



Changing Physical Disk Storage in IBM DB2 pureScale: A Practical Example

IBM® DB2® pureScale® is a feature that provides continuous availability to multiple active servers that share a common set of disk storage subsystems. This feature includes multiple components, such as IBM Tivoli® System Automation (TSA) for high availability (HA) and General Parallel File System (IBM GPFS™) for clustered file systems.

Like any component in an IT infrastructure, DB2 pureScale eventually might require a migration to meet the demands of upgraded hardware and software.

Database administrators, operating system administrators, and system administrators working with DB2 pureScale in different capacities must understand how to upgrade the system and manage the changes that are required for the upgrade effectively by performing the correct steps.

This IBM Redbooks® Analytics Support web doc introduces a reference procedure and related considerations for storage migration that is based on a real-life test example. Database and system administrators can use this document as a reference when performing a storage migration in DB2 pureScale. This document applies to DB2 pureScale V9.8, V10.1, V10.5, and V11.

GPFS file system rebalancing check

8.10.3

After the disks are added to a file system, the data on existing disks should be rebalanced to the new disks.

Automatic GPFS rebalancing might happen, depending on the storage disk vendors that are added. For example, there were four findings during this case scenario test:

- When you add new EMC DMX disks on a file system that consists of IBM DS8000 storage disks, GPFS rebalancing does not start automatically.
- When you add IBM DS8000 storage disks on a file system that consists of IBM DS8000 storage disks, GPFS rebalancing starts automatically.
- When you add new EMC DMX disks and IBM DS8000 storage disks, after you add the new EMC DMX disks to a file system, GPFS rebalancing does not start automatically even if you add IBM DS8000 storage disks afterward.
- When you add new EMC DMX disks on a file system that consists of EMC DMX storage disks, GPFS rebalancing does not start automatically.

No matter what the storage product is, the necessary actions are clear:

- Check whether the rebalancing is in progress after you add the new disks.
- If the GPFS rebalancing is activated, let it run. Otherwise, start the GPFS rebalancing manually.

After you add the new EMC disks, the new disk status changes to `ready` and the free size on the disks is 100%, which means these disks are empty and that the GPFS rebalancing did not happen in this case (see Figure 3).

disk name	driver type	sector size	failure group	holds metadata	holds data	status	availability	storage pool
gpfs229nsd	nsd	512	-1	yes	yes	ready	up	system
gpfs230nsd	nsd	512	-1	yes	yes	ready	up	system
gpfs231nsd	nsd	512	-1	yes	yes	ready	up	system
gpfs237nsd	nsd	512	-1	yes	yes	ready	up	system
gpfs238nsd	nsd	512	-1	yes	yes	ready	up	system
gpfs239nsd	nsd	512	-1	yes	yes	ready	up	system

disk name	disk size in KB	failure group	holds metadata	holds data	free KB in full blocks	free KB in fragments
gpfs229nsd	104857600	-1	yes	yes	62303232 (59%)	30208 (0%)
gpfs230nsd	104857600	-1	yes	yes	62567424 (60%)	36000 (0%)
gpfs231nsd	104857600	-1	yes	yes	62228480 (59%)	29728 (0%)
gpfs237nsd	100669440	-1	yes	yes	100666368 (100%)	992 (0%)
gpfs238nsd	100669440	-1	yes	yes	100666368 (100%)	992 (0%)
gpfs239nsd	100669440	-1	yes	yes	100666368 (100%)	992 (0%)
(pool total)	616581120				489098240 (79%)	98912 (0%)
(total)	616581120				489098240 (79%)	98912 (0%)

Figure 3. Check whether the GPFS rebalancing started

To start the GPFS rebalancing manually, run the following command as root:

```
# db2cluster -cfs -rebalance -filesystem db2data4
```