PROXMOX - HOMELAB

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June 24, 2024

WHY THE CHANGE

- Move to workstation and lab in one.

- Pass-thru for good performance of desktop environment is important.

- Wanted to increase performance
  - *DDR5*
    - More memory > 128Gig
  - *NVME SSD Disk using PCI-Express 4*
  - *Wanted a GUI and CLI*

HARDWARE – INTEL LGA1700 BUILD

- ASROCK B760M PG Riptide LGA1700 DDR Micro ATX Motherboard

- CORSAIR DDR5 192 Gig (4 x 48Gig)

- Crucial P3 Plus 2TB PCIe 4.0 NVMe M.2 (up to 5000MB/s) – CT2000P3PSSD8

- Vetroo V360 AIO Cooler

- Thermaltake Tower 500 Case

- Sapphire 11310-01-20G Pulse AMD Radeon RX600 GPU

- Qty 3 – SATA 2TB SATA SSD

- Qty 1 – Seagate 8TB

HARDWARE

PROMOX OVERVIEW

- Debian Based
- KVM
- LXC
- Web Based Management Interface
- CLI
- REST API
- Clustering – ETC Mirroring
- Online Migration

- SDN
- Ceph
- Backup/Restore

PROMOX HINTS

- Proxmox can be installed on slow disk

- Reserve NVMe drives for production vm's (Desktop environment) and Test

- Put test vm on separate VM

- Minimize / avoid anything on "host" level.

- For High Performance:
  - *Pass thru GPU*
    - Fedora/OSX/Windows works great
  - *Pass thru USB*
    - Audio works great
    - Arduino Works fine
  - *Bluetooth*
    - Use BT-W3X so headset is usb audio

PROMOX GUI

OPENSHIFT TEST/INSTALL

- Bare Metal Install

  - *PXE Boot*

- VM - DNS Server

- VM - Boot Server - TFTP

```
gwest — root@boot:/tftp/pxelinux.cfg — ssh root@boot.gw.lo — 83×32
[root@boot tftp]# cd pxelinux.cfg
[root@boot pxelinux.cfg]# ls
01-00-50-56-1f-25-25        01-00-50-56-1f-26-26   01-00-50-56-1f-32-32   4.7
01-00-50-56-1f-25-25.pve    01-00-50-56-1f-27-27   01-00-50-56-1f-33-01   backup
01-00-50-56-1f-25-25.rhcos  01-00-50-56-1f-28-28   01-02-e7-78-e2-79-b8
01-00-50-56-1f-25-25.rhel7  01-00-50-56-1f-30-30   4.5
01-00-50-56-1f-25-25.save   01-00-50-56-1f-31-31   4.6
[root@boot pxelinux.cfg]# cat 01-00-50-56-1f-25-25
default coreos
prompt 0
timeout 1


label coreos
  kernel  http://192.168.1.5/rhcosinstall.vmlinuz
  append  ip=enp6s18:dhcp initrd=http://192.168.1.5/rhcosinstall-initramfs.img core
os.live.rootfs_url=http://192.168.1.5/rhcosinstall-rootfs.img coreos.inst=yes coreo
s.inst.install_dev=/dev/sda ignition.platform.id=metal ignition.firstboot coreos.in
st.ignition_url=http://192.168.1.5/bootstrap.ign
[root@boot pxelinux.cfg]# cat 01-00-50-56-1f-26-26
default coreos
prompt 0
timeout 1


label coreos
  kernel  http://192.168.1.5/rhcosinstall.vmlinuz
  append  ip=enp6s18:dhcp initrd=http://192.168.1.5/rhcosinstall-initramfs.img core
os.live.rootfs_url=http://192.168.1.5/rhcosinstall-rootfs.img coreos.inst.install_d
ev=/dev/sda ignition.platform.id=metal ignition.firstboot coreos.inst.ignition_url=
http://192.168.1.5/master.ign
[root@boot pxelinux.cfg]#
```

TEST CLUSTER CONFIG

- 1 Bootstrap
- 3 Control
- 3 Workers
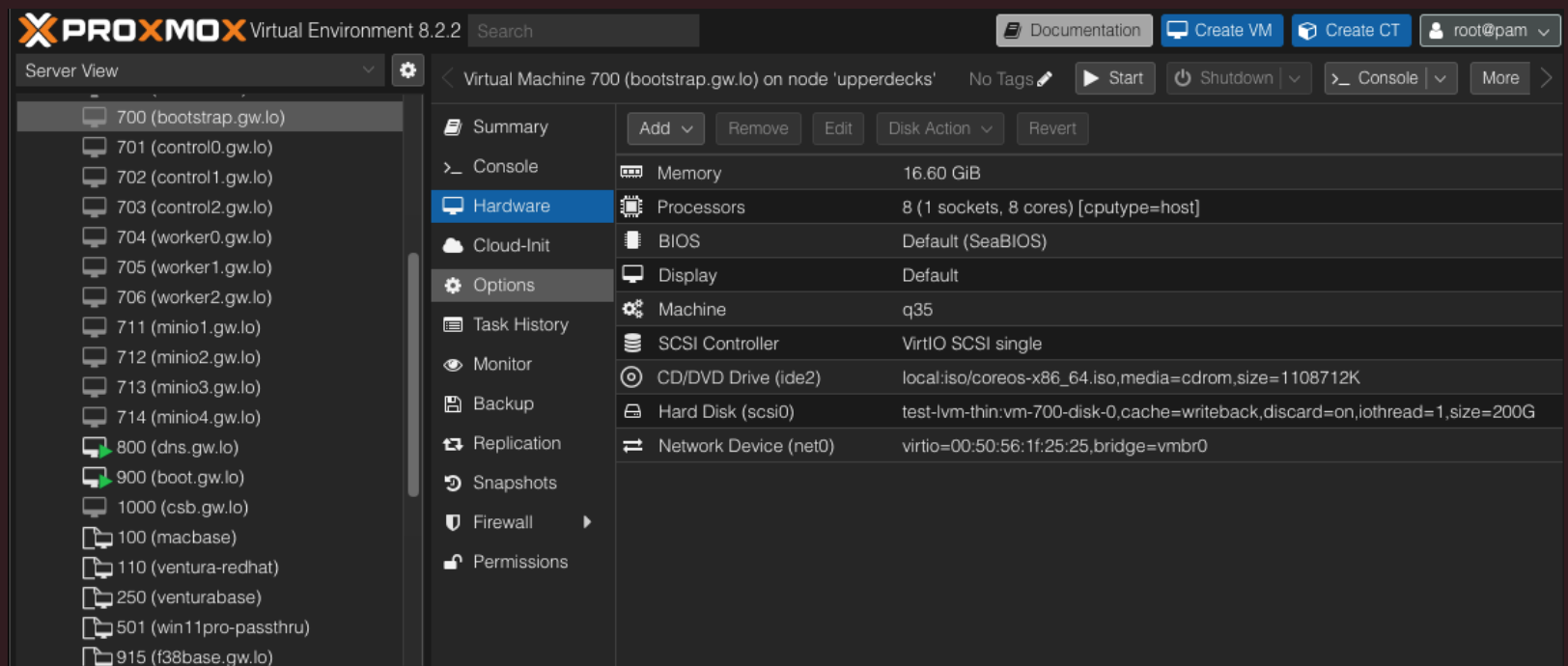
SCRIPTS

