Creating a Juniper lab with EVE-NG

Christian Scholz (🐦 @chsjuniper)

„That guy who loves Juniper and EVE-NG"

Sr. Consultant - Network & Security
[Axians Networks & Solutions]
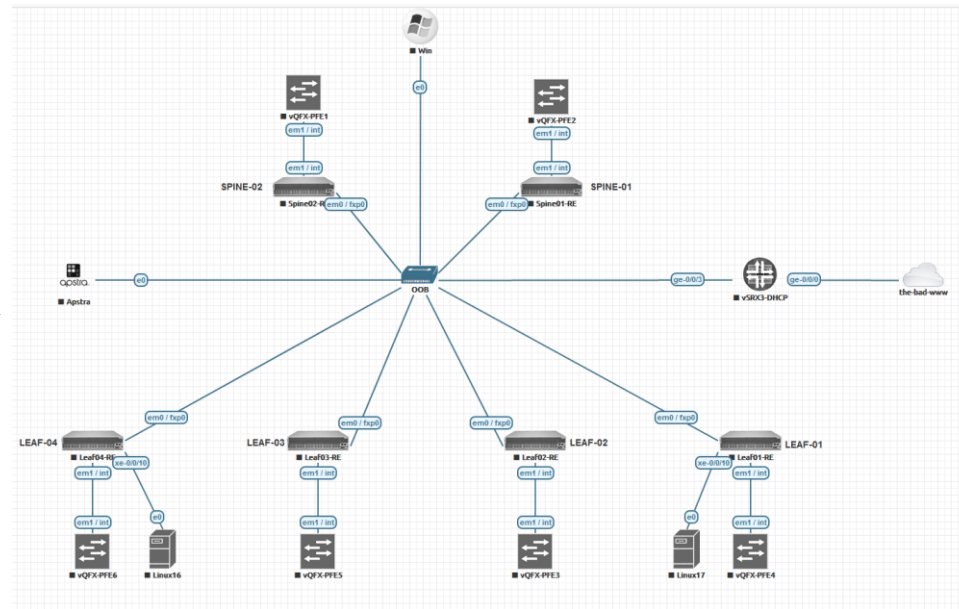
JNPR Ambassador | JNCIE-SEC #374

Blog: www.jncie.eu

Mail: chs@ip4.de

Youtube: www.youtube.com/netchron/

Why EVE-NG | Why Virtual Labs

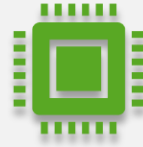Save Power / Rackspace / Time / Resources!

Why Virtual Labs?

▶ Quickly Lab / Test a new Design

▶ GREAT for Certification ☺
   → Combine with vLabs and AATP

▶ Get started for free
   (with the Community Edition)

▶ Vendor-Neutral!
   No Focus on a particular Vendor

▶ Extremely Flexible
   (Bare-Metal, VM | Cloud)

Design Considerations – Planning a Lab

Number of nodes (CPU, RAM, HDD):
For each node, eve „copies" the image and therefore needs harddisk ☺

Number of images on EVE host
„Data Grave" | Clean Policy

Number of needed satellites?
Clustering needed?
Pro needed? VM or Bare?

Flavors?

▶ Ubuntu installed on BMS

Hardware Hypervisor (KVM) [EVE] Juniper vDevice

▶ ESXi installed on BMS and EVE as VM inside ESXi

Hardware Hypervisor (ESX) Hypervisor (KVM nested) [EVE] Juniper vDevice

▶ Windows Client running VMwareWorkstation, running EVE (EVEception)
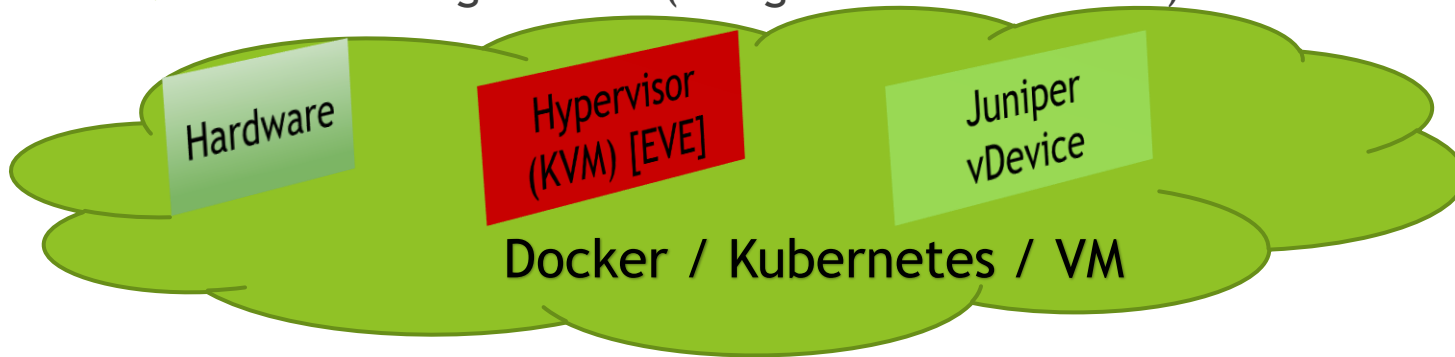
Hardware OS (Windows) Hypervisor (Workstation) Hypervisor (KVM nested) [EVE] Juniper vDevice

