

MultiPath 구성

Target VM: iSCSI Target (공유 디스크 제공 서버) 설정

설정

	Node1	Node2	Target
역할	클러스터 노드	클러스터 노드	iSCSI Target
OS	Rocky Linux release 9.6	Rocky Linux release 9.6	Rocky Linux release 9.6
네트워크 대역	192.168.170.0/24 192.168.180.0/24		
네트워크	클러스터 Path : 192.168.170.10 클러스터 Path : 192.168.180.10	클러스터 Path : 192.168.170.60 클러스터 Path : 192.168.180.60	iSCSI Path 1 : 192.168.170.50 iSCSI Path 2 : 192.168.180.50

0. VM에서 Multipath용 네트워크 추가

세 서버 모두에서 **최소 2개의 NIC**에 고정 IP를 설정

1. Multipath 패키지 설치

```
sudo yum install -y device-mapper-multipath
```

2. LUN 생성 준비

fdisk /dev/sdb 로 파티션(/dev/sdb1) 생성

3. Target 설정 진입

```
targetcli
```

4. 백업 저장소 생성

```
cd /backstores/block
```

```
create lun_20g /dev/sdb1
```

5. iSCSI Target 생성

```
cd /iscsi
```

```
create
```

6. LUN 연결

<Target>

1. 패키지 설치

```
[root@localhost ~]# yum install -y targetcli
```

2. Target 설정 진입

```
[root@localhost ~]# targetcli
targetcli shell version 2.1.57
Copyright 2011-2013 by Datera, Inc and others.
For help on commands, type 'help'.

/backstores/block>
```

3. 백업저장소 생성

```
/backstores/block> cd /backstores/block
/backstores/block> create lun_20g /dev/sda1
```

```
/backstores/block> cd /backstores/block
/backstores/block> ls
o- block ..... [Storage Objects: 0]
/backstores/block> create lun_20g /dev/sda1
Created block storage object lun_20g using /dev/sda1.
/backstores/block> ls
o- block ..... [Storage Objects: 1]
  o- lun_20g ..... [/dev/sda1 (20.0GiB) write-thru deactivated]
    o- alua ..... [ALUA Groups: 1]
      o- default_tg_pt_gp ..... [ALUA state: Active/optimized]
```

4. iSCSI Target 생성

```
/backstores/block> cd /iscsi
```

```
/iscsi> create
```

```
/backstores/block> cd /iscsi
/iscsi> ls
0- iscsi ..... [Targets: 0]
/iscsi> create
Created target iqn.2003-01.org.linux-iscsi.localhost.x8664:sn.7257d3f2ea18.
Created TPG 1.
Global pref auto_add_default_portal=true
Created default portal listening on all IPs (0.0.0.0), port 3260.
/iscsi> ls
0- iscsi ..... [Targets: 1]
0- iqn.2003-01.org.linux-iscsi.localhost.x8664:sn.7257d3f2ea18 ..... [TPGs: 1]
  0- tpg1 ..... [no-gen-acls, no-auth]
    0- acls ..... [ACLs: 0]
    0- luns ..... [LUNs: 0]
    0- portals ..... [Portals: 1]
    0- 0.0.0.0:3260 ..... [OK]
```

5. LUN 연결

```
/iscsi> cd iqn.2003-01.org.linux-iscsi.localhost.x8664:sn.7257d3f2ea18/tpg1/luns
```

(4 단계에서 ls 조회 했을 때 나온 경로 입력)

```
/iscsi/iqn.20...a18/tpg1/luns> create /backstores/block/lun_20g
```

```
/iscsi> cd iqn.2003-01.org.linux-iscsi.localhost.x8664:sn.7257d3f2ea18/tpg1/luns
/iscsi/iqn.20...a18/tpg1/luns> ls
0- luns ..... [LUNs: 0]
/iscsi/iqn.20...a18/tpg1/luns> create /backstores/block/lun_20g
Created LUN 0.
/iscsi/iqn.20...a18/tpg1/luns> ls
0- luns ..... [LUNs: 1]
  0- lun0 ..... [block/lun_20g (/dev/sda1) (default_tg_pt_gp)]
```

<node1, 2>

1. Initiator IQN 확보 및 iSCSI 도구 설치

- 두 노드의 고유 IQN 을 확보/ Target 의 ACL 설정에 필요

1-1) iscsi 접속 도구 설치

```
yum install -y iscsi-initiator-utils
```

1-2) initiator IQN 확인 (각 노드가 고유한 값을 갖고 있어야함 / 각 노드의 값이 같다면 vi 로 수동으로 수정)

```
(node1)
[root@localhost ~]# cat /etc/iscsi/initiatorname.iscsi
InitiatorName=iqn.2025-11.com.single:iscsi-client-node1

(node2)
[root@localhost ~]# cat /etc/iscsi/initiatorname.iscsi
InitiatorName=iqn.2025-11.com.single:iscsi-client-node2
```

