

## ЗАДАНИЕ №6

- 1) Развернуть 3 виртуальные машины и настроить HA-кластер на них.
- 2) Развернуть на этом кластере высокодоступный веб-сервер Apache.

## РЕШЕНИЕ:

- 1) Установка компонентов кластера на 3 хостах:

```
yum install pcs fence-agents-all -y
```

```
systemctl enable pcsd --now
```

Установим пароль для пользователя hacluster

```
echo your password | passwd --stdin hacluster
```

Авторизуем и запустим кластер:

```
pcs cluster auth 192.168.0.1 192.168.0.2 192.168.0.3
```

```
pcs cluster enable --all
```

```
[root@hal ~]# pcs cluster status
Cluster Status:
Stack: corosync
Current DC: hal (version 1.1.23-1.el7_9.1-9acf116022) - partition with quorum
Last updated: Sat Jul 24 18:12:11 2021
Last change: Sat Jul 24 18:09:22 2021 by hacluster via crmd on hal
3 nodes configured
0 resource instances configured

PCSD Status:
hal (192.168.0.1): Online
ha2 (192.168.0.2): Online
ha3 (192.168.0.3): Online
```

The screenshot shows the Pacemaker web management interface. At the top, there's a navigation bar with 'HIGH AVAILABILITY MANAGEMENT' and a 'hacluster' dropdown. Below it, the 'MANAGE CLUSTERS' tab is active. On the left, a table lists clusters: 'mycluster' with 3 nodes and 0 resources. The main panel, 'INFORMATION ABOUT CLUSTERS', shows details for 'mycluster'. It includes a 'Warnings' section with 'No fencing configured in the cluster'. The 'Nodes' section shows 3 nodes (OK) with a table:

NODE	STATUS	QUORUM
ha1	✓ online	YES
ha2	✓ online	YES
ha3	✓ online	YES

The 'Resources' section shows 0 resources (OK) with a table:

RESOURCE	STATUS
No resources	

At the bottom, there's a section for 'Fence-devices' (0 OK).

- 2) Установим на 3-х серверах apache:

```
yum install httpd
```

Создадим ресурсы виртуального IP-адреса и веб сервера:

```
pcs resource create VirtualIP ocf:heartbeat:IPaddr2 ip=192.168.0.200 cidr_netmask=24 op monitor interval=30s
```

```
pcs resource create WebServer ocf:heartbeat:apache configfile=/etc/httpd/conf/httpd.conf
```

```
statusurl="http://127.0.0.1/server-status" op monitor interval=30s
```

Отключим STONITH (доп. защита, в продакшене не стоит откл.)

```
pcs property set stonith-enabled=false
```

Останавливать ресурсы кластера если нет кворума:

```
pcs property set no-quorum-policy=stop
```

Указываем чтобы веб сервер запускался там же где и VirtualIP:

```
pcs constraint colocation add WebServer VirtualIP INFINITY
```

```
[root@ha1 ~]# pcs status
Cluster name: mycluster
Stack: corosync
Current DC: ha3 (version 1.1.23-1.el7_9.1-9acf116022) - partition with quorum
Last updated: Sat Jul 24 22:54:01 2021
Last change: Sat Jul 24 22:49:30 2021 by hacluster via cibadmin on ha1

3 nodes configured
2 resource instances configured

Online: [ ha1 ha2 ha3 ]

Full list of resources:

WebServer      (ocf::heartbeat:apache):      Started ha1
VirtualIP      (ocf::heartbeat:IPaddr2):     Started ha1

Daemon Status:
  corosync: active/enabled
  pacemaker: active/enabled
  pcsd: active/enabled
[root@ha1 ~]#
```

## Выключим ha1:

```
[root@ha2 ~]# pcs status
Cluster name: mycluster
Stack: corosync
Current DC: ha3 (version 1.1.23-1.el7_9.1-9acf116022) - partition with quorum
Last updated: Sun Jul 25 01:56:57 2021
Last change: Sun Jul 25 01:49:24 2021 by hacluster via cibadmin on ha1

3 nodes configured
2 resource instances configured

Online: [ ha2 ha3 ]
OFFLINE: [ ha1 ]

Full list of resources:

WebServer      (ocf::heartbeat:apache):      Started ha2
VirtualIP      (ocf::heartbeat:IPaddr2):     Started ha2

Daemon Status:
  corosync: active/enabled
  pacemaker: active/enabled
  pcsd: active/enabled
[root@ha2 ~]#
```