Emulated Virtual Environment
Next Generation

EVE-NG CE Community Edition Cookbook

Version 6.0

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Table of Contents

PREFACE **7**

1 INTRODUCTION **8**

1.1 WHAT IS EVE-NG? 8
1.2 WHAT IS EVE-NG USED FOR? 8
1.3 WHO IS EVE-NG FOR? 8

2 SYSTEM REQUIREMENTS **9**

2.1 HARDWARE REQUIREMENTS 9
2.1.1 Minimal Laptop/PC Desktop system requirements *9*
2.1.2 Recommended Laptop/PC Desktop system requirements *10*
2.1.3 Virtual Server system requirements *10*
2.1.4 Dedicated Server (bare metal BM) system requirements *11*
2.1.5 Nodes per lab calculator *11*
2.2 SUPPORTED VIRTUALIZATION PLATFORMS AND SOFTWARE 11
2.3 UNSUPPORTED HARDWARE AND SYSTEMS 11

3 INSTALLATION **13**

3.1 VMWARE WORKSTATION OR VM PLAYER 13
3.1.1 VMware Workstation VM installation using ISO Live image *13*
3.1.1.1 EVE VM Setup and Settings 13
3.1.1.2 EVE-NG VM Installation steps 17
3.2 VMWARE ESXI 21
3.2.1 VMware ESXi EVE VM installation using ISO Live image *21*
3.2.1.1 EVE-NG ESXi VM Setup and Settings 22
3.2.1.2 EVE-NG ESXi VM Installation steps 25
3.3 BARE HARDWARE (BM) SERVER INSTALLATION 30
3.3.1 BM Server installation EVE Live ISO *30*
3.3.2 BM Server Installation Ubuntu legacy ISO *34*
3.4 GOOGLE CLOUD PLATFORM 41
3.4.1 Google account *41*
3.4.2 Preparing Ubuntu boot disk template *41*
3.4.3 Creating VM *41*
3.4.4 EVE-NG CE installation *44*
3.4.5 Access to Google Cloud EVE-CE *45*
3.4.6 Optional: GCP MTU 1460 Firewall rules for native console use *46*
3.5 EVE MANAGEMENT IP ADDRESS SETUP 46
3.5.1 Management static IP address setup (preferred) *46*
3.5.2 EVE Management IP address setup via DHCP *49*
3.5.3 EVE Management IP address reset *50*
3.6 NATIVE TELNET CONSOLE MANAGEMENT SETUP 51
3.6.1 Windows Native Console *51*
3.6.2 Linux Native Console *52*
3.6.3 MAC OSX Native Console *53*
3.7 LOGIN TO THE EVE WEB GUI 53

4 EVE-NG COMMUNITY UPDATE & UPGRADE **54**

4.1 EVE-NG COMMUNITY UPDATE 54
4.2 EVE-NG COMMUNITY UPGRADE 55

5 TYPES OF EVE MANAGEMENT CONSOLES **56**

5.1 NATIVE CONSOLE 56

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5.1.1 Native Console: telnet 56
5.1.2 Native Console: Wireshark 57
5.1.3 Native Console: VNC 59
5.1.4 Native Console: RDP 59
5.2 HTML5 CONSOLE 60
5.2.1 HTML5 Console: Telnet 61
5.2.2 HTML5 Console: VNC 61
5.2.3 HTML5 Console: RDP for Windows 62
6 EVE WEB GUI MANAGEMENT 64
6.1 EVE MANAGEMENT PAGE 64
6.1.1 Management buttons 64
6.1.2 Management tabs 65
6.2 FOLDERS AND LAB FILES MANAGEMENT 66
6.2.1 Folders Management 66
6.2.1.1 Create folder 66
6.2.1.2 Delete folder 66
6.2.1.3 Move Folder 66
6.2.1.4 Export Folder 66
6.2.1.5 Import Folder 67
6.2.2 Lab files Management 68
6.2.2.1 Create Lab 68
6.2.2.2 Delete Lab 68
6.2.2.3 Clone Lab 69
6.2.2.4 Move Lab 69
6.2.2.5 Export Lab 70
6.2.2.6 Import Labs 70
6.3 EVE MANAGEMENT DROPDOWN MENU 71
6.3.1 EVE User management 71
6.3.1.1 Creating a new EVE Admin user 72
6.3.1.2 Edit EVE User 72
6.3.1.3 User monitoring 73
6.4 EVE SYSTEM DROPDOWN MENU 73
6.4.1 System status 74
6.4.2 System logs 74
6.4.3 Stop All Nodes 75
6.5 EVE INFORMATION DROPDOWN MENU 75
6.6 OTHER TAB LINE INFO 75
6.7 LAB PREVIEW AND GLOBAL SETTINGS 75
6.7.1 Lab preview window 76
6.7.2 Lab preview buttons 76
6.7.3 Lab preview information 76
6.7.4 Lab Global Settings 77
7 EVE WEB TOPOLOGY PAGE 79
7.1 SIDE BAR FUNCTIONS 79
7.1.1 Add an object 80
7.1.1.1 Node object 80
7.1.1.2 Network object 80
7.1.1.3 Picture object 81
7.1.1.4 Custom shape object 81
7.1.1.5 Text object 81
7.1.2 Nodes 82
7.1.3 Networks 83
7.1.4 Startup-configs 84
7.1.5 Logical Maps 84
7.1.6 Configured Objects 84
7.1.7 More actions 85
7.1.7.1 Start all nodes 85

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7.1.7.2 Stop all nodes 85
7.1.7.3 Wipe all nodes 85
7.1.7.4 Console to All Nodes 86
7.1.7.5 Export all CFGs 86
7.1.7.6 Edit lab 86
7.1.7.7 Set node's startup-cfg to default configset 86
7.1.7.8 Set node's startup-cfg to none 87
7.1.7.9 Delete default startup-cfgs 87
7.1.8 Refresh Topology 87
7.1.9 Lab page zoom/unzoom 87
7.1.10 Status 87
7.1.11 Lab details 88
7.1.12 Lock Lab 88
7.1.13 Dark mode or Light mode 88
7.1.14 Close lab 89
7.1.15 Logout 89
7.2 EVE LAB TOPOLOGY MENUS 89
7.2.1 Lab topology menu 89
7.2.2 Connection menu 89
7.2.3 Cloud or Bridge network menu 89
7.2.4 Stopped node menu 90
7.2.5 Running node menu 91
7.2.6 Selected nodes menu and features 91
7.3 EVE LAB NODE STATES AND SYMBOLS 95
7.3.1 Stopped (non-running) nodes 95
7.3.2 Running nodes 95
7.3.3 Node connector symbol 95
7.4 OTHER 96
7.4.1 Notifications area 96

8 WORKING WITH EVE LABS 97

8.1 CREATING A LAB 97
8.1.1 Adding nodes to the lab 97
8.1.1.1 Node values Table 100
8.1.2 Edit node 102
8.1.2.1 Edit nodes globally 103
8.1.2.2 Edit node individually. 103
8.1.3 Wipe Node 104
8.1.4 Interconnecting nodes 104
8.1.5 Delete connection between nodes 105
8.1.6 Delete Node 105
8.2 RUNNING LABS 106
8.2.1 Starting lab 106
8.3 SAVING LABS 106
8.4 STOPPING LABS 106
8.5 START SAVED LAB 107
8.6 IMPORTING LABS 107
8.7 EXPORTING LABS 107
8.8 DELETING LABS 107
8.9 MOVING LABS 107

9 EVE CLOUDS AND NETWORKS 108

9.1 BRIDGE NETWORK 108
9.2 MANAGEMENT CLOUD0 INTERFACE 109
9.3 OTHER CLOUD INTERFACES 111
9.4 CONNECTING EXTERNAL VM MACHINES TO THE EVE LAB 113
9.4.1 ESXi VM machines 113
9.4.2 VMWare workstation machines 115
9.5 CONNECTING EVE LAB TO A PHYSICAL DEVICE 117

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9.5.1 ESXi EVE 117
9.5.2 VMWare workstation EVE 119
9.5.3 Bare metal server EVE 121

10 ADVANCED EVE LAB FEATURES 123

10.1 LAB DESIGN OBJECTS 123
10.1.1 Custom shape 123
10.1.2 Resize square or circle objects 124
10.1.3 Text object 124
10.1.4 Add custom picture on the Lab using Text object feature 125
10.1.5 Cloning objects and overlay positions 126
10.1.6 Objects Editing 126
10.1.7 Lock objects movement 127
10.2 CUSTOM DESIGN LOGICAL TOPOLOGY 127
10.2.1 Custom design upload 127
10.2.2 Custom topology mapping 128
10.2.3 Delete topology or mapping 129
10.3 CONFIGURATION EXPORT FEATURE 130
10.3.1 Supported nodes for configuration exports 131
10.3.2 Startup config management 131
10.3.2.1 Global commands 131
10.3.2.2 Individual node commands 131
10.3.2.3 Multiple selected nodes commands 132
10.3.2.4 Startup-configuration window 132
10.3.2.5 Startup-config window information 133
10.3.3 Export configuration 133
10.3.4 Boot nodes from exported config set 134
10.3.5 Edit exported configurations 134
10.3.6 Set lab to boot from none 135
10.3.7 Lab config script timeout 135

11 EVE TROUBLESHOOTING 137

11.1 CLI DIAGNOSTIC INFORMATION DISPLAY COMMANDS 137
11.1.1 Display full EVE Community diagnostic 137
11.1.2 Display the currently installed EVE Community version: 137
11.1.3 Display if EVEs Intel VT-x/EPT option on/off: 137
11.1.4 Display EVEs CPU INFO: 137
11.1.5 Display EVEs HDD utilization. 137
11.1.6 Display EVEs Bridge interface status 138
11.1.7 Display EVEs system services status 138
11.2 EXPAND EVES SYSTEM HDD 138
11.2.1 Expand HDD on VMware Workstation 138
11.2.2 Expand your HDD on ESXi 139
11.2.3 Expand your HDD on a Bare Metal EVE Server 139
11.3 RESET MANAGEMENT IP 140
11.4 EVE COMMUNITY SQL DATABASE RECOVERY 140
11.5 EVE LOG FILES 140
11.6 EVE CLI DIAGNOSTIC INFO 140

12 IMAGES FOR EVE 141

12.1 QEMU IMAGE NAMING TABLE 141
12.2 HOW TO PREPARE IMAGES FOR EVE 142
12.3 HOW TO ADD CUSTOM IMAGE TEMPLATE 142
12.3.1 Templates folder choice 142
12.3.2 Prepare template file 142
12.3.3 Prepare interface format and name lines 143
12.3.4 Edit your new template file: 144
12.3.5 Prepare new icon for your template: 145

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12.3.6 Template use 146
12.4 HOW TO HIDE UNUSED IMAGES IN THE NODE LIST 146
12.4.1 Creating new config.php file 146
12.4.2 Edit config.php file 146
13 EVE BACKUP SOLUTION 148
13.1 BACKUP MANAGER 148
13.1.1 Backup Manager Installation 148
13.1.2 Setup external SFTP or FTP server 148
13.1.3 Backup Manager SFTP/FTP settings 148
13.2 CREATE AN EVE-NG BACKUP 149
13.2.1 Backup option All 149
13.2.2 Backup option custom selected 150
13.2.3 Backup option with Mirroring selected 150
13.3 RESTORE DATA FROM EVE-NG BACKUP 151
13.3.1 Select restore backup folder 151
13.3.2 Select the items to restore 152
14 EVE RESOURCES 153

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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.

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@chsjuniper

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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.

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2 System requirements

EVE-NG software is available in the ISO file format. The ISO is an open standard for packaging and distributing install media. 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 10, 11 or Linux Desktop
VMware Workstation 16.0 or later
VMware Player 16.0 or later

PC/Laptop HW requirements	
CPU	Intel i7 (8 Logical processors vCPU), Enabled Intel virtualization in BIOS
RAM	8Gb
HDD Space	50Gb
Network	LAN/WLAN
EVE Virtual machine requirements	
CPU	1/8 (Amount of processors/Number of cores per processor) Enabled Virtualize Intel VT-x/EPT or AMD-V/RVI and virtualize IOMMU options
RAM	8Gb or more
HDD	50Gb or more
Network	VMware NAT or Bridged network adapter

Note: Minimal/small 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 30- 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

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2.1.2 Recommended Laptop/PC Desktop system requirements

Prerequisites:

CPU: Intel CPU supporting Intel® VT-x /EPT virtualization
Operation System: Windows 10, 11 or Linux Desktop
VMware Workstation 16.0 or later
VW Ware Player 16.0 or later

PC/Laptop HW requirements	
CPU	Intel i7 (16 Logical processors), Enabled Intel virtualization in BIOS
RAM	32Gb
HDD Space	200Gb
Network	LAN/WLAN
EVE Virtual machine requirements	
CPU	1/16 (Amount of processors/Number of cores per processor) Enabled Virtualize Intel VT-x/EPT or AMD-V/RVI and virtualize IOMMU options
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: VM Ware ESXi 6.7 or later

Server HW requirements	
CPU	Recommended CPU 2x Intel E5-2650v4 (48 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	2/24 (48) (Number of processors/Cores per socket) Set Expose hardware assisted virtualization to the guest OS to ON (checked) and set Expose IOMMU to the guest OS to ON (checked)

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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 metal BM) system requirements

Prerequisites:

CPU: Intel Xeon CPU supporting Intel® VT-x with Extended Page Tables (EPT)
Operation System: Ubuntu Server 22.04 LTS x64

Server HW requirements	
CPU	Recommended CPU Intel E5-2650v4 (48 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://www.eve-ng.net/index.php/download/#CALC

2.2 Supported virtualization platforms and software

- VMware Workstation 16.0 or later
- VMware Player 16.0 or later
- VMware ESXi 6.7 or later
- Ubuntu Server 22.04 LTS as platform for bare metal
- Google Cloud Platform
- AMD CPU based PC or Server (the Newest AMD CPU versions are supported)

2.3 Unsupported hardware and systems

The following are currently not supported officially:

- VirtualBox virtualization
- Citrix XenServer
- Microsoft HyperV

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- Proxmox
- MAC OSX M1, M2, M3 CPU

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3 Installation

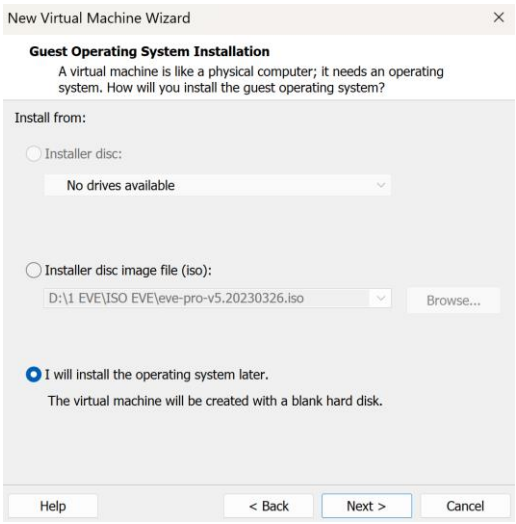
3.1 VMware Workstation or VM Player

3.1.1 VMware Workstation VM installation using ISO Live image

⚠ Mandatory Prerequisites: EVE-CE Live ISO installation on a VM, requires DNS and internet access in order to download EVE-NG software install packages and the latest updates. Make sure that your VM network have working internet and DNS.

Download EVE-NG CE Live ISO distribution image:
https://www.eve-ng.net/index.php/download/

3.1.1.1 EVE VM Setup and Settings

Step 1: Create a New Virtual machine and select Custom, Next. Select your Virtual Machine hardware compatibility (Example 17.5) Following by Next. 	Step 2: Select “I will install the operating system later” 

Step 3: Select a Guest Operating system: Linux and select the version: **Ubuntu 64-bit**	Step 4: Enter the name for your EVE-NG-CE VM and select Location where your EVE VM will be stored on the host PC.

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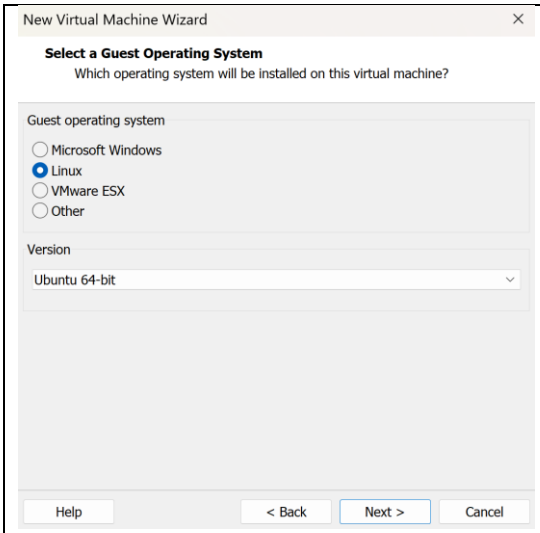
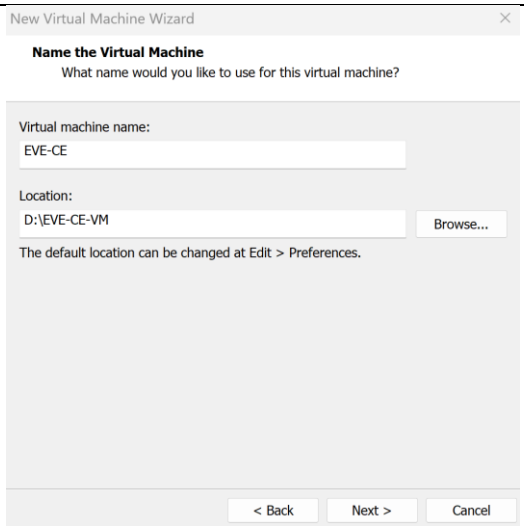
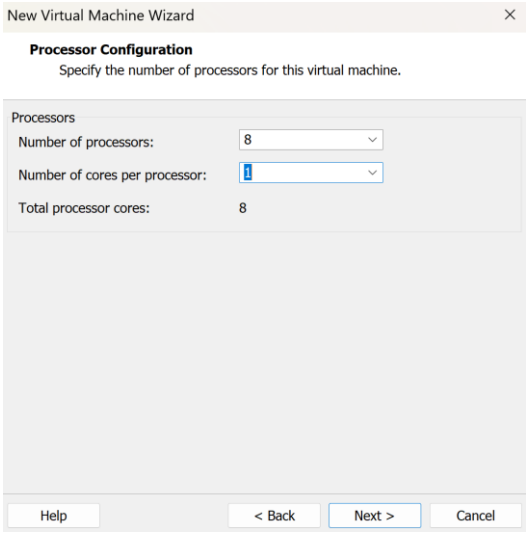
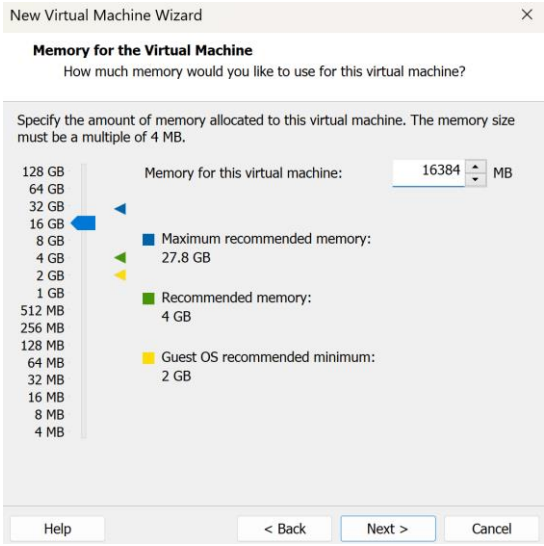




Step 5: Select Number of processors, maximum what your PC supports and set Number of cores per processor as =1.



Step 6: Assign desirable memory



Step 7a: Select your desirable Network Adapter. **For 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

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

NOTE: Desktop PC EVE management interface can be either NAT or Bridged to

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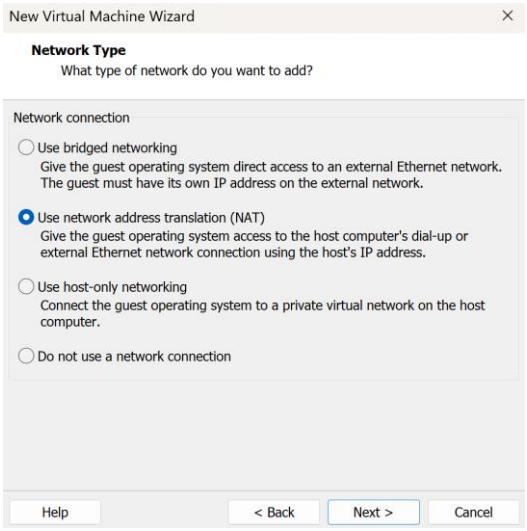
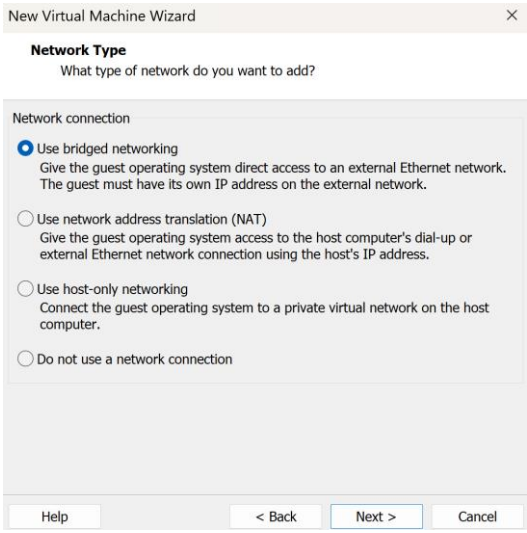
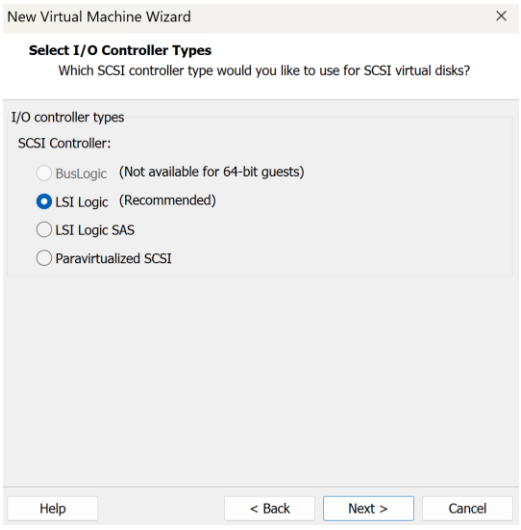
connected to a different SSID. Internet and DNS reachability is a MUST



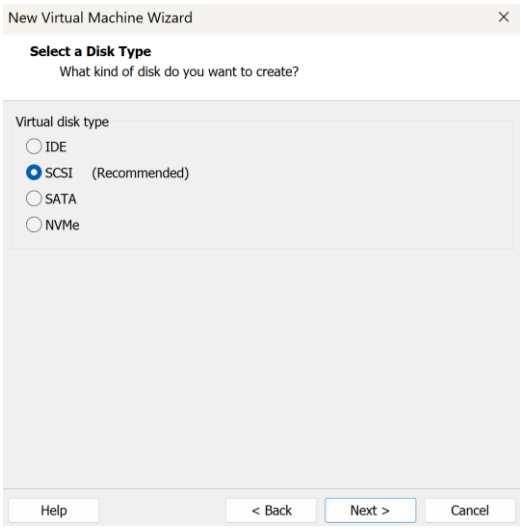
home LAN subnet. Internet and DNS reachability is a MUST.



Step 8: Leave I/O controller Type as recommended (LSI Logic).



Step 9: Leave recommended Disk Type: SCSI



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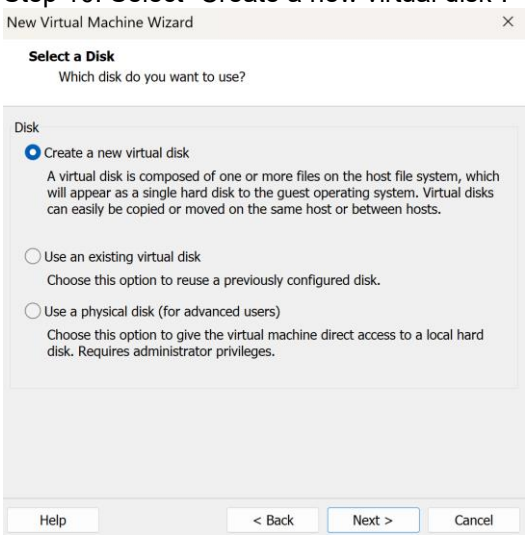
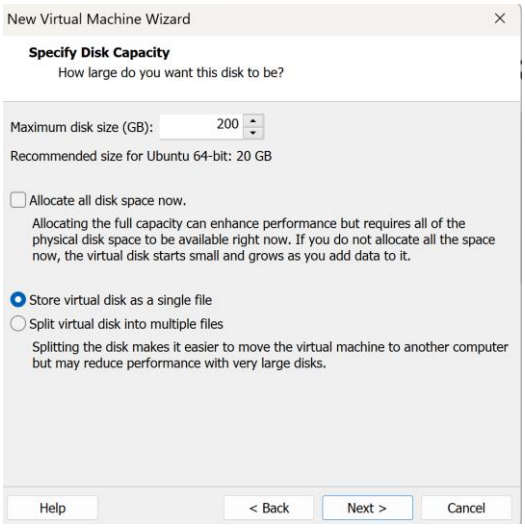
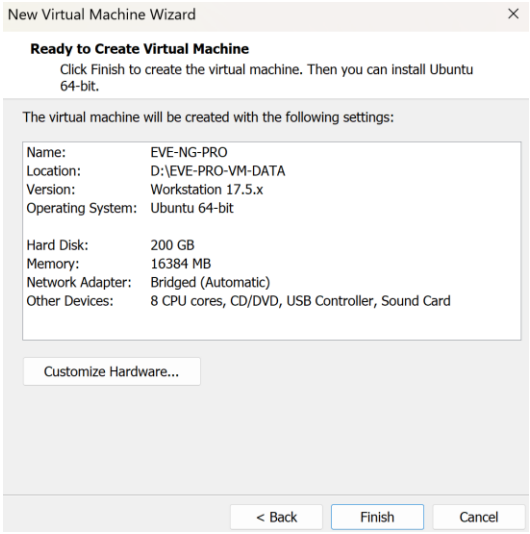
Step 10: Select “Create a new virtual disk”.



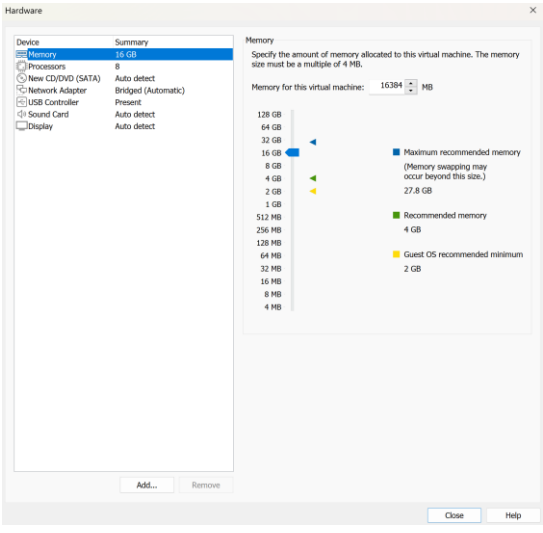
Step 11: Type your **desirable** HDD size and select “Store virtual disk as single file”. It is recommended to set not less than 200GB HDD. Click Next, 2 times.

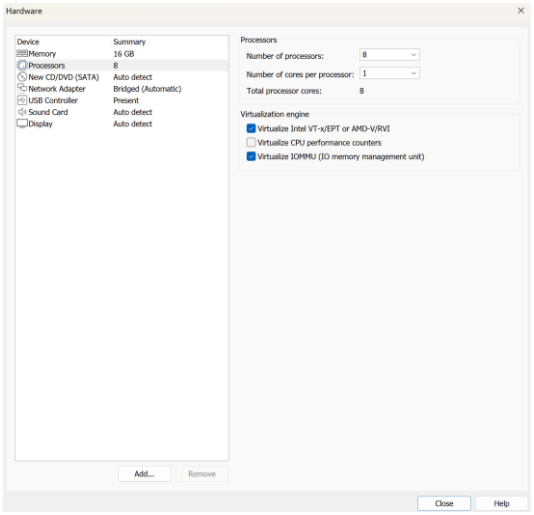
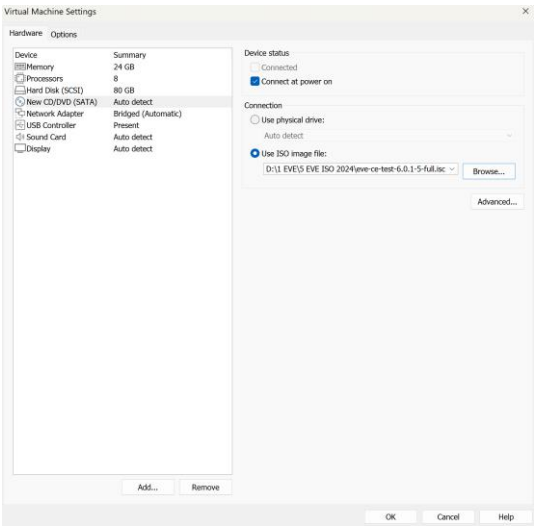


Step 12: IMPORTANT Press Customize Hardware



Step 13: Assign desirable memory



Step 14: IMPORTANT Set Processors “Number of processors” and “Number of cores per processor”. ***Set Virtualize Intel VT-x/EPT or AMD-V/RVI to ON (checked) and set Virtualize IOMMU (checked)*** NOTE: VMware Player will display only one CPU option: Number of processors. 	Step 15: Select CD/DVD Option: “use ISO image file.” Browse to your downloaded EVE-NG CE.iso (actual name will be different) 

Step 16: Confirm VM Settings.

3.1.1.2 EVE-NG VM Installation steps

⚠ Mandatory Prerequisites: EVE-CE Live ISO installation on a VM requires DNS and internet access in order to download EVE packages and the latest updates.

EVE VM Installation from ISO has 3 Phases

Phase 1 (Ubuntu installation)

Step 1: Power ON EVE VM. Chose “Install EVE NG Community” and confirm with Enter.	Step 2: Make sure that English is selected and confirm with Enter.

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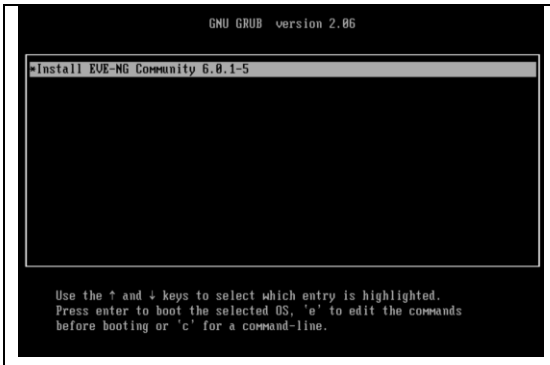
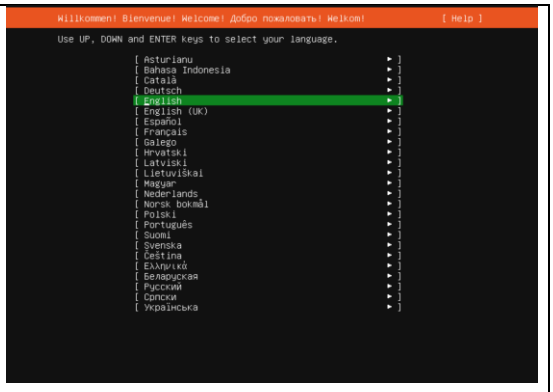
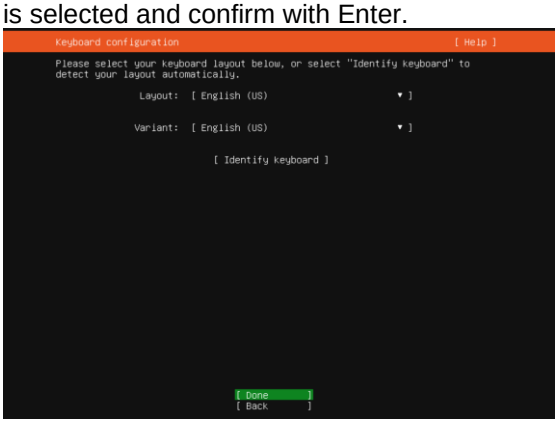




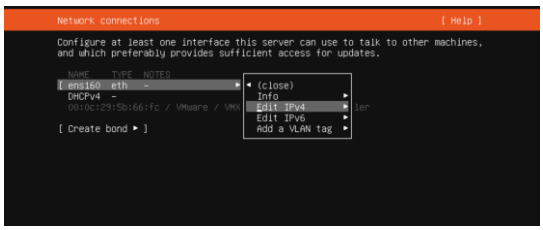
Step 3: Make sure that English US Keyboard is selected and confirm with Enter.



Step 4: If your network has **DHCP ENABLED**, Continue to **Step 10**

Step 5: If your network has not **DHCP.** Static IP setup. If you have not enabled DHCP in the network, you must assign an IP address manually. Use arrow UP key to select your interface for IP

Step 6: Confirm interface selection with Enter, select “Edit IPv4” and confirm with Enter again.



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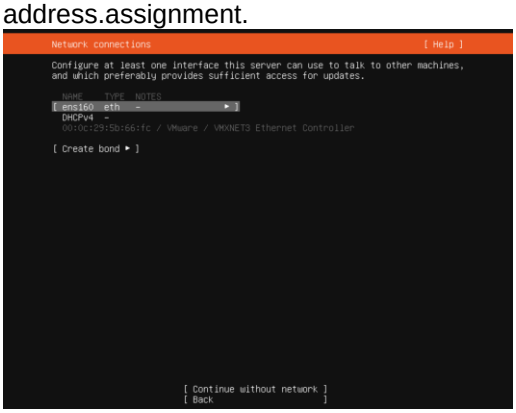
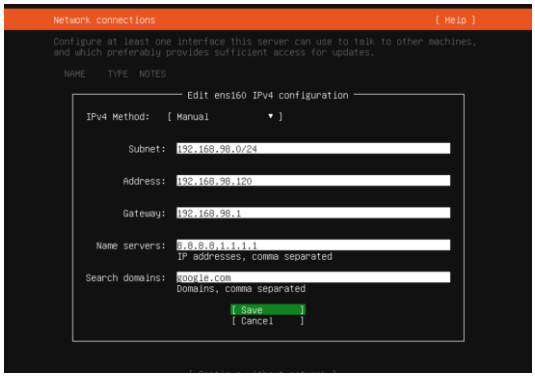
address.assignment.

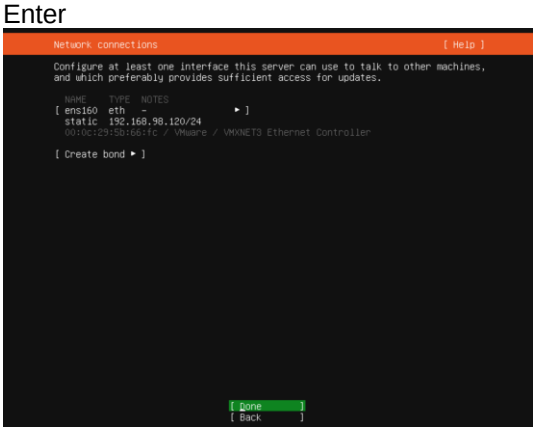


Step 7: Hit Enter on IPv4 Method and select “Manual”, confirm with Enter.

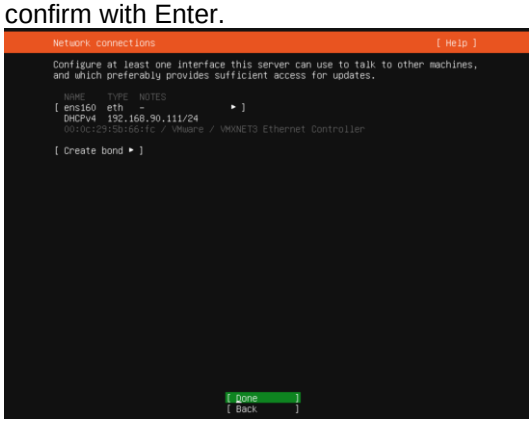
Step 8: Enter your “Subnet”, “IP Address”, “Gateway IP”, “Domain server IPs” and “Search domain”. Select “Save” and confirm with Enter. NOTE, it is very important that your DNS (Name servers) will resolve Internet names.



Step 9: Select “Done” and confirm with Enter



Step 10: Now, when your Static or DHCP IP settings are correct, select Done and confirm with Enter.



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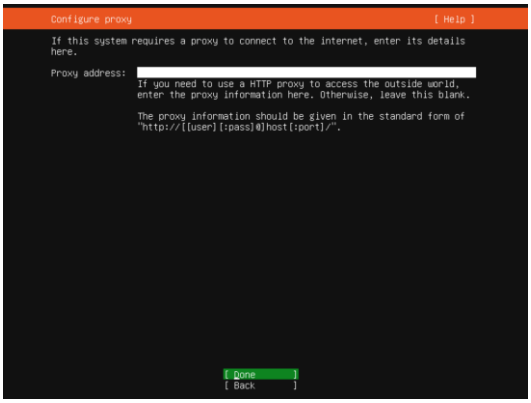
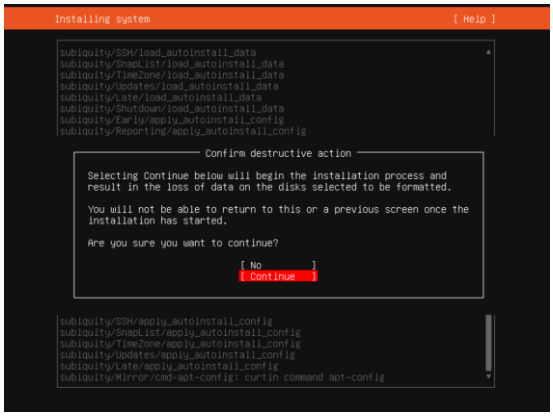
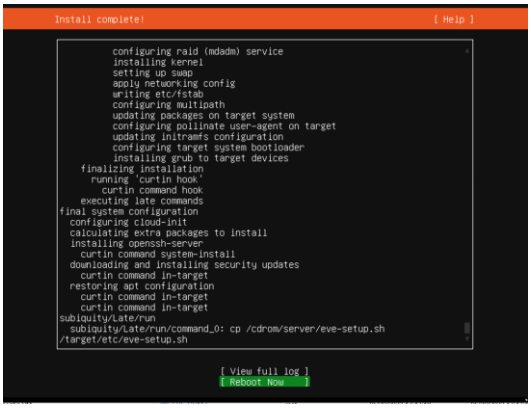
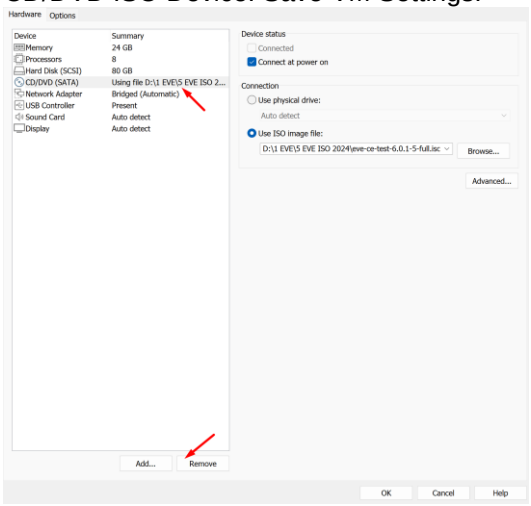
Step 11: If you have proxy in use for your internet, assign your network proxy settings. If no proxy in use, with Tab key select Continue and confirm with Enter. 	Step 12: Select “Continue” and confirm with Enter. 

EVE VM Installation Phase 2 (EVE-NG installation)

Step 13: Please wait till updates download completes and after the Ubuntu “Install Completed” select “Reboot Now” and hit Enter to continue. 	Step 14: Without powering off the EVE VM, open the EVE VM settings and remove CD/DVD ISO Device. Save VM Settings. 