- Deployments are done via scripts

- Scripts are located at:

  https://github.com/glennswest/qpve
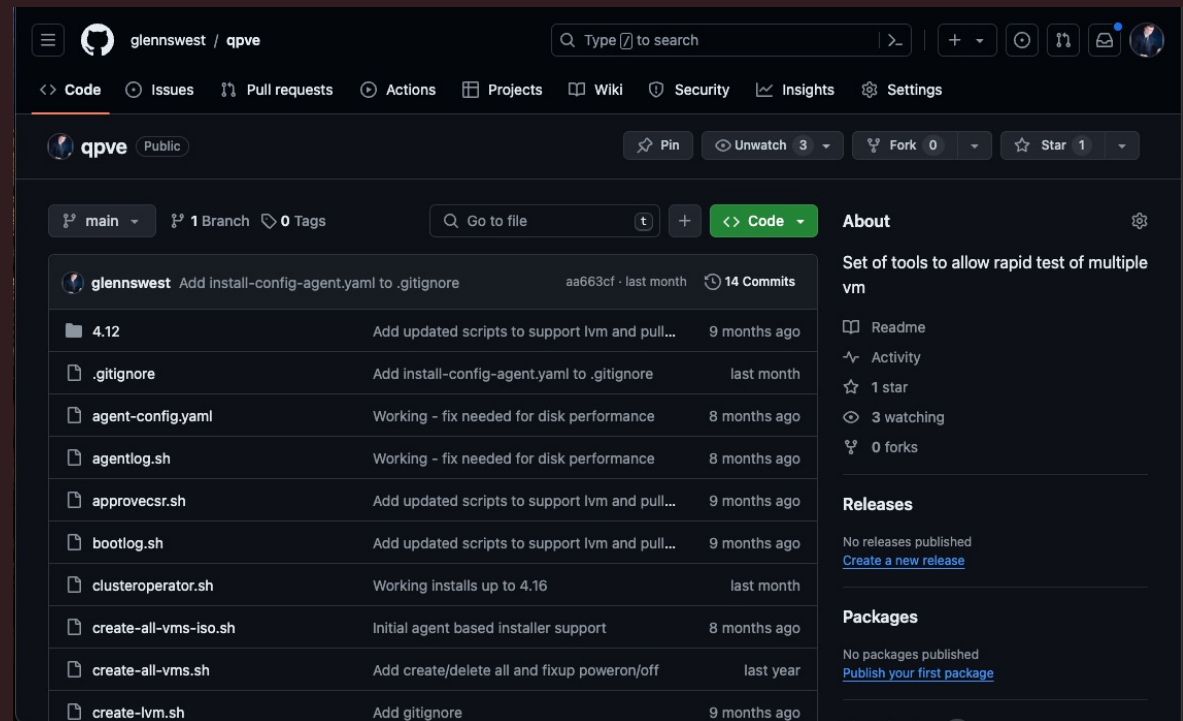
TOP LEVEL SCRIPTS

