Deploying Oracle Session Border Controller (SBC) in VMware TCI 2.2 Cloud Director Edition

Technical Application Note

ORACLE

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Revision History

Version	Description of Changes	Date Revision Completed
1.0	Deploying Oracle SBC in VMware TCI 2.2 Cloud Director Edition	30th March 2023

Table of Contents

1. Intended Audience

This document is intended for use by Oracle Systems Engineers, third party Systems Integrators, Oracle customers and partners and end users of the Oracle Session Border Controller (SBC).
It is assumed that the reader is familiar with basic operations of the Oracle Session Border Controller platform along with VMware TCI 2.2. Cloud Director Edition.

2. Document Overview

This Oracle technical application note outlines how to configure the following Oracle Session delivery products in the VMware TCI 2.2 cloud Director Infrastructure. The products include

- Oracle SBC or Service Provider SBC
- Enterprise SBC.
- Session Router and
- Subscriber Aware Load Balancer

In this app note document, we deploy the Oracle Session Border Controller (Oracle SBC) in either standalone or High Availability (HA) mode as an example and the other product installation will also be similar to the current installation. The solution contained within this document has been tested using Oracle Communication SBC with software version **OS910p4 (SCZ9.1.0 Patch 4)**

Please find the related documentation links below:

- Oracle® Session Border Controller Platform Preparation and Installation Guide
- Oracle® Session Border Controller Configuration Guide
- Oracle® Session Border Controller Release Notes

Please note that the IP Addresses, FQDN and configuration names and details given in this document are used for reference purposes only. These same details cannot be used in customer configurations. End users of this document can use the configuration details according to their network requirements. There are some public facing IPs (externally routable IPs) that we use for our testing are masked in this document for security reasons.
The customers can configure any publicly routable IPs for these sections as per their network architecture needs.

3. Requirements

3.1. Package used for Certification

When we download the build from MOS and unzip them, we will be seeing the following package in which we will be using only the nnSCZ910p4-img-vm_vmware.ova file for our installation. The image will be same for all the products listed above.

3.2. Profile to be used in Vmware TCI 2.2 Director:

VNF Component(s)	Resource allocation	Reservations

SBC (Active- Standby)	• vCPUs: 4, vRAM: 8 GB
	• vDisks: Disk#1 20 GB
	• vNICs (VMXNET3):
	  ○ vNIC#1 (MGMT)
	  ○ vNIC#2 (HA)
	  ○ vNIC#3 (Media01)
	  ○ vNIC#4 (Media02)
		• Total CPU Reservation
		• Total Memory Reservation

- Oracle SBC running 9.1.0 version.

3.3. VMware Ready for Telco Cloud Infrastructure 2.2

Oracle SBC was certified with the following components from VMware Ready for Telco Cloud Infrastructure 2.2 Cloud Director Edition Platform:

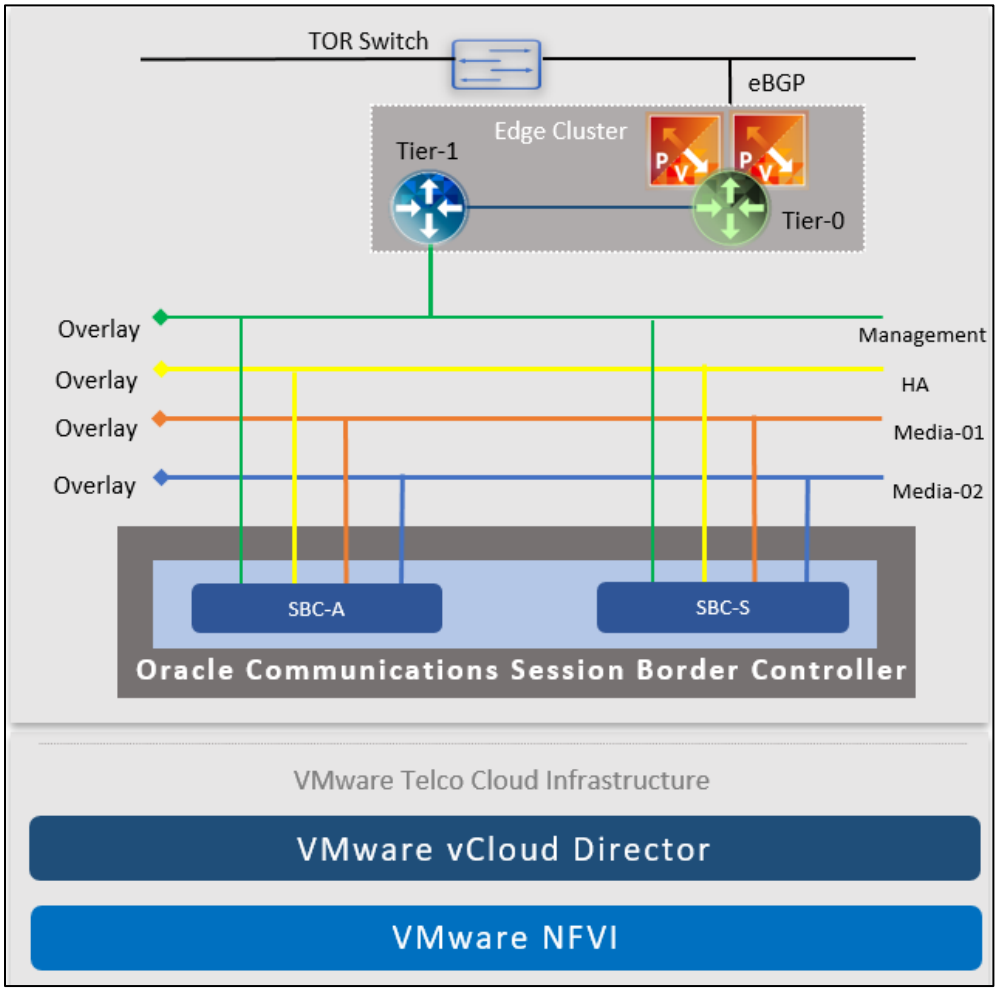
- VMware ESXi 7.0 U3c
- VMware vCenter Server Appliance 7.0 U3c
- VMware Virtual SAN 7.0 U3c
- VMware NSX-T 3.2.0.1
- VMware vCloud Director for Service Providers 10.3.2a
- VMware vRealize Log Insight 8.6.

