

Experiment 3

Amazon Linux on AWS EC2 instances was used for this experiment.

Installing Docker on all instances on EC2.

```
[ec2-user@ip-172-31-37-244 ~]$ sudo su
[root@ip-172-31-37-244 ec2-user]# yum install docker -y
Last metadata expiration check: 0:07:41 ago on Tue Sep 24 13:59:52 2024.
Dependencies resolved.
=====
Package                                         Architecture
=====
Installing:
docker                                         x86_64
Installing dependencies:
containerd                                     x86_64
iptables-libs                                 x86_64
iptables-nft                                  x86_64
libcgroup                                     x86_64
libnetfilter_conntrack                        x86_64
libnftnl                                      x86_64
libnftnl                                       x86_64
libnftnl                                       x86_64
piqz                                          x86_64
runc                                           x86_64
Transaction Summary
=====
Install 10 Packages

Total download size: 84 M
Installed size: 317 M
Downloading Packages:
(1/10): iptables-libs-1.8.8-3.amzn2023.0.2.x86_64.rpm
```

Docker and other dependencies installed.

```
Installed:
containerd-1.7.20-1.amzn2023.0.1.x86_64      docker-25.0.6-1.amzn2023.0.2.x86_64      iptables-libs-1.8.8-3.amzn2023.0.2.x86_64
iptables-nft-1.8.8-3.amzn2023.0.2.x86_64      libcgroup-3.0-1.amzn2023.0.1.x86_64      libnetfilter_conntrack-1.0.8-2.amzn2023.0.2.x86_64
libnftnl-1.0.1-19.amzn2023.0.2.x86_64         libnftnl-1.2.2-2.amzn2023.0.2.x86_64      piqz-2.5-1.amzn2023.0.3.x86_64
runc-1.1.13-1.amzn2023.0.1.x86_64

Complete!
[root@ip-172-31-37-244 ec2-user]#
```

Docker started.

```
Complete!
[root@ip-172-31-37-244 ec2-user]# systemctl start docker
[root@ip-172-31-37-244 ec2-user]# systemctl status docker
• docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; disabled; vendor preset: enabled)
   Active: active (running) since Tue 2024-09-24 14:10:57 UTC; 1min 10s ago
   TriggeredBy: • docker.socket
   Docs: https://docs.docker.com
   Process: 27107 ExecStartPre=/bin/mkdir -p /run/docker (code=exited, status=0/SUCCESS)
   Process: 27108 ExecStartPre=/usr/libexec/docker/docker-setup-storage-opts (code=exited, status=0/SUCCESS)
   Main PID: 27109 (dockerd)
   Tasks: 7
   Memory: 29.7M
   CPU: 206ms
   CGroup: /system.slice/docker.service
           └─27109 /usr/bin/dockerd -H fd:// --containerd=/run/containerd.sock

Sep 24 14:10:57 ip-172-31-37-244.ec2.internal systemd[1]: Started Docker Application Container Engine.
Sep 24 14:10:57 ip-172-31-37-244.ec2.internal dockerd[27109]: time="2024-09-24T14:10:57.123456789Z" level=info msg="Starting dockerd"
Sep 24 14:10:57 ip-172-31-37-244.ec2.internal dockerd[27109]: time="2024-09-24T14:10:57.123456789Z" level=info msg="Listening for connections on fd://..."
Sep 24 14:10:57 ip-172-31-37-244.ec2.internal dockerd[27109]: time="2024-09-24T14:10:57.123456789Z" level=info msg="API endpoint: fd://..."
Sep 24 14:10:57 ip-172-31-37-244.ec2.internal dockerd[27109]: time="2024-09-24T14:10:57.123456789Z" level=info msg="Initializing daemon..."
Sep 24 14:10:57 ip-172-31-37-244.ec2.internal dockerd[27109]: time="2024-09-24T14:10:57.123456789Z" level=info msg="Daemon is ready"
Sep 24 14:10:57 ip-172-31-37-244.ec2.internal systemd[1]: Started Docker Application Container Engine.
lines 1-22/22 (END)
^C
[root@ip-172-31-37-244 ec2-user]#
```

Setting SE Linux to permissive mode and effectively disabling it for smooth operation of Kubernetes.

```
[root@ip-172-31-37-244 ec2-user]# sudo setenforce 0
sudo sed -i 's/^SELINUX=enforcing$/SELINUX=permissive/' /etc/selinux/config
[root@ip-172-31-37-244 ec2-user]#
```

Adding Kubernetes repository.

```
[root@ip-172-31-37-244 ec2-user]# cat <<EOF | sudo tee /etc/yum.repos.d/kubernetes.repo
[kubernetes]
name=Kubernetes
baseurl=https://pkgs.k8s.io/core:/stable:/v1.31/rpm/
enabled=1
gpgcheck=1
gpgkey=https://pkgs.k8s.io/core:/stable:/v1.31/rpm/repodata/repomd.xml.key
exclude=kubelet kubeadm kubectl cri-tools kubernetes-cni
EOF
[kubernetes]
name=Kubernetes
baseurl=https://pkgs.k8s.io/core:/stable:/v1.31/rpm/
enabled=1
gpgcheck=1
gpgkey=https://pkgs.k8s.io/core:/stable:/v1.31/rpm/repodata/repomd.xml.key
exclude=kubelet kubeadm kubectl cri-tools kubernetes-cni
[root@ip-172-31-37-244 ec2-user]#
```

Confirming added repository.

```
[root@ip-172-31-37-244 ec2-user]# yum repolist
repo id                                repo name
amazonlinux                            Amazon Linux 2023 repository
kernel-livepatch                       Amazon Linux 2023 Kernel Livepatch repository
kubernetes                              Kubernetes
[root@ip-172-31-37-244 ec2-user]#
```

Kubernetes installed.

```
Installed:
  conntrack-tools-1.4.6-2.amzn2023.0.2.x86_64      cri-tools-1.31.1-150500.1.1.x86_64      kubeadm-1.31.1-150500.1.1.x86_64
  kubelet-1.31.1-150500.1.1.x86_64                kubelet-1.31.1-150500.1.1.x86_64        kubernetes-cni-1.5.1-150500.1.1.x86_64
  libnetfilter_cthelper-1.0.0-21.amzn2023.0.2.x86_64  libnetfilter_cttimeout-1.0.0-19.amzn2023.0.2.x86_64  libnetfilter_queue-1.0.5-2.amzn2023.0.2.x86_64

Complete!
[root@ip-172-31-37-244 ec2-user]#
```

Trying to start Kubernetes.

```
[root@ip-172-31-37-244 ec2-user]# sudo systemctl enable --now kubelet
Created symlink /etc/systemd/system/multi-user.target.wants/kubelet.service → /usr/lib/systemd/system/kubelet.service.
[root@ip-172-31-37-244 ec2-user]# kubeadm init
[init] Using Kubernetes version: v1.31.0
[preflight] Running pre-flight checks
[WARNING FileExisting-socat]: socat not found in system path
[WARNING FileExisting-tc]: tc not found in system path
error execution phase preflight: [preflight] Some fatal errors occurred:
[ERROR NumCPU]: the number of available CPUs 1 is less than the required 2
[ERROR Mem]: the system RAM (949 MB) is less than the minimum 1700 MB
[preflight] If you know what you are doing, you can make a check non-fatal with '--ignore-preflight-errors=...'
To see the stack trace of this error execute with --v=5 or higher
[root@ip-172-31-37-244 ec2-user]#
```