- ./Install.sh x.y.z – Install specified version

- ./pull-os.sh x.y.z – Pull specified OS and copy to right location

- ./pull-install.sh x.y.z – Pull openshift installer

- ./approvecsr.sh – Approve csr

- ./clusteroperator.sh – Watch Operators During Installs

```
gwest@MacBook-Pro qpve % ./install.sh 4.14.24
Installing nmstatectl for 4.14 support
--2024-06-23 22:32:33--  https://github.com/nmstate/nmstate/releases/download/v2.2.
16/nmstatectl-macos-x64.zip
Resolving github.com (github.com)... 140.82.113.4
Connecting to github.com (github.com)|140.82.113.4|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://objects.githubusercontent.com/github-production-release-asset-2e6
5be/132556280/36b7e0b0-6109-4f62-8f1b-3ad44f20713f?X-Amz-Algorithm=AWS4-HMAC-SHA256
&X-Amz-Credential=releaseassetproduction%2F20240624%2Fus-east-1%2Fs3%2Faws4_request
&X-Amz-Date=20240624T033233Z&X-Amz-Expires=300&X-Amz-Signature=5fe4861ac2f360eae699
78ec7001c3a32b05c421073e66cd1349503730f6b29e&X-Amz-SignedHeaders=host&actor_id=0&ke
y_id=0&repo_id=132556280&response-content-disposition=attachment%3B%20filename%3Dnm
statectl-macos-x64.zip&response-content-type=application%2Foctet-stream [following]
--2024-06-23 22:32:33--  https://objects.githubusercontent.com/github-production-re
lease-asset-2e65be/132556280/36b7e0b0-6109-4f62-8f1b-3ad44f20713f?X-Amz-Algorithm=A
WS4-HMAC-SHA256&X-Amz-Credential=releaseassetproduction%2F20240624%2Fus-east-1%2Fs3
%2Faws4_request&X-Amz-Date=20240624T033233Z&X-Amz-Expires=300&X-Amz-Signature=5fe48
61ac2f360eae69978ec7001c3a32b05c421073e66cd1349503730f6b29e&X-Amz-SignedHeaders=hos
t&actor_id=0&key_id=0&repo_id=132556280&response-content-disposition=attachment%3B%
20filename%3Dnmstatectl-macos-x64.zip&response-content-type=application%2Foctet-str
eam
Resolving objects.githubusercontent.com (objects.githubusercontent.com)... 185.199.
108.133, 185.199.111.133, 185.199.109.133, ...
Connecting to objects.githubusercontent.com (objects.githubusercontent.com)|185.199
.108.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1969257 (1.9M) [application/octet-stream]
Saving to: 'nmstatectl-macos-x64.zip'

nmstatectl-macos-x64 100%[=====================>]   1.88M  --.-KB/s    in 0.1s
```

```
2024-06-23 22:32:34 (13.8 MB/s) - 'nmstatectl-macos-x64.zip' saved [1969257/1969257
]

Archive:  nmstatectl-macos-x64.zip
  inflating: nmstatectl
4.14.7
--2024-06-23 22:32:43--  https://mirror.openshift.com/pub/openshift-v4/x86_64/clien
ts/ocp/4.14.24/openshift-install-mac.tar.gz
Resolving mirror.openshift.com (mirror.openshift.com)... 108.139.15.98, 108.139.15.
61, 108.139.15.25, ...
Connecting to mirror.openshift.com (mirror.openshift.com)|108.139.15.98|:443... con
nected.
HTTP request sent, awaiting response... 200 OK
Length: 455407237 (434M) [application/x-tar]
Saving to: 'openshift-install.tar.gz'

openshift-install.ta 100%[=====================>] 434.31M  29.3MB/s    in 15s

2024-06-23 22:32:59 (29.0 MB/s) - 'openshift-install.tar.gz' saved [455407237/45540
7237]

x README.md
x openshift-install
--2024-06-23 22:33:00--  https://mirror.openshift.com/pub/openshift-v4/x86_64/clien
ts/ocp/4.14.24/openshift-client-mac.tar.gz
Resolving mirror.openshift.com (mirror.openshift.com)... 108.139.15.98, 108.139.15.
61, 108.139.15.25, ...
Connecting to mirror.openshift.com (mirror.openshift.com)|108.139.15.98|:443... con
nected.
HTTP request sent, awaiting response... 200 OK
Length: 53595070 (51M) [application/x-tar]
```

```
rm: *.gz: No such file or directory
INFO Consuming Install Config from target directory
INFO Ignition-Configs created in: gw and gw/auth
kubeadmin-password                                      100%   23      89.8KB/s   00:00
kubeconfig                                              100% 8931      8.7MB/s    00:00
bootstrap.ign                                           100%  277KB 106.7MB/s    00:00
master.ign                                              100% 1707      9.4MB/s    00:00
metadata.json                                           100%   92    603.0KB/s    00:00
worker.ign                                              100% 1707      8.1MB/s    00:00
Powering off bootstrap.gw.lo
Powering off control0.gw.lo
Powering off control1.gw.lo
Powering off control2.gw.lo
Powering off worker0.gw.lo
Powering off worker1.gw.lo
Powering off worker2.gw.lo
lvm erase
/dev/test-lvm-thin/vm-700-disk-0
  Logical volume "vm-700-disk-0" successfully removed.
  Logical volume "vm-700-disk-0" created.
lvm erase
/dev/test-lvm-thin/vm-701-disk-0
  Logical volume "vm-701-disk-0" successfully removed.
  Logical volume "vm-701-disk-0" created.
lvm erase
/dev/test-lvm-thin/vm-702-disk-0
  Logical volume "vm-702-disk-0" successfully removed.
  Logical volume "vm-702-disk-0" created.
lvm erase
/dev/test-lvm-thin/vm-703-disk-0
  Logical volume "vm-703-disk-0" successfully removed.
  Logical volume "vm-703-disk-0" created.
```

```
lvm erase
/dev/test-lvm-thin/vm-704-disk-0
  Logical volume "vm-704-disk-0" successfully removed.
  Logical volume "vm-704-disk-0" created.
lvm erase
/dev/test-lvm-thin/vm-705-disk-0
  Logical volume "vm-705-disk-0" successfully removed.
  Logical volume "vm-705-disk-0" created.
lvm erase
/dev/test-lvm-thin/vm-706-disk-0
  Logical volume "vm-706-disk-0" successfully removed.
  Logical volume "vm-706-disk-0" created.
DEBUG OpenShift Installer 4.14.24
DEBUG Built from commit b6dcee134a2aa62ea0b00e559dc18376cf31b960
INFO Waiting up to 20m0s (until 10:53PM CDT) for the Kubernetes API at https://api.
gw.lo:6443...
DEBUG Loading Agent Config...
DEBUG Still waiting for the Kubernetes API: Get "https://api.gw.lo:6443/version": d
ial tcp: lookup api.gw.lo: no such host
DEBUG Still waiting for the Kubernetes API: Get "https://api.gw.lo:6443/version": d
ial tcp: lookup api.gw.lo: no such host
DEBUG Still waiting for the Kubernetes API: Get "https://api.gw.lo:6443/version": d
ial tcp 192.168.1.201:6443: connect: connection refused
DEBUG Still waiting for the Kubernetes API: Get "https://api.gw.lo:6443/version": d
ial tcp 192.168.1.203:6443: connect: connection refused