The below revision table explains the versions of the software used for each component: This table is Revision 1 as of now:

Software Used	SBC Version
Revision 1	9.1.0

3.4. Network Architecture

Below is the network architecture for the deployment of the Oracle SBC in the VMware cloud infrastructure. The network architecture remains the same for VMware part and the changes happens only in SBC Active and Standby (given as SBC-A and SBC-S in the network diagram) component which can be replaced with appropriate network products that is planned to be deployed (ESBC-A and ESBC-S or OCSR-A and OCSR-S etc.)



4. Create and Deploy on VMware TCI 2.2 Cloud Director

4.1. Prerequisites

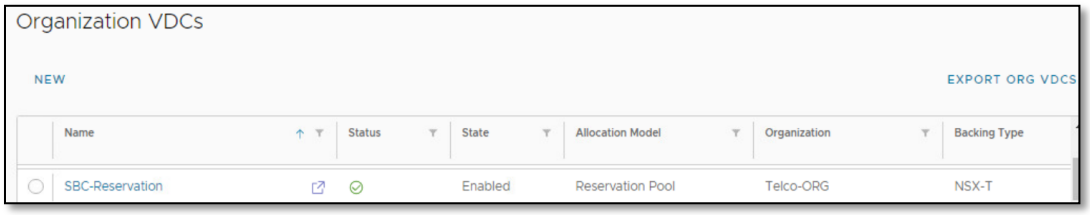
- Oracle recommends the virtual datacenter used for the deployment of Oracle SBC must have the allocation model as Reservation.
- The assumption here is that vCloud Director Provider VDC, Organization and Organization VDC should be available and configured in vCloud environment.
- Organization should have the below network available.
  NSX-T backed imported OrgVDC Networks (Standard Overlay, Standard VLAN, Enhanced Overlay) must be available as per VNF requirement.

- For more details on VCD specifics, refer to VMware vCloud Director user guide.

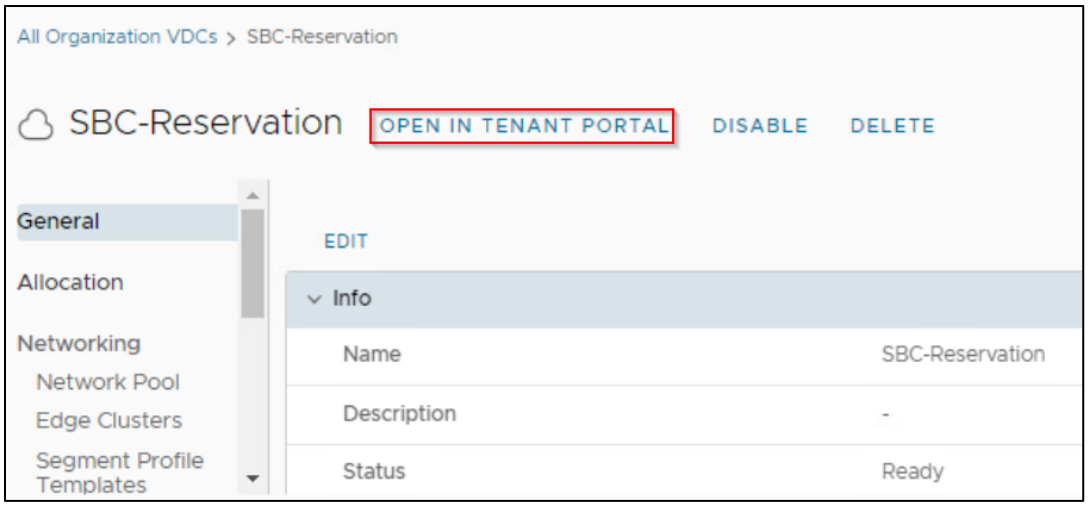
4.2. SBC Deployment Steps on VMware

Follow the below steps to deploy Oracle SBC on Cloud Director Edition Platform:

1. Login to vCloud Director service provider admin portal (https://VCD-IP/provider) as an organization administrator and Click on the organization with networking backed by NSX-T.

