



Emulated Virtual Environment  
Next Generation

# EVE-NG Community Cookbook

*Version 1.03*

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## Preface

When I first heard about EVE-NG I was skeptical. Back then I used to Lab mainly with ESX by deploying many virtual Devices and connecting them manually by separate vSwitches for Point-to-Point connections. The Problem with that was, that it was extremely time-consuming and did not scale - for every new Device I had to create multiple vSwitches to interconnect them with the virtual Machines - a Nightmare. I was in the middle of my JNCIE-Exam-Prep when I first saw EVE-NG on Twitter - I downloaded the Community Edition, which was the only Edition back then and I was amazed how easy Labbing all of a sudden was. No more deploying of vSwitches to interconnect nodes and boy did it Scale...

If you follow me on Twitter you know, that I'm one of the hardest Juniper Fanboys and of course my Goal was to "Juniperize" EVE. I started to get in touch with Uldis and Alain and found myself into the Position as one of the Juniper Test Guys. Meanwhile I added nearly all Juniper related Devices (including cSRX and JATP) and I still test a Lot - but now on EVE-Pro.

The Pro-Edition was a big step forward for the Project. It added some nice Features like "hot-add-interconnect" and the Ability to use EVE-NG with multiple Users. Especially Companies will love EVE as it is THE Solution for Labs and PoC's. I have successfully run over 30 PoC's in EVE and over 100 Labs (Job-Related and Personal Labs) - and I still enjoy it every day thanks to EVE and the amazing Team behind it. When the Guys asked me to write the Introduction I was of course honored and now this Book is finally coming out to help you on your Quest to Setup, Run and Manage EVE-NG in a lot of possible ways.

Well - enough from my Side. I hope you enjoy this Cookbook and use it wisely for your Everyday EVE Work. If you have Problems there is always the EVE-Forum and Live-Helpdesk - you will also find me there from time to time ;)

I wish you happy reading and if you think, that this Product is amazing feel free to support it by buying the PRO-Edition or Donating a bit – it helps to expand this already cool Product even more and it also honors all the work that the Guys spent in it.

Christian Scholz  
@chsjuniper

# 1 Introduction

## 1.1 What is EVE-NG?

To describe what **Emulated Virtual Environment – Next Generation** (EVE-NG) is without solely stating dry facts about features, we need to elaborate more on what EVE-NG can be used for and whom it would be useful for.

In some trivial dry words, EVE-NG gives you tools to use around virtual devices and interconnect them with other virtual or physical devices. Many of its features greatly simplify the usability, re-usability, manageability, interconnectivity, distribution and therefore the ability to understand and share topologies, work, ideas, concepts or simply “labs”. This can simply mean it will reduce the cost and time to set up what you need or it might enable you to do tasks you would not have thought could be done this simple.

## 1.2 What is EVE-NG used for?

This is the real question but there is no finite answer, the possibilities are almost limitless and depends on what you want to use it for.

It can be used for studying all kinds of technologies. You can learn about general technologies or vendor specific topics. You can test new technologies like network automation, SDN, etc.

It can be used to recreate corporate networks and test changes before putting them into production. You can create proof of concepts for clients. You can troubleshoot network issues by recreating them and e.g. use Wireshark to inspect packets.

It is most definitely not just for networking, it can be used to test software in simulated networks, test out security vulnerabilities of any kind, system engineering like LDAP and AD servers and many more areas.

You could set it up to automate sandboxing unknown files/software and use software to analyse short and long term behaviour for malicious intent much simpler than without EVE-NG.

The list of what EVE-NG can be used for could go on indefinitely, possibilities are limited by knowledge and imagination only. Both of which can be improved with EVE-NG.

To get a very small idea of what can be done with EVE-NG, check out the tested/[supported images](#) (many have not been tested, almost everything virtual should run on EVE-NG) and refer to section **12**.

EVE-NG helps you achieve what you want to and more.

## 1.3 Who is EVE-NG for?

EVE-NG is for everyone working in the Information Technology Sector, period.

It is for very large enterprise companies, training facilities, service providers, consultants, people who want to train themselves; it is for everyone, it is for YOU!

Use-cases that are more than worth it, almost priceless even, can be found everywhere.

The EVE-NG community version is free for everyone; while the paid professional version adds a few things that make your life easier. Almost everything can still be done with the free version, just less conveniently and therefore more time-consuming.

However, with the free version, the possibility to train yourself with technologies, hone your skills and become an expert even with very no monetary possibilities. For some this is and has been life changing.

## 2 System requirements

EVE-NG is available in the OVA or ISO file format. The Open Virtual Appliance (OVA) format is an archive (TAR) which packages disks and configuration files that are used to describe a virtual machine. It can be used to deploy a VM in hypervisors like VMware Workstation, Player and ESXi. Please note that installing EVE as a Virtual Machine (VM) will mean any nodes deployed within EVE will be nested. Nested virtualization causes degraded performance in deployed nodes. This should be fine for lab purposes as long as the host meets or exceeds the resource requirements for the deployed nodes.

EVE-NG can also be installed directly on physical hardware, without a hypervisor, using the provided ISO image. This is referred to as a “bare metal” install and is the most recommended method of installing EVE-NG.

### 2.1 Hardware requirements

#### 2.1.1 Minimal Laptop/PC Desktop system requirements

##### Prerequisites:

CPU: Intel CPU supporting Intel® VT-x /EPT virtualization  
Operating System: Windows 7, 8, 10 or Linux Desktop  
VMware Workstation 12.5 or later  
VMware Player 12.5 or later

<b>PC/Laptop HW requirements</b>	
CPU	Intel i5/i7 (4 Logical processors), Enabled Intel virtualization in BIOS
RAM	8Gb
HDD Space	40Gb
Network	LAN/WLAN
<b>EVE Virtual machine requirements</b>	
CPU	4/1 (Number of processors/Number of cores per processor) Enabled Intel VT-x/EPT virtualization engine
RAM	6Gb or more
HDD	40Gb or more
Network	VMware NAT or Bridged network adapter

Note: Minimal PC Desktop/Laptop will be able to run small Labs. The performance and quantity of nodes per lab depend on the types of nodes deployed in the lab.

##### Example:

IOL image-based nodes: up to 40-50 nodes per lab  
Dynamips image-based nodes: up to 20-25 nodes per lab  
vIOS image-based nodes: up to 8-10 nodes per lab  
CSRv1000 or XRv image-based nodes: up to 2-3 per lab

## 2.1.2 Recommended Laptop/PC Desktop system requirements

### Prerequisites:

CPU: Intel CPU supporting Intel® VT-x /EPT virtualization  
Operation System: Windows 7, 8, 10 or Linux Desktop  
VMware Workstation 12.5 or later  
VW Ware Player 12.5 or later

<b>PC/Laptop HW requirements</b>	
CPU	Intel i7 (8 Logical processors), Enabled Intel virtualization in BIOS
RAM	32Gb
HDD Space	200Gb
Network	LAN/WLAN
<b>EVE Virtual machine requirements</b>	
CPU	8/1 (Number of processors/Number of cores per processor) Enabled Intel VT-x/EPT virtualization engine
RAM	24Gb or more
HDD	200Gb or more
Network	VMware NAT or Bridged network adapter

Note: PC Desktops/Laptops will be able to run small to medium Labs. Performance and quantity of nodes per lab depend on the type of nodes deployed in the lab.

Example:

IOL image-based nodes: up to 120 nodes per lab  
vIOS image-based nodes: up to 20-40 nodes per lab  
CSR image-based nodes: up to 10 per lab

## 2.1.3 Virtual Server system requirements

### Prerequisites:

CPU: Intel Xeon CPU supporting Intel® VT-x with Extended Page Tables (EPT)  
Operation System: ESXi 6.0 or later

<b>Server HW requirements</b>	
CPU	Recommended CPU 2x Intel E5-2650v3 (40 Logical processors) or better supporting Intel® VT-x with Extended Page Tables (EPT) Minimum CPU is any Intel Xeon CPU supporting Intel® VT-x with Extended Page Tables (EPT)
RAM	128Gb
HDD Space	2Tb
Network	LAN Ethernet

<b>EVE Virtual machine requirements</b>	
CPU	32/1 (Number of processors/Number of cores per processor) Enabled Intel VT-x/EPT virtualization engine
RAM	64Gb or more
HDD	800Gb or more
Network	vSwitch/VMnet

Note: Performance and quantity of nodes per lab depends from the type of nodes used in the lab.

Example:

120 IOL image-based lab

20 CSrv1000 image-based nodes per lab

## 2.1.4 Dedicated Server (bare) system requirements

### Prerequisites:

CPU: Intel Xeon CPU supporting Intel® VT-x with Extended Page Tables (EPT)

Operation System: Ubuntu Server 16.04.4 LTS x64

<b>Server HW requirements</b>	
CPU	Recommended CPU Intel E5-2650v3 (40 Logical processors) or better supporting Intel® VT-x with Extended Page Tables (EPT) Minimum CPU is any Intel Xeon CPU supporting Intel® VT-x with Extended Page Tables (EPT)
RAM	128Gb
HDD Space	2Tb
Network	LAN Ethernet

Note: Performance and quantity of nodes per lab depends from type of nodes used in the lab.

## 2.1.5 Nodes per lab calculator

It is recommended to use the “nodes per lab calculator” to achieve best performance and avoid overloading your EVE system.

[https://docs.google.com/spreadsheets/d/1J6JlXHcid\\_A661grBOu73rjFOeoHPhGHI9iJb1zIQpE/edit#gid=0](https://docs.google.com/spreadsheets/d/1J6JlXHcid_A661grBOu73rjFOeoHPhGHI9iJb1zIQpE/edit#gid=0)

## 2.2 Supported virtualization platforms and software

- VMware Workstation 12.5 or later
- VMware Player 12.5 or later
- VMware ESXi 6.0 or later

- Ubuntu Server 16.04 LTS as platform for bare metal
- Google Cloud Platform

## 2.3 Unsupported hardware and systems

**The following are currently not supported:**

- AMD CPU based PC or Server
- VirtualBox virtualization
- Citrix XenServer
- Microsoft HyperV
- Ubuntu 17.X or 18.x as platform



## 3 Installation

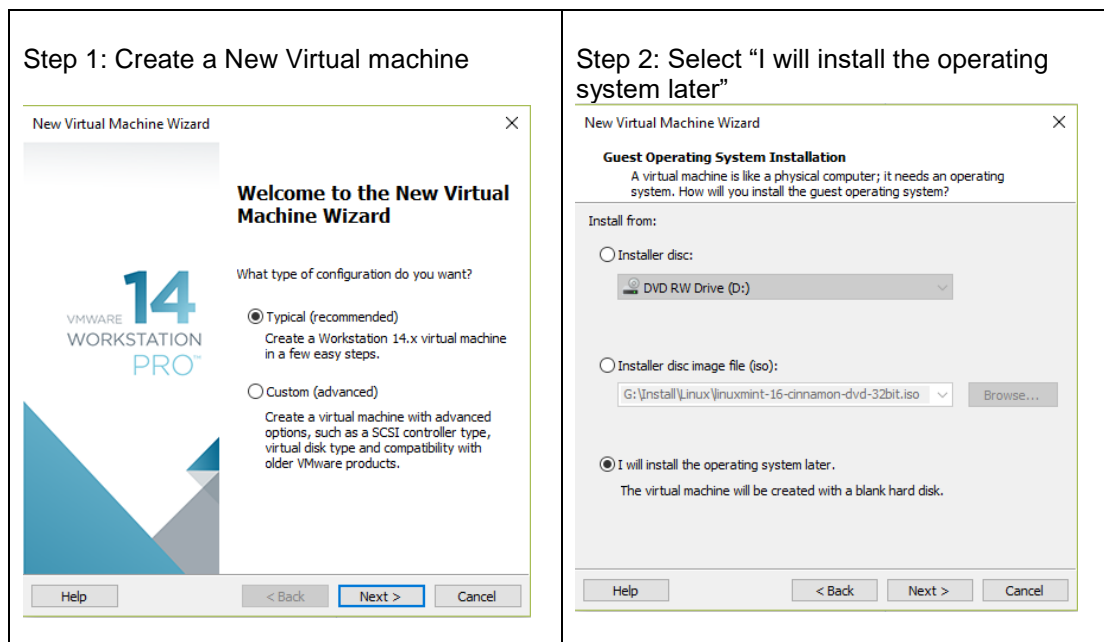
### 3.1 VMware Workstation or VM Player

#### 3.1.1 VMware workstation EVE VM installation using ISO image (preferred)

Download EVE-NG Community ISO distribution image:

<https://www.eve-ng.net/downloads/eve-ng-2>

##### 3.1.1.1 EVE VM Setup and Settings



**Step 3: Select a Guest Operating system:  
Linux and select the version: Ubuntu 64-bit**

New Virtual Machine Wizard

**Select a Guest Operating System**  
Which operating system will be installed on this virtual machine?

Guest operating system

☐ Microsoft Windows

☒ Linux

☐ Novell NetWare

☐ Solaris

☐ VMware ESX

☐ Other

Version

Ubuntu 64-bit

Help < Back Next > Cancel

**Step 4: Enter the name for your EVE-  
COMM VM and select Location where your  
EVE VM will be stored on the host PC.**

New Virtual Machine Wizard

**Name the Virtual Machine**  
What name would you like to use for this virtual machine?

Virtual machine name:

EVE-COMM

Location:

G:\EVE-COMM Browse...

The default location can be changed at Edit > Preferences.

< Back Next > Cancel

**Step 5: Type your **desirable** HDD size and  
select "Store virtual disk as single file".**

New Virtual Machine Wizard

**Specify Disk Capacity**  
How large do you want this disk to be?

The virtual machine's hard disk is stored as one or more files on the host computer's physical disk. These file(s) start small and become larger as you add applications, files, and data to your virtual machine.

Maximum disk size (GB): 200

Recommended size for Ubuntu 64-bit: 20 GB

☒ Store virtual disk as a single file

☐ Split virtual disk into multiple files

Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.

Help < Back Next > Cancel

**Step 6: Press Customize Hardware**

New Virtual Machine Wizard

**Ready to Create Virtual Machine**  
Click Finish to create the virtual machine. Then you can install Ubuntu 64-bit.

The virtual machine will be created with the following settings:

Name: EVE-COMM

Location: G:\EVE-COMM

Version: Workstation 15.x

Operating System: Ubuntu 64-bit

Hard Disk: 200 GB

Memory: 16384 MB

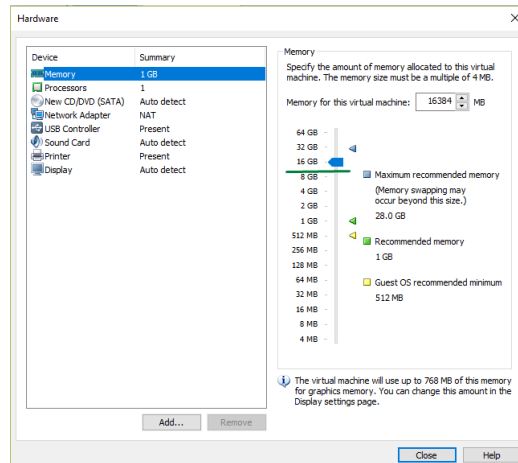
Network Adapter: NAT

Other Devices: 8 CPU cores, CD/DVD, USB Controller, Printer, Sound...

Customize Hardware...

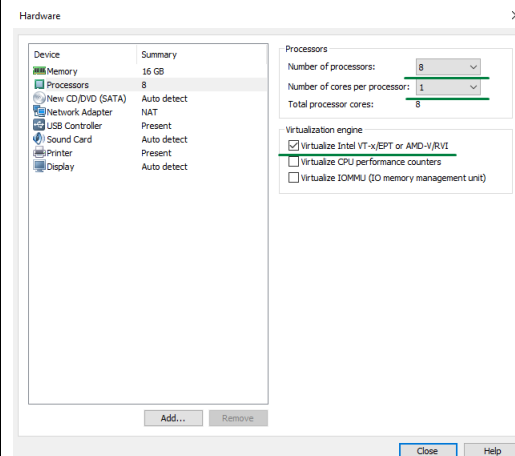
< Back Finish Cancel

### Step 7: Assign desirable memory



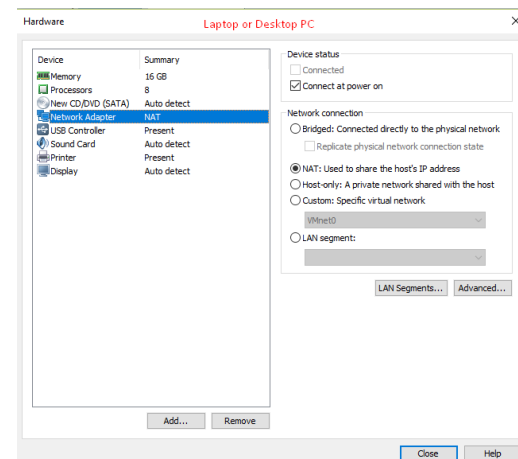
Step 8: Set Processors “Number of processors” and “Number of cores per processor”. Set Intel VT-x/EPT Virtualization engine to ON (checked).

**NOTE:** VMware Player will display only one CPU option: Number of processors.



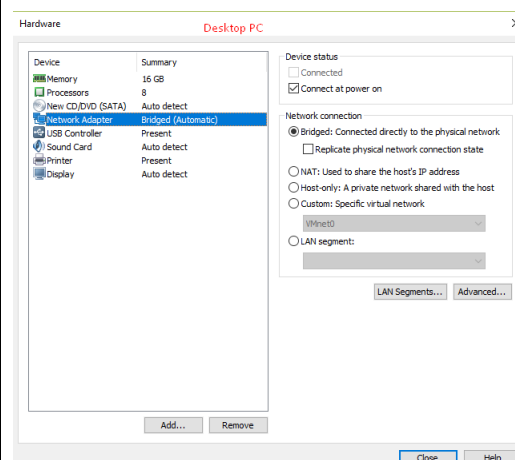
### Step 9a: Select your desirable Network Adapter. **Laptop PC**

**NOTE:** It is recommended to choose the NAT adapter option for Laptops to avoid EVE management interface IP changes. This can happen anytime the laptop is connected to a different SSID

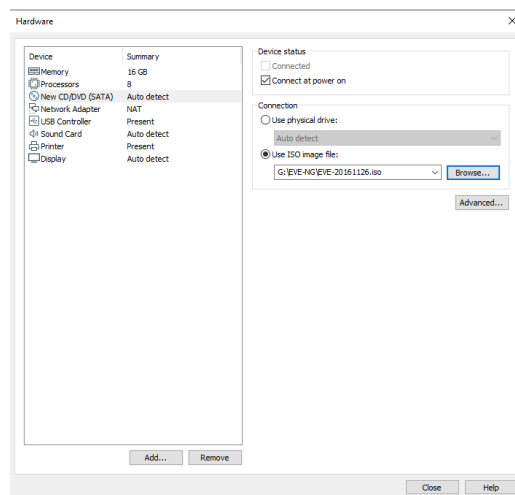


### Step 9b: Select your desirable Network Adapter. **Desktop PC**

**NOTE:** Desktop PC EVE management interface can be either NAT or Bridged to home LAN subnet.



Step 10: Select CD/DVD Option: “use ISO image file.” Browse to your downloaded EVE-Community.iso (actual name can be different) file



Step 11: Confirm VM Settings.

### 3.1.1.2 EVE-NG VM Installation steps

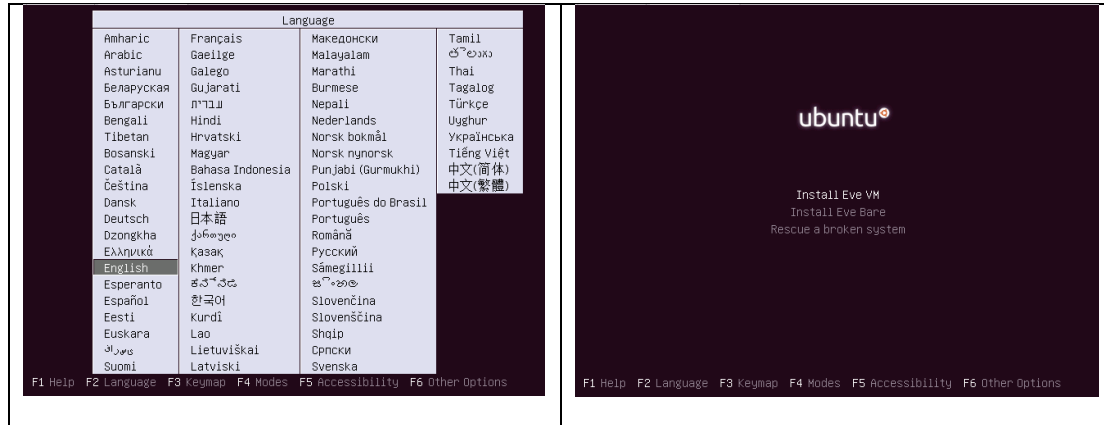
**! Mandatory Prerequisites:** Internet must be reachable from your PC and VMware. EVE ISO installation requires internet access to get updates and install the latest EVE-PRO version from the EVE-NG repository. DNS must work as well, to check it, do a named ping, for example ping www.google.com

#### EVE VM Installation from ISO has 3 Phases

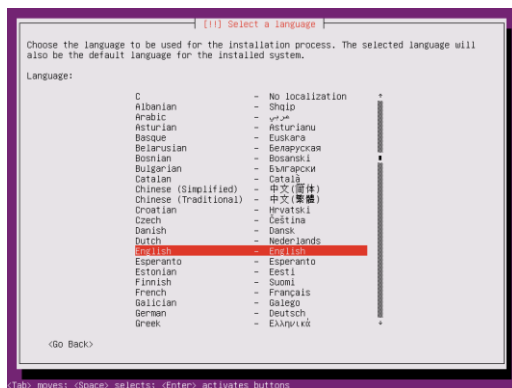
##### Phase 1 (Ubuntu installation)

Step 1: Power ON EVE VM. Chose English and confirm with Enter.

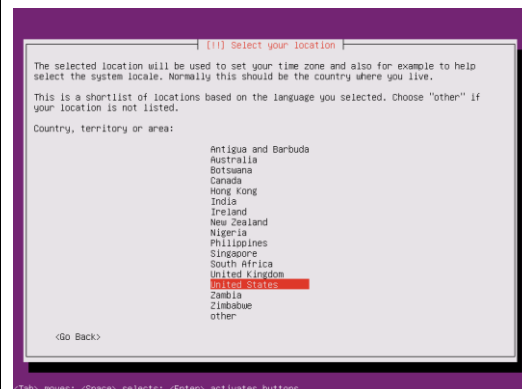
Step 2: Be sure that “Install EVE VM” is highlighted. Confirm with Enter.



**Step 3: Make sure that English is selected and confirm with Enter.**



**Step 4: You can select your own Location, or later, after management IP assignment, location will be set automatically. You can leave United States. Confirm with Enter.**

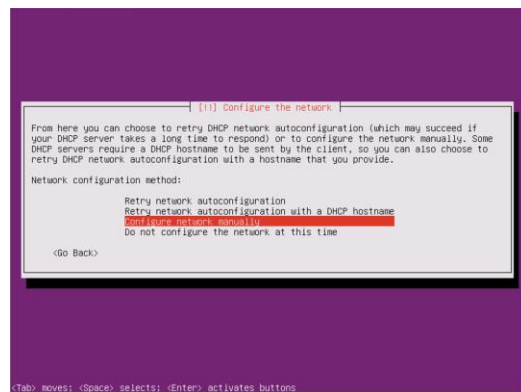


**Step 5: DHCP ENABLED**, EVEs hostname by default is **eve-ng**. You can change it if you wish. Using the Tab key select continue and confirm with Enter. Continue to **Step 14**

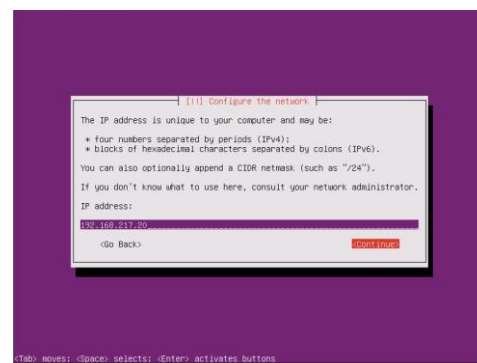
**Step 6: DHCP DISABLED/Static IP setup.** If you have not enabled DHCP in the network, you must assign an IP address manually. Confirm Continue with Enter.



**Step 7: Confirm selection “Configure network manually” with Enter**



**Step 8: Enter your desirable EVE management IP, using the Tab key select “Continue” and confirm with Enter**

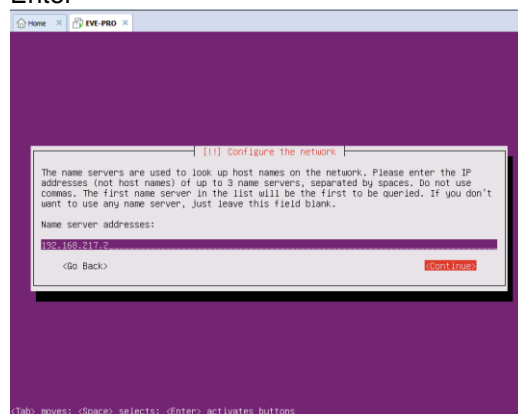


**Step 9: Enter your subnet mask, using the Tab key select “Continue” and confirm with Enter**

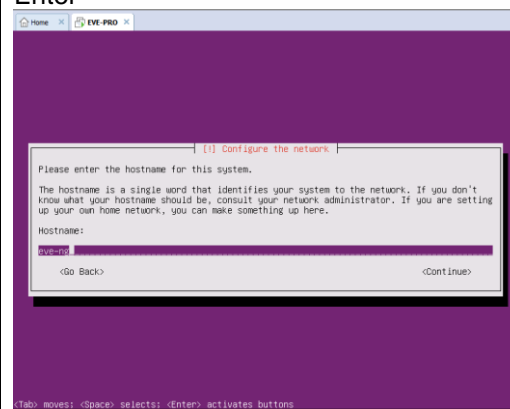
**Step 10: Enter your Gateway IP, using the Tab key select “Continue” and confirm with Enter**



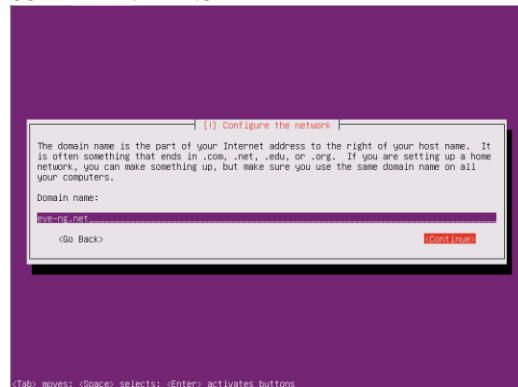
Step 11: **IMPORTANT**. The name server must be able to resolve public DNS entries and will be used during the next install steps. Enter your name server IP, using the Tab key select "Continue" and confirm with Enter



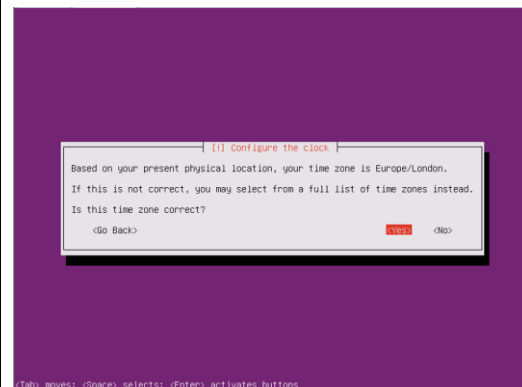
Step 12: EVEs hostname by default is **eve-ng**. It can be changed if you wish, using the Tab key select continue and confirm with Enter



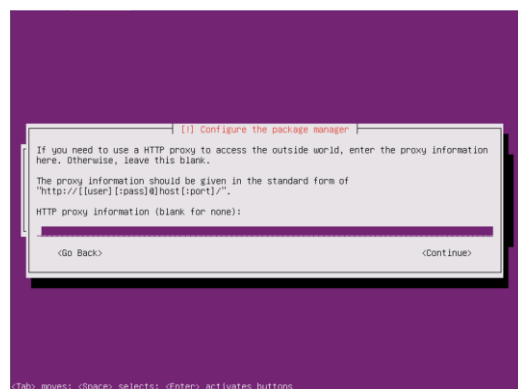
**Step 13: Enter your networks domain name.** You are free to use anything you like, for example: **eve-ng.net**  
Using the Tab key select continue and confirm with Enter



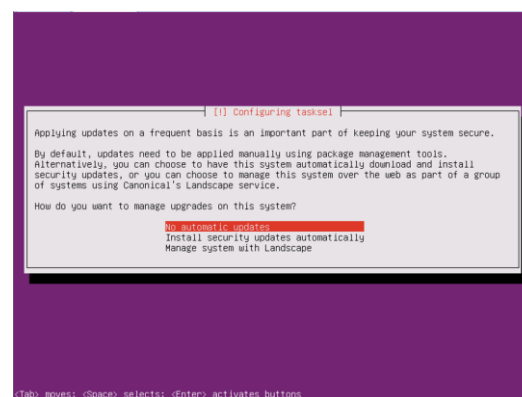
**Step 14: If your DNS IP settings are correct, Ubuntu will detect your location automatically by connecting to Ubuntu servers. Confirm with Enter.**



**Step 15: If you have a proxy in use for your internet access, enter your network proxy settings. If no proxy is used, select Continue with the Tab key and confirm with Enter.**



**Step 16: Select no automatic updates and confirm with Enter. Security updates can later be run manually from EVE cli.**

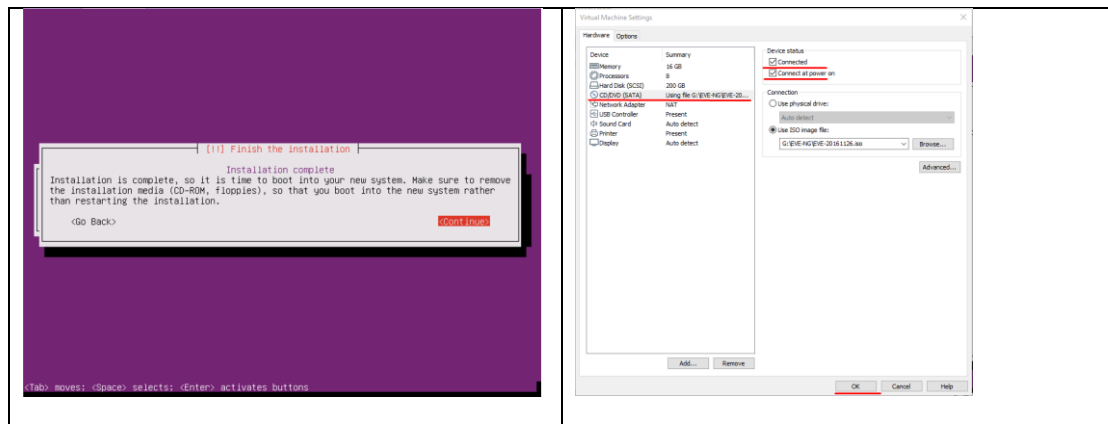


## EVE VM Installation Phase 2 (EVE installation)

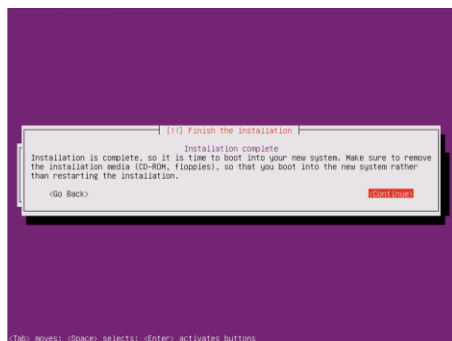
**Step 17: After the “Finish the installation” screen appeared, **DO NOT remove** CD ISO from the VM or hit Enter continue. First, we have to verify that EVE is ready for the installation phase 2.**

**Step 18: Without powering off your EVE VM, open the EVE VM settings and make sure that CD/DVD ISO “Device status connected” and “Connect at power on” is checked. Confirm with OK.**

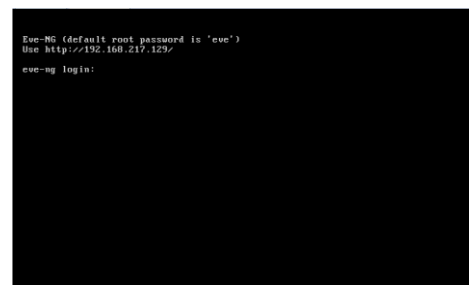




Step 19: Return to the EVE console screen and continue with Enter, the EVE VM will reboot and finish the installation phase 2



Step 20: Once the EVE login screen appears, login to the CLI with **root/eve** and continue with installation phase 3



### EVE VM Installation Phase 3 (Management IP setup and updates)

Step 21: Setup EVEs Management IP address. A Static IP address setup is preferred.

Follow steps in section:

**3.5.1** for static IP, **3.5.2** for DHCP IP

Step 22: After your EVE is rebooted,

Login to EVE CLI and type:

```
apt update
apt upgrade
```

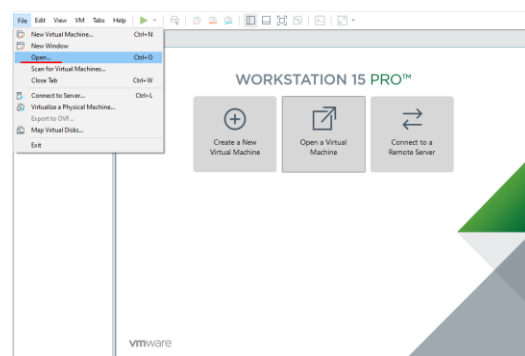
**⚠ IMPORTANT NOTE:** You must prepare and upload at least a couple of images to start building your labs. Refer to section **12**

### 3.1.2 VMware workstation OVA deployment

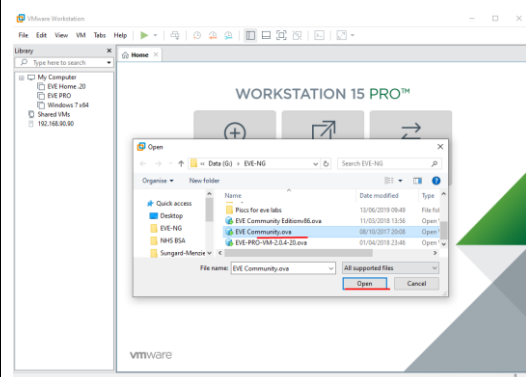
Download EVE-NG Community OVA image:  
<http://www.eve-ng.net/downloads/eve-ng-2>

#### 3.1.2.1 Deployment and VM machine settings

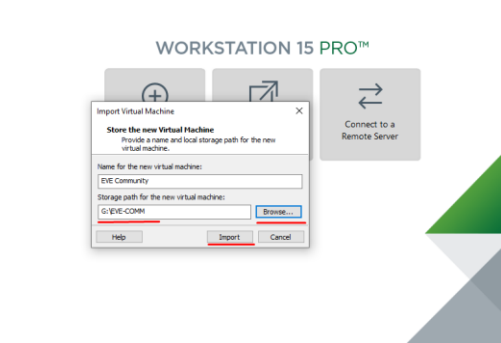
Step 1: VMware workstation or VM Player, Menu File/Open



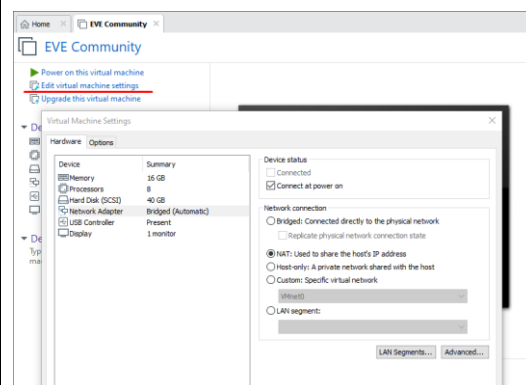
Step 2: Browse your downloaded EVE-Community.OVA file, followed by Open



Step 3: Browse your desired EVE VM store destination followed by Import

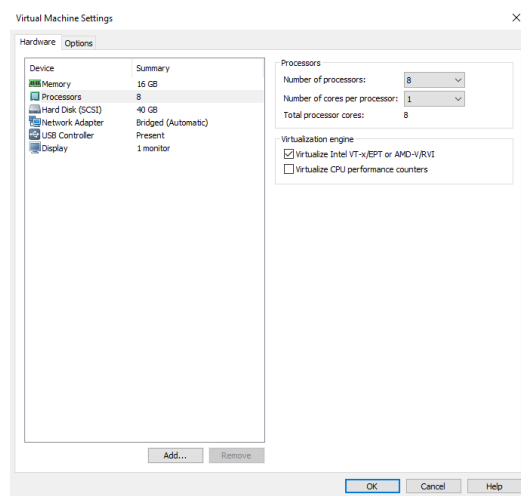


Step 4: Open your EVE VM Settings and set the desired RAM.



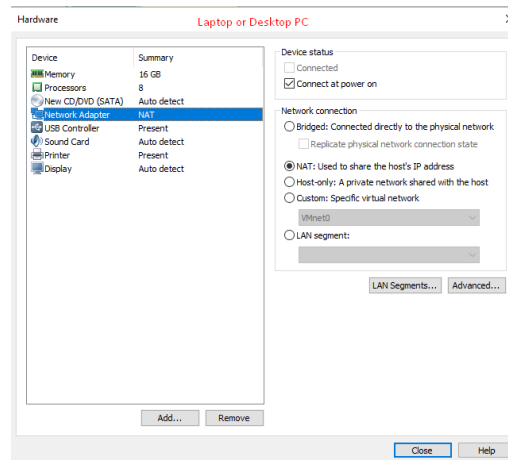
Step 5: **IMPORTANT** Set CPU Number of Cores and number of cores per processor. Set Intel VT-x/EPT Virtualization engine to ON (checked).

NOTE: VMware Player will display only one CPU option: Number of processors.



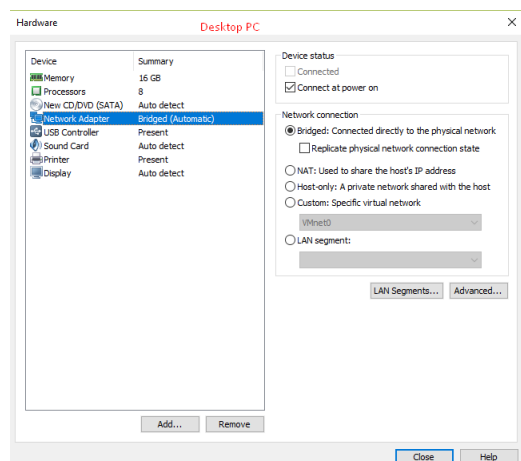
Step 6: **Laptop PC** Select your desirable Network Adapter.

NOTE: It is recommended to choose the NAT adapter option for Laptops to avoid EVE management interface IP changes. This can happen anytime the laptop is connected to a different SSID.



Step 7: **Desktop PC** Select your desirable Network Adapter.

NOTE: Desktop PC EVE management interface can be either NAT or Bridged to home LAN subnet.



Step 8: Power ON your EVE VM and follow Management IP setup instructions described in section 3.5.1 for Static IP or 3.5.2 for DHCP IP.

**⚠ IMPORTANT NOTE:** You must prepare and upload at least a couple of images to start building your labs. Refer to section **12**

### 3.1.2.2 OVA VM update to the latest EVE version

Step 9: Make sure if your EVE OVA VM is up to date to the newest EVE version. Follow the steps described in section **4**.

### 3.1.2.3 OVA VM HDD Size expansion

**⚠ IMPORTANT NOTE:** **DO NOT** expand the current EVE OVA HDD. To expand your EVE system size, please follow Troubleshooting section **11.2**

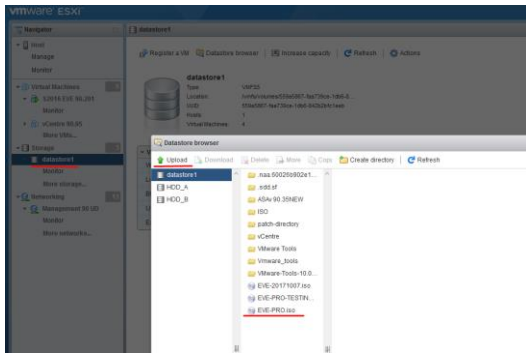
## 3.2 VMware ESXi

### 3.2.1 VMware ESXi EVE installation using ISO image (preferred)

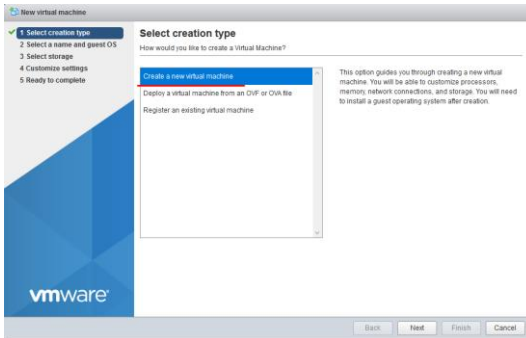
Download EVE-NG Community ISO installation image:  
<http://www.eve-ng.net/downloads/eve-ng-2>

#### 3.2.1.1 EVE-NG ESXi VM Setup and Settings

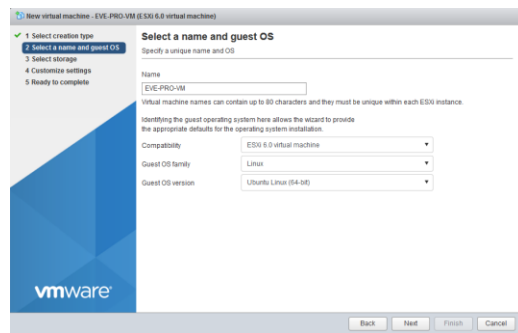
**Step 1: Upload EVE ISO image to the ESXi store.**



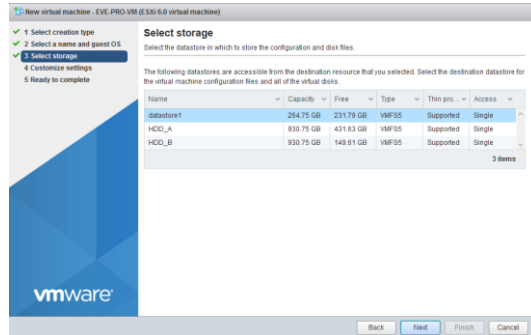
**Step 2: Create NEW VM**



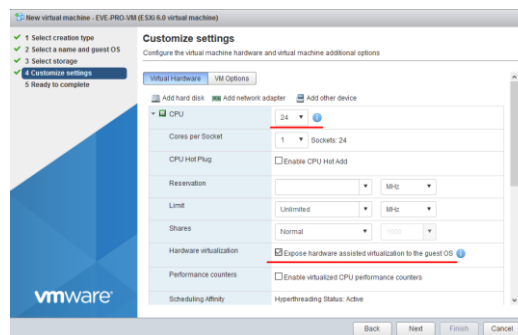
Step 3: Enter the name for your EVE-PRO VM and select Guest Operating system Linux and version: Ubuntu 64-bit



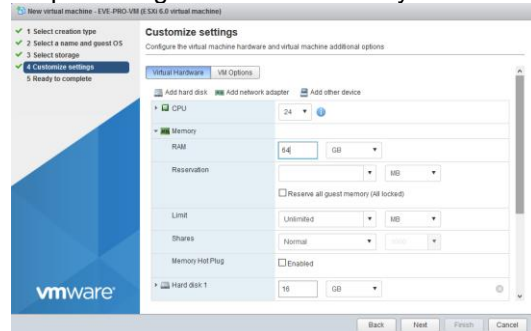
Step 4: Select Location where your EVE VM will be stored in HDD.