Step 15: Return back to EVE console screen and confirm Continue with Enter, EVE VM will reboot and continue Phase 2	Step 16: Please wait, the EVE-NG installation **Phase 2** will start automatically. Depending on your internet speed EVE installation will take some time. After installation EVE VM will auto reboot and EVE login screen will appear, login in CLI with root/eve and follow

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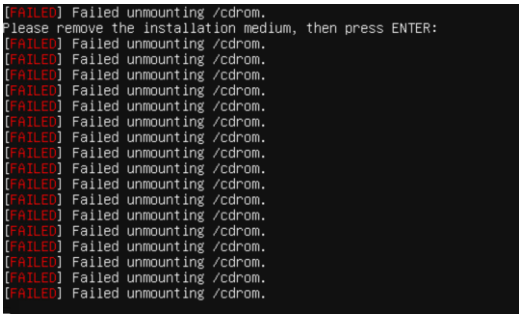
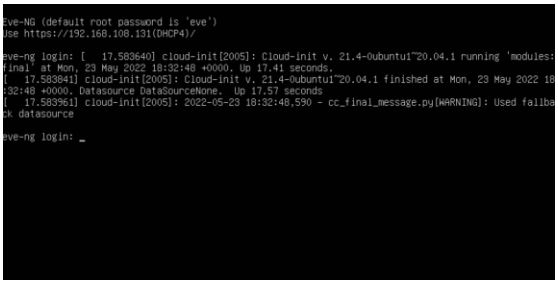
installation	installation Phase 3
	

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

Step 17: 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 18: After your EVE is rebooted,
	
	Login to EVE CLI and type:
	
	`apt update`
	`apt upgrade`

NOTE: Verify your EVE-NG server installation, type "`dpkg -l eve-ng`" command, it must display latest EVE CE version

```
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      6.0.1-XX       amd64         A new generation software
for networking labs.
root@eve-ng:~#
```

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

3.2 VMware ESXi

3.2.1 VMware ESXi EVE VM installation using ISO Live image

⚠ Mandatory Prerequisites: EVE-CE Live ISO installation on a VM, requires DNS and internet access in order to download EVE-CE software install packages and the latest updates. Make sure that your VM network have working internet and DNS.

⚠ IMPORTANT NOTE**:** Make sure that you have set Security Policy (Promiscuous mode, forged transmits and MAC changes) settings on the vSwitch and Port group to Accept.

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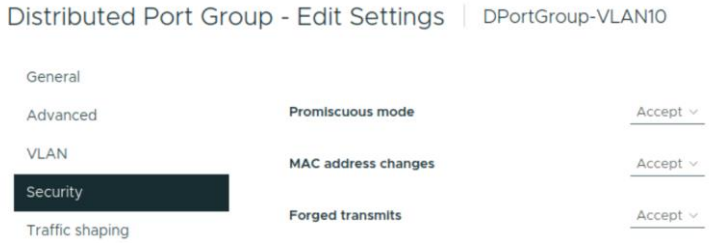
⚠ IMPORTANT NOTE**:** For EVE VMs running on ESXi, with NIC Teaming Network, please follow the steps below to edit the reverse path settings

- From the Navigator window select **Manage > System > Advanced settings**.
- Scroll down or use the search bar to go to the ***Net.ReversePathFwdCheckPromisc*** option.
- Select ***Net.ReversePathFwdCheckPromisc*** and click Edit option.
- In the Edit option - ***Net.ReversePathFwdCheckPromisc*** window update the New value field to 1 and click Save.

⚠ IMPORTANT NOTE**:** For EVE VMs running on ESXi, with NIC Teaming Network, managed by *vCenter and VDS Network* please follow the steps below to edit the reverse path settings

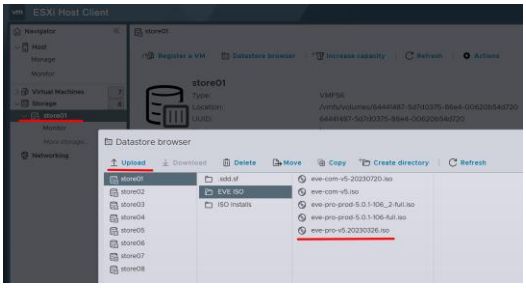
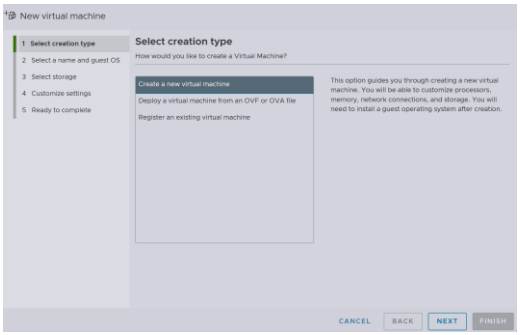
- From the Side Inventory select the ESXi host where the EVE VM is installed **Configure > System > Advanced System Settings**.
- Edit Advanced System Setting
- Scroll down to find ***Net.ReversePathFwdCheckPromisc*** option.

- In the Edit option - ***Net.ReversePathFwdCheckPromisc*** window update the New value field to 1 and click Save.
- Reboot ESXi host
- Select the VDS Workgroup used for EVE VM networking
- Edit VDS Workgroup security setting to allow promiscuous traffic

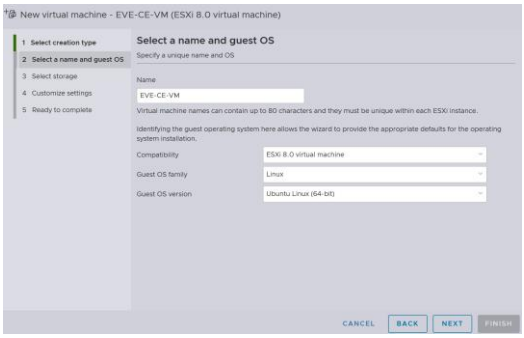


Download EVE-NG CE ISO distribution image:
https://www.eve-ng.net/index.php/download/

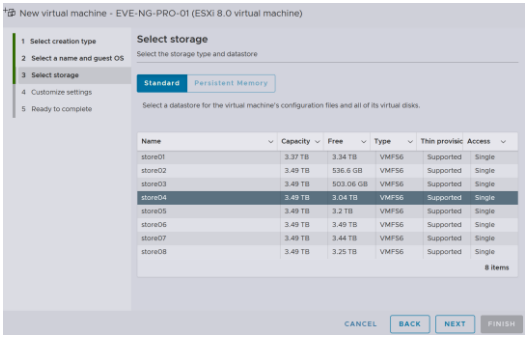
3.2.1.1 EVE-NG ESXi VM Setup and Settings

Step 1: Upload EVE Live ISO image to the ESXi store.	Step 2: Create NEW VM
	

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



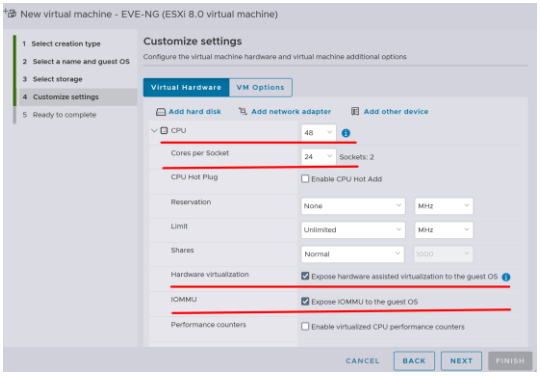
Step 4: Select Location where your EVE VM will be stored in HDD.



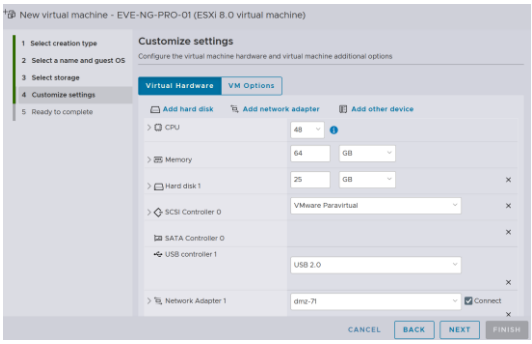
Step 5: ⚠ IMPORTANT OPTION for ESXi 6.7.x or later.

Set Processors “Number of processors” and Set “Cores per Socket”. If your server has dual CPU, then Cores per socket will be divided by 2. Example below, shows dual CPU Server VM setup with 48 CPU with 24 cores per socket (2).

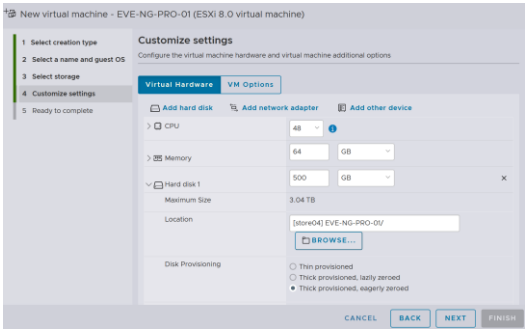
Set Expose hardware assisted virtualization to the guest OS to ON (checked) and set Expose IOMMU to the guest OS to ON (checked)



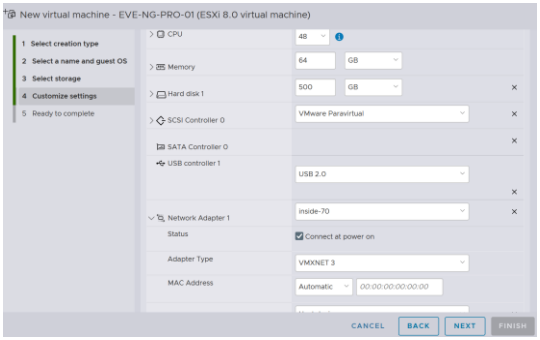
Step 6: Assig desirable RAM for your EVE



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

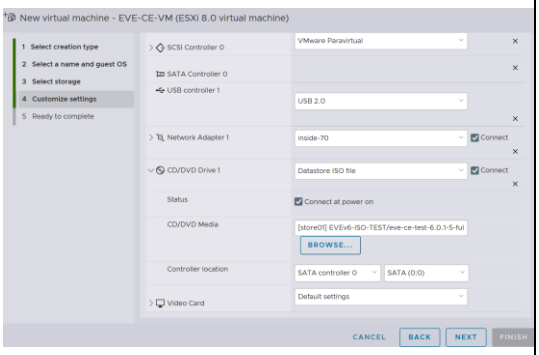


Step 8: Set your Management network. Adapter type VMXNET3



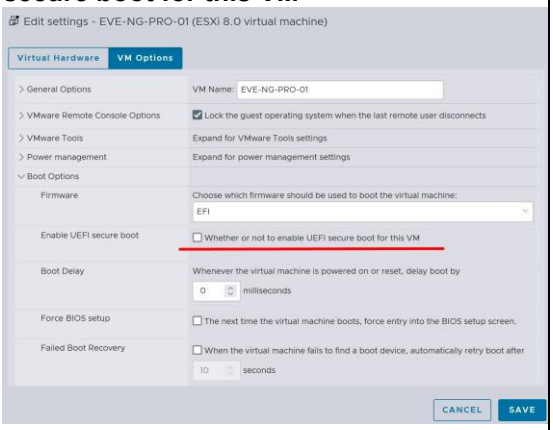
NOTE: Additional Network Adapters can be added for further use.

Step 9: Set DVD drive to “Datastore ISO File” and browse your uploaded EVE-CE.iso (ISO name can vary). Make sure that Status is checked ON, “Connect at power on” and hit “Finish”



Step 11: IMPORTANT ESXi 8.0 and later
Select the Edit your VM and switch to “VM Options”. Firmware *EFI Boot.*

Follow to “Boot Options” and **de-select (uncheck) “Whether or not to enable UEFI secure boot for this VM”**



Step 12: Start VM

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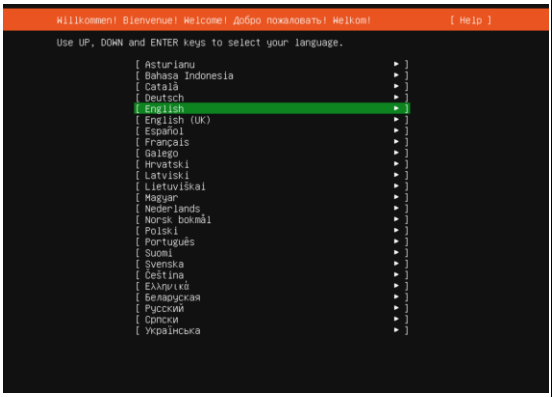
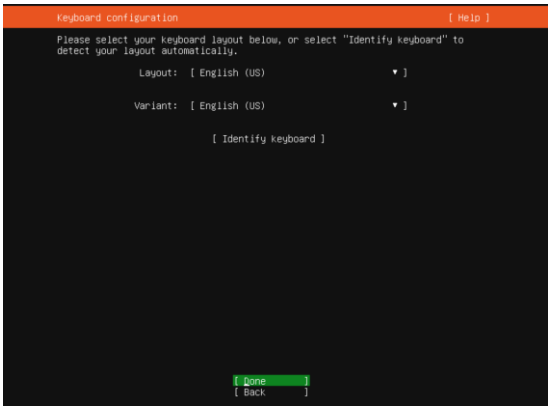
3.2.1.2 EVE-NG ESXi VM Installation steps

⚠ 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-CE version from the EVE-NG repository. DNS must work as well, to check it, do a named ping, for example ping www.google.com

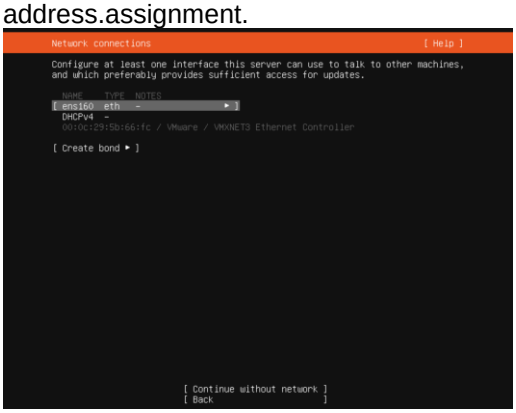
EVE ESXi VM Installation from ISO has 3 Phases

Phase 1 (Ubuntu installation)

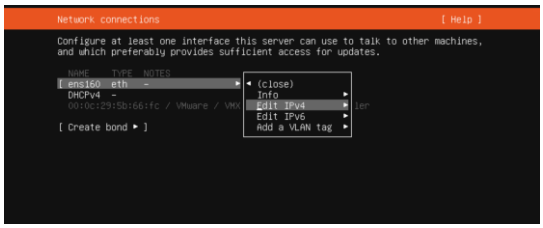
Step 1: Power ON EVE VM. Chose Install EVE-NG Community and confirm with Enter. 	Step 2: Select English language. Confirm with Enter. 

Step 3: Make sure if English US keyboard is selected and confirm with Enter. 	Step 4: If your network has **DHCP ENABLED**, Continue to **Step 10**

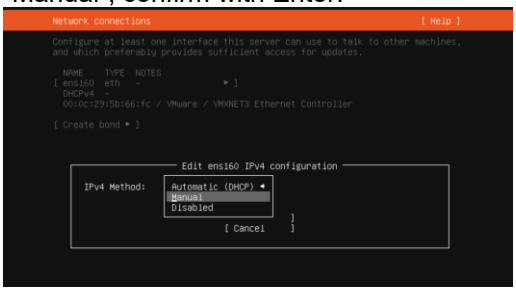
Step 5: If your network has not **DHCP.** Static IP setup. If you have not enabled DHCP in the network, you must assign an IP address manually. Use arrow UP key to select your interface for IP address.assignment.



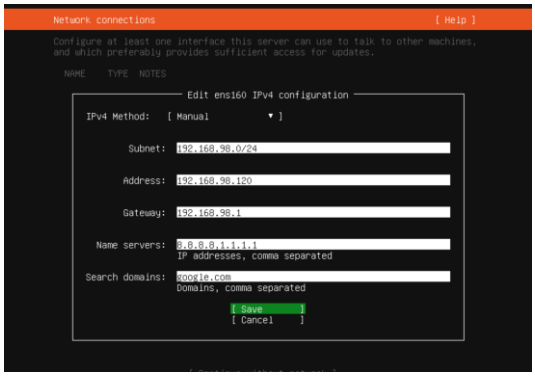
Step 6: Confirm interface selection with Enter, select “Edit IPv4” and confirm with Enter again.



Step 7: Hit Enter on IPv4 Method and select “Manual”, confirm with Enter.



Step 8: Enter your “Subnet”, “IP Address”, “Gateway IP”, “Domain server IPs” and “Search domain”. Select “Save” and confirm with Enter. NOTE, it is very important that your DNS (Name servers) will resolve Internet names.



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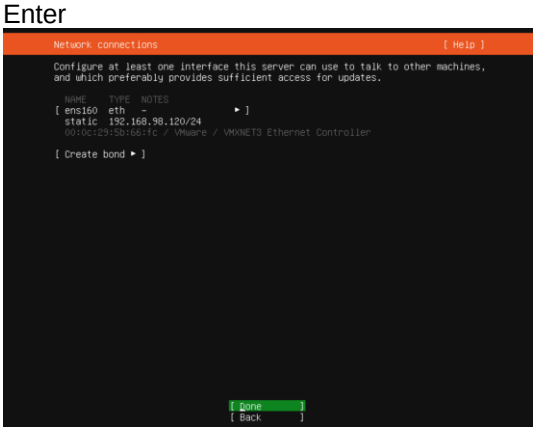
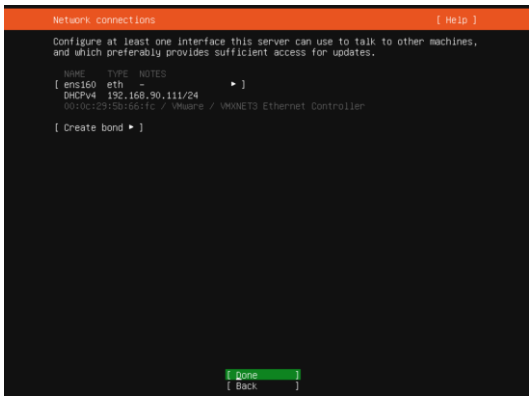
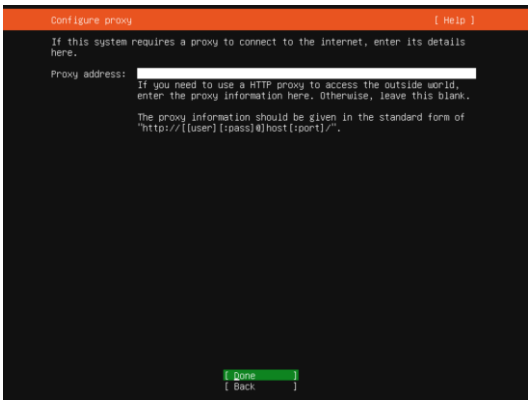
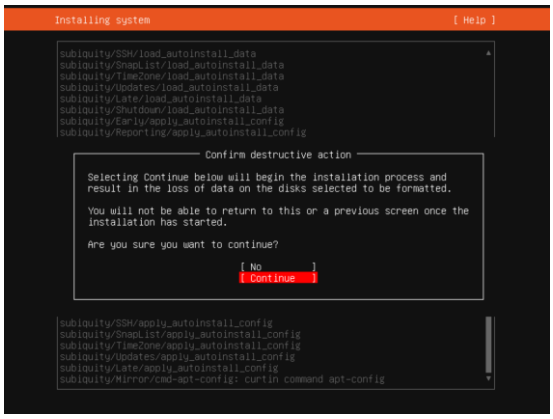
Step 9: Select “Done” and confirm with Enter 	Step 10: If your DHCP IP settings are correct, select Done and confirm with Enter. 

Step 11: If you have proxy in use for your internet, assign your network proxy settings. If no proxy in use, with Tab key select Continue and confirm with Enter. 	Step 12: Select “Continue” and confirm with Enter. 

EVE VM Installation Phase 2 (EVE installation)

Step 13: After the Ubuntu “Install Complete” select “Reboot Now” and hit Enter to	Step 14: Without powering off the EVE VM, open the EVE VM settings and remove CD/DVD ISO Device. Save VM Settings.

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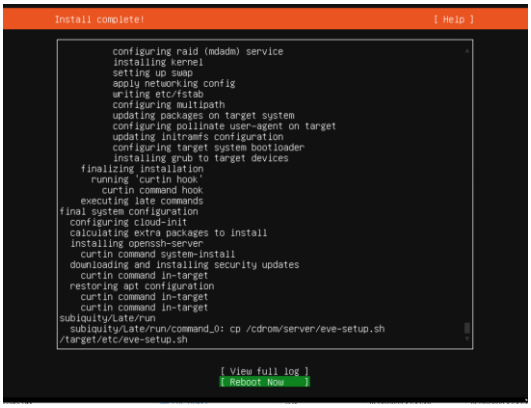
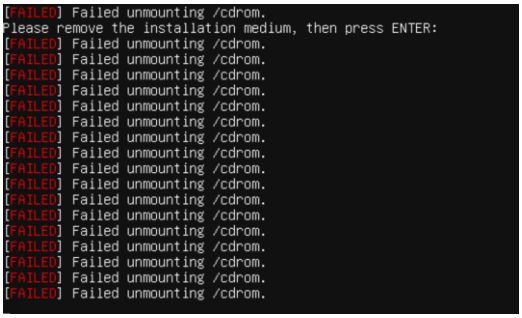
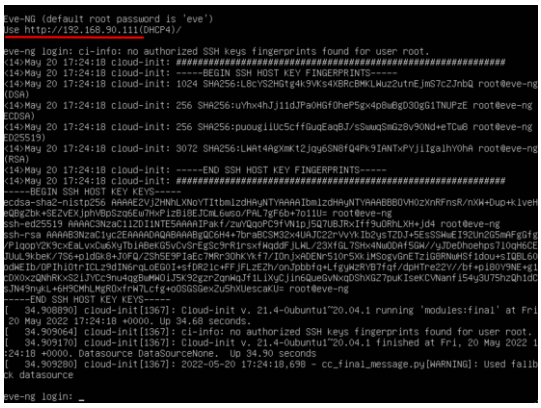
continue.



Step 15: Return back to EVE console screen and confirm Continue with Enter, EVE VM will reboot and continue Phase 2 installation



Step 16: Depending on your internet speed EVE installation will take some time. After installation EVE VM will auto reboot and EVE login screen will appear, login in CLI with root/eve and follow installation Phase 3



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

Step 17: 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 18: After your EVE is rebooted,

Login to EVE CLI and type:

```
apt update
apt upgrade
```

Step 19: On the EVE CLI prompt, reboot EVE by typing `reboot`	

NOTE: Verify your EVE-NG server installation, type “dpkg -l eve-ng” command, it must display latest EVE CE version (please note that version of EVE-CE will be newest)

```
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                   6.0.1-XX           amd64              A new
generation software for networking labs.
root@eve-ng:~#root@eve-sat01:~#
```

NOTE: If your newly installed EVE-CE shows nothing like above, you must check your internet reachability and verify DNS configuration on your EVE-CE server.

```
root@eve-ng:~# ping www.google.com
PING www.google.com (172.217.22.164) 56(84) bytes of data.
64 bytes from arn09s11-in-f164.1e100.net (172.217.22.164): icmp_seq=1
ttl=120 time=8.84 ms
64 bytes from arn09s11-in-f164.1e100.net (172.217.22.164): icmp_seq=2
ttl=120 time=8.84 ms
^C
--- www.google.com ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 8.848/8.848/8.849/0.094 ms
root@eve-ng
```

Launch EVE-CE installation manually

```
root@eve-ng:~# cd /etc
root@eve-ng:~# ./eve-setup.sh
```

NOTE: If you are installing EVE in the locked environment and cannot install dockers online, please contact with us: info@eve-ng.net for offline dockers installation option.

Or download FULL INSTALL ISO including the Dockers.

https://www.eve-ng.net/index.php/download/

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

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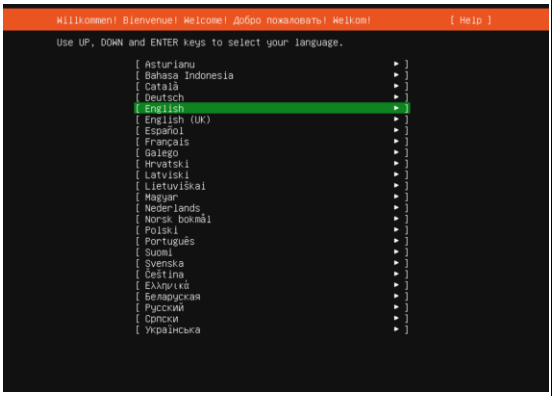
3.3 Bare hardware (BM) server installation

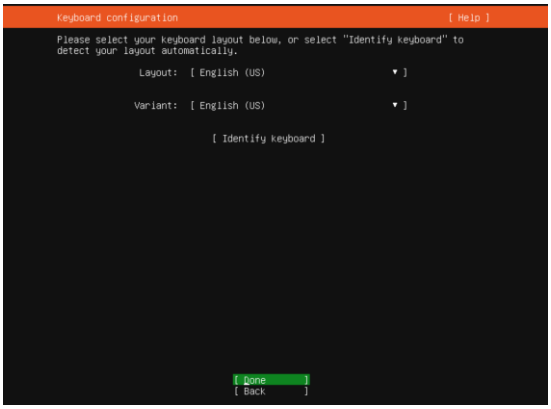
3.3.1 BM Server installation EVE Live ISO

⚠ Mandatory Prerequisites: EVE-CE Live ISO installation on bare metal, requires DNS and internet access in order to download EVE CE software install packages and the latest updates. Make sure, that your bare metal VM network have working internet and DNS.

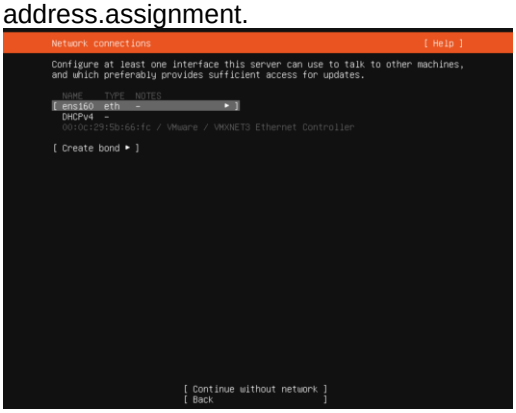
Download EVE CE ISO
https://www.eve-ng.net/index.php/download/

Phase 1 (Ubuntu installation)

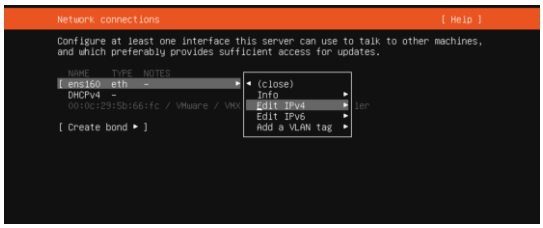
Step 1: Create a bootable DVD disk or USB flash drive with an EVE ISO image. Boot your server from ISO. Chose Install EVE CE and confirm with Enter. 	Step 2: Select English language. Confirm with Enter. 

Step 3: Make sure if English US keyboard is selected and confirm with Enter. 	Step 4: If your network has **DHCP ENABLED**, Continue to **Step 10**

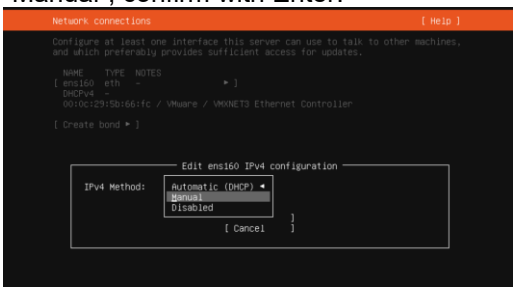
Step 5: If your network has not **DHCP.** Static IP setup. If you have not enabled DHCP in the network, you must assign an IP address manually. Use arrow UP key to select your interface for IP address.assignment.



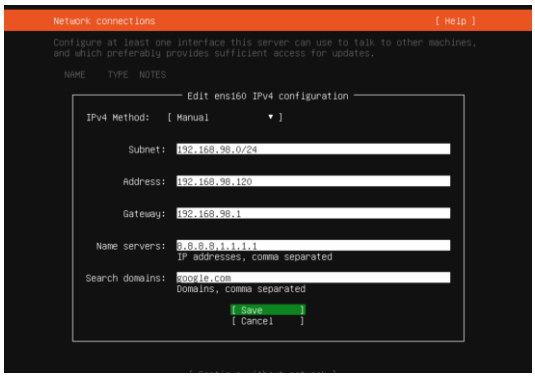
Step 6: Confirm interface selection with Enter, select “Edit IPv4” and confirm with Enter again.



Step 7: Hit Enter on IPv4 Method and select “Manual”, confirm with Enter.



Step 8: Enter your “Subnet”, “IP Address”, “Gateway IP”, “Domain server IPs” and “Search domain”. Select “Save” and confirm with Enter. NOTE, it is very important that your DNS (Name servers) will resolve Internet names.



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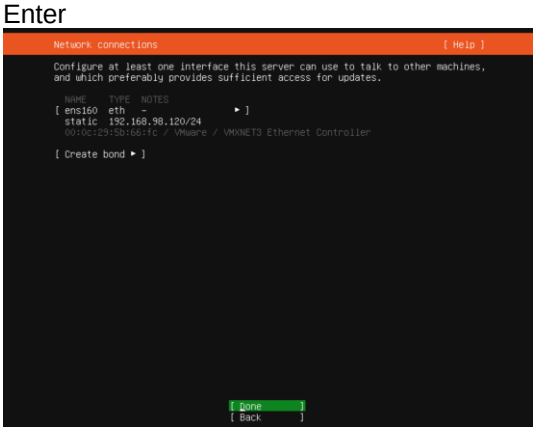
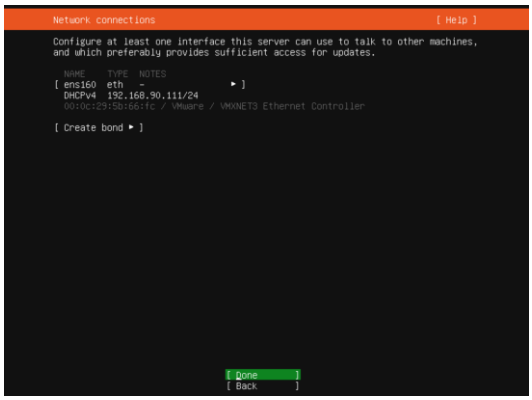
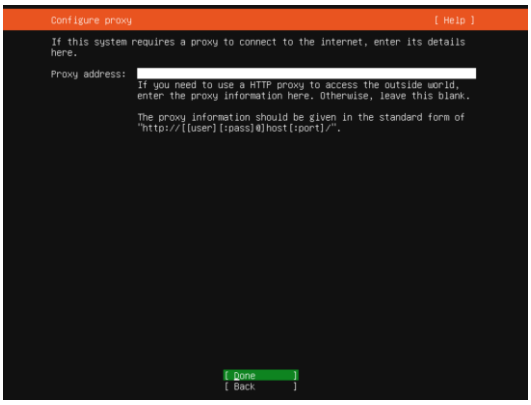
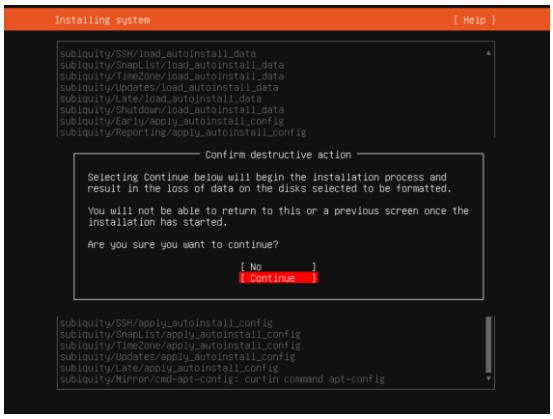
Step 9: Select “Done” and confirm with Enter	Step 10: If your DHCP IP settings are correct, select Done and confirm with Enter.
	

Step 11: If you have proxy in use for your internet, assign your network proxy settings. If no proxy in use, with Tab key select Continue and confirm with Enter.	Step 12: Select “Continue” and confirm with Enter.
	

EVE VM Installation Phase 2 (EVE installation)

Step 13: After the Ubuntu “Install Complete” select “Reboot Now” and hit Enter to	Step 14: Remove CD/DVD ISO Media.

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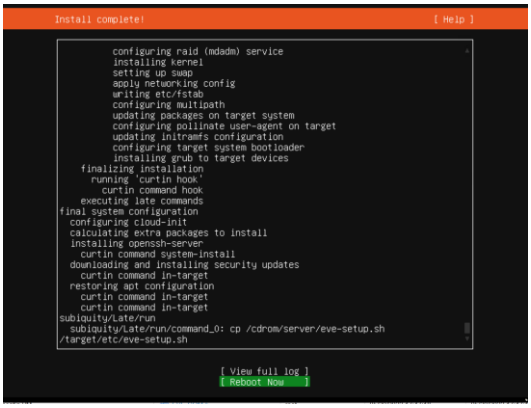
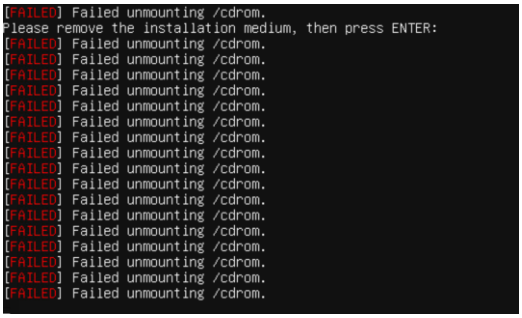
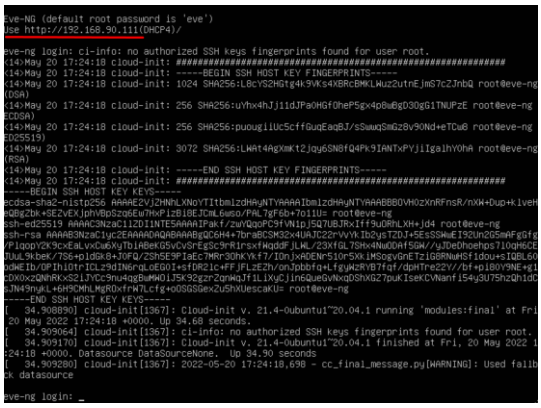
continue.



Step 15: Return back to EVE console screen and confirm Continue with Enter, EVE VM will reboot and continue Phase 2 installation



Step 16: Depending on your internet speed EVE installation will take some time. After installation EVE VM will auto reboot and EVE login screen will appear, login in CLI with root/eve and follow installation Phase 3



EVE Installation Phase 3 (Management IP setup and updates)

Step 17: After the installation is completed, **reboot EVE** and login as root first time: root/eve. 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.

