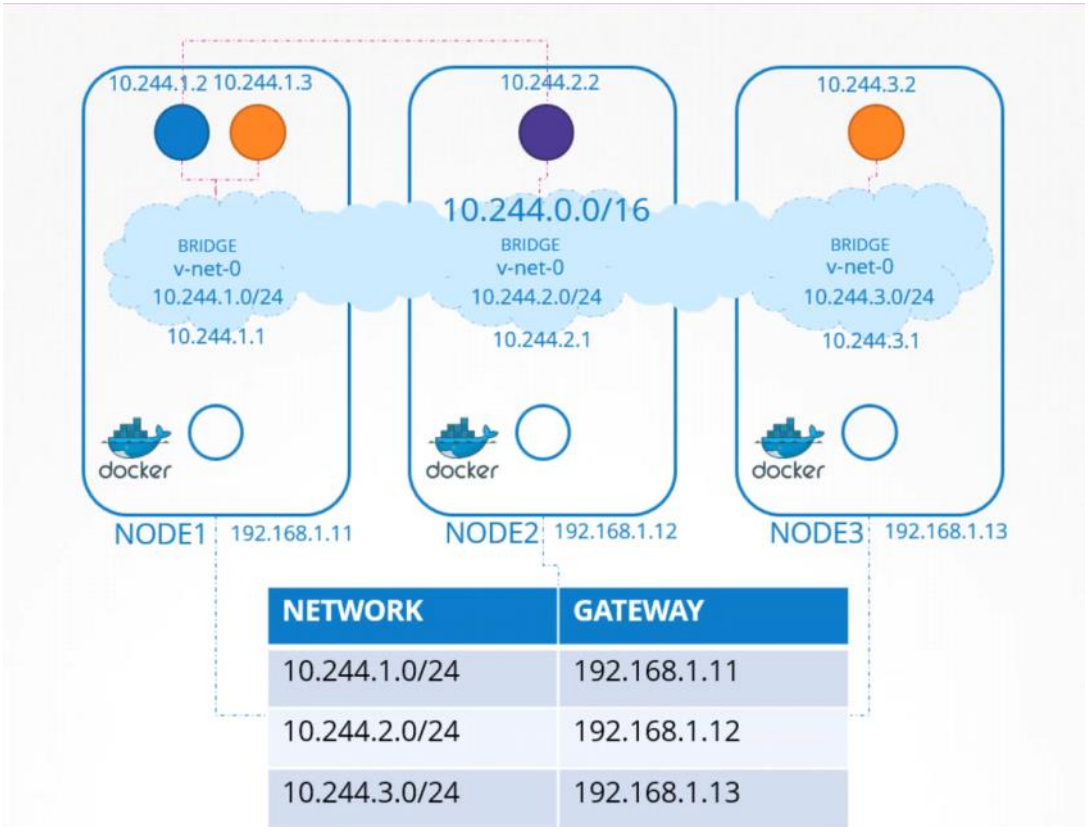
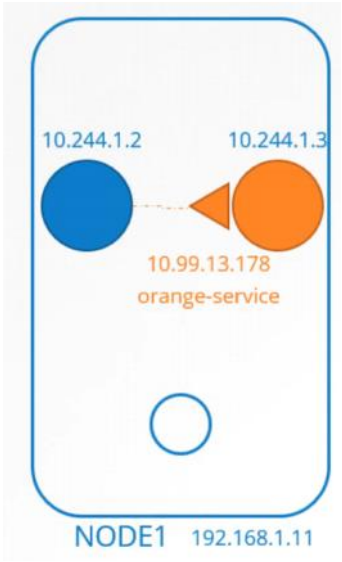
