Expanding Pool Capacity

in

FlashNAS ZFS

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Product Models Covered by This Document

This document applies to the following product models:

- **FlashNAS ZX3U16 Series**
- **FlashNAS ZX2U12 Series**

For more information about compression, virtualization, snapshot, remote replication, ZFS, backup, storage, network-attached-storage, file-sharing and WORM (Write Once, Read Many), please visit   www.winsys.com.

FlashNAS ZFS Series of Unified Storage Systems

IT environments often feature multiple types of storage infrastructures to accommodate various types of data and achieve different service levels. The scattered boxes for DAS (Direct-Attached Storage), SAN (Storage Area Network) and NAS (Network-Attached Storage) configurations lead to poor utilization and complicated management.

FlashNAS ZFS simultaneously serves file and block-based applications with a unified storage platform, and features easy management, optimized resource utilization, high availability, flexible scalability and competitive price/performance. In addition, FlashNAS ZFS offers a comprehensive set of advanced software features at no additional costs. FlashNAS ZFS systems help businesses effectively meet diverse and changing data demand while staying within budget.
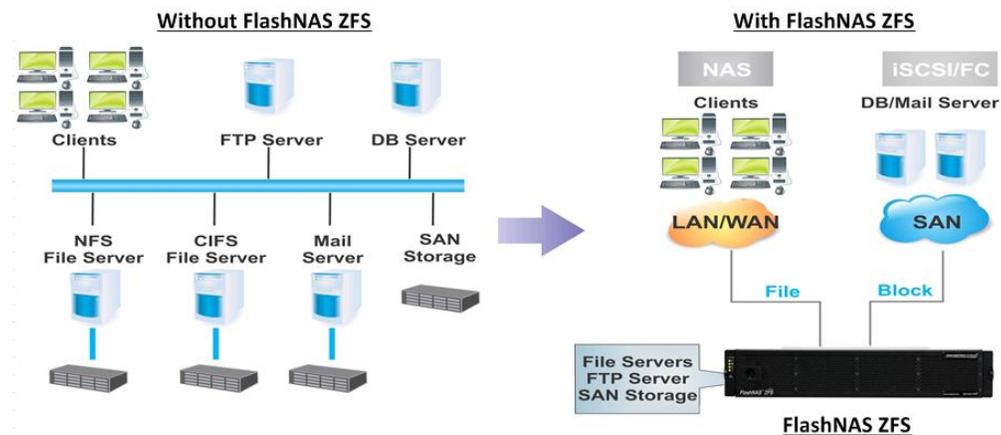
Expanding the Capacity of a Storage Pool

Users can expand the capacity of an existing pool by replacing all member drives of the selected pool with larger capacity drives. The pool size will be expanded when all member drives have been replaced. User data will not be affected by the capacity expansion process.

The overall expansion procedure is as follows:
- Select a disk drive.
- Replace it with a drive with larger capacity.
- The NAS system will rebuild the data using redundant information stored in other drives in the pool.
- Repeat the same for all disks in the same pool.
- The pool size will be expanded.

Note: Because the Capacity Expansion function uses the redundant data in the RAID configuration, **RAID 0 is not applicable** (RAID 1, 5, and 6 are all applicable).

Users need to follow these steps to expand the capacity of an existing pool in a FlashNAS ZFS system.

Step 1: Preparing the Environment

1. Prepare replacement disk drives with the same size and interface type as the existing ones. It is strongly recommended that all disk drives in the same pool will be of the same capacity.
2. Although capacity expansion does not affect existing data, to be on the safe side, users may want to backup important data through the Backup > Snapshot menu or Remote Replication menu.

Step 2: Expanding the Capacity of a Pool

1. Go to the Storage > Capacity Expansion menu. The list of existing storage pools will appear.

Capacity Expansion   ?

Virtual Storage Pools

Replace the member drives of selected pool with larger capacity drives. The pool size will be expanded when all member drives have been replaced.