Step 5: **IMPORTANT** Customize your EVE VM CPU Settings. Set CPU Number of Cores and number of cores per processor. Set Intel VT-x/EPT Virtualization to ON (checked).

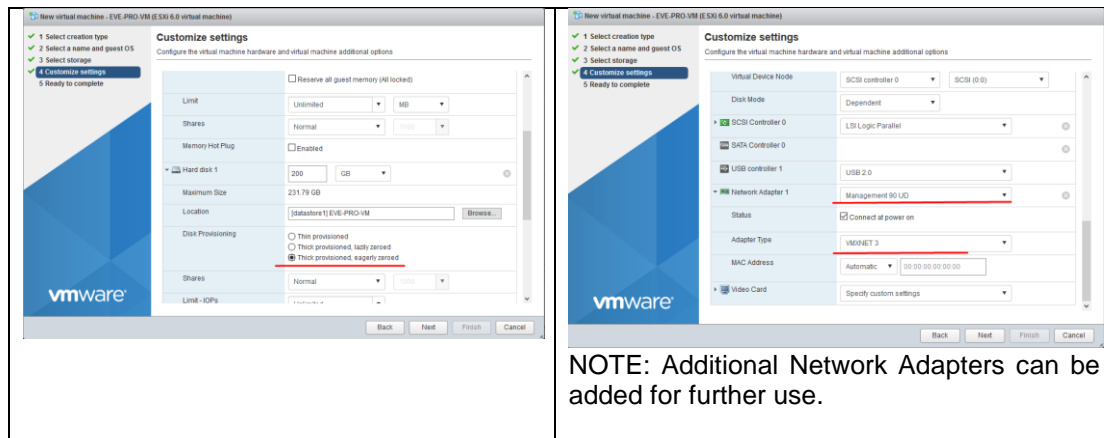


Step 6: Assign desirable RAM for your EVE

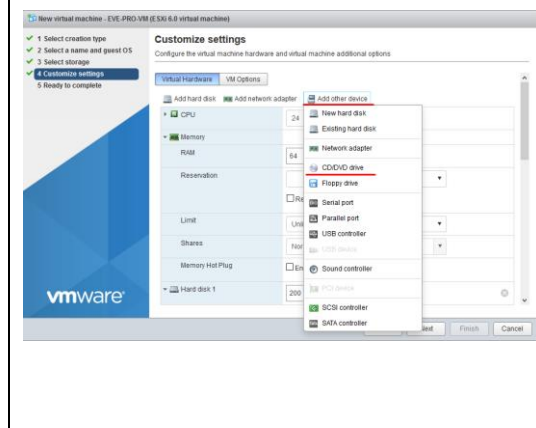


Step 7: Set the size of HDD for your new EVE VM. It is recommended to set "Thick Provisioned eagerly provisioned". Server EVE HDD is recommended to set at least 500Gb

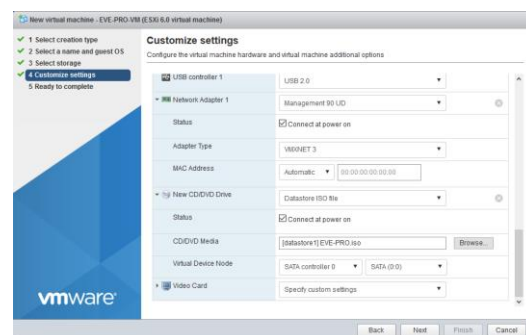
Step 8: Set your Management network. Adapter type VMXNET3



Step 9: Add new device to your EVE VM, CD/DVD



Step 10: Set DVD drive to "Datastore ISO File" and browse your uploaded EVE-PRO.iso. Make sure that Status is checked ON, "Connect at power on"



### 3.2.1.2 EVE-NG ESXi VM Installation steps

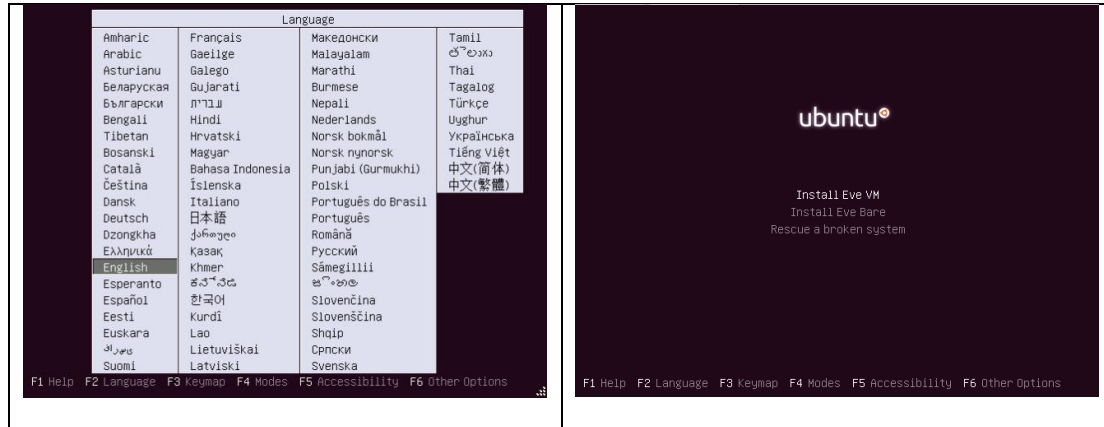
**⚠ Mandatory Prerequisites:** Internet must be reachable from your PC and VMware. EVE ISO installation requires internet access to get updates and install the latest EVE-PRO version from the EVE-NG repository. DNS must work as well, to check it, do a named ping, for example ping www.google.com

#### EVE ESXi VM Installation from ISO has 3 Phases

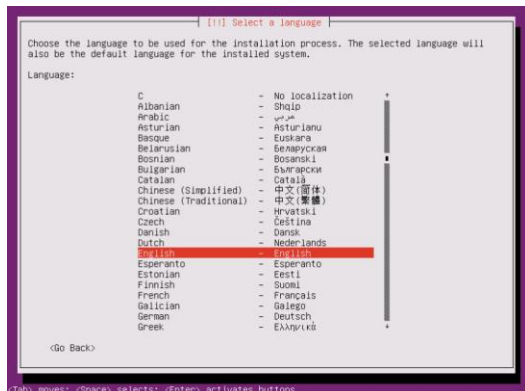
##### Phase 1 (Ubuntu installation)

Step 1: Power ON EVE VM. Chose English and confirm with Enter.

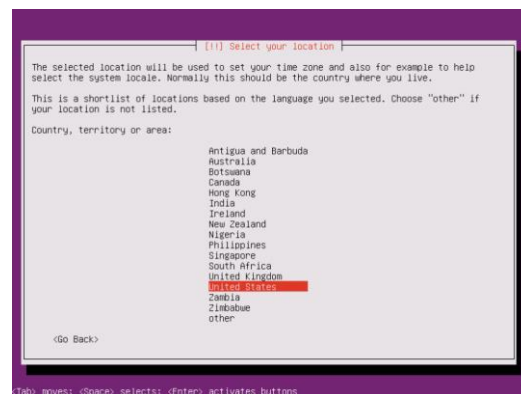
Step 2: Be sure if "Install EVE VM" is highlighted. Confirm with Enter.



Step 3: Make sure if English is selected and confirm with Enter.

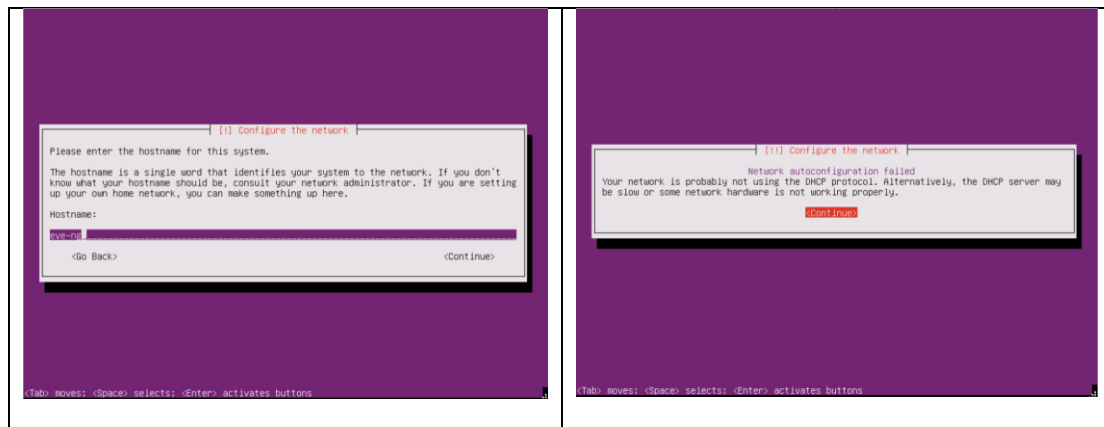


Step 4: You can select your own Location, or later, after management IP assignment, location will be set automatically. You can leave United States. Confirm with Enter

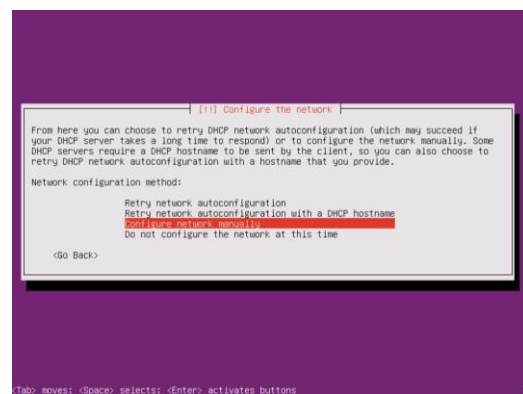


Step 5: **DHCP ENABLED**, EVEs hostname by default is **eve-ng**. You can change it if you wish. Using the Tab key select continue and confirm with Enter. Continue to **Step 14**

Step 6: **DHCP DISABLED/Static IP** setup. If you have not enabled DHCP in the network, you must assign an IP address manually. Confirm Continue with Enter.



#### Step 7: Confirm selection "Configure network manually" with Enter



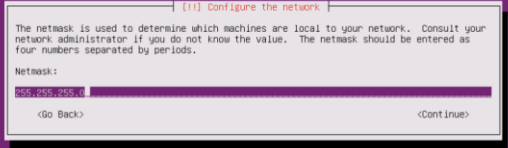
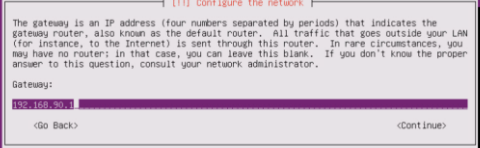
#### Step 8: Enter your desirable EVE management IP, using the Tab key select "Continue" and confirm with Enter

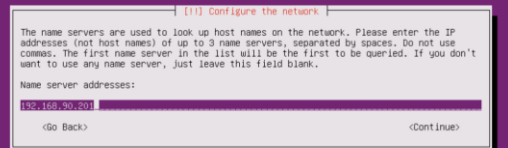
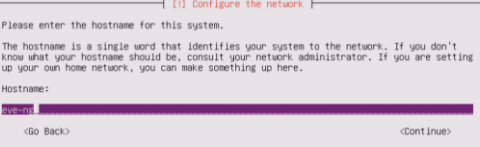


#### Step 9: Correct your subnet mask, using the Tab key select "Continue" and confirm with

#### Step 10: Correct your Gateway IP, using the Tab key select "Continue" and confirm

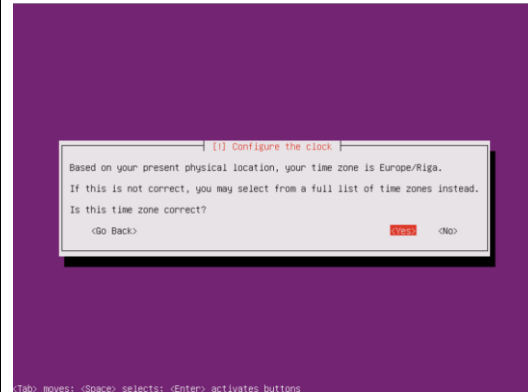
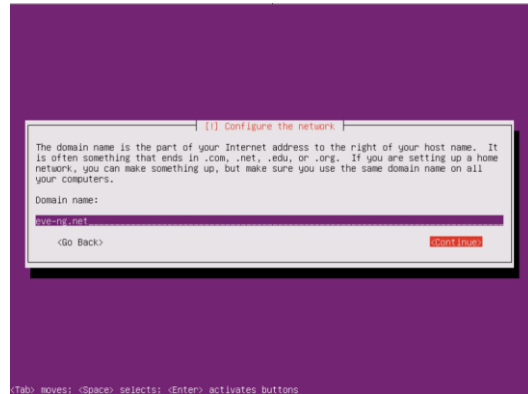


<p><b>Enter</b></p> 	<p><b>with Enter</b></p> 
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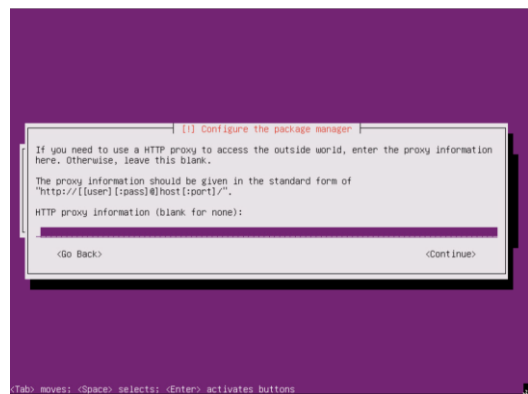
<p><b>Step 11: IMPORTANT.</b> Name server must respond to the Internet and will be used during the next install steps. Enter your name server IP. Using the Tab key select “Continue” and confirm with Enter</p> 	<p><b>Step 12:</b> EVE hostname by default is <b>eve-ng</b>. It can be changed if you wish. Using the Tab key select continue and confirm with Enter</p> 
--	---

<p><b>Step 13:</b> Enter your network domain name. You are free to use any, for example: <b>eve-ng.net</b></p>	<p><b>Step 14:</b> If your DNS IP settings are correct, Ubuntu will detect your location from Internet. Confirm with Enter.</p>
--	---

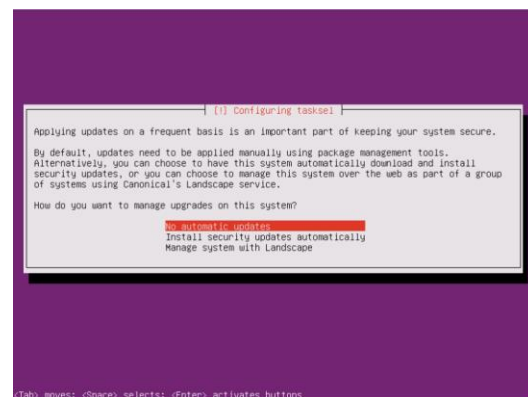
Using the Tab key select continue and confirm with Enter



Step 15: If you have proxy in use for your internet, assign your network proxy settings. If no proxy in use, with Tab key select Continue and confirm with Enter.



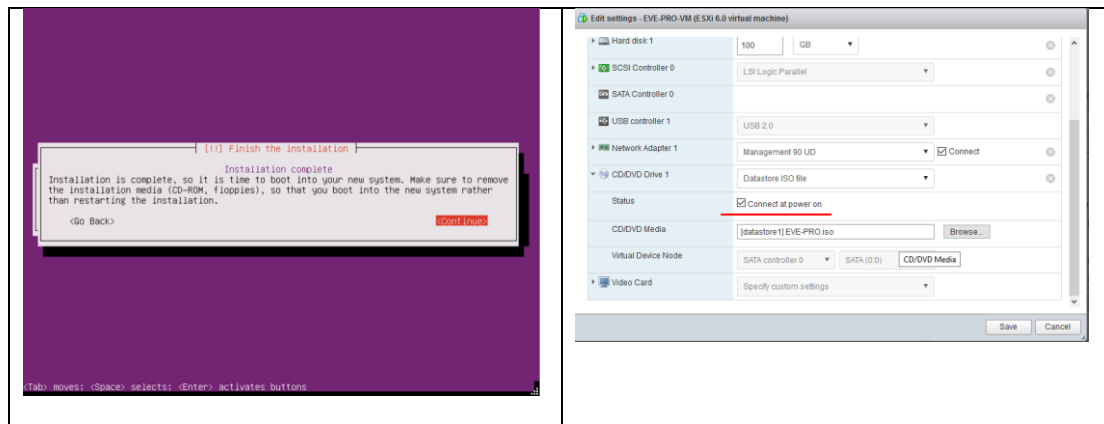
Step 16: Select no automatic updates and confirm with Enter. Security updates can be run later manually from EVE cli.



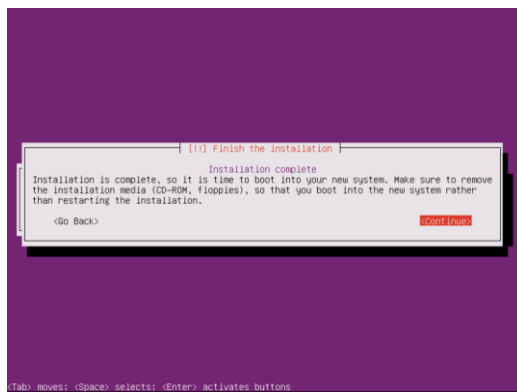
## EVE VM Installation Phase 2 (EVE installation)

Step 17: After the “Finish the installation” screen appears, **DO NOT remove** CD ISO from VM or hit Enter continue. We have to verify settings for EVE installation Phase 2. Follow step 9.

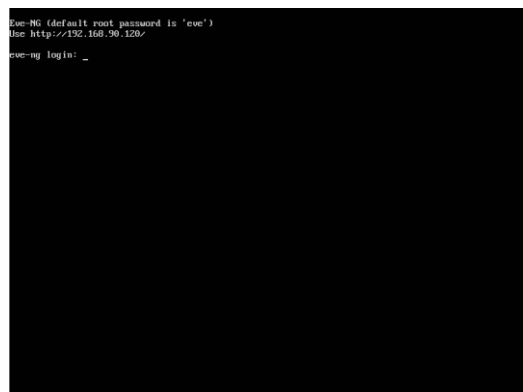
Step 18: Without powering off the EVE VM, open the EVE VM settings and make sure that CD/DVD ISO “Device status connected” and “Connect at power on” is checked. Confirm with OK.



Step 19: Return back to EVE console screen and confirm Continue with Enter, EVE VM will reboot and continue Phase 2 installation



Step 20: Once EVE login screen appeared, login in CLI with **root/eve** and follow installation Phase 3



### EVE VM Installation Phase 3 (Management IP setup and updates)

Step 21: Setup EVE Management IP address. A Static IP address setup is preferred

Follow steps in section :

**3.5.1** for static IP, **3.5.2** for DHCP IP

Step 22: After your EVE is rebooted,

Login to EVE CLI and type:

```
apt update
apt upgrade
```

Step 23: On the EVE CLI prompt, reboot EVE by typing

```
reboot
```

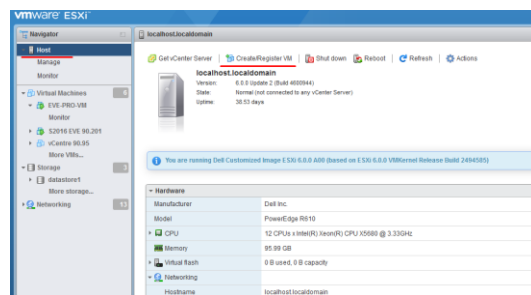
**IMPORTANT NOTE:** You must prepare and upload at least a couple of images to start building your labs. Refer to section **12**

## 3.2.2 VMware ESXi OVA deployment

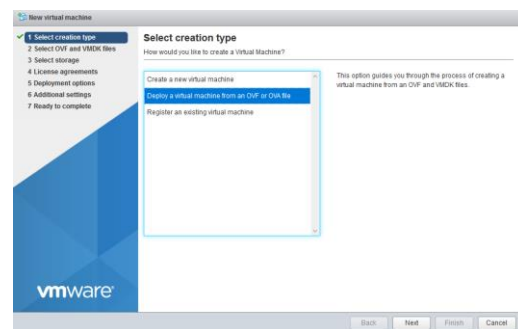
Download EVE-NG Community OVA image:  
<http://www.eve-ng.net/downloads/eve-ng>

### 3.2.2.1 ESXi OVA VM Setup and Settings

Step 1: ESXi Host, Create/Register VM



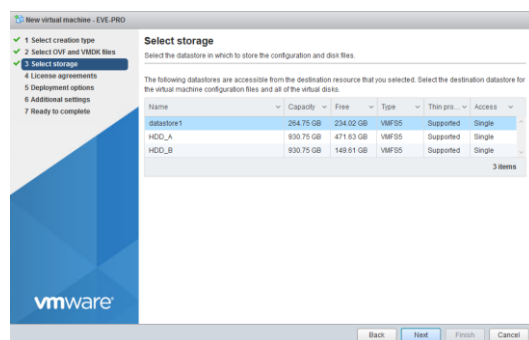
Step 2: Set option Deploy a virtual machine from an OVF or OVA file



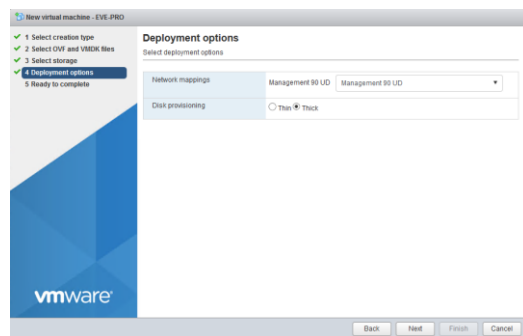
Step 3: Type the name for your new EVE VM and browse to select your downloaded EVE OVA file



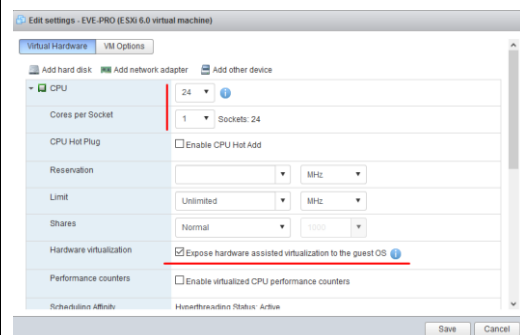
Step 4: Select the storage where your EVE VM will be deployed.



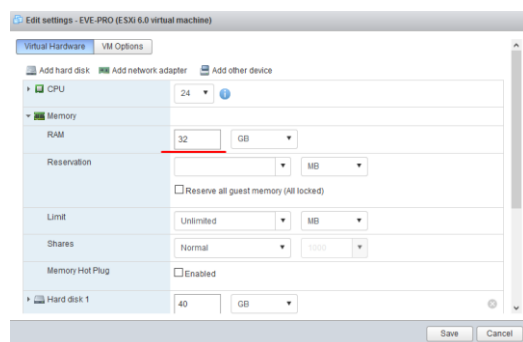
Step 5: Select your Management network and **Thick Disk provisioning**. EVE OVA HDD is only 40Gb large. It is recommended after installation to add extra HDD. Section **11.2**



Step 6: **! IMPORTANT** Open VM Settings. Set the quantity of CPUs and number of cores per socket. Set Intel VT-x/EPT Hardware Virtualization engine to ON (checked).



Step 7: Set desirable RAM for your EVE.



Step 8: Power ON your EVE VM and follow Management IP setup instructions described in section **3.5.1** for Static IP or **3.5.2** for DHCP IP.

**! IMPORTANT NOTE:** You must prepare and upload at least a couple of images to start building your labs. Refer to section **12**

### 3.2.2.2 ESXi OVA VM update to the latest EVE version

Make sure that your EVE OVA VM is up to date with the newest EVE version. Follow the steps described in section **4** for upgrade instructions

### 3.2.2.3 ESXi OVA VM HDD Size expansion

⚠ **NOTE: IMPORTANT! DO NOT** expand the current EVE OVA HDD. To expand your EVEs system disk size, please follow the troubleshooting section **11.2**

## 3.3 Bare hardware server EVE installation

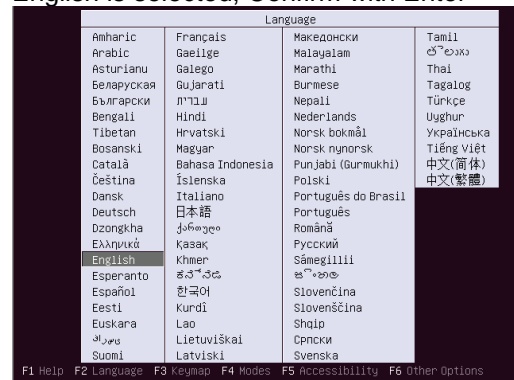
Download Ubuntu Server 16.04.6 LTS ISO image:

<http://tw.archive.ubuntu.com/ubuntu-cd/16.04/ubuntu-16.04.6-server-amd64.iso>

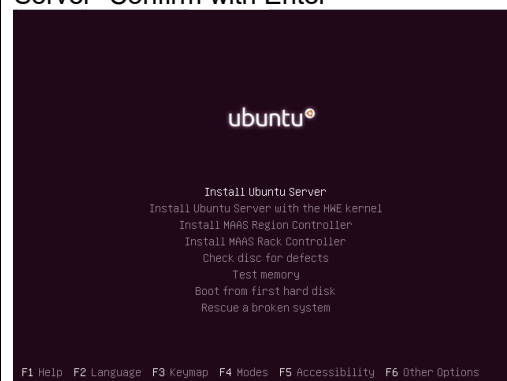
⚠ **Mandatory Prerequisites:** Internet must be reachable from your PC and VMware. EVE ISO installation requires internet access to get updates and install the latest EVE-COMM version from the EVE-NG repository. DNS must work as well, to check it, do a named ping, for example ping www.google.com

### 3.3.1 Ubuntu Server Installation Phase 1

Step 1: Create a bootable DVD disk or USB flash drive with an Ubuntu server image. Boot your server from ISO. Make sure that English is selected, Confirm with Enter



Step 2: Select the first Option “Install Ubuntu Server” Confirm with Enter

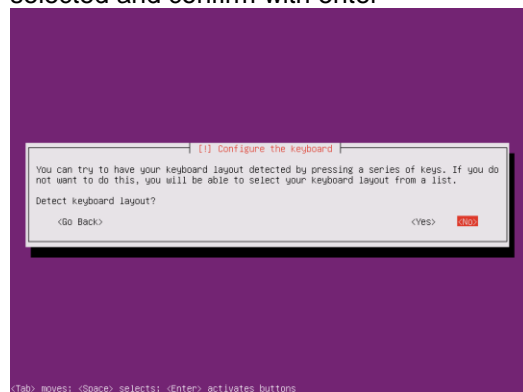


Step 3: Make sure that English is selected and confirm with Enter

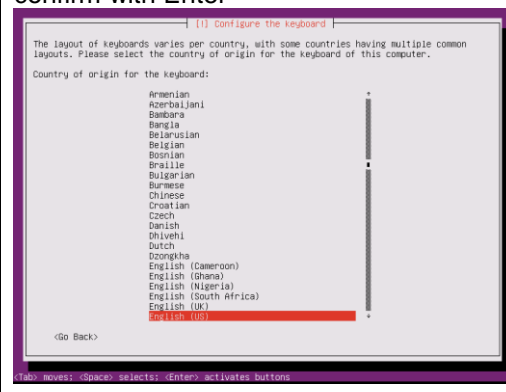
Step 4: You can select your own Location, or later, after management IP assignment, location will be set automatically. You can leave United States. Confirm with Enter.



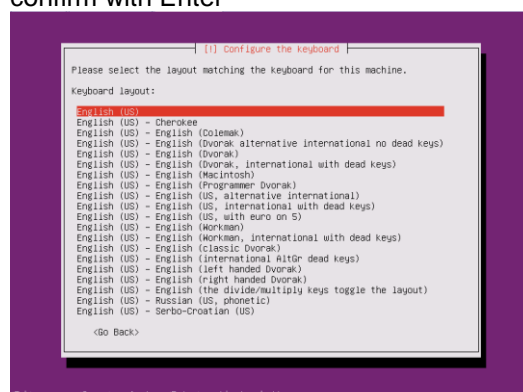
#### Step 5: Configure the keyboard, leave "No" selected and confirm with enter



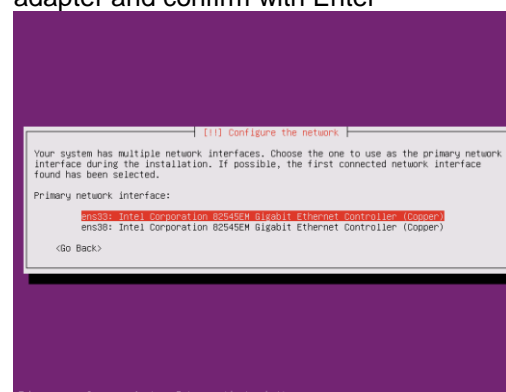
#### Step 6: Leave English (US) as selection, confirm with Enter



#### Step 7: Leave English (US) as selection and confirm with Enter



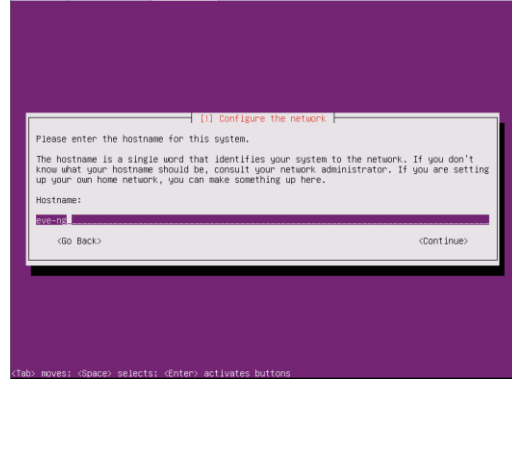
#### Step 8: Select your management network adapter and confirm with Enter



#### Step 9: DHCP ENABLED

#### Step 10: DHCP DISABLED/Static IP setup. If have not enabled DHCP in the network,

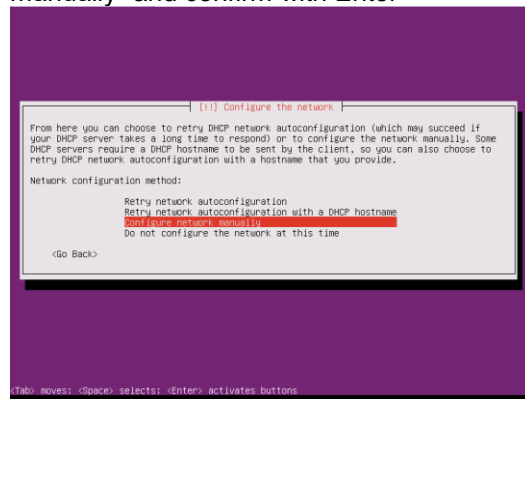
### Continue with **Step 16**



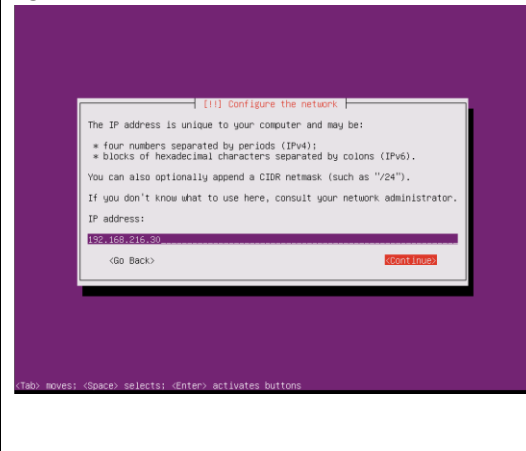
you must assign an IP address manually.  
Continue with Enter.



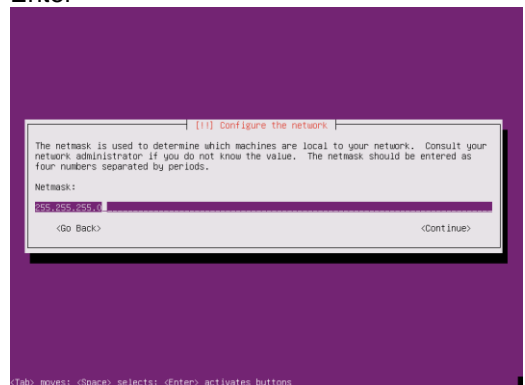
### Step 11: Select "Configure network manually" and confirm with Enter



### Step 12: Enter your desirable EVE management IP, using the Tab key select "Continue" and confirm with Enter



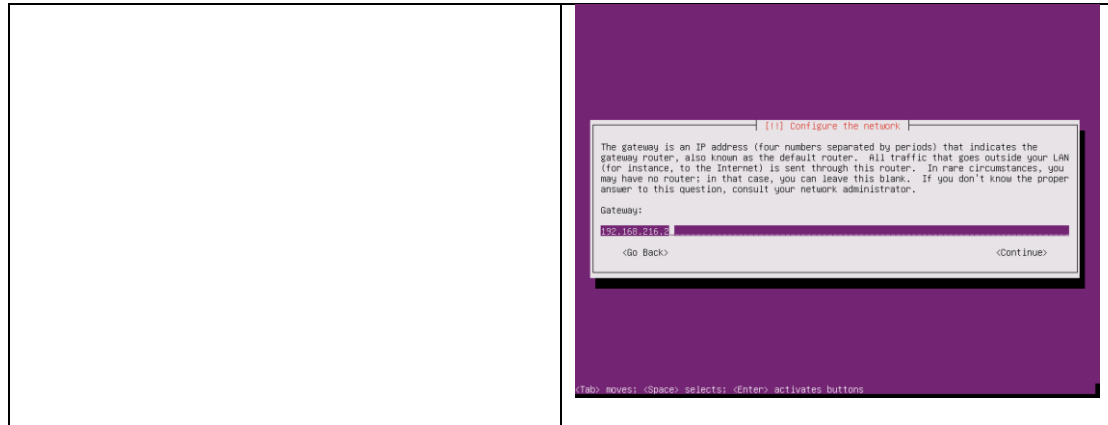
### Step 13: Enter your subnet mask, using the Tab key select "Continue" and confirm with Enter



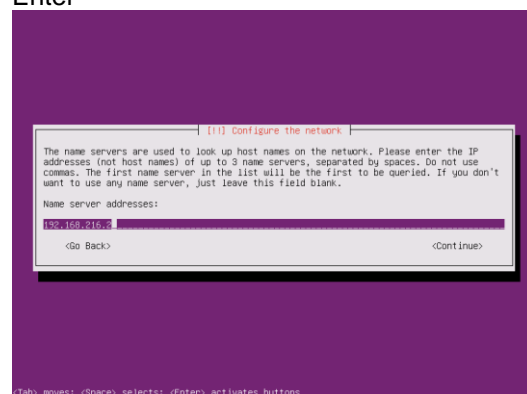
### Step 14: Enter your Gateway IP, using the Tab key select "Continue" and confirm with Enter



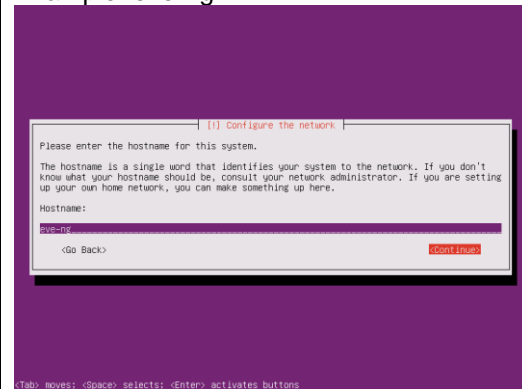




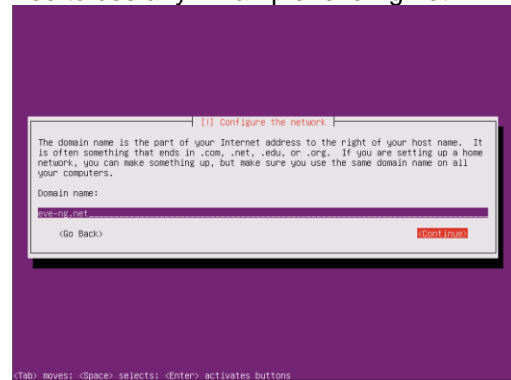
**Step 15: IMPORTANT:** The name server must be able to resolve public DNS entries and will be used during the next install steps. Enter your name server IP, using the Tab key select “Continue” and confirm with Enter



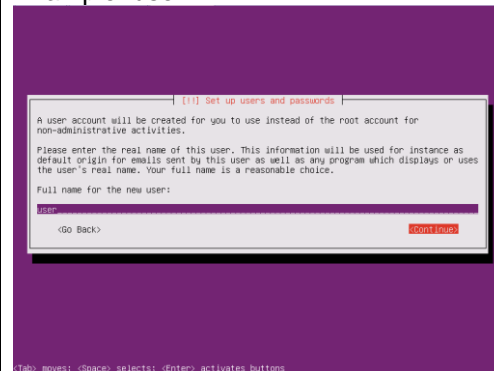
**Step 16:** Type your EVE server hostname, Example: eve-ng



**Step 17:** Type your domain name. You are free to use any. Example: eve-ng.net



**Step 18:** Type your Ubuntu username, Example: user



### Step 19: Select a username (e.g. "user") for your account and Continue

[1] Set up users and passwords

Select a username for the new account. Your first name is a reasonable choice. The username should start with a lower-case letter, which can be followed by any combination of numbers and more lower-case letters.

Username for your account:

user

<Go Back> <Continue>

<Tab> moves: <Space> selects: <Enter> activates buttons

### Step 20: Enter a password for your new user

[1] Set up users and passwords

A good password will contain a mixture of letters, numbers and punctuation and should be changed at regular intervals.

Choose a password for the new user:

Test123

<Go Back> <Continue>

<Tab> moves: <Space> selects: <Enter> activates buttons

### Step 21: Re-enter your password and continue

[1] Set up users and passwords

Please enter the same user password again to verify you have typed it correctly.

Re-enter password to verify:

Test123

<Go Back> <Continue>

<Tab> moves: <Space> selects: <Enter> activates buttons

### Step 22: If you want to use a weak password, click "Yes" on this screen.

[1] Set up users and passwords

You entered a password that consists of less than eight characters, which is considered too weak. You should choose a stronger password.

Use weak password?

<Go Back> Yes No

<Tab> moves: <Space> selects: <Enter> activates buttons

### Step 23: Encrypt your Home directory, "No"

[1] Set up users and passwords

You may configure your home directory for encryption, such that any files stored there remain private even if your computer is stolen.

The system will seamlessly mount your encrypted home directory each time you login and automatically unmount when you log out of all active sessions.

Encrypt your home directory?

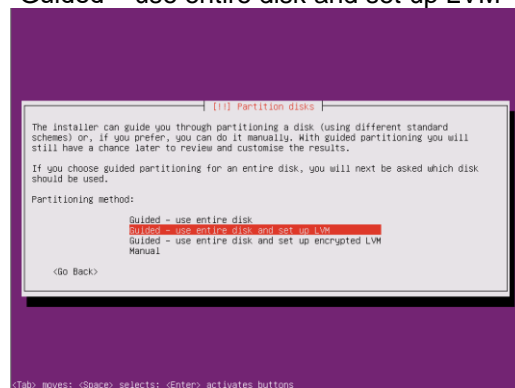
<Go Back> Yes No

<Tab> moves: <Space> selects: <Enter> activates buttons

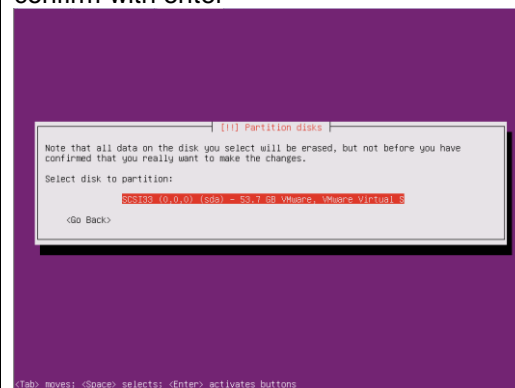
### Step 24: If your DNS and internet are working properly, Ubuntu will automatically detect your location and timezone. Confirm your timezone and continue with enter



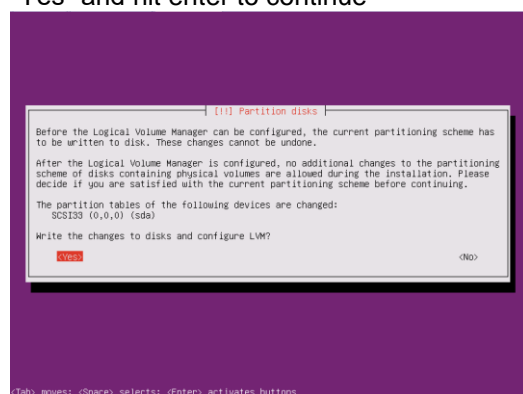
#### Step 25: Select HDD partitioning method “Guided – use entire disk and set up LVM”



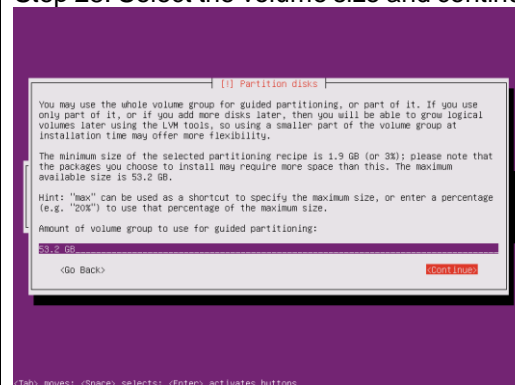
#### Step 26: Select your disk partition, and confirm with enter



#### Step 27: Confirm write changes to disk with “Yes” and hit enter to continue

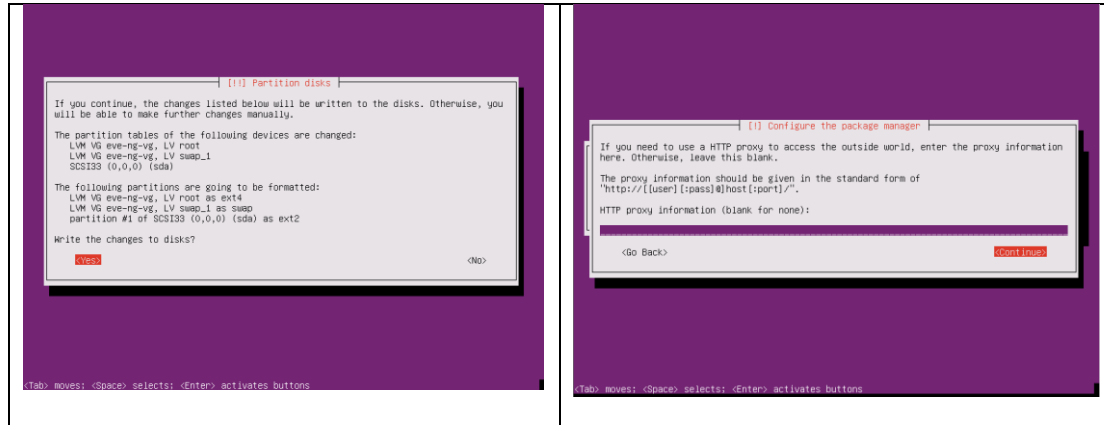


#### Step 28: Select the volume size and continue

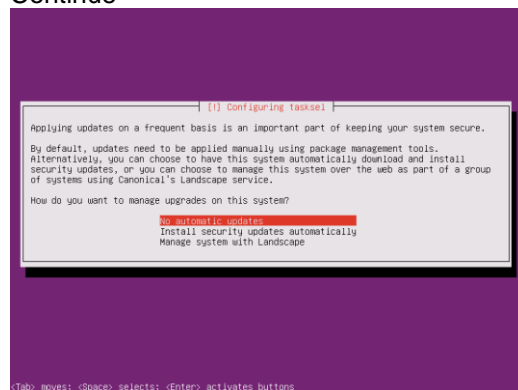


#### Step 29: Confirm write the changes to disk with “Yes” and continue

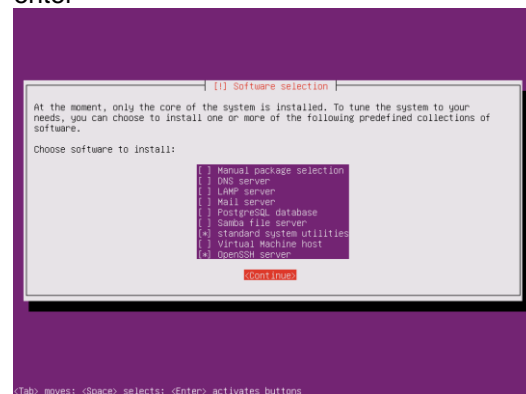
#### Step 30: If you have a proxy in use for your internet, enter your network proxy settings. If no proxy is used, use the tab key to select Continue and confirm with enter.



