📘 Kubeadm Kubernetes Cheatsheet for Linux

A useful script and command reference for managing Kubernetes clusters with **kubeadm** on Linux.

🚀 Installation Scripts

Set up Kubernetes APT Repo (v1.32)

```
sudo mkdir -p -m 755 /etc/apt/keyrings
curl -fsSL https://pkgs.k8s.io/core:/stable:/v1.32/deb/Relea
se.key | gpg --dearmor --no-tty | \
  sudo tee /etc/apt/keyrings/kubernetes-apt-keyring.gpg > /d
ev/null

echo 'deb [signed-by=/etc/apt/keyrings/kubernetes-apt-keyrin
g.gpg] https://pkgs.k8s.io/core:/stable:/v1.32/deb/ /' | \
  sudo tee /etc/apt/sources.list.d/kubernetes.list
```

Install Specific Kubernetes Version (v1.32.6)

```
sudo apt-get update
sudo apt-get install -y kubelet=1.32.6-1.1 kubeadm=1.32.6-1.
1 kubectl=1.32.6-1.1 --allow-downgrades
sudo apt-mark hold kubelet kubeadm kubectl
```

Enable containerd with `SystemdCgroup = true`

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```
sudo mkdir -p /etc/containerd
containerd config default | sudo tee /etc/containerd/config.
toml > /dev/null
sudo sed -i 's/SystemdCgroup = false/SystemdCgroup = true/'
 /etc/containerd/config.toml
sudo systemctl restart containerd
```

⚙️ Core Cluster Commands

Initialize Cluster (Master)

```
sudo kubeadm init --pod-network-cidr=192.168.0.0/16 --kubern
etes-version=1.32.6
```

Setup kubeconfig (for current user)

```
mkdir -p $HOME/.kube
sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config
sudo chown $(id -u):$(id -g) $HOME/.kube/config
```

Join Worker Node

```
# Run the command shown by kubeadm init output
sudo kubeadm join <MASTER_IP>:6443 --token <TOKEN> --discove
ry-token-ca-cert-hash sha256:<HASH>
```

Reset Cluster

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```
sudo kubeadm reset -f
sudo rm -rf $HOME/.kube
sudo systemctl restart containerd
```

Upgrade Cluster to v1.33.2

Step 1 – Unhold kube components

```
sudo apt-mark unhold kubelet kubeadm kubectl
```

Step 2 – Update APT Repo to v1.33

```
sudo sed -i 's/v1.32/v1.33/g' /etc/apt/sources.list.d/kubern
etes.list
curl -fsSL https://pkgs.k8s.io/core:/stable:/v1.33/deb/Relea
se.key | gpg --dearmor --no-tty | \
  sudo tee /etc/apt/keyrings/kubernetes-apt-keyring.gpg > /d
ev/null
sudo apt-get update
```

Step 3 – Upgrade kubeadm

```
sudo apt-get install -y kubeadm=1.33.2-1.1
```

Step 4 – Plan & Apply Upgrade

```
sudo kubeadm upgrade plan
sudo kubeadm upgrade apply v1.33.2
```

Step 5 – Upgrade kubelet and kubectl

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```
sudo apt-get install -y kubelet=1.33.2-1.1 kubectl=1.33.2-1.
1
sudo systemctl restart kubelet
sudo apt-mark hold kubelet kubeadm kubectl
```

🧪 Debugging Tips

- Check component status:

  ```
  kubectl get pods -n kube-system
  ```

- Check logs:

  ```
  journalctl -u kubelet -f
  ```

- Check kubeadm logs:

  ```
  sudo kubeadm reset -f && sudo kubeadm init
  ```

Backup and Recovery etcd

Backup etcd Data

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```
sudo ETCDCTL_API=3 etcdctl snapshot save /var/lib/etcd/snaps
hot.db \
  --endpoints=https://<MASTER_IP>:2379 \
  --cacert=/etc/kubernetes/pki/etcd/ca.crt \
  --cert=/etc/kubernetes/pki/etcd/server.crt \
  --key=/etc/kubernetes/pki/etcd/server.key
```

Restore etcd Data

```
sudo ETCDCTL_API=3  etcdctl snapshot restore /var/lib/etcd/s
napshot.db \
  --endpoints=https://127.0.0.1:2379 \
  --data-dir=/var/lib/etcd-backup \
  --cacert=/etc/kubernetes/pki/etcd/ca.crt \
  --cert=/etc/kubernetes/pki/etcd/server.crt \
  --key=/etc/kubernetes/pki/etcd/server.key
```

✅ Use this cheatsheet as your go-to reference for cluster setup, recovery, and upgrades!

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