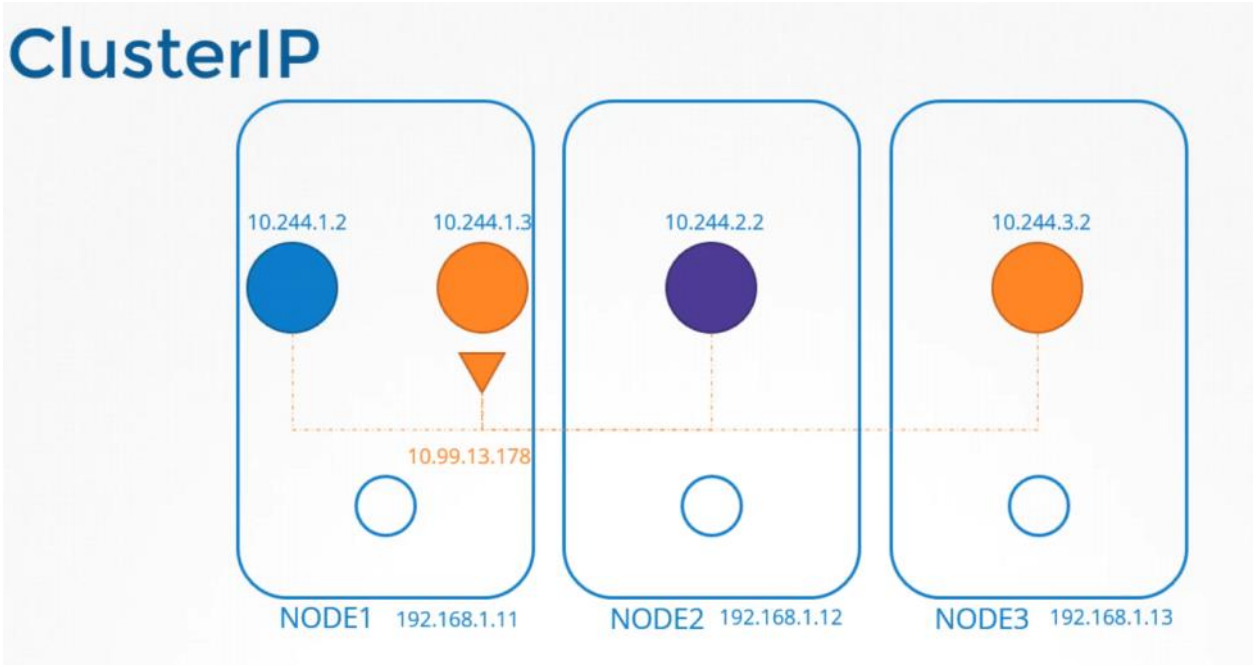
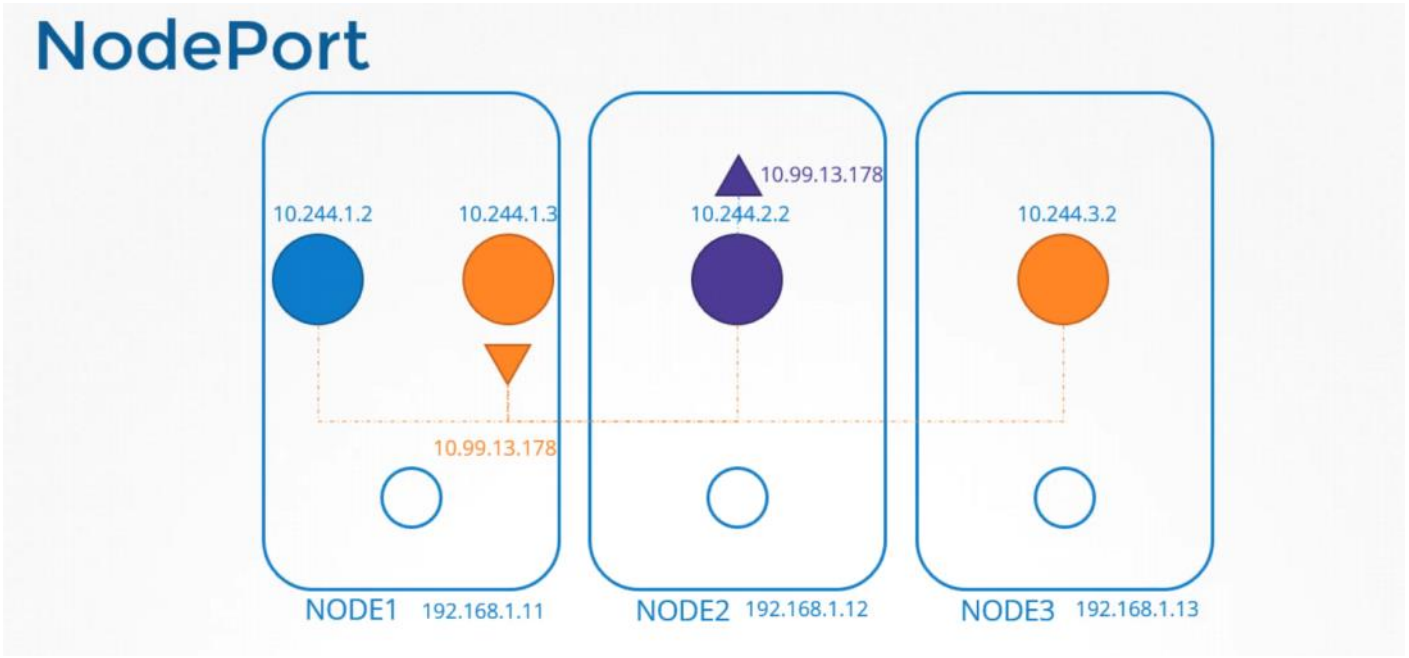
Service Networking

