NCP Troubleshooting

Agenda

Installation Issue

Day2 basic troubleshooting

Installation Issue

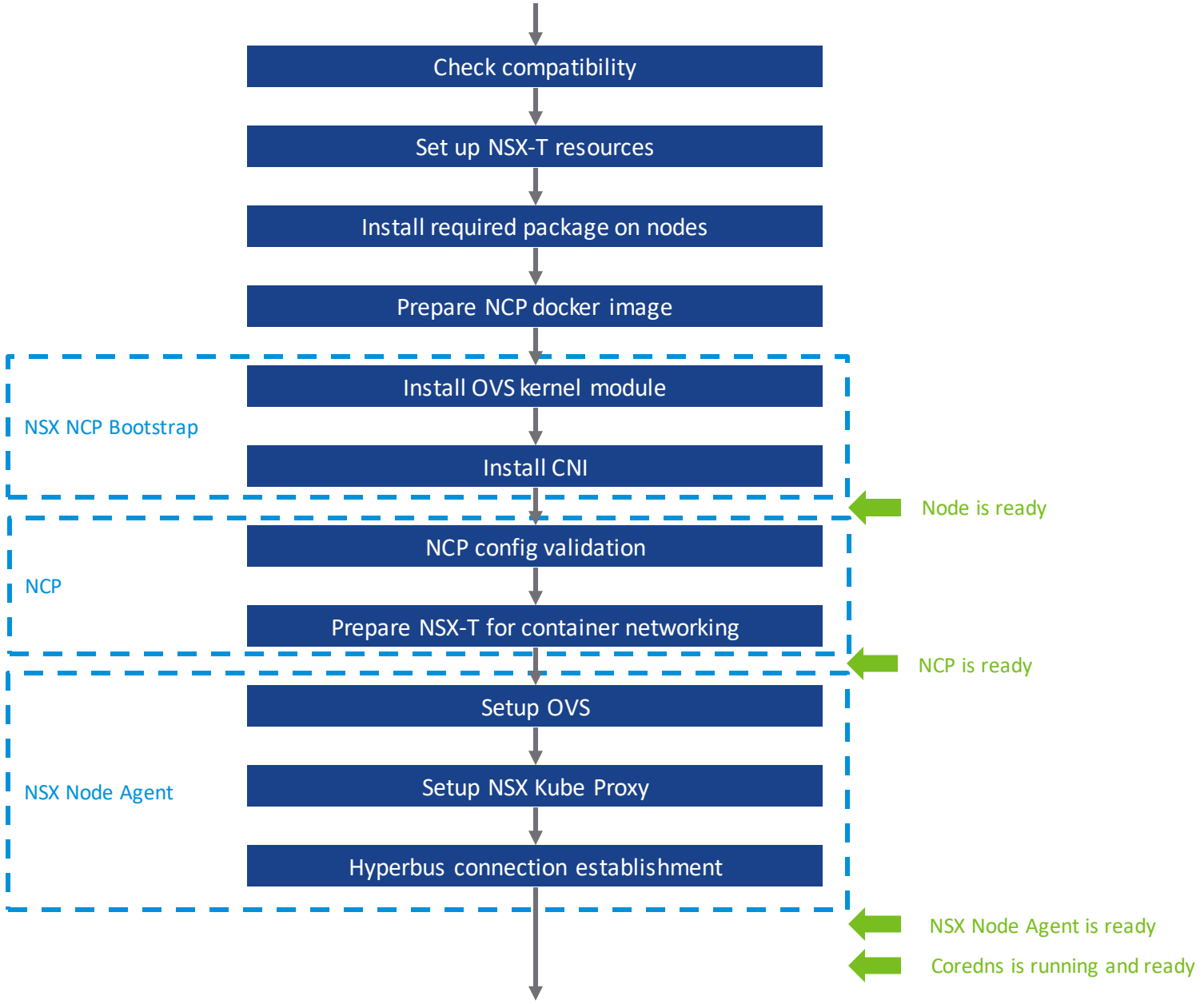
Installation Issue

Installation process

All the components must be up and running for NCP to work properly.

Although NCP manifeset deploys them all at once, there are some dependencies.

It’s important to understand the dependencies and architectures to do troubleshoot



Installation Issue

Verify cimpatibility requirements

Release note exaplains compatibility.
Please make sure that supported softwares are used.
https://docs.vmware.com/en/VMware-NSX-T/index.html

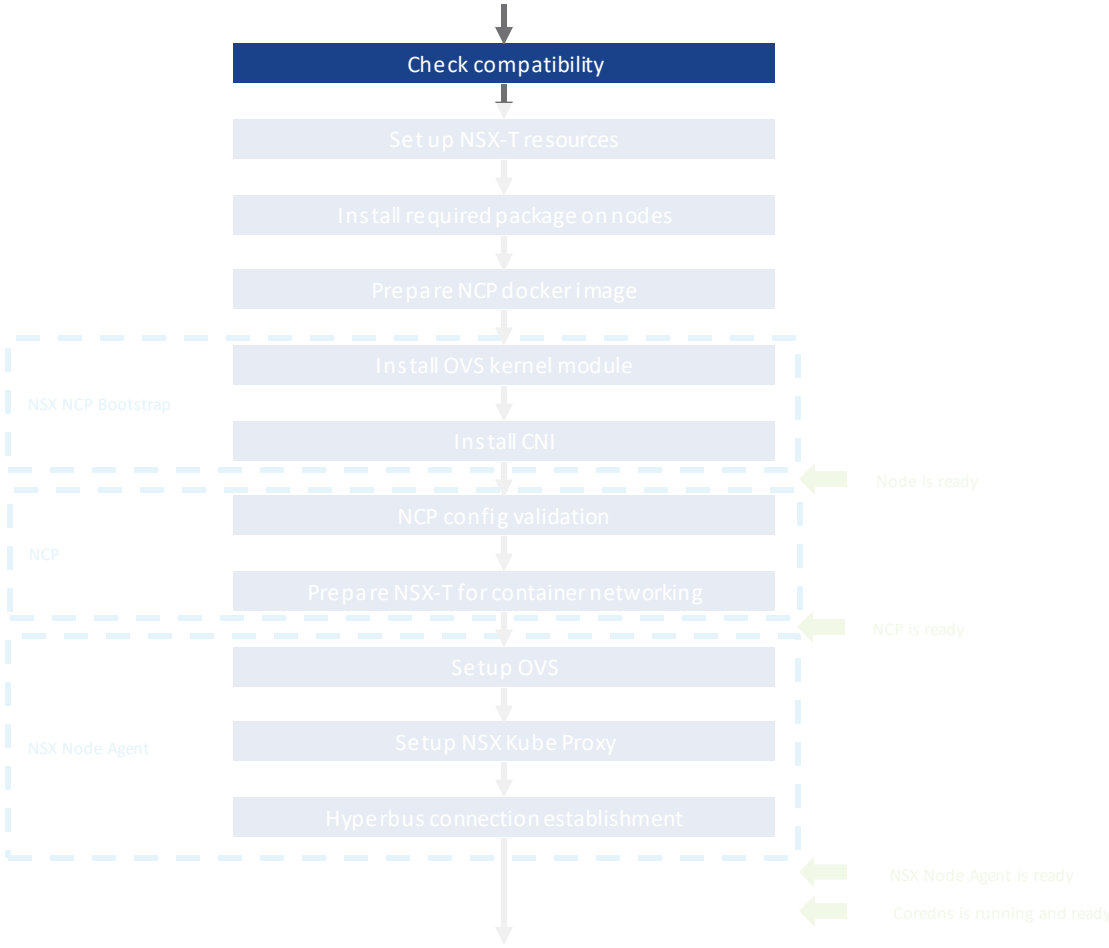
(02/27/20)
For example, NCP 2.5.1 supports the followings

Compatibility Requirements

Product	Version
NCP / NSX-T Tile for PAS	2.5.1
NSX-T	2.4.1, 2.4.2, 2.4.3, 2.5.0, 2.5.1
Kubernetes	1.15, 1.16
OpenShift	3.10, 3.11
Kubernetes Host VM OS	Ubuntu 16.04, Ubuntu 18.04, CentOS 7.5, CentOS 7.6, CentOS 7.7
OpenShift Host VM OS	RHEL 7.5, RHEL 7.6, RHEL 7.7
OpenShift BMC	RHEL 7.5, RHEL 7.6
PAS (PCF)	Ops Manager 2.6 + PAS 2.6 Ops Manager 2.7 + PAS 2.7 Note: PAS 2.7.0 + NCP 2.5.1 is not supported.

Note: For RHEL and CentOS Host VMs, only kernel versions 862 and 957 are supported.

If the RHEL nodes have kernel version lower than 3.10.0-957.27.2, OpenShift installation will fail. Upgrading the kernel version is not recommended on a bare-metal container node because OVS will fail to run. To deploy OpenShift 3.11 with a lower kernel version, the openshift-ansible repository should use commit: e0499023ea91741ab4afd29391e420a26b8859b5 as the top commit.



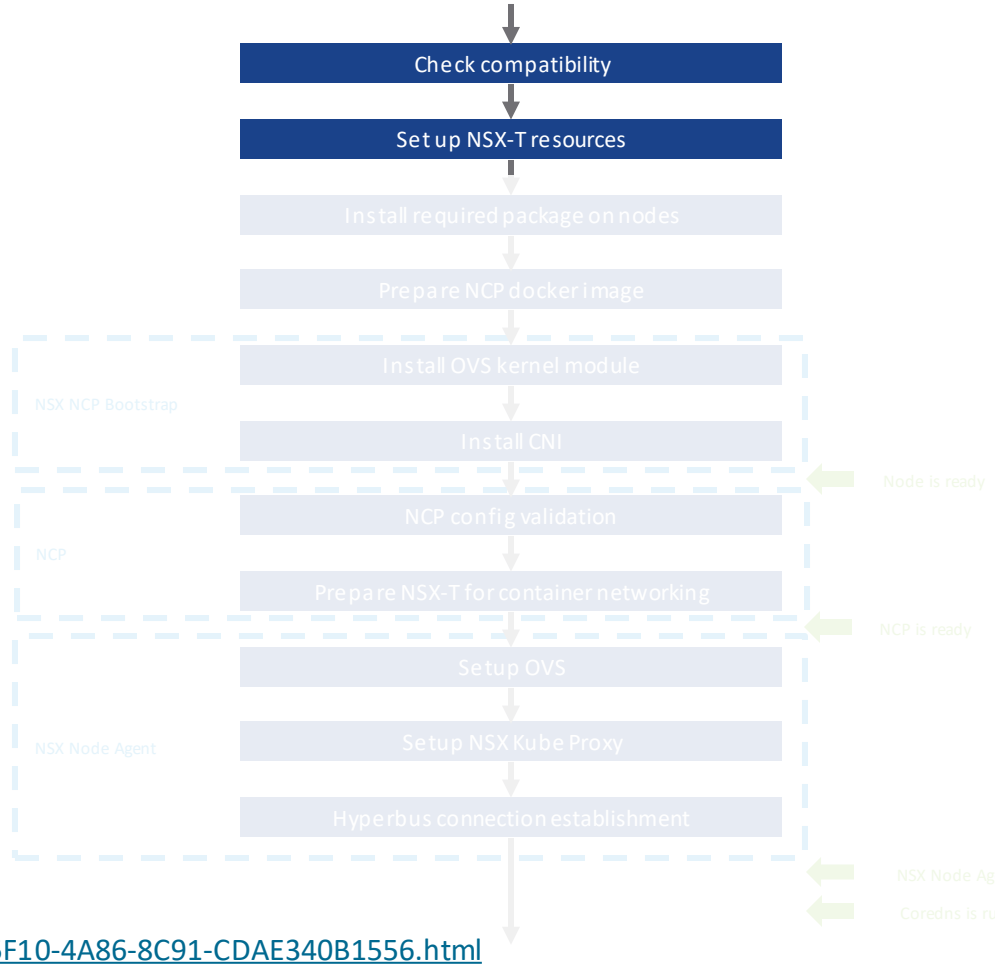
Installation Issue

Verify NSX-T resources

Please make sure that NSX-T resources are configured.

