Fabric can manage up to four pods, up to 128 leafs and up to 12 spines. Without super fabric any combination of leafs and spines are supported up to 140 total, 32 nodes maximum per fabric.

⁶Number of simultaneous stats collected every ten seconds.

⁷ A Tunnel is a virtual connection between two fabric end points.

UNUM Fabric Manager Scalability

Arista NetVisor UNUM Insight Analytics Scalability Matrix

	UNUM Base Capacity VM/Appliance	UNUM Medium Capacity VM/Appliance	UNUM High Capacity VM Cluster/Appliance
IA Maximum Records Stored 1,2,3	100 million	500 million	2 billion
IA Analytics Records, Maximum days 1,3	Up to 30 Days	Up to 30 Days	Up to 30 Days ⁴
IA Peak Ingestion Rate ³	1000 flows/sec	1000 flows /sec	10,000 flows/sec

¹Records storage is a rolling first-in first-out window of both flow (nvFlow) and switch analytics records.

²Long-term retention of records, up to the value stated (100M, 500M, 2B). Variations based on network traffic can occur.

³Ingestion rate will affect the number of days of records are stored. This can vary based on fabric size and traffic patterns.

⁴Busy environments generating more than 1000 flows per second impact the number of days records are stored. If sustained 10,000 flows per second occur, the maximum days of records stored will be reduced to approximately one week. This environment can be mitigated using the UNUM Archiver license and external SSD storage.

Note: All UNUM fabrics are required to have a minimum of one switch with 16 GB of RAM to act as a communication node. Two 16 GB switches will be required if seed switch redundancy is implemented.

UNUM Insight Analytics Scalability

Arista NetVisor UNUM 6.3.2 Licensing

Ordering Information

Pluribus UNUM software is available in three flavors: a BASE virtual machine, a medium capacity virtual machine, and a high-capacity option which can be ordered on an appliance or installed on four Dell RX740 servers. Refer to the Hardware Requirements and Scalability tables for more information on the different UNUM options. See the ordering information below for Pluribus UNUM, Insight Analytics, server appliances, and add-on reports/alerts. Support is ordered separately, and subscription options are available.

Pluribus UNUM Software is available in three options.

- UNUM-LIC Pluribus UNUM BASE license.
- UNUM-MC-LIC Pluribus medium-capacity license.
- UNUM-HC-LIC Pluribus high-capacity license. Requires either the appliance option below or four Dell RX740 servers ordered directly from Dell, as well as professional services for deployment.

Insight Analytics Module License is optionally licensed in addition to the Pluribus UNUM software.

- IA-MOD-LIC Pluribus Insight Analytics module BASE license. Supports up to 100 million flows.
- IA-MC-MOD-LIC Pluribus Insight Analytics Medium-Capacity (MC) module license. Supports up to 500 million flows.
- IA-HC-MOD-LIC Pluribus Insight Analytics High-Capacity (HC) module license. Supports up to 2 billion flows. Cannot be deployed on existing customer hardware HC server appliance or four Dell RX740 are required.
- IA-SC-MOD-LIC Introductory, low-cost license for Insight Analytics that will enable the storage of 1 million flows.

UNUM Appliance Hardware

AP-HC-HW — UNUM high capacity hardware server appliance. Hardware only (software licenses are required) – add to order when a high-capacity
appliance is needed. Requires professional services deployment.

Other Optional, add-on UNUM Licenses

- UNUM-RPRT-LIC Pluribus UNUM add-on reporting license.
- UNUM-ALRT-LIC Pluribus UNUM add-on e-mail alert license.
- UNUM-ARCHIVER-LIC Archive daily snapshots capturing Insight & Switch Analytics meta data to an NFS repository (network folder) for long term storage. Includes a second UNUM "viewer" virtual machine so that archived data can be loaded and analyzed.

UNUM Licensing Information

For more information about the Hardware and Specifications and Scalability please refer to the Arista NetVisor UNUM Platform Data Sheet.

Physical Installation

Please refer to "**Server Installation**" section in the Users Manual (MNL-1662). Follow the "Manuals" link at the following location:

https://www.supermicro.com/products/system/2U/2028/SYS-2028TP-HTTR.cfm

Please review and follow all Warnings! outlined in the above documentation.

High Capacity Appliance Hardware Overview

The 2RU Arista NetVisor UNUM High Capacity Appliance is a unique server system. With four system boards incorporated into a single chassis acting as four separate server nodes.

Server Nodes

Each of the four server boards act as a separate server node in the system.

As independent server nodes, each may be powered off and on without affecting the others.

In addition, each server node is a hot-swappable unit that may be removed from the rear of the chassis.

The server nodes are connected to the server back-plane by means of an adapter card.

Note: A guide pin is located between the upper and lower server nodes on the inner chassis wall. This guide pin also acts as a "stop" when a server node is fully installed. If too much force is used when inserting a server node this pin may break off. Take care to slowly slide a server node in until you hear the "click" of the locking tab seating itself.

Each Server node consists of:

Processors

Dual Intel[®] Xeon[®] E5-26x series processors.

Memory

Sixteen DIMM slots supporting 256 GB of ECC RDIMM (Registered DIMM) memory.

Serial ATA

A Serial ATA controller is integrated to provide dual 1.2 TB SSD Drives.

Warning: The SATA drives are physically hot-swappable units, however doing so during regular operation results in loss of data in the Arista NetVisor UNUM High Capacity Appliance.

Recommended Procedure: Under normal operation, power down the server node and data redistribute across the nodes, and then the SATA drives can be safely removed without data loss.

Onboard Controllers/Ports

An Intel Gigabit (100/1000/10000 Mb/s) Ethernet dual-channel controller is included. Using an AOC Card not a supported configuration.

I/O ports include a VGA (monitor) port, two USB 3.0 ports, an IPMI dedicated LAN port and two Ethernet ports, Eth0 and Eth1. Eth0 is used for Management, Eth1 is used for internal server node to server node communications.

Eth1 must be isolated from the public network.

Other Features

Other onboard features that promote system health include onboard voltage monitors, auto-switching voltage regulators, chassis and CPU overheat sensors, server node manager software and BIOS rescue.



Server Nodes

Server Chassis Features

The following is a general outline of the main features of the appliance chassis.

System Power

Each chassis model includes redundant, hot-plug high-efficiency 80-plus Platinum certified power supplies, rated at 2000 Watts. In the unlikely event your power supply fails, replacement is simple and can be accomplished without tools. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

Cooling System

The chassis contains four system fans, which are powered from the back-plane.

Mounting Rails

The Arista NetVisor UNUM High Capacity Appliance includes a set of quick-release rails, and can be placed in a rack for secure storage and use. To setup your rack, follow the step-by-step instructions included in the SMCI manual.



Server Chassis Features

System Interface

High Capacity Appliance Interface

There are several LEDs on the control panel and on the drive carriers to keep you constantly informed of the overall status of the system.

This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.



LED Indicators

Control Panel Button

Power

The main power button on each of the four control panels is used to apply or remove power from the power supply to each of the four server nodes in the chassis.

The power button has a built-in LED which will turn green when the power is on.

Each of the four server nodes are powered on and off individually.

Powering off one server node does not affect the power of the other server nodes.

Turning power off with this button does not remove power from the chassis, hence caution must be used when servicing.

UID

The UID button is used to turn on or off the blue light function of the LED. Once the blue light is activated, the unit can be easily located in very large racks and server banks.

Control Panel LEDs

The four control panels are located on the front handle of the chassis.

Each control panel has two additional LEDs.

These LEDs provide you with critical information related to different parts of the system.

This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Alert

This LED is illuminated when an alert condition occurs:

- A solid red light indicates an overheat condition in the system
- A flashing red light which flashes in one second intervals indicates a fan failure
- A flashing red light which flashes in four second intervals indicates a power failure

When notified of an alert, check the routing of the cables and make sure all fans are present and operating normally.

You should also check to make sure that the chassis covers, and air shrouds are installed.

This LED will remain flashing or on as long as the temperature is too high, or a fan does not function properly.

NIC

Indicates network activity on either LAN1 or LAN2 when flashing.

Drive Carrier LEDs

SATA Drives

Each drive carrier has two LEDs.

- Blue: When illuminated, this blue LED (on the front of the drive carrier) indicates drive activity. A connection to the back-plane enables this LED to blink on and off when that drive is being accessed
- Red: The red LED to indicate a hard drive failure.

High Capacity Appliance Network Interface

After installation of the Arista NetVisor UNUM High Capacity Appliance, network activity must be setup as follows (please refer to the figure below for proper connections):

- 1. For proper operation the Arista NetVisor UNUM High Capacity Appliance requires a separate 1G or 10G switch for connectivity between eth1 on all Server nodes.
- 2. Connect your Management Network to Eth0 (1G or 10G) on Server node A. By default, Server node A (Host) is configured for DHCP. To set a static IP, see Appendix A.
- 3. It is required to connect Eth1 into an isolated 1G or 10G switch. Server nodes will communicate via Eth1, with the following IP Addresses:
 - a. 172.16.250.150 172.16.250.162
- 4. Plug in redundant power connections with the provided cables ONLY and power up.

High Capacity Appliance Network Interface (cont'd)



Network Connections

High Capacity Appliance Network Interface (cont'd)

NOTE: Eth1 connections are not configured on a VLAN, please contact Arista Technical support if one of the following must occur:

- More than one Arista NetVisor UNUM High Capacity Appliance plugged into the same switch (by default, all appliances come with the same pre-configured Eth1 IP addresses), and each Appliance isolated in a separate and dedicated VLAN.
- You want to change the default Eth1 IP Addresses of: 172.16.250.150 172.16.250.162.
- 5. Connect VGA console and IPMI as desired. IPMI default configuration is DHCP.
- 6. USB connections are not advised.
- 7. The Arista NetVisor UNUM High Capacity Appliance, comes with the Arista NetVisor UNUM software pre-installed.
- 8. Upon boot up, by default Arista NetVisor UNUM will use DHCP to obtain a Management / eth0 IP address. If a Static IP is desired, see Appendix B.
- 9. It is highly recommended that the default root password of your Server nodes be changed from test123.

NOTE: It is required that all Server nodes have the same root password.

To change the root password of your Server nodes, you can do the following:

Log onto each Server node as root using the ESXi web client (or vSphere client if you have access):

VMware ESXi Welcome

Getting Started

If you need to access this host remotely, use the following program to install vSphere Client software. After running the installer, start the client and log in to this host.

- Download vSphere Client for Windows
- Open the VMware Host Client

To streamline your IT operations with vSphere, use the following program to install vCenter. vCenter will help you consolidate and optimize workload distribution across ESX hosts, reduce new system deployment time from weeks to seconds, monitor your virtual computing environment around the clock, avoid service disruptions due to planned hardware maintenance or unexpected failure, centralize access control, and automate system administration tasks.

