Configuring the RAID Array 3000 for Dual Controller Operation With Netware 4

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Introduction

This application note describes how to load the Adaptec AIC7870.DSK driver in Netware 4 to take advantage of the RAID Array 3000 Dual-Controller functionality. To configure the dual-controller RAID Array 3000, refer to your *Getting Started, RAID Array 3000 for Novell Netware Installation Guide, AA-RCJDA-TE*. To take full advantage of the dual controller features of the RAID Array 3000, Adaptec driver AIC7870.DSK Version d4.10 S41 must be loaded in STARTUP.NCF with the following switches:

```
Load AIC7870.DSK io_timeout=30 io_retries=10
```

The dual-controller failover capability must have the *io-timeout* and the *io_retries* values set. This value depends on the number and size of storagesets configured. If you are using a single controller RAID Array 3000, you do not need these two switches. The recommended values are *io_timeout*=30 *io_retries*=10.

The *io_timeout* variable is a counter that is used to detect and retry/abort I/O requests that have either come back with an error or haven't come back at all (i.e. lost or not completed for some reason). Approximately every two seconds, the driver calls a timer routine that decrements the io_timeout counter of all I/O requests. When it reaches 0, the I/O request is either retried or aborted (depending on the *io_retries* variable). Therefore, *io_timeout* * 2 is approximately the number of seconds the driver waits before retrying or aborting a given I/O command. Its primary purpose is to prevent the system from hanging while waiting for lost I/O requests.

The *io_retries* is a counter for how many times to retry a command before aborting it. Every time the *io_timeout* counter reaches 0, *io_retries* is decremented and the I/O request is retried. When *io_retries* reaches 0, the driver reports an error to the OS (i.e. the request is aborted). Note that if the request is retried, its io_timeout counter is reset to the user-specified value. Thus, if we had a time-out of 30 seconds and a retry count of 10, we could potentially wait five minutes before reporting the request's status back to the OS.

Multiple LUN Support.

The `lun_enable` or `multlun_targets` switches must also be set for NetWare to see multiple luns configured on the RAID Array 3000. If you do not use multiple LUNs, you do not need to enable these two switches. Add these switches to your `load aic7870` statement.

```
lun_enable=xx multlun_targets=xx
```

lun_enable =	scan for LUNS on all targets	Hexadecimal 0 - FF	1 (Scan LUN 0 only)
multlun_targets =	scan for LUNS on selected targets	Hexadecimal 0 - FFFF	FFFF (LUNs on all targets)

Bit Mask Options

Use the example in the following table to aid in calculating bit mask options hex values. Each SCSI device ID 0-7 (or 0-15 for wide host adapters) is enabled by a "1" in its corresponding bit position. For example, lun_enable = 03 enables scanning for LUNs 0 and 1 on all targets. If multlun_targets = 03 is set, then this enables all luns on SCSI target ID's 0 and 1. You can use either or both of these switches.

	Bit Position			
SCSI ID	15 14 13 12	11 10 09 08	07 06 05 04	03 02 01 00
Binary	0 0 0 0	0 0 0 0	0 0 0 0	0 0 1 1
Hex Conversion	0	0	0	3

Mapping Netware Partitions with Netware Device ID's

When you create your Netware partitions, the disk options will show the devices as:

1. Device # 3 DEC   HSZ22   (5D020101)
2. Device # 4 DEC   HSZ22   (5D020201)
3. Device # 5 DEC   HSZ22   (5D020301)
4. Device # 6 DEC   HSZ22   (5D020401)
5. Device # 7 DEC   HSZ22   (5D020501)
6. Device # 8 DEC   HSZ22   (5D020601)
7. Device # 9 DEC   HSZ22   (5D020701)

Device #9 DEC HSZ22 (5D020701) breaks down as:

5D	02	07	01
adapter device ID,	adapter number,	LUN number,	SCSI ID