- Overlay Transport zone
- T0/T1 gateway
- Overlay segment for container networking
- IP pool for SNAT/LB
- IP block for Pod IP
- Tags on logical ports of the overlay segment

Note: Required resources depend on your toplogy.



https://docs.vmware.com/en/VMware-NSX-T-Data-Center/2.5/ncp-kubernetes/GUID-27B299C8-5F10-4A86-8C91-CDAE340B1556.html

Installation Issue

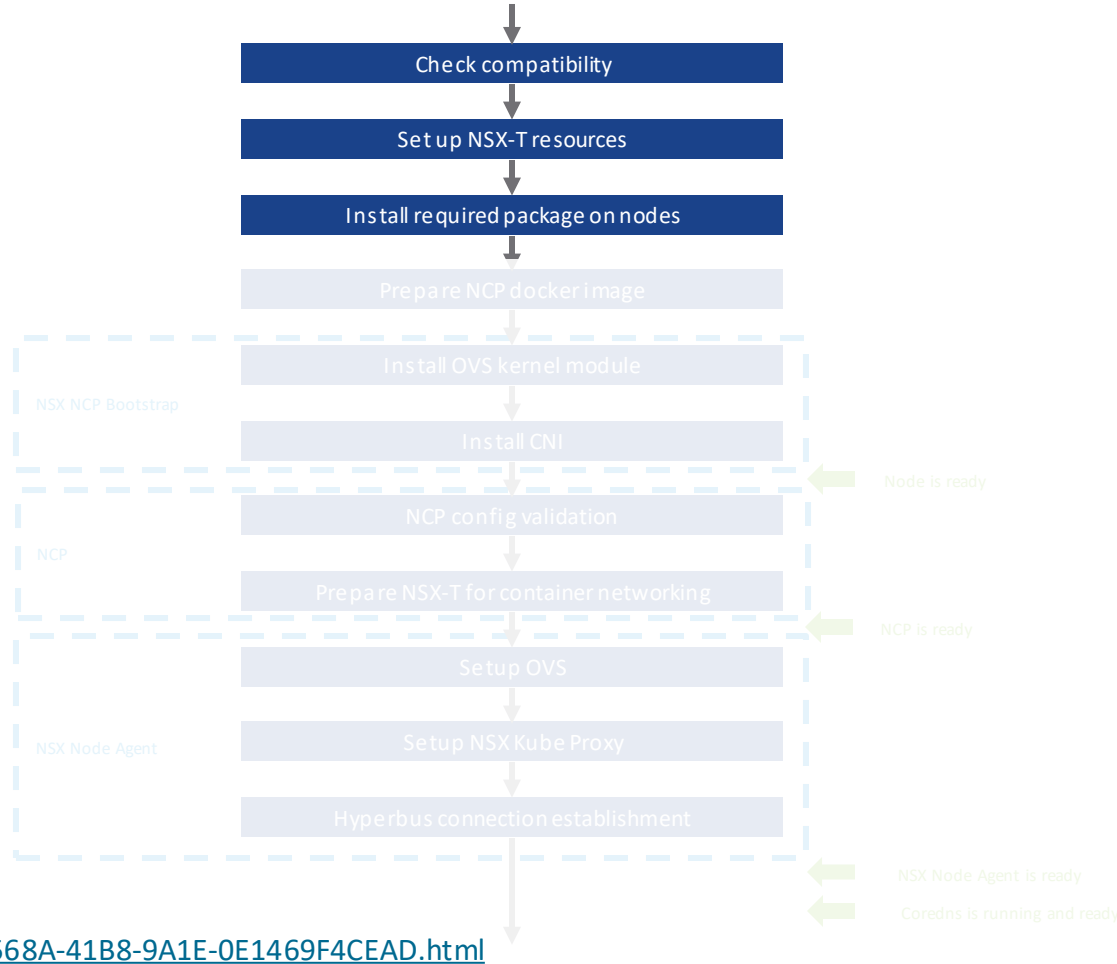
Verify required packages on nodes

Nodes must have Python
Please make sure that it's installed like below.

```
$ /usr/bin/python --version
Python 2.7.12
```

If nodes are Ubuntu, apparmor must be enabled.
You can check by the following command.

```
$ sudo cat /sys/module/apparmor/parameters/enabled
Y

$ sudo /etc/init.d/apparmor status
● apparmor.service - LSB: AppArmor initialization
   Loaded: loaded (/etc/init.d/apparmor; bad; vendor preset: enabled)
   Active: active (exited) since Tue 2020-01-21 10:02:48 JST; 1 months 6 days ago
     Docs: man:systemd-sysv-generator(8)

Warning: Journal has been rotated since unit was started. Log output is incomplete or
unavailable.
```



https://docs.vmware.com/en/VMware-NSX-T-Data-Center/2.5/ncp-kubernetes/GUID-079146A2-568A-41B8-9A1E-0E1469F4CEAD.html

Installation Issue

Verify NCP docker image on nodes

NCP manifest specify docker image like below.

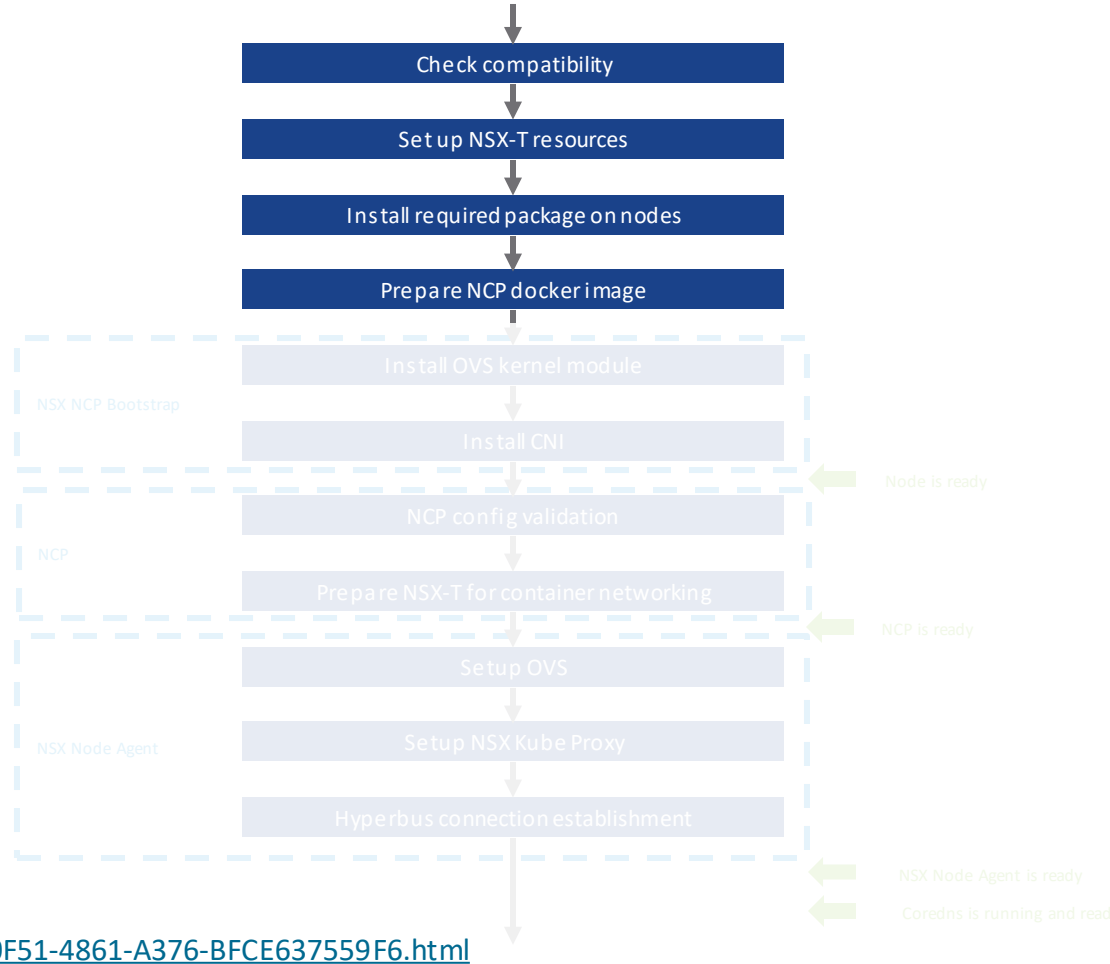
```
      - name: nsx-ncp
        # Docker image for NCP
        image: nsx-ncp
```

When you don't change it in the manifest, nodes must have the same image name.
Please verify that they have it.

```
$ sudo docker image ls nsx-ncp
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
nsx-ncp             latest              40aae9a4aeda        5 months ago        744MB
```

You can also use external repository for ncp image.
Please change image name of ncp, nsx-node-agent and nsx-ncp-bootstrap to your external docker repo.
i.e.)

```
      - name: nsx-ncp
        # Docker image for NCP
        image: harbor.corp.local/library/nsx-ncp-ubuntu:2.5.0.14628220
```



https://docs.vmware.com/en/VMware-NSX-T-Data-Center/2.5/ncp-kubernetes/GUID-9F15EFCC-0F51-4861-A376-BFCE637559F6.html

Installation Issue

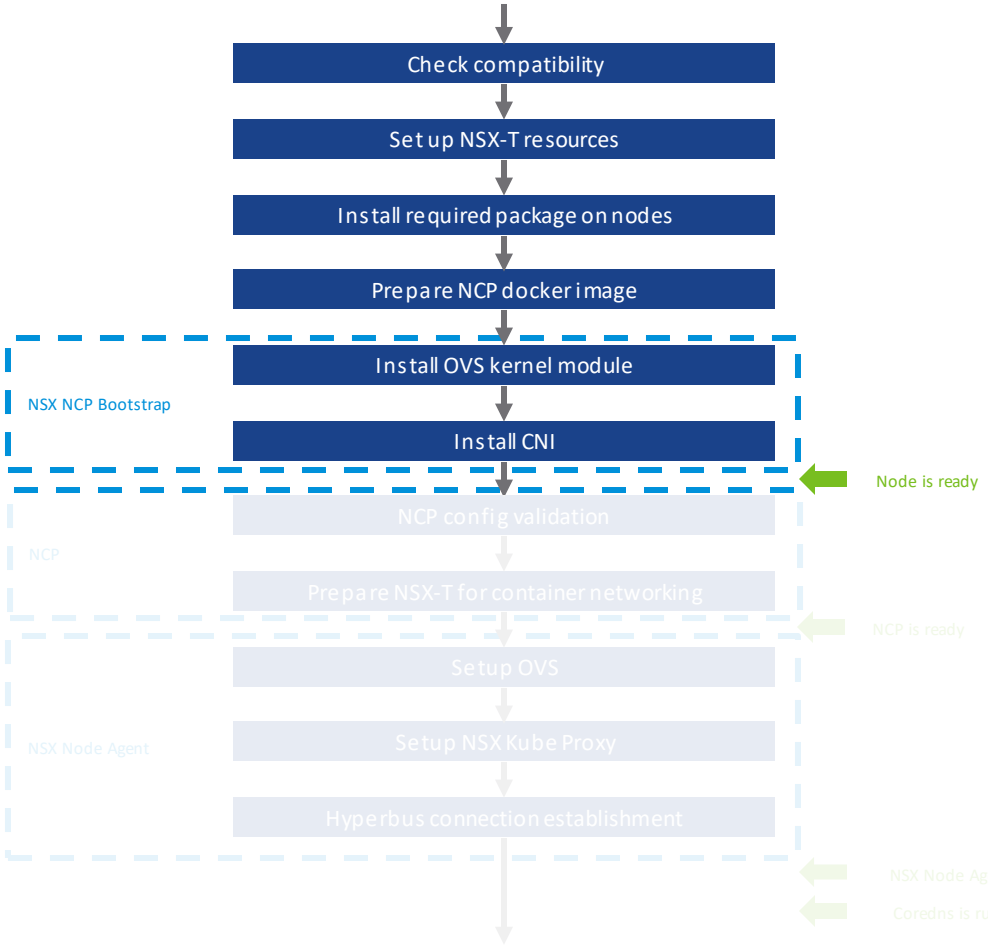
Verify NSX NCP bootstrap completed

NSX NCP bootstrap installs OVS kernel module and CNI. If initContainer installed successfully, NSX NCP bootstrap pod is ready.

```
$ kubectl -n nsx-system get pod -l component=nsx-ncp-bootstrap
NAME                          READY   STATUS    RESTARTS   AGE
nsx-ncp-bootstrap-b9hrn   1/1     Running   0          24h
nsx-ncp-bootstrap-bdgtc   1/1     Running   0          24h
nsx-ncp-bootstrap-d5m4r   1/1     Running   0          24h
```

```
$ kubectl get node
NAME           STATUS   ROLES    AGE    VERSION
k8s1-master    Ready    master   112d   v1.15.3
k8s1-worker1   Ready    <none>   112d   v1.15.3
k8s1-worker2   Ready    <none>   112d   v1.15.3
```

```
$ kubectl -n nsx-system logs nsx-ncp-bootstrap-b9hrn -c nsx-ncp-bootstrap
[2020-02-26T13:42:01Z INFO NSX-NCP-BOOTSTRAP]: Detected host OS: Ubuntu
[2020-02-26T13:42:01Z INFO NSX-NCP-BOOTSTRAP]: NSX-CNI build not detected on the host. Creating a new build.
[2020-02-26T13:42:01Z INFO NSX-NCP-BOOTSTRAP]: Detected container OVS kmod version: '2.10.4.14564004'
[2020-02-26T13:42:01Z INFO NSX-NCP-BOOTSTRAP]: Checking if openvswitch-dkms is already installed.
[2020-02-26T13:42:01Z INFO NSX-NCP-BOOTSTRAP]: openvswitch-dkms is already installed.
[2020-02-26T13:42:01Z INFO NSX-NCP-BOOTSTRAP]: Comparing with installed openvswitch-dkms version.
[2020-02-26T13:42:01Z INFO NSX-NCP-BOOTSTRAP]: Detected host OVS kmod version: '2.10.4.14564004'
[2020-02-26T13:42:01Z INFO NSX-NCP-BOOTSTRAP]: openvswitch-dkms is already the required version: 2.10.4.14564004.
[2020-02-26T13:42:07Z INFO NSX-NCP-BOOTSTRAP]: Checking if NSX-CNI is installed as a package.
[2020-02-26T13:42:07Z INFO NSX-NCP-BOOTSTRAP]: NSX-CNI is not installed as a package.
[2020-02-26T13:42:07Z INFO NSX-NCP-BOOTSTRAP]: NSX-CNI is not present. Copying the files now.
[2020-02-26T13:42:07Z INFO NSX-NCP-BOOTSTRAP]: /opt/cni/bin/loopback already exists. Not copying it.
[2020-02-26T13:42:07Z INFO NSX-NCP-BOOTSTRAP]: Reloading with ncp-apparmor.
 * Reloading AppArmor profiles
 * Mounting securityfs on /sys/kernel/security...
Skipping profile in /etc/apparmor.d/disable: usr.sbin.rsyslogd
   ...done.
[2020-02-26T13:42:09Z INFO NSX-NCP-BOOTSTRAP]: Reloading with ncp-apparmor complete.
[2020-02-26T13:42:09Z INFO NSX-NCP-BOOTSTRAP]: NSX-CNI installation succeeded.
[2020-02-26T13:42:09Z INFO NSX-NCP-BOOTSTRAP]: Node Initialization complete.
```



