



**RocketRAID Intelli-VRM™
(Intelligent Virtual RAID Management)**

“Early Warning System and Virtual System Rescue”

Introduction

The fast-paced, high-definition requirements of our modern, digital age, has increased demand for high capacity storage. Maintaining a high-level of performance without sacrificing reliability is paramount - downtime means lost revenue. As a result, modern companies facing the reality of a 24/7 business model, require mass storage solutions that can be seamlessly, and rapidly, integrated into existing infrastructure.

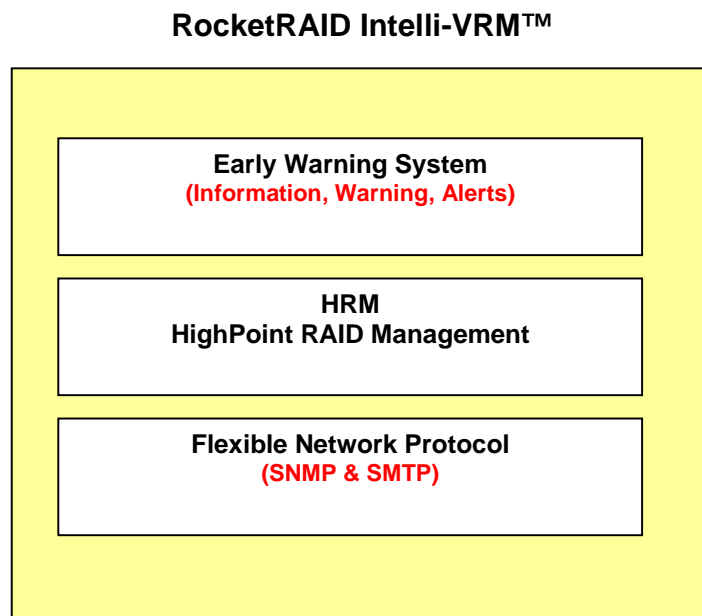
The Problem – Prohibitive Costs of Support

Turn-key Storage Appliances are an attractive option for these growing businesses – they provide user friendly data management solutions for companies that do not want to concern themselves with the complexity of the underlying technology. Highly cost effective from a hardware standpoint, and easy to install, these products appeal to a large pool of potential customers. However, adding such Appliances raises post-sales maintenance concerns for many SMB (Small to Medium Businesses). SMB's often do not have substantial IT departments, and may need to hire maintenance staff, or outsource administrative responsibilities to technology consultants, in order to service the new hardware. Unfortunately, the costs of hiring additional personnel can turn a large number of potential SMB customers away from storage appliances.

The Solution – HighPoint RocketRAID Intelli-VRM™ (Intelligent Virtual RAID Management)

The HighPoint RocketRAID Intelli-VRM™ is the industry's first virtualized RAID management solution to offers an independent RAID module that is combined with an early warning system for advance warnings, alerts and information. This revolutionary breakthrough with virtual RAID management will help eliminate the additional cost of post sales support to the SMB.

RocketRAID Intelli-VRM™ (Intelligent Virtual RAID Management) Block Diagram



Main benefits of "RocketRAID Intelli-VRM™" are **Early Warning System** and **Virtual Onsite Rescue**.

Early Warning System

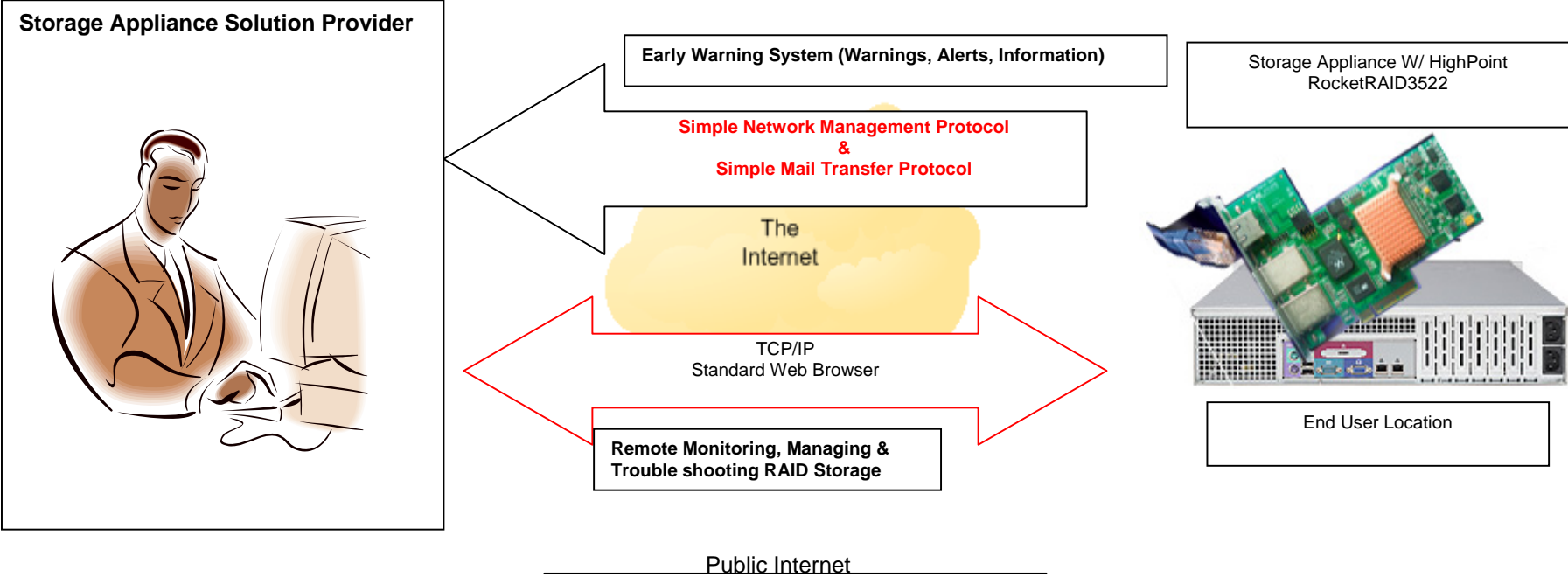
The first benefit of the RocketRAID Intelli-VRM™ solution is the Early Warning System which includes RAID monitoring of the storage. It includes automatic rebuild capabilities, event logging and abnormal out of range conditions defined in the system notifications function. The Early Warning System is linked to (SHI) Storage Health Inspector which includes SMART status information. The types of information included are (Warnings, Alerts and Information) that are sent by email (SMTP) or through SNMP traps.

