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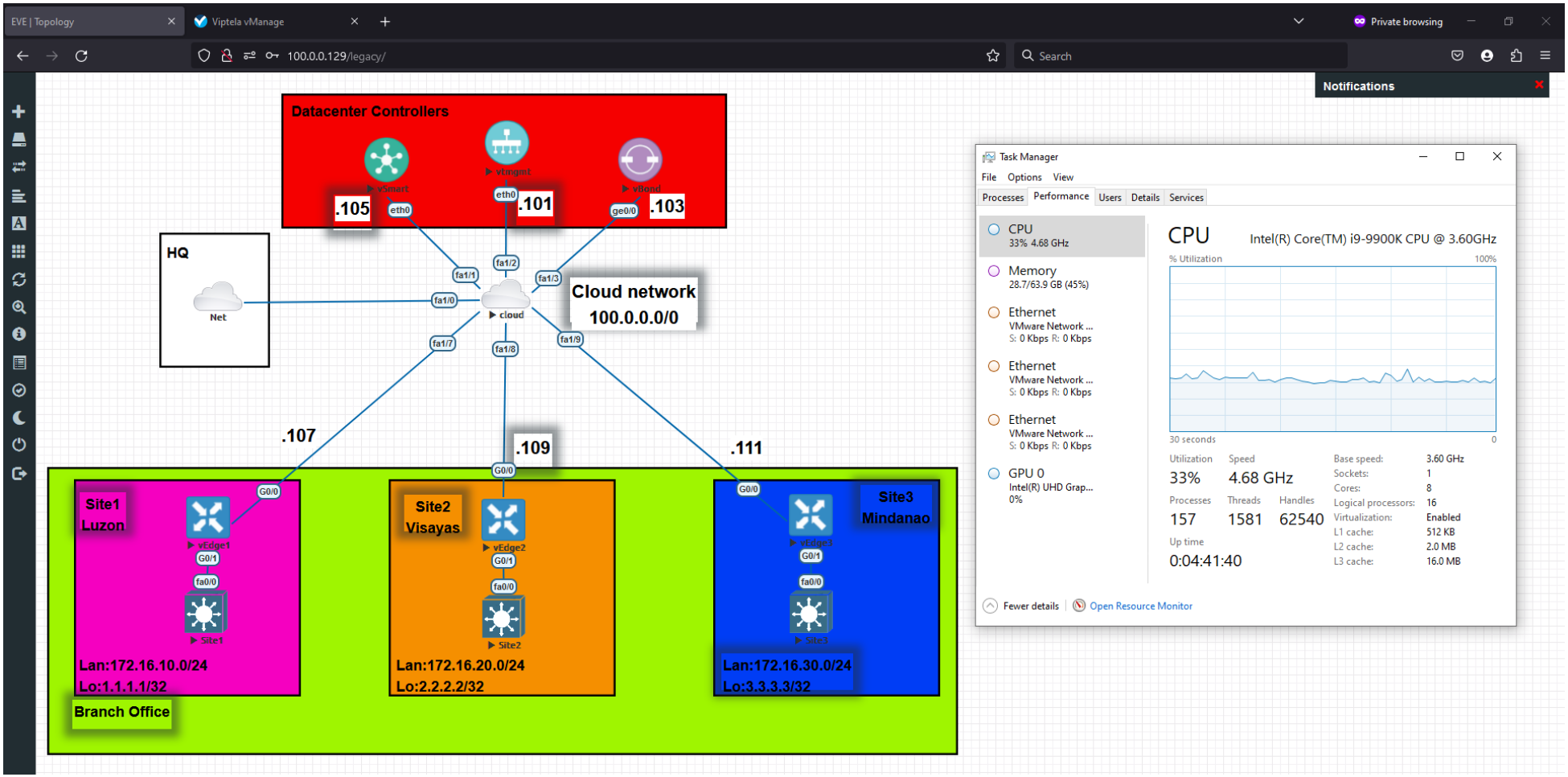
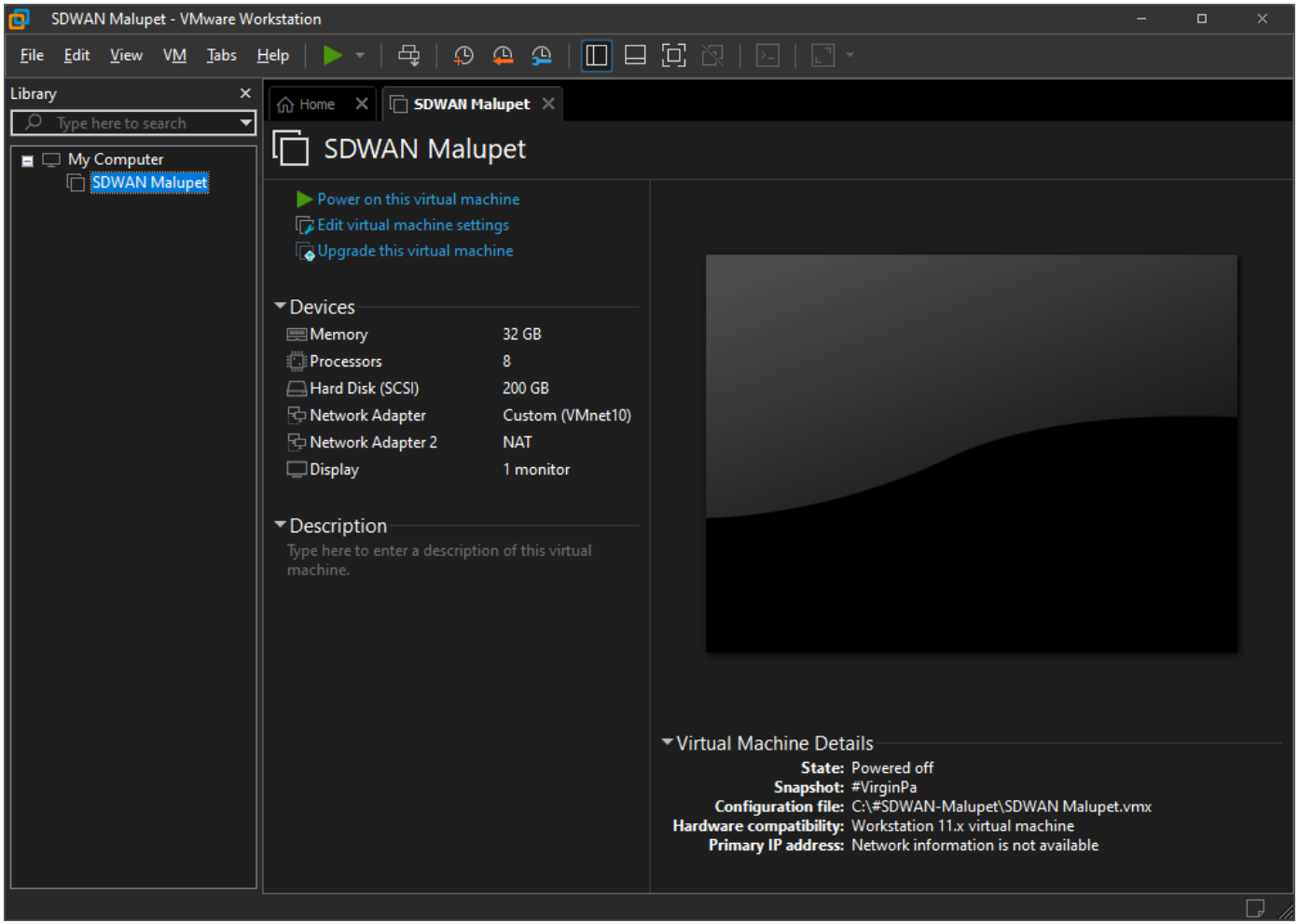
FULL PROCEDURES OF SD-WAN IMPLEMENTATION

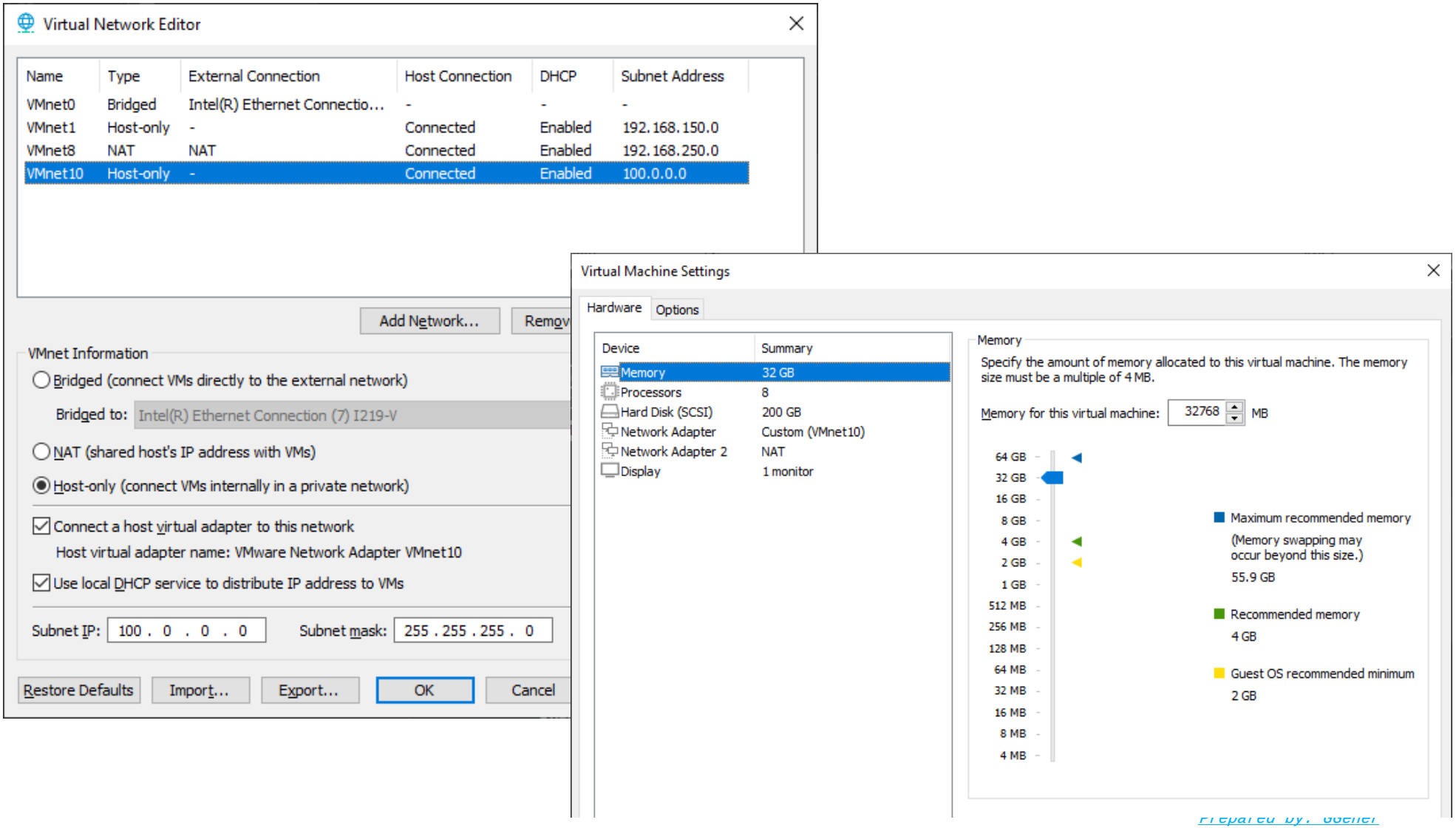
Prior to setup and running SDWAN thru VMWare, Minimum RAM must at least 32GB and Intel i5 CPU to run. The SDWAN VM Package really consumes a lot of Resources, example to the indicated screenshot below runs on Intel i9-9900K and 64GB RAM DDR4-2666 with XMP.



To begin with, extract the provided SDWAN Package (.zip / .rar / .7zip file) to the drive which having the biggest space.
Launch the VMWare App and open its .vmx file from the extracted path.



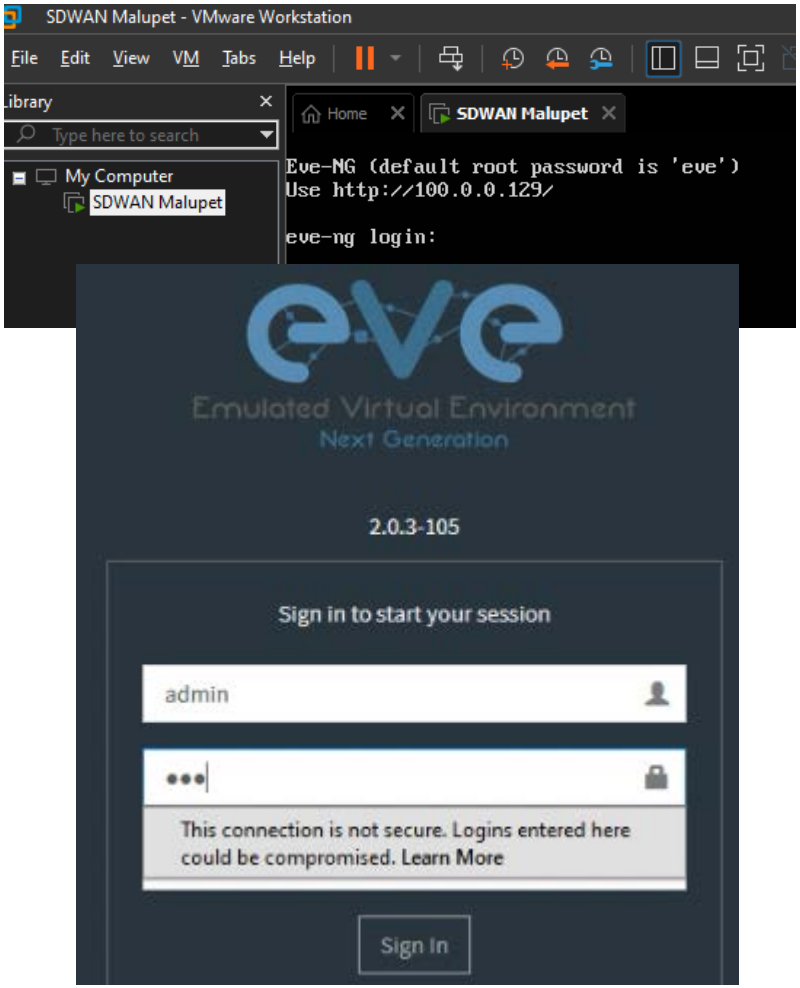
Let's configure its Virtual Networking first… Add and set (or check) VMNet10 in Virtual Network Editor, the first Network Adapter is set to VMNet10 with its subnet IP 100.0.0.0. Since the IP Address 100.0.0.0 is not a private IP, it is recommended to disconnect the internet first to avoid possible conflict. The second Network Adapter is set to NAT.