Installation Issue

Verify NCP is up and running

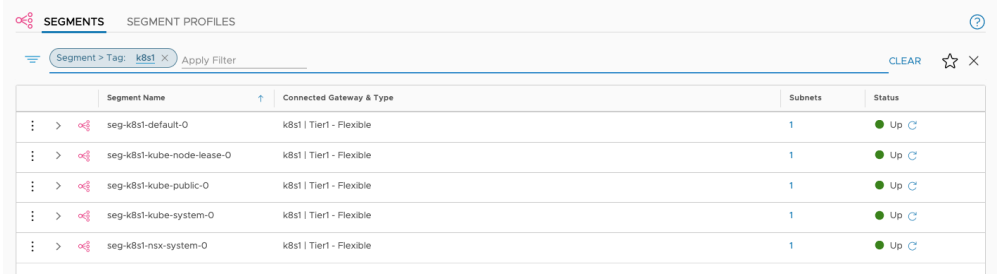
NCP will start with config validation. If your config is valid, you should be able to see NCP is READY.

```
$ kubectl -n nsx-system get pod -l component=nsx-ncp
NAME                      READY   STATUS    RESTARTS   AGE
nsx-ncp-56d988fcdf-2klbg  1/1     Running   0          24h
```

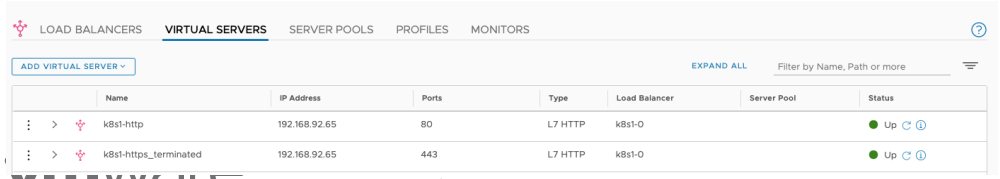
When NCP is READY, please verify NCP has connection to Kubernetes and NSX-T API. You can check by nsxcli in ncp pod.

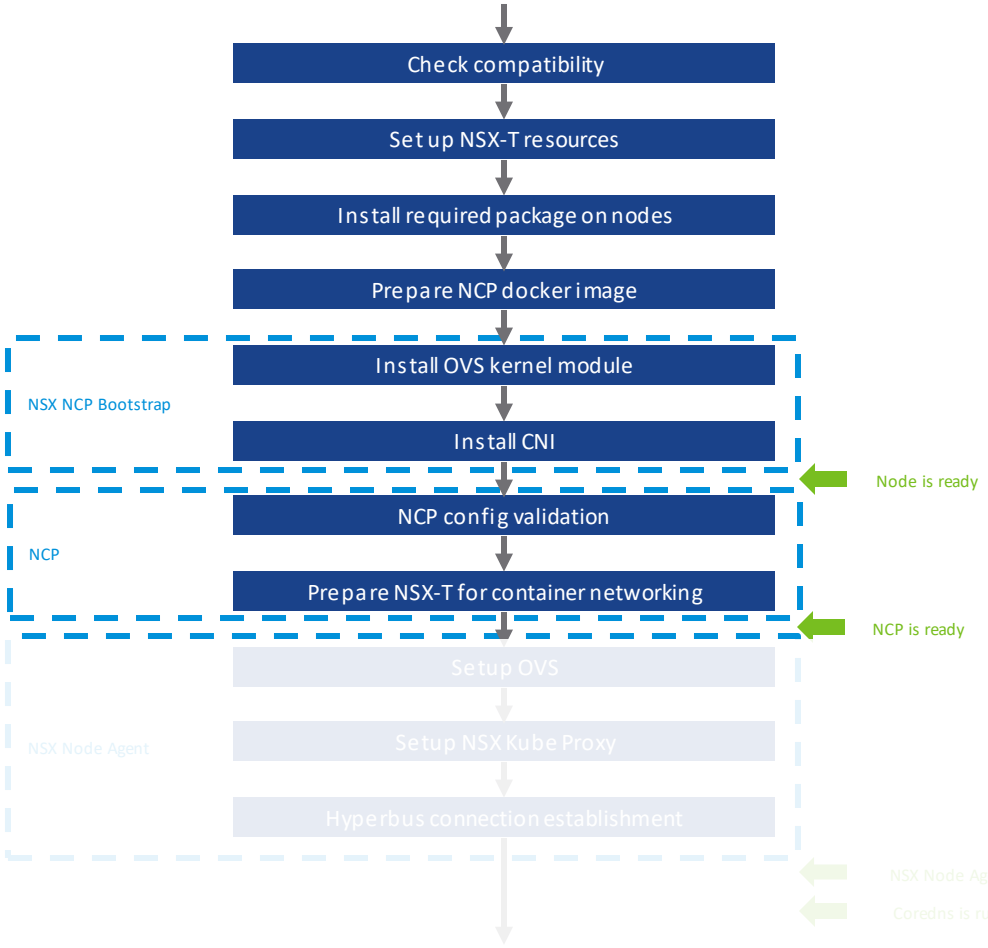
```
$ kubectl -n nsx-system exec nsx-ncp-56d988fcdf-2klbg -c nsx-ncp -- nsxcli -c get ncp-nsx status
NSX Manager status: Healthy

$ kubectl -n nsx-system exec nsx-ncp-56d988fcdf-2klbg -c nsx-ncp -- nsxcli -c get ncp-k8s-api-server status
Kubernetes ApiServer status: Healthy
```

Additionally, please verify that NSX-T resources are set up.
For example,
- Segment



- Virtual Servers for Ingress





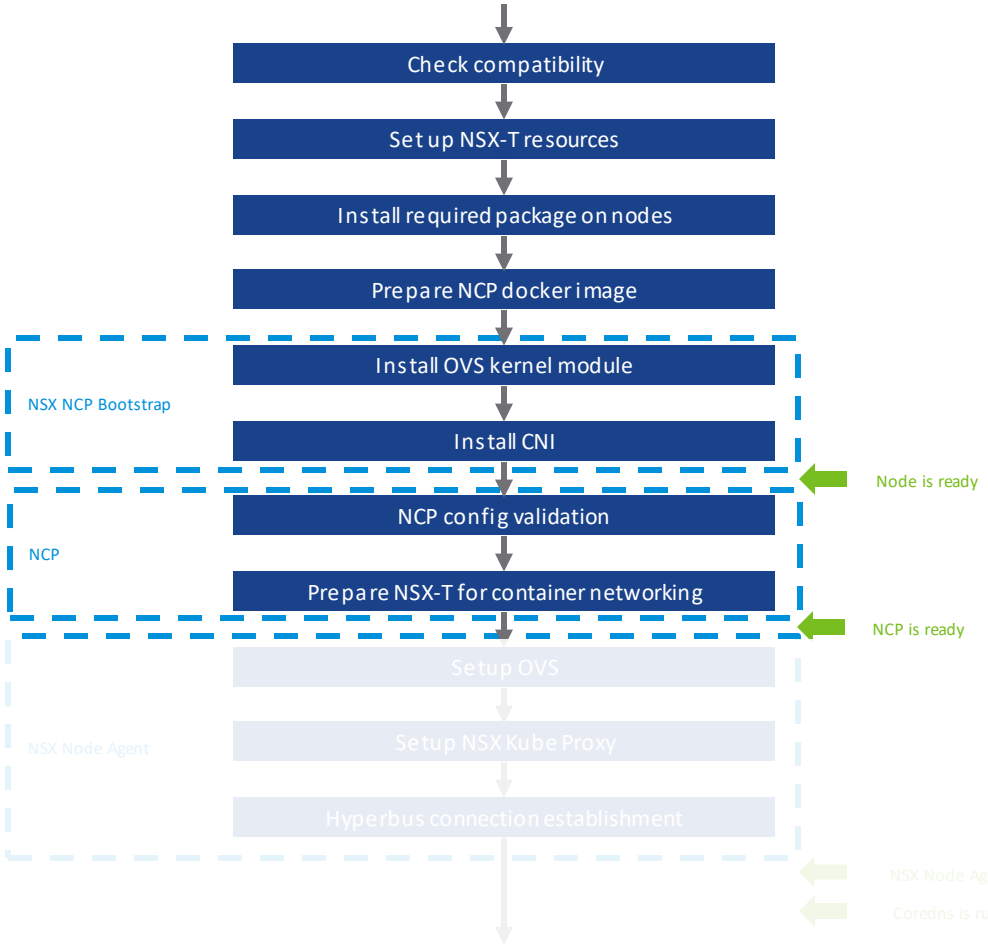
Installation Issue

Verify NCP is up and running

If there are something wrong with NCP, please check logs.
Usually you can see an ERROR

This example failed to connect to NSX-T API.
Therefore we need to check NSX manager IP, NSX manager authentication and CA cert. In addition to it, you must check IP connectivity to NSX-T manager from your nodes.

```
$ kubectl -n nsx-system logs nsx-ncp-56d988fcdf-5jpjw -c nsx-ncp
1 2020-02-27T14:25:52.949Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="INFO" security="True"]
nsx_ujo.common.nsx_log_adaptor Initialized log configuration
1 2020-02-27T14:25:53.466Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="INFO"] nsx_ujo.ncp.coe_adaptor Finding
the configured NCP adaptor kubernetes
1 2020-02-27T14:25:53.477Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="DEBUG"] stevedore.extension found
extension EntryPoint.parse('pcf = nsx_ujo.ncp.pcf.adaptor:PivotalCloudFoundry')
1 2020-02-27T14:25:53.477Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="DEBUG"] stevedore.extension found
extension EntryPoint.parse('openshift = nsx_ujo.ncp.k8s.adaptor:OpenShift')
1 2020-02-27T14:25:53.477Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="DEBUG"] stevedore.extension found
extension EntryPoint.parse('kubernetes = nsx_ujo.ncp.k8s.adaptor:Kubernetes')
1 2020-02-27T14:25:53.969Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="DEBUG"] nsx_ujo.common.utils Setting
level to INFO for logger None
1 2020-02-27T14:25:53.970Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="INFO" security="True"] nsx_ujo.ncp.main
Starting NCP with adaptor kubernetes
1 2020-02-27T14:25:53.977Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="INFO"] nsx_ujo.ncp.nsx.nsx_wrapper
Authenticating with NSX using client certificate loaded at /etc/nsx-ujo/nsx-cert/tls.crt and private key loaded at /etc/nsx-ujo/nsx-
cert/tls.key in filesystem by kubernetes
1 2020-02-27T14:25:54.033Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="WARNING"] vmware_nsxlib.v3.cluster
Session create failed for endpoint https://nsxm-01.ytsuboi.local with error HTTPSConnectionPool(host='nsxm-01.ytsuboi.local', port=443): Max
retries exceeded with url: /api/session/create (Caused by NewConnectionError('<urllib3.connection.VerifiedHTTPSConnection object at
0x7f7871b8bf10>: Failed to establish a new connection: [Errno -2] No address found',))
1 2020-02-27T14:25:54.088Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="INFO"] vmware_nsxlib.v3.cluster
Endpoint 'https://nsxm-01.ytsuboi.local' changing from state 'INITIALIZED' to 'DOWN'
1 2020-02-27T14:25:54.088Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="WARNING"] vmware_nsxlib.v3.cluster
Failed to validate API cluster endpoint '[DOWN] https://nsxm-01.ytsuboi.local' due to: HTTPSConnectionPool(host='nsxm-01.ytsuboi.local',
port=443): Max retries exceeded with url: /api/v1/operational/application/status (Caused by
NewConnectionError('<urllib3.connection.VerifiedHTTPSConnection object at 0x7f7872a38990>: Failed to establish a new connection: [Errno -2] No
address found',))
1 2020-02-27T14:25:54.484Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="ERROR"] vmware_nsxlib.v3.lib Unable to
read tag limits. Reason: Service cluster: 'https://nsxm-01.ytsuboi.local' is unavailable. Please, check NSX setup and/or configuration
1 2020-02-27T14:25:54.485Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="ERROR"] vmware_nsxlib.v3.lib Unable to
read maximum tags. Reason: Service cluster: 'https://nsxm-01.ytsuboi.local' is unavailable. Please, check NSX setup and/or configuration
1 2020-02-27T14:25:54.485Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="ERROR" errorCode="NCP00009"]
nsx_ujo.common.utils NSX connection failed: NSX manager cannot be connected successfully
1 2020-02-27T14:25:54.486Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="CRITICAL" security="True"
errorCode="NCP00001"] nsx_ujo.ncp.main NSX connection validation failed
```



