

Solution Brief



"Intel® Modular Server abstracts the physical disks into virtual drives that can be created, removed, or changed on the fly, without powering servers up or down. DataCore extends those resources by allowing centralized management to reach beyond the chassis, as well as by enabling advanced services."

— Jared Leavitt,
Product Line Manager,
Intel

Virtualized Storage Infrastructure Reduces Cost and Complexity

DataCore adds flexible, low-cost storage scalability to the Intel® Modular Server

Intel Modular Server combines compute, storage, networking, and management modules in a single, unified chassis that includes an integrated SAN. DataCore SANmelody extends Intel Modular Server's SAN outside the chassis, making it accessible to other servers. SANmelody also allows the Intel Modular Server to act as a central storage subsystem for a larger server infrastructure, while enabling advanced usage models such as thin provisioning of storage and remote replication.

The Intel® Enabled Server Acceleration Alliance (Intel® ESAA) gives value-added resellers free access to pre-validated solution recipes that provide detailed instructions for configuration of this combined infrastructure¹. Customers have confidence that all components have been thoroughly tested by Intel and DataCore and work together smoothly, for predictable, dependable results. Intel ESAA enables resellers to deliver a wide range of Intel®-based server solutions at a lower cost and with faster time to market. To learn more, visit www.intel.com/go/esaa.

Intel® Modular Server Delivers an All-in-One Infrastructure That Grows on Demand

Intel Modular Server integrates compute, storage, and networking resources into a 6U chassis optimized for either rack-mount or pedestal implementation. It is engineered from the ground up to give businesses of all sizes enterprise-class capabilities with a simple, flexible, and value-oriented chassis-based infrastructure.

IT organizations can simplify their operations using the Intel Modular Server, a single integrated system managed centrally with a point-and-click interface. They can achieve greater flexibility with the ability to increase capacity on demand using hot-swappable compute and storage modules. They can lower their operating costs through high resource utilization, efficient management and serviceability, and excellent energy efficiency.





Figure 1. Intel® Modular Server integrates multiple levels of infrastructure in a single chassis:

- 1 Support for six dual-processor compute modules
- 2 Virtual shared storage based on 14 hot-swap hard drives with RAID 0, 1, 1E, 5, 6, 10
- 3 Integrated networking with ten 1 GbE uplinks
- 4 GUI-based hardware management
- 5 Redundant hot-swap fans and power supplies

The Intel Modular Server's SAN provides consolidated, shared storage that separates hard disks from the compute modules, creating a series of virtual drives that are mapped to server slots rather than servers. If an individual compute module is upgraded or otherwise replaced, it automatically connects to the appropriate storage resources, simplifying maintenance and setup. The abstraction of storage into a shared pool also optimizes the use of physical storage resources, reducing hardware costs.

Intel® Modular Server Features	Real-World Benefits
Scalable compute capacity	Supports up to six Intel® Server Compute Modules based on Intel® Xeon® processors, including modules based on different generations of processors
Integrated SAN	Separates storage from compute resources, allowing for the creation of storage pools and virtual drives that reduce the amount of physical storage needed
Virtual presence GUI management	Allows robust, simple management of remote systems
Integrated networking	Dual Gigabit Ethernet (GbE) switches offer ten 1 GbE uplinks per module
Full redundancy and hot-swap capabilities	Provides for increased capacity on demand and improves availability

DataCore Extends Intel Modular Server's Reach and Capabilities

DataCore lets customers extend the native SAN functionality of Intel Modular Server beyond the chassis to provide more advanced storage capabilities. Carlos Carreras, vice president of business development at DataCore, emphasizes the ability of the solution to simplify implementation. As he puts it, "The Intel Modular Server saves customers from the complexity of piecing together hardware solutions. Intel ESAA recipes for DataCore add the benefits of advanced storage servers to that scenario. Now it's effortless and inexpensive for them to provide services like storage capacity on demand, advanced backup and recovery, and high availability."

SANmelody enables the Intel Modular Server SAN to appear to the rest of the network simply as a very large, flexible, shared storage resource. Servers can be assigned large amounts of virtual storage capacity but only physically consume the small fraction that they actually write to. Furthermore, the storage pool can be expanded centrally and non-disruptively as capacity is depleted to meet the changing needs of the business without guessing and overspending.

Organizations that implement SANmelody can capture point-in-time snapshot images of their systems environment at any time they like. These restore points make it very simple to return the system to that precise state, and restoration occurs at disk speeds, which is both faster and simpler than using tape and other common backup mechanisms. Low-impact, thinly-provisioned online snapshots also prove invaluable when testing new applications or system changes, backing out IT changes if problems arise and analyzing business trends using consistent replicas of live data.