Download VMware vCenter

If you need more help, please refer to our documentation library:

vSphere Documentation

For Administrators

vSphere Remote Command Line

The Remote Command Line allows you to use command line tools to manage vSphere from a client machine. These tools can be used in shell scripts to automate day-to-day operations.

- Download the Virtual Appliance
- Download the Windows Installer (exe)
- Download the Linux Installer (tar.gz)

Web-Based Datastore Browser

Use your web browser to find and download files (for example, virtual machine and virtual disk files).

Browse datastores in this host's inventory

For Developers

vSphere Web Services SDK

Learn about our latest SDKs, Toolkits, and APIs for managing VMware ESX, ESXi, and VMware vCenter. Get sample code, reference documentation, participate in our Forum Discussions, and view our latest

Sessions and Webinars.
 Learn more about the Web Services SDK

Browse objects managed by this host

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VMware Welcome Screen

Select "Change Password"

vmware [,] ESXi [,]			- 1	Help - 1	Q Search -
Ta Navigator	localhost.localdomain	2 Auto-refresh			
Host Manage Monitor Given Virtual Machines Monitor Monitor Monitor	Image: Sever intermediate intermedintermediate intermediate intermediate intermediate inter	Change password Client settings Log out	USED: 245.67 C STORAGE USED: 613.8 G	8	FREE: 30.5 GHz 9% CAPACITY: 33.6 GHz FREE: 15.22 GB 00% CAPACITY: 255.89 GB FREE: 1.58 TB 22% CAPACITY: 2.19 TB
Storage	* Hardware * Configuration				

VMware Change Password Dashboard

Enter New Password:

<mark>8</mark> Change pass	word		
	New password New password again		
		Change password Cancel	

VMware Change Password

IMPORTANT: Repeat for each Server node, root passwords must be the same on each.

10. The Primary Server Node A, runs the Arista NetVisor UNUM Web Interface.

You can find the IP of your Arista NetVisor UNUM Primary VM via the ESXi web client (or vSphere client if you have access), log in with the your newly set root password:

vmware [,] ESXi [,]		
Navigator	VCFC-2.3.0-jenkins-st-4611	
 Host Manage 	📑 Console 🕨 Power on 🔳 Shut down 🔢 Suspend 🧐 Restart 🥒 I	Edit settings C Refre
Monitor	VCFC-2.3.0-jenkins-st-4611	
👻 🗗 Virtual Machines 👘 1	Compatibility ESXi 5.1 and later (VM	version 9)
VCFC-2.3.0-jenkins-st-4	VMware Tools Yes CPUs 8	
Monitor	Memory 64 GB	
More VMs	Host name vcf-center	
> 🗄 Storage 📃 1		
> Q Networking 2	✓ General Information	
	▼ 👱 Networking	
	Host name vcf-center	
	IP addresses 1. 172.18.0.1 2. fe80::42:56ff:fe94:69a1 3. fe80::d880:edff:fe32:af70 4. fe80::20c:29ff:fed1:13f2 5. fe80::d861:42ff:feb0:cb2d 6. 172.16.251.1 7. fe80::20c:29ff:fed1:13e8 8. fe80::84f0:4cff:fe93:5604 9. 172.17.0.1 10. 10.110.0.200	
	11. fe80::20c:29ff;fed1:13de 12. fe80::6cea:20ff;fe59:3392	

Arista NetVisor UNUM Primary VM

In the above example, you will see the IP from your DHCP server, in this case it is "10.x.x.x", but the actual IP will depend on your DHCP configurations.

11. Once you obtain the IP of your Arista NetVisor UNUM, use a Chrome browser to connect for the best experience.

- 12. Please refer to the Arista NetVisor UNUM Installation & User's Guide for SW configuration and current Release Notes for configuration and operating instructions:
 - a. These documents can be found at: https://www.pluribusnetworks.com/get-started/unum

	Log in with your Support credentials
	OR
Your email	
Password	
Log in	Forgot password?

Pluribus Networks Cloud Login Screen

NOTE: All content of the Installation & User's Guide is applicable to both the Arista NetVisor UNUM Standalone VM as well as the Arista NetVisor UNUM High Capacity Appliance unless otherwise noted. There is no need to download the OVA software as it comes pre-installed on the High-Capacity Appliance.

The software upgrade procedure is the same for both the Standalone VM/Appliance and the High Capacity Appliance.

If supported between two compatible versions, upgrade software can also be obtained from: https://www.pluribusnetworks.com/get-started/unum

Configuring UNUM to use VMware vSphere High Availability (HA)

Note: Appropriate VMware licensing required when using vSphere HA. VMware vSphere Enterprise licensing recommended.

To fully utilize high availability for your UNUM instance, the general configuration process is as follows:

- Create a DataCenter on the VMware vCenter, if a datacenter does not currently exist.
- Create a VMWare Cluster.
- Create a shared Datastore.
- Migrate the primary UNUM instance.
- Configure HA on the cluster.
- Validate the configuration in VMware and UNUM Database Health.

More detailed instructions are listed below in the Configure High Availability section.

The following series of illustrations are examples of a fully configured UNUM HA instance and using UNUM to monitor cluster health.

Summary

- **ESXi Server Node A** configured on IP address 10.110.0.207.
- **ESXi Server Node B** configured on IP Address 10.110.0.208.
- **PN-Unum-main** UNUM application instance running on Node A and fails over to Node B as necessary.
- **PN-Unum-data-2** UNUM datanode residing on local datastore on Node A.
- **PN-Unum-data-3** UNUM datastore residing on local datastore on Node B.

vm vSphere Client Menu V	2 Search in all environments	C ? ~ Administrator@VSPHERELOCAL ~ 3
□ □ □ → □ 10.110.2.62 → □ UNUM-DataCenter2 → □ DN-Cluster	IO.110.0.208 ACTIONS ~ Summary Monitor Configure Permissions VM Hypervisor: VMware ESXi, 6.7.0, 1432	Ms Datastores Networks Updates
 10.110.0.207 10.110.0.208 PN-Unum-data-2 PN-Unum-data-3 PN-Unum-main 	Model: SYS-2028TP-HTTR Processor Type: Intel(R) Xeon(R) CPU E5- Logical Processors: 32 NICs: 4 Virtual Machines: 2 State: Connected Uptime: 27 days	2620 v4 @ 2.10GHz Used: 1.3 GHz Capacity: 33.4 GHz Merrory Free: 173.75 GB Used: 12.14 GB Capacity: 255.89 GB Blorage Free: 8.83 TB Used: 1 TB Capacity: 9.63 TB
	Hardware	Configuration v
	Tags Assigned Tag Category Description	Related Objects Cluster
		Update Manager Host Baseline Compliant (never checked) Compliance
	No items to displa Assign Remove	Precheck ⑦ Remediation status unknown Remediation State (never checked)
	Custom Attributes	CHECK COMPLIANCE PRE-CHECK REMEDIATION
	Attribute Value AutoDeploy.Machineidentity	
Recent Tasks Alarms		\$

Fully Configured High Availability UNUM Instance

DN Cluster ESXi Hosts

- ESXi Server Node A configured on IP address 10.110.0.207
- ESXi Server Node B configured on IP Address 10.110.0.208

vm vSphere Client Menu V	Q Search in all environments	C C	⑦ ∽ Administrator@∨SPHI	ERELOCAL V
 □ □ □ ○ □ □ □ ○ □ □ □ □ ○ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	DN-Cluster ACTIONS ~ Summary Monitor Configure Per Hosts Resource Pools	rmissions <mark>Hosts</mark> VMs	Datastores Networks	Updates
PN-Unum-data-2	Name ↑ 🧼 🗸 State	 ✓ Status 	~ Cluster ~	Consumed CPU % ~ C
PN-Unum-data-3	🗌 10.110.0.207 Conr	nected 🗸 Normal	DN-Cluster	1%
PN-Onum-main	10.110.0.208 Conr	nected 🗸 Normal	DN-Cluster	3%
				C Export 2 items

Fully Configured High Availability UNUM Instance - Hosts

DN Cluster Virtual Machines

- **PN-Unum-main** UNUM application instance running on Node A and fails over to Node B as necessary.
- **PN-Unum-data-2** UNUM datanode residing on local datastore on Node A.
- PN-Unum-data-3 UNUM datastore residing on local datastore on Node B.

vm vSphere Client Menu V	Q Search in all environments		C ? ~ Adm	
 □ □	Image: DN-Cluster ACTIONS ~ Summary Monitor Configure Virtual Machines vApps	Permissions Hosts	VMs Datastores	Networks Updates
PN-Unum-data-2	Name 🕇 🛛 🗸	State ~ Status	Provisioned Space	Used Space v Host CPU v Host Mer
PN-Unum-data-3	PN-Unum-data-2	Powered On 🗸 Norma	664.09 GB	664.09 GB 252 MHz 38.09 G
Pre-onum-main	PN-Unum-data-3	Powered On 🗸 Norma	664.09 GB	664.09 GB 189 MHz 36.22 G
	PN-Unum-main	Powered On 🗸 Norma	600 GB	19.17 GB 1.26 GHz 42.64 G
				🕒 Export 3 items

Fully Configured High Availability UNUM Instance - Virtual Machines

UNUM Instance

The PN-Unum-main shown currently running on ESXi instance 10.110.0.208 and in vSphere HA protection mode (High Availability).

Should this instance go down or offline the UNUM application switches over to run on ESXi instance 10.110.0.207.

vm vSphere Client Menu V C				C ©~	Administrator@VSPHERE.LC	cal v 🛛 🕤
	PN-Unum-main Summary Monitor Configu	🕨 💻 😴 🦻 🔉 🔺 re Permissions Datasto	CTIONS -	/odates		
UNUM-DataCenter2 DN-Cluster 10.100.0.207 10.100.0.208 PN-Unum-data-2 PN-Unum-data-3 PN-Unum-main	Powered Cn Launch Web Console Launch Remote Console Most: Output	25: Ubuntu Linux (64-bit) Ubitty: ESXI 5.1 and later (VM v Tools: Running, version:10304 More info unum esses: 172.16.250.150 View all 3 IP addresses 10.110.0.208	ersion 9) (Guest Managed)			CPU USAGE 1.05 GHz MEMORY USAGE 1.28 GB STORAGE USAGE 19.17 GB
	VM Hardware CPU Memory Hard disk 1	8 CPU(s)	tive	Notes UNUM v6.2.0 Copyright (8) 2020-2021 Pluribus Networks Use subject to license agreement Edit Notes	5	Ŷ
	> Network adapter 1	VM Network (connected)		Custom Attributes		^
	> Network adapter 2	AutoCluster (connected)		Attribute	Value	
	> Network adapter 3	VM Network (connected)				
	CD/DVD drive 1	Disconnected	Ч _р ч			
	> Video card	4 MB				
	VMCI device	Device on the virtual machine provides support for the virtu communication interface	PCI bus that al machine	Edt.		No items to display
	> Other	Additional Hardware		vSphere HA		^
	Compatibility	ESXI 5.1 and later (VM version	19)	Felure	Response	
	Edit Settings			Host failure	✓ Restart VMs	
	Related Objects		~	Host Isolation	Disabled Disabled	
				Datastore with Permanent Device Loss	Disabled	
	Tags		^	Datastore with All Paths Down	Disabled	
	Assigned Tag Car	tegory Descr	lption	Guest not heartbeeting	Disabled	
Recent Tasks Alarms				Traprete 7 to PROBE		*

Fully Configured High Availability UNUM Instance - vSphere HA Protection Mode

Datastores

- Datastore-HC shared instance used by UNUM HA and VMware Heartbeat.
- **Datastore2-HC** shared instance used for VMware Heartbeat.

vm vSphere Client Menu V	Q Search in all environments	G	⑦ ∨ Administ	zator@VSPHERELOCAL ∽	\odot
Image: Control 2.62 ✓ Image: Control 2.62	Image: DN-Cluster ACTIONS ~ Summary Monitor Configure Permissions Hosts Datastores Datastore Clusters	; VMs	Datastores N	etworks Updates	
PN-Unum-data-2	Name ↑ ✓ Status ✓ Image: Datastore-HC ✓ Normal ✓	Type NFS 3	~ Detastore C	 ✓ Capacity ✓ Free 3.75 TB 3.41 TB 	~
C execution	Detastore2-HC Vormal	NFS 3		3.91 TB 3.91 TI	2 844

Fully Configured High Availability UNUM Instance - Redundant Datastores

UNUM Database Health

In UNUM, **Settings** – **Database** – **Health**.