Installation Issue

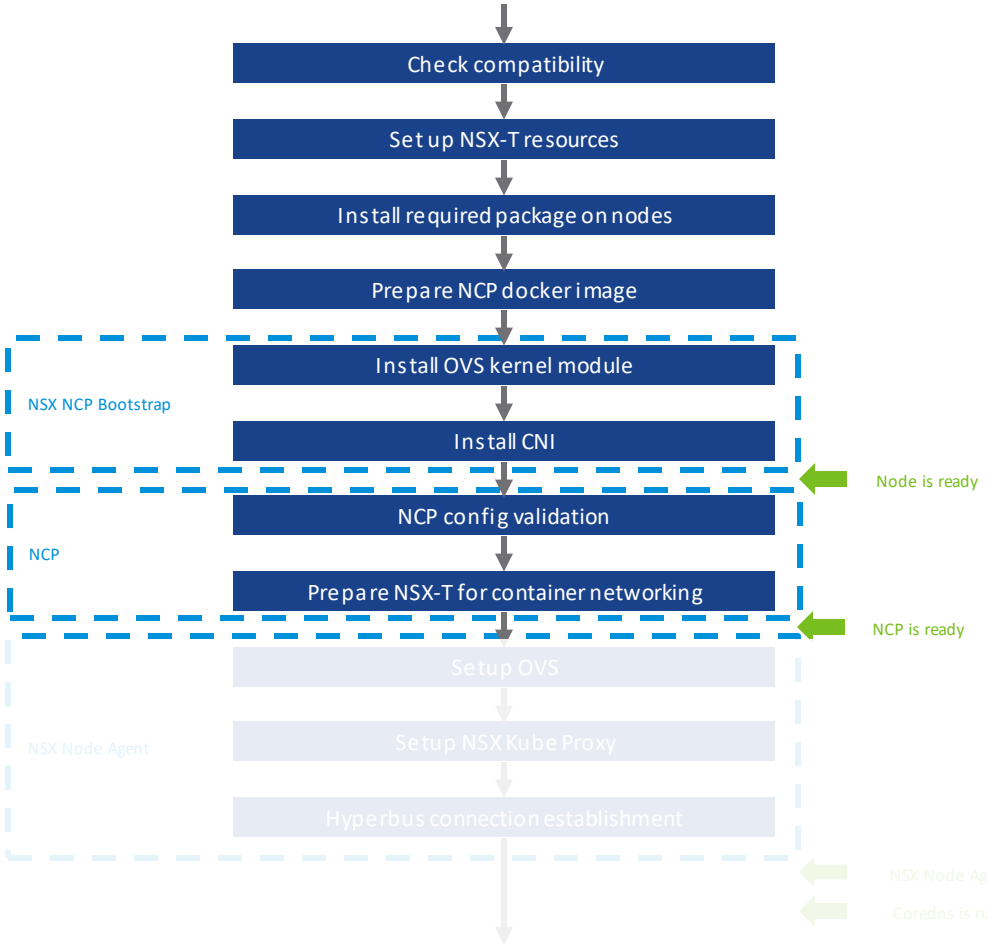
Verify NCP is up and running

Here is another example.

NCP failed to validate cofiguration due to wrong IP pool name.
You can see that there is a problem with ip pool from the log.

```
$ kubectl -n nsx-system logs nsx-ncp-56d988fcdf-74hw7 -c nsx-ncp | grep -v "INFO"
1 2020-02-27T14:33:12.708Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="DEBUG"] stevedore.extension found
extension EntryPoint.parse('pcf = nsx_ujo.ncp.pcf.adaptor:PivotalCloudFoundry')
1 2020-02-27T14:33:12.708Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="DEBUG"] stevedore.extension found
extension EntryPoint.parse('openshift = nsx_ujo.ncp.k8s.adaptor:OpenShift')
1 2020-02-27T14:33:12.708Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="DEBUG"] stevedore.extension found
extension EntryPoint.parse('kubernetes = nsx_ujo.ncp.k8s.adaptor:Kubernetes')
1 2020-02-27T14:33:13.271Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="WARNING"] vmware_nsxlib.v3.cluster
Session create failed for endpoint https://nsxm01.ytsuboi.local with response 403
1 2020-02-27T14:33:31.980Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="WARNING"] vmware_nsxlib.v3.cluster
Session create failed for endpoint https://nsxm01.ytsuboi.local with response 403
1 2020-02-27T14:33:32.489Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="WARNING"] vmware_nsxlib.v3.cluster
Session create failed for endpoint https://nsxm01.ytsuboi.local with response 403
1 2020-02-27T14:33:35.329Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="WARNING"] vmware_nsxlib.v3.client The
HTTP request returned error code 404, whereas 200 response codes were expected. Response body {u'error_code': 600, u'error_message': u'The
requested object : /infra/tier-0s/k8s1 could not be found. Object identifiers are case sensitive.', u'httpStatus': u'NOT_FOUND',
u'module_name': u'common-services'}
1 2020-02-27T14:33:36.374Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="WARNING"] vmware_nsxlib.v3.client The
HTTP request returned error code 400, whereas 200 response codes were expected. Response body {u'error_code': 500012, u'error_message': u'The
path=[/infra/ip-pools/ippool-k8s] is invalid', u'httpStatus': u'BAD_REQUEST', u'module_name': u'Policy'}
1 2020-02-27T14:33:36.374Z k8s1-worker1 NSX 9 - [nsx@6876 comp="nsx-container-ncp" subcomp="ncp" level="CRITICAL"] nsx_ujo.ncp.main Failed to
initialize container orchestrator adaptor: Unexpected error from backend manager (['nsxm01.ytsuboi.local']) for GET policy/api/v1/infra/ip-
pools/ippool-k8s/ip-subnets: The path=[/infra/ip-pools/ippool-k8s] is invalid
```

If you have anything wrong, please check ncp log.



Installation Issue

Verify NSX Node agent is up and running

NSX Node agent has 3 containers. Please veirfy that all 3 are READY.

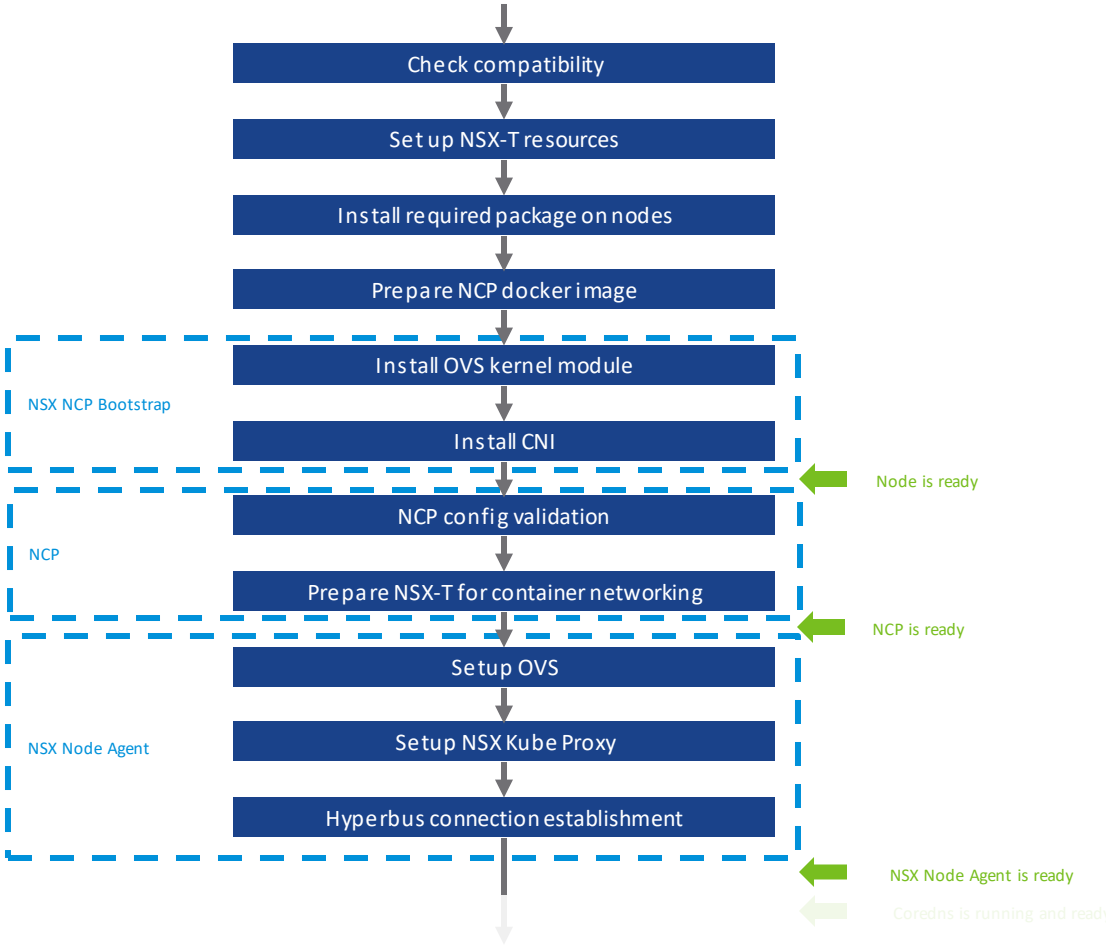
```
$ kubectl -n nsx-system get pod -l component=nsx-node-agent
NAME                   READY   STATUS    RESTARTS   AGE
nsx-node-agent-2l76c   3/3     Running   0          2m41s
nsx-node-agent-2mtgx   3/3     Running   0          24h
nsx-node-agent-nj8kj   3/3     Running   0          24h
```

Please make sure that they don't restart.
In addition to it, you can check hyperbus connection is up by the command.

```
$ kubectl -n nsx-system exec nsx-node-agent-2l76c -c nsx-node-agent -- nsxcli -c get node-agent-hyperbus
status
HyperBus status: Healthy
```

For example, if hyperbus is not up, NSX node agent contianer will crash like below.

```
$ kubectl -n nsx-system get pod -l component=nsx-node-agent
NAME                   READY   STATUS    RESTARTS   AGE
nsx-node-agent-2l76c   3/3     Running   3          9m15s
nsx-node-agent-2mtgx   3/3     Running   0          25h
nsx-node-agent-nj8kj   3/3     Running   0          25h
```



Installation Issue

Verify NSX Node agent is up and running

Please check which container has a problem by the following command.