Step 18: After your EVE is rebooted,

Login to EVE CLI and type:

```
apt update
apt upgrade
```

Verification: Verify your EVE-NG server installation, type “dpkg -l eve-ng” command, it must display latest EVE CE version

```
root@eve-ng:~# dpkg -l eve-ng
```

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```
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                          6.0.1-XX                amd64                  A new
generation software for networking labs.
root@eve-ng:~#
```

⚠ IMPORTANT NOTE: If your Network interfaces order has been changed, please follow instruction to section **12**

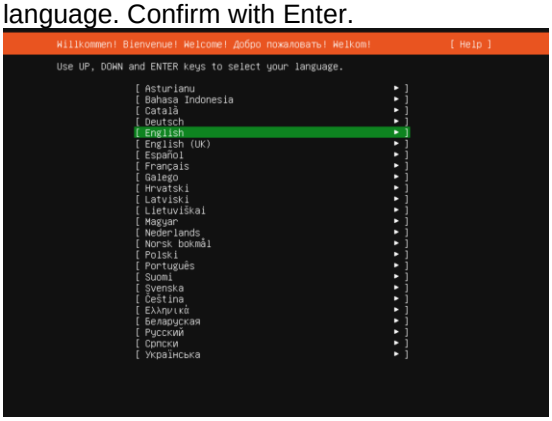
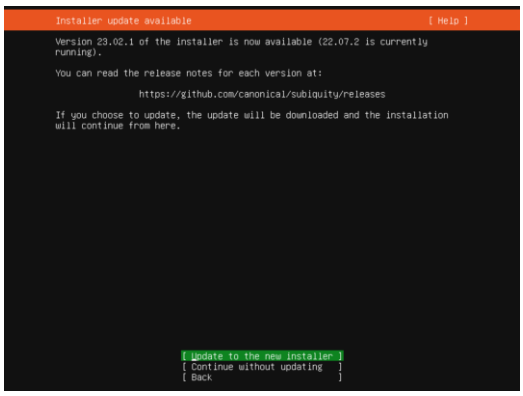
⚠ IMPORTANT NOTE: You must prepare and upload at least a couple of images to start building your labs. Refer to section Error! Reference source not found.

3.3.2 BM Server Installation Ubuntu legacy ISO

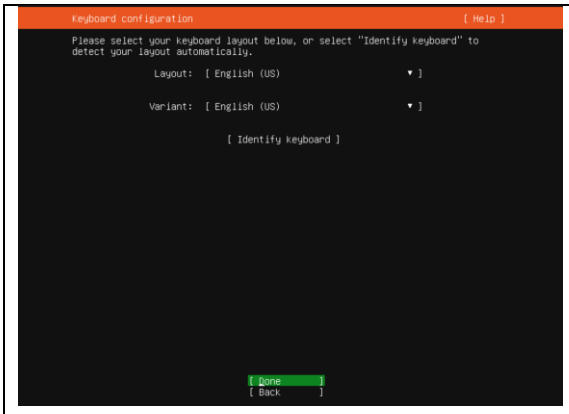
⚠ Mandatory Prerequisites: Internet must be reachable from your Server. This ISO installation requires internet access to get updates and install the latest EVE-CE version from the EVE-NG repository. DNS must resolve names!

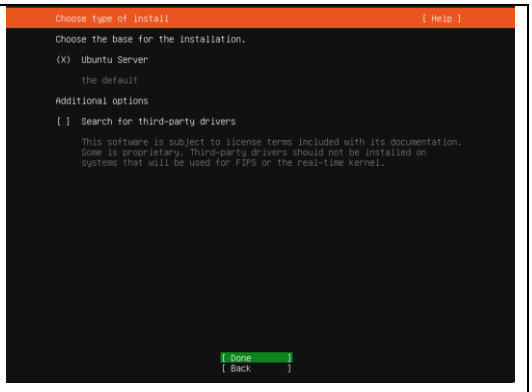
Download Ubuntu Legacy Server installation image/ISO
https://releases.ubuntu.com/jammy/

Phase 1 (Ubuntu installation)

Step 1: Create a bootable DVD disk or USB flash drive with an Ubuntu server image. Boot your server from ISO. Select English language. Confirm with Enter. 	Step 2: Select Option Update to the new installer, following by Enter. 

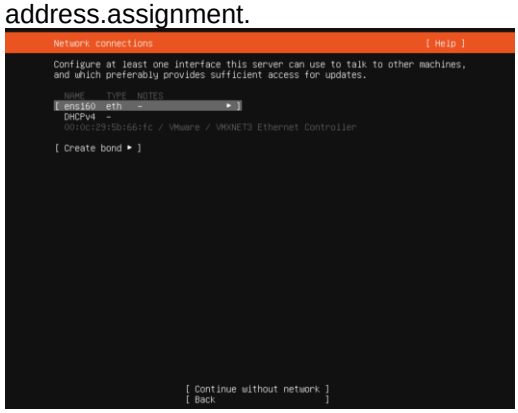
Step 3: Make sure if English US keyboard is selected and confirm with Done/Enter.	Step 4: Select Option Ubuntu Server [X], following by Done/Enter.



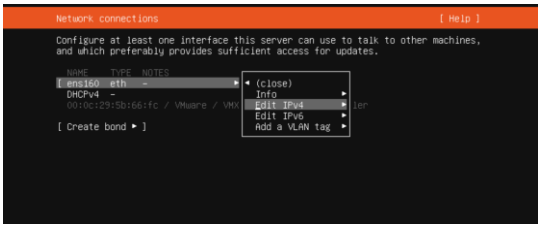


Step 5: If your network has **DHCP ENABLED**, Continue to **Step 11**

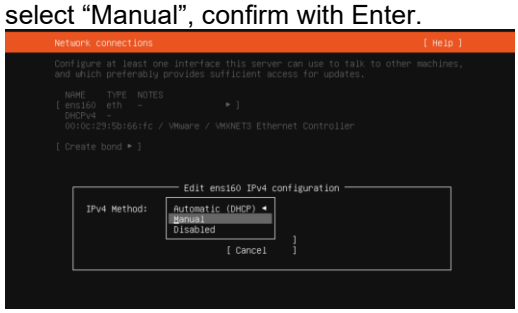
Step 6: If your network has not **DHCP.** Static IP setup. If you have not enabled DHCP in the network, you must assign an IP address manually. Use arrow UP key to select your interface for IP address.assignment.



Step 7: Confirm interface selection with Enter, select “Edit IPv4” and confirm with Enter again.



Step 8: Hit Enter on IPv4 Method and select “Manual”, confirm with Enter.



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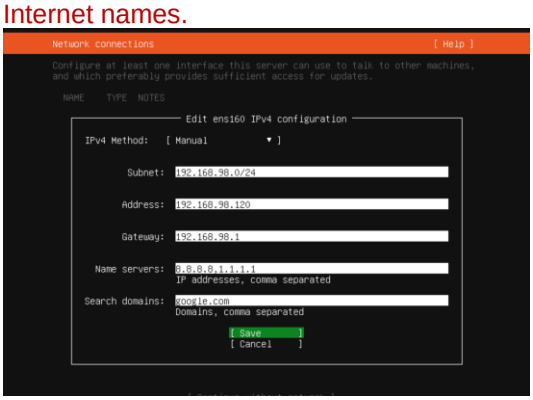
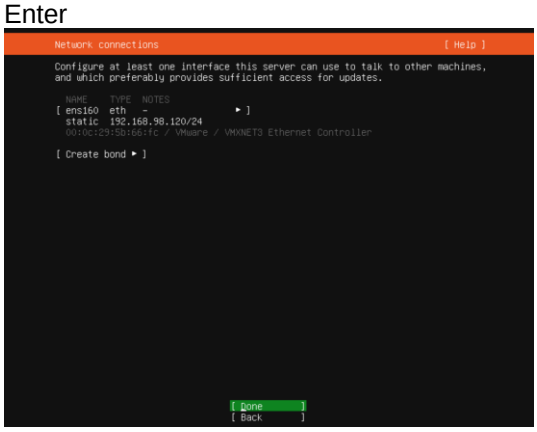
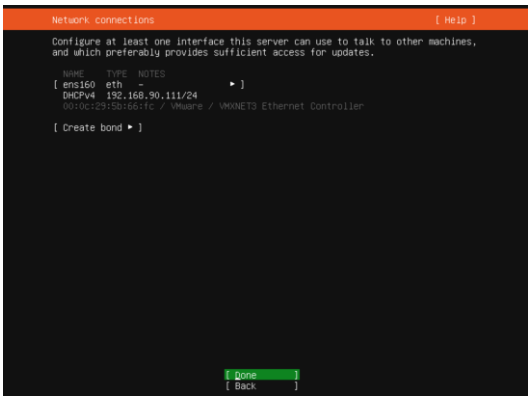
Step 9: Enter your “Subnet”, “IP Address”, “Gateway IP”, “Domain server IPs” and “Search domain”. Select “Save” and confirm with Enter. NOTE, it is very important that your DNS (Name servers) will resolve Internet names.



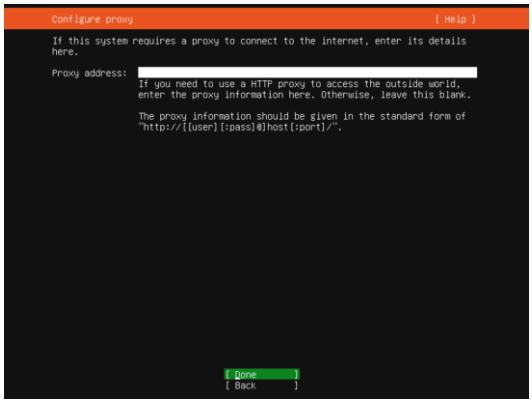
Step 10: Select “Done” and confirm with Enter



Step 11: If your DHCP IP settings are correct, select Done and confirm with Enter.



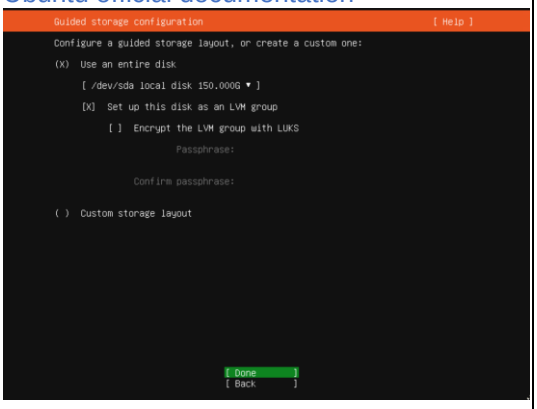
Step 12: If you have proxy in use for your internet, assign your network proxy settings. If no proxy in use, with Tab key select Continue and confirm with Enter.

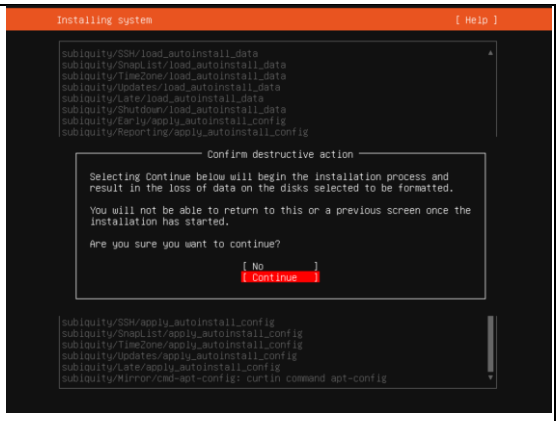


Step 13: Select [X] “Use an entire disk” and [X] Set up this disk as and LVM group confirm with Enter. For advnaced (multi hdd as single LVM) setup it can be Custom storage option selected. For Custom storage selection, please refer to the

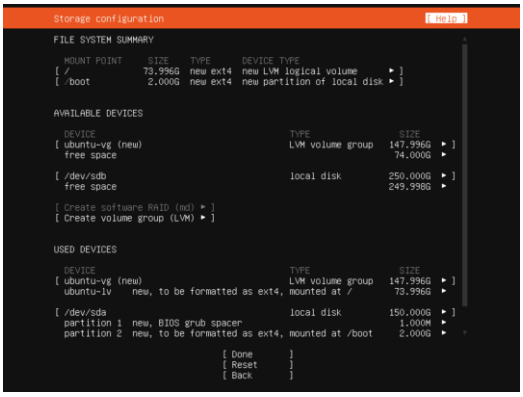
Step 14: Select “Continue” and confirm with Enter.

Ubuntu official documentation

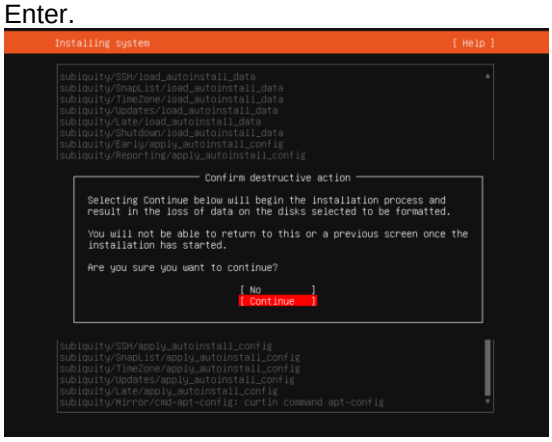




Step 15: Confirm your HDD configuration Done/Enter

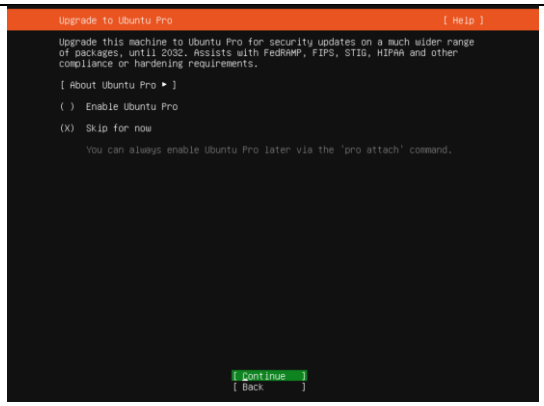
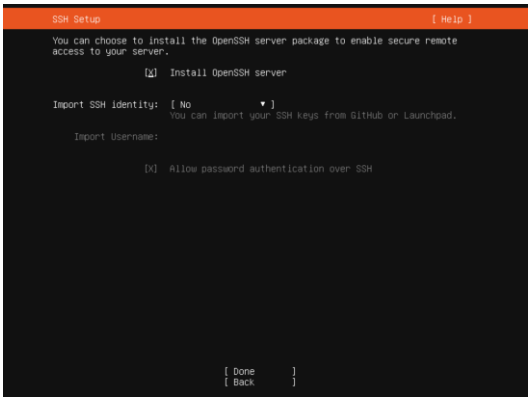
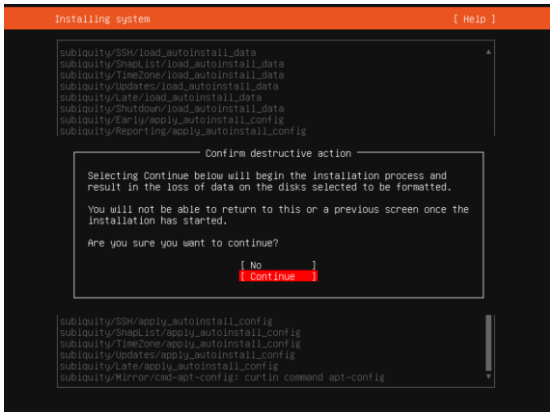
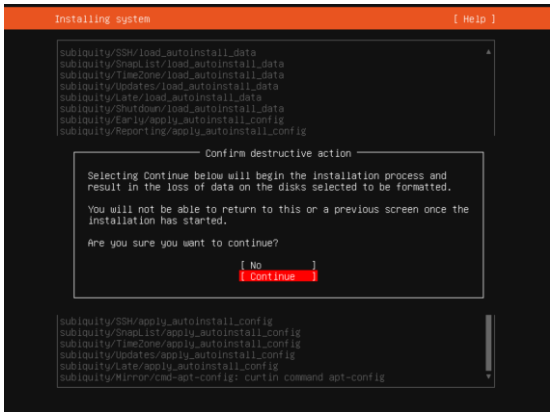


Step 16: Select “Continue” and confirm with Enter.



Step 17: Fill the *non-root user* profile following by Done/Enter

Step 18: Skip Ubuntu Pro installation Continue confirm with Enter.

	
Step 19: Select [X] “Install OpenSSH Server” and confirm Done/Enter. 	Step 20: Select “Continue” and confirm with Enter. 
Step 21: DO NOT Select any other services confirm Done/Enter. 	Step 22: Select “Continue” and confirm with Enter. 

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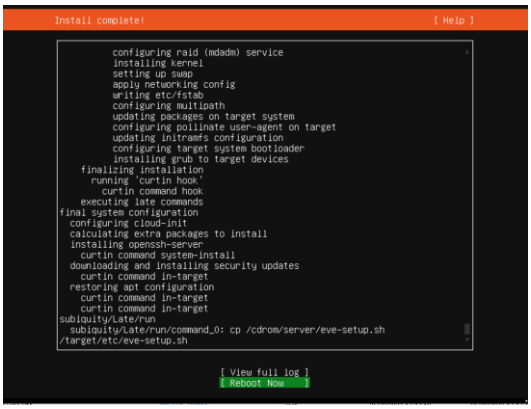
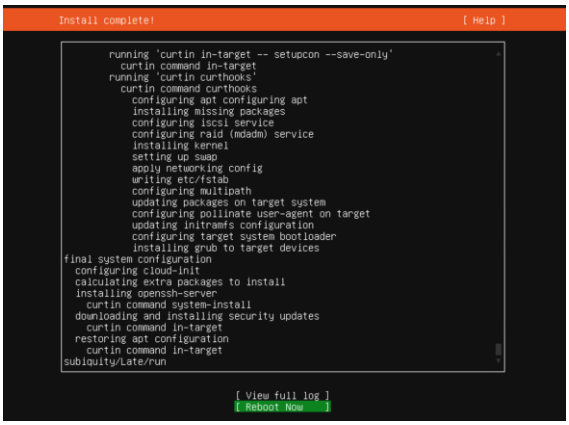
Step 23: After the Ubuntu “Install Complete” select “Reboot Now” and hit Enter to continue.



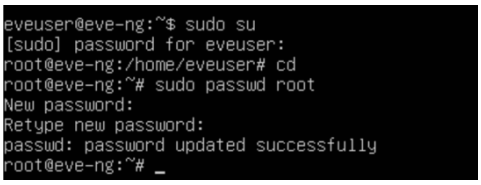
Step 24: Remove CD/DVD ISO Media following by Enter.

Step 25: Login into your Ubuntu server with previously created non-root user: eveuser/test123



Step 26: IMPORTANT: Set root user password, Example:

```
sudo su
test123
passwd root
eve
eve
```



Step 26: Allow permissions for root administrator user SSH to your server.

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

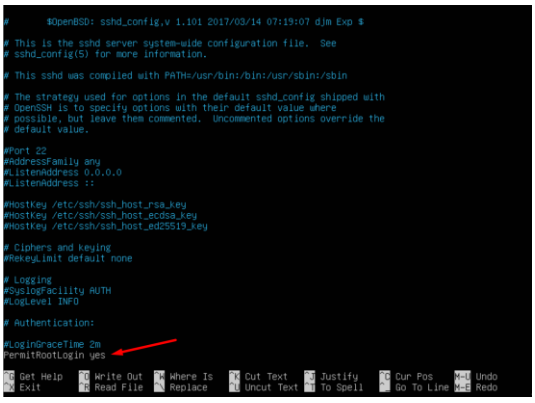
Edit to: PermitRootLogin yes
ctrl+o Enter for save
crlr +x for exit
restart ssh service

```
service sshd restart
```

Step 27: IMPORTANT: Set root user password, Example:

```
sudo su
test123
passwd root
eve
eve
```

© EVE-NG LTD




```
eveuser@eve-ng:~$ sudo su
[sudo] password for eveuser:
root@eve-ng:/home/eveuser# cd
root@eve-ng:~# sudo passwd root
New password:
Retype new password:
passwd: password updated successfully
root@eve-ng:~# _
```

EVE Installation Phase 2 (EVE installation)

Step 28: SSH to your EVE IP using Putty or other SSH client. Log in as root user execute:

```
apt update
apt upgrade
```

Step 29: Run EVE CE online installation script. (it is single line command below)

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

At the end of eve server installation, reboot eve

EVE Installation Phase 3 (Management IP setup and updates)

Step 30: After reboot SSH to your EVE IP as root and Setup EVE Management IP address. A Static IP address for BM setup is preferred.

Follow steps in section **: 3.5.1** for static IP, **3.5.2** for DHCP IP

Step 31: After your EVE is rebooted,

Login to EVE CLI and type:

```
apt update
apt upgrade
```

Verification: Verify your EVE-NG server installation, type “dpkg -l eve-ng” command, it must display latest EVE CE version

```
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
```

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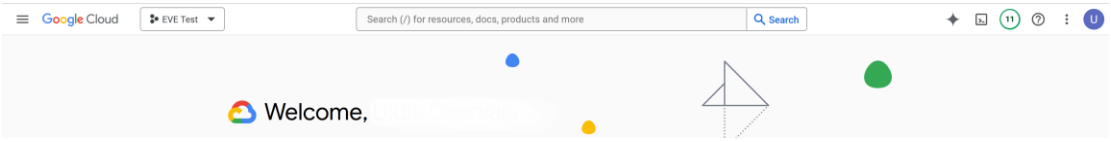
```
+++-=====================================-=====================-=====================-
==========================================================================
ii  eve-ng                          6.0.1-XX                amd64                  A
new generation software for networking labs.
root@eve-ng:~#
```

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

3.4 Google Cloud Platform

3.4.1 Google account

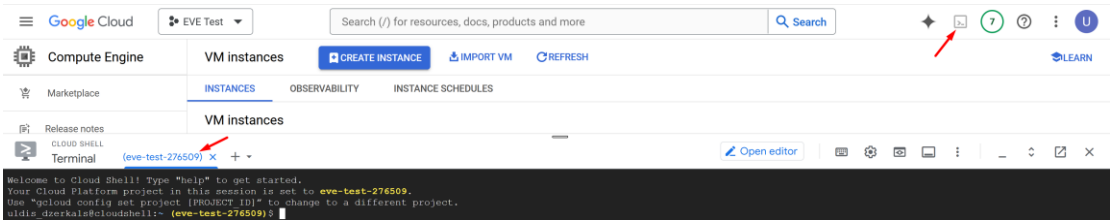
Step 1: Connect to Google Cloud Platform (GCP)
https://console.cloud.google.com/getting-started



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

3.4.2 Preparing Ubuntu boot disk template

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



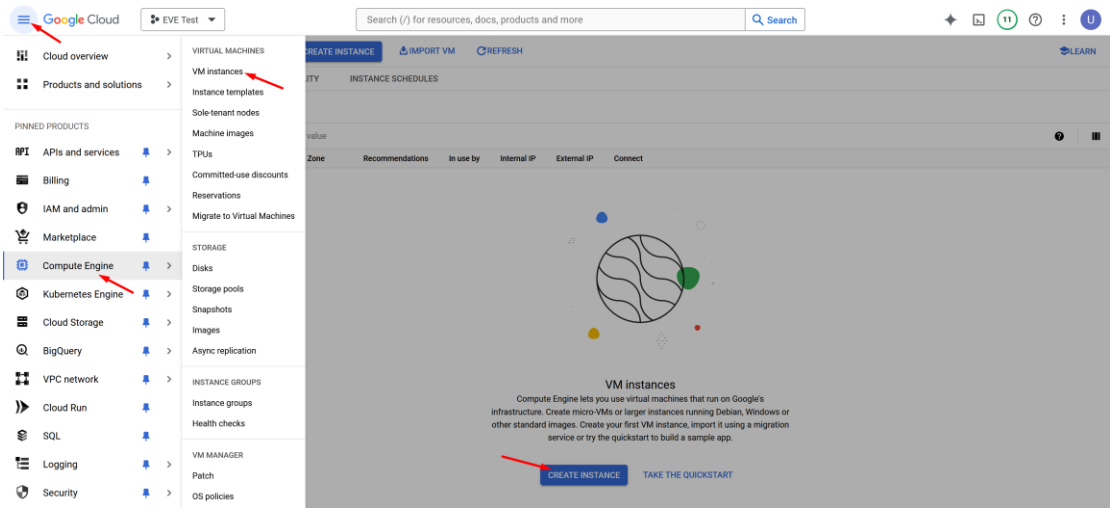
Step 2: Create a nested Ubuntu 22.04 image. Copy and paste the below command into the shell. Use copy/paste. crtl +c/ctrl +v. **It is single line command**. Confirm with “enter”:

```
gcloud compute images create nested-ubuntu-jammy --source-image-
family=ubuntu-2204-lts --source-image-project=ubuntu-os-cloud --licenses
https://www.googleapis.com/compute/v1/projects/vm-
options/global/licenses/enable-vmx
```

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

3.4.3 Creating VM

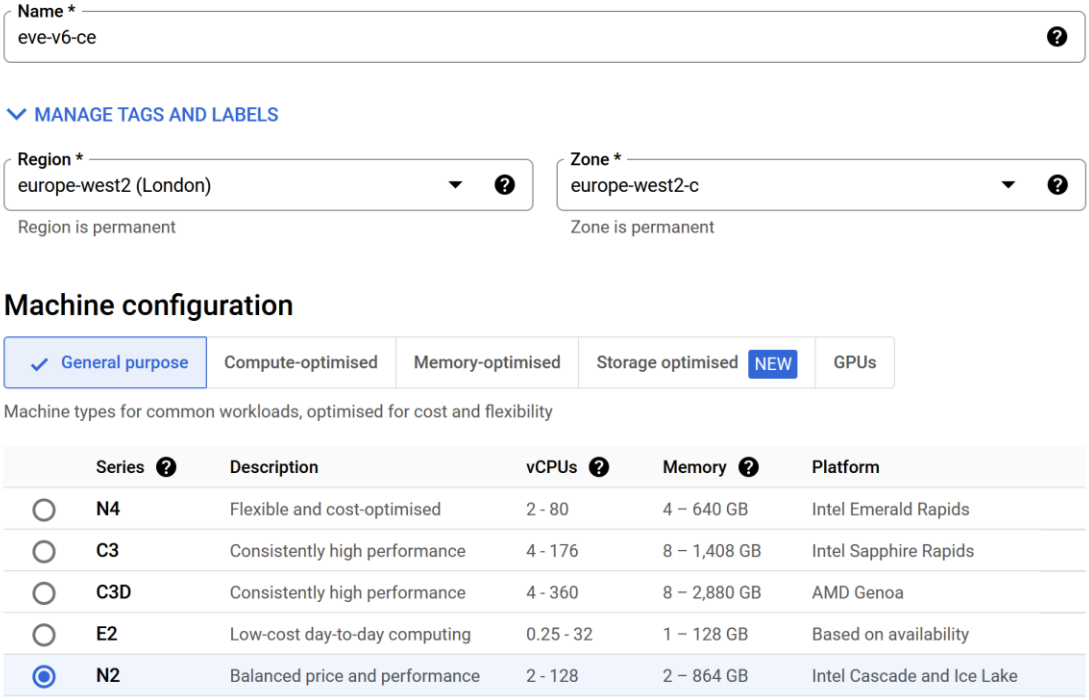
Step 1: Navigate: Navigation Menu/Compute Engine/VM Instances and press “CREATE INSTANCE”



Step 2: Assign the name for your VM

Step 3: Set your own region and zone

Step 4: Edit your Machine Configuration. General-Purpose. Choose the series of CPU platform, Preferred are ***Intel CPUs Cascade and Ice Lake***.



Step 5: Choose your desirable CPU and RAM settings.

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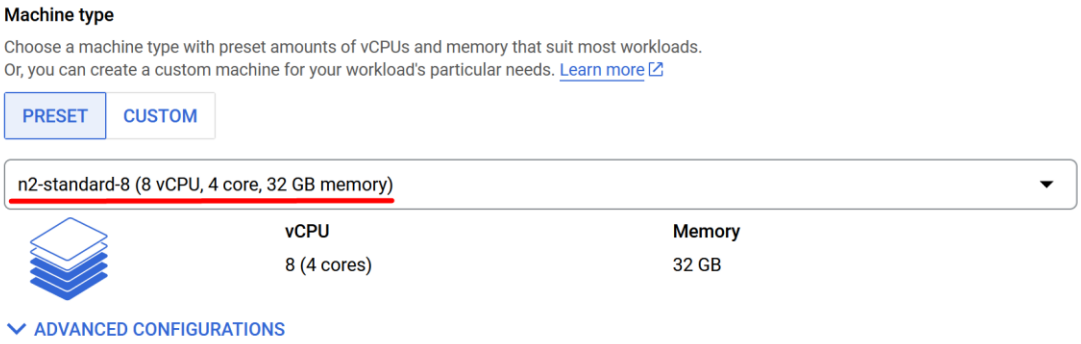
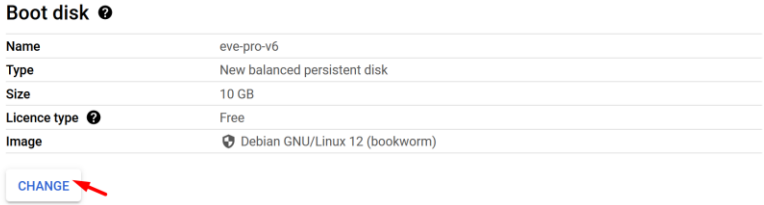
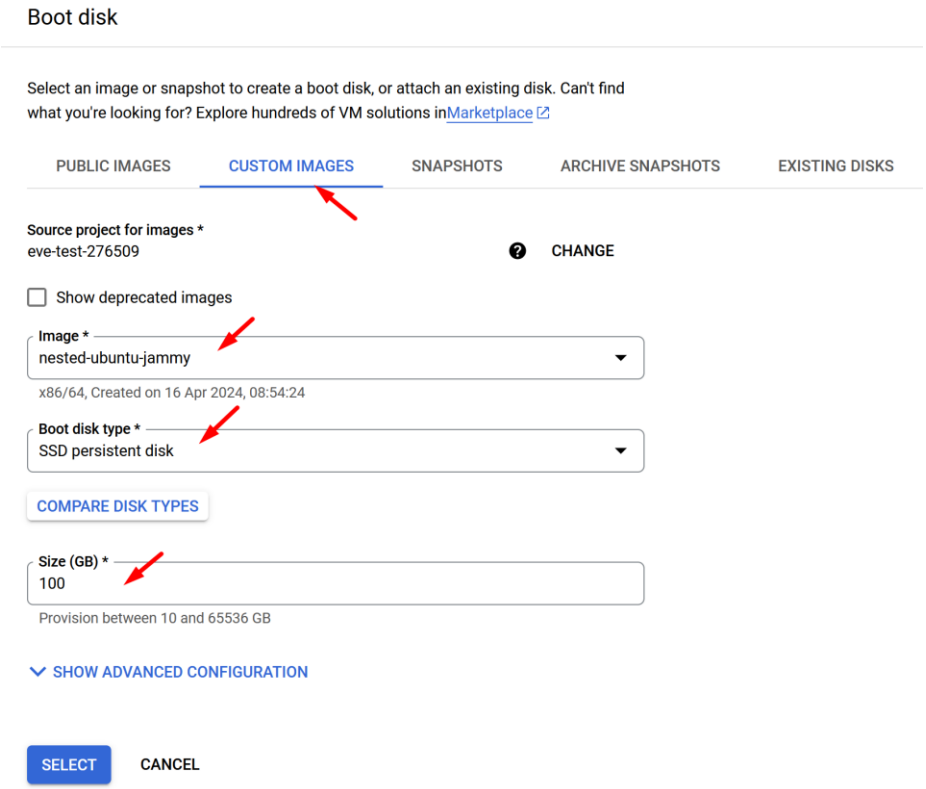


Step 6: Select Boot disk. Press Change



Step 7. Select Custom images, select nested-ubuntu-jammy ***you created previously***. Choose HDD disk type and size. HDD size can vary depends of your needs.



Step 8: Allow http traffic.

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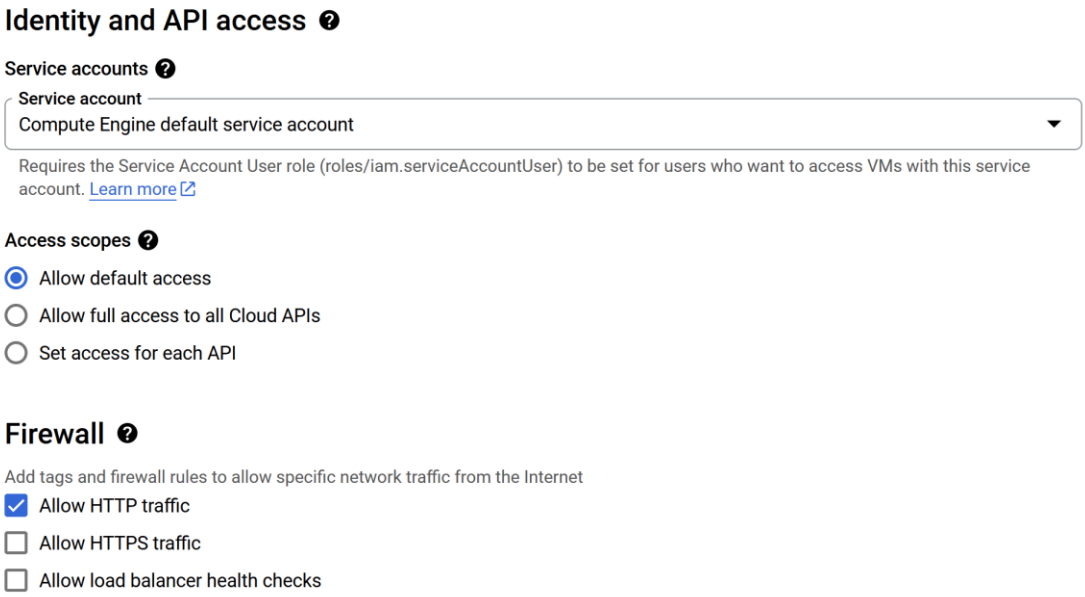
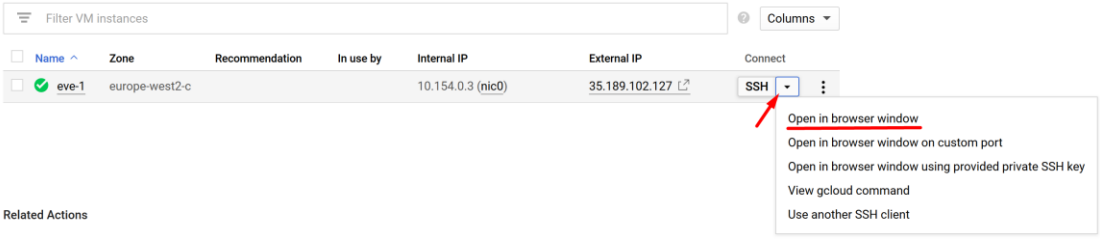
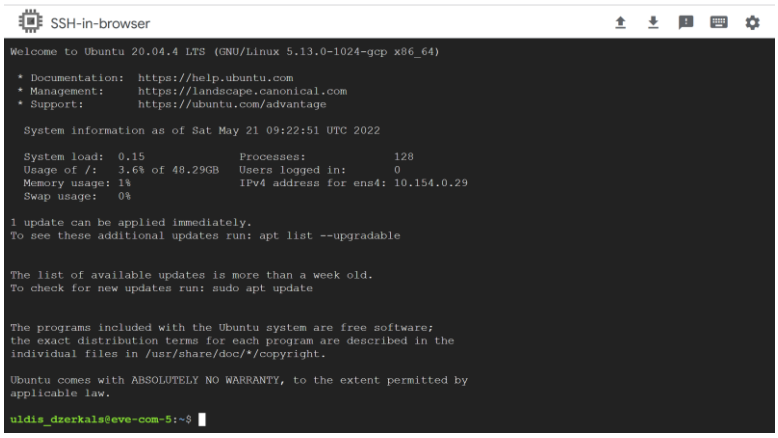


3.4.4 EVE-NG CE installation

Step 1: Click VM Instances to get access SSH to your VM, Connect to the VM with the first option “Open in browser window”





Step 2: Launch installation with:

Type the below command to become root:

```
sudo -i
```

Start EVE-CE installation

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

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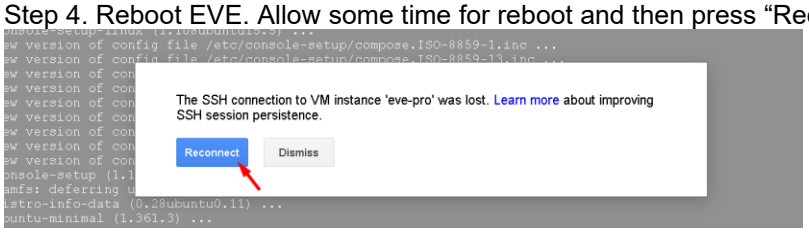
Step 3: Update and upgrade your new EVE-CE

```
apt update
```

```
apt upgrade
```

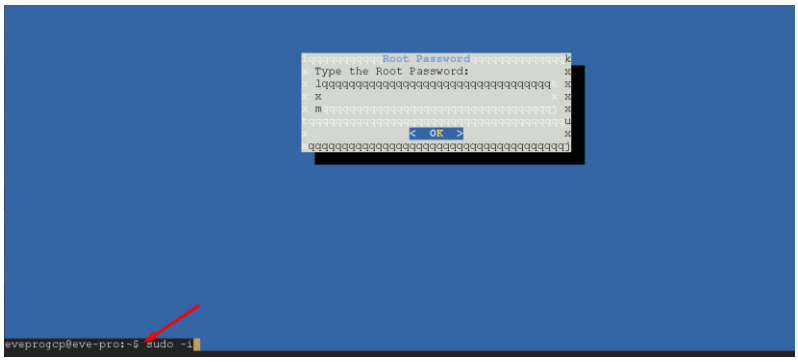
Confirm with Y

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



Step 5: **IMPORTANT**: Setup IP
Once the IP wizard screen appears, press ctrl +c and type the below command to become root:

```
sudo -i
```

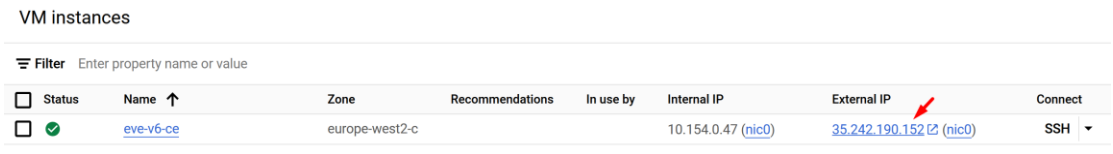


Now follow the IP setup wizard.
IMPORTANT: set IP as DHCP!

Step 6: Reboot

3.4.5 Access to Google Cloud EVE-CE

Use your public IP for accessing EVE via https.



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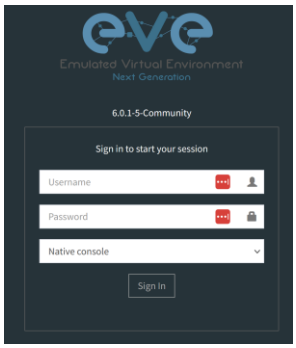

Default web login: admin/eve

3.4.6 Optional: GCP MTU 1460 Firewall rules for native console use

NOTE: If your GCP VM is using default network (MTU1460), then for native console use, you have to create following FW rules.
Open the google cloud shell and press: “START CLOUD SHELL”

Copy the following commands in SHELL Cloud console:

```
##### Create default network (MTU 1460) Firewall rules for native
console use #####

gcloud compute firewall-rules create eve-all-out --direction=EGRESS -
-priority=1000 --network=default --action=ALLOW --rules=tcp:0-65535 -
-destination-ranges=0.0.0.0/0

gcloud compute firewall-rules create eve-all-in --direction=INGRESS -
-priority=1000 --network=default --action=ALLOW --rules=tcp:0-65535 -
-destination-ranges=0.0.0.0/0
```

Firewall rules summary:

Name	Type	Targets	Filters	Protocols/ports	Action	Priority	Network	Logs
eve-all-out	Egress	Apply to all	IP	tcp:0-65535	Allow	1000	default	Off
eve-all-in	Ingress	Apply to all	IP	tcp:0-65535	Allow	1000	default	Off

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.

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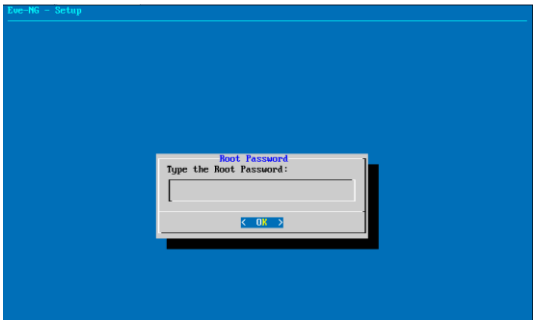
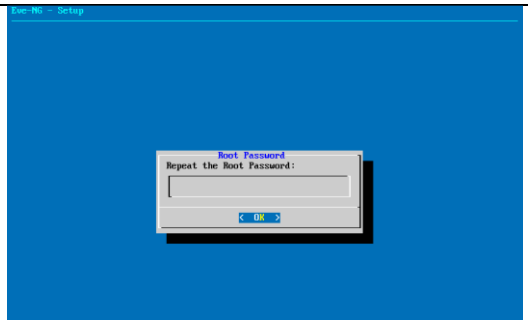
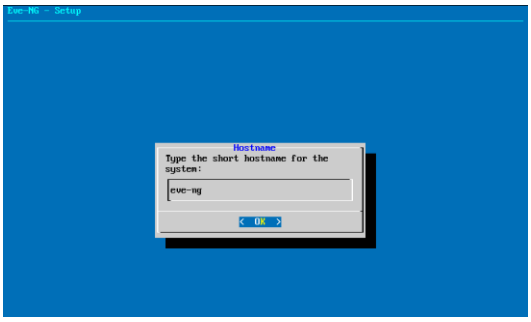
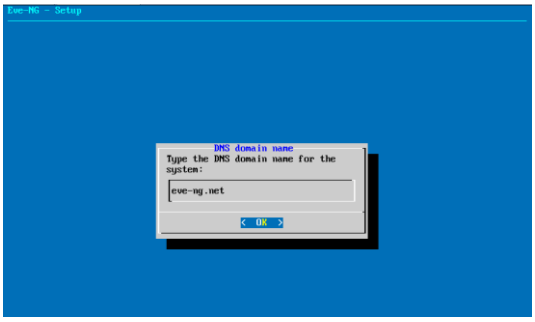




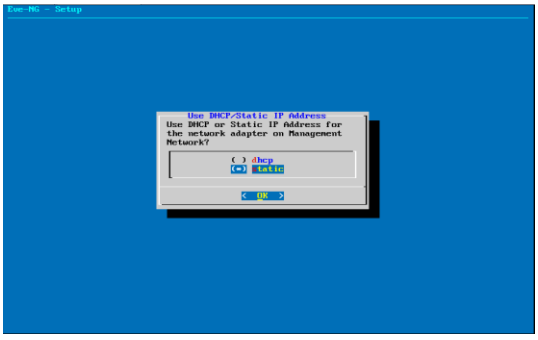
Step 3: Choose your EVE VMs hostname. By default, it is **eve-ng**. You can leave it as it is. Confirm with enter



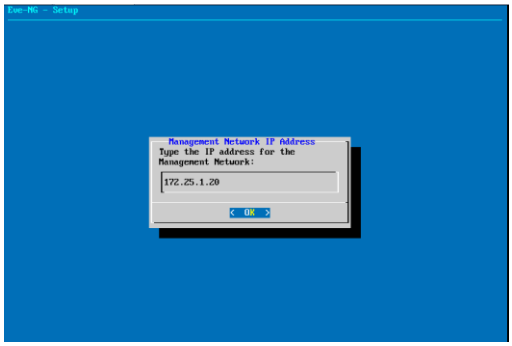
Step 4: Type your domain name for your EVE VM. By default, it is example.com. The default value can be used as well. Confirm with enter



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



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



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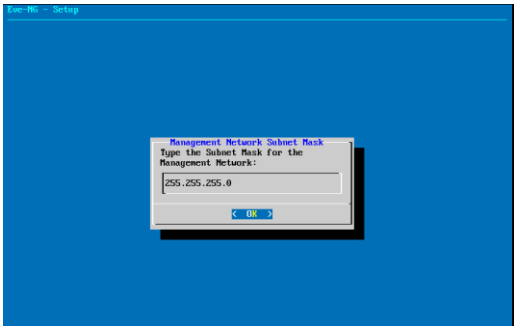
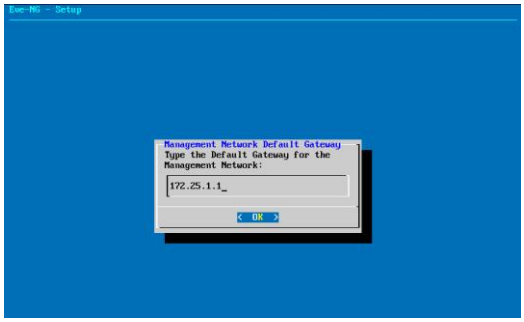
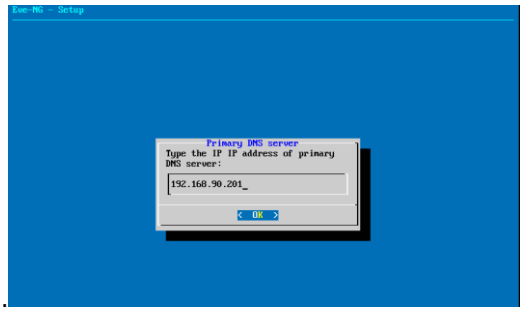
Step 7: Type the subnet mask of your EVE management network. Confirm with enter.



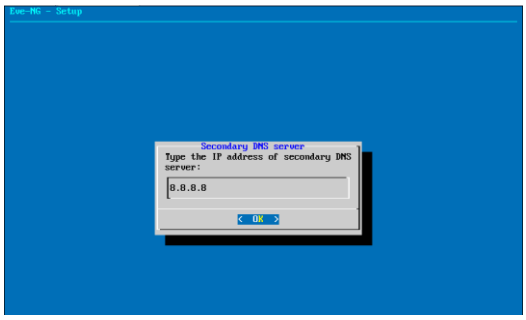
Step 8: Type your networks gateway IP. Confirm with enter.



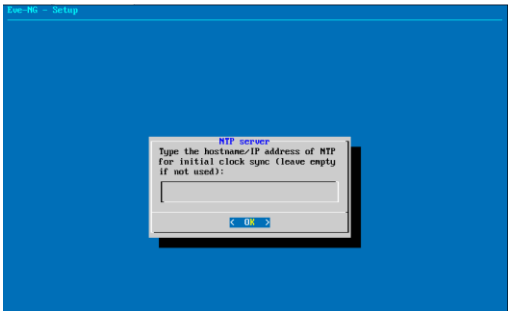
Step 9: Type your networks primary DNS IP. Confirm with enter.
IMPORTANT: DNS must be reachable and resolve public addresses.



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

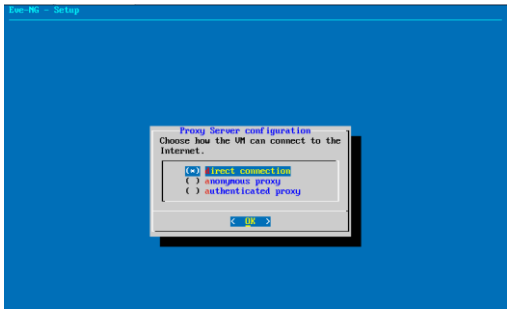


Step 11: Type your preferred NTP server IP. It can be left empty as well; in this case, your EVE VM will automatically assign the time from its host.



Step 12: **Skip this step.** By default, it is set to direct connection (no proxy).

Confirm selection with enter. EVE will reboot automatically.



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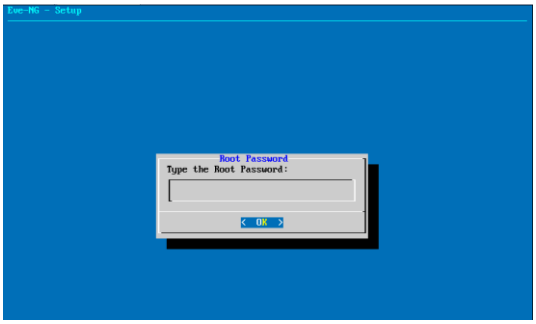
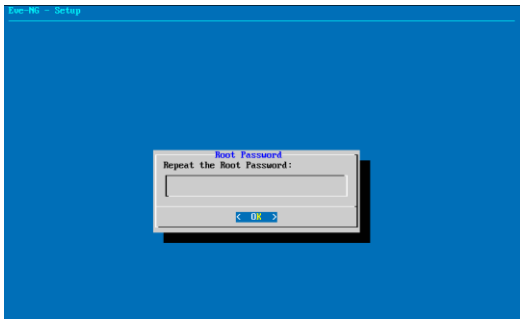
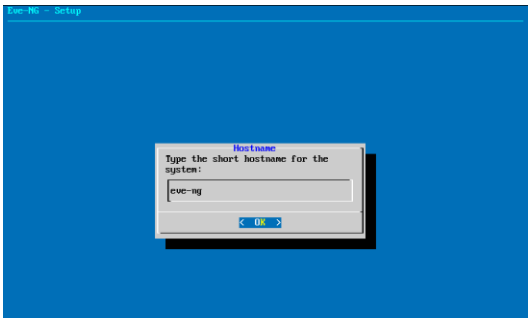
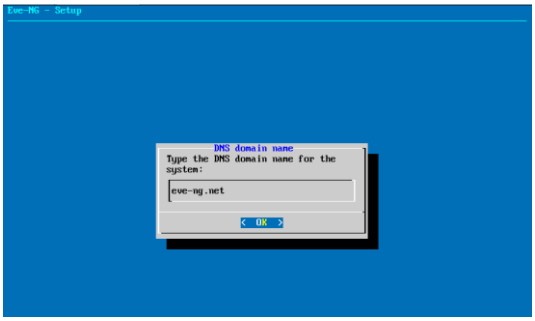
⚠ **IMPORTANT NOTE:** If you are setting up your management IP for the first time (fresh EVE installation), please return to the install section and complete installation Phase 3.

3.5.2 EVE Management IP address setup via DHCP

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

Step 1: Log into the EVE CLI using the default login **root/eve** After login, type your preferred root password for EVE, default is **eve. Remember it for further use.** Confirm with enter NOTE: Typed characters in the password field are not visible. 	Step 2: Retype your root password again and confirm with enter. 
Step 3: Choose your EVE VMs hostname. By default, it is **eve-ng**. You can leave it as it is. Confirm with enter 	Step 4: Type your domain name for your EVE VM. By default, it is example.com. The default value can be used as well. Confirm with enter 

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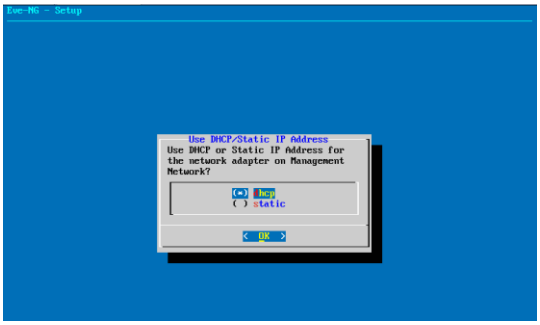
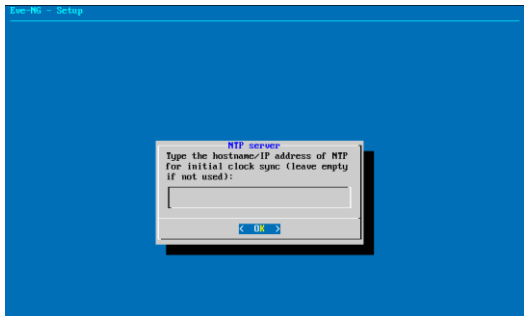
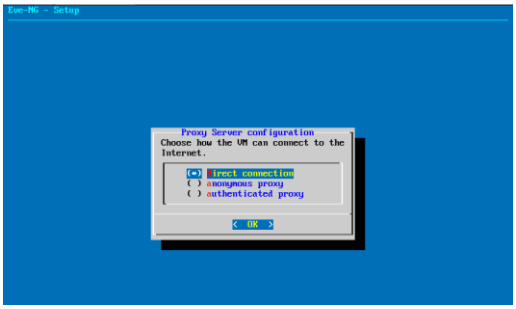
Step 5: Using the arrow keys, select the option “dhcp”, confirm your selection with the space key, followed by enter 	Step 6: Type your preferred NTP server IP. It can be left empty as well; in this case, your EVE VM will automatically assign the time from its host. 

Step 7: **Skip this step.** By default, it is set to direct connection (no proxy). Confirm selection with enter. EVE will reboot automatically. 	

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

3.5.3 EVE Management IP address reset

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

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

Then type:

```
su -
```

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.

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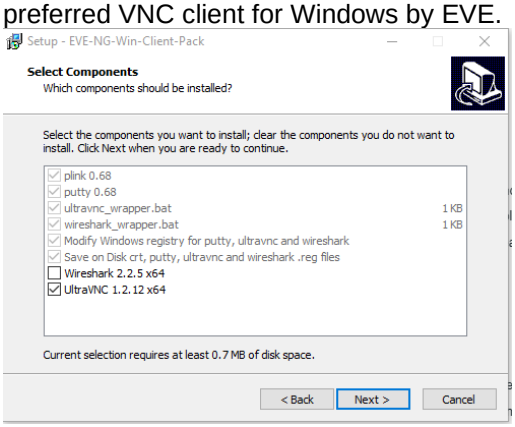
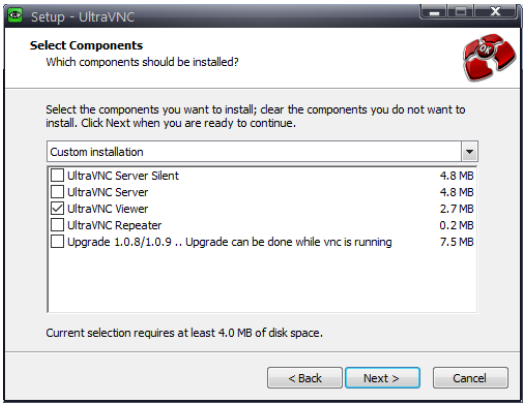
3.6 Native telnet console management setup

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

3.6.1 Windows Native Console

<table>
<tr>
<td>Step 1: Download the EVE Windows Client integration pack:

http://www.eve-ng.net/downloads/windows-client-side-pack</td>
<td>Step 2: Install it as administrator
</td>
</tr>
<tr>
<td>Step 3: Leave the option for UltraVNC checked. UltraVNC is very tiny and the preferred VNC client for Windows by EVE.
 

NOTE: The Wireshark option for EVE Professional is left unchecked, because Wireshark is already integrated into EVE PRO.</td>
<td>Step 4: Continue with Next. When it asks to choose Ultra VNC Options, only leave the UltraVNC Viewer checked, the rest is not needed.
 
</td>
</tr>
<tr>
<td>Step 5: Continue with Next and finish the installation.</td>
<td></td>
</tr>
</table>

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: Secure CRT

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

Step 2: Set your default Telnet program:

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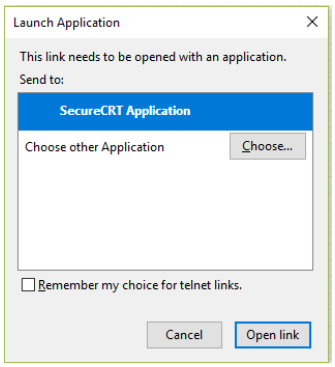
⚠ NOTE: The first time click on the type of link that is used to access a running node inside EVE via telnet, the browser will ask to choose the telnet program. If you have prepared your default telnet program with the instructions above, you have to choose your default Telnet program.

Example: Firefox browser:



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

3.6.2 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

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3.6.3 MAC OSX Native Console

Download the EVE MAC OSX Client integration pack and install it:

https://www.eve-ng.net/index.php/download/#DL-OSX

3.7 Login to the EVE WEB GUI

EVE CE is using http 80. Login to the EVE management UI:

http://<your_eve_ip>/

Default user access:

User: admin

Password: eve

⚠ NOTE: You can change your EVE 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

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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.

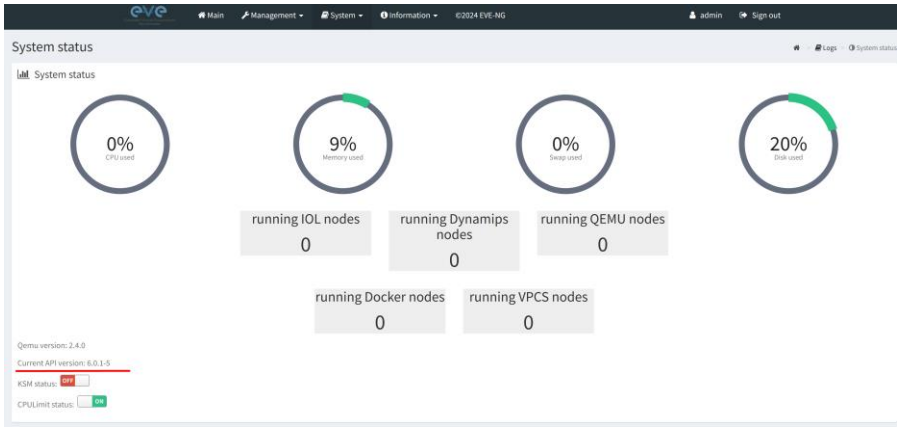
⚠ **IMPORTANT NOTE:** before you start your EVE Community update & upgrade, please free up your EVE Community from older kernel packages:

```
apt autoremove
```

4.1 EVE-NG Community Update

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

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



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

Type the below commands followed by Enter

```
apt update
```

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

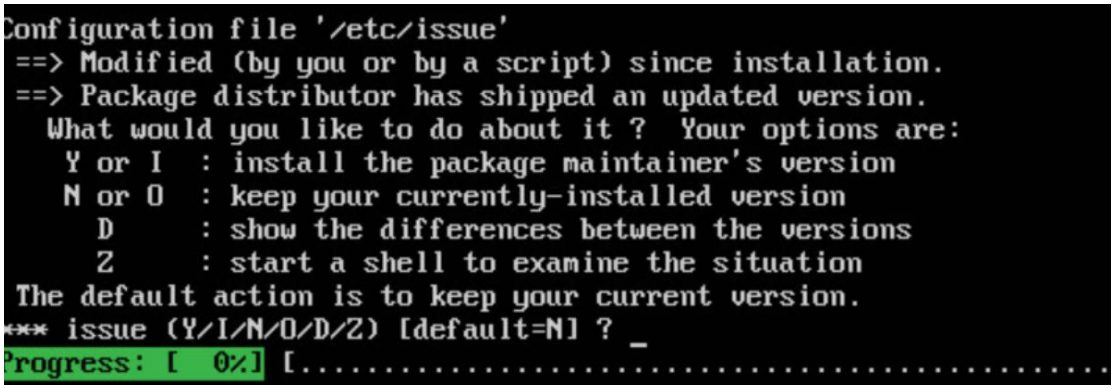
4.2 EVE-NG Community Upgrade

Type commands followed by Enter

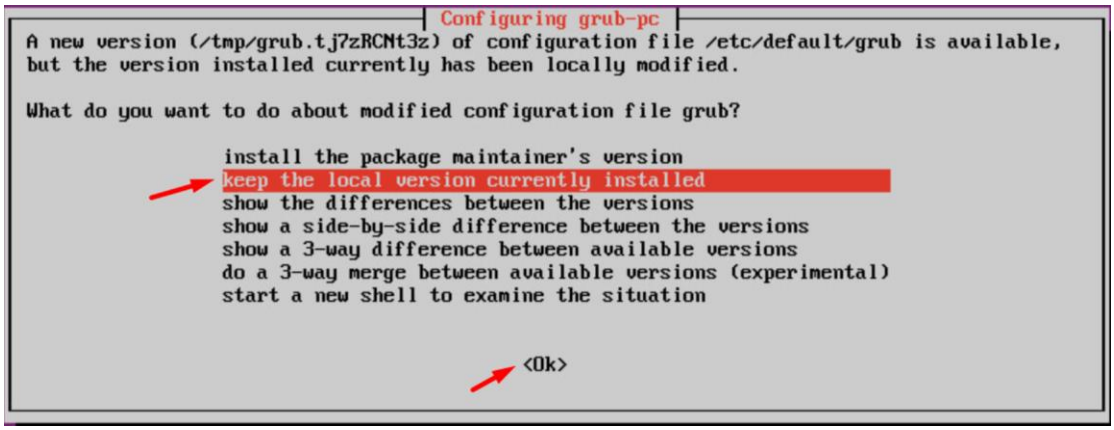
```
apt upgrade
```

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

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



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



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
```

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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 3.6.1

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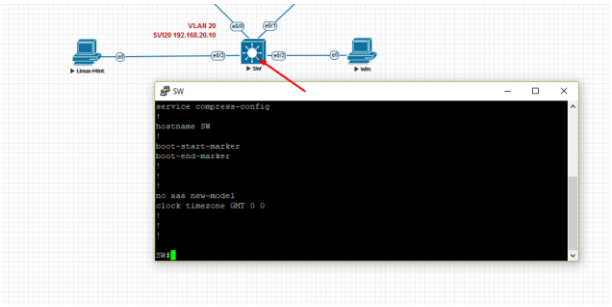
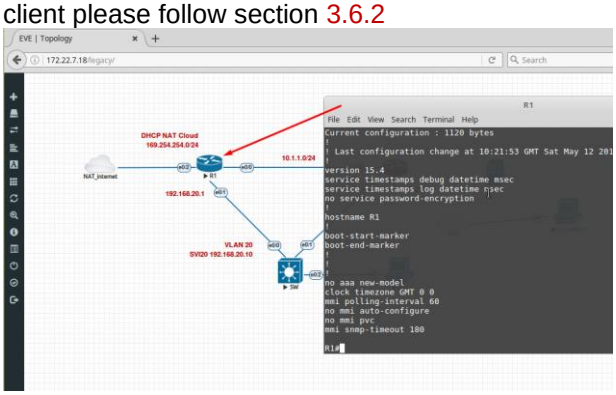


Linux OS: You can use your preferred telnet program like the Native Terminal, SecureCRT, or others.
Example: Telnet client from the native terminal on Linux Mint. To setup Linux native telnet client please follow section 3.6.2

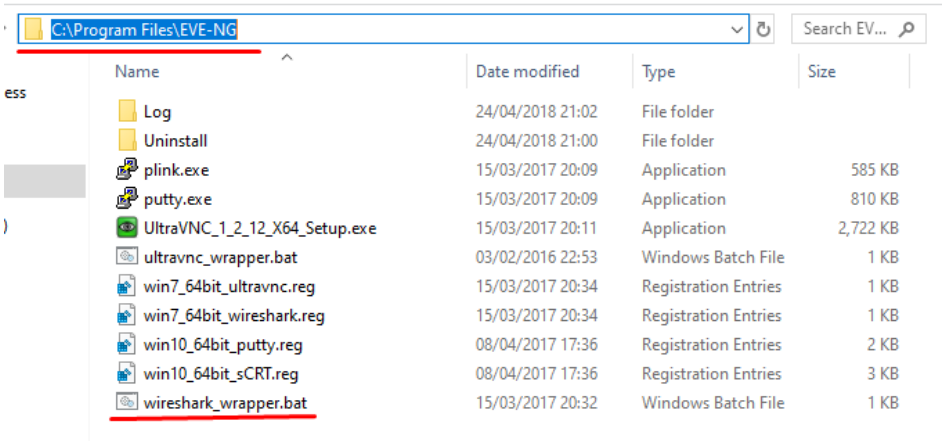


MAC OSX: You can use your preferred telnet program like the native Terminal, SecureCRT, or others.
Example: Telnet client from the native terminal on MAC OSX. To setup MAC OSX native telnet client please follow section 3.6.3

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.



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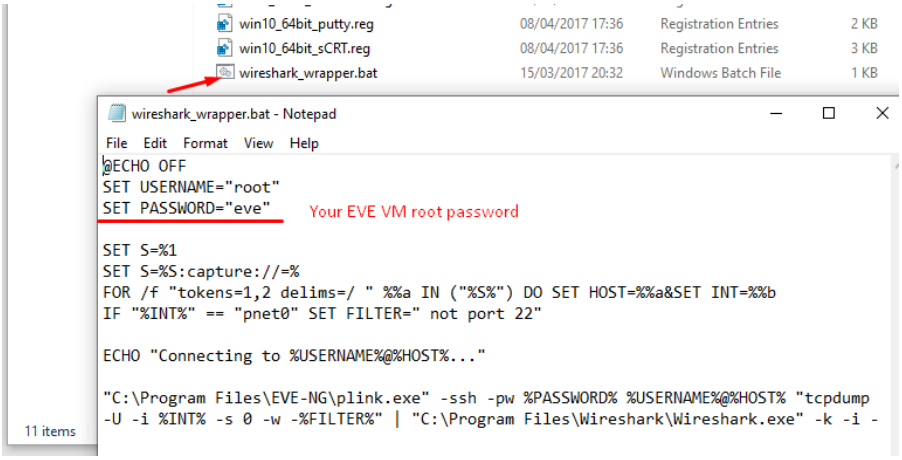
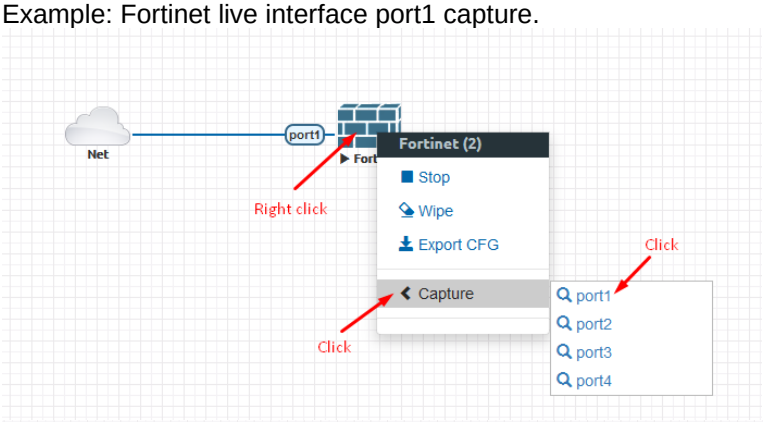
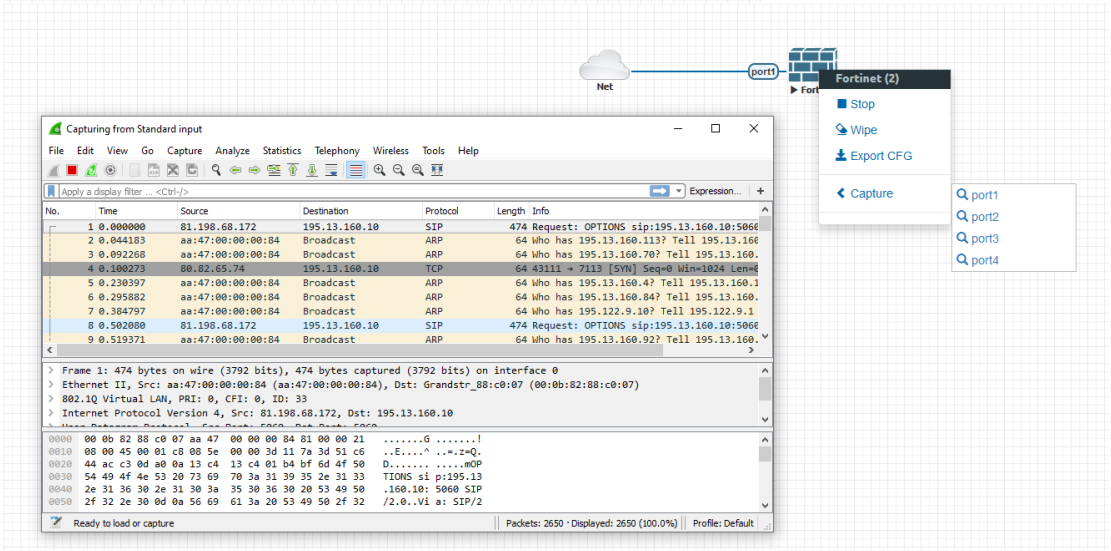
⚠ IMPORTANT NOTE: The Wireshark wrapper located in your PC station must match your EVE root password. Edit your EVE root password in the wireshark_wrapper.bat, if you had changed it during install.



Example: Fortinet live interface port1 capture.

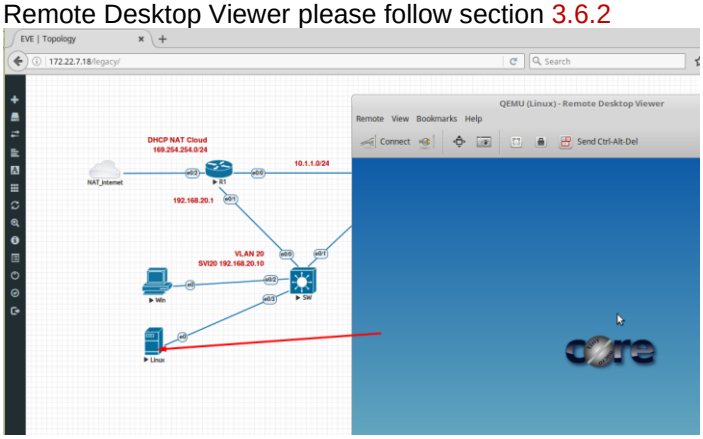




5.1.3 Native Console: VNC

Windows OS: Recommended and tested is UltraVNC but any other compatible one can be used.
Example: UltraVNC as Native VNC client on Windows. To setup Windows native VNC client please follow section 3.6.1

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 3.6.2



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 3.6.3

5.1.4 Native Console: RDP

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

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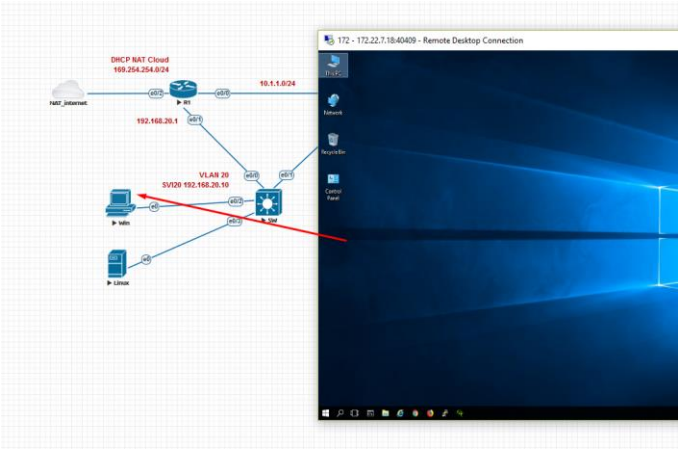
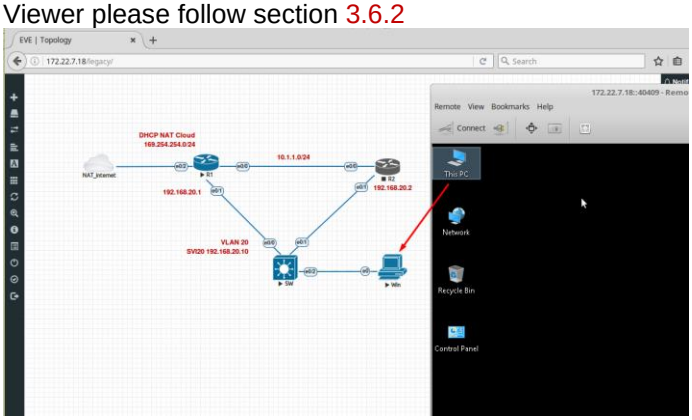
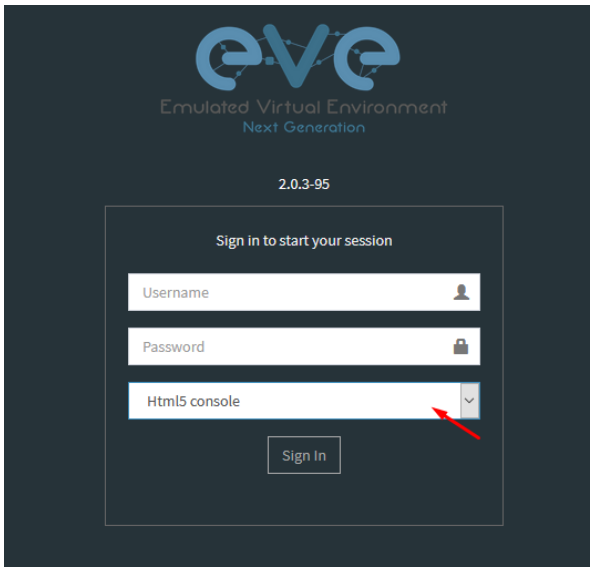


Linux OS: Remote Desktop Viewer as RDP session to lab Win10 host.
Example: RDP session to Win10 host in the lab. To setup Linux native Remote Desktop Viewer please follow section 3.6.2



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 3.6.3

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).

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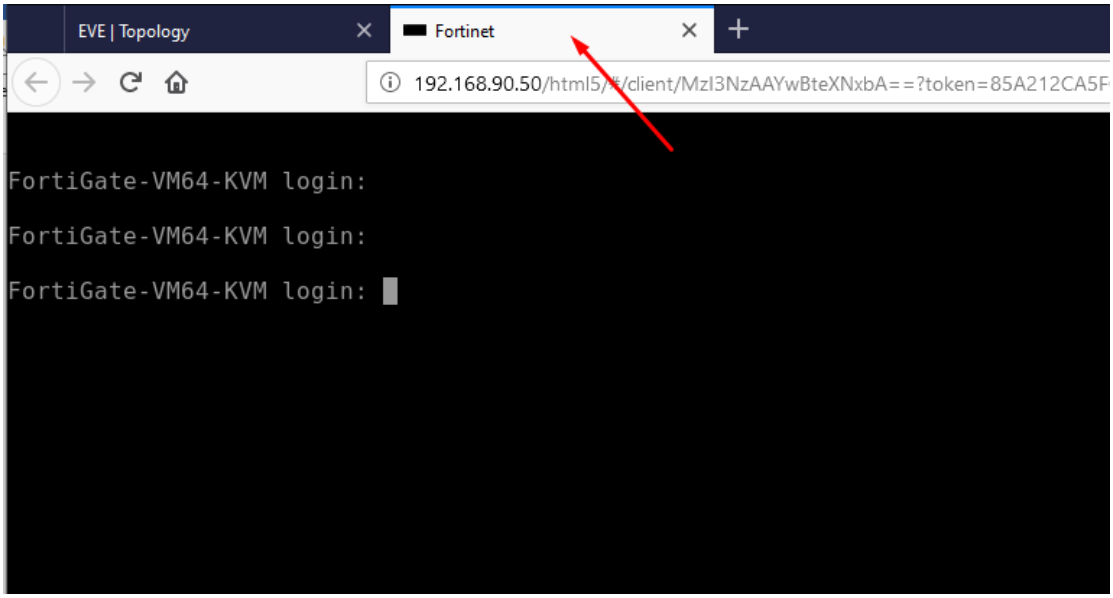
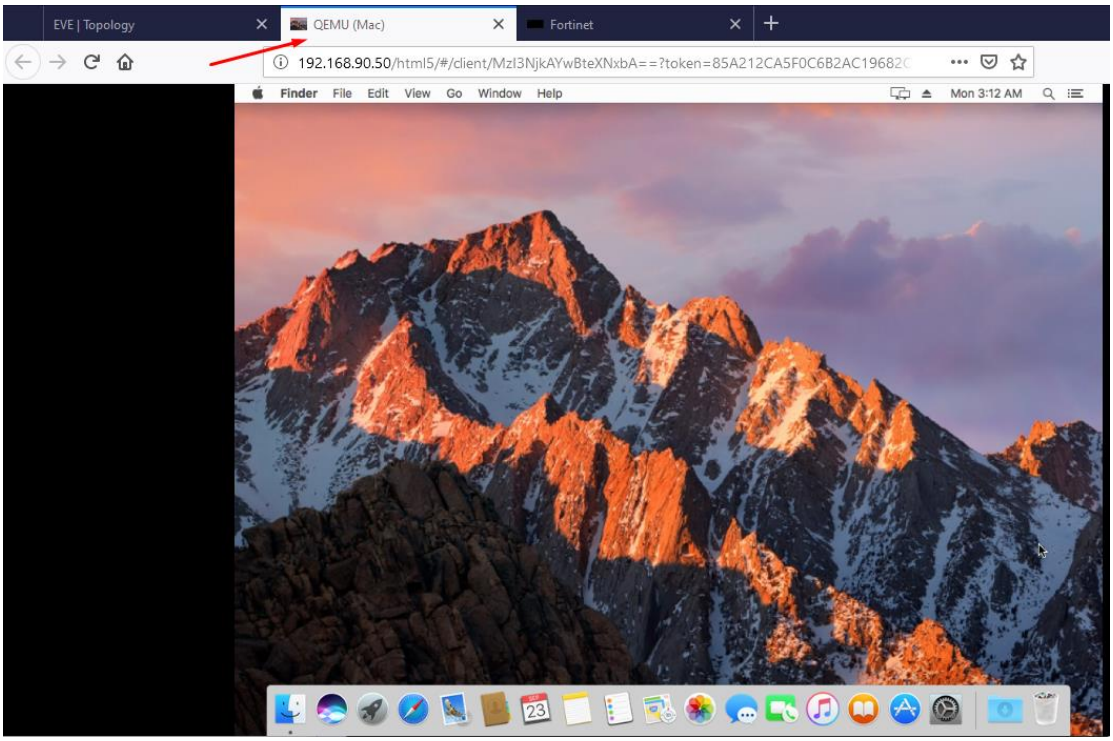
5.2.1 HTML5 Console: Telnet

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



5.2.2 HTML5 Console: VNC

HTML5 VNC opens VNC sessions in the new browser window.



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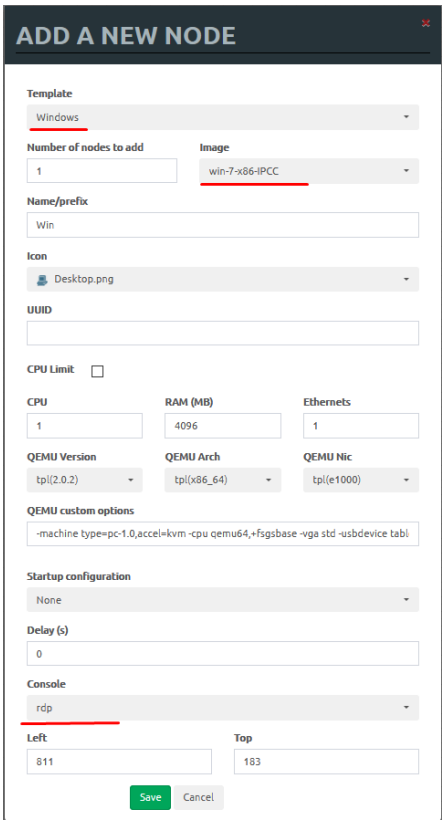
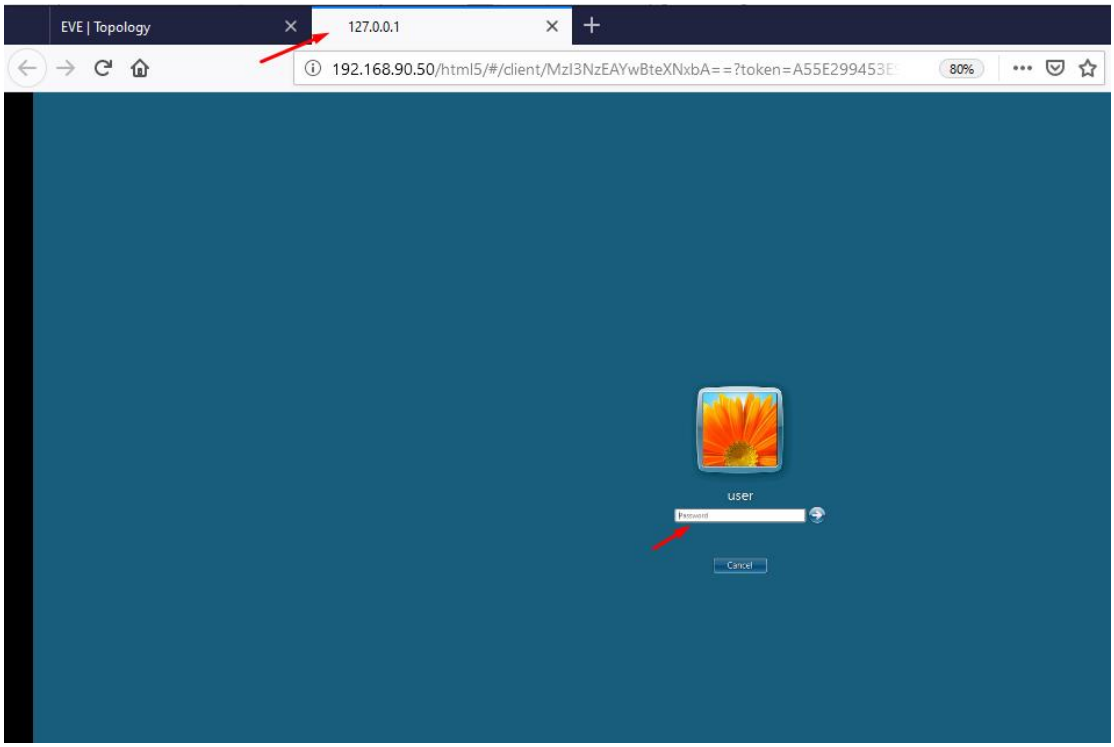
5.2.3 HTML5 Console: RDP for Windows

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.



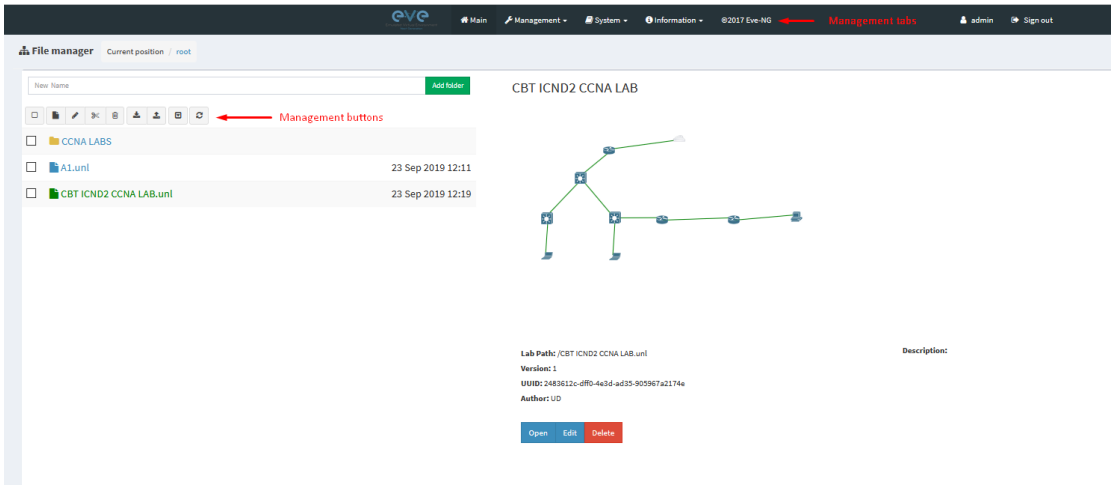
© EVE-NG LTD


EVE | Topology
127.0.0.1
192.168.90.50/html5/#/client/MzI3NzEAYwBteXNxbA==?token=A55E299453E
80%
user
Cancel

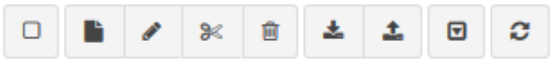
6 EVE WEB GUI Management

6.1 EVE Management Page

The Main EVE management window



6.1.1 Management buttons



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

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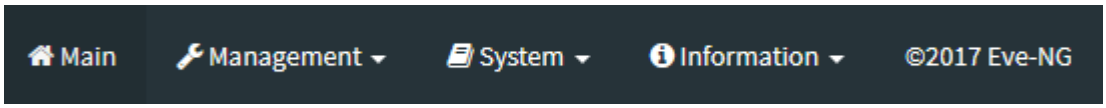
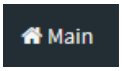
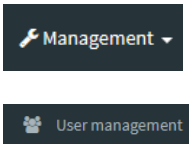
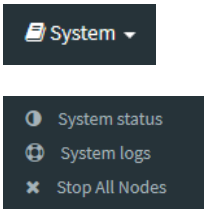
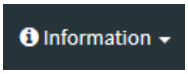
	Import an EVE lab or lab folder from a previous export. Import file must be in .zip format
	Export EVE lab or folder. Select folder(s) and/or labs you wish to export and select this option. The export is saved to your local PC in .zip format and is ready to import to another EVE.
	Toggle the sorting 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*
	Returns back to the EVE Home Management screen.
	Management dropdown, opening the management submenu. Management submenu, refer to sections: 6.3
	System dropdown. System submenu, refer to section 6.4
	Information dropdown

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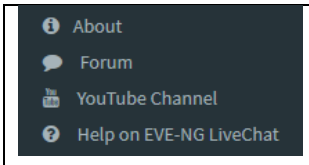
	Information submenu, for details see section 6.5

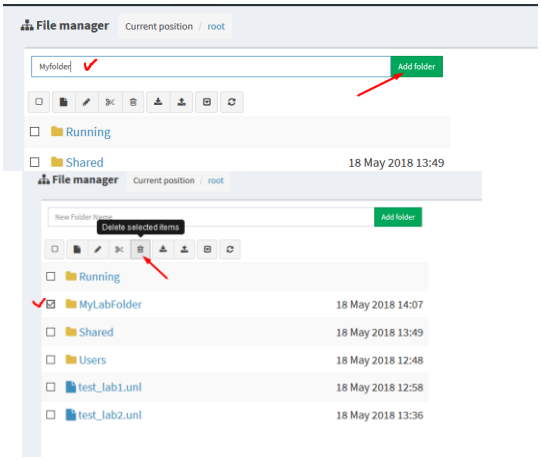
6.2 Folders and Lab files management

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”



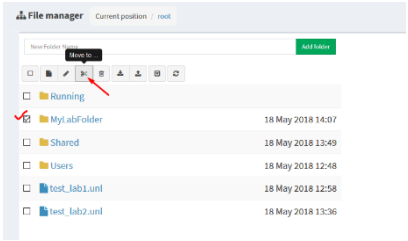
6.2.1.2 Delete folder

Select the folder you wish to delete and press Delete.

