Vess™ R2000 Tech Brief

Advanced Battery Flash Backup

Feature

In write-back cache mode, power from the battery backup unit (BBU) is used to write the content of the RAID controller write cache to non-volatile flash memory in order to extend the period of cache protection beyond the standard 72 hours provided by a typical BBU.

The Problem

RAID storage arrays used in performance-critical applications are typically configured to operate in write-back cache mode. The standard method used to protect the write cache is to install a BBU that provides power to maintain the cache memory intact, in a state of suspension until system power is restored and the cache is flushed to hard disk.

In a write-back configuration, the RAID cache memory is used to greatly accelerate write speed which dramatically increases overall system performance. Write-back configuration is used for arrays in high demand or running applications that require high performance write speed. In this mode, data is considered committed, or successfully received, as soon as the RAID controller writes back to the host that the data has been received in cache memory. Data written to a write-back cache is vulnerable until it is written to disk. Typically, a battery backup arrangement is used to prevent "write loss" in the event of a power outage during write-back caching. Normally, a BBU will save the data in the cache for 72 hours. But what if more than 72 hours are needed to restore power to the system?

The Fix

A better solution is the Advanced Battery Flash Backup feature in the Vess R2000 which provides protection beyond the normal 72 hour backup of the RAID cache. Advanced Battery Flash Backup uses power from the BBU module to save write cache data used by the RAID controller (held in DDR3 DIMM) to non-volatile NAND flash memory. Once the write cache data backup is completed, the battery ceases to provide power and conserves whatever battery capacity remains.

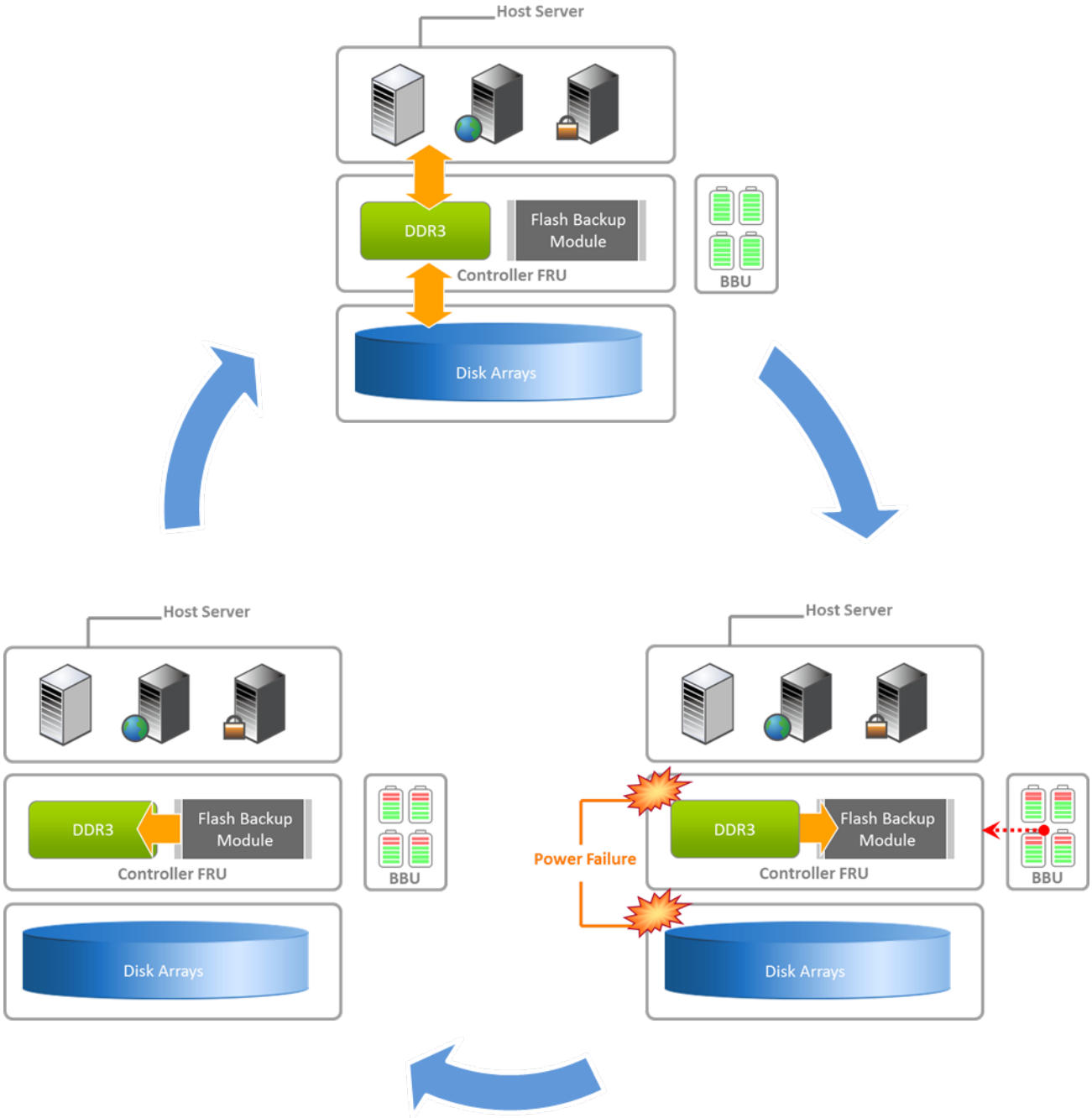
The Advanced Battery Flash Backup module and BBU module are packaged as standard on the Vess R2000 series system.

Comparison of typical BBU and Super Capacitor systems with Advanced Battery Flash Backup:

Attribute	BBU	Battery Flash Backup	SuperCap NV DDR
Keep data	72hrs	Non-volatile	Non-volatile
Maintenance	1~2 years	1~2 years (battery)	None
Charge till usable time	Hours	Minutes	Seconds
Backup/Restore time	None	A few minutes	Seconds to minutes
Protect cycles (full charge)	1	More than 5 times	1

Note: The comparison table is based on the following assumptions:
a) 2GB RAID cache protection for block based storage (not include NAS) b) Battery in good condition within the one year warranty period

How it Works



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