

# iSCSI and SAN Storage

LPIC-2: Linux Engineer (201-450)

## Objectives:

At the end of this episode, I will be able to:

1. Describe connectivity methods used with Storage Area Networks.
2. Configure a Linux server to act as an iSCSI target.
3. Configure a Linux client to connect to iSCSI storage.

Additional resources used during the episode can be obtained using the download link on the overview episode.

- SAN
  - Storage Area Network
  - Allows external hard drives to be pooled and shared
  - Typically attached via Fiber
- HBA
  - Host Bus Adapter
  - Designed for a SAN
  - Cross between Hard drive controller and NIC
  - Drives show up as local drives
  - Typically little or no configuration needed
- Accessing a SAN via network
  - iSCSI
    - Internet SCSI
    - SCSI protocol encapsulated in TCP/IP
    - Moderate performance
    - Suitable for LAN
  - FCoE
    - Fiber Channel over Ethernet
    - FC protocol encapsulated in TCP/IP
    - Poor performance
    - Suitable for replicating between locations
  - AoE
    - ATA over Ethernet
    - ATA protocol run at Layer 2
    - Not routable
    - Good performance
- Creating an iSCSI Target (Server)
  - `sudo apt install tgt -y`
  - `sudo systemctl enable --now tgt`
  - `sudoedit /etc/tgt/conf.d/tgt.conf`

```
<target iqn.dons-server:storage>
  backing-store /dev/sdc
  initiator-address 10.0.222.50
</target>
```

- Verifying the iSCSI server

- `sudo systemctl restart tgt`
- `sudo tgtadm --mode target --op show`
- `sudo ss -natp`
- `sudo ufw allow 3260/tcp comment "iSCSI Target"`
- Reboot may be necessary if disks are locked

- Configuring an iSCSI Client

- `sudo apt install open-iscsi -y`
- `sudo iscsiadm -m discovery -t st -p 10.0.222.51`
- `sudoedit /etc/iscsi/initiatorname.iscsi`
  - `InitiatorName=iqn.dons-server:storage`

- Make it start automatically

- `sudoedit /etc/iscsi/nodes/iqn.dons-server\:storage/10.0.222.51\,3260\,1/default`
- Change:
  - `node.startup = manual`
  - `node.startup = automatic`

- Verify connection

- `sudo systemctl restart open-iscsi iscsid`
- `sudo iscsiadm -m session -o show`
- `sudo iscsiadm -m session -P3`
- `sudo iscsiadm -m session -P3 | grep scsi`
- `lsblk`

- Configuring Authentication - Target

- `sudoedit /etc/tgt/conf.d/tgt.conf`
  - `incominguser donslaptop password123`
  - `outgoinguser dpserver password123`
- `sudo systemctl restart tgt`

- Configuring Authentication - Client

- `sudoedit /etc/iscsi/nodes/iqn.dons-server\:storage/10.0.222.51\,3260\,1/default`
- Change:
  - `node.session.auth.authmethod = None`
- To:

```
node.session.auth.authmethod = CHAP
node.session.auth.username = donslaptop
node.session.auth.password = password123
node.session.auth.username_in = dpserver
node.session.auth.password_in = password123
```