



# NS-RC 2000

4 Fibre Channels (Up To 6 Fibre)



MODELS	Base Channels
NS-RC 2000-4	4 Fibre + 2 Ultra2 for Synchronized Cache, Half-height
NS-RC 2000-6	6 Fibre, Half-height

# NS-RC 2000R

6 Fibre Redundant Channels



MODELS	Base Channels
NS-RC 2000R	6 Redundant Fibre, Full-height

## OVERVIEW

The RC-2000 is the performance champion among RAID controllers. With the help of a high-performance 64-bit RISC PowerPC CPU and dual Infortrend sophisticated RAID ASICs, I/Os are rapidly processed and distributed to array hard drives. Data is transferred between host and drive through a high-speed 64-bit data path at a burst rate of 533MB/sec. The result is a controller which excels in applications that require high sustained data rates and I/O turnaround, without compromising fault-tolerance and data-availability.

## FEATURES

### High Flexibility

Each Fibre channel can be defined as either a drive or a host channel. This allows the connection of multi-host systems through independent channels.

### SAN Application

The RC-2000 has all the necessary protocols for SAN applications. This includes facilities for LUN filtering, also known as SAN mapping or masking, and global file system (GFS) Dlocks. It has advanced functions for setting different types of data protection from local back-up to full disaster-tolerant remote redundant systems.

### High Data Availability

With a multitude of RAID functions, the user gets the highest data availability and security. The RC-2000's capabilities include: automatic drive failure detection, concurrent background rebuilding, and bad sector reassignment. When the controller detects a hard drive failure in a RAID 1, 3, or 5 logical drive, the disk array will instantly replace the failed disk with a hot-spare drive. Data is reconstructed onto the hot-spare drive, while the host remains uninterrupted. In the absence of a hot-spare drive, users can hot-swap the failed drive with a new one and the rebuild will initiate automatically.

### Active-Active Redundancy

The RC-2000 supports active-active redundancy with a synchronized write-back cache. Each controller has two dedicated high-bandwidth channels for cache synchronization. While in redundant mode, a failed controller automatically shifts I/O functions to the existing controller, and the controller failover/failback process is transparent to the host.

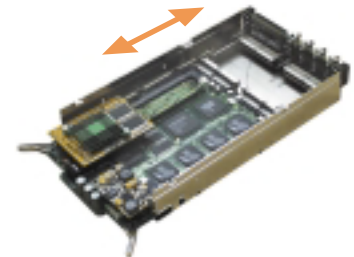
### Redundant Chassis (2000R)

The NS-RC 2000R series consists of two controllers housed in a 5.25" full-height chassis. Two dedicated high-bandwidth channels are used for cache synchronization. Its cableless design makes system integration effortless.

# Fibre-Fibre RAID Controllers 5.25" Drive Profile

Bypass circuits are included to maintain loop integrity during controller replacement.

## Hot-Swap Mechanism

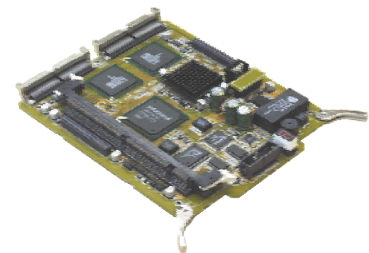


The controller itself is hot-swappable for full non-stop redundant operation. The backplane holding the cable connections is joined / separated from the main controller board with a pair of docking connectors. A faulty controller can easily be ejected from the front which has a removable bezel.

## Battery Back-Up

The optional battery backup protects any data in the write-back cache from sudden power interruptions. If system power is lost before the controller completes a cache write flush operation, the battery supplies auxiliary power (see specifications for details) to the controller's DRAM until the write cache is flushed.

## Board-Only Solutions for OEM's



The RC-2000 controller is an ideal solution for OEM customers who design their own backplanes. The controller board can be readily integrated with the mechanical design of their backplane. This guarantees OEMs to fully accomplish a cable-less and hot-swappable enclosure design.



## DAUGHTERBOARD

IFT-9282FA 2 Fibre



## BACKPLANES

IFT-9288B6A For 2000-4; DB9 Fibre x 4, DB68 SCSI x 2, power x 2, I<sup>2</sup>C port, COM1+COM2 combo serial port, battery connector



IFT-9288B6B 2000-6 plus IFT-9282FA; DB9 Fibre x 6, power x 2, I<sup>2</sup>C port, COM1+COM2 combo serial port, battery connector



IFT-9288BB DB9 Fibre x 6, power x 4, battery connector x 2, other interfaces same as 9288B6B. Vertical backplane for EonRAID 2000R with bypass circuits on board, full-height



## ACCESSORIES

- IFT-9010C Battery cell pack
- IFT-9070C Battery backup daughterboard
- IFT-9512 COM1 and COM2 combo cable
- IFT-9531 Bezel key

## SPECIFICATIONS

### Compatibility

- Host platform independent
- Host OS independent
- 5.25 inch, half-height formfactor
- S.M.A.R.T. support with enhanced features

### Fibre Operation

- FC-AL Fibre channels
- 100 MBytes/sec transfer rate
- Up to 125 drives per channel
- Full duplex send/receive payload buffers
- Up to 30m(copper), 10km(optical) cable length
- Host-side redundant loop support
- Drive-side redundant loop intelligent load balancing
- MIA support on all Fibre channels
- Loop IDs aliasing

### SAN Operation

- LUN Filtering (SAN mapping or masking)
- Disaster tolerance: remote redundancy and mirroring
- SAN Backup: remote replication and local snapshot backup
- Redundant loop balancing
- Global file system(GFS) Drives

### RAID Operation

- RAID levels 0, 1, (0+ 1), 3, 5, 10, 30, 50, N RAID and JBOD
- Multiple host support
- Up to 8 logical drives of variable RAID levels for a maximum of 16 terabytes
- Unlimited logical drive size
- Dedicated and Global spare drive support
- MSCS clustering support
- Active-active redundant controller operation with synchronized write-back cache
- Host-LUN mapping
- Online RAID expansion

### Fault Detection, Monitoring and Recovery

- Automatic and background rebuild
- Hot spare drive operation
- Disk hot-swapping
- Memory parity checking
- Infortrend Simple Enclosure Management Service (ISEMS) via I<sup>2</sup>C interface SAF-TE, S.E.S.
- On-board alarm
- Controller self-diagnostics

### Management

- RAIDWatch manager software for any platform that supports Java 2.0 or higher.
- Text-based RAID manager (Text RAID Manager) software (all major platforms) Firmware-embedded manager (via RS-232C port)
- Management via LAN SNMP
- Field-upgradeable firmware in flash memory

### Processor

- PowerPC 64-bit RISC microprocessor
- Dual Infortrend proprietary 64-bit ASIC chipset with enhanced hardware assisted XOR
- Write-through, write-back, multi-threaded intelligent predictive read-ahead, optimized sorted and grouped writes
- Up to 1GB maximum cache size on single SDRAM DIMM socket with ECC support

### Physical/electrical

Channels	FC-AL Fibre
Interfaces	Power, I <sup>2</sup> C port, serial port COM1+COM2 combo serial port, battery connector
Input Voltage	+ 5VDC, + 12VDC
2000	5.25" half-height, 9.93L x 5.75W x 1.60H inches
2000R	5.25" full-height, 9.93L x 5.75W x 3.30H inches
Main Board Dimensions	7.99L x 5.62W inches
Operating Temperature	5° to 44°C
Relative Humidity	10-95%, non-condensing
Altitude	Sea level to 10,000 ft
MTBF	> 500,000 hours