- **172.16.250.150** represents the health of the UNUM primary instance.
- **172.16.250.151 .156** represent the health of the UNUM datanodes. The datanodes for **Nodes A & B** appear in the vCenter dashboard and all datanodes appear in the UNUM Database Health.

Dashba	ards 🔻	Manager 🔻	Anal	ytics 👻	Alerts/Re	ports 🔻					e	Welcon	ne admin 🔻	8-
Settings	Server Certificate	Auth Server	License	Manage Users	Archiver	Projects	Audit Logs	Database H	lealth			Instal	X-Pock License	0
Clusters	/ vcf-es-cluster	1 / Elasticsearch	1								10 seconds	< 0	Last 1 hour	>
Overvi	ew Indices	Nodes												
Nodes: 7	Indices: 17	Memory: 5GB / 196GB	Tc 10	otal Shards: 06	Unassigr 0	ned Shards:	Docume 587,776	nts:	Data: 381MB	Uptime: an hour	Version: 5.4.1	:	Health: Gree	n
Node	Filter Nod	es	7 of 7											
Name 🎼		Status		CPU Usa	ge	Load Ave	rage	JVM Memory	r	Dis	k Free Space	Shards		
★ <u>172</u> 172.16.25	.16.250.150 0.150:9300	Online	(O % † °‱	ax 1.4	8 1 16.84	max 3 9	6 \$ % max 0 % min	493.1	GB↓⁴	93.3 GB max 0.0 B min	0		
172 172	.16.250.151 0.151:9300	 Online 	0.67	%↓ ^{3.67 % m} 0% m	ax iin 0.0	07↓0.68	max 2 9	6 ↓ 2 % max 0 % min	493.5	5 GB↓*	93.7 GB max 0.0 B min	18		
≣ <u>172</u> 172.16.25	.16.250.152 0.152:9300	 Online 	0.67	% ↑ 19.5 % m 0 % m	ax 0.0	09↓°°°	max 3 9	6 ↓ 3 % max 0 % min	493.7	7 GB↓⁴	93.7 GB max 0.0 B min	18		
172 172	.16.250.153 0.153:9300	 Online 	0.67	7 %↓ ^{2%m}	ax iin 0.	74↓°.78	max 2 9	6↓ 2 % max 0 % min	493.5	5 GB↓≪	93.7 GB max 0.0 B min	18		
≣ <u>172</u> 172.16.25	.16.250.154 0.154:9300	 Online 	0.33	%↓ ^{6.33 % m} 0% r	ax 0.0	07↓°³³	max 2 9	6 ↓ 2 % max 0 % min	493.7	7 GB↓⁴	93.8 GB max 0.0 B min	18		
172.16.25	.16.250.155 0.155:9300	 Online 	(0 %↓ ^{2%m}	ax 0.	05↓°°°	max 1 9	6 ↓ 2 % max 0 % min	493.7	7 GB↓*	93.7 GB max 0.0 B min	17		
172.16.25	.16.250.156 0.156:9300	 Online 	0	%↓ ^{9.67%m} 0%m	ax. iin	01025	max 2 9	6 🕽 2 % max 0 % min	493.7	7 GB↓*	93.7 GB max 0.0 B min	17		

Fully Configured High Availability UNUM Instance - Database Health

Configure High Availability (HA)

To configure HA refer to the following steps. The general process involves:

- 1. Creating a DataCenter on the VMware vCenter, if a datacenter does not currently exit.
- 2. Creating a VMWare Cluster.
- 3. Creating an NFS datastore.
- 4. Migrating the primary UNUM instance.
- 5. Configuring HA on the cluster.
- 6. Validating the configuration and Database Health.

Create Data Center on vCenter

If a datacenter does not exit you must create a new datacenter.

Right-click on the vSphere instance and select **New Datacenter**.

vm	vSphere Client Menu 🗸	Q s	earch in a	all enviro	onments			
þ			🗗 10.	.110.2	2.62	ΑΟΤΙΟ	NS 🗸	
✓ 🗗 10. ²	Actions - 10.110.2.62		Su	М	Con	Per	m	Data
	New Datacenter		6		Virtual M Hosts:	Machines	s: 3 2	
	Export System Logs		Ľ	Γ.				
	न्→ Assign License							
	Tags & Custom Attributes 🕨							
	Add Permission		Custon	n Attrib	outes			
	Alarms 🕨		Attrib	ute			Value	
	Update Manager 🕨							
								No
			Edit					

UNUM HA - Add New Datacenter

High Availability (cont'd)

Enter the name for the new datacenter.

New Datacenter		×
Name	UNUM-Datacenter2	
Location:	₽ 10.110.2.62	
	CANCEL	

UNUM HA - Add New Name

Click **OK** to continue.

The new datacenter appears in the dashboard.



UNUM HA - New Datacenter Dashboard

Create VMware Cluster

Create a VMware cluster under the new datacenter by selecting the datacenter. Right-click and select **New Cluster**.

∨ 🗗 10.110.2.62		Summary	Monitor	Confi	gure	
> 📑 UNUM-DataCenter:	>					
	Actions - UNUM-DataCente	er2	Hosts:		2	
	🚹 Add Host		Clusters:	achine	es: 3 1	
	🕼 New Cluster		Networks Datastor	s: es:	2 6	
	New Folder	•				
	Distributed Switch	+				
	🔂 New Virtual Machine		Attributes			
	Deploy OVF Template	 P			Value	
	Storage	•				
	Edit Default VM Compa	atibility				
	🖧 Migrate VMs to Anothe	er Network				
	Move To					
	Rename	-				
	Tags & Custom Attribu	tes 🕨				
	Add Permission					
	Alarms	► Ma	anager			
	🗙 Delete	t B	aseline	\oslash	Complian	
	Update Manager	► International				
		Preche	ck	0	Remediat	

UNUM HA - Create Cluster

Enter a **name** for the new cluster.



UNUM HA - New Cluster Name

Click **OK** to continue. The new cluster appears in the dashboard.

vm vSphere Client Menu ∨	Q Search in all environments
	UNUM-DataCenter2
∨ 🗗 10.110.2.62	Summary Monitor Configure Permissions
 UNUM-DataCenter2 DN-Cluster 	Hosts: Virtual Machines: Clusters: 1 Networks: 2 Datastores:

UNUM HA - New Cluster in Dashboard

Add Primary Hosts

Power off the deployed VMs before processing.

Highlight the new cluster and right-click and select **Add Hosts**.

✓ 10.110.2.62 ✓ 10.110.2.62	Center?	1	Summary N			
> (L) DN-Cluste	Actions - DN-Cluster		6			
	Add Hosts					
	📩 New Virtual Machine					
	🏷 New Resource Pool					
	讨 Deploy OVF Template					
	🚼 New vApp		Related Obje			
	Storage	►	Datacente			
	Host Profiles	►				
	Edit Default VM Compatibility		Cluster Consu			
	√→ Assign License					
	Settings		Custom Attrik			
	Move To		Attribute			
	Rename					
	Tags & Custom Attributes	►				
	Add Permission					
	Alarms	•				
	🗙 Delete					
	Update Manager					
	vSAN	•	Update Mana			

UNUM HA - Add Hosts
Add Primary Hosts (ESXi servers) only, ESXi servers A & B.

Enter the **IP Address**, **username** and **password** for each node.

Add hosts	Add new and existing hosts to	your cluster		×
1 Add hosts	New hosts (2) Existing hosts (0 from 0)			
2 Host summary3 Ready to complete	Use the same credentials for all hosts 10.110.0.207 10.110.0.208 IP address or FQDN	root root Username	Password	×
			CANCEL	NEXT

UNUM HA - Add Hosts Details

Click **Next** to continue.

Review the Host Summary.

Add hosts	Host summary			×
1 Add hosts	Hostname / IP Address	Y ESX Version	y Model	Ψ
2 Host summary	> 10.110.0.207	6.7.0	Supermicro SYS-2	2028TP-HTTR
3 Ready to complete	> 10.110.0.208	6.7.0	Supermicro SYS-2	2028TP-HTTR
			CANCEL BACK	NEXT

Click **Next** to continue and review the entries.

	-
1 Add hosts Hosts will enter maintenance mode before they are moved to the cluster. You might need to either power off or migrate powered on and suspended virtual machines.	
2 Host summary 2 new hosts will be connected to vCenter Server and moved to this cluster: 10.110.0.207	
3 Ready to complete 10.110.0.208	
CANCEL BACK FINISH	

UNUM HA - Add Hosts Finish

Click **Finish** to add the new hosts.

The hosts appear in the dashboard.

vm vSphere Client Menu V (Q Search in all environments	C (?) ~ Administrator@VSPHERELOCAL ~
Image: Control of the second seco	Summary Monitor Configure Permissions VMs	Datastores Networks Updates
ON-Cluster DN-Cluster ON-Cluster	Hypervisor: VMware ESXI, 6.7.0, 15160130	8 CPU Pres: 33.16 GHz
10.110.0.207	Model: STS-20281P-HTTR Processor Tupe: Jate/(2) Yean/D) (201155-262)	Used: 439 MHz Capacity: 33.6 GHz
10.110.0.208	Logical Processors: 32	Memory Free: 214.59 GB
	NICs: 4	Used: 41.3 GB Capacity: 255.89 GB
	Virtual Machines: 1	Storege Free: 8.83 TB
	Uptime: 18 hours	Used: 1 TB Capacity: 9.63 TB
	li⇒	

UNUM HA - Hosts Dashboard

Add NFS

Configure the **VMWare Cluster** to use the shared datastore.