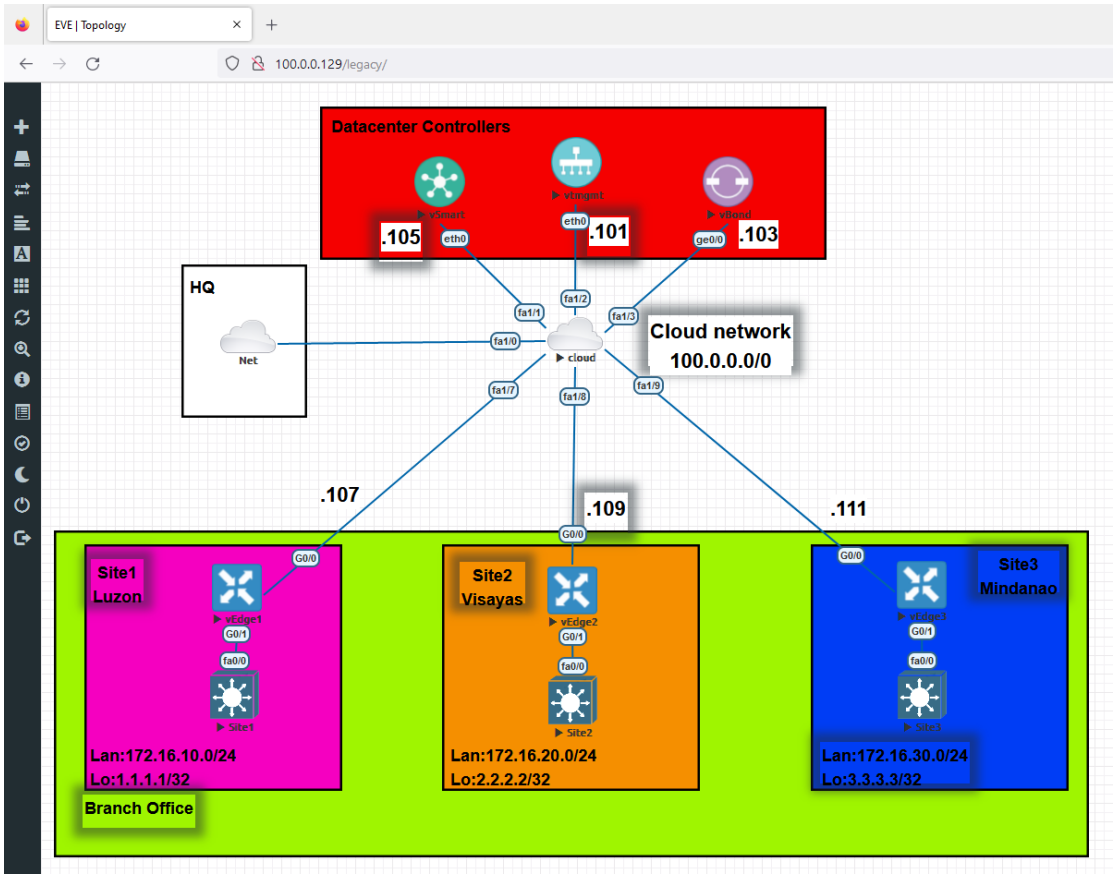


When VM is running, activate all the virtual devices via browser > 100.0.0.xxx (depending on what it assign after its boot), you may ping check 100.0.0.1 and 100.0.0.xxx to confirm

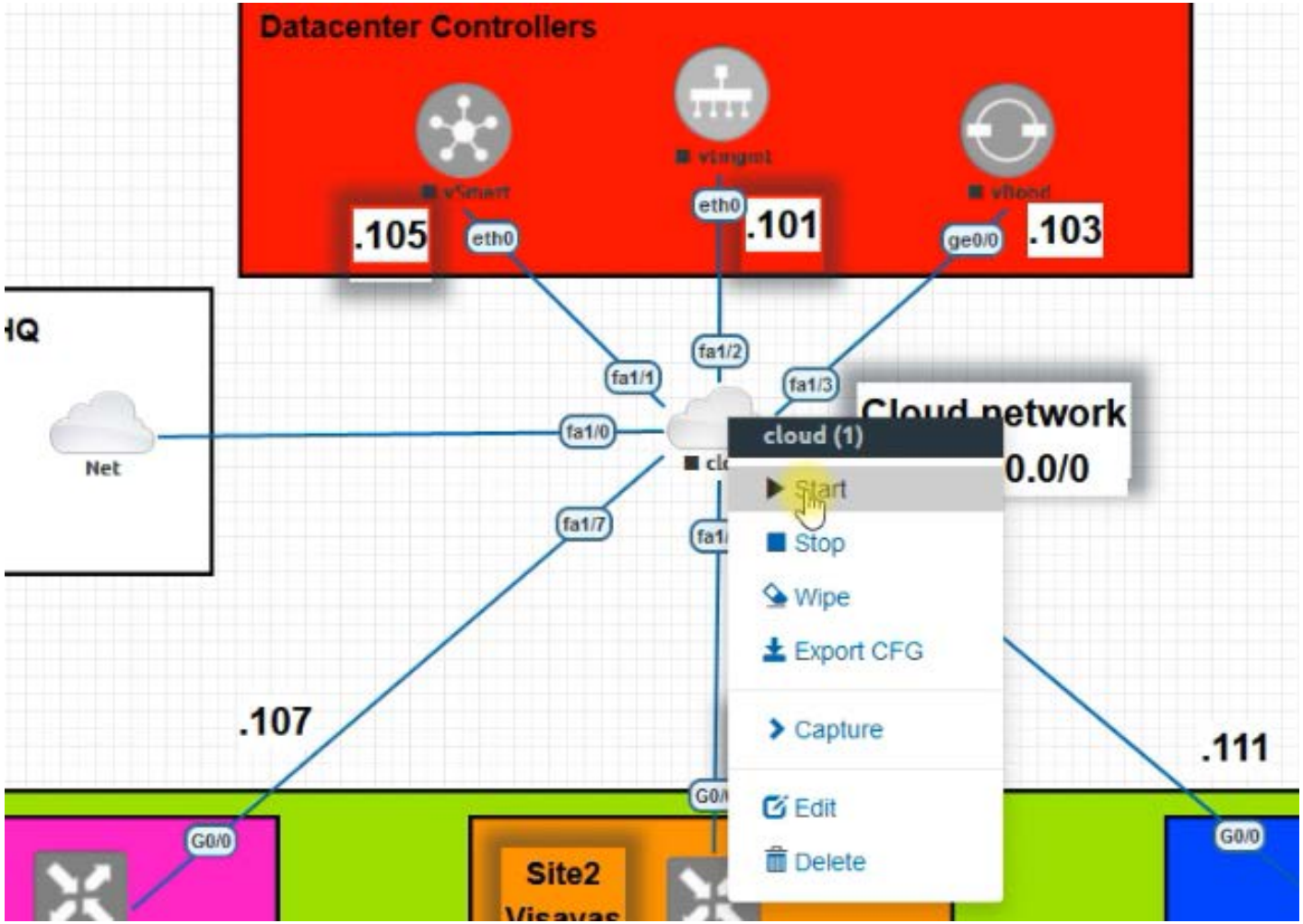
Open a browser and access the 100.0.0.xxx, a virtual topology of SDWAN should be accessed.

Login (browser): admin / eve

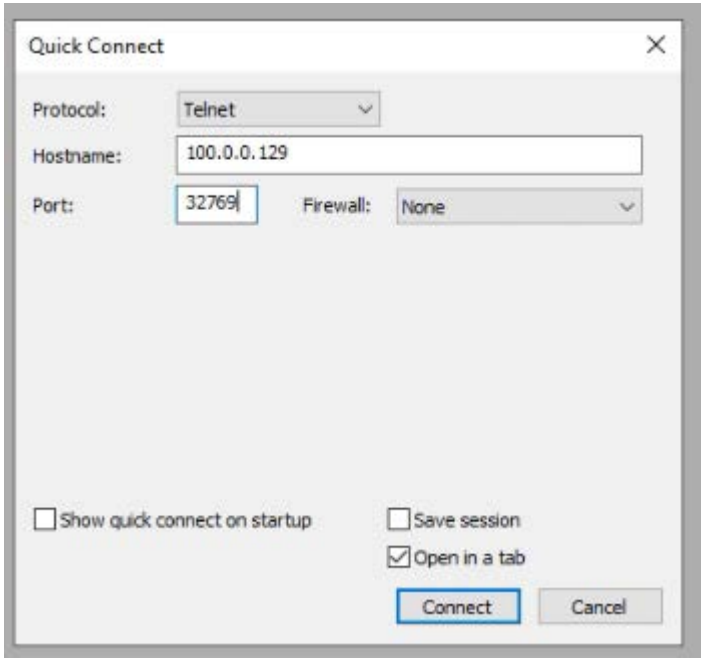




Run first the CLOUD (right-click and start)



telnet 100.0.0.xxx : 32769 (cloud/google)



CLI Initial Configuration:

en

conf t

hostname google

int lo0

ip add 8.8.8.8 255.255.255.255

exit

int vlan 1

no shut

ip add 100.0.0.254 255.255.255.0

router bgp 65001

no synchro

bgp log-neighbor-changes

network 8.8.8.8 mask 255.255.255.255

network 100.0.0.0 mask 255.255.255.0

neighbor 100.0.0.107 remote-as 65001

neighbor 100.0.0.109 remote-as 65001

neighbor 100.0.0.111 remote-as 65001

no auto-summary

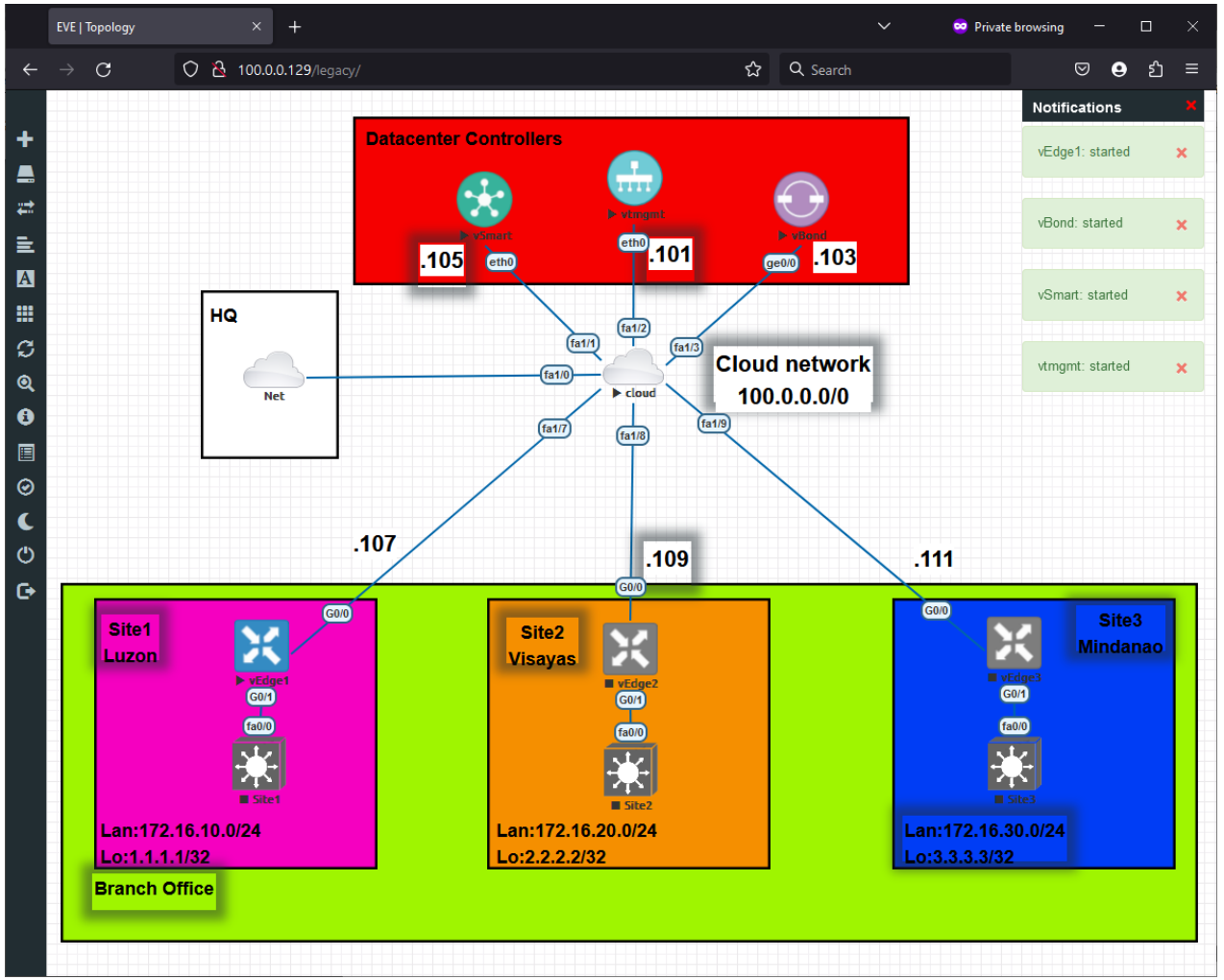
end

wr

!

!

To determine if it is running, ping 100.0.0.254, upon it pings.Launch all the virtual devices in the VIPTELA one by one (it changes colors when successfully started without issues). It is estimated that all devices will fully boot within 5 to 10 mins.



(While booting… Just Ready the following, don't paste it yet until Site1, Site2, and Site3 will require to configure eventually.)

for Telnet 100.0.0.xxx : 32777

!*Site1*
en
conf t
hostname Site1
no ip domain-lookup
int f0/0
no shut
ip add 172.16.10.2 255.255.255.0
exit
int lo0
no shut
ip add 1.1.1.1 255.255.255.255
end
wr

for telnet 100.0.0.xxx : 32778

!*Site2*
en
conf t
hostname Site2
no ip domain-lookup
int f0/0
no shut
ip add 172.16.20.2 255.255.255.0
exit
int lo0
no shut
ip add 2.2.2.2 255.255.255.255
end
wr