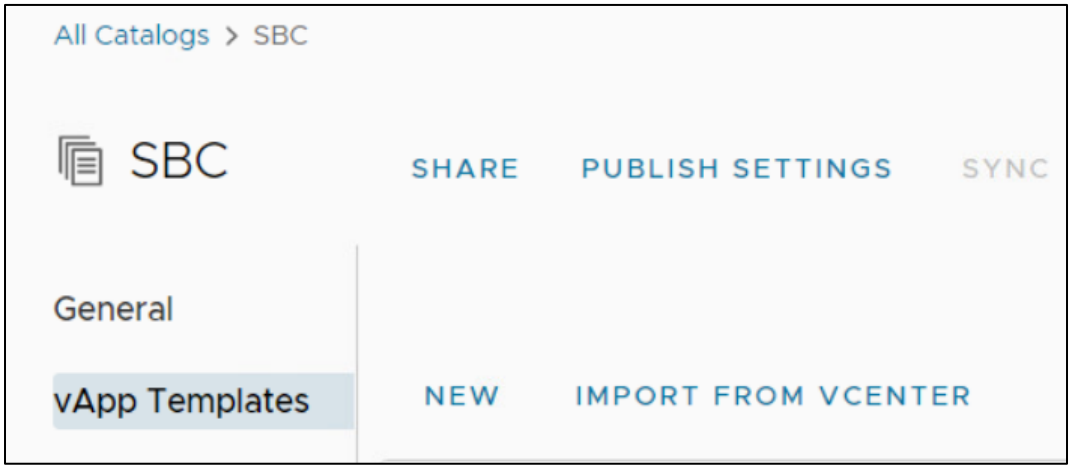


2. Click OPEN IN TENANT PORTAL

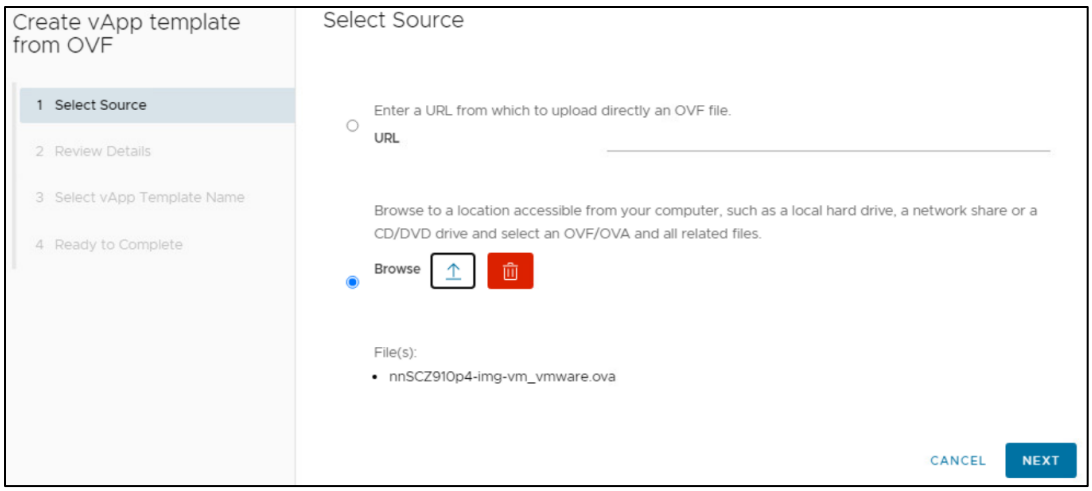


3. Go to Libraries -> Select Catalogs under content Libraries -> Click New and create Catalog for Oracle SBC templates.

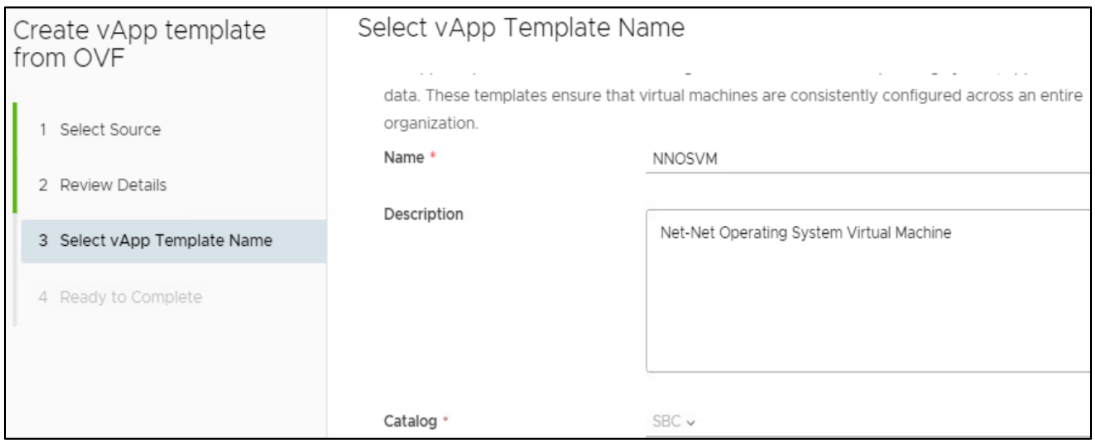
4. Click on SBC under the catalogs and in vApp Templates upload OVA images of VNF.

