Emulated Virtual Environment
Next Generation

EVE-NG Community Cookbook

Version 1.04

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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 **E**mulated **V**irtual **E**nvironment **– N**ext **G**eneration (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 usabilities, 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

PC/Laptop HW requirements	
CPU	Intel i5/i7 (4 Logical processors), Enabled Intel virtualization in BIOS
RAM	8Gb
HDD Space	40Gb
Network	LAN/WLAN
EVE Virtual machine requirements	
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

PC/Laptop HW requirements	
CPU	Intel i7 (8 Logical processors), Enabled Intel virtualization in BIOS
RAM	32Gb
HDD Space	200Gb
Network	LAN/WLAN
EVE Virtual machine requirements	
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

Server HW requirements	
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

EVE Virtual machine requirements	
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

Server HW requirements	
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/1J6JIXHcid_A661grBOu73rjFOeoHPhGHi9iJb1zlQpE/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 1: Create a New Virtual machine

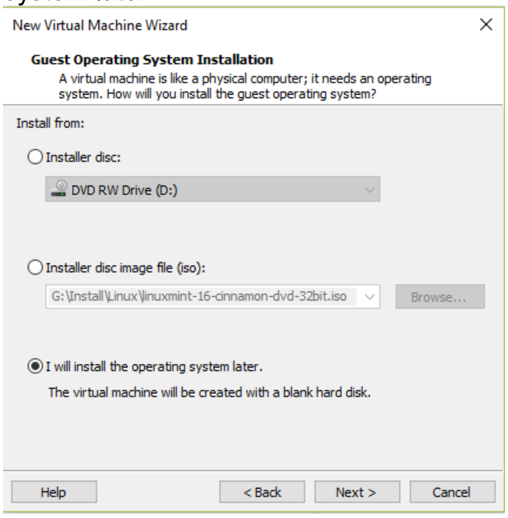
Welcome to the New Virtual Machine Wizard

What type of configuration do you want?

● Typical (recommended)
Create a Workstation 14.x virtual machine in a few easy steps.

○ Custom (advanced)
Create a virtual machine with advanced options, such as a SCSI controller type, virtual disk type and compatibility with older VMware products.

Step 2: Select "I will install the operating system later"



Guest Operating System Installation
A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?

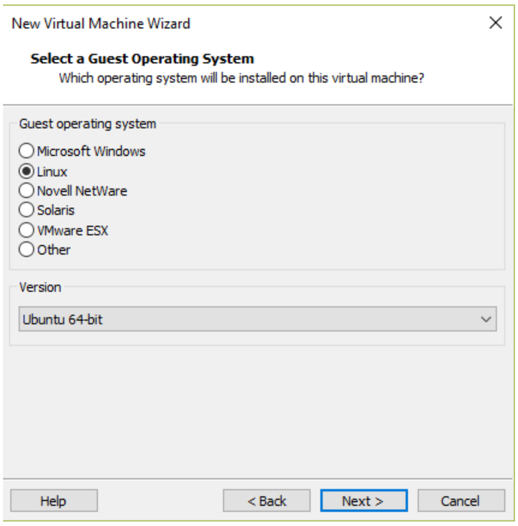
Install from:

○ Installer disc:
DVD RW Drive (D:)

○ Installer disc image file (iso):
G:\Install\Linux\linuxmint-16-cinnamon-dvd-32bit.iso

● I will install the operating system later.
The virtual machine will be created with a blank hard disk.

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



New Virtual Machine Wizard

Select a Guest Operating System

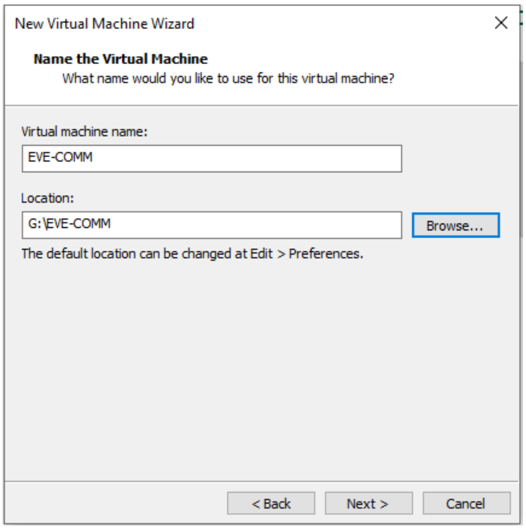
Which operating system will be installed on this virtual machine?

Guest operating system

- ○ Microsoft Windows
- ● Linux
- ○ Novell NetWare
- ○ Solaris
- ○ VMware ESX
- ○ Other

Version: Ubuntu 64-bit

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

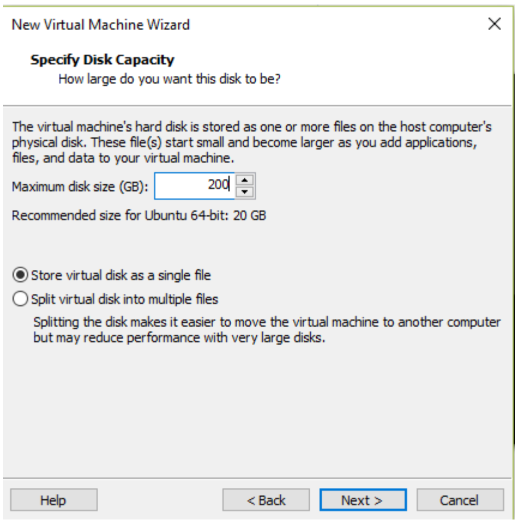
What name would you like to use for this virtual machine?

Virtual machine name: EVE-COMM

Location: G:\EVE-COMM

The default location can be changed at Edit > Preferences.

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.

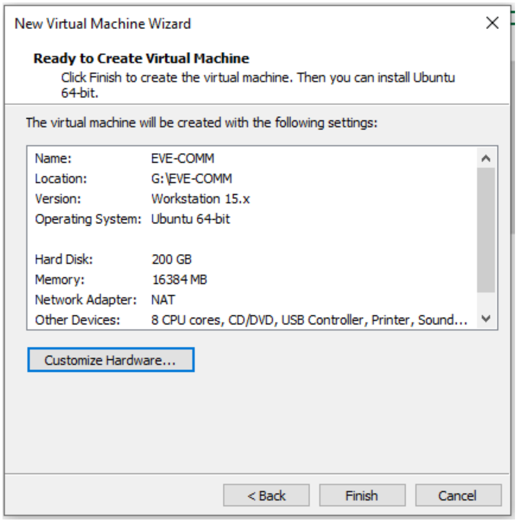
Maximum disk size (GB): 200

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.

Step 6: Press Customize Hardware



New Virtual Machine Wizard

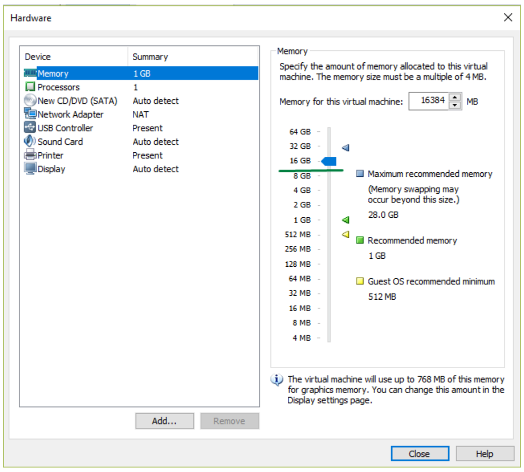
Ready to Create Virtual Machine

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...

Step 7: Assign desirable memory


Hardware

Device	Summary
Memory	1 GB
Processors	1
New CD/DVD (SATA)	Auto detect
Network Adapter	NAT
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Memory

Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.

Memory for this virtual machine: 16384 MB

Maximum recommended memory
(Memory swapping may occur beyond this size.)
28.0 GB

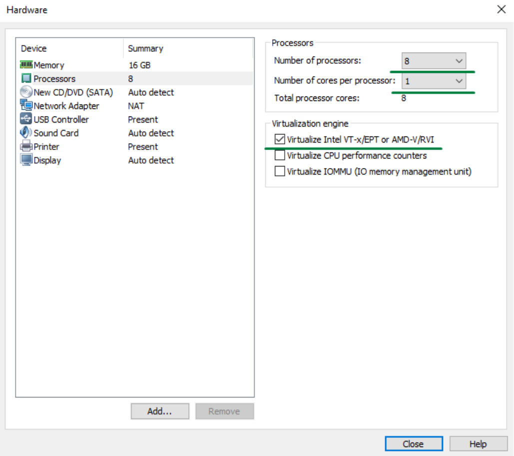
Recommended memory
1 GB

Guest OS recommended minimum
512 MB

The virtual machine will use up to 768 MB of this memory for graphics memory. You can change this amount in the Display settings page.

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.


Hardware

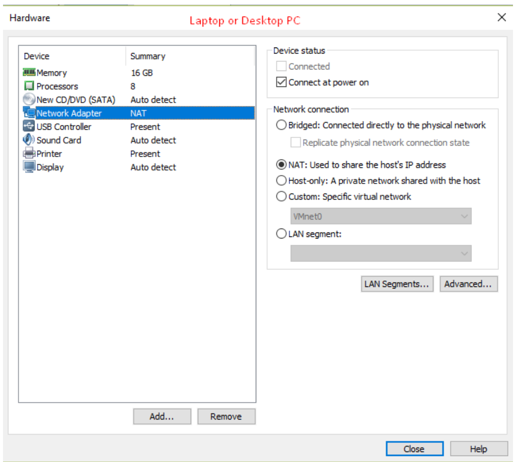
Device	Summary
Memory	16 GB
Processors	8
New CD/DVD (SATA)	Auto detect
Network Adapter	NAT
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Processors
Number of processors: 8
Number of cores per processor: 1
Total processor cores: 8

Virtualization engine
☑ Virtualize Intel VT-x/EPT or AMD-V/RVI
☐ Virtualize CPU performance counters
☐ Virtualize IOMMU (IO memory management unit)

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


Hardware

Laptop or Desktop PC

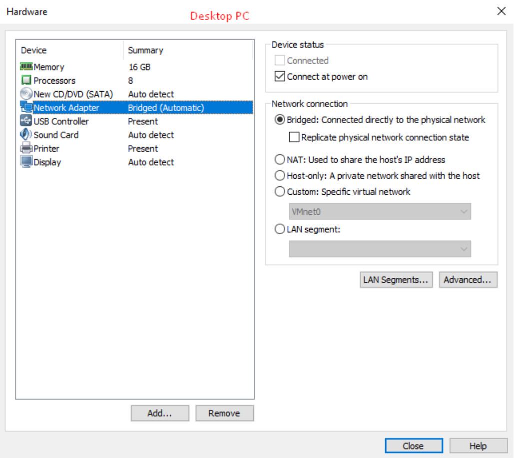
Device	Summary
Memory	16 GB
Processors	8
New CD/DVD (SATA)	Auto detect
Network Adapter	NAT
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Device status
☐ Connected
☑ Connect at power on

Network connection
○ Bridged: Connected directly to the physical network
☐ Replicate physical network connection state
● NAT: Used to share the host's IP address
○ Host-only: A private network shared with the host
○ Custom: Specific virtual network
VMnet0
○ LAN segment:

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.

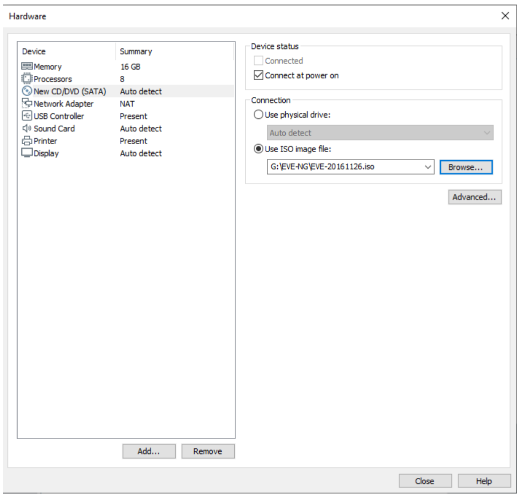

Hardware

Desktop PC

Device	Summary
Memory	16 GB
Processors	8
New CD/DVD (SATA)	Auto detect
Network Adapter	Bridged (Automatic)
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Device status
☐ Connected
☑ Connect at power on

Network connection
● Bridged: Connected directly to the physical network
☐ Replicate physical network connection state
○ NAT: Used to share the host's IP address
○ Host-only: A private network shared with the host
○ Custom: Specific virtual network
VMnet0
○ LAN segment:

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.
 Hardware Device — Summary Memory — 16 GB Processors — 8 New CD/DVD (SATA) — Auto detect Network Adapter — NAT USB Controller — Present Sound Card — Auto detect Printer — Present Display — Auto detect Device status ☐ Connected ☑ Connect at power on Connection ○ Use physical drive: Auto detect ● Use ISO image file: G:\EVE-NG\EVE-20161126.iso 	

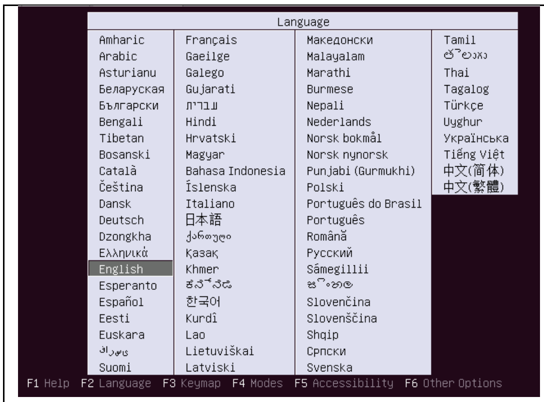
3.1.1.2 EVE-NG VM Installation steps

⚠ 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

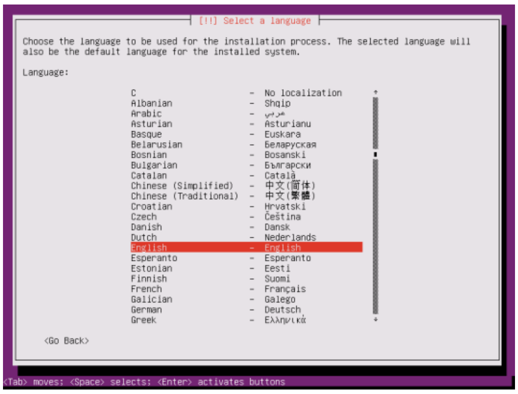
EVE VM Installation from ISO has 3 Phases

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.



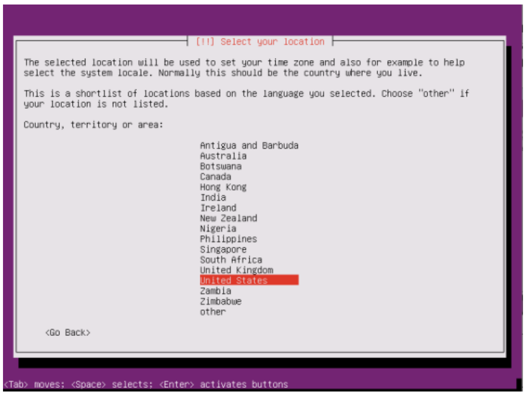
Step 3: Make sure that English is selected and confirm with Enter.



Choose the language to be used for the installation process. The selected language will also be the default language for the installed system.

Language:

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.



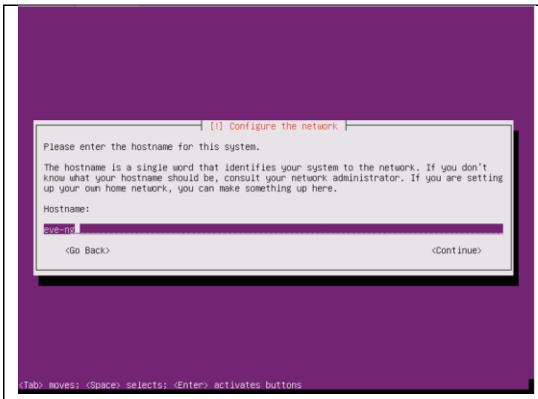
The selected location will be used to set your time zone and also for example to help select the system locale. Normally this should be the country where you live.

This is a shortlist of locations based on the language you selected. Choose "other" if your location is not listed.

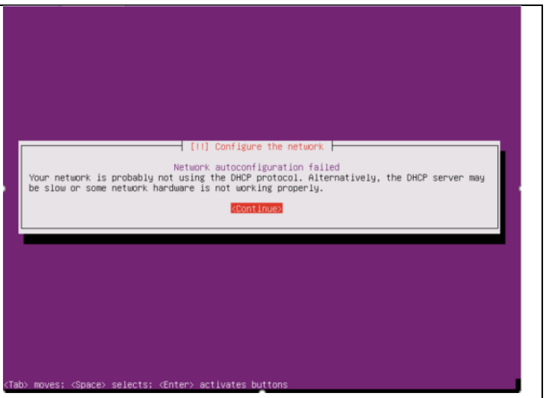
Country, territory or area:

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.

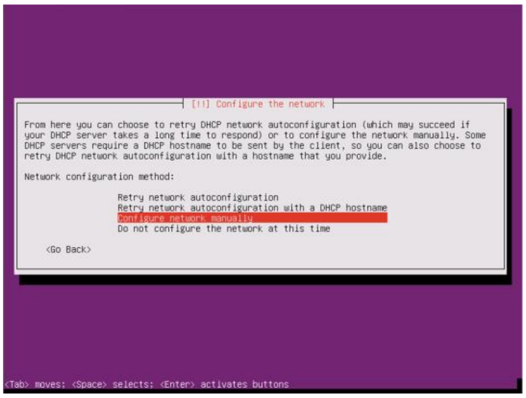


```
[!] Configure the network

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't
know what your hostname should be, consult your network administrator. If you are setting
up your own home network, you can make something up here.

Hostname:

eve-ng

     <Go Back>                                                         <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```



```
[!!] Configure the network

Network autoconfiguration failed
Your network is probably not using the DHCP protocol. Alternatively, the DHCP server may
be slow or some network hardware is not working properly.

<Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



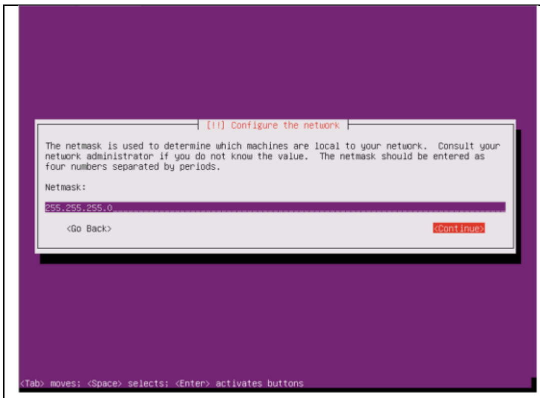
```
[!!] Configure the network

From here you can choose to retry DHCP network autoconfiguration (which may succeed if
your DHCP server takes a long time to respond) or to configure the network manually. Some
DHCP servers require a DHCP hostname to be sent by the client, so you can also choose to
retry DHCP network autoconfiguration with a hostname that you provide.

Network configuration method:

                  Retry network autoconfiguration
                  Retry network autoconfiguration with a DHCP hostname
                  Configure network manually
                  Do not configure the network at this time

     <Go Back>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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

```
[!!] Configure the network

The IP address is unique to your computer and may be:

 * four numbers separated by periods (IPv4);
 * blocks of hexadecimal characters separated by colons (IPv6).

You can also optionally append a CIDR netmask (such as "/24").

If you don't know what to use here, consult your network administrator.

IP address:

192.168.217.20

    <Go Back>                                            <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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

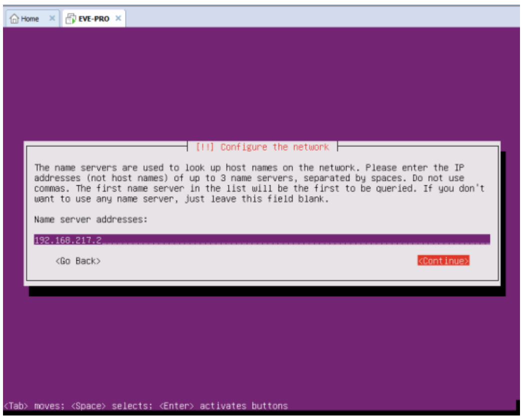
Step 10: Enter your Gateway IP, using the Tab key select “Continue” and confirm with Enter



```
[!!] Configure the network

The netmask is used to determine which machines are local to your network.  Consult your
network administrator if you do not know the value.  The netmask should be entered as
four numbers separated by periods.

Netmask:

255.255.255.0

     <Go Back>                                                            <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

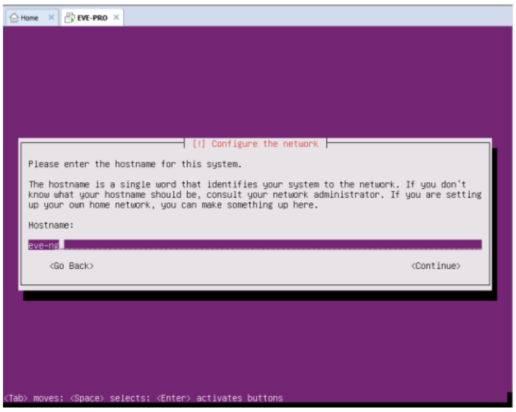
```
[!!] Configure the network

The gateway is an IP address (four numbers separated by periods) that indicates the
gateway router, also known as the default router.  All traffic that goes outside your LAN
(for instance, to the Internet) is sent through this router.  In rare circumstances, you
may have no router; in that case, you can leave this blank.  If you don't know the proper
answer to this question, consult your network administrator.

Gateway:

192.168.217.2

     <Go Back>                                                            <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



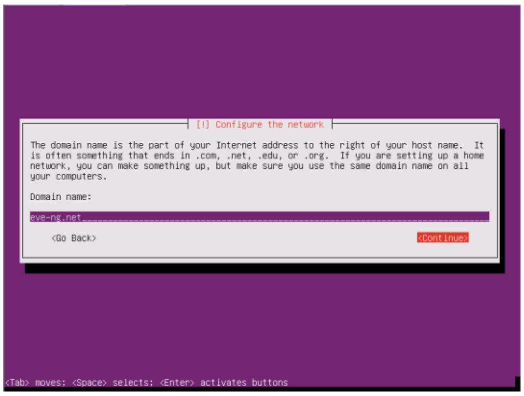
```
[!!] Configure the network

The name servers are used to look up host names on the network. Please enter the IP
addresses (not host names) of up to 3 name servers, separated by spaces. Do not use
commas. The first name server in the list will be the first to be queried. If you don't
want to use any name server, just leave this field blank.

Name server addresses:

192.168.217.2

     <Go Back>                                                            <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



```
[!] Configure the network

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't
know what your hostname should be, consult your network administrator. If you are setting
up your own home network, you can make something up here.

Hostname:

eve-ng

     <Go Back>                                                            <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



```
[!] Configure the network

The domain name is the part of your Internet address to the right of your host name.  It
is often something that ends in .com, .net, .edu, or .org.  If you are setting up a home
network, you can make something up, but make sure you use the same domain name on all
your computers.

Domain name:

eve-ng.net

    <Go Back>                                                          <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

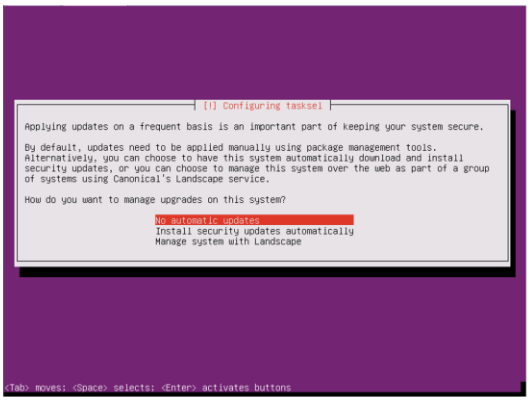
Step 14: If your DNS IP settings are correct, Ubuntu will detect your location automatically by connecting to Ubuntu servers. Confirm with Enter.

```
[!] Configure the clock

Based on your present physical location, your time zone is Europe/London.

If this is not correct, you may select from a full list of time zones instead.

Is this time zone correct?

    <Go Back>                                              <Yes>    <No>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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.

```
[!] Configure the package manager

If you need to use a HTTP proxy to access the outside world, enter the proxy information
here. Otherwise, leave this blank.

The proxy information should be given in the standard form of
"http://[[user][:pass]@]host[:port]/".

HTTP proxy information (blank for none):


    <Go Back>                                                          <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



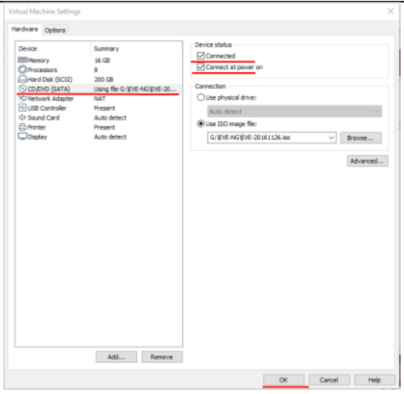
```
[!] Configuring tasksel

Applying updates on a frequent basis is an important part of keeping your system secure.

By default, updates need to be applied manually using package management tools.
Alternatively, you can choose to have this system automatically download and install
security updates, or you can choose to manage this system over the web as part of a group
of systems using Canonical's Landscape service.

How do you want to manage upgrades on this system?

                         No automatic updates
                         Install security updates automatically
                         Manage system with Landscape

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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.

```
[!!] Finish the installation

Installation complete
Installation is complete, so it is time to boot into your new system. Make sure to remove
the installation media (CD-ROM, floppies), so that you boot into the new system rather
than restarting the installation.

<Go Back>                                                                    <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```



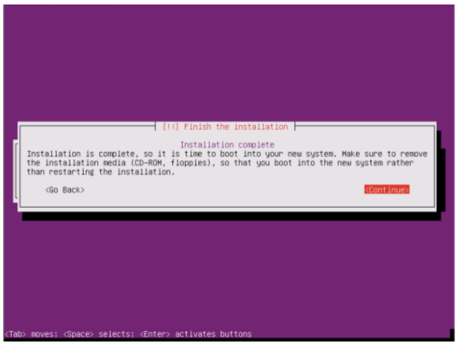
Virtual Machine Settings

Device	Summary
Memory	16 GB
Processors	8
Hard Disk (SCSI)	200 GB
CD/DVD (SATA)	Using file G:\EVE-NG\EVE-20...
Network Adapter	NAT
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Device status
☑ Connected
☑ Connect at power on

Connection
○ Use physical drive: Auto detect
● Use ISO image file: G:\EVE-NG\EVE-20161126.iso

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



```
[!!] Finish the installation

Installation complete
Installation is complete, so it is time to boot into your new system. Make sure to remove
the installation media (CD-ROM, floppies), so that you boot into the new system rather
than restarting the installation.

<Go Back>                                                                    <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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

```
Eve-NG (default root password is 'eve')
Use http://192.168.217.129/

eve-ng login:
```

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:

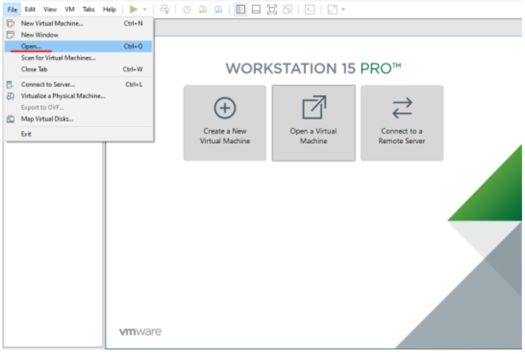
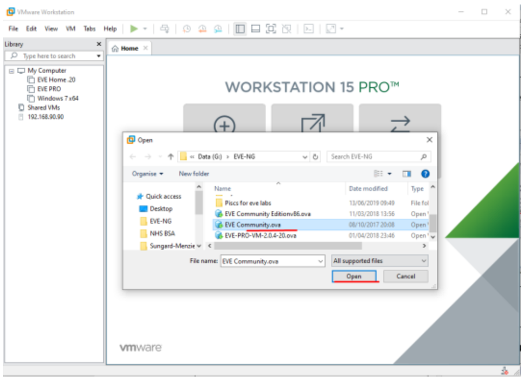
```
apt update
apt upgrade
```

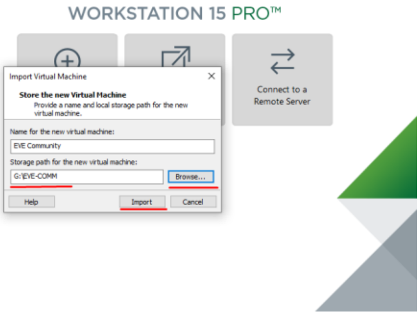
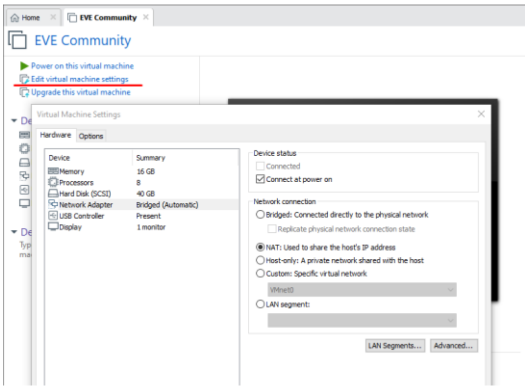
⚠ IMPORTANT NOTE: You must prepare and upload at least a couple of images to start building your labs. Refer to section **12**

3.1.2 VMware workstation OVA deployment

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

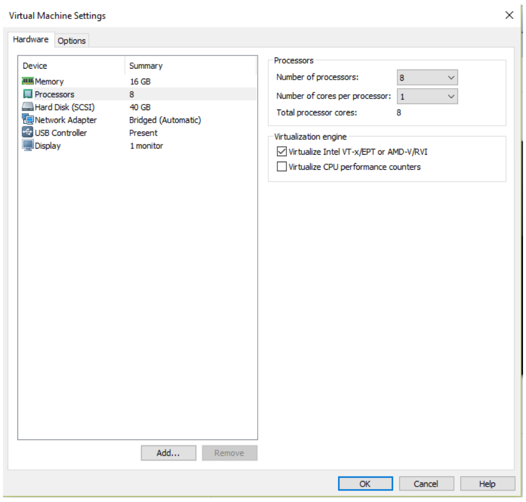
3.1.2.1 Deployment and VM machine settings

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  Import Virtual Machine **Store the new Virtual Machine** Provide a name and local storage path for the new virtual machine. Name for the new virtual machine: EVE Community Storage path for the new virtual machine: G:\EVE-COMM	Step 4: Open your EVE VM Settings and set the desired RAM.  EVE Community Virtual Machine Settings Memory 16 GB Processors 8 Hard Disk (SCSI) 40 GB Network Adapter Bridged (Automatic) USB Controller Present Display 1 monitor Device status: ☐ Connected ☑ Connect at power on Network connection: ○ Bridged: Connected directly to the physical network ☐ Replicate physical network connection state ● NAT: Used to share the host's IP address ○ Host-only: A private network shared with the host ○ Custom: Specific virtual network ○ LAN segment:

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.



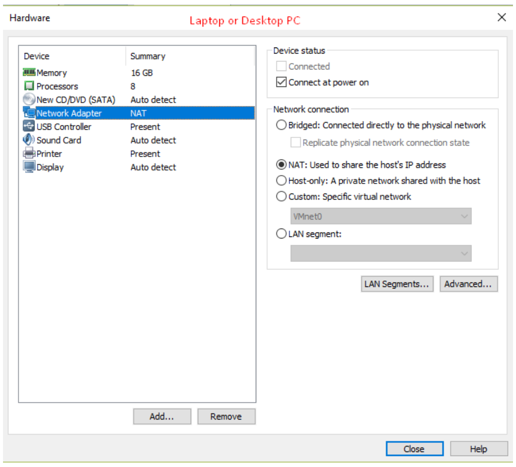
Device	Summary
Memory	16 GB
Processors	8
Hard Disk (SCSI)	40 GB
Network Adapter	Bridged (Automatic)
USB Controller	Present
Display	1 monitor

Processors
Number of processors: 8
Number of cores per processor: 1
Total processor cores: 8

Virtualization engine
☑ Virtualize Intel VT-x/EPT or AMD-V/RVI
☐ Virtualize CPU performance counters

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.



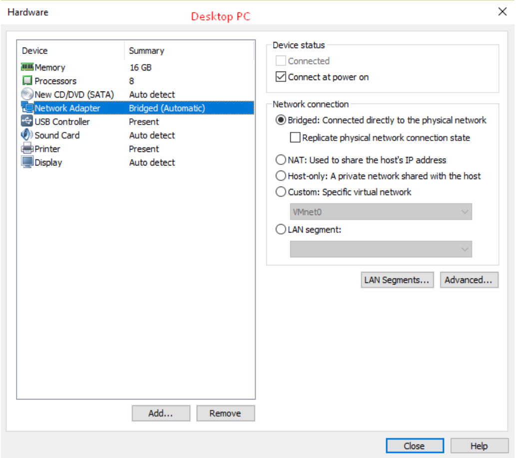
Device	Summary
Memory	16 GB
Processors	8
New CD/DVD (SATA)	Auto detect
Network Adapter	NAT
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Device status
☐ Connected
☑ Connect at power on

Network connection
○ Bridged: Connected directly to the physical network
☐ Replicate physical network connection state
● NAT: Used to share the host's IP address
○ Host-only: A private network shared with the host
○ Custom: Specific virtual network
VMnet0
○ LAN segment:

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.



Device	Summary
Memory	16 GB
Processors	8
New CD/DVD (SATA)	Auto detect
Network Adapter	Bridged (Automatic)
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Device status
☐ Connected
☑ Connect at power on

Network connection
● Bridged: Connected directly to the physical network
☐ Replicate physical network connection state
○ NAT: Used to share the host's IP address
○ Host-only: A private network shared with the host
○ Custom: Specific virtual network
VMnet0
○ LAN segment:

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

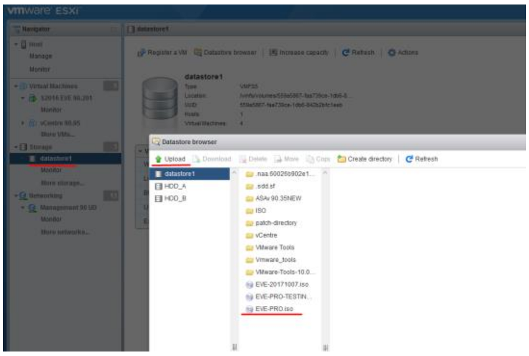
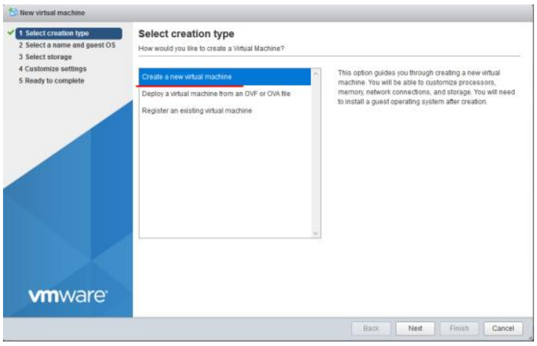
⚠ IMPORTANT NOTE: DO NOT expand the current EVE OVA HDD. To expand your EVE system size, please follow Troubleshooting section **11.2**

3.2 VMware ESXi

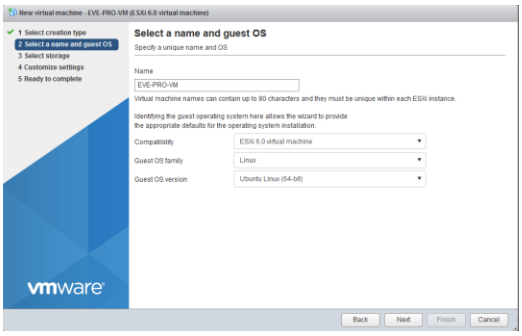
3.2.1 VMware ESXi EVE installation using ISO image (preferred)

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
	 How would you like to create a Virtual Machine? This option guides you through creating a new virtual machine. You will be able to customize processors, memory, network connections, and storage. You will need to install a guest operating system after creation.

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



New virtual machine - EVE-PRO-VM (ESXi 6.0 virtual machine)

1 Select creation type
2 Select a name and guest OS
3 Select storage
4 Customize settings
5 Ready to complete

Select a name and guest OS

Specify a unique name and OS

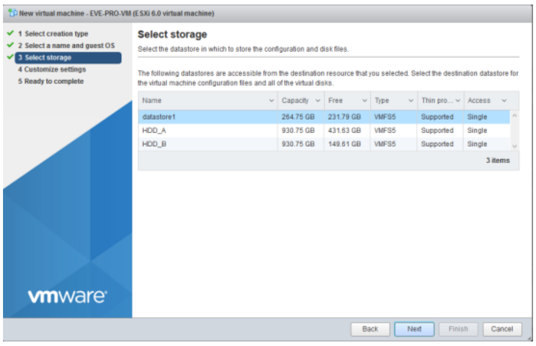
Name: EVE-PRO-VM

Virtual machine names can contain up to 80 characters and they must be unique within each ESXi instance.

Identifying the guest operating system here allows the wizard to provide the appropriate defaults for the operating system installation.

Compatibility: ESXi 6.0 virtual machine
Guest OS family: Linux
Guest OS version: Ubuntu Linux (64-bit)

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



New virtual machine - EVE-PRO-VM (ESXi 6.0 virtual machine)

1 Select creation type
2 Select a name and guest OS
3 Select storage
4 Customize settings
5 Ready to complete

Select storage

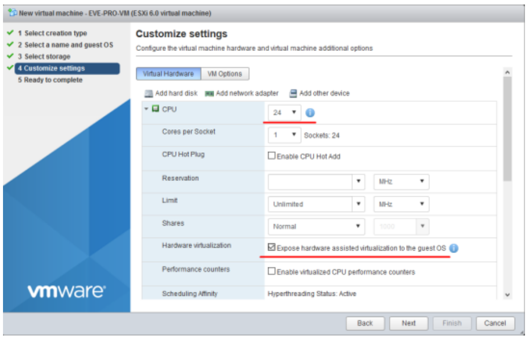
Select the datastore in which to store the configuration and disk files.

The following datastores are accessible from the destination resource that you selected. Select the destination datastore for the virtual machine configuration files and all of the virtual disks.

Name	Capacity	Free	Type	Thin pro...	Access
datastore1	264.75 GB	231.79 GB	VMFS5	Supported	Single
HDD_A	930.75 GB	431.63 GB	VMFS5	Supported	Single
HDD_B	930.75 GB	149.61 GB	VMFS5	Supported	Single

3 items

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).



New virtual machine - EVE-PRO-VM (ESXi 6.0 virtual machine)

1 Select creation type
2 Select a name and guest OS
3 Select storage
4 Customize settings
5 Ready to complete

Customize settings

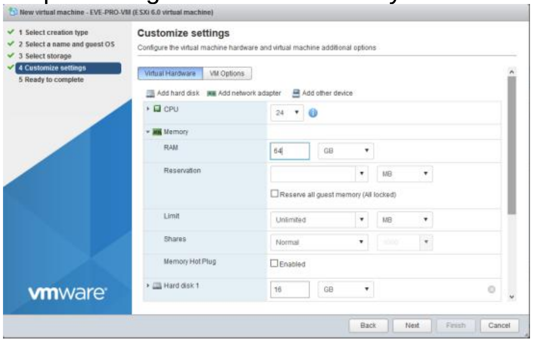
Configure the virtual machine hardware and virtual machine additional options

Virtual Hardware | VM Options

Add hard disk | Add network adapter | Add other device

CPU: 24
Cores per Socket: 1 Sockets: 24
CPU Hot Plug: ☐ Enable CPU Hot Add
Reservation: MHz
Limit: Unlimited MHz
Shares: Normal 1000
Hardware virtualization: ☑ Expose hardware assisted virtualization to the guest OS
Performance counters: ☐ Enable virtualized CPU performance counters
Scheduling Affinity: Hyperthreading Status: Active

Step 6: Assig desirable RAM for your EVE



New virtual machine - EVE-PRO-VM (ESXi 6.0 virtual machine)

1 Select creation type
2 Select a name and guest OS
3 Select storage
4 Customize settings
5 Ready to complete

Customize settings

Configure the virtual machine hardware and virtual machine additional options

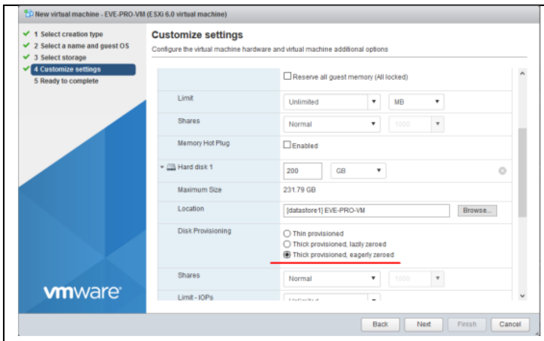
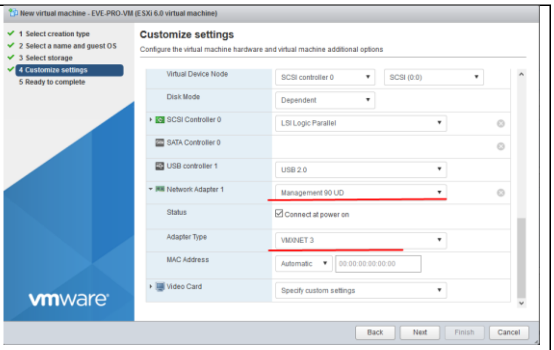
Virtual Hardware | VM Options

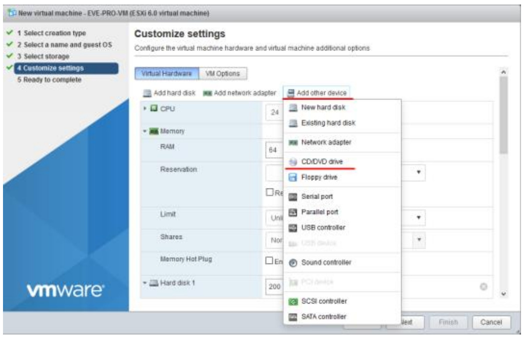
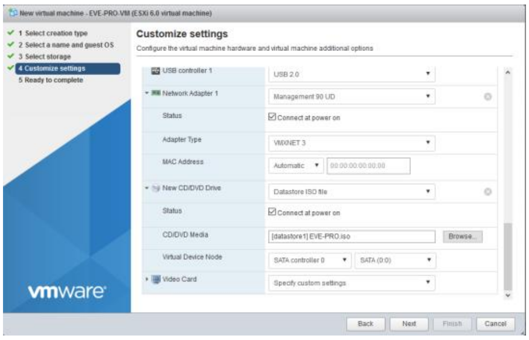
Add hard disk | Add network adapter | Add other device

CPU: 24
Memory
RAM: 64 GB
Reservation: MB
☐ Reserve all guest memory (All locked)
Limit: Unlimited MB
Shares: Normal
Memory Hot Plug: ☐ Enabled
Hard disk 1: 16 GB

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

 New virtual machine - EVE-PRO-VM (ESXi 6.0 virtual machine) Customize settings Configure the virtual machine hardware and virtual machine additional options ☐ Reserve all guest memory (All locked) Limit: Unlimited, MB Shares: Normal, 1000 Memory Hot Plug: ☐ Enabled Hard disk 1: 200 GB Maximum Size: 231.79 GB Location: [datastore1] EVE-PRO-VM Disk Provisioning: ○ Thin provisioned ○ Thick provisioned, lazily zeroed ● Thick provisioned, eagerly zeroed Shares: Normal, 1000 Limit - IOPs 	 New virtual machine - EVE-PRO-VM (ESXi 6.0 virtual machine) Customize settings Configure the virtual machine hardware and virtual machine additional options Virtual Device Node: SCSI controller 0, SCSI (0:0) Disk Mode: Dependent SCSI Controller 0: LSI Logic Parallel SATA Controller 0 USB controller 1: USB 2.0 Network Adapter 1: Management 90 UD Status: ☑ Connect at power on Adapter Type: VMXNET 3 MAC Address: Automatic, 00:00:00:00:00:00 Video Card: Specify custom settings NOTE: Additional Network Adapters can be added for further use.

Step 9: Add new device to your EVE VM, CD/DVD  New virtual machine - EVE-PRO-VM (ESXi 6.0 virtual machine) Customize settings Configure the virtual machine hardware and virtual machine additional options CPU: 24 Memory RAM: 64 Memory Hot Plug: ☐ En Hard disk 1: 200 	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”  New virtual machine - EVE-PRO-VM (ESXi 6.0 virtual machine) Customize settings Configure the virtual machine hardware and virtual machine additional options USB controller 1: USB 2.0 Network Adapter 1: Management 90 UD Status: ☑ Connect at power on Adapter Type: VMXNET 3 MAC Address: Automatic, 00:00:00:00:00:00 New CD/DVD Drive: Datastore ISO file Status: ☑ Connect at power on CD/DVD Media: [datastore1] EVE-PRO.iso Virtual Device Node: SATA controller 0, SATA (0:0) Video Card: Specify custom settings

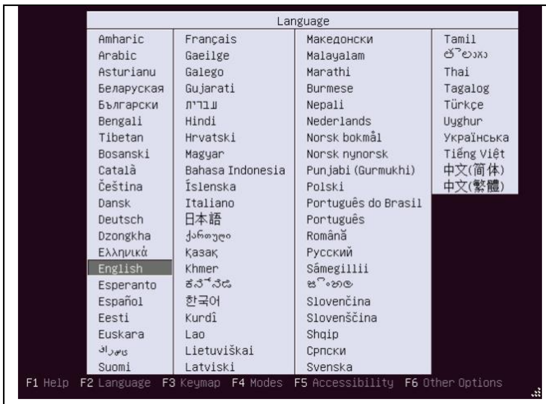
3.2.1.2 EVE-NG ESXi VM Installation steps

⚠ 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

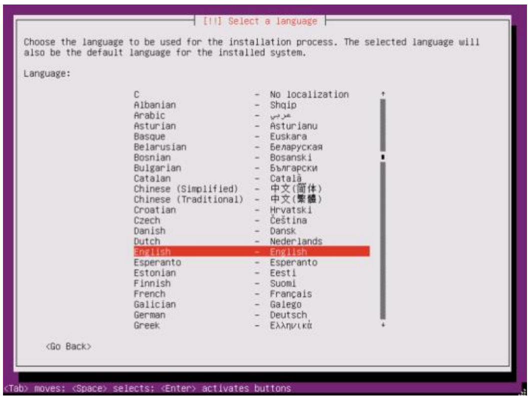
EVE ESXi VM Installation from ISO has 3 Phases

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.