for telnet 100.0.0.xxx : 32779

!*Site3*

en

conf t

hostname Site3

no ip domain-lookup

int f0/0

no shut

ip add 172.16.30.2 255.255.255.0

exit

int lo0

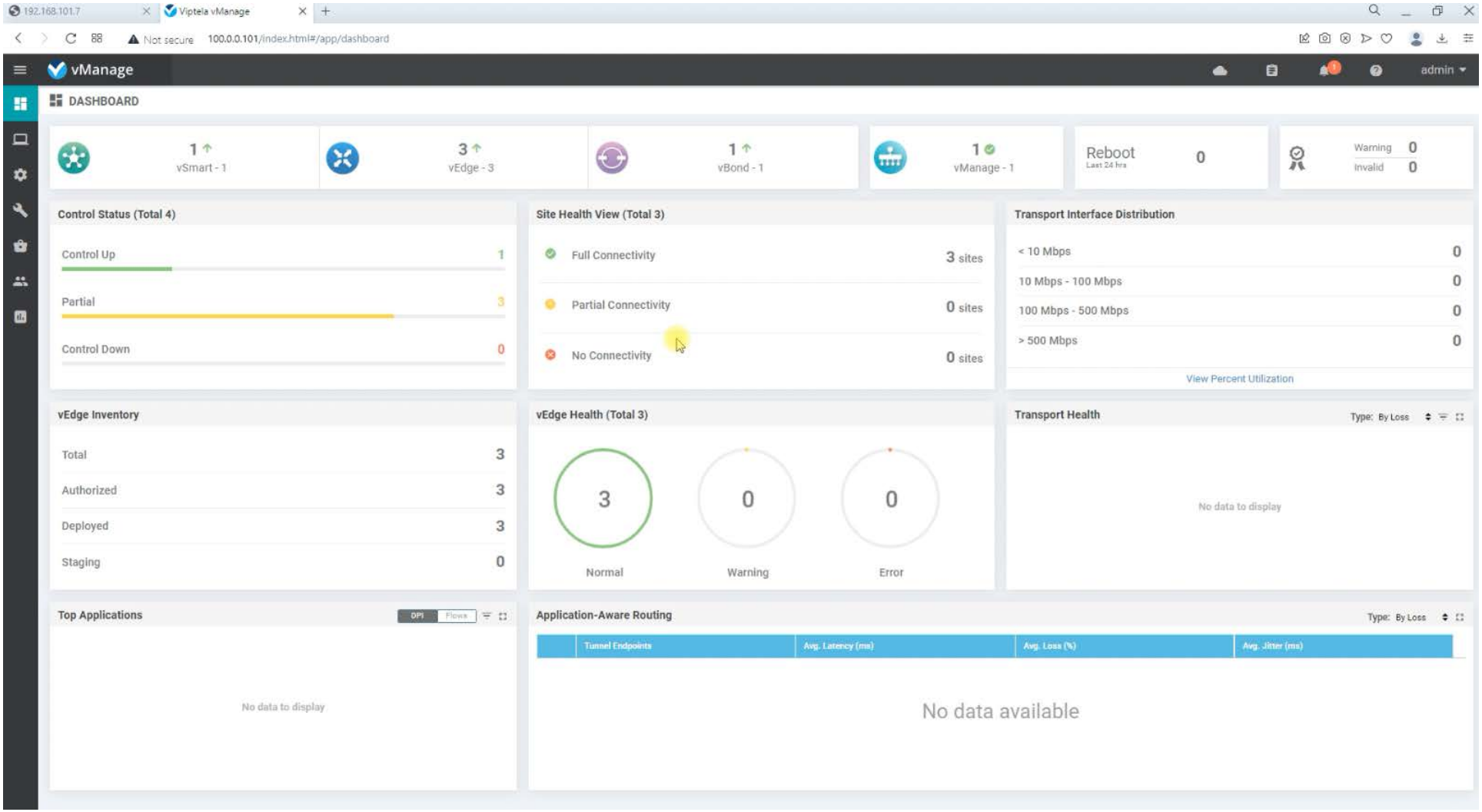
no shut

ip add 3.3.3.3 255.255.255.255

end

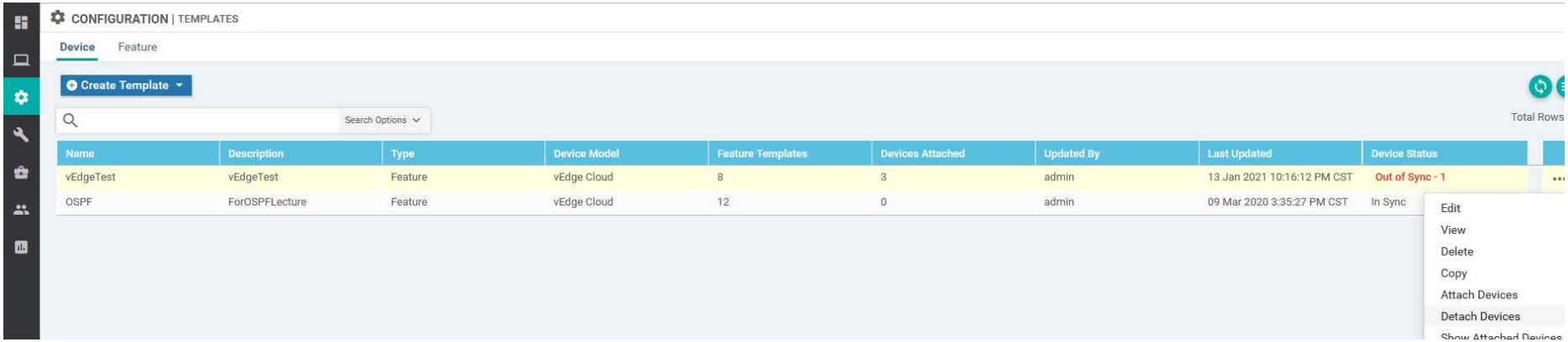
wr

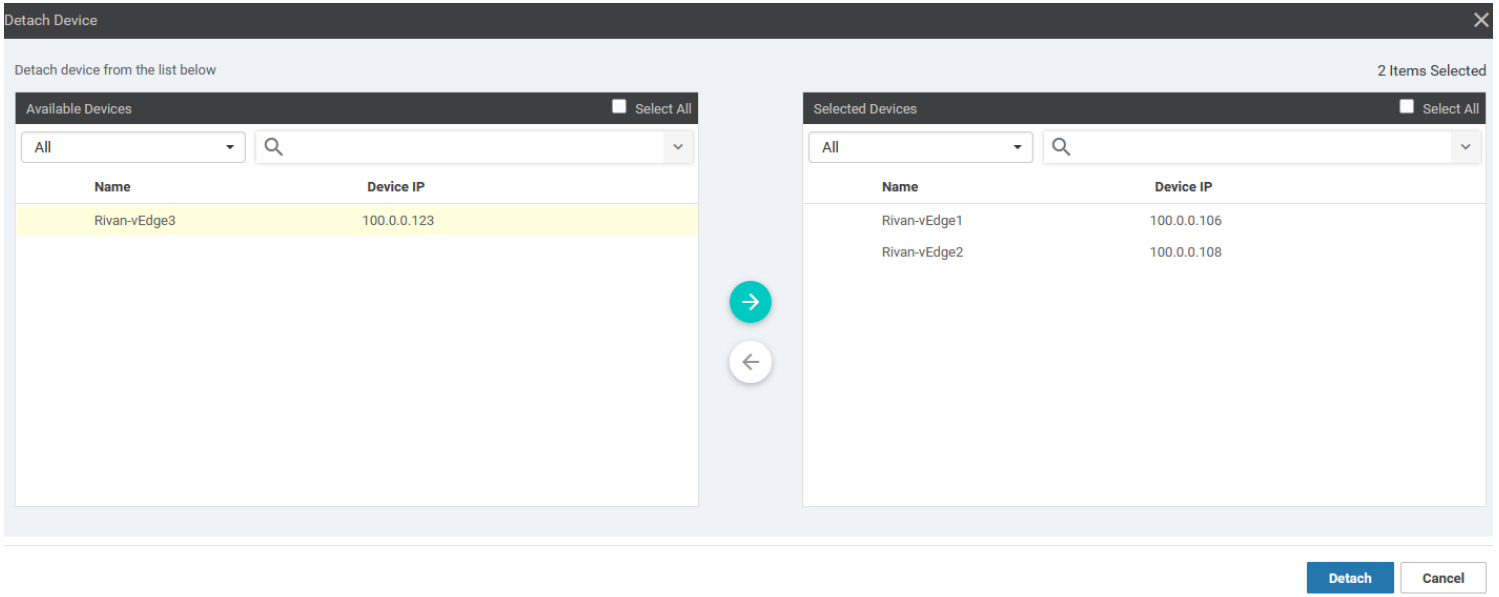
Launch VIPTELA on a separate browser https://100.0.0.101, login: ***admin/admin*** (it may preferable to ping it first to know if it is completely booted).



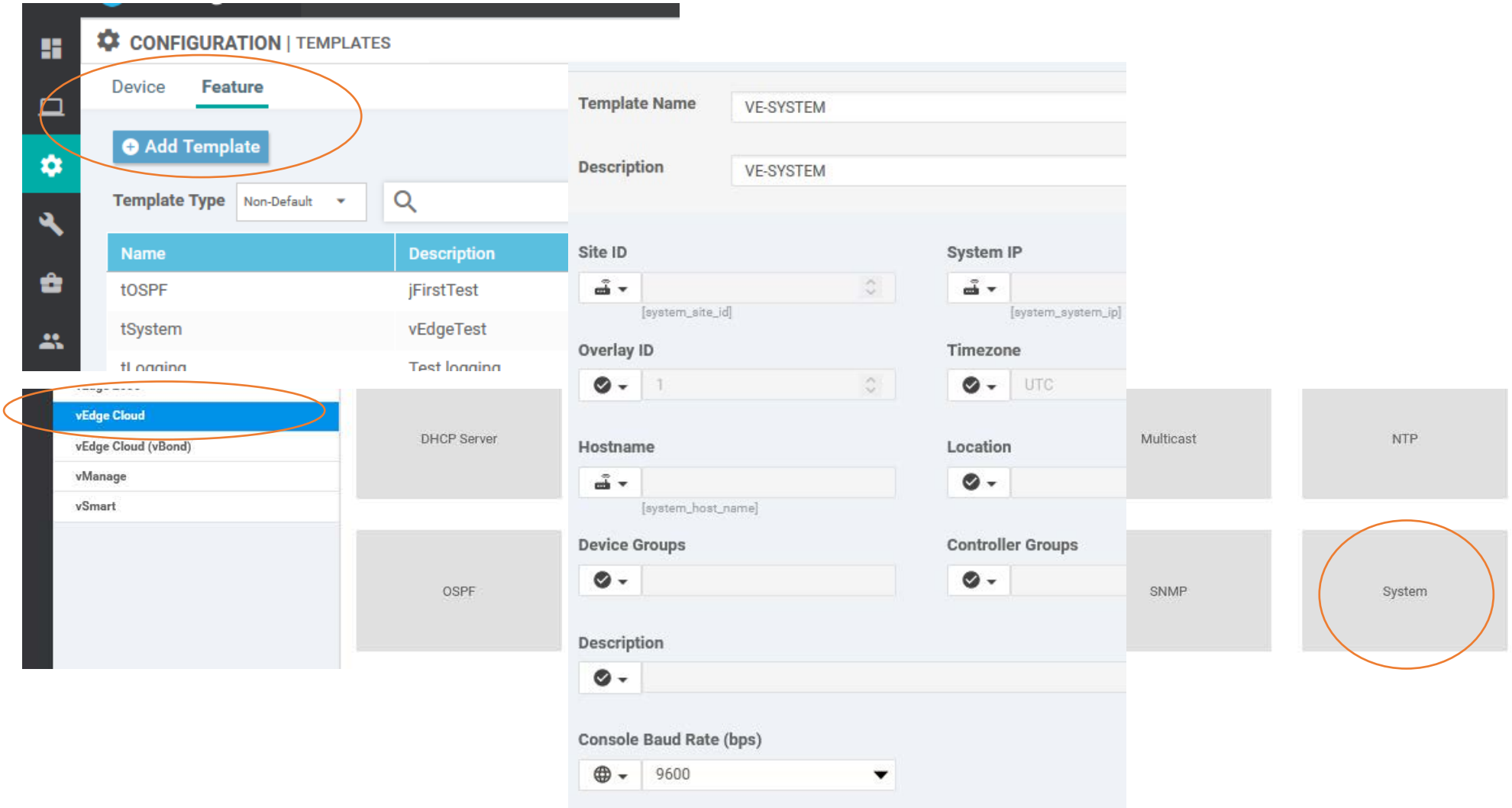
!@VIPTELA

Configuration > Templates > Devices > ••• > Select Lahat then Baklas (Detach) , wait for the completion of detach.





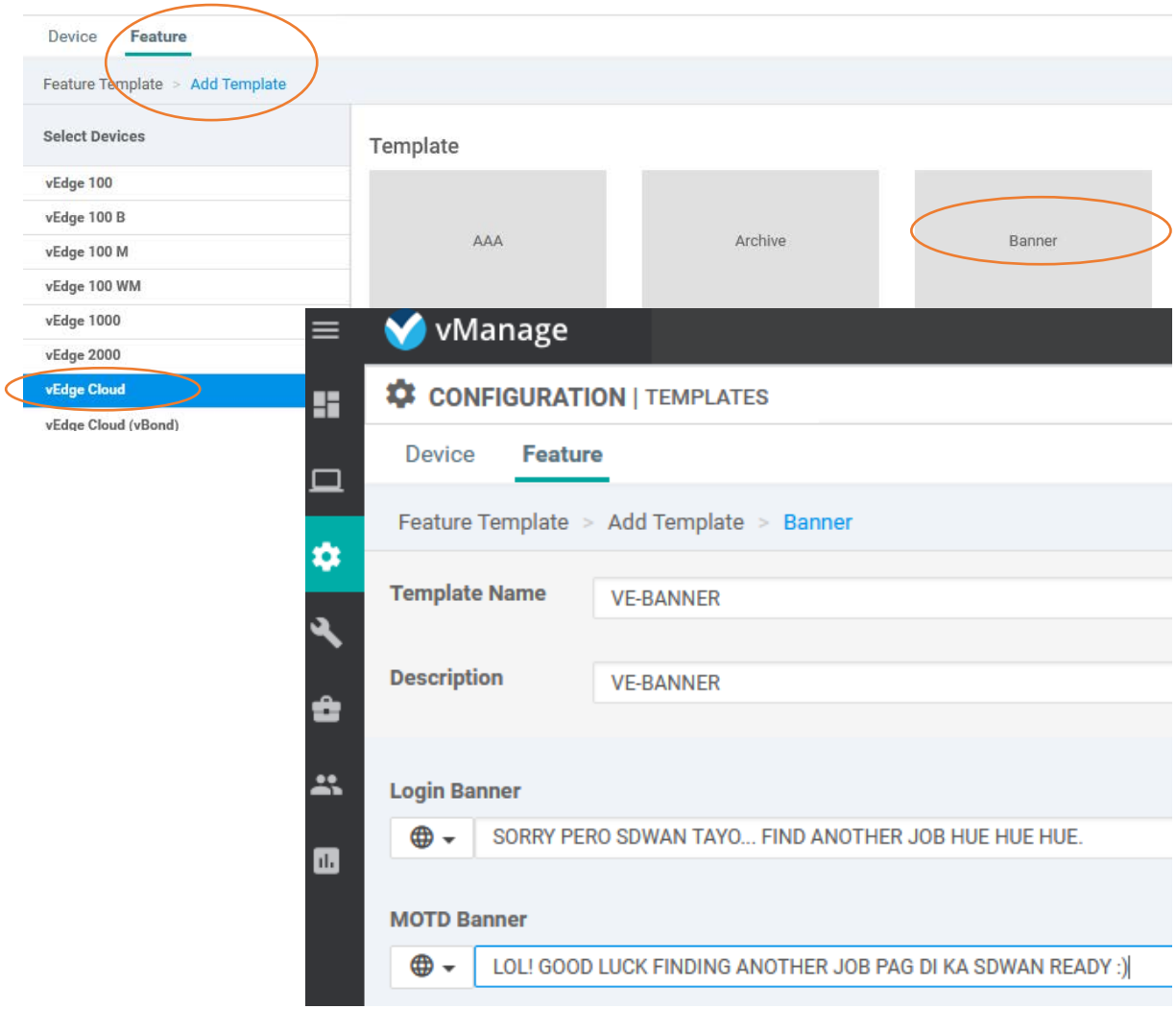
Configuration > Templates > Feature > Add Template > vEdge Cloud > System : Template Name: VE-SYSTEM : (scroll) Console Baud Rate > 9600. (this is similar in configuring the serial console.)



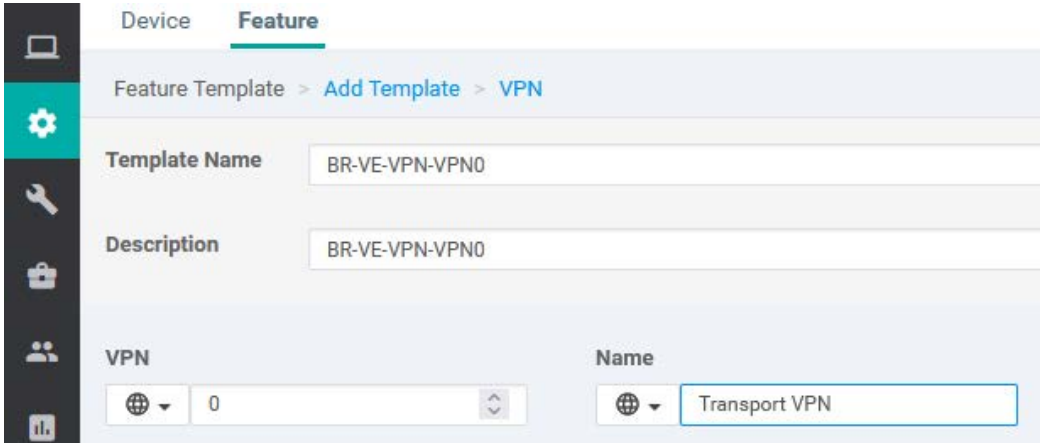
Add Template > vEdge Cloud > Banner :: Template Name: VE-BANNER ::

Login Banner > Global > SORRY PERO SDWAN TAYO... FIND ANOTHER JOB HUE HUE HUE.

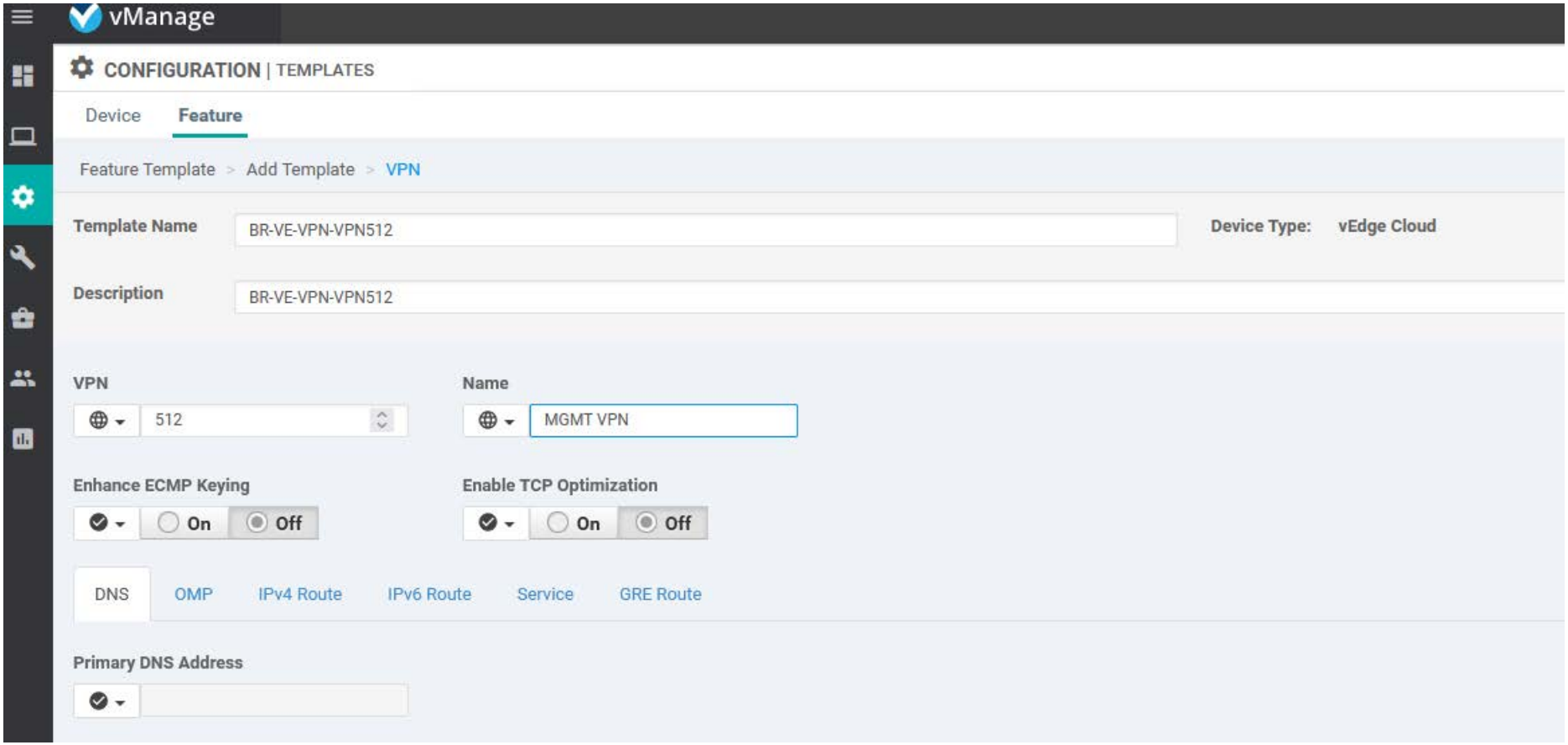
MOTD Banner > Global > LOL! GOOD LUCK FINDING ANOTHER JOB PAG DI KA SDWAN READY :)