The example below shows how to configure for **NFS**, the shared medium we have chosen:

Create a new NFS datastore under Cluster → Storage → New Datastore.

1 Туре	Туре
2 Select NFS version	Specify datastore type.
3 Name and configuration 4 Host accessibility 5 Ready to complete	 VMFS Create a VMFS datastore on a disk/LUN.
	NFS Create an NFS datastore on an NFS share over the network.
	 VVol Create a Virtual Volumes datastore on a storage container connected to a storage provider.
	CANCEL BACK NEX

Click on **Next**.

Enter **NFS** type and details.

1 Type	Select NFS version
3 Name and configuration 4 Host accessibility 5 Ready to complete	 NFS 3 NFS 3 allows the datastore to be accessed by ESX/ESXi hosts of version earlier than 6.0 NFS 4.1 NFS 4.1 provides multipathing for servers and supports the Kerberos authentication protocol
	CANCEL BACK NEX

Click on **Next**.

Enter the details, including Name, Folder and Server.

1 Type	Name and configuration	on
2 Select NFS version	Specify name and con	figuration.
3 Name and configuration		
4 Host accessibility	 If you plan to con 	nfigure an existing datastore on new hosts in the datacenter, $\qquad imes$
5 Ready to complete	it is recommende datastore instea	ed to use the "Mount to additional hosts" action from the d.
	NFS Share Details	
	Datastore name:	Datastore-HC
	Folder:	/mnt/nfs_3.58/
		E.g: /vols/vol0/datastore-001
	Server:	10.110.3.50
		E.g: nas, nas.it.com or 192.168.0.1
	Access Mode	
	Mount NFS as read-	only

Click on **Next**.

Select **all** hosts in the cluster.

' 1 Type ' 2 Select NFS version	Host accessibility Select the hosts that require acces	s to the datastore	ł.	
3 Name and configuration	✓ Host	~	Cluster	~
5 Ready to complete	10.110.0.207	Q	DN-Cluster	
	☑ 10.110.0.208	(DN-Cluster	
				2 items

UNUM HA - Select Host Accessibility

Click Next to continue.

Review all details and click **Finish** to complete the datastore configuration.

/ 1 Type	Ready to complete			
2 Select NFS version	Review your settings selec	ctions before finishing the v	vizard.	
3 Name and configuration				
4 Host accessibility	General			
E Beady to complete	Name:	Datastore-HC		
S Ready to complete	Type:	NFS 3		
	NFS settings			
	Server:	10.110.3.50		
	Folder:	/mnt/nfs_3.58/		
	Access Mode:	Read-write		
	Hosts that will have acce	ess to this datastore		
	Hosts:	10.110.0.207		
		10.110.0.208		
				-

Note: Repeat the New Datastore process and create a second datastore for redundancy. For example, **Datastore2-HC**.

Migrate Primary UNUM Instance

You must migrate PN-Unum-main instance to the clustered datastore.

vm vSphere Client Menu V	2 Search in all environments	C @ ~ ^d	
ID.110.2.62 ✓ ☑ UNUM-DataCenter2	Summary Monitor Configure Permissions Datast	ACTIONS - tores Networks U	Jpdates
 DN-Cluster 10.110.0.207 10.110.0.208 PN-Unum-data-2 PN-Unum-data-3 PN-Unum-main 	Guest OS: Ubuntu Linux (64-bit) Compatibility: ESXI 5.1 and later (VM VMware Tools: Not running, version:10 More info DNS Name: IP Addresses: Host: 10.110.0.208	version 9))304 (Guest Managed)	CPU USAGE O Hz MEMORY USAGE O B STORAGE USAGE 19.6 GB
	VM Hardware ^ > CPU 8 CPU(s)	Notes UNUM v6.2.0 Copyright (@) 2020-	2021 Bharibur Nebuorles
	> Memory 64 GB, 0 GB memory active	Use subject to licens	e agreement
	Hard disk 1 600 GB Network adapter 1 VM Network (connected)	Custom Attributes	^
	> Network adapter 2 AutoCluster (connected)	Attribute	Value
	> Network adapter 3 VM Network (connected)		
	> Video card 4 MB		
	VMCI device		No items to display
	Device on the virtual machine PCI bus that provides support for the virtual machine communication interface	Edit	
	> Other Additional Hardware	vSphere HA	A Besonse
	Compatibility ESXI 5.1 and later (VM version 9)	Host fallure	V Restart VMs

UNUM HA - Dashboard - Ready for Migration

Power Off the PN-Unum-main VM instance before proceeding.



UNUM HA - Dashboard - Power Off PN-Unum-main

Right-click on the PN-Unum-main instance and select Migrate.

vm vSphere	Client Menu 🗸	Q Search in all environments
	3 9	🗗 PN-Unum-main
∨ 🗗 10.110.2.62	🔓 Actions - PN-Unum-main	Summary Monitor Co
✓ III UNUM-DataQ✓ III DN-Cluste	r Power	► Gi
10.110.0	- Guest OS	Powered Off
PN-Unu	Snapshots	► DI
PN-Unu	📑 Open Remote Console	IP He
D PN-Unu	🖶 Migrate	Launch Web Console
	Clone	•
	Fault Tolerance	 VM Hardware
	VM Policies	> CPU 8
	Template	Memory
	Compatibility	Hard disk 1 6

UNUM HA - Dashboard - Migrate

Select Migration Type

Choose Change Storage Only and click Next to continue.

2 Select storage	Select a migration type VM origin Change the virtual machines' compute resource, storage, or both. VM origin
3 Ready to complete	 Change compute resource only Migrate the virtual machines to another host or cluster.
	Change storage only Migrate the virtual machines' storage to a compatible datastore or datastore cluster.
	 Change both compute resource and storage Migrate the virtual machines to a specific host or cluster and their storage to a specific datastore or datastore cluster.

UNUM HA - Migrate - Change Storage Only

Select the **Datastore** for the migration.

1 Select a migration type 2 Select storage 3 Ready to complete	Select storage VM origin (Select the destination storage for the virtual machine migration.											
					Configu	re per disk 🔵						
	Select virtual disk format:		Thin	Provision	~	~						
	VM Storage Policy:			Keep existing	VM storage p	olicies ~						
	Name	Capacity	Provisioned	Free	Туре	Cluster						
	Datastore-HC	3.75 TB	999.01 GB	3.41 TB	NFS v3							
	Datastore2-HC	3.91 TB	44.88 MB	3.91 TB	NFS v3							
	datastore11	1.08 TB	667.45 GB	442.8 GB	VMFS 6							
	datastore222	1.09 TB	4.45 GB	1.09 TB	VMFS 5							
	Compatibility	succeeded.										

UNUM HA - Migrate - Select Storage for Migration

Click **Next** to continue.

Ready To Complete

Ready to complete Verify that the information is correct and click Finish to start the migration.						
Migration Type	Change storage. Leave VM on the original compute resource					
Virtual Machine	PN-Unum-main					
Storage	Datastore-HC					
Disk Format	Thin Provision					
	Ready to complete Verify that the inform Migration Type Virtual Machine Storage Disk Format					

UNUM HA - Migrate - Ready To Complete Migration

Click **Finish** to begin the migration.

Progress is monitored in the dashboard.

vm vSphere Client	Menu V Q Search in all environments C ? V Administrator@V	/SPHERE.LOCAL V	٢
Viiii VSphere Client Ion construction Ion construction Ion construction Ion	Image: Construction of all environments Image: Construction of all environments Image: Construction of all environments Image: Construction of all environments Image: Construction of all environments Image: Construction of all environments Image: Construction of all environments Image: Construction of all environments Image: Construction of all environments Image: Construction of all environments Image: Construction of all environments Image: Construction of all environments Image: Construction of all	CPU USAGE O HZ MEMORY US O B STORAGE U 600 GB	SAGE
Power Off virtual machine	PN-Unum-main Completed	Ma	re Tasks

UNUM HA - Migrate - Migration in Progress

After the migration completes, **Power On** the **PN-Unum-main** instance.



Recent Tasks Alarms

UNUM HA - Migrate - PN-Unum-main Powered On

Configure HA on VMWare Cluster

Setup HA on VMware Cluster (if not previously configured).

Click on **Configure** – vSphere Availability – Edit.

ummary Monitor C	onfigure Permissions Hosts	VMs Datastores Ne	tworks Updates
 Services vSphere DRS vSphere Availability 	vSphere HA is Turne Runtime information for vSphere HA Proactive HA is not a	d OFF A is reported under vSphere HA M Vailable	EDIT
 Configuration Quickstart General 	To enable Proactive HA you must a Failure conditions an	so enable DRS on the cluster. d responses	
Licensing	Failure	Response	Details
VMware EVC VM/Host Groups	Host failure	✓ Restart VMs	Restart VMs using VM restart priority ordering.
VM/Host Rules	Proactive HA	Disabled	Proactive HA is not enabled.
VM Overrides Host Options	Host Isolation	Disabled	VMs on isolated hosts will remain powered on.
Host Profile I/O Filters More	Datastore with Permanent Devic	Disabled	Datastore protection for All Paths Down and Permanent Device Los is disabled.
Alarm Definitions Scheduled Tasks			
 vSAN Services 	> Admission Control	Expand for details	
	> Datastore for Heartbeating	Expand for details	
	a Advanced Onlines	Evened for advanced or	- 4*

UNUM HA - Configure vSphere HA

Select vSphere HA to On.

phere HA				
ailures and responses	Admission Control	Heartbeat Datastores	Advanced O	ptions
u can configure how vSpher	e HA responds to the	failure conditions on this clus	ster. The following	g failure conditions are
pported: host, host isolation,	, VM component prote	ection (datastore with PDL ar	nd APD), VM and	application.
able Host Monitoring i				
	-			
Linet Fallows Deserves				
> Host Failure Response		Restart VMs		
 > Host Failure Response > Response for Host Isolation 	on	Restart VMs 💌 Disabled	•	
 > Host Failure Response > Response for Host Isolation > Datastore with PDL 	on	Disabled	•	
 > Host Failure Response > Response for Host Isolation > Datastore with PDL > Datastore with APD 	on	Restart VMs Disabled Disabled Disabled	•	•
 > Host Failure Response > Response for Host Isolation > Datastore with PDL > Datastore with APD > VM Monitoring 	on	Restart VMs Disabled Disabled Disabled Disabled Disabled	•	•
 > Host Failure Response > Response for Host Isolation > Datastore with PDL > Datastore with APD > VM Monitoring 	on	Restart VMs Disabled Disabled Disabled Disabled Disabled	•	•
 > Host Failure Response > Response for Host Isolation > Datastore with PDL > Datastore with APD > VM Monitoring 	on	Restart VMs Disabled Disabled Disabled Disabled	•	•

Disable the Admission Control setting.