DEBUG Still waiting for the Kubernetes API: Get "https://api.gw.lo:6443/version": d
ial tcp 192.168.1.203:6443: connect: connection refused
DEBUG Still waiting for the Kubernetes API: Get "https://api.gw.lo:6443/version": d
ial tcp 192.168.1.203:6443: connect: connection refused
INFO API v1.27.13+fd36fb9 up
DEBUG Loading Install Config...
DEBUG   Loading SSH Key...
```

```
DEBUG    Loading Base Domain...
DEBUG      Loading Platform...
DEBUG    Loading Cluster Name...
DEBUG      Loading Base Domain...
DEBUG      Loading Platform...
DEBUG    Loading Networking...
DEBUG      Loading Platform...
DEBUG    Loading Pull Secret...
DEBUG    Loading Platform...
DEBUG Using Install Config loaded from state file
INFO Waiting up to 30m0s (until 11:06PM CDT) for bootstrapping to complete...
```

```
p list: Get "https://api.gw.lo:6443/api?timeout=32s": dial tcp 192.168.1.203:6443:
connect: connection refused
E0623 22:36:05.047604   20788 memcache.go:265] couldn't get current server API grou
p list: Get "https://api.gw.lo:6443/api?timeout=32s": dial tcp 192.168.1.203:6443:
connect: connection refused
The connection to the server api.gw.lo:6443 was refused – did you specify the right
 host or port?
E0623 22:36:25.148072   20914 memcache.go:265] couldn't get current server API grou
p list: Get "https://api.gw.lo:6443/api?timeout=32s": dial tcp 192.168.1.203:6443:
connect: connection refused
E0623 22:36:25.149931   20914 memcache.go:265] couldn't get current server API grou
p list: Get "https://api.gw.lo:6443/api?timeout=32s": dial tcp 192.168.1.203:6443:
connect: connection refused
E0623 22:36:25.151564   20914 memcache.go:265] couldn't get current server API grou
p list: Get "https://api.gw.lo:6443/api?timeout=32s": dial tcp 192.168.1.203:6443:
connect: connection refused
E0623 22:36:25.153476   20914 memcache.go:265] couldn't get current server API grou
p list: Get "https://api.gw.lo:6443/api?timeout=32s": dial tcp 192.168.1.203:6443:
connect: connection refused
E0623 22:36:25.155170   20914 memcache.go:265] couldn't get current server API grou
p list: Get "https://api.gw.lo:6443/api?timeout=32s": dial tcp 192.168.1.203:6443:
connect: connection refused
The connection to the server api.gw.lo:6443 was refused – did you specify the right
 host or port?
certificatesigningrequest.certificates.k8s.io/csr-gqmgm approved
certificatesigningrequest.certificates.k8s.io/csr-j7hwx approved
certificatesigningrequest.certificates.k8s.io/csr-lpg4f approved
certificatesigningrequest.certificates.k8s.io/csr-s6mdv approved
certificatesigningrequest.certificates.k8s.io/csr-vz5wk approved
The connection to the server api.gw.lo:6443 was refused – did you specify the right
 host or port?
```

```
Every 5.0s: oc get clusteroperators                                                          MacBook-Pro.local: Sun Jun 23 22:45:48 2024

NAME                             VERSION   AVAILABLE   PROGRESSING   DEGRADED   SINCE   MESSAGE
authentication                   4.14.24   False       False         False      2m2s    APIServicesAvailable: apiservices.apiregistration.k8s.io/v1.oauth.openshift.io: not availa
ble: failing or missing response from https://10.130.0.42:8443/apis/oauth.openshift.io/v1: Get "https://10.130.0.42:8443/apis/oauth.openshift.io/v1": net/http: request canceled while waiti
ng for connection (Client.Timeout exceeded while awaiting headers)...
baremetal                        4.14.24   True        False         False      56s
cloud-controller-manager         4.14.24   True        False         False      6m24s
cloud-credential                           True        False         False      7m5s
cluster-autoscaler               4.14.24   True        False         False      60s
config-operator                  4.14.24   True        False         False      2m4s
console
control-plane-machine-set        4.14.24   True        False         False      68s
csi-snapshot-controller          4.14.24   True        False         False      103s
dns                              4.14.24   True        False         False      80s
etcd                             4.14.24   True        True          False      14s     NodeInstallerProgressing: 2 nodes are at revision 0; 1 nodes are at revision 2; 0 nodes ha
ve achieved new revision 3
image-registry
ingress                                    False       True          True       100s    The "default" ingress controller reports Available=False: IngressControllerUnavailable: On
e or more status conditions indicate unavailable: DeploymentAvailable=False (DeploymentUnavailable: The deployment has Available status condition set to False (reason: MinimumReplicasUnava
ilable) with message: Deployment does not have minimum availability.)
insights
kube-apiserver                             False       True          False      38s     StaticPodsAvailable: 0 nodes are active; 3 nodes are at revision 0; 0 nodes have achieved
new revision 2
kube-controller-manager                    False       True          True       110s    StaticPodsAvailable: 0 nodes are active; 3 nodes are at revision 0; 0 nodes have achieved
new revision 3
kube-scheduler                             False       True          True       2m6s    StaticPodsAvailable: 0 nodes are active; 3 nodes are at revision 0; 0 nodes have achieved
new revision 5
kube-storage-version-migrator    4.14.24   True        False         False      111s
machine-api                      4.14.24   True        False         False      57s
machine-approver                 4.14.24   True        False         False      99s
machine-config                   4.14.24   True        False         False      59s
marketplace                      4.14.24   True        False         False      63s
monitoring                                 Unknown     True          Unknown    60s     Rolling out the stack.
network                          4.14.24   True        True          False      2m15s   DaemonSet "/openshift-network-diagnostics/network-check-target" is waiting for other opera
tors to become ready...
node-tuning                      4.14.24   True        False         False      90s
```