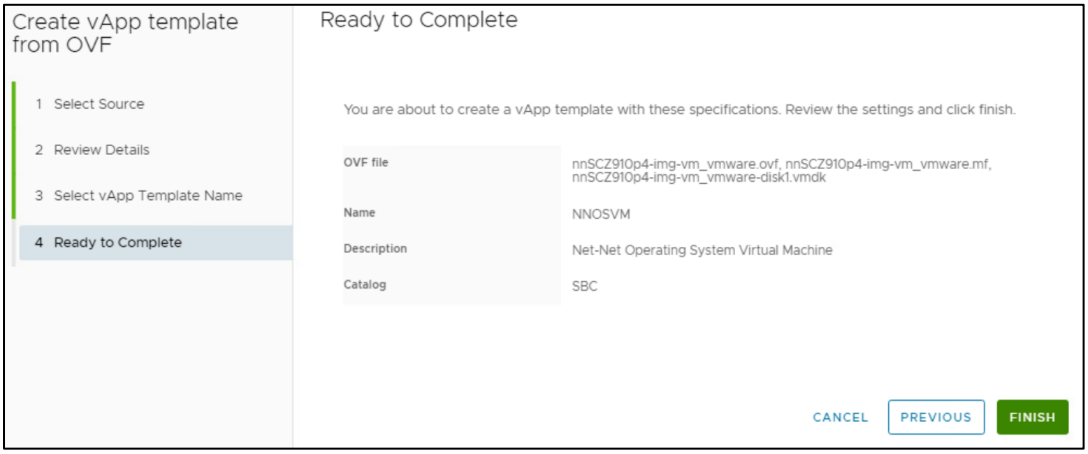


5. Browse/Upload the image -> Click NEXT.

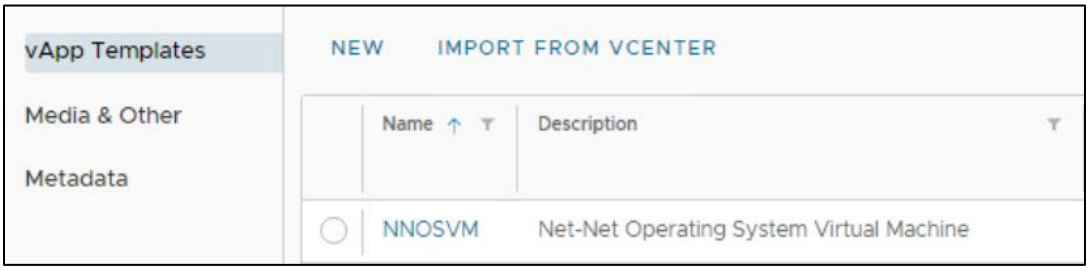


6. Provide vApp Template Name -> Select Catalog -> Click NEXT -> Click FINISH

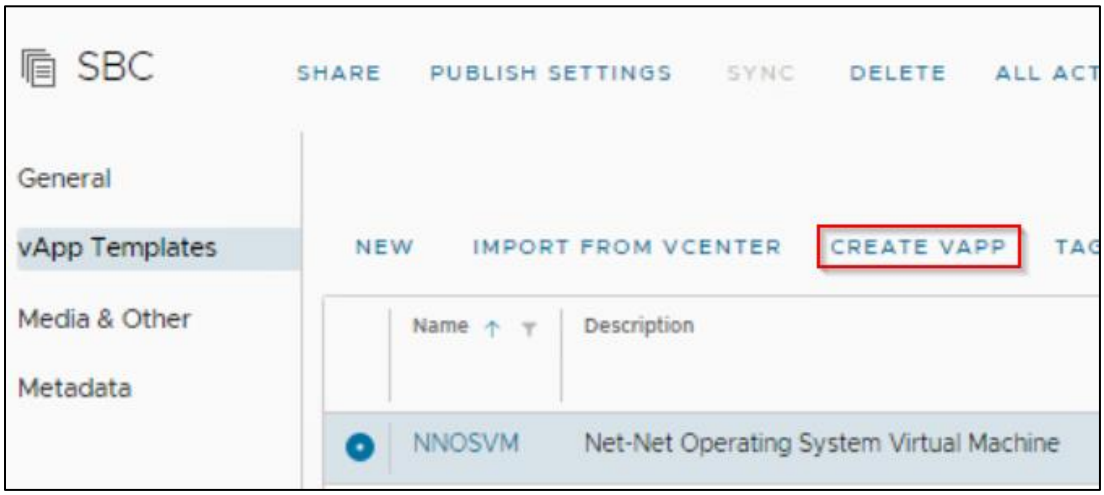




7. Ensure that VNF images must be available in “vApp Templates”.