Edit Cluster Settings DN-Cluster								
vSphere HA								
Failures and responses	Admission Control	Heartbeat Datastores	Advanced Options					
Admission control is a policy host failures will increase the Define host failover capacity	y used by vSphere HA to e availability constraints a y by	ensure failover capacity with and capacity reserved. abled	in a cluster. Raising the number of poten	tial				
			CANCEL	ок				

UNUM HA - Configure vSphere Admission Control - Disabled

Select Heartbeat Datastores.

ailures and responses	Admission Control	Heartbeat Datastores	Advanced Options
phere HA uses datastore atastores for each host us	es to monitor hosts and vi sing the policy and datast	rtual machines when the HA i ore preferences specified be	network has failed. vCenter Server selects 2 Iow.
eartbeat datastore select	ion policy:		
O Automatically select	datastores accessible fro	m the hosts	
O Use datastores only	from the specified list		
 Use datastores from 	the specified list and com	plement automatically if nee	ded
		,,	
Name	Data	store Cluster	Hosts Mounting Datastore U
	N/A		2
Datastore-HC			

UNUM HA - Configure vSphere Heartbeat Datastores

Click on **OK**.

HA Configuration Validation

The **Recent Tasks** pane shows that **HA** configures successfully on the hosts and when **HA** is configured on the VMware cluster.

Recent Tasks	Ala	rms																
Task Name specification	~	Target	~	Status		×	Details	×	Initiator	~	Queued For	×	Start Time ↓ PM	~	Completion Time PM	\sim	Server	1
Configuring vSphere HA		10.110.0.207			53% (Э			System		4 ms		09/24/2020, 4:48:05 PM				10.110.2.62	
Configuring vSphere HA		10.110.0.208			52% (Э			System		3 ms		09/24/2020, 4:48:05 PM				10.110.2.62	
t	UNUM HA - Configuration Validation																	

Configuring vSphere HA	10.110.0.207	✓ Completed	System	4 ms	09/24/2020, 4:48:05 PM	09/24/2020, 4:48:55 PM	10.110.2.62
Configuring vSphere HA	10.110.0.208	✓ Completed	System	3 ms	09/24/2020, 4:48:05 PM	09/24/2020, 4:48:55 PM	10.110.2.62

The VM on Shared Storage shows HA protected.

vm vSphere Client Menu v	Q Search in all environments				0~	Administrator@VSPHERE.LC	CAL Y 🗍 🕃		
	🖧 PN-Unum-main 🛛 🕨	📕 😻 🦻 🔝 ACTIONS 🗸							
V 💋 10.110.2.62	Summary Monitor Configure	Permissions Datastores Netwo	rks Upd	iates					
✓ ✓	Guest OS Compatib VMware 1 P Reversed Co Launch Web Console Launch Remote Console Launch Remote Console	: Ubuntu Linux (64-bit) ility: ESXI 5.1 and later (VM version 9) Tools: Running, version:10304 (Guest Manage More info e: unum ses: 172.16.250.150 View all 3 IP addresses 10.110.0.206	d)				CPU USAGE 1.05 GHz MEMORY USAGE 1.28 GB STORAGE USAGE 19.17 GB		
	VM Hardware		~	Notes			^		
	> CPU	8 CPU(s)		UNUM v6.2.0 Copyright (ID) 2020-2021 Plur	ibus Network	5			
	> Memory	64 GB, 1.28 GB memory active		Use subject to license agreen	preement				
	> Hard disk 1	600 GB		COL HORES					
	> Network adapter 1	VM Network (connected)		Custom Attributes			^		
	> Network adapter 2	AutoCluster (connected)		Attribute		Value			
	> Network adapter 3	VM Network (connected)							
	CD/DVD drive 1	Disconnected	$q_{\rm D} \neq$						
	> Video card	4 MB							
	VMCI device	Device on the virtual machine PCI bus that provides support for the virtual machine communication interface		Edt			to items to display		
	. Other	Additional Manhouse	- 6	and the					
	Comerth lite	FEVER 1 and later Officiencies R		vSphere HA			^		
	Companionity	ESKI S.1 and later (VM Version 9)		Felure		Response			
	Edit Settings			Host failure		 Restart VMs 			
	Related Objects		~	Host Isolation		Disabled Disabled			
				Datastore with Permanent Dev	ice Loss	Disabled			
	Tags		~	Datastore with All Paths Down		Disabled			
	Assigned Tag Categ	ary Description		Guest not heartbeating		0 Disabled			
				vSphe	re HA Protec	tion: 🗸 Protected 🕕			
Recent Tasks Alarms									

 ${\it UNUM\,HA}\ -\ {\it Configuration}\ Validation\ -\ vSphere\ HA\ Protection\ Enabled$

High Availability Validation after Fail-over

In the following example, the UNUM instance runs on one of the instances in the cluster. This instance is HA protected.



UNUM HA - Configuration Validation - Example - Cluster Good

Respective instance (10.110.0.208) then becomes unresponsive or is rebooted.

vm vSphere Client Menu V	Q Search in all environments	
□ □ ○ □ □ □ <	Io.110.0.208 ACTIONS ✓ Summary Monitor Configure Permissions VMs Image: White the system of t	Datastores Networks Updates 188 20 v4 @ 2.10GHz CPU Used: 0 Hz Cepecity: 0 Hz Memory Free: 0 B Used: 0 B Capacity: 0 B Used: 0 B Capacity: 0 B Capacity
	Host connection and power state vSphere HA host status Cannot synchronize host 10.110.0.208.	Acknowledge Reset To Green Acknowledge Reset To Green

UNUM HA - Configuration Validation - Example - Cluster Instance Failed or Rebooted

You can confirm the UNUM instance restarts on the second host (10.110.0.207), Host B, in the same VMWare Cluster.

vm vSphere Client Menu V	Q Search in all environments		C 0 ~ Adm	
 Image: Constraint of the second second	PN-Unum-data Summary Monitor Monitor Provered On Launch Web Console Launch Remote Console	a-2 Permissions Datasto Configure Permissions Datasto Guest OS: Ubuntu Linux (64-bit) Compatibility: ESXi 5.1 and later (VM vv VMware Tools: Running, version:10304 (More info DNS Name: unum IP Addresses: 172.16.250.151 View all 3 IP addresses Host: 10.110.0.207	ACTIONS - res Networks Up ersion 9) (Guest Managed)	dates CPU USAGE 147 MHz MEMORY USAGE 2.56 GB STORAGE USAGE 664.09 GB
	VM Hardware > CPU > Memory > Hard disk 1	 8 CPU(s) 64 GB, 2.56 GB memory active 600 GB 	Notes UNUM v6.2.0 Copyright (©) 2020-20 Use subject to license Edit Notes	021 Pluribus Networks agreement
	> Network adapter 1	VM Network (connected)	Custom Attributes	Value
	Network adapter 2 Network adapter 3 CD/DVD drive 1	AutoCluster (connected) VM Network (connected) Disconnected q _D ×		
	> Video card VMCI device	4 MB Device on the virtual machine PCI bus that provides support for the virtual machine communication interface	Edit	No items to display
	> Other	Additional Hardware	vSphere HA	Response
Decent Tasks Alasma	Permethille	PPV: F1 and later Alt1 inciden M		

UNUM HA - Configuration Validation - Example - Cluster Instance Failed Over

UNUM Database Health - High Availability Validation after Fail-over

In UNUM, **Settings** \rightarrow **Database** \rightarrow **Health** monitor the datanode status. In this example the offline datanode returns to service.

Dashboards *	Manager *	Analytics *	Alerts/Reports *	¥0		\varTheta Welcome admin *
Settings Server Certifica	ites Auth Server	License Manage Users	Archiver Projects J	Audit Logs Database He	aith	Install X-Pack License
Clusters / vcf-es-cluste	r1 / Elasticsearch	n			10:	seconds < O Last 1 hour >
Overview Indices	Nodes					
Nodes: Indices: 6 30	Memory: 5GB / 166GB	Total Shards: 192	Unassigned Shards: Ø	Documents: 14,811,323	Data: Uptime: 21 8GB hours	Version: Health: • 5.4.1 Green
Nodes Filter No	des	7 of 7				
Name II.	Status	CPU Usag	e Load Ave	rage J/M Memory	Disk Free 5	ipace Sharils
★ 172.16.250.150 172.16.350.150.9900	 Online 	1 % ^{12.5 % ma}	14.85↓ 17.61	max 3%↓ ^{5% max}	491.9 GB	max O
172.16.250.151	 Online 	2 % 🕽 🖏 🖏 🖏 🖏	0.95	nas 2%↓ ^{3%} mas	491.3 GB	max 38
172.16.250.152	Offline	N/A	N/	/A N/A	N	/A N/A
172.16.250.153	 Online 	2.67 % 1 2.67 % mil	0.64	max 2%↓ ^{3%} max	490.7 GB	max 39
172.16.250.154 172.16.250.154.9900	 Online 	1 % J 2 Norma	0.2↓0.00	max 3%↓ ^{3%} max	492.3 GB	max 38
172.16.250.155	 Online 	0%	0.18↓0.81	mas 3%↓ ^{3% max}	492.2 GB	max 39
172.16.250.156 172.16.250.156:9900	 Online 	1.67 % 1 25 % 0%	0.81**	nas 3%↓ ^{3%} mas	492.4 GB	max 38
Deshboards *	Monager *	Analytics *	Alerts/Reports *	"0		🕒 Welcome admin 👻
Settings Server Certifica	ites Auth Server	License Monoge Users	Archiver Projects	Audit Logs Database He	ealth	Install X-Pack License
Clusters / vcf-es-cluste	er1 / Elasticseard	n			II 10:	seconds 《 @ Last 1 hour 》
Overview Indices	Nodes					
Nodes: Indices: 7 30	Memory: 468 / 19668	Total Shards: 192	Unassigned Shards: 0	Documents: 14,815,326	Data: Uptime: 21 BGB hours	Version: Health: • 5.4.1 Green
Nodes Filter No	des	7 of 7				
Name IL	Status	CPU UN	ige Load Aver	age JVM Memory	Disk Free	Space Shards
172.16.250.150 172.16.250.150.9300	 Online 	0.67 % 1 25 %	tin 9.59↓ ^{17,61} 0	nax 4%↓ ^{5%} max	491.9 GB	t max 8 min 0
172.16.250.151 172.16.250.151:9300	 Online 	2.33 %† 👬	0.681	nax 2%↓ ^{3%} max	491.5 GB 🕹 🕬	max 36
172.16.250.152 172.16.250.152.9300	• Online	0%↓35₩₩	tex 0↓°.4∉	nax 0%↓ ³ %inax	0.0 B L 492.3 G	trax 10
 172.16.250.152 172.16.250.152:000 172.16.250.153:000 172.16.250.153:000 	Online Online	0 % ^{35%}	₩ 0↓°.4 ₩ 0.54†°.64	nas 0%↓ ^{3% mas}	0.0 B↓ ^{403.60} 490.7 GB↓ ^{401.60}	Inat 10
172.16.250.152 172.16.250.152:800 172.16.250.153:900 172.16.250.153:900 172.16.250.154:900 172.16.250.154:900	Online Online Online	0 %↓ 25% 0.33 %† 247% 1 %↓ 2%	NMM 0↓0400 MMM 0.5410060 MMM 0.23↓0000	nen 0%↓3%inter men 3%↓3%inter 3%↓3%inter 3%↓3%inter	0.0 B \$ 403.00 490.7 GB \$ 401.40 492.3 GB \$ 402.40	10 Inst 10 Inst 37 Inst 36
172.16.250.152 172.16.256.152 172.16.256.153 172.16.250.153 172.16.250.154 172.16.250.154 172.16.250.154 172.16.250.154 172.16.250.154 172.16.250.154 172.16.250.154 172.16.250.154 172.16.250.154 172.16.250.154 172.16.250.154 172.16.250.154 172.16.250.154 172.16.250.154 172.16.250.155 172.16.250.154	Online Online Online Online Online	0 %↓ ^{35%} 0.33 %↑ ^{267%} 1 %↓ ^{2%%} 0.67 %↑ ^{1,33%}	NM 0↓04 NM 0.5410 NM 0.23↓0.66 NM 0.23↓0.66 NM 0.23↓0.66 NM 0.18↓0.81	Name 0 % ↓ 3 % rule name 3 % ↓ 3 % rule	0.0 B \$ **********************************	Insta 10 Insta 37 Insta 36 Insta 36 Insta 37
IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Online Online Online Online Online Online	0 %↓ 35% 0.33 % ↑ 267% 1 %↓ 26% 0.67 % ↑ 135% 0.67 % ↑ 235%	NH 0↓04 NH 0.5410 NH 0.23↓065 NH 0.23↓065 NH 0.18↓085 NH 0.18↓085 NH 0.6810	max 0 % 3 % 3 % 1 %	0.0 B I 403.00 490.7 GB I 401.00 492.3 GB I 403.00 492.2 GB I 403.00 492.1 GB I 403.00	Imax 10 Imax 37 Imax 36 Imax 36 Imax 37 Imax 36 Imax 37