Flavors?

- EVE running on GCP (Google Cloud Platform)

Hardware

Hypervisor (KVM) [EVE]

Juniper vDevice

Docker / Kubernetes / VM

Fetching images

- 3 „base" images: vMX (Router), vSRX (Firewall/Secure-Router), vQFX (Switch)

- Need an active Juniper account → can be created for free

- vMX:
  https://www.juniper.net/us/en/dm/vmx-trial-download.html
  Convert:
  https://www.eve-ng.net/index.php/documentation/howtos/howto-add-juniper-vmx-16-x-17-x/

- vSRX:
  https://www.juniper.net/us/en/dm/download-next-gen-vsrx-firewall-trial.html
  Already qcow2 - upload and use :)

- vQFX:
  https://www.juniper.net/us/en/dm/free-vqfx10000-software.html
  Rename the PFE from qcow to qcow2 - that's it :)

Adding the Juniper MIST Edge Appliance

1 Fetch image (from Juniper SE)

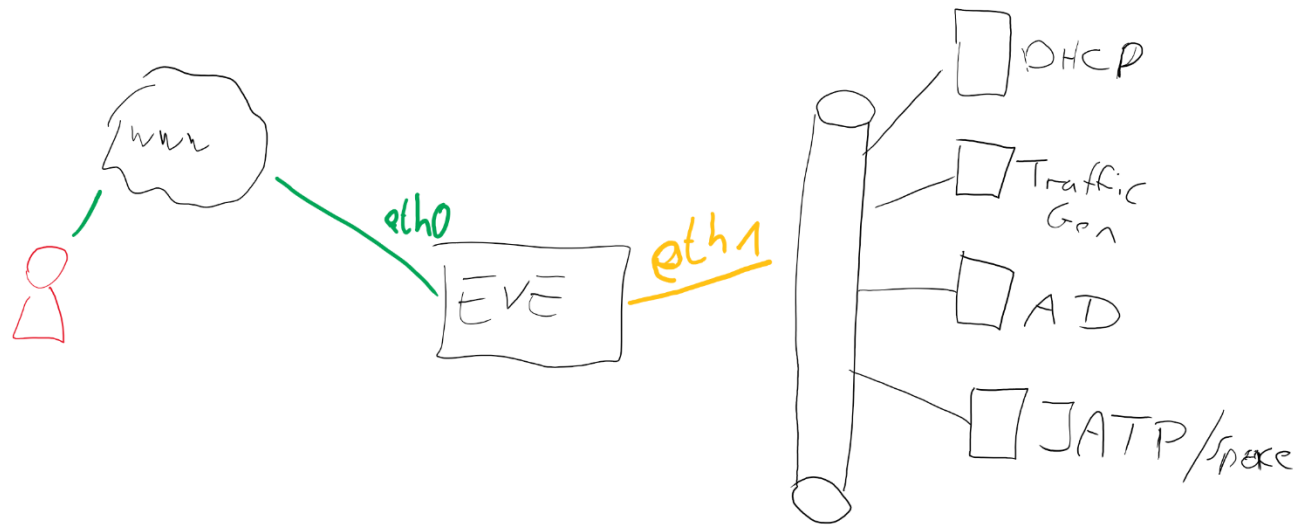**2** Create Management Link for Cloud Connect