CPU USAGE WITH BOOTSTRAP AND 3 MASTERS

```
DEBUG Loading Agent Config...
DEBUG Still waiting for the Kubernetes API: Get "https://api.gw.lo:6443/version": dial tcp: lookup api.gw.lo: no such host
DEBUG Still waiting for the Kubernetes API: Get "https://api.gw.lo:6443/version": dial tcp: lookup api.gw.lo: no such host
DEBUG Still waiting for the Kubernetes API: Get "https://api.gw.lo:6443/version": dial tcp 192.168.1.201:6443: connect: connection refused
DEBUG Still waiting for the Kubernetes API: Get "https://api.gw.lo:6443/version": dial tcp 192.168.1.203:6443: connect: connection refused
DEBUG Still waiting for the Kubernetes API: Get "https://api.gw.lo:6443/version": dial tcp 192.168.1.203:6443: connect: connection refused
DEBUG Still waiting for the Kubernetes API: Get "https://api.gw.lo:6443/version": dial tcp 192.168.1.203:6443: connect: connection refused
INFO API v1.27.13+fd36fb9 up
DEBUG Loading Install Config...
DEBUG     Loading SSH Key...
DEBUG     Loading Base Domain...
DEBUG       Loading Platform...
DEBUG     Loading Cluster Name...
DEBUG       Loading Base Domain...
DEBUG       Loading Platform...
DEBUG     Loading Networking...
DEBUG       Loading Platform...
DEBUG     Loading Pull Secret...
DEBUG     Loading Platform...
DEBUG Using Install Config loaded from state file
INFO Waiting up to 30m0s (until 11:06PM CDT) for bootstrapping to complete...
DEBUG Bootstrap status: complete
INFO It is now safe to remove the bootstrap resources
DEBUG Time elapsed per stage:
DEBUG Bootstrap Complete: 15m29s
DEBUG              API: 2m49s
INFO Time elapsed: 15m29s
Powering off bootstrap.gw.lo
DEBUG OpenShift Installer 4.14.24
DEBUG Built from commit b6dcee134a2aa62ea0b00e559dc18376cf31b960
DEBUG Loading Install Config...
DEBUG     Loading SSH Key...
DEBUG     Loading Base Domain...
DEBUG       Loading Platform...
DEBUG     Loading Cluster Name...
DEBUG       Loading Base Domain...
DEBUG       Loading Platform...
```

```
Trace[1527962641]: [16.027658753s] [16.027658753s] END
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 80 of 860 done (9% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 86 of 860 done (10% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 122 of 860 done (14% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 163 of 860 done (18% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 200 of 860 done (23% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 201 of 860 done (23% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 238 of 860 done (27% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 239 of 860 done (27% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 240 of 860 done (27% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 241 of 860 done (28% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 243 of 860 done (28% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 244 of 860 done (28% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 245 of 860 done (28% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 254 of 860 done (29% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 267 of 860 done (31% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 281 of 860 done (32% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 282 of 860 done (32% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 286 of 860 done (33% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 289 of 860 done (33% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 316 of 860 done (36% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 318 of 860 done (36% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 319 of 860 done (37% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 320 of 860 done (37% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 321 of 860 done (37% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 325 of 860 done (37% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 332 of 860 done (38% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 337 of 860 done (39% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 352 of 860 done (40% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 378 of 860 done (43% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 380 of 860 done (44% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 381 of 860 done (44% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 382 of 860 done (44% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 384 of 860 done (44% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 395 of 860 done (45% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 404 of 860 done (46% complete)
```

```
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 410 of 860 done (47% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 420 of 860 done (48% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 428 of 860 done (49% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 436 of 860 done (50% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 446 of 860 done (51% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 455 of 860 done (52% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 462 of 860 done (53% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 470 of 860 done (54% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 476 of 860 done (55% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 484 of 860 done (56% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 490 of 860 done (56% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 500 of 860 done (58% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 507 of 860 done (58% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 515 of 860 done (59% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 523 of 860 done (60% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 531 of 860 done (61% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 539 of 860 done (62% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 546 of 860 done (63% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 553 of 860 done (64% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 560 of 860 done (65% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 568 of 860 done (66% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 576 of 860 done (66% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 584 of 860 done (67% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 590 of 860 done (68% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 596 of 860 done (69% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 605 of 860 done (70% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 613 of 860 done (71% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 621 of 860 done (72% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 629 of 860 done (73% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 635 of 860 done (73% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 644 of 860 done (74% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 652 of 860 done (75% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 658 of 860 done (76% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 667 of 860 done (77% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 674 of 860 done (78% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 682 of 860 done (79% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 691 of 860 done (80% complete)
```

```
Every 5.0s: oc get clusteroperators                                                        MacBook-Pro.local: Sun Jun 23 22:54:42 2024

NAME                             VERSION   AVAILABLE  PROGRESSING  DEGRADED  SINCE  MESSAGE
authentication                   4.14.24   False      False        True      10m    OAuthServerRouteEndpointAccessibleControllerAvailable: failed to retrieve route from cache
: route.route.openshift.io "oauth-openshift" not found...
baremetal                        4.14.24   True       False        False     9m49s
cloud-controller-manager         4.14.24   True       False        False     15m
cloud-credential                 4.14.24   True       False        False     15m
cluster-autoscaler               4.14.24   True       False        False     9m53s
config-operator                  4.14.24   True       False        False     10m
console                          4.14.24   False      False        True      3m56s  RouteHealthAvailable: console route is not admitted
control-plane-machine-set        4.14.24   True       False        False     10m
csi-snapshot-controller          4.14.24   True       False        False     10m
dns                              4.14.24   True       True         False     10m    DNS "default" reports Progressing=True: "Have 5 available node-resolver pods, want 6."
etcd                             4.14.24   True       True         False     9m7s   NodeInstallerProgressing: 1 nodes are at revision 4; 2 nodes are at revision 6
image-registry                   4.14.24   True       True         False     20s    Progressing: All registry resources are removed...
ingress                                    False      True         True      10m    The "default" ingress controller reports Available=False: IngressControllerUnavailable: On
e or more status conditions indicate unavailable: DeploymentAvailable=False (DeploymentUnavailable: The deployment has Available status condition set to False (reason: MinimumReplicasUnava
ilable) with message: Deployment does not have minimum availability.)