UNUM HA - Configuration Validation - Example - UNUM Datanodes Status

HA Considerations - Cluster

Cluster / Data Node Health:

- Green Cluster is fully operational with replicated data.
- Yellow Cluster is fully operational data is being replicated.
- Red Cluster is operational data has been lost.

Failure of any one Server Node B, C, or D:

Upon failure or removal of any one Server node B, C, or D, the Arista NetVisor UNUM High Capacity Appliance will redistribute data such that no data will be lost.

The Cluster will temporarily go to Yellow, then will recover to Green after data is fully redistributed.

Redistribution of data times will vary depending on system / traffic load.

Normal operation can continue; however, the system is operating in a non-redundant configuration.

The failed or removed Server node, must be replaced as soon as possible.

Failure of more than one Server Node B, C, or D:

Upon failure or removal of more than one Server node B, C, or D will likely result in permanent data loss.

Two of the three Server nodes B, C, and D must be operational for the system to collect, manage and store data properly.

Upon data loss the Cluster status will likely go Red and require replacement of failed or removed Server nodes until at a minimum, two of the three are replaced.

Failure of Server Node A:

Upon failure or removal of the Primary Server node A, data will not be lost, however data collection and connectivity to Arista NetVisor UNUM will stop.

The Primary Server node A must be replaced as soon as possible for normal operation to resume.

Data Server Node Replacement

One symptom of a failed **Data Server Node** is the appearance of offline nodes in the UNUM **System Health** dashboard as shown in the example below.

In the example, UNUM displays single ESXi instance with 4 data nodes, all offline.

(R) Plur	ibus	Overview M	/lanage 🔻	Analytics 👻 🛛	Notifications 🛛 🧩	X	(9 Welcome admin 👻 👂
Search	Q	Settings Certificate A	authority Auth	Server License Manage	Users Audit Logs	System Health		Install X-Pack License
Global	Add	172.16.248.31 172.16.248.31:9300	Online	U.33 % I 17.33 % max 0 % min	0.8 1.73 max 0 min	6 % ^{7 % max}	189.1 GB 191.9 GB max 0.0 B min	18
2 M2082 leaf111 leaf112 leaf113 leaf114 leaf115 leaf131 leaf133 leaf134 spine101 spine102	■ <u>172.16.248.32</u> 172.16.248.32:9300	Online	0.67 %↓ 13.33 % max 0 % min	0.01	34 % 1 34 % max 32 % min	190.7 GB↓ 191.8 GB max 190.7 GB min	18	
	172.16.248.33 172.16.248.33:9300	Online	0 % 10.67 % max 0 % min	0.06 1 0.59 max 0 min	12 % 1 12 % max 10 % min	190.9 GB J 193.5 GB max 190.9 GB min	17	
	172.16.248.34 172.16.248.34:9300	• Online	0 % 1 15 % max 0 % min	0.16↓	13 % 1 15 % max 11 % min	189.5 GB ↓ 193.5 GB max 189.5 GB min	17	
	172.16.248.35 172.16.248.35:9300	Offline	N/A	N/A	N/A	N/A	N/A	
	172.16.248.36 172.16.248.36:9300	Offline	N/A	N/A	N/A	N/A	N/A	
	172.16.248.37 172.16.248.37:9300	Offline	N/A	N/A	N/A	N/A	N/A	
		172.16.248.38 172.16.248.38.9300	Offline	N/A	N/A	N/A	N/A	N/A

UNUM System Health Dashboard - Cluster

In the event of a **Cluster Server** failure and you have received a replacement **Server** from Arista Networks please use the following instructions to rebuild the **Cluster**.

Note: The replacement **Server** you receive has **VMware ESXi** installed. You need to add the Server to the Cluster using the cluster_menu.sh configuration script.

- Login into the Remote Console of a **Primary VM** instance with your login credential. If you have not changed the default credentials the username and password is "vcf" and the password is "changeme". The UNUM Cluster setup script is named "unum_provision.sh" and is located in the default folder "/home/vcf/srv/vcf/bin/tools/cluster".
- 2. Run the setup script: ./unum_provision.sh



UNUM Cluster Menu -Setup Script 3. Select Option 2 - **Manage Cluster** from the deployment menu.



UNUM Cluster Menu - Manage Cluster

4. Select Option 5 - **Node Management** - from the setup menu.



UNUM Cluster Menu - Node Management 5. Select Option 2 - **Replace Server** - from Node Management.





6. Follow the on-screen instructions. Enter the **IP address** of the **VMWare ESXi Primary Node**. In the event of a **Primary Server Node** failure you use the IP address of a **Data Server Node**. However, the instructions for replacing a **Primary Server Node** server differ slightly. Refer to Primary Server Node replacement for more instructions.



UNUM Cluster Menu - Primary Server Node IP Address

7. Download the applicable Cluster OVA Template from the Pluribus Cloud. The downloaded OVA version must be the same version as previously installed. Enter the absolute path of the OVA template. Enter Shift U and then press the Tab key on your keyboard. The downloaded OVA template name will be displayed. Press Enter to continue. For the VM Port Group Name press Enter and use the default AutoCluster.



UNUM Cluster Menu - OVA Template Path - VM Port Group Name

8. Provisioning of the replacement **Server** begins.

UNUM: Node Management 8: Main Menu 1: Replace VM 2: Replace Server (0-2):2 Enter IP of ESXI server to be replaced: 10.110.0.203 Enter absolute path of OVA: UNUM-3.1.0-6176.5-cl.ova Enter Wh port group name [AutoCluster]: Wed Oct 3 13:15:81 PDT 2018: Invoking provisioning script. Please wait JSON:("nodes": [("host": "172.16.248.31", "serverId": "10.110.0.202", "service": "data,kafka"}, {"host": "172.16.248.32", "serverId": "10.110.0.202", "service": "data"}, {"host": "172.16.248.33", "serverId": "10.110.0.202", "service": "data,kafka"}, {"host": "172.16.248.34", "serverId": "10.110.0.202", "service": "data"}, {"host": "172.16.248.35", "serverId": "10.110.0.203", "service": "data,kafka"}, {"host": "172.16.248.35", "serverId": "10.110.0.203", "service": "data"}, {"host": "172.16.248.35", "serverId": "10.110.0.203", "service": "data"}, {Thost": "172.16.248.37", "serverId": "10.110.0.203", "service": "data"}, {Thost": "172.16.248.38", "serverId": "10.110.0.203", "service": "data"}, "Ino.110.0.204", "service": "data"}, {Thost": "172.16.248.35", "serverId": "172.16.248.42", "serverId": "10.110.0.204", "service": "data"}, {Thost": "172.16.248.35", "serverId": "10.110.0.203", "service": "data"}, "Ino.110.0.204", "service": "data"}, {Thost": "172.16.248.43", "serverId": "10.110.0.204", "service": "data"}, {Thost": "172.16.248.44", "service": "data"}, "serverId": "10.110.0.204", "service": "data"}, {Thost": "172.16.248.44", "serverId": "10.110.0.204", "service": "data"}, {Thost": "172.16.248.44", "serverId": "10.110.0.204", "service": "data"}, {Thost:": "172.16.248.44", "serverId": "10.110.0.204", "service": "data"}, {Thost": "172.16.248.42", "serverId": "10.110.0.204", "service": "data"}, {Thost:": "172.16.248.42", "serverId": "10.110.0.204", "service": "data"}, {Thost:": "172.16.248.42", "serverId": "10.110.0.204", "service": "data"}, {Thost:: "172.16.248.42", "serverId": "10.110.0.204", "service": "data"}, {Thost:: "172.16.248.42", "serverId": "10.110.0.204", "service": "data"}], {Thost:: "172.16.248.42", "se

UNUM Cluster Menu - Replacement Server Provisioning

When you replace a **Data Node Server** auto-provisioning starts and details appear as the process continues.

The auto-provisioning process typically begins within 10 minutes and provisions the new Data Node Server.



UNUM Cluster Menu - Replacement Server Provisioning Details

UNUM will restart and **NTP** details for each new **Data Server Node** are displayed along with a summary message indicating Cluster Provisioning passed.

9. Press any key to continue and you return to the configuration menu. Press **0** (zero) to exit.

At any time during the provisioning process you can review the status of the **Data Server Nodes** in the **UNUM System Health** dashboard.

Note: For each **Data Server Node** there is an an **Eth1 IP Address** entry and you may observe two entries per **IP Address**, one **Offline** and one **Online**. This is a normal and expected condition and is temporary until the next automatic data refresh is performed by **UNUM** as shown in the images below. This should normally occur with 20 - 25 minutes.