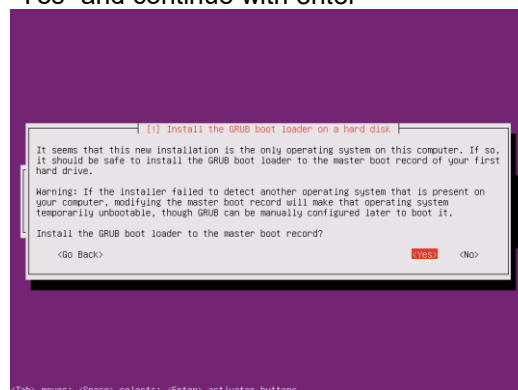
### Step 31: Select "No automatic updates" and Continue



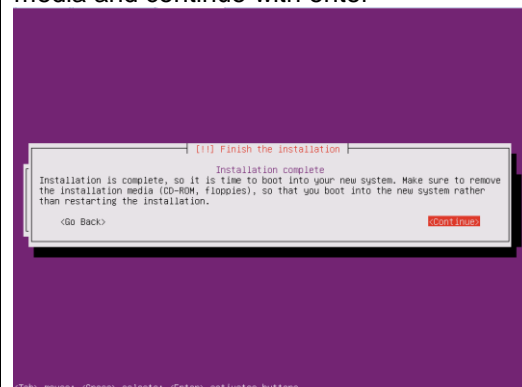
### Step 32: Using the Arrow keys select "OpenSSH server" for installation and confirm with the Space key (\*), continue with enter



### Step 33: Confirm "Install the GRUB bootloader to the master boot record" with "Yes" and continue with enter



### Step 34: REMOVE CD/DVD installation media and continue with enter



Step 35: Login in to your Ubuntu with the username created above (user/Test123 was the example)

```
Ubuntu 16.04.4 LTS eve-ng tty1
eve-ng login:
Ubuntu 16.04.4 LTS eve-ng tty1
eve-ng login: user
Password:
Welcome to Ubuntu 16.04.4 LTS (GNU/Linux 4.4.0-116-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

32 packages can be updated.
7 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

user@eve-ng:~$
```

Step 36: Continue as root user. Enter the commands below, each followed by the enter key.

```
sudo su
```

```
Test123
```

```
cd
```

```
user@eve-ng:~$ sudo su
[sudo] password for user:
root@eve-ng:/home/user# cd
root@eve-ng:~#
```

Step 37: Create root password

```
sudo passwd root
```

Repeat your desirable password twice;  
Example: eve

```
root@eve-ng:~# sudo passwd root
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
root@eve-ng:~#
```

Step 38: Verify and set your hostname if you haven't set it before

```
nano /etc/hostname
```

Edit it if necessary: eve-ng

Confirm edit with ctrl+o followed by Enter  
And ctrl+x for Exit

Step 39: Verify your host settings

```
nano /etc/hosts
```

Your assigned static IP will be bound to your server hostname and domain

```
127.0.0.1    localhost
192.168.217.50 eve-ng.eve-ng.net  eve-ng

# The following lines are desirable for IPv6 capable hosts
::1        localhost ip6-localhost ip6-loopback
ff02::1    ip6-allnodes
ff02::2    ip6-allrouters
```

NOTE: in case if DHCP IP address is used, you will see 127.0.0.1 IP vs hostname

Confirm edit with ctrl+o followed by enter  
And ctrl+x for Exit

Step 40: Edit permissions for root user to allow SSH access to EVE server

```
nano /etc/ssh/sshd_config
```

Find and edit PermitRootLogin to "yes"

```
# Authentication:
LoginGraceTime 120
PermitRootLogin yes
StrictModes yes
```

Confirm edit with ctrl+o followed by enter  
And ctrl+x for Exit

Restart ssh service:

```
sudo service ssh restart
```

Step 41: **⚠ IMPORTANT**

SSH as **root** to your EVE server with Putty or any other telnet client program.

Update the Ubuntu grub CMD Line with the following customized command. Make sure you enter this command below in a single line and confirm it with the enter key.

```
sed -i -e 's/GRUB_CMDLINE_LINUX_DEFAULT=.*/GRUB_CMDLINE_LINUX_DEFAULT="net.ifnames=0\nnoquiet"/' /etc/default/grub
```

Update GRUB, Followed by Enter

```
update-grub
```

**⚠ WARNING: DO NOT REBOOT your Ubuntu/EVE yet, proceed to step 42!**

Step 42: **IMPORTANT**

Rename your Server interface name to **eth0**

```
nano /etc/network/interfaces
```

Before edit:

```
# The primary network interface
auto ens33
iface ens33 inet static
    address 192.168.217.50
    netmask 255.255.255.0
    network 192.168.217.0
    broadcast 192.168.217.255
    gateway 192.168.217.2
    # dns-* options are implemented by the resolvconf package, if installed
    dns-nameservers 192.168.217.2
    dns-search eve-ng.net
```

After edit:

```
# The primary network interface
auto eth0
iface eth0 inet static
    address 192.168.217.50
    netmask 255.255.255.0
    network 192.168.217.0
    broadcast 192.168.217.255
    gateway 192.168.217.2
    # dns-* options are implemented by the resolvconf package, if installed
    dns-nameservers 192.168.217.2
    dns-search eve-ng.net
```

Confirm your edit with ctrl+o followed by enter

And ctrl+x to exit

Reboot the EVE server

```
reboot
```

### 3.3.2 EVE Community Installation Phase 2

Step 43: Start EVE Community installation with the following one-line command and hit enter

```
wget -O - http://www.eve-ng.net/repo/install-eve.sh | bash -i
```

Step 43.1: OPTIONAL for Broadcom NetExtreme II ethernet drivers in your server. NOT necessary for regular servers. DO NOT reboot EVE before you did Broadcom driver installation below !!

```
apt install firmware-bnx2x -o Dpkg::Options::="--force-overwrite"
```

Step 44: Reboot EVE

```
reboot
```

### 3.3.3 EVE Community Installation Phase 3

Step 45: After the installation is completed, reboot EVE and follow the Management IP setup instructions in section **3.5.1**. It is strongly recommended for bare-metal installations to use a static IP address. After the IP address setup, continue with **Step 46**

Step 46: After your EVE is rebooted,

Login to the EVE CLI and type:

```
apt update
apt upgrade
reboot
```

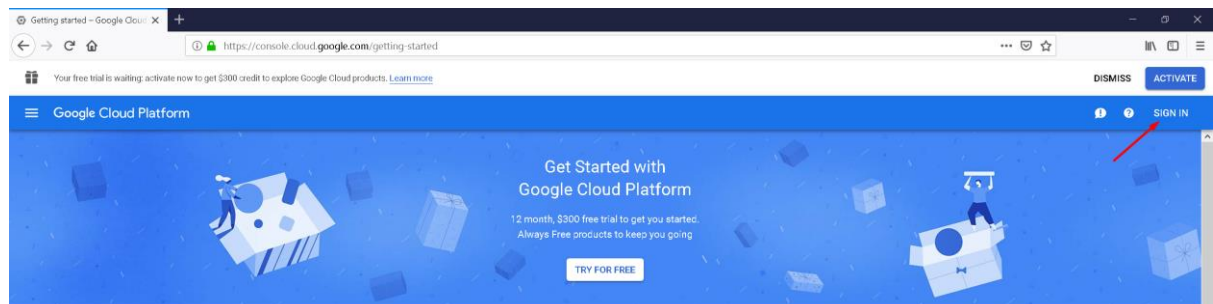
**⚠ IMPORTANT NOTE:** You must prepare and upload at least a couple of images to start building your labs. Refer section **12**

## 3.4 Google Cloud Platform

### 3.4.1 Google account

Step 1: Connect to Google Cloud Platform (GCP)

<https://console.cloud.google.com/getting-started>

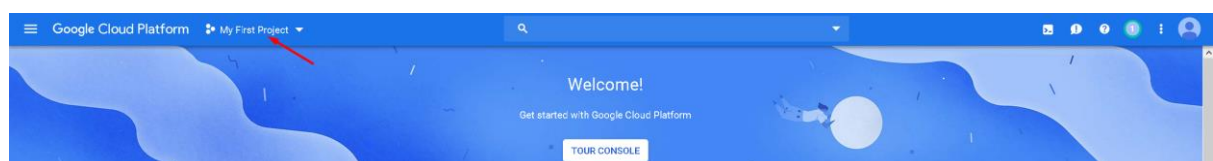


Step 2: Sign into GCP. Create a new GCP account if you do not already have one.

### 3.4.2 Google Cloud project

Create new project. By default, GCP will offer you a project named "My First Project". It can be used as well.

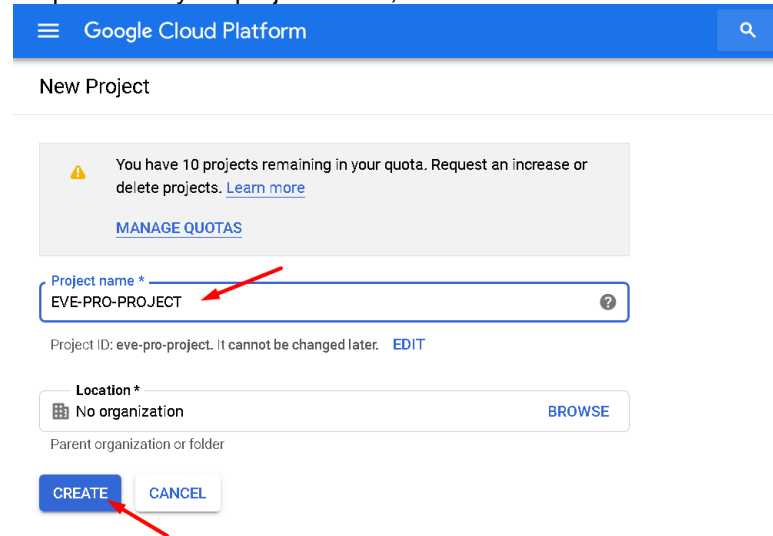
Step 1. GCP top bar, click on "My First Project"



Step 2. Next pop up window, click “NEW PROJECT”

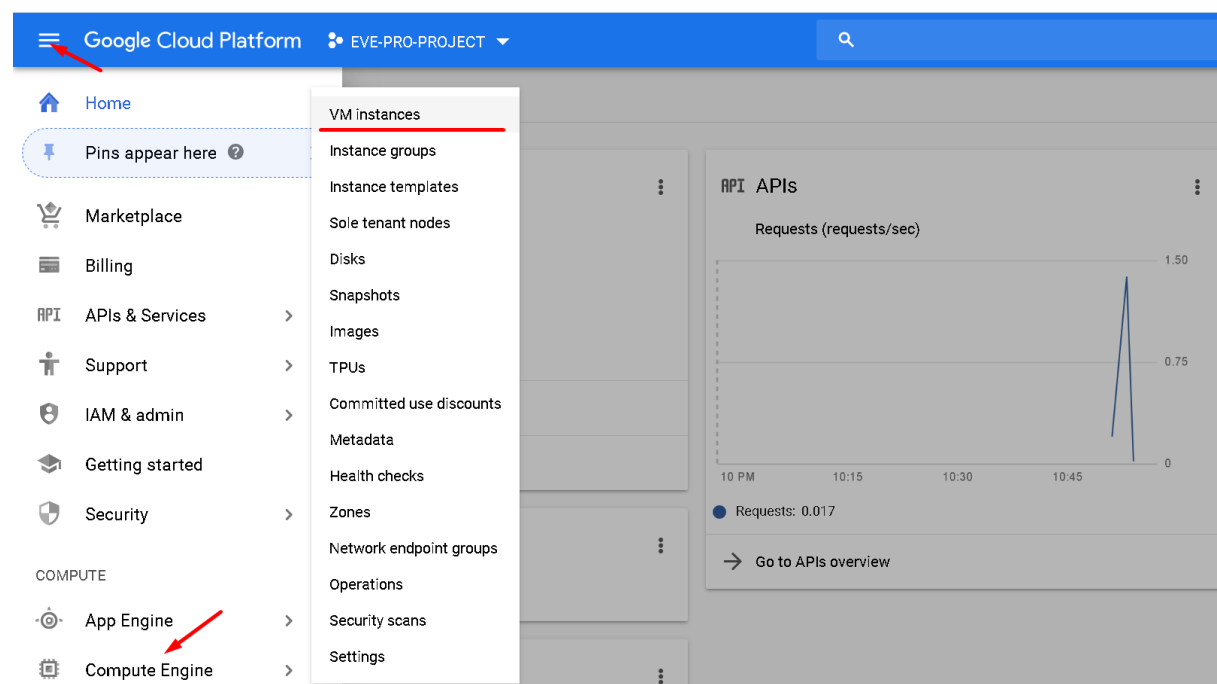


Step 3. Enter your project name, and confirm “CREATE”



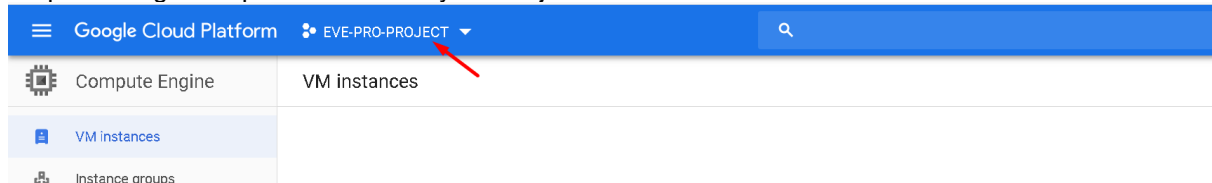
This will take some time.

Step 4. Navigate: Navigation Menu/Compute Engine/VM Instances

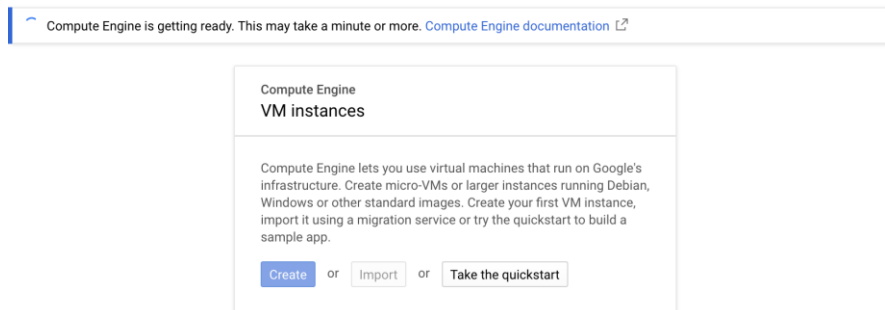




### Step 5. Navigate: top bar and select your Project

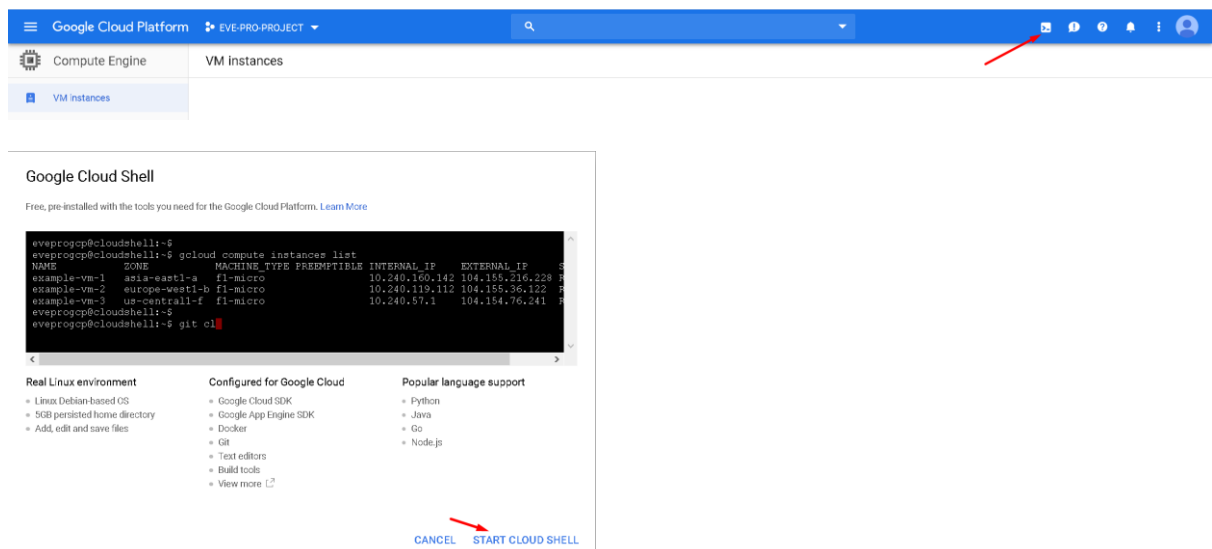


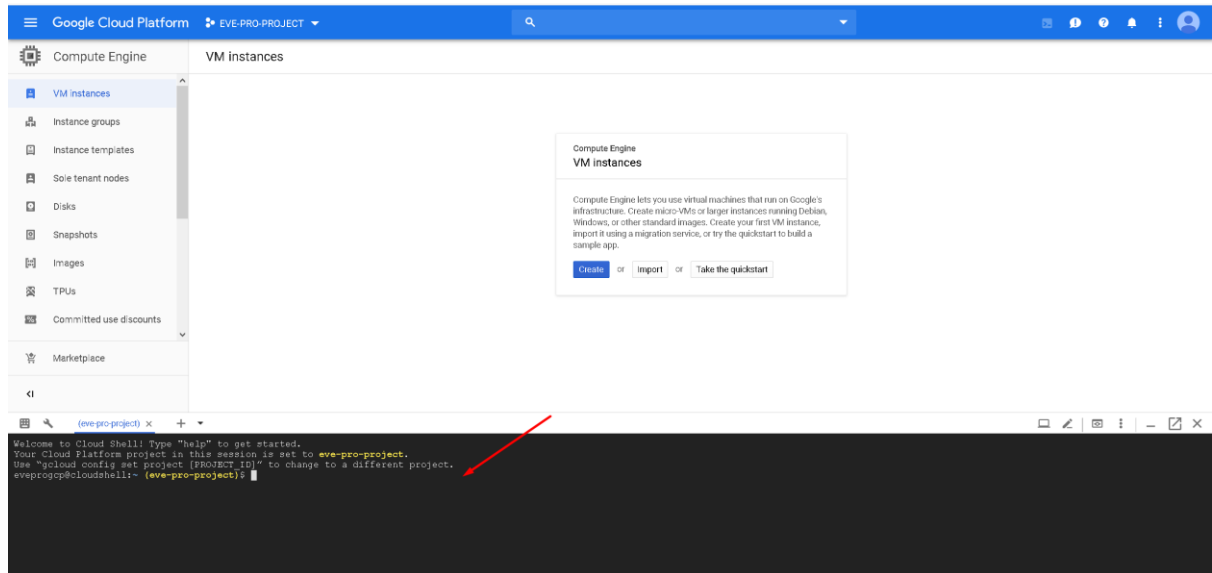
Preparation of your Project can take some time. Wait until the VM Instance window finishes deployment and then press the “Create button.”



## 3.4.3 Preparing Ubuntu boot disk template

### Step 1: Open the google cloud shell and press: “START CLOUD SHELL”





Step 2: create a nested Ubuntu 16.04 image model. Copy and paste the below command into the shell. Use copy/paste. ctrl +c/ctrl +v. **It is single line command.** Confirm with “enter”:

```
gcloud compute images create nested-ubuntu-xenial --source-image-family=ubuntu-1604-lts --source-image-project=ubuntu-os-cloud --licenses https://www.googleapis.com/compute/v1/projects/vm-options/global/licenses/enable-vmx
```

The screenshot shows the Cloud Shell terminal with the command being entered: `gcloud compute images create nested-ubuntu-xenial --source-image-family=ubuntu-1604-lts --source-image-project=ubuntu-os-cloud --licenses https://www.googleapis.com/compute/v1/projects/vm-options/global/licenses/enable-vmx`. A red arrow points to the end of the command line.

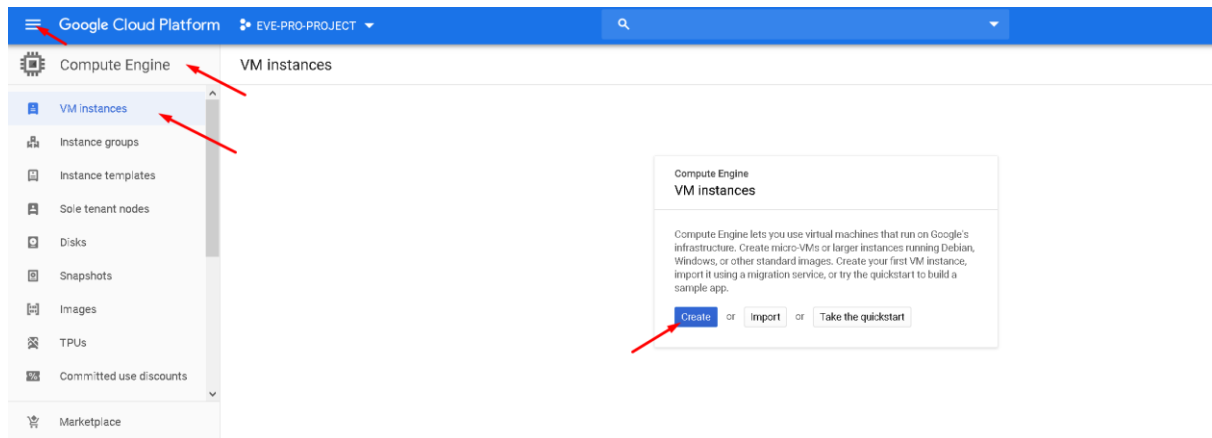
You will get the following output when your image is ready:

The screenshot shows the Cloud Shell terminal output after the command is executed. The output indicates that the image 'nested-ubuntu-xenial' has been created successfully. The output is as follows:

```
Created [https://www.googleapis.com/compute/v1/projects/eve-pro-project/global/images/nested-ubuntu-xenial].
NAME          PROJECT          FAMILY  DEPRECATED  STATUS
nested-ubuntu-xenial  eve-pro-project  ubuntu-1604-lts  false      READY
```

### 3.4.4 Creating VM

Step 1: Navigate: Navigation Menu/Compute Engine/VM Instances and press “Create”



Step 2: Edit your VM settings. Use your own region and zone. Choose your desirable CPU and RAM settings.  
**IMPORTANT:** “Deploy a container image” must be **UNCHECKED**.

**Name** <sup>?</sup>  
eve-comm1  
eve-comm

**Region** <sup>?</sup> **Zone** <sup>?</sup>  
europe-west2 (London) europe-west2-c

**Machine configuration** <sup>?</sup>

**Machine family**  
General-purpose Memory-optimised Compute-optimised  
Machine types for common workloads, optimised for cost and flexibility

**Generation**  
First  
Powered by Skylake CPU platform or one of its predecessors

**Machine type**  
n1-standard-8 (8 vCPU, 30 GB memory)

	vCPU	Memory
	8	30 GB

**Container** <sup>?</sup>  
☐ Deploy a container image to this VM instance. [Learn more](#)

Step 3: Select Boot disk. Press Change

**Boot disk** <sup>?</sup>

New 10 GB standard persistent disk  
Image  
Debian GNU/Linux 9 (stretch)

**Change**

Step 4. Select the custom boot images you created previously. Choose HDD disk type and size. HDD size can vary depends of your needs

#### Boot disk

Select an image or snapshot to create a boot disk; or attach an existing disk

OS images   Application images   **Custom images**   Snapshots   Existing disks

Show images from

EVE-PRO-PROJECT

☒ nested-ubuntu-xenial

Created from EVE-PRO-PROJECT on Apr 22, 2019, 11:10:28 PM

Can't find what you're looking for? Explore hundreds of VM solutions in [Marketplace](#)

Boot disk type ?

SSD persistent disk

Size (GB) ?

100

Select

Cancel

Step 5: Allow http traffic and create VM

Identity and API access ?

Service account ?

Compute Engine default service account

Access scopes ?

- ☒ Allow default access
- ☐ Allow full access to all Cloud APIs
- ☐ Set access for each API

Firewall ?

Add tags and firewall rules to allow specific network traffic from the Internet.

- ☒ Allow HTTP traffic
- ☒ Allow HTTPS traffic

Management, security, disks, networking, sole tenancy

Your free trial credit will be used for this VM instance. [GCP Free Tier](#)

Create

Cancel

### 3.4.5 EVE-NG-Community installation

Step 1: Connect to the VM with the first option "Open in browser window"

<input type="checkbox"/>	<input checked="" type="checkbox"/>	eve-comm1	europa-west2-c	10.154.0.8 (nic0)	35.189.66.46	SSH	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	eve-pro	europa-west2-c	10.154.0.7 (nic0)	None	SSH	

Open in browser window

Open in browser window on custom port

Open in browser window using provided private SSH key

View gcloud command

Use another SSH client

```
Connected, host fingerprint: ssh-rsa 0 CE:00:B3:F3:3C:48:07:1D:3E:0A:FD:AE:3B:B7
:56:63:75:6F:BD:92:31:45:76:CD:19:00:FB:66:33:9E:4B:EC
Welcome to Ubuntu 16.04.6 LTS (GNU/Linux 4.15.0-1036-gcp x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

0 packages can be updated.
0 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

aldis_dzrkals@eve-comm1:~$
```

Step 2: Launch installation with:

Type the below command to become root:

```
sudo -i
```

Start EVE-COMM installation

```
wget -O - http://www.eve-ng.net/repo/install-eve.sh | bash -i
```

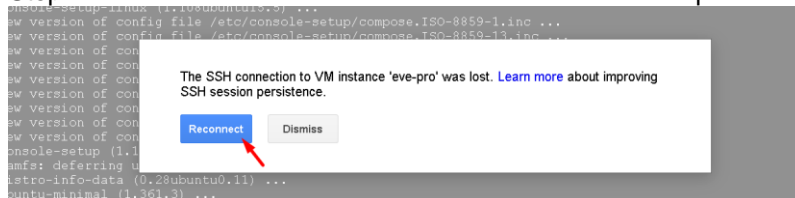
Step 3: Update and upgrade your new EVE-COMM

```
apt update
```

```
apt upgrade
```

Confirm with Y

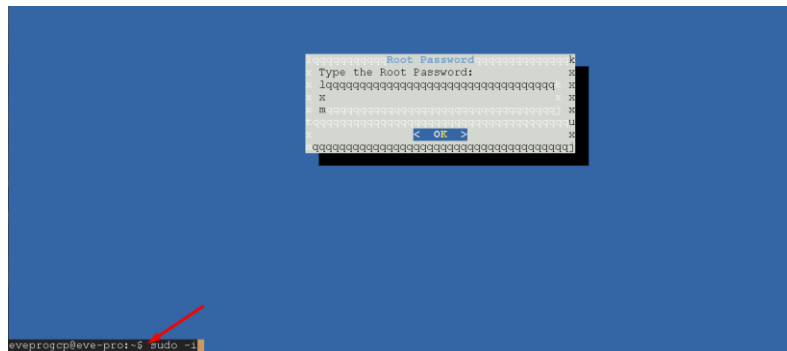
Step 4. Reboot EVE. Allow some time for reboot and then press “Reconnect”



Step 5: **IMPORTANT:** Setup IP

Once the IP wizard screen appears, press **ctrl +c** and type the below command to become root:

```
sudo -i
```



Now follow the IP setup wizard.

**IMPORTANT:** set IP as **DHCP**!

Step 6: Dockers installation. After EVE is rebooted, reconnect the SSH session:

Type command to become root:

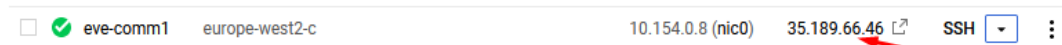
```
sudo -i
```

Type command to update EVE

```
apt update
```

### 3.4.6 Access to Google Cloud EVE-COMM

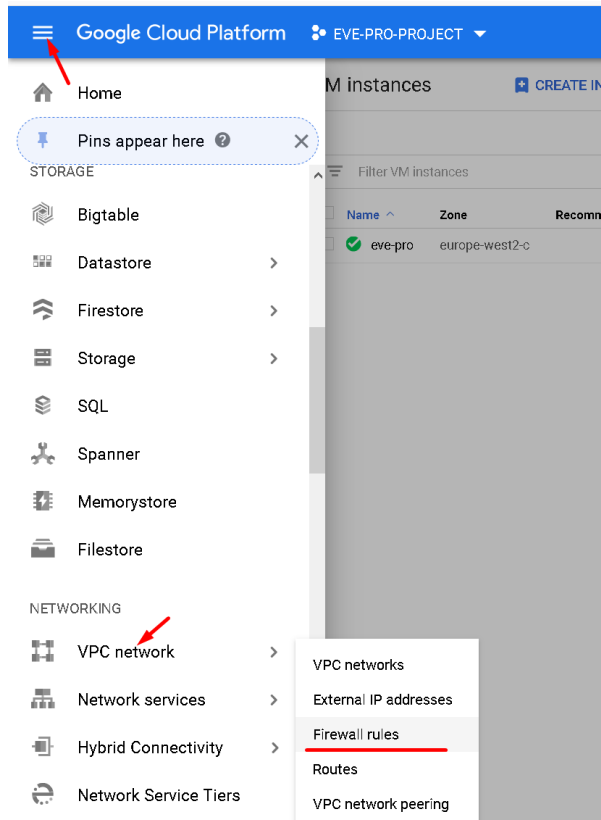
Use your public IP for accessing EVE via **http**.



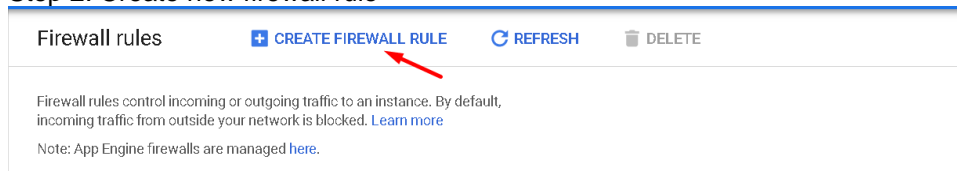
Default web login: admin/eve

### 3.4.7 Optional: GCP Firewall rules for native console use

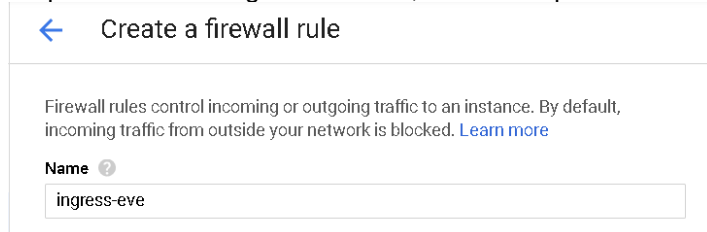
Step 1: Navigate: Navigation menu/VPC Network/Firewall rules



## Step 2: Create new firewall rule



## Step 3: Create an ingress FW rule; allow TCP ports 0-65535



**Direction of traffic** ?  
☒ Ingress  
☐ Egress

**Action on match** ?  
☒ Allow  
☐ Deny

**Targets** ?  
All instances in the network

**Source filter** ?  
IP ranges

**Source IP ranges** ?  
0.0.0.0/0

**Second source filter** ?  
None

**Protocols and ports** ?  
☐ Allow all  
☒ Specified protocols and ports

☒ tcp : 0-65535  
☐ udp : all  
☐ Other protocols  
protocols, comma separated, e.g. ah, sctp

[Disable rule](#)

**Create** **Cancel**

#### Step 4: Create an egress FW rule; allow TCP ports 0-65535

Firewall rules control incoming or outgoing traffic to an instance. By default, incoming traffic from outside your network is blocked. [Learn more](#)

**Name** ?  
egress-eve



**Direction of traffic** ?  
☐ Ingress  
☒ Egress

**Action on match** ?  
☒ Allow  
☐ Deny

**Targets** ?  
 All instances in the network

**Destination filter** ?  
 IP ranges

**Destination IP ranges** ?  
 0.0.0.0/0

**Protocols and ports** ?  
☐ Allow all  
☒ Specified protocols and ports

☒ tcp : 0-65535  
☐ udp : all  
☐ Other protocols  
 protocols, comma separated, e.g. ah, sctp

[DisableView rule](#)

**Create** **Cancel**

Summary FW rules.

<input type="checkbox"/>	Name	Type	Targets	Filters	Protocols / ports	Action	Priority	Network ^
<input type="checkbox"/>	egress-eve	Egress	Apply to all	IP ranges: 0.0.0.0/0	tcp:0-65535	Allow	1000	default
<input type="checkbox"/>	default-allow-https	Ingress	https-server	IP ranges: 0.0.0.0/0	tcp:443	Allow	1000	default
<input type="checkbox"/>	ingress-eve	Ingress	Apply to all	IP ranges: 0.0.0.0/0	tcp:0-65535	Allow	1000	default

## 3.5 EVE Management IP Address setup

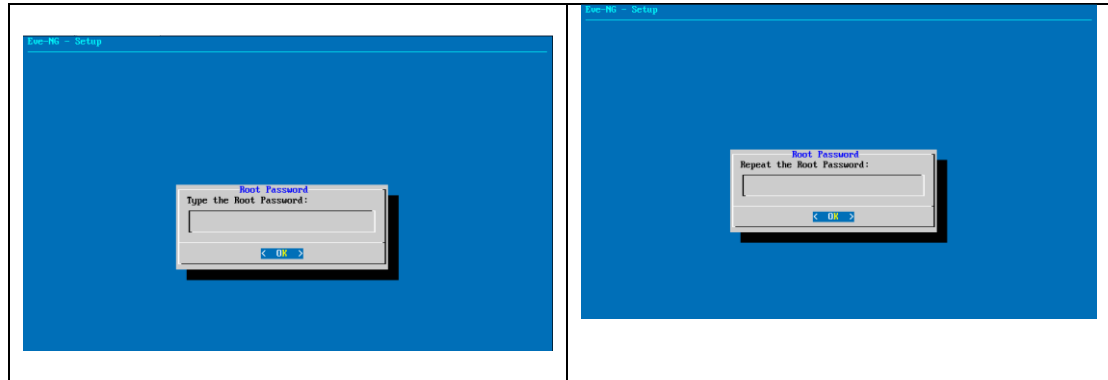
### 3.5.1 Management static IP address setup (preferred)

The steps below will walk you through the network setup and assign a static management IP for EVE.

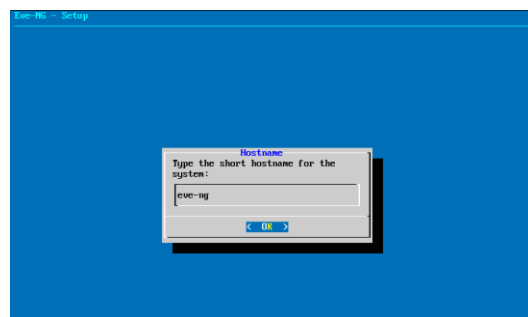
Step 1: Log into the EVE CLI using the default login **root/eve**. After login, type your preferred root password for EVE, default is **eve**. **Remember it for further use.** Confirm with enter

NOTE: Typed characters in the password field are not visible.

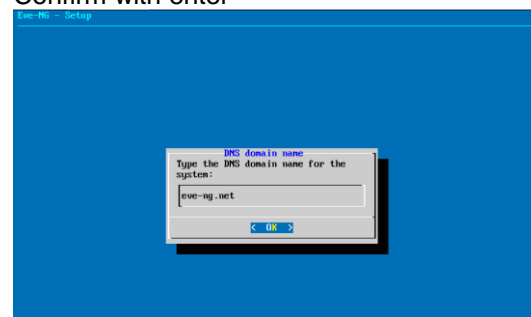
Step 2: Retype your root password again and confirm with enter.



Step 3: Choose your EVE VMs hostname. By default, it is **eve-ng**. You can leave it as it is. Confirm with enter



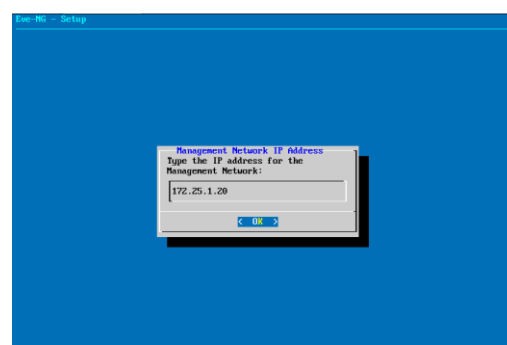
Step 4: Type your domain name for your EVE VM. By default, it is example.com. The default value can be used as well. Confirm with enter



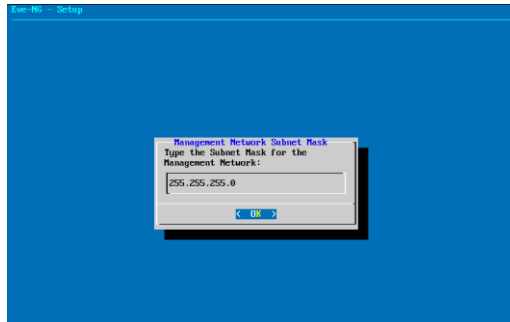
Step 5: Using the arrow keys, select the option "static", confirm your selection with the space key, followed by enter



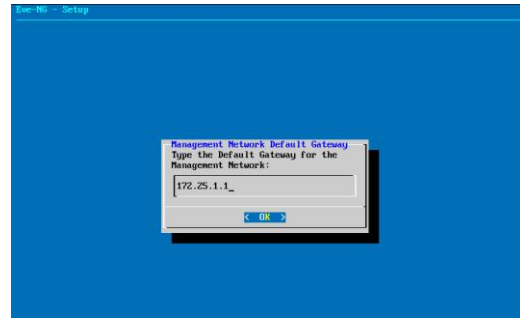
Step 6: Type your desirable EVE management IP. Confirm with enter.



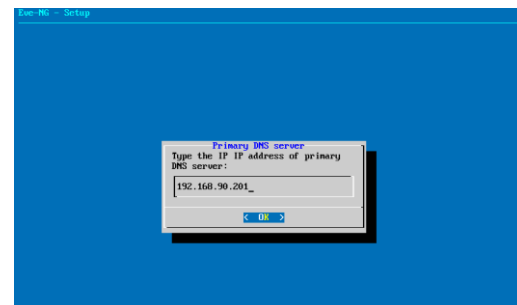
Step 7: Type the subnet mask of your EVE management network. Confirm with enter.



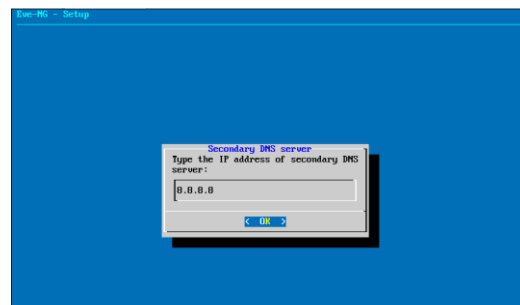
Step 8: Type your networks gateway IP. Confirm with enter.



Step 9: Type your networks primary DNS IP. Confirm with enter.  
**IMPORTANT:** DNS must be reachable and resolve public addresses.

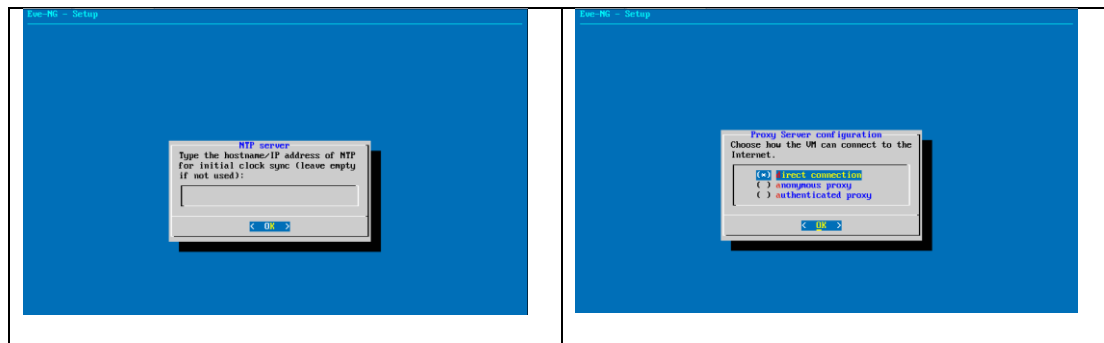


Step 10: Type your network Secondary DNS IP. Confirm with Enter.  
**IMPORTANT:** DNS must be reachable and resolve public addresses.



Step 11: Type your preferred NTP server IP. It can be left empty as well; in this case, your EVE VM will automatically assign the time from its host.

Step 12: If you have a proxy in use for your Internet, select the respective proxy option and configure your proxy settings. By default, it is direct connection (no proxy). Confirm your selection with enter. EVE will reboot automatically.



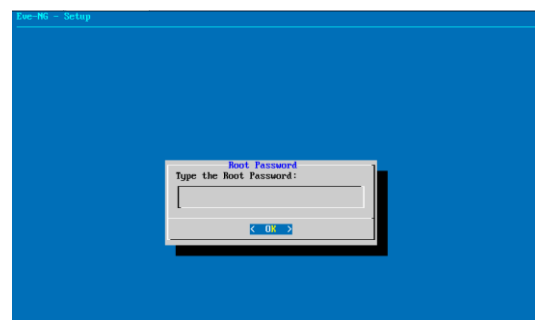
**⚠ IMPORTANT NOTE:** If you are setting up your management IP for the first time (fresh EVE installation), please return to the install section and complete installation phase 3.

### 3.5.2 EVE Management IP address setup via DHCP

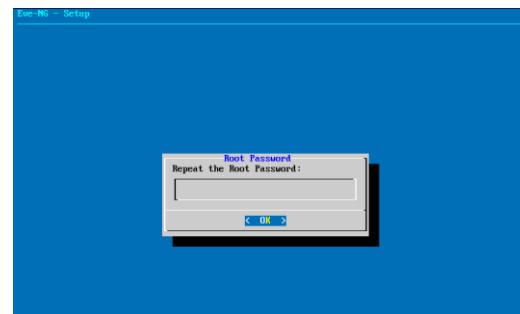
The steps below will walk you through the network setup and assign a management IP for EVE via DHCP.

Step 1: Log into the EVE CLI using the default login **root/eve**. After login, type your preferred root password for EVE, default is **eve**. **Remember it for further use.** Confirm with enter

NOTE: Typed characters in the password field are not visible.