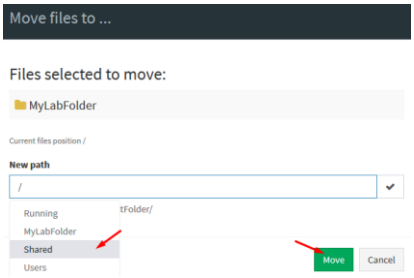
⚠ NOTE: All folder content will be deleted as well.

6.2.1.3 Move Folder

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

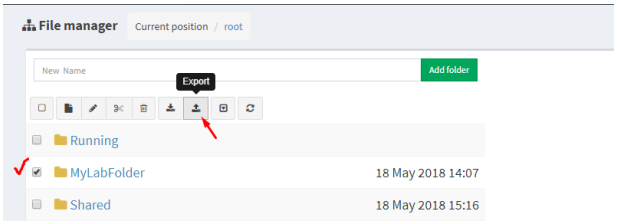


Type and select the target destination for your folder and confirm by clicking on Move.

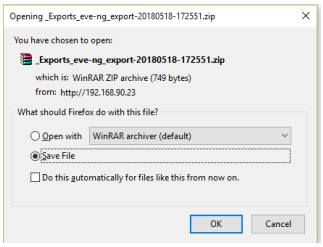


6.2.1.4 Export Folder

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



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

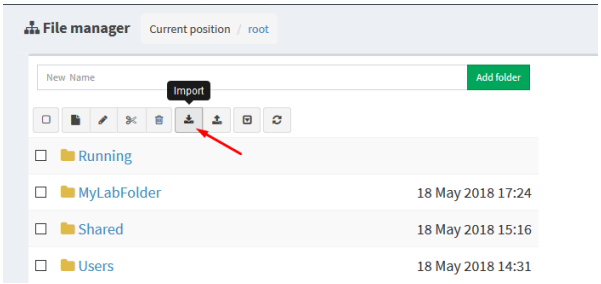


If your browser is set to save downloaded files to a default directory, your exported file will be saved in the browsers default downloads directory.

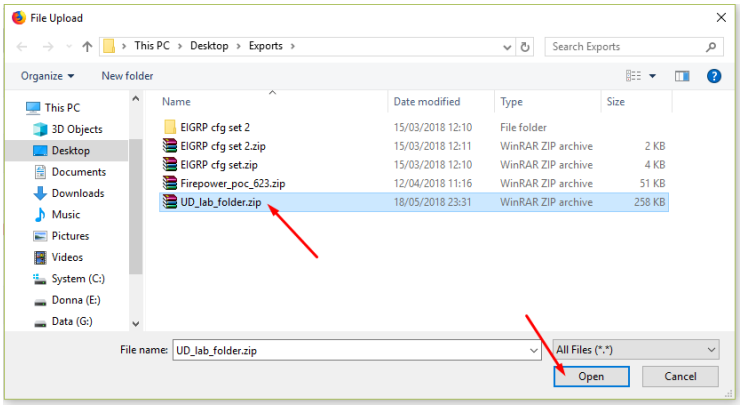
6.2.1.5 Import Folder

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

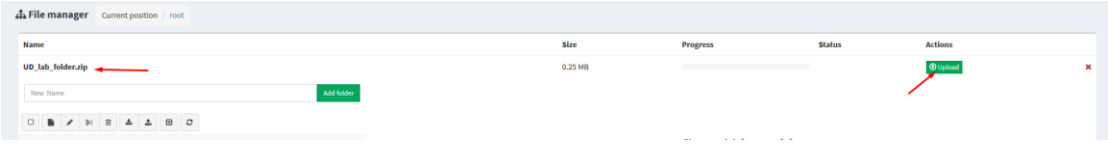
Step 1: Press the Import button.



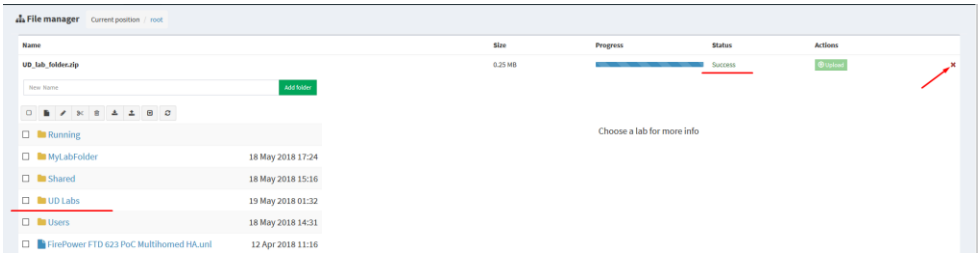
Step 2: Choose the zipped file that contains EVE folders with labs.



Step 3: Press the Upload Button

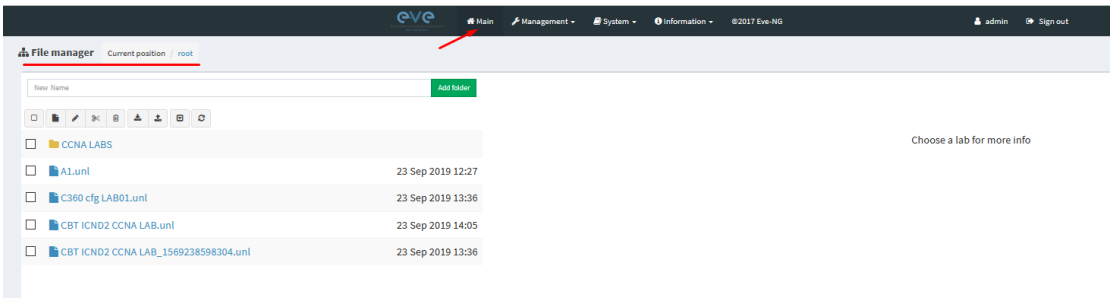


Step 4: After you made sure your folder is imported and has all its content (labs), you can close the upload session.



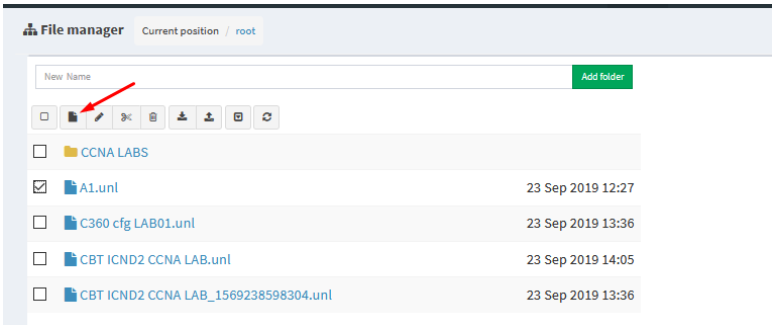
6.2.2 Lab files Management

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



6.2.2.1 Create Lab

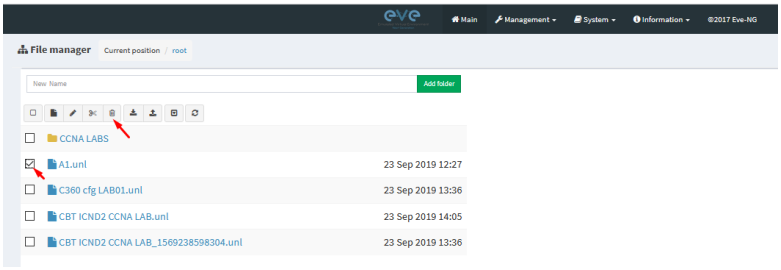
Click on the New Lab button and refer to section 8.1



6.2.2.2 Delete Lab

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

© EVE-NG LTD

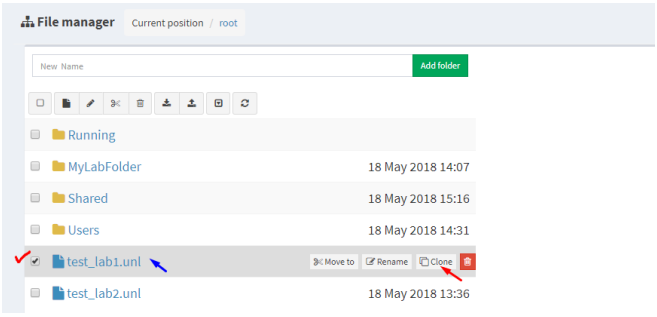


6.2.2.3 Clone Lab

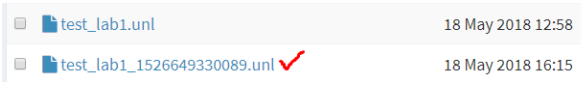
The cloning feature provides a very convenient way to duplicate original labs to share with others or base another lab on it.

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 10.3 for more information on configuration export for labs.

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

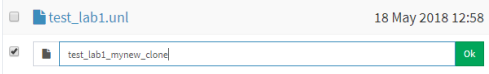


Step 2: Your lab will be cloned with all your exported configurations or configuration sets with a new name.



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

Step 4: Rename it, and click OK to confirm



6.2.2.4 Move Lab

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

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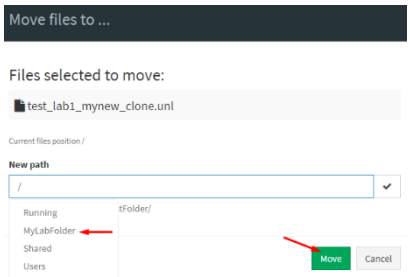
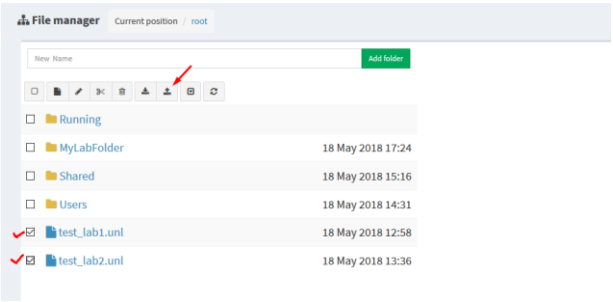
Step 2: Type the path to the new destination and confirm by clicking Move

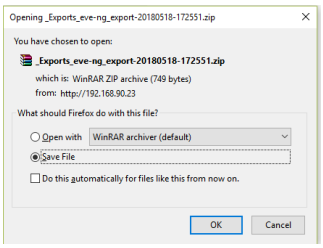


6.2.2.5 Export Lab

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



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



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

6.2.2.6 Import Labs

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

Step 1: Press the Import button.

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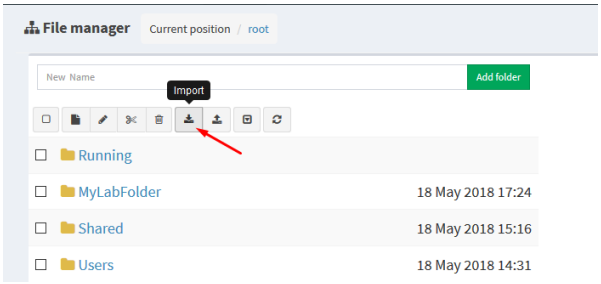
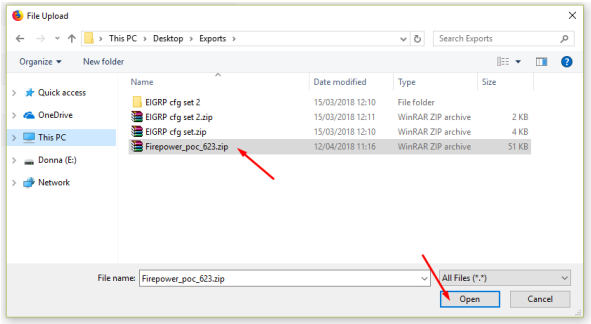
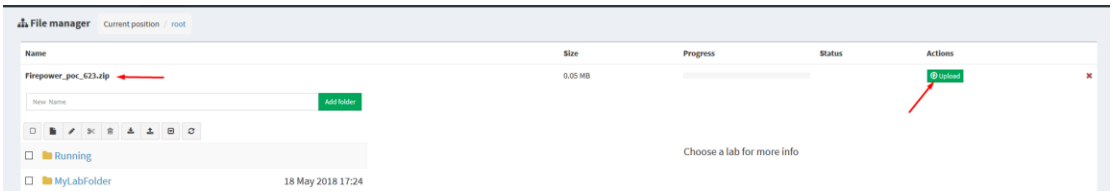


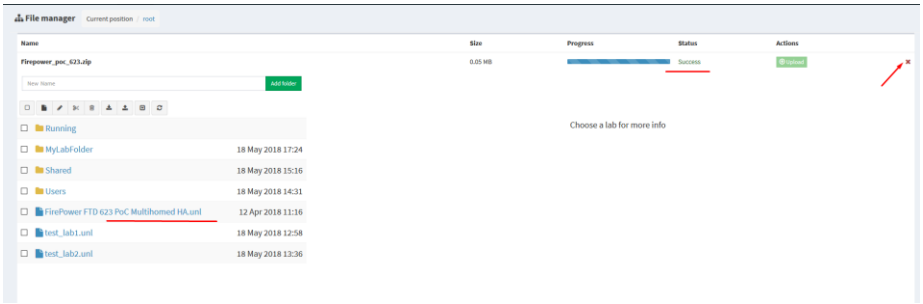
Step 2: Choose the zipped file which contains the EVE labs.



Step 3: Press the Upload Button

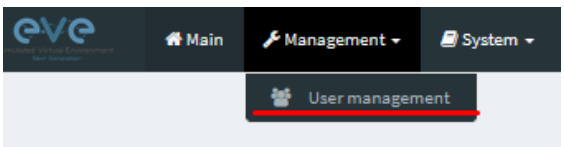


Step 4: After you made sure your lab is imported, you can close the upload session.



6.3 EVE Management Dropdown Menu

6.3.1 EVE User management



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

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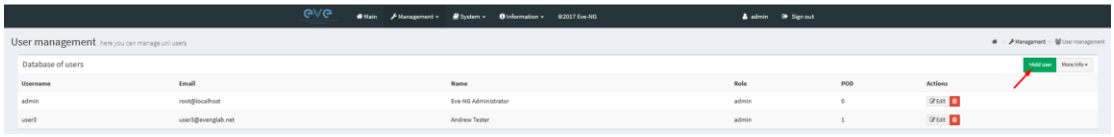
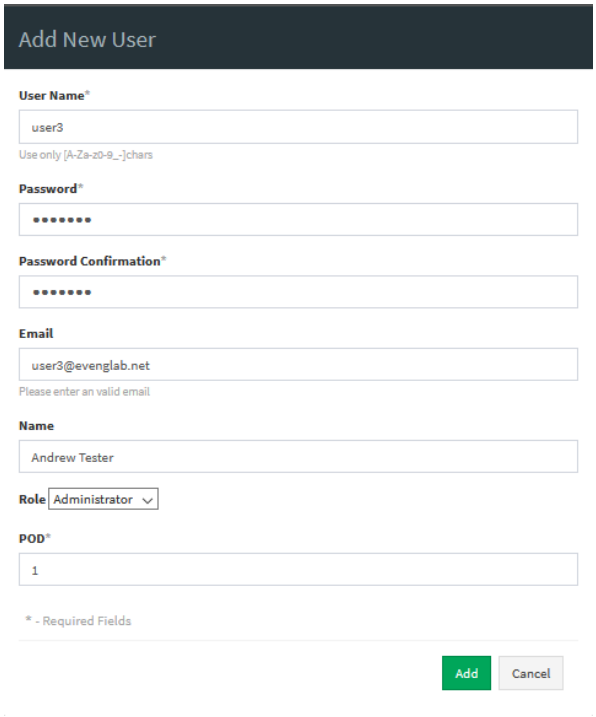
6.3.1.1 Creating a new EVE Admin user

NOTE: EVE-NG CE supports up to 2x admin users.

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



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



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.

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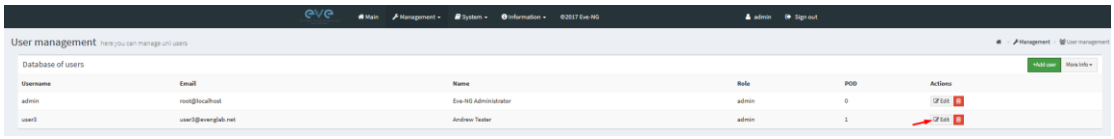
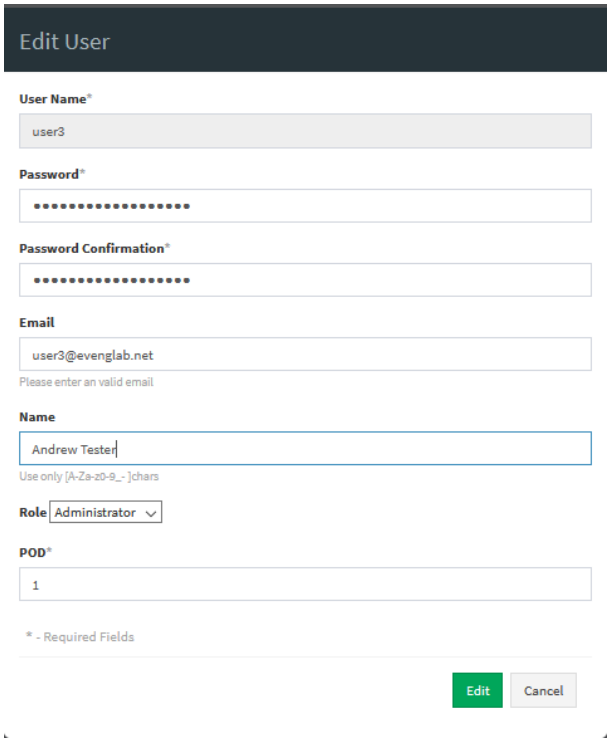
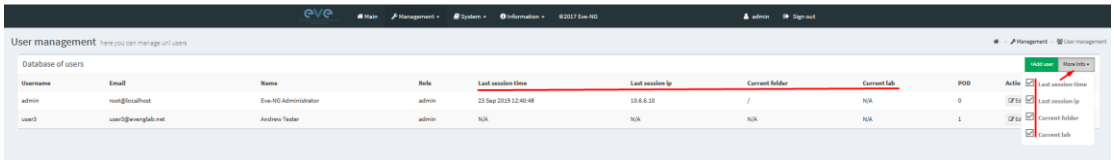


Step 2: The Edit user management window will pop up. Now you can edit necessary user information, roles, or access time. Confirm settings by pressing Edit at the bottom of the window.

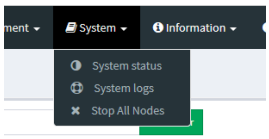


6.3.1.3 User monitoring

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.



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.

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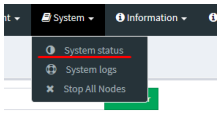
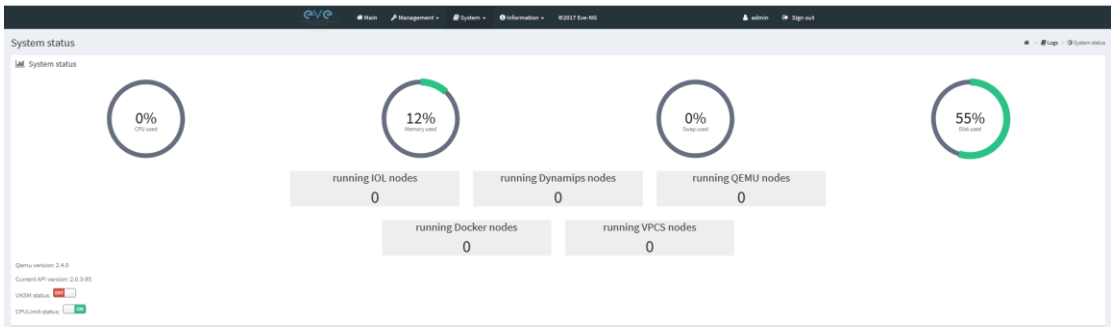
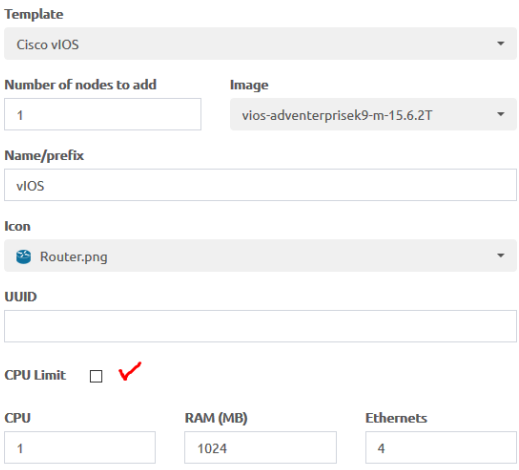
6.4.1 System status



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



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



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.

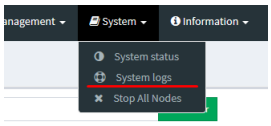
It is recommended to keep the Global CPU Limit option enabled.

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.

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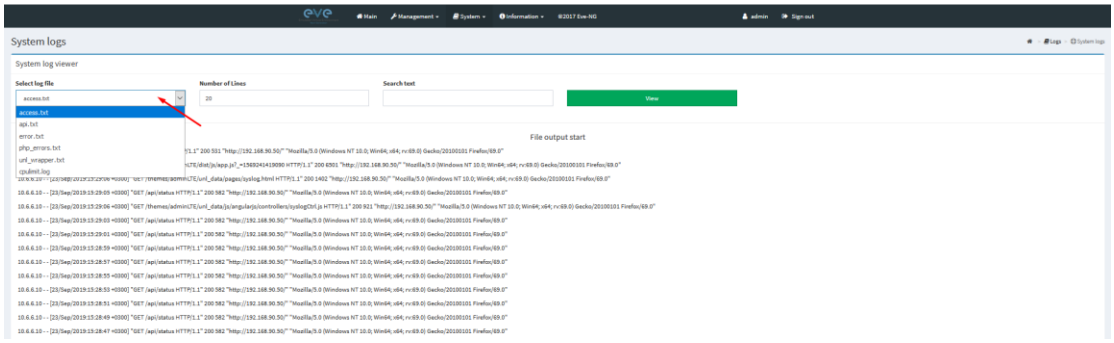
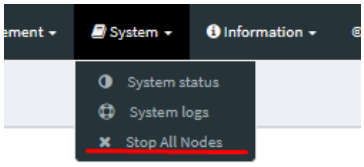
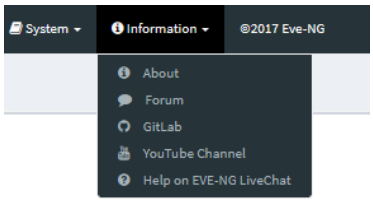


6.4.3 Stop All Nodes



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

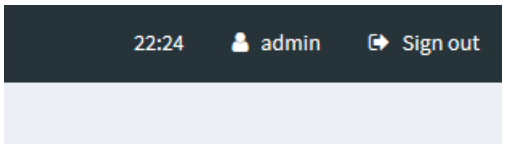


The Eve Information Dropdown contains links to the EVE Website, EVE forum, EVE YouTube channel, and the web-based EVE Live Help chat.

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.

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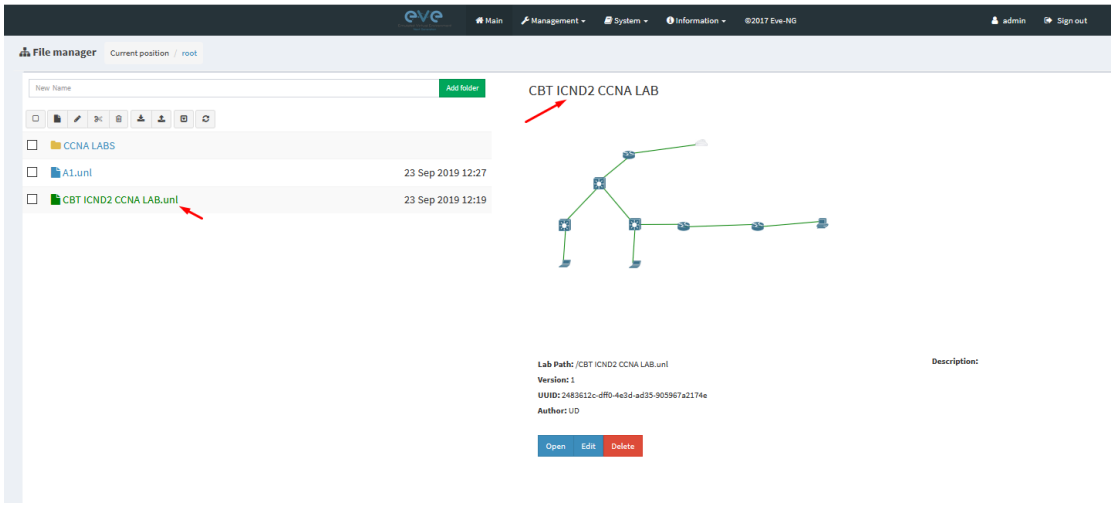
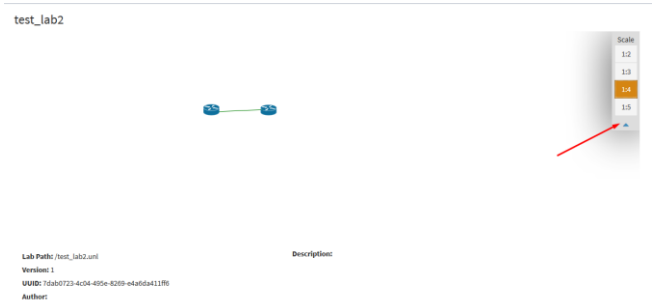


6.7.1 Lab preview window

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



6.7.2 Lab preview buttons

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

Button	***Description***
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.

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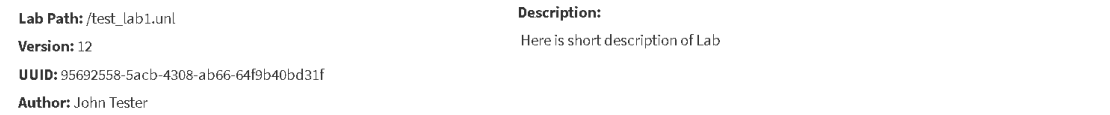
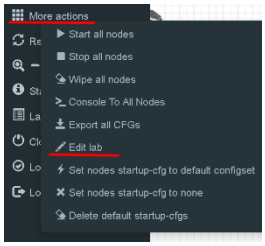
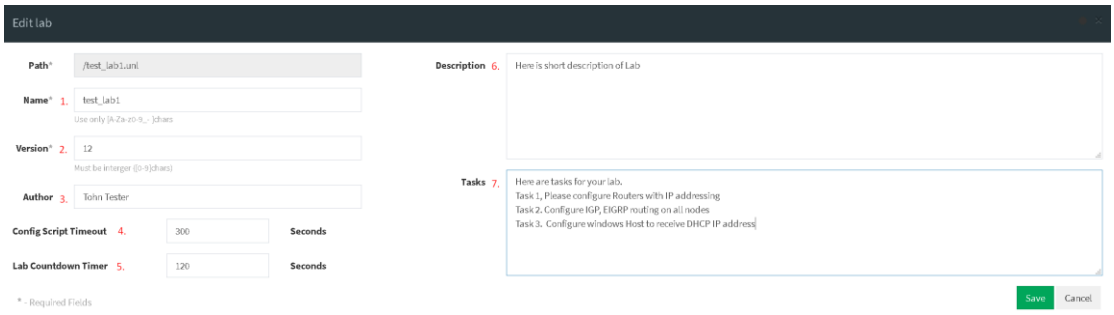


6.7.4 Lab Global Settings

Lab Global Settings Page is opened when you click on the

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





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

- Lab name.
- 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.
- Author: You can add a lab author name in this field
- 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.
- Description: In the Description field you can write a short description of the lab.
- 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.

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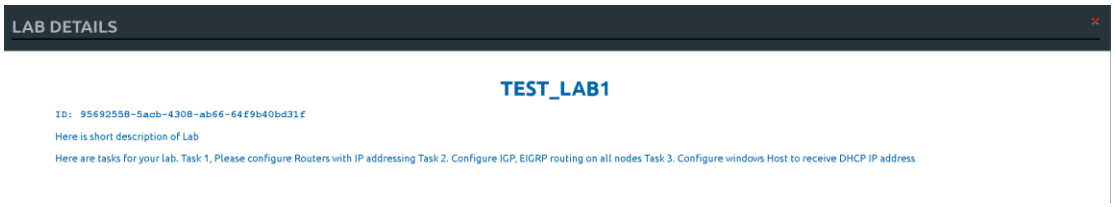
LAB DETAILS
TEST_LAB1
ID: 95692558-5acb-4308-ab66-64f9b40bd31f
Here is short description of Lab
Here are tasks for your lab. Task 1, Please configure Routers with IP addressing Task 2. Configure IGP, EIGRP routing on all nodes Task 3. Configure windows Host to receive DHCP IP address

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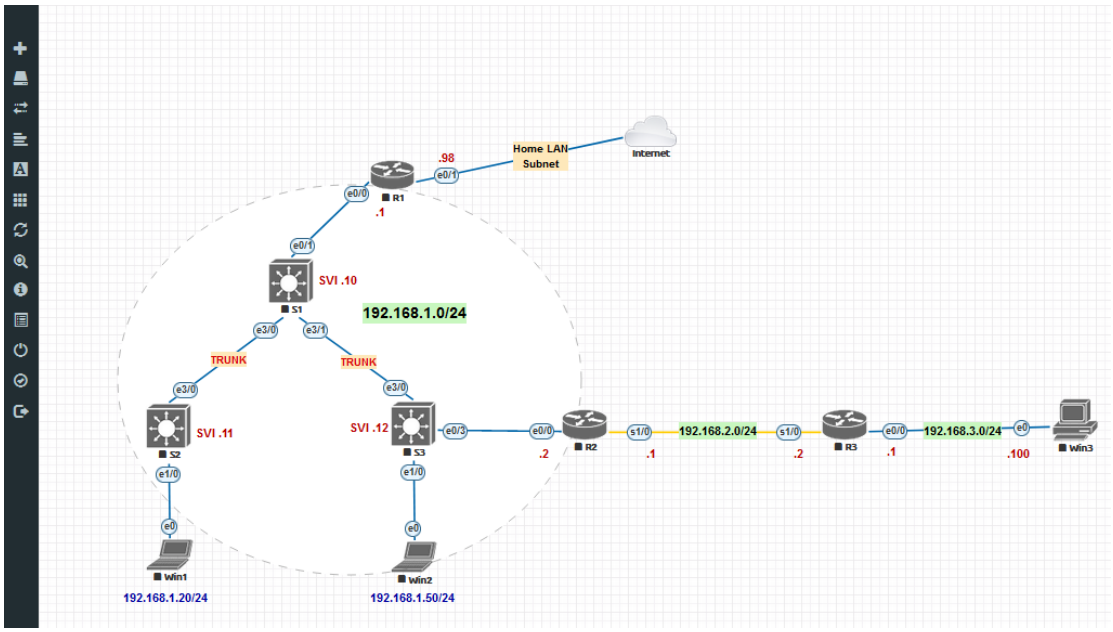
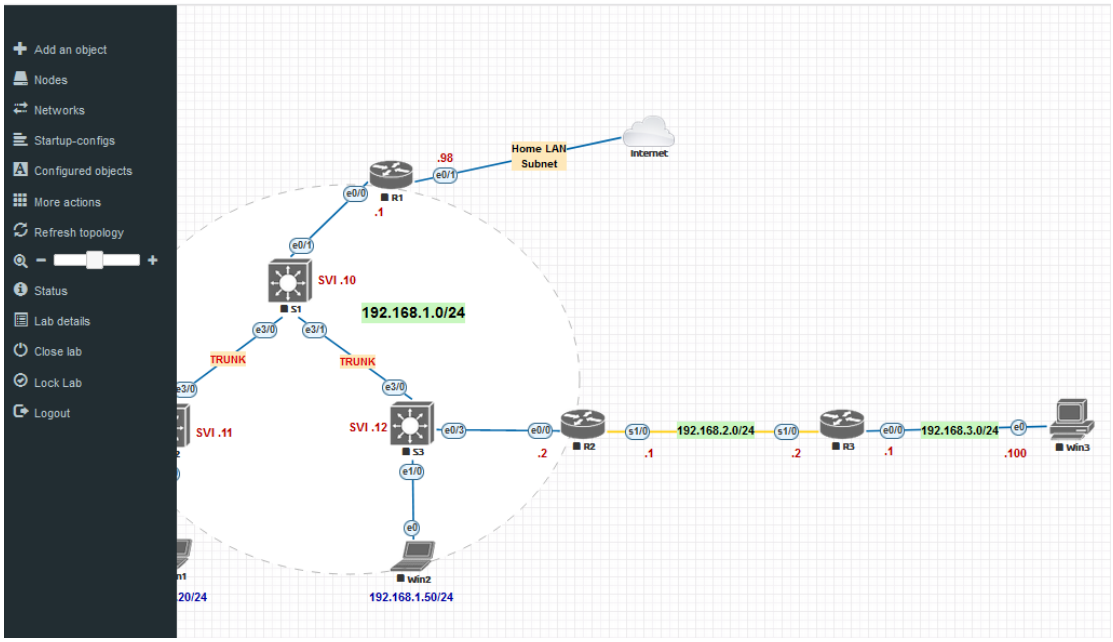
7 EVE WEB Topology page

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



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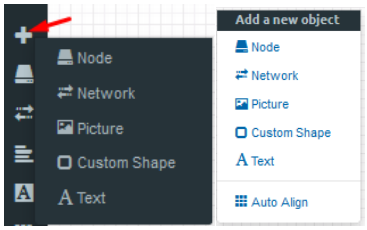
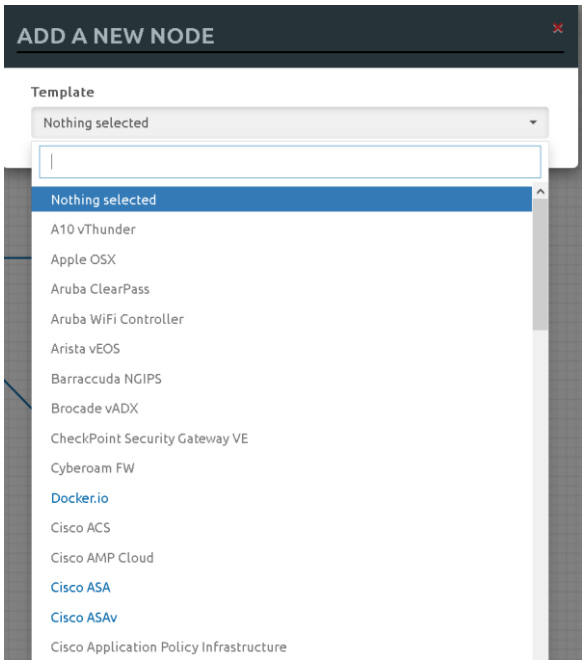
7.1.1 Add an object

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

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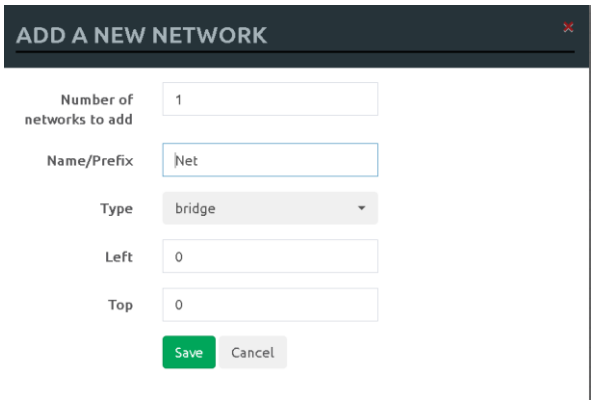
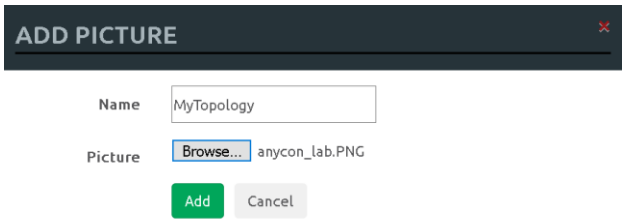


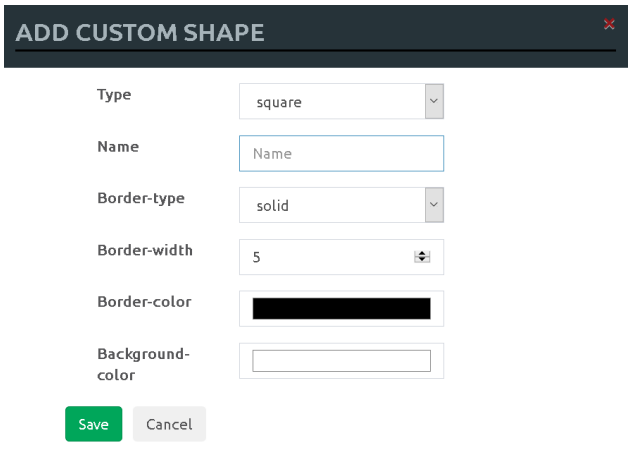
7.1.1.3 Picture object

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



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



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

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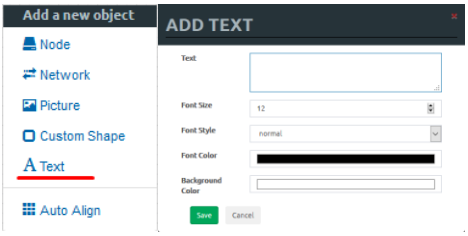
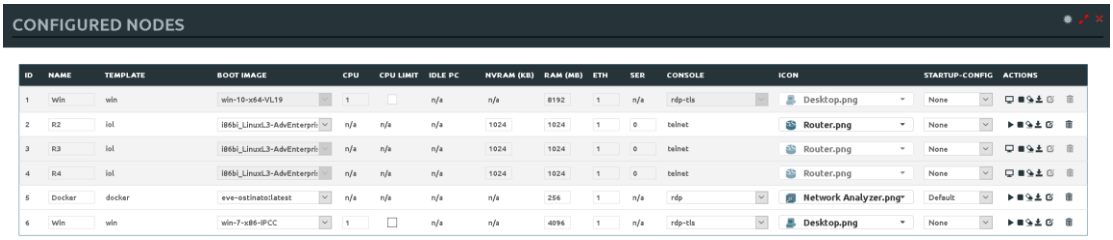


7.1.2 Nodes

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



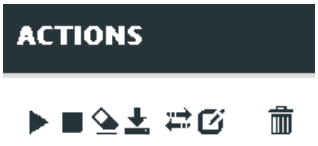
In this window, you can make changes for nodes that are on the lab topology. More options can be found in the detailed node specific menu, for details refer to section 8.1.2.