(R) Pluribus	Overview Ma	anoge 👻	Analytics 👻 Notif	ications 🛛 🧩		6	Welcome admin 👻
Search Q () Global Add () TWE-RE	Settings Certificate Aut <u>172.16.248.32</u> 172.16.248.32-9300	online	th Server License Manage Use 2 %↓ ^{13,33} ™ max 0 % min	ns Audit Logs 5	System Health 35 % max 32 % min	191.6 GB max 190.5 GB min	Install X-Pack License 16
eof111 eof112 eof113 eof114 eof115 eof123 eof131 eof133 eof134 spine101 spine102	172.16.248.33 172.16.248.33:9300	• Online	1 % 1 ^{10,67 % max} 0 % min	0 \$ 0.59 max 0 min	11% † 12 % max 10 % min	190.8 GB↓ 193.3 GB max 190.8 GB min	16
	172.16.248.34 172.16.248.34:9300	• Online	3 % 1 ^{15% max} 0% min	0.05 J	15% *	189.3 GB ↓ 193.2 GB max 189.3 GB min	16
	172.16.248.35 172.16.248.35:9300	Offline	N/A	N/A	N/A	N/A	N/A
	172.16.248.35 172.16.248.35:9300	• Online	0.67 % ^{20.67 % max} ^{0 % min}	1.74 [†] 2.86 max 0 min	4 % 1 4% max	190.3 GB 1 193.6 GB max 0.0 B min	6
	172.16.248.36 172.16.248.36:9300	• Offline	N/A	N/A	N/A	N/A	N/A
	172.16.248.36 172.16.248.36:9300	• Online	16.67 % † 21.67 % max 0 % min	1.16 t 1.56 max 0 min	4 % 1 4 % max	194.7 GB 1 196.0 GB max 0.0 B min	3
	172.16.248.37 172.16.248.37:9300	• Offline	N/A	N/A	N/A	N/A	N/A
	172.16.248.37 172.16.248.37:9300	• Online	1.67 % ^{2% max} 0% min	0.43	2 % ^{2 % max} 0 % min	195.5 GB 1 196.0 GB max 0.0 B min	1
	172.16.248.38 172.16.248.38:9300	Offline	N/A	N/A	N/A	N/A	N/A
	172.16.248.38	Online	0 % 1 2% max 0% min	0.54	1 % 1 % max	196.0 GB †	2

UNUM Cluster Menu - Replacement Server Offline / Online

Data Server Nodes in the UNUM System Health dashboard. (cont'd)

Pluribus	Overview Man	nage • Ar	nalytics • Natifications	*			\varTheta Welcome admin 👻 🐕
Search C	Settings Certificate Auth	ority Auth Server	License Manage Users Aud	itLogi System Health			Install X-Pack License
Global Add	Clusters / vcf-es-cluster	r1 / Elasticsearch				10 second	ds 🔇 🛇 Last 1 hour 🗦
t TME-BE	Overview Indices	Nodes					
leaf112	Nodes: 13 Indices: 30	Memory: 49GB	/ 375GB Total Shards: 142	Unassigned Shards: 0 D	ocuments: 46,877,709 Data:	39GB Uptime: 16 hours Version: 5.4.1	Health: 🔵 Green
leaf113	Nodes Elter Nor	des.	13 of 13				
ieaf115	Name IL	Status	CPU Usage	Load Average	IVM Memory	Disk Free Space	Shards
leaf123 leaf131	★ <u>172.16.248.30</u> 172.16.248.30:9300	 Online 	0 % \$ 0 % min	0.42	4 % 1 5 % max 2 % min	189.6 GB 189.7 GB max	0
ieaf134 spine101	172.16.248.31 172.16.248.31:9300	 Online 	0 % † ^{7.67} % max	0.17↓ ^{0.84 max} 0 min	8 % 1 %** max	191.3 GB 1 191.6 GB max	12
□ spine102	172.16.248.32	 Online 	9.67 % 11.33 % max	0.95 t 0.95 max	37 % † 37 % max 34 % min	190.2 GB 1 190.9 GB max	12
	172.16.248.33 172.16.248.33:9300	 Online 	0 % 🕽 4 % max	0.05 t 0.69 max 0 min	10 % 12 % max	192.8 GB 1 193.1 GB max	12
	172.16.248.34 172.16.248.34:9300	 Online 	0 %↓ 11.67 % max 0 % min	0.02 1 0.92 max	14 % 🕽 ^{15 % max}	193.1 GB 1 193.4 GB max	12
	172.16.248.35 172.16.248.35:9300	 Online 	0 % \$ 13.33 % max 0 % min	0.11 1 1.2 max	7 % 1 3 % min	191.2 GB 1 191.3 GB max	12
	172.16.248.36 172.16.248.36:9300	 Online 	1 %↓ ^{17 % max} 0 % min	0.1↓ ^{0.84} max	11 % 11 % max 3 % min	190.2 GB I 194.4 GB max	11
	172.16.248.37	 Online 	0 %↓ ^{23,33} % max 0 % min	0.01 \$ 1.86 max	6 % 1 7 % max 2 % min	192.9 GB ^{193.7 GB} max	11
	172.16.248.38 172.16.248.38:9300	 Online 	0 % I ^{19 té max} 0 té min	0.03 1.98 max	6 % † 7 % max 1 % min	192.9 GB 1 195.3 GB max	12
	172.16.248.39 172.16.248.39:9300	 Online 	0.33 % 🕽 ^{3.67 % max} 0 % min	0.45 1 0.88 max	8 %↓ ⁸ % max 6 % min	192.9 GB 193.2 GB max	12
	172.16.248.40	 Online 	0.67 % \$\$ \$\$ \$\$ \$\$ 0.67 % max	0.13 ¹ 0.86 max	7 %↓ ^{8 % max} 7 % min	192.9 GB 199.2 GB max	12
	172.16.248.41 172.16.248.41:9300	 Online 	0 %↓ 9.33 % max 0 % min	0.03 L 0.49 max	32 % 🕽 ^{33 % max} 31 % min	193.1 GB 1 193.4 GB max	12
	172.16.248.42	 Online 	0.33 % † 11 % max	0.52 t 0.73 max 0 min	12 % I ^{13 % max}	192.8 GB 1 193.2 GB max	12

UNUM Cluster Menu - Replacement Server Online

Primary Server Node Replacement

Follow the instructions provided above for **Data Server Node** replacement, however you will login to an existing **Data Server Node**.

Note: When the new **Primary Server Node** is inserted into the **Cluster** with already provisioned **Data Server Nodes** and their respective IP addresses match, the **Cluster** will form.

You must run a **"Restore Configuration**" from the **"UNUM_setup.sh"** script located on the new **Primary Server Node** in the **"**/home/vcf" directory to restore previously stored data and configuration. On an UNUM Primary Server Node data is automatically backed up on a daily basis.

Select Option 8: Advanced Settings - Restore Configuration

Restore Configuration

Select **Option 2** to restore your configuration.

Select the desired backup file from the list of Available Backups and follow the on-screen instructions.

Note: UNUM will be restarted during the process.



Option 2 - Advanced Settings Restore Configuration

Primary Server Node Replacement (cont'd)

```
UNUM: Advanced Settings
0: Main Menu
1: Backup Configuration
2: Restore Configuration
3: Delete Backup
4: Enable Disable Debug Mode
(0-4):2
Available backups: BACKUP-3.1.0-SNAPSHOT-2018-08-23_16:25:22
Enter the backup to restore from []: BACKUP-3.1.0-SNAPSHOT-2018-08-23_16:25:22
To restore configurations, UNUM will be restarted during the process.
Continue? ([Y]es or [N]o) [Yes]: Yes
2018-08-23 16:33:29 Preparing to restore, please wait ...
2018-08-23 16:33:40 Downloading files .....
2018-08-23 16:34:06 Restoring database from /tmp/unum_backup/postgres-dump.sql ...
2018-08-23 16:34:15 Restore completed successfully.
2018-08-23 16:34:15 Stopping UNUM 3.1.0-SNAPSHOT ...
2018-08-23 16:34:17 Stopping vcf-elastic ...
2018-08-23 16:34:31 Stopping vcf-collector ...
2018-08-23 16:34:33 Stopping vcf-mgr ...
2018-08-23 16:34:40 Stopping skedler
2018-08-23 16:34:41 Stopping vcf-center ...
2018-08-23 16:34:42 Stopping vcf-dhcp ...
2018-08-23 16:34:43 Services have been successfully stopped.
2018-08-23 16:34:43 Starting UNUM 3.1.0-SNAPSHOT ...
2018-08-23 16:34:44 Starting vcf-elastic ...
2018-08-23 16:34:44 Starting vcf-collector ...
2018-08-23 16:34:46 Starting vcf-mgr ...
2018-08-23 16:34:46 Starting skedler ...
2018-08-23 16:34:47 Starting vcf-center ...
2018-08-23 16:34:48 Starting vcf-dhcp ...
2018-08-23 16:34:49 Services have been successfully started.
Press any key to continue ...
```

Option 2 - Advanced Settings Restore Process

When the **Data Server Node** (with data node VMs) is inserted into the Cluster with **Primary Server Node** and **Data Server Node** and the IP address matches the previous IP Address the auto provisioning begins and the **Cluster** will eventually form.

Submitting a Service Request

Arista Software Support

For Arista software support, you can purchase optional support contracts from your partner, reseller, or Arista Networks.

Purchasing a support contract from a local partner is sometimes preferred due to geographical or language requirements.

Please contract your local partner to better understand the available service programs and pricing.

If you originally purchased an Pluribus FreedomCare maintenance agreement, you can contact Arista Networks directly for support requirements.

Appendix A

Static IP Assignment for ESXI Management (eth0) Interface

- 1. Connect to the ESXi console and Press **F2** to log in to DCUI.
- 2. In the **System Customization** screen, move the cursor down and select **Configure Management Network**:



EXSI Management - Configure Management Network

3. Select IP Configuration and press Enter to assign an IP address:

IP Configuration

This host can obtain network settings automatically if your network includes a DHCP server. If it does not, the following settings must be specified:

() Use dynamic IP addr (o) Set static IP addre	ess and network ss and network	configuration configuration:			
IP Address Subnet Mask Default Gateway		[[[192.10 255.29 192.10	68.19.129 55.255.0 68.19.2	1 1 1
<pre><up down=""> Select <space< pre=""></space<></up></pre>	> Mark Selected	<ent< th=""><th>ter> OI</th><th>< KEsc></th><th>Cancel</th></ent<>	ter> OI	< KEsc>	Cancel

EXSI IP Configuration

4. Select "Set static IP address and network configuration" and press Enter.

Appendix A (cont'd)

- 5. Now, you will be back on the **Configure Management** screen; scroll down to the DNS Configuration and press **Enter** to modify the DNS IP settings.
- 6. You will be presented with the DNS configuration where you need to enter the DNS Server IP address and hostname. When you have finished entering the details, press **Enter**.