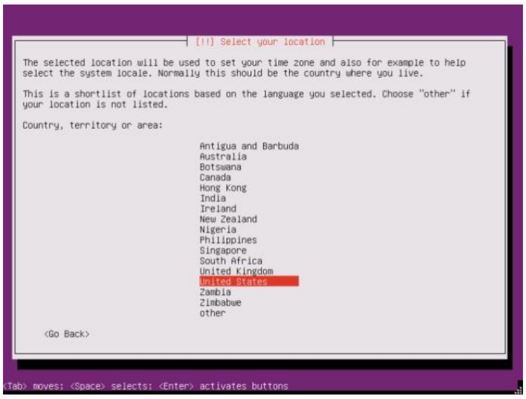
Step 3: Make sure if English is selected and confirm with Enter.


[!!] Select a language

Choose the language to be used for the installation process. The selected language will also be the default language for the installed system.

Language:

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


[!!] Select your location

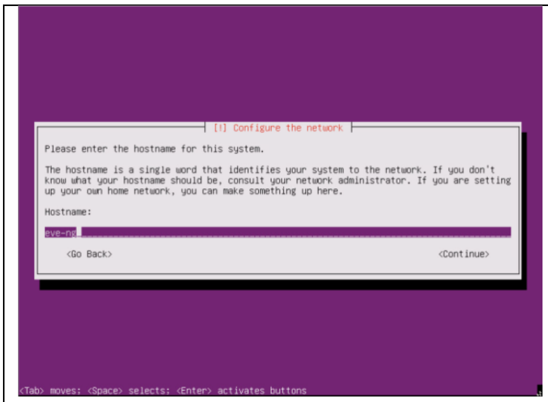
The selected location will be used to set your time zone and also for example to help select the system locale. Normally this should be the country where you live.

This is a shortlist of locations based on the language you selected. Choose "other" if your location is not listed.

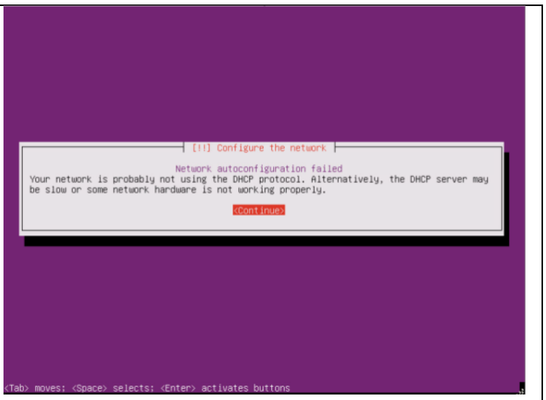
Country, territory or area:

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.

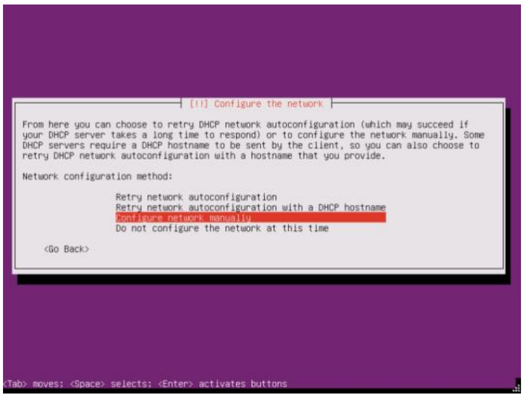


```
[!] Configure the network

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't
know what your hostname should be, consult your network administrator. If you are setting
up your own home network, you can make something up here.

Hostname:

eve-ng

    <Go Back>                                                              <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```



```
[!!] Configure the network

Network autoconfiguration failed
Your network is probably not using the DHCP protocol. Alternatively, the DHCP server may
be slow or some network hardware is not working properly.

<Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



```
[!!] Configure the network

From here you can choose to retry DHCP network autoconfiguration (which may succeed if
your DHCP server takes a long time to respond) or to configure the network manually. Some
DHCP servers require a DHCP hostname to be sent by the client, so you can also choose to
retry DHCP network autoconfiguration with a hostname that you provide.

Network configuration method:

                Retry network autoconfiguration
                Retry network autoconfiguration with a DHCP hostname
                Configure network manually
                Do not configure the network at this time

    <Go Back>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

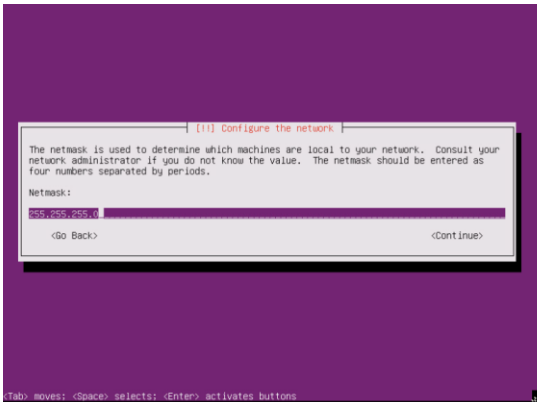
Step 8: Enter your desirable EVE management IP, using the Tab key select “Continue” and confirm with Enter

```
[!!] Configure the network

The IP address is unique to your computer and may be:

 * four numbers separated by periods (IPv4);
 * blocks of hexadecimal characters separated by colons (IPv6).

You can also optionally append a CIDR netmask (such as "/24").

If you don't know what to use here, consult your network administrator.

IP address:

192.168.90.120

    <Go Back>                                          <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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

Enter



```
[!!] Configure the network

The netmask is used to determine which machines are local to your network.  Consult your
network administrator if you do not know the value.  The netmask should be entered as
four numbers separated by periods.

Netmask:

255.255.255.0

     <Go Back>                                                              <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

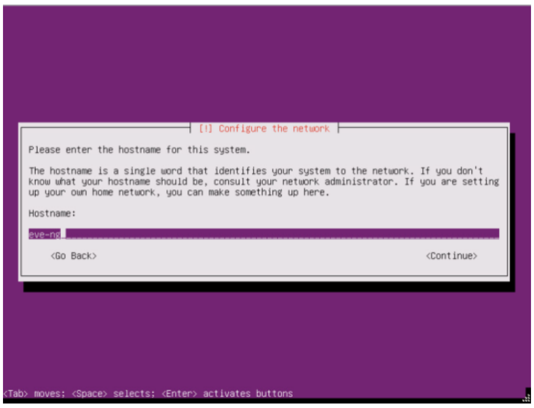
with Enter

```
[!!] Configure the network

The gateway is an IP address (four numbers separated by periods) that indicates the
gateway router, also known as the default router.  All traffic that goes outside your LAN
(for instance, to the Internet) is sent through this router.  In rare circumstances, you
may have no router; in that case, you can leave this blank.  If you don't know the proper
answer to this question, consult your network administrator.

Gateway:

192.168.90.1

     <Go Back>                                                              <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

Step 11: IMPORTANT. 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

```
[!!] Configure the network

The name servers are used to look up host names on the network. Please enter the IP
addresses (not host names) of up to 3 name servers, separated by spaces. Do not use
commas. The first name server in the list will be the first to be queried. If you don't
want to use any name server, just leave this field blank.

Name server addresses:

192.168.90.201

     <Go Back>                                                              <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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

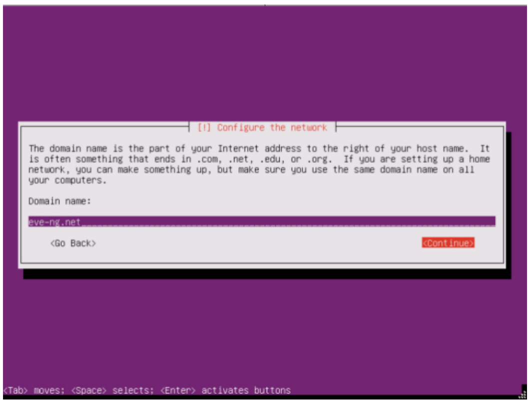


```
[!] Configure the network

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't
know what your hostname should be, consult your network administrator. If you are setting
up your own home network, you can make something up here.

Hostname:

eve-ng

     <Go Back>                                                              <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

Step 13: Enter your network domain name. You are free to use any, for example: **eve-ng.net**

Step 14: If your DNS IP settings are correct, Ubuntu will detect your location from Internet. Confirm with Enter.

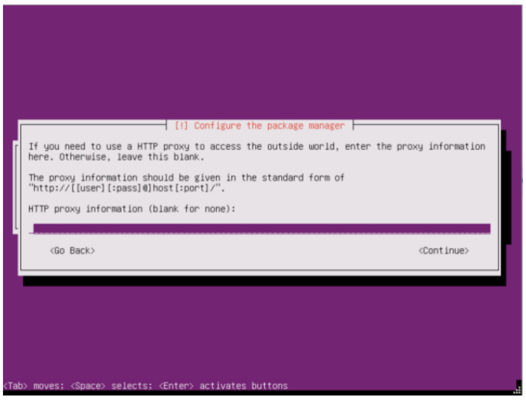
Using the Tab key select continue and confirm with Enter



```
[!] Configure the network

The domain name is the part of your Internet address to the right of your host name.  It
is often something that ends in .com, .net, .edu, or .org.  If you are setting up a home
network, you can make something up, but make sure you use the same domain name on all
your computers.

Domain name:

eve-ng.net

<Go Back>                                                            <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

```
[!] Configure the clock

Based on your present physical location, your time zone is Europe/Riga.

If this is not correct, you may select from a full list of time zones instead.

Is this time zone correct?

<Go Back>                                               <Yes>    <No>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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.



```
[!] Configure the package manager

If you need to use a HTTP proxy to access the outside world, enter the proxy information
here. Otherwise, leave this blank.

The proxy information should be given in the standard form of
"http://[[user][:pass]@]host[:port]/".

HTTP proxy information (blank for none):

<Go Back>                                                            <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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

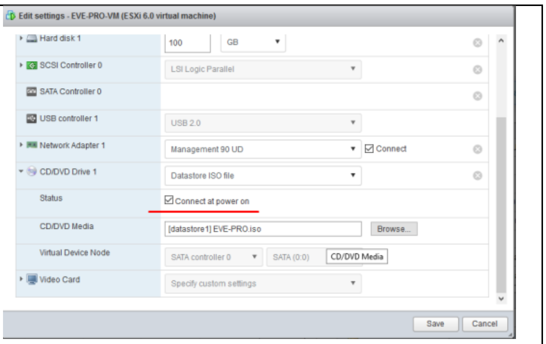
```
[!] Configuring tasksel

Applying updates on a frequent basis is an important part of keeping your system secure.

By default, updates need to be applied manually using package management tools.
Alternatively, you can choose to have this system automatically download and install
security updates, or you can choose to manage this system over the web as part of a group
of systems using Canonical's Landscape service.

How do you want to manage upgrades on this system?

                        No automatic updates
                        Install security updates automatically
                        Manage system with Landscape

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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.

```
[!!] Finish the installation

Installation complete
Installation is complete, so it is time to boot into your new system. Make sure to remove
the installation media (CD-ROM, floppies), so that you boot into the new system rather
than restarting the installation.

<Go Back>                                                        <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```



Edit settings - EVE-PRO-VM (ESXi 6.0 virtual machine)

Hard disk 1: 100 GB
SCSI Controller 0: LSI Logic Parallel
SATA Controller 0
USB controller 1: USB 2.0
Network Adapter 1: Management 90 UD ☑ Connect
CD/DVD Drive 1: Datastore ISO file
Status: ☑ Connect at power on
CD/DVD Media: [datastore1] EVE-PRO.iso
Virtual Device Node: SATA controller 0, SATA (0:0), CD/DVD Media
Video Card: Specify custom settings

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

```
[!!] Finish the installation

Installation complete
Installation is complete, so it is time to boot into your new system. Make sure to remove
the installation media (CD-ROM, floppies), so that you boot into the new system rather
than restarting the installation.

<Go Back>                                                        <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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

```
Eve-NG (default root password is 'eve')
Use http://192.168.90.120/

eve-ng login: _
```

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
```

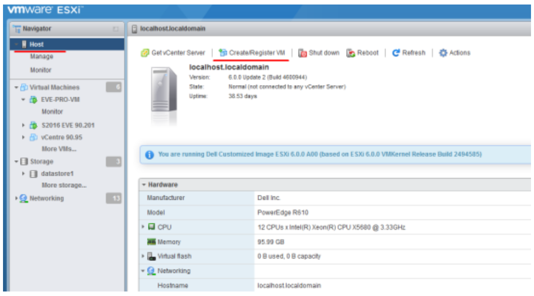
⚠ **IMPORTANT NOTE**: You must prepare and upload at least a couple of images to start building your labs. Refer to section **12**

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

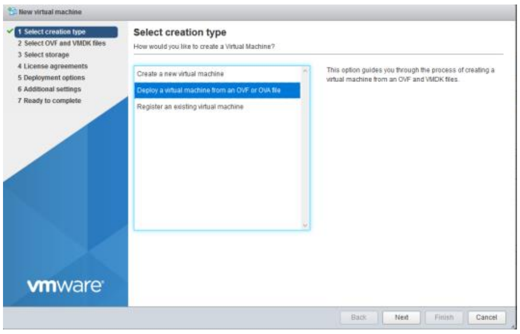


localhost.localdomain
Version: 6.0.0 Update 2 (Build 4600944)
State: Normal (not connected to any vCenter Server)
Uptime: 38.53 days

You are running Dell Customized Image ESXi 6.0.0 A00 (based on ESXi 6.0.0 VMKernel Release Build 2494585)

Manufacturer	Dell Inc.
Model	PowerEdge R610
CPU	12 CPUs x Intel(R) Xeon(R) CPU X5680 @ 3.33GHz
Memory	95.99 GB
Virtual flash	0 B used, 0 B capacity
Networking	
Hostname	localhost.localdomain

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

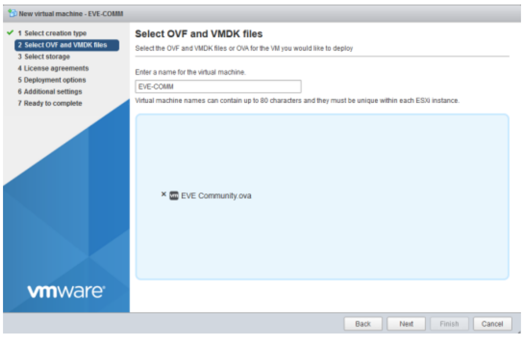


Select creation type
How would you like to create a Virtual Machine?

Create a new virtual machine
Deploy a virtual machine from an OVF or OVA file
Register an existing virtual machine

This option guides you through the process of creating a virtual machine from an OVF and VMDK files.

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

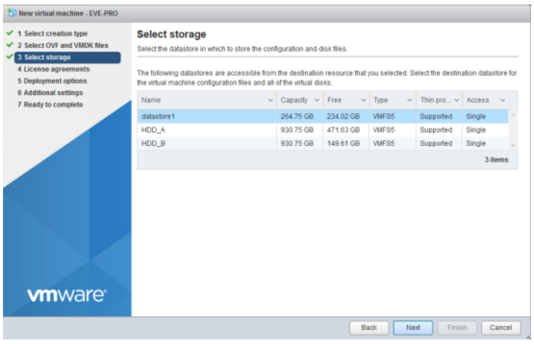


Select OVF and VMDK files
Select the OVF and VMDK files or OVA for the VM you would like to deploy

Enter a name for the virtual machine.
EVE-COMM
Virtual machine names can contain up to 80 characters and they must be unique within each ESXi instance.

× EVE Community.ova

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



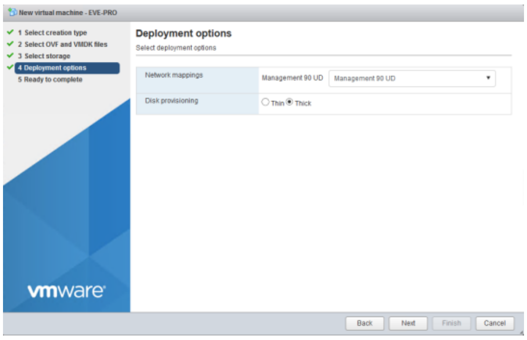
Select storage
Select the datastore in which to store the configuration and disk files.

The following datastores are accessible from the destination resource that you selected. Select the destination datastore for the virtual machine configuration files and all of the virtual disks.

Name	Capacity	Free	Type	Thin pro...	Access
datastore1	264.75 GB	234.02 GB	VMFS5	Supported	Single
HDD_A	930.75 GB	471.63 GB	VMFS5	Supported	Single
HDD_B	930.75 GB	149.61 GB	VMFS5	Supported	Single

3 items

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**



New virtual machine - EVE-PRO

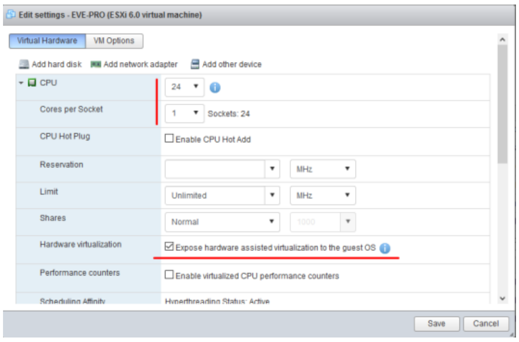
Deployment options

Select deployment options

Network mappings: Management 90 UD → Management 90 UD

Disk provisioning: ○ Thin ● Thick

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).



Edit settings - EVE-PRO (ESXi 6.0 virtual machine)

CPU: 24

Cores per Socket: 1 Sockets: 24

CPU Hot Plug: ☐ Enable CPU Hot Add

Reservation: MHz

Limit: Unlimited MHz

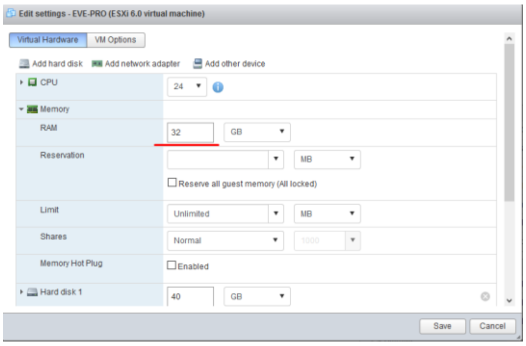
Shares: Normal 1000

Hardware virtualization: ☑ Expose hardware assisted virtualization to the guest OS

Performance counters: ☐ Enable virtualized CPU performance counters

Scheduling Affinity: Hyperthreading Status: Active

Step 7: Set desirable RAM for your EVE.



Edit settings - EVE-PRO (ESXi 6.0 virtual machine)

CPU: 24

Memory

RAM: 32 GB

Reservation: MB

☐ Reserve all guest memory (All locked)

Limit: Unlimited MB

Shares: Normal 1000

Memory Hot Plug: ☐ Enabled

Hard disk 1: 40 GB

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

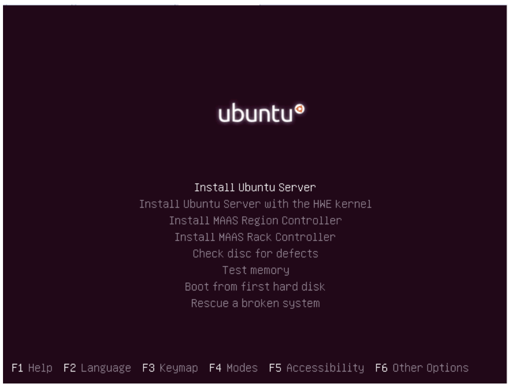
Download Ubuntu Server 16.04.6 LTS ISO image:
http://tw.archive.ubuntu.com/ubuntu-cd/16.04/ubuntu-16.04.6-server-amd64.iso

⚠ 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

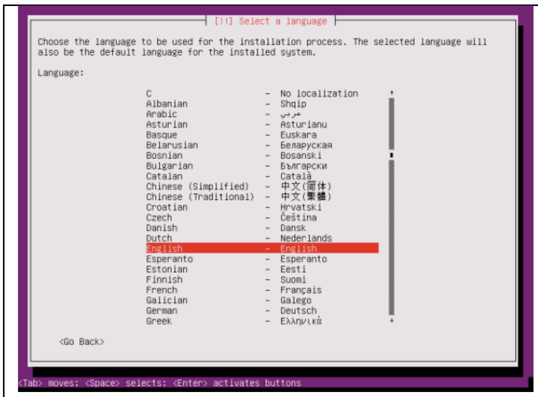
Step 1: Create a bootable DVD disk or USB flash drive with an Ubuntu server image. Boot your server from ISO. Make sure that English is selected, Confirm with Enter

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

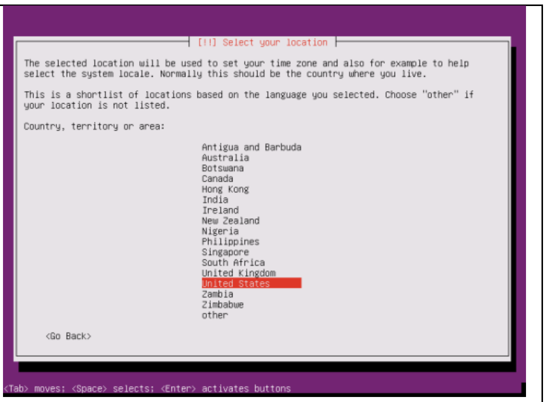


Step 3: Make sure that English is selected and confirm with Enter

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.



```
[!!] Select a language

Choose the language to be used for the installation process. The selected language will
also be the default language for the installed system.

Language:

           C                      -  No localization
           Albanian               -  Shqip
           Arabic                 -  عربي
           Asturian               -  Asturianu
           Basque                 -  Euskara
           Belarusian             -  Беларуская
           Bosnian                -  Bosanski
           Bulgarian              -  Български
           Catalan                -  Català
           Chinese (Simplified)   -  中文(简体)
           Chinese (Traditional)  -  中文(繁體)
           Croatian               -  Hrvatski
           Czech                  -  Čeština
           Danish                 -  Dansk
           Dutch                  -  Nederlands
           English                -  English
           Esperanto              -  Esperanto
           Estonian               -  Eesti
           Finnish                -  Suomi
           French                 -  Français
           Galician               -  Galego
           German                 -  Deutsch
           Greek                  -  Ελληνικά

    <Go Back>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

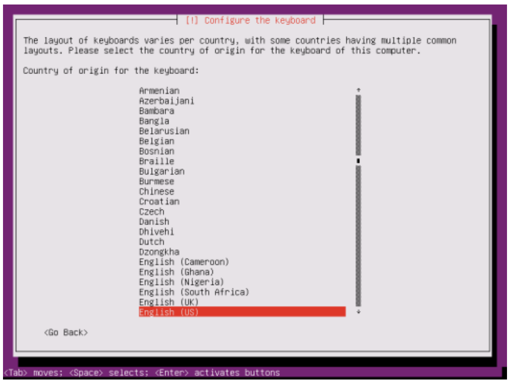


```
[!!] Select your location

The selected location will be used to set your time zone and also for example to help
select the system locale. Normally this should be the country where you live.

This is a shortlist of locations based on the language you selected. Choose "other" if
your location is not listed.

Country, territory or area:

                    Antigua and Barbuda
                    Australia
                    Botswana
                    Canada
                    Hong Kong
                    India
                    Ireland
                    New Zealand
                    Nigeria
                    Philippines
                    Singapore
                    South Africa
                    United Kingdom
                    United States
                    Zambia
                    Zimbabwe
                    other

    <Go Back>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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

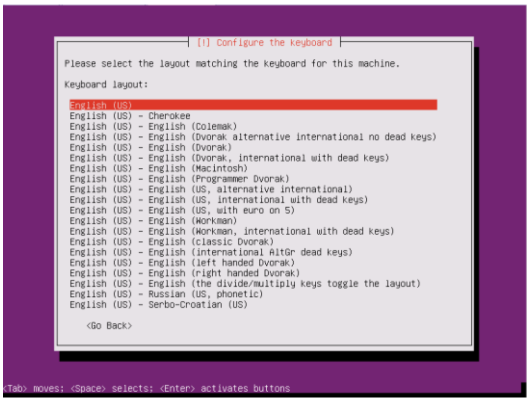
```
[!] Configure the keyboard

You can try to have your keyboard layout detected by pressing a series of keys. If you do
not want to do this, you will be able to select your keyboard layout from a list.

Detect keyboard layout?

    <Go Back>                                                          <Yes>    <No>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



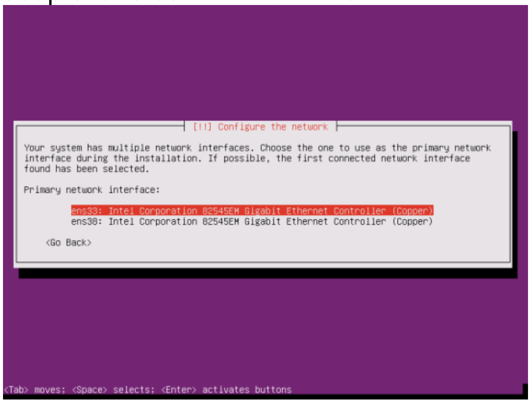
```
[!] Configure the keyboard

The layout of keyboards varies per country, with some countries having multiple common
layouts. Please select the country of origin for the keyboard of this computer.

Country of origin for the keyboard:

              Armenian
              Azerbaijani
              Bambara
              Bangla
              Belarusian
              Belgian
              Bosnian
              Braille
              Bulgarian
              Burmese
              Chinese
              Croatian
              Czech
              Danish
              Dhivehi
              Dutch
              Dzongkha
              English (Cameroon)
              English (Ghana)
              English (Nigeria)
              English (South Africa)
              English (UK)
              English (US)

    <Go Back>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



```
[!] Configure the keyboard

Please select the layout matching the keyboard for this machine.

Keyboard layout:

 English (US)
 English (US) - Cherokee
 English (US) - English (Colemak)
 English (US) - English (Dvorak alternative international no dead keys)
 English (US) - English (Dvorak)
 English (US) - English (Dvorak, international with dead keys)
 English (US) - English (Macintosh)
 English (US) - English (Programmer Dvorak)
 English (US) - English (US, alternative international)
 English (US) - English (US, international with dead keys)
 English (US) - English (US, with euro on 5)
 English (US) - English (Workman)
 English (US) - English (Workman, international with dead keys)
 English (US) - English (classic Dvorak)
 English (US) - English (international AltGr dead keys)
 English (US) - English (left handed Dvorak)
 English (US) - English (right handed Dvorak)
 English (US) - English (the divide/multiply keys toggle the layout)
 English (US) - Russian (US, phonetic)
 English (US) - Serbo-Croatian (US)

    <Go Back>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

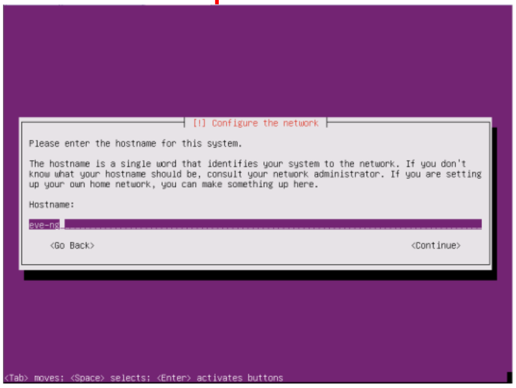
Step 8: Select your management network adapter and confirm with Enter



```
[!!] Configure the network

Your system has multiple network interfaces. Choose the one to use as the primary network
interface during the installation. If possible, the first connected network interface
found has been selected.

Primary network interface:

        ens33: Intel Corporation 82545EM Gigabit Ethernet Controller (Copper)
        ens38: Intel Corporation 82545EM Gigabit Ethernet Controller (Copper)

    <Go Back>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

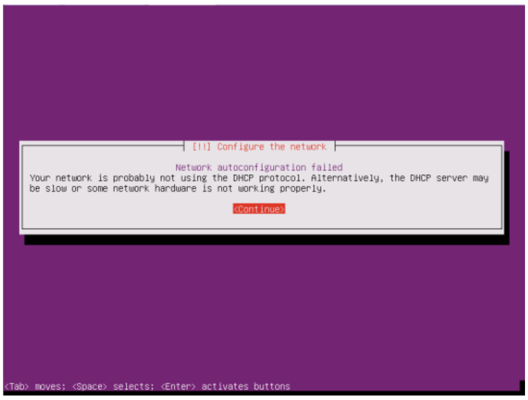
Step 9: **DHCP ENABLED**

Step 10: **DHCP DISABLED**/Static IP setup. If have not enabled DHCP in the network, Continue with **Step 16**



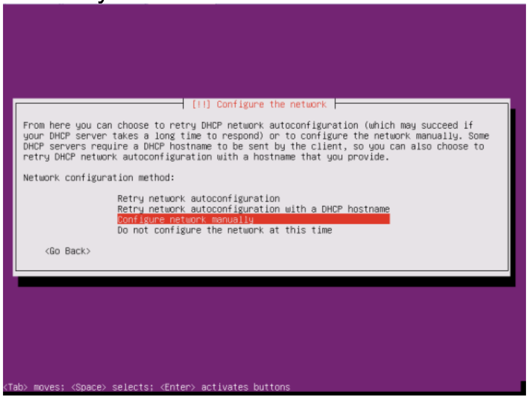
```
[!] Configure the network

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't
know what your hostname should be, consult your network administrator. If you are setting
up your own home network, you can make something up here.

Hostname:

eve-ng

    <Go Back>                                                          <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



```
[!!] Configure the network

                        Network autoconfiguration failed
Your network is probably not using the DHCP protocol. Alternatively, the DHCP server may
be slow or some network hardware is not working properly.

                                  <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

Step 11: Select “Configure network manually” and confirm with Enter

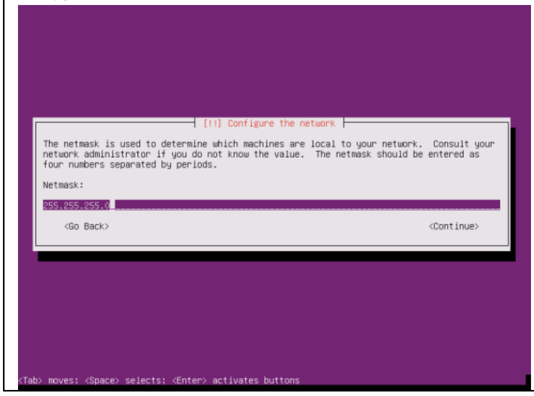


```
[!!] Configure the network

From here you can choose to retry DHCP network autoconfiguration (which may succeed if
your DHCP server takes a long time to respond) or to configure the network manually. Some
DHCP servers require a DHCP hostname to be sent by the client, so you can also choose to
retry DHCP network autoconfiguration with a hostname that you provide.

Network configuration method:

                  Retry network autoconfiguration
                  Retry network autoconfiguration with a DHCP hostname
                  Configure network manually
                  Do not configure the network at this time

    <Go Back>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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

```
[!!] Configure the network

The IP address is unique to your computer and may be:

 * four numbers separated by periods (IPv4);
 * blocks of hexadecimal characters separated by colons (IPv6).

You can also optionally append a CIDR netmask (such as "/24").

If you don't know what to use here, consult your network administrator.

IP address:

192.168.216.30

    <Go Back>                                        <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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

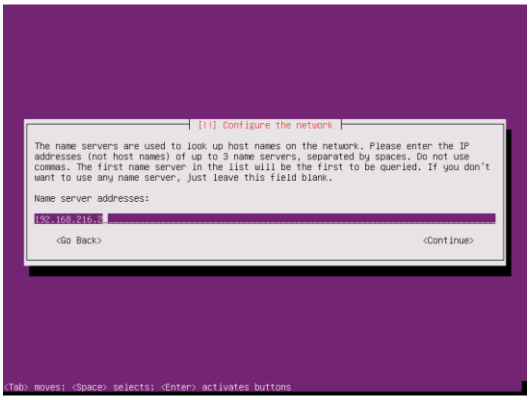


```
[!!] Configure the network

The netmask is used to determine which machines are local to your network.  Consult your
network administrator if you do not know the value.  The netmask should be entered as
four numbers separated by periods.

Netmask:

255.255.255.0

    <Go Back>                                                          <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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

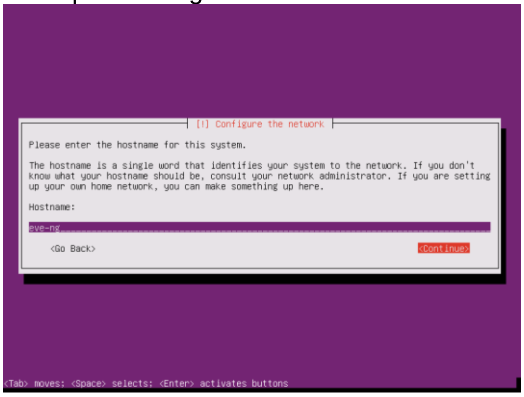
```
[!!] Configure the network

The gateway is an IP address (four numbers separated by periods) that indicates the
gateway router, also known as the default router.  All traffic that goes outside your LAN
(for instance, to the Internet) is sent through this router.  In rare circumstances, you
may have no router; in that case, you can leave this blank.  If you don't know the proper
answer to this question, consult your network administrator.

Gateway:

192.168.216.2
```

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



```
[!!] Configure the network

The name servers are used to look up host names on the network. Please enter the IP
addresses (not host names) of up to 3 name servers, separated by spaces. Do not use
commas. The first name server in the list will be the first to be queried. If you don't
want to use any name server, just leave this field blank.

Name server addresses:

192.168.216.2
```

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

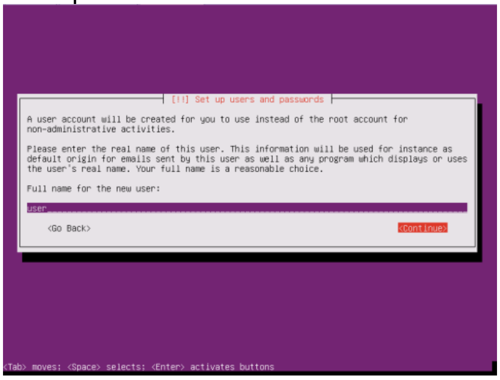


```
[!] Configure the network

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't
know what your hostname should be, consult your network administrator. If you are setting
up your own home network, you can make something up here.

Hostname:

eve-ng
```

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

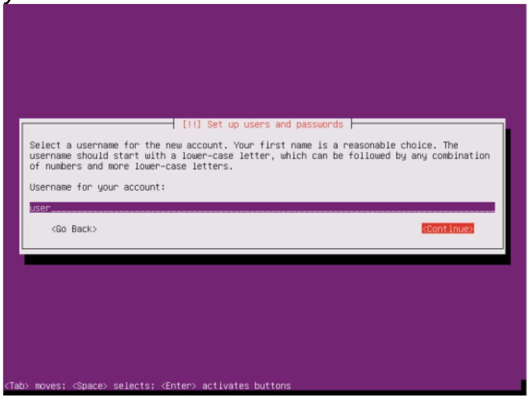
```
[!] Configure the network

The domain name is the part of your Internet address to the right of your host name.  It
is often something that ends in .com, .net, .edu, or .org.  If you are setting up a home
network, you can make something up, but make sure you use the same domain name on all
your computers.

Domain name:

eve-ng.net
```

Step 18: Type your Ubuntu username, Example: user



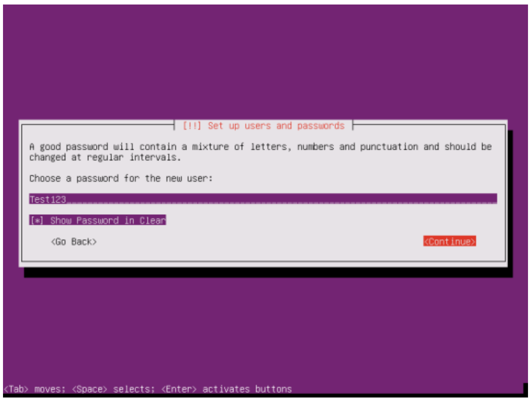
```
[!!] Set up users and passwords

A user account will be created for you to use instead of the root account for
non-administrative activities.

Please enter the real name of this user. This information will be used for instance as
default origin for emails sent by this user as well as any program which displays or uses
the user's real name. Your full name is a reasonable choice.

Full name for the new user:

user
```

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



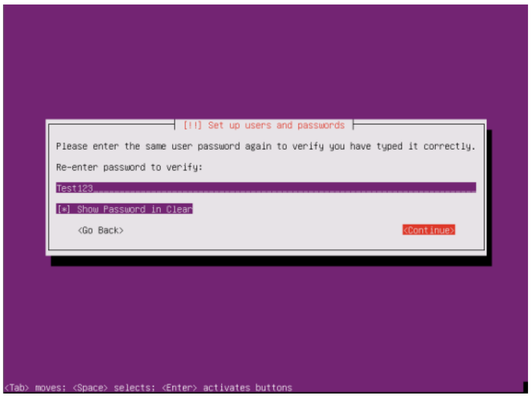
```
[!!] Set up users and passwords

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

<Tab> moves; <Space> selects; <Enter> activates buttons
```

Step 20: Enter a password for your new user



```
[!!] 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

[*] Show Password in Clear

<Tab> moves; <Space> selects; <Enter> activates buttons
```

Step 21: Re-enter your password and continue

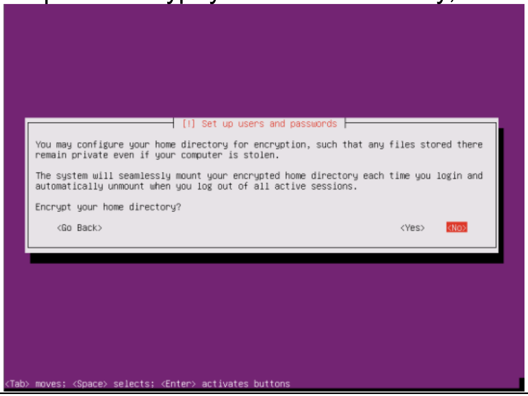


```
[!!] Set up users and passwords

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

Re-enter password to verify:

Test123

[*] Show Password in Clear

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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

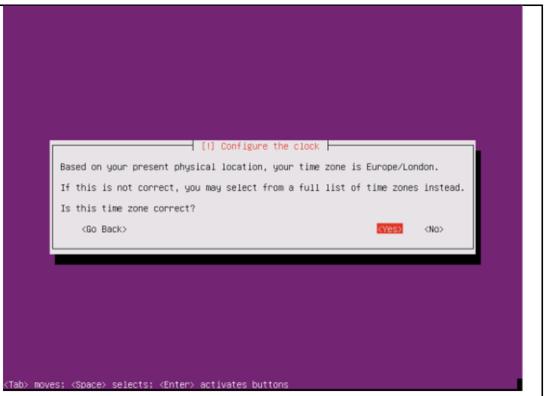
```
[!!] Set up users and passwords

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?

<Tab> moves; <Space> selects; <Enter> activates buttons
```

Step 23: Encrypt your Home directory, “No”



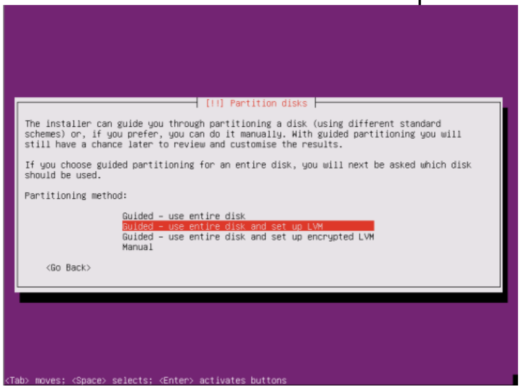
```
[!] Set up users and passwords

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?

<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



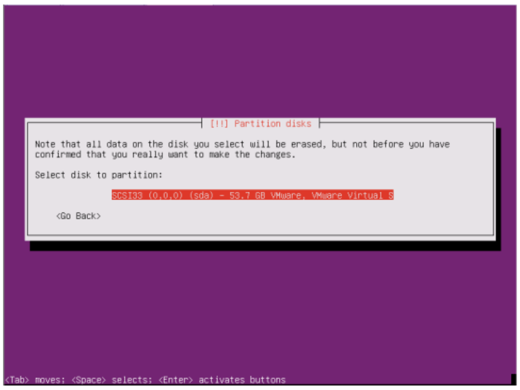
```
[!] Configure the clock

Based on your present physical location, your time zone is Europe/London.

If this is not correct, you may select from a full list of time zones instead.

Is this time zone correct?

    <Go Back>                                        <Yes>    <No>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



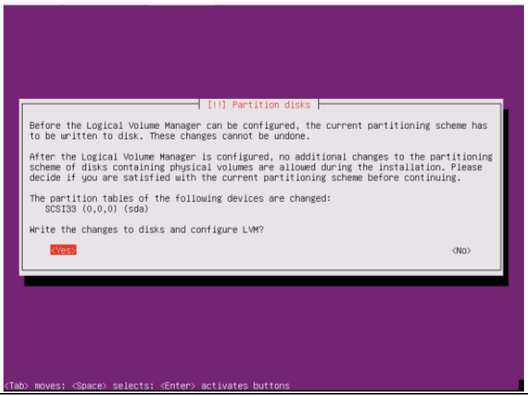
```
[!!] Partition disks

The installer can guide you through partitioning a disk (using different standard
schemes) or, if you prefer, you can do it manually. With guided partitioning you will
still have a chance later to review and customise the results.

If you choose guided partitioning for an entire disk, you will next be asked which disk
should be used.

Partitioning method:

                   Guided - use entire disk
                   Guided - use entire disk and set up LVM
                   Guided - use entire disk and set up encrypted LVM
                   Manual

    <Go Back>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



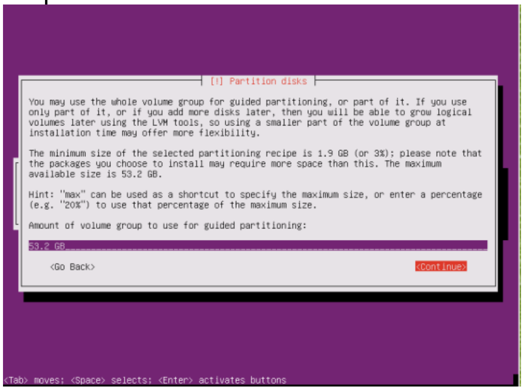
```
[!!] Partition disks

Note that all data on the disk you select will be erased, but not before you have
confirmed that you really want to make the changes.

Select disk to partition:

              SCSI33 (0,0,0) (sda) - 53.7 GB VMware, VMware Virtual S

    <Go Back>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

Step 27: Confirm write changes to disk with "Yes" and hit enter to continue



```
[!!] Partition disks

Before the Logical Volume Manager can be configured, the current partitioning scheme has
to be written to disk. These changes cannot be undone.

After the Logical Volume Manager is configured, no additional changes to the partitioning
scheme of disks containing physical volumes are allowed during the installation. Please
decide if you are satisfied with the current partitioning scheme before continuing.

The partition tables of the following devices are changed:
   SCSI33 (0,0,0) (sda)

Write the changes to disks and configure LVM?

    <Yes>                                                              <No>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

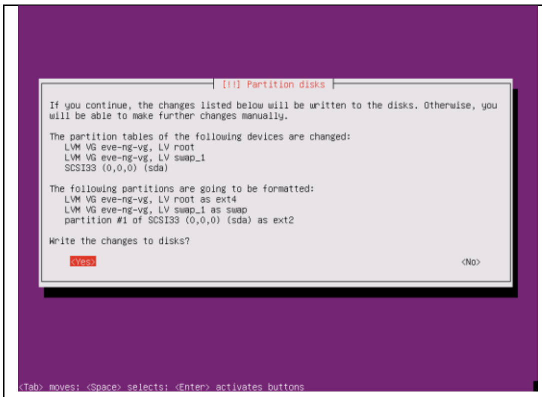
Step 28: Select the volume size and continue



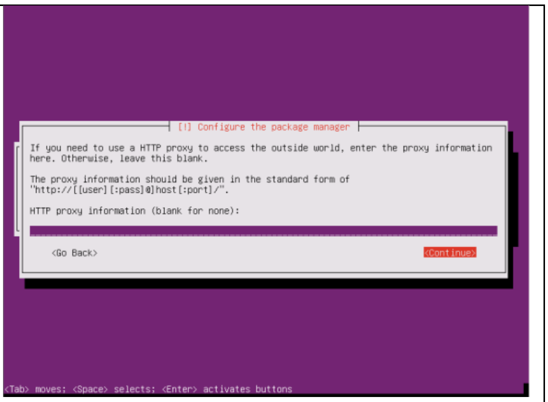
```
[!] Partition disks

You may use the whole volume group for guided partitioning, or part of it. If you use
only part of it, or if you add more disks later, then you will be able to grow logical
volumes later using the LVM tools, so using a smaller part of the volume group at
installation time may offer more flexibility.

The minimum size of the selected partitioning recipe is 1.9 GB (or 3%); please note that
the packages you choose to install may require more space than this. The maximum
available size is 53.2 GB.

Hint: "max" can be used as a shortcut to specify the maximum size, or enter a percentage
(e.g. "20%") to use that percentage of the maximum size.

Amount of volume group to use for guided partitioning:

53.2 GB_________________________________________________________________

    <Go Back>                                                    <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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.

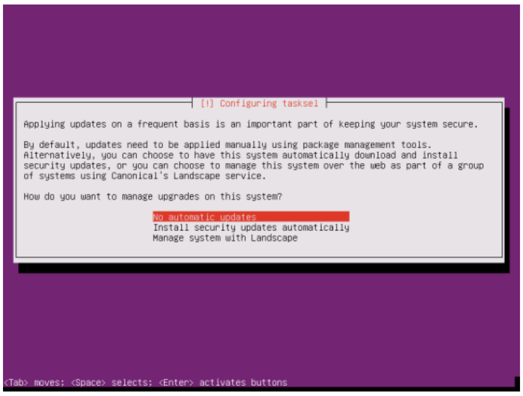


```
[!!] Partition disks

If you continue, the changes listed below will be written to the disks. Otherwise, you
will be able to make further changes manually.

The partition tables of the following devices are changed:
   LVM VG eve-ng-vg, LV root
   LVM VG eve-ng-vg, LV swap_1
   SCSI33 (0,0,0) (sda)

The following partitions are going to be formatted:
   LVM VG eve-ng-vg, LV root as ext4
   LVM VG eve-ng-vg, LV swap_1 as swap
   partition #1 of SCSI33 (0,0,0) (sda) as ext2

Write the changes to disks?