⚠ 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

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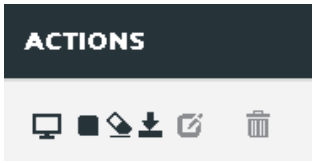
- Stop node
- Wipe node
- Export the nodes config
- Networks
- Edit node
- Delete Node

Actions Buttons (Running node):

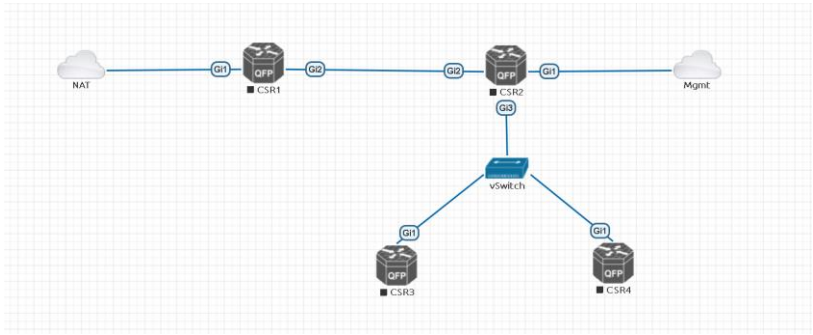


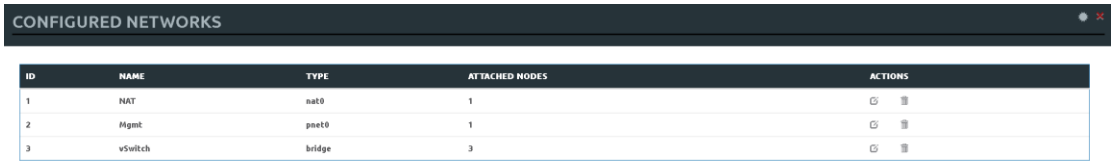
- Console to the node
- Stop node
- Wipe node
- Export the nodes config
- Edit node
- Delete Node

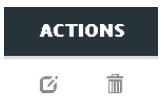
7.1.3 Networks

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







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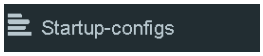
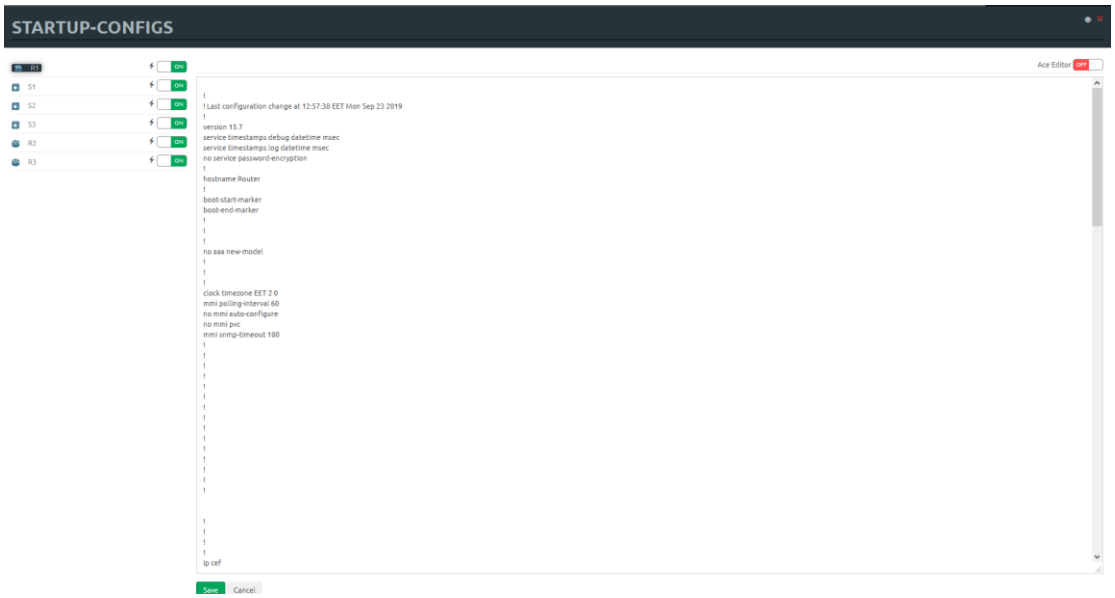
- Edit Network
- Delete Network

7.1.4 Startup-configs



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

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

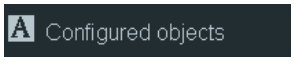


7.1.5 Logical Maps

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

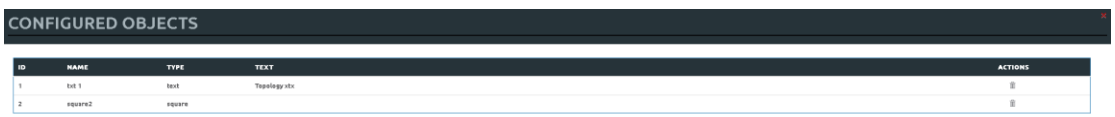
For details on the Picture / custom topology feature, refer to section 10.2

7.1.6 Configured Objects



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.



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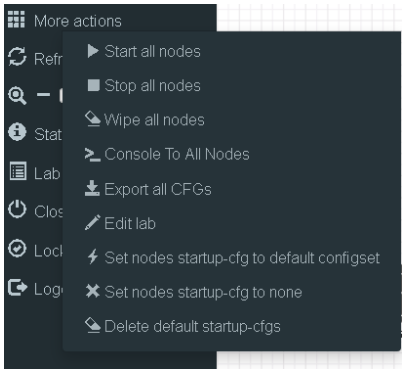
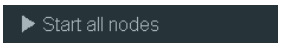
7.1.7 More actions

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.

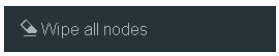
⚠ IMPORTANT. Starting many nodes at once can seriously spike your CPU utilization. Please make sure that you are not using the “Start all nodes” option for heavy labs or that you have configured a proper delay between the nodes. For heavy nodes and large quantities, it is recommended to start them in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

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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.

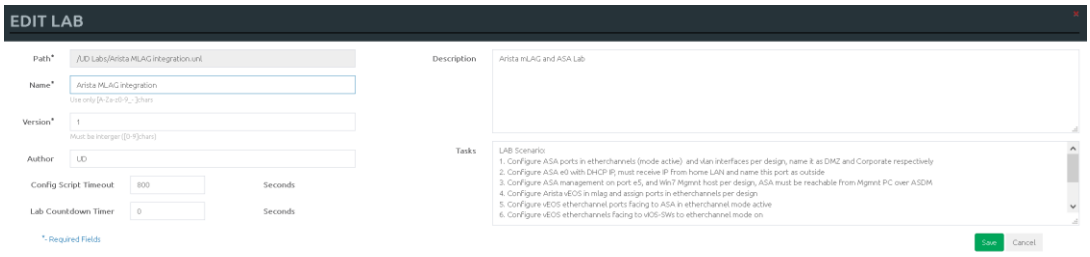
Export configurations are supported for:

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

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

7.1.7.6 Edit lab

Opens the Edit lab window. Refer to section: 6.7.4



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

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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

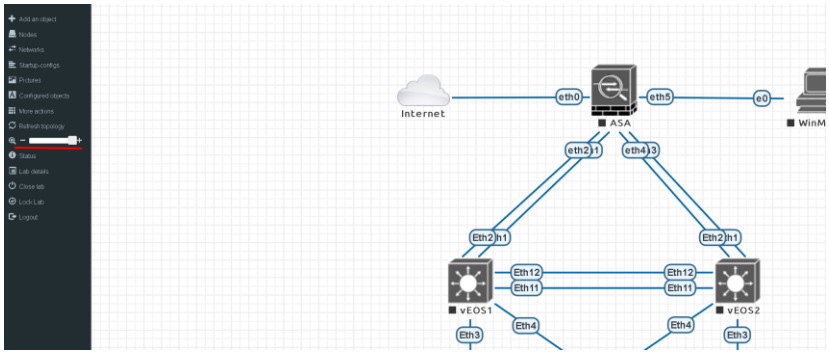
⚠ WARNING: this action will delete all configurations saved to your saved default config set. Please make sure that is what you want to do before you execute this.

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

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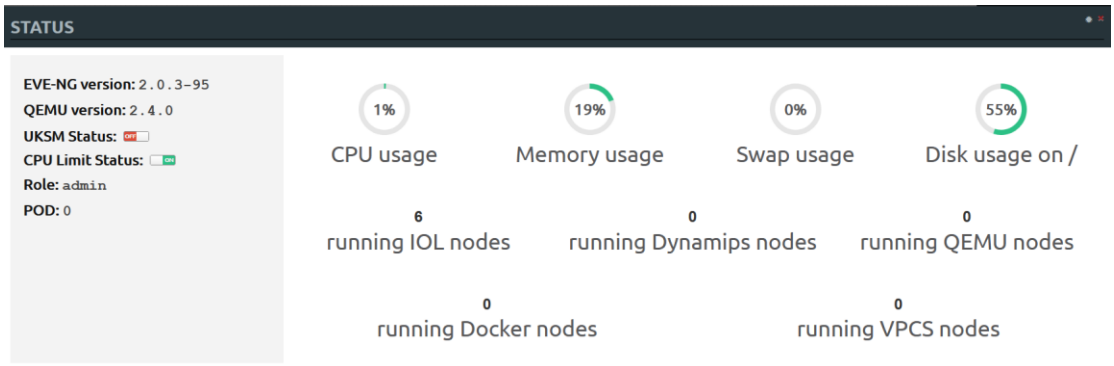
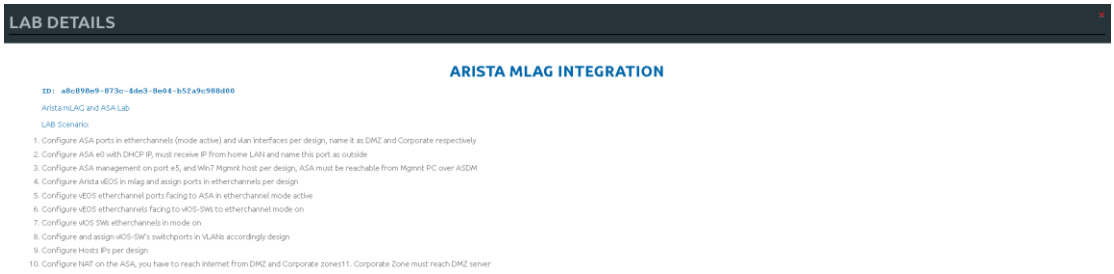


7.1.11 Lab details

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



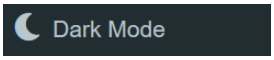
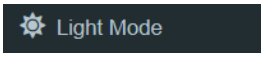
7.1.12 Lock Lab

"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	Lab is locked and all operations are restricted

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

7.1.13 Dark mode or Light mode

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

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7.1.14 Close lab

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

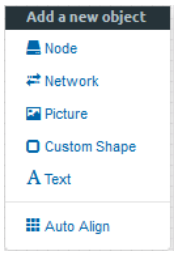
7.1.15 Logout

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.

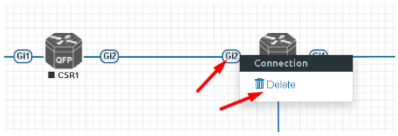
7.2.1 Lab topology menu



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.

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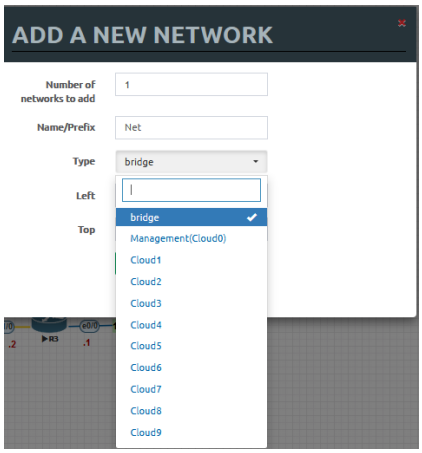
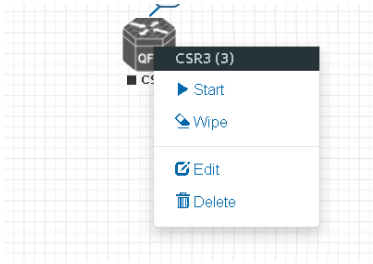


If you have chosen Edit, the Network edit window will open a window where you can change the placement, network type or name/prefix.

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:

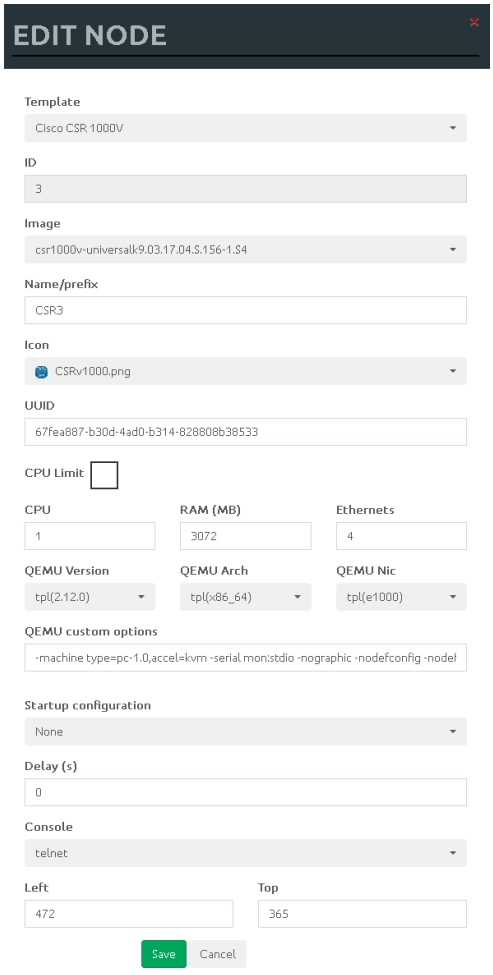


Start node: This will start the selected node in this lab

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.

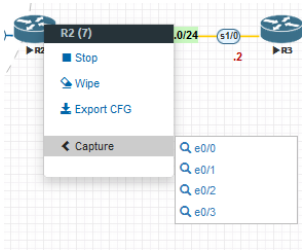


7.2.5 Running node menu

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.

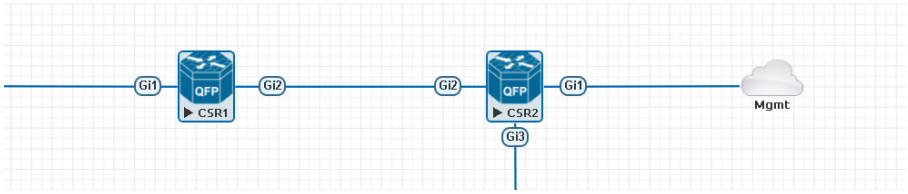
Export CFG: This function is used to export the saved running configuration to the EVE startup configuration sets. Reference section 10.3



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:

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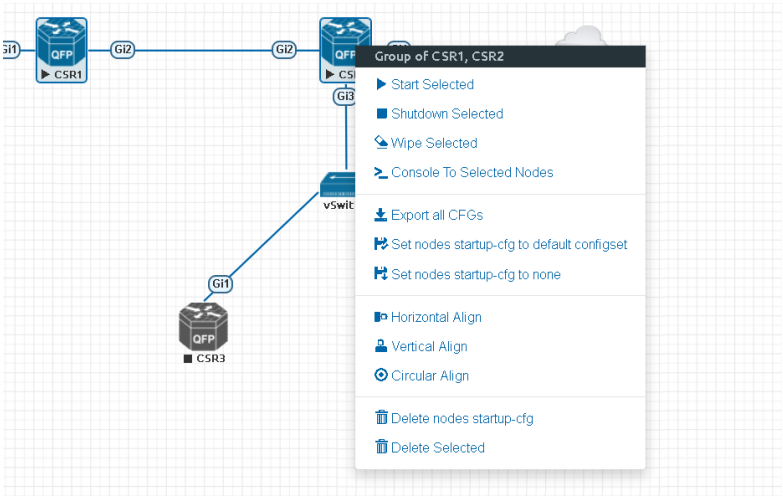

Start Selected: This will start the selected nodes in this lab**.**

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

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Step 2: Set nodes startup-cfg to none

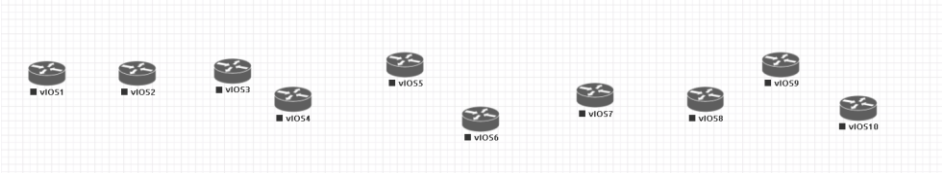
Please refer to section 10.3

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:



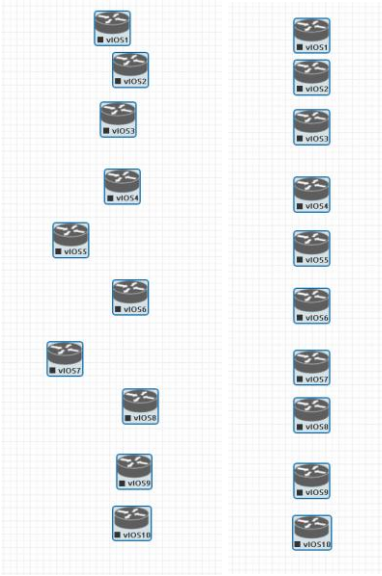
Picture after:

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.

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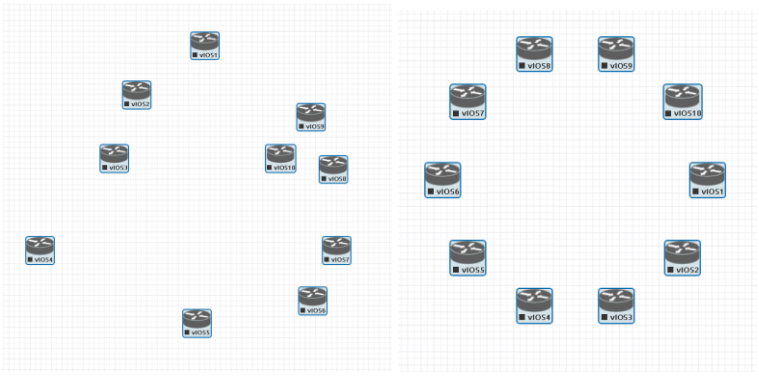
Step 1: Select the nodes you wish to align.

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**



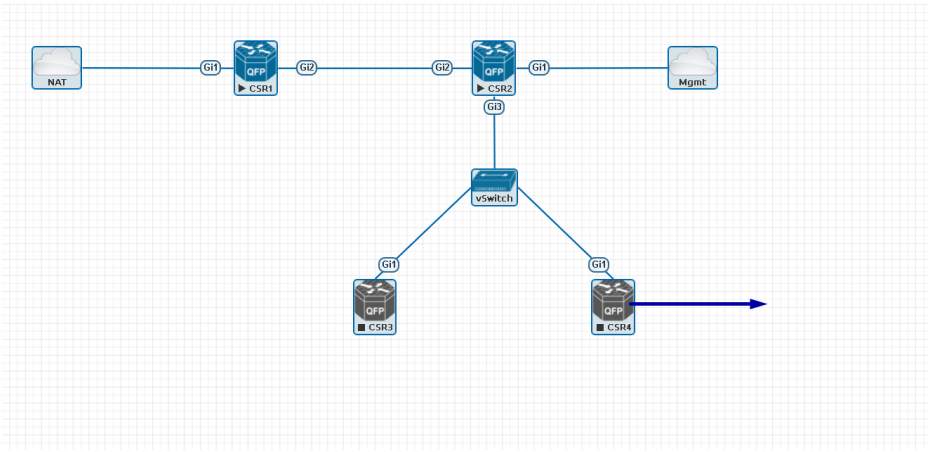
Delete nodes startup-config.

⚠ 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.



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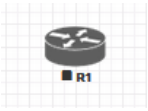
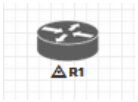
7.3 EVE Lab node states and symbols

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.

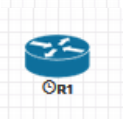


A grey node with an exclamation mark inside a triangle below the node means that there was a problem during the boot process, this could be a corrupted boot image, insufficient resources or problems with the initial configuration. A node in this state cannot be started again.

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.



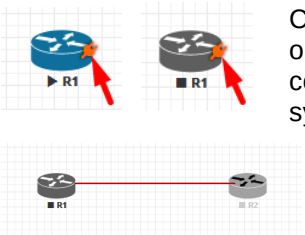
A running node with a clock symbol below the node means that the node is waiting to finish loading from the set exported/startup configuration. Once the configuration has been successfully applied, the node symbol will change to a Play triangle symbol. If the node has finished booting but the clock symbol 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.

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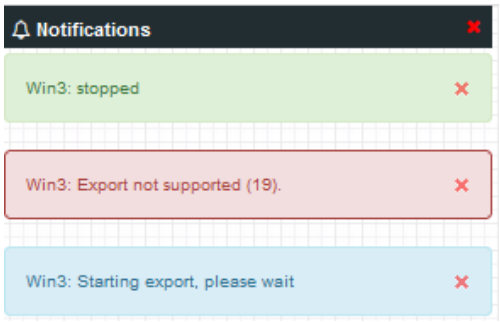
7.4 Other

7.4.1 Notifications area



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

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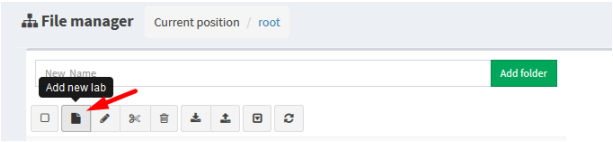
8 Working with EVE labs

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

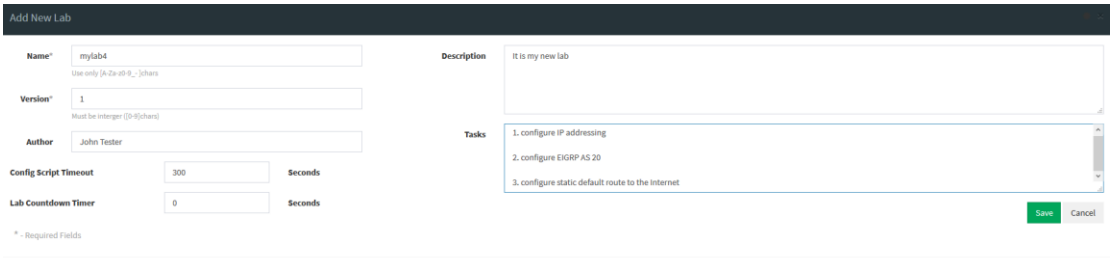
8.1 Creating a lab

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



Step 2:

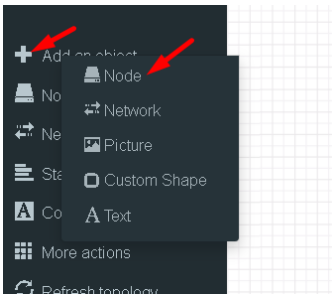
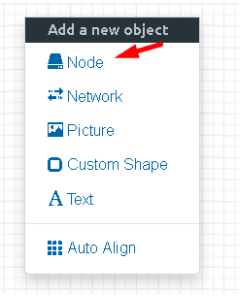
Fill out the lab information. Name and Version are required fields. Next hit Save. Refer to section 6.7.4 for more information about the different fields in the Edit lab window.



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. 

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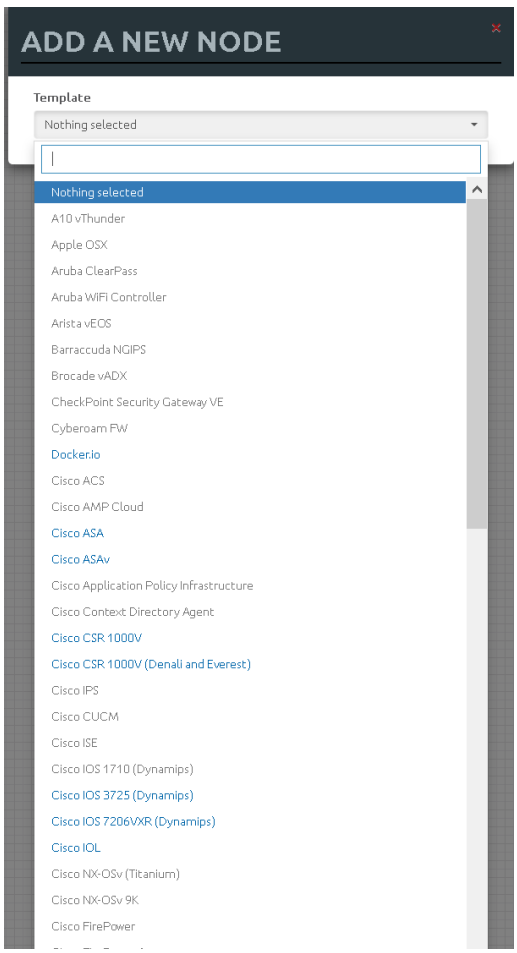
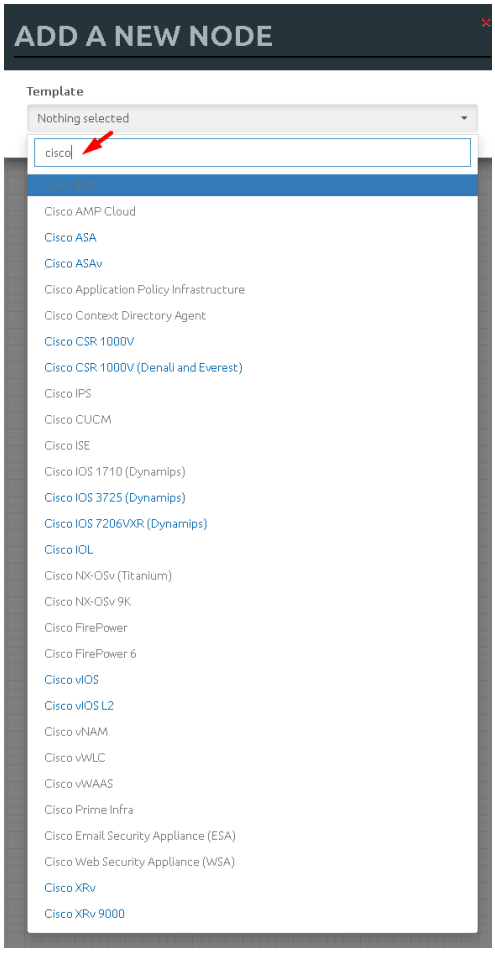
Step 2: The Add new node window will appear. You can scroll down to choose which node you wish to add to the lab topology, or you can type the node name to filter through the node list.

⚠ 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.

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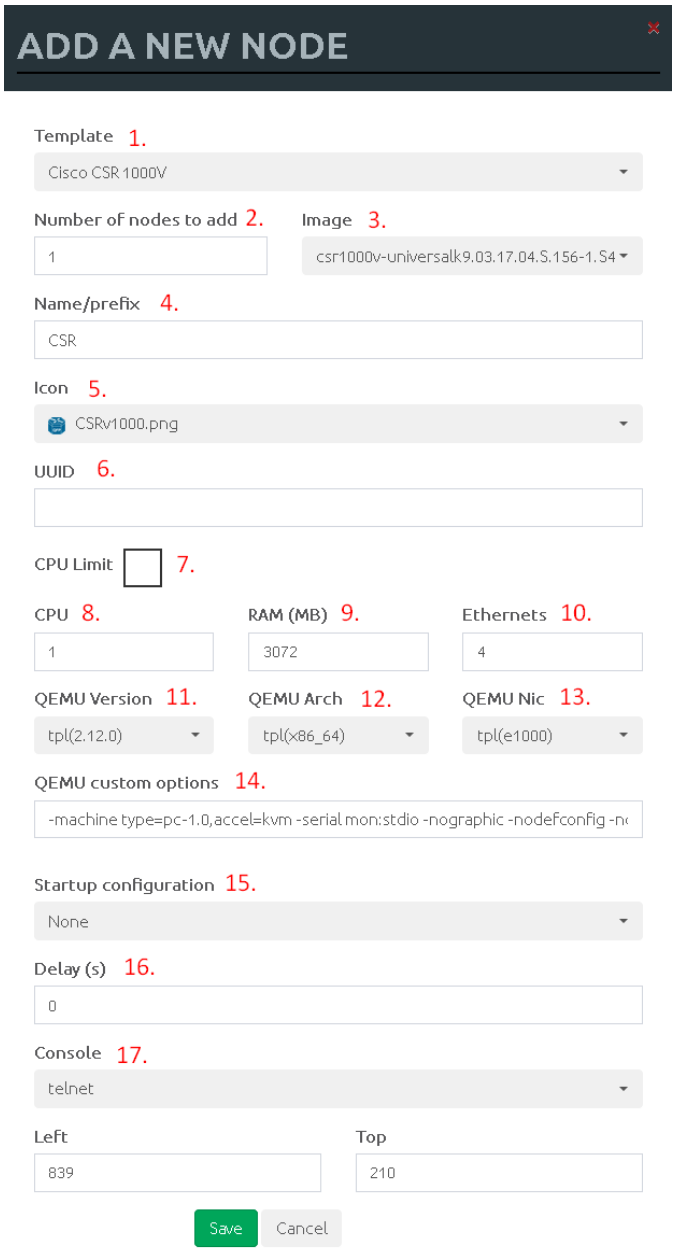
ADD A NEW NODE
Template 1.
Cisco CSR 1000V
Number of nodes to add 2.
1
Image 3.
csr1000v-universalk9.03.17.04.S.156-1.S4
Name/prefix 4.
CSR
Icon 5.
CSRv1000.png
UUID 6.
CPU Limit 7.
CPU 8.
1
RAM (MB) 9.
3072
Ethernets 10.
4
QEMU Version 11.
tpl(2.12.0)
QEMU Arch 12.
tpl(x86_64)
QEMU Nic 13.
tpl(e1000)
QEMU custom options 14.
-machine type=pc-1.0,accel=kvm -serial mon:stdio -nographic -nodefconfig -n
Startup configuration 15.
None
Delay (s) 16.
0
Console 17.
telnet
Left
839
Top
210
Save
Cancel

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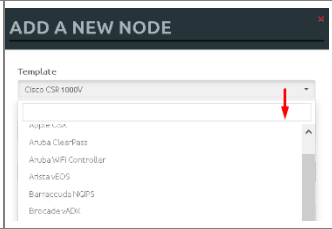
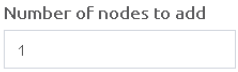
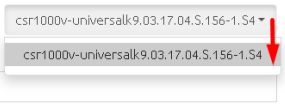
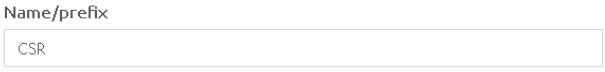
8.1.1.1 Node values Table

Number	Description
1.	 Template menu. Choose which node template to add to the topology
2.	 Chose the number of nodes of this type you want to add to the topology
3.	 Choose your preferred version from preloaded images list (if you have more than one image loaded for a single template).
4.	 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.	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.	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 per node. This option is already set (checked/unchecked) per EVE recommendations. Refer to section 6.4.1

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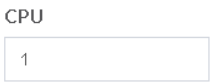
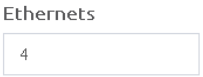
8.	 Each node template has a pre-set CPU value that aligns with vendor requirements. This value can be changed per your needs.
9.	Each node template has a pre-set RAM value that aligns with vendor requirements. This value is displayed in MB and may be changed per your needs.
10.	 The number of ethernets 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.
11.	Custom MAC address for Qemu nodes only. You can define your own MAC address for first interface:
12.	EVE will pre-set the best recommended QEMU version for each node template. This value can be changed per your needs.
13.	Qemu architecture is pre-set per image vendor recommendations. This value can be changed per your needs
14.	Type of Qemu NIC is pre-set per image vendor recommendations. This value can be changed per your needs.

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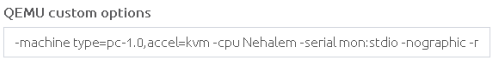
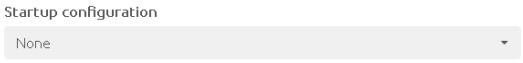
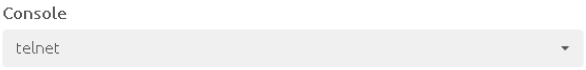
15.	 Qemu custom options are pre-set per image vendor recommendations. This value can be changed per your needs
16.	 Startup configuration: Value can be changed to set your node to boot from saved configurations. Refer to section 10.3 for more details.
17.	The Delay value is set in seconds and can be 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 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.	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.

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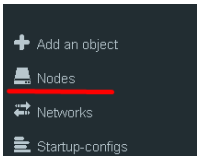
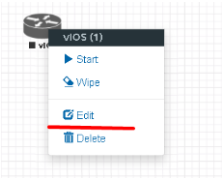
8.1.2.1 Edit nodes globally

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.

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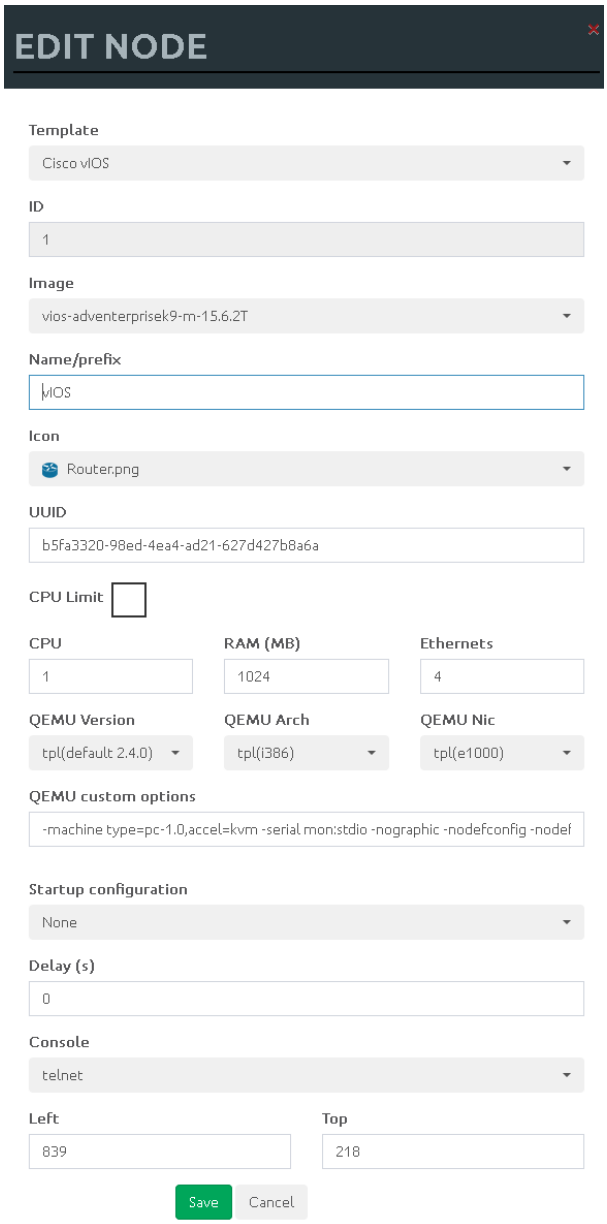
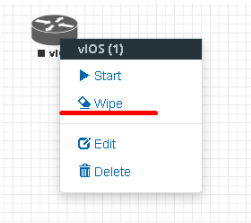


8.1.3 Wipe Node



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

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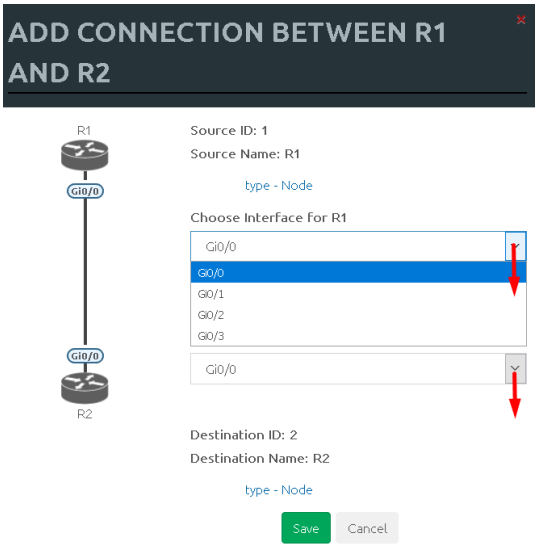
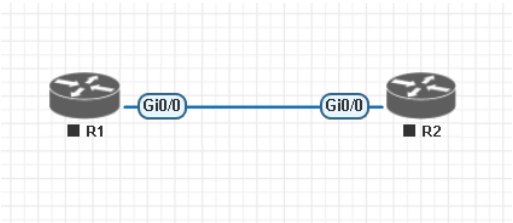
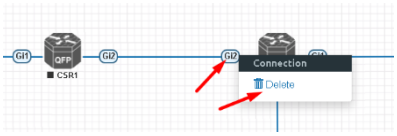
Connector symbol: Moving the mouse over a node will make an orange male plug appear. The male plug is used to connect nodes on the topology, drag and drop style. Release the mouse pointer on the second node.

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



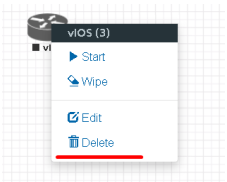


8.1.5 Delete connection between nodes



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.

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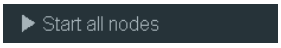
8.2 Running labs

8.2.1 Starting lab

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

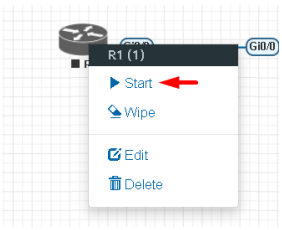


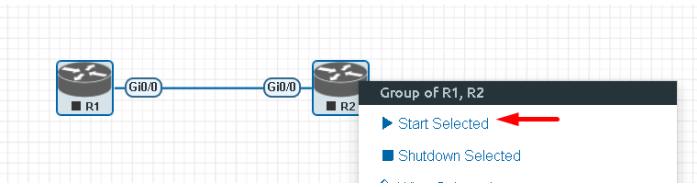
The Start all nodes option will start all nodes on your topology.

> ⚠ 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.

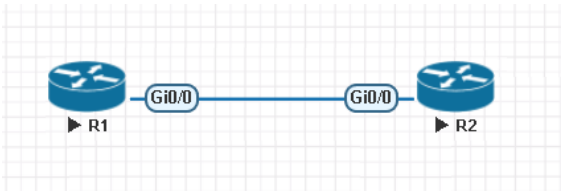
Starting a node or group of nodes:

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.

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

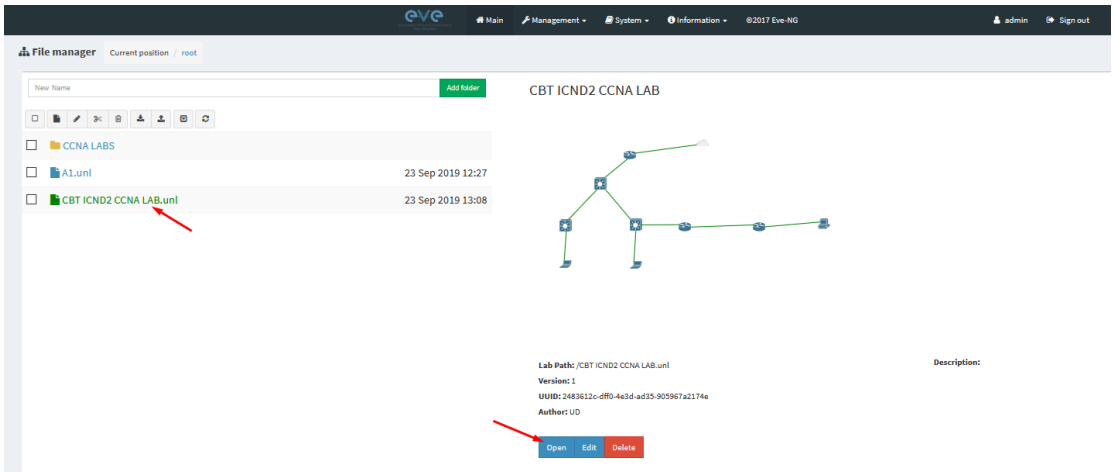
Stopping a node or group of nodes:

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

For individual node Stop options refer to section 7.2.5

8.5 Start saved lab

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



8.6 Importing labs

Refer to section 6.2.2.6

8.7 Exporting labs

Refer to section 6.2.2.5

8.8 Deleting labs

Refer to section 6.2.2.2

8.9 Moving labs

Refer to section 6.2.2.4

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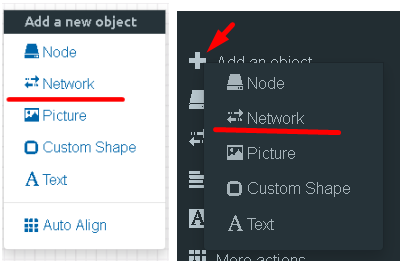
9 EVE Clouds and Networks

9.1 Bridge Network

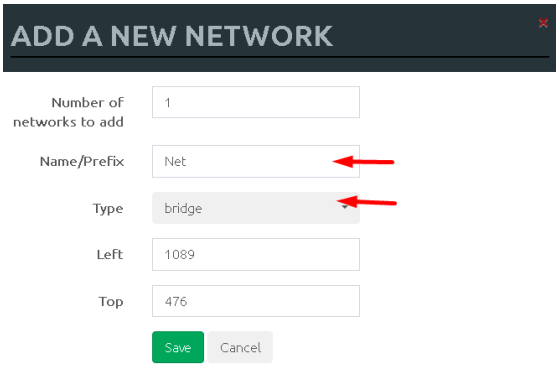
The EVE Bridge interface acts like an unmanaged Switch. It supports passing along tagged dot1q packets.