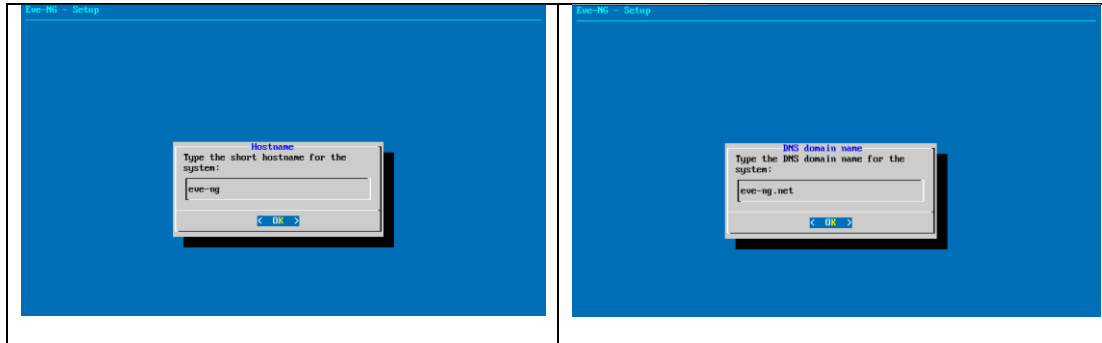


Step 2: Retype your root password again and confirm with enter.

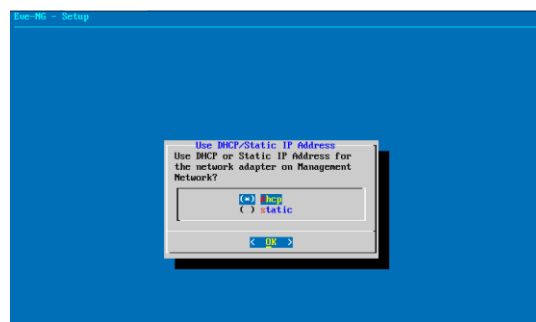


Step 3: Choose your EVE VMs hostname. By default, it is **eve-ng**. You can leave it as it is. Confirm with enter

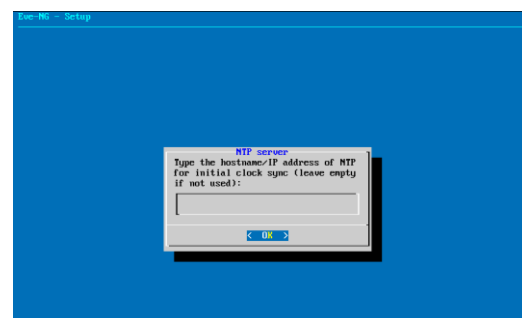
Step 4: Type your domain name for your EVE VM. By default, it is example.com. The default value can be used as well. Confirm with enter



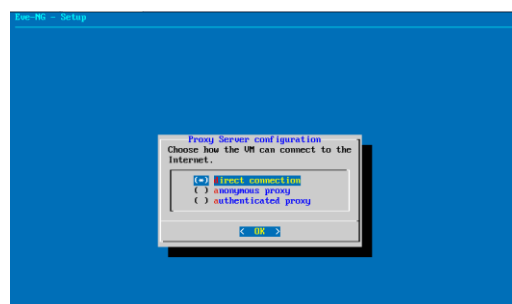
Step 5: Using the arrow keys, select the option “dhcp”, confirm your selection with the space key, followed by enter



Step 6: Type your preferred NTP server IP. It can be left empty as well; in this case, your EVE VM will automatically assign the time from its host.



Step 7: If you have a proxy in use for your Internet, select the respective proxy option and configure your proxy settings. By default, it is direct connection (no proxy). Confirm your selection with enter. EVE will reboot automatically.



**⚠ IMPORTANT NOTE:** If you are setting up your management IP for the first time (fresh EVE installation), please return to the install section and complete installation phase 3.

### 3.5.3 EVE Management IP address reset

If for any reason you need to change these settings after the installation, you can rerun the IP setup wizard. Type the following command in the CLI and hit enter:

```
rm -f /opt/ovf/.configured
```

Then reboot. Once you log into the CLI again, EVE will go through the network setup again. Please follow the steps in section [3.5.1](#) for Static IP or [3.5.2](#) for DHCP IP.

## 3.6 EVE-NG Community upgrade to EVE-NG Professional

### 3.6.1 Mandatory Prerequisites

**⚠ Mandatory Prerequisites:** Internet must be reachable from your PC and VMware. EVE ISO installation requires internet access to get updates and install the latest EVE-PRO version from the EVE-NG repository. DNS must work as well, to check it, do a named ping, for example ping [www.google.com](http://www.google.com)

#### 3.6.1.1 EVE Community disk space

You must have enough HDD space available. The main eve-ng--vg-root partition must have at least 10GByte free space while the boot partition must have at least 50Mbyte. To check how much space is available on your HDD, enter the following command into the CLI of EVE:

```
df -h
```

```
root@eve-ng:~# df -h
Filesystem              Size  Used Avail Use% Mounted on
udev                    7.9G   0    7.9G   0% /dev
tmpfs                   1.6G  22M   1.6G   2% /run
/dev/mapper/eve-ng--vg-root 71G   29G   38G  44% /
tmpfs                   7.9G   0    7.9G   0% /dev/shm
tmpfs                   5.0M   0    5.0M   0% /run/lock
tmpfs                   7.9G   0    7.9G   0% /sys/fs/cgroup
/dev/sda1               472M  155M  294M  35% /boot
root@eve-ng:~#
```

To free up space on the /boot, enter the following command, hit enter and confirm with “y”

```
apt autoremove
```

#### 3.6.1.2 Verify current EVE Community version

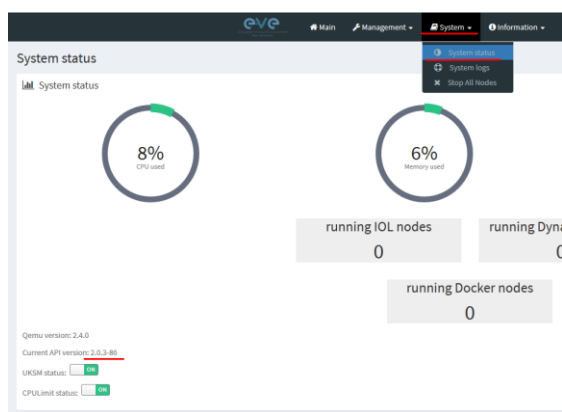
You have to make sure that your EVE Community Edition is of version (v2.0.3-86) or later. You must be able to reach the internet from your PC, VMware or Server.

To check your current EVE-NG version, enter the following command

```
dpkg -l eve-ng
```

```
root@eve-ng:~# dpkg -l eve-ng
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name          Version      Architecture Description
+++-+-----+-----+-----+-----+
ii  eve-ng          2.0.3-86    amd64        A new generation software for network
```

You can also verify your current EVE version from the WEB GUI. Top menu bar, System, System status.



You can check the version number of the newest currently available Community version on the EVE-NG Community site: <http://www.eve-ng.net/community>.

### 3.6.1.3 Steps to upgrade to the latest EVE Community version

Type the following commands below and hit enter after each.

```
apt update
```

In case of any Y/N prompt, answer Yes.

```
apt upgrade
```

In case of any Y/N prompt, answer Yes.

```
reboot
```

### 3.6.2 Upgrading EVE Community to EVE-NG Professional

**⚠ WARNING:** Please be ready to purchase a license when upgrading, as you will not be able to start any nodes until a valid license has been activated on your EVE.

To upgrade to EVE-NG Pro, issue the following commands into the CLI of EVE followed by enter.

```
apt update
```

```
apt install eve-ng-pro
```

```
reboot
```

After the reboot continue with the below commands, followed by enter

```
apt update
```

```
apt install eve-ng-dockers
```

```
reboot
```

Continue to the EVE-NG Pro license purchase section of the website and follow the remaining instructions.

## 3.7 Native telnet console management setup

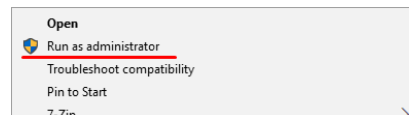
If you prefer to use a natively installed telnet client to manage nodes inside EVE, follow the steps below:

### 3.7.1 Windows Native Console

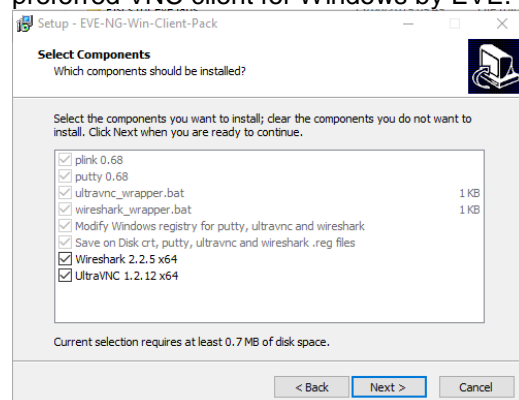
Step 1: Download the EVE Windows Client integration pack:

<http://www.eve-ng.net/downloads/windows-client-side-pack>

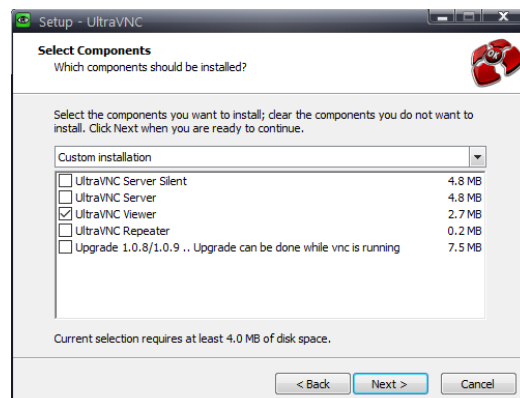
Step 2: Install it as administrator



Step 3: Leave the option for UltraVNC checked. UltraVNC is very tiny and the preferred VNC client for Windows by EVE.



Step 4: Continue with Next. When it asks to choose Ultra VNC Options, only leave the UltraVNC Viewer checked, the rest is not needed.





Step 5: Continue with Next and finish the installation.

By default, EVE Windows Client Integration will install **Putty** as your Telnet Client. The default location for the EVE Windows Client Integration software and .reg files is: "C:\Program Files\EVE-NG"

### Set the default telnet program manually in Windows 10. Example: SecureCRT

Step 1: Go to: Windows Settings/Apps/Default Apps/Choose Default Apps by Protocol

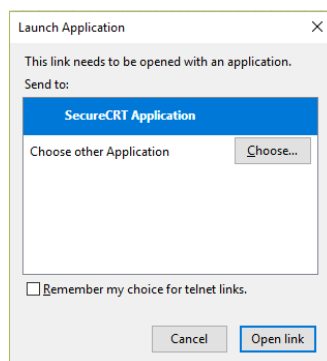
Step 2: Set your default Telnet program:

TELNET  
URL:Telnet Protocol



**NOTE:** The first time click on the type of link that is used to access a running node inside EVE via telnet, the browser will ask to choose the telnet program. If you have prepared your default telnet program with the instructions above, you have to choose your default Telnet program.

Example: Firefox browser:



Set your default application, check the box "Remember my choice telnet links" and click Open link

### 3.7.2 Linux Native Console

The steps below will show how to setup the native consoles pack for Linux Mint 18 (Ubuntu):

Step 1: Go to the EVE Linux Side integration pack download page:  
<http://www.eve-ng.net/downloads/linux-client-side>

Step 2: Open the link to GitHub  
<https://github.com/SmartFinn/eve-ng-integration>

### Step 3: Scroll down to the installation part

#### Installation

##### Ubuntu and derivatives

You can install eve-ng-integration from the official [PPA](#):

```
sudo add-apt-repository ppa:smartfinn/eve-ng-integration
sudo apt-get update
sudo apt-get install eve-ng-integration
```

### Step 4: Login as root to your Linux system and enter the commands below:

NOTE: An internet connection is required. Enter each command line below one after the other

```
sudo add-apt-repository ppa:smartfinn/eve-ng-integration
```

```
sudo apt-get update
```

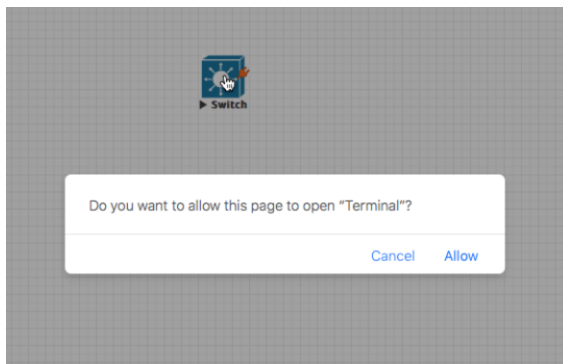
```
sudo apt-get install eve-ng-integration
```

⚠ For other Linux native console setup options please refer to:  
<https://github.com/SmartFinn/eve-ng-integration>

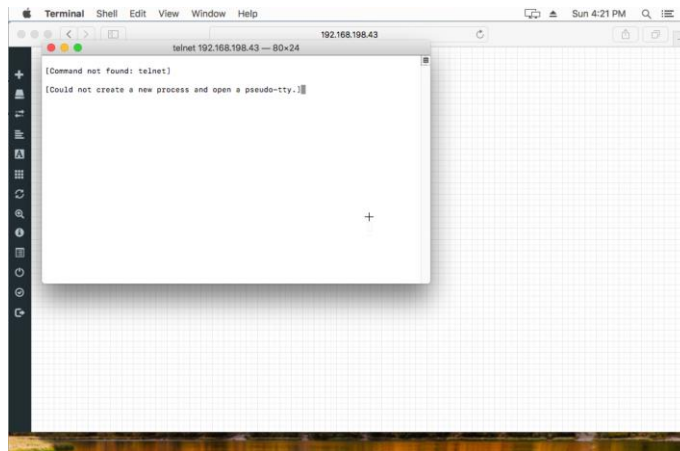
## 3.7.3 MAC OSX Native Console

Telnet Protocol:

OSX Sierra (and older releases) is ready to use for the telnet protocol.



For High Sierra, a telnet binary must be added (Apple decided to remove it and it is not present anymore on the latest OSX releases).



Procedure to install a previous telnet binary:

Download telnet and ftp binaries from eve:

[http://your\\_eve\\_ip/files/osx.zip](http://your_eve_ip/files/osx.zip) (to be updated) Please contact to EVE Live chat for this package.

Step 1: Reboot the Mac and hold down the “Command” and “R” key simultaneously after you hear the start-up chime, this will boot OSX into Recovery Mode

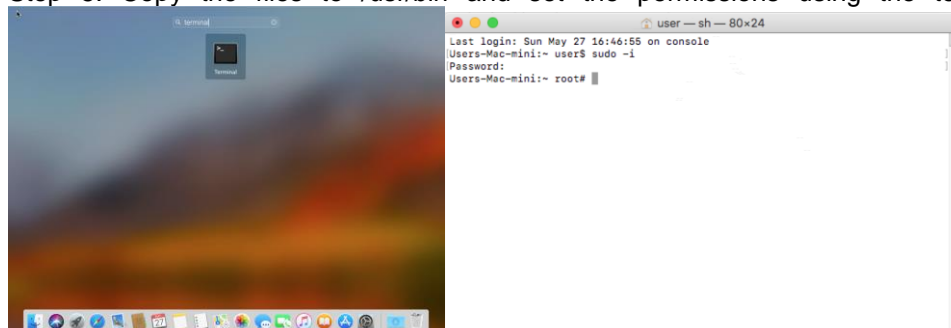
Step 2: When the “OSX Utilities” screen appears, pull down the ‘Utilities’ menu at the top of the screen instead, and choose “Terminal”

Step 3: Type the following command into the terminal then hit enter:

```
crutil disable; reboot
```

Step 4: When the OSX reboot is done, extract the osx.zip to your home directory

Step 5: Copy the files to /usr/bin and set the permissions using the terminal utility:



```
sudo -i
```

```
cp telnet ftp /usr/bin ; chmod 555 /usr/bin/telnet; chmod 555 /usr/bin/ftp
```

```
chown root:wheel /usr/bin/telnet /usr/bin/ftp
```

1. Reboot the Mac and hold down Command + R keys simultaneously after you hear the startup chime, this will boot OSX into Recovery Mode
2. When the “OSX Utilities” screen appears, pull down the ‘Utilities’ menu at the top of the screen instead, and choose “Terminal”

Type the following command into the terminal then hit enter:

```
crutil enable; reboot
```

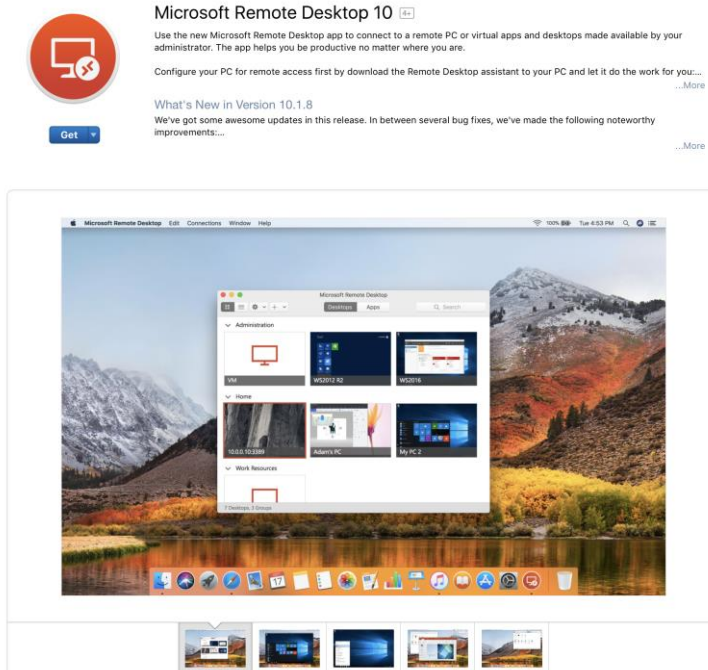
VNC Protocol:

Download Chicken of VNC at: <https://sourceforge.net/projects/chicken/files/Chicken-2.2b2.dmg/download>

Install and use it as default VNC Client

RDP Protocol:

Download and install the Microsoft Remote Desktop on the App Store:



## 3.8 Login to the EVE WEB GUI


Login to the EVE management UI:


[http://<your\\_eve\\_ip>/](http://<your_eve_ip>/)

Default user access:

**User: admin**

**Password: eve**

 **NOTE:** You can change your EVE WEB Admin password, please refer to section **6.3.1.2**

 **IMPORTANT NOTE:** You must prepare and upload at least a couple of images to start building your labs. Refer to section **12**

## 4 EVE-NG Community Update & Upgrade

⚠ **Prerequisites:** Internet access and working DNS on your EVE-NG is required.

Verify your internet reachability with named ping. Example: ping www.google.com

```
ping www.google.com
```

```
root@eve-ng:~# ping www.google.com
PING www.google.com (216.58.207.228) 56(84) bytes of data:
64 bytes from arn09s19-in-f4.1e100.net (216.58.207.228): icmp_seq=1 ttl=58 time=9.11 ms
64 bytes from arn09s19-in-f4.1e100.net (216.58.207.228): icmp_seq=2 ttl=58 time=19.5 ms
64 bytes from arn09s19-in-f4.1e100.net (216.58.207.228): icmp_seq=3 ttl=58 time=9.50 ms
64 bytes from arn09s19-in-f4.1e100.net (216.58.207.228): icmp_seq=4 ttl=58 time=9.56 ms
64 bytes from arn09s19-in-f4.1e100.net (216.58.207.228): icmp_seq=5 ttl=58 time=9.56 ms
```

If your ping is success, follow next step for update. If named ping has no success, please verify your DNS IP assigned for EVE or firewall. Some cases ping can be blocked by FW, but Internet and DNS are capable to make update/upgrade.

**OPTION** for bare EVE installations which has **bnx2x Broadcom Ethernet** drivers, please rewrite your driver to the newest linux-firmware:

```
sudo apt-get -o Dpkg::Options::="--force-overwrite" install linux-firmware
```

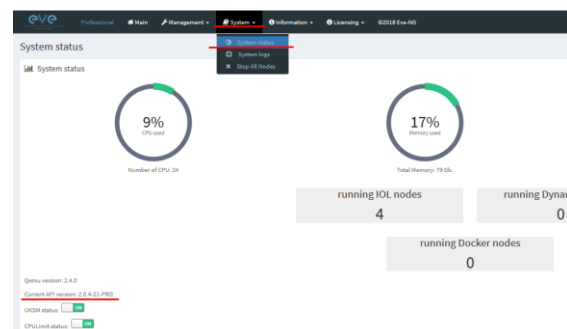
⚠ **IMPORTANT NOTE:** before you start your EVE Community update & upgrade, please free up your EVE Community from older kernel packages:

```
apt autoremove
```

### 4.1 EVE-NG Community Update

It is strongly recommended to keep your EVE-NG up to date. To update and upgrade, SSH to your EVE CLI.

To verify your current EVE-NG version, please follow “CLI diagnostic information display commands” in section **11.1.1**. You can verify your current EVE version from the System/System Status tab on the top menu of the WEB GUI as well.



The newest version of EVE-NG can be verified by checking the official website: <http://www.eve-ng.net/community/community-2>. The main page will display the latest EVE-NG version and correct steps to update.



Type the below commands followed by Enter

```
apt update
```

In case the prompt asks to confirm with Y/N, answer Yes.

## 4.2 EVE-NG Community Upgrade

Type commands followed by Enter

```
apt upgrade
```

In case the prompt asks to confirm with Y/N, answer Yes.

**! IMPORTANT NOTE:** If you are upgrading EVE Community from older version, the installation may ask you to confirm additional! Information:

```
Configuration file '/etc/issue'
==> Modified (by you or by a script) since installation.
==> Package distributor has shipped an updated version.
What would you like to do about it ? Your options are:
    Y or I : install the package maintainer's version
    N or O : keep your currently-installed version
    D      : show the differences between the versions
    Z      : start a shell to examine the situation
The default action is to keep your current version.
*** issue (Y/I/N/O/D/Z) [default=N] ? _
Progress: [ 0%] [.....]
```

Answer for prompt above is "N"

```
| Configuring grub-pc |
A new version (/tmp/grub.tj7zRCMt3z) of configuration file /etc/default/grub is available,
but the version installed currently has been locally modified.

What do you want to do about modified configuration file grub?

    install the package maintainer's version
    keep the local version currently installed
    show the differences between the versions
    show a side-by-side difference between the versions
    show a 3-way difference between available versions
    do a 3-way merge between available versions (experimental)
    start a new shell to examine the situation

                                <Ok>
```

Answer for grub-pc version is: **"Keep the local version currently installed"**

After the completion of the update and upgrade, reboot your EVE Server. Type the following command and hit enter.

```
reboot
```



## 5 Types of EVE management consoles

**⚠ IMPORTANT NOTE:** EVE Console TCP ports. EVE Community uses a static port range between 32678-40000.

Formula is =  $32768 + 128 * \text{POD} + 1$  ->  $32768 + 128 * \text{POD} + 128$  POD: user id ( admin = 0 )

Exemple: you got admin (POD 0) + 2 users ( POD 1, POD 2 )

$32768 + 128 * 0 + 1$  (First port for POD0) ->  $32768 + 128 * 2 + 128$  (Last port of POD 2 ) = 32769 -> 33152

Port per user pod:

POD	First Port	Last Port
0	32769	32896
1	32897	33024
2	33025	33152
3	33153	33280
4	33281	33408
5	33409	33536
6	33537	33664
7	33665	33792
8	33793	33920
9	33921	34048
10	34049	34176

EVE Community supports two different console types.

### 5.1 Native console



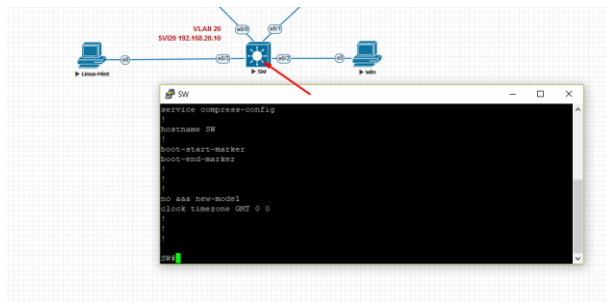
EVE Native console option requires locally installed software to access your lab nodes. To use the Native console option, you must have Administrator rights on your PC and ensure the TCP port range 32768-40000 is not blocked by a firewall or antivirus software. (See table above)

#### 5.1.1 Native Console: telnet

**Windows OS:** You can use your preferred telnet program like Putty, SecureCRT or others.

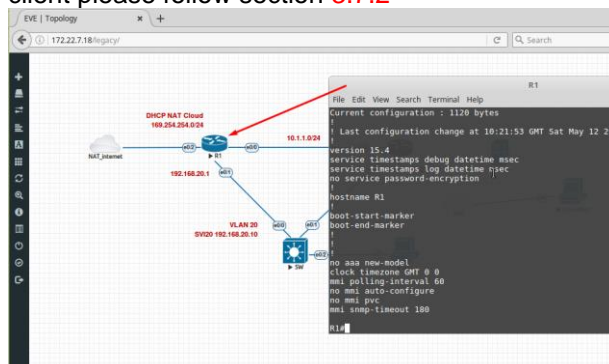
Example: Putty as native telnet client on Windows.

To setup Windows native telnet client please follow section [3.7.1](#)



**Linux OS:** You can use your preferred telnet program like the Native Terminal, SecureCRT, or others.

Example: Telnet client from the native terminal on Linux Mint. To setup Linux native telnet client please follow section [3.7.2](#)



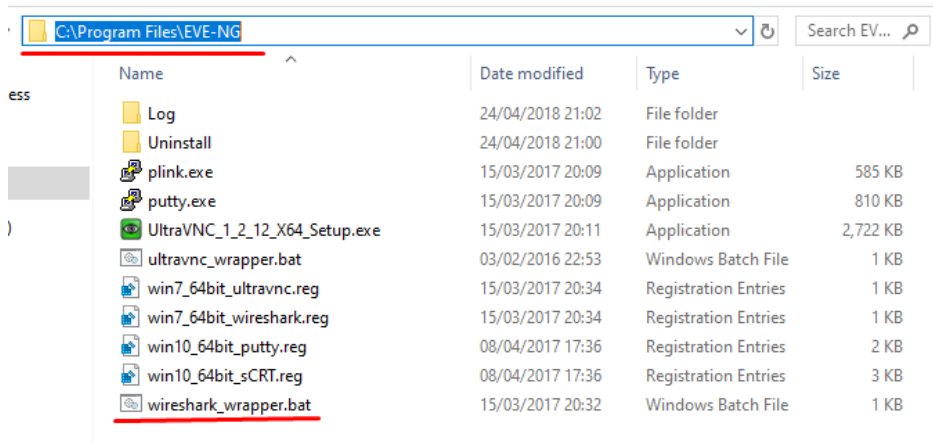
**MAC OSX:** You can use your preferred telnet program like the native Terminal, SecureCRT, or others.

Example: Telnet client from the native terminal on MAC OSX. To setup MAC OSX native telnet client please follow section [3.7.3](#)

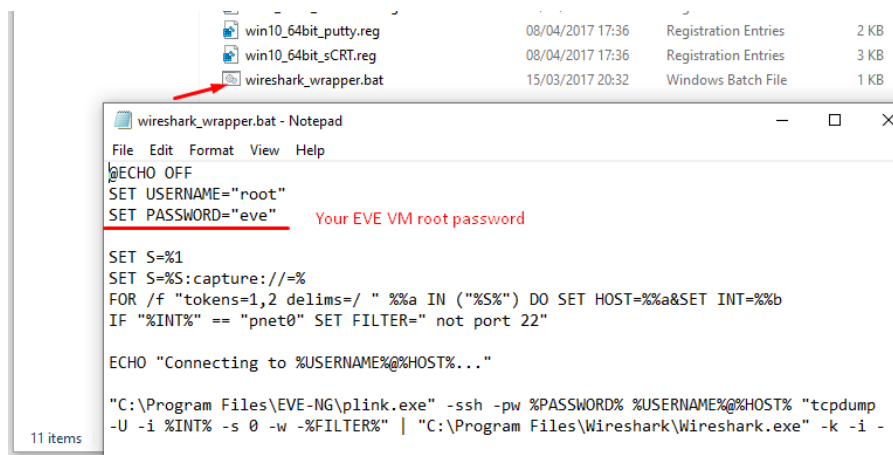
### 5.1.2 Native Console: Wireshark

EVE Community has an integrated connection with natively installed Wireshark software on your PC. This allows live captures with Wireshark installed on the client machine. The EVE will capture natively installed Wireshark session.

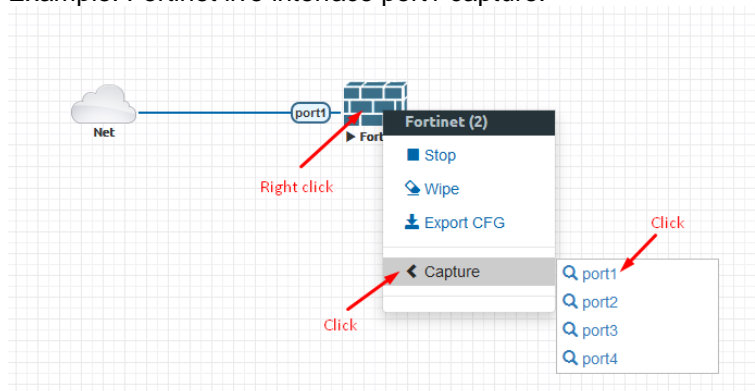
**⚠ IMPORTANT NOTE:** Make sure you have installed Wireshark and EVE-NG client pack. It is strongly recommended if your Wireshark software is installed at your PC default location.

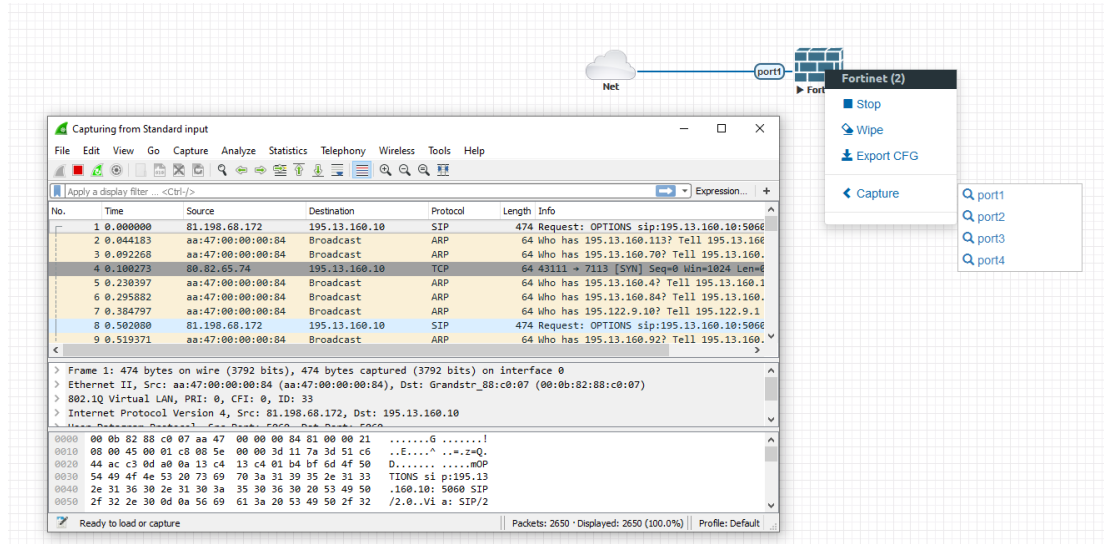


**IMPORTANT NOTE:** The Wireshark wrapper located in your PC station must match your EVE root password. Edit your EVE root password in the wireshark\_wrapper.bat, if you had changed it during install.



Example: Fortinet live interface port1 capture.





### 5.1.3 Native Console: VNC

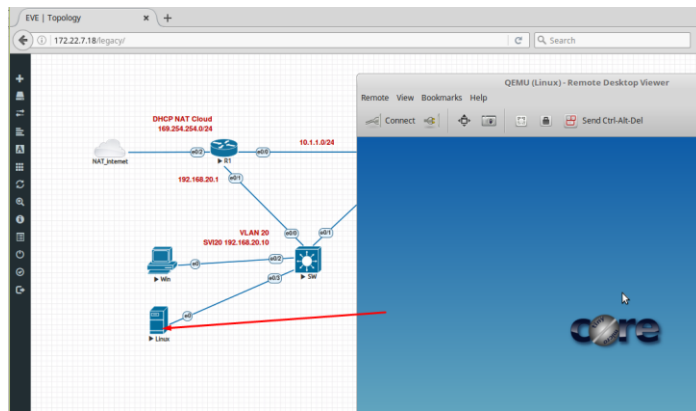
**Windows OS:** Recommended and tested is UltraVNC but any other compatible one can be used.

Example: UltraVNC as Native VNC client on Windows. To setup Windows native VNC client please follow section [3.7.1](#)



**Linux OS:** Remote Desktop Viewer for VNC Sessions.

Example: Remote Desktop Viewer for VNC sessions on Linux Mint. To setup Linux native Remote Desktop Viewer please follow section [3.7.2](#)



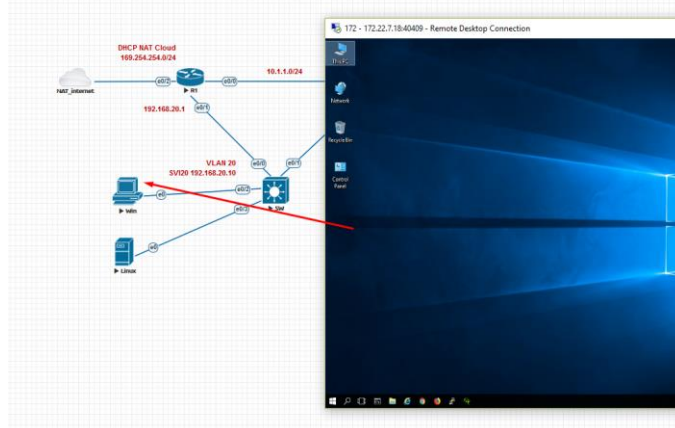
**MAC OSX:** Preferred VNC program: Chicken VNC

Example: Chicken VNC as Native VNC client on MAC OSX. To setup MAC OSX native RDP Viewer client please follow section [3.7.3](#)

#### 5.1.4 Native Console: RDP

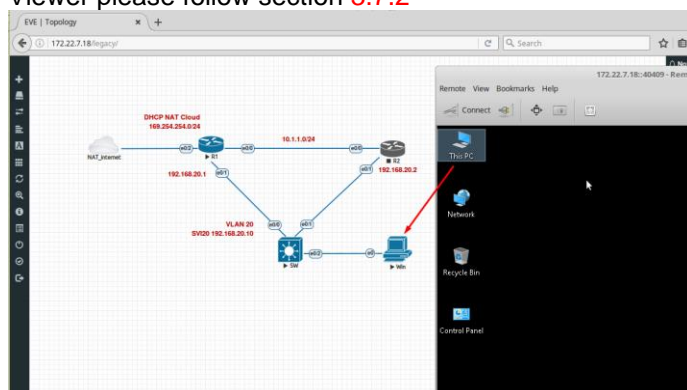
**Windows OS:** Windows Native RDP.

Example: Windows RDP session to Win10 host in the lab.



**Linux OS:** Remote Desktop Viewer as RDP session to lab Win10 host.

Example: RDP session to Win10 host in the lab. To setup Linux native Remote Desktop Viewer please follow section [3.7.2](#)



**MAC OSX:** Remote Desktop Viewer as RDP session to lab Win10 host.

Example: RDP session to Win10 host in the lab.

To setup MAC OSX native RDP Viewer client please follow section [3.7.3](#)

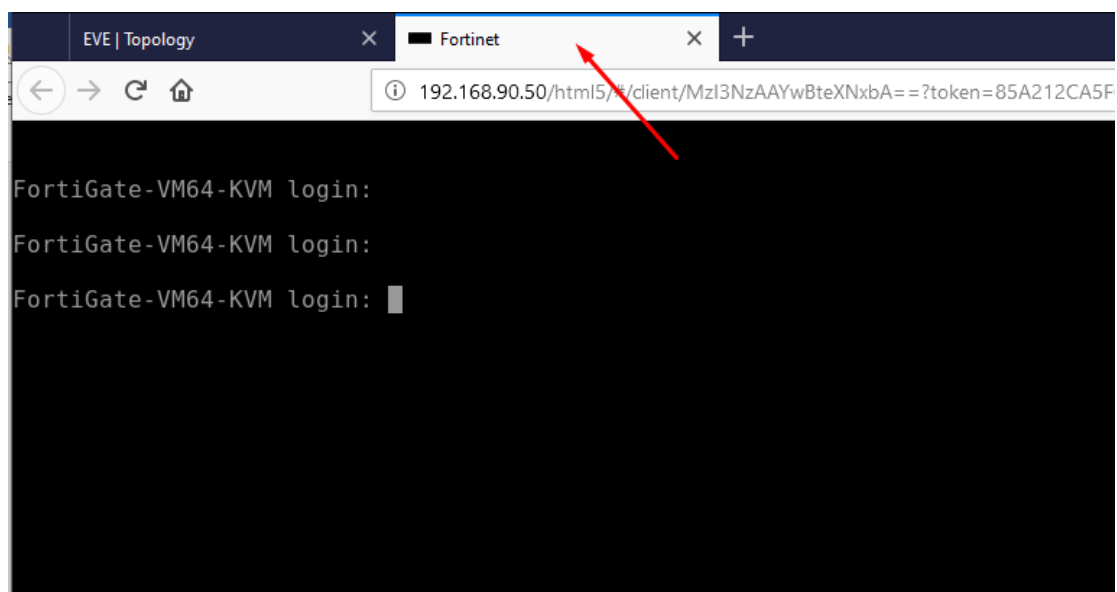
## 5.2 HTML5 console



The EVE Community HTML5 console provides a clientless solution for managing labs and node sessions. Management is achieved directly through the browser by opening new browser window. It is very convenient for Corporate users with restricted Workstation permissions (Locked Telnet, vnc, rdp).

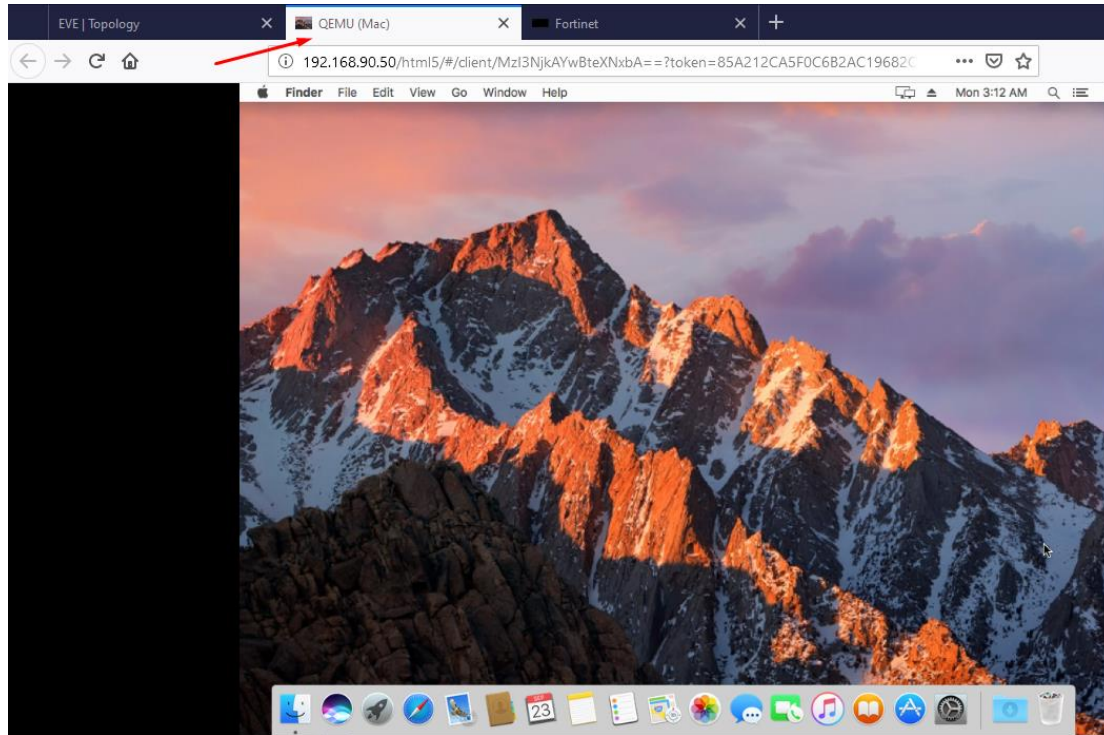
### 5.2.1 HTML5 Console: Telnet

HTML5 Telnet console opens telnet sessions in the new browser window.



## 5.2.2 HTML5 Console: VNC

HTML5 VNC opens VNC sessions in the new browser window.



## 5.2.3 HTML5 Console: RDP for Windows

HTML5 RDP console opens RDP sessions in the new browser window. For Windows 7, Windows Server 2008.

During Windows machine image installation, you can allow RDP sessions to be used for access to Windows host. If your Windows host has enabled RDP session, edit windows node settings and set RDP console. Give time to boot this node and RDP session will opens in new browser tab.