insights                         4.14.24   True       False        False     4m19s
kube-apiserver                   4.14.24   True       True         False     5m54s  NodeInstallerProgressing: 1 nodes are at revision 5; 2 nodes are at revision 7
kube-controller-manager          4.14.24   True       False        False     7m52s
kube-scheduler                   4.14.24   True       True         False     7m37s  NodeInstallerProgressing: 1 nodes are at revision 5; 2 nodes are at revision 6
kube-storage-version-migrator    4.14.24   True       False        False     10m
machine-api                      4.14.24   True       False        False     9m50s
machine-approver                 4.14.24   True       False        False     10m
machine-config                   4.14.24   True       False        False     9m52s
marketplace                      4.14.24   True       False        False     9m56s
monitoring                                 Unknown    True         Unknown   9m53s  Rolling out the stack.
network                          4.14.24   True       True         False     11m    DaemonSet "/openshift-network-diagnostics/network-check-target" is not available (awaiting
 3 nodes)...
node-tuning                      4.14.24   True       True         False     10m    Waiting for 3/6 Profiles to be applied
openshift-apiserver              4.14.24   True       False        False     4m40s
openshift-controller-manager     4.14.24   True       False        False     6m26s
openshift-samples                4.14.24   True       False        False     3m33s
operator-lifecycle-manager       4.14.24   True       False        False     10m
operator-lifecycle-manager-catalog 4.14.24 True       False        False     10m
```
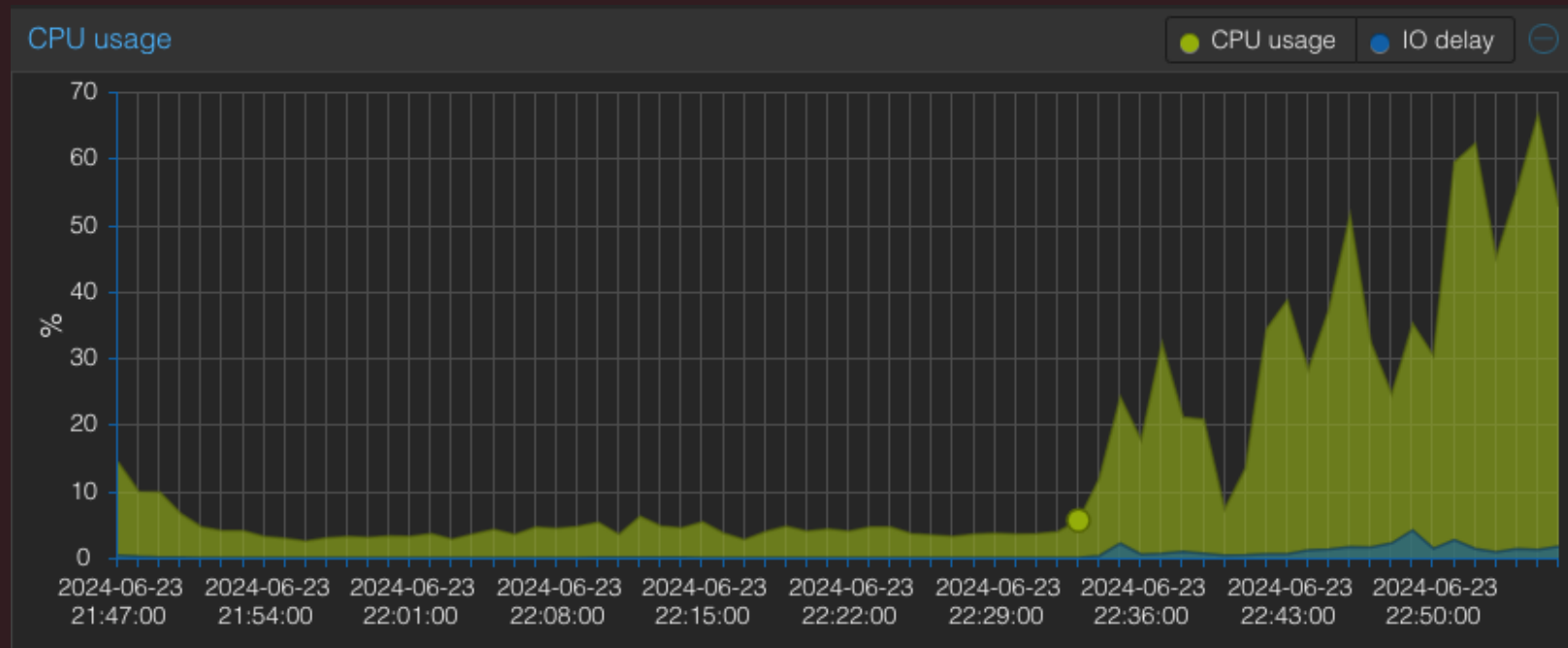
USAGE WITH 3 CONTROL AND 3 WORKERS

```
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 699 of 860 done (81% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 706 of 860 done (82% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 714 of 860 done (83% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 720 of 860 done (83% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 728 of 860 done (84% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 736 of 860 done (85% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 744 of 860 done (86% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 752 of 860 done (87% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 761 of 860 done (88% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 768 of 860 done (89% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 775 of 860 done (90% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 784 of 860 done (91% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 790 of 860 done (91% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 796 of 860 done (92% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 801 of 860 done (93% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 806 of 860 done (93% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 811 of 860 done (94% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 815 of 860 done (94% complete)
DEBUG Still waiting for the cluster to initialize: Cluster operators authentication, console, image-registry, ingress, monitoring, openshift-samples are not available
DEBUG Still waiting for the cluster to initialize: Cluster operators authentication, console, ingress, monitoring, openshift-samples are not available
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 824 of 860 done (95% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 826 of 860 done (96% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 827 of 860 done (96% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 828 of 860 done (96% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 829 of 860 done (96% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 830 of 860 done (96% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 831 of 860 done (96% complete)
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 833 of 860 done (96% complete)
DEBUG Still waiting for the cluster to initialize: Cluster operators authentication, console, ingress, monitoring are not available
DEBUG Still waiting for the cluster to initialize: Cluster operators authentication, console, ingress, monitoring are not available
DEBUG Still waiting for the cluster to initialize: Cluster operators authentication, console, ingress, monitoring are not available
DEBUG Still waiting for the cluster to initialize: Cluster operators authentication, console, ingress, monitoring are not available
DEBUG Still waiting for the cluster to initialize: Cluster operators authentication, console, monitoring are not available
DEBUG Still waiting for the cluster to initialize: Working towards 4.14.24: 840 of 860 done (97% complete)
DEBUG Still waiting for the cluster to initialize: Cluster operators authentication, monitoring are not available
```

```
Every 5.0s: oc get clusteroperators                                                                        MacBook-Pro.local: Sun Jun 23 23:03:29 2024

NAME                                        VERSION    AVAILABLE  PROGRESSING  DEGRADED  SINCE   MESSAGE
authentication                              4.14.24    False      True         True      19m     WellKnownAvailable: The well-known endpoint is not yet available: kube-apiserver oauth end
point https://192.168.1.203:6443/.well-known/oauth-authorization-server is not yet served and authentication operator keeps waiting (check kube-apiserver operator, and check that instances
 roll out successfully, which can take several minutes per instance)
baremetal                                   4.14.24    True       False        False     18m
cloud-controller-manager                    4.14.24    True       False        False     24m
cloud-credential                            4.14.24    True       False        False     24m
cluster-autoscaler                          4.14.24    True       False        False     18m
config-operator                             4.14.24    True       False        False     19m
console                                     4.14.24    True       False        False     4m13s
control-plane-machine-set                   4.14.24    True       False        False     18m
csi-snapshot-controller                     4.14.24    True       False        False     19m
dns                                         4.14.24    True       False        False     18m
etcd                                        4.14.24    True       False        False     17m
image-registry                              4.14.24    True       False        False     9m6s
ingress                                     4.14.24    True       False        False     6m44s
insights                                    4.14.24    True       False        False     13m
kube-apiserver                              4.14.24    True       True         False     14m     NodeInstallerProgressing: 1 nodes are at revision 7; 2 nodes are at revision 8
kube-controller-manager                     4.14.24    True       False        False     16m
kube-scheduler                              4.14.24    True       False        False     16m
kube-storage-version-migrator               4.14.24    True       False        False     19m
machine-api                                 4.14.24    True       False        False     18m
machine-approver                            4.14.24    True       False        False     19m
machine-config                              4.14.24    True       False        False     18m
marketplace                                 4.14.24    True       False        False     18m
monitoring                                  4.14.24    True       False        False     47s
network                                     4.14.24    True       False        False     19m
node-tuning                                 4.14.24    True       False        False     19m
openshift-apiserver                         4.14.24    True       False        False     13m
openshift-controller-manager                4.14.24    True       False        False     15m
openshift-samples                           4.14.24    True       False        False     12m
operator-lifecycle-manager                  4.14.24    True       False        False     18m
operator-lifecycle-manager-catalog          4.14.24    True       False        False     18m
operator-lifecycle-manager-packageserver    4.14.24    True       False        False     13m
service-ca                                  4.14.24    True       False        False     19m
```

```
DEBUG Still waiting for the cluster to initialize: Cluster operator authentication is not available
DEBUG Cluster is initialized
INFO Checking to see if there is a route at openshift-console/console...
DEBUG Route found in openshift-console namespace: console
DEBUG OpenShift console route is admitted
INFO Install complete!
INFO To access the cluster as the system:admin user when using 'oc', run 'export KUBECONFIG=/Users/gwest/qpve/gw/auth/kubeconfig'
INFO Access the OpenShift web-console here: https://console-openshift-console.apps.gw.lo
INFO Login to the console with user: "kubeadmin", and password: "ykRLm-uEEEp-gFrc3-rNX4D"
DEBUG Time elapsed per stage:
DEBUG Cluster Operators: 15m47s
INFO Time elapsed: 15m47s
gwest@MacBook-Pro qpve % []
```