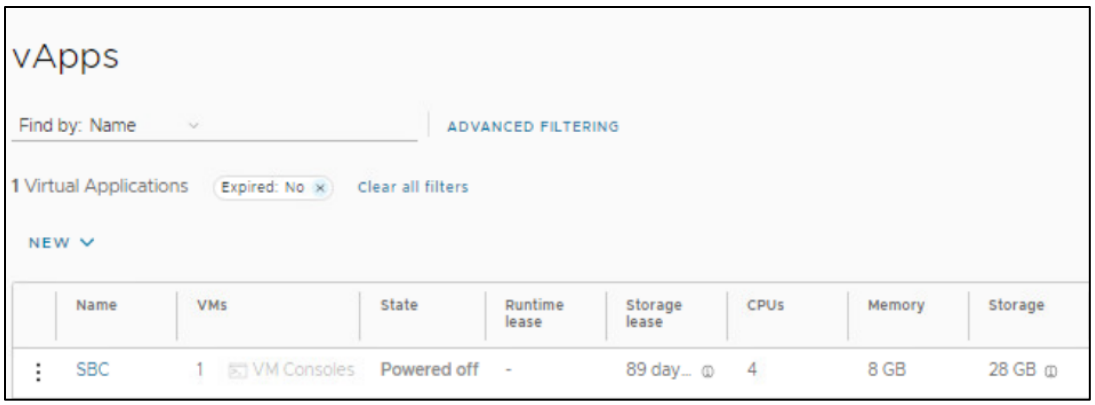


8. Select vApp Template -> Create vApp for SBC.

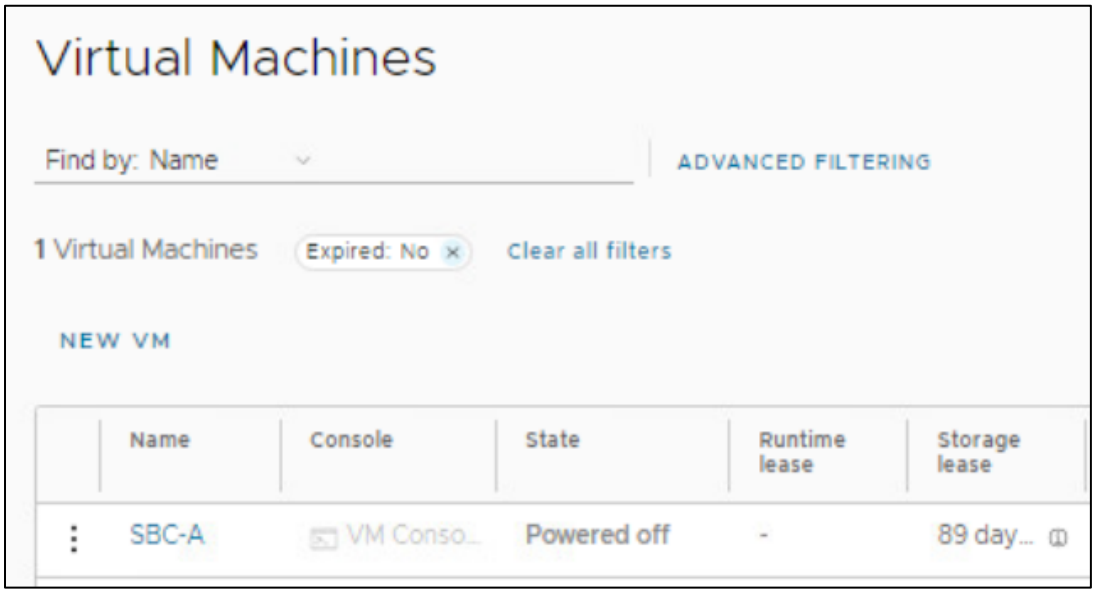


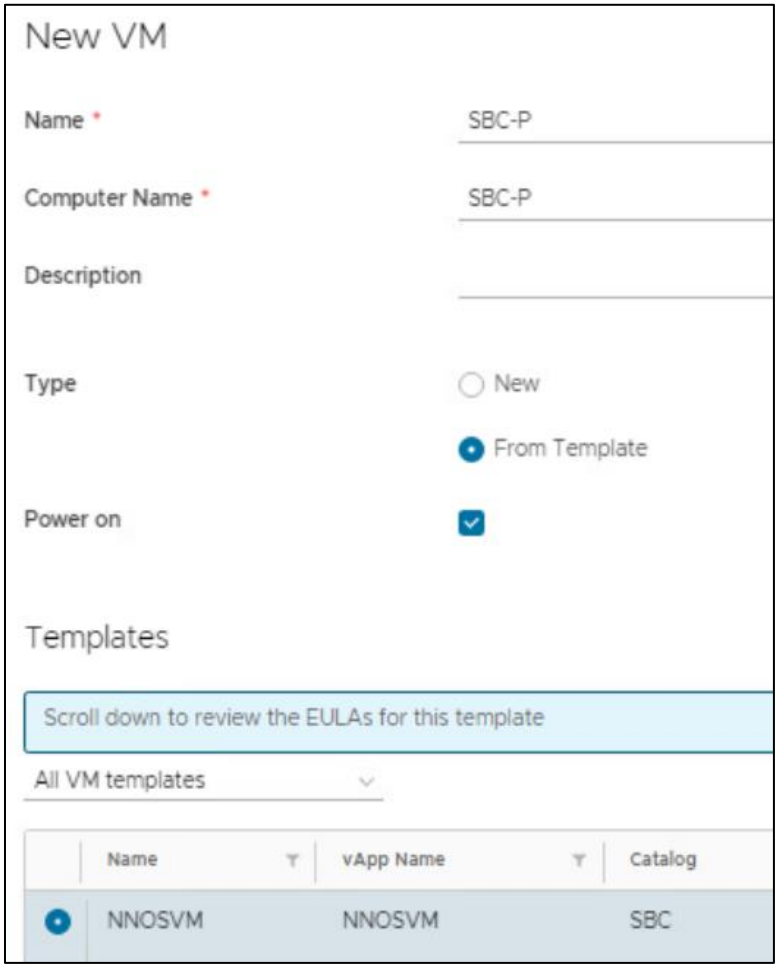
9. Provide the required details on page “Create vApp from Template" (e.g., Name, Configure Resources, Networking details) and Click FINISH.

