PXE Boot Installation Guide for OpenShift 4.17 (CoreOS)

Step 1: Prepare PXE Server

1. **Install required services** (on a Linux bastion/PXE server):

```
sudo dnf install -y dhcp-server tftp-server syslinux httpd
sudo systemctl enable --now dhcpd tftp httpd
```

2. **Configure DHCP** `/etc/dhcp/dhcpd.conf`:

```
subnet 192.168.1.0 netmask 255.255.255.0 {
  range 192.168.1.100 192.168.1.200;
  option routers 192.168.1.1;
  option domain-name-servers 8.8.8.8;
  next-server 192.168.1.10;
  filename "pxelinux.0";
}
```

3. **Configure TFTP Boot Directory** `/var/lib/tftpboot/`:

```
sudo cp /usr/share/syslinux/pxelinux.0 /var/lib/tftpboot/
sudo mkdir -p /var/lib/tftpboot/pxelinux.cfg
```

Step 2: Prepare RHCOS Images

1. Download the OpenShift 4.17 CoreOS images:

```
wget https://mirror.openshift.com/pub/openshift-v4/dependencies/rhcos/4.17/
latest/rhcos-4.17.0-x86_64-live.x86_64.iso
wget https://mirror.openshift.com/pub/openshift-v4/dependencies/rhcos/4.17/
latest/rhcos-4.17.0-x86_64-metal.x86_64.raw.gz
```

2. Extract kernel and initramfs:

```
mkdir -p /var/lib/tftpboot/rhcos
bsdtar -C /var/lib/tftpboot/rhcos -xf rhcos-4.17.0-x86_64-live.x86_64.iso
```

3. Create PXE boot config `/var/lib/tftpboot/pxelinux.cfg/default`:

```
DEFAULT rhcos
LABEL rhcos
  KERNEL rhcos/images/pxeboot/vmlinuz
  APPEND initrd=rhcos/images/pxeboot/initrd.img coreos.inst.install_dev=sda
coreos.inst.image_url=http://192.168.1.10/rhcos/rhcos-4.17.0-x86_64-
metal.x86_64.raw.gz ip=dhcp
```

Step 3: Boot Nodes via PXE

1. Set nodes (masters and workers) to boot from network.
2. Nodes will automatically fetch the kernel/initrd and start CoreOS installation.
3. Confirm the installation via console or serial.

Step 4: Prepare OpenShift Installation

1. Create `install-config.yaml`:

```
apiVersion: v1
baseDomain: example.com
metadata:
  name: openshift
platform:
  none: {}
compute:
- name: worker
  replicas: 2
controlPlane:
  name: master
  replicas: 3
networking:
  networkType: OVNKubernetes
pullSecret: '{"auths": ...}'
sshKey: 'ssh-rsa AAAAB3...'
```

2. Create ignition files:

```
openshift-install create ignition-configs --dir=install_dir
```

Step 5: Use `oc` to Verify and Join Nodes

1. Export `KUBECONFIG`:

```
export KUBECONFIG=install_dir/auth/kubeconfig
```

2. Verify nodes:

```
oc get nodes
```

3. Approve CSR for new nodes if required:

```
oc get csr
oc adm certificate approve <csr_name>
```

Step 6: Post-install Configuration

1. Label nodes as needed:

```
oc label node <node_name> node-role.kubernetes.io/worker=worker
```

2. Check cluster operators:

```
oc get co
```

3. Ensure all nodes are ready:

```
oc get nodes -o wide
```