| Start Time | End Time | Node | User name | Description |

```
[gwest@MacBook-Pro qpve % oc get nodes
NAME            STATUS   ROLES                  AGE    VERSION
control0.gw.lo  Ready    control-plane,master   27m    v1.27.13+fd36fb9
control1.gw.lo  Ready    control-plane,master   27m    v1.27.13+fd36fb9
control2.gw.lo  Ready    control-plane,master   27m    v1.27.13+fd36fb9
worker0.gw.lo   Ready    worker                 13m    v1.27.13+fd36fb9
worker1.gw.lo   Ready    worker                 12m    v1.27.13+fd36fb9
worker2.gw.lo   Ready    worker                 13m    v1.27.13+fd36fb9
gwest@MacBook-Pro qpve % 
```

```
NAME                                          VERSION   AVAILABLE   PROGRESSING   DEGRADED   SINCE   MESSAGE
authentication                                4.14.24   True        False         False      2m58s
baremetal                                     4.14.24   True        False         False      22m
cloud-controller-manager                      4.14.24   True        False         False      28m
cloud-credential                              4.14.24   True        False         False      29m
cluster-autoscaler                            4.14.24   True        False         False      23m
config-operator                               4.14.24   True        False         False      24m
console                                       4.14.24   True        False         False      8m36s
control-plane-machine-set                     4.14.24   True        False         False      23m
csi-snapshot-controller                       4.14.24   True        False         False      23m
dns                                           4.14.24   True        False         False      23m
etcd                                          4.14.24   True        False         False      22m
image-registry                                4.14.24   True        False         False      13m
ingress                                       4.14.24   True        False         False      11m
insights                                      4.14.24   True        False         False      17m
kube-apiserver                                4.14.24   True        False         False      19m
kube-controller-manager                       4.14.24   True        False         False      21m
kube-scheduler                                4.14.24   True        False         False      20m
kube-storage-version-migrator                 4.14.24   True        False         False      23m
machine-api                                   4.14.24   True        False         False      22m
machine-approver                              4.14.24   True        False         False      23m
machine-config                                4.14.24   True        False         False      23m
marketplace                                   4.14.24   True        False         False      23m
monitoring                                    4.14.24   True        False         False      5m10s
network                                       4.14.24   True        False         False      24m
node-tuning                                   4.14.24   True        False         False      23m
openshift-apiserver                           4.14.24   True        False         False      17m
openshift-controller-manager                  4.14.24   True        False         False      19m
openshift-samples                             4.14.24   True        False         False      16m
operator-lifecycle-manager                    4.14.24   True        False         False      23m
operator-lifecycle-manager-catalog            4.14.24   True        False         False      23m
operator-lifecycle-manager-packageserver      4.14.24   True        False         False      17m
service-ca                                    4.14.24   True        False         False      24m
storage                                       4.14.24   True        False         False      23m
```