DNS Configuration								
This host can only obtain DNS settings automatically if it also obtains its IP configuration automatically.								
() Obtain DNS server addresses and a hostname automatically (o) Use the following DNS server addresses and hostname:								
Primary DNS Server[192.168.19.2]Alternate DNS Server[]								
Hostname [ESXi1.test.local_]								
«Up/Down» Select «Space» Mark Selected «Enter» OK «Esc» Cance	el							

EXSI DNS Configuration

- 7. Now, you will be back on the **Configure Management** screen. Scroll down to **Custom DNS Suffixes** and press **Enter** to change DNS suffixes.
- 8. In Custom DNS Suffixes, modify the suffixes as required, press Enter:



Appendix A (cont'd)

 You need to save the configuration that has been changed, from the Configure Management Network, press Esc and you will be asked for confirmation on the Configure Management Network scene:

Configure Management Network: Confirm

You have made changes to the host's management network. Applying these changes may result in a brief network outage, disconnect remote management software and affect running virtual machines. In case IPv6 has been enabled or disabled this will restart your host.

Apply changes and restart management network?

(Y) Yes (N) No

KEsc> Cancel

EXSI Configure Management Network - Confirm

10. Press **Y** to confirm the settings; this will save the settings and restart the management network.

- 11. If you want to make sure that the configuration is correct, from the **System Customization** screen you can perform the test management network operation. To proceed with the test, select **Test Management Network** and press **Enter**.
- 12. The ESXi host will try to ping the DNS servers and the default gateway and resolve the configured host name:
Appendix A (cont'd)

Test Management Networ	`k	
By default, this test will attempt to ping your default gateway and DNS servers, and resolve your hostname.		
Ping Address #0:	[192.168.19.2	1
Ping Address #1: Ping Address #2:	[192.168.19.5_	L
Resolve Hostname	[ESXi1.test.local	i
<up down=""> Select</up>	(Enter) OK	<esc> Cancel</esc>

ESXI Test Management Network

13. Press **Enter** to proceed with the testing, and the test will show the status as **OK** or **Failed**. If you notice any failure, make sure that you have configured the correct settings.

Appendix **B**

Static IP Assignment Arista NetVisor UNUM Management (eth0) Interface

1. Login - If desired to set a static IP for Arista NetVisor UNUM, log into the VM via the console with the credentials vcf/changeme.



UNUM Console Login Screen

2. Run./UNUM_setup.sh:

vcf@unum: ~ - Pluribus Networks UNUM UNUM: Installation Setup Version: 6.2.0-SNAPSHOT-8198 Template Version: ubuntu-16.04-p5-st Machine ID: E4C272AF-7852EB26-08FE6F99-C8685EEE 0: Exit 1: Configure UNUM IP 2: Configure date/time 3: Start UNUM 4: Stop UNUM 5: Upgrade UNUM 6: Tech Support 7: Status Check 8: Advanced Settings 9: Configure SNMP community String 10: Execute Custom Ansible Playbook (0-10):

Run UNUM_setup.sh Script

Configure UNUM IP

You may now configure the **Host IP** by selecting **Option 1**. Follow the on-screen instructions for entering the **Host IP** address.

Note: Before you can configure or edit UNUM IP Addresses, you must first stop UNUM using Option 4.

• •	vcf@unum: ~ — Pluribus Networks UNUM
UNUM: Installation Setup Version: 6.2.0-SNAPSHOT-8198 Template Version: ubuntu-16.04-p5-st Machine ID: E4C272AF-7852EB26-08FE6F9	99–C8685EEE
0: Exit 1: Configure UNUM IP 2: Configure date/time 3: Start UNUM 4: Stop UNUM 5: Upgrade UNUM 6: Tech Support 7: Status Check 8: Advanced Settings 9: Configure SNMP community String 10: Execute Custom Ansible Playbook	
(0-10):4_	

UNUM Options Menu - Stop UNUM

• •	vcf@unum: ~ — Pluribus Networks UNUM
UNUM: Installation Setup Version: 6.2.0-SNAPSHOT-8198 Template Version: ubuntu-16.04-p5-st Machine ID: E4C272AF-7852EB26-08FE6F9	99-C8685EEE
0: Exit 1: Configure UNUM IP 2: Configure date/time 3: Start UNUM 4: Stop UNUM 5: Upgrade UNUM 6: Tech Support 7: Status Check 8: Advanced Settings 9: Configure SNMP community String 10: Execute Custom Ansible Playbook	
(0-10):1_	

UNUM Options Menu - Configure IP

Configure UNUM IP (cont'd)

vcf@unum: ~ — Pluribus Networks UNUM
UNUM: Configure UNUM IP Menu
Main Menu
Change interface IP
Configure docker0 IP
Configure vcfnet network
(0-3):_

UNUM Configure UNUM IP Menu

Configure UNUM IP (cont'd)

• • • vcf@unum: ~ - Pluribus Networks UNUM UNUM: Configure UNUM IP Menu 0: Main Menu 1: Change interface IP 2: Configure docker0 IP 3: Configure vcfnet network (0-3):1Configure Host IP Address: This step is needed the first time that the UNUM OVA has been installed. WARNING: If UNUM is currently running in a clustered environment, the IP change can disrupt service and any remote node including Elasticsearch and PCAP agent may need to be re-provisioned. UNUM must be restarted after changing the IP address. (Note: Unless you are on the server console, your current connection will be lost. You will need to re-connect using the new IP address.) Continue? ([Y]es or [N]o) [Yes]: Y Enter interface [eth0]: Enter ip address [10.110.3.32]: 10.110.3.32 Enter network mask [255.255.252.0]: 255.255.252.0 Enter gateway []: 10.110.0.1 Enter domain search list []: pluribusnetworks.com Enter DNS name servers separated by space []: 10.20.4.1_

UNUM - Configure Host IP

Note: Please review the following usage information regarding the Ethernet adapters used by UNUM:		
EthO: Eth1:	used for management, GUI (user interaction) and data collection via Netvisor REST. This interface uses DHCP by default. used for internal system communication as clustered UNUM VM instances REQUIRE a range of IP address settings for Eth1 before normal operations begin.	
	Eth1 is set to IP address 172.16.250.150/24 by default.	
	WARNING! If you change the IP addresses of Eth1 in a cluster configuration, you disrupt normal operations. Please contact Technical Support if you need or want to change the Eth1 address in a cluster configuration.	
Eth2:	<optional> used to connect a Seed Switch or Fabric via an inband connection.</optional>	
UNUM Ethernet Adapters Usage Table		

Appendix B (cont'd)

Configure Docker0 IP

UNUM uses a default docker IP address of 172.17.251.1/24 for internal communication.

Warning: In the majority of deployments, there is no need to change this address.

However, if you use the default range as the UNUM management network there could be network conflicts within your network. Therefore, you have the ability to modify the **docker0** interface **IP** address using **Option 2** - **Configure docker0 IP**.



UNUM - Configure Docker0 & VCFnet Bridge IP

Select Option 2 - Configure docker0 IP.

Enter the desired **IP** address range and mask. (Shown below as example only.)

Enter the sudo password.

UNUM updates the **docker0 IP** address, stopping and restarting services.

	vcf@unum: ~ — Pluribus Networks UNUM
UNUM: Configure UNUM IP Menu	
0: Main Menu 1: Change interface IP 2: Configure docker0 IP 3: Configure vcfnet network	
(0-3):2	
Enter desired docker0 IP/mask []: 192 [sudo] password for vcf: Updating docker interface ip 2020-01-20 13:53:15 Stopping UNUM 5.2 2020-01-20 13:53:16 Stopping vcf-elas 2020-01-20 13:53:19 Stopping vcf-coll 2020-01-20 13:53:21 Stopping vcf-mgr 2020-01-20 13:53:52 Stopping skedler 2020-01-20 13:53:54 Stopping vcf-cent 2020-01-20 13:53:59 Stopping vcf-dhcp 2020-01-20 13:53:59 Starting UNUM 5.2 2020-01-20 13:53:59 Starting vcf-elas 2020-01-20 13:53:59 Starting vcf-elas 2020-01-20 13:54:00 Starting vcf-cent 2020-01-20 13:54:00 Starting vcf-mgr 2020-01-20 13:54:02 Starting skedler 2020-01-20 13:54:03 Starting vcf-cent 2020-01-20 13:54:03 Starting vcf-cent 2020-01-20 13:54:04 Starting vcf-dhcp 2020-01-20 13:54:05 Services have bee 2020-01-20 13:54:05 Services have bee Press any key to continue	2.17.241.1/24 2.0-SNAPSHOT stic lector ter p en successfully stopped. 2.0-SNAPSHOT stic lector ter p en successfully started.
Press any key to continue	

UNUM - Configure Docker0 IP

Press any key to continue.

If required, view the new docker0 IP address using ifconfig from a command prompt.



UNUM - New Docker0 IP Address

Note: The **docker0 IP** address has to be a specific host IP address and mask.

Appendix B (cont'd)

Configure VCFnet Network

UNUM uses a default VCFnet IP address of 172.18.251.1/24 for internal communication.

However, if you use the default range as the UNUM management network there could be network conflicts within your network.

Therefore, you have the ability to modify the **VCFnet** interface **IP** address using **Option 3** - **Configure vcfnet network**.



UNUM - Configure VCFnet Network IP

Select Option 3 - Configure vcfnet Network.

Enter the desired IP address range and mask. (Shown below as example only.)

Enter the sudo password.

UNUM updates the **vcfnet IP** address, stopping and restarting services.

	vcf@unum: ~ — Pluribus Networks UNUM
UNUM: Configure UNUM IP Menu	
0: Main Menu 1: Change interface IP 2: Configure docker0 IP 3: Configure vcfnet network	
(0-3):3	
Enter desired vcfnet subnet/mask []: 2020-01-20 14:08:20 Stopping UNUM 5.2 2020-01-20 14:08:22 Stopping vcf-ela 2020-01-20 14:08:55 Stopping vcf-col 2020-01-20 14:09:06 Stopping vcf-mgr 2020-01-20 14:09:08 Stopping skedler 2020-01-20 14:09:10 Stopping vcf-cen 2020-01-20 14:09:15 Stopping vcf-dhc 2020-01-20 14:09:16 Starting UNUM 5.2 2020-01-20 14:09:16 Starting vcf-ela 2020-01-20 14:09:16 Starting vcf-ela 2020-01-20 14:09:17 Starting vcf-col 2020-01-20 14:09:18 Starting vcf-mgr 2020-01-20 14:09:19 Starting skedler	192.18.251.1/24 2.0-SNAPSHOT stic lector ter p en successfully stopped. 2.0-SNAPSHOT stic lector
2020-01-20 14:09:20 Starting vcf-cen 2020-01-20 14:09:21 Starting vcf-dhc 2020-01-20 14:09:22 Services have be Press any key to continue	ter p en successfully started.

UNUM - Configure VCFnet Network IP

Press any key to continue.

If required, view the new vcfnet IP address using ifconfig from a command prompt.



UNUM - New vcfnet IP Address

Note: The vcfnet IP address has to be a specific network IP address and mask.

If no further configuration changes are required, use **Option 3** to restart UNUM.