Pluribus UNUM™ Management Platform

High Capacity Appliance

Getting Started Guide

Version 5.2.0

June 2020
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Introduction

Pluribus Networks’ UNUM™ Unified Management, Automation, and Analytics Platform Software is an application portal developed by Pluribus Networks.

UNUM enables the network administrator to extract analytical value from the telemetry data reported by the network switches powered by the Pluribus Networks Netvisor® ONE network operating system.

Once data is collected, 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 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 ONE, such as VFLOWs, mirrors, and connections statistics, but can also provide analytics in a non-Pluribus environment.

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

- **Netvisor ONE** as a mirror switch; an out-of-band Pluribus switch is configured as a mirror in either an existing Pluribus-switched network or a non-Pluribus-switched network.
- **Netvisor ONE** as an in-band switch; connection stats are pulled, and VFLOWs configured on the switch.

Collectors gather network analytics and feed data into the UNUM analytics store(s):

- This collector is enhanced to use the vREST API to gather the analytics data from Netvisor.

Pluribus UNUM High-Capacity Appliance (UNUM Cluster)

The Pluribus UNUM High-Capacity Appliance is a pre-integrated 2 rack-unit quad server. It provides the following benefits:

- Turn-key appliance to deploy UNUM Platform and Insight Analytics in the high capacity configuration
- Easy to startup and configure
- Designed to provide excellent operators' experience under very demanding conditions
- Store up to 1 Billion records (refer to the Insight Analytics datasheet for supported scalability in software)
- Capable to collect up to 10,000 connection records/seconds

The Pluribus UNUM High-Capacity Appliance with Insight Analytics is suitable for medium to large deployments.
## Specifications

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<th>Features</th>
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<td>High Capacity</td>
<td>Hardware</td>
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<td>- Quad Server chassis, 2 Rack Units</td>
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<td>- Dual power supply</td>
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<tr>
<td></td>
<td>- Each server</td>
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<td></td>
<td>- 16 CPU cores (32 vCPU), 256 GB Ram, dual 960GB SSD</td>
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<td>Insight Analytics:</td>
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<td>- Ingest up to 10,000 connections/second</td>
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<td>- Retains up to 1 Billion connections</td>
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<td></td>
<td>- Refer to Insight Analytics data sheet for release specific information</td>
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</tbody>
</table>

*UNUM High Capacity Appliance Specifications*
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.
Hardware Overview

The 2RU Pluribus 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 Pluribus 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.
Hardware Overview (cont'd)

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.
Hardware Overview (cont'd)

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.
Hardware Overview (cont'd)

Mounting Rails

The Pluribus 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.
System 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.
System Interface (cont'd)

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.
**Network Connections**

After installation of the Pluribus 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 Pluribus 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.
Network Connections (cont'd)

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

- More than one Pluribus 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 Pluribus UNUM High Capacity Appliance, comes with the Pluribus UNUM software pre-installed.

8. Upon boot up, by default Pluribus 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:
Network Connections (cont'd)

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

![VMware Welcome Screen](image-url)
Network Connections (cont'd)

Select “Change Password”

Enter New Password:
Network Connections (cont'd)

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

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

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

![Pluribus UNUM Primary VM](image)

    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 Pluribus UNUM, use a Chrome browser to connect for the best experience.
Network Connections (cont'd)


   a. These documents can be found at: http://www.pluribusnetworks.com/get-started/unum

   

   Log in to Pluribus Networks Cloud

   Log in with your Support credentials

   OR

   Your email

   Password

   Log in  Forgot password?

   Don't have an account? Sign up!

   Pluribus Networks Cloud Login Screen

**NOTE:** All content of the Installation & User's Guide is applicable to both the Pluribus UNUM Standalone VM as well as the Pluribus 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: http://www.pluribusnetworks.com/get-started/unum
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 Pluribus 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 Pluribus UNUM will stop.

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

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.

In the event of a Cluster Server failure and you have received a replacement Server from Pluribus 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.

**Note:** All Server Nodes must be connected via the Eth0 Ethernet interface.

1. 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”.
Replace a Failed Cluster Server (cont'd)

2. Run the setup script: `./unum_provision.sh`

3. Select Option 2 - Manage Cluster from the deployment menu.

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

5. Select Option 2 - Replace Server - from Node Management.
Replace a Failed Cluster Server (cont'd)

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](image1)

   **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](image2)

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

8. Provisioning of the replacement **Server** begins.
Replace a Failed Cluster Server (cont’d)

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 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.
Replace a Failed Cluster Server (cont'd)

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 **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.
Replace a Failed Cluster Server (cont’d)

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

![UNUM System Health Dashboard](image)

**UNUM Cluster Menu - Replacement Server Online**
Replace a Failed Cluster Server (cont'd)

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.

```
UNUM: Advanced Settings
0: Main Menu
1: Backup Configuration
2: Restore Configuration
3: Delete Backup
4: Enable|Disable Debug Mode

(0-4): 2

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]:  
```

Option 2 - Advanced Settings Restore Configuration
Replace a Failed Cluster Server (cont'd)

Primary Server Node Replacement (cont’d)

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

Pluribus Software Support

For Pluribus software support, you can purchase optional support contracts from your partner, reseller, or Pluribus 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 purchased a Pluribus FreedomCare maintenance agreement, you can contact Pluribus 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:

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

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**.

   ![EXSI DNS Configuration](image1)

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**.