     <Yes>                                                        <No>

<Tab> moves; <Space> selects; <Enter> activates buttons
```



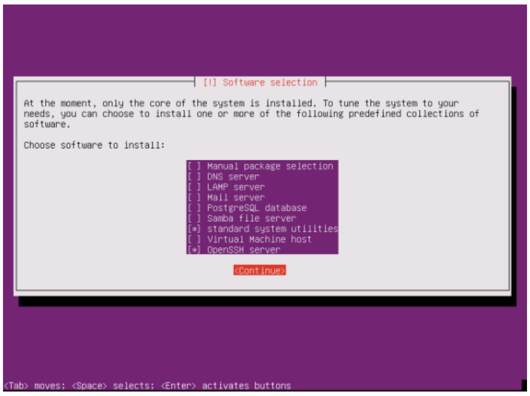
```
[!] Configure the package manager

If you need to use a HTTP proxy to access the outside world, enter the proxy information
here. Otherwise, leave this blank.

The proxy information should be given in the standard form of
"http://[[user][:pass]@]host[:port]/".

HTTP proxy information (blank for none):

    <Go Back>                                                     <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

Step 31: Select “No automatic updates” and Continue



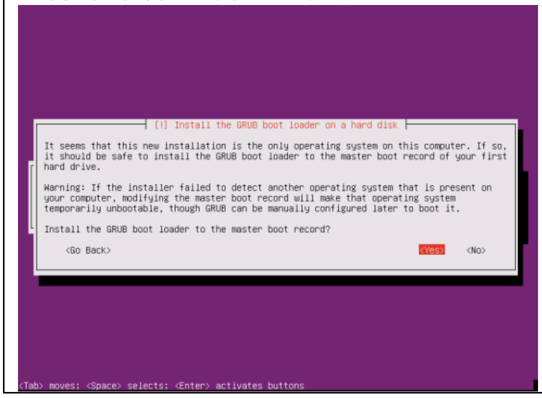
```
[!] Configuring tasksel

Applying updates on a frequent basis is an important part of keeping your system secure.

By default, updates need to be applied manually using package management tools.
Alternatively, you can choose to have this system automatically download and install
security updates, or you can choose to manage this system over the web as part of a group
of systems using Canonical's Landscape service.

How do you want to manage upgrades on this system?

                         No automatic updates
                         Install security updates automatically
                         Manage system with Landscape

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



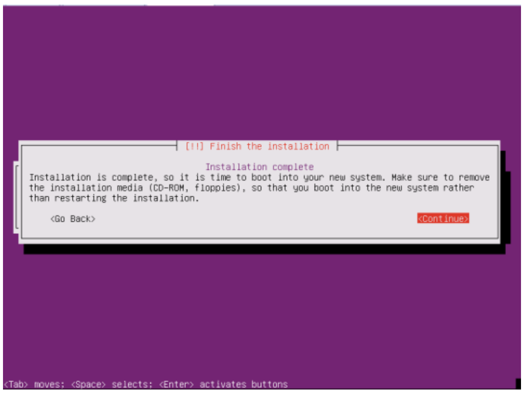
```
[!] Software selection

At the moment, only the core of the system is installed. To tune the system to your
needs, you can choose to install one or more of the following predefined collections of
software.

Choose software to install:

                    [ ] Manual package selection
                    [ ] DNS server
                    [ ] LAMP server
                    [ ] Mail server
                    [ ] PostgreSQL database
                    [ ] Samba file server
                    [*] standard system utilities
                    [ ] Virtual Machine host
                    [*] OpenSSH server

                              <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



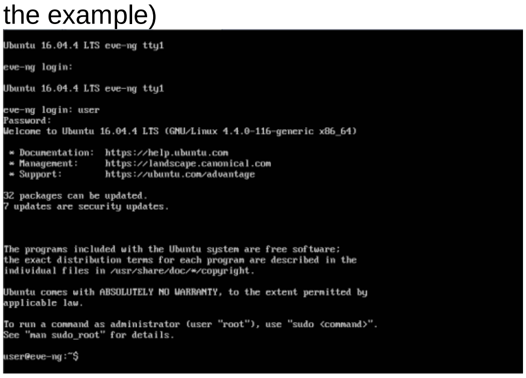
```
[!] Install the GRUB boot loader on a hard disk

It seems that this new installation is the only operating system on this computer. If so,
it should be safe to install the GRUB boot loader to the master boot record of your first
hard drive.

Warning: If the installer failed to detect another operating system that is present on
your computer, modifying the master boot record will make that operating system
temporarily unbootable, though GRUB can be manually configured later to boot it.

Install the GRUB boot loader to the master boot record?

    <Go Back>                                               <Yes>    <No>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

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



```
[!!] Finish the installation

                         Installation complete
Installation is complete, so it is time to boot into your new system. Make sure to remove
the installation media (CD-ROM, floppies), so that you boot into the new system rather
than restarting the installation.

    <Go Back>                                                     <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

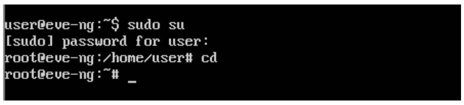
Step 35: Login in to your Ubuntu with the username created above (user/Test123 was the example)



```
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
```

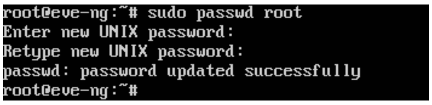


```
user@eve-ng:~$ sudo su
[sudo] password for user:
root@eve-ng:/home/user# cd
root@eve-ng:~# _
```

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
noquiet"/' /etc/default/grub
```

Update GRUB, Followed by Enter

```
update-grub
```

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

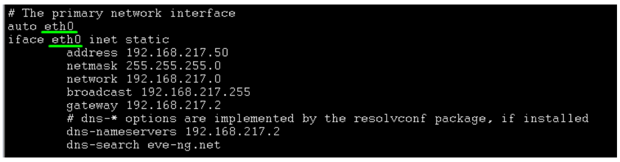
Step 42: IMPORTANT
Rename your Server interface name to **eth0**

```
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:

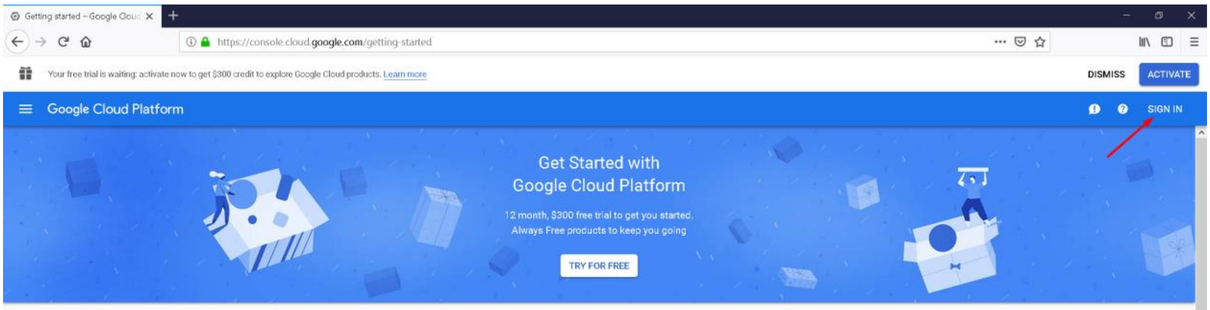
```
apt update
apt upgrade
reboot
```

⚠ 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



Your free trial is waiting: activate now to get $300 credit to explore Google Cloud products. Learn more

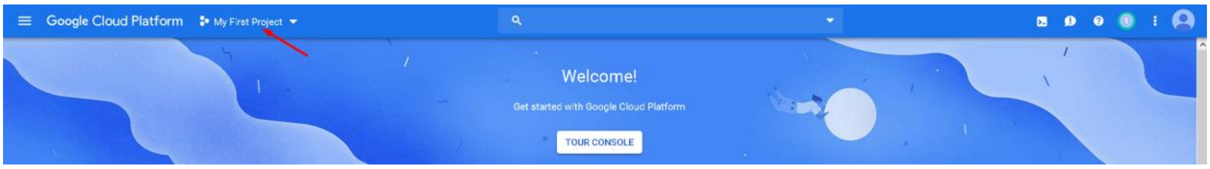
12 month, $300 free trial to get you started.
Always Free products to keep you going

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

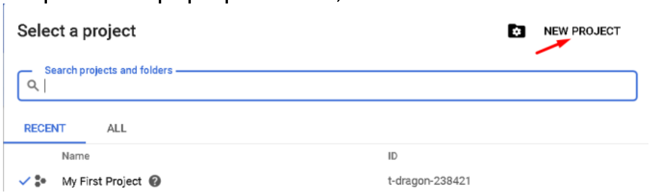
3.4.2 Goggle Cloud project

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”



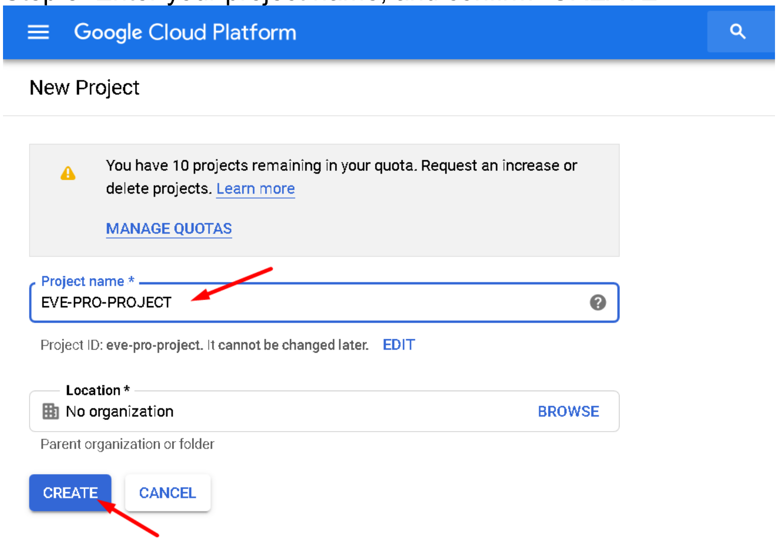
Step 2. Next pop up window, click “NEW PROJECT”



Select a project

Name	ID
My First Project	t-dragon-238421

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



New Project

You have 10 projects remaining in your quota. Request an increase or delete projects. Learn more

Project name * EVE-PRO-PROJECT

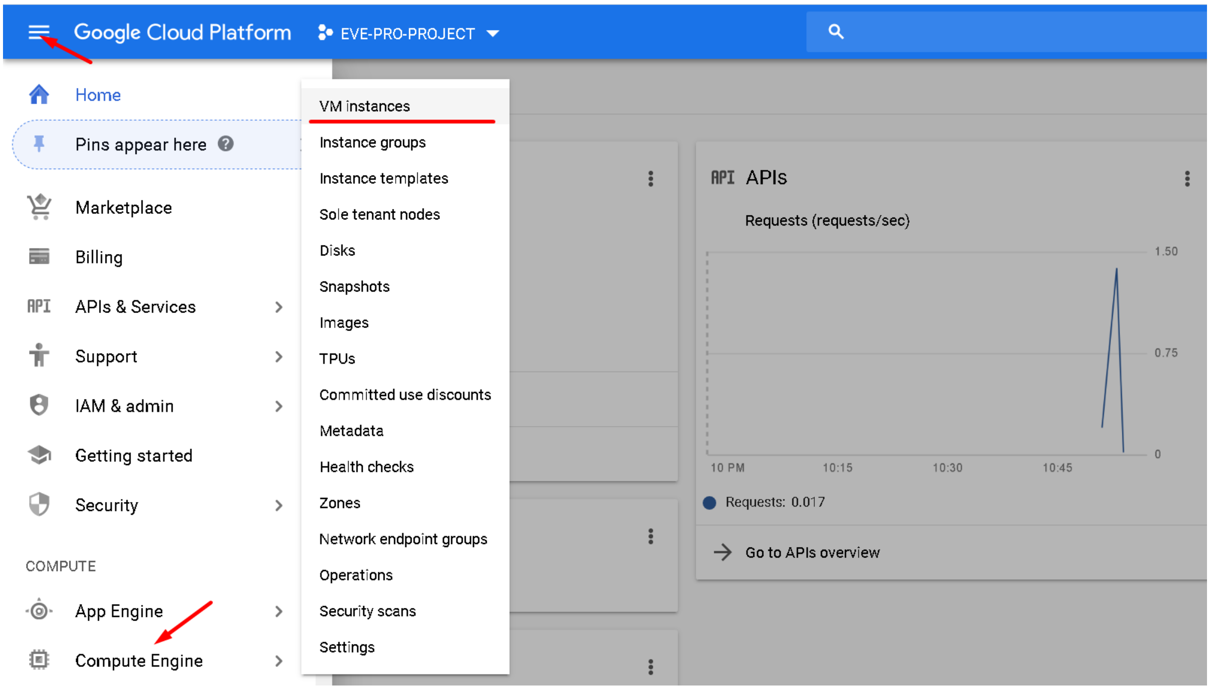
Project ID: eve-pro-project. It cannot be changed later. EDIT

Location * No organization BROWSE

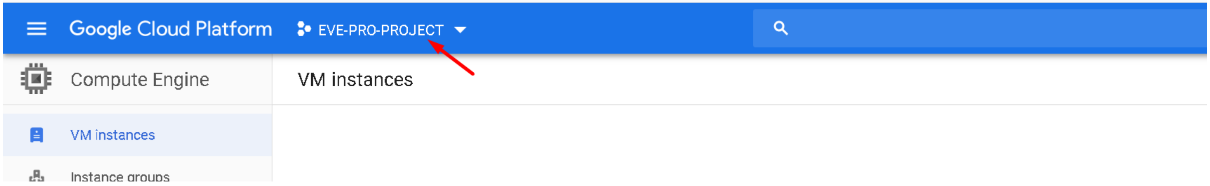
Parent organization or folder

This will take some time.

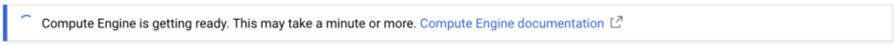
Step 4. Navigate: Navigation Menu/Compute Engine/VM Instances



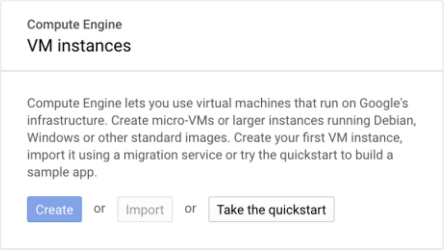
Step 5. Navigate: top bar and select your Project



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



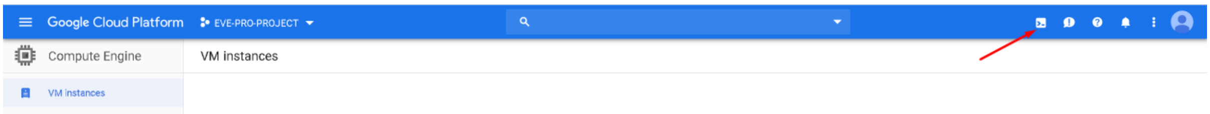
Compute Engine is getting ready. This may take a minute or more. Compute Engine documentation

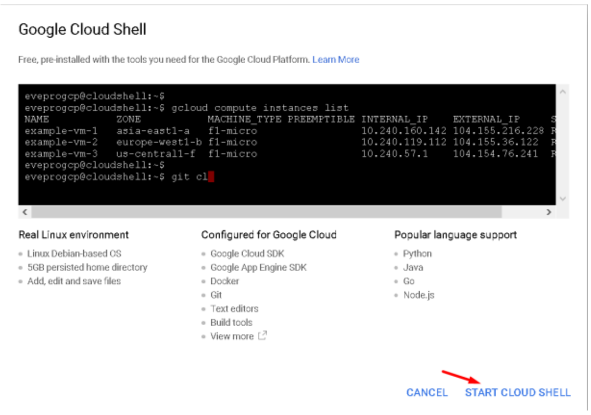


Compute Engine lets you use virtual machines that run on Google's infrastructure. Create micro-VMs or larger instances running Debian, Windows or other standard images. Create your first VM instance, import it using a migration service or try the quickstart to build a sample app.

3.4.3 Preparing Ubuntu boot disk template

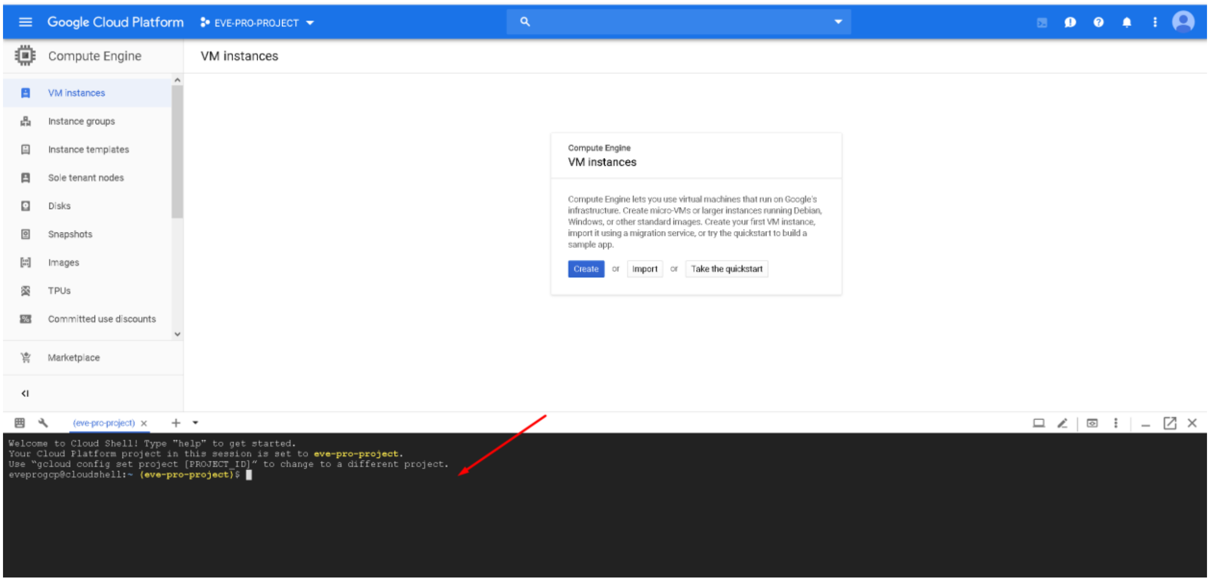
Step 1: Open the google cloud shell and press: “START CLOUD SHELL”





Free, pre-installed with the tools you need for the Google Cloud Platform. Learn More

```
eveprogcp@cloudshell:~$
eveprogcp@cloudshell:~$ gcloud compute instances list
NAME          ZONE           MACHINE_TYPE PREEMPTIBLE INTERNAL_IP    EXTERNAL_IP     S
example-vm-1  asia-east1-a   f1-micro                 10.240.160.142 104.155.216.228 R
example-vm-2  europe-west1-b f1-micro                 10.240.119.112 104.155.36.122  R
example-vm-3  us-central1-f  f1-micro                 10.240.57.1    104.154.76.241  R
eveprogcp@cloudshell:~$
eveprogcp@cloudshell:~$ git cl
```



Compute Engine
VM instances

Compute Engine lets you use virtual machines that run on Google's infrastructure. Create micro-VMs or larger instances running Debian, Windows, or other standard images. Create your first VM instance, import it using a migration service, or try the quickstart to build a sample app.

```
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to eve-pro-project.
Use “gcloud config set project [PROJECT_ID]” to change to a different project.
eveprogcp@cloudshell:~ (eve-pro-project)$
```

Step 2: create a nested Ubuntu 16.04 image model. Copy and paste the below command into the shell. Use copy/paste. crtl +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
```

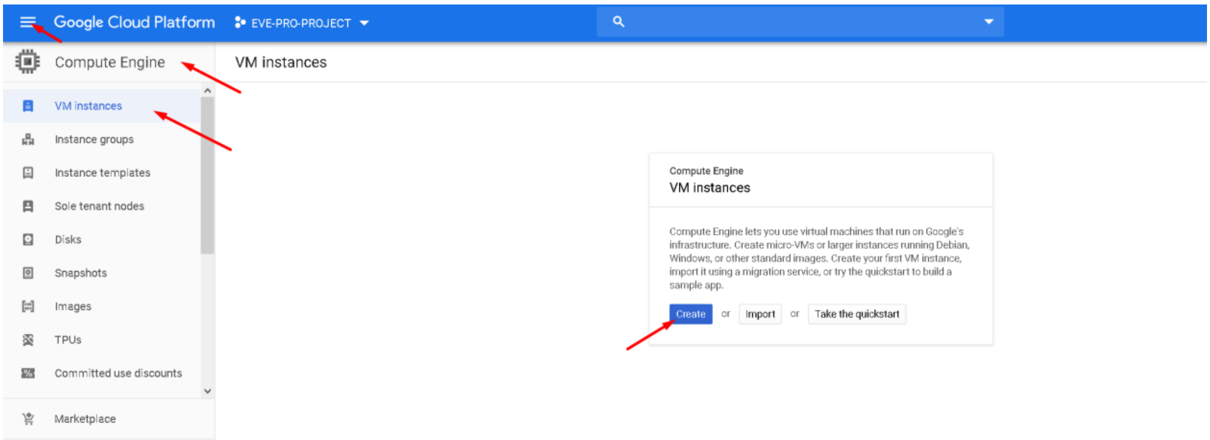
```
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to eve-pro-project.
Use “gcloud config set project [PROJECT_ID]” to change to a different project.
eveprogcp@cloudshell:~ (eve-pro-project)$ gcloud compute images create nested-ubuntu-xenial --source-image-family=ubuntu-1604-lts --source-image-project=ubuntu-os-cloud --licenses https://www.googleapis.com/comp
ute/v1/projects/vm-options/global/licenses/enable-vmx
```

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

```
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to eve-pro-project.
Use “gcloud config set project [PROJECT_ID]” to change to a different project.
eveprogcp@cloudshell:~ (eve-pro-project)$ gcloud compute images create nested-ubuntu-xenial --source-image-family=ubuntu-1604-lts --source-image-project=ubuntu-os-cloud --licenses https://www.googleapis.com/comp
ute/v1/projects/vm-options/global/licenses/enable-vmx
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                      READY
eveprogcp@cloudshell:~ (eve-pro-project)$
```

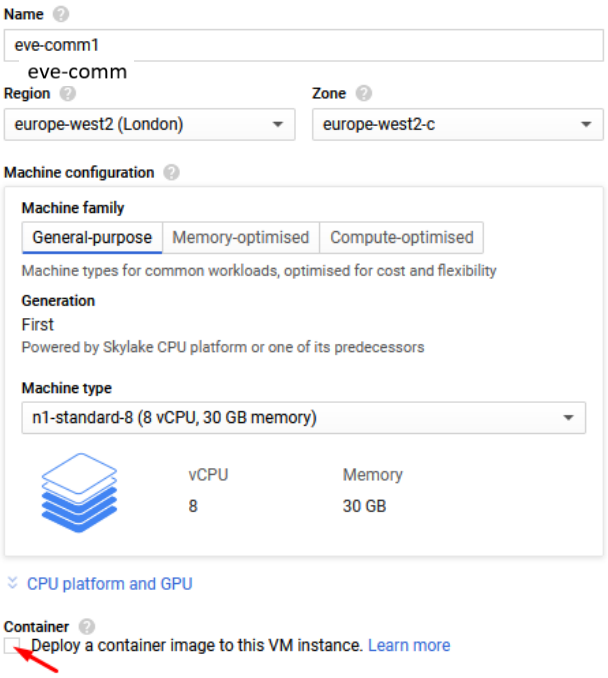
3.4.4 Creating VM

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



Compute Engine lets you use virtual machines that run on Google's infrastructure. Create micro-VMs or larger instances running Debian, Windows, or other standard images. Create your first VM instance, import it using a migration service, or try the quickstart to build a sample app.

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 eve-comm1

Region europe-west2 (London)

Zone europe-west2-c

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)

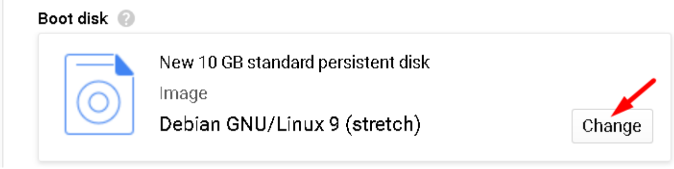
vCPU 8

Memory 30 GB

Container

☐ Deploy a container image to this VM instance. Learn more

Step 3: Select Boot disk. Press Change

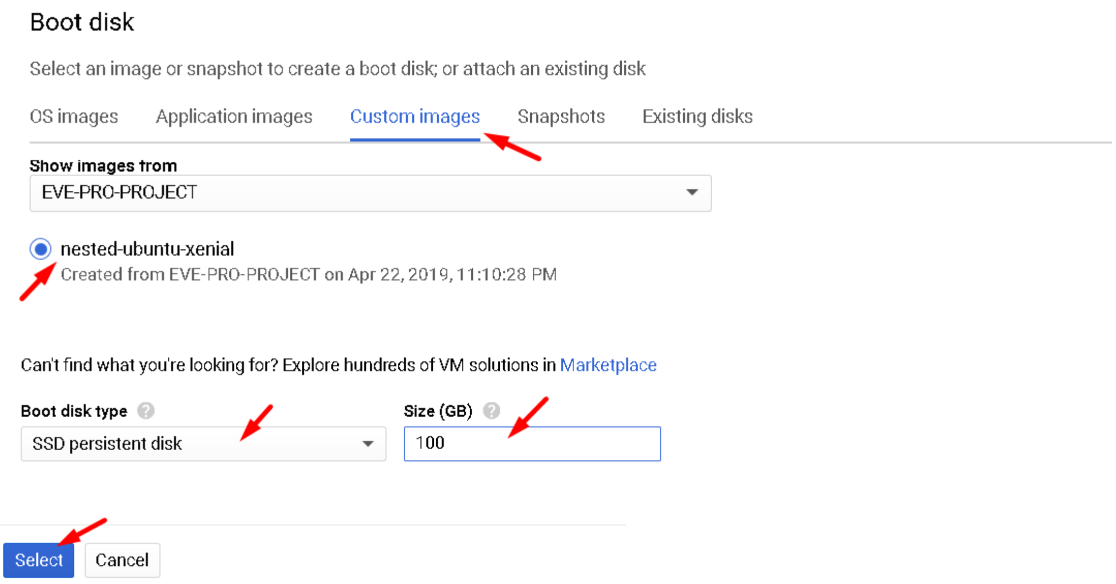


New 10 GB standard persistent disk

Image

Debian GNU/Linux 9 (stretch)

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

Show images from: EVE-PRO-PROJECT

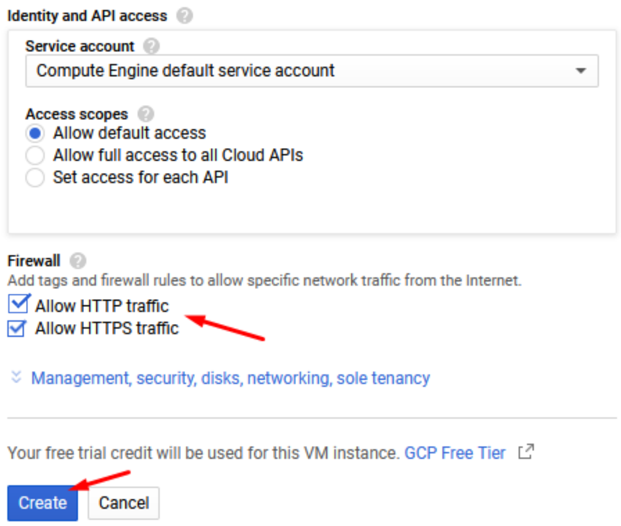
● nested-ubuntu-xenial
Created from EVE-PRO-PROJECT on Apr 22, 2019, 11:10:28 PM

Can't find what you're looking for? Explore hundreds of VM solutions in Marketplace

Boot disk type: SSD persistent disk

Size (GB): 100

Step 5: Allow http traffic and create VM



Identity and API access

Service account: Compute Engine default service account

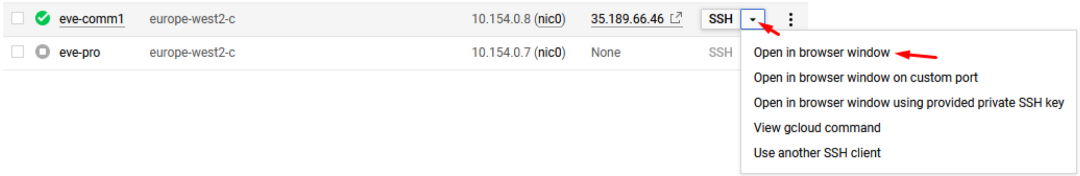
Access scopes
● Allow default access
○ Allow full access to all Cloud APIs
○ Set access for each API

Firewall
Add tags and firewall rules to allow specific network traffic from the Internet.
☑ Allow HTTP traffic
☑ Allow HTTPS traffic

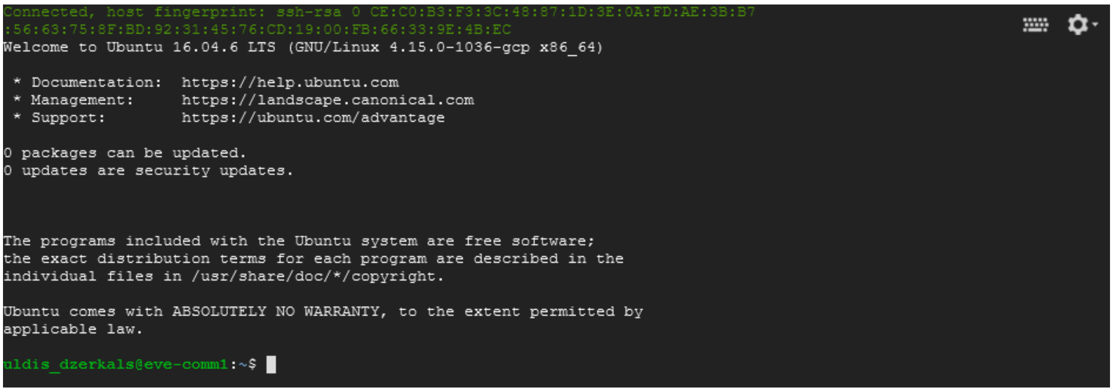
Your free trial credit will be used for this VM instance. GCP Free Tier

3.4.5 EVE-NG-Community installation

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



eve-comm1	europe-west2-c	10.154.0.8 (nic0)	35.189.66.46	SSH
eve-pro	europe-west2-c	10.154.0.7 (nic0)	None	SSH



```
Connected, host fingerprint: ssh-rsa 0 CE:C0:B3:F3:3C:48:87:1D:3E:0A:FD:AE:3B:B7
:56:63:75:8F: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.

uldis_dzerkals@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
```

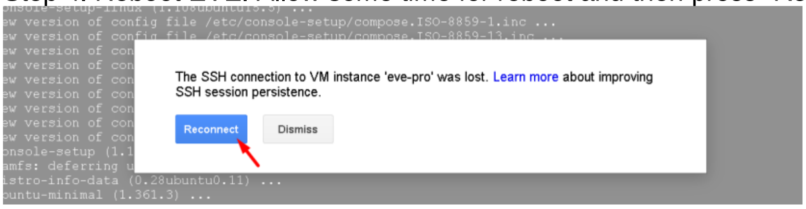
Step 3: Update and upgrade your new EVE-COMM

```
apt update
```

```
apt upgrade
```

Confirm with Y

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



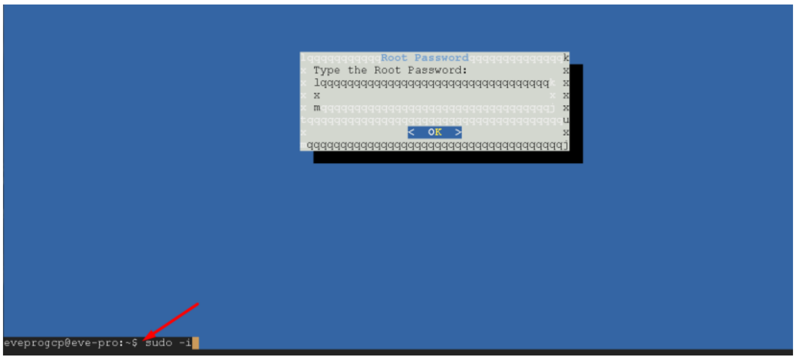
```
ew version of config file /etc/console-setup/compose.ISO-8859-1.inc ...
ew version of config file /etc/console-setup/compose.ISO-8859-13.inc ...
ew version of con
ew version of con
ew version of con
ew version of con
ew version of con
ew version of con
ew version of con
onsole-setup (1.1
amfs: deferring u
istro-info-data (0.28ubuntu0.11) ...
ountu-minimal (1.361.3) ...
```

The SSH connection to VM instance 'eve-pro' was lost. Learn more about improving SSH session persistence.

Step 5: **IMPORTANT**: Setup IP

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

```
sudo -i
```



```
lqqqqqqqqqqqRoot Passwordqqqqqqqqqqqqqk
x Type the Root Password:             x
x lqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqk x
x x                                 x x
x mqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqj x
tqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqu
x              <  OK  >               x
mqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqj

eveprogcp@eve-pro:~$ 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:

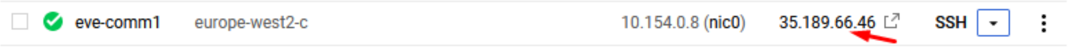
```
sudo -i
```

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**.

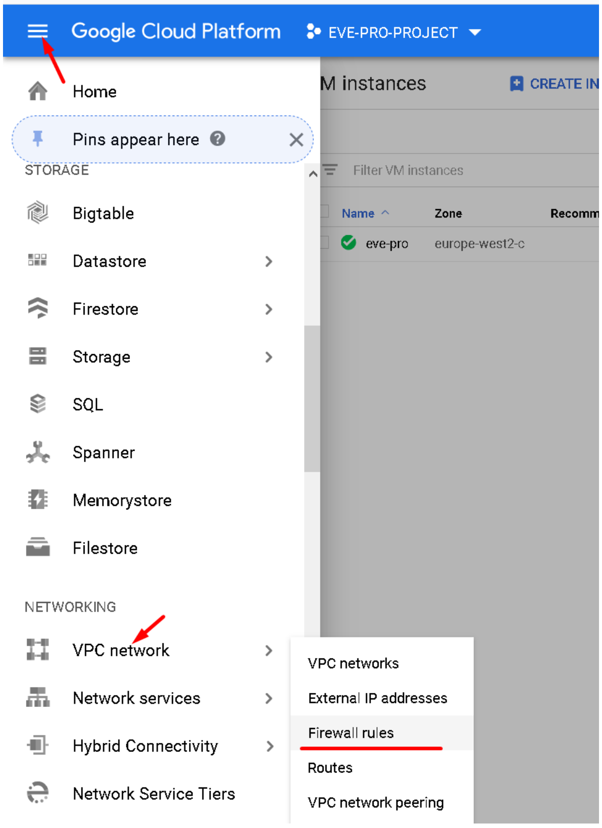


☐ ✓ eve-comm1 europe-west2-c 10.154.0.8 (nic0) 35.189.66.46 SSH

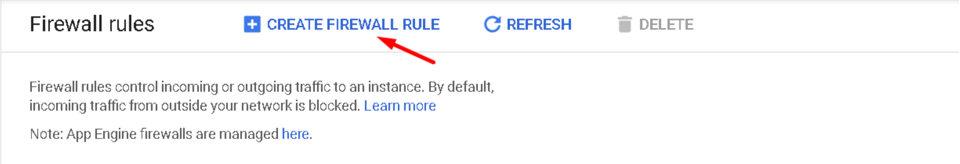
Default web login: admin/eve

3.4.7 Optional: GCP Firewall rules for native console use

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



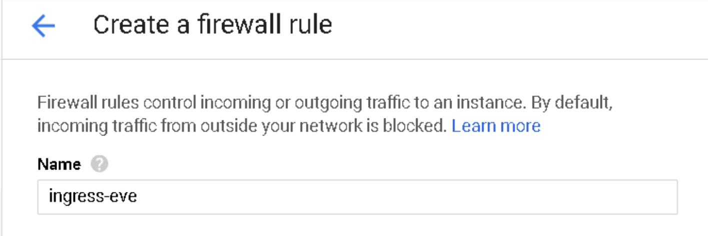
Step 2: Create new firewall rule



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

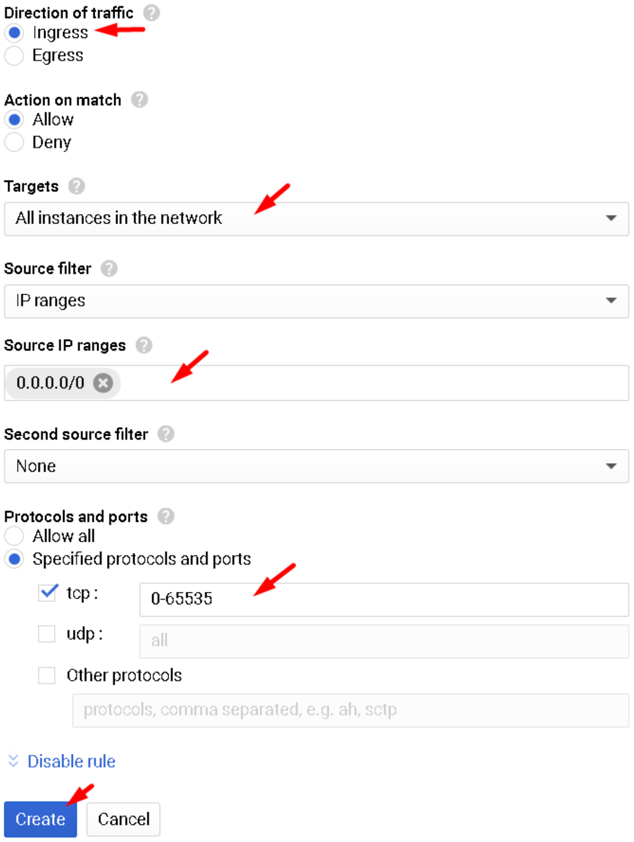
Note: App Engine firewalls are managed here.

Step 3: Create an ingress 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: ingress-eve



Direction of traffic
● Ingress
○ Egress

Action on match
● Allow
○ Deny

Targets
All instances in the network

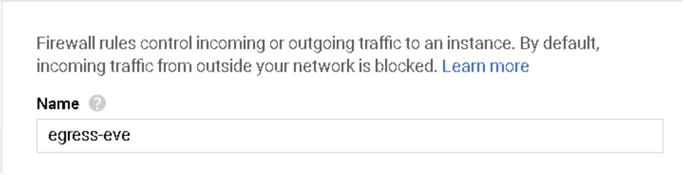
Source filter
IP ranges

Source IP ranges
0.0.0.0/0

Second source filter
None

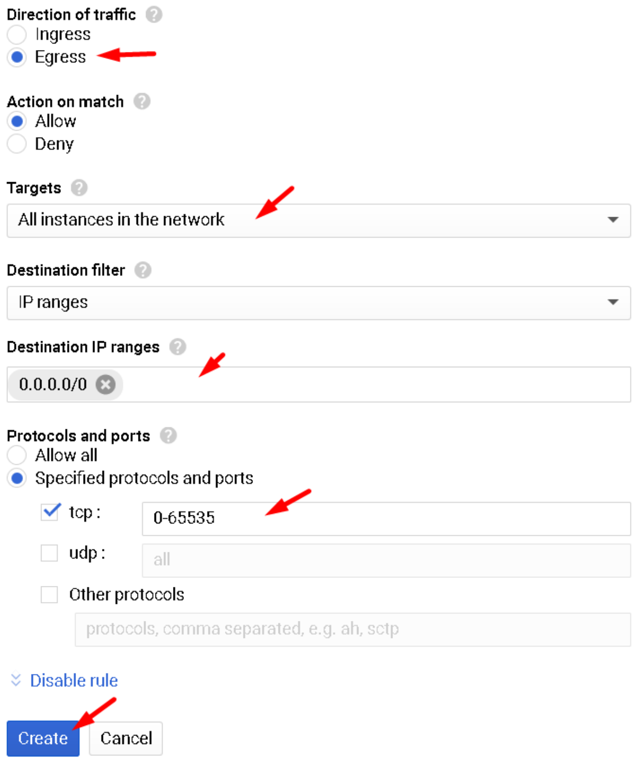
Protocols and ports
○ Allow all
● Specified protocols and ports
☑ tcp : 0-65535
☐ udp : all
☐ Other protocols
protocols, comma separated, e.g. ah, sctp

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

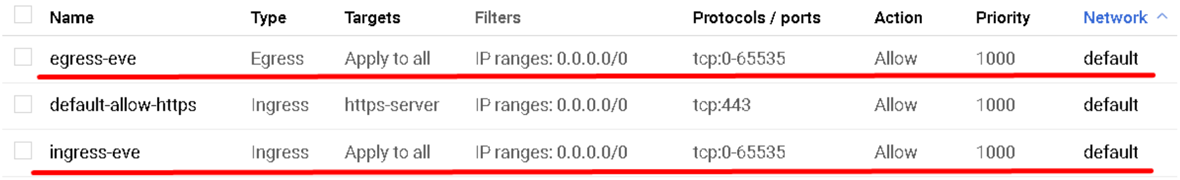
Targets
All instances in the network

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

Summary FW rules.



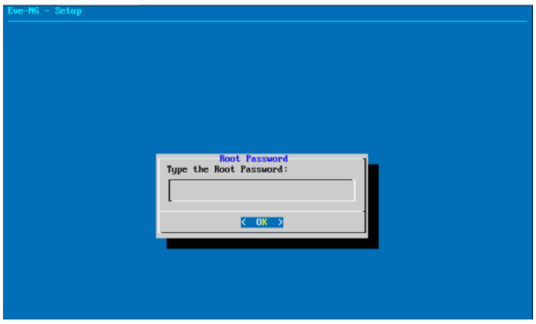
Name	Type	Targets	Filters	Protocols / ports	Action	Priority	Network
egress-eve	Egress	Apply to all	IP ranges: 0.0.0.0/0	tcp:0-65535	Allow	1000	default
default-allow-https	Ingress	https-server	IP ranges: 0.0.0.0/0	tcp:443	Allow	1000	default
ingress-eve	Ingress	Apply to all	IP ranges: 0.0.0.0/0	tcp:0-65535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

3.5 EVE Management IP Address setup

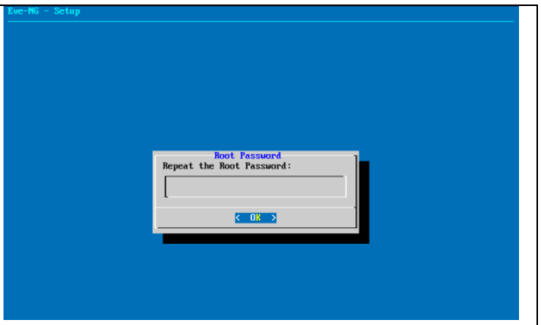
3.5.1 Management static IP address setup (preferred)

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.

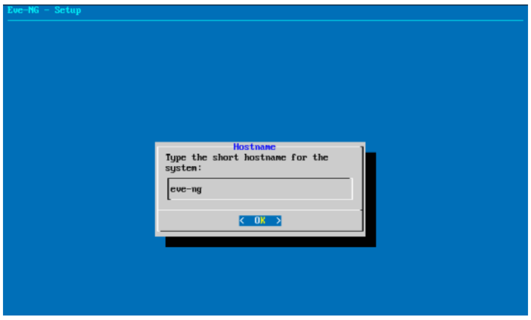


```
Eve-NG - Setup

Root Password
Type the Root Password:

< OK >
```



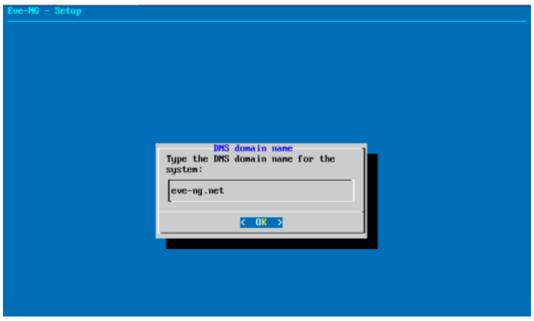
```
Eve-NG - Setup

Root Password
Repeat the Root Password:

< OK >
```

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



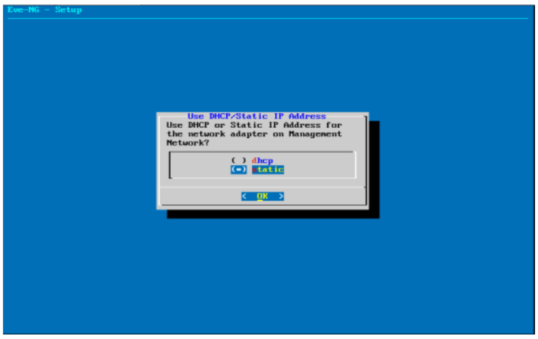
```
Eve-NG - Setup

Hostname
Type the short hostname for the
system:
eve-ng
< OK >
```

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



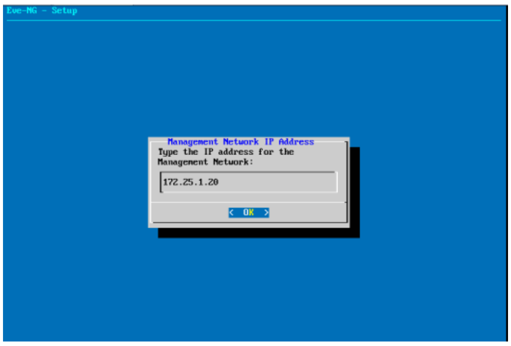
```
Eve-NG - Setup

DNS domain name
Type the DNS domain name for the
system:
eve-ng.net
< OK >
```

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



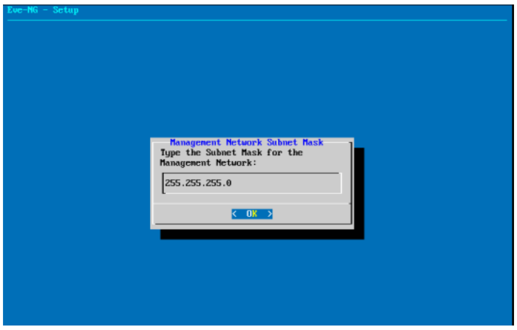
```
Eve-NG - Setup

Use DHCP/Static IP Address
Use DHCP or Static IP Address for
the network adapter on Management
Network?
( ) dhcp
(*) static
< OK >
```

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



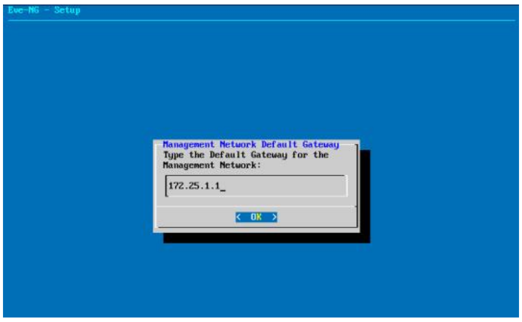
```
Eve-NG - Setup

Management Network IP Address
Type the IP address for the
Management Network:
172.25.1.20
< OK >
```

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



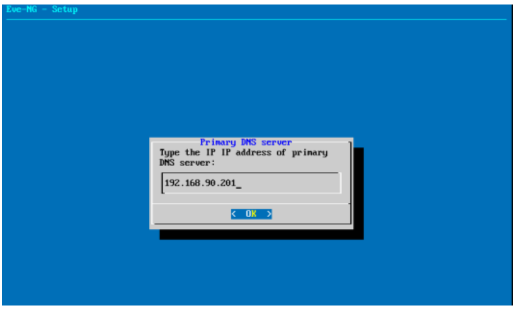
```
Management Network Subnet Mask
Type the Subnet Mask for the
Management Network:
255.255.255.0
< OK >
```

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



```
Management Network Default Gateway
Type the Default Gateway for the
Management Network:
172.25.1.1_
< OK >
```

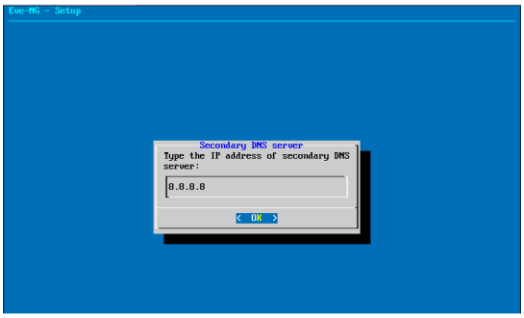
Step 9: Type your networks primary DNS IP. Confirm with enter.
IMPORTANT: DNS must be reachable and resolve public addresses.



```
Primary DNS server
Type the IP IP address of primary
DNS server:
192.168.90.201_
< OK >
```

.