INSTALL COMPLETE CPU USAGE
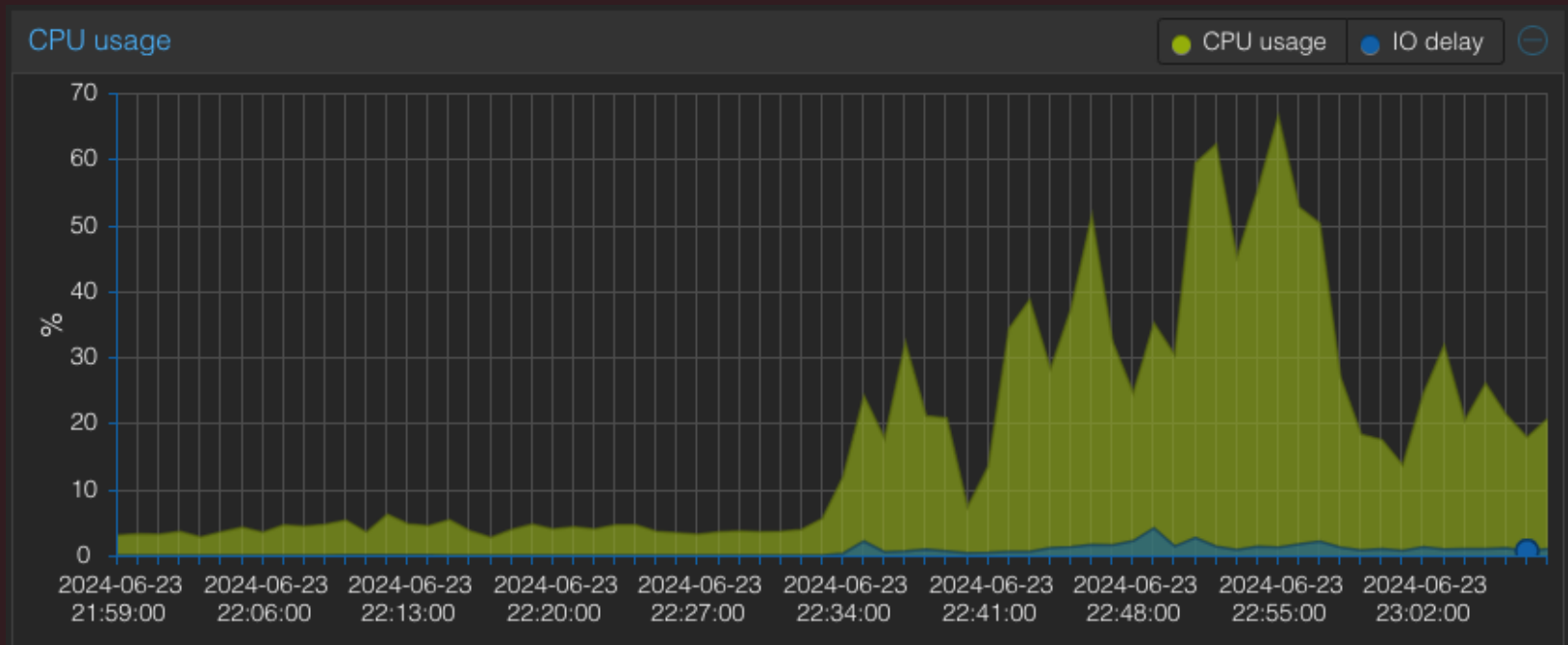
SUMMARY

- Repeatable Multi-Node and Single Node Installs

- Stable environment for development

- Fully mixed environment – Fedora RHEL OSX

- Backup with snapshot really helps