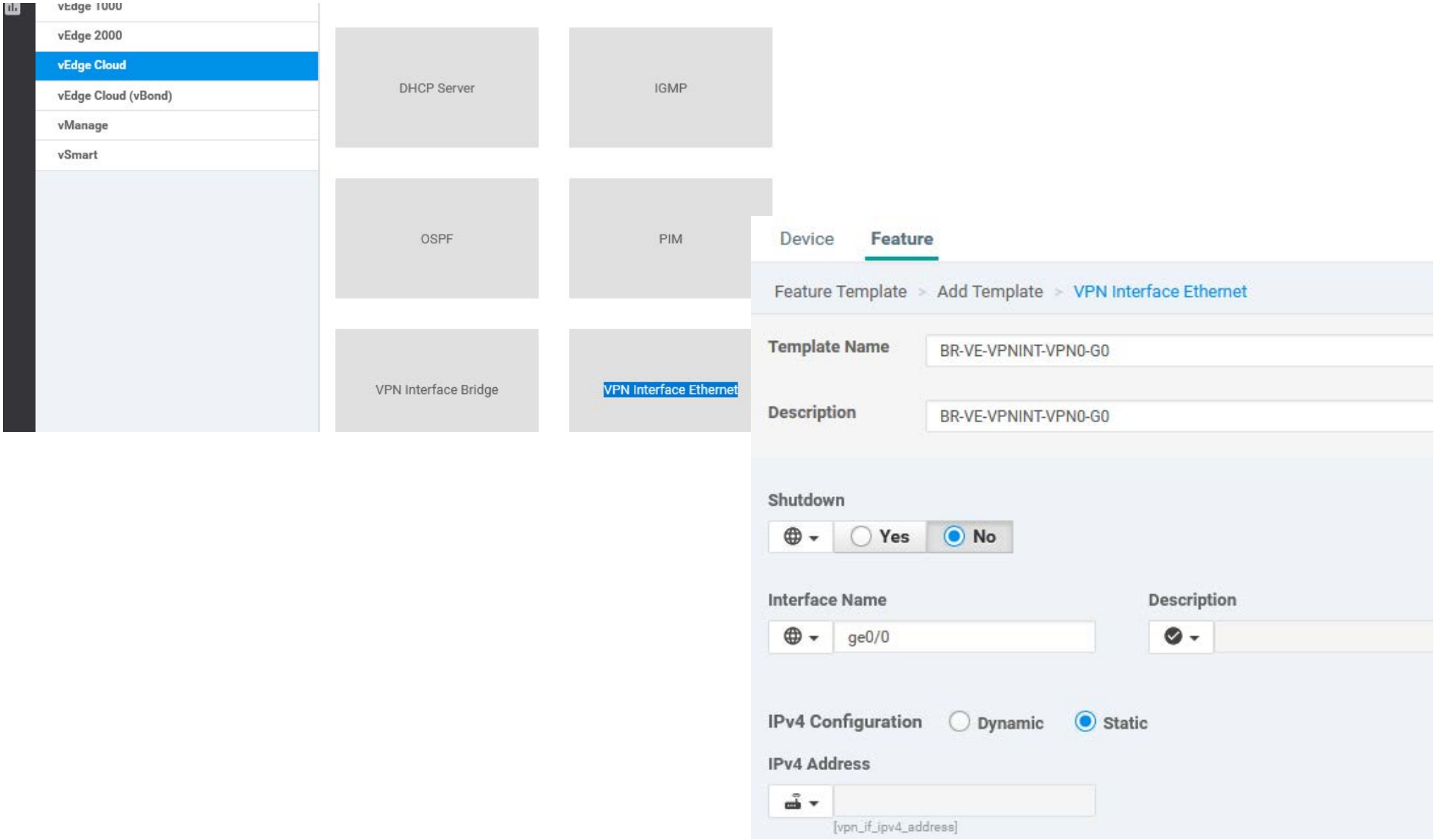
(for setting up VPN-0 Config): Add Template > vEdge Cloud > VPN : Template Name: BR-VE-VPN-VPN0 :
VPN > Global: 0 > Name: Transport VPN : IPv4 Route > + > Prefix > Global 0.0.0.0/0 > Next Hop + > Address: Device Specific(default).
!device specific because of different next hops per site, it will be set to ***[ip_address_0_0]***



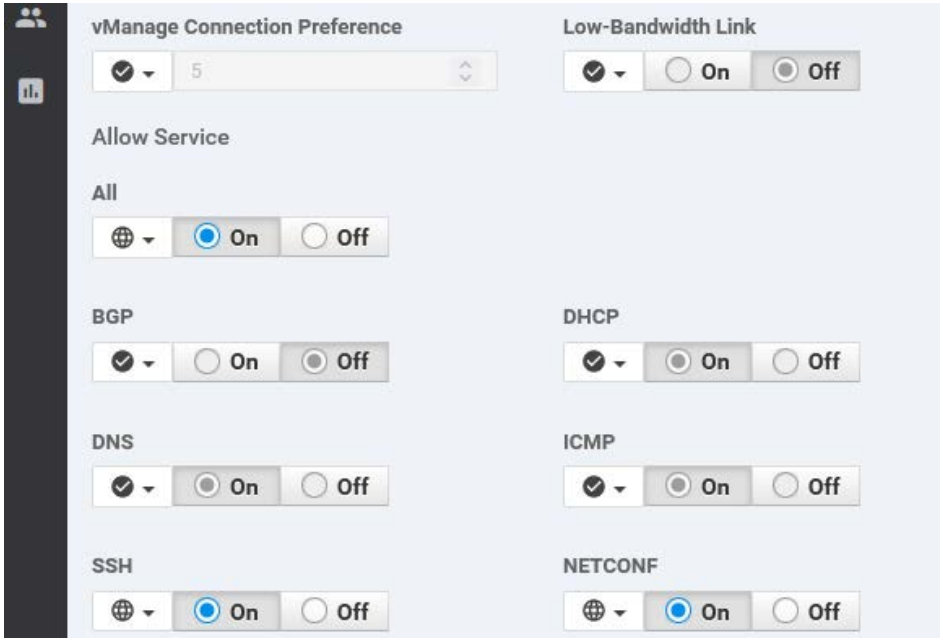
Add Template > vEdge Cloud > VPN : Template Name: BR-VE-VPN-VPN512 : VPN > Global: 512 > Name: MGMT VPN



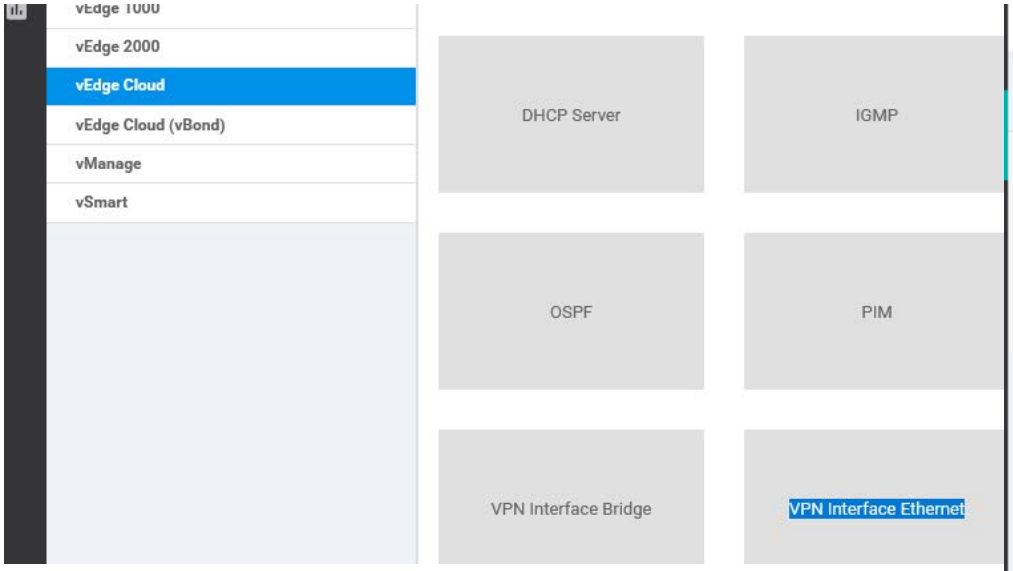
Add Template > vEdge Cloud > VPN Interface Ethernet (!serves as connector) : Template Name: BR-VE-VPNINT-VPN0-G0
Shutdown: Global NO : Interface Name > Global: ge0/0 : IPv4 Address > Device Specific: (***default***, IP Addreses are different in the offices)

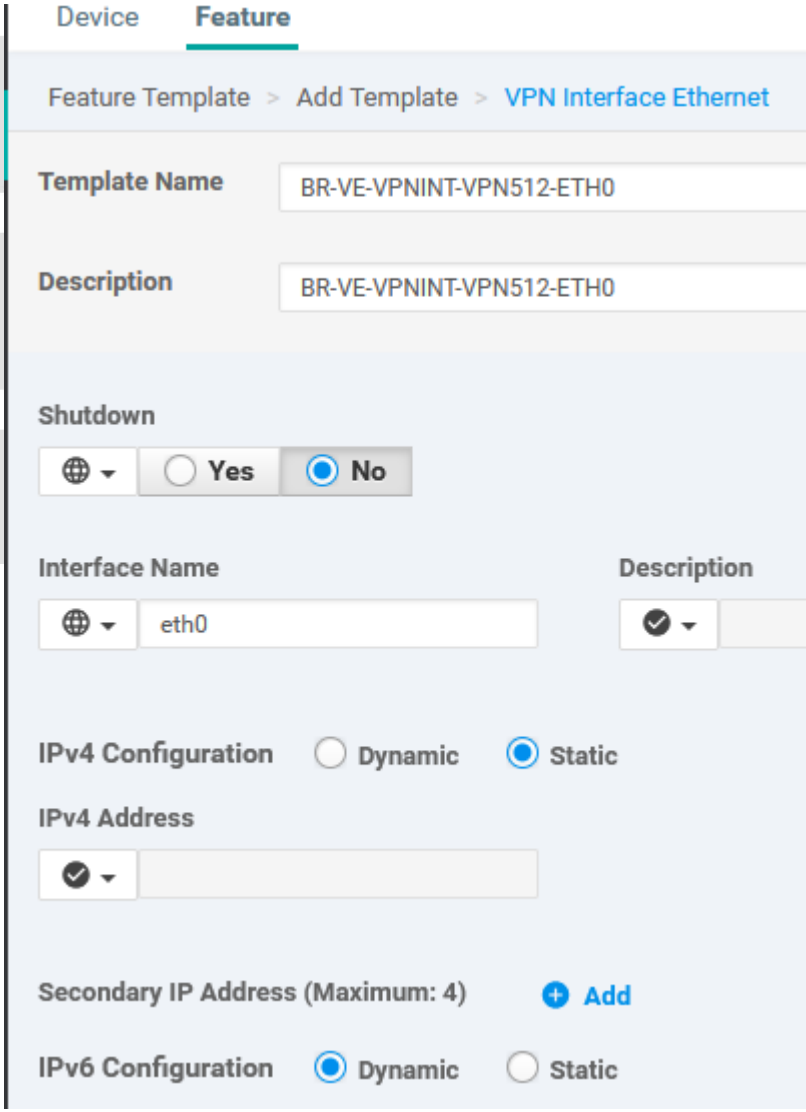


(scroll)… Tunnel Interface > Global: ON > Color: biz_Internet (*it's a cisco thing)* : (Scroll to Allow Service) Global ON for: ALL, SSH (for security), NETCONF (!for postman-like) : (link tab above) NAT > Global: ON > SAVE

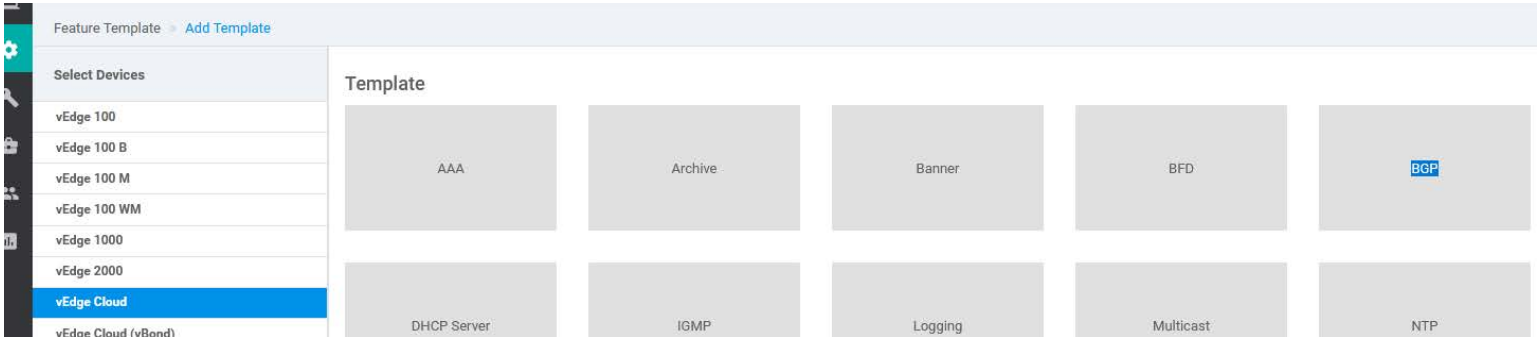


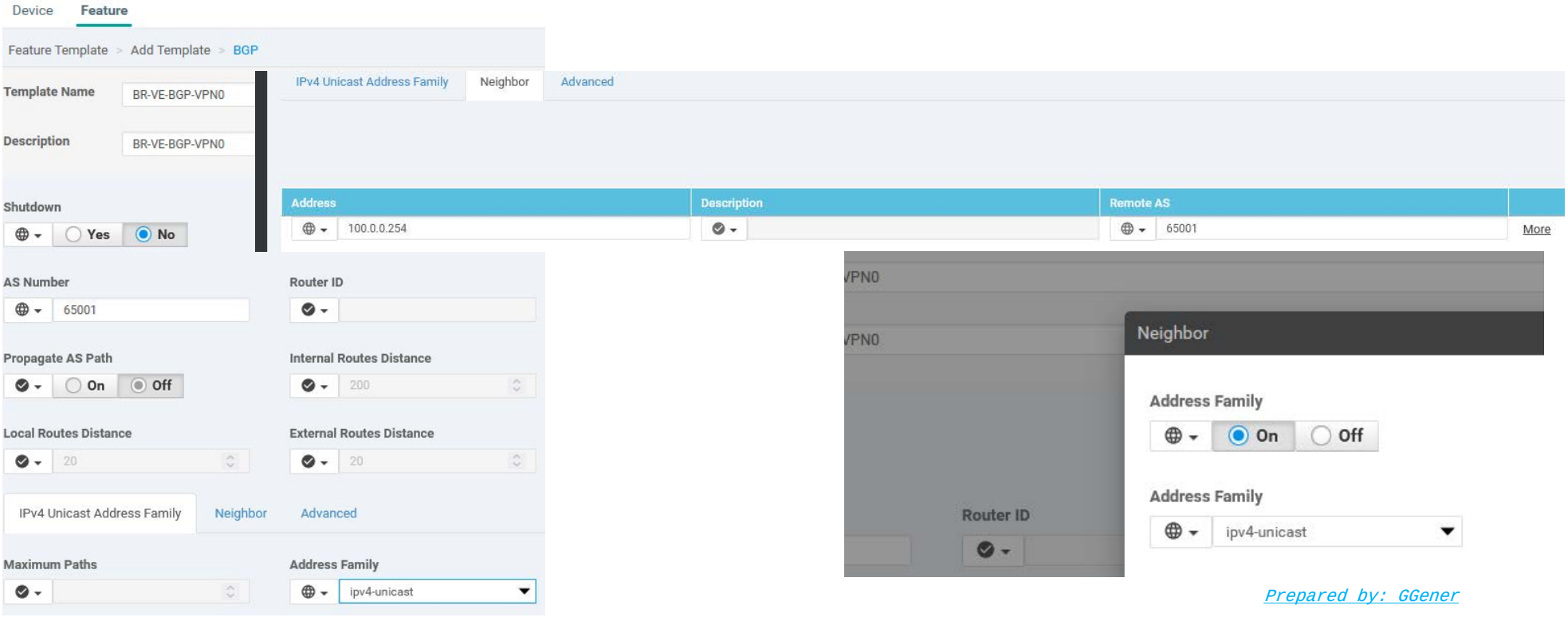
Add Template > vEdge Cloud > VPN Interface Ethernet : Template Name: BR-VE-VPNINT-VPN512-ETH0 : Shutdown> Global: NO
Interface Name: eth0 : IPv6 Configuration: Dynamic > SAVE