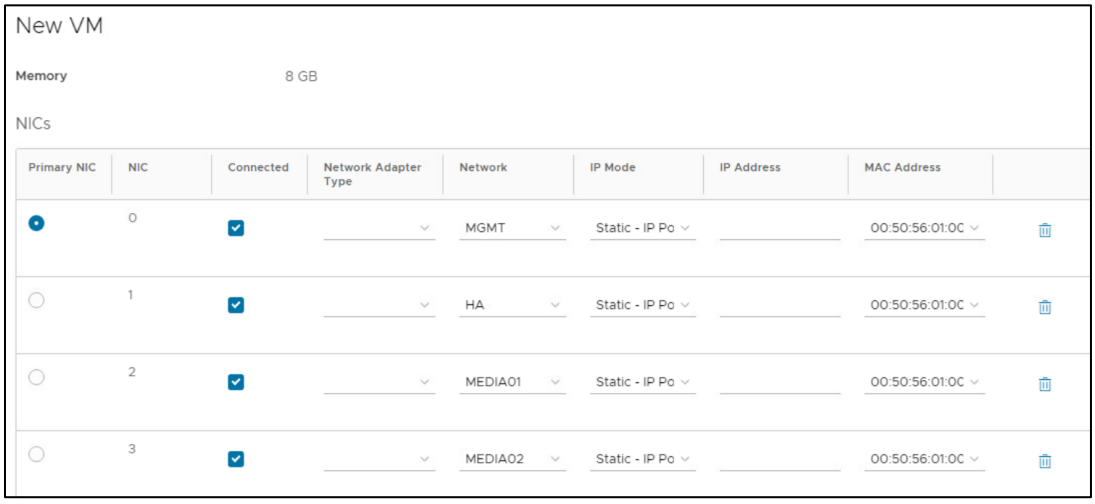
10. Ensure that vApp is Created.