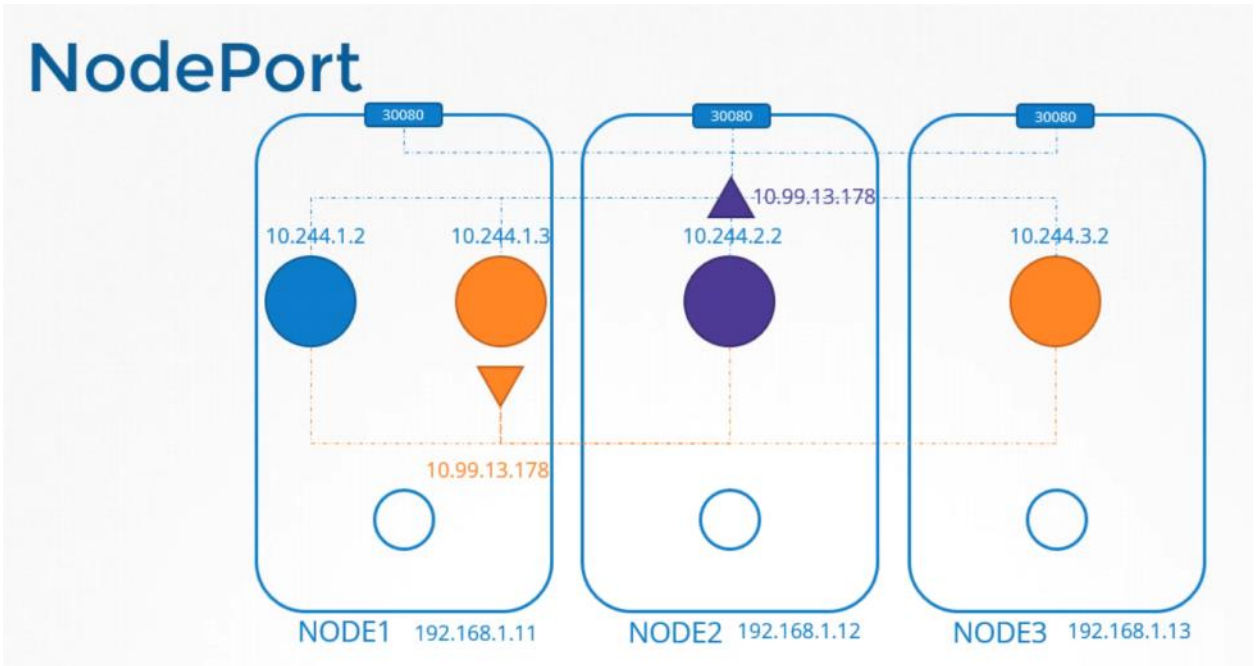


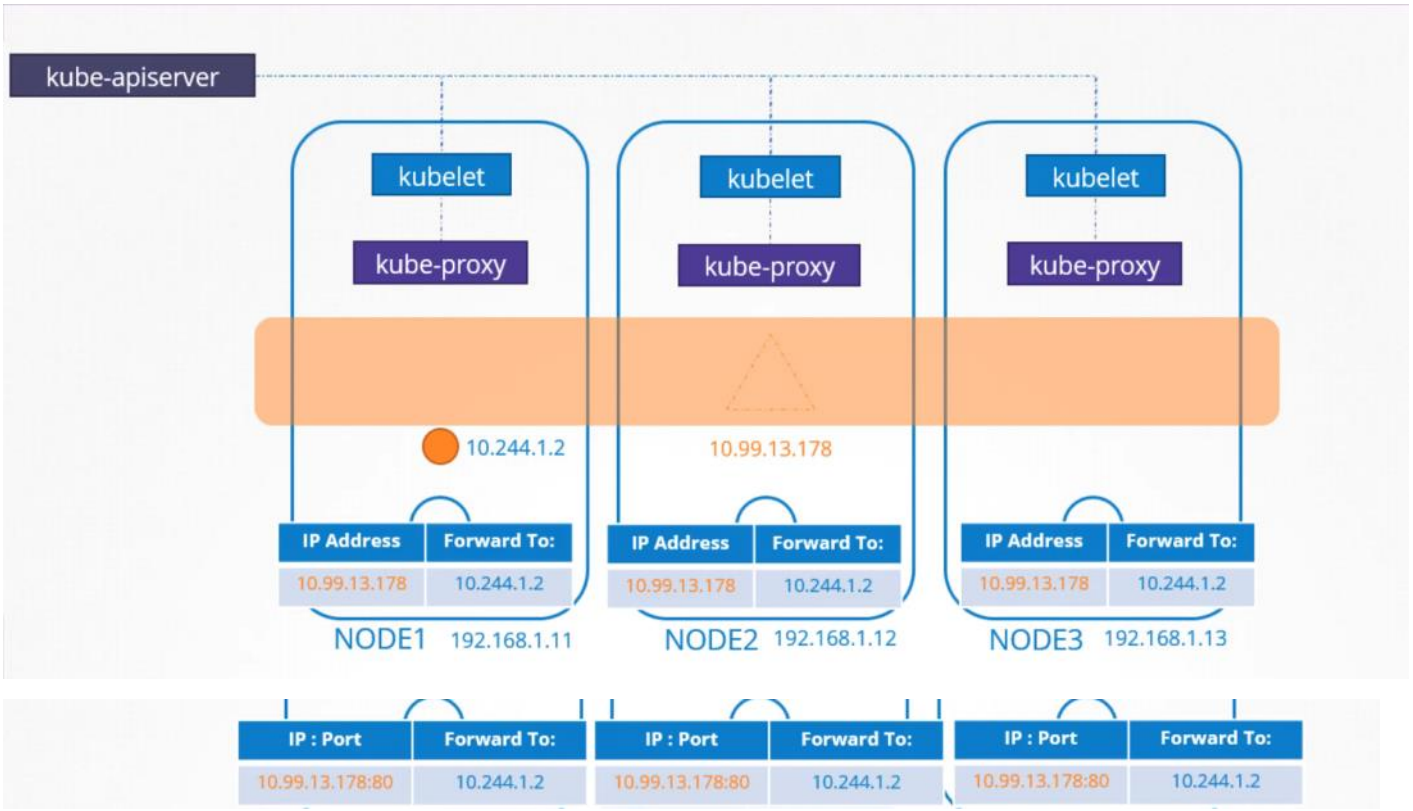
NETWORK	GATEWAY
10.244.1.0/24	192.168.1.11
10.244.2.0/24	192.168.1.12
10.244.3.0/24	192.168.1.13