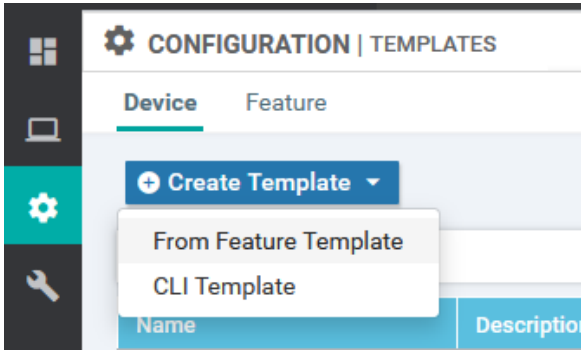


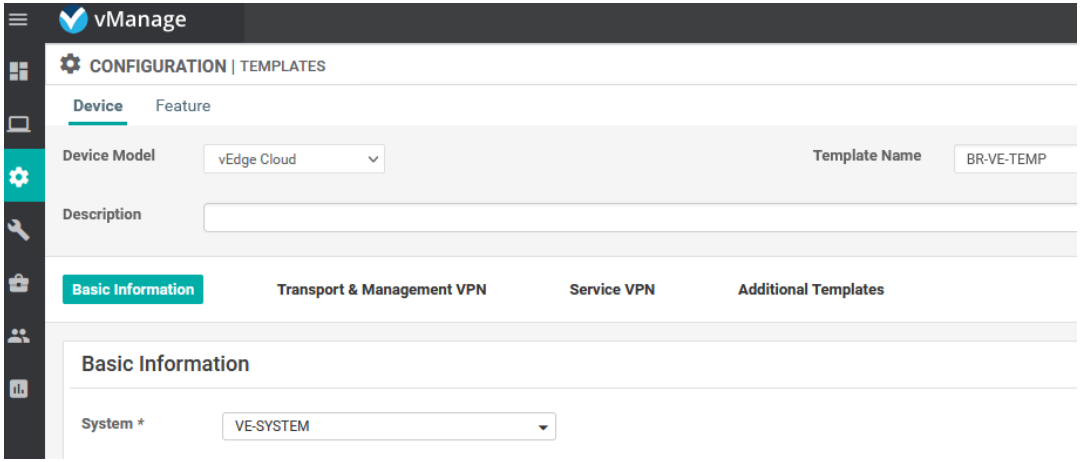
Add Template > vEdge Cloud > BGP : Template Name: BR-VE-BGP-VPN0 : Shutdown> Global: NO : AS Number > Global: 65001
Address-Family > Global: ipv4-unicast : Neighbor+ > Address: 100.0.0.254 > Remote-AS: Global 65001 > ***more***
> Address Family: Global ON > Global ipv4-unicast > SAVE > SAVE

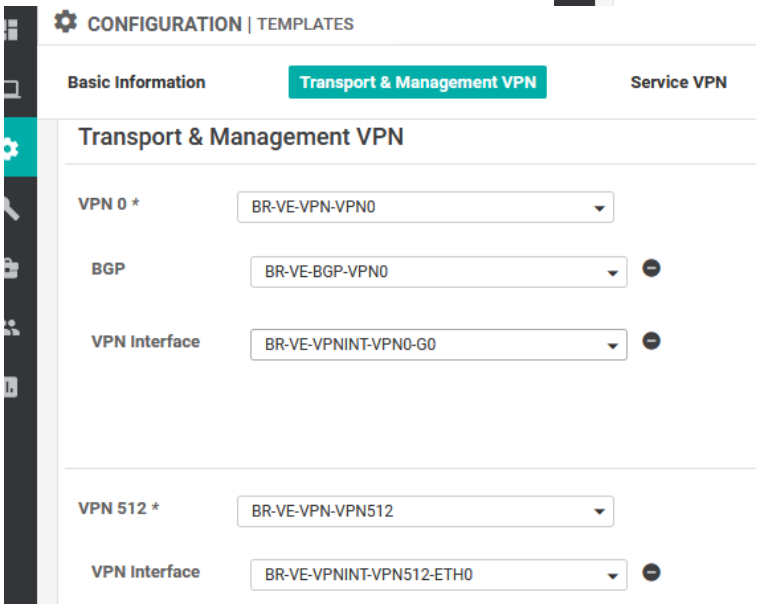




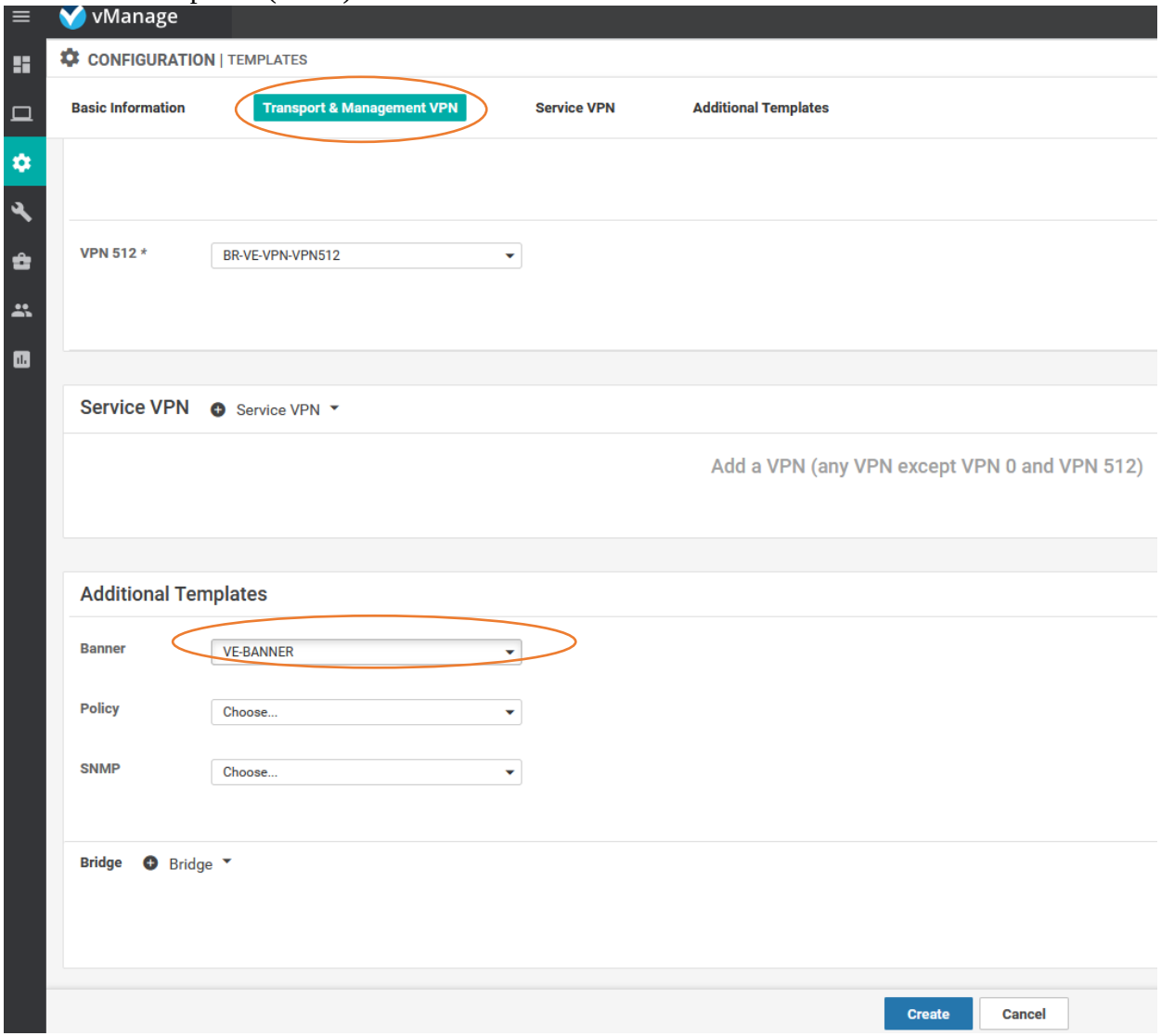
Configuration > Templates > (Device) Create Template... From Feature Template : Device Model: vEdge Cloud > Template Name: BR-VE-TEMP : System: VE-SYSTEM : Transport & Manage VPN > VPN 0: BR-VE-VPN-VPN0 > +BGP > BR-VE-BGP-VPN0 : VPN Interface: BR-VE-VPNINT-VPN0-G0 > VPN 512: BR-VE-VPN-VPN512 > +VPN Int: BR-VE-VPNINT-VPN512-ETH0 *(VPN 0 and VPN 512 are needed to talk to each other)*



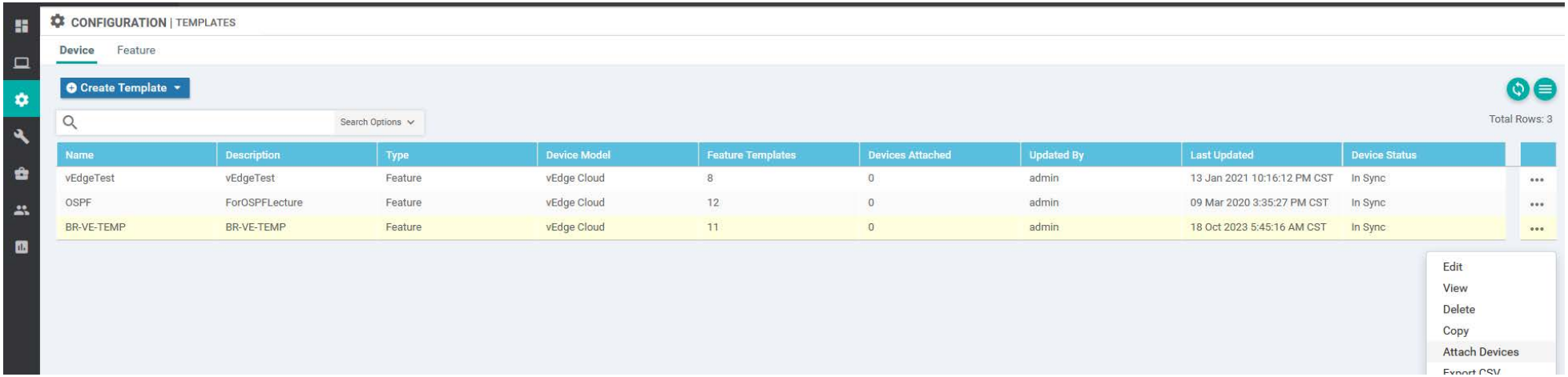




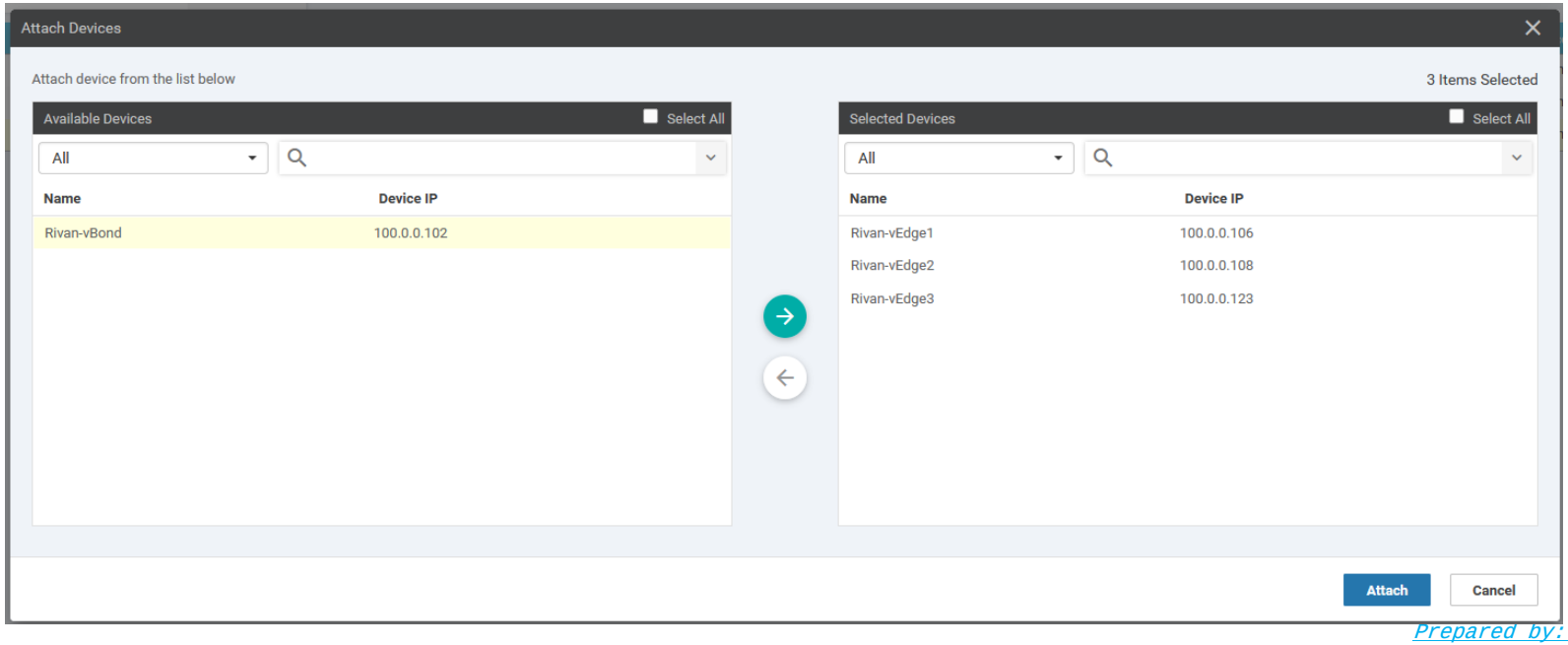
Additional Templates (scroll) > Banner: VE-BANNER > CREATE



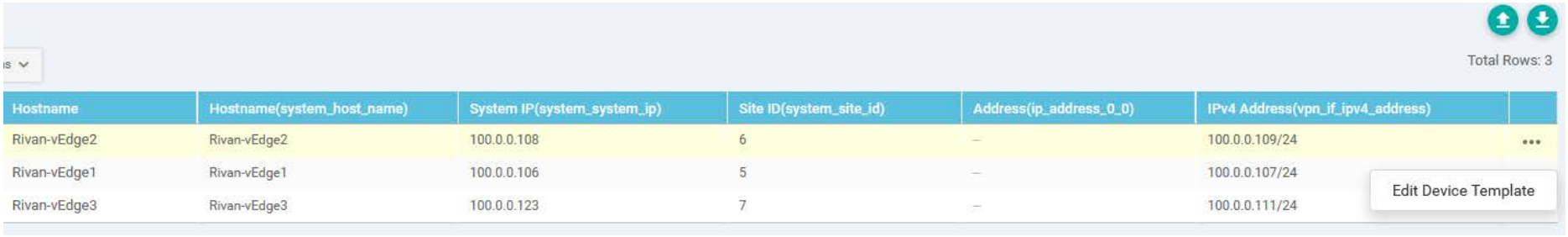
!(Deployment Time)…: Configuration > Templates > BR-VE-TEMP > ••• > Attach Devices



ATTACH: Rivan-vEdge1 > Rivan-vEdge2 > Rivan-vEdge3 *(NOT vBond as it is their communicator),*

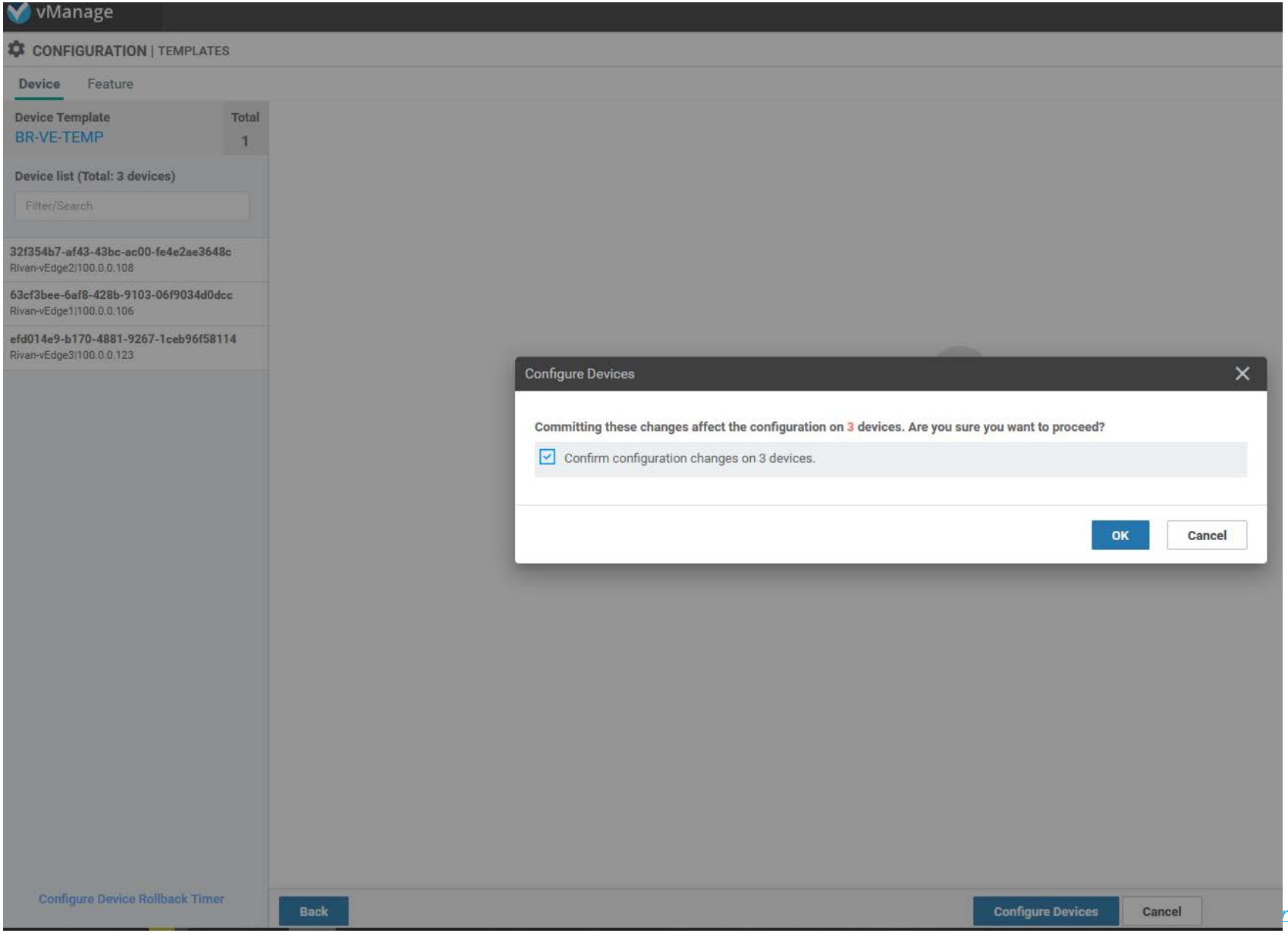


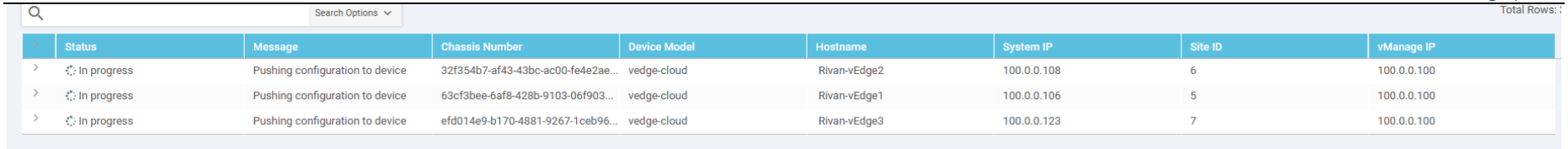
(for final edit) ... **UPDATE** each (all of Rivan vEdges) ... > Address: 100.0.0.254