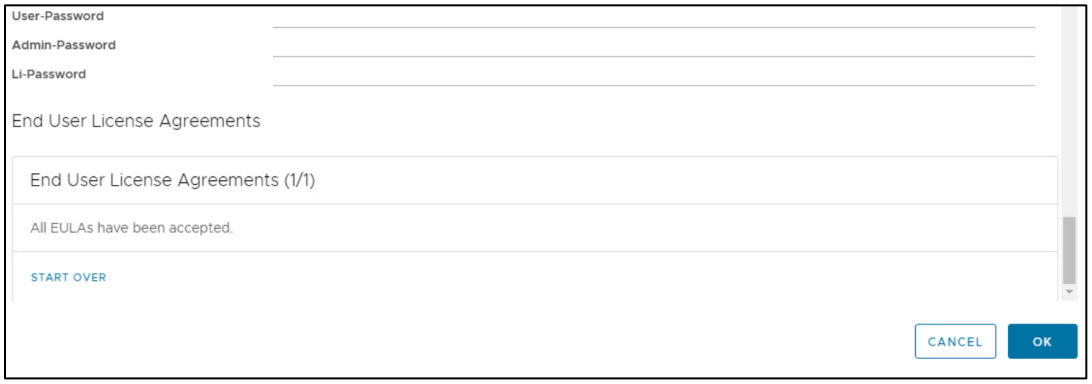


11. Ensure that VM has created and Add standby VM from vApp template.



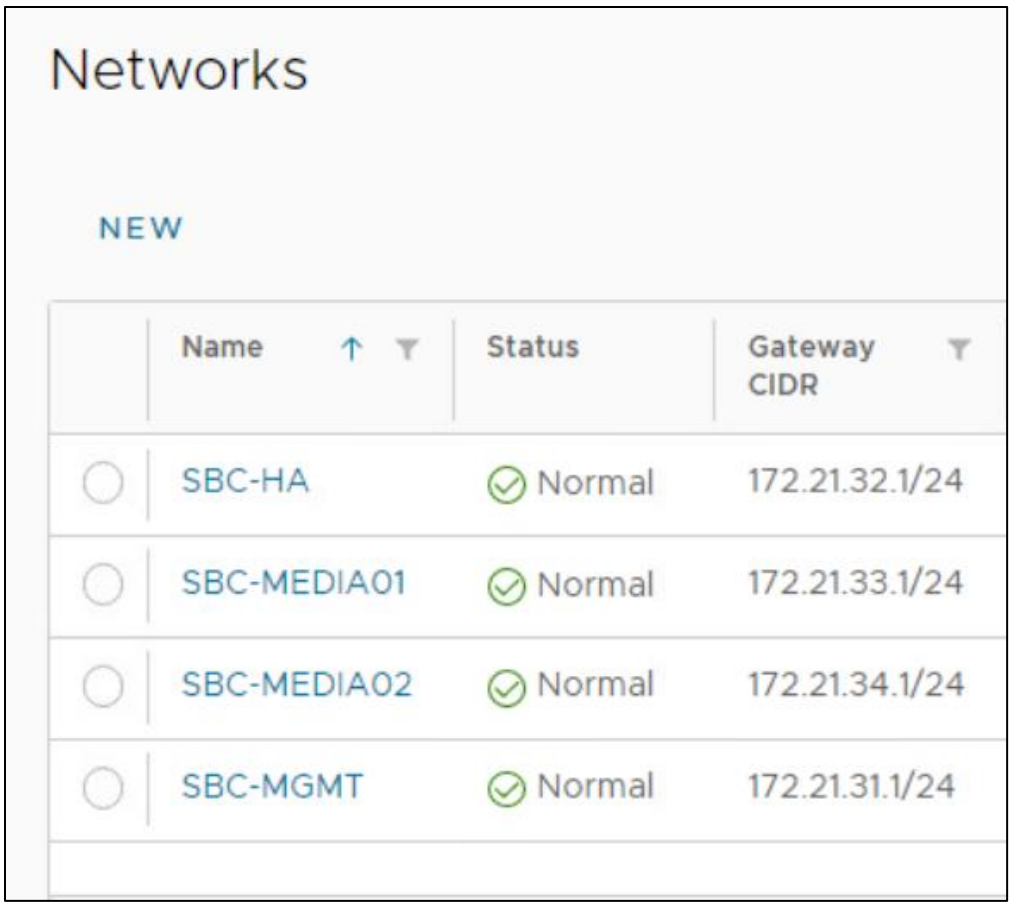

New VM
Name *
SBC-P
Computer Name *
SBC-P
Description
Type
New
From Template
Power on
Templates
Scroll down to review the EULAs for this template
All VM templates
Name
vApp Name
Catalog
NNOSVM
NNOSVM
SBC


New VM
Memory
8 GB
NICs
Primary NIC
NIC
Connected
Network Adapter Type
Network
IP Mode
IP Address
MAC Address
0
MGMT
Static - IP Po
00:50:56:01:0C
1
HA
Static - IP Po
00:50:56:01:0C
2
MEDIA01
Static - IP Po
00:50:56:01:0C
3
MEDIA02
Static - IP Po
00:50:56:01:0C



Note: - Do not provide any password for USER and Admin on above screen.

12. Ensure that all networks as per VNF requirements are available in the vApp.



13. Power on the vApp and the Status must be Running.

4.3. Initial Access To SBC

Set the User and Administrative Passwords on VMware deployed ORACLE SBC

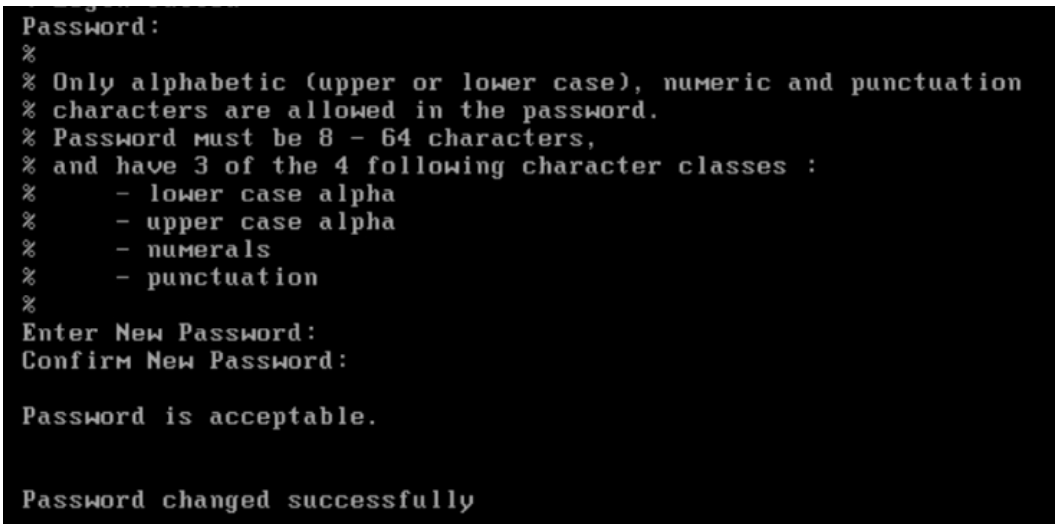
Once the Oracle SBC is deployed on VMware, perform the password procedures which are required before any further ORACLE SBC operations. For HA deployments, perform these procedures on both ORACLE SBCs.

1) Open the VDU-console and use the password as "acme" for user login which is the initial login of SBC. After this, the SBC asks to set a new password and we can set the user password as per our needs.