<target>

6. ACL 설정 (node1, node2 작업 이후 진행)

```
/iscsi/iqn.20...a18/tpg1/luns> cd ../acls  
# Node1 등록  
/iscsi/iqn.20...a18/tpg1/acls> create iqn.2025-11.com.single:iscsi-client-node1  
# Node2 등록  
/iscsi/iqn.20...a18/tpg1/acls> create iqn.2025-11.com.single:iscsi-client-node2
```

```
/iscsi/iqn.20...a18/tpg1/luns> ls  
o- luns ..... [LUNs: 0]  
/iscsi/iqn.20...a18/tpg1/luns> create /backstores/block/lun_20g  
Created LUN 0.  
/iscsi/iqn.20...a18/tpg1/luns> ls  
o- luns ..... [LUNs: 1]  
o- lun0 ..... [block/lun_20g (/dev/sda1) (default_tg_pt_gp)]  
/iscsi/iqn.20...a18/tpg1/luns> cd ../acls  
/iscsi/iqn.20...a18/tpg1/acls> ls  
o- acls ..... [ACLs: 0]  
/iscsi/iqn.20...a18/tpg1/acls> create iqn.2025-11.com.single:iscsi-client-node1  
Created Node ACL for iqn.2025-11.com.single:iscsi-client-node1  
Created mapped LUN 0.  
/iscsi/iqn.20...a18/tpg1/acls> create iqn.2025-11.com.single:iscsi-client-node2  
Created Node ACL for iqn.2025-11.com.single:iscsi-client-node2  
Created mapped LUN 0.  
/iscsi/iqn.20...a18/tpg1/acls> exit  
Global pref auto_save_on_exit=true  
Configuration saved to /etc/target/saveconfig.json
```

<Node1, Node2>

1. 서비스 활성화

```
[root@localhost ~]# systemctl enable iscsid
Created symlink /etc/systemd/system/multi-user.target.wants/iscsid.service →
/usr/lib/systemd/system/iscsid.service.
```

2. Target 정보 재검색 및 저장

```
[root@localhost ~]# iscsiadm -m discovery -t sendtargets -p 192.168.170.50
[root@localhost ~]# iscsiadm -m discovery -t sendtargets -p 192.168.180.50
[root@localhost ~]# iscsiadm -m node
[root@localhost ~]# iscsiadm -m discovery -t sendtargets -p 192.168.170.50
192.168.170.50:3260,1 iqn.2003-01.org.linux-iscsi.localhost.x8664:sn.7257d3f2ea18
[root@localhost ~]# iscsiadm -m discovery -t sendtargets -p 192.168.180.50
192.168.180.50:3260,1 iqn.2003-01.org.linux-iscsi.localhost.x8664:sn.7257d3f2ea18
[root@localhost ~]# iscsiadm -m node
192.168.170.50:3260,1 iqn.2003-01.org.linux-iscsi.localhost.x8664:sn.7257d3f2ea18
192.168.180.50:3260,1 iqn.2003-01.org.linux-iscsi.localhost.x8664:sn.7257d3f2ea18
[root@localhost ~]# lsblk
NAME                MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda                   8:0    0   20G  0 disk
sdb                   8:16   0   20G  0 disk
sdc                   8:32   0   20G  0 disk
sr0                   11:0    1 1024M  0 rom
nvme0n1               259:0   0   20G  0 disk
├─nvme0n1p1           259:1   0    1G  0 part /boot
└─nvme0n1p2           259:2   0   19G  0 part
   └─r1-root           253:0   0   17G  0 lvm  /
      └─r1-swap        253:1   0    2G  0 lvm  [SWAP]
```

3. Target 접속 (Login)

```
[root@localhost ~]# iscsiadm -m node -l
[root@localhost ~]# iscsiadm -m node -l
Logging in to [iface: default, target: iqn.2003-01.org.linux-iscsi.localhost.x8664:sn.7257d3f2ea18, portal: 192.168.170.50,3260]
Logging in to [iface: default, target: iqn.2003-01.org.linux-iscsi.localhost.x8664:sn.7257d3f2ea18, portal: 192.168.180.50,3260]
Login to [iface: default, target: iqn.2003-01.org.linux-iscsi.localhost.x8664:sn.7257d3f2ea18, portal: 192.168.170.50,3260] successf
ul.
Login to [iface: default, target: iqn.2003-01.org.linux-iscsi.localhost.x8664:sn.7257d3f2ea18, portal: 192.168.180.50,3260] successf
ul.
```

4. multipath 패키지 설치

```
yum install -y device-mapper-multipath
```

5. multipath 활성화 및 이름 설정

```
mpathconf --enable
mpathconf --user_friendly_names y
```

6. 서비스 실행

```
[root@localhost ~]# systemctl enable multipathd
```

```
[root@localhost ~]# systemctl start multipathd
```

```
[root@localhost ~]# mpathconf --enable
[root@localhost ~]# mpathconf --user_friendly_names y
[root@localhost ~]# systemctl enable multipathd
Created symlink /etc/systemd/system/sockets.target.wants/multipathd.socket → /usr/lib/systemd/system/multipathd.socket.
[root@localhost ~]# systemctl start multipathd
```

7. Multipath 리로드 및 장치 목록 출력

```
[root@localhost ~]# multipath -r
```

```
[root@localhost ~]# multipath -ll
```

```
[root@localhost ~]# multipath -r
[root@localhost ~]# multipath -ll
mpathb (360014052b870157782f477d8159ae091) dm-2 LI0-0RG,lun_20g
size=20G features='0' hwhandler='1 alua' wp=rw
|+- policy='service-time 0' prio=50 status=active
|  - 34:0:0:0 sdb      8:16 active ready running
`+- policy='service-time 0' prio=50 status=enabled
   - 35:0:0:0 sdc      8:32 active ready running
```