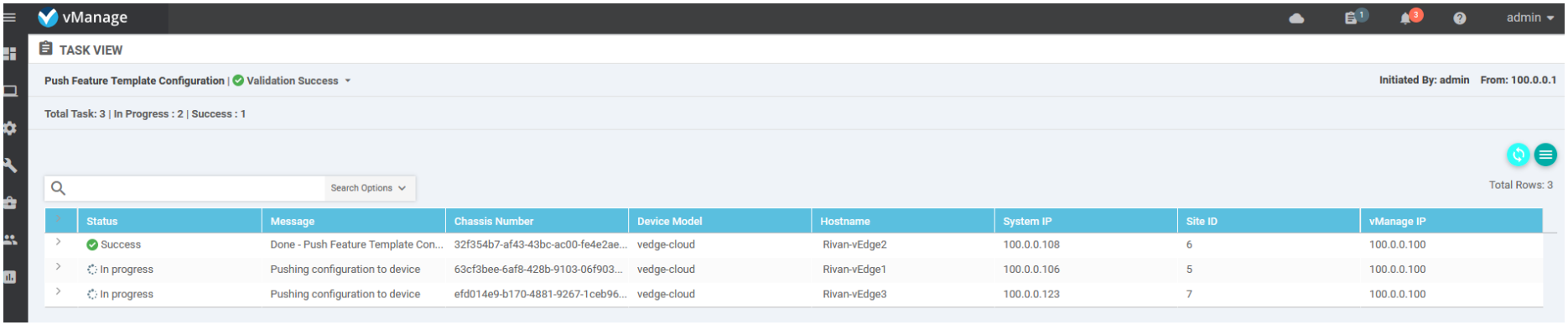
Hostname	Hostname(system_host_name)	System IP(system_system_ip)	Site ID(system_site_id)	Address(ip_address_0_0)
Rivan-vEdge2	Rivan-vEdge2	100.0.0.108	6	100.0.0.254
Rivan-vEdge1	Rivan-vEdge1	100.0.0.106	5	100.0.0.254
Rivan-vEdge3	Rivan-vEdge3	100.0.0.123	7	100.0.0.254

Next > CONFIGURE DEVICES > Confirm Configuration… > OK …. (and cross-fingers or pray! hue hue hue)

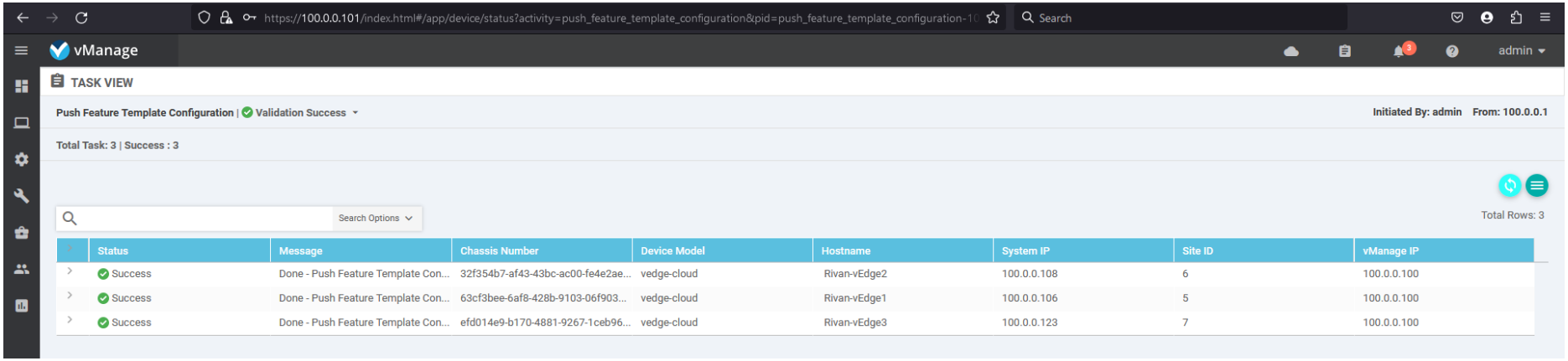




Status	Message	Chassis Number	Device Model	Hostname	System IP	Site ID	vManage IP
In progress	Pushing configuration to device	32f354b7-af43-43bc-ac00-fe4e2ae...	vedge-cloud	Rivan-vEdge2	100.0.0.108	6	100.0.0.100
In progress	Pushing configuration to device	63cf3bee-6af8-428b-9103-06f903...	vedge-cloud	Rivan-vEdge1	100.0.0.106	5	100.0.0.100
In progress	Pushing configuration to device	efd014e9-b170-4881-9267-1ceb96...	vedge-cloud	Rivan-vEdge3	100.0.0.123	7	100.0.0.100



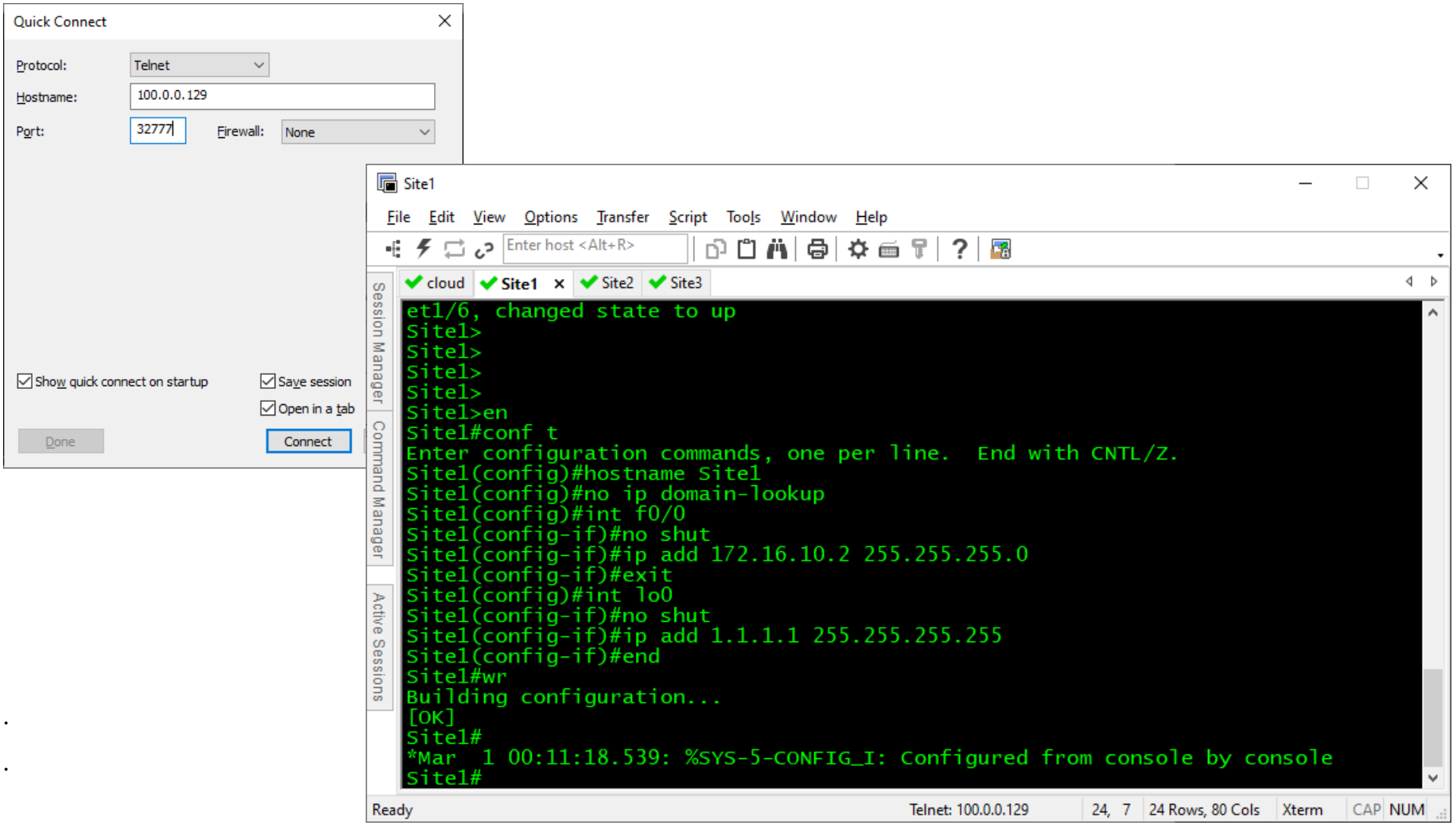
Status	Message	Chassis Number	Device Model	Hostname	System IP	Site ID	vManage IP
Success	Done - Push Feature Template Con...	32f354b7-af43-43bc-ac00-fe4e2ae...	vedge-cloud	Rivan-vEdge2	100.0.0.108	6	100.0.0.100
In progress	Pushing configuration to device	63cf3bee-6af8-428b-9103-06f903...	vedge-cloud	Rivan-vEdge1	100.0.0.106	5	100.0.0.100
In progress	Pushing configuration to device	efd014e9-b170-4881-9267-1ceb96...	vedge-cloud	Rivan-vEdge3	100.0.0.123	7	100.0.0.100



Status	Message	Chassis Number	Device Model	Hostname	System IP	Site ID	vManage IP
Success	Done - Push Feature Template Con...	32f354b7-af43-43bc-ac00-fe4e2ae...	vedge-cloud	Rivan-vEdge2	100.0.0.108	6	100.0.0.100
Success	Done - Push Feature Template Con...	63cf3bee-6af8-428b-9103-06f903...	vedge-cloud	Rivan-vEdge1	100.0.0.106	5	100.0.0.100
Success	Done - Push Feature Template Con...	efd014e9-b170-4881-9267-1ceb96...	vedge-cloud	Rivan-vEdge3	100.0.0.123	7	100.0.0.100

If you have 3 SUCCESS, GOOD JOB (^_^) … if failed… re-check the each created templates via Feature Templates.

WAIT… there's more!!! … while pushing config status, add the previously prepared initial script for Sites 1,2, and 3.
(telnet 100.0.0.xxx : 32777, 32778, 32779) @ Pages 7-8 , verify that Sites 1, 2, 3 in the topology are running.



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Configure OSPF to remote SITES, push the following scripts via CLI …

!Site1

en

conf t

router ospf 1

network 172.16.10.0 0.0.0.255 area 0

network 1.1.1.1 0.0.0.0 area 0

end

wr

!

.

.

.

!Site2

en

conf t

router ospf 1

network 172.16.20.0 0.0.0.255 area 0

network 2.2.2.2 0.0.0.0 area 0

end

wr

!

.

!Site3

en

conf t

router ospf 1

network 172.16.30.0 0.0.0.255 area 0

network 3.3.3.3 0.0.0.0 area 0

end

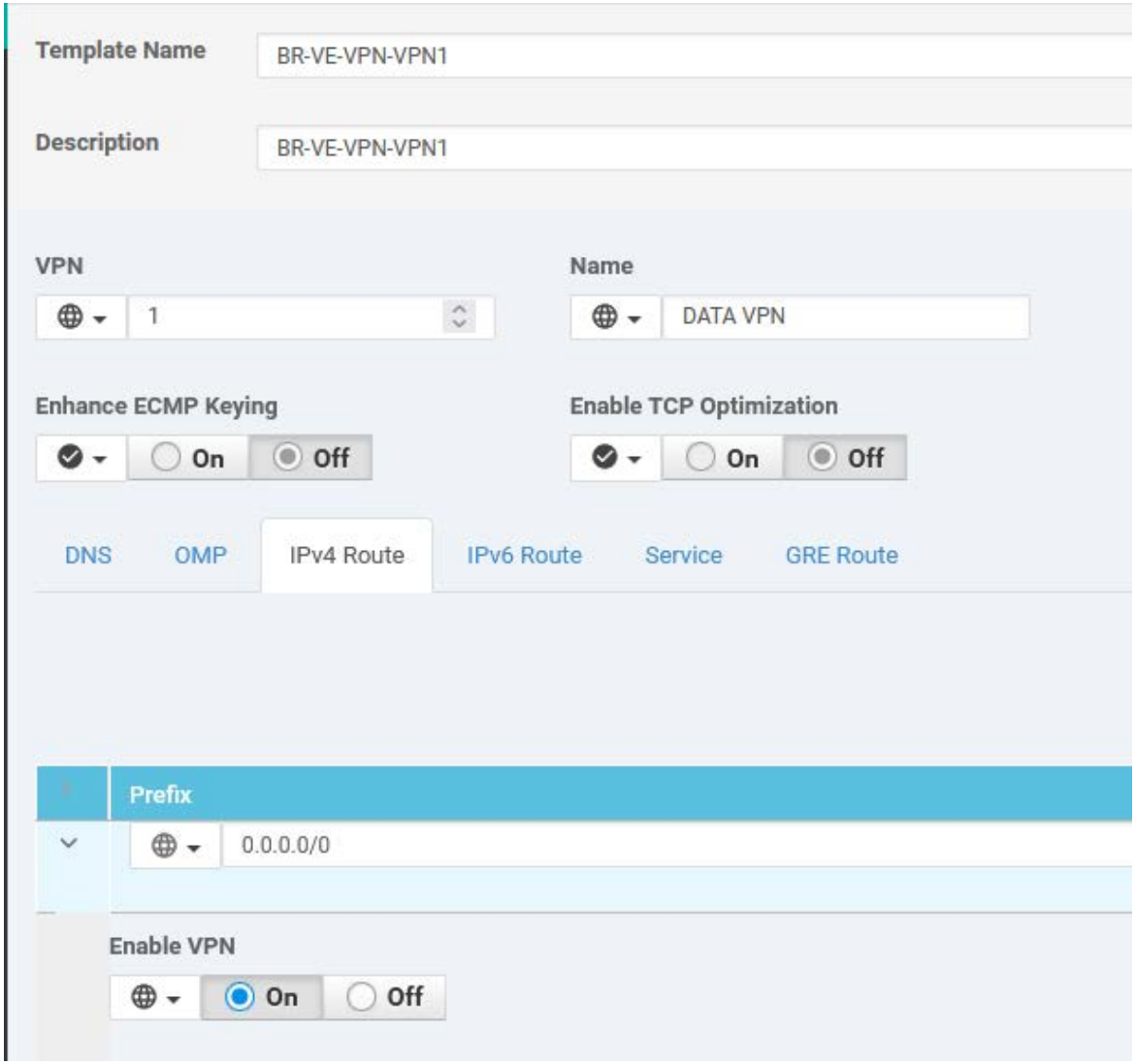
wr

!