3 Create Template for Edge

4 Enjoy Labbing ;)

Separate Link(s) for Management Network(s)


```
iface eth3 inet manual
auto pnet3
iface pnet3 inet static
    address 172.16.100.210
    netmask 255.255.255.0
    gateway 172.16.100.1
    dns-domain netchron-v4.deprecated.local
    dns-nameservers 1.1.1.1
    bridge_ports eth3
    bridge_stp off
```

```
11: pnet3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
        link/ether 10:60:4b:a9:b3:77 brd ff:ff:ff:ff:ff:ff
        inet 172.16.100.210/24 brd 172.16.100.255 scope global pnet3
           valid_lft forever preferred_lft forever
        inet6 fe80::1260:4bff:fea9:b377/64 scope link
           valid_lft forever preferred_lft forever
```
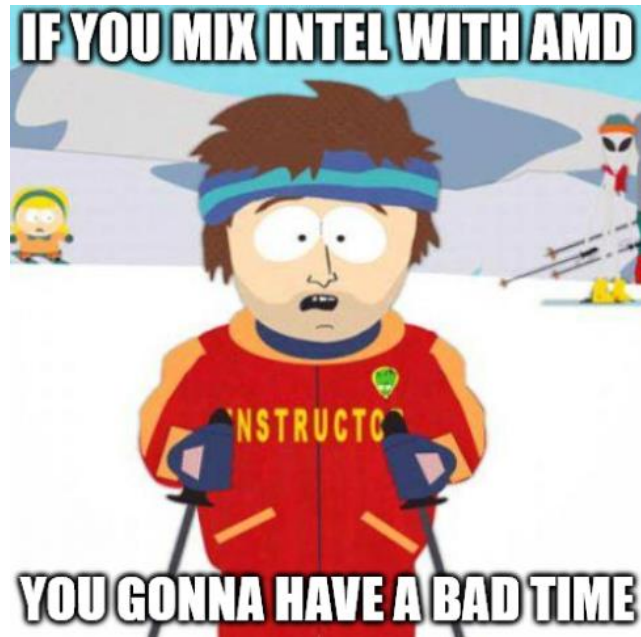
Adding the Juniper MIST Edge Appliance

```
root@eve:/opt/unetlab/html/templates/intel# cat jnprmistedge.yml
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# Copyright (c) 2019-2022, Christian Scholz
# All rights reserved.
#
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# (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: MISTvEdge
cpulimit: 1
icon: JuniperMistEdge.png
cpu: 2
ram: 16384
eth_format: ge{0}
ethernet: 3
qemu_nic: vmxnet3
console: telnet
qemu_arch: x86_64
qemu_version: 5.2.0
qemu_options: -machine type=pc,accel=kvm -vga std -usbdevice tablet -boot order=dc
...
root@eve:/opt/unetlab/html/templates/intel#
```

/opt/unetlab/html/templates/intel

Custom Template

- /opt/unetlab/html/templates/intel/ (for Intel CPUs)
- /opt/unetlab/html/templates/amd/ (for AMD CPUs)

Adding the Juniper MIST Edge Appliance


```
root@eve:/opt/unetlab/html/includes# cat custom_templates.yml
---
custom_templates:
- name: JATP
  listname: 'EVE-BETA :: Juniper JATP Appliance (SkyATP on Premise)'
- name: PACKETFENCE
  listname: 'EVE-BETA :: PacketFence OpenSource NAC'
- name: CSRX
  listname: 'EVE-BETA :: Juniper cSRX'
- name: vsrx30
  listname: 'Juniper vSRX3.0 (Custom Template)'
- name: jnprmistedge
  listname: 'Juniper MIST Edge (virtual Edge Appliance requires Hardware AP)'
- name: jspacepolicy
  listname: 'EVE-BETA :: JunOS Space Policy Enforcer'
- name: jspacelogcollector
  listname: 'EVE-BETA :: JunOS Space Log Collector'
- name: riverbedSCM
  listname: 'EVE-BETA :: Riverbed SteelConnect Manager (on Premise)'
- name: riverbedSC
  listname: 'EVE-BETA :: Riverbed SteelConnect VM'
- name: ucopia
  listname: 'EVE-BETA :: Ucopia'
- name: jspacesdinsights
  listname: 'EVE-BETA :: JunOS Space Security Director Insights'
- name: ostinatostd
  listname: 'Ostinato (standard)'
...
```