2) Set the administrative password by typing enable at the command prompt. (The initial enable password is “packet”.)

3) Reboot the virtual machine.
   # reboot

The screenshot for the password change screen is given below for reference:



4.4. Interface Mapping

– Switch to the administrative user.

> enable

– Use the “show interfaces mapping” command to verify the network interfaces have expected MAC addresses.

```
# show interfaces mapping
Interface Mapping Info
Eth-IF MAC-Addr Label
wancom0 06:DF:71:BA:D8:77 #generic
wancom1 06:A6:08:58:92:C9 #generic
s0p0 06:D4:E6:E8:B8:FB #generic
s1p0 06:EA:08:51:4D:DF #generic
wancom2 FF:FF:FF:FF:FF:FF #dummy
spare FF:FF:FF:FF:FF:FF #dummy
s0p1 FF:FF:FF:FF:FF:FF #dummy
s1p1 FF:FF:FF:FF:FF:FF #dummy
s0p2 FF:FF:FF:FF:FF:FF #dummy
s1p2 FF:FF:FF:FF:FF:FF #dummy
s0p3 FF:FF:FF:FF:FF:FF #dummy
s1p3 FF:FF:FF:FF:FF:FF #dummy
```

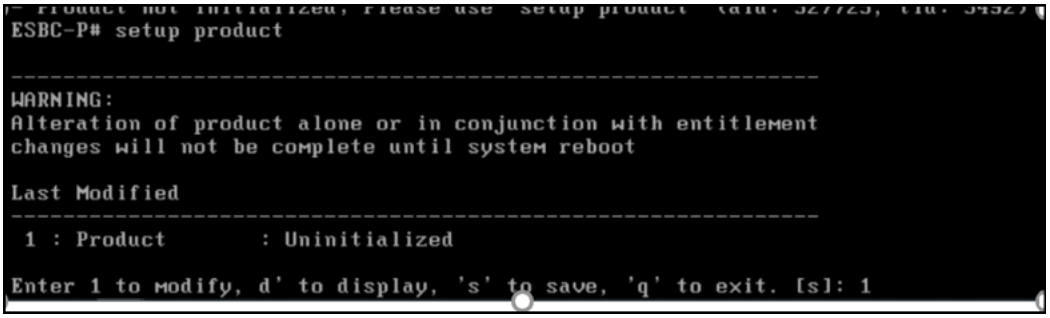
Execute the “interfaces-mapping swap” command, if necessary, in order to correct any issues with your interface to MAC address mapping.

See below for example command

interface-mapping swap s0p0 wancom1

4.5. Setting up the product

After the above step, please type “setup product” command to select the product that you want to setup by selecting the option 1 to modify the product and the appropriate choice. The list of choices is given in the screen below and we can select the choice based on the deployment of the product that we do. For this app note document, as we are deploying the Oracle SBC and so, we need to select the option 1.



Refer to Oracle Sessions Border Controller Configuration Guide for the deployment for administrative and service configuration, including entitlement setup and HA configuration.

5. Appendix A

5.1. Deploying SBC behind the NAT

The SPL configuration is a must for ORACLE SBC deployed in Cloud Environments.

The Oracle Communication once deployed VMware cloud environment, you need to configure SPL NAT plugin in order for proper signaling and voice path between deployed ORACLE SBC and PSTN.

The plug-in modifies the information in SIP messages to hide the end point located inside the private network of AWS deployed ORACLE SBC. Configure the Support for SBC behind the NAT SPL plugin for each SIP interface on the SBC. Here there are two interfaces, one on the side facing VMware and

the other on the PSTN side. One public-private address pair required for each SIP interface that uses the SPL plug-in as follows.

– The private IP address must be the same as the SIP interface IP address.
– The public IP address must be the IP address configured in VMware for particular network interface.

Here is an example configuration with SBC behind NAT SPL config. The SPL is applied to M00 interface. To configure SBC behind NAT SPL plug-in using the GUI,

Go to session-router -> sip-interface -> spl- options and input the following value, save and activate>

HeaderNatPublicSipIfIp=<Reserved Public IP of the s0p0 interface>,HeaderNatPrivate IfIp=<Private IP of the s0p0 interface>

eg: HeaderNatPublicSipIfIp=1.1.1.1,HeaderNatPrivateSipIfIp=2.2.2.2 Here the HeaderNatPublicSipIfIp is the reserved public interface IP and HeaderNatPrivateSipIfIp is the private IP

5.2. Test Results

The Solution is fully certified with these components from VMware Ready for Telco Cloud Infrastructure 2.2 Cloud Director Edition Platform
VMware ESXi 7.0 U3c
VMware vCenter Server Appliance 7.0 U3c
VMware NSX-T 3.2.0.1
VMware Virtual SAN 7.0 U3c
VMware vCloud Director for Service Providers 10.3.2a
VMware vRealize Log Insight 8.6.2

Level 1 - Test Results	SBC
Total Test Cases	74
Total Applicable Test Cases	41
Not Applicable	33
Pass	41
Fail	0
Blocked	0
In Progress	0
Not Run	0
Completion %	100%
Success Rate	100%

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