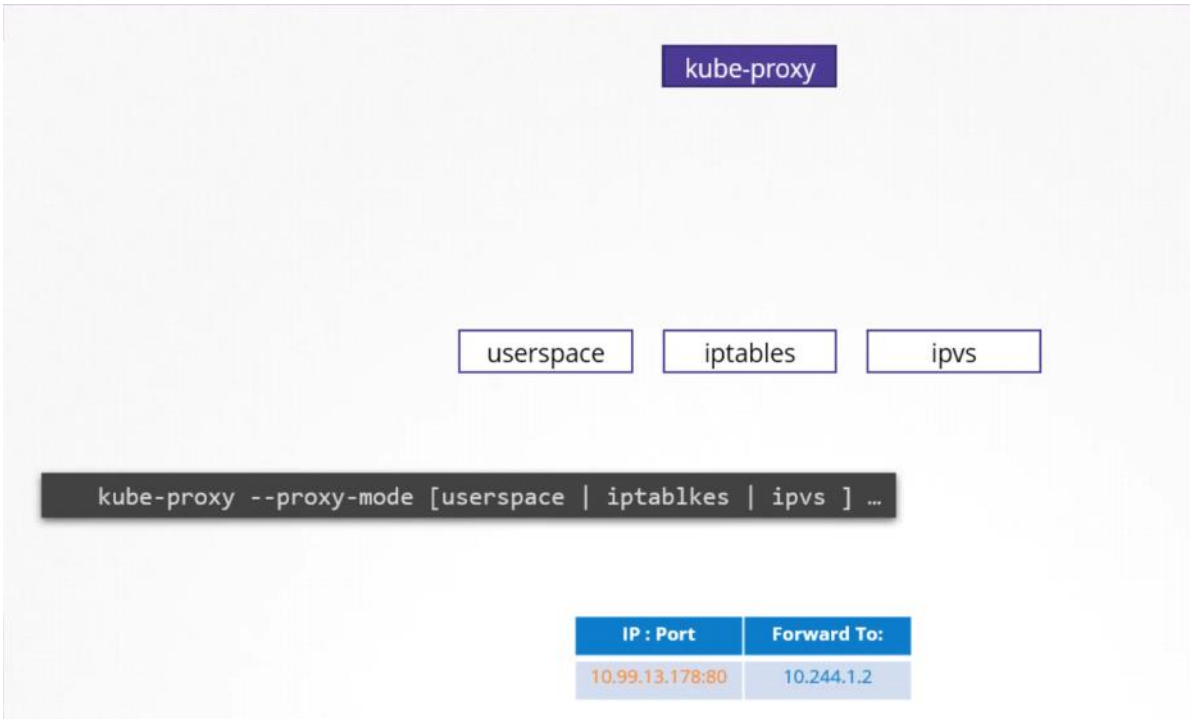

ClusterIP
10.244.1.2
10.244.1.3
10.244.2.2
10.244.3.2
10.99.13.178
NODE1 192.168.1.11
NODE2 192.168.1.12
NODE3 192.168.1.13


NodePort
10.99.13.178
10.244.1.2
10.244.1.3
10.244.2.2
10.244.3.2
10.99.13.178
NODE1 192.168.1.11
NODE2 192.168.1.12
NODE3 192.168.1.13


