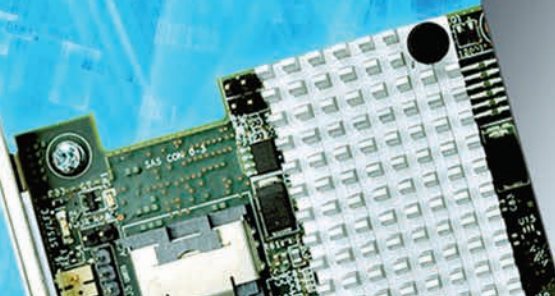


ABOUT INTEL® RAID

Industry Leading Storage
Solutions from Intel®



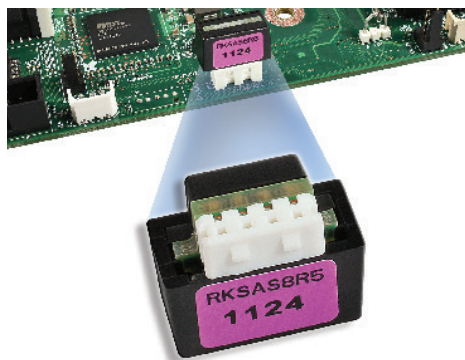
ABOUT INTEL RAID

Industry Leading Storage Solutions from Intel

Intel's portfolio of industry leading RAID products, powered by LSI*, is segmented into 5 types of products that serve 5 different markets. This document describes how the RAID products are classified and their corresponding target markets.

Intel RAID Classifications

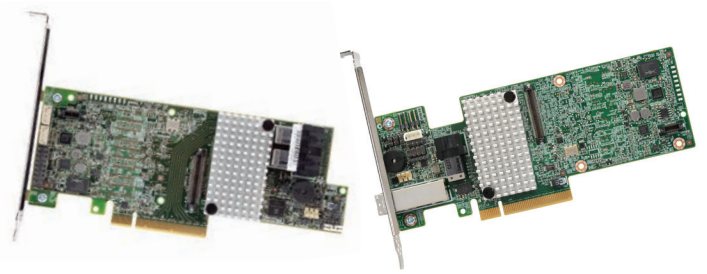
Intel categorizes RAID products into five distinct types, based upon how they are used within Intel platforms.



Intel® Embedded Server RAID Technology II

Software RAID for Basic Data Protection and Performance

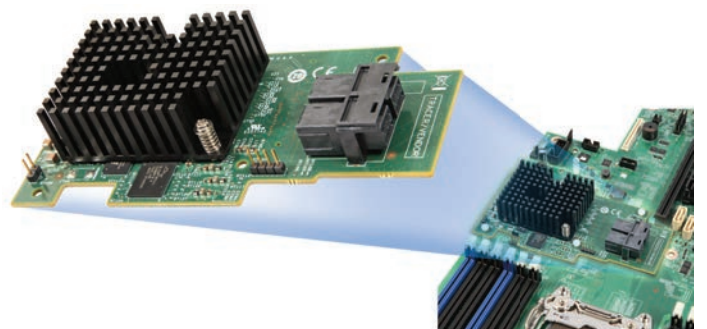
The Intel® Embedded Server RAID Technology is host-based RAID that utilizes the chip-set, processors, and memory of the server board to provide basic data protection. It includes advanced technologies and features to support up to six SATA or eight SAS/SATA drives, depending on the server board or system. Intel Embedded Server RAID Technology with SATA RAID 0,1,0 support is included with Intel® Server Boards RAID 5 is available as an upgrade (small key as shown) for all Intel Server Boards. SAS is available as an upgrade for select Intel® Server Boards.



Intel® RAID Controllers

Standard Add-In Cards for Intel and 3rd Party Server Boards

Intel® RAID Controllers are expansion cards that plug into a PCIe slot on the computer system's motherboard and provides fast, reliable, non-RAID I/O between the host and the storage devices. They facilitate redundancy, optimize performance, reduce latency and determine when to store data on an HDD or an SSD cache. Intel RAID Controllers feature RAID-On-Chip technology, native PCI express* architecture and high- speed cache. Powered by LSI* MegaRAID* Technology, Intel RAID Controllers provide Advanced Management, Solid-State Drive (SSD) support with unique functions such as SSD Guard* data protection and high energy efficiency.



Intel® Integrated Server RAID Technology

Unique Modules and system boards for Added Flexibility and Ease of Use with Intel Server Boards

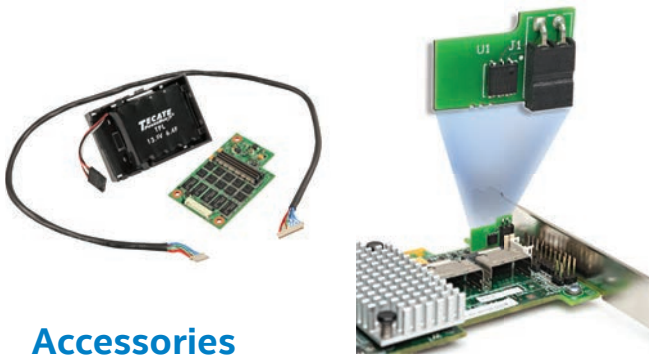
Intel® Integrated Server RAID Technology brings the features and functionality of Intel RAID Controllers (standard add-in cards) to unique system boards. Small form factor mezzanine modules allow system builders to optimize RAID without sacrificing a riser card slot or using a chassis with low-profile add-in card cutouts for 1U and 2U servers. Intel Integrated Server RAID Technology provides mission critical fault tolerance for hard drives with options for direct SAS connectivity and RAID levels 0/1/5/6/10/50/60.