### ADD A NEW NODE

Template

Windows

Number of nodes to add

1

Image

win-7-x86-IPCC

Name/prefix

Win

Icon

Desktop.png

UUID

CPU Limit

☐

CPU

1

RAM (MiB)

4096

Ethernets

1

QEMU Version

tpi(2.0.2)

QEMU Arch

tpi(x86\_64)

QEMU Nic

tpi(e1000)

QEMU custom options

-machine type=pc-1.0,accel=kvm -cpu qemu64,+fsgsbase -vga std -usbdevice tabl

Startup configuration

None

Delay (s)

0

Console

rdp

Left

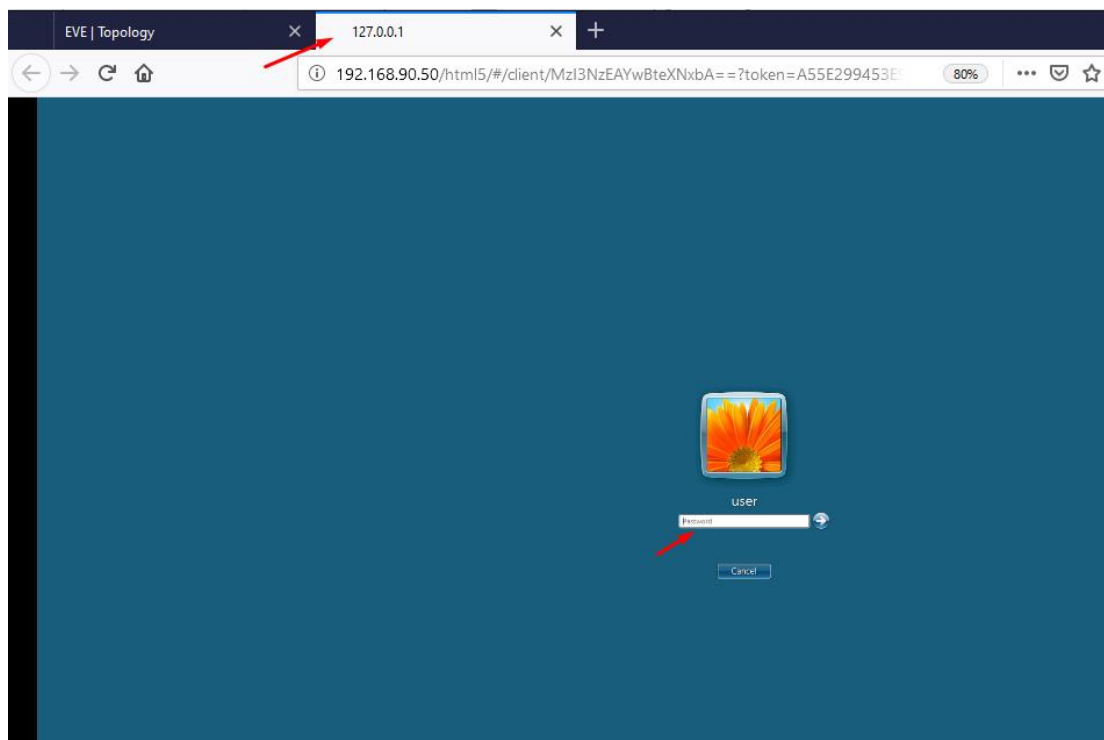
811

Top

183

Save

Cancel

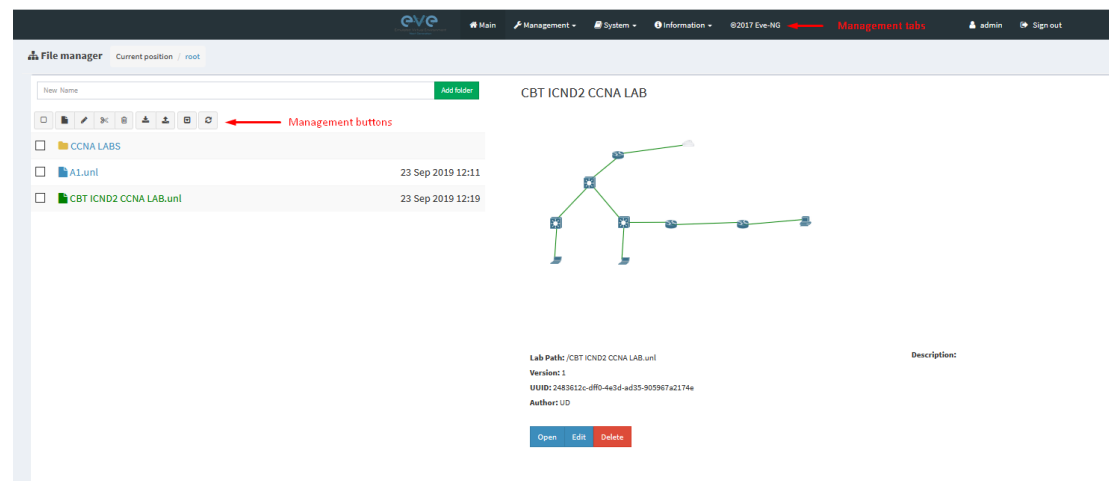




## 6 EVE WEB GUI Management





### 6.1 EVE Management Page






The Main EVE management window



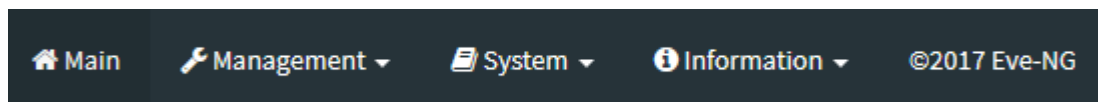
#### 6.1.1 Management buttons

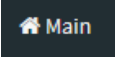
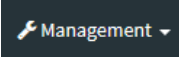
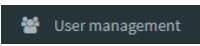
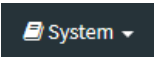


Button	Description
	Select All or Deselect All folders or labs in the EVE tree
	Create/Add new Lab
	Change selected item name. To use this option, please select the folder or lab that you want to rename. You must not rename the Shared folder, the Users folder or any folder inside the Users folder.
	Move selected item(s) to a different location. To use this option, please select the folder(s) or lab(s) that you want to move.

	Delete selected folders or labs. You must not delete the Shared folder, the Users folder or any folder inside the Users folder.
	Import an EVE lab or lab folder from a previous export. Import file must be in .zip format
	Export EVE lab or folder. Select folder(s) and/or labs you wish to export and select this option. The export is saved to your local PC in .zip format and is ready to import to another EVE.
	Toggle the sorting folders and labs between alphabetical and last edit date (ascending/descending cannot be changed currently).
	Refresh current folder content

### 6.1.2 Management tabs



<b>Tab</b>	<b>Description</b>
	Returns back to the EVE Home Management screen.
 	Management dropdown, opening the management submenu.  Management submenu, refer to sections: <a href="#">6.3</a>
	System dropdown.  System submenu, refer to section <a href="#">6.4</a>

<ul style="list-style-type: none"> <li>System status</li> <li>System logs</li> <li>Stop All Nodes</li> </ul>	
<div>Information</div> <ul style="list-style-type: none"> <li>About</li> <li>Forum</li> <li>YouTube Channel</li> <li>Help on EVE-NG LiveChat</li> </ul>	<p>Information dropdown</p> <p>Information submenu, for details see section 6.5</p>

## 6.2 Folders and Lab files management

This section will explain how to manage folders and labs on the EVE management page.

### 6.2.1 Folders Management

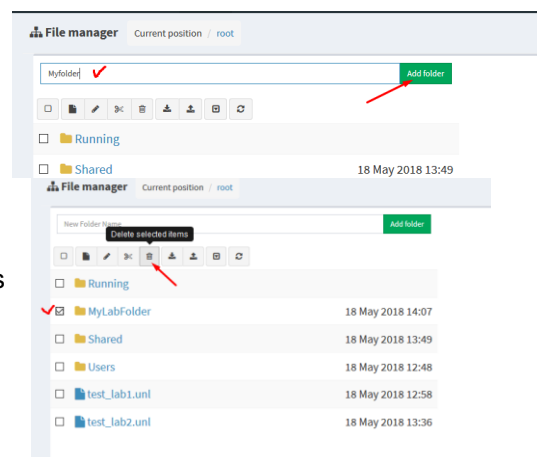
#### 6.2.1.1 Create folder

Type the new folder name and click “Add Folder”

#### 6.2.1.2 Delete folder

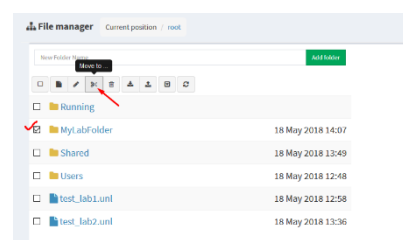
Select the folder you wish to delete and press Delete.

**NOTE:** All folder content will be deleted as well.

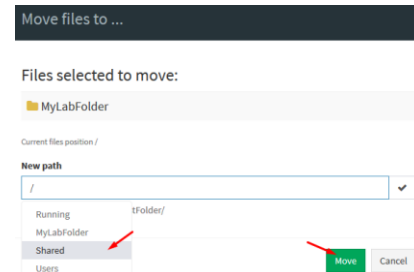


#### 6.2.1.3 Move Folder

Select the folder you wish to move and press the Move to button.

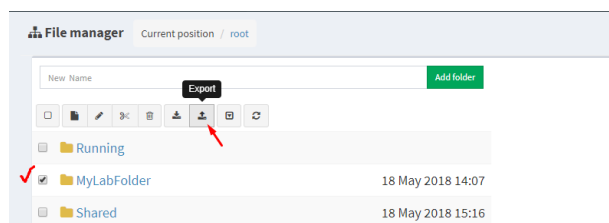


Type and select the target destination for your folder and confirm by clicking on Move.

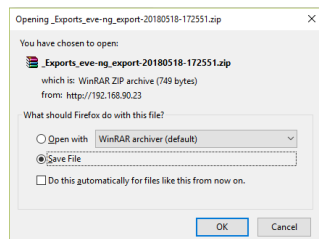


#### 6.2.1.4 Export Folder

Select the folder(s) you wish to export from your EVE and press Export.



Save the exported file as .zip to your local PC. The exported zip file is ready to import to another EVE instance.

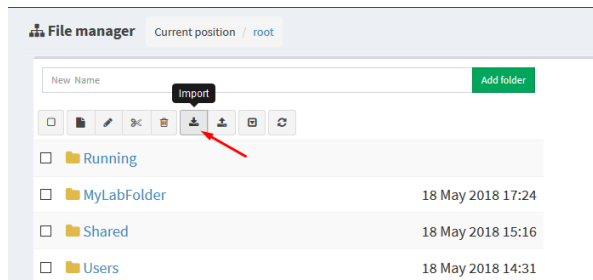


If your browser is set to save downloaded files to a default directory, your exported file will be saved in the browsers default downloads directory.

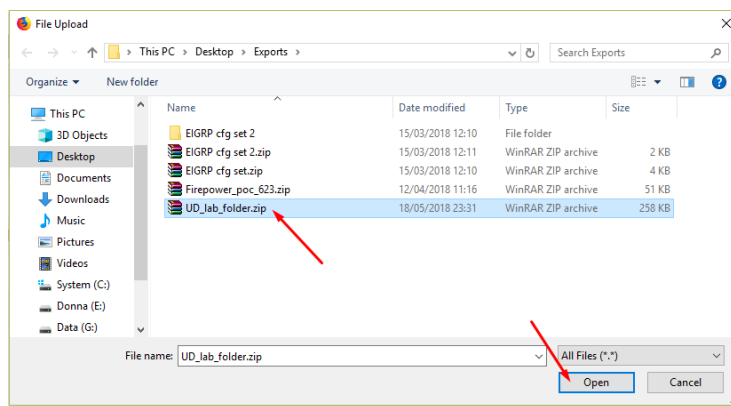
#### 6.2.1.5 Import Folder

**⚠ IMPORTANT:** Importable file **MUST** be in .zip format, do **NOT** unzip the file.

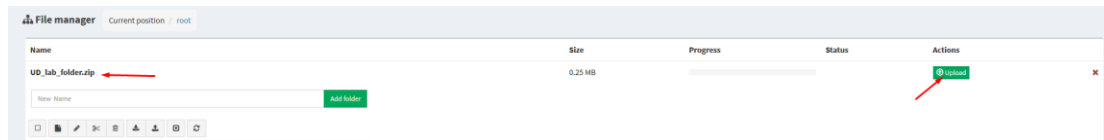
Step 1: Press the Import button.



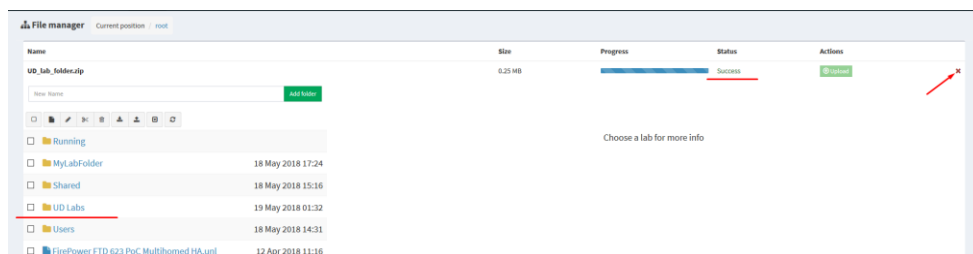
Step 2: Choose the zipped file that contains EVE folders with labs.



Step 3: Press the Upload Button

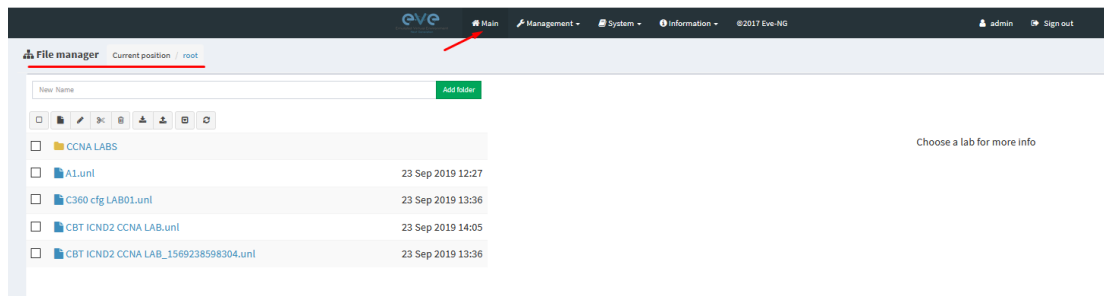


Step 4: After you made sure your folder is imported and has all its content (labs), you can close the upload session.



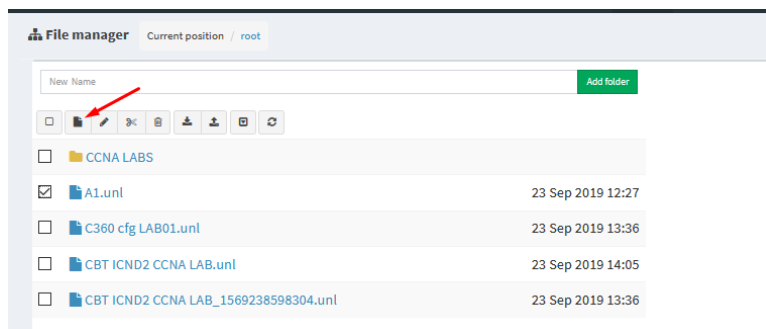
## 6.2.2 Lab files Management

You can manage created labs from the main EVE file manager window



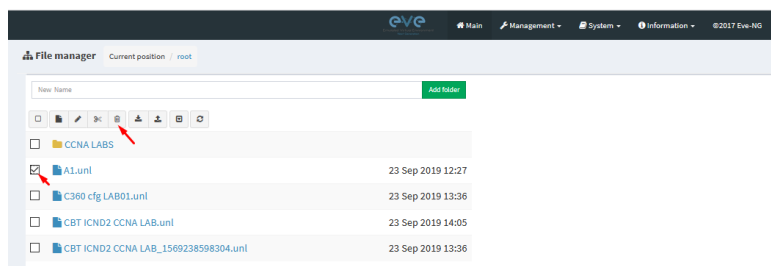
### 6.2.2.1 Create Lab

Click on the New Lab button and refer to section [8.1](#)



### 6.2.2.2 Delete Lab

Select the lab or labs you wish to delete and then press the Delete button

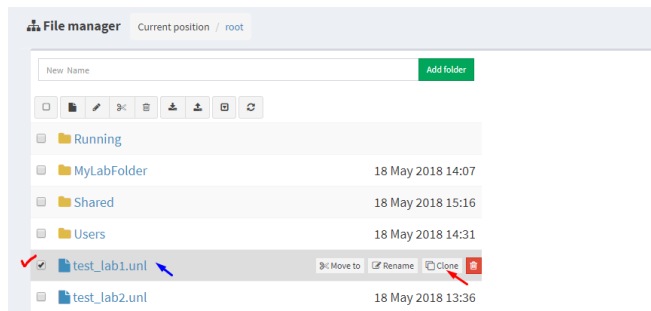


### 6.2.2.3 Clone Lab

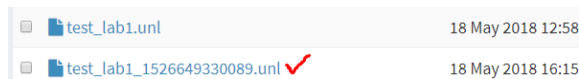
The cloning feature provides a very convenient way to duplicate original labs to share with others or base another lab on it.

Cloned labs will copy exported configs (on supported nodes) but will not copy saved states/configurations in Qemu nodes like Windows hosts, Cisco ISE, or other Qemu nodes that are not supported by the export config feature. Please refer to section [10.1](#) for more information on configuration export for labs.

Step 1: Select the lab you wish to clone and move the mouse pointer (blue) to that lab, an extra option will appear. Click on Clone.



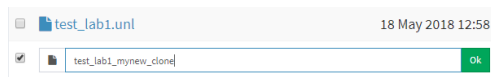
Step 2: Your lab will be cloned with all your exported configurations or configuration sets with a new name.



Step 3: The lab has been cloned and can be renamed to your liking. Move the mouse pointer to the cloned lab and choose Rename.

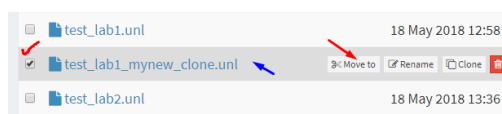


Step 4: Rename it, and click OK to confirm

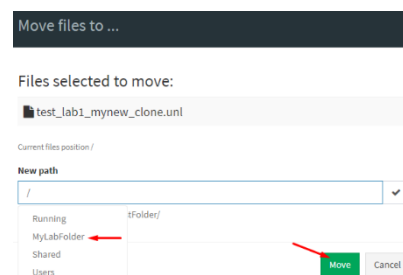


#### 6.2.2.4 Move Lab

Step 1: Select the lab you wish to Move and move the mouse pointer (blue) to that lab, an extra option will appear. Choose Move to.

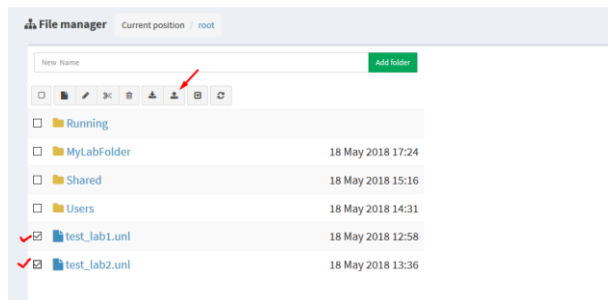


Step 2: Type the path to the new destination and confirm by clicking Move

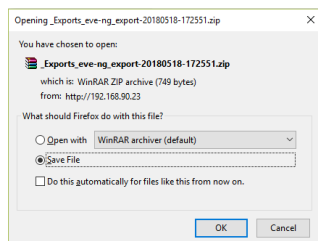


#### 6.2.2.5 Export Lab

Select the Lab(s) you wish to export from your EVE Server and press Export.



Save exported file as .zip to your local PC. The exported zip file is ready to import into another EVE.

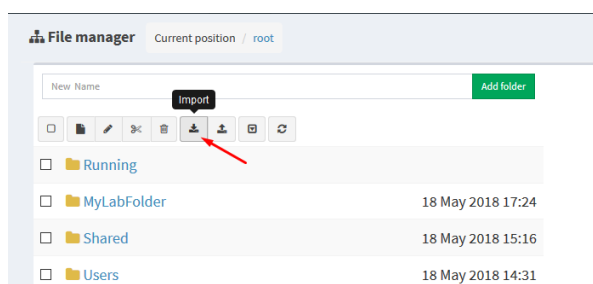


If your browser is set to save downloaded files to default directory, your exported file will be saved in the browsers default downloads directory.

### 6.2.2.6 Import Labs

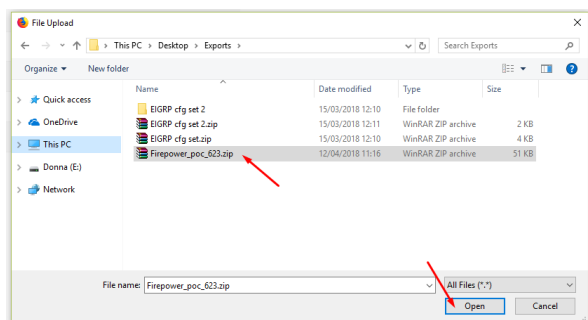
**⚠ IMPORTANT:** Importable file **MUST** be in .zip format, do **NOT** unzip the file.

Step 1: Press the Import button.

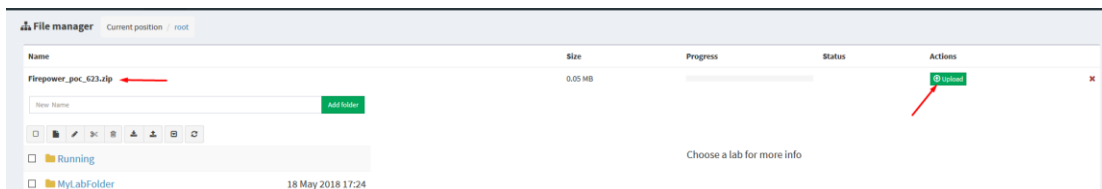


Step 2: Choose the zipped file which contains the EVE labs.

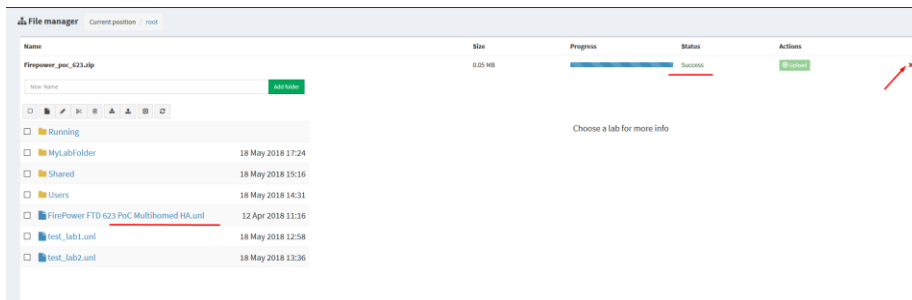




Step 3: Press the Upload Button

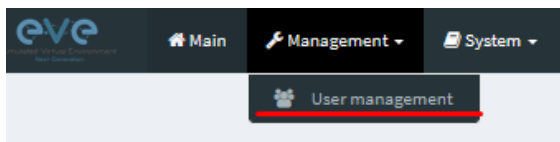


Step 4: After you made sure your lab is imported, you can close the upload session.



## 6.3 EVE Management Dropdown Menu

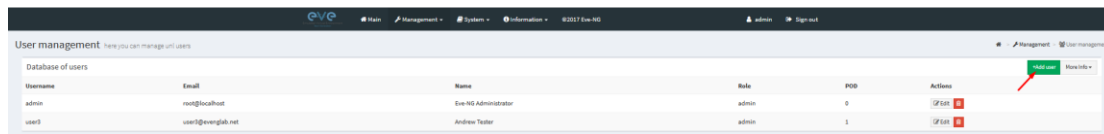
### 6.3.1 EVE User management



The User Management page, under the Management dropdown, will allow Admin accounts to manage other user accounts.

#### 6.3.1.1 Creating a new EVE User

Step 1: Open the User management submenu. Management>User management and click Add user



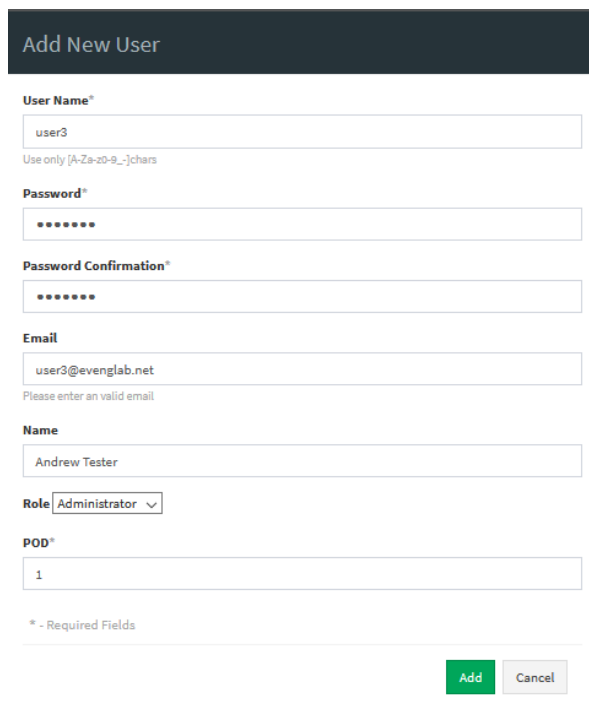
User management here you can manage all users

Database of users

Username	Email	Name	Role	POD	Actions
admin	root@localhost	Eve-NG Administrator	admin	0	<a href="#">Edit</a> <a href="#">Delete</a>
user3	user3@evenglab.net	Andrew Tester	admin	1	<a href="#">Edit</a> <a href="#">Delete</a>

[Add user](#) [New table](#)

Step 2: The Add New User management window will pop up. Fill in the main information about your EVE user



**Add New User**

**User Name\***

Use only [a-zA-z0-9\_~]chars

**Password\***

**Password Confirmation\***

**Email**

Please enter an valid email

**Name**

**Role** Administrator ▾

**POD\***

\* - Required Fields

[Add](#) [Cancel](#)

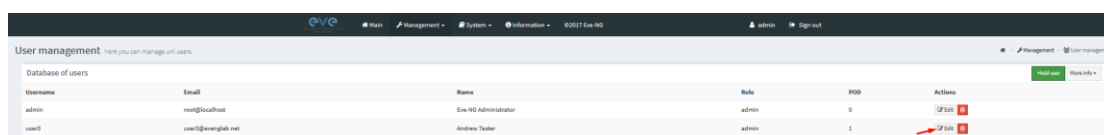
Step 3: The POD number is a value assigned to user accounts automatically. POD numbers are like user profiles inside of EVE and are a unique value for every user Think of PODs like a virtual rack of equipment for each user. Admins can assign a preferred number between 1-128. Please keep POD numbers unique between users!

Step 4: Press ADD



### 6.3.1.2 Edit EVE User

Step 1: Open the User management submenu. Management -> User management and choose which user you want to edit.



User management here you can manage all users

Database of users

Username	Email	Name	Role	POD	Actions
admin	root@localhost	Eve-NG Administrator	admin	0	<a href="#">Edit</a> <a href="#">Delete</a>
user3	user3@evenglab.net	Andrew Tester	admin	1	<a href="#">Edit</a> <a href="#">Delete</a>

[Add user](#) [New table](#)

Step 2: The Edit user management window will pop up. Now you can edit necessary user information, roles, or access time. Confirm settings by pressing Edit at the bottom of the window.

## Edit User

User Name\*

user3

Password\*

••••••••••••••••

Password Confirmation\*

••••••••••••••••

Email

user3@evenglab.net

Please enter an valid email

Name

Andrew Tester

Use only [A-Za-z0-9\_~] chars

Role

Administrator ▾

POD\*

1

\* - Required Fields

Edit

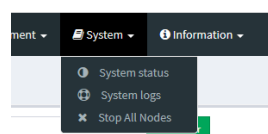
Cancel

### 6.3.1.3 User monitoring

There is a dropdown menu next to “Add User” called “More Info” that can provide additional information about your users. Click the checkbox next to the relevant information that you would like displayed. Additional columns will be added for each checkbox that is chosen.

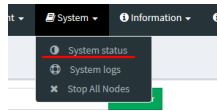
User management									
<b>User management</b> here you can manage all users									
Database of users									
Username	Email	Name	Role	Last session time	Last session ip	Current folder	Current tab	PDR	Action
admin	root@localhost	Eve-NG Administrator	admin	23 Sep 2019 12:40:48	10.6.6.13	/	N/A	0	<input checked="" type="checkbox"/> Last session time <input checked="" type="checkbox"/> Last session ip
user3	user3@eve-nglab.net	Andrew Tester	admin	N/A	N/A	N/A	N/A	1	<input checked="" type="checkbox"/> Current folder <input checked="" type="checkbox"/> Current tab

## 6.4 EVE System Dropdown menu

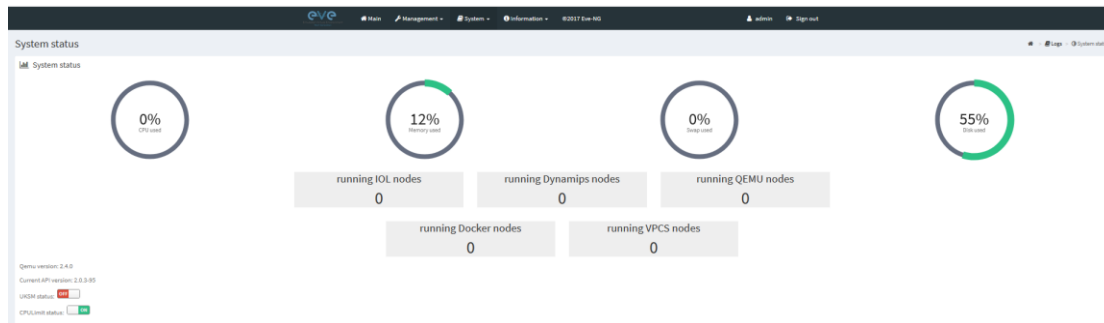


The EVE System dropdown contains the system utilization status, log files, and an option to stop all running nodes on the server.

## 6.4.1 System status



The System Status page, under the System Dropdown, will show EVE server resource utilization, the number of running nodes per template, current running versions of EVE and Qemu, and the current status of the UKSM and CPU Limit options.



UKSM – “Ultra KSM (kernel same-page merging) is a Linux kernel feature that allows the KVM hypervisor to share identical memory pages among different process or virtual machines on the same server.” It can be disabled globally for EVE on this page. It is recommended to keep UKSM **enabled**.

Template  
Cisco vIOS

Number of nodes to add  
1

Image  
vios-adventerprise9-m-15.6.2T

Name/prefix  
vIOS

Icon  
Router.png

UUID

CPU Limit ☐ ☒

CPU  
1

RAM (MB)  
1024

Ethernets  
4

CPU Limit – CPU limit is used to limit CPU overloads during the nodes run time. It acts like a smart CPU usage option. If a running node reaches 80% CPU utilization, the CPU Limit feature throttles CPU use for this node to 50% until process usage drops under 30% for a period of 1 minute.

It is recommended to keep the Global CPU Limit option enabled.

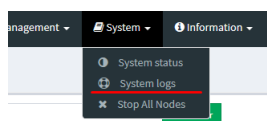
CPU Limit can be turned for individual nodes in a lab. EVE node templates are set, by default, with the recommended CPU limit settings. An Unchecked CPU Limit option means that this node will boot without CPU

limit.

Reference:

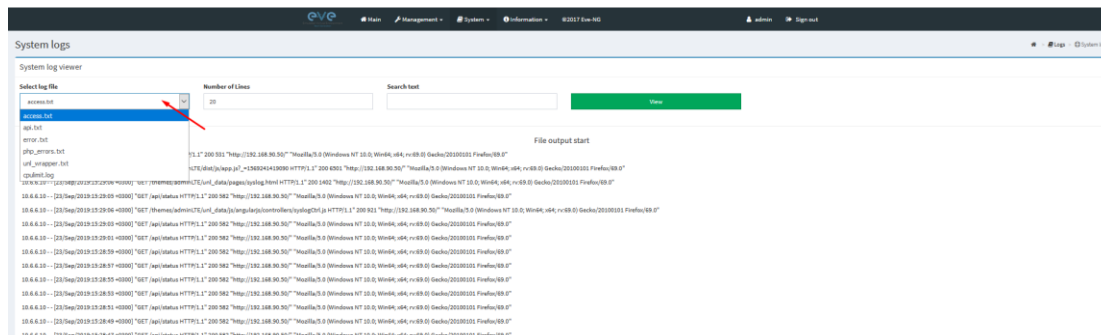
<https://searchservirtualization.techtarget.com/definition/KSM-kernel-samepage-merging>

## 6.4.2 System logs

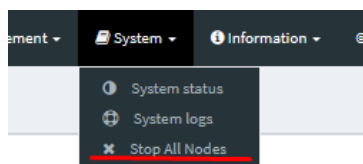


The System logs page, under the System Dropdown, will display EVE server log information

In the menu you can select a specific log file for inspection.

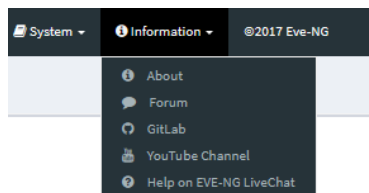


### 6.4.3 Stop All Nodes



The Stop All Nodes option, under the System Dropdown, is an option that stops all running nodes on the EVE server. This option is accessible only by Admin users.

## 6.5 EVE Information Dropdown menu

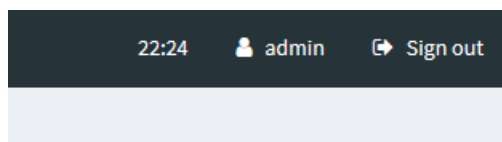


The Eve Information Dropdown contains links to the EVE Website, EVE forum, EVE YouTube channel, and the web-based EVE Live Help chat.

To join the EVE Forum, in order to make posts or download materials, a forum user account must be created.

To join the EVE Live Chat for support, please use your Google account for access, or create a new user account for this chat. Please note the forum and live chat use separate user accounts.

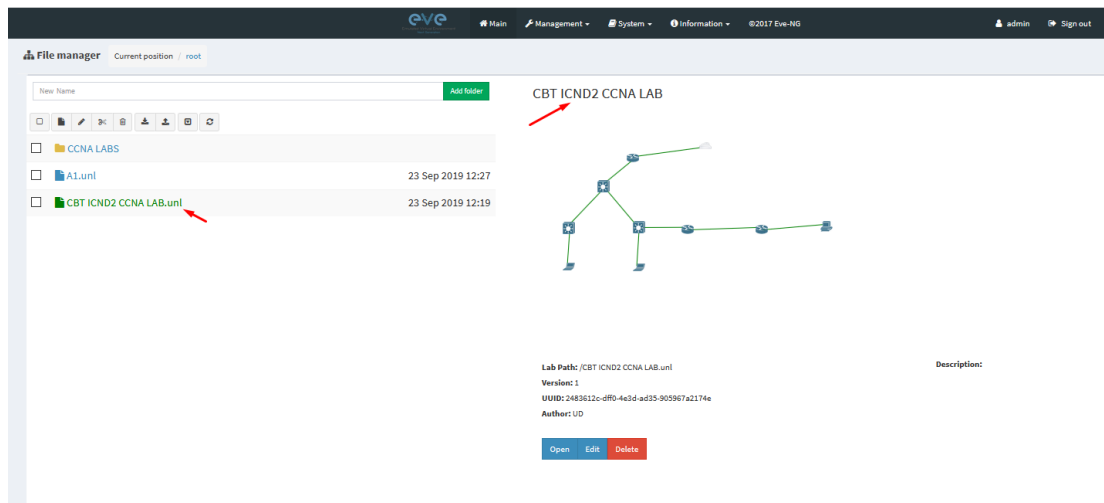
## 6.6 Other Tab line info



Other items on the top menu are: Real-time clock, a shortcut to edit the currently logged in user, and a sign-out button.

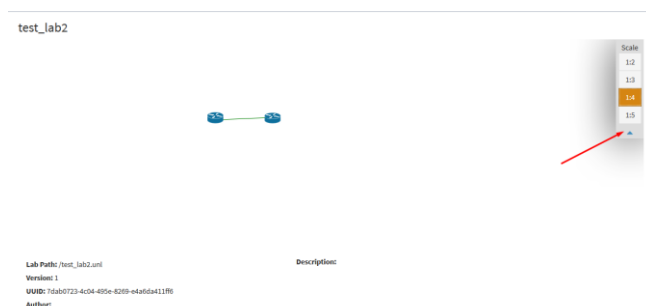
## 6.7 Lab preview and global settings

Once you click on a lab in the folder tree, a main window on the right side will display schematic content of the lab as well as lab management options like open, edit, and delete.






### 6.7.1 Lab preview window

The lab preview window displays the schematic position of nodes and their connectivity. The Scale option allows you change the lab preview size.



### 6.7.2 Lab preview buttons

In the lab preview, these buttons allow you to manage the selected lab.

Button	Description
	Opens the Lab to the Topology Canvas
	Opens the Labs Global Settings. Refer to section 6.7.4 for more info.
	Deletes the lab

## 6.7.3 Lab preview information

Description, version, UUID etc.

**Lab Path:** /test\_lab1.unl

**Version:** 12


**UUID:** 95692558-5acb-4308-ab66-64f9b40bd31f

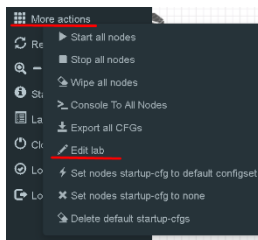
**Author:** John Tester

**Description:**

Here is short description of Lab

## 6.7.4 Lab Global Settings

Lab Global Settings Page is opened when you click on the  Edit button below the Lab preview window or from the Topology page Side bar:




This page allows you to fill out important information about the lab. The red numbers in the picture correlate with the numbers listed below

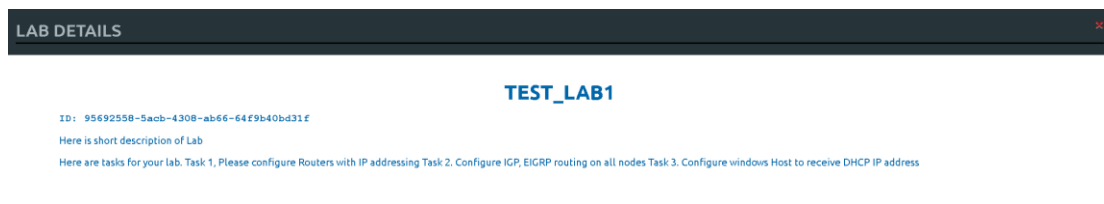
1. Lab name.
2. Version: Version numbers allow a lab author to assign a value to a unique state of a lab. Increase the number to correspond to new developments in the lab. If left unfilled, EVE will assign a value of 1 automatically.
3. Author: You can add a lab author name in this field
4. Config Script Timeout: It is the value in seconds used for the “Configuration Export” and “Boot from exported configs” operations. Refer to section **10.3** for more information.

5. Description: In the Description field you can write a short description of the lab.

6. Tasks: In the Tasks field you can write the task for your lab.

 Lab details

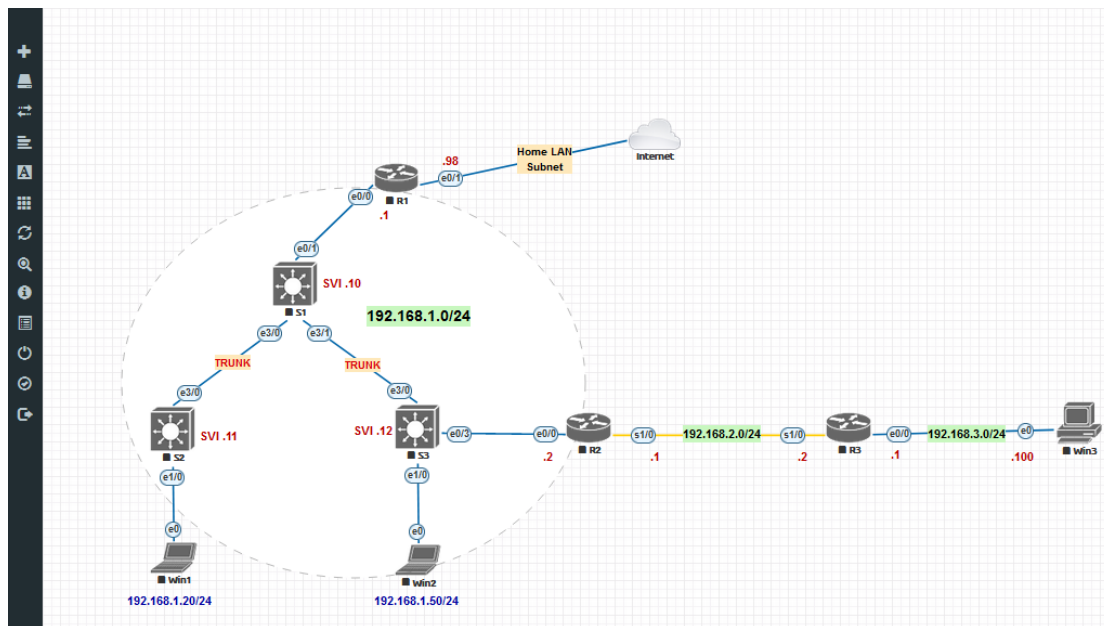
The Lab details window can be opened from the Topology Canvas page sidebar during labbing, to read the Tasks for the lab.





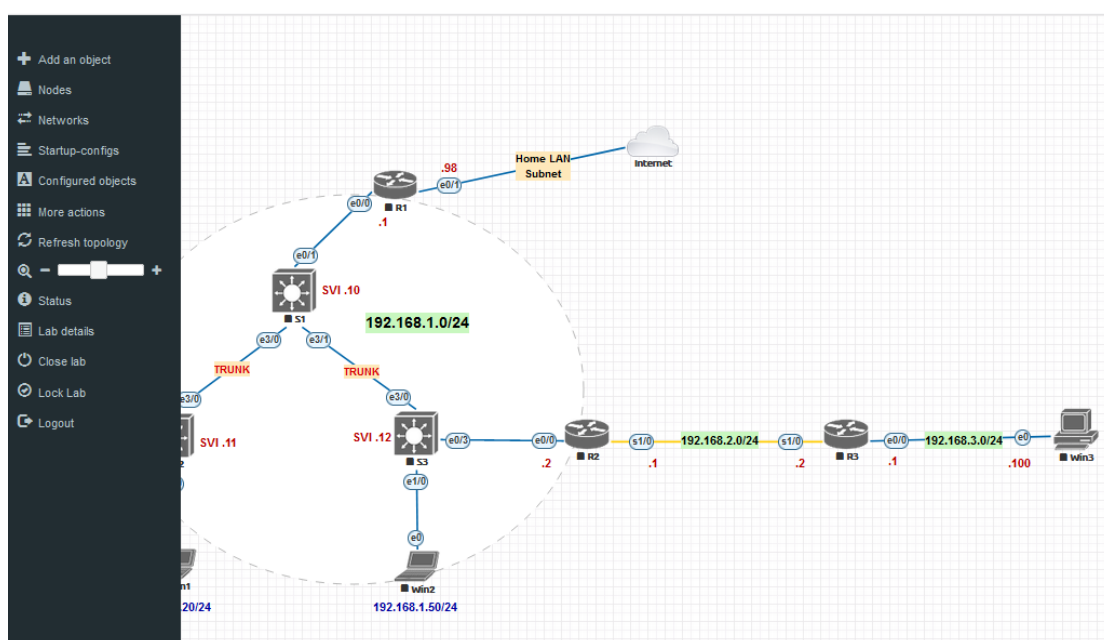
## 7 EVE WEB Topology page

Once you open a lab, the topology page for that lab will open.



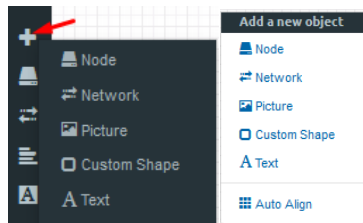
### 7.1 Side bar functions

Move your mouse pointer over to the left on top of the minimized sidebar to expand the interactive sidebar as shown in below screenshot



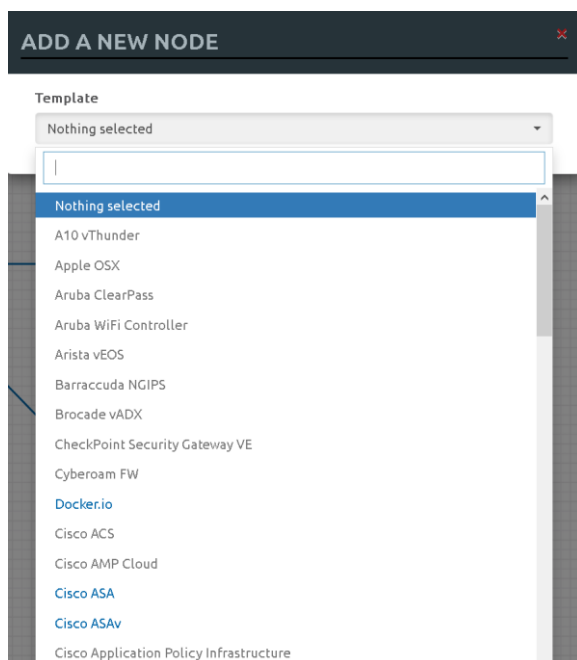
## 7.1.1 Add an object

The “Add an object” menu can be accessed in two different ways, from the sidebar and by right-clicking on the Topology Page



### 7.1.1.1 Node object

The Node object opens the “Add a new node” window. Only nodes that appear blue in the dropdown menu can be added. A grey image name signifies that you have not yet properly uploaded an image to the proper folder. A blue image name means that at least one image exists in the proper folder for this template.