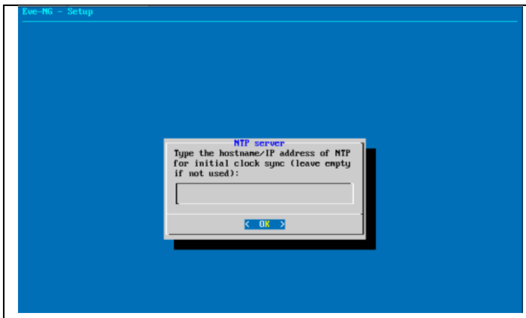
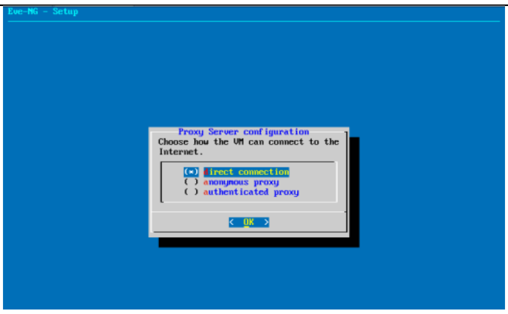
Step 10: Type your network Secondary DNS IP. Confirm with Enter.
IMPORTANT: DNS must be reachable and resolve public addresses.



```
Secondary DNS server
Type the IP address of secondary DNS
server:
8.8.8.8
< OK >
```

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.

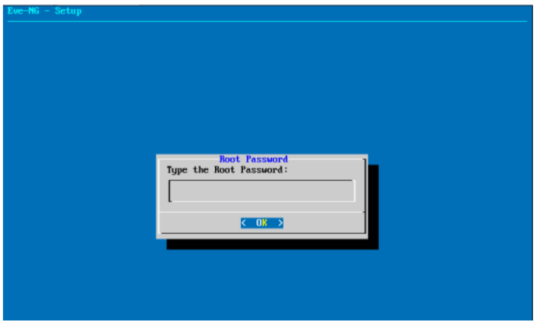
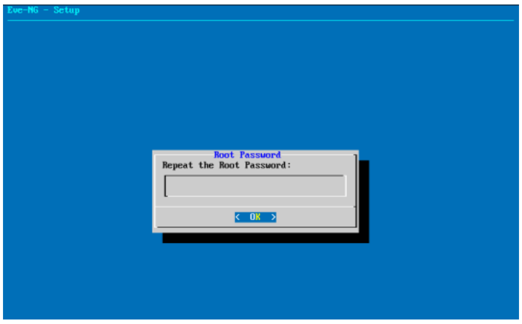
Step 12: If you have a proxy in use for your Internet, select the respective proxy option and configure your proxy settings. By default, it is direct connection (no proxy). Confirm your selection with enter. EVE will reboot automatically.

 Eve-NG - Setup NTP server Type the hostname/IP address of NTP for initial clock sync (leave empty if not used): 	 Eve-NG - Setup Proxy Server configuration Choose how the VM can connect to the Internet. (*) direct connection ( ) anonymous proxy ( ) authenticated proxy

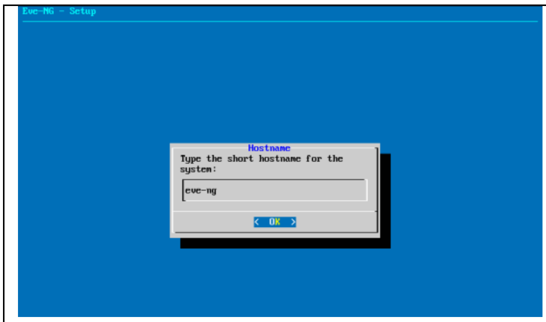
⚠ **IMPORTANT NOTE:** If you are setting up your management IP for the first time (fresh EVE installation), please return to the install section and complete installation phase 3.

3.5.2 EVE Management IP address setup via DHCP

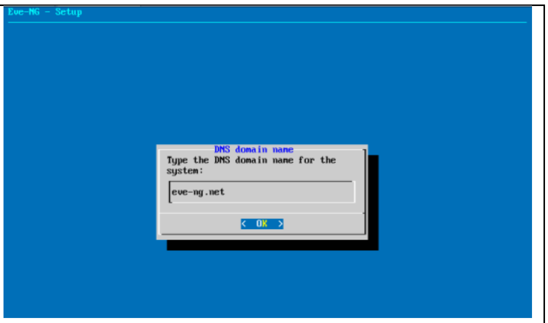
The steps below will walk you through the network setup and assign a management IP for EVE via DHCP.

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.  Eve-NG - Setup Root Password Type the Root Password: 	Step 2: Retype your root password again and confirm with enter.  Eve-NG - Setup Root Password Repeat the Root Password:

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

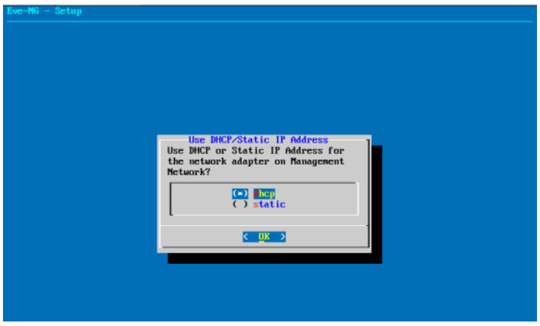


```
Eve-NG - Setup

Hostname
Type the short hostname for the
system:
eve-ng
```



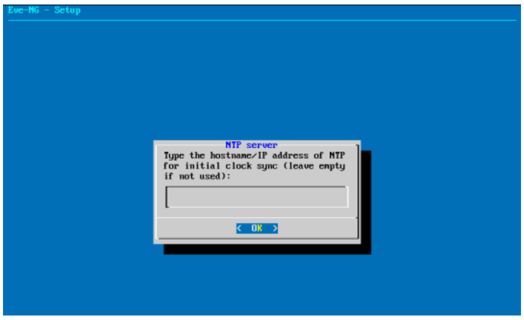
```
Eve-NG - Setup

DNS domain name
Type the DNS domain name for the
system:
eve-ng.net
```

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



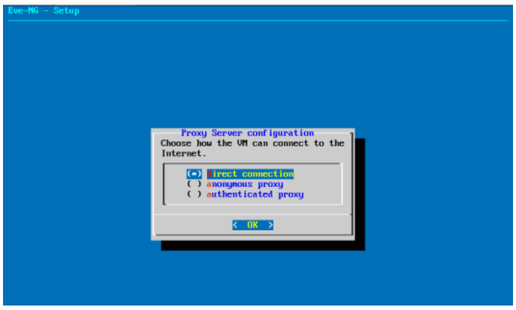
```
Eve-NG - Setup

Use DHCP/Static IP Address
Use DHCP or Static IP Address for
the network adapter on Management
Network?
(*) dhcp
( ) static
```

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.



```
Eve-NG - Setup

NTP server
Type the hostname/IP address of NTP
for initial clock sync (leave empty
if not used):
```

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.



```
Eve-NG - Setup

Proxy Server configuration
Choose how the VM can connect to the
Internet.
(*) direct connection
( ) anonymous proxy
( ) authenticated proxy
```

⚠ **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

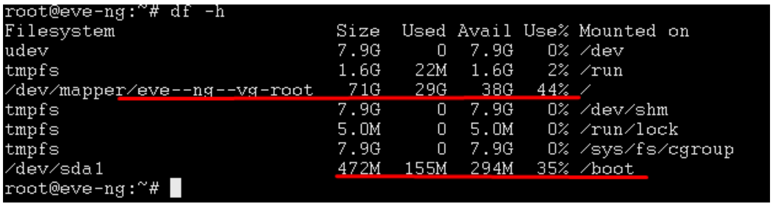
3.6.1 Mandatory Prerequisites

⚠ 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

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

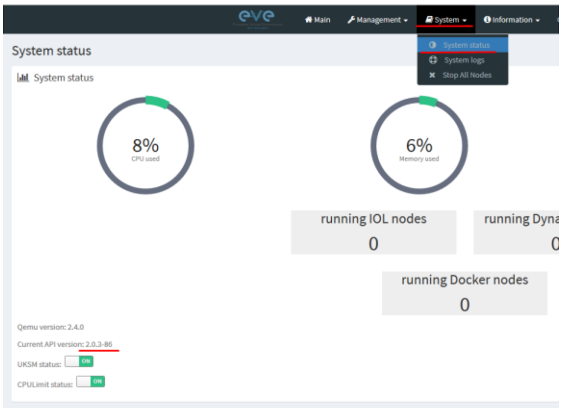
You have to make sure that your EVE Community Edition is of version (v2.0.3-86) or later. You must be able to reach the internet from your PC, VMware or Server.

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 networ
root@eve-ng:~# █
```

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



Qemu version: 2.4.0
Current API version: 2.0.3-86
UKSM status: ON
CPULimit status: ON

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
```

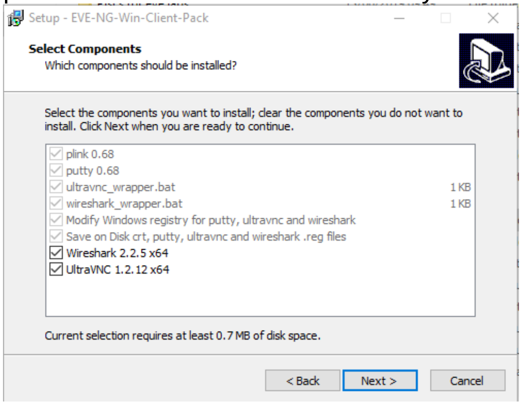
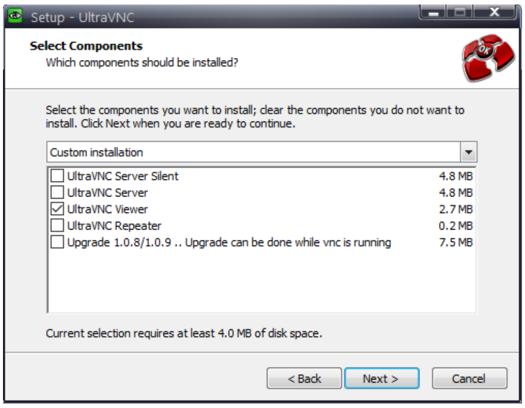
```
reboot
```

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.  Setup - EVE-NG-Win-Client-Pack **Select Components** Which components should be installed? Select the components you want to install; clear the components you do not want to install. Click Next when you are ready to continue. ☑ plink 0.68 ☑ putty 0.68 ☑ ultravnc_wrapper.bat 1 KB ☑ wireshark_wrapper.bat 1 KB ☑ Modify Windows registry for putty, ultravnc and wireshark ☑ Save on Disk crt, putty, ultravnc and wireshark .reg files ☑ Wireshark 2.2.5 x64 ☑ UltraVNC 1.2.12 x64 Current selection requires at least 0.7 MB of disk space. 	Step 4: Continue with Next. When it asks to choose Ultra VNC Options, only leave the UltraVNC Viewer checked, the rest is not needed.  Setup - UltraVNC **Select Components** Which components should be installed? Select the components you want to install; clear the components you do not want to install. Click Next when you are ready to continue. Custom installation ☐ UltraVNC Server Silent 4.8 MB ☐ UltraVNC Server 4.8 MB ☑ UltraVNC Viewer 2.7 MB ☐ UltraVNC Repeater 0.2 MB ☐ Upgrade 1.0.8/1.0.9 .. Upgrade can be done while vnc is running 7.5 MB Current selection requires at least 4.0 MB of disk space.

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

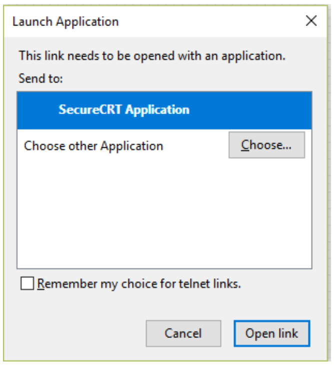
Step 2: Set your default Telnet program:

TELNET
URL:Telnet Protocol

SecureCRT Application

⚠ 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:



Launch Application

This link needs to be opened with an application.

Send to:

SecureCRT Application

Choose other Application

☐ Remember my choice for telnet links.

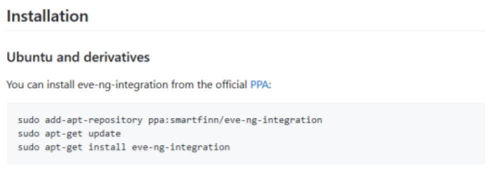
Set your default application, check the box “Remember my choice telnet links” and click Open link

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
```

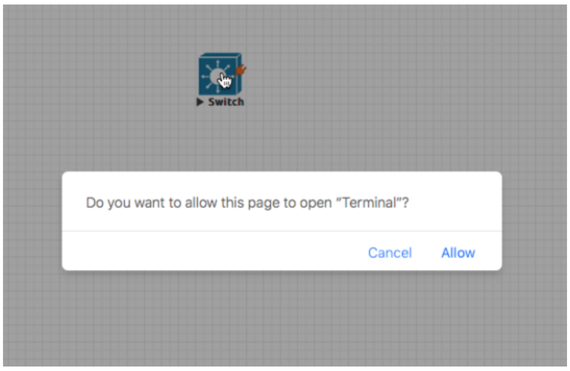
```
sudo apt-get install eve-ng-integration
```

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

3.7.3 MAC OSX Native Console

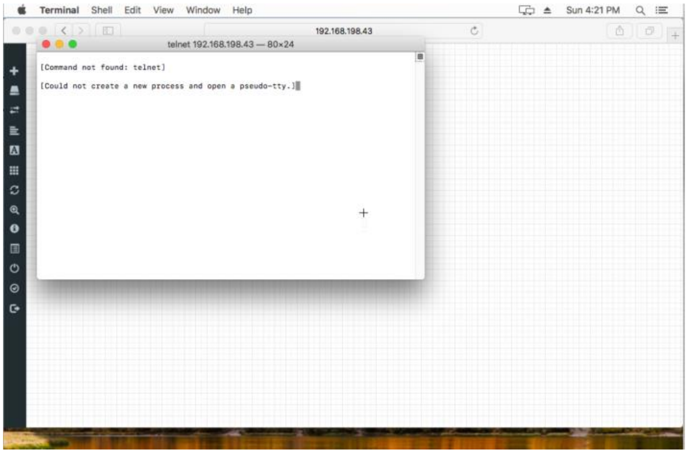
Telnet Protocol:

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



Do you want to allow this page to open "Terminal"?

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).



```
[Command not found: telnet]

[Could not create a new process and open a pseudo-tty.]
```

Procedure to install a previous telnet binary:

Download telnet and ftp binaries from eve:

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

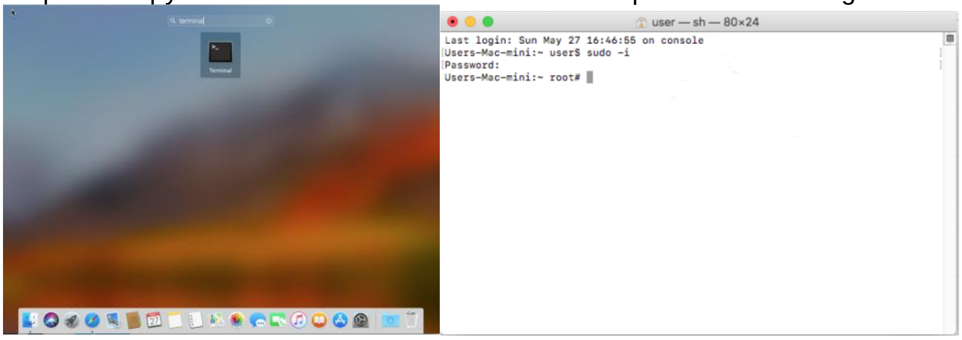
Step 2: When the “OSX Utilities” screen appears, pull down the ‘Utilities’ menu at the top of the screen instead, and choose “Terminal”

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:



```
Last login: Sun May 27 16:46:55 on console
Users-Mac-mini:~ user$ sudo -i
Password:
Users-Mac-mini:~ root#
```

```
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
```

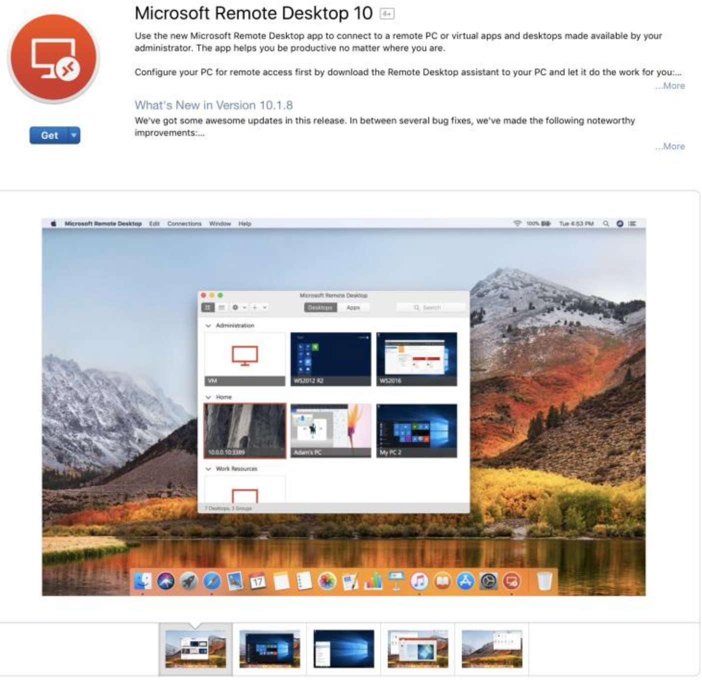
VNC Protocol:

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:



Microsoft Remote Desktop 10

Use the new Microsoft Remote Desktop app to connect to a remote PC or virtual apps and desktops made available by your administrator. The app helps you be productive no matter where you are.

Configure your PC for remote access first by download the Remote Desktop assistant to your PC and let it do the work for you:...

What's New in Version 10.1.8

We've got some awesome updates in this release. In between several bug fixes, we've made the following noteworthy improvements:...

3.8 Login to the EVE WEB GUI

Login to the EVE management UI:

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**

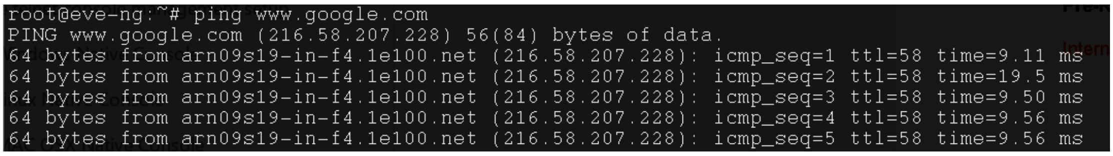
⚠ IMPORTANT NOTE: You must prepare and upload at least a couple of images to start building your labs. Refer to section **12**

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
```

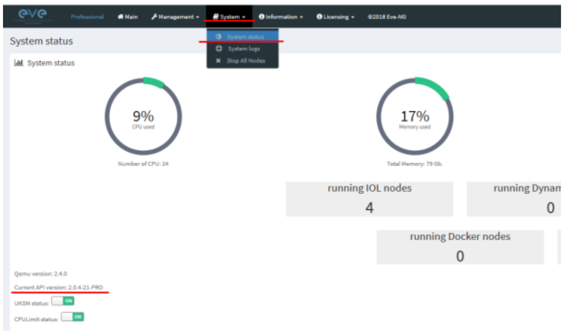
⚠ **IMPORTANT NOTE:** before you start your EVE Community update & upgrade, please free up your EVE Community from older kernel packages:

```
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.



Number of CPU: 24

Total Memory: 79 Gb.

running IOL nodes 4

running Dynam 0

running Docker nodes 0

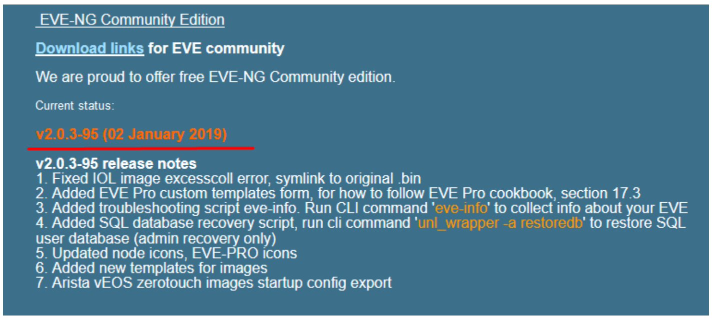
Qemu version: 2.4.0

Current API version: 2.0.4-21-PRO

UKSM status: ON

CPULimit status: ON

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.



EVE-NG Community Edition

Download links **for EVE community**

We are proud to offer free EVE-NG Community edition.

Current status:

v2.0.3-95 (02 January 2019)

v2.0.3-95 release notes
1. Fixed IOL image excesscoll error, symlink to original .bin
2. Added EVE Pro custom templates form, for how to follow EVE Pro cookbook, section 17.3
3. Added troubleshooting script eve-info. Run CLI command 'eve-info' to collect info about your EVE
4. Added SQL database recovery script, run cli command 'unl_wrapper -a restoredb' to restore SQL user database (admin recovery only)
5. Updated node icons, EVE-PRO icons
6. Added new templates for images
7. Arista vEOS zerotouch images startup config export

Type the below commands followed by Enter

```
apt update
```

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

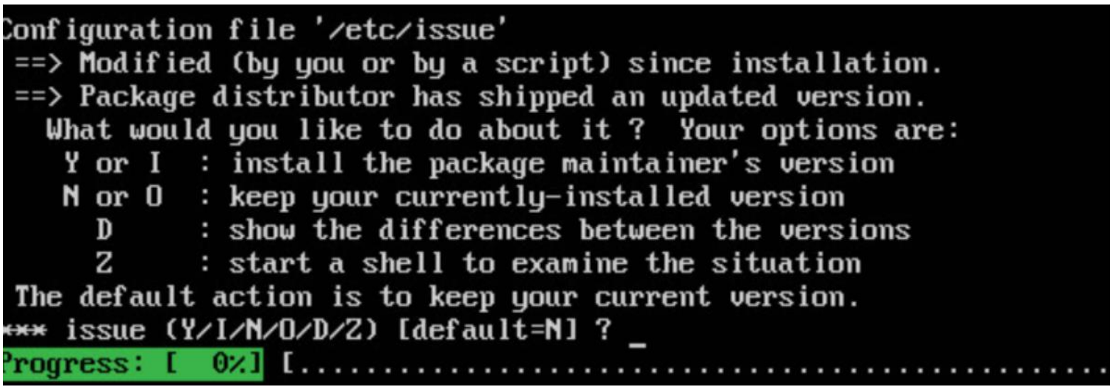
4.2 EVE-NG Community Upgrade

Type commands followed by Enter

```
apt upgrade
```

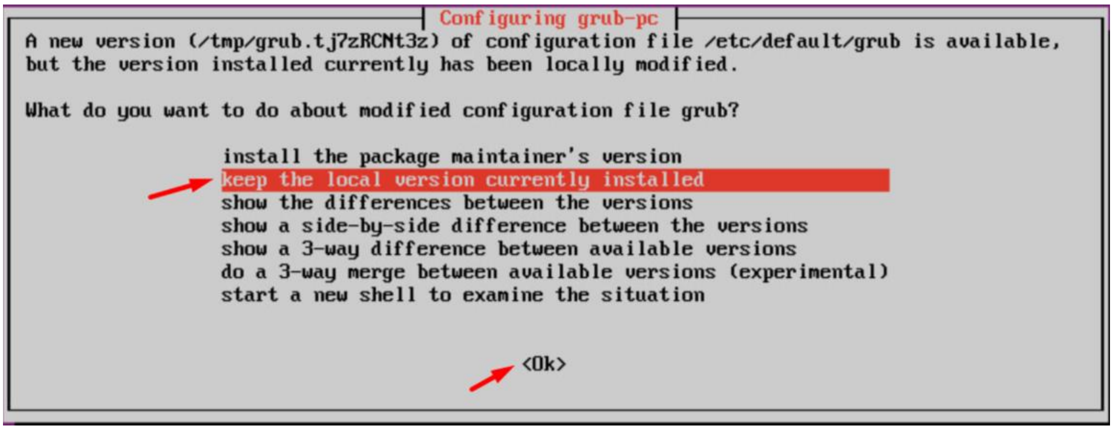
In case the prompt asks to confirm with Y/N, answer Yes.

⚠ **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] ? _
rogress: [  0%] [...............................................
```

Answer for prompt above is **"N"**



```
Configuring grub-pc
A new version (/tmp/grub.tj7zRCNt3z) 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*POD+1 -> 32768+128*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

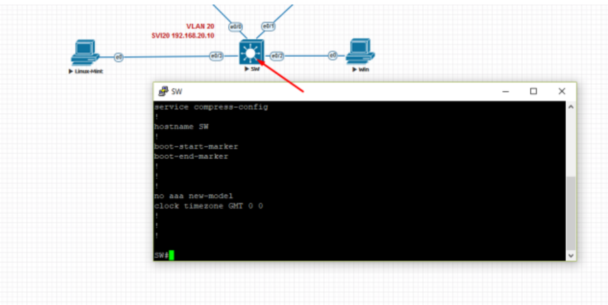
EVE Community supports two different console types.

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)

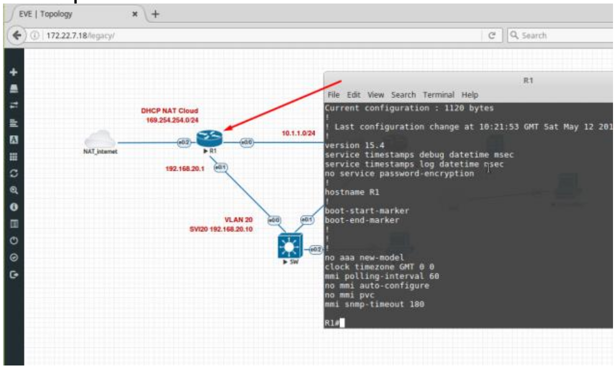
5.1.1 Native Console: telnet

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



```
service compress-config
!
hostname SW
!
boot-start-marker
boot-end-marker
!
!
!
no aaa new-model
clock timezone GMT 0 0
!
!
!

SW#
```

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



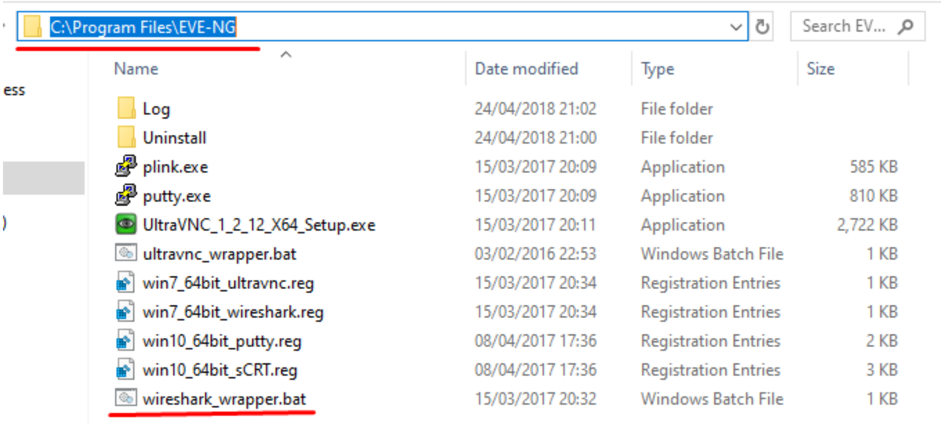
```
Current configuration : 1120 bytes
!
! Last configuration change at 10:21:53 GMT Sat May 12 201
!
version 15.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R1
!
boot-start-marker
boot-end-marker
!
!
!
no aaa new-model
clock timezone GMT 0 0
mmi polling-interval 60
no mmi auto-configure
no mmi pvc
mmi snmp-timeout 180

R1#
```

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.

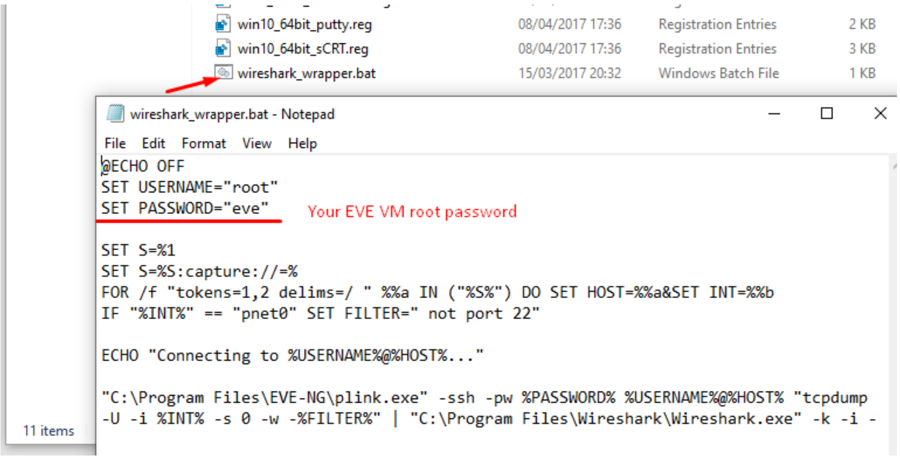
⚠ **IMPORTANT NOTE:** Make sure you have installed Wireshark and EVE-NG client pack. It is strongly recommended if your Wireshark software is installed at your PC default location.



C:\Program Files\EVE-NG

Name	Date modified	Type	Size
Log	24/04/2018 21:02	File folder	
Uninstall	24/04/2018 21:00	File folder	
plink.exe	15/03/2017 20:09	Application	585 KB
putty.exe	15/03/2017 20:09	Application	810 KB
UltraVNC_1_2_12_X64_Setup.exe	15/03/2017 20:11	Application	2,722 KB
ultravnc_wrapper.bat	03/02/2016 22:53	Windows Batch File	1 KB
win7_64bit_ultravnc.reg	15/03/2017 20:34	Registration Entries	1 KB
win7_64bit_wireshark.reg	15/03/2017 20:34	Registration Entries	1 KB
win10_64bit_putty.reg	08/04/2017 17:36	Registration Entries	2 KB
win10_64bit_sCRT.reg	08/04/2017 17:36	Registration Entries	3 KB
wireshark_wrapper.bat	15/03/2017 20:32	Windows Batch File	1 KB

⚠ **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.



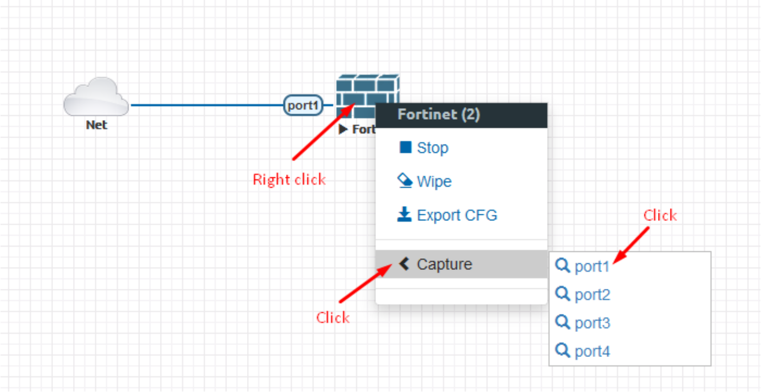
Name	Date modified	Type	Size
win10_64bit_putty.reg	08/04/2017 17:36	Registration Entries	2 KB
win10_64bit_sCRT.reg	08/04/2017 17:36	Registration Entries	3 KB
wireshark_wrapper.bat	15/03/2017 20:32	Windows Batch File	1 KB

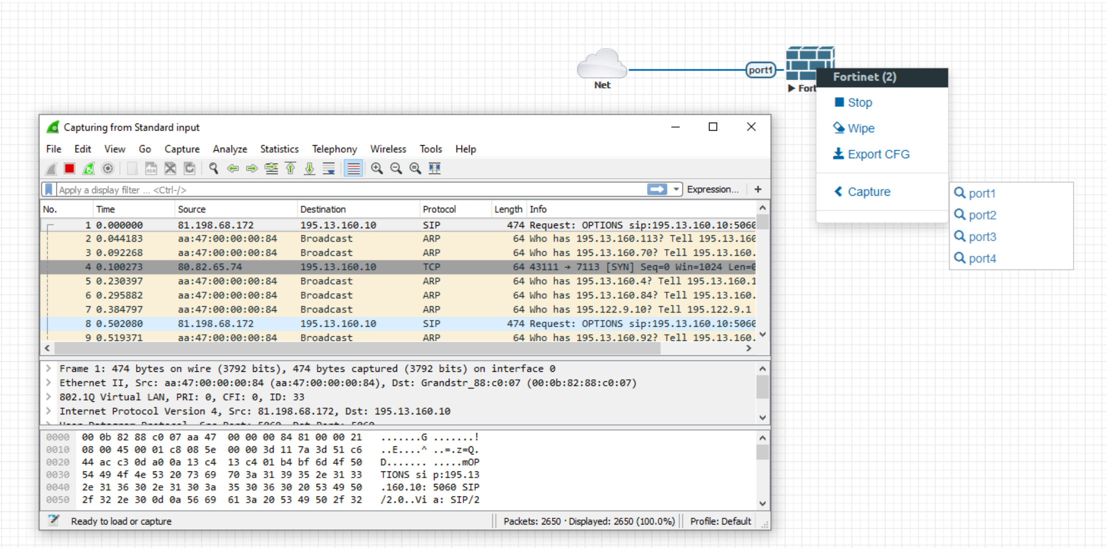
wireshark_wrapper.bat - Notepad

```
@ECHO OFF
SET USERNAME="root"
SET PASSWORD="eve"

SET S=%1
SET S=%S:capture://=%
FOR /f "tokens=1,2 delims=/ " %%a IN ("%S%") DO SET HOST=%%a&SET INT=%%b
IF "%INT%" == "pnet0" SET FILTER=" not port 22"

ECHO "Connecting to %USERNAME%@%HOST%..."

"C:\Program Files\EVE-NG\plink.exe" -ssh -pw %PASSWORD% %USERNAME%@%HOST% "tcpdump
-U -i %INT% -s 0 -w -%FILTER%" | "C:\Program Files\Wireshark\Wireshark.exe" -k -i -
```

Your EVE VM root password

Example: Fortinet live interface port1 capture.

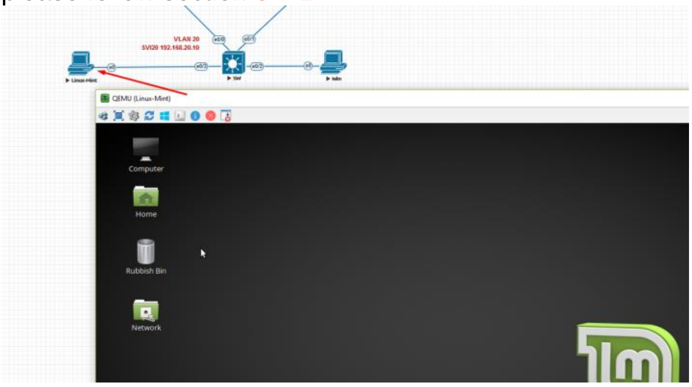




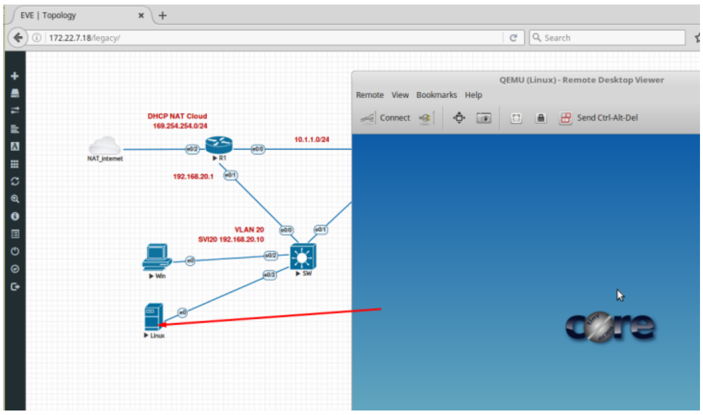
```
No.   Time        Source              Destination    Protocol  Length Info
    1 0.000000    81.198.68.172       195.13.160.10  SIP       474 Request: OPTIONS sip:195.13.160.10:5060
    2 0.044183    aa:47:00:00:00:84   Broadcast      ARP        64 Who has 195.13.160.113? Tell 195.13.160
    3 0.092268    aa:47:00:00:00:84   Broadcast      ARP        64 Who has 195.13.160.70? Tell 195.13.160.
    4 0.100273    80.82.65.74         195.13.160.10  TCP        64 43111 → 7113 [SYN] Seq=0 Win=1024 Len=0
    5 0.230397    aa:47:00:00:00:84   Broadcast      ARP        64 Who has 195.13.160.4? Tell 195.13.160.1
    6 0.295882    aa:47:00:00:00:84   Broadcast      ARP        64 Who has 195.13.160.84? Tell 195.13.160.
    7 0.384797    aa:47:00:00:00:84   Broadcast      ARP        64 Who has 195.122.9.10? Tell 195.122.9.1
    8 0.502080    81.198.68.172       195.13.160.10  SIP       474 Request: OPTIONS sip:195.13.160.10:5060
    9 0.519371    aa:47:00:00:00:84   Broadcast      ARP        64 Who has 195.13.160.92? Tell 195.13.160.

> Frame 1: 474 bytes on wire (3792 bits), 474 bytes captured (3792 bits) on interface 0
> Ethernet II, Src: aa:47:00:00:00:84 (aa:47:00:00:00:84), Dst: Grandstr_88:c0:07 (00:0b:82:88:c0:07)
> 802.1Q Virtual LAN, PRI: 0, CFI: 0, ID: 33
> Internet Protocol Version 4, Src: 81.198.68.172, Dst: 195.13.160.10

0000  00 0b 82 88 c0 07 aa 47  00 00 00 84 81 00 00 21   .......G .......!
0010  08 00 45 00 01 c8 08 5e  00 00 3d 11 7a 3d 51 c6   ..E....^ ..=.z=Q.
0020  44 ac c3 0d a0 0a 13 c4  13 c4 01 b4 bf 6d 4f 50   D....... .....mOP
0030  54 49 4f 4e 53 20 73 69  70 3a 31 39 35 2e 31 33   TIONS si p:195.13
0040  2e 31 36 30 2e 31 30 3a  35 30 36 30 20 53 49 50   .160.10: 5060 SIP
0050  2f 32 2e 30 0d 0a 56 69  61 3a 20 53 49 50 2f 32   /2.0..Vi a: SIP/2

Ready to load or capture    Packets: 2650 · Displayed: 2650 (100.0%)    Profile: Default
```

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



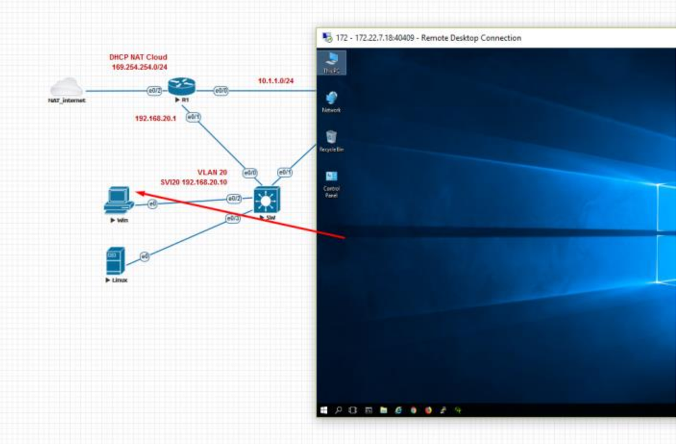
Linux OS: Remote Desktop Viewer for VNC Sessions.
Example: Remote Desktop Viewer for VNC sessions on Linux Mint. To setup Linux native Remote Desktop Viewer please follow section 3.7.2



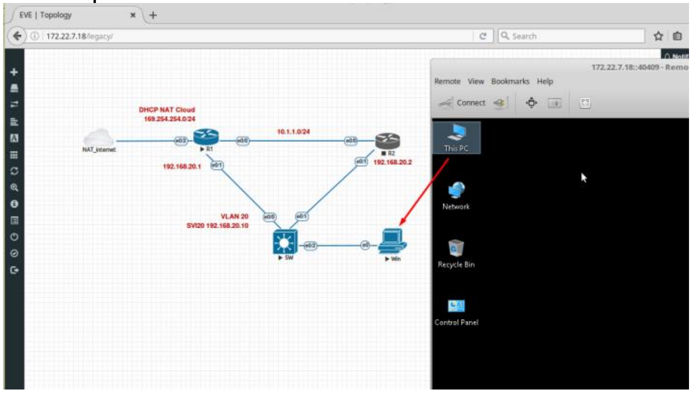
MAC OSX: Preferred VNC program: Chicken VNC
Example: Chicken VNC as Native VNC client on MAC OSX. To setup MAC OSX native RDP Viewer client please follow section 3.7.3

5.1.4 Native Console: RDP

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

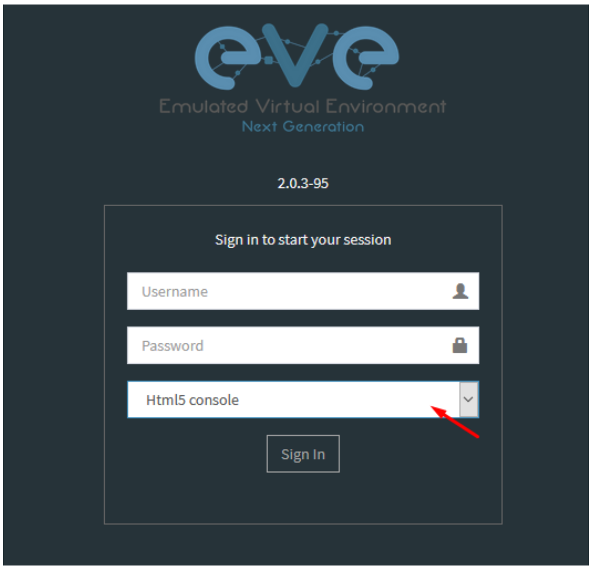


Linux OS: Remote Desktop Viewer as RDP session to lab Win10 host.
Example: RDP session to Win10 host in the lab. To setup Linux native Remote Desktop Viewer please follow section 3.7.2



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

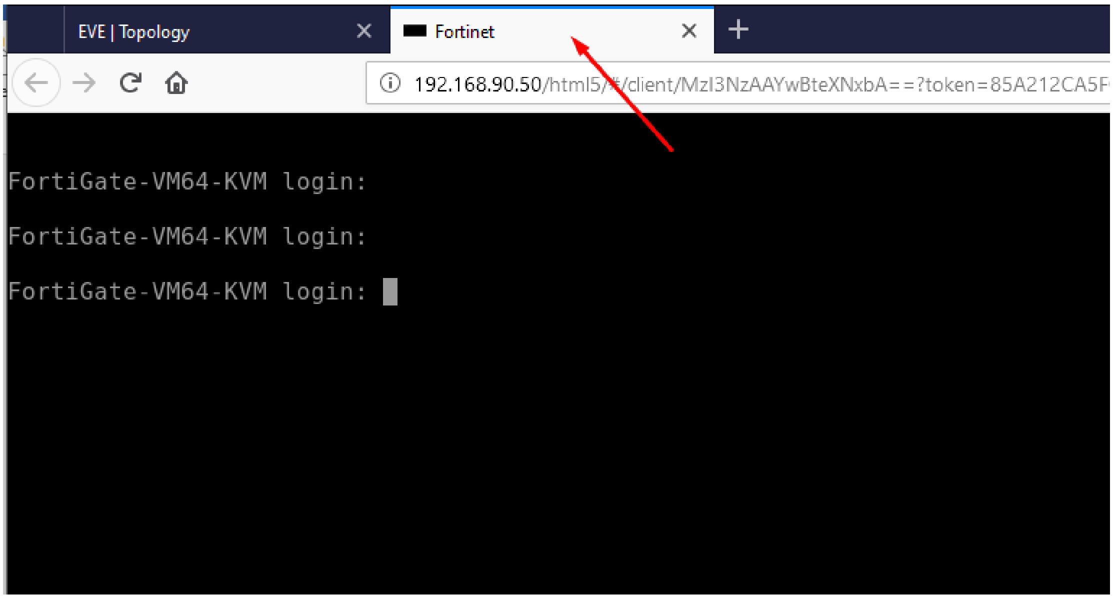
5.2 HTML5 console



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

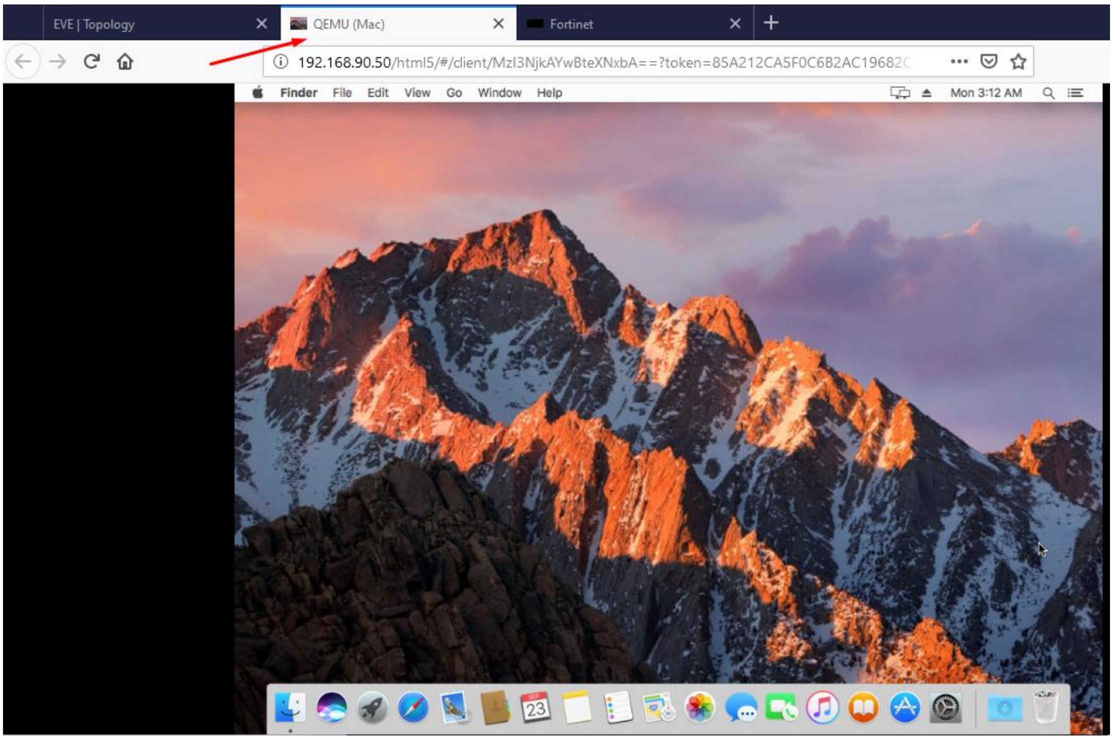
HTML5 Telnet console opens telnet sessions in the new browser window.