Expanders

For Systems with More than 8 Drives

Expanders allow for additional SAS devices to be connected to a SAS based controller card or HBA. In any SAS configuration the number of devices that can be connected is a function of the number of ports that are available. A SAS expander can be thought of as being similar to a switch that allows additional device to be connected.



Accessories

1. Premium Feature Keys

Add Features to the Server You Already Own.

Premium feature keys are physical keys that plug into an Intel system and provides additional functionality. This additional functionality could include providing RAID features to SAS ports that previously only offered basic connectivity. Other features, depending on the key could allow for the use of an attached SSD to function as high-speed cache for attached storage.

2. Cache Backup

Keeping Your Data Safe When the Lights Go Out

Write back cache offers performance benefits to write intensive environments by allowing data to be written to the cache on the RAID controller instead of to disk. The danger in doing this is that if there is a power loss to the host server before the data in cache is written to disk then data loss may occur. Cache backup provides a layer of protection from this. The cache is protected either through a physical battery that keeps data resident in cache until power is restored or through a capacitor that provides power to write data from DRAM cache to non-volatile flash memory.

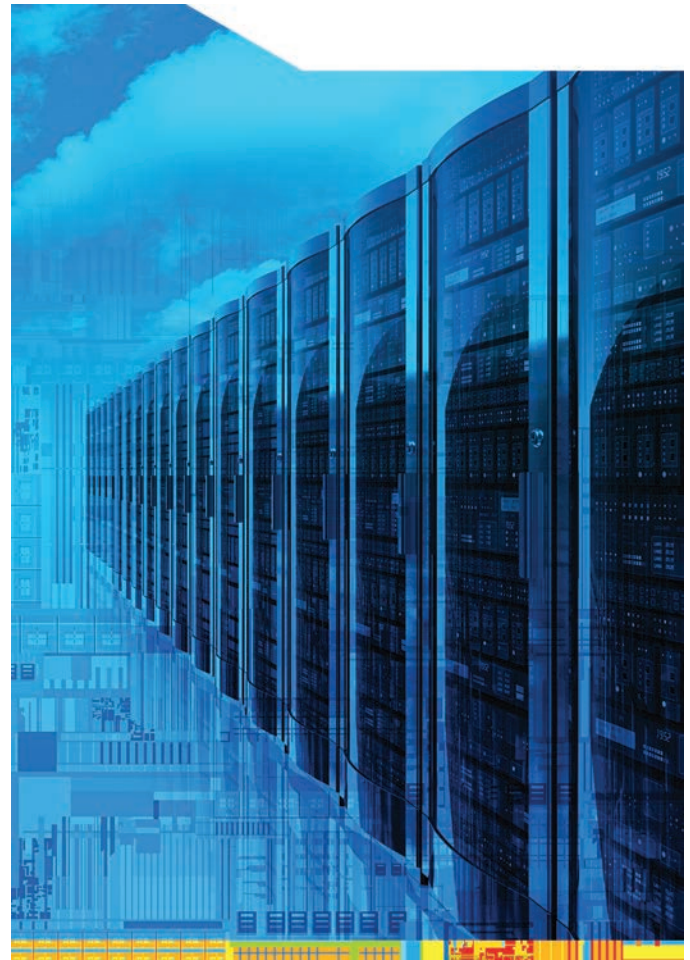
Target Markets

Intel understands that different users have different needs. That is why Intel offers a complete line of RAID storage solutions, powered by LSI*. Each of these solutions is designed to offer users the right combination of performance and protection. With solutions ranging from software based RAID for desktop users to the most advanced data center, Intel RAID products are products are classified into five markets.

1. Scalable Performance

For users that demand the highest performing solutions, the Intel RAID Scalable Performance controllers provide full RAID functionality including RAID levels 0, 1, 5, 6, 50 and 60. Scalable performance cards are available with:

- a) External ports to extend RAID to JBOD connected storage.
- b) High capacity on-board solid state memory and advanced read caching algorithms to provide maximum performance for transaction-intensive applications.





2. Mainstream

Mainstream RAID solutions are the most widely used controllers within the Intel RAID family. They offer full hardware RAID functionality including a powerful on-board processor for parity calculations and support for RAID levels 0, 1, 5, 6, 50 and 60. These solutions include performance features such as on-board dynamic cache. These cards are available with advanced features that can provide for additional data protection in the event of a system failure. memory and data protection features such as an on-board battery.

3. SMB and Mid-Tier Datacenter

The SMB solutions offer advanced RAID levels and storage management beyond what software RAID can offer. These solutions offer advanced management and parity-based data protection like more advanced solutions, but the performance is not quite as high. These solutions use system resources for generating parity information on RAID 5 and 50 sets. However, unlike software RAID in which the RAID is OS driver based, the RAID algorithms are hosted in the hardware firmware.

4. Entry-Level

The Entry-Level Intel RAID solutions only offer RAID levels 0, 1, 10 and 1E plus JBOD mode. These are ideal for environments where SAS connectivity or providing an OS mirror is key; but advanced management and high RAID performance is not required.

5. Software RAID

Software RAID offers basic functionality and can also be an excellent choice for an OS mirror or non-business critical RAID. As the name implies, Software RAID provides functionality through software and relies upon the host system to provide any resources that may be needed, such as processor cycles and memory space for parity calculations. This use of system resources can have a significant impact on system performance, particularly during when a drive failure is experienced in a parity set.

For more information visit: www.intel.com/go/RAID

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