.

```
Site1#
*Mar  1 00:11:18.539: %SYS-5-CONFIG_I: Configured from console by console
Site1#en
Site1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Site1(config)#router ospf 1
Site1(config-router)#network 172.16.10.0 0.0.0.255 area 0
Site1(config-router)#network 1.1.1.1 0.0.0.0 area 0
Site1(config-router)#end
Site1#wr
Building configuration...
[OK]
```

reminder: VPN512 for MGMT, VPN0 for Connectivity… new VPN1 for Data Plane…. ***@VIPTELA for OSPF Template Data Connectivity:*** Configuration > Templates > Feature : Add Template > vEdge Cloud > VPN : Template Name/Description: BR-VE-VPN-VPN1 : VPN > Global: 1 > Name: DATA VPN : IPv4 Route+ : Global 0.0.0.0/0 ---> VPN: Global ON >>> SAVE



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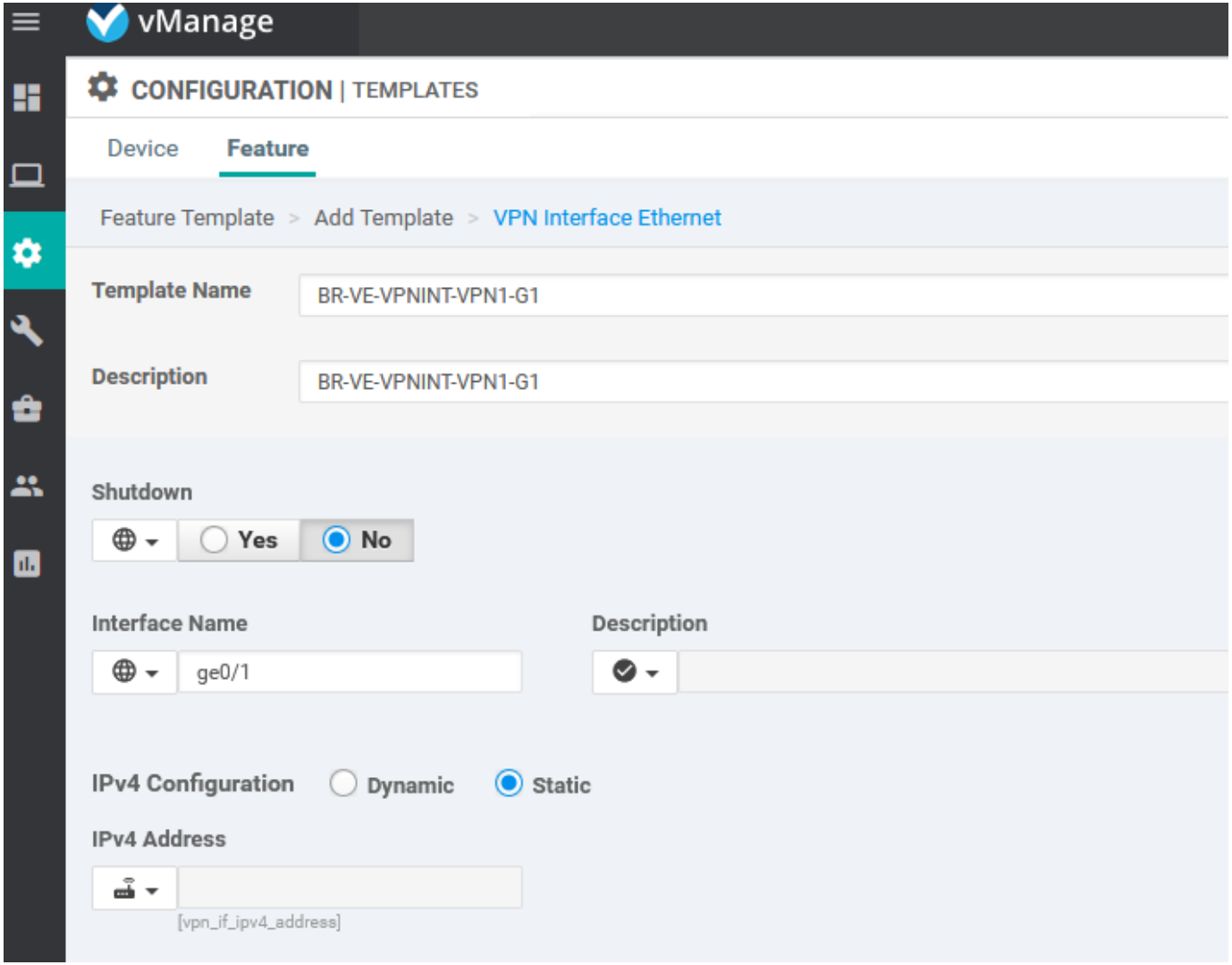
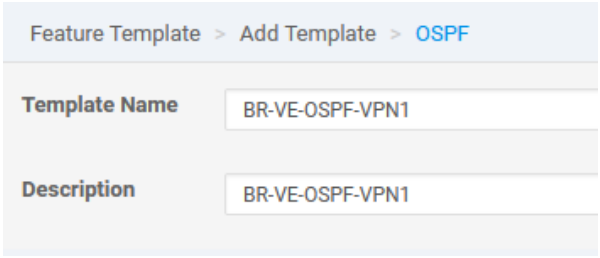
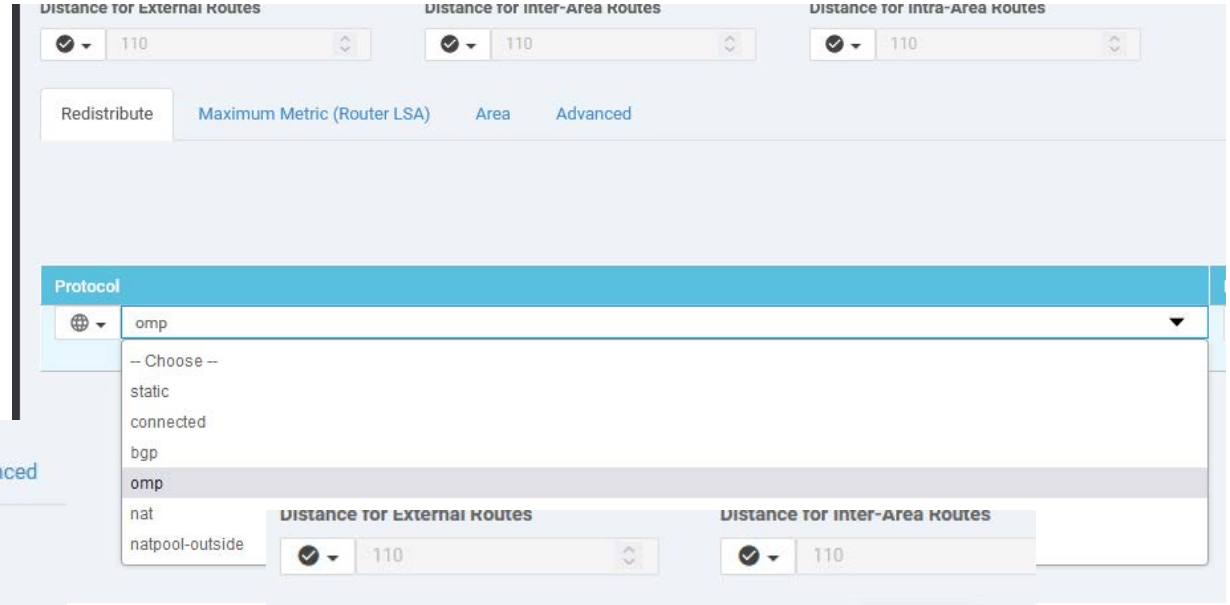
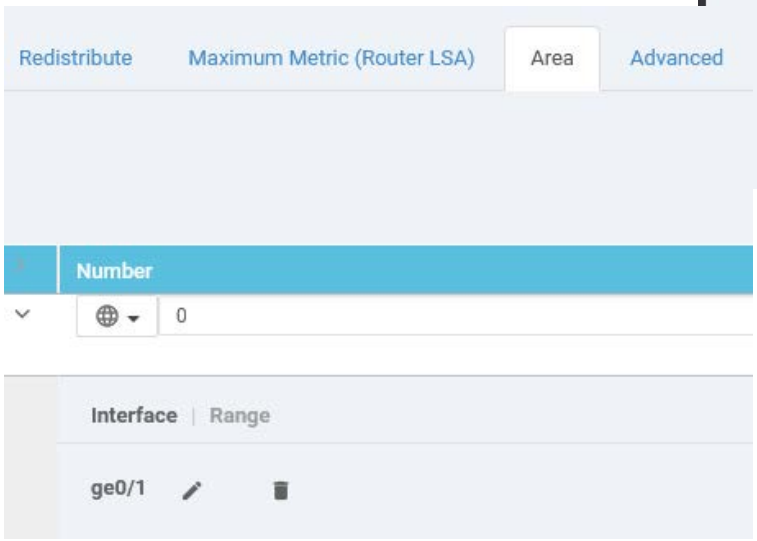
(for the connectivity)… Add Template > vEdge Cloud > VPN Interface Ethernet : Template Name: BR-VE-VPNINT-VPN1-G1 : Shutdown > Global NO : Interface: ge0/1 > IPv4 Address: Device Specific >>> SAVE

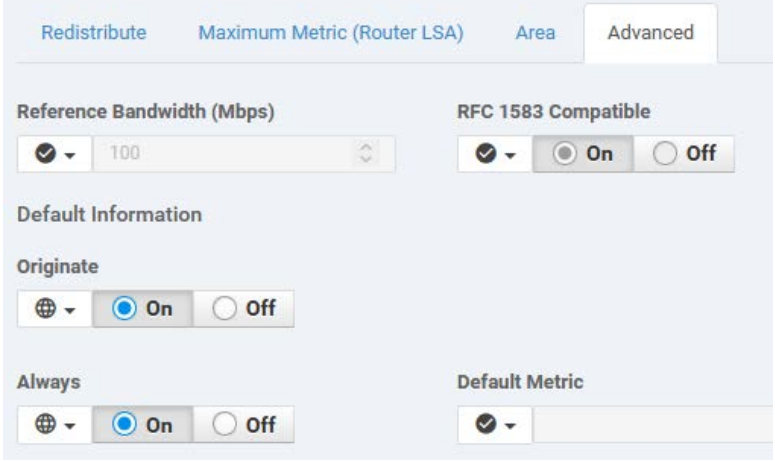


(for OSPF Template)… Add Template > vEdge Cloud > OSPF (via VPN1) : Template Name: BR-VE-OSPF-VPN1 : Redistribute+ > Global: OMP (Overlay Management Protocol) : Area+ > Global: 0 > Interface+ > ge0/1 : Advance > Default Information Originate: Global ON, Always: (Global) ON > > SAVE

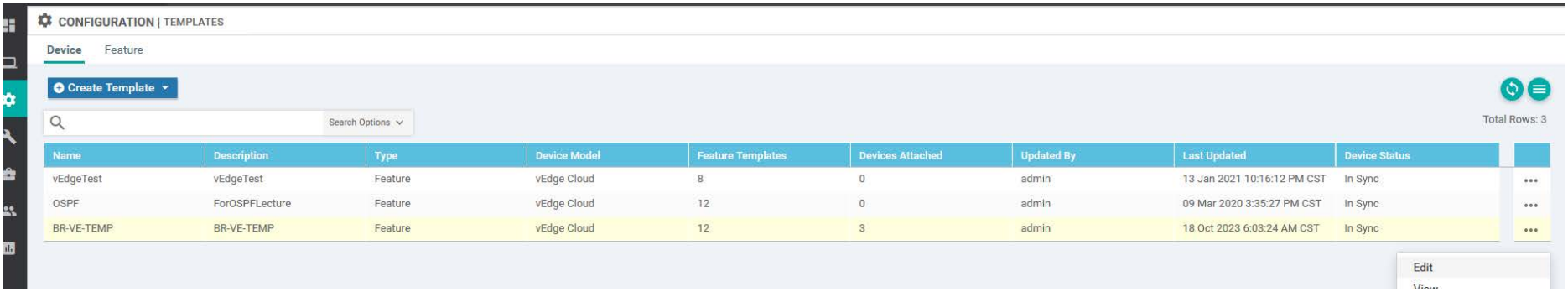


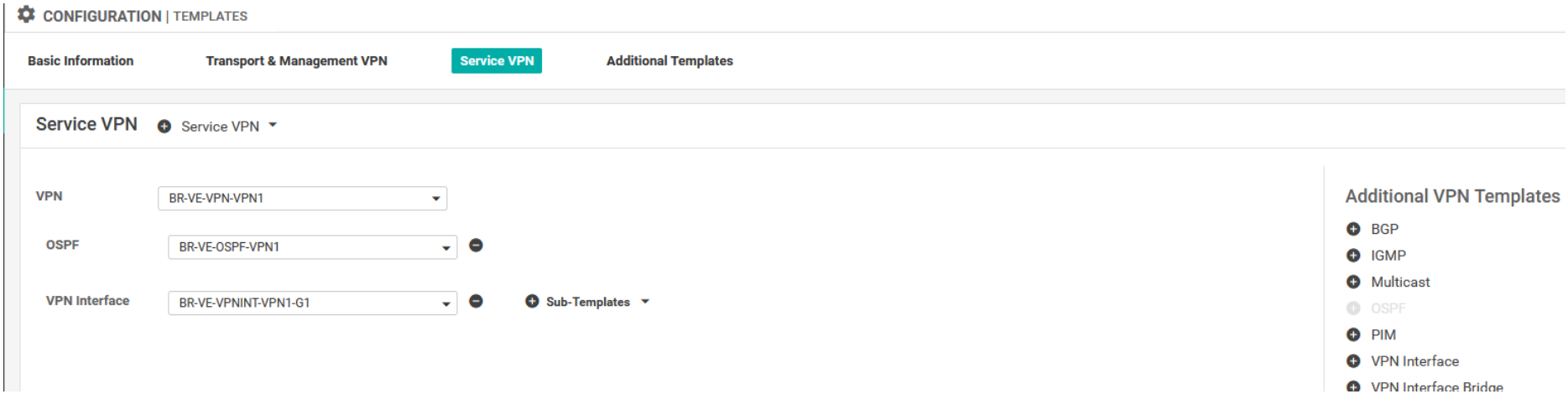






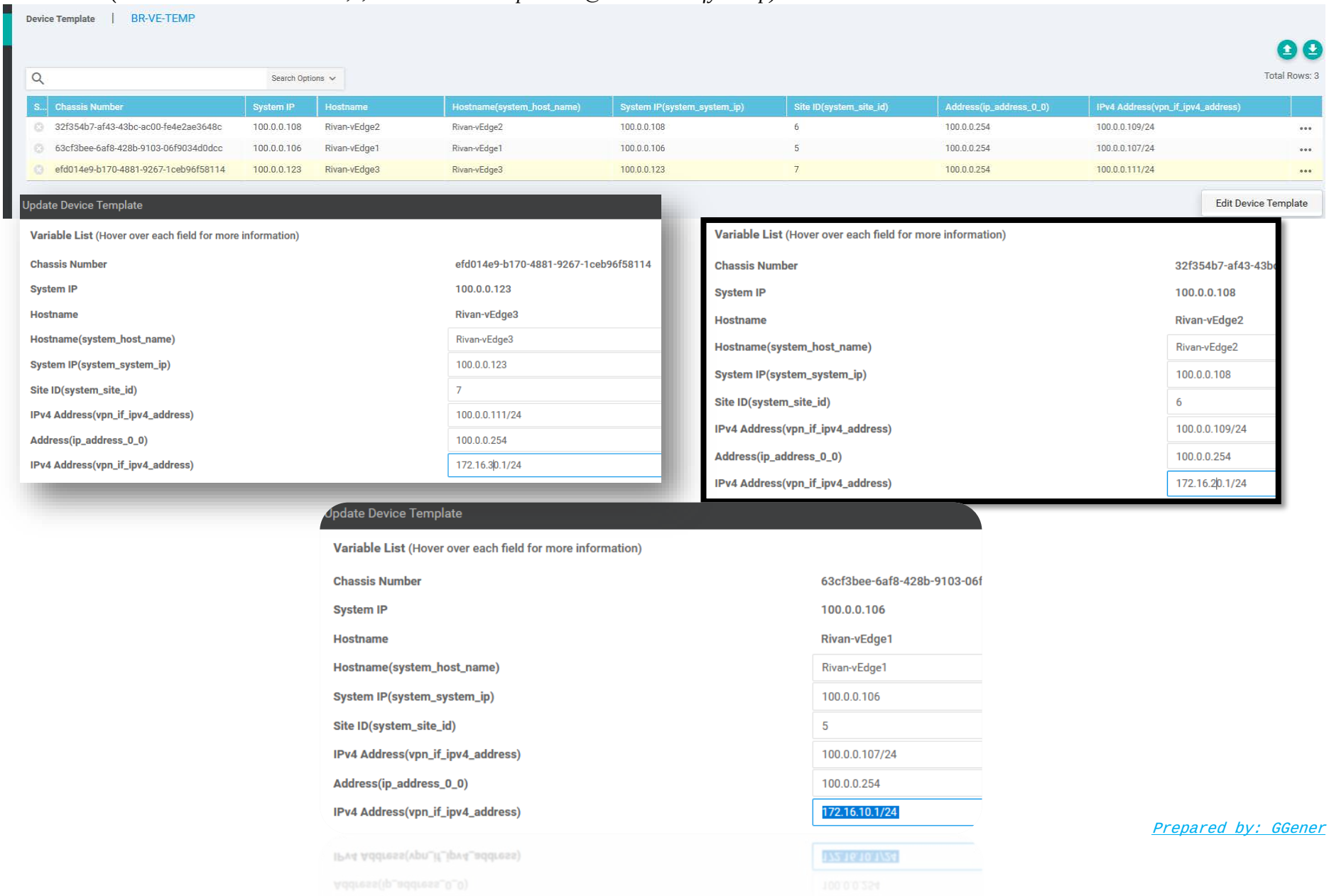
(***for the connectivity of OSPF Template***):… Configuration > Templates > Device : BR-VE-TEMP... > Edit > Service VPN+ > VPN: BR-VE-VPN-VPN1 : OSPF+ > BR-VE-OSPF-VPN1 : VPN Interface+ > VPN Int: BR-VE-VPNINT-VPN1-G1 > >> UPDATE