```
FortiGate-VM64-KVM login:

FortiGate-VM64-KVM login:

FortiGate-VM64-KVM login:
```

5.2.2 HTML5 Console: VNC

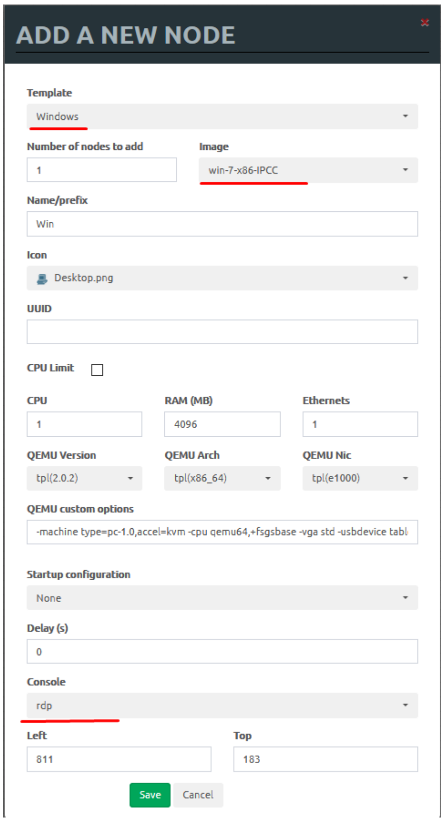
HTML5 VNC opens VNC sessions in the new browser window.



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 (MB): 4096

Ethernets: 1

QEMU Version: tpl(2.0.2)

QEMU Arch: tpl(x86_64)

QEMU Nic: tpl(e1000)

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

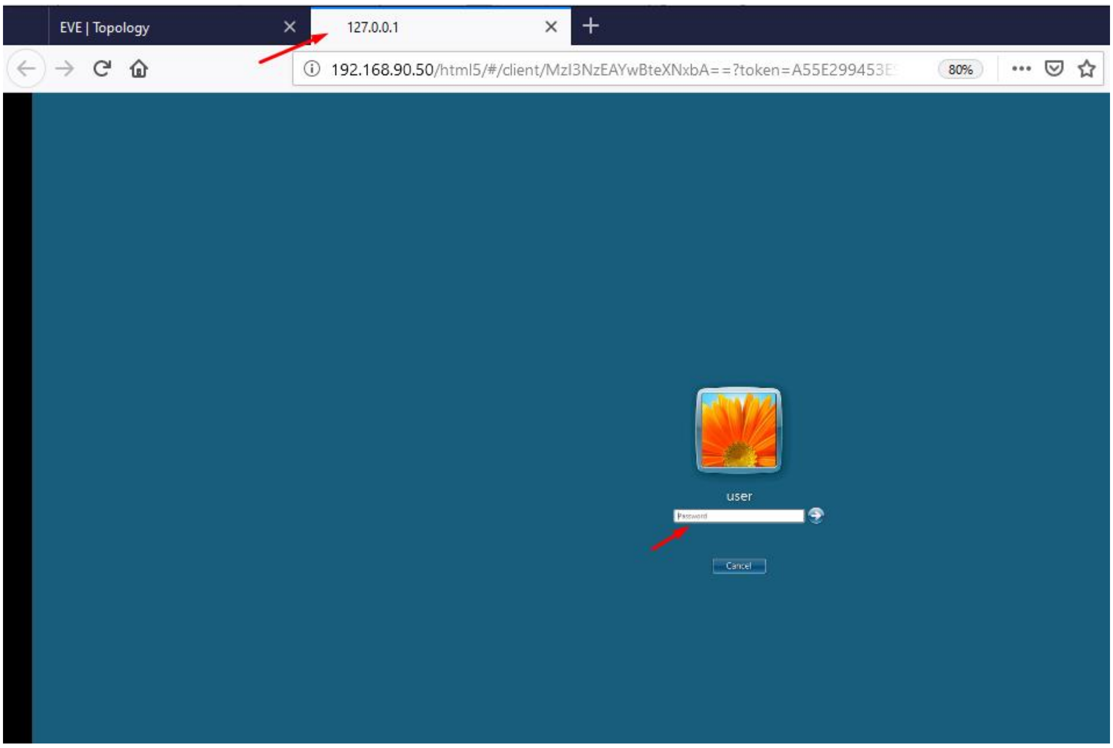
Startup configuration: None

Delay (s): 0

Console: rdp

Left: 811

Top: 183

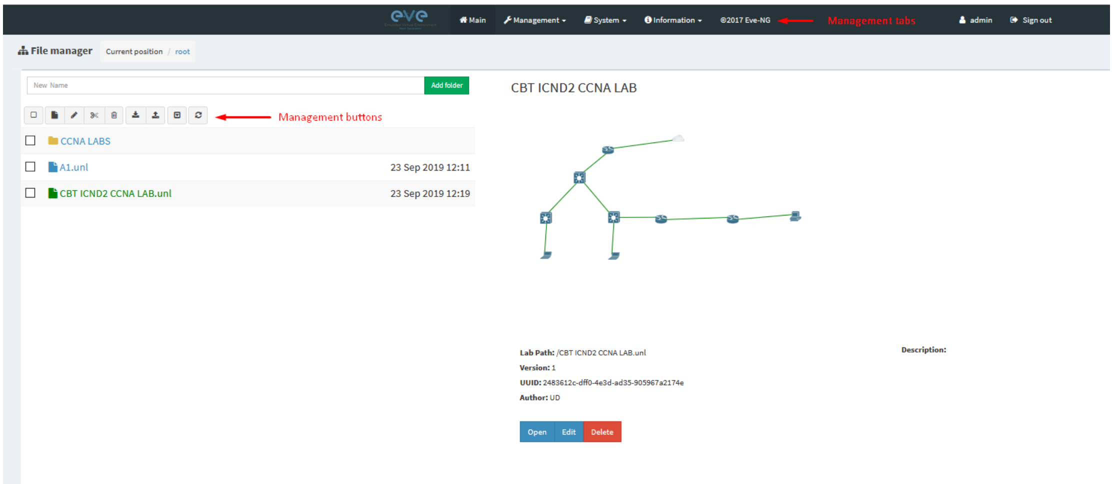


192.168.90.50/html5/#/client/MzI3NzEAYwBteXNxbA==?token=A55E299453E

6 EVE WEB GUI Management

6.1 EVE Management Page

The Main EVE management window



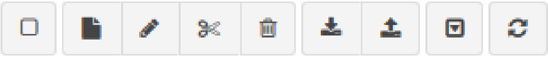
☐ CCNA LABS
☐ A1.unl 23 Sep 2019 12:11
☐ CBT ICND2 CCNA LAB.unl 23 Sep 2019 12:19

CBT ICND2 CCNA LAB

Lab Path: /CBT ICND2 CCNA LAB.unl
Version: 1
UUID: 2483612c-dff0-4e3d-ad35-905967a2174e
Author: UD

Description:

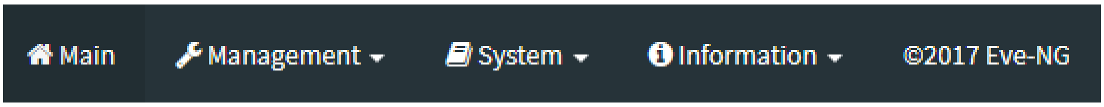
6.1.1 Management buttons



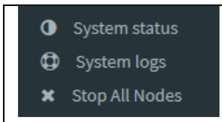
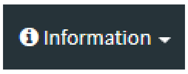
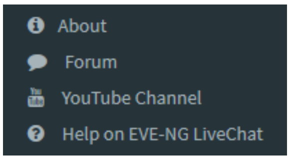
Button	***Description***
☐	Select All or Deselect All folders or labs in the EVE tree
📄	Create/Add new Lab
✎	Change selected item name. To use this option, please select the folder or lab that you want to rename. You must not rename the Shared folder, the Users folder or any folder inside the Users folder.
✂	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



Tab	***Description***
Main	Returns back to the EVE Home Management screen.
Management ▾ User management	Management dropdown, opening the management submenu. Management submenu, refer to sections: 6.3
System ▾	System dropdown. System submenu, refer to section 6.4

	
 	Information dropdown Information submenu, for details see section 6.5

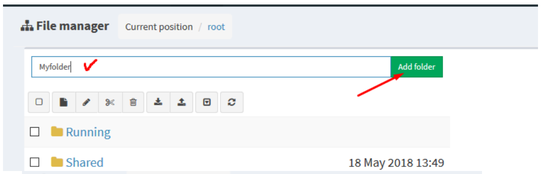
6.2 Folders and Lab files management

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

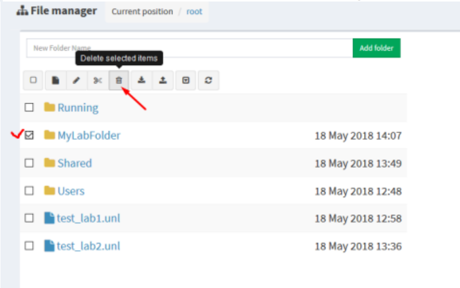
Type the new folder name and click "Add Folder"



6.2.1.2 Delete folder

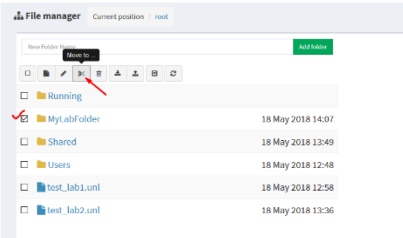
Select the folder you wish to delete and press Delete.

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

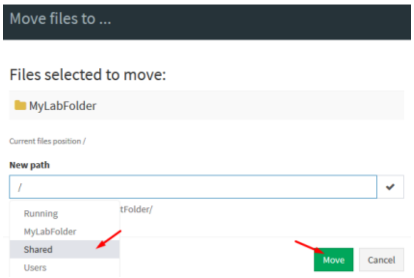


6.2.1.3 Move Folder

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.



Move files to ...

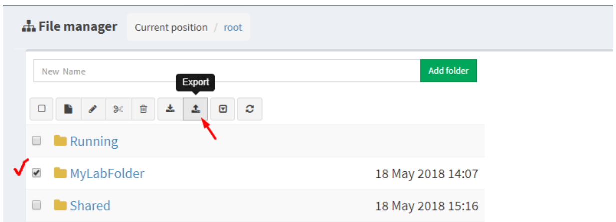
Files selected to move:
MyLabFolder

Current files position /

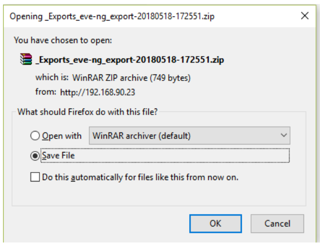
New path: /

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.



Opening _Exports_eve-ng_export-20180518-172551.zip

You have chosen to open:

_Exports_eve-ng_export-20180518-172551.zip

which is: WinRAR ZIP archive (749 bytes)
from: http://192.168.90.23

What should Firefox do with this file?

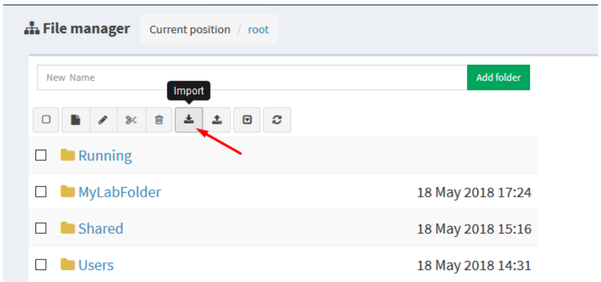
○ Open with WinRAR archiver (default)
● Save File
☐ Do this automatically for files like this from now on.

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

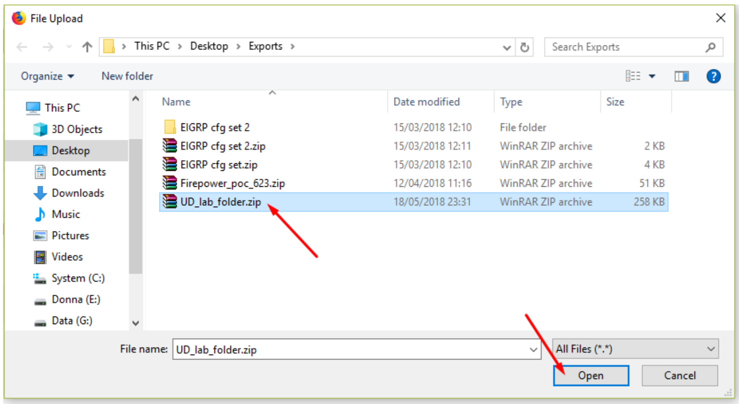
⚠ IMPORTANT: Importable file MUST be in .zip format, do NOT unzip the file.

Step 1: Press the Import button.



Name	Date
☐ Running	
☐ MyLabFolder	18 May 2018 17:24
☐ Shared	18 May 2018 15:16
☐ Users	18 May 2018 14:31

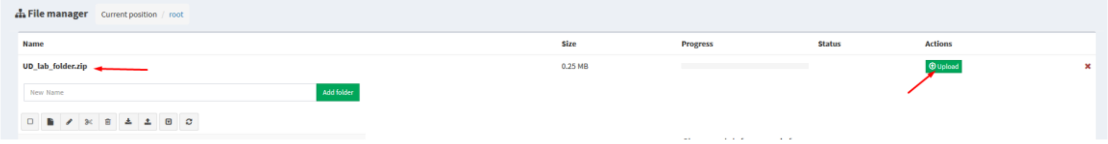
Step 2: Choose the zipped file that contains EVE folders with labs.



Name	Date modified	Type	Size
EIGRP cfg set 2	15/03/2018 12:10	File folder	
EIGRP cfg set 2.zip	15/03/2018 12:11	WinRAR ZIP archive	2 KB
EIGRP cfg set.zip	15/03/2018 12:10	WinRAR ZIP archive	4 KB
Firepower_poc_623.zip	12/04/2018 11:16	WinRAR ZIP archive	51 KB
UD_lab_folder.zip	18/05/2018 23:31	WinRAR ZIP archive	258 KB

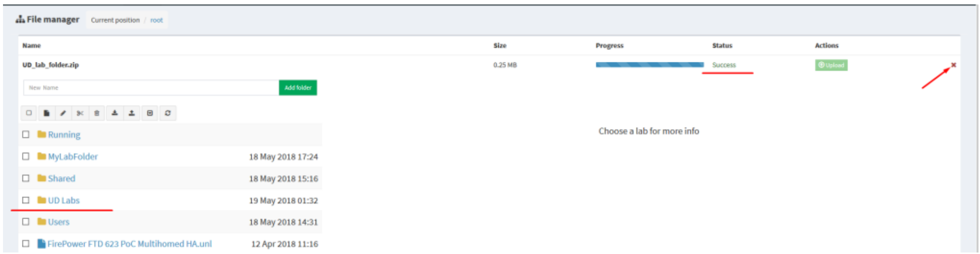
File name: UD_lab_folder.zip

Step 3: Press the Upload Button



Name	Size	Progress	Status	Actions
UD_lab_folder.zip	0.25 MB			Upload

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



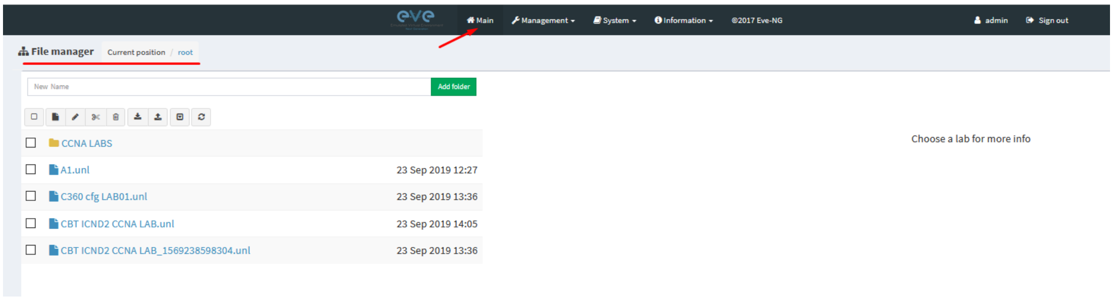
Name	Size	Progress	Status	Actions
UD_lab_folder.zip	0.25 MB		Success	Upload

Name	Date
☐ Running	
☐ MyLabFolder	18 May 2018 17:24
☐ Shared	18 May 2018 15:16
☐ UD Labs	19 May 2018 01:32
☐ Users	18 May 2018 14:31
☐ FirePower FTD 623 PoC Multihomed HA.unl	12 Apr 2018 11:16

Choose a lab for more info

6.2.2 Lab files Management

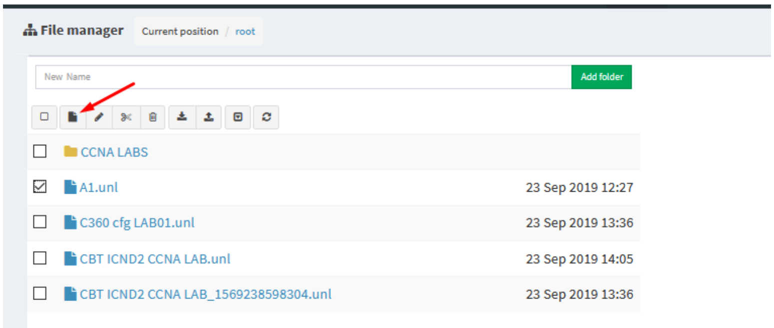
You can manage created labs from the main EVE file manager window



CCNA LABS	
A1.unl	23 Sep 2019 12:27
C360 cfg LAB01.unl	23 Sep 2019 13:36
CBT ICND2 CCNA LAB.unl	23 Sep 2019 14:05
CBT ICND2 CCNA LAB_1569238598304.unl	23 Sep 2019 13:36

6.2.2.1 Create Lab

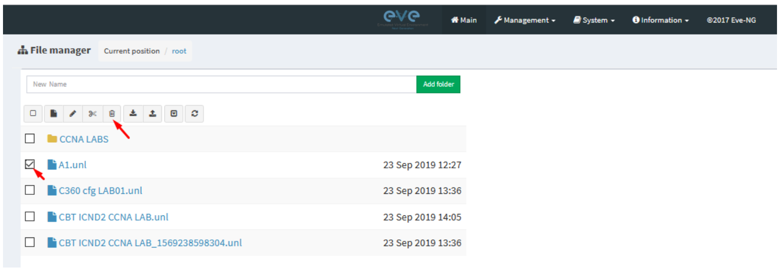
Click on the New Lab button and refer to section 8.1



☐	CCNA LABS	
☑	A1.unl	23 Sep 2019 12:27
☐	C360 cfg LAB01.unl	23 Sep 2019 13:36
☐	CBT ICND2 CCNA LAB.unl	23 Sep 2019 14:05
☐	CBT ICND2 CCNA LAB_1569238598304.unl	23 Sep 2019 13:36

6.2.2.2 Delete Lab

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



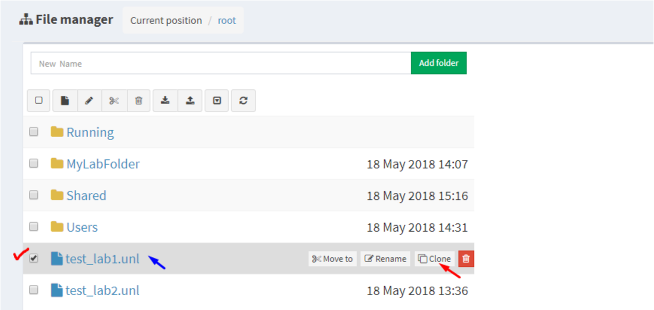
☐	CCNA LABS	
☑	A1.unl	23 Sep 2019 12:27
☐	C360 cfg LAB01.unl	23 Sep 2019 13:36
☐	CBT ICND2 CCNA LAB.unl	23 Sep 2019 14:05
☐	CBT ICND2 CCNA LAB_1569238598304.unl	23 Sep 2019 13:36

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.

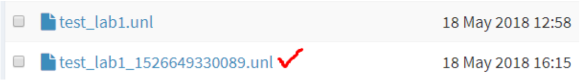
Cloned labs will copy exported configs (on supported nodes) but will not copy saved states/configurations in Qemu nodes like Windows hosts, Cisco ISE, or other Qemu nodes that are not supported by the export config feature. Please refer to section 10.1 for more information on configuration export for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



Running
MyLabFolder 18 May 2018 14:07
Shared 18 May 2018 15:16
Users 18 May 2018 14:31
☑ test_lab1.unl
test_lab2.unl 18 May 2018 13:36

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

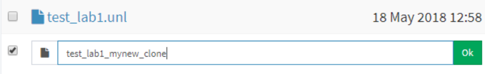


test_lab1.unl 18 May 2018 12:58
test_lab1_1526649330089.unl 18 May 2018 16:15

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

test_lab1.unl 18 May 2018 12:58
test_lab1_1526649330089.unl

Step 4: Rename it, and click OK to confirm



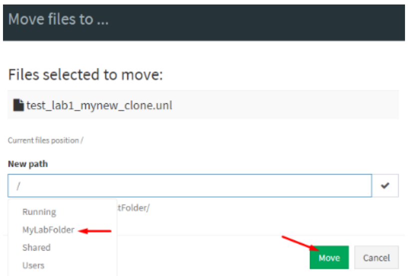
test_lab1.unl 18 May 2018 12:58
☑ test_lab1_mynew_clone

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.

test_lab1.unl 18 May 2018 12:58
☑ test_lab1_mynew_clone.unl
test_lab2.unl 18 May 2018 13:36

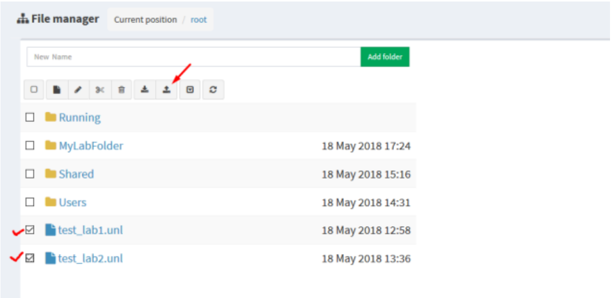
Step 2: Type the path to the new destination and confirm by clicking Move



Files selected to move:
test_lab1_mynew_clone.unl
Current files position /
New path
/

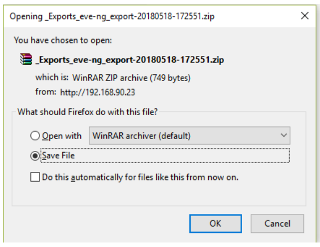
6.2.2.5 Export Lab

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



☐ Running
☐ MyLabFolder 18 May 2018 17:24
☐ Shared 18 May 2018 15:16
☐ Users 18 May 2018 14:31
☑ test_lab1.unl 18 May 2018 12:58
☑ test_lab2.unl 18 May 2018 13:36

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


Opening _Exports_eve-ng_export-20180518-172551.zip

You have chosen to open:

_Exports_eve-ng_export-20180518-172551.zip

which is: WinRAR ZIP archive (749 bytes)
from: http://192.168.90.23

What should Firefox do with this file?

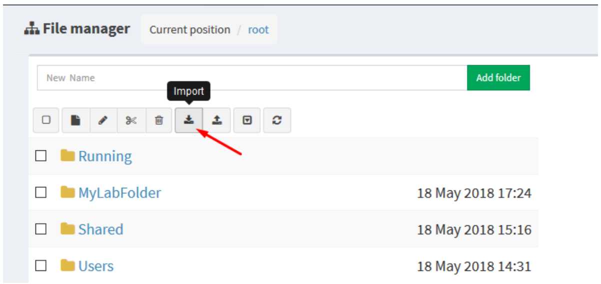
○ Open with WinRAR archiver (default)
● Save File
☐ Do this automatically for files like this from now on.

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

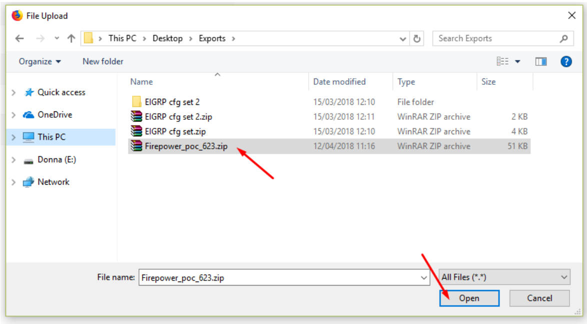
⚠ IMPORTANT: Importable file MUST be in .zip format, do NOT unzip the file.

Step 1: Press the Import button.



☐ Running
☐ MyLabFolder 18 May 2018 17:24
☐ Shared 18 May 2018 15:16
☐ Users 18 May 2018 14:31

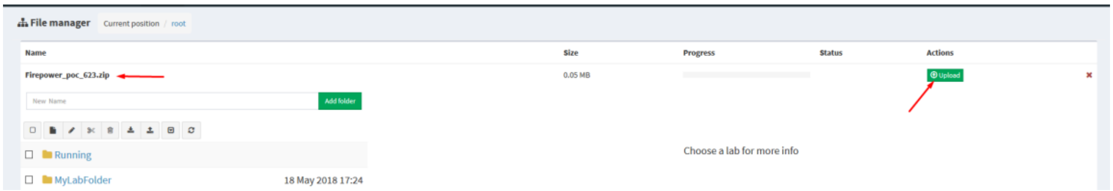
Step 2: Choose the zipped file which contains the EVE labs.



Name	Date modified	Type	Size
EIGRP cfg set 2	15/03/2018 12:10	File folder	
EIGRP cfg set 2.zip	15/03/2018 12:11	WinRAR ZIP archive	2 KB
EIGRP cfg set.zip	15/03/2018 12:10	WinRAR ZIP archive	4 KB
Firepower_poc_623.zip	12/04/2018 11:16	WinRAR ZIP archive	51 KB

File name: Firepower_poc_623.zip

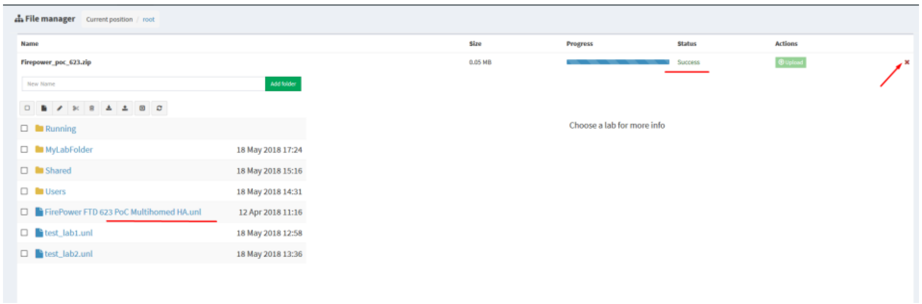
Step 3: Press the Upload Button



Name	Size	Progress	Status	Actions
Firepower_poc_623.zip	0.05 MB			Upload

- ☐ Running
- ☐ MyLabFolder 18 May 2018 17:24

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

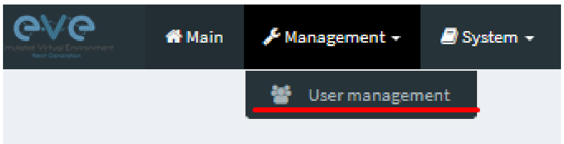


Name	Size	Progress	Status	Actions
Firepower_poc_623.zip	0.05 MB		Success	Upload

- ☐ Running
- ☐ MyLabFolder 18 May 2018 17:24
- ☐ Shared 18 May 2018 15:16
- ☐ Users 18 May 2018 14:31
- ☐ FirePower FTD 623 PoC Multihomed HA.unl 12 Apr 2018 11:16
- ☐ test_lab1.unl 18 May 2018 12:58
- ☐ test_lab2.unl 18 May 2018 13:36

6.3 EVE Management Dropdown Menu

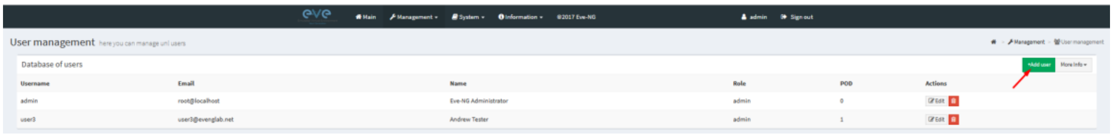
6.3.1 EVE User management



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

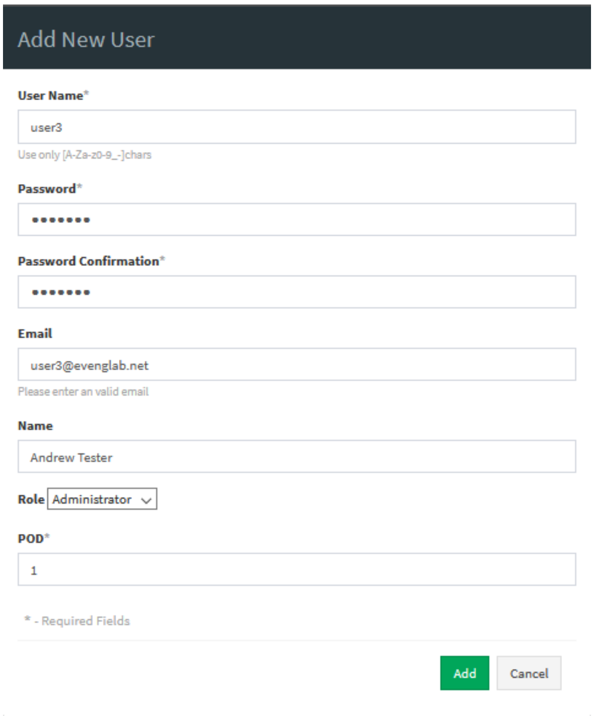


User management here you can manage unl users

Database of users

Username	Email	Name	Role	POD	Actions
admin	root@localhost	Eve-NG Administrator	admin	0	Edit
user3	user3@evenglab.net	Andrew Tester	admin	1	Edit

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*: user3
Use only [A-Za-z0-9_-]chars

Password*: •••••••

Password Confirmation*: •••••••

Email: user3@evenglab.net
Please enter an valid email

Name: Andrew Tester

Role: Administrator

POD*: 1

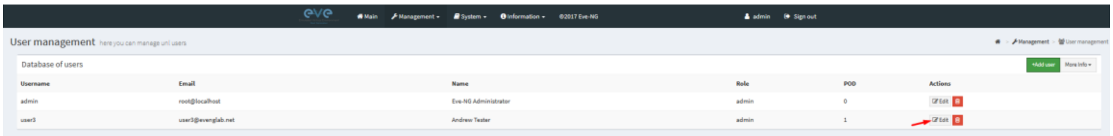
* - Required Fields

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.

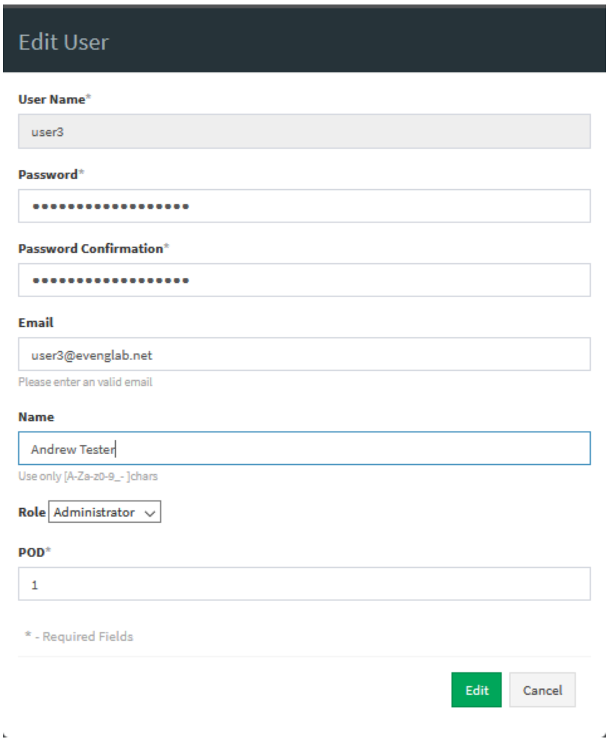


User management here you can manage unl users

Database of users

Username	Email	Name	Role	POD	Actions
admin	root@localhost	Eve-NG Administrator	admin	0	Edit
user3	user3@evenglab.net	Andrew Tester	admin	1	Edit

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

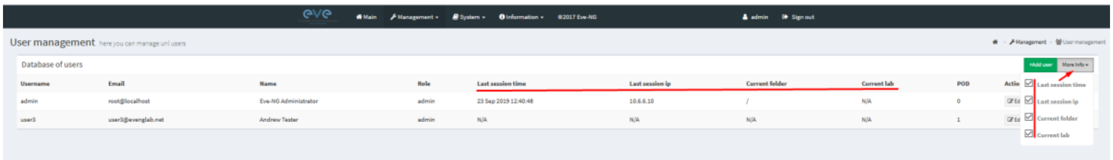
Role: Administrator

POD*: 1

* - Required Fields

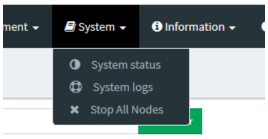
6.3.1.3 User monitoring

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.



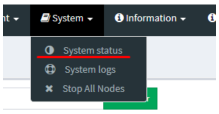
Username	Email	Name	Role	Last session time	Last session ip	Current folder	Current lab	POD
admin	root@localhost	Eve-NG Administrator	admin	23 Sep 2019 12:40:48	10.6.6.10	/	N/A	0
user3	user3@evenglab.net	Andrew Tester	admin	N/A	N/A	N/A	N/A	1

6.4 EVE System Dropdown menu

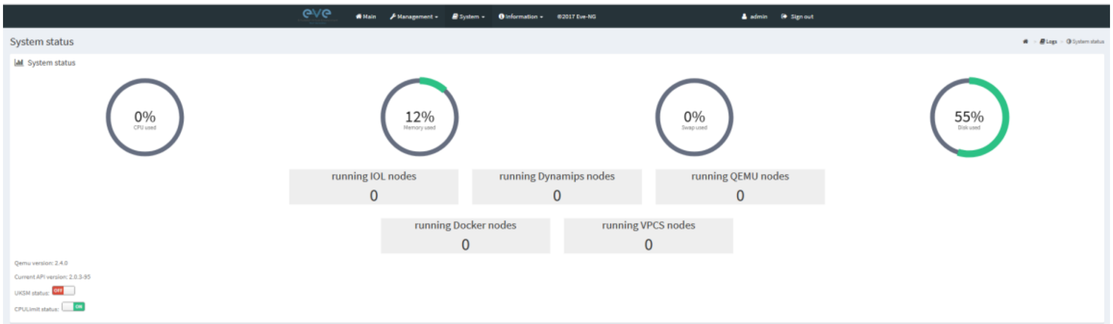


The EVE System dropdown contains the system utilization status, log files, and an option to stop all running nodes on the server.

6.4.1 System status



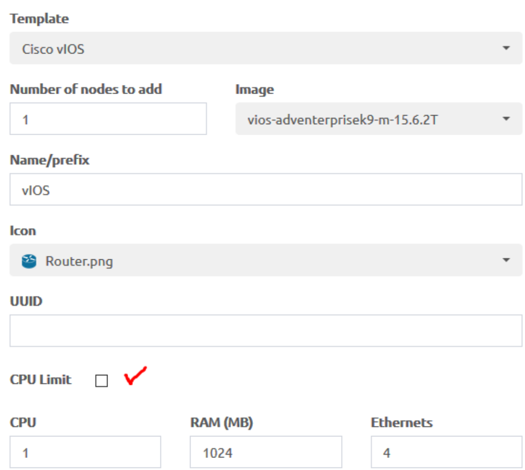
The System Status page, under the System Dropdown, will show EVE server resource utilization, the number of running nodes per template, current running versions of EVE and Qemu, and the current status of the UKSM and CPU Limit options.



running IOL nodes 0
running Dynamips nodes 0
running QEMU nodes 0
running Docker nodes 0
running VPCS nodes 0

Qemu version: 2.4.0
Current API version: 2.0.3-95
UKSM status: OFF
CPULimit status: ON

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-adventerprisek9-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.

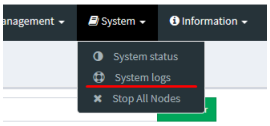
It is recommended to keep the Global CPU Limit option enabled.

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:

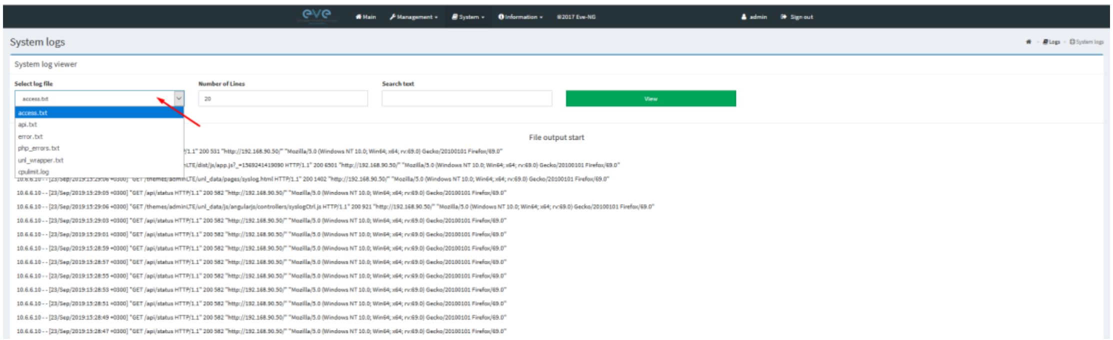
https://searchservervirtualization.techtarget.com/definition/KSM-kernel-samepage-merging

6.4.2 System logs



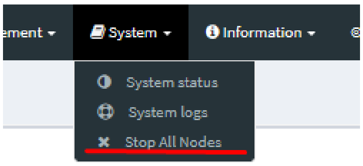
The System logs page, under the System Dropdown, will display EVE server log information

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



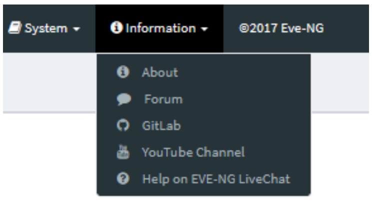
```
/1.1" 200 531 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
nLTE/dist/js/app.js?_=1569241419090 HTTP/1.1" 200 6501 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
10.6.6.10 - - [23/Sep/2019:15:29:06 +0300] "GET /themes/adminLTE/unl_data/pages/syslog.html HTTP/1.1" 200 1402 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
10.6.6.10 - - [23/Sep/2019:15:29:05 +0300] "GET /api/status HTTP/1.1" 200 582 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
10.6.6.10 - - [23/Sep/2019:15:29:06 +0300] "GET /themes/adminLTE/unl_data/js/angularjs/controllers/syslogCtrl.js HTTP/1.1" 200 921 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
10.6.6.10 - - [23/Sep/2019:15:29:03 +0300] "GET /api/status HTTP/1.1" 200 582 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
10.6.6.10 - - [23/Sep/2019:15:29:01 +0300] "GET /api/status HTTP/1.1" 200 582 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
10.6.6.10 - - [23/Sep/2019:15:28:59 +0300] "GET /api/status HTTP/1.1" 200 582 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
10.6.6.10 - - [23/Sep/2019:15:28:57 +0300] "GET /api/status HTTP/1.1" 200 582 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
10.6.6.10 - - [23/Sep/2019:15:28:55 +0300] "GET /api/status HTTP/1.1" 200 582 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
10.6.6.10 - - [23/Sep/2019:15:28:53 +0300] "GET /api/status HTTP/1.1" 200 582 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
10.6.6.10 - - [23/Sep/2019:15:28:51 +0300] "GET /api/status HTTP/1.1" 200 582 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
10.6.6.10 - - [23/Sep/2019:15:28:49 +0300] "GET /api/status HTTP/1.1" 200 582 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
10.6.6.10 - - [23/Sep/2019:15:28:47 +0300] "GET /api/status HTTP/1.1" 200 582 "http://192.168.90.50/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:69.0) Gecko/20100101 Firefox/69.0"
```

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

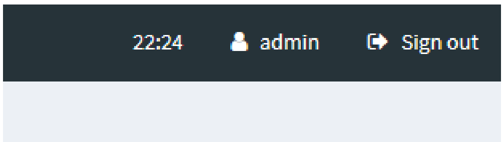


The Eve Information Dropdown contains links to the EVE Website, EVE forum, EVE YouTube channel, and the web-based EVE Live Help chat.

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.

CCNA LABS
A1.unl 23 Sep 2019 12:27
CBT ICND2 CCNA LAB.unl 23 Sep 2019 12:19

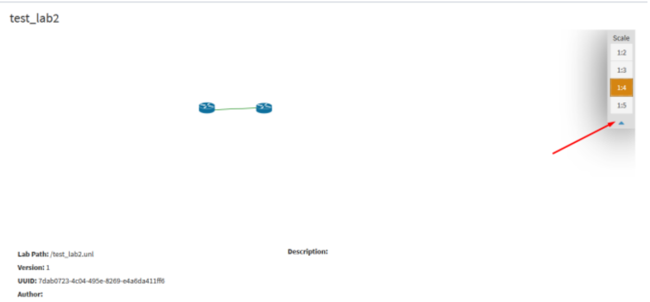
CBT ICND2 CCNA LAB

Lab Path: /CBT ICND2 CCNA LAB.unl
Version: 1
UUID: 2483612c-dff0-4e3d-ad35-905967a2174e
Author: UD

Description:

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.



test_lab2

Lab Path: /test_lab2.unl
Version: 1
UUID: 7dab0723-4c04-495e-8269-e4a6da411ff6
Author:

Description:

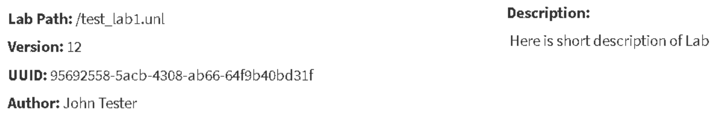
6.7.2 Lab preview buttons

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

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

6.7.3 Lab preview information

Description, version, UUID etc.

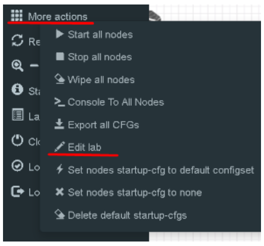


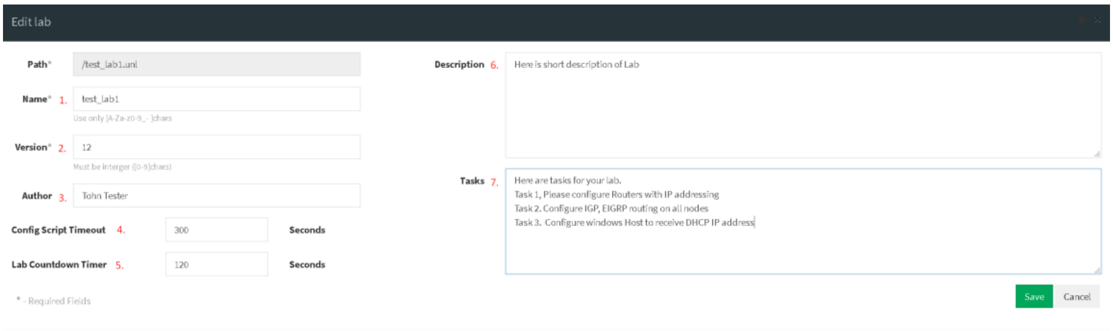
Lab Path: /test_lab1.unl
Version: 12
UUID: 95692558-5acb-4308-ab66-64f9b40bd31f
Author: John Tester

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 Edit button below the Lab preview window or from the Topology page Side bar:





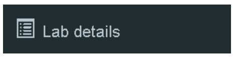
Path* /test_lab1.unl
Name* test_lab1
Use only [A-Za-z0-9_-]chars
Version* 12
Must be interger ([0-9]chars)
Author Tohn Tester
Config Script Timeout 300 Seconds
Lab Countdown Timer 120 Seconds
* - Required Fields
Description Here is short description of Lab
Tasks Here are tasks for your lab.
Task 1, Please configure Routers with IP addressing
Task 2. Configure IGP, EIGRP routing on all nodes
Task 3. Configure windows Host to receive DHCP IP address

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

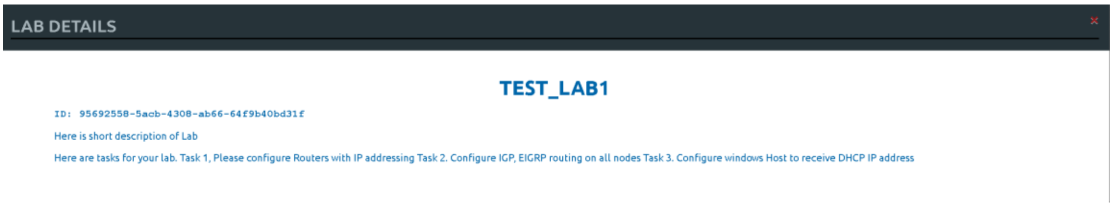
1. Lab name.
2. Version: Version numbers allow a lab author to assign a value to a unique state of a lab. Increase the number to correspond to new developments in the lab. If left unfilled, EVE will assign a value of 1 automatically.
3. Author: You can add a lab author name in this field
4. Config Script 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.



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



TEST_LAB1

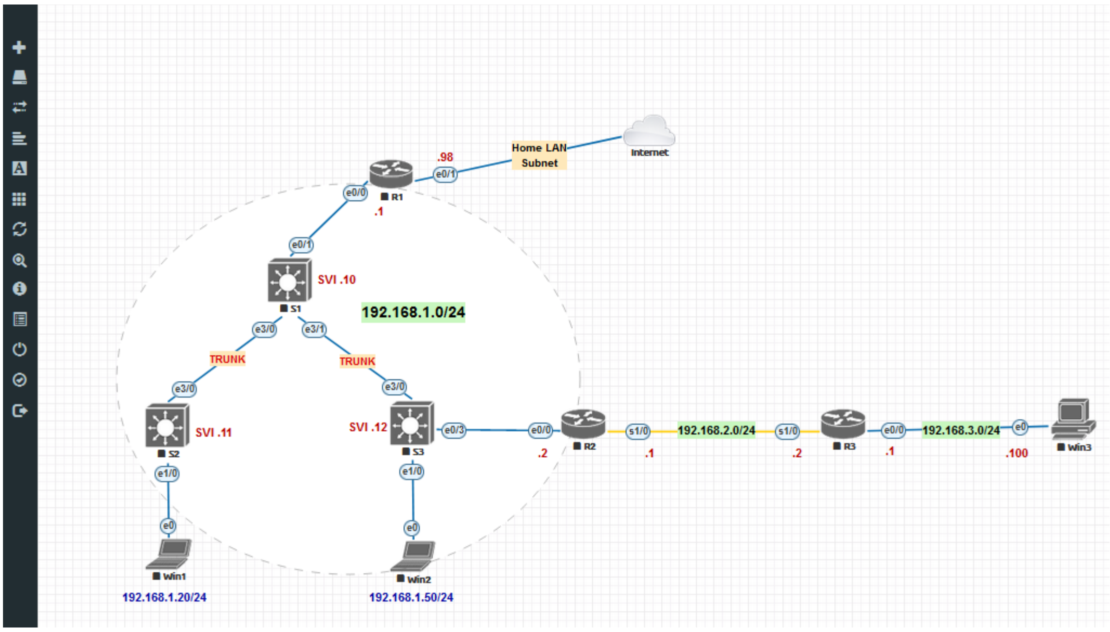
`ID: 95692558-5acb-4308-ab66-64f9b40bd31f`

Here is short description of Lab

Here are tasks for your lab. Task 1, Please configure Routers with IP addressing Task 2. Configure IGP, EIGRP routing on all nodes Task 3. Configure windows Host to receive DHCP IP address

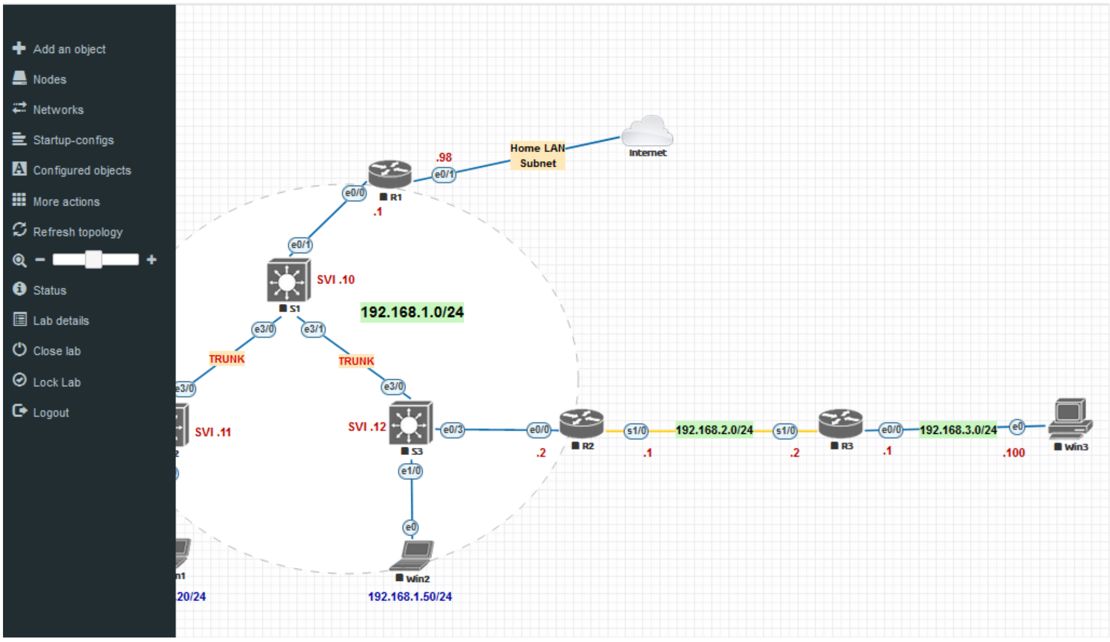
7 EVE WEB Topology page

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



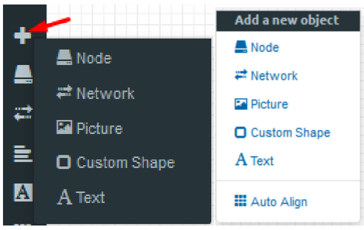
7.1 Side bar functions

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



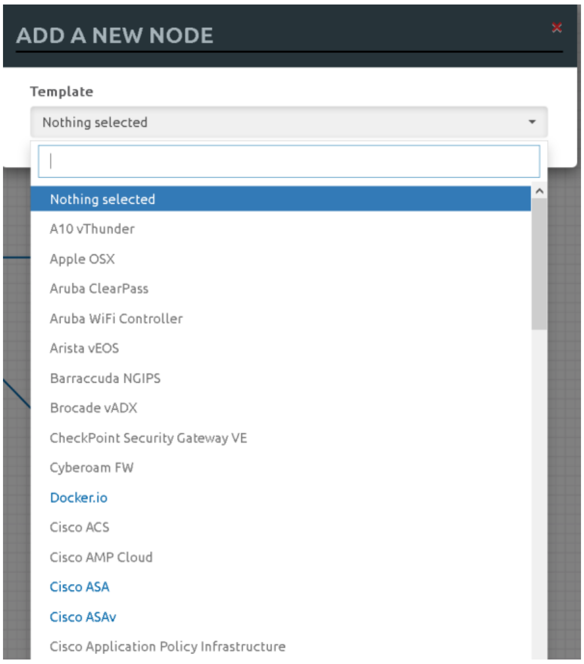
7.1.1 Add an object

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



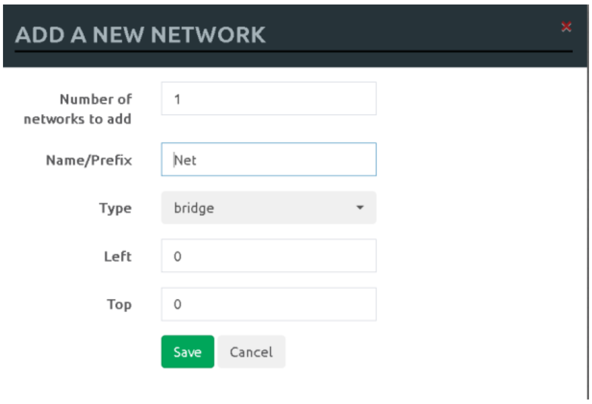
7.1.1.1 Node object

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

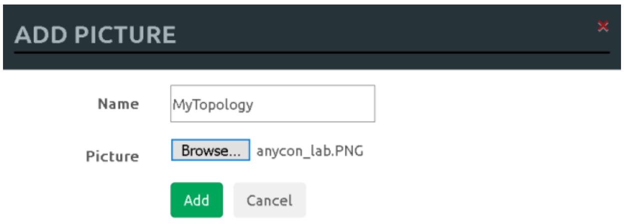
The Network object opens the “Add a new network” window. This function is used to add any kind of network (Cloud, Bridge). For details on these, please refer to section **9**



Number of networks to add: 1
Name/Prefix: Net
Type: bridge
Left: 0
Top: 0

7.1.1.3 Picture object

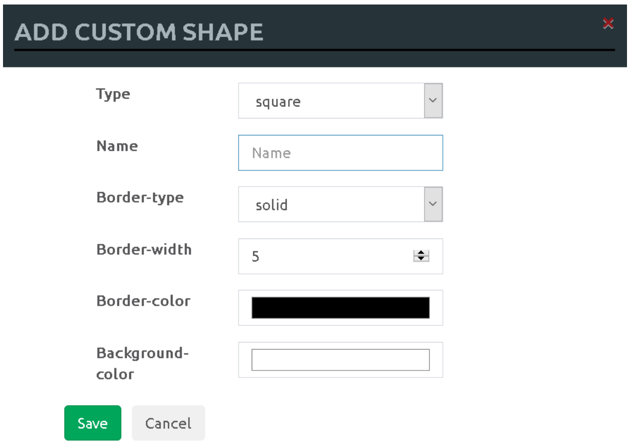
The picture object opens the “Add Picture” window and allows you to upload custom topologies in jpg or png format. After uploading, you can edit these pictures and map selected areas to nodes from the topology to use your own designs as a lab topology from which you can directly connect to the nodes.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



Name: MyTopology
Picture: anycon_lab.PNG

7.1.1.4 Custom shape object

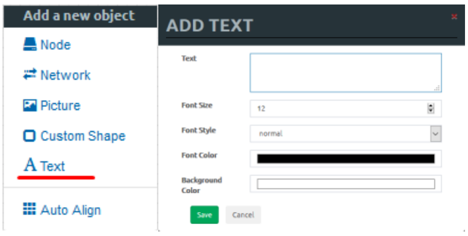
The Custom shape object allows you to add shape elements onto the topology; these currently include squares, round squares and circles. For details, refer to section 10.1



Type: square
Name: Name
Border-type: solid
Border-width: 5
Border-color: ■
Background-color: □

7.1.1.5 Text object

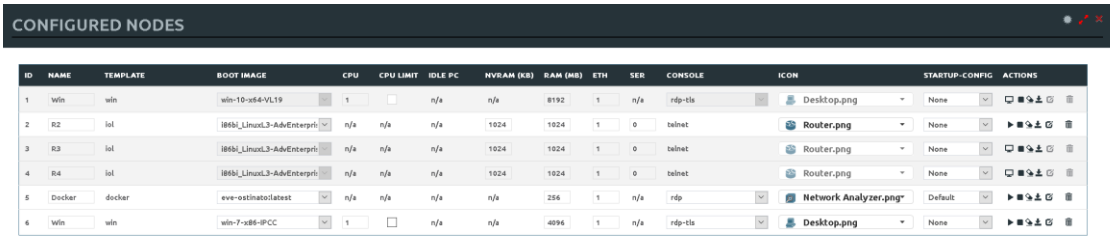
The Text object allows you to add Text elements onto the topology. For details, refer to section 10.1.3



Text
Font Size: 12
Font Style: normal
Font Color
Background Color

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	iol	i86bi_LinuxL3-AdvEnterpri:	n/a	n/a	n/a	1024	1024	1	0	telnet	Router.png	None	
3	R3	iol	i86bi_LinuxL3-AdvEnterpri:	n/a	n/a	n/a	1024	1024	1	0	telnet	Router.png	None	
4	R4	iol	i86bi_LinuxL3-AdvEnterpri:	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-x86-IPCC	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.

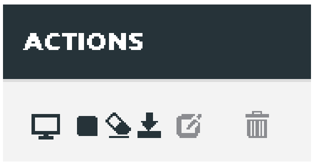
You can change the following values:

- 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):

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

Actions Buttons (Running node):

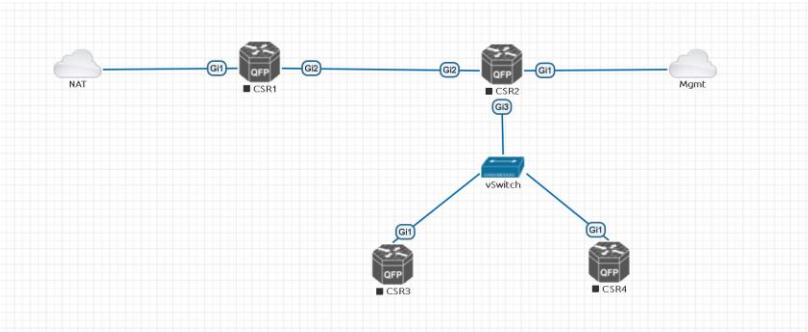


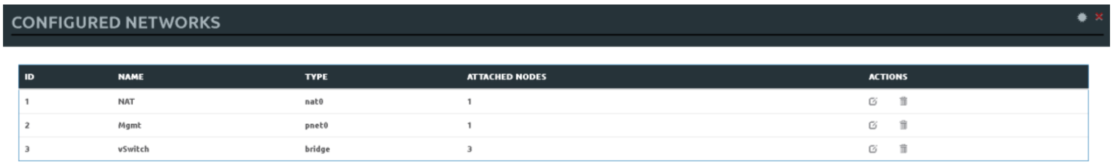
- Console to the node
- Stop node
- Wipe node
- Export the nodes config
- Edit node
- Delete Node

7.1.3 Networks

The Networks object in the sidebar will open the "Configured Networks" window.

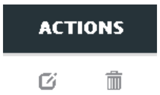
The "Configured Networks" window will only show networks that were specifically added to the topology; it will not show node interconnections. The example below is showing information for networks on the Topology. For Cloud networks and how to connect EVE labs to a network external to EVE, please refer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





CONFIGURED NETWORKS

ID	NAME	TYPE	ATTACHED NODES	ACTIONS
1	NAT	nat0	1	
2	Mgmt	pnet0	1	
3	vSwitch	bridge	3	

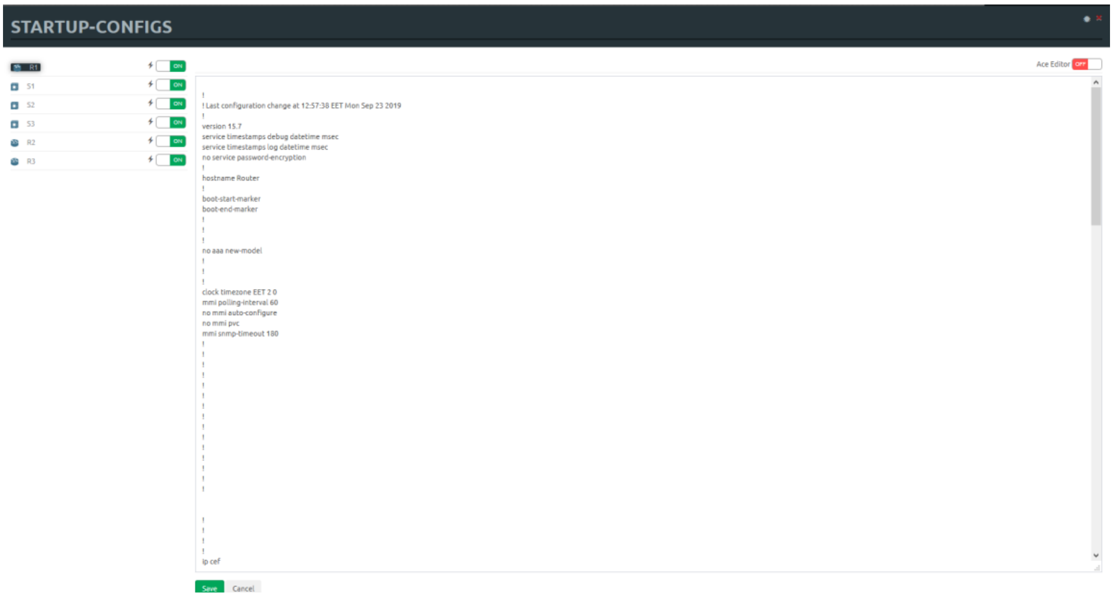


- Edit Network
- Delete Network

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).



