

07. 验证集群功能

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- 检查节点状态
- 创建测试文件
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本文档验证 K8S 集群是否工作正常。

注意：如果没有特殊指明，本文档的所有操作均在 `zhangjun-k8s-01` 节点上执行，然后远程分发文件和执行命令。

检查节点状态

```
$ kubectl get nodes
```

NAME	STATUS	ROLES	AGE	VERSION
zhangjun-k8s-01	Ready	<none>	15m	v1.16.6
zhangjun-k8s-02	Ready	<none>	15m	v1.16.6
zhangjun-k8s-03	Ready	<none>	15m	v1.16.6

都为 Ready 且版本为 v1.16.6 时正常。

创建测试文件

```
cd /opt/k8s/work
cat > nginx-ds.yml <<EOF
apiVersion: v1
kind: Service
metadata:
  name: nginx-ds
  labels:
    app: nginx-ds
spec:
  type: NodePort
  selector:
```

```

    app: nginx-ds
  ports:
  - name: http
    port: 80
    targetPort: 80
---
apiVersion: apps/v1
kind: DaemonSet
metadata:
  name: nginx-ds
  labels:
    addonmanager.kubernetes.io/mode: Reconcile
spec:
  selector:
    matchLabels:
      app: nginx-ds
  template:
    metadata:
      labels:
        app: nginx-ds
    spec:
      containers:
      - name: my-nginx
        image: nginx:1.7.9
        ports:
        - containerPort: 80
EOF

```

执行测试

```
kubectl create -f nginx-ds.yml
```

检查各节点的 Pod IP 连通性

```
$ kubectl get pods -o wide -l app=nginx-ds
```

NAME	READY	STATUS	RESTARTS	AGE	IP	NODE
NOMINATED NODE	READINESS	GATES				
nginx-ds-j7v5g	1/1	Running	0	61s	172.30.244.1	zhangjun-k8s-01
<none>	<none>					
nginx-ds-js8g8	1/1	Running	0	61s	172.30.82.129	zhangjun-k8s-02
<none>	<none>					
nginx-ds-n2p4x	1/1	Running	0	61s	172.30.184.130	zhangjun-k8s-03
<none>	<none>					

在所有 Node 上分别 ping 上面三个 Pod IP，看是否连通：

```
source /opt/k8s/bin/environment.sh
for node_ip in ${NODE_IPS[@]}
do
    echo ">>> ${node_ip}"
    ssh ${node_ip} "ping -c 1 172.30.244.1"
    ssh ${node_ip} "ping -c 1 172.30.82.129"
    ssh ${node_ip} "ping -c 1 172.30.184.130"
done
```

检查服务 IP 和端口可达性

```
$ kubectl get svc -l app=nginx-ds
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
nginx-ds	NodePort	10.254.116.22	<none>	80:30562/TCP	2m7s

可见:

- Service Cluster IP: 10.254.116.22
- 服务端口: 80
- NodePort 端口: 30562

在所有 Node 上 curl Service IP:

```
source /opt/k8s/bin/environment.sh
for node_ip in ${NODE_IPS[@]}
do
    echo ">>> ${node_ip}"
    ssh ${node_ip} "curl -s 10.254.116.22"
done
```

预期输出 nginx 欢迎页面内容。

检查服务的 NodePort 可达性

在所有 Node 上执行:

```
source /opt/k8s/bin/environment.sh
for node_ip in ${NODE_IPS[@]}
do
    echo ">>> ${node_ip}"
    ssh ${node_ip} "curl -s ${node_ip}:30562"
done
```

预期输出 nginx 欢迎页面内容。