Advanced iSCSI Procedures

This article covers non-trivial iSCSI procedures that require careful execution to avoid data loss or service disruption.

Resizing an iSCSI Target

Overview

When an iSCSI target needs to be expanded, the process varies depending on the underlying storage technology. This guide covers both LVM2 and ZFS-based targets.

General Approach (LVM2)

For LVM2-backed exports:

1. Unmount and disconnect the target on all initiators
2. Expand the logical volume on the target server
3. Restart the iSCSI target service (recommended for consistency)
4. Reconnect initiators and resize the filesystem

ZFS-Based Targets (FreeBSD)

The following procedure assumes:

- **Target:** FreeBSD with ZFS volumes (zvols)
- **Initiator:** Debian/Devuan-based Linux systems

⚠ **Warning:** Ensure no applications or services are accessing the target volume during this process. Options:

- **Minimum:** Stop all services using the target
- **Recommended:** Logout from the target on all initiators before making changes

Step 1: Expand the ZFS Volume (Target Server)

```
# Set the new size on the ZFS volume
# Example: storage/iscsi/target is the zvol path
# newsize format: 500G, 2T, etc.
zfs set volsize=500G storage/iscsi/target
```

```
# Notify ctld of the configuration change
# 'restart' may work instead of 'reload' if reload not supported
service ctld reload
ctladm devlist -v
```

Step 2: Rescan from Initiator (Linux)

After expanding the target, initiators must rescan to detect the new size.

Option A: Rescan all sessions (not recommended for production)

```
# Rescans ALL iSCSI sessions - use with caution in production
iscsiadm -m session --rescan
```

Option B: Rescan specific target only (recommended)

```
# Method 1: Find the Session ID (SID) for your specific target
# Replace 'thing1' with a unique substring from your target name
SID=$(iscsiadm -m session -P 0 | grep thing1 | cut -d'[' -f2 | cut -d']' -
f1)

# Rescan only that specific session
iscsiadm --mode session --sid=$SID --rescan

# Alternatively, manually find SID and run directly:
# iscsiadm -m session          # Lists all sessions with SIDs
# iscsiadm --mode session --sid=15 --rescan

# Verify the new size has been detected
fdisk -l /dev/disk/by-path/ip-<target-ip>:3260-iscsi-<iqn>-lun-<num>
# Or use lsblk for a cleaner view
lsblk /dev/disk/by-path/ip-<target-ip>*
```

Step 3: Resize the Filesystem

After the initiator recognizes the new size, expand the filesystem:

For ext4:

```
resize2fs /dev/sdX
```

For XFS:

```
xfs_growfs /mount/point
```

For LVM:

```
pvresize /dev/sdX
```

```
lvextend -l +100%FREE /dev/vg_name/lv_name
resize2fs /dev/vg_name/lv_name  # for ext4
```

For virtual machines: Consider booting from GParted Live CD to safely resize partitions without mounting them.

Removing an iSCSI Target

Overview

Removing an iSCSI target requires cleanup on both the target server and all initiators. The initiator maintains a local database of discovered targets that must be explicitly cleaned.

Critical: Always logout from the target BEFORE removing it from the database. Failure to do so may cause issues.

Procedure: Remove a Single Target

```
# Step 1: Logout from the iSCSI session
# Replace with your actual target IQN and portal address
iscsiadm -m node \
  --target='iqn.2005-03.org.example:storage.target1' \
  --portal "192.168.1.100:3260" \
  --logout

# Step 2: Remove the target from the local database
iscsiadm -m node \
  --target='iqn.2005-03.org.example:storage.target1' \
  --portal "192.168.1.100:3260" \
  -o delete

# Verify removal
iscsiadm -m node
```

Procedure: Remove All Targets (Complete Cleanup)

When decommissioning an entire iSCSI infrastructure or target server:

Method 1: Service Shutdown and Manual Cleanup

```
# Stop the iSCSI initiator service
# sysV (Devuan, other good Linux systems)
service start iscsiadm
service stop open-iscsi # or iscsid on some systems
```

```
# systemd (RedHat, other Linux systems which have drunk the Kool-aid)
systemctl stop iscsiadm
systemctl stop open-iscsi    # or iscsid on some systems

# Remove iSCSI configuration databases
# Debian/Ubuntu location:
rm -rf /etc/iscsi/send_targets/*
rm -rf /etc/iscsi/nodes/*

# RHEL/CentOS/Rocky location:
rm -rf /var/lib/iscsi/send_targets/*
rm -rf /var/lib/iscsi/nodes/*

# Restart the service
service start open-iscsi # sysV
systemctl start open-iscsi # systemd
```

Method 2: Programmatic Logout

```
# Logout from all active sessions
iscsiadm -m node --logoutall=all

# Remove all node records
iscsiadm -m node -o delete

# Verify all targets are removed
iscsiadm -m node
```

Distribution-Specific Notes

Distribution	Configuration Path
Debian/Ubuntu/Devuan	`/etc/iscsi/nodes/` and `/etc/iscsi/send_targets/`
RHEL/CentOS/Rocky/Fedora	`/var/lib/iscsi/nodes/` and `/var/lib/iscsi/send_targets/`
SUSE	`/var/lib/iscsi/nodes/` and `/var/lib/iscsi/send_targets/`

Additional Resources

- iscsiadm man page
- FreeBSD iSCSI Handbook
- Open-iSCSI Google Group Discussion

Best Practices

- Always test resize operations in a non-production environment first
- Maintain backups before performing any resize operations

- Document your target IQNs and portal addresses
- Use `by-path` device naming for consistency across reboots
- Monitor initiator logs (`/var/log/syslog` or `journalctl`) during operations

Disclaimer

This article was reformatted and edited by an AI agent. The contents are mine, and after I allowed the AI agent to modify it, I reread the entire article to validate.

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