Adding the Juniper MIST Edge Appliance

ADD A NEW NODE

Template   ☑ **Show unprovisioned templates**

Juniper MIST Edge (virtual Edge Appliance requires Hardware AP)   ▼

Number of nodes to add   **Image**

1   jnprmistedge-deb10.5.0_mxedge-202009: ▼

Name/prefix

MISTvEdge

Icon

🖼 JuniperMistEdge.png   ▼
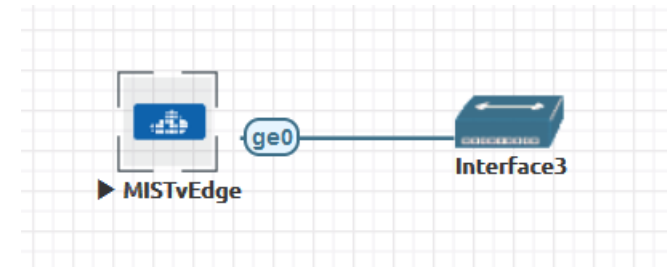
UUID

CPU Limit ☐

CPU   **RAM (MB)**   **Ethernets**

2   16384   3

First Eth MAC Address

Adding the Juniper MIST Edge Appliance

Adding APSTRA

1 Fetch image

2 Create (custom) Template

3 Connect to OOB

4 Enjoy Labbing ;)

Adding APSTRA

```
root@eve:/opt/unetlab/html/templates/intel# cat apstra-aos.yml
# Copyright (c) 2016, Andrea Dainese
# Copyright (c) 2018, Alain Degreffe
# Copyright (c) 2021, Christian Scholz
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#
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# 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
description: Apstra AOS Server
name: apstra-aos
cpulimit: 1
icon: Apstra-aos.png
cpu: 8
ram: 67584
ethernet: 1
console: vnc
shutdown: 1
qemu_arch: x86_64
qemu_version: 3.1.0
qemu_nic: virtio-net-pci
qemu_options: -machine type=pc,accel=kvm -vga virtio -usbdevice tablet -boot order=cd
...
```

/opt/unetlab/html/templates/intel

67GB RAM! (64GB + 300MB per Device)
= 10 Devices (vQFX)

Adding APSTRA

EDIT NODE

Template

Apstra AOS Server

ID

5

Image

aos-4.1.1-287

Name/prefix

AOS

Icon

apstra.png

UUID

9a3b5572-af5f-4a82-ad7f-cd7149e902a5

CPU Limit

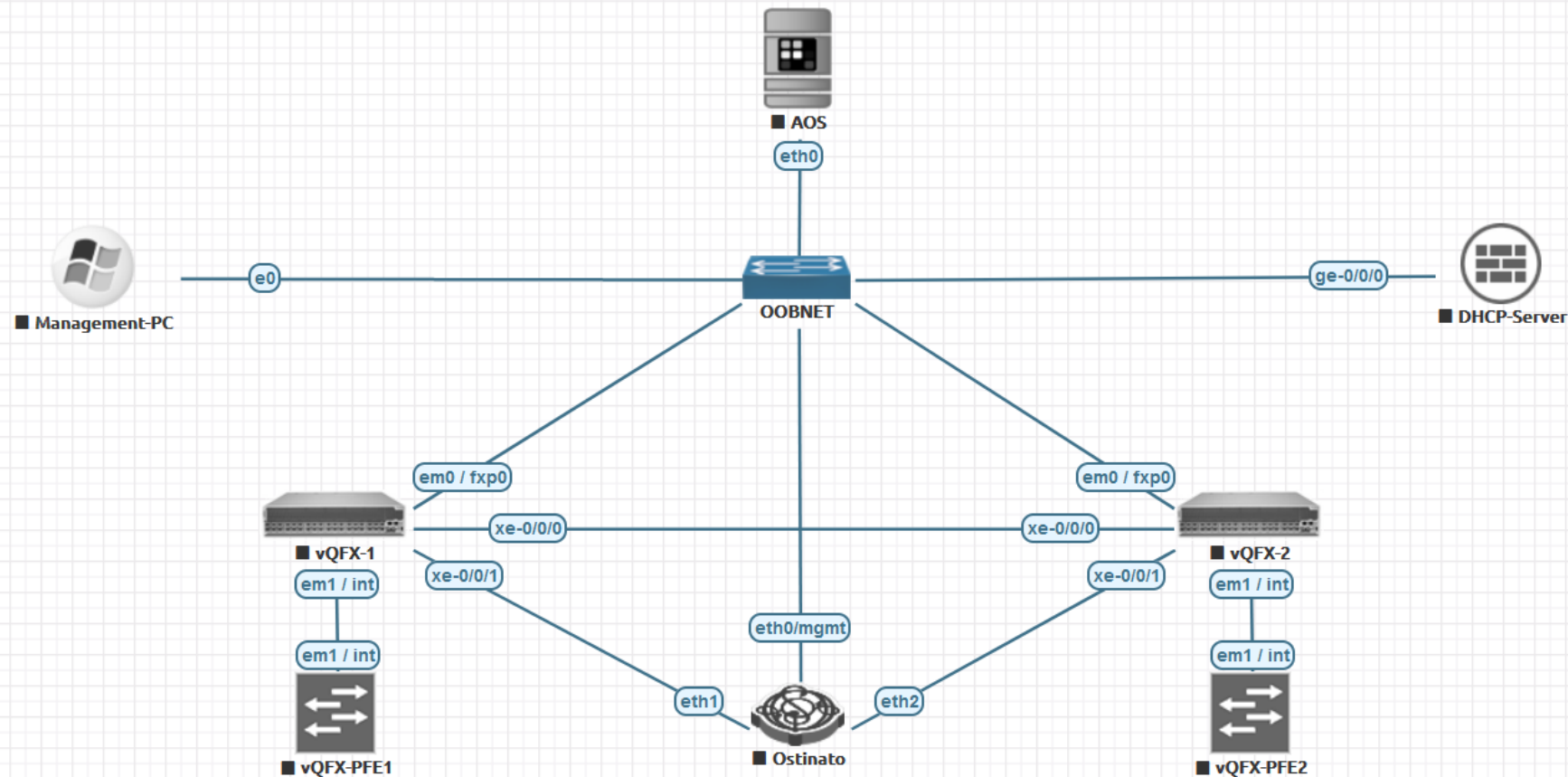| **CPU**	**RAM (MB)**	**Ethernets**
8	67584	1

