

Inspur SAS3108(2G) RAID Adapter

Whitepaper

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Introduction

Inspur SAS3108 raid adapter is a 12Gb SAS/ 6Gb SATA Raid on a chip (ROC) Controller compliant with the Fusion-MPT architecture, which offers a cost-effective internal RAID solution for small to medium business customers. The adapter supports RAID levels 0, 1, 5, 6, 10, 50 and 60 standards. Inspur SAS3108 raid card provides 3Gbit/s, 6Gbit/s, 12Gbit/s SAS data channel, each port supports SSP, SMP, STP and others protocols.

Overview

Inspur SAS3108 raid card is designed to ensure data protection for performance-hungry applications in mid-range server storage environments.



Inspur SAS3108 technical specifications

The following table lists the specs of the Inspur SAS3108

Table 1. Specifications

Model	Inspur SAS3108
Form factor	PCIe low profile
Controller chip	Broadcom (LSI) SAS3108 dual core RAID on Chip (ROC)
Host interface	PCIe 3.0 x8
Port interface	12 Gbps SAS, supporting rate of 12Gb/s, 6Gb/s, and 3Gb/s
Port connector	2x SFF8643
Drive interface	SAS, SATA
Drive type	HDD, SSD
Number of drives	8
RAID levels	0,1,5,6,10,50,60

Pass-through	Support
Cache	DDR3 1866MHz with 2GB Capacity
Cache protection	CacheVault Flash Module (CVM02)
Maximum disk	240
Logical drive support	64
Max. stripe size	1MB
Max. volume capacity	64TB
Management	MegaRAID Storage Manager StorCLI (command-line interface) CTRL-R (BIOS configuration utility) HII (UEFI Human Interface Infrastructure)

Features

The Inspur SAS3108 RAID adapter has the following features:

- **Standard Features:**

Online Capacity Expansion

Online Capacity Expansion (OCE) allows the capacity of a virtual disk to be expanded by adding new physical disks or making use of unused space on existing disks, without requiring a reboot.

Online RAID Level Migration

Online RAID Level Migration (RLM), which is also known as logical drive migration, can migrate a virtual disk from any RAID level to any other RAID level without requiring a reboot. System availability and application functionality remain unaffected.

Fast initialization for quick array setup

Fast initialization quickly writes zeros to the first and last sectors of the virtual drive. This feature allows you to immediately start writing data to the virtual drive while the initialization is running in the background.

Consistency check for background data integrity

RAID controller provide options for testing the consistency of a RAID set. The objective of such tests is the early detection of parity and block errors. Generally, all of the associated blocks on the affected hard disks will be read. If individual read errors (bad blocks) occur during this testing process, these blocks can be re-written with the correct data. When re-writing the data from the affected data block on the hard disk, the hard disk's firmware will replace the erroneous sector with another free sector (reserve sector).

Patrol read for media scanning and repairing

Patrol read is a background sentry service that pro-actively discovers and corrects media defects (bad sectors) that arise normally as a disk drive ages. The service issues a series of verify commands, and if a bad block is discovered, the card's firmware uses RAID algorithms to re-create the missing data and remap the sector to a

good sector. The task is interruptible based on controller activity and host operations.

Global and dedicated hot spare with revertible hot spare support

A hot spare rebuilds data from all virtual disks within the disk group in which it is configured. You can define a physical disk as a hot spare to replace a failed drive. Hot spares can be configured as either global or dedicated. A global hot spare allows any physical drive to be designated as a hot spare. A dedicated hot spare allows the user to assign a hot spare drive to a particular array of the same drive type.

Auto resume after loss of system power during array rebuild or reconstruction

Auto-resume uses non-volatile RAM (NVRAM) to save the rebuild progress during a host reboot or power failure to automatically resume from the last checkpoint. Auto-resume ensures that data integrity is maintained throughout the process. The card supports a number of features that can be implemented without rebooting the server.

DDF compliant Configuration on Disk (COD)

The Disk Data Format (DDF) structure allows a basic level of interoperability between different suppliers of RAID technology. The Common RAID DDF structure benefits storage users by enabling data-in-place migration among systems from different vendors

S.M.A.R.T support

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology; often written as SMART) is a monitoring system included in computer hard disk drives (HDDs) and solid-state drives (SSDs) that detects and reports on various indicators of drive reliability, with the intent of enabling the anticipation of hardware failures

- **Optional Features:**

Support for CacheVault flash cache protection

CacheVault technology provides RAID controller cache protection using NAND flash memory and a supercapacitor. In the event of a power or server failure, CacheVault technology automatically transfers cached data from the DRAM cache to flash. Once power is restored, the data in the NAND flash is copied back into cache until it can be flushed to the disk drives.

Configuration

The following tables list optional kits supported by Inspur SAS3108 RAID card.

Table 2. Kit options

Basic controller
Inspur SAS3108 12Gb RAID adaptor
Feature upgrade kit

CacheVault Flash Module (CVM02) for data protection of 2GB cache

Server support

The following tables list the Inspur Server systems that are compatible.

MODEL	Inspur SAS3108(2G)	MODEL	Inspur SAS3108(2G)
NF5240M4	Y	NF5180M5	Y
NF5270M4	Y	NF8480M5	Y
NF5280M4	Y	NP3020M4	N/A
NF5180M4	Y	NP5540M4	Y
NF8460M4	Y	NP5570M4	N/A
NF8480M4	Y	NF5212M4	Y
NF5568M4	Y	NF5212M5	Y
NF5588M4	N/A	NF5112M5	Y
NF5460M4	Y	NF5280M5	Y

OS support

- Microsoft Windows Server 2008
- Microsoft Windows Server 2012
- Microsoft Windows Server 2016
- Red Hat Enterprise Linux 6
- Red Hat Enterprise Linux 7
- SUSE Linux Enterprise Server 11
- SUSE Linux Enterprise Server 12

Operating environment

The SAS3108 RAID RAID Card adapter is supported in the following environment:

- Maximum ambient: Controller Card: 55 °C
- Environment friendly: compliance to RoHS