Virtual Onsite Rescue

The second benefit of the RocketRAID Intelli-VRM™ solution is Virtual Onsite Rescue which makes remote troubleshooting possible. Early Warning System sends alerts and warnings the system administrator. The system administrator will be virtually onsite to help troubleshoot the RAID storage by examining event logs and checking the storage health status. With Virtual Onsite Rescue the cost of technical support and troubleshooting is removed the reseller since they are not often able to provide the level of support that some SMB (Small to Medium Businesses) are capable of providing.

RocketRAID Intelli-VRM™ (Firmware Based Intelli-VRM™)

The Reseller will assist in support case only when it is necessary and when they need to be at the customer's site.



RocketRAID 3000 Series Feature Highlights

The RocketRAID 3000 Series of hardware RAID controllers have the following advance features to deliver the performance, reliability and stability needed for enterprise storage environments.

Hardware Features

Specification

Processor Engine:	Intel IOP341 at 800MHz
Intel ADMA Module:	Enhancing performance for concurrent RAID requests to reduce latency
Cache Memory:	256MB of DDR-II with ECC (533MHz)
Dedicated LAN Port: (RocketRAID 3522 series and above)	Dedicated LAN for port with 10/100/1000 Mbps speeds
Dedicated Connectors:	Internal or External mini-SAS ports for secure connections
Bus Speed:	PCI-Express x8
NVRAM:	RAID Events keeper for troubleshooting and
BBU:	Battery Back Up - (Write Back) cache option for redundant RAID arrays enabled to preserve unwritten for up to 72 hours during power lose

RAID Functionality

Specification

Create/Delete/Initialization:	Creating RAID storage in host adapter BIOS or through web GUI, RAID GUI or CLI (Command Line Interface)
Global Hot Spare:	A global spare drive setup on standby to help automatically rebuild redundant RAID arrays
Hot Swap:	The ability to add/remove a drive when the system is still powered on
Auto Rebuilding:	Automatic rebuilding of degraded RAID array when a new disk is inserted in RAID controller
RAID Levels:	0, 1, 3, 5, 10, 50 and JBOD for performance, protection or single drive
RAID 6:	Dual hard disk parity protection for large RAID arrays; Hardware (P+Q)
Multiple RAID Arrays:	Create multiple RAID arrays and different RAID levels on a single controller
VSS (Variable Sector Size):	Support for greater than 2TB single partition for non-GPT Windows operating systems)

Spin Down Idle Disk:	Power saving feature to spin down idle disk at a specified time when drives are not accessed
Read Ahead:	Increase overall READ performance when workloads are steady and sequential.
<u>RAID Management & Monitoring</u>	<u>Specification</u>
Array Verification:	Verification of redundant RAID arrays for errors, disk scrubbing to eliminate bad sectors and bad sector reallocation
Storage Health Inspector (SHI):	Monitoring individual hard drive SMART status and drive temperature. SMART failures and temperature failures are recorded in Event Log
Event Log History:	All RAID arrays events (Information, Warnings and Errors) are recorded in the Event Log history to alert users of problem or potential problems.
NTP:	Network Time Protocol – synchronize host Intelli-VRM time stamp to server time clock.
<u>Event Notifications</u>	<u>Specification</u>
System Traps: (RocketRAID 3522 series and above)	(Simple Network Management Protocol) A popular protocol for network management for collecting information from and configuring the RAID array
Email Notification:	(Simple Mail Transport Protocol). Is the network protocol used to send email across the Internet with (Information, Warnings or Errors) status on the RAID array
Local Buzzer:	Buzzer to alert users that an unusual event has occurred on the RAID array
LED:	SATA hard drive activity, present and failure LED for rack mount chassis.
<u>Operating Systems Support:</u>	High quality software support for the RocketRAID 3000 Series controllers.
WHQL Certified:	Windows Hardware Quality Labs certified drivers for Window 2003 Server and Windows Vista
GPL Licensed Linux Driver:	GPL Licensed Linux driver embedded into kernel 2.6.24; Linux distribution with kernel 2.6.24 will mean pull and play RocketRAID series hardware.
FreeBSD	FreeBSD 7.0 (32and 64) bit licensed driver embedded into FreeBSD kernel

Linux

RHEL / CentOS :

Red Hat Enterprise Linux 3,4,5 / CentOS
(32 and 64) bit versions supported.

Fedora Core 1-8:

Fedora Core versions 1-8 (32 and 64) bit
versions supported.

SuSE:

Open SuSE 8 – 10.3 (32 and 64) bit supported

SLES:

SuSE Linux Enterprise Server 9-10 (32 and 64)
bit supported.

Windows:

Windows 2000, XP (Pro and Home), Windows
x64 bit, Windows Server 2003, Windows Server
2008, Windows Vista (32 and 64) bit

Mac OS X:

Mac OS X 10.4.x (Tiger) and 10.5.x (Leopard)