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Apple RAID: Software Overview (3/95)

Revised: 3/17/95
Security: Everyone

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Article Created: 8 November 1994
Article Reviewed/Updated: 17 March 1995

TOPIC ---

This article provides an overview of Apple RAID (Redundant Array of Independent
Disks) software.

DISCUSSION --

Overview
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RAID is a method of using multiple disk drives and multiple SCSI buses to
increase the reliability and/or performance of disk subsystems. There are
several RAID levels available in the commercial market today. The most well
known RAID levels are from 0 through 5, but other levels are emerging. Each
level has its unique set of features and appropriate uses. Apple RAID Software
provides RAID levels 0 and 1 (described later in this article), and was designed
specifically for PowerPC-based Workgroup Servers, and provides three main
features for the PowerPC-based Workgroup Servers:

• Reliability: improve server fault tolerance (RAID 1, mirroring).
• Performance: increase system performance (RAID 0, striping).
• Ease of Use: Simple graphical interface, with drag & drop features.

The Apple RAID software has three main parts:

• Apple RAID Monitor extension
• Apple RAID Driver
• Apple RAID Application

Apple RAID Monitor extension

The Apple RAID monitor is loaded at startup and monitors the condition of Apple
RAID formatted disks. If a failed disk is detected, the monitor extension

receives an error notification from the disk and notifies the user on the
server's local desktop. (Currently, remote notification of failed disks in not
available in this version of Apple RAID.)

Apple RAID Driver

The Apple RAID Driver has two main parts:

• One part is loaded with the system software at startup and acts as the
interface between an application's request for data and the SCSI Manager.

• The other part is loaded onto each disk formatted by Apple RAID and interprets
commands from the SCSI manager and a disk's SCSI firmware.

For example, when an application writes data to a mirrored volume, the Apple
RAID Driver converts this command into two identical write commands for the SCSI
Manager, one write command to each of the two disks with partitions for the
mirrored volume. If the application is reading from a striped volume, the Apple
RAID Driver reconnects the data stripes from each disk into the appropriate form
for the requesting application.

At the disk level, the Apple RAID Driver monitors the status of each disk and
reports various error conditions to the Apple RAID application.

Apple RAID Application

The Apple RAID application is the main interface as seen by users. It provides
information about the type and location of connected hard disks, the created
RAID volumes, and provides users the ability to create, manage, and repair
volumes.

Apple RAID currently does not support SCSI/NuBus cards for additional SCSI
buses, and actively attempts to turn off disk caching for connected disks. Also,
Apple RAID checks to see if the system was shut down in a controlled fashion and
if a mirrored volume is "out-of-sync".

Article Change History:
17 Mar 1995 - Corrected PowerPC wording.
14 Feb 1995 - Added keyword; made minor technical updates.

Support Information Services

Tech Info Library Article Number:16712