Apple RAID: Software Overview (3/95)

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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".

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

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