6Gbps SAS to SATA SSD adapters for dual-controller NAS/servers with SAS interface

QNAP

QDA-SA & QDA-SA2

ES1686dc dual-controller NAS

Windows/Linux dual-controller server

QDA-SA

QDA-SA2

SATA SSD
How to Cost-Effectively use SATA SSDs in Dual-Controller Servers?

Why Do You Need a Dual-Controller Server

Use SATA SSDs on Dual-Controller Servers with QDA-SA & QDA-SA2

Reliable Performance with SATA SSDs
What if The Following Systems Stop Working

- CCTV camera for schools / communities / hotels
- Hospital X-ray scanning and medical record systems
- Critical data and daily operation systems in companies
- Various financial services of banks

Not that it might cause monetary losses only
But might endanger the lives and social security of the general public
Common High Availability Storage Architecture

**Active-Standby**
- Twice HDD and system cost
- Unbalanced system load
- Data loss when power outage
- Network becomes risky

**Active-Active**
- Dual active path
- Dual standby path

- Active path
- Standby path
- Sync data

Active

Standby

Active

Active
Full-duplex data transfer and dual-port

SAS drives are dual-port
- Designed for high-availability (HA) architecture

SATA drives are single-port
- Not for high-availability (HA) architecture
What kind of storage are supported by dual-controller servers

- OEM SAS SSD
- SAS SSD
- OEM SAS HDD
- SAS HDD

Higher price per GB

- Larger capacity
- Lower price per GB

- Smaller capacity
Large-capacity HDD and SSD are becoming popular

- With the rapid increase in HDD and SSD capacity
- RAID-6 has gradually failed to meet the reliability needs

Cost-effective enterprise SATA SSD do exist

2019/07/26 Newegg.com USD prices

Enterprise-grade SATA SSD designed for data centers and cloud server applications
- **Cost saving** compared to SAS SSD
- Up to **3.8TB** storage capacity
- Enhanced **enterprise reliability** with up to 564MB/s seq. read and 536 MB/s seq. write performance
QDA-SA & QDA-SA2 adapters let dual controller servers use SATA SSDs

QNAP Enterprise ZFS NAS
- ES1686dc
- ES1640dc / E1640dc v2

Dual-controller Windows/Linux servers
For dual-controller Windows/Linux servers and QNAP Enterprise ZFS NAS

QDA-SA for QNAP Enterprise ZFS NAS 3.5” SAS drive trays

Order number: QDA-SA-4PCS (4 in a bundle)

QDA-SA2 for dual-controller Windows®/Linux® SAS servers, and QNAP Enterprise ZFS NAS 3.5” SAS drive trays

Order number: QDA-SA2-4PCS (4 in a bundle)

Note: NAS must run on QES 2.0.0 or a later version.
Let SATA SSD support SAS dual-port capability
QDA-SA: 6Gb/s SAS to SATA adapter

Marvell 9110 6Gb/s SAS to SATA IC

SAS 6Gb/s

SATA 6Gb/s

Marvell 9110 600 MHz processor
Support Enterprise ZFS NAS 3.5” drive trays

ES NAS 3.5” drive tray
Order number: SP-ES-TRAY-WOLOCK
QDA-SA2: 6Gb/s SAS to SATA adapter

- SAS 6Gb/s
- Marvell 9110 6Gb/s SAS to SATA IC
- SATA 6Gb/s
- Marvell 9110 600 MHz processor
- SATA 6Gb/s
- 2.5" SATA SSD
- 101.6mm
- 138.2mm
- 25mm
- 25.9mm
Install 2.5” SATA SSD to QDA-SA2 adapter
SATA HDD/SSD for NAS storage pool
SATA HDD/SSD for NAS SSD cache

- Improves random read IOPS
- Accelerate file and block access performance
- Support multiple SATA SSDs
- Hot-swappable drive in SSD cache
- NAS QES 2.1.1 O.S. will support HDD/SSD S.M.A.R.T health monitoring.

*QDA-SA & QDA-SA2 do not support SSD TRIM and the HDD/SSD S.M.A.R.T. This feature is not supported on non-QES operating systems.
SATA SSD for reliable performance

10GbE x 2 (SMB seq. transfer)

Read: 2099 MB/s
Write: 1786 MB/s

Tested in QNAP Labs. Figures may vary by environment.
Test environment: ES1686dc Xeon E5-2420 v2 80GB RAM RAID 5 2 x 10G SFP+ + 16 x QDA-SA + 16 x Intel SSDSC2BB240G4 SATA SSD
Testing the ES1686dc 4 x 10GbE iSCSI performance with QDA-SA2 and SATA SSD in RAID 60
QDA-SA & QDA-SA2
6Gb/s SAS to SATA adapter

Let SATA SSD become dual-path for dual-controller servers