NodePort
30080
30080
30080
10.99.13.178
10.244.1.2
10.244.1.3
10.244.2.2
10.244.3.2
10.99.13.178
NODE1 192.168.1.11
NODE2 192.168.1.12
NODE3 192.168.1.13


kube-apiserver
kubelet
kube-proxy
kubelet
kube-proxy
kubelet
kube-proxy
10.244.1.2
10.99.13.178
IP Address
Forward To:
10.99.13.178
10.244.1.2
IP Address
Forward To:
10.99.13.178
10.244.1.2
IP Address
Forward To:
10.99.13.178
10.244.1.2
NODE1 192.168.1.11
NODE2 192.168.1.12
NODE3 192.168.1.13

IP : Port
Forward To:
10.99.13.178:80
10.244.1.2
IP : Port
Forward To:
10.99.13.178:80
10.244.1.2
IP : Port
Forward To:
10.99.13.178:80
10.244.1.2


kube-proxy
userspace
iptables
ipvs
kube-proxy --proxy-mode [userspace | iptablkes | ipvs] …
IP : Port
Forward To:
10.99.13.178:80
10.244.1.2

kube-proxy

iptables

IP : Port	Forward To:
10.99.13.178:80	10.244.1.2

```
kubectl get pods -o wide
```

```
NAME      READY   STATUS    RESTARTS   AGE   IP           NODE
db        1/1     Running   0          14h   10.244.1.2   node-1
```

10.244.1.2

```
kubectl get service
```

```
NAME           TYPE        CLUSTER-IP      PORT(S)    AGE
db-service     ClusterIP   10.103.132.104  3306/TCP   12h
```

```
kube-api-server --service-cluster-ip-range ipNet (Default: 10.0.0.0/24)
```

kube-proxy

iptables

IP : Port	Forward To:
10.99.13.178:80	10.244.1.2

```
kubectl get pods -o wide
```

```
NAME      READY   STATUS    RESTARTS   AGE   IP           NODE
db        1/1     Running   0          14h   10.244.1.2   node-1
```

10.244.1.2

```
kubectl get service
```

```
NAME           TYPE        CLUSTER-IP      PORT(S)    AGE
db-service     ClusterIP   10.103.132.104  3306/TCP   12h
```

10.96.0.0 => 10.111.255.255

```
kube-api-server --service-cluster-ip-range ipNet (Default: 10.0.0.0/24)
```

```
ps aux | grep kube-api-server
```

```
kube-apiserver --authorization-mode=Node,RBAC --service-cluster-ip-
range=10.96.0.0/12
```

10.244.1.2

10.244.0.0/16

10.244.0.0 => 10.244.255.255

10.96.0.0 => 10.111.255.255

```
iptables -L -t nat | grep db-service
KUBE-SVC-XA5OGUC7YRHOS3PU  tcp  --  anywhere   10.103.132.104   /* default/db-service: cluster IP */ tcp dpt:3306
DNAT                       tcp  --  anywhere   anywhere         /* default/db-service: */ tcp to:10.244.1.2:3306
KUBE-SEP-JBWCWHHQM57V2WN7  all  --  anywhere   anywhere         /* default/db-service: */
```

```
cat /var/log/kube-proxy.log
I0307 04:29:29.883941       1 server_others.go:140] Using iptables Proxier.
I0307 04:29:29.912037       1 server_others.go:174] Tearing down inactive rules.
I0307 04:29:30.027360       1 server.go:448] Version: v1.11.8
I0307 04:29:30.049773       1 conntrack.go:98] Set sysctl 'net/netfilter/nf_conntrack_max' to 131072
I0307 04:29:30.049945       1 conntrack.go:52] Setting nf_conntrack_max to 131072
I0307 04:29:30.050701       1 conntrack.go:83] Setting conntrack hashsize to 32768
I0307 04:29:30.050701       1 proxier.go:294] Adding new service "default/db-service:3306" at 10.103.132.104:3306/TCP
```