Name	Used Space	Free Space	Utilization	Status	Deduplication Ratio
Pool-1	0MB	220GB	0.00%	Online	0%

Capacity Expansion

2. Highlight a storage pool from the list and click Capacity Expansion.

Status	Deduplication Ratio
Online	0%

Capacity Expansion

3. The list of disk drives in the pool will appear.

Expand Capacity   ✕

Disk	Model	Capacity	Status	Description
Slot 1	HDT722525DLA380	232.88GB	Ready	The drive is ready to be replaced.
Slot 2	HDT722525DLA380	232.88GB	Ready	The drive is ready to be replaced.

Replace

4. Highlight a drive.

Status	Description
Ready	The drive is ready to be replaced.
Ready	The drive is ready to be replaced.

Replace

5. Click Replace. The status description will change into "Please remove this drive." (The status of other drives will change into "Do not remove this drive.")

Status	Description
Ready	Do not remove this drive.
Ready	Please remove this drive.

Replace

6. Check the disk drive slot in your NAS system. The Hard Disk status LED on the drive tray should turn red, indicating that it is ready to be disconnected from the system.
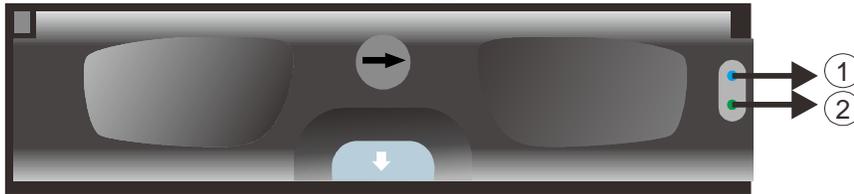
1: Drive Busy LED   **2: Power Status LED**

7. Pull the disk drive out of the enclosure. You will hear a short beep sound.

8. The disk drive status should show "No disk is available."

9. Insert the new disk drive back into the enclosure.

10. The NAS system will automatically start rebuilding the storage pool. (The status will change into "Rebuilding.") **DO NOT** remove any disk drive from the enclosure until it finishes.

11. When the rebuild process has been completed, the description should indicate "The drive has been replaced."

12. Select other drives in the storage pool and repeat the procedure. All drives in the pool need to be replaced.

13. When all drives have been replaced, go to the Storage > Pool menu, select the pool, and make sure that the pool size has been updated.
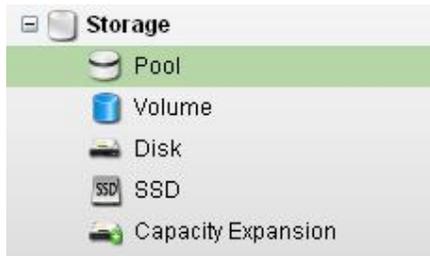
Appendix: Pool Expansion vs. Disk Expansion

The FlashNAS ZFS web interface provides another type of "Expand" functionality inside the Storage > Pool menu. This is a different functionality compared with the Capacity Expansion feature that has been described previously.

The Expansion function in the Pool menu allows users to add another RAID configuration inside the same storage pool, as long as disk drives are available. This function DOES NOT expand the size of an existing RAID configuration.
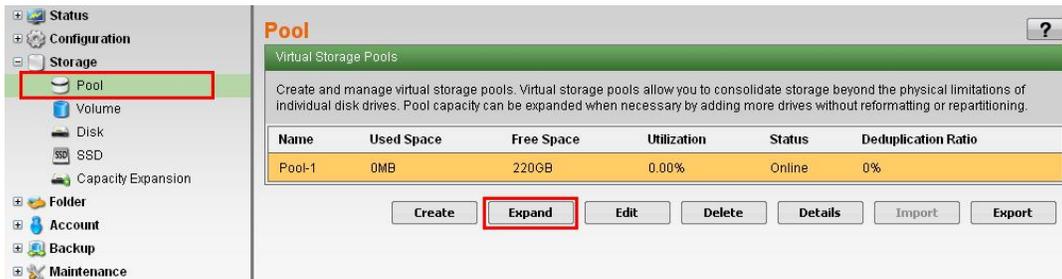
The Capacity Expansion menu, as described in the previous section, allows users to expand the size of an existing pool, or an existing hard disk, by replacing a hard disk drive with the one with a bigger capacity.