### 7.1.1.2 Network object

The Network object opens the “Add a new network” window. This function is used to add any kind of network (Cloud, Bridge). For details on these, please refer to section [9](#)

ADD A NEW NETWORK

Number of networks to add

Name/Prefix

Type

bridge

Left

Top

Save

Cancel

### 7.1.1.3 Picture object

The picture object opens the “Add Picture” window and allows you to upload custom topologies in jpg or png format. After uploading, you can edit these pictures and map selected areas to nodes from the topology to use your own designs as a lab topology from which you can directly connect to the nodes. For details, refer to section [10.2](#)

ADD PICTURE

Name

Picture

Browse...

anycon\_lab.PNG

Add

Cancel

### 7.1.1.4 Custom shape object

The Custom shape object allows you to add shape elements onto the topology; these currently include squares, round squares and circles. For details, refer to section [10.1](#)

ADD CUSTOM SHAPE

Type

square

Name

Border-type

solid

Border-width

Border-color

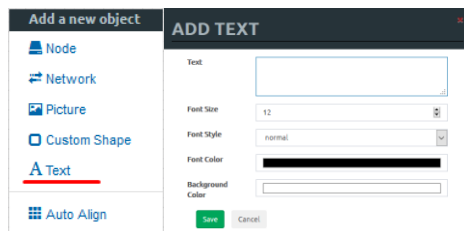
Background-color

Save

Cancel

### 7.1.1.5 Text object

The Text object allows you to add Text elements onto the topology. For details, refer to section [10.1.3](#)



## 7.1.2 Nodes



The Nodes object in the sidebar opens the “Configured Nodes” window.

ID	NAME	TEMPLATE	BOOT IMAGE	CPU	CPU LIMIT	IDLE PC	NVRAM (KB)	RAM (MB)	ETH	SER	CONSOLE	ICON	STARTUP-CONFIG	ACTIONS
1	Win	win	win-10-x64-VL19	1		n/a	n/a	8192	1	n/a	rdp-tls	Desktop.png	None	
2	R2	lol	1866_LinuxL3-AdvEnterpr	n/a	n/a	n/a	1024	1024	1	0	telnet	Router.png	None	
3	R3	lol	1866_LinuxL3-AdvEnterpr	n/a	n/a	n/a	1024	1024	1	0	telnet	Router.png	None	
4	R4	lol	1866_LinuxL3-AdvEnterpr	n/a	n/a	n/a	1024	1024	1	0	telnet	Router.png	None	
5	Docker	docker	eve-ostinato:latest	n/a	n/a	n/a	n/a	256	1	n/a	rdp	Network Analyzer.png	Default	
6	Win	win	win-7-x64-SPCC	1		n/a	n/a	4096	1	n/a	rdp-tls	Desktop.png	None	

In this window, you can make changes for nodes that are on the lab topology. More options can be found in the detailed node specific menu, for details refer to section [8.1.2](#).

**NOTE:** Running nodes are highlighted in Blue, their settings cannot be changed. You can only change settings of nodes that are not currently running.

You can change the following values:

- Node Name
- Boot image
- Number of CPUs for the node
- Enable or disable CPU Limit (Refer to section [6.4.1](#))
- IDLE PC for Dynamips node
- NVRAM in Kbyte
- RAM in Mbyte
- Ethernet quantity. **NOTE:** The Node must be disconnected from any other nodes to make this change. You cannot change the interface quantity if the node is connected to any other node.
- Serial interface quantity, IOL nodes only. You cannot change Serial interface quantity if the node is connected to any other node.
- Type of Console
- Node Icon that appears on the Topology
- Startup configuration to boot from

Actions Buttons (Stopped node):

### ACTIONS



- Start node
- Stop node
- Wipe node
- Export the nodes config
- Networks
- Edit node
- Delete Node

Actions Buttons (Running node):

### ACTIONS



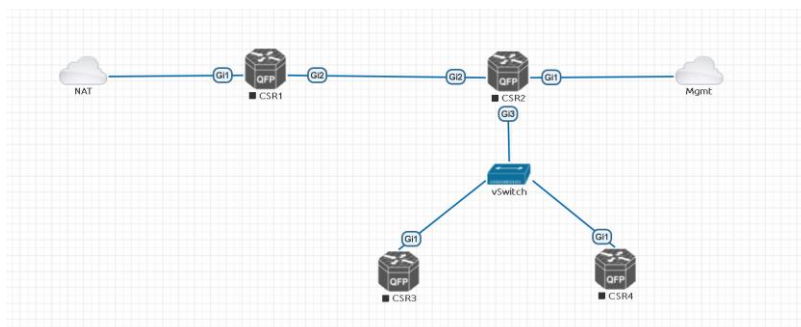
- Console to the node
- Stop node
- Wipe node
- Export the nodes config
- Edit node
- Delete Node







## 7.1.3 Networks



The Networks object in the sidebar will open the “Configured Networks” window.

The “Configured Networks” window will only show networks that were specifically added to the topology; it will not show node interconnections. The example below is showing information for networks on the Topology. For Cloud networks and how to connect EVE labs to a network external to EVE, please refer to section 9



CONFIGURED NETWORKS				
ID	NAME	TYPE	ATTACHED NODES	ACTIONS
1	NAT	nat0	1	 
2	Mgmt	port0	1	 
3	vswitch	bridge	3	 

#### ACTIONS



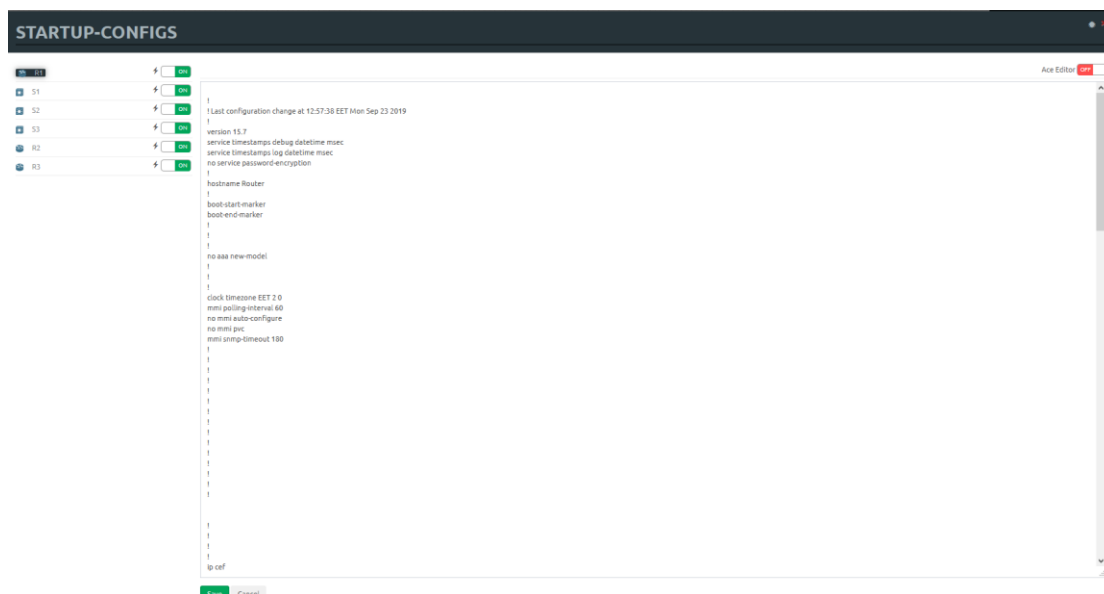
- Edit Network
- Delete Network

### 7.1.4 Startup-configs



The Startup-configs object in the sidebar opens the “Startup-configs” window.

This window will show you startup-config for each node and if the node is set to boot from it (ON) or not (OFF).



### 7.1.5 Logical Maps



**NOTE:** The Logical Maps object will only appear in the sidebar after you have uploaded a custom topology picture to the lab EVE lab (Please refer to section [7.1.1.3](#)). The Pictures object in the sidebar opens the “Picture Management” window.



For details on the Picture / custom topology feature, refer to section [10.2](#)

## 7.1.6 Configured Objects

### Configured objects

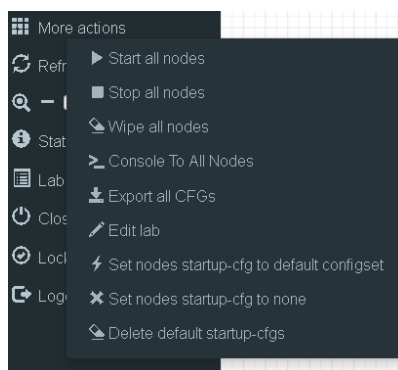
The “Configured Objects” window will display a list of all objects that are added onto the topology. For details on different objects, refer to section [10.1](#)

**NOTE:** You will not see any objects in this window if none have been added to the lab yet.

CONFIGURED OBJECTS				
ID	NAME	TYPE	TEXT	ACTIONS
1	test 1	text	Topology.txt	
2	square2	square		

## 7.1.7 More actions

The More actions menu in the sidebar has a submenu with the following functions.



### 7.1.7.1 Start all nodes

#### Start all nodes

The “Start all nodes” action will start all nodes on your topology, taking the (configurable) startup delay of each node into consideration.

**⚠ IMPORTANT.** Starting many nodes at once can seriously spike your CPU utilization. Please make sure that you are not using the “Start all nodes” option for heavy labs or that you have configured a proper delay between the nodes. For heavy nodes and large quantities, it is recommended to start them in smaller groups, wait for them to finish booting and then start another small group of nodes.

### 7.1.7.2 Stop all nodes

#### Stop all nodes

Stopping all nodes will power off all nodes on your topology.

**⚠ NOTE:** It is recommended to save your (running) configurations on the nodes in your lab before you stop the lab if you want to continue where you left off the next time. Stopping the nodes will leave the images in a temporary folder and will take up space on your drive until they have been wiped.

### 7.1.7.3 Wipe all nodes

 Wipe all nodes

The “Wipe all nodes” action will wipe the NVRAM or currently saved image of all your nodes in the current lab.

Example: You have saved the nodes configuration by saving the running configuration to the startup configuration. The Wipe command will delete the saved NVRAM startup configuration and on the next boot it will boot from factory defaults.

The same applies to images without configurations, e.g. a linux node. If you make modifications to the system and afterwards wipe this node, the next time it will boot from the original base image again as the modified image was deleted.


The “Wipe node” action is commonly used with initial startup configuration modifications. The Wipe node action does not delete configured startup configurations or sets. Please refer to section [10.3](#)

### 7.1.7.4 Console to All Nodes

 Console To All Nodes

“Console to all nodes” will open a console to all of your running nodes in the current lab. This includes all different kinds of configured console types for lab nodes like VNC, Telnet and RDP.

### 7.1.7.5 Export all CFGs

 Export all CFGs

The “Export all configurations” action will export current configs to the EVE startup-configs.

Export configurations are supported for:

Cisco Dynamips all nodes	Juniper VRR
Cisco IOL (IOS on Linux)	Juniper VMX
Cisco ASA	Juniper vMX-NG
Cisco ASAv	Juniper vQFX
Cisco CSR1000v	Juniper vSRX
Cisco Nexus 9K	Juniper vSRX-NG
Cisco Nexus Titanium	Mikrotik
Cisco vIOS L3	PFsense FW
Cisco vIOS L2	Timos Alcatel
Cisco XRv	vEOS Arista
Cisco XRv9K	

For a full explanation of exporting configurations, please refer to section [10.3](#)

### 7.1.7.6 Edit lab

 Edit lab

Opens the Edit lab window. Refer to section: [6.7.4](#)



### 7.1.7.7 Set node's startup-cfg to default configset

Set nodes startup-cfg to default configset

Sets nodes to the default startup-config. NOTE: If you have nothing saved in the default config set for any node, that node will boot from factory default instead. This is commonly used with the wipe nodes function so the node will boot from the configured startup-config on next boot and not from the startup-config in its NVRAM in case the node was started before already.

Please refer to section [10.3](#)

### 7.1.7.8 Set node's startup-cfg to none

Set nodes startup-cfg to none

Setting all lab nodes to boot from factory default. Used commonly with the wipe nodes function. The example below shows the steps to set a lab to boot from factory default.

Step 1: Wipe all nodes

Step 2: Set all nodes to startup-cfg none

Please refer to section [10.3](#)

### 7.1.7.9 Delete default startup-cfgs

Delete default startup-cfgs

**WARNING:** this action will delete all configurations saved to your saved default config set. Please make sure that is what you want to do before you execute this.

## 7.1.8 Refresh Topology

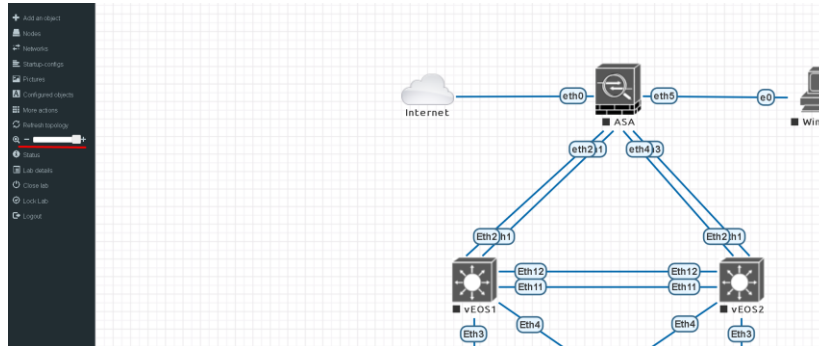
Refresh topology

Sometimes it is necessary to refresh the topology if many objects are added on the topology.

## 7.1.9 Lab page zoom/unzoom



This action is used to zoom or unzoom a large topology in EVE.



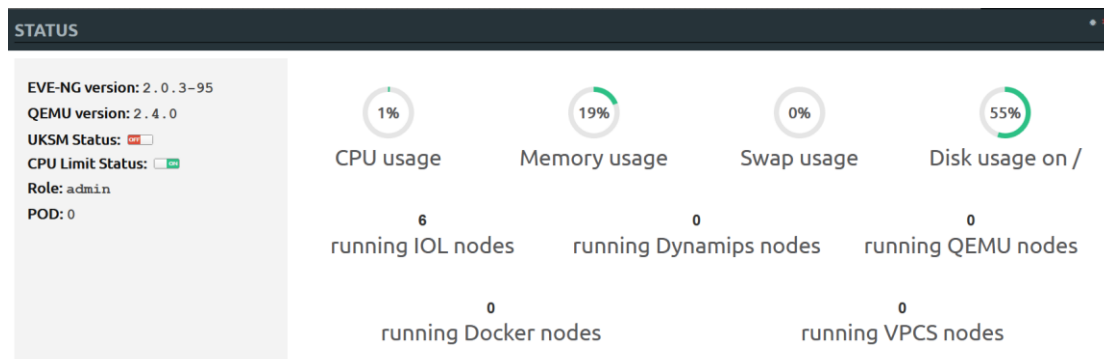
### 7.1.10 Status



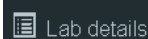
Status

Opens the EVE Status window.

Especially useful while working with labs to monitor your EVE's resource utilization. It shows EVEs CPU, RAM and disk utilization in real time. You can also see the number of running nodes per node type. For details on UKSM and CPU Limit, please refer to section [6.4.1](#)



### 7.1.11 Lab details



Lab details

Lab details display information about a lab, its UUID, description and lab tasks. To edit the lab description and lab tasks, please refer to section [6.7.4](#) and [7.1.7.6](#)

**LAB DETAILS**

**ARISTA MLAG INTEGRATION**

ID: a8c09be9-8730-4dc3-be04-b52abc988d00

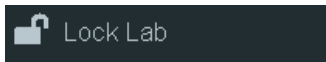
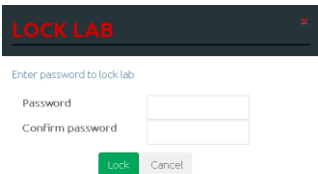
Arista mLAG and ASA Lab

LAB Scenario


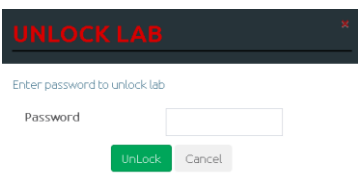
1. Configure ASA ports in etherchannels (mode active) and vlan interfaces per design, name it as DMZ and Corporate respectively
2. Configure ASA vIOS with DHCP IP, must receive IP from Home LAN and name this port as outside
3. Configure ASA management on port e5, and W67 Mgmt host per design, ASA must be reachable from Mgmt PC over ASDM
4. Configure Arista vEOS in mlag and assign ports in etherchannels per design
5. Configure vEOS etherchannel ports facing to vEOS-SW6 in etherchannel mode active
6. Configure vEOS etherchannels facing to vEOS-SW6 to etherchannel mode on
7. Configure vEOS SW6 etherchannels in mode on
8. Configure and assign vEOS-SW7's switchports in VLANs accordingly design
9. Configure hosts IP's per design
10. Configure NAT on the ASA, you have to reach Internet from DMZ and Corporate zones11. Corporate Zone must reach DMZ server

### 7.1.12 Lock Lab with password

“Lock Lab” disables some of the functions on the lab topology. If the lab is locked, you cannot move any node or object nor edit any node settings. Basically, the whole lab will be in read-only mode except for the lab settings itself, which you can still edit as Administrator from the main menu.

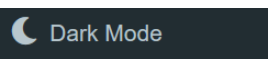
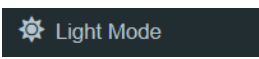
 <p>Lab is unlocked and all operations are working</p>	 <p>Enter and confirm your lab lock password</p>
---	--

To unlock a Lab, simply press on the red “Unlock Lab” button with an Administrator account.


 <p>Lab is locked and all operations are restricted</p>	 <p>Enter lab unlock password to unlock lab.</p>
--	--

**Warning:** Please remember your Lab lock password. In case of a lost password, you will not be able to recover it. Unlocking a lab / removal of password can be done by EVE-NG support only.

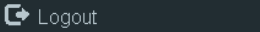
### 7.1.13 Dark mode or Light mode

 <p>Sets your lab background to the dark mode</p>	 <p>Sets your lab background to light mode</p>
--	--

### 7.1.14 Close lab

	<p>Closes the lab topology. The lab can be closed while the nodes in the lab nodes are stopped.</p>
---	---

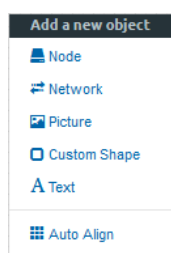
### 7.1.15 Logout

	<p>Log out from the EVE WEB GUI session.</p>
---	--

## 7.2 EVE Lab topology menus

Right-clicking within the EVE topology can open new menus with various functions and options for managing nodes.

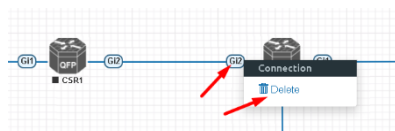
### 7.2.1 Lab topology menu



Right-clicking on the (free/unused) canvas of the EVE topology opens a new menu. (Add-) Node, Network, Picture, Custom Shape and Text are the same functions referred to in section 7.1.1.

**Auto Align.** This function will help align objects on the topology. The lab creator does not need to worry about small displacements of objects. Auto Align will align all objects to a virtual grid with a single click and can make neatly arranged labs look even neater.

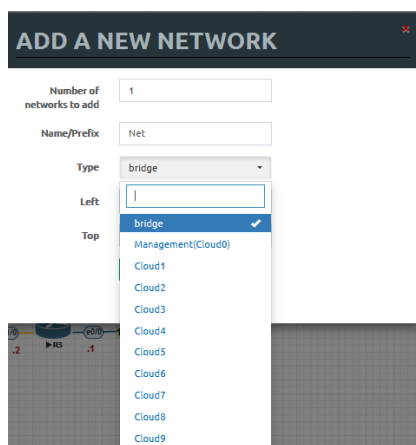
### 7.2.2 Connection menu



Right-clicking on the connection between nodes allows you to delete this connection.

### 7.2.3 Cloud or Bridge network menu

Right-clicking on a Cloud or Bridge network allows you to edit or delete it.

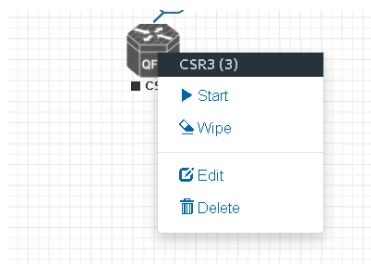


If you have chosen Edit, the Network edit window will open a window where you can change the placement, network type or name/prefix.

For details on how to operate EVE Cloud networks and external connections, please refer to section 9

## 7.2.4 Stopped node menu

Right-clicking on a stopped node also opens a menu:



**Start node:** This will start the selected node in this lab

**Wipe node:** Wiping a node will erase the NVRAM (running config) or the temporary image snapshot depending on the type of node. This option is used to clean up a node in order to boot it from factory defaults or a custom set of configurations.

**Edit node:** Opens the Edit node window (picture on the right). For details please refer to section [8.1.2](#)

**Delete node.** Deletes the node from the lab. It is recommended to disconnect (delete connections to it) the node before you delete it.

**EDIT NODE**

Template

Cisco CSR 1000V

ID

3

Image

csl1000v-universalk-9.03.17.04.S.156-1.54

Name/prefix

CSR3

Icon

CSRv1000.png

UUID

67fea887-b30d-4ad0-b314-828808b38533

CPU Limit

☐

CPU

1

RAM (MB)

3072

Ethernets

4

QEMU Version

tpl(2.12.0)

QEMU Arch

tpl(x86\_64)

QEMU Nic

tpl(e1000)

QEMU custom options

-machine type=pc-1.0,accel=kvm -serial mon:stdio -nographic -nodefconfig -nodef

Startup configuration

None

Delay (s)

0

Console

telnet

Left

472

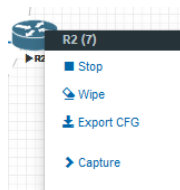
Top

365

Save

Cancel

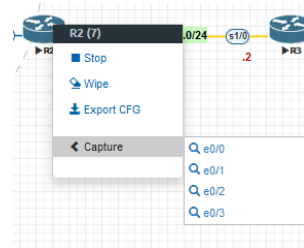
## 7.2.5 Running node menu



Right-clicking on a running node also opens a menu:

**Wipe node:** Wiping a node will erase the NVRAM (running config) or the temporary image snapshot depending on the type of node. This option is used to clean up a node in order to boot it from factory defaults or a custom set of configurations.

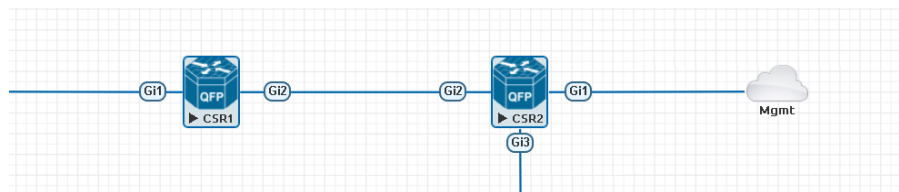
**Export CFG:** This function is used to export the saved running configuration to the EVE startup configuration sets. Reference section [10.3](#)



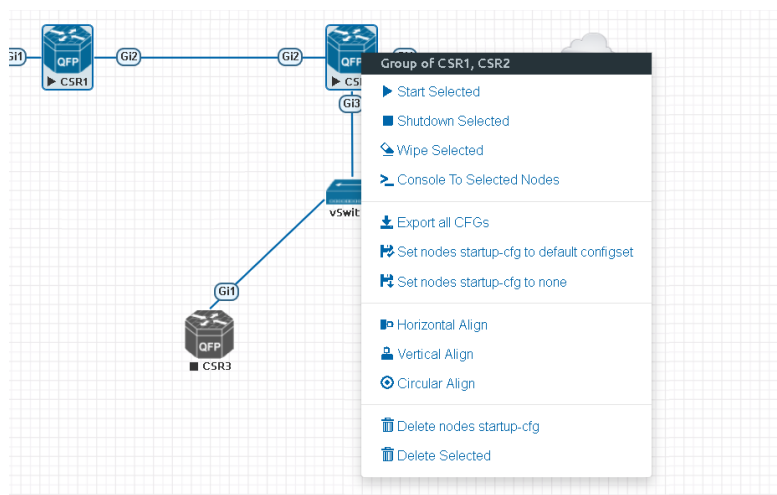
**Capture.** Wireshark capture. Select the interface which you wish to capture. Reference section [5.1.2](#)

## 7.2.6 Selected nodes menu and features

It is possible to select many objects or nodes at once in EVE. Using your mouse, you can select an area which will cover your nodes and/or you can click on nodes while holding the CTRL key on your keyboard.



A right-click on any of the selected nodes opens a group menu:



**Start Selected:** This will start the selected nodes in this lab.

**Stop Selected:** This will stop the selected nodes in this lab

**Wipe Selected:** The Wipe Selected nodes action will wipe the NVRAM or currently saved image of the selected nodes in the current lab.

Example: You have saved the nodes configuration by saving the running configuration to the startup configuration. The Wipe command will delete the saved NVRAM startup configuration and on the next boot it will boot from factory defaults.

The same applies to images without configurations, e.g. a linux node. If you make modifications to the system and afterwards wipe this node, the next time it will boot from the original base image again as the modified image was deleted.

The Wipe node action is commonly used with initial startup configuration modifications. The Wipe node action does not delete configured startup configurations or sets. Please refer to section [10.3](#)

**Console To Selected Nodes:** Console To Selected Nodes will open a console to all selected running nodes in the current lab. This includes all different kinds of configured console types for lab nodes like VNC, Telnet and RDP

**Export all CFGs:** The Export all configurations action will export current configs of selected nodes to the EVE startup-configs.

For a full explanation of exporting configurations, please refer to section [10.3](#)

**Set nodes startup-cfg to default configset:** Sets nodes to Default startup config, used commonly with the wipe nodes function. NOTE: If you have nothing saved in the default config set for any node, that node will boot from factory default instead. This is commonly used with the wipe nodes function so the node will boot from the configured startup-config on next boot and not from the startup-config in its NVRAM in case the node was started before already.

Please refer to section [10.3](#)

**Set nodes startup-cfg to none.** Setting selected lab nodes to boot from factory default. Used commonly with the wipe nodes function. The example below shows the steps to set selected nodes to boot from factory default.

Step 1: Wipe selected nodes  
Step 2: Set nodes startup-cfg to none

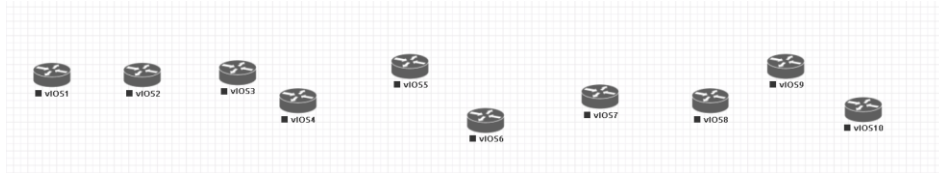
Please refer to section [10.3](#)

**Horizontal Align.** Aligns the selected nodes in one horizontal line.

Step 1: Select the nodes you wish to align.

Step 2: Right click on one of the selected nodes and choose Horizontal align, this will align all nodes to the selected node.

**Picture before:**



**Picture after:**



**Vertical Align:** Aligns the nodes in one vertical line.

Step 1: Select the nodes you wish to align.

Step 2: Right click on one of the selected nodes and choose Vertical align, this will align all nodes to the selected node.

**Picture before**

**Picture after**



**Circular Align:** Aligns the nodes in a circle.

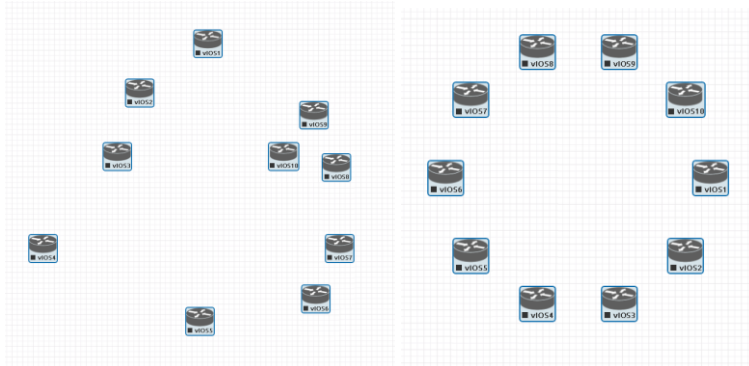
Step 1: Select the nodes you wish to align.

Step 2: Right click on one of the selected nodes and choose Circular Align, this will align all nodes in a circle, the midpoint of the circle will be at the coordinates the selected node was at before.

**Picture Before**

**Picture After**





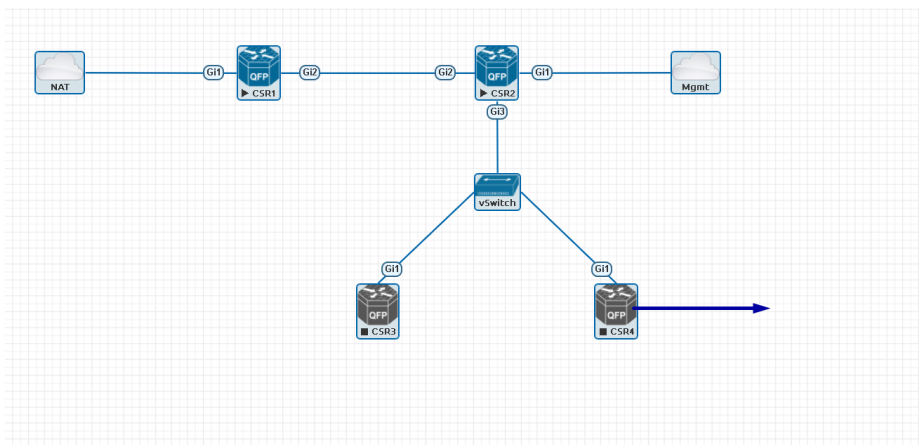
### Delete nodes startup-config.

**⚠ WARNING**, this action will delete the configurations of the selected nodes that are saved to your Default config set. Please make sure that is what you want to do before you execute this.

**Delete selected:** This will delete the selected nodes from your current lab.

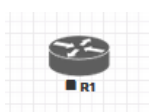
Selected nodes can be moved as a group across the topology.

Example: You can select nodes and objects to better position them on the Topology.



## 7.3 EVE Lab node states and symbols

### 7.3.1 Stopped (non-running) nodes



Grey colour and a square symbol below a node means that the node is stopped and not running. Once you will start it, the node will change to one of the running states below.



A grey node with an exclamation mark inside a triangle below the node means that there was a problem during the boot process, this could be a corrupted boot image, insufficient resources or problems with the initial configuration. A node in this state cannot be started again.

**Workaround:** Right-click on the node and wipe it, the symbol will then change to a grey colour with a square symbol below it. Then edit the node and make sure you have configured sufficient resources and the correct settings for this node, if it has startup-configs you can check them as well. Afterwards start the node again.

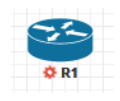
### 7.3.2 Running nodes



The blue colour and black Play triangle symbol means that the node is started and running, the node is in a working/functional state.



A running node with a clock symbol below the node means that the node is waiting to finish loading from the set exported/startup configuration. Once the configuration has been successfully applied, the node symbol will change to a Play triangle symbol. If the node has finished booting but the clock symbol does not change to the Play triangle symbol, the problem could be in the uploaded startup configuration. For how to use exported configurations and boot nodes from them, please refer to section **10.1**



A running node with a turning red gear symbol means that the node is either in the process of hibernating the node or it has sent the shutdown signal to the node and is waiting for it to turn off. Once this process has successfully finished, the symbol will turn into a grey node with a black square symbol below it (stopped state).

**NOTE:** If the node does not support a system shutdown or does not recognize the shutdown signal (example: Cisco router), after clicking on Shutdown, the node can stay with a turning red gear symbol below it indefinitely.

**Workaround:** Use Stop or Stop/PowerOff to stop the node.

Example nodes where Stop/Shutdown is supported: Microsoft Windows and most Linux nodes as well as a lot of appliances based on linux.

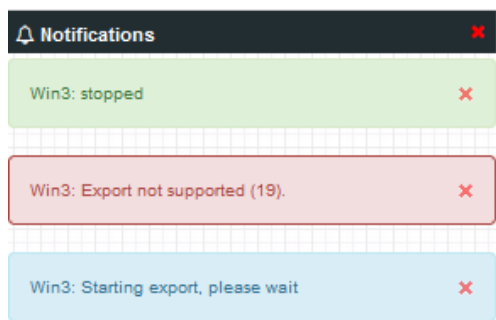
### 7.3.3 Node connector symbol



**Connector symbol:** If you move your mouse pointer on top of a running or stopped node, an orange connector symbol appears. It is used to connect nodes on the topology in a drag and drop style. Drag the symbol from one node and release the mouse pointer on the second node. A new window will appear where you can select the interfaces the link should connect to.

## 7.4 Other

### 7.4.1 Notifications area



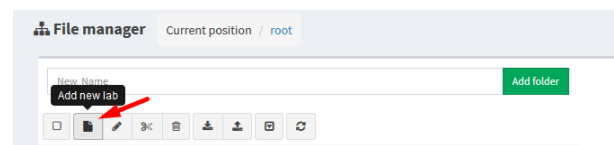
The Notification area in the top right is displaying informational or error messages.

## 8 Working with EVE labs

**⚠ IMPORTANT NOTE:** You must prepare and upload at least a couple of images to start building your labs. Refer to section [12](#)

### 8.1 Creating a lab

Step 1: Click Add new lab. For more information on creating new labs, please refer to section [6.2.2.1](#)



Step 2:

Fill out the lab information. Name and Version are required fields. Next hit Save. Refer to section [6.7.4](#) for more information about the different fields in the Edit lab window.

The screenshot shows the 'Add New Lab' form. It includes the following fields and sections:

- Name:** A text input field containing 'mylab4'. Below it, a small note says 'Use only [a-zA-Z0-9\_]+chars'.
- Version:** A text input field containing '1'. Below it, a small note says 'Must be integer (0-99999)'.
- Author:** A text input field containing 'John Tester'.
- Description:** A large text area containing 'It is my new lab'.
- Tasks:** A list of tasks: '1. configure IP addressing', '2. configure EIGRP AS 20', and '3. configure static default route to the Internet'.
- Config Script Timeout:** A text input field containing '300' with a 'Seconds' label.
- Lab Countdown Timer:** A text input field containing '0' with a 'Seconds' label.
- Buttons:** 'Save' and 'Cancel' buttons at the bottom right.
- Footer:** A small note '\* - Required Fields'.

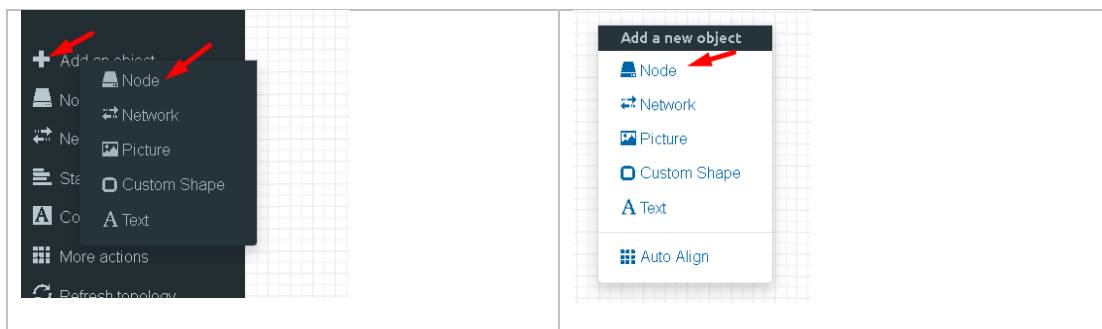
#### 8.1.1 Adding nodes to the lab

The new Topology page will open. There are two different ways to add nodes to the topology canvas:

Step 1: Object/Add Node

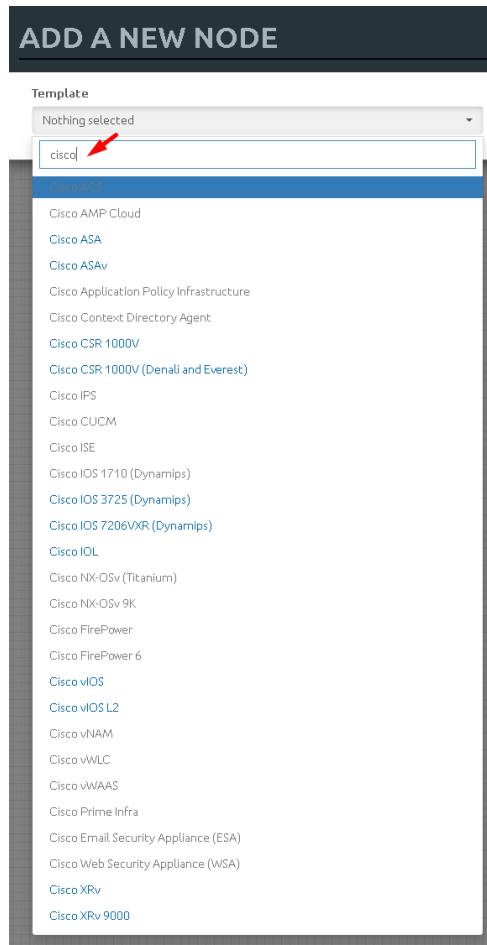
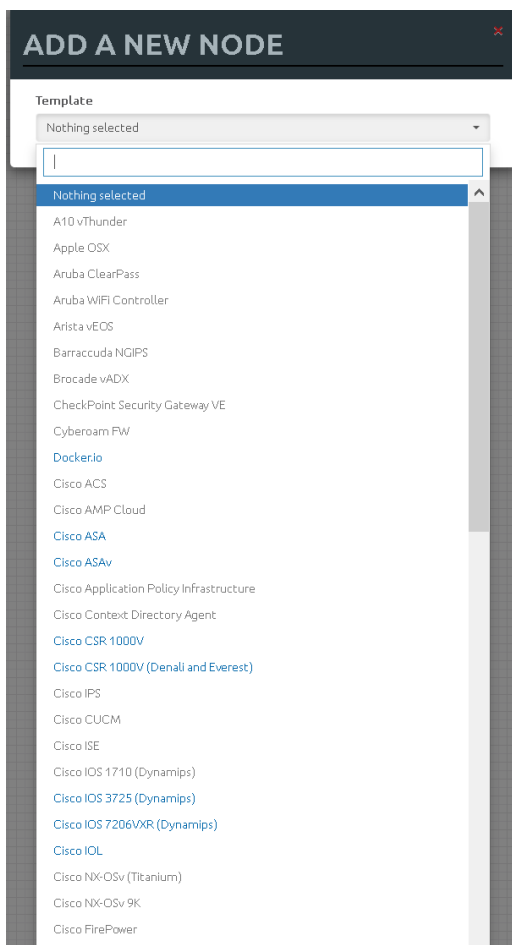
Left Side Bar > Add object > node. Refer to section [7.1.1.1](#) for more information.

Right click on a free area of the topology page and click on "Node" to add a new node. Refer to section [7.2.1](#) for more information.



Step 2: The Add new node window will appear. You can scroll down to choose which node you wish to add to the lab topology, or you can type the node name to filter through the node list.

**NOTE:** It will only be possible to select and add nodes that have images preloaded in EVE. These nodes will be displayed in a blue font. To prepare images for EVE, refer to section 12.2



Step 3: Edit “Add a new node” settings. Please refer to the picture and table below.

ADD A NEW NODE

Template 1.

Cisco CSR 1000V

Number of nodes to add 2.

1

Image 3.

csr1000v-universalk9.03.17.04.S.156-1.S4

Name/prefix 4.

CSR

Icon 5.

CSRv1000.png

UUID 6.

CPU Limit 7.

CPU 8.

1

RAM (MB) 9.

3072

Ethernets 10.

4

QEMU Version 11.

tpl(2.12.0)

QEMU Arch 12.

tpl(x86\_64)

QEMU Nic 13.

tpl(e1000)

QEMU custom options 14.

-machine type=pc-1.0,accel=kvm -serial mon:stdio -nographic -nodefconfig -n

Startup configuration 15.

None

Delay (s) 16.

0

Console 17.

telnet

Left

839



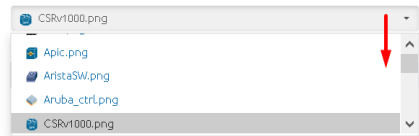
Top

210

Save


Cancel

### 8.1.1.1 Node values Table

Number	Description
1.	 <p>Template menu. Choose which node template to add to the topology</p>
2.	<p>Number of nodes to add</p> <p>1</p> <p>Chose the number of nodes of this type you want to add to the topology</p>
3.	<p>Image</p>  <p>Choose your preferred version from preloaded images list (if you have more than one image loaded for a single template).</p>
4.	<p>Name/prefix</p> <p>CSR</p> <p>Type your preferred node name. If you are adding more than one, EVE will automatically append numbers to the nodes name.</p> <p><b>Example.</b> We are adding 5 CSR nodes with the name R. On the topology they will appear as R1, R2, R3, R4, R5. Later using the Nodes window, you can edit the node names per your needs. Refer to section 7.1.2 or edit the node individually, refer to section 8.1.2.</p>
5.	<p>Icon</p>  <p>Node icons can be changed from the default per your preference, simply choose the preferred icon from the dropdown list. Node icons can be changed later per your needs. Refer to section 7.1.2</p>
6.	<p>UUID</p> <p>The UUID number is assigned automatically after a node is created. You may also set it manually in case you are using a license that is tied to a particular UUID.</p>

7.	CPU Limit <input type="checkbox"/>	CPU limit per node. This option is already set (checked/unchecked) per EVE recommendations. Refer to section <a href="#">6.4.1</a>
8.	CPU <input type="text" value="1"/>	Each node template has a pre-set CPU value that aligns with vendor requirements. This value can be changed per your needs.
9.	RAM (MB) <input type="text" value="3072"/>	Each node template has a pre-set RAM value that aligns with vendor requirements. This value is displayed in MB and may be changed per your needs.
10.	<div>           Ethernets  <input type="text" value="4"/> </div> <p>The number of ethernet interfaces.</p> <p><b>⚠ NOTE for IOL nodes:</b></p> <p>Ethernet interfaces for IOL nodes are placed into groups of 4. A value of 1 for Ethernet means your node will have 4 interfaces.</p> <p>The serial interface option is available for IOL nodes only and follows the same grouping structure as ethernet interfaces. A value of 1 for Serial means your node will have 4 serial interfaces.</p> <div> <div>           Ethernet portgroups (4 int each)  <input type="text" value="1"/> </div> <div>           Serial portgroups (4 int each)  <input type="text" value="1"/> </div> </div>	
11.	Custom MAC address for Qemu nodes only. You can define your own MAC address for first interface:  First Eth MAC Address <input type="text" value="aa:bb:cc:00:de:ad"/>	
12.	QEMU Version <input type="text" value="tpl(2.12.0)"/>	EVE will pre-set the best recommended QEMU version for each node template. This value can be changed per your needs.
13.	QEMU Arch <input type="text" value="tpl(x86_64)"/>	Qemu architecture is pre-set per image vendor recommendations. This value can be changed per your needs



14.	 <p>Type of Qemu NIC is pre-set per image vendor recommendations. This value can be changed per your needs.</p>
15.	<p>QEMU custom options</p> <p><code>-machine type=pc-1.0,accel=kvm -cpu Nehalem -serial mon:stdio -nographic -r</code></p> <p>Qemu custom options are pre-set per image vendor recommendations. This value can be changed per your needs</p>
16.	<p>Startup configuration</p> <p>None</p> <p>Startup configuration: Value can be changed to set your node to boot from saved configurations. Refer to section <a href="#">10.3</a> for more details.</p>
17.	<p>Delay (s)</p> <p>0</p> <p>The Delay value is set in seconds and can be used to delay a node from booting after it is started. Example: if the value is set to 30, the node will wait 30 seconds before processing its boot sequence. This feature is useful in conjunction with the “Start all nodes” function if your lab requires certain nodes to start up before others or to avoid a mass-start of very heavy nodes.</p>
18.	<p>Console</p> <p>telnet</p> <p>The setting can be changes per your needs.</p> <p><b>NOTE:</b> The Docker template contains a wide variety of images, therefore, please refer to section <a href="#">14.1.3</a> for recommended console types for each docker image. Windows nodes can use either RDP or VNC but RDP needs to be enabled in Windows itself.</p> <p>Console types for each template are pre-set with recommended settings.</p>
19.	<p>First Eth MAC Address</p> <p>manually set the MAC address for the first ethernet interface. This will enable the use of licenses that are tied to a particular MAC address.</p> <p>MAC Address format must be like: 00:50:0a:00:0b:00</p> <p>OPTIONAL: Templates for Cisco FirePower, F5, Linux, and Citrix have the option to</p>

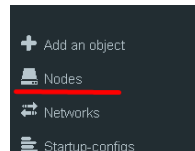
### 8.1.2 Edit node

EVE provides two ways to edit nodes after being added to the topology canvas.