   ![EXSI Custom DNS Suffixes](image2)
Appendix A (cont'd)

9. 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](image)

   **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)

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 Pluribus UNUM Management (eth0) Interface.

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

   ![UNUM Console Login Screen](image)

   **UNUM Console Login Screen**

   2. **Run** `/UNUM_setup.sh`:

   ![Run UNUM_setup.sh Script](image)

   **Run UNUM_setup.sh Script**

   3. **Configure UNUM IP**
Appendix B (cont'd)

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**.

---

**UNUM: Installation Setup**

Version: 5.2.0-SNAPSHOT-7172
Template Version: ubuntu-16.04-p5-st
Machine ID: E4C272AF-7852EB26-08FE6F99-C86B5EEE

0: Exit
1: Configure UNUM IP
2: Configure date/time
3: Start UNUM
4: Stop UNUM
5: Update UNUM
6: Tech Support
7: Status Check
8: Advanced Settings
9: Configure SNMP community String

(0-9):_

---

**UNUM Options Menu**

---

**UNUM: Configure UNUM IP Menu**

0: Main Menu
1: Change interface IP
2: Configure docker0 IP
3: Configure vcfnet network

(0-3):_
Appendix B (cont'd)

Note: Please review the following usage information regarding the Ethernet adapters used by UNUM:

<table>
<thead>
<tr>
<th>Adapter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eth0</td>
<td>used for management, GUI (user interaction) and data collection via Netvisor REST. This interface uses DHCP by default.</td>
</tr>
<tr>
<td>Eth1</td>
<td>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.</td>
</tr>
<tr>
<td>Eth2</td>
<td>&lt;Optional&gt; used to connect a Seed Switch or Fabric on a separate network other than the web interface.</td>
</tr>
</tbody>
</table>

WARNING! If you change the IP addresses of Eth1 in a cluster configuration, you disrupt normal operations. Please contact Pluribus Networks Technical Support if you need or want to change the Eth1 address in a cluster configuration.
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 UNUM IP Menu
0: Main Menu
1: Change interface IP
2: Configure docker0 IP
3: Configure vcfnet network
(0-3): 2
```

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.
Appendix B (cont'd)

**UNUM - Configure docker0 IP**

Press any key to continue.

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

```
vcf@unum:~ $ ifconfig

docker0  Link encap:Ethernet  HWaddr 02:42:c3:14:63:6e
          inet addr:192.17.251.1  Bcast:0.0.0.0  Mask:255.255.255.0
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0  errors:0  dropped:0  overruns:0  frame:0
          TX packets:0  errors:0  dropped:0  overruns:0  carrier:0
          collisions:0  txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
```

**UNUM - New Docker0 IP Address**

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

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.
Appendix B (cont'd)

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 []: 192.18.251.1/24
2020-01-20 14:08:20 Stopping UNUM 5.2.0-SNAPSHOT ...
2020-01-20 14:08:22 Stopping vcf-elastic ...
2020-01-20 14:08:55 Stopping vcf-collector ...
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-center ...
2020-01-20 14:09:15 Stopping vcf-dhcp ...
2020-01-20 14:09:16 Services have been successfully stopped.
2020-01-20 14:09:16 Starting UNUM 5.2.0-SNAPSHOT ...
2020-01-20 14:09:16 Starting vcf-elastic ...
2020-01-20 14:09:17 Starting vcf-collector ...
2020-01-20 14:09:18 Starting vcf-mgr ...
2020-01-20 14:09:19 Starting skedler ...
2020-01-20 14:09:20 Starting vcf-center ...
2020-01-20 14:09:21 Starting vcf-dhcp ...
2020-01-20 14:09:22 Services have been successfully started.
Press any key to continue ...

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 otherwise proceed to the next step.
About Pluribus Networks

Pluribus Networks delivers an open, controllerless software-defined network fabric for modern data centers, multi-site data centers, and distributed cloud edge environments.

The Linux-based Netvisor® ONE operating system and the Adaptive Cloud Fabric™ have been purpose-built to deliver radically simplified networking and comprehensive visibility along with white box economics by leveraging hardware from our partners Celestica, Dell EMC, and Edgecore, as well as Pluribus Networks' Freedom™ Series of switches.

The Adaptive Cloud Fabric provides a fully automated underlay and virtualized overlay with comprehensive visibility and brownfield interoperability and optimized to deliver rich and highly secure per-tenant services across data center sites with simple operations having no single point of failure.

Further simplifying network operations is Pluribus UNUM™, an agile, multi-functional web management portal that provides a rich graphical user interface to manage the Adaptive Cloud Fabric. UNUM has two key modules - UNUM Fabric Manager for provisioning and management of the fabric and UNUM Insight Analytics to quickly examine billions of flows traversing the fabric to ensure quality and performance.

Pluribus is deployed in more than 275 customers worldwide, including the 4G and 5G mobile cores of more than 75 Tier 1 service providers delivering mission-critical traffic across the data center for hundreds of millions of connected devices. Pluribus is networking, simplified.

For additional information contact Pluribus Networks at info@pluribusnetworks.com or visit www.pluribusnetworks.com

Follow us on Twitter @pluribusnet or on LinkedIn at https://www.linkedin.com/company/pluribus-networks/

Corporate Headquarters

Pluribus Networks, Inc.
5201 Great America Parkway, Suite 422
Santa Clara, CA 95054

1-855-438-8638 / +1-650-289-4717

India Office

Pluribus Networks India Private Limited
Indiqube Brigade Square, 4th Floor
21, Cambridge Road
Bangalore 560008

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