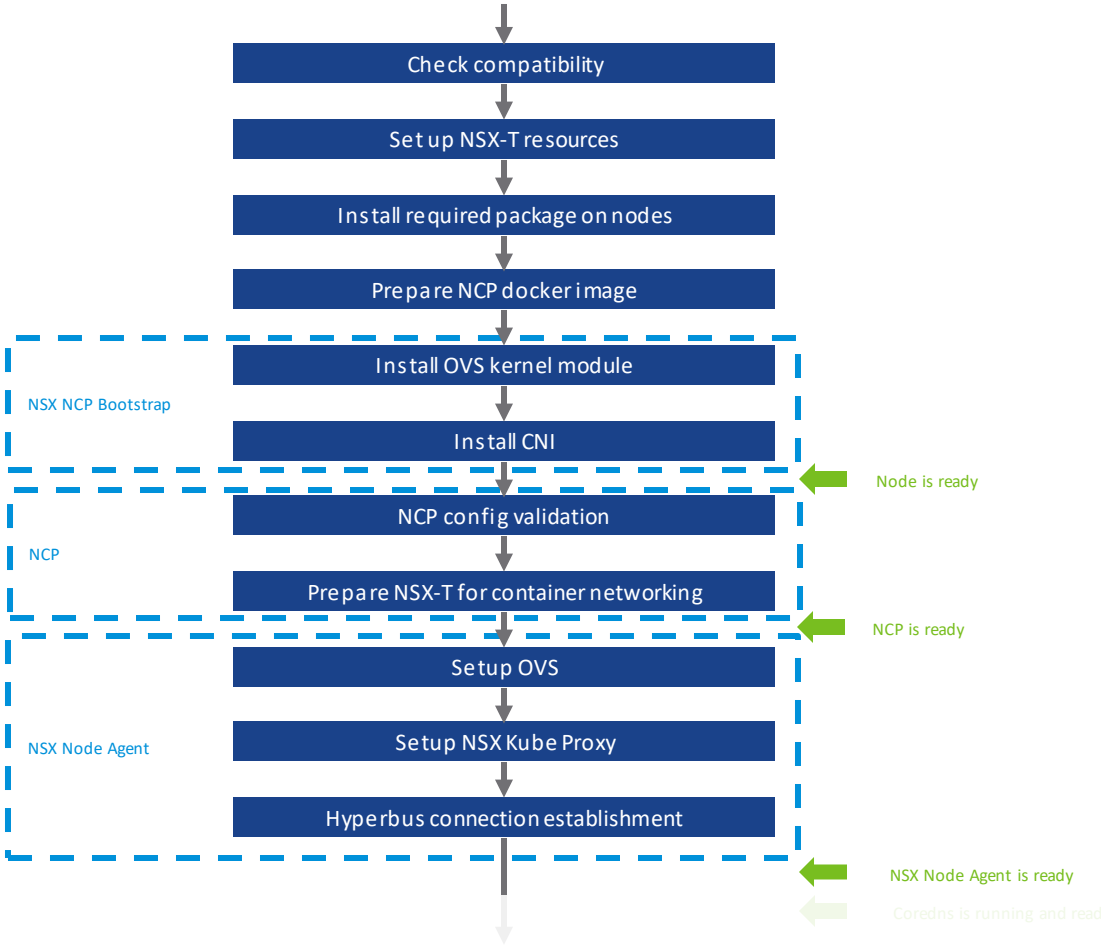
```
$ kubectl -n nsx-system describe pod nsx-node-agent-2176c  | grep " nsx-node-agent:\|nsx-kube-proxy:\|nsx-ovs:\|Restart Count:"
  nsx-node-agent:
    Restart Count:  195
  nsx-kube-proxy:
    Restart Count:  0
  nsx-ovs:
    Restart Count:  0
```

This example covers popular hyperbus disconnection issue.
But please check logs for the restarted container first and see if there are any error logs or not.

```
$ kubectl -n nsx-system logs nsx-node-agent-2176c -c nsx-node-agent

$ kubectl -n nsx-system logs nsx-node-agent-2176c -c nsx-kube-proxy

$ kubectl -n nsx-system logs nsx-node-agent-2176c -c nsx-ovs
```

If you don't see any errors in the log but container keeps restarting, please check why it restarted.If hyperbus has a problem, you can see nsx-node-agent liveness probe failed like below

```
$ kubectl -n nsx-system describe pod nsx-node-agent-2176c
Name:           nsx-node-agent-2176c
Namespace:      nsx-system
<snip>
Events:
  Type     Reason     Age                     From                Message
  ----     ------     ----                    ----                -------
  Normal   Scheduled  2m16s                   default-scheduler   Successfully assigned nsx-system/nsx-node-agent-2176c to k8s1-worker2
  Normal   Pulled     2m15s                   kubelet, k8s1-worker2  Container image "harbor.ytsuboi.local/library/nsx-ncp-
ubuntu:2.5.0.14628220" already present on machine
  Normal   Created    2m15s                   kubelet, k8s1-worker2  Created container nsx-ovs
  Normal   Pulled     2m15s                   kubelet, k8s1-worker2  Container image "harbor.ytsuboi.local/library/nsx-ncp-
ubuntu:2.5.0.14628220" already present on machine
  Normal   Created    2m15s                   kubelet, k8s1-worker2  Created container nsx-kube-proxy
  Normal   Started    2m15s                   kubelet, k8s1-worker2  Started container nsx-kube-proxy
  Normal   Started    2m14s                   kubelet, k8s1-worker2  Started container nsx-ovs
  Normal   Created    <invalid> (x2 over 2m16s)  kubelet, k8s1-worker2  Created container nsx-node-agent
  Normal   Started    <invalid> (x2 over 2m15s)  kubelet, k8s1-worker2  Started container nsx-node-agent
  Warning  Unhealthy  <invalid> (x10 over 2m2s)  kubelet, k8s1-worker2  Liveness probe failed:
  Normal   Pulled     <invalid> (x3 over 2m16s)  kubelet, k8s1-worker2  Container image "harbor.ytsuboi.local/library/nsx-ncp-
ubuntu:2.5.0.14628220" already present on machine
  Normal   Killing    <invalid> (x6 over 83s)    kubelet, k8s1-worker2  Container nsx-node-agent failed liveness probe, will be restarted
```



Installation Issue

Verify NSX Node agent is up and running

Subsequent covers how to troubleshoot hyperbus.

The followings must be configured properly to establish hyperbus connection

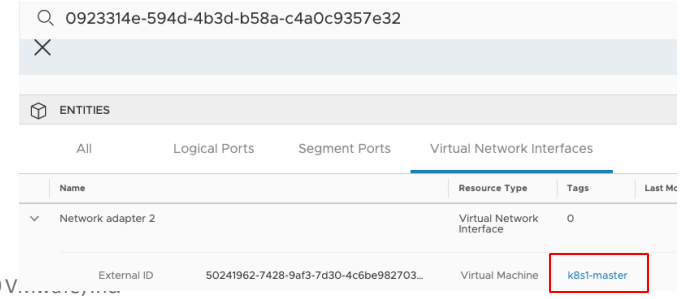
- OVS uplink
- Tag on logical port

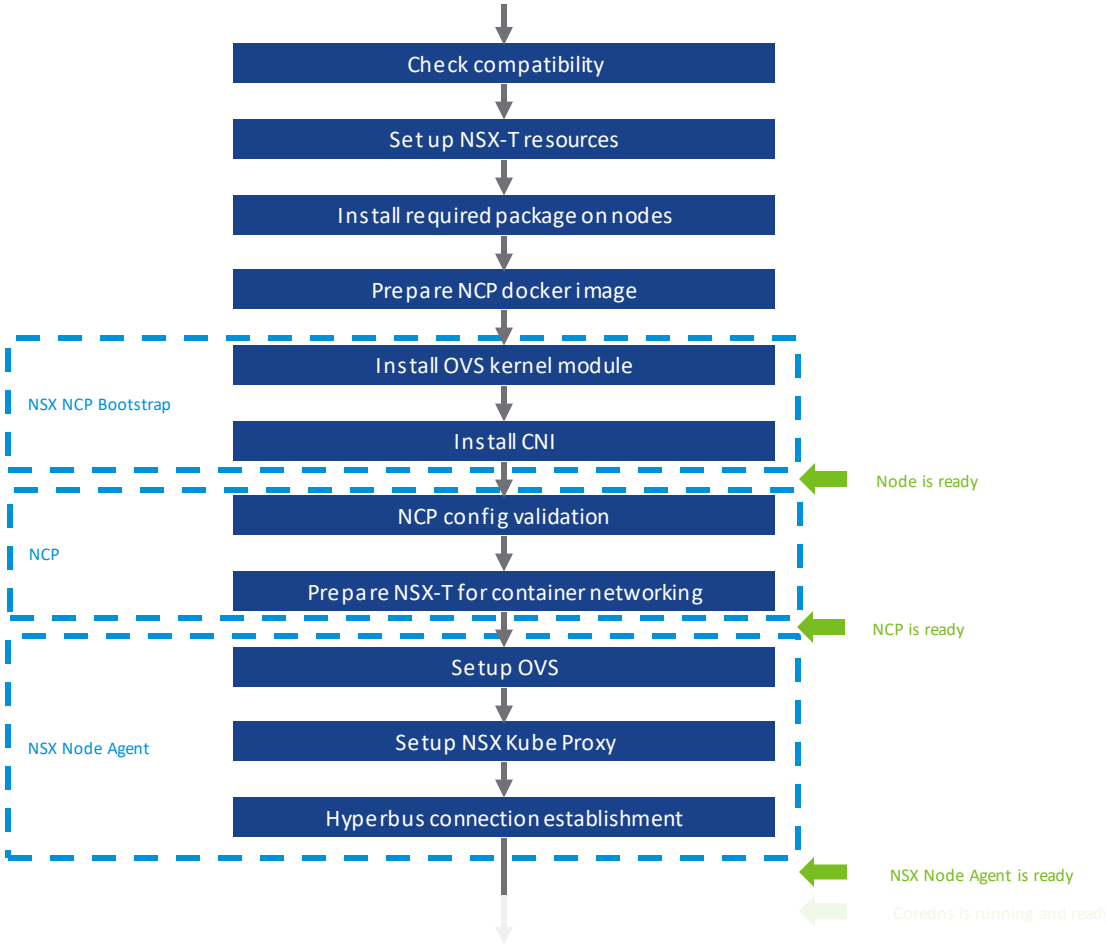
In addition to it, NCP must be up and running.

Before checking details, please check current hyperbus connection from ESXi. You should the same number of hyperbus connection as # of nodes on this ESXi

```
[root@sm7:~] nsxcli
sm7.corp.local>
sm7.corp.local> get hyperbus connection info
                VIFID                              Connection                        Status
0923314e-594d-4b3d-b58a-c4a0c9357e32         169.254.1.10:2345                    HEALTHY
13c00b80-30df-4e3e-ac19-041007a8f604         169.254.1.13:2345                    HEALTHY
```

You can see which node has hyperbus connection by searching with VIFID.