```
!
! Last configuration change at 12:57:38 EET Mon Sep 23 2019
!
version 15.7
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname Router
!
boot-start-marker
boot-end-marker
!
!
!
no aaa new-model
!
!
!
clock timezone EET 2 0
mmi polling-interval 60
no mmi auto-configure
no mmi pvc
mmi snmp-timeout 180
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!


!
!
!
!
ip cef
```

7.1.5 Logical Maps

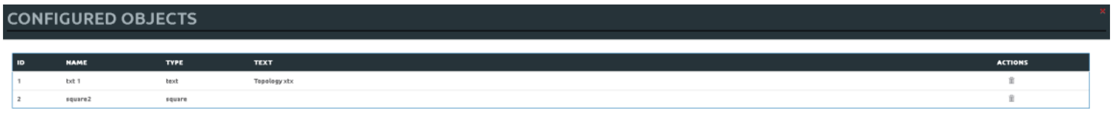
NOTE: The Logical Maps object will only appear in the sidebar after you have uploaded a custom topology picture to the lab EVE lab (Please refer to section 7.1.1.3). The Pictures object in the sidebar opens the “Picture Management” window.

For details on the Picture / custom topology feature, refer to section 10.2

7.1.6 Configured Objects

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

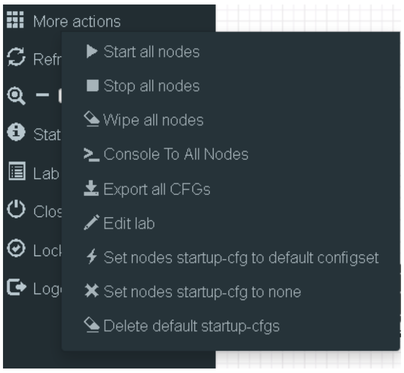
NOTE: You will not see any objects in this window if none have been added to the lab yet.


CONFIGURED OBJECTS

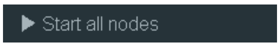
ID	NAME	TYPE	TEXT	ACTIONS
1	txt 1	text	Topology xtx	🗑
2	square2	square		🗑

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



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

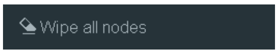
⚠ IMPORTANT. Starting many nodes at once can seriously spike your CPU utilization. Please make sure that you are not using the “Start all nodes” option for heavy labs or that you have configured a proper delay between the nodes. For heavy nodes and large quantities, it is recommended to start them in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

7.1.7.2 Stop all nodes

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



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” 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

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

Export configurations are supported for:

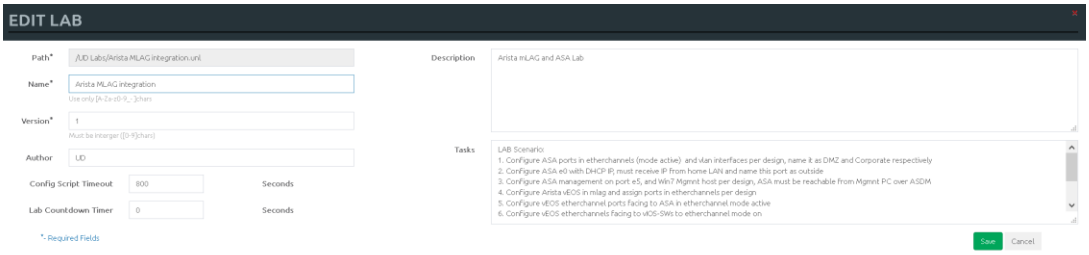
Cisco Dynamips all nodes
Cisco IOL (IOS on Linux)
Cisco ASA
Cisco ASAv
Cisco CSR1000v
Cisco Nexus 9K
Cisco Nexus Titanium
Cisco vIOS L3
Cisco vIOS L2
Cisco XRv
Cisco XRv9K

Juniper VRR
Juniper VMX
Juniper vMX-NG
Juniper vQFX
Juniper vSRX
Juniper vSRX-NG
Mikrotik
PFsense FW
Timos Alcatel
vEOS Arista

For a full explanation of exporting configurations, please refer to section 10.3

7.1.7.6 Edit lab

Opens the Edit lab window. Refer to section: 6.7.4

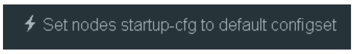


Path*: /UD Labs/Arista MLAG integration.unl
Name*: Arista MLAG integration
Use only [A-Za-z0-9_-]chars
Version*: 1
Must be interger ([0-9]chars)
Author: UD
Config Script Timeout: 800 Seconds
Lab Countdown Timer: 0 Seconds
*- Required Fields

Description: Arista mLAG and ASA Lab

Tasks:
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 e0 with DHCP IP, must receive IP from home LAN and name this port as outside
3. Configure ASA management on port e5, and Win7 Mgmnt host per design, ASA must be reachable from Mgmnt PC over ASDM
4. Configure Arista vEOS in mlag and assign ports in etherchannels per design
5. Configure vEOS etherchannel ports facing to ASA in etherchannel mode active
6. Configure vEOS etherchannels facing to vIOS-SWs to etherchannel mode on

7.1.7.7 Set node's 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

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.

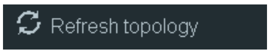
Step 1: Wipe all nodes
Step 2: Set all nodes to startup-cfg none

Please refer to section 10.3

7.1.7.9 Delete default startup-cfgs

⚠ 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.

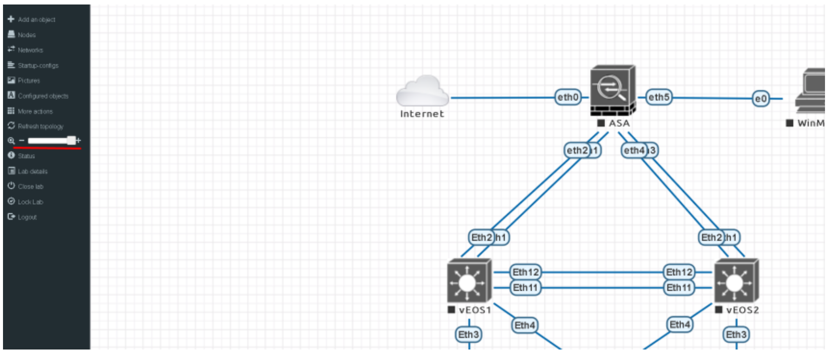
7.1.8 Refresh Topology



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

7.1.9 Lab page zoom/unzoom

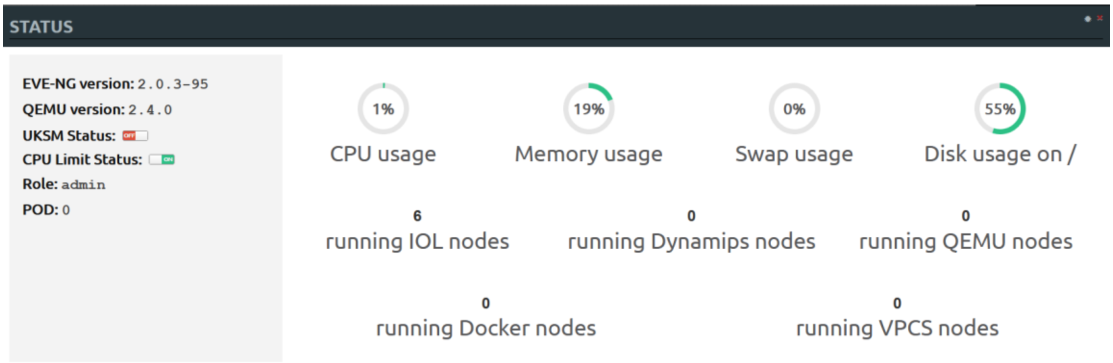
This action is used to zoom or unzoom a large topology in EVE.



7.1.10 Status

Opens the EVE Status window.

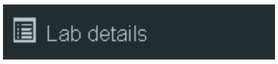
Especially useful while working with labs to monitor your EVE's resource utilization. It shows EVEs CPU, RAM and disk utilization in real time. You can also see the number of running nodes per node type. For details on UKSM and CPU Limit, please refer to section 6.4.1



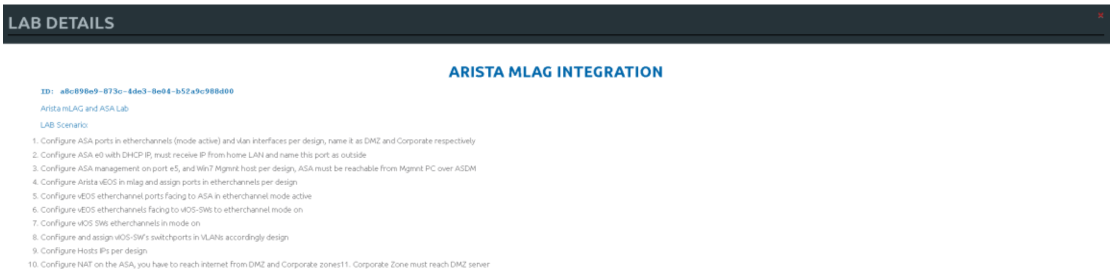
EVE-NG version: 2.0.3-95
QEMU version: 2.4.0
UKSM Status: OFF
CPU Limit Status: ON
Role: admin
POD: 0

6 running IOL nodes
0 running Dynamips nodes
0 running QEMU nodes
0 running Docker nodes
0 running VPCS nodes

7.1.11 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



ARISTA MLAG INTEGRATION

ID: a8c898e9-873c-4de3-8e04-b52a9c988d00

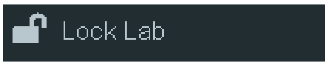
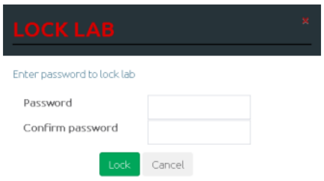
Arista mLAG and ASA Lab

LAB Scenario:

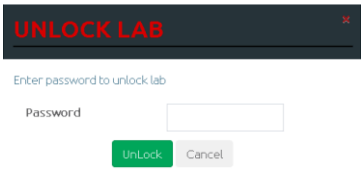
1. Configure ASA ports in etherchannels (mode active) and vlan interfaces per design, name it as DMZ and Corporate respectively
2. Configure ASA e0 with DHCP IP, must receive IP from home LAN and name this port as outside
3. Configure ASA management on port e5, and Win7 Mgmnt host per design, ASA must be reachable from Mgmnt PC over ASDM
4. Configure Arista vEOS in mlag and assign ports in etherchannels per design
5. Configure vEOS etherchannel ports facing to ASA in etherchannel mode active
6. Configure vEOS etherchannels facing to vIOS-SWs to etherchannel mode on
7. Configure vIOS SWs etherchannels in mode on
8. Configure and assign vIOS-SW's switchports in VLANs accordingly design
9. Configure Hosts IPs 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.

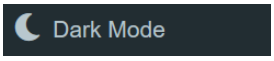
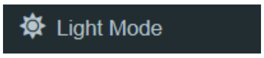
 Lab is unlocked and all operations are working	 Enter and confirm your lab lock password

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

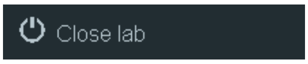
 Lab is locked and all operations are restricted	 Enter lab unlock password to unlock lab.

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

 Sets your lab background to the dark mode	 Sets your lab background to light mode

7.1.14 Close lab



Closes the lab topology. The lab can be closed while the nodes in the lab nodes are stopped.

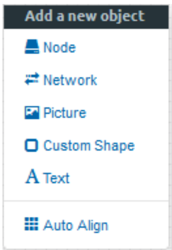
7.1.15 Logout

Log out from the EVE WEB GUI session.

7.2 EVE Lab topology menus

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

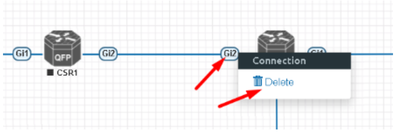
7.2.1 Lab topology menu



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.

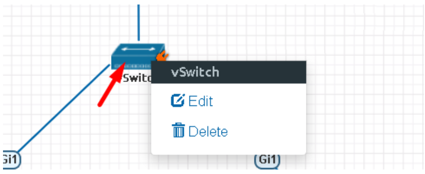
7.2.2 Connection menu

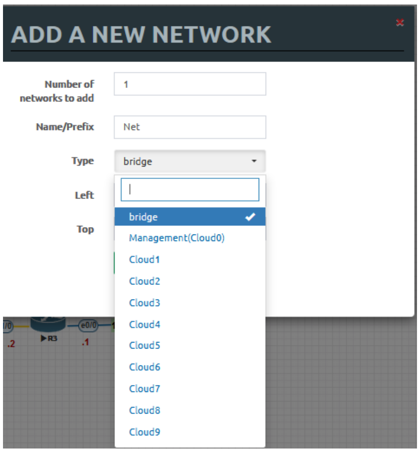


Right-clicking on the connection between nodes allows you to delete this connection.

7.2.3 Cloud or Bridge network menu

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



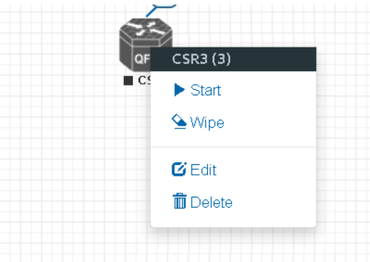


If you have chosen Edit, the Network edit window will open a window where you can change the placement, network type or name/prefix.

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:

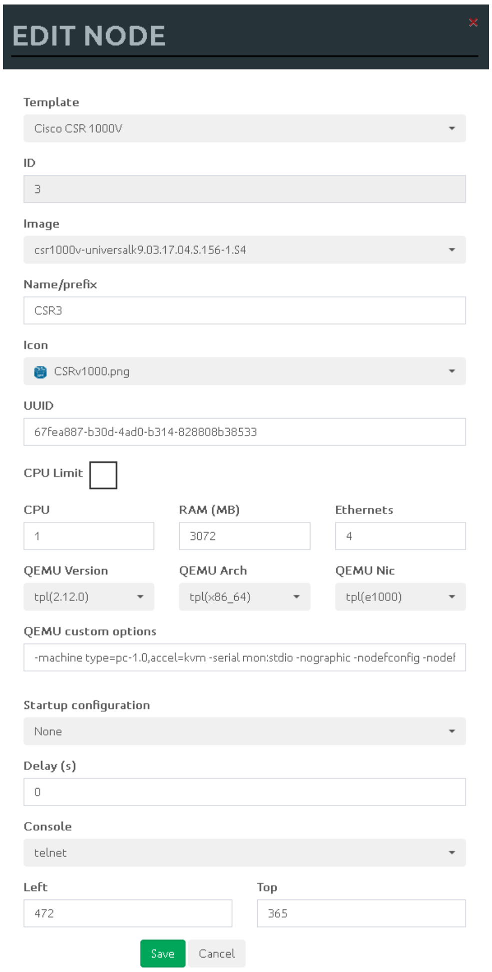


Start node: This will start the selected node in this lab

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.

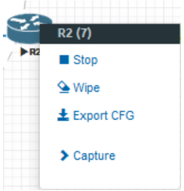
Edit node: Opens the Edit node window (picture on the right). For details please refer to section 8.1.2

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

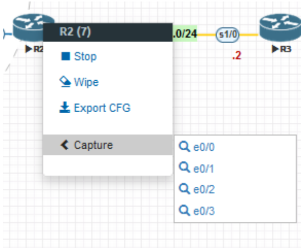
7.2.5 Running node menu



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.

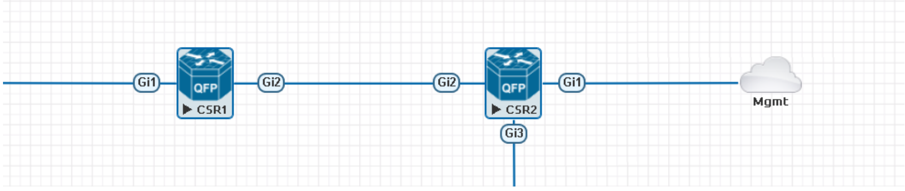
Export CFG: This function is used to export the saved running configuration to the EVE startup configuration sets. Reference section 10.3



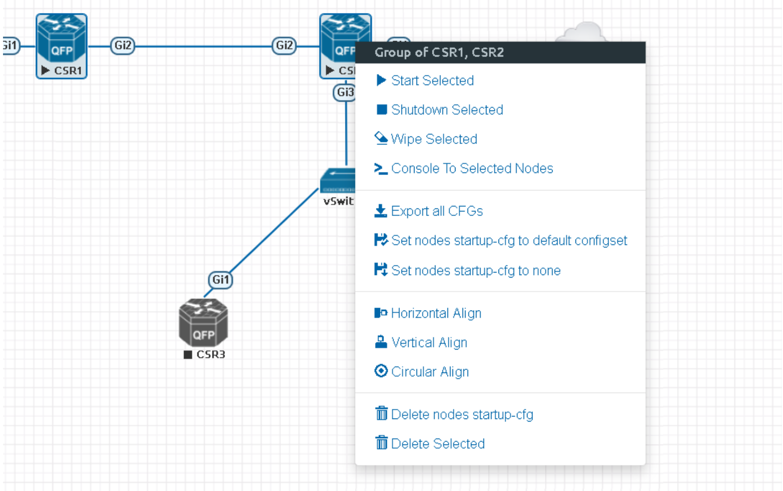
Capture. Wireshark capture. Select the interface which you wish to capture. Reference section **5.1.2**

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

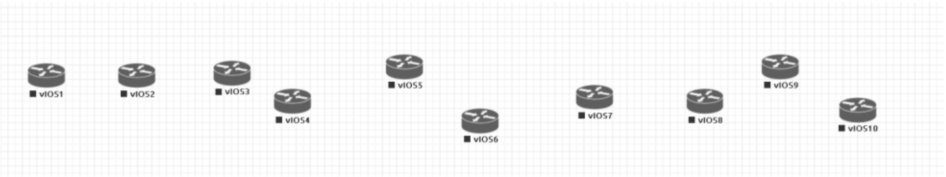
Please refer to section 10.3

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:



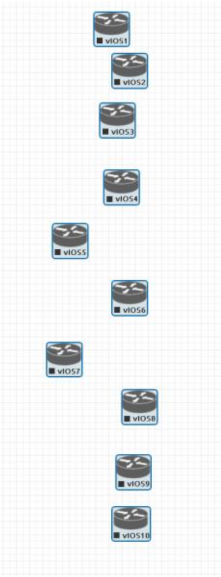
Picture after:

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**

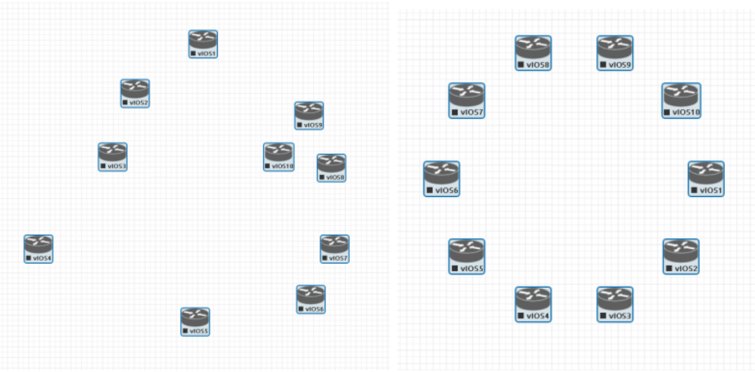


Circular Align: Aligns the nodes in a circle.

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**



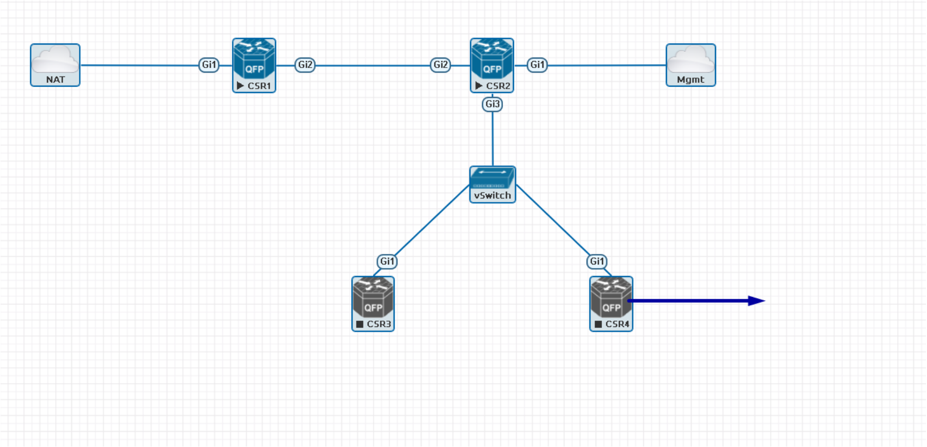
Delete nodes startup-config.

⚠ 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.

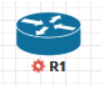
A grey node with an exclamation mark inside a triangle below the node means that there was a problem during the boot process, this could be a corrupted boot image, insufficient resources or problems with the initial configuration. A node in this state cannot be started again.

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**

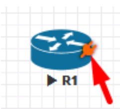


A running node with a turning red gear symbol means that the node is either in the process of hibernating the node or it has sent the shutdown signal to the node and is waiting for it to turn off. Once this process has successfully finished, the symbol will turn into a grey node with a black square symbol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

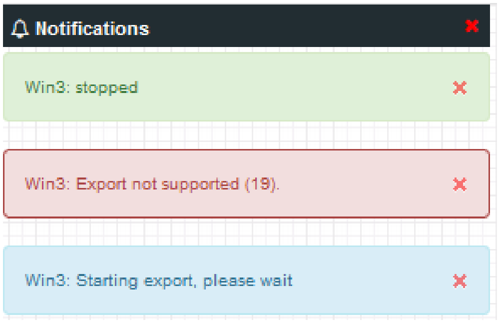
7.3.3 Node connector symbol



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



Win3: stopped

Win3: Export not supported (19).

Win3: Starting export, please wait

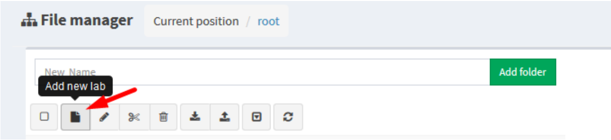
The Notification area in the top right is displaying informational or error messages.

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

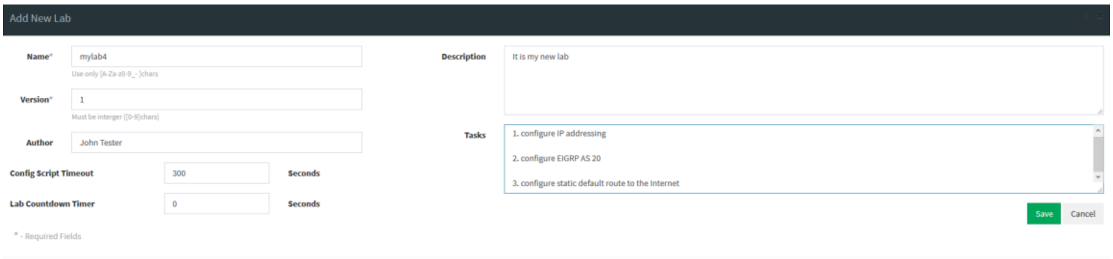
8.1 Creating a lab

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.


Add New Lab

Name*: mylab4
Use only [A-Za-z0-9_-]chars
Version*: 1
Must be interger ([0-9]chars)
Author: John Tester
Config Script Timeout: 300 Seconds
Lab Countdown Timer: 0 Seconds
* - Required Fields

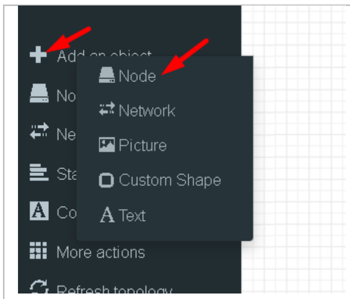
Description: It is my new lab
Tasks:
1. configure IP addressing
2. configure EIGRP AS 20
3. configure static default route to the Internet

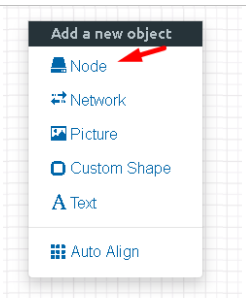
8.1.1 Adding nodes to the lab

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

Step 1: Object/Add Node

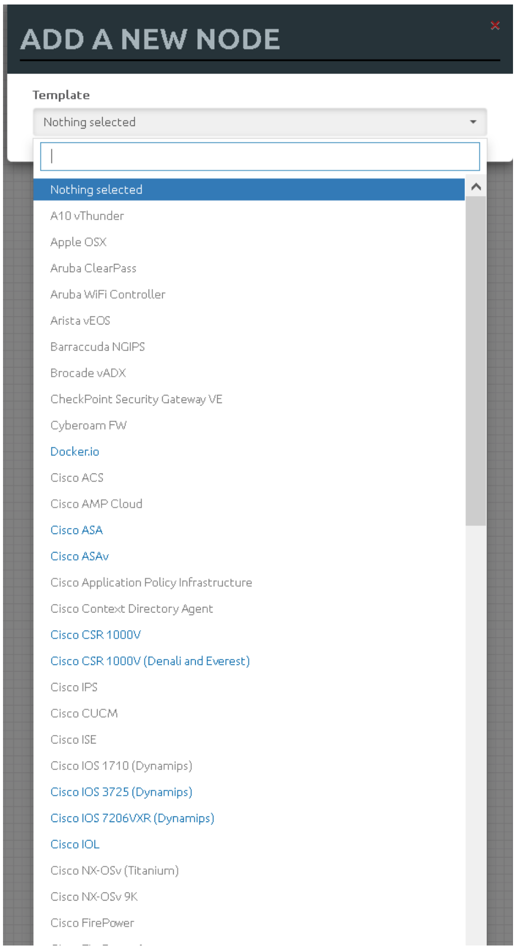
Left Side Bar > Add object > node. Refer to section 7.1.1.1 for more information.	Right click on a free area of the topology page and click on "Node" to add a new node. Refer to section 7.2.1 for more information.

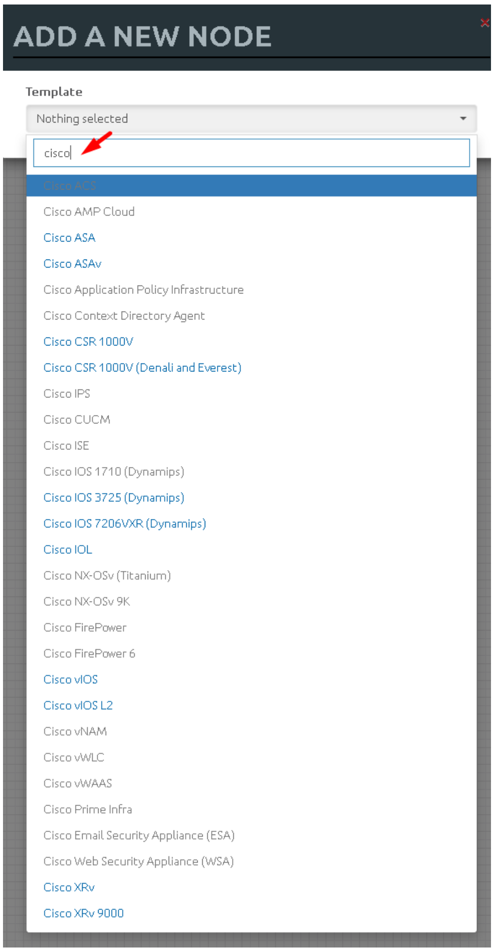




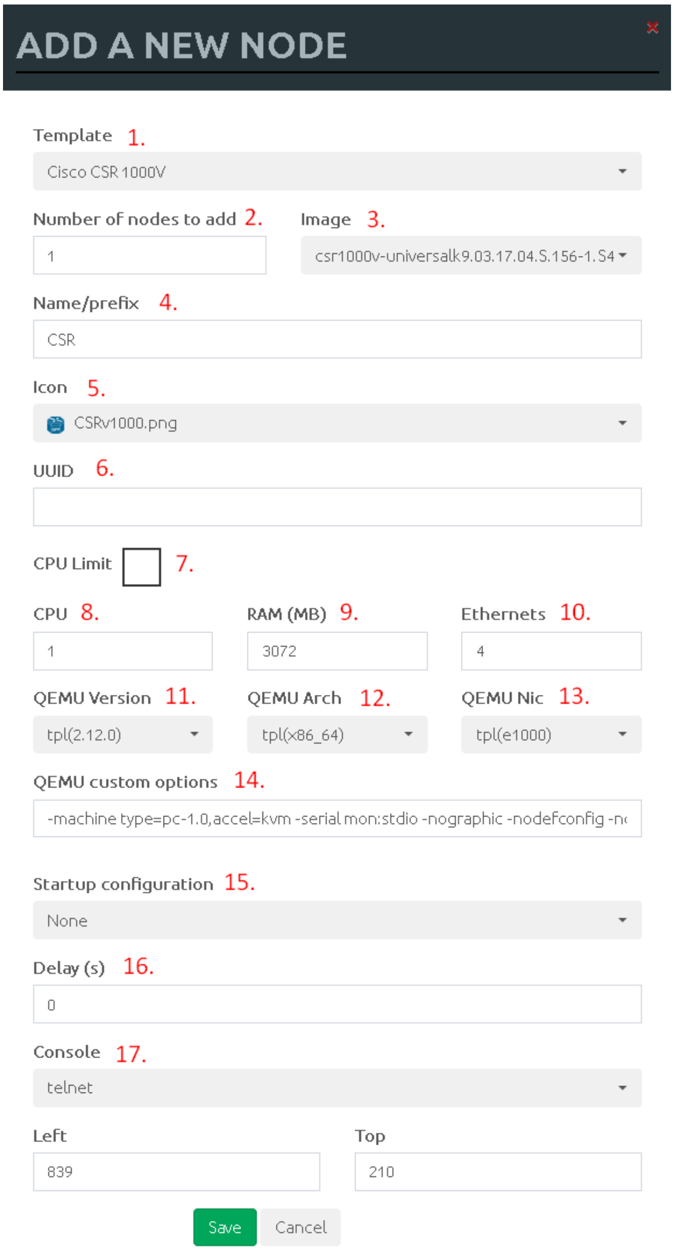
Step 2: The Add new node window will appear. You can scroll down to choose which node you wish to add to the lab topology, or you can type the node name to filter through the node list.

⚠ **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 □





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

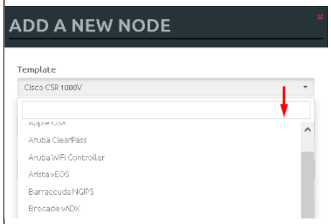
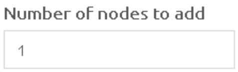
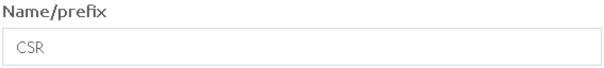
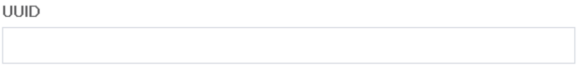
Delay (s) 16.
0

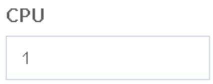
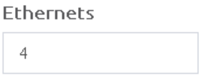
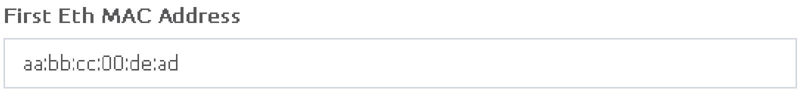
Console 17.
telnet

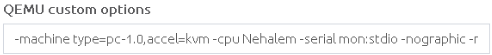
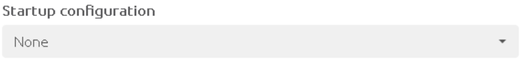
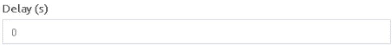
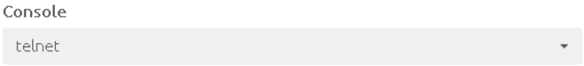
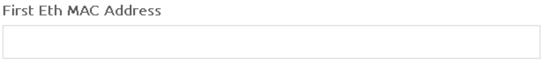
Left
839

Top
210

8.1.1.1 Node values Table

Number	Description
1.	 ADD A NEW NODE Template: Cisco CSR 1000V Template menu. Choose which node template to add to the topology
2.	 Number of nodes to add: 1 Chose the number of nodes of this type you want to add to the topology
3.	 Image: csr1000v-universalk9.03.17.04.S.156-1.S4 Choose your preferred version from preloaded images list (if you have more than one image loaded for a single template).
4.	 Name/prefix: CSR Type your preferred node name. If you are adding more than one, EVE will automatically append numbers to the nodes name. **Example.** 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.
5.	 Icon: CSRv1000.png 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
6.	 UUID 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.

7.	 CPU Limit ☐ CPU limit per node. This option is already set (checked/unchecked) per EVE recommendations. Refer to section 6.4.1
8.	 CPU 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) 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.	 Ethernets 4 The number of ethernets interfaces. ⚠ **NOTE for IOL nodes:** Ethernet interfaces for IOL nodes are placed into groups of 4. A value of 1 for Ethernet means your node will have 4 interfaces. 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.  Ethernet portgroups (4 int each) 1 Serial portgroups (4 int each) 1
11.	Custom MAC address for Qemu nodes only. You can define your own MAC address for first interface:  First Eth MAC Address aa:bb:cc:00:de:ad
12.	 QEMU Version 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 tpl(x86_64) Qemu architecture is pre-set per image vendor recommendations. This value can be changed per your needs

14.	 QEMU Nic: tpl(vmxnet3) Type of Qemu NIC is pre-set per image vendor recommendations. This value can be changed per your needs.
15.	 QEMU custom options: -machine type=pc-1.0,accel=kvm -cpu Nehalem -serial mon:stdio -nographic -r Qemu custom options are pre-set per image vendor recommendations. This value can be changed per your needs
16.	 Startup configuration: None Startup configuration: Value can be changed to set your node to boot from saved configurations. Refer to section 10.3 for more details.
17.	 Delay (s): 0 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 sequense. 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.
18.	 Console: telnet Console types for each template are pre-set with recommended settings. The setting can be changes per your needs. ⚠ **NOTE:** The Docker template contains a wide variety of images, therefore, please refer to section 14.1.3 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.
19.	 First Eth MAC Address OPTIONAL: Templates for Cisco FirePower, F5, Linux, and Citrix have the option to 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. MAC Address format must be like: 00:50:0a:00:0b:00

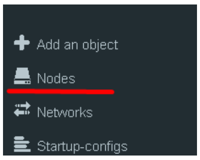
8.1.2 Edit node

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

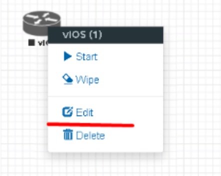
⚠ NOTE: A node must be wiped each time an image or startup configuration has been changed.

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.

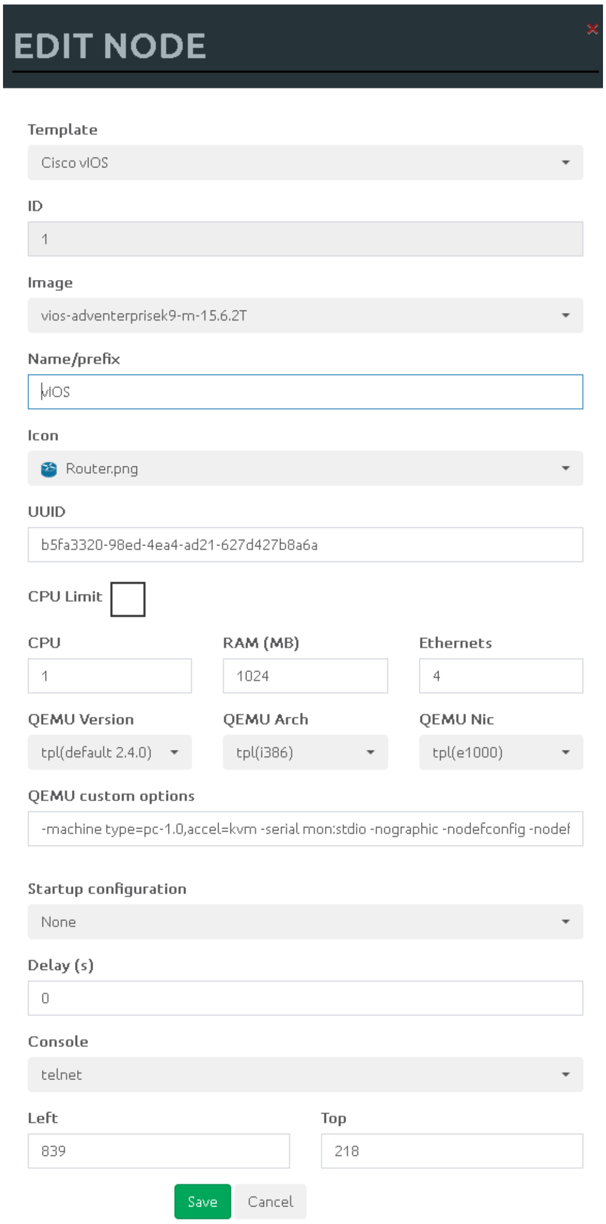


8.1.2.2 Edit node individually.



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.



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

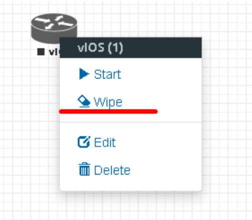
Delay (s): 0

Console: telnet

Left: 839

Top: 218

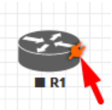
8.1.3 Wipe Node



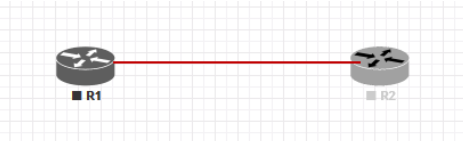
The “Wipe node” function will clear the NVRAM of the node. Each time a node setting is changed (CPU, RAM, boot image or startup configuration) a wipe must be issued on that node. For more information refer to section 10.3

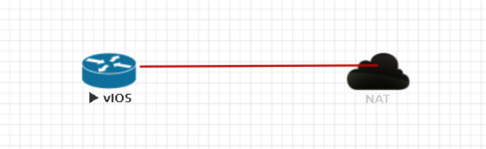
8.1.4 Interconnecting nodes

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

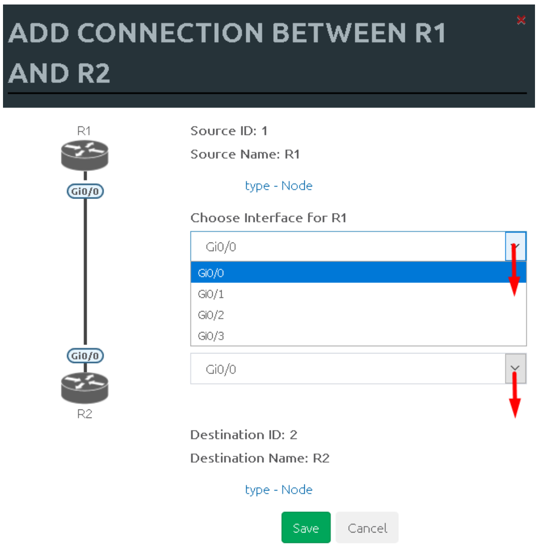


Connector symbol: Moving the mouse over a node will make an orange male plug appear. The male plug is used to connect nodes on the topology, drag and drop style. Release the mouse pointer on the second node.





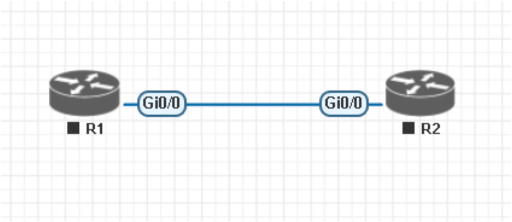
The connection window will appear. Choose the interface you want to use to interconnect the nodes. Click Save when finished.



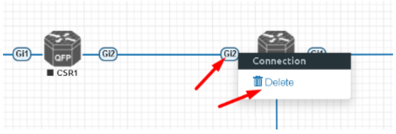
ADD CONNECTION BETWEEN R1 AND R2

Source ID: 1
Source Name: R1
type - Node
Choose Interface for R1
Gi0/0

Gi0/0
Destination ID: 2
Destination Name: R2
type - Node

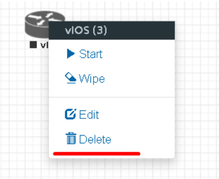


8.1.5 Delete connection between nodes



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

8.1.6 Delete Node



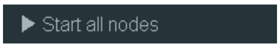
To delete a node, right click it and hit “Delete.” This is a non-reversable function

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.

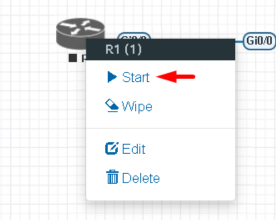


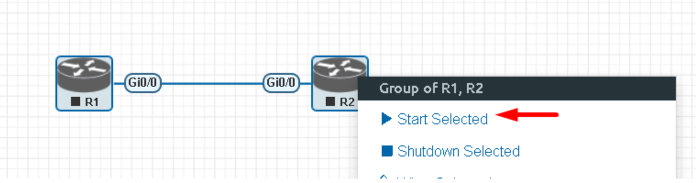
The Start all nodes option will start all nodes on your topology.

⚠ 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.

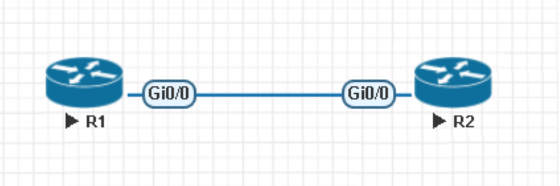
Starting a node or group of nodes:

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

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.

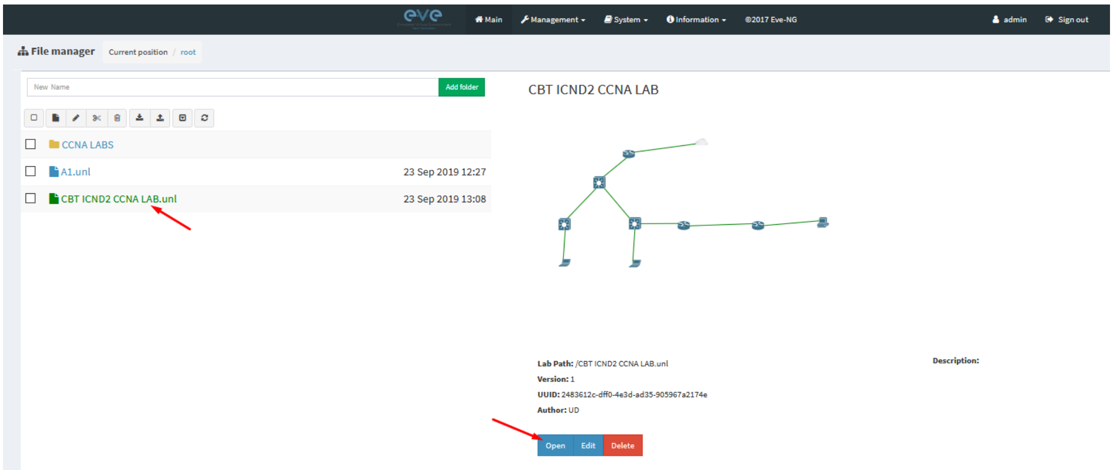
Stopping a node or group of nodes:

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



Lab Path: /CBT ICND2 CCNA LAB.unl
Version: 1
UUID: 2483612c-dff0-4e3d-ad35-905967a2174e
Author: UD
Description:

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

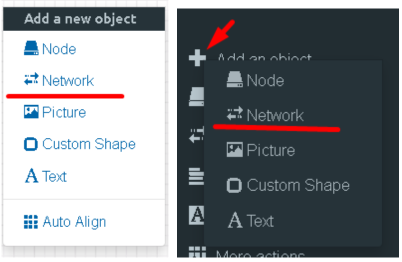
9 EVE Clouds and Networks

9.1 Bridge Network

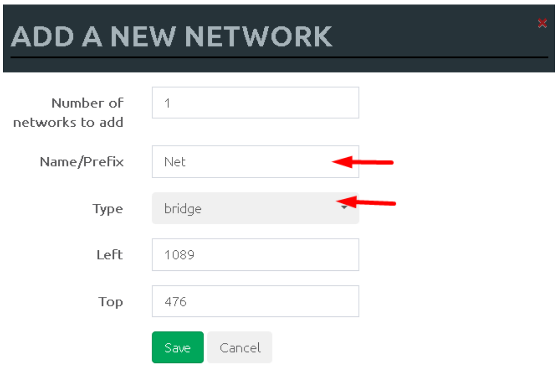
The EVE Bridge interface acts like an unmanaged Switch. It supports passing along tagged dot1q packets.

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

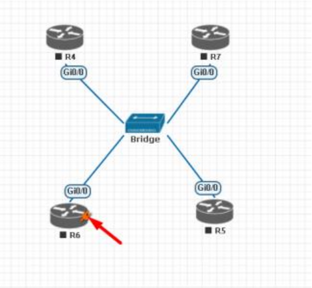


Step 2: Name/prefix can be changed in order to rename your Bridge network. Make sure your network type is set to bridge.


ADD A NEW NETWORK

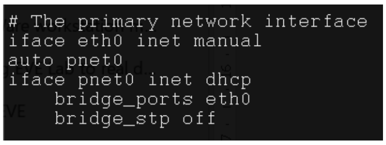
Number of networks to add: 1
Name/Prefix: Net
Type: bridge
Left: 1089
Top: 476

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.

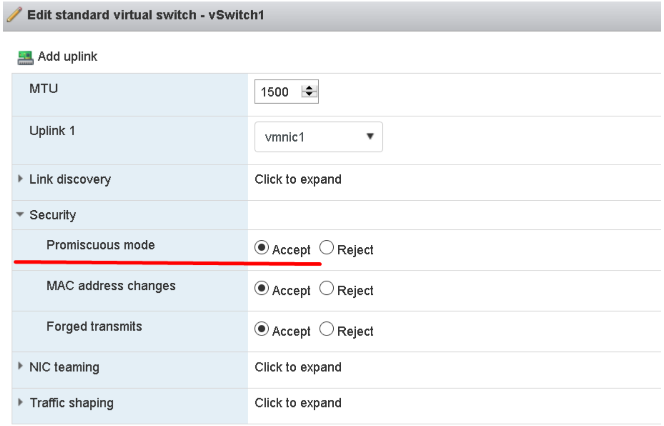