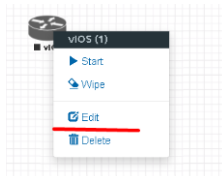
⚠ NOTE: A node must be **wiped** each time an image or startup configuration has been changed.

#### 8.1.2.1 Edit nodes globally

From the Topology page. Click “Nodes” from the left sidebar to bring up the nodes list. Refer to section 7.1.2 for more details.



#### 8.1.2.2 Edit node individually.



Right click on the node and click Edit

The “Edit node” window will appear. It is very similar to the window that is displayed when you add a new node. To change values for the node, refer to the nodes value table in section 8.1.1.1.

**EDIT NODE**

Template

Cisco vIOS

ID

1

Image

vios-adventerprisek9-m-15.6.2T

Name/prefix

vIOS

Icon

Router.png

UUID

b5fa3320-98ed-4ea4-ad21-627d427b8a6a

CPU Limit

☐

CPU

1

RAM (MB)

1024

Ethernets

4

QEMU Version

tpl(default 2.4.0)

QEMU Arch

tpl(i386)

QEMU Nic

tpl(e1000)

QEMU custom options

-machine type=pc-1.0,accel=kvm -serial mon:stdio -nographic -nodefconfig -nodef

Startup configuration

None

Delay (s)

0

Console

telnet

Left

839

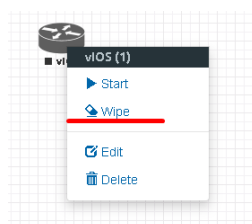
Top

218

Save

Cancel


### 8.1.3 Wipe Node



The “Wipe node” function will clear the NVRAM of the node. Each time a node setting is changed (CPU, RAM, boot image or startup configuration) a wipe must be issued on that node. For more information refer to section [10.3](#)

## 8.1.4 Interconnecting nodes


To connect nodes on the lab, use the drag and drop style method

 Connector symbol: Moving the mouse over a node will make an orange male plug appear. The male plug is used to connect nodes on the topology, drag and drop style. Release the mouse pointer on the second node.



The connection window will appear. Choose the interface you want to use to interconnect the nodes. Click Save when finished.

**ADD CONNECTION BETWEEN R1 AND R2**



Source ID: 1  
Source Name: R1  
type - Node

Choose Interface For R1

Gi0/0

G0/0


Gi0/1

Gi0/2

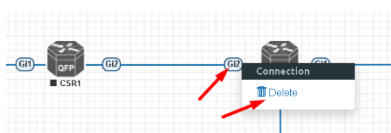
Gi0/3

Destination ID: 2  
Destination Name: R2  
type - Node

Save Cancel

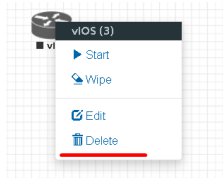


## 8.1.5 Delete connection between nodes



To delete a connection, right click on it and hit "Delete."

## 8.1.6 Delete Node



To delete a node, right click it and hit “Delete.” This is a non-reversible function

**NOTE:** It is strongly recommended to delete connections from a node before deleting the node itself.

## 8.2 Running labs

### 8.2.1 Starting lab

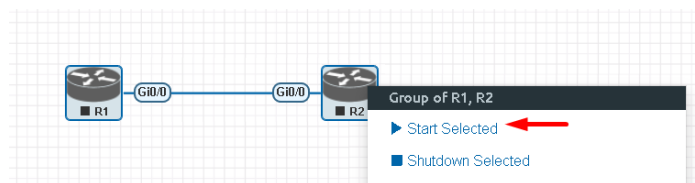
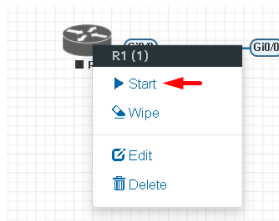
Nodes inside a lab may be started individually, in groups, or all at once.

**▶ Start all nodes** The Start all nodes option will start all nodes on your topology.

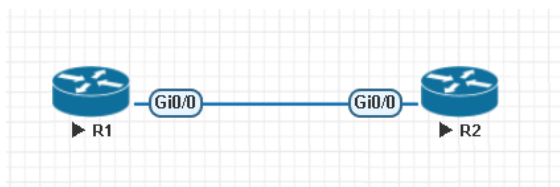
**⚠ IMPORTANT.** Starting all the nodes at once can result in major spikes in CPU utilization. Please make sure you are not using the “Start all nodes” option for heavy labs. Instead, it is recommended to start nodes in small groups.

Starting a node or group of nodes:

Right click on single node or node group and hit “Start.”



Running nodes will turn blue. Refer to section 7.3 for node states



## 8.3 Saving labs

To save a running lab, refer to the vendor recommended save commands for each node.

Example:

Cisco: “copy run start”

Juniper “commit”

Your current work will be saved in the nodes' NVRAM and the lab can be stopped safely. Starting the lab again will allow you to pick up from where you left off.

**⚠ WARNING:** Using the wipe action on a node will clear its NVRAM. This is similar to doing a factory reset on a device.

The configurations of nodes can be exported and used as initial or startup configurations for your labs. To export configurations and configuration sets for labs refer to section **10.1**

## 8.4 Stopping labs

■ Stop all nodes

The Stop all nodes option will stop all nodes on your topology.

NOTE: It is recommended to save your running configurations before you stop your nodes.

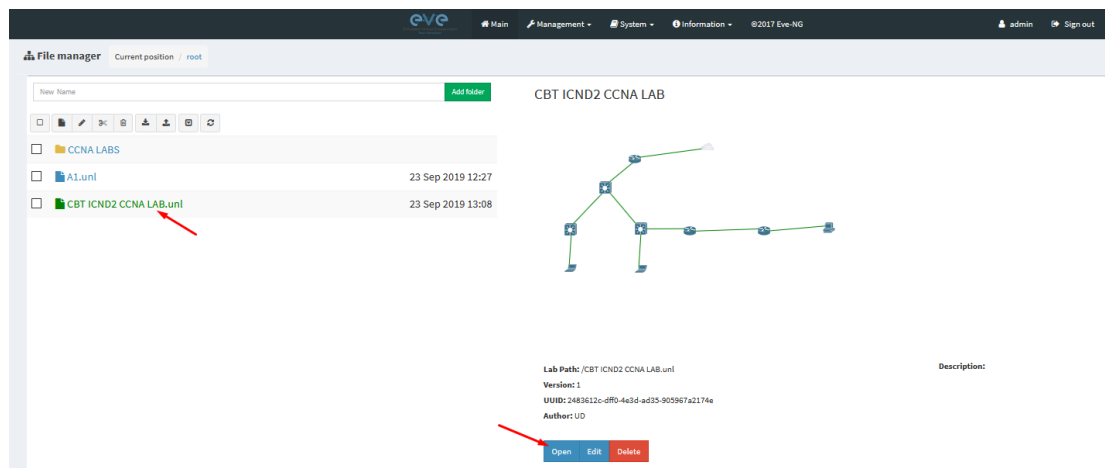
Stopping a node or group of nodes:

Right click on single node or node group and hit "Stop."

For individual node Stop options refer to section **7.2.5**

## 8.5 Start saved lab

Select the lab you want to start and click "Open". To start Lab refer section **8.2.1**



## 8.6 Importing labs

Refer to section **6.2.2.6**

## 8.7 Exporting labs

Refer to section **6.2.2.5**

## 8.8 Deleting labs

Refer to section [6.2.2.2](#)

## 8.9 Moving labs

Refer to section [6.2.2.4](#)

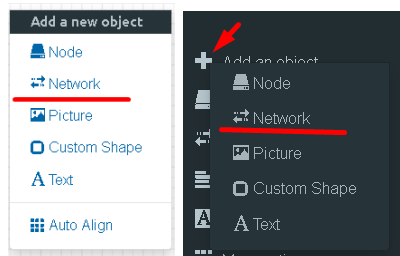
## 9 EVE Clouds and Networks

### 9.1 Bridge Network

The EVE Bridge interface acts like an unmanaged Switch. It supports passing along tagged dot1q packets.

**Example:** We have to connect many nodes in a flat (dot1q) network

Step 1: Add a Bridge Network onto the topology. There are two ways to do this: Right-clicking on the topology area and selecting “Add Network” or in the sidebar click “Add an Object” and then select “Network.” Please refer to sections [7.2.3](#) and [7.1.1.2](#)



Step 2: Name/prefix can be changed in order to rename your Bridge network. Make sure your network type is set to bridge.

ADD A NEW NETWORK ✕

Number of networks to add:

Name/Prefix:  ←

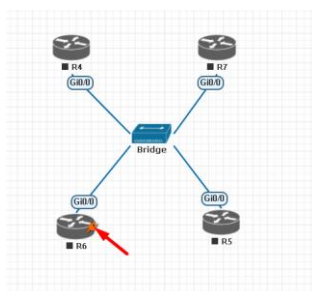
Type: bridge ←

Left:

Top:

Save Cancel

Step 3: Connect your nodes using the drag and drop connector. Refer to sections [8.1.4](#) and [7.2.3](#)





## 9.2 Management Cloud0 interface

EVE management interface is also known as the Cloud0 network for labs. The Cloud0 interface is bridged with your EVEs first NIC. “Cloud” is used as an alias to pnet. Pnet is the bridge interface name inside of EVE.

```
# The primary network interface
iface eth0 inet manual
auto pnet0
iface pnet0 inet dhcp
bridge_ports eth0
bridge_stp off
```

Cloud0 is commonly used inside EVE labs to get management access to nodes running inside EVE from a host machine external to EVE.

**⚠ IMPORTANT NOTE:** For EVE VMs running on ESXi, make sure your management interface bridged with the vSwitch (Port group) has the security settings for Promiscuous Mode set to Accept. Any port group or vSwitch used to connect an external network to an EVE Cloud network needs to have the Promiscuous mode set to “Accept”!

### vSwitch Settings

Edit standard virtual switch - vSwitch1

Add uplink

MTU	1500
Uplink 1	vmnic1
Link discovery	Click to expand
Security	
Promiscuous mode	<input checked="" type="radio"/> Accept <input type="radio"/> Reject
MAC address changes	<input checked="" type="radio"/> Accept <input type="radio"/> Reject
Forged transmits	<input checked="" type="radio"/> Accept <input type="radio"/> Reject
NIC teaming	Click to expand
Traffic shaping	Click to expand

### Portgroup Settings

Management 90 UD

Edit settings | Refresh | Actions

**Management 90 UD**  
 Accessible: Yes  
 Virtual machines: 7  
 Virtual switch: vSwitch1  
 VLAN ID: 4095  
 Active ports: 5

**vSwitch topology**

Management 90 UD  
 VLAN ID: 4095  
 Virtual Machines (7)  
 vCentre 90.95  
 S2016 EVE 90.201  
 EVE-PRO 98.100  
 MAC Address 00:0c:29:d1:aa:0e  
 EVE-PROV24  
 EVE COMM 89  
 Cisco Identity Services Engine  
 ASAv 90.35 PROD

Physical adapters  
 vmnic1, 100 Mbps, Full

**Security policy**

Allow promiscuous mode	Yes
Allow forged transmits	Yes
Allow MAC changes	Yes

**NIC teaming policy**

Notify switches	Yes
Policy	Route based on ori
Reverse policy	Yes
Rolling order	No

**Shaping policy**

Enabled	No
---------	----

### EVE Cloud0 bridging table.

Lab name	EVE interface name (inside)	Type	Notes
Cloud0	pnet0	Bridged	Cloud0/pnet0 is bridged with your primary EVE ethernet port. It is assigned a management IP address used for WEB GUI access. The EVE management subnet can be used as a management network in labs.

**⚠ Question:** How can I obtain my Cloud0 subnet and gateway IP. Many EVE VMs only have a DHCP address assigned on the pnet0 interface.

**Answer:** SSH to EVE and type the following from the CLI:

#### route

```
root@eve-ng:~# route
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
default 192.168.90.1 0.0.0.0 UG 0 0 0 pnet0
172.17.0.0 * 255.255.0.0 U 0 0 0 docker0
172.29.129.0 gateway IP type: 255.255.255.0 U 0 0 0 nat0
192.168.90.0 * 255.255.255.0 U 0 0 0 pnet0
root@eve-ng:~#
```

**Example:** We want to use Cloud0 as a management network for an ASAv node in an EVE lab. From the above-obtained information, we know that our Cloud management subnet is 192.168.90.0 with a mask of 255.255.255.0 and the Gateway IP is 192.168.90.1.

### ADD A NEW NETWORK

Number of networks to add:

Name/Prefix:

Type:

Left:

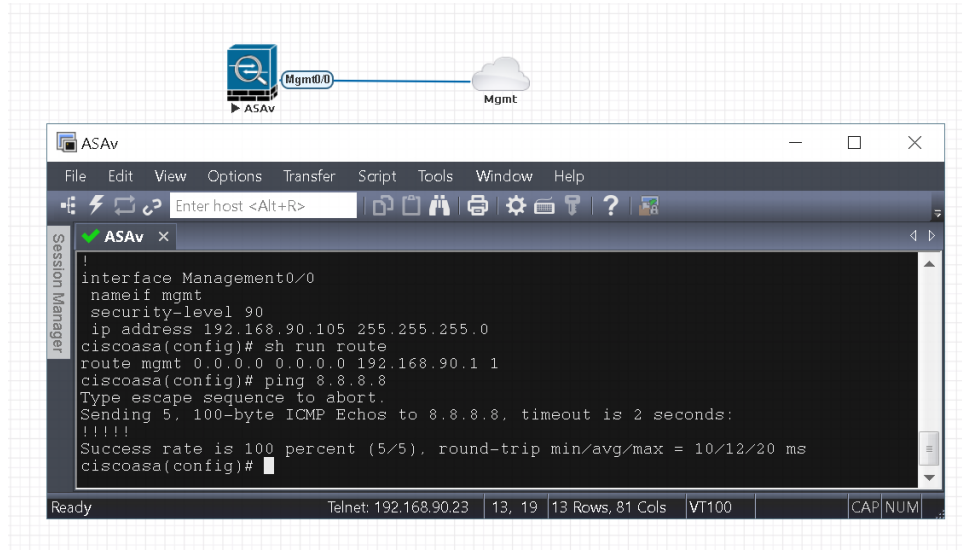
Top:

Step 1: Add A New Network onto the topology. There are two ways to do this: Right-clicking on topology area and selecting "Network" or in the sidebar, "Add an Object" and then select "Network."

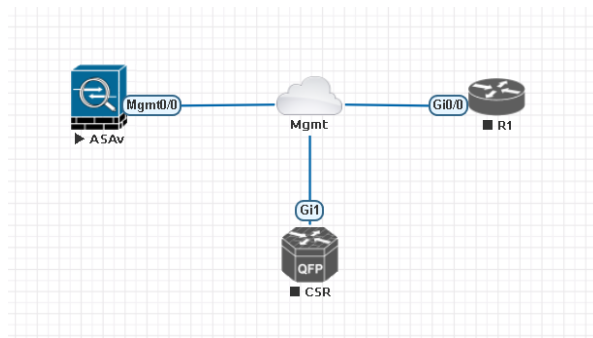
Step 2: Name/prefix can be changed in order to rename your Cloud0 network. Make sure your network type is set to Management(Cloud0).

Step 3: Connect your ASAv using the drag and drop connector to the Cloud0 network. Refer to sections [8.1.4](#) and [7.2.3](#)

Step 4: Start the node and configure the interface connected to Cloud0 with an IP address from the management subnet (192.168.90.0/24 in this example). Make sure you do not assign duplicate IPs.



**NOTE:** Cloud interfaces can be used to connect multiple nodes to a single cloud instance on the topology.



## 9.3 Other cloud interfaces

Other cloud interfaces can be used to extend a lab connection inside of EVE or bridged with other EVE interfaces to connect external networks or devices.

### ***EVE Cloud bridging table.***

Lab cloud name	EVE interface name (inside)	Type	ESXi VM corresponding interface	VMware Workstation corresponding interface	Bare HW Server	Notes
Cloud0	Pnet0	bridged	Network adapter 1	Network Adapter	First ethernet Eth0	Cloud0/pnet0 is bridged with your primary EVE ethernet port. It is assigned a management IP address used for WEB GUI access. The EVE management subnet can be used as

						management network in the labs.
Cloud1	Pnet1	bridged	Network adapter 2	Network Adapter 2	Second ethernet Eth1	Cloud1 can be bridged with your EVE second ethernet port to achieve connection to another network or device. The IP address is not required to be configured on it. It will act like a pure bridge your external connection with EVE lab node.
Cloud2	Pnet2	bridged	Network adapter 3	Network Adapter 3	Third ethernet Eth2	Same as Cloud1
Cloud3	Pnet3	bridged	Network adapter 4	Network Adapter 4	Fourth ethernet Eth3	Same as Cloud1
Cloud4-9	Pnet4-9	bridged	Network adapter 5-10	Network Adapter 5-10		Same as Cloud1

**Example:** Cloud7 network is used as an extended connector between nodes:

Step 1: Add two Cloud7 networks onto the topology.

**ADD A NEW NETWORK**

Number of networks to add:

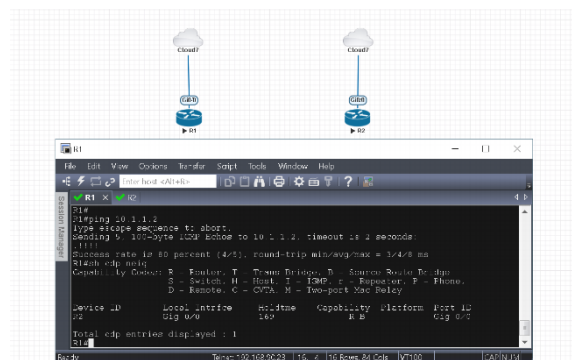
Name/Prefix:

Type:

Left:

Top:

Step 2: Connect your lab nodes to Cloud7. Your configured nodes will work like being connected to the same switch (or the same bridge in EVE). Even CDP works. It is convenient if it is necessary to have connections across the lab and you don't want to have connections going from one end of the lab to the other.



If some of the clouds (e.g. Cloud1) are bridged to another ethernet (VMnet) you can connect your EVE lab to an external VM or physical device (like e.g. a switch, IP phone or access point).

**⚠** For ESXi make sure that you have set Promiscuous mode security settings on the vSwitch and Port group to Accept. Please refer to section [9.2](#)

The next sections will explain how you can use Cloud networks in EVE to connect to other external (e.g. VMWare) VMs or physical devices.

## 9.4 Connecting external VM machines to the EVE Lab

### 9.4.1 ESXi VM machines

External ESXi VM machines can be connected to EVE labs using cloud interfaces.

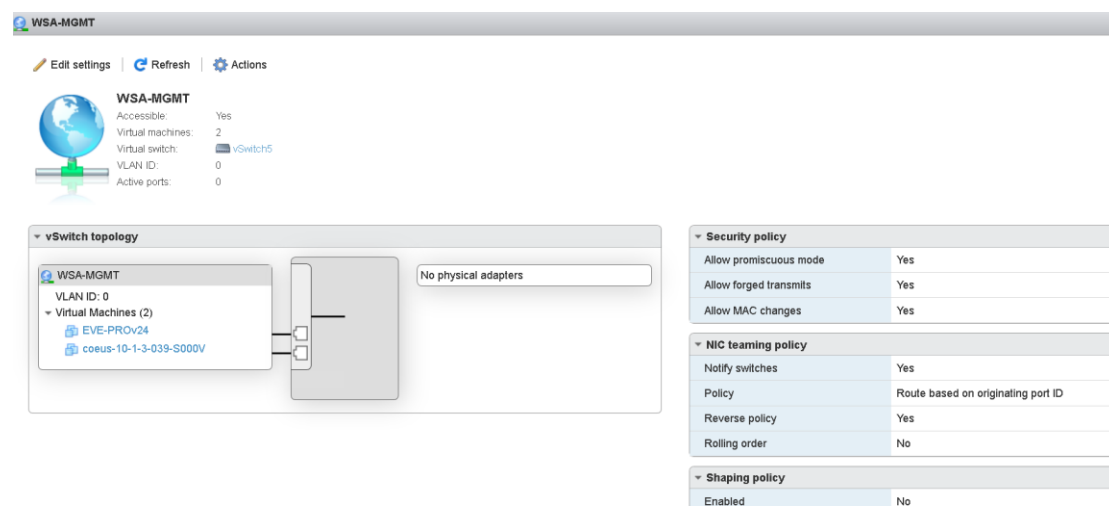
**⚠ NOTE:** A single Cloud interface can be used to connect more than one external VM to the EVE lab.

**Example:** Connecting a Web Security Appliance (WSA) to the lab using the Cloud1 interface.

Step 1: Create a new or use an existing portgroup on your ESXi and assign it to EVE and WSA VMs as shown below. Make sure you have set Promiscuous mode on the vSwitch (portgroup WSA-MGMT) to Accept.

**⚠ NOTE:** VM machines must be in a powered off state to assign network interfaces.

**Portgroup WSA-MGMT (with vSwitch5 as parent) settings:**



**WSA-MGMT**

Accessible: Yes  
Virtual machines: 2  
Virtual switch: vSwitch5  
VLAN ID: 0  
Active ports: 0

**vSwitch topology**

WSA-MGMT  
VLAN ID: 0  
Virtual Machines (2)  
EVE-PROV24  
coeus-10-1-3-039-S000V

No physical adapters

**Security policy**

Allow promiscuous mode	Yes
Allow forged transmits	Yes
Allow MAC changes	Yes

**NIC teaming policy**

Notify switches	Yes
Policy	Route based on originating port ID
Reverse policy	Yes
Rolling order	No

**Shaping policy**

Enabled	No
---------	----

## Parent vSwitch5 settings:

**vSwitch5**

Add uplink | Edit settings | Refresh | Actions

**vSwitch5**  
Type: Standard vSwitch  
Port groups: 1  
Uplinks:

**vSwitch Details**

MTU	1500
Ports	4352 (4319 available)
Link discovery	Unknown
Attached VMs	2 (0 active)

**NIC teaming policy**

Notify switches	Yes
Policy	Route based on originating port ID
Reverse policy	Yes
Rolling order	No

**Security policy**

Allow promiscuous mode	Yes
Allow forged transmits	Yes
Allow MAC changes	Yes

**vSwitch topology**

WSA-MGMT  
VLAN ID: 0  
Virtual Machines (2)  
EVE-PROV24  
coeus-10-1-3-039-S000V

No physical adapters

## EVE and WSA VMs settings

EVE VM, second port is assigned to portgroup WSA-MGMT. It is Cloud1 on the EVE topology.

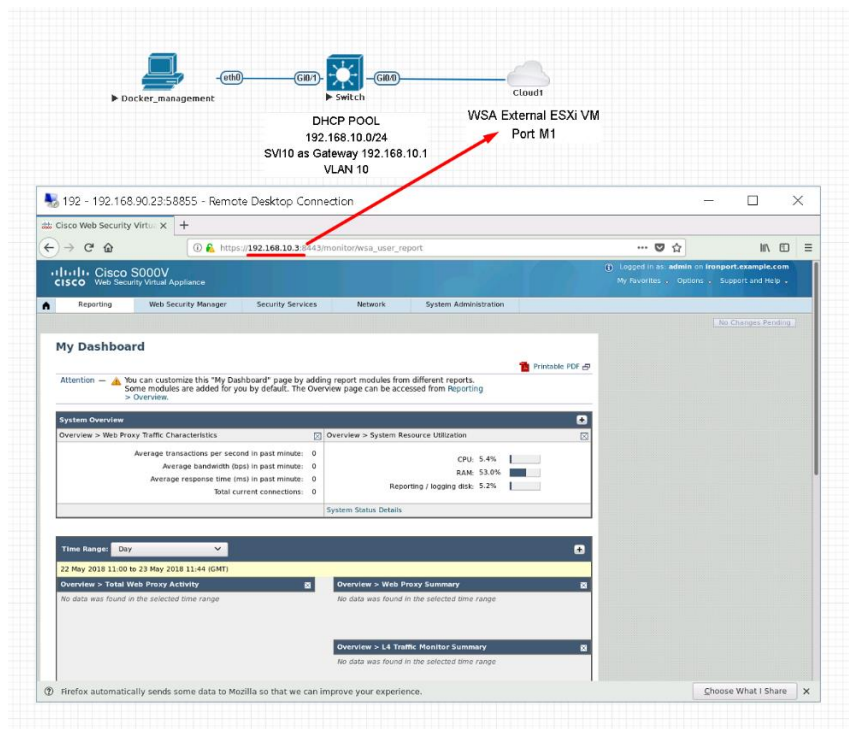
Hardware Configuration	
CPU	16 vCPUs
Memory	32 GB
Hard disk 1	40 GB
Hard disk 2	150 GB
USB controller	USB 2.0
Network adapter 1	Management 90 UD (Connected)
Network adapter 2	<u>WSA-MGMT (Connected)</u>
Video card	4 MB
Others	Additional Hardware

Cisco Web security appliance (WSA), Management port is assigned in portgroup WSA-MGMT.

Hardware Configuration	
CPU	1 vCPUs
Memory	4 GB
Hard disk 1	250 GB
Network adapter 1	<u>WSA-MGMT (Connected)</u>
Network adapter 2	UNUSED (Connected)
Network adapter 3	UNUSED (Connected)
Network adapter 4	UNUSED (Connected)
Network adapter 5	UNUSED (Connected)

## EVE Lab connected to the WSA (Cloud1)

- ⚠ NOTE: ESXi WSA VM obtained the IP 192.168.10.3 from the DHCP pool on the lab switch. The gateway is 192.168.10.1
- ⚠ NOTE: The Firefox Docker node user for management obtained the IP 192.168.10.2 from the DHCP pool configured on the lab switch.



## 9.4.2 VMWare workstation machines

External (meaning not running inside EVE) VMWare workstation machines can be connected to EVE labs using cloud interfaces.

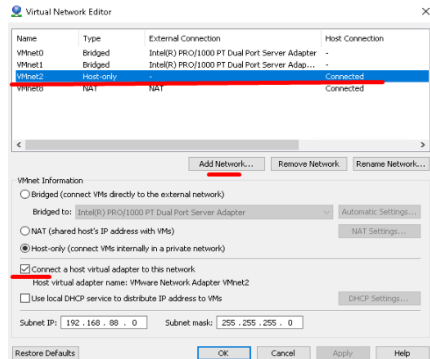
**NOTE:** A single Cloud interface can be used to connect more than one external VM to the EVE lab.

**Example:** Connecting Web security Appliance (WSA) to the lab using **Cloud2** interface.

**NOTE:** VMs must be in a powered off state to assign network interfaces.

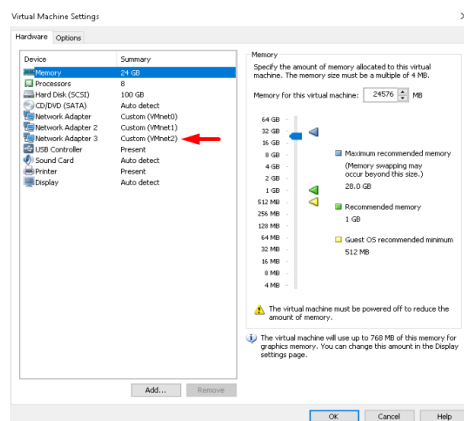
Step 1: Open your VMWare Workstation Virtual Network Editor and configure the VMnet interface for the Cloud and WSA VMs. If necessary, add a new VMnet. The example below is showing VMnet2 Settings in VMWare workstation. DHCP must be disabled for VMnet2.

**Virtual Network Editor settings:**

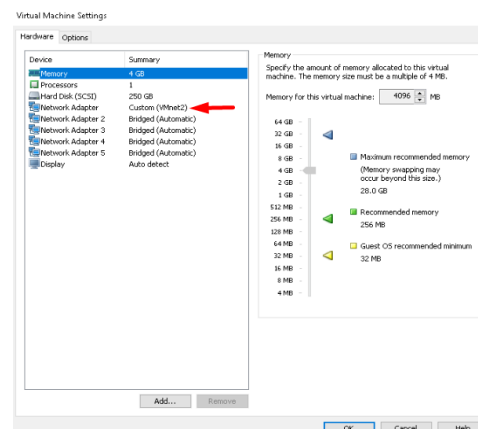


## EVE and WSA VMs settings

EVE VM, the third port (Network adapter 3) is assigned to VMnet2. This is Cloud2 inside your EVE labs.



Cisco Web Security Appliance (WSA), Management port is assigned to VMnet2

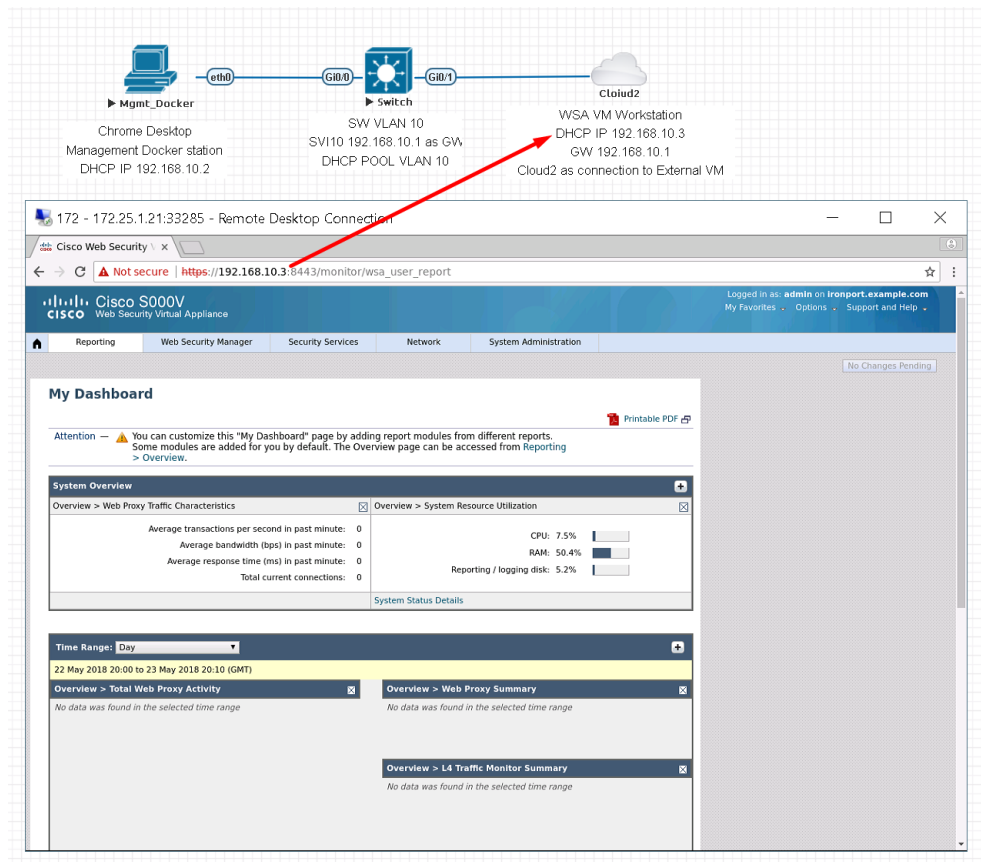


## EVE Lab connected to the WSA (Cloud2)

⚠ NOTE: ESXi WSA VM obtained the IP 192.168.10.3 from the DHCP pool on the lab switch. The gateway is 192.168.10.1

⚠ NOTE: The Firefox Docker node user for management obtained the IP 192.168.10.2 from the DHCP pool configured on the lab switch.





## 9.5 Connecting EVE Lab to a physical device

**IMPORTANT NOTE:** To bypass MAC addressing over pnet/cloud interface please SSH to your EVE and type:

```
for i in /sys/class/net/pnet*/bridge/group_fwd_mask ; do echo 8 > $i ; done
```

### 9.5.1 ESXi EVE

To connect a physical device (e.g. router, switch) to an EVE lab over a cloud interface, we have to bridge the ESXi NICs ethernet port to a VMnet interface.

**IMPORTANT NOTE:** Make sure that you have set Promiscuous mode security settings on the vSwitch and Port group to Accept.

**IMPORTANT NOTE:** If you are building trunk between EVE lab node to real Switch, please make sure you have set your ESXi vSwitch interface to accept all vlans. Reference: <https://kb.vmware.com/s/article/1004074>

The **Example** below is showing ESXi Server settings of the virtual network bridged to the physical interface.

### Logical chain of the networking bridge:

EVE Lab Cloud0 → Portgroup “Management 90 UD” → vSwitch 1 → Physical Adapter eth1

### vSwitch1 settings bridged with Server Ethernet port vmnic1 (physical adapter)

**vSwitch1**

Type: Standard vSwitch  
Port groups: 2  
Uplinks: 1

vSwitch Details	
MTU	1500
Ports	4352 (4317 available)
Link discovery	Listen / Cisco discovery protocol (CDP)
Attached VMs	7 (4 active)
Beacon interval	1

NIC teaming policy	
Notify switches	Yes
Policy	Route based on originating port ID
Reverse policy	Yes
Rolling order	No

Security policy	
Allow promiscuous mode	Yes
Allow forced transmits	Yes

**vSwitch topology**

Management 90 UD  
VLAN ID: 4095

Virtual Machines (7)

- vCentre 90.95
- \$2016 EVE 90.201
- EVE-PRO 98.100
- EVE-PROV24
- EVE COMM 89
- Cisco Identity Services Engine
- ASAv 90.35 PROD

Physical adapters

- vmnic1, 100 Mbps, Full

### Portgroup “Management 90 UD” Settings associated with vSwitch1

**Management 90 UD**

Accessible: Yes  
Virtual machines: 7  
Virtual switch: vSwitch1  
VLAN ID: 4095  
Active ports: 5

**vSwitch topology**

Management 90 UD  
VLAN ID: 4095

Virtual Machines (7)

- vCentre 90.95
- \$2016 EVE 90.201
- EVE-PRO 98.100
- EVE-PROV24
- EVE COMM 89
- Cisco Identity Services Engine

Physical adapters

- vmnic1, 100 Mbps, Full

Security policy	
Allow promiscuous mode	Yes
Allow forged transmits	Yes
Allow MAC changes	Yes

NIC teaming policy	
Notify switches	Yes
Policy	Route based on originating port ID
Reverse policy	Yes
Rolling order	No

**Shaping policy**

### EVE VM Settings

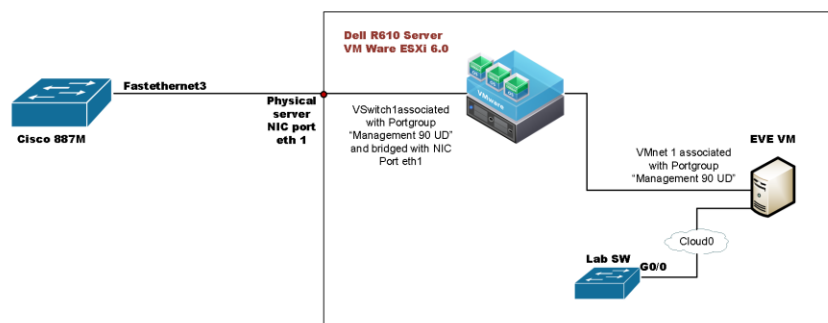
EVE VM Cloud0 is connected to Portgroup “Management 90 UD”

▼ Hardware Configuration	
CPU	16 vCPUs
Memory	32 GB
Hard disk 1	40 GB
Hard disk 2	150 GB
USB controller	USB 2.0
Network adapter 1	Management 90 UD (Connected)
Network adapter 2	WSA-MGMT (Connected)
Video card	4 MB
Others	Additional Hardware

## EVE Lab Connected to a physical device

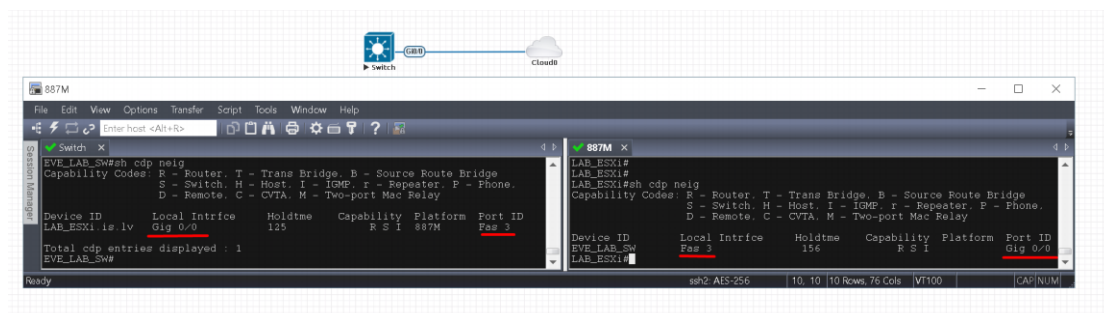
### Physical Topology

Cisco 887M device port Fastethernet 3 is physically connected to Server port eth1.



### EVE Lab Topology

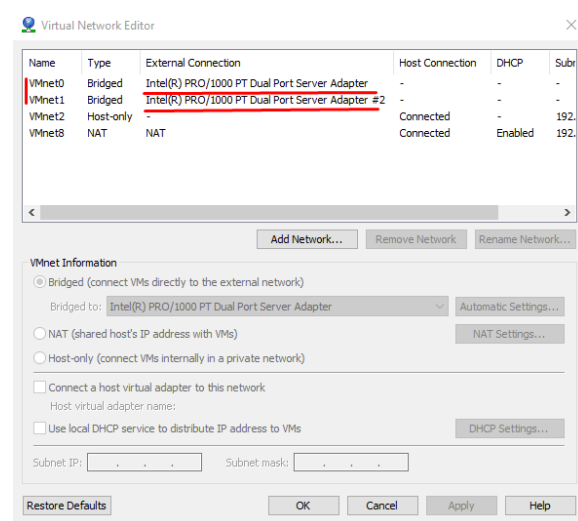
EVE lab switch port G0/0 is configured as trunk and connected to Cloud0 over bridged chain to the physical Cisco 887M Router switchport Fastethernet 3



## 9.5.2 VMWare workstation EVE

Similar to the ESXi connection, it is recommended to have a second ethernet interface on your PC. It can be a USB ethernet extender as well. Not all ethernet adapters fully support a layer2 connectivity over it. MS Windows OS itself strips off any tags added to the packet. Even if your NIC supports 802.1q VLAN tagging, Windows 10 strips these tags off. The example below will show a Windows 10 host connected to a physical 3750G-24 switch. The Windows 10 Host has an Intel (R) PRO/1000 PT Dual port server adapter and is bridged with VMWare workstation (version 14) VMnets.

*Virtual Network Editor Settings, Bridged VMnet interfaces with Real NIC Ports*

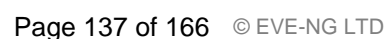
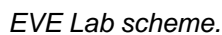


EVE VM Settings. Network adapter is bridged to VMnet0 (ethernet Intel Pro 1), and Network adapter 2 is bridged to VMnet1 (ethernet Intel Pro 2).

Responding cloud interfaces on EVE VM:

Cloud0→Network Adapter→VMnet0→IntelPro

Cloud1→Network Adapter 2→VMnet1→IntelPro#2



The following solution allows Windows hosts to transmit tagged packets over ethernet. This has been used in the example above.

**⚠ Warning.** You are making changes to your Windows registry files! This is at your own risk.

<https://www.intel.co.uk/content/www/uk/en/support/articles/000005498/network-and-io/ethernet-products.html>

### 9.5.3 Bare metal server EVE

A physical server usually has more than one ethernet port, free ports can be bridged with EVE clouds and used for external connections. EVEs internal interface settings are already bridged in order, pnet0-9 are mapped to eth0-9. Refer to the bridging table in section 9.3

```
cat /etc/network/interfaces
```

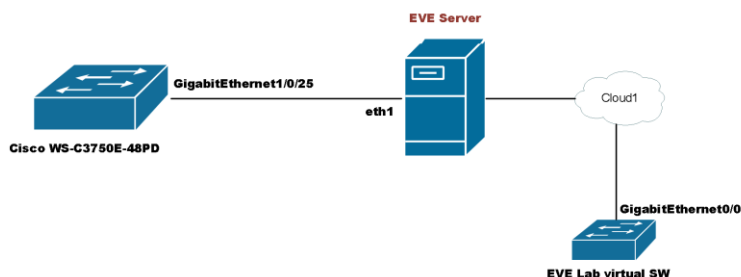
```
# Cloud devices
iface eth1 inet manual
auto pnet1
iface pnet1 inet manual
bridge_ports eth1
bridge_stp off

iface eth2 inet manual
auto pnet2
iface pnet2 inet manual
bridge_ports eth2
bridge_stp off
```

Basically, your servers physical port eth0 is bridged to pnet0 which is Cloud0 in your labs, eth1 is bridged to pnet1 which is Cloud1 in your labs (and so on). Refer to the bridging table in section 9.3

The example below shows how to connect a bare-metal EVE server with a physical Cisco 3750E switch.

*Physical connection topology:*



The EVE lab switch's CDP neighbor is the 3750E switch's port Gig 1/0/25: A trunk has been configured between the EVE lab switch and the physical 3750E switch.

```
Switch#sh cdp neig
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
D - Remote, C - CVIA, M - Two-port Mac Relay

Device ID    Local Intrfce    Holdtme    Capability  Platform  Port ID
NottsCoreRackSwitch1 DataServices.local
Gig 0/0      140           R S I      WS-C3750E  Gig 1/0/25

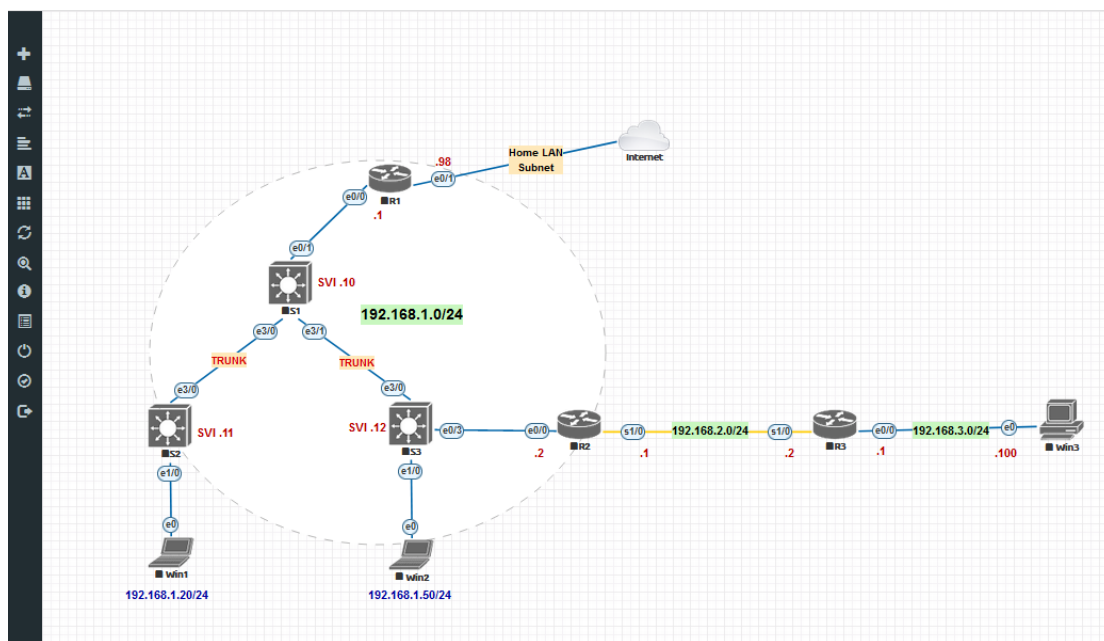
Total cdp entries displayed : 1
Switch#
```

## 10 Advanced EVE Lab features

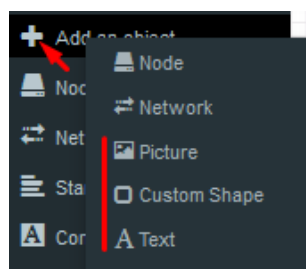
### 10.1 Lab design objects

EVE Community has drawing elements integrates to add drawings and text information to the lab topology. Objects can be placed on the topology in two ways.