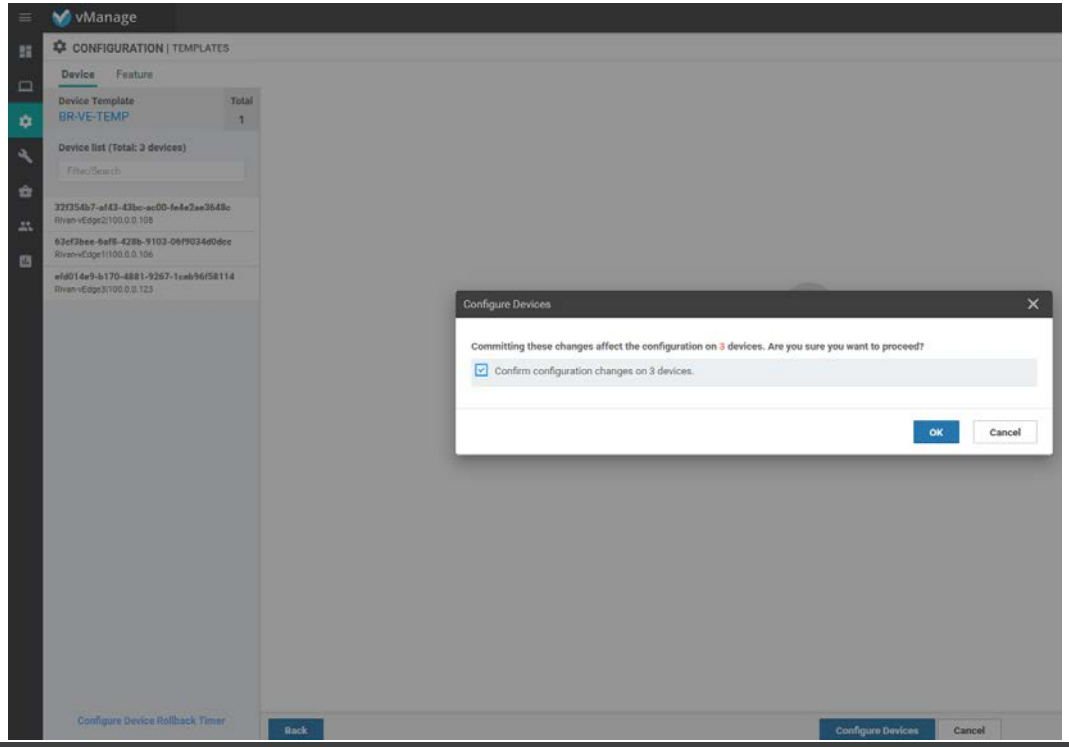


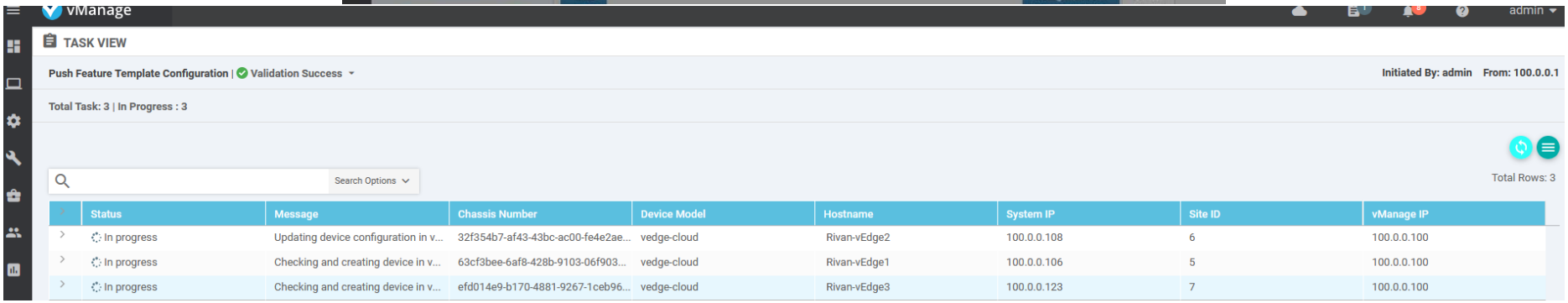
(Edges Last Editing)… > Edit Device Templete > vpn_if_ipv4_address: ***<u>172.16.x0.1/24</u>*** (where x == according to sites 1,2,3)

!!! :!(it can be checked on sites 1,2,and 3 via CLI sh ip int br @ eth0 to verify the ip)



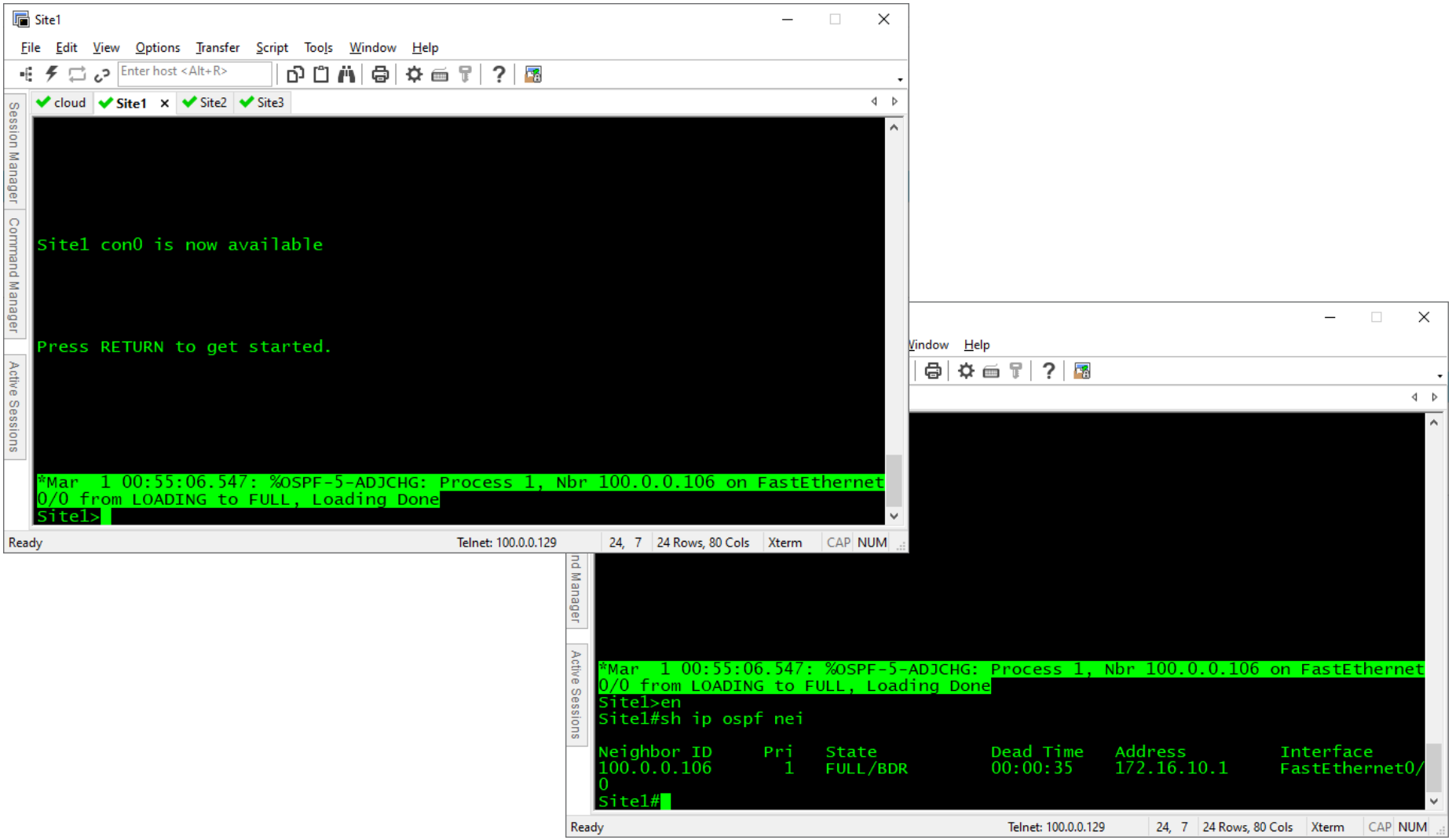
Next > CONFIGURE DEVICES > (and cross-fingers again! huehuehue)



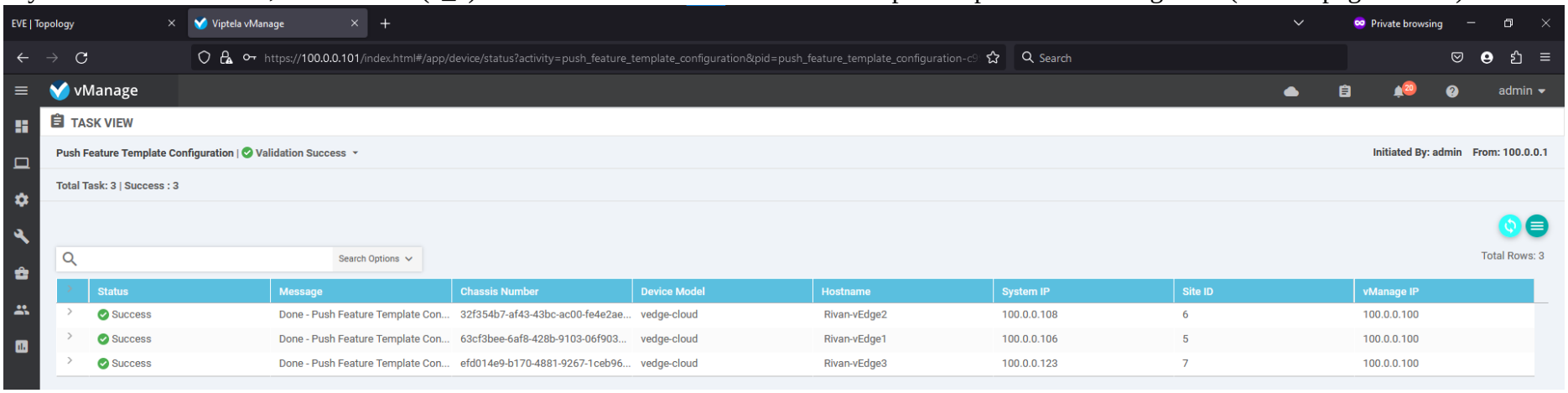


: !(while in progress of saving, you may monitor the CLi of Sites 1,2, and 3 for OSPF Neighboring)

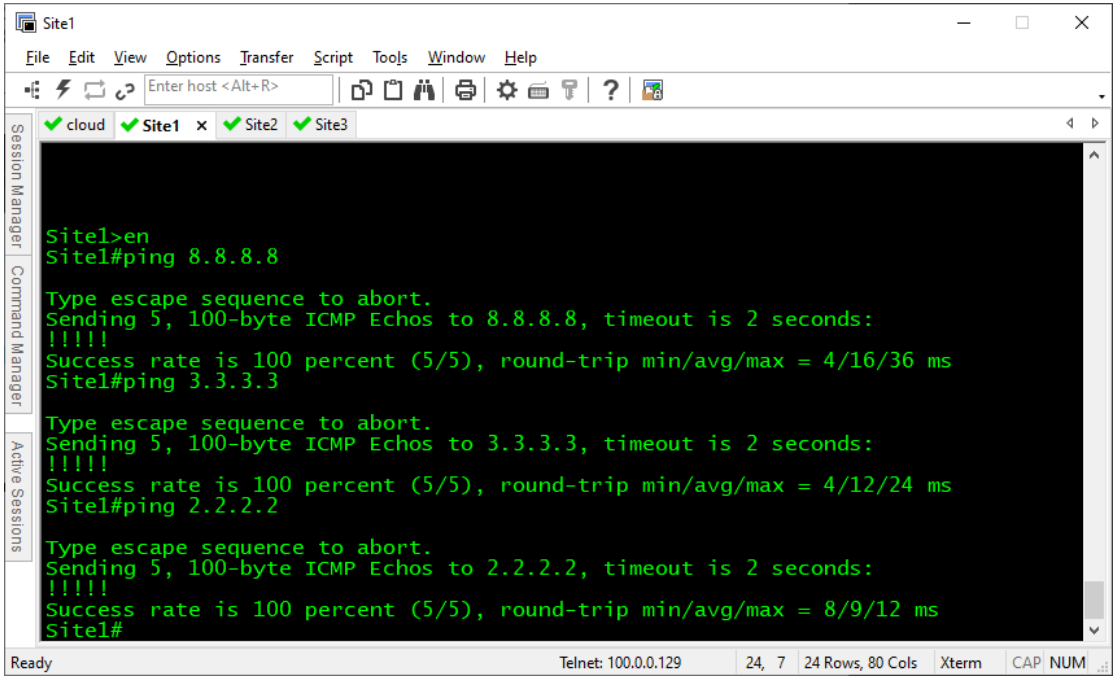
: !(thru cli, you can confirm via sh ip ospf nei... it should be in FULL/BDR)



If you have 3 SUCCESS, GOOD JOB (^_^) … if failed… re-check the OSPF Templates up to Final Editing of IP (refer to page 30 - 32)



ping 8.8.8.8 and each site's loopback addresses for checking



#CONGRATZ

#SDWAN.Success (^_^)
#GGWP \m/

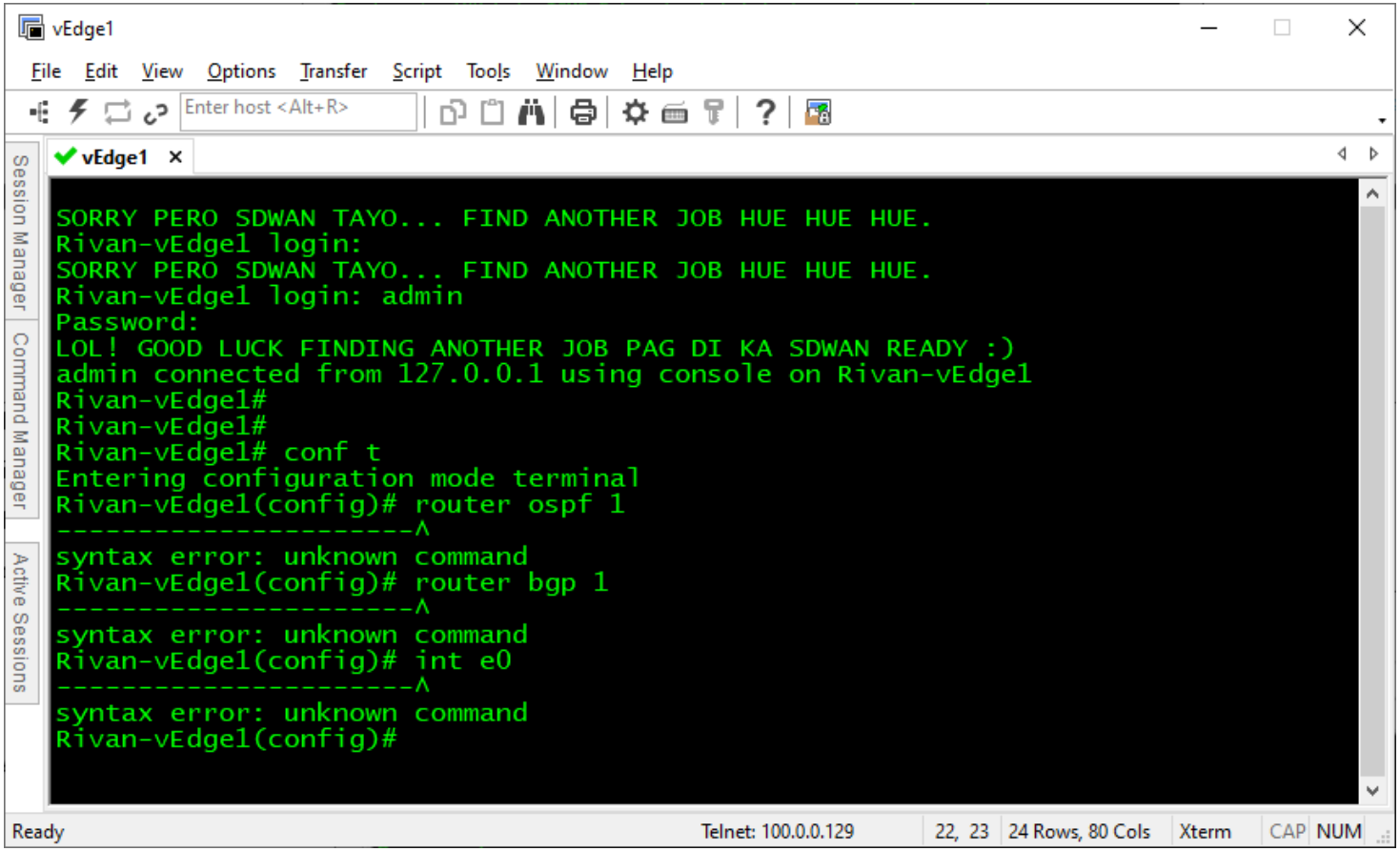
Prepared by: GGener

BONUS FINALE CHECKING !!!

if working lahat… pasukin ang mga edges.

Login: admin/admin

may config pero wala nang Control Plane.



#SDWAN-Works :)

#GloryToTeamRivan