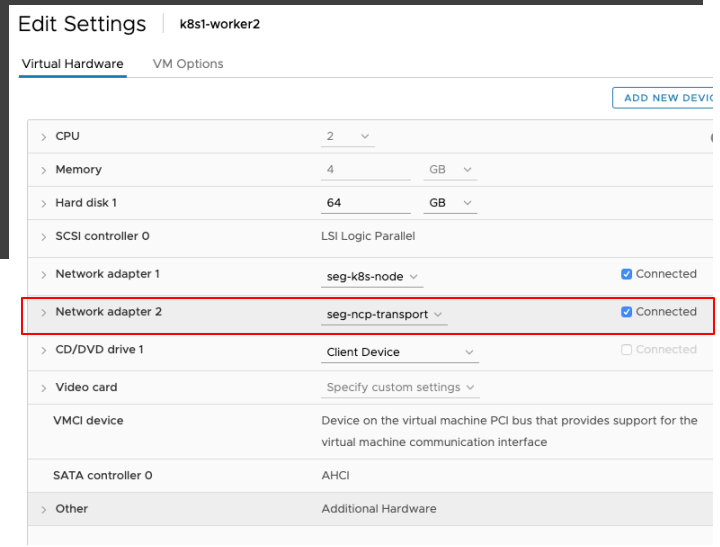
Installation Issue

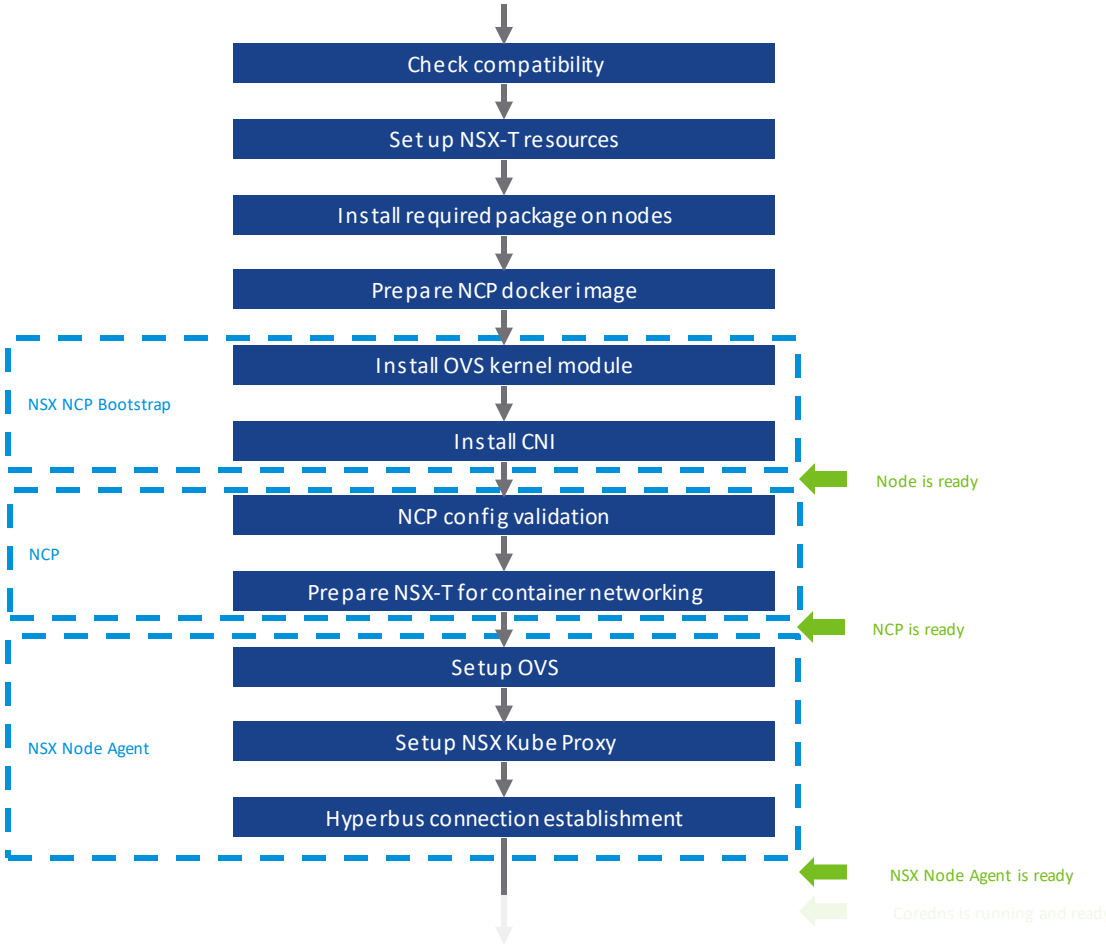
Verify NSX Node agent is up and running

Verify OVS is configured correctly. When node has multiple NICs, please make sure that OVS use the interface you intend.
In this example, node has 2 interfaces and the 2nd interface(ens192) is used for container network.

```
$ ip link show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN mode DEFAULT group default qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP mode DEFAULT group default qlen 1000
    link/ether 00:50:56:a4:3c:eb brd ff:ff:ff:ff:ff:ff
3: ens192: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq master ovs-system state UP mode DEFAULT group default qlen 1000
    link/ether 00:50:56:a4:52:73 brd ff:ff:ff:ff:ff:ff
```

```
$ kubectl -n nsx-system exec nsx-node-agent-2l76c -c nsx-ovs -- ovs-vsctl show
e92d6530-365e-4906-898a-4598f3383686
    Bridge br-int
        Port "coredns-5c98db65d4-vhrtt_32bc9bb30571807"
            tag: 11
            Interface "32bc9bb30571807"
        Port "ens192"
            Interface "ens192"
        Port br-int
            Interface br-int
                type: internal
        Port nsx_agent_outer
            tag: 4094
            Interface nsx_agent_outer
        Port "coredns-5c98db65d4-mw49c_91102761741cada"
            tag: 12
            Interface "91102761741cada"
    ovs_version: "2.10.4.14564004"
```





Installation Issue

Verify NSX Node agent is up and running

Verify tags on logical port

1. Open the logical port of the OVS uplink in NSX-T.

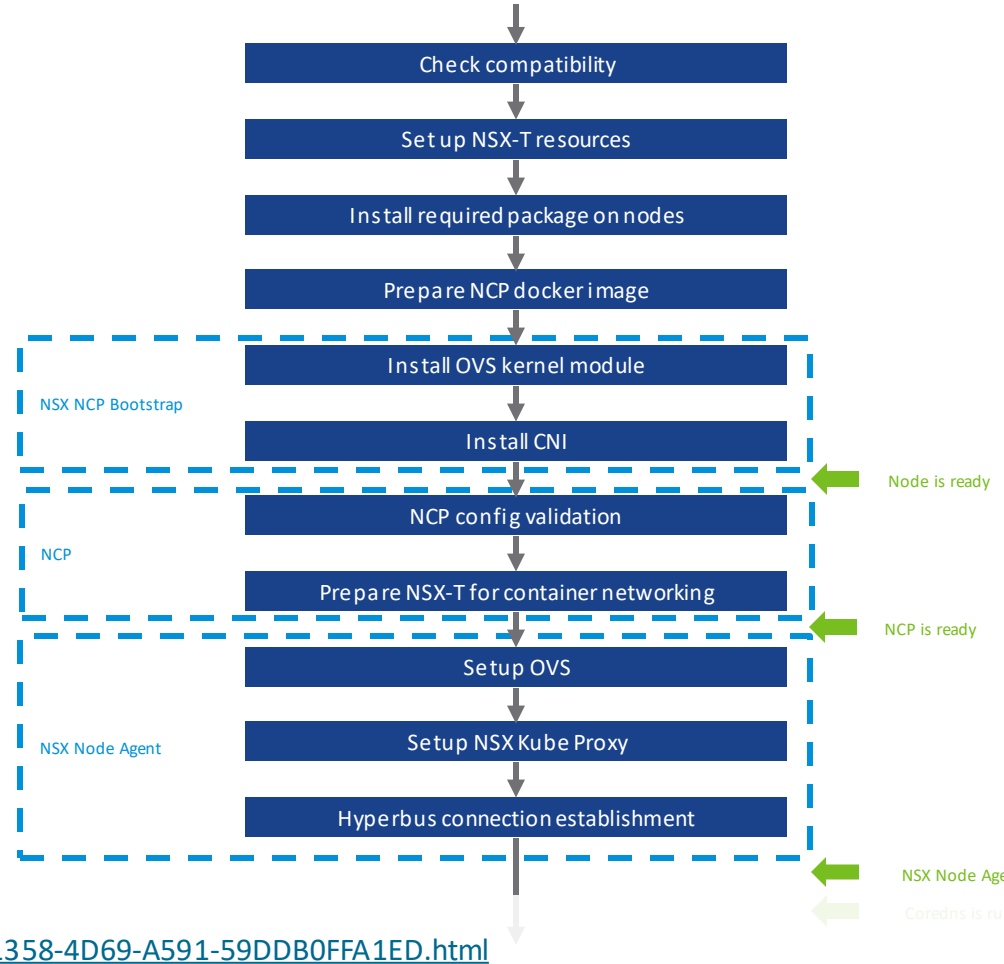
2. Make sure that tags are configured correctly.

– `ncp/cluster` must be same as the cluster name in NCP manifest

```
[coe]
# Container orchestrator adaptor to plug in.
adaptor = kubernetes

# Specify cluster for adaptor.
cluster = k8s1
```

– `ncp/node_name` must be same as the node name in Kubernetes

```
$ kubectl get node
NAME           STATUS   ROLES    AGE    VERSION
k8s1-master    Ready    master   113d   v1.15.3
k8s1-worker1   Ready    <none>   113d   v1.15.3
k8s1-worker2   Ready    <none>   113d   v1.15.3
```



https://docs.vmware.com/en/VMware-NSX-T-Data-Center/2.5/ncp-kubernetes/GUID-86F19122-1358-4D69-A591-59DDB0FFA1ED.html

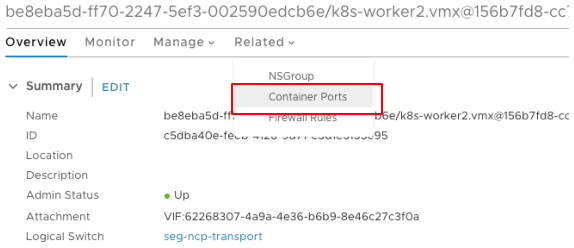
Installation Issue

Verify NSX Node agent is up and running

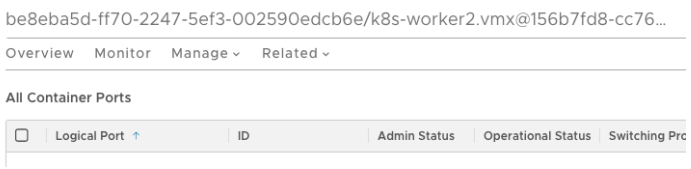
Please check the type of logical port.
NCP looks for the port based on tags you configured and change its type to Parent for container network.

You can check from UI like below

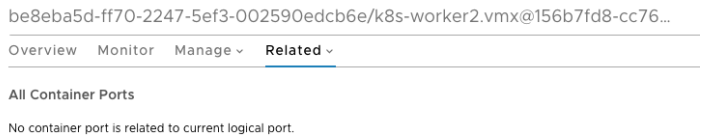
- Please open the logical port in “Advanced Networking & Security”.
  Then please go to “Container Ports”.

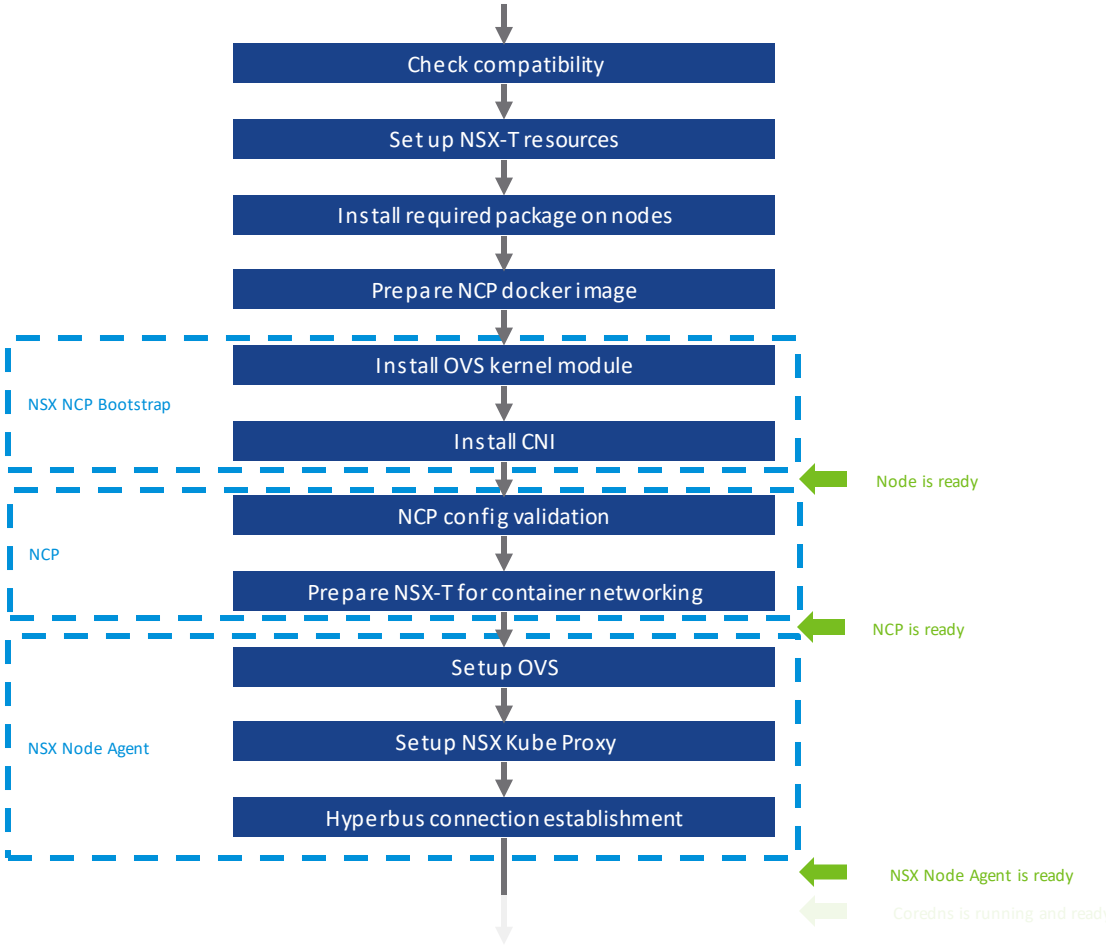


- Type was successfully changed if you can see table in Container



- Otherwise you will see the following message





Installation Issue

Verify Coredns pod is running and ready

Check coredns status

```
$ kubectl -n kube-system get pod -l k8s-app=kube-dns -o wide
NAME                       READY   STATUS    RESTARTS   AGE   IP           NODE          NOMINATED NODE   READINESS GATES
coredns-5c98db65d4-4v9pc   1/1     Running   0          35m   172.25.1.5   k8s1-worker1   <none>           <none>
coredns-5c98db65d4-xbpsn   1/1     Running   0          35m   172.25.1.4   k8s1-master    <none>           <none>
```

If NSX NCP Bootstrap/NCP/NSX Node agent are up and running, coredns has IP address and they are READY.