Adding APSTRA

Apstra Collapsed Core - Topology
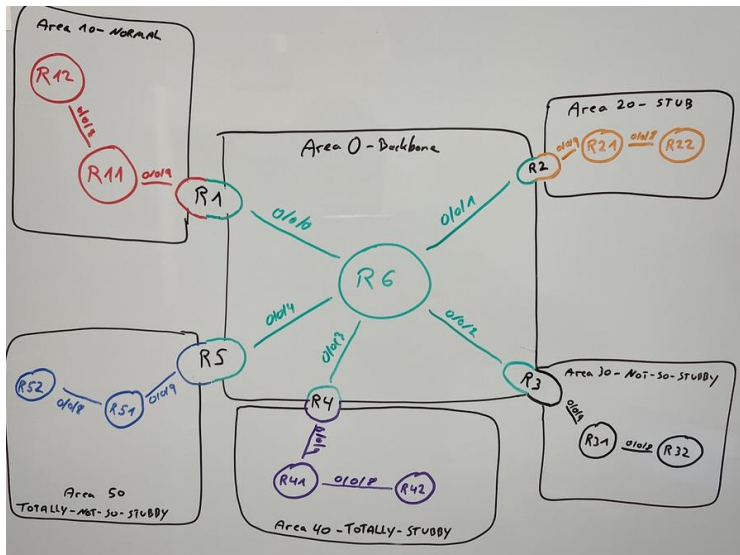
Pro Features – great for everyday usage

▶ Hot-Link-Add

▶ Upload PDF Files

▶ Packetloss / Jitter / Delay

Link Quality: vMX-VFP29 - vMX-VFP28

Interface	Delay (ms)	Jitter (ms)	Loss (%)	Rate(kbps)	Interface	Delay (ms)	Jitter (ms)	Loss (%)	Rate(kbps)
ge-0/0/8	0	0	0	0	ge-0/0/8	0	0	0	0

Apply   Save   Close

▶ Logical Maps

More Infos

- Youtube Video Series covering EVE-NG and Juniper:
  https://www.youtube.com/netchron

- EVE-NG Youtube Channel:
  https://www.youtube.com/channel/UCh-RxHfEpYzo2Sgflq4_vAA/videos

- EVE-NG Website:
  https://www.eve-ng.net/

- EVE-NG Forum:
  https://www.eve-ng.net/forum/

- EVE-NG Helpdesk (Live-Chat):
  https://www.eve-ng.net/index.php/live-helpdesk/

Q&A

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[Axians Networks & Solutions]

JNPR Ambassador | JNCIE-SEC #374
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