```
# The primary network interface
iface eth0 inet manual
auto pnet0
iface pnet0 inet dhcp
    bridge_ports eth0
    bridge_stp off
```

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”!

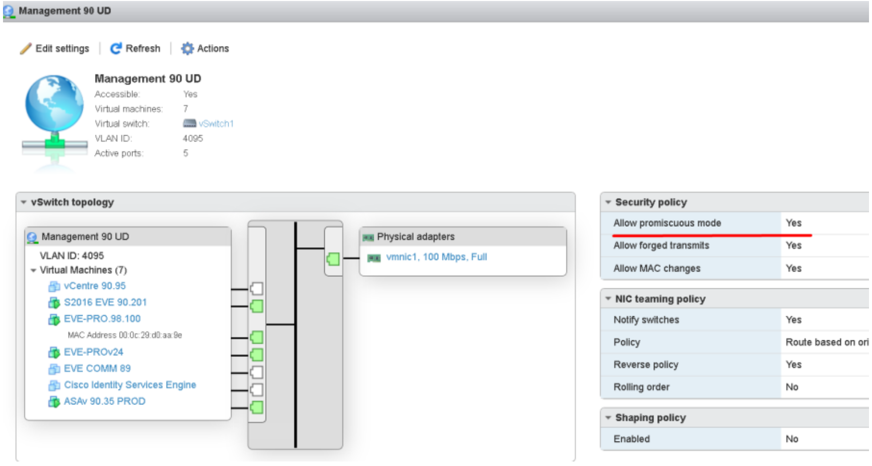
vSwitch Settings



Edit standard virtual switch - vSwitch1

MTU	1500
Uplink 1	vmnic1
Link discovery	Click to expand
Security	
Promiscuous mode	● Accept ○ Reject
MAC address changes	● Accept ○ Reject
Forged transmits	● Accept ○ Reject
NIC teaming	Click to expand
Traffic shaping	Click to expand

Portgroup Settings



Management 90 UD

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:d0:aa:9e
- 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

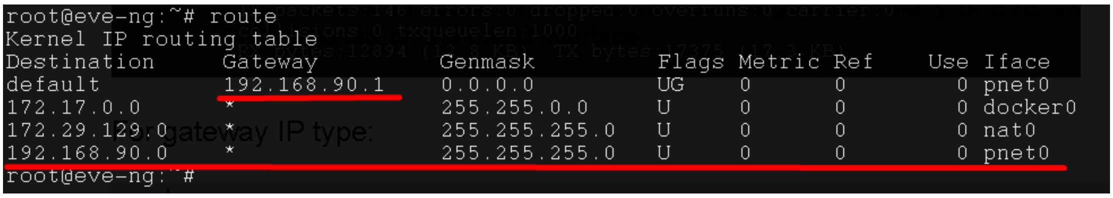
EVE Cloud0 bridging table.

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.

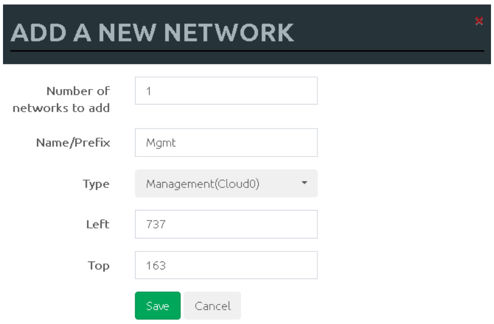
Answer: SSH to EVE and type the following from the CLI:

```
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    *               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

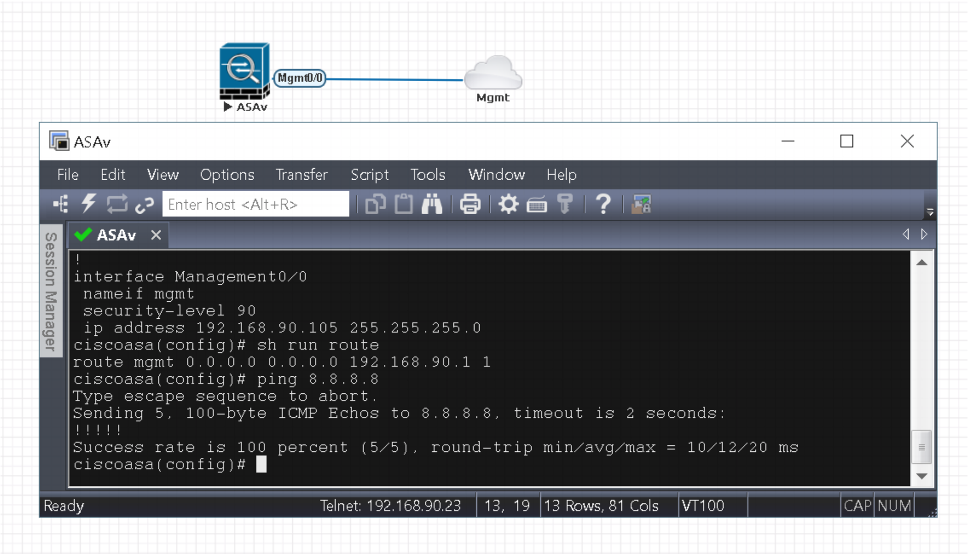
Number of networks to add: 1
Name/Prefix: Mgmt
Type: Management(Cloud0)
Left: 737
Top: 163

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).

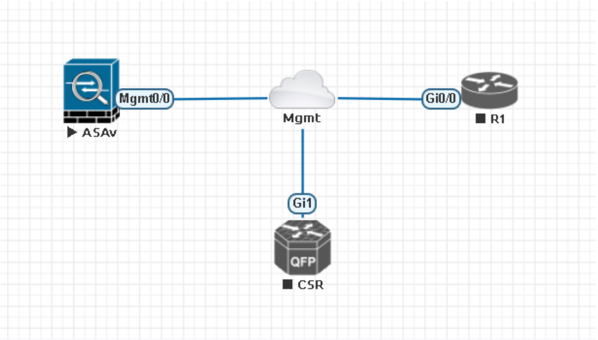
Step 3: Connect your ASAv using the drag and drop connector to the Cloud0 network. Refer to sections 8.1.4 and 7.2.3

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.



```
!
interface Management0/0
 nameif mgmt
 security-level 90
 ip address 192.168.90.105 255.255.255.0
ciscoasa(config)# sh run route
route mgmt 0.0.0.0 0.0.0.0 192.168.90.1 1
ciscoasa(config)# ping 8.8.8.8
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 8.8.8.8, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 10/12/20 ms
ciscoasa(config)#
```

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.

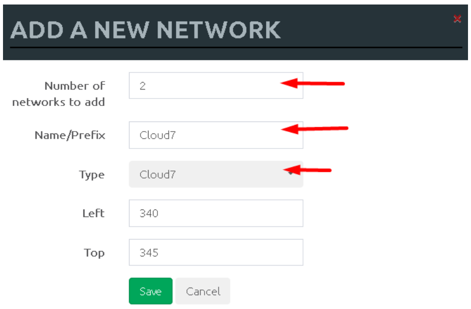
EVE Cloud bridging table.

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

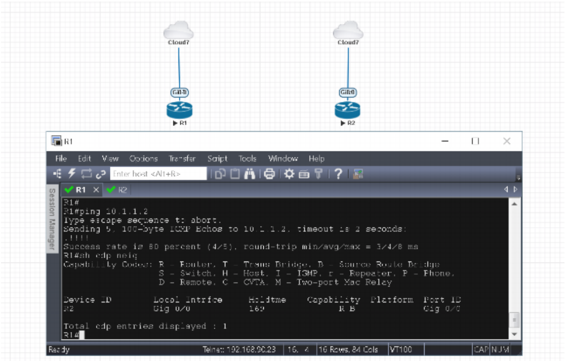
Example: Cloud7 network is used as an extended connector between nodes:

Step 1: Add two Cloud7 networks onto the topology.


ADD A NEW NETWORK

Number of networks to add: 2
Name/Prefix: Cloud7
Type: Cloud7
Left: 340
Top: 345

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.



```
R1#
R1#ping 10.1.1.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 3/4/8 ms
R1#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 - CVTA, M - Two-port Mac Relay

Device ID        Local Intrfce     Holdtme    Capability  Platform  Port ID
R2               Gig 0/0           169              R B             Gig 0/0

Total cdp entries displayed : 1
R1#
```

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.

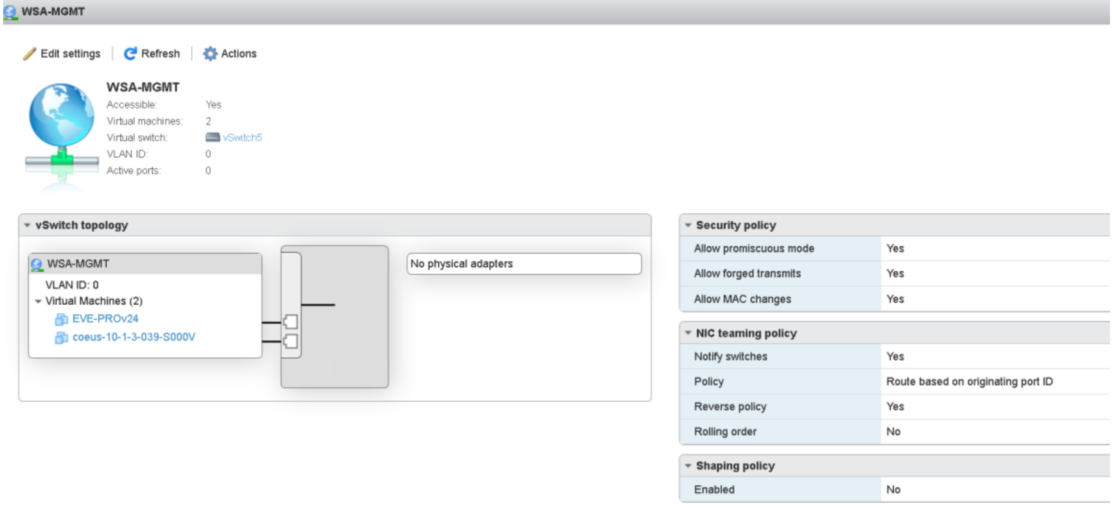
⚠ **NOTE**: A single Cloud interface can be used to connect more than one external VM to the EVE lab.

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

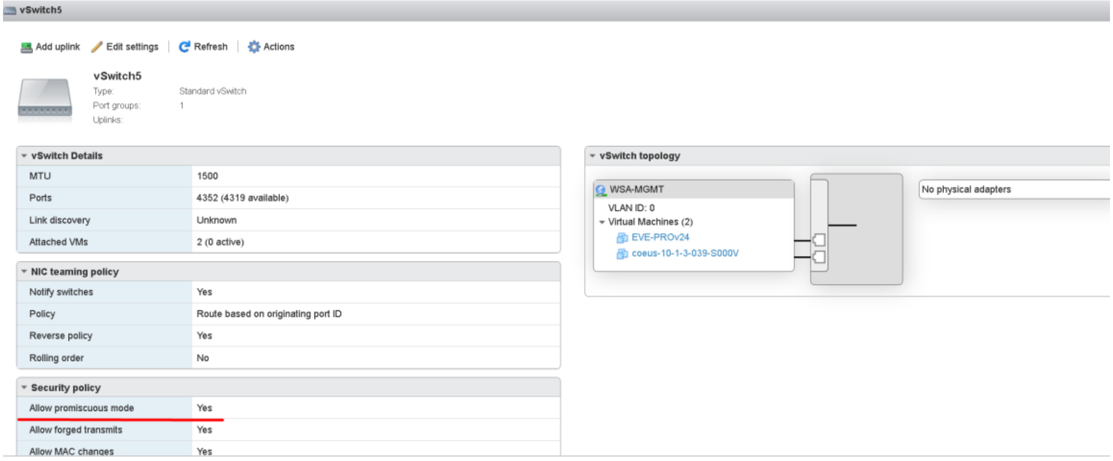
WSA-MGMT
VLAN ID: 0
Virtual Machines (2)
  EVE-PROv24
  coeus-10-1-3-039-S000V

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

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

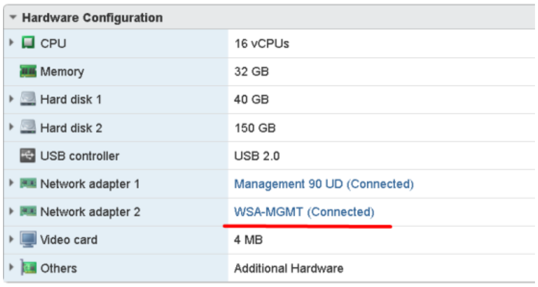
Allow promiscuous mode	Yes
Allow forged transmits	Yes
Allow MAC changes	Yes

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

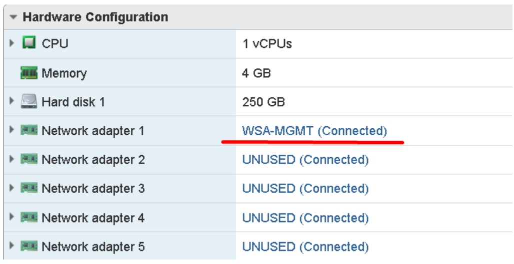
EVE VM, second port is assigned to portgroup WSA-MGMT. It is Cloud1 on the EVE topology.



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	WSA-MGMT (Connected)
Video card	4 MB
Others	Additional Hardware

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



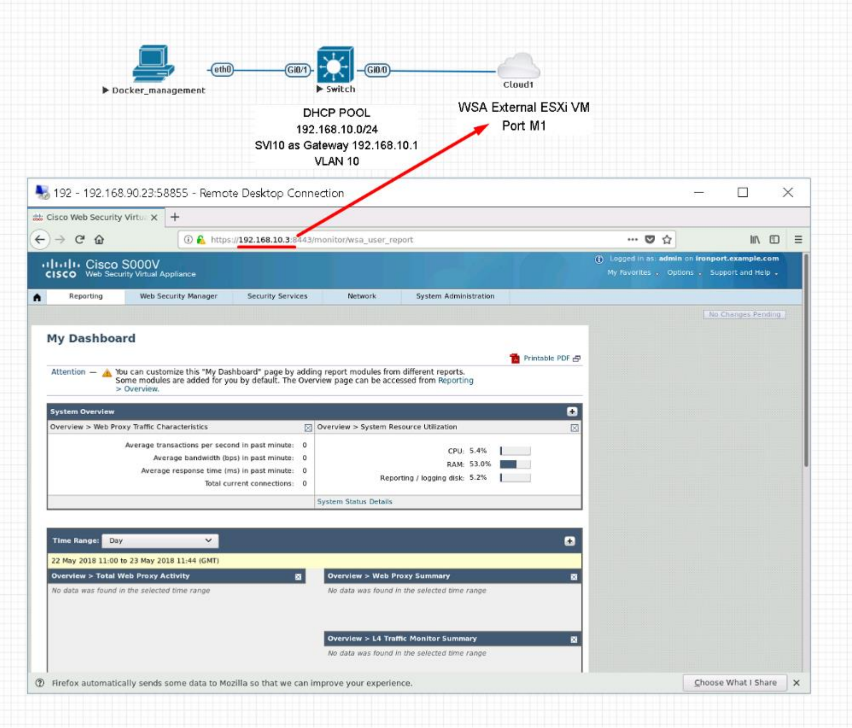
Hardware Configuration

CPU	1 vCPUs
Memory	4 GB
Hard disk 1	250 GB
Network adapter 1	WSA-MGMT (Connected)
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.



DHCP POOL
192.168.10.0/24
SVI10 as Gateway 192.168.10.1
VLAN 10

WSA External ESXi VM
Port M1

Attention — You can customize this "My Dashboard" page by adding report modules from different reports. Some modules are added for you by default. The Overview page can be accessed from Reporting > Overview.

Average transactions per second in past minute: 0
Average bandwidth (bps) in past minute: 0
Average response time (ms) in past minute: 0
Total current connections: 0

CPU: 5.4%
RAM: 53.0%
Reporting / logging disk: 5.2%

22 May 2018 11:00 to 23 May 2018 11:44 (GMT)

No data was found in the selected time range

Firefox automatically sends some data to Mozilla so that we can improve your experience.

9.4.2 VMWare workstation machines

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

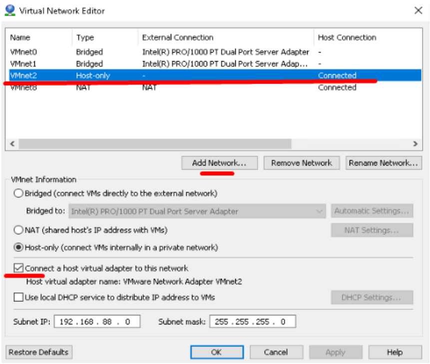
⚠ **NOTE**: A single Cloud interface can be used to connect more than one external VM to the EVE lab.

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:



Virtual Network Editor

Name	Type	External Connection	Host Connection
VMnet0	Bridged	Intel(R) PRO/1000 PT Dual Port Server Adapter	-
VMnet1	Bridged	Intel(R) PRO/1000 PT Dual Port Server Adap...	-
VMnet2	Host-only	-	Connected
VMnet8	NAT	NAT	Connected

VMnet Information

○ Bridged (connect VMs directly to the external network)

Bridged to: Intel(R) PRO/1000 PT Dual Port Server Adapter

○ NAT (shared host's IP address with VMs)

● Host-only (connect VMs internally in a private network)

☑ Connect a host virtual adapter to this network

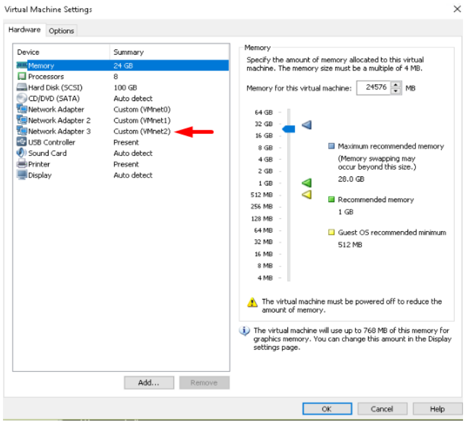
Host virtual adapter name: VMware Network Adapter VMnet2

☐ Use local DHCP service to distribute IP address to VMs

Subnet IP: 192 . 168 . 88 . 0 Subnet mask: 255 . 255 . 255 . 0

EVE and WSA VMs settings

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



Virtual Machine Settings

Device	Summary
Memory	24 GB
Processors	8
Hard Disk (SCSI)	100 GB
CD/DVD (SATA)	Auto detect
Network Adapter	Custom (VMnet0)
Network Adapter 2	Custom (VMnet1)
Network Adapter 3	Custom (VMnet2)
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Memory

Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.

Memory for this virtual machine: 24576 MB

Maximum recommended memory (Memory swapping may occur beyond this size.) 28.0 GB

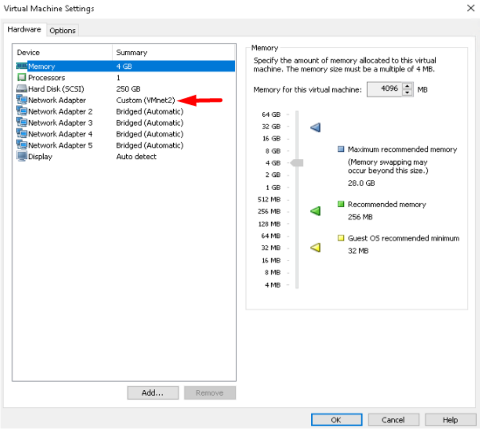
Recommended memory 1 GB

Guest OS recommended minimum 512 MB

The virtual machine must be powered off to reduce the amount of memory.

The virtual machine will use up to 768 MB of this memory for graphics memory. You can change this amount in the Display settings page.

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



Virtual Machine Settings

Device	Summary
Memory	4 GB
Processors	1
Hard Disk (SCSI)	250 GB
Network Adapter	Custom (VMnet2)
Network Adapter 2	Bridged (Automatic)
Network Adapter 3	Bridged (Automatic)
Network Adapter 4	Bridged (Automatic)
Network Adapter 5	Bridged (Automatic)
Display	Auto detect

Memory

Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.

Memory for this virtual machine: 4096 MB

Maximum recommended memory (Memory swapping may occur beyond this size.) 28.0 GB

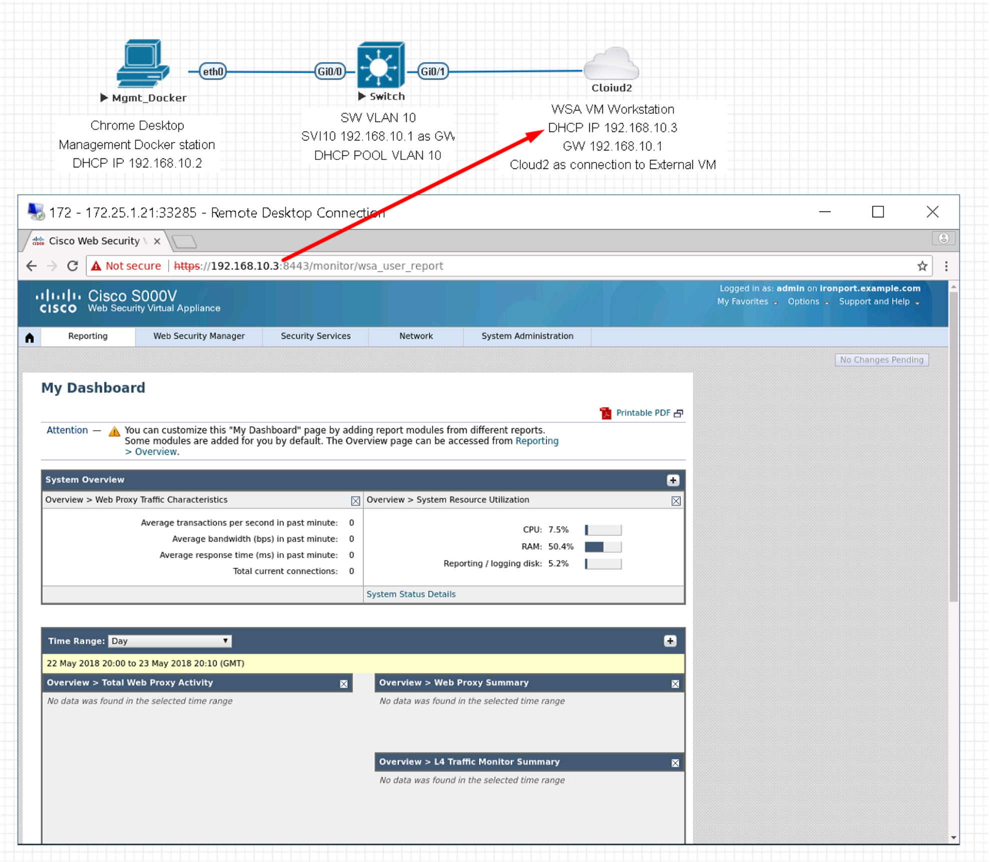
Recommended memory 256 MB

Guest OS recommended minimum 32 MB

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.



https://192.168.10.3:8443/monitor/wsa_user_report

Logged in as: admin on ironport.example.com

My Dashboard

Attention — You can customize this "My Dashboard" page by adding report modules from different reports. Some modules are added for you by default. The Overview page can be accessed from Reporting > Overview.

System Overview

Overview > Web Proxy Traffic Characteristics

Average transactions per second in past minute: 0
Average bandwidth (bps) in past minute: 0
Average response time (ms) in past minute: 0
Total current connections: 0

Overview > System Resource Utilization

CPU: 7.5%
RAM: 50.4%
Reporting / logging disk: 5.2%

Time Range: Day

22 May 2018 20:00 to 23 May 2018 20:10 (GMT)

Overview > Total Web Proxy Activity

No data was found in the selected time range

Overview > Web Proxy Summary

No data was found in the selected time range

Overview > L4 Traffic Monitor Summary

No data was found in the selected time range

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.

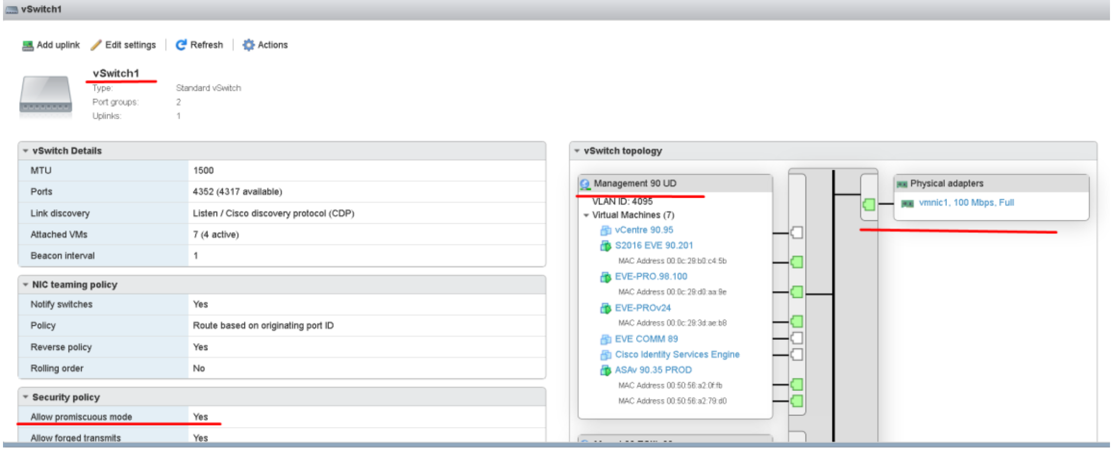
⚠ **IMPORTANT NOTE:** If you are building trunk between EVE lab node to real Switch, please make sure you have set your ESXi vSwitch interface to accept all vlans. Reference: https://kb.vmware.com/s/article/1004074

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

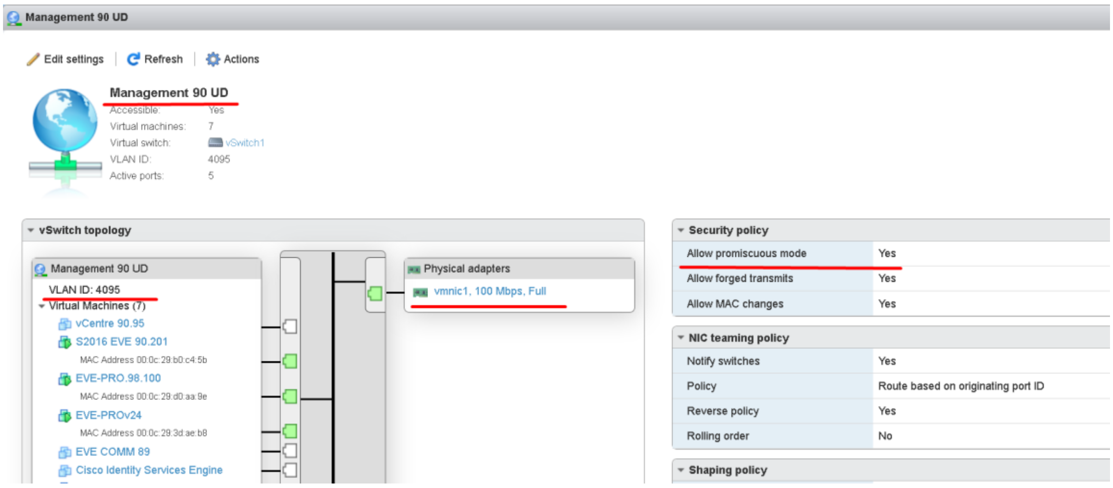
NIC teaming policy

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

Security policy

Allow promiscuous mode	Yes
Allow forged transmits	Yes

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

Security policy

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

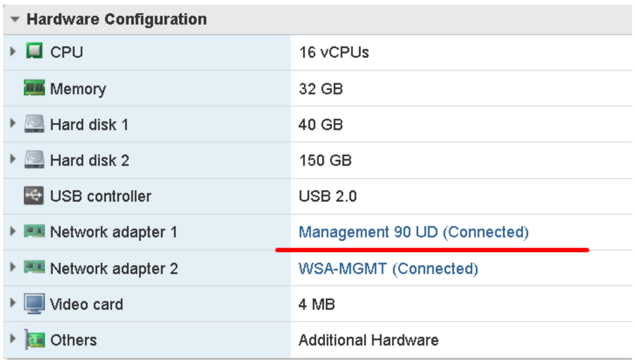
NIC teaming policy

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”



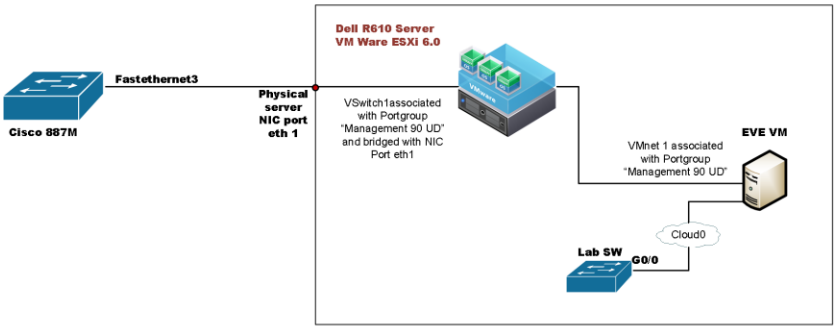
Hardware Configuration

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

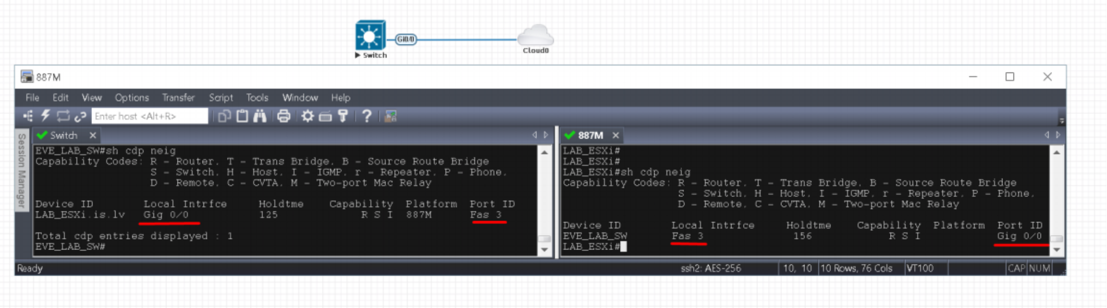
Physical Topology

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



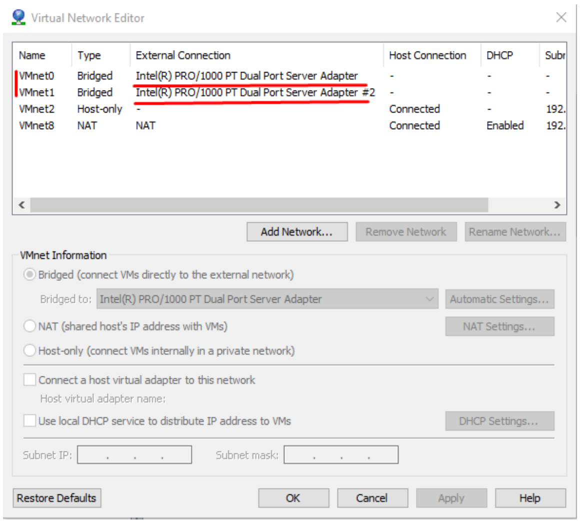
```
EVE_LAB_SW#sh cdp neig
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID        Local Intrfce     Holdtme    Capability  Platform  Port ID
LAB_ESXi.is.lv   Gig 0/0           125             R S I  887M      Fas 3

Total cdp entries displayed : 1
EVE_LAB_SW#
```

```
LAB_ESXi#
LAB_ESXi#
LAB_ESXi#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 - CVTA, M - Two-port Mac Relay

Device ID        Local Intrfce     Holdtme    Capability  Platform  Port ID
EVE_LAB_SW       Fas 3              156            R S I            Gig 0/0
LAB_ESXi#
```

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



Name	Type	External Connection	Host Connection	DHCP	Subr
VMnet0	Bridged	Intel(R) PRO/1000 PT Dual Port Server Adapter	-	-	-
VMnet1	Bridged	Intel(R) PRO/1000 PT Dual Port Server Adapter #2	-	-	-
VMnet2	Host-only	-	Connected	-	192.
VMnet8	NAT	NAT	Connected	Enabled	192.