Please check the log if coredns won't be READY.

```
$ kubectl -n kube-system logs coredns-5c98db65d4-4v9pc
```

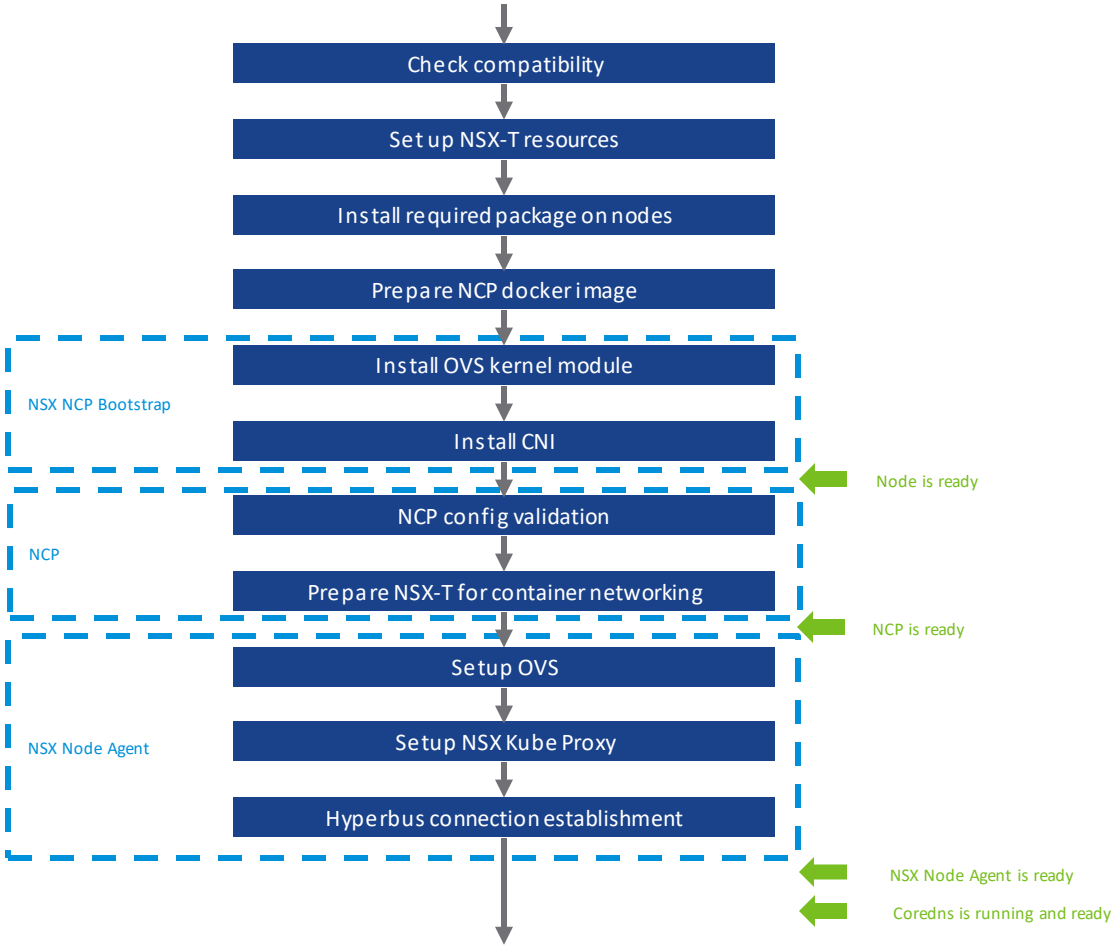
You can also try reschedule them.
Depending on how you failed to configure, this step is required.

```
$ kubectl -n kube-system delete pods -l k8s-app=kube-dns
pod "coredns-5c98db65d4-4v9pc" deleted
pod "coredns-5c98db65d4-xbpsn" deleted
```

This can be because

- No connection from coredns pod to DNS server
- Node doesn't have connection to coredns.(This causes liveness probe failure). You can verify reachability by ping and curl.

```
$ ping -c 3 172.25.1.5
PING 172.25.1.5 (172.25.1.5) 56(84) bytes of data.
64 bytes from 172.25.1.5: icmp_seq=1 ttl=61 time=0.986 ms
64 bytes from 172.25.1.5: icmp_seq=2 ttl=61 time=1.36 ms
64 bytes from 172.25.1.5: icmp_seq=3 ttl=61 time=1.05 ms

--- 172.25.1.5 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 1999ms
rtt min/avg/max/mdev = 0.986/1.133/1.360/0.164 ms

$ curl http://172.25.1.5:8080/health
OK
```



Day2 basic troubleshooting

Day2 basic troubleshooting

Overview

Troubleshooting requires the following accesses.

- Access to NSX-T UI
  This is required to see what NSX-T resources(Realized state) are configured by NCP.
- Kubernetes API access(kubectl command)
  This is required to see what is config in desired state(Kubernetes Database) and also for access to NCP components pods.
- Logs of NCP components
  This is required to look for errors in NCP components

vmware.com document covers supported CLI commands and error codes.

- NSX-T 2.5 NCP CLI commands
  https://docs.vmware.com/en/VMware-NSX-T-Data-Center/2.5/ncp-kubernetes/GUID-EA8E6CEE-36F4-423C-AD1E-DD6421A5FB1C.html
- NSX-T 2.5 NCP Error Codes
  https://docs.vmware.com/en/VMware-NSX-T-Data-Center/2.5/ncp-kubernetes/GUID-F4F1BBF5-1F23-42E0-98BD-ADE4C4AFFD47.html

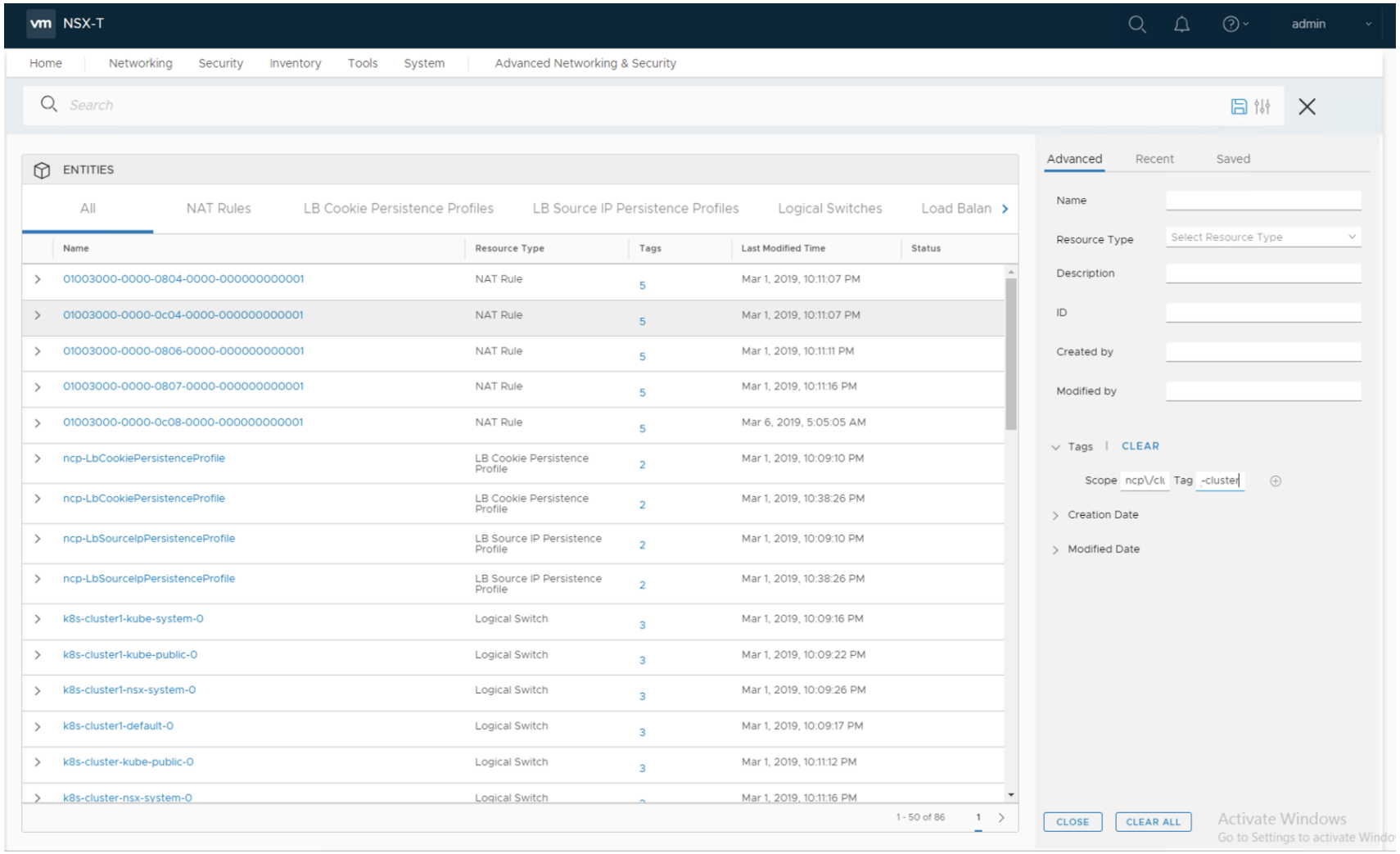
Day2 basic troubleshooting

NSX-T objects created by NCP

You can find objects using search function with the following query

Specify tags to search

- Scope is ‘ncp\/cluster’
- Tag is ‘<cluster name>’



Day2 basic troubleshooting

How to login to nsxcli of each NCP components

Login to nsxcli of NCP components are required to see information.

Here is an example

- Using kubectl command to login to nsxcli in NCP

```
$ kubectl -n nsx-system exec -it nsx-ncp-56d988fcdf-gl7c2 -- nsxcli
NSX CLI (NCP). Press ? for command list or enter: help
k8s1-worker2>
```

- Using kubectl command to login to nsxcli in NSX Node agent

```
$ kubectl -n nsx-system exec -it nsx-node-agent-2mtgx -c nsx-node-agent -- nsxcli
NSX CLI (Node Agent). Press ? for command list or enter: help
k8s1-master>
```

- Using kubectl command to login to nsxcli in NSX Kube Proxy

```
$ kubectl -n nsx-system exec -it nsx-node-agent-2mtgx -c nsx-kube-proxy -- nsxcli
NSX CLI (Kube Proxy). Press ? for command list or enter: help
k8s1-master>
```

Day2 basic troubleshooting

How to see logs of each NCP components

Get logs of NCP components are important to find errors.

Here is an example

- Using kubectl command to get logs in NCP

```
$ kubectl -n nsx-system logs nsx-ncp-56d988fcdf-gl7c2
```

- Using kubectl command to get logs in NSX Node agent

```
$ kubectl -n nsx-system logs nsx-node-agent-2mtgx -c nsx-node-agent
```

- Using kubectl command to get logs in NSX Kube Proxy

```
$ kubectl -n nsx-system logs nsx-node-agent-2mtgx -c nsx-kube-proxy
```

- Using kubectl command to get logs in NSX OVS

```
$ kubectl -n nsx-system logs nsx-node-agent-2mtgx -c nsx-ovs
```

Day2 basic troubleshooting

Basic health check of NCP components

NCP nsxcli and log

- Check if NSX-T manager connection status is healthy or not
- Check if K8s API connection status is healthy or not
- Check if there is error log or not

Node Agent nsxcli and log

- Check if hyperbus connection status is healthy or not

NSX OVS

- Check what flows are configured on OVS

ESXi nsxcli

- Check hyperbus information

NSXError(If it's enabled)

- Check if there is any NSXError or not

nsxcli on ncp/nsx-node-agent/nsx-kube-proxy

Basic health check

NCP

```
$ kubectl exec -it nsx-ncp-5bcf5bbb87-wbl7j nsxcli
NSX CLI (NCP). Press ? for command list or enter: help

k8s-node1> get ncp-nsx status
NSX Manager status: Healthy

k8s-node1> get ncp-k8s-api-server status
Kubernetes ApiServer status: Healthy
```

NSX Kube Proxy

```
$ kubectl exec -it nsx-node-agent-7pr7v -c nsx-kube-proxy  nsxcli
NSX CLI (Kube Proxy). Press ? for command list or enter: help

k8s-master1> get kube-proxy-k8s-api-server status
Kubernetes ApiServer status: Healthy
```

NSX Node Agent

```
$ kubectl exec -it nsx-node-agent-7pr7v -c nsx-node-agent  nsxcli
NSX CLI (Node Agent). Press ? for command list or enter: help

k8s-master1> get node-agent-hyperbus status
HyperBus status: Healthy
```

NSX OVS

Check configured flow on OVS such as Service configuration(East-West LB)

Check OVS flow

- Check ports connected to OVS

```
$ kubectl -n nsx-system exec nsx-node-agent-2mtgx -c nsx-ovs -- ovs-vsctl show
45ae25e6-a130-400f-aad8-834304c550a0
    Bridge br-int
        Port br-int
            Interface br-int
                type: internal
        Port "coredns-5c98db65d4-xbpsn_15d239217356162"
            tag: 1
            Interface "15d239217356162"
        Port nsx_agent_outer
            tag: 4094
            Interface nsx_agent_outer
        Port "ens192"
            Interface "ens192"
    ovs_version: "2.10.4.14564004"
```

- Check group actions on OVS

```
$ kubectl -n nsx-system exec nsx-node-agent-2mtgx -c nsx-ovs -- ovs-ofctl dump-groups br-int
NXST_GROUP_DESC reply (xid=0x2):
 group_id=1,type=select,bucket=bucket_id:0,weight:100,actions=ct(commit,table=2,zone=65312,nat(dst=192.168.92.11:6443))

group_id=6,type=select,bucket=bucket_id:0,weight:100,actions=ct(commit,table=2,zone=65312,nat(dst=172.25.1.4:53)),bucket=buck
et_id:1,weight:100,actions=ct(commit,table=2,zone=65312,nat(dst=172.25.1.5:53))

group_id=7,type=select,bucket=bucket_id:0,weight:100,actions=ct(commit,table=2,zone=65312,nat(dst=172.25.1.4:9153)),bucket=bu
cket_id:1,weight:100,actions=ct(commit,table=2,zone=65312,nat(dst=172.25.1.5:9153))

group_id=8,type=select,bucket=bucket_id:0,weight:100,actions=ct(commit,table=2,zone=65312,nat(dst=172.25.1.4:53)),bucket=buck
et_id:1,weight:100,actions=ct(commit,table=2,zone=65312,nat(dst=172.25.1.5:53))
```