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

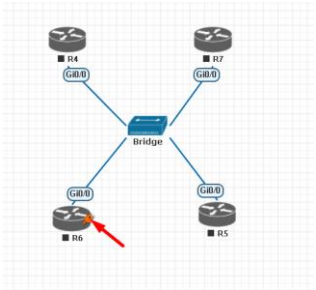
Step 1: Add a Bridge Network onto the topology. There are two ways to do this: Right-clicking on the topology area and selecting “Add Network” or in the sidebar click “Add an Object” and then select “Network.” Please refer to sections 7.2.3 and 7.1.1.2



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



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



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9.2 Management Cloud0 interface

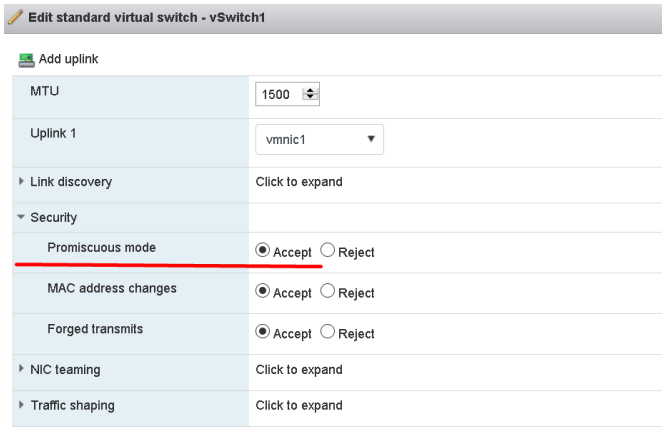
EVE management interface is also known as the Cloud0 network for labs. The Cloud0 interface is bridged with your EVEs first NIC. “Cloud” is used as an alias to pnet. Pnet is the bridge interface name inside of EVE.

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

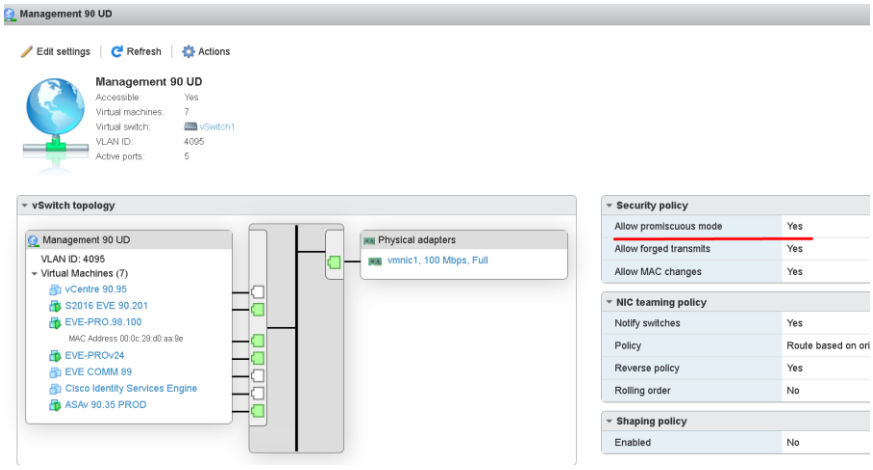
Cloud0 is commonly used inside EVE labs to get management access to nodes running inside EVE from a host machine external to EVE.

> ⚠ **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



Portgroup Settings



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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.

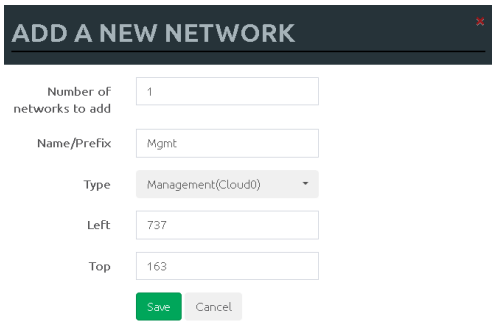
⚠ **Question:** How can I obtain my Cloud0 subnet and gateway IP. Many EVE VMs only have a DHCP address assigned on the pnet0 interface.

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

```
ip 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.



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.

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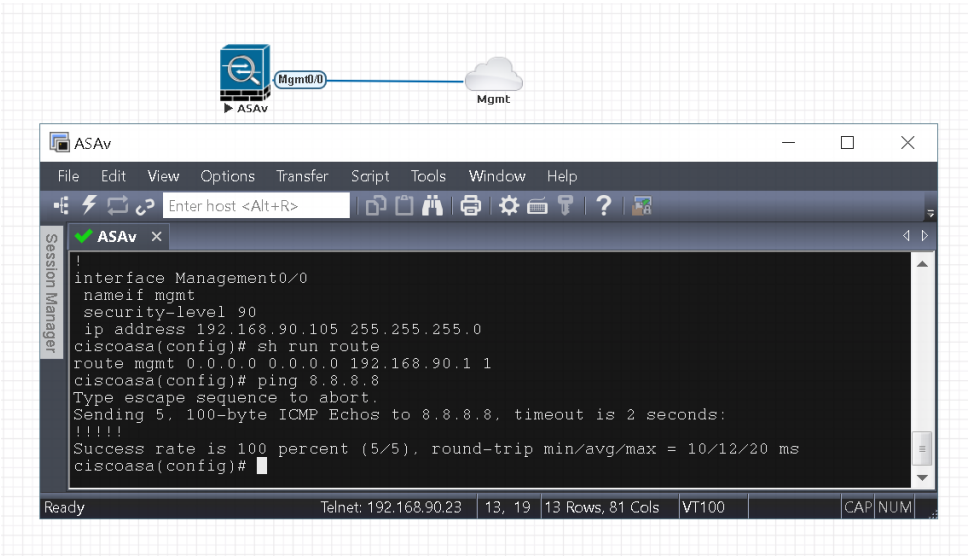
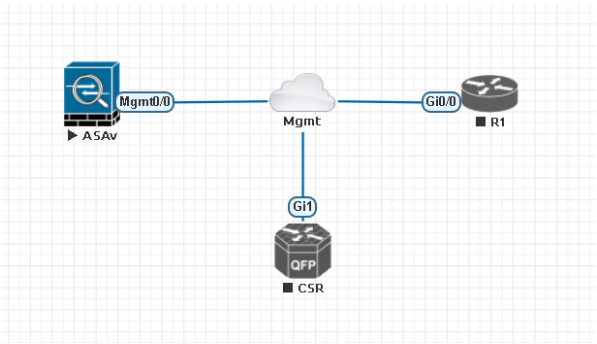


NOTE: Cloud interfaces can be used to connect multiple nodes to a single cloud instance on the topology.



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.

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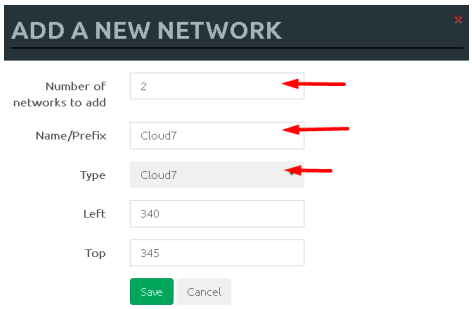
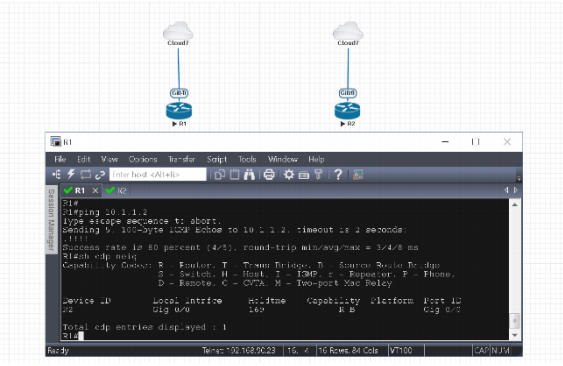
Cloud1	Pnet1	bridged	Network adapter 2	Network Adapter 2	Second ethernet Eth1	Cloud1 can be bridged with your EVE second ethernet port to achieve connection to another network or device. The IP address is not required to be configured on it. It will act like a pure bridge your external connection with 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.



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



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

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

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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.

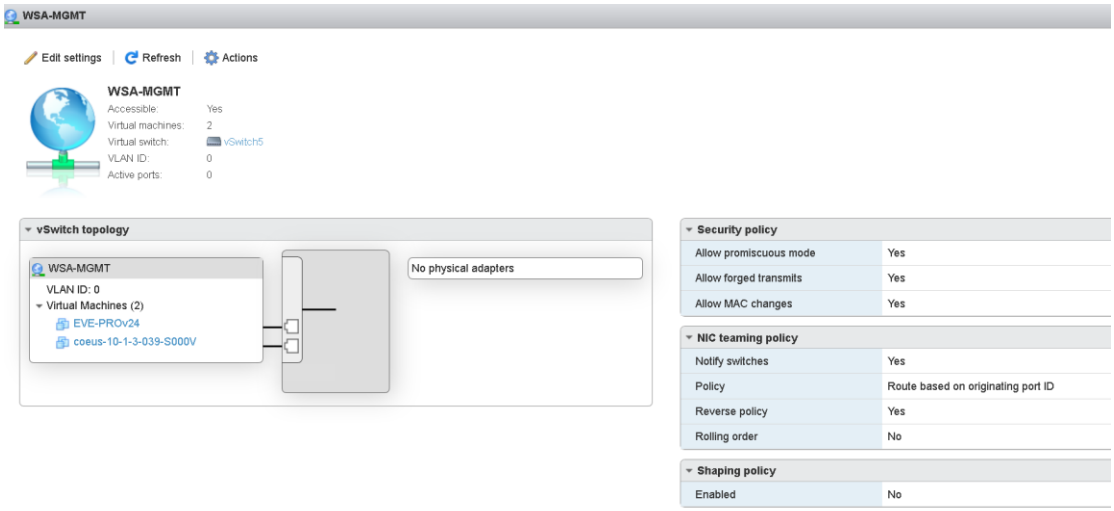
⚠ **NOTE**: A single Cloud interface can be used to connect more than one external VM to the EVE lab.

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:



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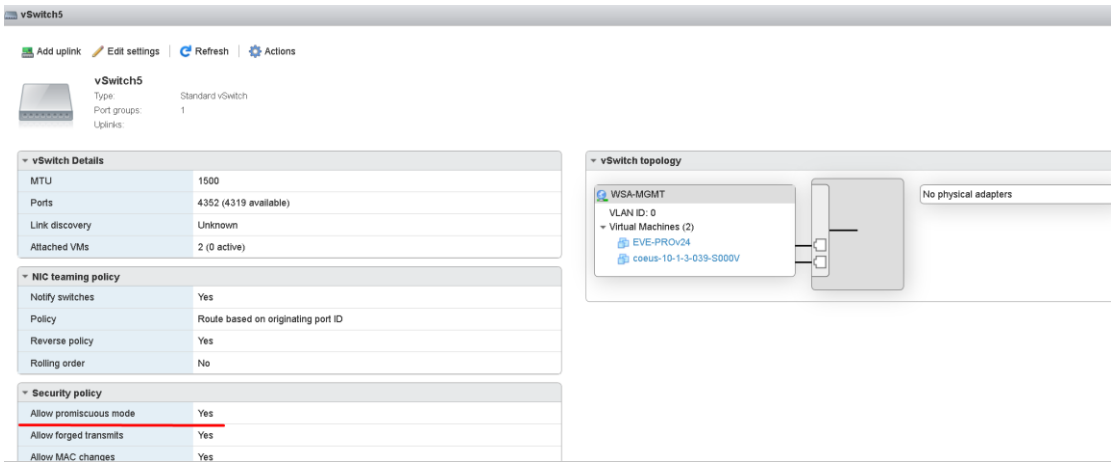
Parent vSwitch5 settings:



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.

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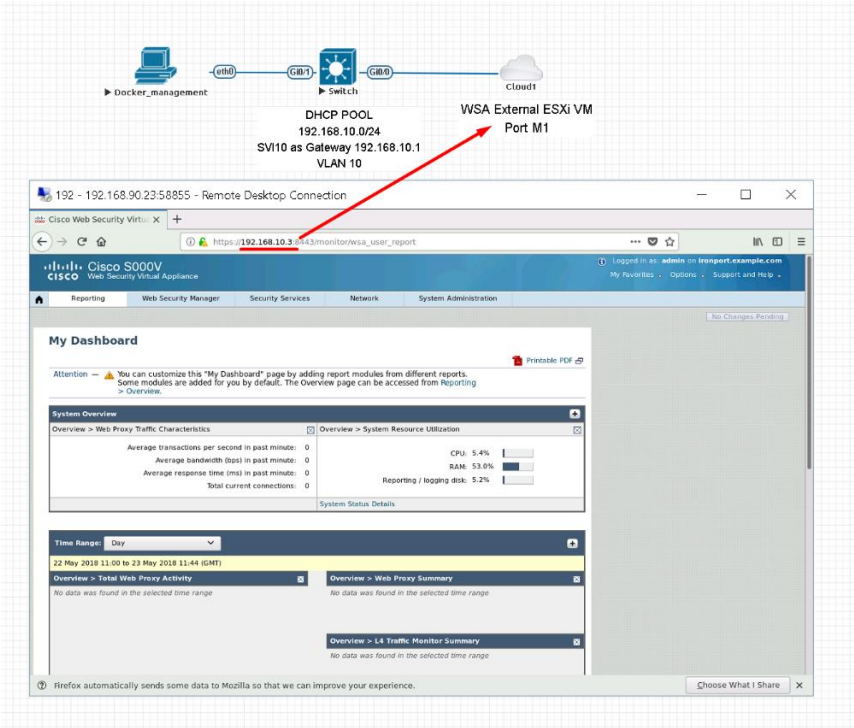


9.4.2 VMWare workstation machines

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

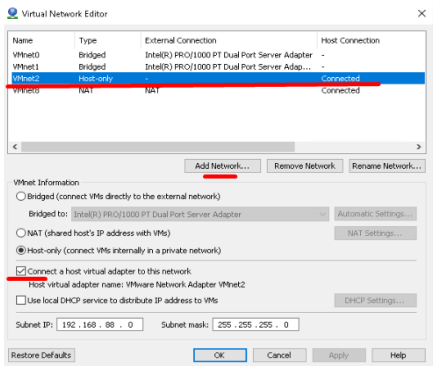
> ⚠ **NOTE**: A single Cloud interface can be used to connect more than one external VM to the EVE lab.

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

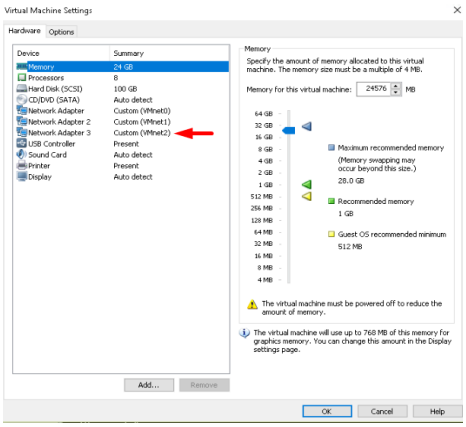
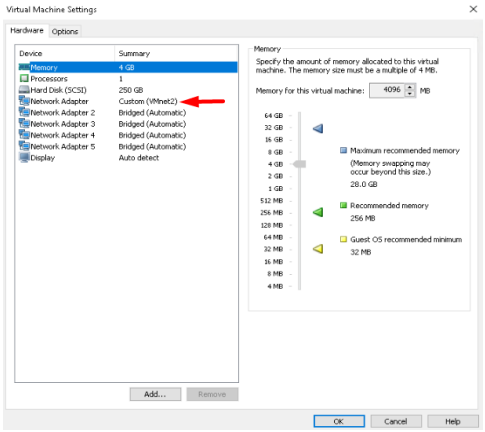
> ⚠ **NOTE:** VMs must be in a powered off state to assign network interfaces.

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

Virtual Network Editor settings:



EVE and WSA VMs settings

EVE VM, the third port (Network adapter 3) is assigned to VMnet2. This is Cloud2 inside your EVE labs.	Cisco Web Security Appliance (WSA), Management port is assigned to VMnet2
	

EVE Lab connected to the WSA (Cloud2)

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

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

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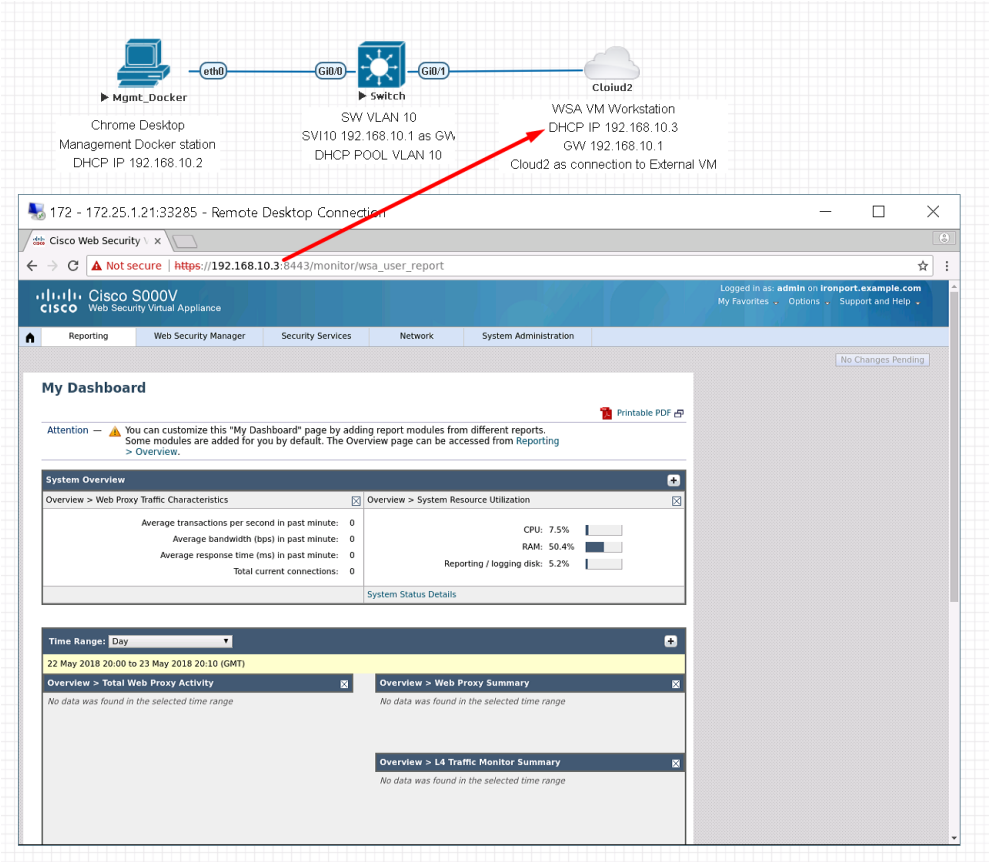

9.5 Connecting EVE Lab to a physical device

⚠ 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

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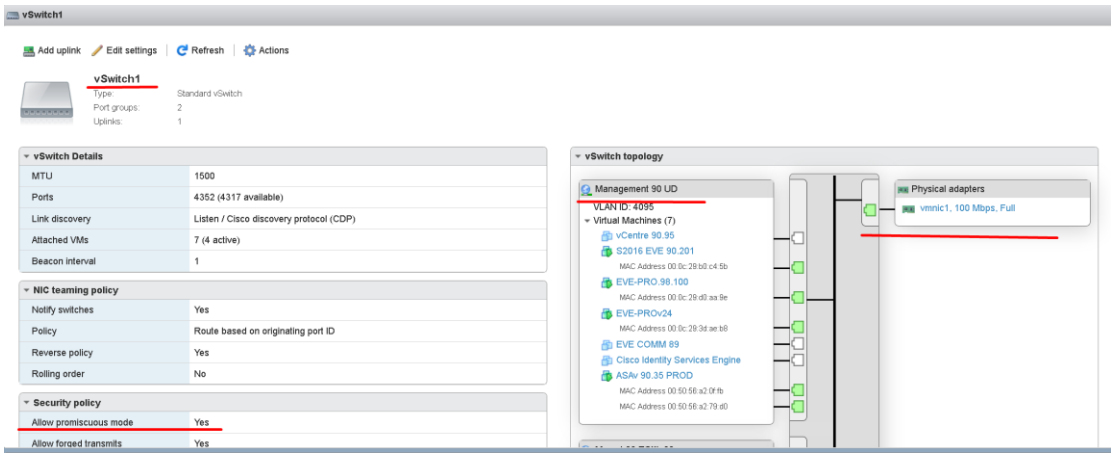
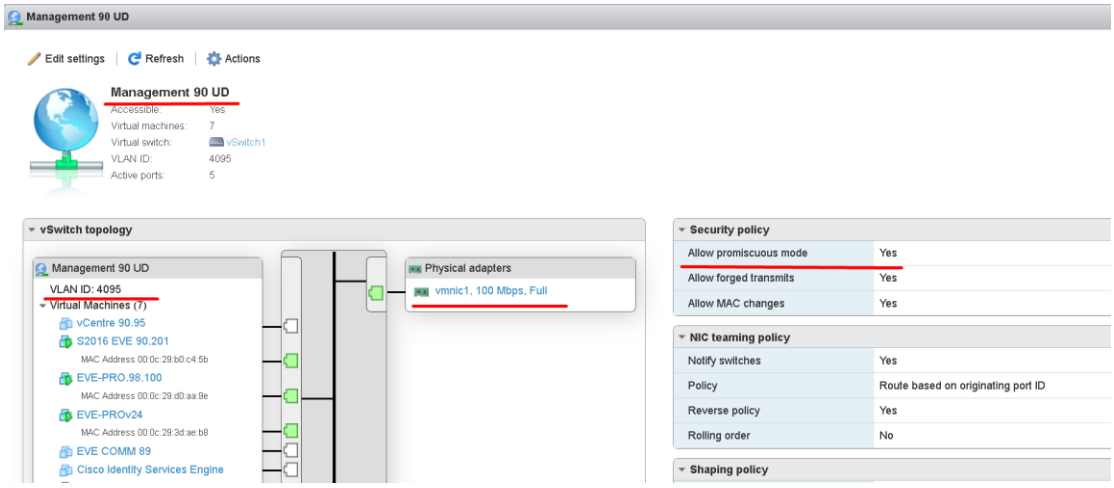
vSwitch1 settings bridged with Server Ethernet port vmnic1 (physical adapter)

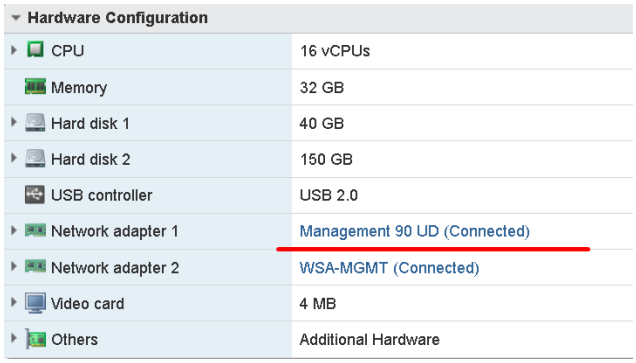


Portgroup “Management 90 UD” Settings associated with vSwitch1



EVE VM Settings

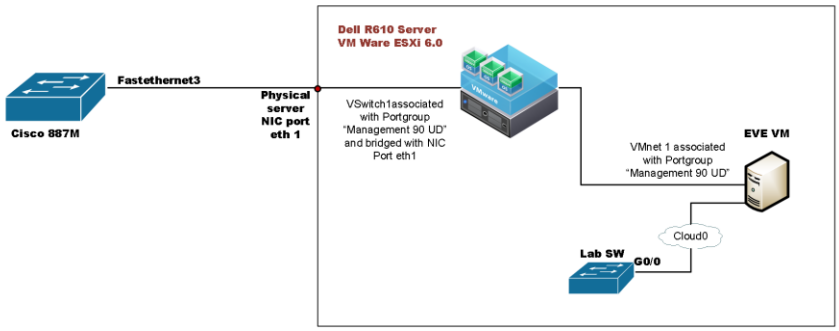
EVE VM Cloud0 is connected to Portgroup “Management 90 UD”



EVE Lab Connected to a physical device

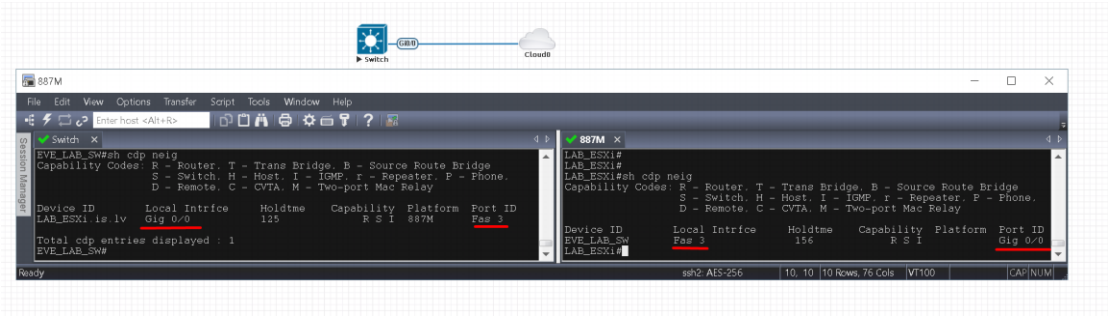
Physical Topology

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



EVE Lab Topology

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



9.5.2 VMWare workstation EVE

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

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

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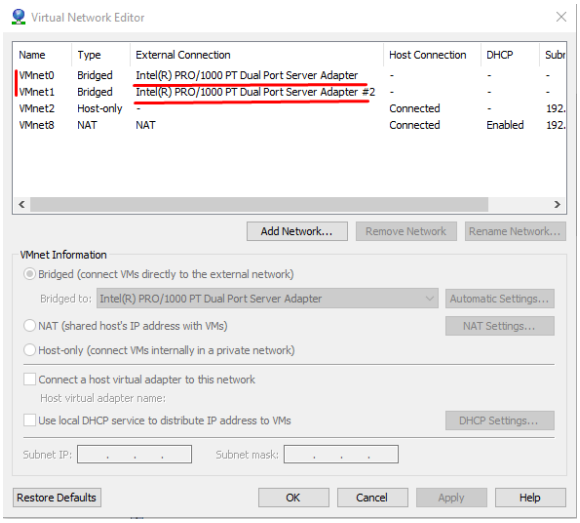
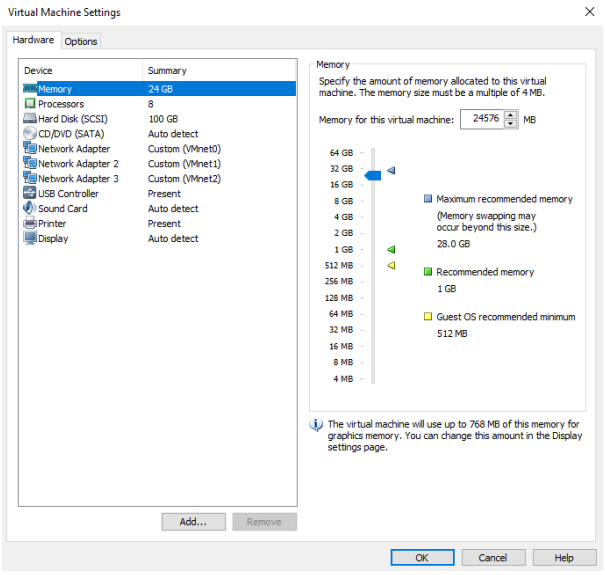


EVE VM Settings. Network adapter is bridged to VMnet0 (ethernet Intel Pro 1), and Network adapter 2 is bridged to VMnet1 (ethernet Intel Pro 2).

Responding cloud interfaces on EVE VM:

Cloud0→Network Adapter→VMnet0→IntelPro

Cloud1→Network Adapter 2→VMnet1→IntelPro#2



Physical connection scheme and VMware bridging.

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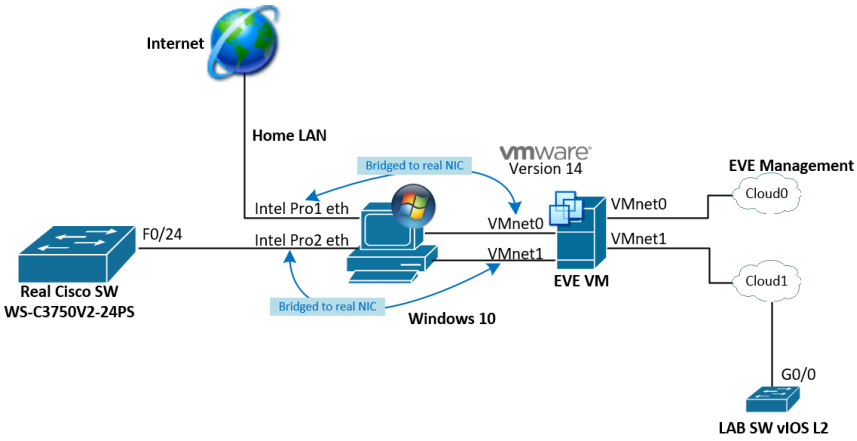
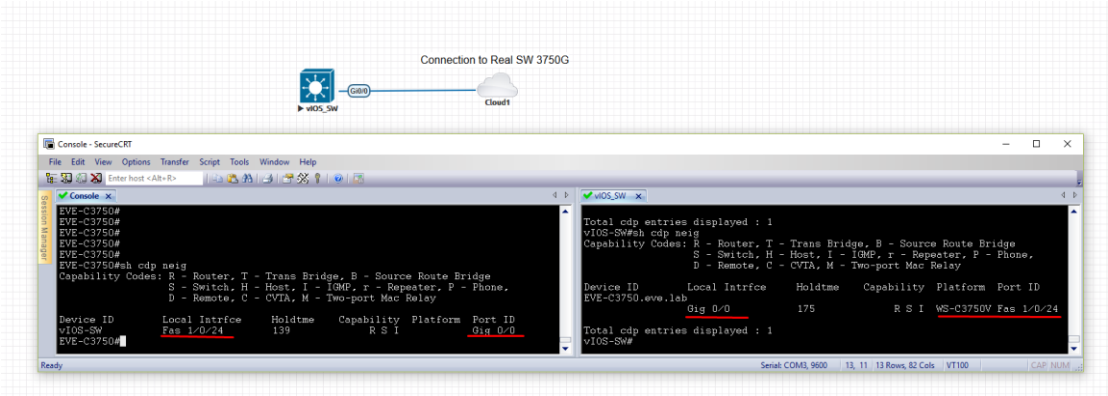


EVE Lab scheme.



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.

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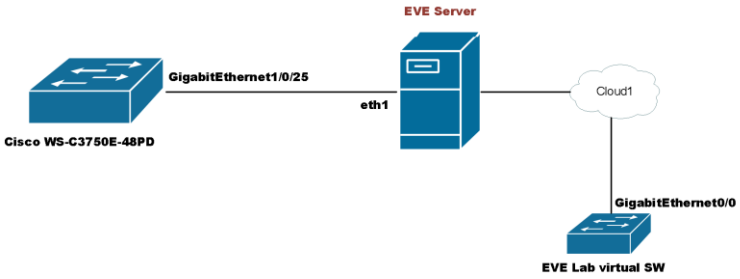
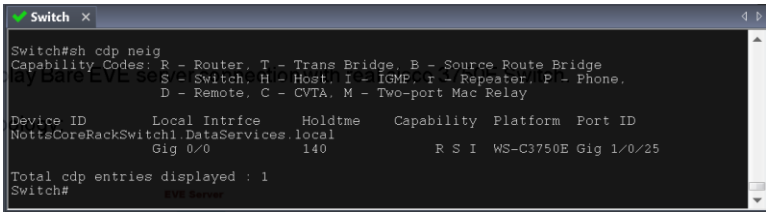
Physical connection topology:



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.

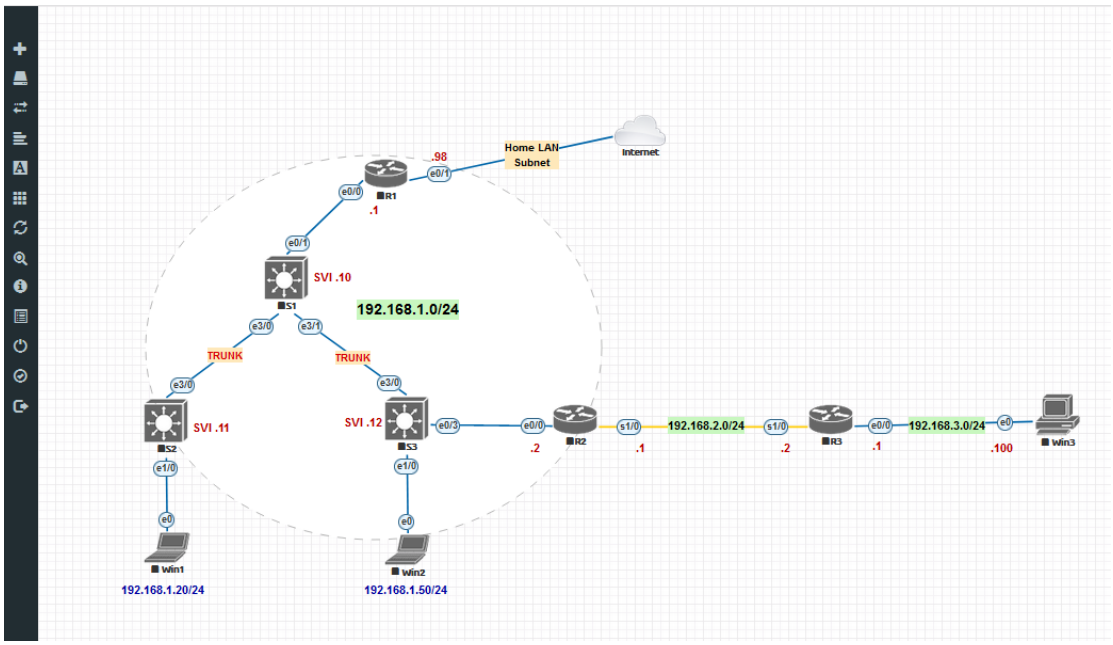


10 Advanced EVE Lab features

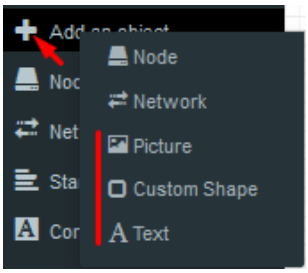
10.1 Lab design objects

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.

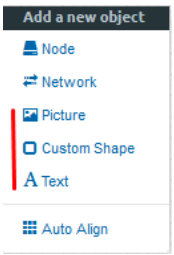
Example below, EVE lab with design elements:



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.

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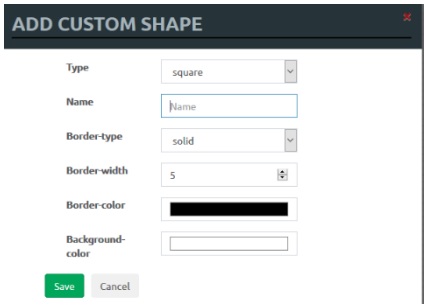
Border type: Two options: line or dashed

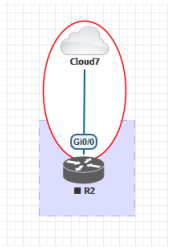


Border width: Increase or decrease the width of the border. This can be edited later in the “Shape Edit” menu.

Border colour: Allows you to choose a colour for the shape’s border. This can be edited later in the “Shape Edit” menu.

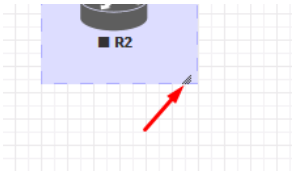
Background colour: Allows you to choose a colour to fill your shape with. This can be edited later in the “Shape Edit” menu.

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



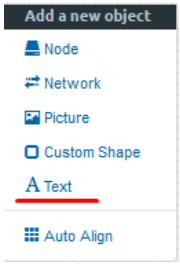
10.1.2 Resize square or circle objects

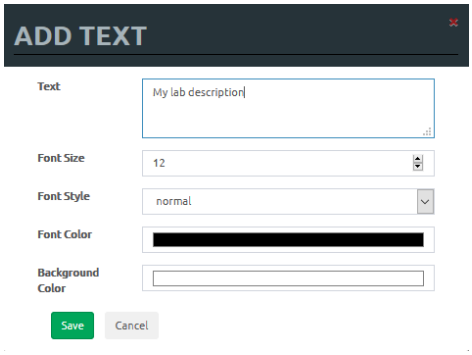
Move your mouse over the right bottom corner of the object until a corner symbol appears. Left click and drag your mouse to change object size or style (rectangle, sphere)

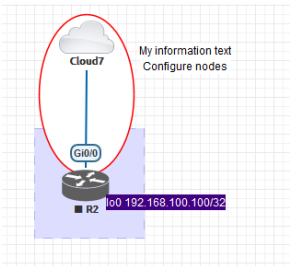


10.1.3 Text object

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







Example: text objects added to the topology.

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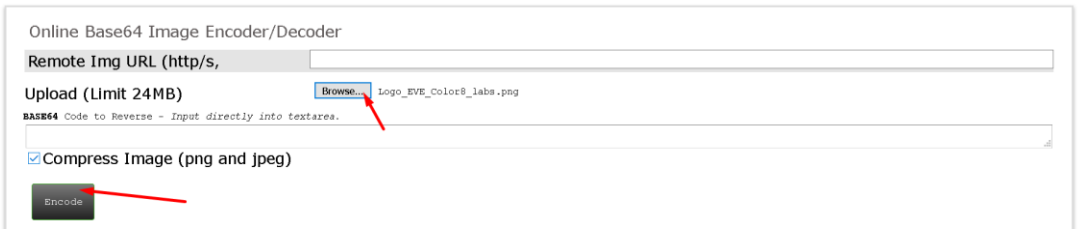
10.1.4 Add custom picture on the Lab using Text object feature

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.

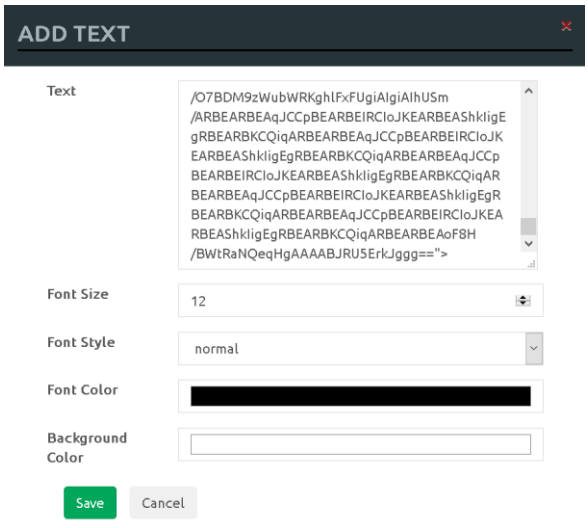


Step 2: Scroll down to find HTML format

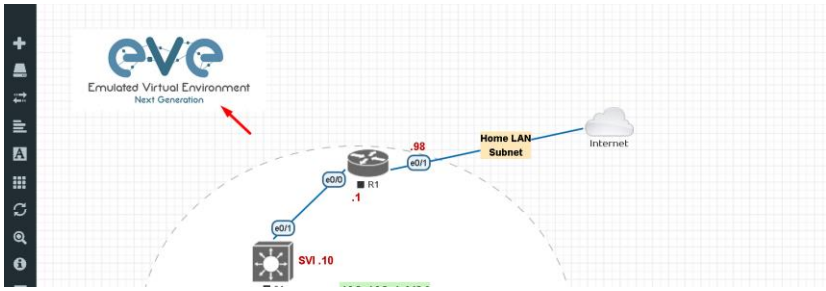
Step 3: Set your desirable size of picture.

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

Step 4: Copy content to EVE text object

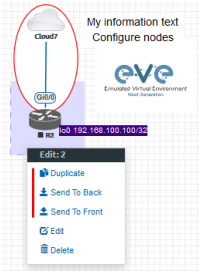


Step 5: Move and place your picture to the Lab.



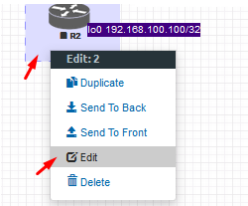
10.1.5 Cloning objects and overlay positions

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

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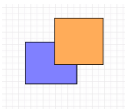
Z-index: Used to change the object's overlay position on the "Topology Canvas." An object with a higher numerically valued z-index will cover an object with a lower numerically valued z-indexed.



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

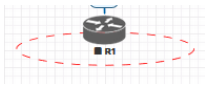
Border width: Used to change the object's border width.

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

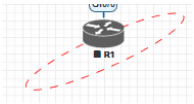
Border colour: Used to change the colour of the object's border

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

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



Rotate: Used to rotate the object on the



topology.

Name: Used to change the object's name.

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

10.1.7 Lock objects movement

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

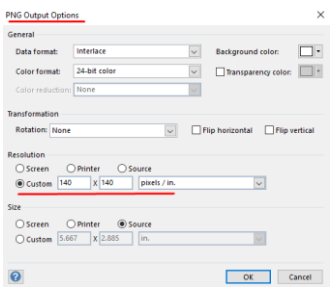
10.2 Custom design logical topology

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

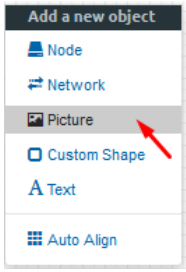
10.2.1 Custom design upload

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

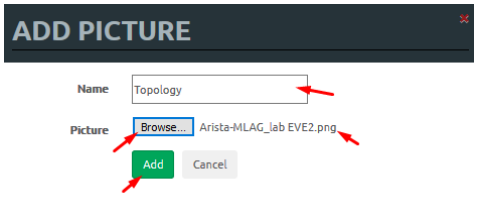
TIP: It is best is to create a topology in the MS Visio and after convert it to the .png picture format with resolution 140x140.



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

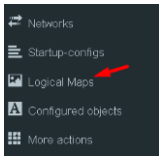


Step 2: Browse your PC for a .png or .jpg file and hit “Add”.



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

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



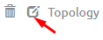
Pictures window management

	Delete uploaded picture from the lab
	Image Map: Map nodes to places in the picture
	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.

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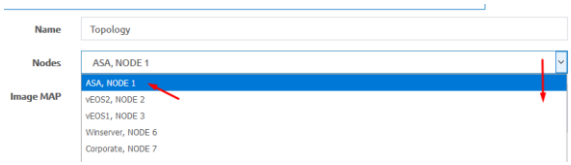
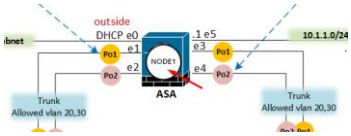
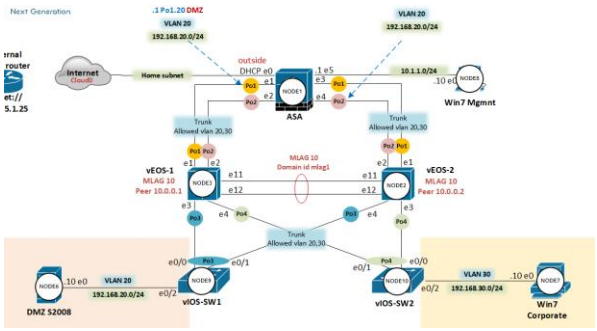


Step 3: Move your mouse over a node icon on the “Image Map” and click to map it. The grey circle means that the node is mapped.



Step 4: Continue mapping the rest of the nodes.

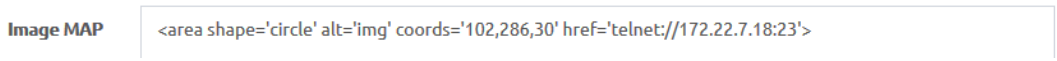


Step 5: OPTIONAL. You can also add a mapping for a device external to your EVE server in order to telnet, VNC, or RDP to it. This way you can open sessions to all your devices (whether external or internal) in one place.

Select from menu:

And map with node on topology.

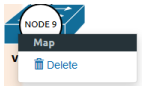
Change image map adding protocol, IP and port.



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.”



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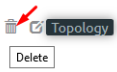
To delete the entire custom topology, click delete.



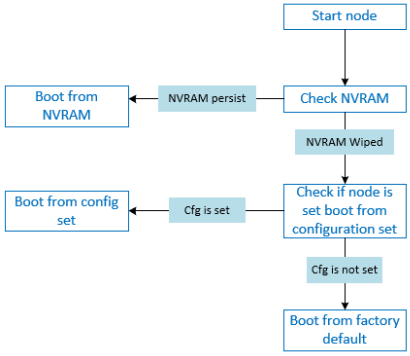
10.3 Configuration export feature

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.

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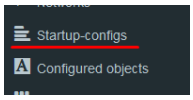
10.3.1 Supported nodes for configuration exports

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

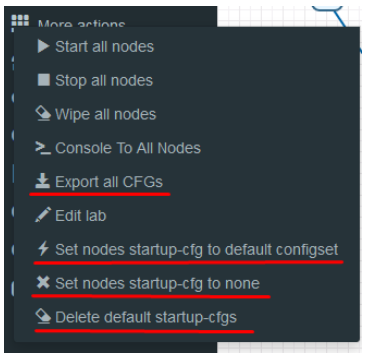
10.3.2 Startup config management

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

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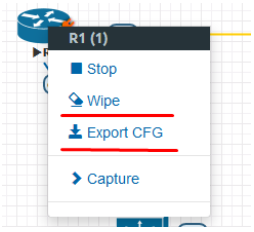
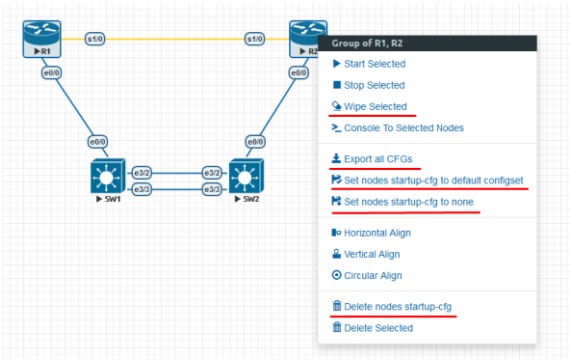


Wipe: Wipes the NVRAM for a single node

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.

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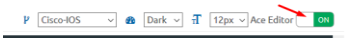
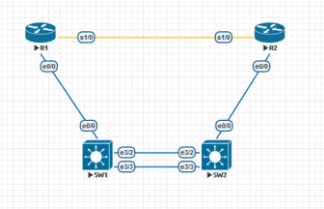
10.3.2.5 Startup-config window information

	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.

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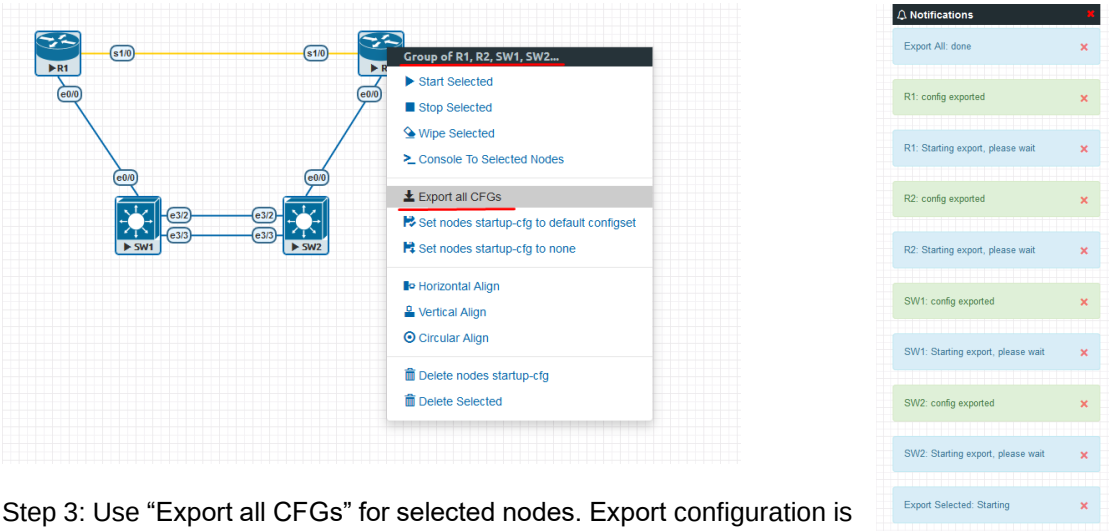
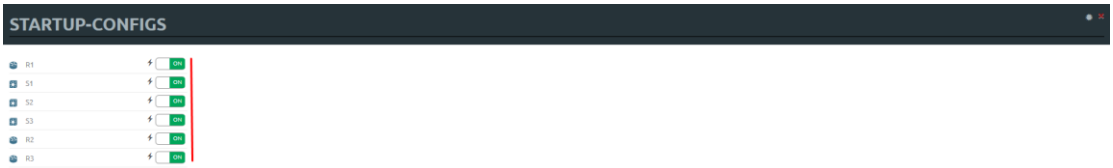


Step 3: Use “Export all CFGs” for selected nodes. Export configuration is completed. The notification area will display “Export All: done” when complete.

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.

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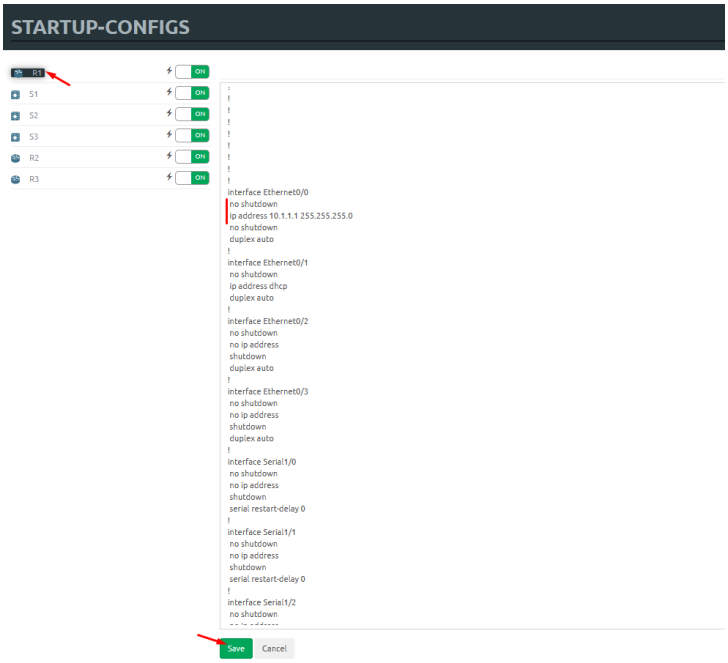

Step 2: Save the config for nodes with the green “Save” button on the bottom.

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

10.3.6 Set lab to boot from none

To reset your lab nodes’ configuration to factory default, follow the steps below:

Step 1: Wipe nodes. Refer to section 10.3 for information about wiping nodes and the order of operations during boot.

Step 2: Open sidebar and click Startup-configs. Make sure your config is set to OFF and the nodes config switch is red (switch on/off beside node). Press the green “Save” button (on the bottom) and all your nodes will boot with no config/factory default after wiping them.

Step 3: Start nodes

10.3.7 Lab config script timeout

Lab config script timeout is used when nodes are waiting to boot from a config set. The node will literally wait during boot until the configuration is applied from the config set.

Hit “More actions” and then “Edit lab” from the sidebar. Set the config script timeout in seconds. By default, this timer is set to 300 seconds for new labs.

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⚠ NOTE: For heavy labs and nodes with long configurations, you can raise this timer to 600 seconds or higher.

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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 **Error! Reference source not found.**. 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
```