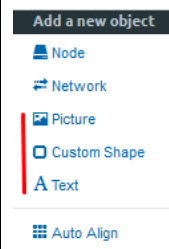
Example below, EVE lab with design elements:



Option 1: Side bar -> Add an object



Option 2: Right-click on a free area on the topology canvas to add an object.



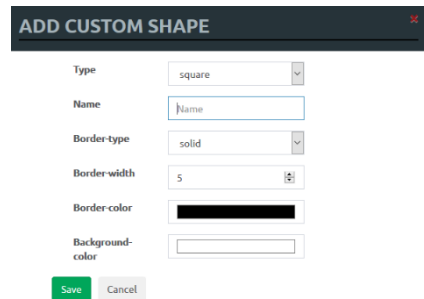
#### 10.1.1 Custom shape

There are three custom shapes that can be added to the topology: square, round square and circle (sphere).

**Type:** Square, round square or circle

**Name:** This field can be filled with your preferred shape's name. If the field is left empty, EVE will generate a name for the shape.

**Border type:** Two options: line or dashed

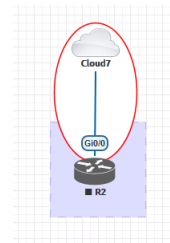


**Border width:** Increase or decrease the width of the border. This can be edited later in the "Shape Edit" menu.

**Border colour:** Allows you to choose a colour for the shape's border. This can be edited later in the "Shape Edit" menu.

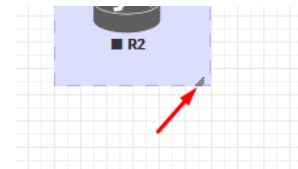
**Background colour:** Allows you to choose a colour to fill your shape with. This can be edited later in the "Shape Edit" menu.

Example: Added a circle and square on the topology. Shapes can be moved around the topology drag and drop style (click and move with mouse).



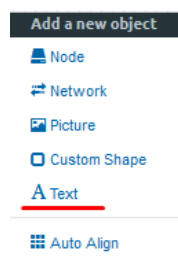
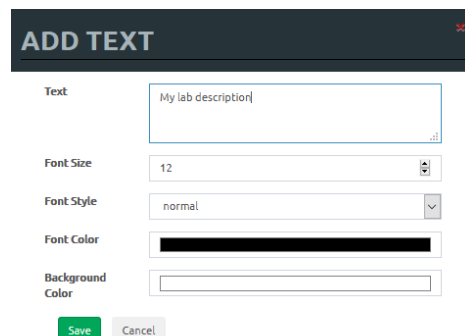
### 10.1.2 Resize square or circle objects

Move your mouse over the right bottom corner of the object until a corner symbol appears. Left click and drag your mouse to change object size or style (rectangle, sphere)

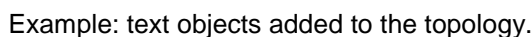


### 10.1.3 Text object

It is also possible to add text to your EVE topology.





#### Step 4: Copy content to EVE text object

**ADD TEXT**

Text

```
/O7BDM9zWubWRKghlFxFUgiAlgiAlhUSm
/ARBEARBEAqJCCpBEARBEIRClOJKEARBEASHkligE
gRBEARBKCCQiqARBEARBEAqJCCpBEARBEIRClOJK
EARBEASHkligEgRBEARBKCCQiqARBEARBEAqJCCp
BEARBEIRClOJKEARBEASHkligEgRBEARBKCCQiqAR
BEARBEAqJCCpBEARBEIRClOJKEARBEASHkligEgR
BEARBKCCQiqARBEARBEAqJCCpBEARBEIRClOJKEA
RBEASHkligEgRBEARBKCCQiqARBEARBEAoF8H
/BWtRaNQeqHgAAAABJRUSErkJggg==">
```

Font Size: 12

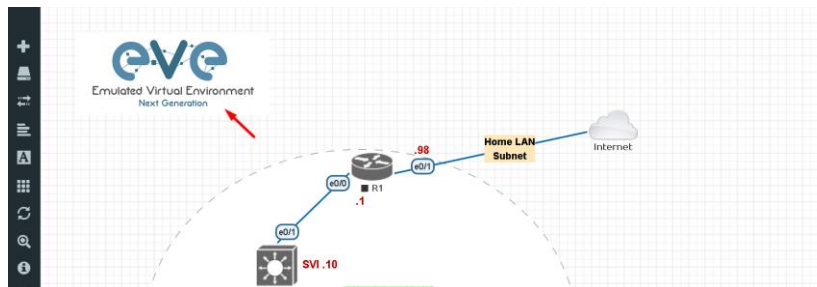
Font Style: normal

Font Color: [Black]

Background Color: [White]

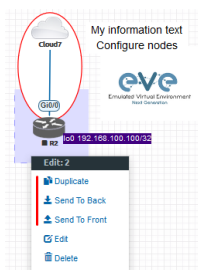
Save Cancel

#### Step 5: Move and place your picture to the Lab.



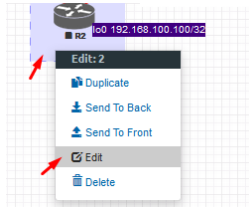
### 10.1.5 Cloning objects and overlay positions

Right click on the object you want to clone and choose "Duplicate". You can also change the object's overlay position using the "Send to Back" or "Send to front" options.



### 10.1.6 Objects Editing

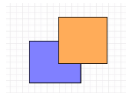
Right click the object and choose "Edit" for additional options.



At the bottom of the “Topology Canvas” page, additional object options will appear



**Z-index:** Used to change the object’s overlay position on the “Topology Canvas.” An object with a higher numerically valued z-index will cover an object with a lower numerically valued z-indexed.



**Example:** The blue object has a z-index of -1 and the orange object’s z-index is 0. Orange object is top over blue object.

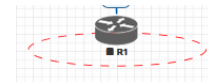
**Border width:** Used to change the object’s border width.

**Border type:** Used to change the border style of the object between solid and dashed.

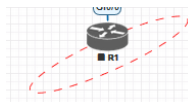
**Border colour:** Used to change the colour of the object’s border

**Background colour:** Used to change the background colour of the object

**Transparent:** Turns off background colour (filling) and makes the object transparent.



**Rotate:** Used to rotate the object on the topology.



**Name:** Used to change the object’s name.

To save the object, press Save (green button).



### 10.1.7 Lock objects movement

The “Lock Lab” feature prevents objects from being moved around on the canvas (among other things). For more information about this feature, refer to section [7.1.12](#).

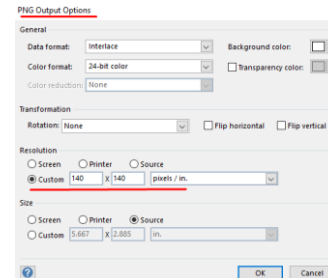
## 10.2 Custom design logical topology

EVE Community includes a feature to upload your own custom topology picture and map nodes to it for easy access.

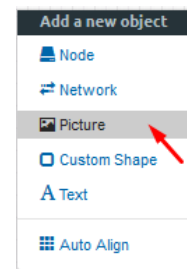
## 10.2.1 Custom design upload

Before you upload a custom picture in the lab, make sure it is in .png or .jpg format with resolution 130-150x130-150 pixels.

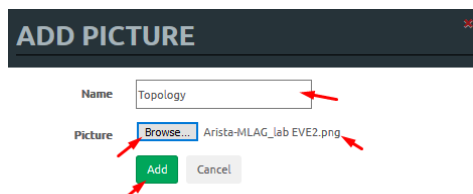
**TIP:** It is best is to create a topology in the MS Visio and after convert it to the .png picture format with resolution 140x140.



Step 1: Open “Add an Object” and then “Pictures” from the left sidebar or right click on a free area on topology canvas and hit “Add Picture.”

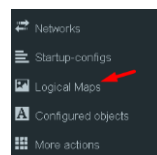


Step 2: Browse your PC for a .png or .jpg file and hit “Add”.




Once the picture is added to the topology canvas, the sidebar will display a new option: “Logical maps”

Step 3: Open the “Logical maps” menu item.



### Pictures window management

	Delete uploaded picture from the lab
	Image Map: Map nodes to places in the picture
Topology	Display uploaded picture. Work with lab and custom topology
	Zoom/unzoom uploaded custom topology
	Makes the window transparent to see the “Topology Canvas” behind it. Clicking again returns to the normal view.

	Close "Pictures" window.
---	--------------------------

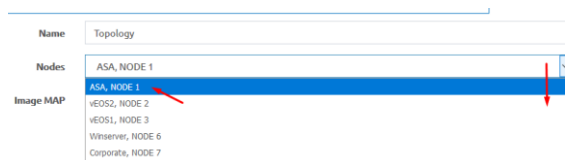
## 10.2.2 Custom topology mapping

This feature allows you to map the lab nodes to your custom topology picture.

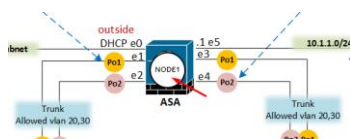
Step 1: Open the Image Map window:



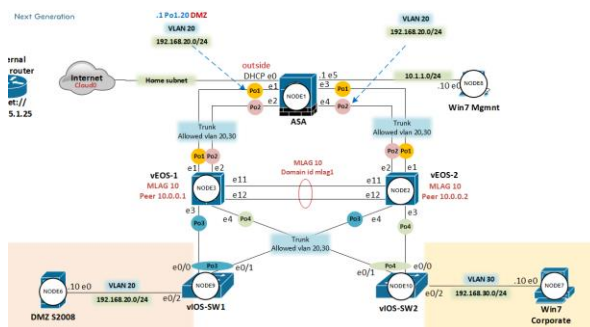
Step 2: Select a node, from the dropdown menu, that you want to map to the topology.



Step 3: Move your mouse over a node icon on the "Image Map" and click to map it. The grey circle means that the node is mapped.



Step 4: Continue mapping the rest of the nodes.



Step 5: OPTIONAL. You can also add a mapping for a device external to your EVE server in order to telnet, VNC, or RDP to it. This way you can open sessions to all your devices (whether external or internal) in one place.

Select from menu:

Nodes

And map with node on topology.



Change image map adding protocol, IP and port.

**Image MAP**

```
<area shape='circle' alt='img' coords='102,286,30' href='proto://CUSTOM_IP:CUSTOM_PORT'>
```

**Image MAP**

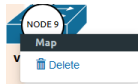
```
<area shape='circle' alt='img' coords='102,286,30' href='telnet://172.22.7.18:23'>
```

Step 6: Save your mapping and refresh the browser with F5.

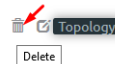
Save Cancel

### 10.2.3 Delete topology or mapping

To delete a single node mapping, right click on node mapping circle and click “Delete.”



To delete the entire custom topology, click delete.



## 10.3 Configuration export feature

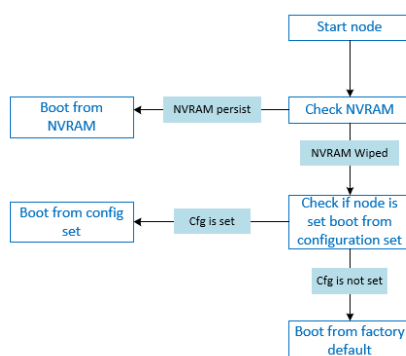
EVE Community includes an export configuration feature that allows you to save and manage configurations in a lab. The "Configuration Export" and "Startup-configs" features will allow you to set these saved configurations as startup configs for your nodes when they boot.

**⚠ IMPORTANT NOTE:** Before you start using the “Configuration export” feature, you must complete at least one configuration export.



Nodes will be greyed out without the option to enable “Startup-configs” until you complete at least one configuration export for each node.

**Node boot order:**



**NVRAM:** NVRAM is used as writable permanent storage for the startup configuration. During the boot process, the node will always check NVRAM for a saved configuration. Saving the configuration to NVRAM requires a vendor specific command. Cisco: copy run startup (wr), Juniper: commit, etc. It is **MANDATORY** to save a node's configuration before you can export it.

**Exported configuration:** A node configuration that has been exported from the node. It can be used to backup configurations or to set them as startup-configs.

**Wipe node:** Wiping a node will erase the NVRAM (running config) or the temporary image snapshot, depending on the type of node. Upon a successful wipe, the node will boot with the factory default configuration or the configuration included in the base image you are using. If you have the "Startup-config" feature enabled for the node, then it will boot with the chosen config set. You must wipe a node after changing certain node template settings like the image or startup-config. You also must wipe the node the first time you want to enable the "Startup-config" feature.

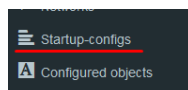
**Factory default configuration:** The base configuration that is applied from the manufacturer.

### 10.3.1 Supported nodes for configuration exports

Cisco Dynamips all nodes  
Cisco IOL (IOS on Linux)  
Cisco ASA  
Cisco ASAv  
Cisco CSR1000v  
Cisco Nexus 9K  
Cisco Nexus Titanium  
Cisco vIOS L3  
Cisco vIOS L2  
Cisco XRV  
Cisco XRV9K  
Juniper VRR  
Juniper VMX  
Juniper vMX-NG  
JunipervQFX  
JunipervSRX  
Juniper vSRX-NG  
Mikrotik  
PFsense FW  
Timos Alcatel  
vEOS Arista

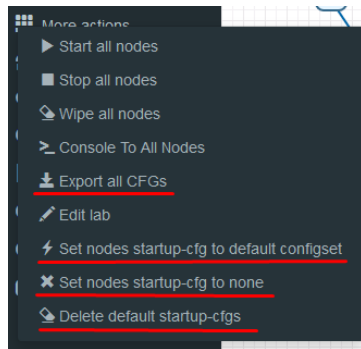
### 10.3.2 Startup config management

#### 10.3.2.1 Global commands



Configurations can be managed via the "Startup-configs window which can be accessed from the sidebar menu while on the Topology page.

### Topology page, More Options:



**Export all CFGs** – Exports all supported node configurations.

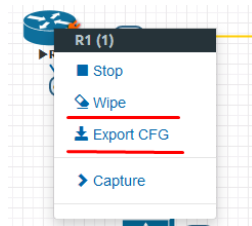
**Set nodes startup-cfg to default configset**- Sets all supported nodes to boot from the default configuration set.

**Set nodes startup-cfg to none** - Sets all supported nodes to boot from NVRAM configuration.

**Delete default configuration set.** **Warning**, this will delete your exported default configuration set for all nodes.

### 10.3.2.2 Individual node commands

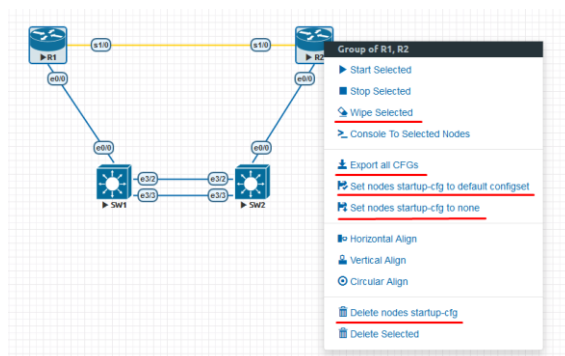
Select node, right click



**Wipe:** Wipes the NVRAM for a single node

**Export CFG:** Exports the configuration for a single node

### 10.3.2.3 Multiple selected nodes commands



**Wipe Selected:** Wipes the NVRAM for selected nodes

**Export all CFGs:** Exports the configuration for selected nodes

**Set nodes startup-cfg to default configs set:** Set selected nodes to the default config set

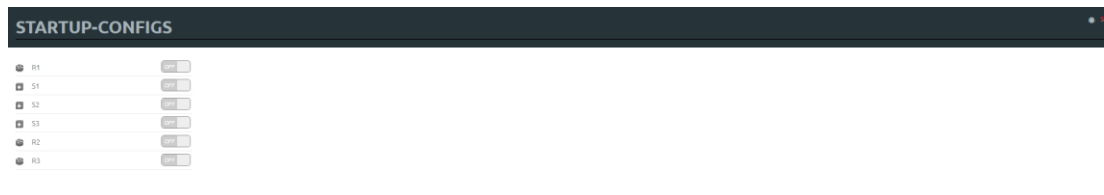
**Set nodes startup-cfg to none:** Set nodes to boot from NVRAM or from factory default if wiped.



**Delete nodes startup cfg:** Delete selected node's startup cfg. (clean default set)

### 10.3.2.4 Startup-configuration window

No configuration exports or manual configs loaded for nodes



Startup-configs are exported and the “Configuration Export” feature can be used.

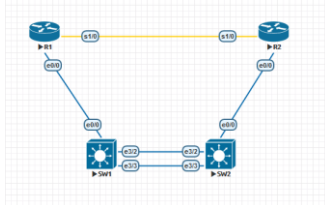


### 10.3.2.5 Startup-config window information

Config Set <span>Default ▾</span>	Config set menu
R1	No configuration is available for node. Grey node
R1	Configuration is available and can be used. Blue node. Exported configuration persist
R2 <span>OFF</span>	Configuration persist but it is disabled. Node will boot from NVRAM or factory default if it is wiped
R1 <span>ON</span>	Configuration persists and node will boot from the configuration after being wiped
<span>P</span> <span>Cisco-IOS ▾</span> <span>Dark ▾</span> <span>12px ▾</span> <span>Ace Editor</span> <span>ON</span>	Ace Editor. Different vendor configuration edit option. Just Text visual format.

### 10.3.3 Export configuration

#### Example:



Step 1: **MANDATORY:** Configure your nodes and make sure you applied the vendor specific command to save the running configuration to NVRAM. If you do not save the configuration, it will not be exported and in the notification area, you will receive an error message stating the node cannot be exported.

In this example the nodes have been configured with hostnames only and the configurations have been saved to NVRAM.

Step 2: In the example below a group of nodes were selected to export configurations.

Step 3: Use “Export all CFGs” for selected nodes. Export configuration is completed. The notification area will display “Export All: done” when complete.

### 10.3.4 Boot nodes from exported config set

Step 1: Stop all nodes

Step 2: Open sidebar and click Startup-configs. Make sure your config is set to ON and the nodes config switch is green (switch on/off beside node). Press the green “Save” button (on the bottom) and all your nodes will boot with the exported config set after wiping them.



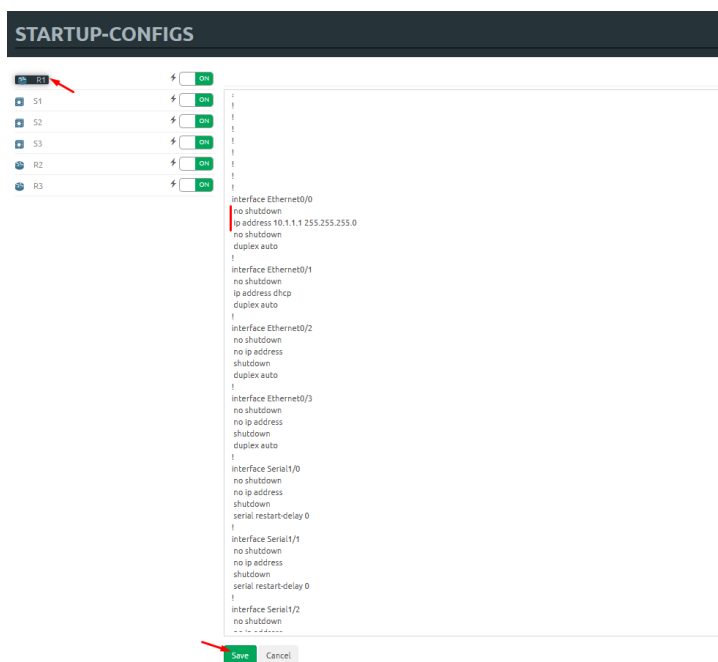
Step 3: Wipe nodes. For more information refer to section [8.1.3](#)

Step 4: Start nodes

### 10.3.5 Edit exported configurations

It is possible to edit your configurations for the nodes manually.

Step 1: Select the node you want to edit the configuration of and make your changes. Click “Save” when you are finished.



Step 2: Save the config for nodes with the green “Save” button on the bottom.

**⚠ NOTE:** you can manually copy/paste any configuration into the config set editor and apply it to your node. Make sure your configuration interfaces match the lab node’s interface names.

### 10.3.6 Set lab to boot from none

To reset your lab nodes’ configuration to factory default, follow the steps below:

Step 1: Wipe nodes. Refer to section [10.3](#) for information about wiping nodes and the order of operations during boot.

Step 2: Open sidebar and click Startup-configs. Make sure your config is set to OFF and the nodes config switch is red (switch on/off beside node). Press the green “Save” button (on the bottom) and all your nodes will boot with no config/factory default after wiping them.



Step 3: Start nodes

### 10.3.7 Lab config script timeout

Lab config script timeout is used when nodes are waiting to boot from a config set. The node will literally wait during boot until the configuration is applied from the config set.

Hit “More actions” and then “Edit lab” from the sidebar. Set the config script timeout in seconds. By default, this timer is set to 300 seconds for new labs.

**⚠ NOTE:** For heavy labs and nodes with long configurations, you can raise this timer to 600 seconds or higher.

Config Script Timeout  Seconds

## 11 EVE Troubleshooting

### 11.1 CLI diagnostic information display commands

#### 11.1.1 Display full EVE Community diagnostic

```
eve-info
```

#### 11.1.2 Display the currently installed EVE Community version:

```
dpkg -l eve-ng
```

```
root@eve-ng:~# dpkg -l eve-ng
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name          Version          Architecture Description
++-+-----+-----+-----+-----+
ii  eve-ng          2.0.3-95         amd64         A new generation software for network
```

#### 11.1.3 Display if EVEs Intel VT-x/EPT option on/off:

```
kvm-ok
```

```
root@eve-ng:~# kvm-ok
INFO: /dev/kvm exists
KVM acceleration can be used
root@eve-ng:~#
```

#### 11.1.4 Display EVEs CPU INFO:

```
lscpu
```

```
root@eve-ng:~# lscpu
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:             Little Endian
CPU(s):                 24
On-line CPU(s) list:   0-23
Thread(s) per core:    1
Core(s) per socket:    1
Socket(s):              24
NUMA node(s):          4
Vendor ID:              GenuineIntel
CPU family:             6
Model:                  44
Model name:             Intel(R) Xeon(R) CPU           X5680  @ 3.33GHz
Stepping:               2
CPU MHz:                3324.053
BogoMIPS:               6650.00
Virtualization:         VT-x
Hypervisor vendor:     VMware
```

#### 11.1.5 Display EVEs HDD utilization.

If the /boot only has a little space left you can refer to section [3.6.1.1](#). If the eve-ng-vg-root reaches 99% or 100% then you will need to expand the HDD in order to continue using EVE. The Solution to expand your HDD is described in section [11.1](#)

```
df -h
```

```
root@eve-ng:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            40G   0    40G   0% /dev
tmpfs           7.9G  52M   7.9G   1% /run
/dev/mapper/eve--ng--vg-root 681G  370G  283G  57% /
tmpfs           40G   0    40G   0% /dev/shm
tmpfs           5.0M   0   5.0M   0% /run/lock
tmpfs           40G   0    40G   0% /sys/fs/cgroup
/dev/sda1       472M   83M  365M  19% /boot
root@eve-ng:~#
```

### 11.1.6 Display EVEs Bridge interface status

```
brctl show
```

```
root@eve-ng:~# brctl show
bridge name      bridge id        STP enabled      interfaces
docker0          8000.0242c0db8435 no                eth0
nat0             8000.000000000000 no                eth1
pnet0            8000.000c29d0aa94 no                vuni1_0_1_0
pnet1            8000.000c29d0aabc no                eth2
pnet2            8000.000c29d0aa9e no                eth3
pnet3            8000.000c29d0aaa8 no                eth4
pnet4            8000.000c29d0aabb2 no
pnet5            8000.000000000000 no
pnet6            8000.000000000000 no
pnet7            8000.000000000000 no
pnet8            8000.000000000000 no
pnet9            8000.000000000000 no
```

### 11.1.7 Display EVEs system services status

```
systemctl list-unit-files --state=enabled
```

```
root@eve-ng:~# systemctl list-unit-files --state=enabled
UNIT FILE      STATE
accounts-daemon.service enabled
autovt@.service enabled
capdog.service enabled
cpulimit.service enabled
cron.service   enabled
docker.service enabled
getty@.service enabled
lvm2-monitor.service enabled
mysql.service  enabled
networking.service enabled
open-vm-tools.service enabled
openvswitch-switch.service enabled
ovfstartup.service enabled
resolvconf.service enabled
rsyslog.service enabled
ssh.service    enabled
sshd.service   enabled
syslog.service enabled
systemd-timesyncd.service enabled
unattended-upgrades.service enabled
ureadahead.service enabled
dm-event.socket enabled
docker.socket  enabled
lvm2-lvmetad.socket enabled
lvm2-lvmpolld.socket enabled
uuuid.socket   enabled
remote-fs.target enabled
apt-daily-upgrade.timer enabled
apt-daily.timer enabled
```

## 11.2 Expand EVEs System HDD

**⚠ IMPORTANT NOTE: DO NOT expand your current/existing HDD on your EVE VM!**

### 11.2.1 Expand HDD on VMware Workstation

Expanding your EVEs system HDD is achieved by adding an additional HDD to your EVE VM.

Step 1: Stop all your labs and shutdown EVE.

Use EVE CLI command: **shutdown -h now**

Step 2: Go to edit VM settings and add a new Hard drive. Then click Next.

Step 3: Leave the recommended SCSI HDD option and then click Next

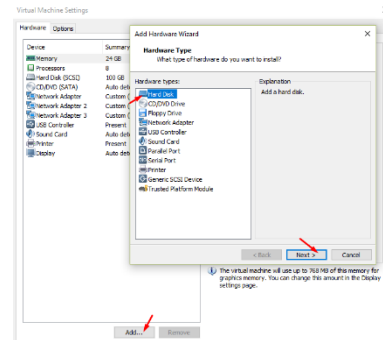
Step 4: Make sure you have selected the option “Create a new Virtual disk.”

Step 5: Set your desirable HDD Size; example 200GB.

Step 6: Make sure you have set the option “Store Virtual disk as a single file” and then click Next

Step 7: Optional: Specify the location of where your new HDD will be stored, then click Finish.

Step 8: Boot your EVE VM, HDD size will be expanded automatically. To verify, use the command to verify HDD utilization referenced in section [11.1.5](#)



### 11.2.2 Expand your HDD on ESXi

Expanding your EVEs system HDD is achieved by adding an additional HDD to your EVE VM.

Step 1: Stop all your labs and shutdown EVE.

Use EVE CLI command: **shutdown -h now**

Step 2: Go to edit VM settings and add a new Hard drive. Then click Next

Step 3: Make sure you have selected the option “Create a new Virtual disk.” Then click Next

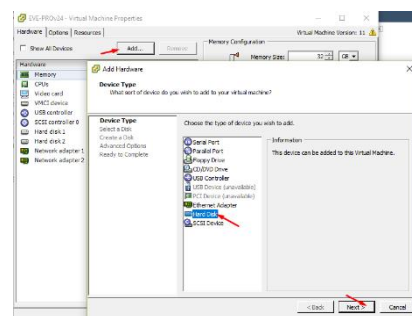
Step 4: Set your desirable HDD Size; example 200GB.

Step 5: It is recommended to set the **Thick Provision Lazy Zeroed** HDD option.

Step 6: Specify the location of where your new HDD will be stored and then click Next

Step 7: Leave the recommended SCSI HDD option as is and click Finish.

Step 8: Boot your EVE VM, the HDD size will be expanded automatically. To verify, use the command to verify HDD utilization referenced in section [11.1.5](#)



### 11.2.3 Expand your HDD on a Bare Metal EVE Server

It is a complicated process to expand a HDD for a bare metal EVE server. Please open a ticket in our Live chat support for advice.

<http://www.eve-ng.net/live-helpdesk>

Use a google account to join in the Live Chat or create new chat account.

## 11.3 Reset Management IP

Type the following commands into the CLI followed by enter:

```
rm -f /opt/ovf/.configured
```

```
su -
```

<http://www.eve-ng.net/documentation/installation/bare-installIP> address setup wizard. Please follow the steps in section [3.5.1](#) for Static IP or [3.5.2](#) for DHCP IP setup.

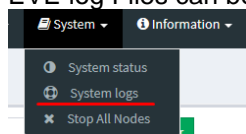
## 11.4 EVE Community SQL Database recovery

Starting from EVE Community version 2.0.3-95, you can recover SQL user database in case of disaster:

```
unl_wrapper -a restoredb
```

## 11.5 EVE Log files

EVE log Files can be obtained from the System Logs page under the System dropdown menu



Use the menu to collect log file data you are interested in.



System logs

System log viewer

Select log file

access.txt

access.txt

api.txt

error.txt

php\_errors.txt

unl\_wrapper.txt

cpulimit.log

Number of Lines

20

Search text

View

Null

## 11.6 EVE cli diagnostic info

Use EVE cli to obtain your EVE information:

```
eve-info
```

## 12 Images for EVE

Images must be uploaded and prepared before they can be used in labs. The best way to upload images is to use the WinSCP tool for Windows environment or FileZilla for MAC OSX and Linux.

Link to download WinSCP:

<https://winscp.net/eng/download.php>

Link to download FileZilla:

<https://filezilla-project.org/>

To access EVE, use SSH protocol (port 22).

Supported images for EVE are stored in the three locations:

- IOL (IOS on Linux), **/opt/unetlab/addons/iol/bin/**
- Dynamips images, **/opt/unetlab/addons/dynamips**
- Qemu images, **/opt/unetlab/addons/qemu**

### 12.1 Qemu image naming table

**⚠ IMPORTANT NOTE:** Intel VT-X/EPT must be enabled to run Qemu nodes in EVE. For information on how to enable this option, Refer to section 3: EVE Installation.

The directory names used for QEMU images are very sensitive and must match the table below exactly in order to work.

Ensure your image folder name starts as per the table. After the "-" you can add whatever you like to label the image. We recommend using the version of your image.

Folder name examples:

firepower6-FTD-6.2.1  
acs-5.8.1.4

The image inside the folder must be named correctly:  
Example: hda.qcow2 or virtioa.qcow2

Full path Example: opt/unetlab/addons/qemu/acs-5.8.1.4/hda.qcow2

Qemu folder name EVE	Vendor	Qemu image .qcow2 name
a10-	A10-vthunder	hda
acs-	ACS	hda
asa-	ASA ported	hda

asav-	ASAv	virtioa
ampcloud-	Ampcloud Private	hda, hdb, hdc
barracuda-	Barracuda FW	hda
bigip-	F5	hda, hdb
brocadevadx-	Brocade	hda
cda-	Cisco CDA	hda
cips-	Cisco IPS	hda, hdb
clearpass-	Aruba ClearPass	hda, hdb
aruba-	Aruba Virtual Mobility Controller	hda, hdb
coeus-	Cisco WSA coeus	virtioa
phoebe-	Cisco ESA	virtioa
cpsg-	Checkpoint	hda
csr1000v-	Cisco CSR v1000	virtioa
csr1000vng-	Cisco CSR v1000 Denali & Everest	virtioa
prime-	Cisco Prime Infra	virtioa
cucm-	Cisco CUCM	virtioa
cumulus-	Cumulus	hda
extremexos-	ExtremeOS	hda
firepower-	Cisco FirePower 5.4 NGIPS	scsia
firepower-	Cisco FirePower 5.4 FMC	scsia
firepower6-	Cisco FirePower 6.x NGIPS	scsia
firepower6-	Cisco FirePower 6.x FMC	hda
firepower6-	Cisco FirePower 6.x FTD	hda
fortinet-	Fortinet FW	virtioa
fortinet-	Fortinet SGT	virtioa
fortinet-	Fortinet mail	virtioa, virtiob
fortinet-	Fortinet manager	virtioa
hpvsr-	HP virt router	hda
huaweiug6kv-	Huawei USG6000v	hda
ise-	ISE 1.x cisco	hda
ise-	ISE 2.x cisco	virtioa
jspace-	Junos Space	hda
infoblox-	Infoblox	virtioa
junipervrr-	Juniper vRR	virtioa
linux-	any linux	hda
mikrotik-	Mikrotik router	hda
nsvpx-	Citrix Netscaler	virtioa
nxosv9k-	NX9K Cisco Nexus ( SATA best perf)	sataa
olive-	Juniper	hda
ostinato-	Ostinato traffic generator	hda
osx-	Apple OSX	hda + kernel.img
paloalto-	PaloAlto FW	virtioa
pfsense-	pFsense FW	hda
riverbed-	vRiverbed	virtioa, virtiob
sonicwall-	DELL FW Sonicwall	hda

sourcefire-	Sourcefire NGIPS	scsia
sterra-	S-terra VPN	hda
sterra-	S-terra Gate	virtioa
timos-	Alcatel Lucent Timos	hda
titanium-	NXOS Titanium Cisco	virtioa
vcenter-	VMWare vCenter	sataa ( 12G ) satab ( 1.8G ) satac ( 15G ) satad ( 25G ) satae ( 25G ) sataf ( 10G ) satag ( 10G ) satah ( 15G ) satai ( 10G ) sataj ( 1.0G ) satak ( 10G ) satal ( 10G ) satam ( 100G )
veos-	Arista SW	hda, cdrom.iso
vios-	L3 vIOS Cisco Router	virtioa
viosl2-	L2 vIOS Cisco SW	virtioa
vtbond-	Viptela vBond	hda
vtedge-	Viptela vEdge	hda
vtsmart-	Viptela vSmart	hda
vtmanage-	Viptela vManage	hda, hdb
vmx-	Juniper vMX router	hda
vmxvcp-	Juniper vMX-VCP	hda, hdb, hdc
vmxvfp-	Juniper vMX-VFP	hda
vnam-	Cisco VNAM	hda
vqfxpfe-	Juniper vQFX-PFE	hda
vqfxre-	Juniper vQFX-RE	hda
vsrx-	vSRX 12.1 Juniper FW/router	virtioa
vsrxng-	vSRX v15.x Juniper FW/router	virtioa
vwaas-	Cisco WAAS	virtioa,virtiob,virtioc
vwlc-	vWLC Cisco WiFi controller	megasasa
vyos-	VYOS	virtioa
win-	Windows Hosts (Not Server Editions)	hda or virtioa(using driver)
winserver-	Windows Server Editions	hda or virtioa(using driver)
xrv-	XRv Cisco router	hda
xrv9k-	XRv 9000 Cisco router	virtioa

## 12.2 How to prepare images for EVE

How to add EVE-NG images please refer to:

<https://www.eve-ng.net/index.php/documentation/howtos/>

## 12.3 How to add custom image template

For advanced users only. SSH to you EVE.

### 12.3.1 Prepare template file

All templates files are in "/opt/unetlab/html/templates/" Make a copy the most similar existing template to your new file

Example:

```
cp /opt/unetlab/html/templates/linux.yml /opt/unetlab/html/templates/ngips.yml
```

### 12.3.2 Prepare interface format and name lines

EVE Community has included option to create various interface names, sequences and numbering. Please refer table below.

<b>Formula</b>	<b>Template line format example</b>	<b>Will produce</b>
eth_format: <prefix>{<first value for slot: example 1>}<separator>{<first value for port>-<number of port per slot: example 8>}	eth_format: Gi{1}/{0-8}	Gi1/0 Gi1/1 Gi1/2 Gi1/3 Gi1/4 Gi1/5 Gi1/6 Gi1/7 Gi2/0 Gi2/1 ....
eth_format: <prefix>{<first value for slot: example 0>}<separator>{<first value for port>-<number of port per slot: example 4>}	eth_format: Ge{0}/{0-4}	Ge0/0 Ge0/1 Ge0/2 Ge0/3 Ge1/0 Ge1/2 Ge1/3 Ge2/0 Ge2/1 Ge2/2 ....
eth_format: <prefix>{<first value>}	eth_format: Gi{0}	Gi0 Gi1 Gi2 Gi3 ...

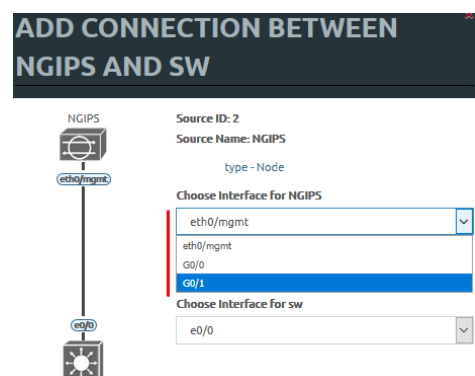
eth_format: <prefix><{<first value>>	eth_format: G0/{0}	G0/0 G0/1 G0/2 G0/3 ...
eth_name: <prefix: Interface custom name>	eth_name: - M1 - T1 - T2	M1 T1 T2
eth_name: <prefix: Interface custom name>	eth_name: - MGMT - DATA - TRAFFIC	MGMT DATA TRAFFIC

**Combined first named interface following by formatted interfaces Example:** We have to set first node interface name “eth0/mgmt” and next following interfaces must start from G0/0 and change sequence accordingly. G0/0, G0/1,.....,G0/X

As your node first interface will be custom named (eth0/mgmt), therefore in the template “eth\_name:” must be added before “eth\_format:”

```
eth_name:
- eth0/mgmt
eth_format: G0/{0}
```

This adding will produce Node interfaces.



```
nano ngips.yml
```

Change content, setting for various images can vary depends of vendor requirements. The interface name lines please refer Section: [12.3.2](#)

```
# Copyright (c) 2016, Andrea Dainese
# Copyright (c) 2017, Alain Degreffe
# All rights reserved.
#
# Redistribution and use in source and binary forms, with or without
# modification, are permitted provided that the following conditions are met:
# * Redistributions of source code must retain the above copyright
```

```
# notice, this list of conditions and the following disclaimer.
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# * Neither the name of the UNetLab Ltd nor the name of EVE-NG Ltd nor the
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# THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
# ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
# WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
GNU nano 2.5.3 File: ngips.yml

# DISCLAIMED. IN NO EVENT SHALL <COPYRIGHT HOLDER> BE LIABLE FOR ANY
# DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
# (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
# LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
# ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
# (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
# SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
---
type: qemu
name: NGIPS
cpulimit: 1
icon: IPS.png
cpu: 4
ram: 8192
ethernet: 3
eth_name:
- eth0/mgmt
eth_format: G0/{0}
console: vnc
qemu_arch: x86_64
qemu_nic: e1000
qemu_options: -machine type=pc-1.0,accel=kvm -serial none -nographic -nodefconfig
              -nodefaults -display none -vga std -rtc base=utc
...
```

Node name on the Topology



### 12.3.3 Prepare custom\_templates.yml

EVE has installed sample file: /opt/unetlab/html/includes/cutom\_templates.yml.distribution

If you don't have already a file /opt/unetlab/html/includes/custom\_templates.yml, just copy sample to custom\_templates.yml (single line commad below)

```
cp /opt/unetlab/html/includes/custom_templates.yml.distribution /opt/unetlab/html/includes/custom_templates.yml
```

#### Edit cutom\_templates.yml

Original file content:

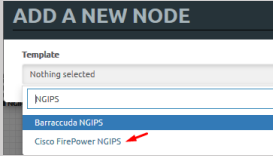
```
---
custom_templates:
- name: generic
  listname: Generic Template
...
```

Change to:

```

---
custom_templates:
- name: ngips ← Node template image foldername
  listname: Cisco FirePower NGIPS ← Node list name
...

```



### 12.3.4 Prepare new icon for your template:

**Step 1** Use Filezilla or Winscp to copy your custom icon IPS.png (icon we have in ngips.yml - see sample at Section [12.3.1](#))

This icon should be about 30-60 x 30-60 in the png format (switch.png is for example 65 x 33, 8-bit/color RGBA)

**Step 2** Copy this new icon into /opt/unetlab/html/images/icons/

### 12.3.5 Template use

**Step 1** Create directory /opt/unetlab/addons/qemu/ngips-6.2.83

```
mkdir /opt/unetlab/addons/qemu/ngips-6.2.83
```

**Step 4.2** Upload image NGIPS, Refer Section: [12.2](#)

## 12.4 How to hide unused images in the node list

### 12.4.1 Creating new config.php file

If your EVE Server does not have the **config.php** file in the /opt/unetlab/html/includes/ directory, then it must be created.

Step 1. Use the EVE CLI. Make sure you are in the following EVE directory: /opt/unetlab/html/includes/

Step 2. Rename config.php.distribution (the template) to config.php.

```
mv config.php.distribution config.php
```

### 12.4.2 Edit config.php file

Step 1. Use vi or nano file editor to edit your config.php file.

```
nano config.php
```



Step 2. Edit the config.php file, uncomment and adjust to your TEMPLATE\_DISABLED settings (see screenshot below).

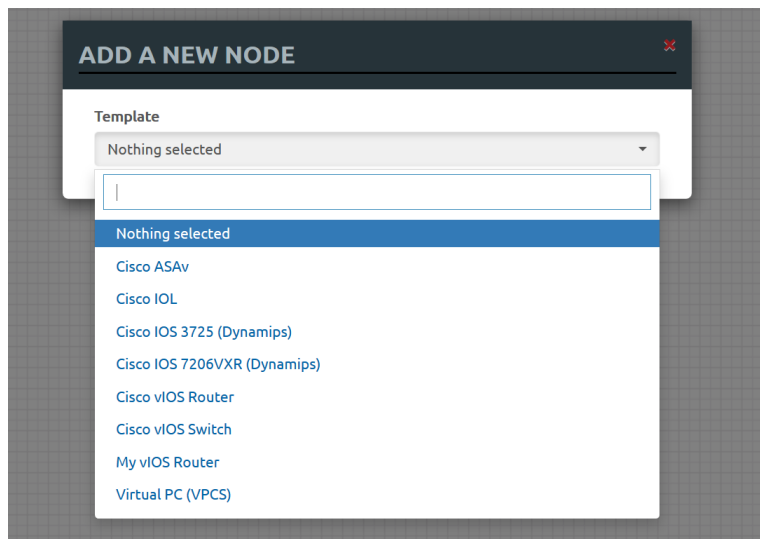
“hided” will remove unloaded/empty image templates from nodes list in WEB GUI

“missed” will show you all available templates in EVE WEB nodes list

Example below will give you result:

```
<?php
// TEMPLATE MODE .missing or .hided
DEFINE('TEMPLATE_DISABLED', '.hided') ;
?>
```

You are seeing only templates with loaded images.



## 13 EVE Resources

For additional updated information please follow our web site: <http://www.eve-ng.net>

How to updates: <http://www.eve-ng.net/documentation/howto-s>

How to videos: <http://www.eve-ng.net/documentation/howto-s-2>

FAQ: <http://www.eve-ng.net/faq>

Live support chat: <http://www.eve-ng.net/live-helpdesk>

For access to live chat use your Google account or create new chat account.

EVE forum: <http://www.eve-ng.net/forum/>

To access forum resources, please create a new forum account.

EVE YouTube channel:

<https://www.youtube.com/playlist?list=PLF8yvsYkPZQ0myW7aVMZ80k8FU04UUgjV>

EVE Professional downloads: <http://www.eve-ng.net/downloads/eve-ng>

EVE Community version downloads, free: <http://www.eve-ng.net/community>

EVE Supported images: <http://www.eve-ng.net/documentation/supported-images>