



NVDIMM FOR WRITE-BACK CACHE PROTECTION

RAIDIX 4.X (since 4.6 release) employs non-volatile DIMM (NVDIMM-N) for write-back cache protection. It eliminates cache data loss in case of emergency power shutdown or critical hardware failure. NVDIMM-N module gives you solid write-back cache protection with no performance penalty.



IMPLEMENTATION AREA

Non-volatile memory NVDIMM is employed to ensure data integrity during write-back cache operations. Write-back cache technology writes data on the drive with the most efficient way, that significantly improves total system performance.

Write-back cache workflow consists of the following steps: first, data blocks are placed in RAM (cache), and then they are moved in a structured appearance to the storage drive. During this procedure there is a time interval when data is already in cache, but still not at the drive. In this situation data integrity is vulnerable to power loss and memory cache protection is much needed.



HOW IT WORKS

RAIDIX 4.X engages persistent memory (PMEM), which combines the benefits of data storage devices and high throughput of DRAM. This type of memory demonstrates DRAM-like velocity and appropriate low latency. PMEM works on NVDIMM (Non-Volatile Dual Inline Memory Module), which is a combination of RAM and non-volatile memory technologies.

It makes them suitable for using as reliable cache drives, which ensure data integrity in case of emergency power shutdown.

In regular mode NVDIMM works as a normal RAM module. Accompanying NVDIMM's supercapacitor in this moment has a full charge. When power is going off, data is writing in module's NAND memory, consuming supercapacitor charge. When power is going on, data is writing to storage drive and supercapacitor is restoring its charge.



FEATURES

NVDIMM is a simple and reliable way to protect data integrity during write-back cache operation.

This technology in RAIDIX 4.X has the following features:

- Duration of data storage in case of power shutdown is limited only by NAND life time and doesn't depend on battery charge.
- Appropriate for both single-controller and dual-controller modes.
- Performance 10 times faster than during synchronous data writing to the drives.
- Unique technology for software-defined storage solutions.
- Tolerance and compatibility with new NVDIMM models.