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```
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.

Step 1: Stop all your labs and shutdown EVE.

Use EVE CLI command: **shutdown -h now**

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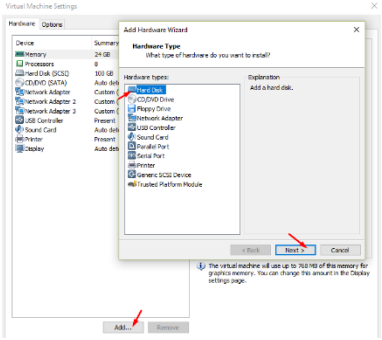
Step 2: Go to edit VM settings and add a new Hard drive. Then click Next.



Step 3: Leave the recommended SCSI HDD option and then click Next

Step 4: Make sure you have selected the option “Create a new Virtual disk.”

Step 5: Set your desirable HDD Size; example 200GB.

Step 6: Make sure you have set the option “Store Virtual disk as a single file” and then click Next

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

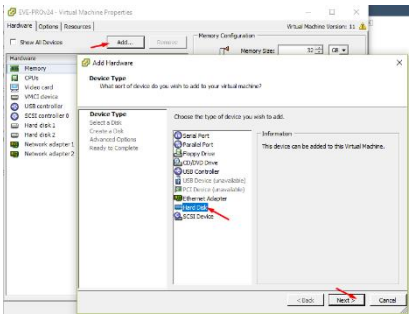
Step 8: Boot your EVE VM, HDD size will be expanded automatically. To verify, use the command to verify HDD utilization referenced in section 11.1.5

11.2.2 Expand your HDD on ESXi

Expanding your EVEs system HDD is achieved by adding an additional HDD to your EVE VM.

Step 1: Stop all your labs and shutdown EVE.

Use EVE CLI command: **shutdown -h now**



Step 2: Go to edit VM settings and add a new Hard drive. Then click Next

Step 3: Make sure you have selected the option “Create a new Virtual disk.” Then click Next

Step 4: Set your desirable HDD Size; example 200GB.

Step 5: It is recommended to set the Thick Provision Lazy Zeroed HDD option.

Step 6: Specify the location of where your new HDD will be stored and then click Next

Step 7: Leave the recommended SCSI HDD option as is and click Finish.

Step 8: Boot your EVE VM, the HDD size will be expanded automatically. To verify, use the command to verify HDD utilization referenced in section 11.1.5

11.2.3 Expand your HDD on a Bare Metal EVE Server

It is a complicated process to expand a HDD for a bare metal EVE server. Please open a ticket in our Live chat support for advice.

http://www.eve-ng.net/live-helpdesk

Use a google account to join in the Live Chat or create new chat account.

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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.

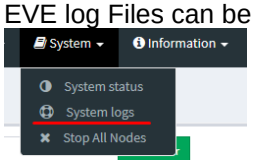
11.4 EVE Community SQL Database recovery

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

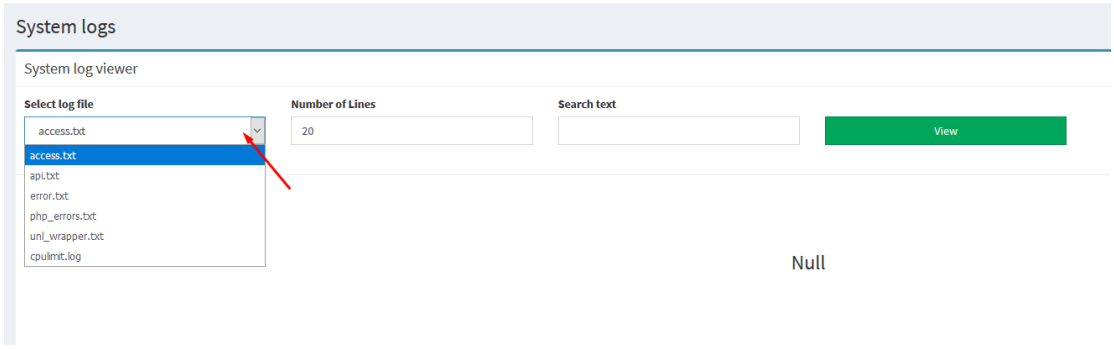
```
unl_wrapper -a restoredb
```

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
```

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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

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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

12.3.1 Templates folder choice

⚠ IMPORTANT NOTE: Starting from EVE-Community Version 2.0.3-107, EVE installation is autodetecting what kind of CPU manufacturer has your server: Intel or AMD, to choose proper templates set. You can check it manually on EVE cli: example below, showing that EVE has Intel CPU.

```
root@eve-ng:~# lsmod | grep ^kvm_
kvm_intel             212992  74
root@eve-ng:~#
```

- If you have Intel CPU, then your template files are in **"/opt/unetlab/html/templates/intel/"**
- If you have AMD CPU, then your template files are in **"/opt/unetlab/html/templates/amd/"**

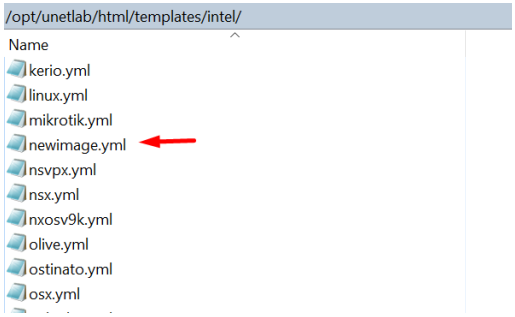
12.3.2 Prepare template file

⚠ NOTE: For templates development use templates folder which is matching your EVE server CPU manufacturer.

Example below will be based for Intel CPU EVE custom image template. Use EVE cli or WinSCP/Filezilla to create template.

Step 1: Navigate to EVE location: **/opt/unetlab/html/templates/intel/**

Step 2: Choose your most suitable template from which you want to create your own image template. (example: newimage.yml)



Step 3: Make a copy from source template newimage.yml. Example: Using CLI create template and name it ngips.yml.

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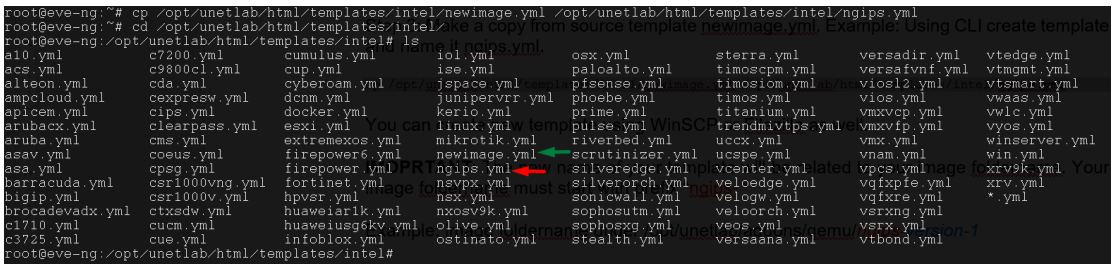
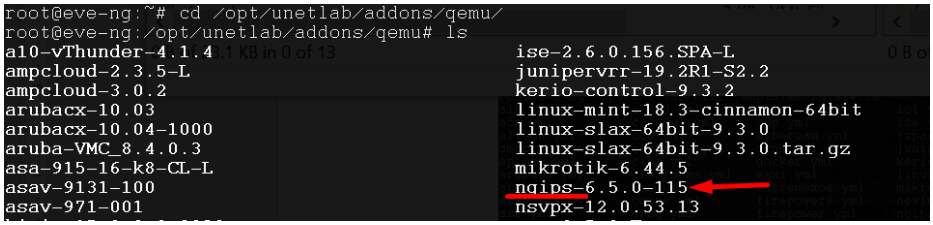
```
cp /opt/unetlab/html/templates/intel/newimage.yml /opt/unetlab/html/templates/intel/ngips.yml
```

You can create new template using WinSCP or Filezilla as well.



IMOPRTANT: The new name of your template will be related to your image foldername. Your image foldername must start with prefix "ngips- "

Example: image foldername under /opt/unetlab/addons/qemu/*ngips-6.5.0-115*



12.3.3 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

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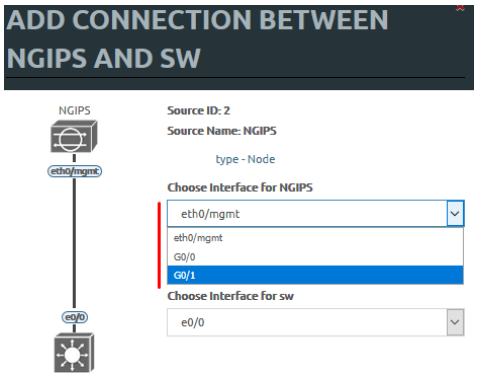
		....
eth_format: <prefix>{<first value>}	eth_format: Gi{0}	Gi0 Gi1 Gi2 Gi3 ...
eth_format: <prefix>{<first value>}	eth_format: G0/{0}	G0/0 G0/1 G0/2 G0/3 ...
eth_name: <prefix: Interface custom name>	eth_name: - M1 - T1 - T2	M1 T1 T2
eth_name: <prefix: Interface custom name>	eth_name: - MGMT - DATA - 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 eth1 and change sequence accordingly. eth1, eth2,….,ethx

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: eth{1}
```

This adding will produce Node interfaces.



12.3.4 Edit your new template file:

For edit newly created template you can use WinSCP, FileZilla or cli. Example below shows template edit using cli and *nano* editor

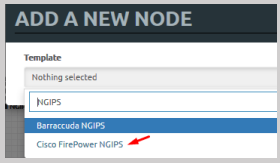
```
cd /opt/unetlab/html/templates/intel/
nano ngips.yml
```

Change content, setting for various images can vary depends of vendor requirements. The interface name lines please refer Section: 12.3.1

```
# Copyright (c) 2016, Andrea Dainese
# Copyright (c) 2018, 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
# 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
description: Cisco FirePower NGIPS
cpulimit: 1
icon: IPS.png
cpu: 4
ram: 8192
ethernet: 3
eth_name:
- eth0/mgmt
eth_format: eth{1}
console: vnc
shutdown: 1
qemu_arch: x86_64
qemu_version: 2.4.0
qemu_nic: e1000
qemu_options: -machine type=pc,accel=kvm -serial none -nographic -no-user-config
  -nodefaults -display none -vga std -rtc base=utc -cpu host
...
```

Node name on the Topology

Node list name



Note: Qemu options in the line may vary per image requirements. Please check manufacturer advice how to run KVM image

12.3.5 Prepare new icon for your template:

Step 1 Use Filezilla or Winscp to copy your custom icon IPS.png (icon filename IPS.png used in ngips.yml)

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/

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12.3.6 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.

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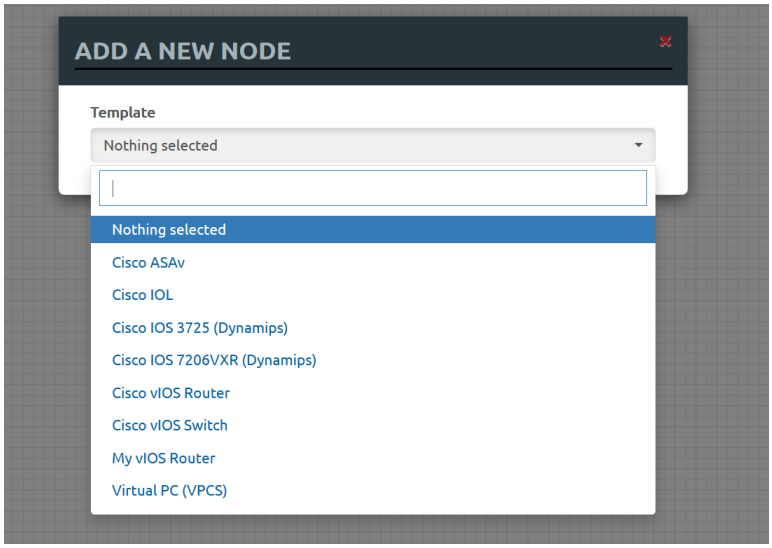
ADD A NEW NODE
Template
Nothing selected
Nothing selected
Cisco ASAv
Cisco IOL
Cisco IOS 3725 (Dynamips)
Cisco IOS 7206VXR (Dynamips)
Cisco vIOS Router
Cisco vIOS Switch
My vIOS Router
Virtual PC (VPCS)

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13 EVE Backup Solution

EVE NG Software provides full and partial content backup Starting from:
EVE Community 5.0.1-20 and later
EVE Backup Solution supported transfer protocols: SFTP port 22 or FTP port 23.

EVE Backup solution requires to have an external SFTP/FTP server where the EVE-NG content will be stored. The SFTP/FTP server HDD size must be chosen appropriately.

13.1 Backup manager

13.1.1 Backup Manager Installation

⚠ Mandatory Prerequisites: The Internet must be reachable from your server. DNS names must be resolved. This Backup solution installation requires internet access to get updates and install the latest EVE-Professional or Community version from the EVE-NG repository.

SSH to your EVE as root user and execute following commands.

```
root@eve-ng:~# apt update
root@eve-ng:~# apt install eve-backup-manager
root@eve-ng:~# reboot
```

13.1.2 Setup external SFTP or FTP server

SFTP server setup is EVE user's responsibility and not covered under EVE-NG support.

In order to use the backup tool, you are required to set up an external SFTP/FTP server. This part is not supported by EVE-NG support, because every user can install and establish a server in its own way. The main pre-requisite is: The SFTP server must be reachable two ways from the EVE server and back from the SFTP server to EVE.

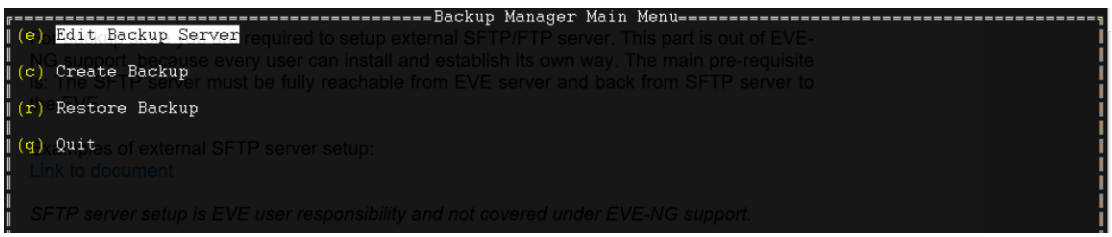
Examples of external SFTP server setup:
https://www.eve-ng.net/wp-content/uploads/2024/03/EVE-Doc-2024-External-SFTP-Server.pdf

13.1.3 Backup Manager SFTP/FTP settings

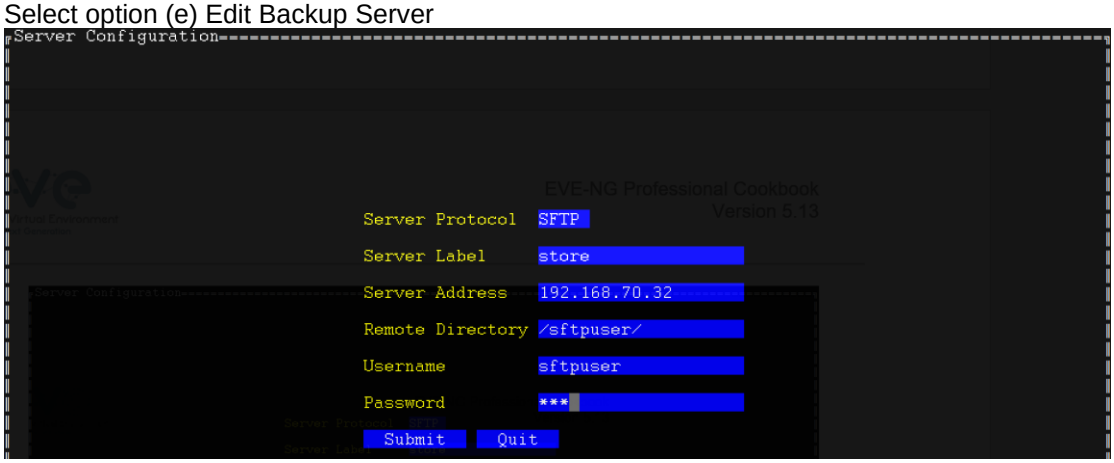
⚠ IMPORTANT NOTE: It's a must to stop all running labs (nodes) before starting a backup process. If you have satellites, then make sure they are and connected to the Master. Satellites backup will be done automatically.

SSH to your EVE as root user and execute following command.

```
root@eve-ng:~# backup-manager
```



Select option (e) Edit Backup Server



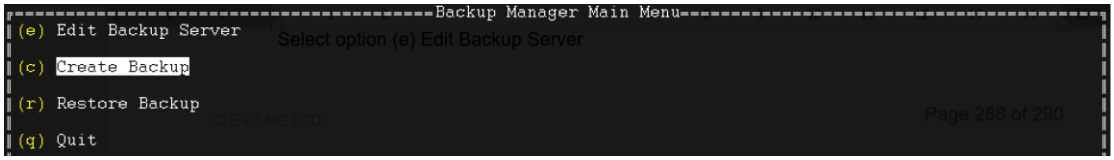
Server Protocol: Select your designated backup server protocol FTP or SFTP
Server Label: Name your Server Label, free to name it.
Server Address: Put your backup server IP,
Remote directory: For Linux servers, specify the target directory. The example above is /sftpuser/. This is the directory where the backup uploads will be stored. On the Windows SFTP server, this part can be left clear. All uploads will be stored in the sftp user-designated directory.
Username: Put your SFTP server username
Password: Put your SFTP user password
Submit

13.2 Create an EVE-NG Backup

SSH to your EVE as root user and execute following command.

```
root@eve-ng:~# backup-manager
```

Select option (c) Create Backup.



13.2.1 Backup option All

*Every time when you run All backup process, EVE backup manager will create new backup folder **[hostname]-[date]-[backup ID]** with selected backup content.*

Select your backup items:

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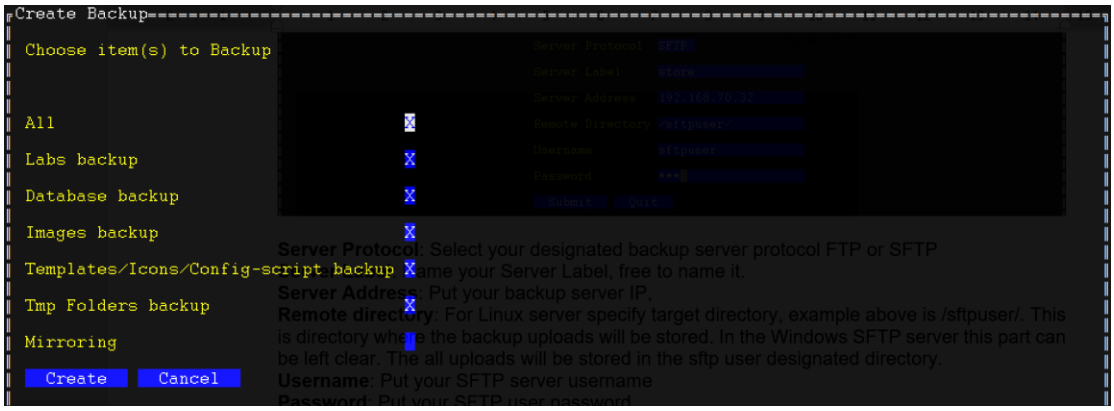


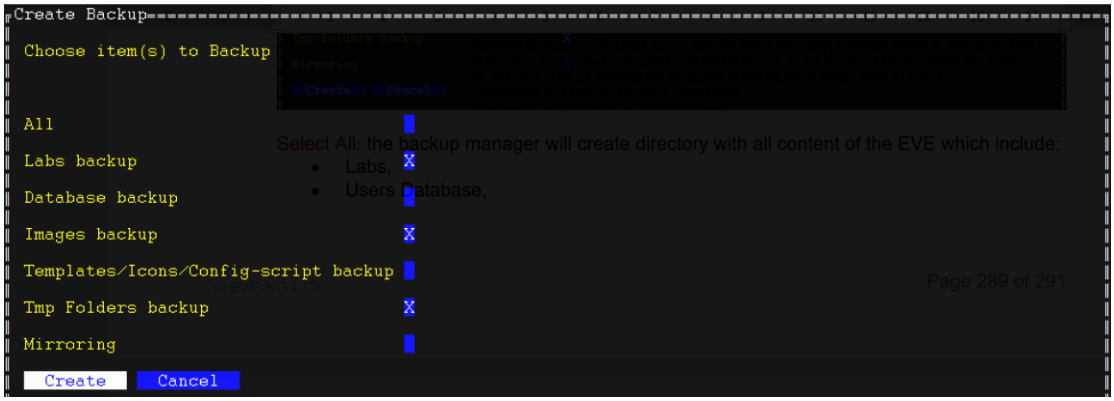
Select All: the backup manager will create directory with all contents of EVE which includes:

- Labs,
- Users Database,
- All images (Dynamips, IOL, Qemu),
- Templates of all images including Custom templates, config scripts and icons,
- TMP Folder (TMP folder contains all of your labs saved configurations and qemu nodes)

13.2.2 Backup option custom selected

*Every time when you run a custom selected backup process, EVE backup manager will create new backup folder **[hostname]-[date]-[backup ID]** with selected backup content.*

Select Custom items: For example, if you want to back up only labs, images and full labs with a tmp directory, your selection should look like the screenshot below.



This backup folder will only contain Lab files (topologies), all images (vendor images) from the EVE in the current stage and the TMP folder (saved labs with all configurations) for all EVE users.

13.2.3 Backup option with Mirroring selected

*First time when you run Mirror backup process, EVE backup manager will create new backup folder **"[hostname]-eve-ng-mirror"** with selected backup content.*

Select Mirroring: The mirroring option creates a single Folder named **"[hostname]-eve-ng-mirror"**.

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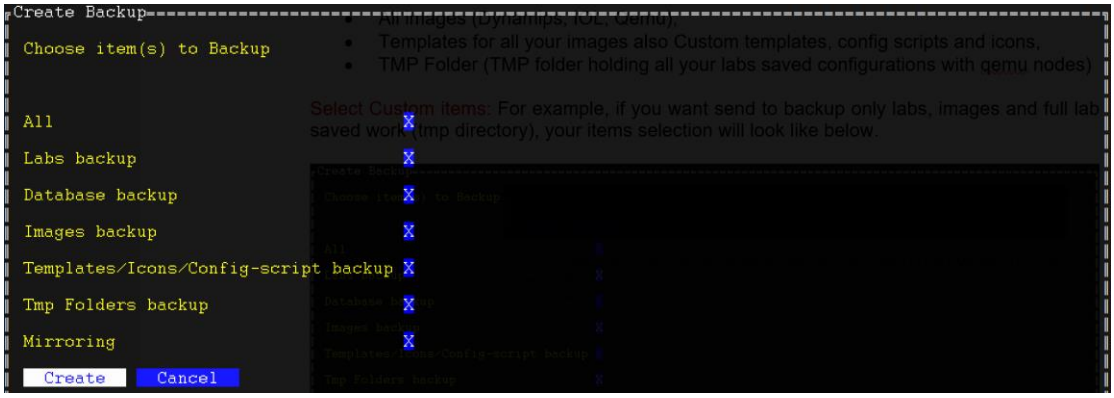
Using this option will only back up content of the new data added after the first backup. EVE Backup will compare data that already persists in the backup folder and will update only new items which have been changed after the backup is saved in the “[hostname]-eve-ng-mirror”. It is recommended to select all items with a mirror option.

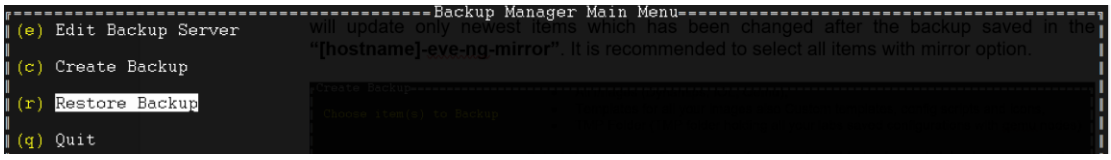


13.3 Restore data from EVE-NG Backup

SSH to your EVE as root user and execute following command.

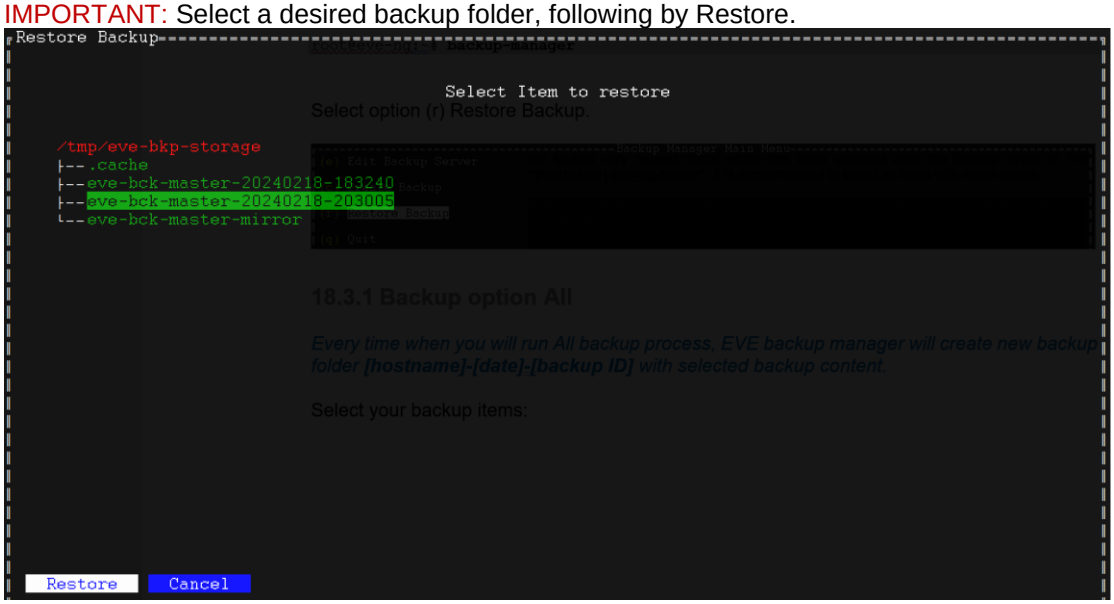
```
root@eve-ng:~# backup-manager
```

Select option (r) Restore Backup.



13.3.1 Select restore backup folder

IMPORTANT: Select a desired backup folder, following by Restore.

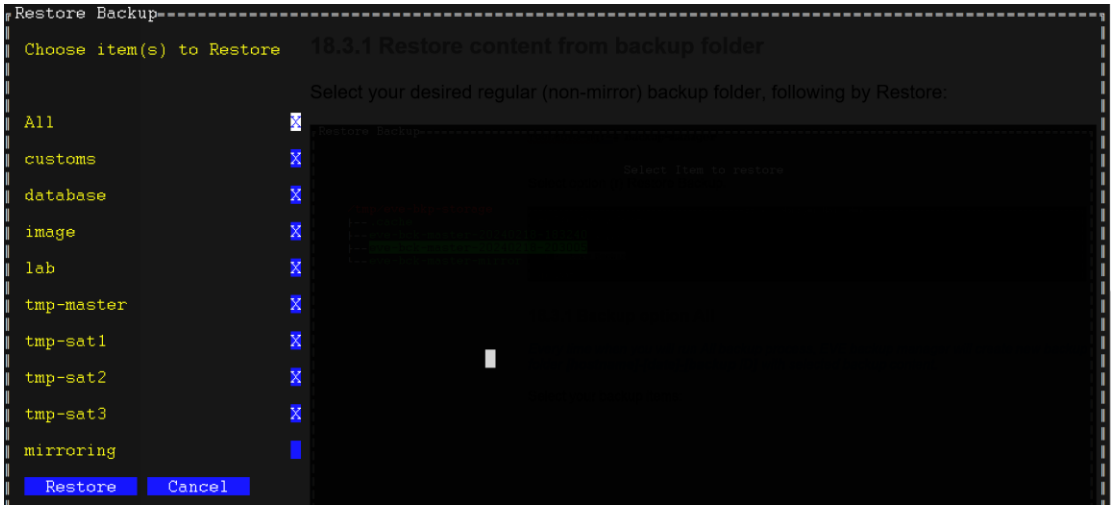


13.3.2 Select the items to restore

All: (Mirroring disabled) This option is useful to restore all data from backup to the new EVE installation. Backup manager will compare your existing data on your EVE with backup content and will restore only missing data.

Custom selected items: (Mirroring disabled) This option will restore custom selected items' data from backup to the new EVE installation. Backup manager will compare your existing data on your EVE with backup content and will restore only missing data.

Important: Restoring cluster satellite server TMP folder content for the new EVE install. Make sure that the Satellite ID matches your tmp-satellite folder number (ID)



Careful! Mirroring enabled! This option will restore selected data from backup to the EVE installation. Backup manager will replace all data on your EVE with backup content and will destroy data which does not exist in backup.

14 EVE Resources

For additional updated information please follow our web site: https://www.eve-ng.net

How to updates: https://www.eve-ng.net/index.php/documentation/howtos/

How to videos: https://www.eve-ng.net/index.php/documentation/howtos-video/

FAQ: https://www.eve-ng.net/index.php/faq/

Live support chat: https://www.eve-ng.net/index.php/live-helpdesk/

For access to live chat use your Google account or create new chat account.

EVE forum: https://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: https://www.eve-ng.net/index.php/download/

EVE Community version downloads, free: https://www.eve-ng.net/index.php/community/

EVE Supported images: https://www.eve-ng.net/index.php/documentation/supported-images/

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