- Check flows configured on OVS

```
$ kubectl -n nsx-system exec nsx-node-agent-2mtgx -c nsx-ovs -- ovs-ofctl dump-flows br-int
NXST_FLOW reply (xid=0x4):
 cookie=0x7, duration=171936.880s, table=0, n_packets=146368, n_bytes=14019638, idle_age=0, hard_age=65534, priority=100,ip actions=ct(table=1,zone=65312)
 cookie=0x7, duration=171936.920s, table=0, n_packets=58761, n_bytes=3167816, idle_age=3, hard_age=65534, priority=0 actions=NORMAL
 cookie=0x7, duration=171936.803s, table=1, n_packets=0, n_bytes=0, idle_age=65534, hard_age=65534, priority=100,ct_state=-trk,ip actions=ct(table=1,zone=65312)
 cookie=0x7, duration=171936.690s, table=1, n_packets=5, n_bytes=370, idle_age=4370, hard_age=65534, priority=100,ct_state=+new+trk,tcp,nw_dst=10.96.0.1,tp_dst=443 actions=group:1
 cookie=0x7, duration=4366.908s, table=1, n_packets=0, n_bytes=0, idle_age=4371, priority=100,ct_state=+new+trk,udp,nw_dst=10.96.0.10,tp_dst=53 actions=group:8
 cookie=0x7, duration=4366.879s, table=1, n_packets=0, n_bytes=0, idle_age=4371, priority=100,ct_state=+new+trk,tcp,nw_dst=10.96.0.10,tp_dst=53 actions=group:6
 cookie=0x7, duration=4366.845s, table=1, n_packets=0, n_bytes=0, idle_age=4371, priority=100,ct_state=+new+trk,tcp,nw_dst=10.96.0.10,tp_dst=9153 actions=group:7
 cookie=0x7, duration=171936.665s, table=1, n_packets=4902, n_bytes=347702, idle_age=0, hard_age=65534, priority=100,ct_state=-new+trk,ip,nw_dst=10.96.0.1 actions=ct(table=2,zone=65312,nat)
 cookie=0x7, duration=171936.478s, table=1, n_packets=0, n_bytes=0, idle_age=65534, hard_age=65534, priority=100,ct_state=-new+trk,ip,nw_dst=10.96.0.10 actions=ct(table=2,zone=65312,nat)
 cookie=0x7, duration=171936.778s, table=1, n_packets=79417, n_bytes=9723771, idle_age=0, hard_age=65534, priority=90,ip,in_port=1 actions=ct(table=2,zone=65312,nat)
 cookie=0x7, duration=171936.751s, table=1, n_packets=62044, n_bytes=3587677, idle_age=2, hard_age=65534, priority=80,ip actions=NORMAL
 cookie=0x7, duration=171936.853s, table=2, n_packets=84324, n_bytes=10071843, idle_age=0, hard_age=65534, actions=NORMAL
```

nsxcli on ESXi

Basic health check

ESXi

```
sm1.corp.local> get hyperbus connection info
             VIFID                         Connection                  Status
65b4eb4f-3c6f-4cc3-ad59-e945cdf46b0e        169.254.1.15:2345          HEALTHY
e18bc2db-a325-4e14-b68e-55de27fcfa22        169.254.1.16:2345          HEALTHY

sm1.corp.local> get hyperbus cif-table
     Type                    AppID                                          LSPID                                  LRPID                                  VIFID                                  LSID                                   MAC                IP              GatewayIP       Vlan  Version
   Link LSP                                                                 65e2e0b4-0b9e-45cb-aaa4-1aca7d9f5e1c   cc90e383-4011-4094-b8fa-231f48224b5f                                                  6fa3fa83-22e6-4eb5-b588-c8dd3ff80e57   00:00:00:00:00:00  0.0.0.0         10.0.1.1        0     4
   Link LSP                                                                 b85e0b2f-d8e0-44ab-a21a-e1b5eeddb11a   b4ff36d1-c0a0-43e8-8d26-33180555512e                                                  ae0ef121-2525-4af5-aa6d-107fec979cfa   00:00:00:00:00:00  0.0.0.0         100.64.80.1     0     4
  Parent VIF                                                                158de761-3a22-49c5-9b1b-0da68db45a94   00000000-0000-0000-0000-000000000000   65b4eb4f-3c6f-4cc3-ad59-e945cdf46b0e   e412bb87-54a9-4e32-97b9-78fc9183b42b   00:00:00:00:00:00  0.0.0.0         0.0.0.0         0     4
  Parent VIF                                                                f3efe5b3-845a-47ad-9f34-bfb94def7c80   00000000-0000-0000-0000-000000000000   e18bc2db-a325-4e14-b68e-55de27fcfa22   e412bb87-54a9-4e32-97b9-78fc9183b42b   00:00:00:00:00:00  0.0.0.0         0.0.0.0         0     4
   Link LSP                                                                 f7b61fa8-c7be-471e-a131-5c5e352c5938   5b1c26e9-c6bb-422c-ae72-ee10822aaadf                                                  f069220b-876e-4a5f-a39a-8fc49e26bf26   00:00:00:00:00:00  0.0.0.0         172.16.0.1      0     4
   Link LSP                                                                 21ed7148-9033-4405-b040-215f3147dc93   62adfbc7-e0dc-4e6c-9c5d-50776cee434f                                                  00e69446-8127-4f4c-98a5-d62b8d1a13b2   00:00:00:00:00:00  0.0.0.0         100.64.80.7     0     4
   Link LSP                                                                 d5eaae0d-cd73-43ab-9c6e-034c5965fcf9   94ee6cd3-6396-4519-afc6-74671f4e9dcd                                                  00f11fd4-36e3-4784-b19e-bb89cf1aef37   00:00:00:00:00:00  0.0.0.0         172.16.1.1      0     4
   Link LSP                                                                 dfd264f9-83c0-4f9a-b9ec-106e9ca28d85   9a0e321a-2492-4d93-843e-bcbba52d867f                                                  8a5dd39f-8ec3-4520-a17f-10a4ed7e73a5   00:00:00:00:00:00  0.0.0.0         100.64.80.9     0     4
   Link LSP                                                                 f6bc368e-9831-45cf-8a05-83cb3cd63674   a97bca16-b479-4c97-9e61-11428947966f                                                  70fa5e2a-ac67-462d-8e55-883141ae96d6   00:00:00:00:00:00  0.0.0.0         172.16.2.1      0     4
   Link LSP                                                                 8b5f2947-9a1f-4110-b542-ab2bd352217b   12e3ff48-8ca8-4241-bb85-c200b90e049f                                                  9a95a847-ce56-45eb-b547-b3b8f4c72cc9   00:00:00:00:00:00  0.0.0.0         172.16.3.1      0     4
   Link LSP                                                                 a859668b-9f41-4498-9246-9c3af5c2a5a0   70db9e01-716b-403a-8daa-46074fbea5f9                                                  6e48d72d-1b51-4b2f-9c9d-1d151557a10d   00:00:00:00:00:00  0.0.0.0         100.64.80.13    0     4
   Link LSP                                                                 9d631405-f414-444c-88be-8b5bfa46f4fe   bb06811f-a8cf-4726-8054-7201c831b4f0                                                  f16075f2-9e17-4cee-bc20-1af8e055fc48   00:00:00:00:00:00  0.0.0.0         100.64.80.11    0     4
   Link LSP                                                                 68827faf-b6ea-4af7-a788-46405f87e29b   57c31bb9-1116-426d-a148-89d81a8b1034                                                  ecaa95e0-d36c-4fb8-a853-25606a545cb9   00:00:00:00:00:00  0.0.0.0         100.64.80.15    0     4
   Link LSP                                                                 79ee5cdc-4613-458f-ad7d-e4b551e473ce   be519273-8685-43db-8ae5-d3eee1cede90                                                  df8ec62a-c187-4b55-8972-3d56d74d8bb1   00:00:00:00:00:00  0.0.0.0         172.16.4.1      0     4
   Link LSP                                                                 ff770033-b016-4c43-ab16-41938a398539   2476406e-13ff-4a21-99cb-1841213a4481                                                  b18a1b68-ccd6-4783-9a47-c1c5cce81992   00:00:00:00:00:00  0.0.0.0         100.64.80.19    0     4
   Link LSP                                                                 5c1d8f44-54e1-4e1d-8a20-bbc456dfc259   06c584b0-be80-4c46-b6aa-9a0db624aa6e                                                  f20bb796-bbb5-45a3-95f7-14788bdb30cd   00:00:00:00:00:00  0.0.0.0         172.16.6.1      0     4
   Link LSP                                                                 5f9252b1-56a5-4953-a589-820afcc3d188   12d41e76-12f4-40fc-b0f7-b4195532fb2f                                                  130faf40-59a4-48a0-bd2d-d879fa0b0031   00:00:00:00:00:00  0.0.0.0         172.16.8.1      0     4
   Link LSP                                                                 5160b5f0-f951-4e34-9ec1-205785d8876b   3096c03c-ac70-42a6-bb4d-f94ce51e5917                                                  52eb1619-e810-49d2-8e22-bad30548a02b   00:00:00:00:00:00  0.0.0.0         100.64.80.29    0     4
   Child CIF     nsx.kube-system.concourse-worker-0                         ea41486d-0f63-4ff0-b7c8-24541de78f75   00000000-0000-0000-0000-000000000000   e18bc2db-a325-4e14-b68e-55de27fcfa22   9a95a847-ce56-45eb-b547-b3b8f4c72cc9   02:50:56:00:20:0e  172.16.3.6      0.0.0.0         11    4
   Child CIF    nsx.kube-system.coredns-86c58d9df4-m8blt                    2399b5a7-6c5e-4eb7-9d0b-e25d89f13089   00000000-0000-0000-0000-000000000000   e18bc2db-a325-4e14-b68e-55de27fcfa22   9a95a847-ce56-45eb-b547-b3b8f4c72cc9   02:50:56:00:20:0b  172.16.3.4      0.0.0.0         1     4
   Child CIF        nsx.kube-system.fluentd-kcddx                           e078c6ee-83e8-4e80-9fc1-8d29653de729   00000000-0000-0000-0000-000000000000   65b4eb4f-3c6f-4cc3-ad59-e945cdf46b0e   9a95a847-ce56-45eb-b547-b3b8f4c72cc9   02:50:56:00:20:1c  172.16.3.18     0.0.0.0         2     4
   Child CIF        nsx.kube-system.fluentd-sc9bm                           397fb383-5740-499c-941d-c684d7dacb9c   00000000-0000-0000-0000-000000000000   e18bc2db-a325-4e14-b68e-55de27fcfa22   9a95a847-ce56-45eb-b547-b3b8f4c72cc9   02:50:56:00:20:1e  172.16.3.20     0.0.0.0         8     4
   Child CIF    nsx.ncp-feature.nginx-allow-http-6b5c777c74-k81cr           01f2d0d5-c939-4eb1-820b-3a2b281683ff   00000000-0000-0000-0000-000000000000   e18bc2db-a325-4e14-b68e-55de27fcfa22   130faf40-59a4-48a0-bd2d-d879fa0b0031   02:50:56:00:20:2b  172.16.8.10     0.0.0.0         7     4
   Child CIF    nsx.ncp-feature.nginx-service-with-loadbalancerip-848b77f4bd-lwqzc 1686379f-34bd-43bf-a151-debf7d7872dd   00000000-0000-0000-0000-000000000000   e18bc2db-a325-4e14-b68e-55de27fcfa22   130faf40-59a4-48a0-bd2d-d879fa0b0031   02:50:56:00:20:11  172.16.8.3      0.0.0.0         10    4
   Child CIF    nsx.ncp-feature.nginx-service-with-sessionaffinity-dbb968466-xrjpr 1d8c642d-9d75-49f0-8d3d-b50fd15f94f2   00000000-0000-0000-0000-000000000000   e18bc2db-a325-4e14-b68e-55de27fcfa22   130faf40-59a4-48a0-bd2d-d879fa0b0031   02:50:56:00:20:20  172.16.8.6      0.0.0.0         12    4
   Child CIF    nsx.nsxt-monitor.nsxt-monitor-59644b7d-d7s6f                da6e65eb-8875-4761-b4d0-97c0677fb5ce   00000000-0000-0000-0000-000000000000   e18bc2db-a325-4e14-b68e-55de27fcfa22   f20bb796-bbb5-45a3-95f7-14788bdb30cd   02:50:56:00:20:12  172.16.6.2      0.0.0.0         6     4
```

NSXError if it’s configured

Check if there is any NSXError or not

kubectl get ne

```
$ kubectl get ne
NAME                                    MESSAGES                                                                  ERROROBJECTID      ERROROBJECTTYPE   ERROROBJECTNAME   ERROROBJECTNAMESPACE
services-a95400a87fe444d4b728b273acfa5083   [[2019-04-03 21:23:24]NCP00015: IP Pool exhausted when allocating external IP]   test3.test3-demo   services          test3-demo        test3
```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