VMnet Information

● Bridged (connect VMs directly to the external network)

Bridged to: Intel(R) PRO/1000 PT Dual Port Server Adapter

○ NAT (shared host's IP address with VMs)

○ Host-only (connect VMs internally in a private network)

☐ Connect a host virtual adapter to this network

Host virtual adapter name:

☐ Use local DHCP service to distribute IP address to VMs

Subnet IP: . . .

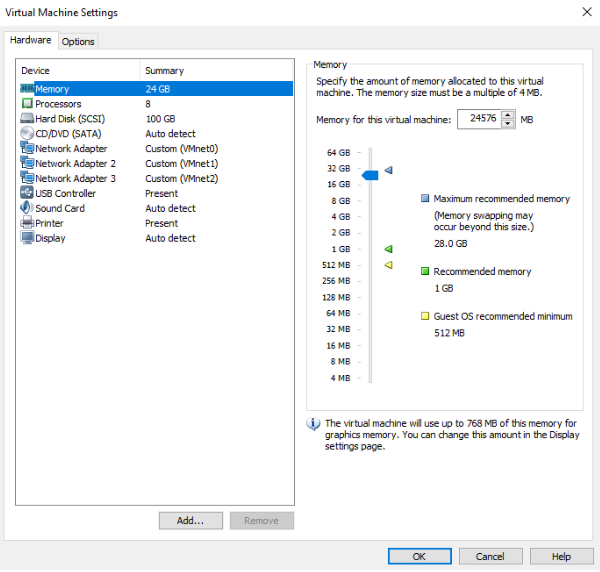
Subnet mask: . . .

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



Device	Summary
Memory	24 GB
Processors	8
Hard Disk (SCSI)	100 GB
CD/DVD (SATA)	Auto detect
Network Adapter	Custom (VMnet0)
Network Adapter 2	Custom (VMnet1)
Network Adapter 3	Custom (VMnet2)
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Memory

Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.

Memory for this virtual machine: 24576 MB

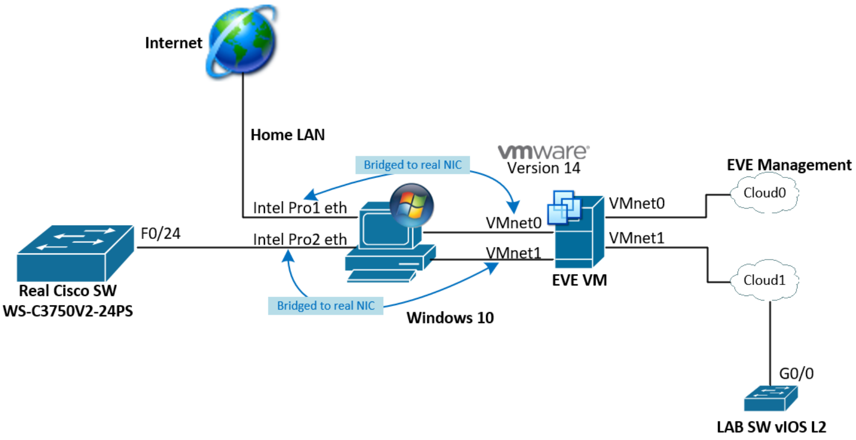
Maximum recommended memory
(Memory swapping may occur beyond this size.)
28.0 GB

Recommended memory
1 GB

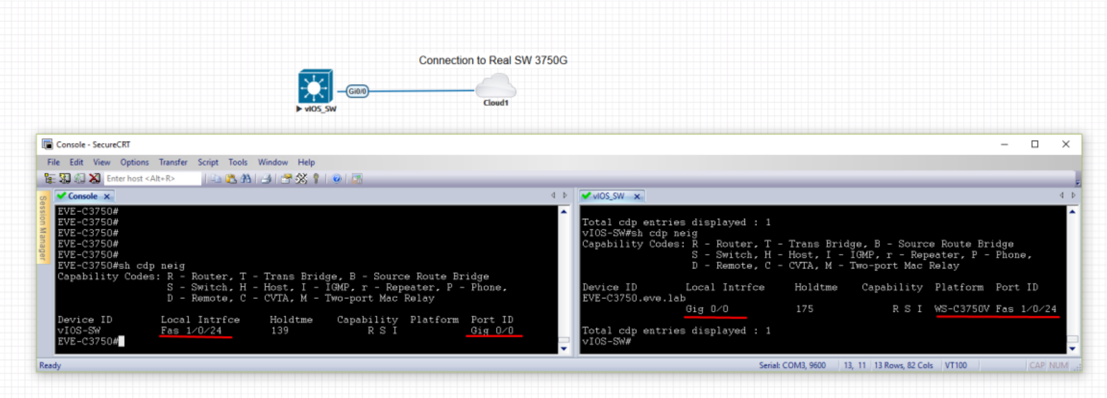
Guest OS recommended minimum
512 MB

The virtual machine will use up to 768 MB of this memory for graphics memory. You can change this amount in the Display settings page.

Physical connection scheme and VMware bridging.



EVE Lab scheme.



```
EVE-C3750#
EVE-C3750#
EVE-C3750#
EVE-C3750#
EVE-C3750#
EVE-C3750#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 - CVTA, M - Two-port Mac Relay

Device ID        Local Intrfce     Holdtme    Capability  Platform  Port ID
vIOS-SW          Fas 1/0/24        139             R S I            Gig 0/0
EVE-C3750#
```

```
Total cdp entries displayed : 1
vIOS-SW#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 - CVTA, M - Two-port Mac Relay

Device ID        Local Intrfce     Holdtme    Capability  Platform  Port ID
EVE-C3750.eve.lab
                 Gig 0/0           175              R S I  WS-C3750V Fas 1/0/24

Total cdp entries displayed : 1
vIOS-SW#
```

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

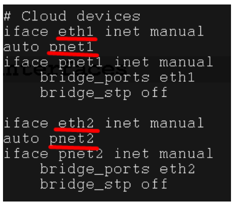
⚠ Warning. You are making changes to your Windows registry files! This is at your own risk.

https://www.intel.co.uk/content/www/uk/en/support/articles/000005498/network-and-i-o/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
```

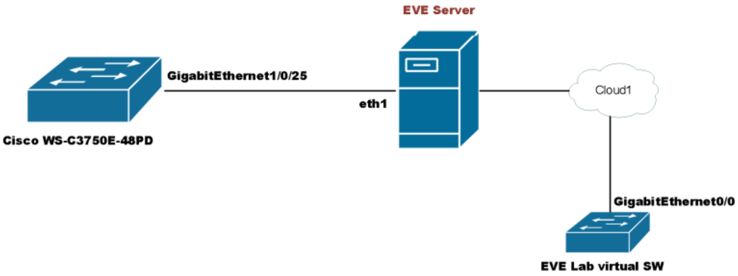


```
# Cloud devices
iface eth1 inet manual
auto pnet1
iface pnet1 inet manual
    bridge_ports eth1
    bridge_stp off

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

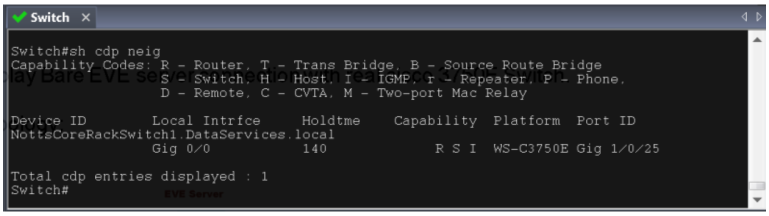
Basically, your servers physical port eth0 is bridged to pnet0 which is Cloud0 in your labs, eth1 is bridged to pnet1 which is Cloud1 in your labs (and so on). Refer to the bridging table in section 9.3

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.



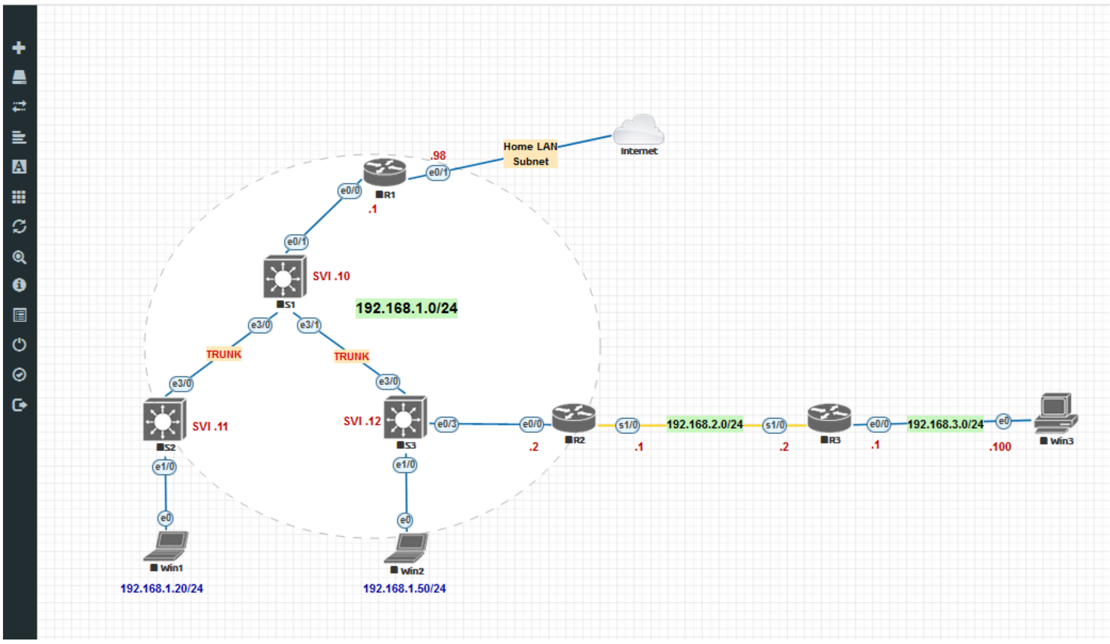
```
Switch#sh cdp neig
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
                  D - Remote, C - CVTA, M - Two-port Mac Relay

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#
```

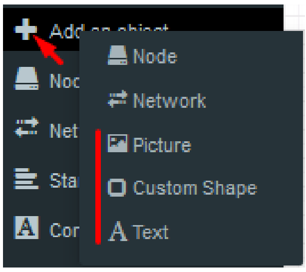
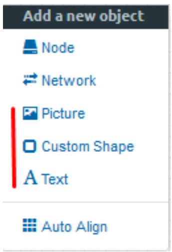
10 Advanced EVE Lab features

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. 

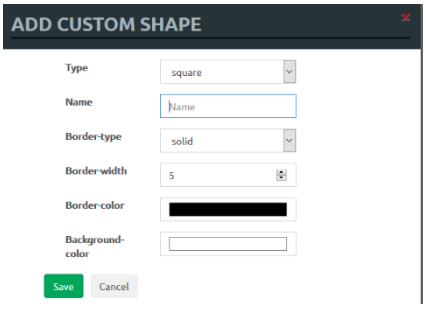
10.1.1 Custom shape

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


ADD CUSTOM SHAPE

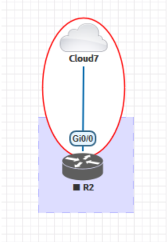
Type: square
Name: Name
Border-type: solid
Border-width: 5
Border-color: ■
Background-color: □

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.

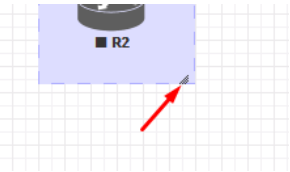
Background colour: Allows you to choose a colour to fill your shape with. This can be edited later in the “Shape Edit” menu.

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).



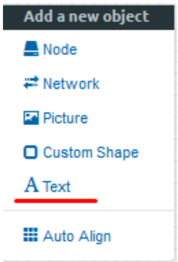
10.1.2 Resize square or circle objects

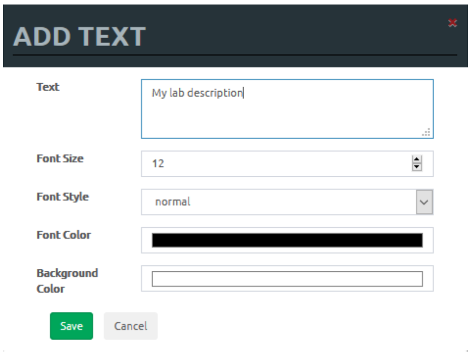
Move your mouse over the right bottom corner of the object until a corner symbol appears. Left click and drag your mouse to change object size or style (rectangle, sphere)



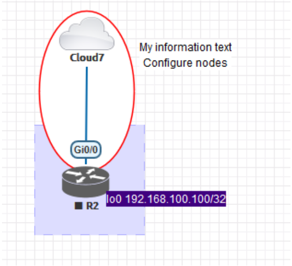
10.1.3 Text object

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




ADD TEXT

Text: My lab description
Font Size: 12
Font Style: normal
Font Color: ■
Background Color: □



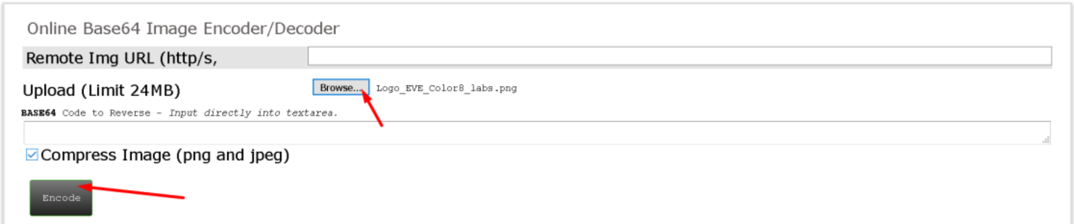
Example: text objects added to the topology.

10.1.4 Add custom picture on the Lab using Text object feature

Sometimes you may have to add pictures, like logos on your topology. It is possible but you need to convert your png or jpg to html format. We have tested this one as the best to achieve result. Load your image in the web, and convert to html format.

https://www.askapache.com/online-tools/base64-image-converter/

Step 1: Load your picture jpg or png format and encode it.



Online Base64 Image Encoder/Decoder

Remote Img URL (http/s,

Upload (Limit 24MB) Logo_EVE_Color8_labs.png

BASE64 Code to Reverse - *Input directly into textarea.*

☑ Compress Image (png and jpeg)

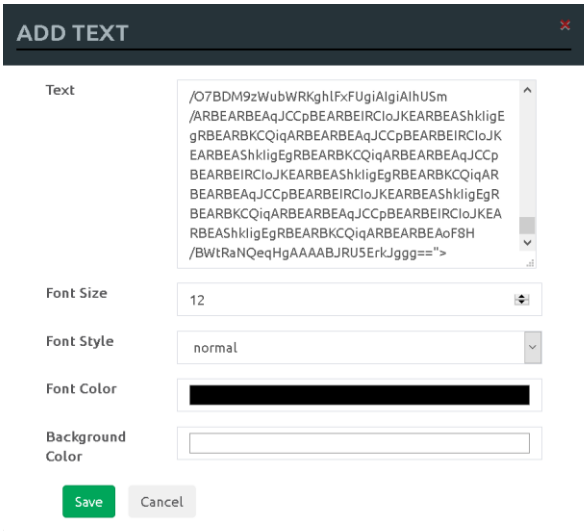
Step 2: Scroll down to find HTML format

Step 3: Set your desirable size of picture.

```
<img  width="240" height="100"  src="data:image/png;
base64,iVBORw0KGgoAAAANSUhEUgAAAlQAAADvCAYAAAA0Ckq2AAAAAXNSR0IArs4c6QAAAARnQU1BAACxjwv8YQUAAAAJcEhZcw
AADJGlUWHRYTUw6Y29tLmFkb2JlLnhtcAAAAAAAPD94cGFja2V0IGJlZ2luPSLvu78iIGlkPSJXNU0wTXBDZWhpSHpyZVN6TlRjem
z0iQWRvYmUgWE1QIENvcmUgNS4zLWMwMTEgNjYuMTQ1NjYxLCAyMDEyLzAyLzA2LTE0OjU2OjI3ICAgICAgICAiPiA8cmRmOlJERi
ClucyMiPiA8cmRmOkRlc2NyaXB0aW9uIHJkZjphYm91dD0iIiB4bWxuczp4bXA9Imh0dHA6Ly9ucy5hZG9iZS5jb20veGFwLzEuMC
WxuczpzdFJlZj0iaHR0cDovL25zLmFkb2JlLmNvbS94YXAvMS4wL3NUeXBlL1Jlc291cmNlUmVmIyIgeG1wOkNyZWF0b3JUb29sPS
SJ4bXAuaWlkOkU0NTVENUYyMTQyRDExRTZCRURCODA4RjM0NjczQTEzIiB4bXBNTTpEb2N1bWVudElEPSJ4bXAuZGlkOkU0NTVENU
```

Step 4: Mark and copy all content from HTML window above

Step 4: Copy content to EVE text object



ADD TEXT

Text

```
/O7BDM9zWubWRKghlFxFUgiAIgiAIhUSm
/ARBEARBEAqJCCpBEARBEIRCIoJKEARBEAShkIigE
gRBEARBKCQiqARBEARBEAqJCCpBEARBEIRCIoJK
EARBEAShkIigEgRBEARBKCQiqARBEARBEAqJCCp
BEARBEIRCIoJKEARBEAShkIigEgRBEARBKCQiqAR
BEARBEAqJCCpBEARBEIRCIoJKEARBEAShkIigEgR
BEARBKCQiqARBEARBEAqJCCpBEARBEIRCIoJKEA
RBEAShkIigEgRBEARBKCQiqARBEARBEAoF8H
/BWtRaNQeqHgAAAABJRU5ErkJggg==">
```

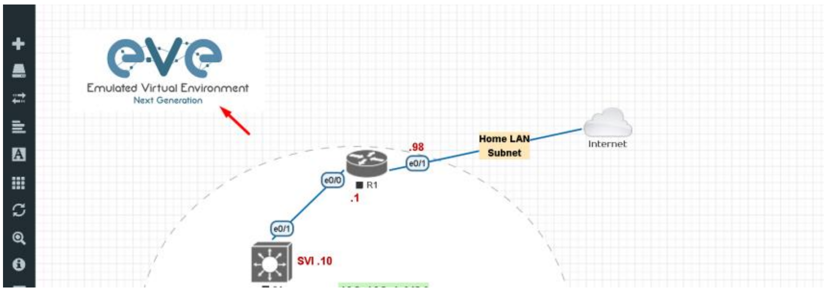
Font Size: 12

Font Style: normal

Font Color

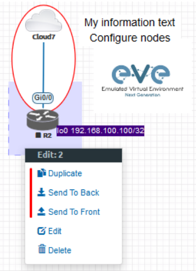
Background Color

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



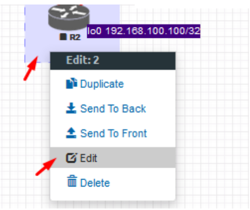
10.1.5 Cloning objects and overlay positions

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.

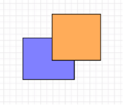


At the bottom of the “Topology Canvas” page, additional object options will appear


Edit: 2

Z-Index	Border-width	Border-type	Border-color	Background-color	Transparent	Rotate	Name
-1	1	dashed			Off	0	square2

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.

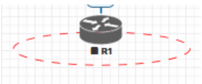
Border width: Used to change the object’s border width.

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

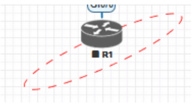
Border colour: Used to change the colour of the object’s border

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

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

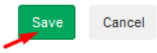


Rotate: Used to rotate the object on the topology.



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.

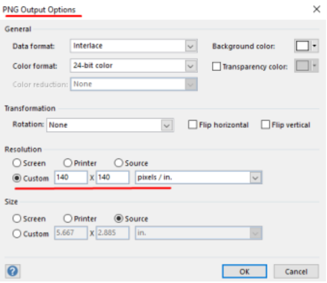
10.2 Custom design logical topology

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.


PNG Output Options

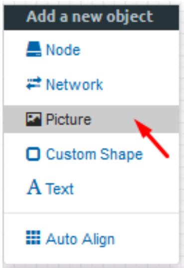
General
Data format: Interlace
Color format: 24-bit color
Color reduction: None
Background color:
☐ Transparency color:

Transformation
Rotation: None
☐ Flip horizontal ☐ Flip vertical

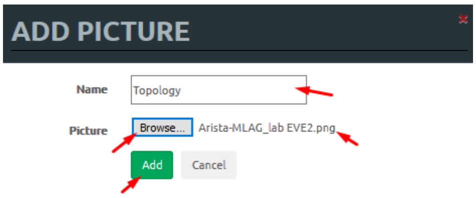
Resolution
○ Screen ○ Printer ○ Source
● Custom 140 x 140 pixels / in.

Size
○ Screen ○ Printer ● Source
○ Custom 5.667 x 2.885 in.

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.”



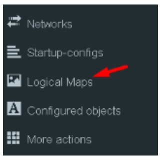
Step 2: Browse your PC for a .png or .jpg file and hit “Add”.


ADD PICTURE

Name: Topology
Picture: Arista-MLAG_lab EVE2.png

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

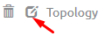
🗑	Delete uploaded picture from the lab
✎	Image Map: Map nodes to places in the picture
Topology	Display uploaded picture. Work with lab and custom topology
━━▢━━	Zoom/unzoom uploaded custom topology
✹	Makes the window transparent to see the “Topology Canvas” behind it. Clicking again returns to the normal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

✖	Close “Pictures” window.

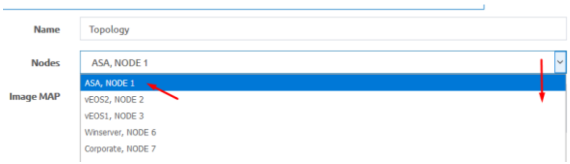
10.2.2 Custom topology mapping

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.



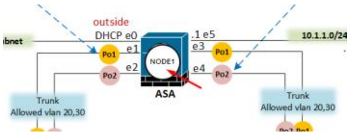
Name: Topology

Nodes: ASA, NODE 1

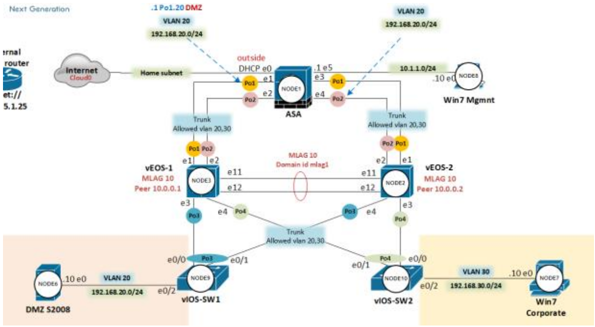
Image MAP

- ASA, NODE 1
- vEOS2, NODE 2
- vEOS1, NODE 3
- Winserver, NODE 6
- Corporate, NODE 7

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: CUSTOM , NODE outside lab

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'>

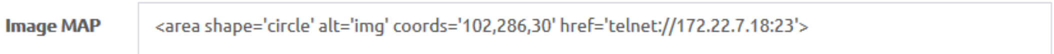
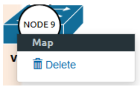


Image MAP <area shape='circle' alt='img' coords='102,286,30' href='telnet://172.22.7.18:23'>

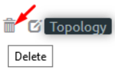
Step 6: Save your mapping and refresh the browser with F5.

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.



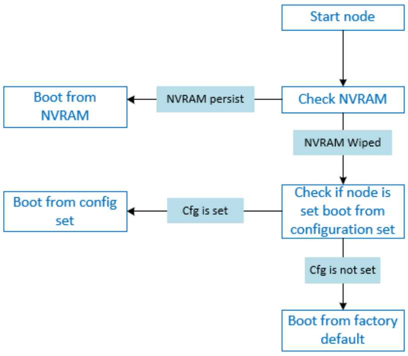
10.3 Configuration export feature

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.

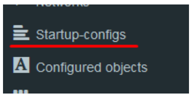
Factory default configuration: The base configuration that is applied from the manufacturer.

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

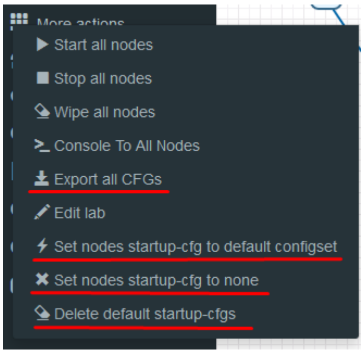
10.3.2 Startup config management

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.

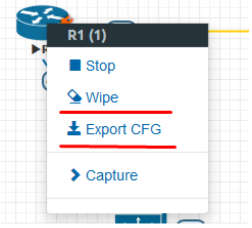
Set nodes startup-cfg to default configset- Sets all supported nodes to boot from the default configuration set.

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

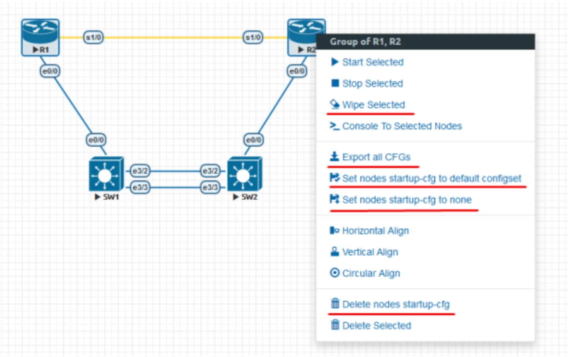
Select node, right click



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

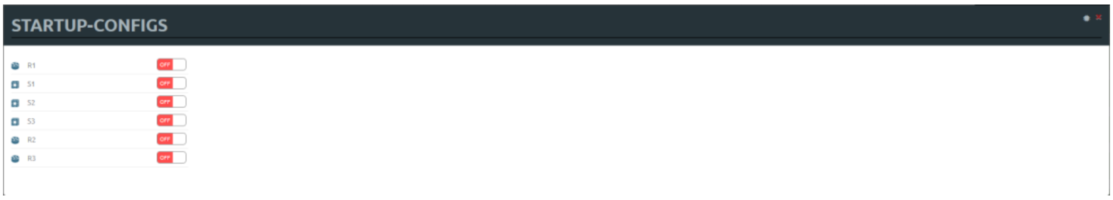
Set nodes startup-cfg to none: Set nodes to boot from NVRAM or from factory default if wiped.

Delete nodes startup cfg: Delete selected node’s startup cfg. (clean default set)

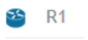
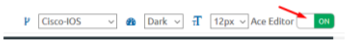
10.3.2.4 Startup-configuration window

No configuration exports or manual configs loaded for nodes

Startup-configs are exported and the “Configuration Export” feature can be used.

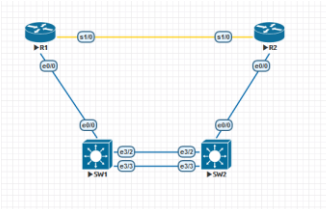


10.3.2.5 Startup-config window information

	Config set menu
	No configuration is available for node. Grey node
	Configuration is available and can be used. Blue node. Exported configuration persist
	Configuration persist but it is disabled. Node will boot from NVRAM or factory default if it is wiped
	Configuration persists and node will boot from the configuration after being wiped
	Ace Editor. Different vendor configuration edit option. Just Text visual format.

10.3.3 Export configuration

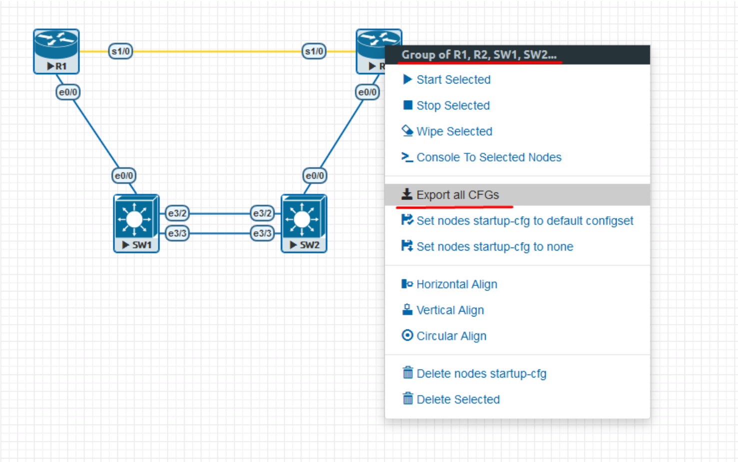
Example:



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.



Export All: done

R1: config exported

R1: Starting export, please wait

R2: config exported

R2: Starting export, please wait

SW1: config exported

SW1: Starting export, please wait

SW2: config exported

SW2: Starting export, please wait

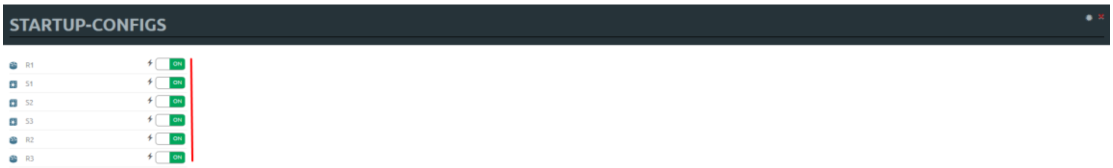
Export Selected: Starting

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.



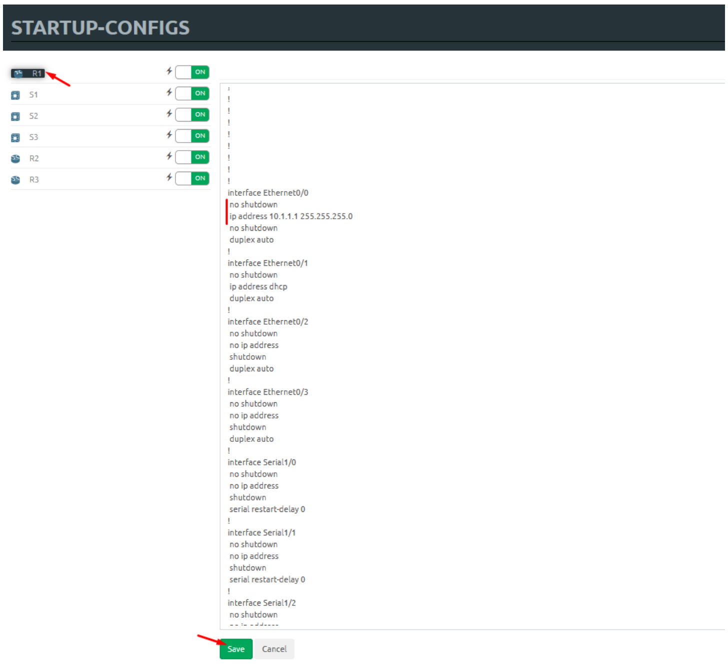
Step 3: Wipe nodes. For more information refer to section 8.1.3

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.



```
!
!
!
!
!
!
!
!
interface Ethernet0/0
 no shutdown
 ip address 10.1.1.1 255.255.255.0
 no shutdown
 duplex auto
!
interface Ethernet0/1
 no shutdown
 ip address dhcp
 duplex auto
!
interface Ethernet0/2
 no shutdown
 no ip address
 shutdown
 duplex auto
!
interface Ethernet0/3
 no shutdown
 no ip address
 shutdown
 duplex auto
!
interface Serial1/0
 no shutdown
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial1/1
 no shutdown
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial1/2
 no shutdown
```

Step 2: Save the config for nodes with the green "Save" button on the bottom.

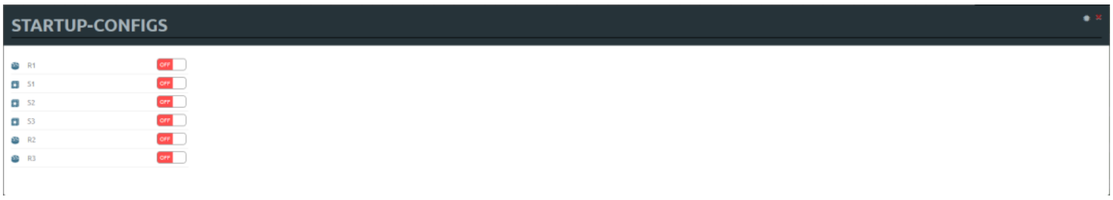
⚠ NOTE: you can manually copy/paste any configuration into the config set editor and apply it to your node. Make sure your configuration interfaces match the lab node's interface names.

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.



STARTUP-CONFIGS

R1 OFF
S1 OFF
S2 OFF
S3 OFF
R2 OFF
R3 OFF

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 800 **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 networ
root@eve-ng:~#
```

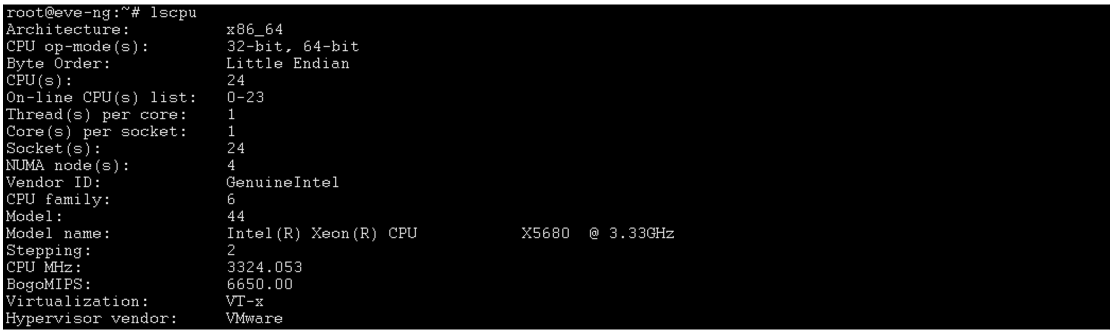
11.1.3 Display if EVEs Intel VT-x/EPT option on/off:

```
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
```

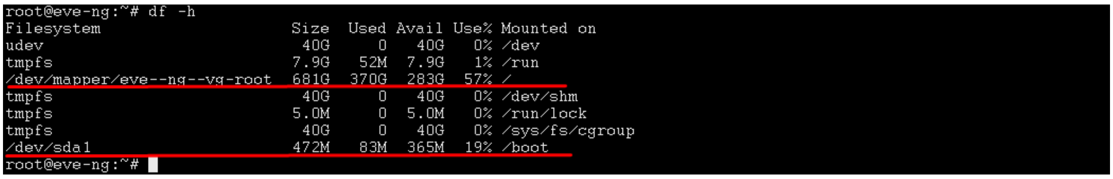


```
root@eve-ng:~# lscpu
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                24
On-line CPU(s) list:   0-23
Thread(s) per core:    1
Core(s) per socket:    1
Socket(s):             24
NUMA node(s):          4
Vendor ID:             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

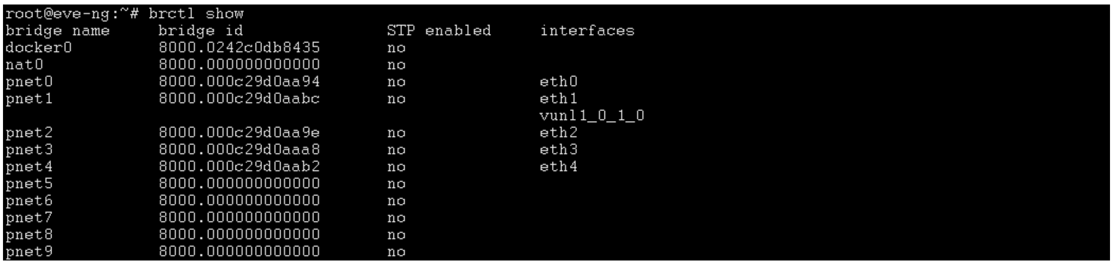
```
df -h
```



```
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

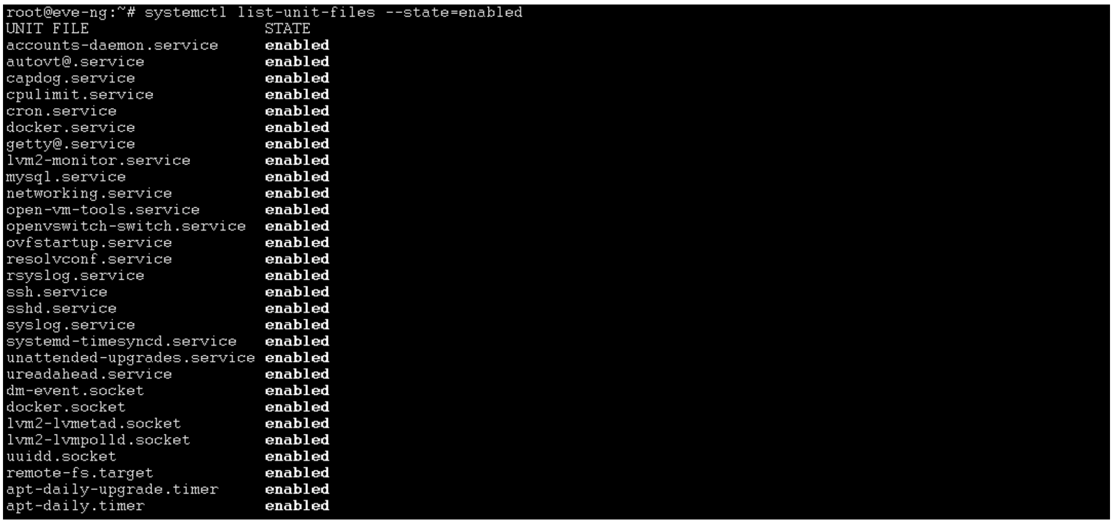
```
brctl show
```



```
root@eve-ng:~# brctl show
bridge name     bridge id               STP enabled     interfaces
docker0         8000.0242c0db8435       no
nat0            8000.000000000000       no
pnet0           8000.000c29d0aa94       no              eth0
pnet1           8000.000c29d0aabc       no              eth1
                                                        vunl1_0_1_0

pnet2           8000.000c29d0aa9e       no              eth2
pnet3           8000.000c29d0aaa8       no              eth3
pnet4           8000.000c29d0aab2       no              eth4
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
```



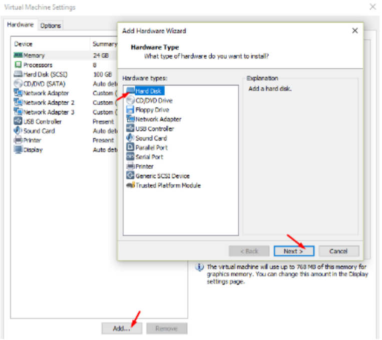
```
root@eve-ng:~# systemctl list-unit-files --state=enabled
UNIT FILE                           STATE
accounts-daemon.service             enabled
autovt@.service                     enabled
capdog.service                      enabled
cpulimit.service                    enabled
cron.service                        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
uuidd.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.



What type of hardware do you want to install?

Add a hard disk.

The virtual machine will use up to 768 MB of this memory for graphics memory. You can change this amount in the Display settings page.

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

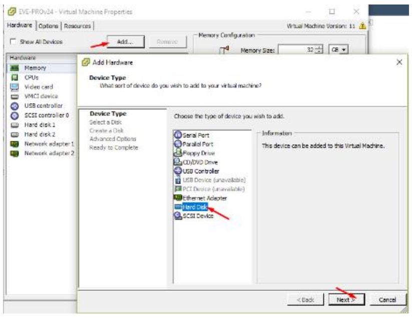
Step 7: Optional: Specify the location of where your new HDD will be stored, then click Finish.

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.



What sort of device do you wish to add to your virtual machine?

Choose the type of device you wish to add.

This device can be added to this Virtual Machine.

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.

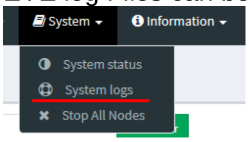
11.4 EVE Community SQL Database recovery

Starting from EVE Community version 2.0.3-95, you can recover SQL user database in case of disaster:

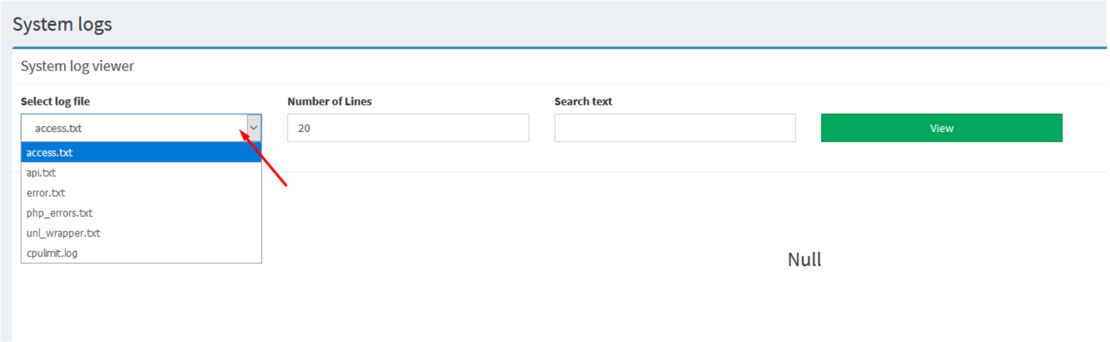
```
unl_wrapper -a restoredb
```

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.



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 hdd 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
The table of proper folder names is provided in our website:

https://www.eve-ng.net/index.php/documentation/qemu-image-namings/

Supported HDD formats for the EVE images:

lsi([a-z]+).qcow	lsia.qcow

hd([a-z]+).qcow	hda.qcow
virtide([a-z]+).qcow	virtidea.qcow
virtio([a-z]+).qcow	virtioa.qcow
scsi([a-z]+).qcow	scsia.qcow
sata([a-z]+).qcow	sataa.qcow

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.

Formula	***Template line format example***	***Will produce***
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

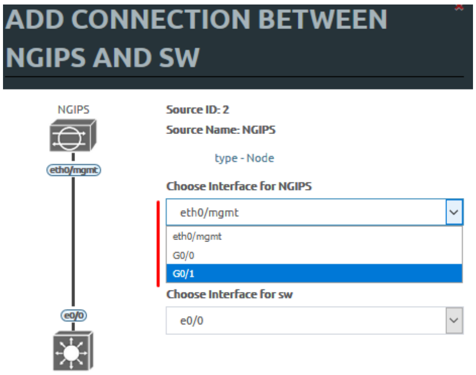
		Ge1/2 Ge1/3 Ge2/0 Ge2/1 Ge2/2 ....
eth_format: <prefix>{<first value>}	eth_format: Gi{0}	Gi0 Gi1 Gi2 Gi3 ...
eth_format: <prefix>{<first value>}	eth_format: G0/{0}	G0/0 G0/1 G0/2 G0/3 ...
eth_name: <prefix: Interface custom name>	eth_name: - M1 - T1 - T2	M1 T1 T2
eth_name: <prefix: Interface custom name>	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.



ADD CONNECTION BETWEEN NGIPS AND SW

Source ID: 2
Source Name: NGIPS
type - Node

Choose Interface for NGIPS: eth0/mgmt
- eth0/mgmt
- G0/0
- G0/1

Choose Interface for sw: e0/0

```
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.
#     * Redistributions in binary form must reproduce the above copyright
#       notice, this list of conditions and the following disclaimer in the
#       documentation and/or other materials provided with the distribution.
#     * Neither the name of the UNetLab Ltd nor  the name of EVE-NG Ltd nor the
#       names of its contributors may be used to endorse or promote products
#       derived from this software without specific prior written permission.
#
# 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:

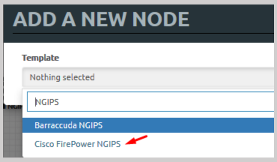
```
---
custom_templates:

- name: generic
  listname: Generic Template
...
```

Change to:

```
---
custom_templates:

- name: ngips
  listname: Cisco FirePower NGIPS
...
```

Node template image foldername

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:

12.4 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.distributed (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).

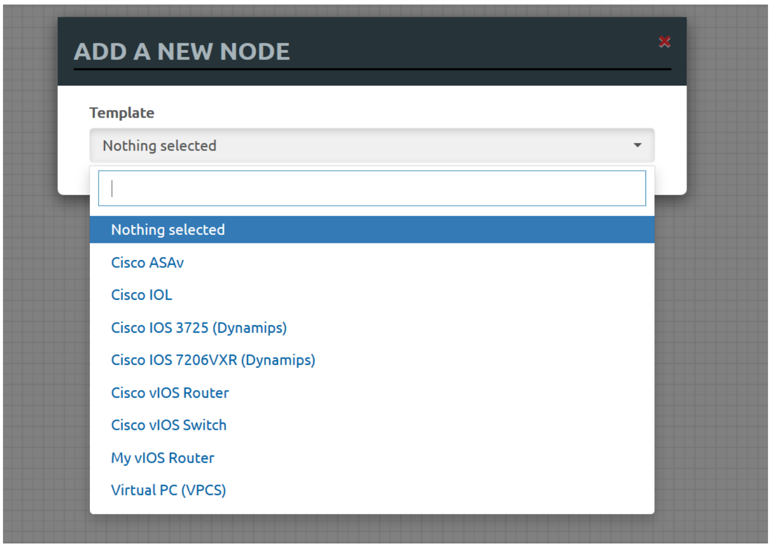
“hided” will remove unloaded/empty image templates from nodes list in WEB GUI

“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.



ADD A NEW NODE
Template
Nothing selected
Nothing selected
Cisco ASAv
Cisco IOL
Cisco IOS 3725 (Dynamips)
Cisco IOS 7206VXR (Dynamips)
Cisco vIOS Router
Cisco vIOS Switch
My vIOS Router
Virtual PC (VPCS)

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