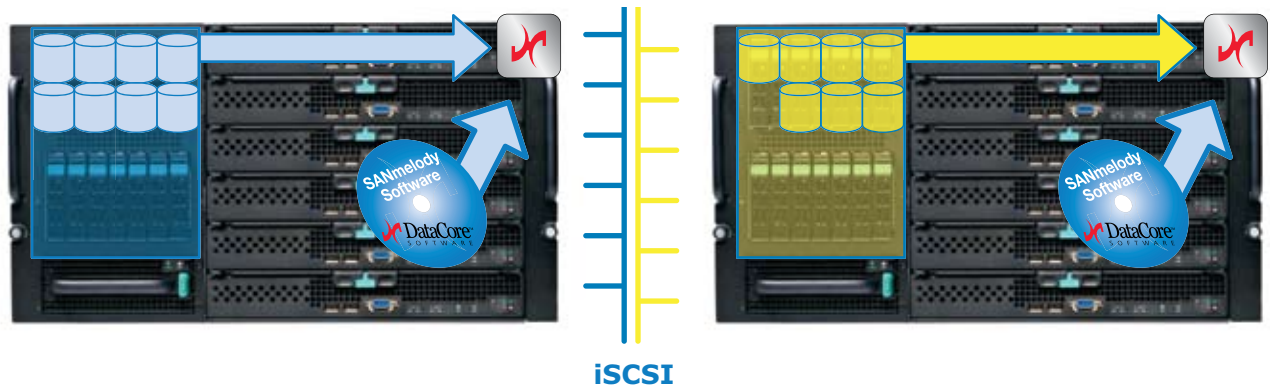


Figure 2. DataCore SANmelody* is installed on one compute module in each Intel® Modular Server chassis, making it the storage-control engine for that chassis. Operating systems and applications on all compute modules have access to the advanced services of the multi-chassis DataCore environment.

SANmelody achieves radically simple high availability by synchronously mirroring between two Intel Modular Servers using iSCSI across an Ethernet network. Each half of a mirrored virtual disk is accessible over multiple paths from the servers to eliminate single points of failure in the storage infrastructure. Hot sites can be cost-effectively implemented

within a metropolitan area using this unique capability. When longer distances preclude the use of synchronous mirroring, SANmelody will asynchronously replicate virtual disks over any IP-based wide-area network in both directions. This cost-effective disaster recovery mechanism is ideal for companies of all sizes.

DataCore SANmelody* Features	Real-World Benefits
Thin provisioning	Allocates just enough space, just-in-time to minimize storage consumption and maximize utilization
Point-in-time, online snapshots	Enables rapid restores from disk to the last known good state, streamlining backup/recovery operations, testing, and analysis
Synchronous mirroring with metro-wide automatic fail-over and fail-back	Makes high availability practical by eliminating storage-related disruptions from repairs, upgrades, expansions, and failures
Asynchronous remote replication over IP WANs	Automatically updates disks at remote sites for rapid disaster recovery without slowing application performance

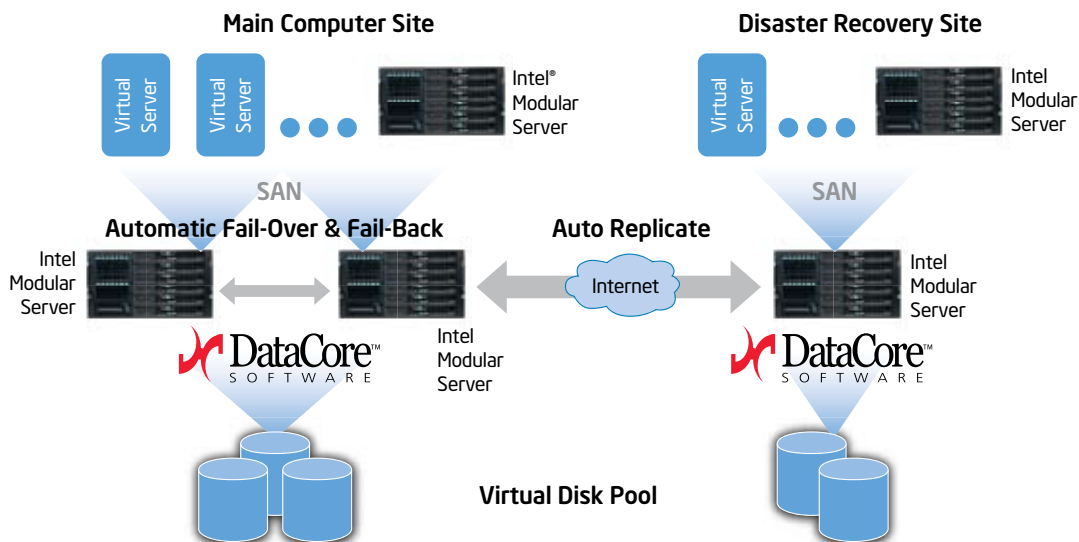


Figure 3. DataCore SANmelody* storage virtualization implemented on Intel® Modular Server hardware provides high availability and disaster recovery with hot-site mirroring and off-site replication.

Intel Modular Server and SANmelody in Action: Solving a Real-World Budget Shortfall

Organizations struggle every day with project requirements that exceed the ability of their budgets to fulfill them. In one such case, a police department was planning a server-consolidation project using virtualization. As part of the project requirements, the customer wanted to implement a SAN in order to migrate live virtual machines to support advanced failover, load balancing, and other capabilities. Some of the core characteristics of the project were as follows:

- Users: 300
- Application servers: 20
- Main applications: Microsoft Exchange* Server and SQL Server*
- Shared storage: 4 TB

With a project budget of about USD 100,000, the project team had discovered that a SAN from a Tier 1 storage vendor would consume almost all of their funds. By deploying SANmelody and VMware ESX* on two Intel Modular Servers, the project came in under budget and the customer got the SAN functionality they needed. In fact, the police department was able to increase the project scope by adding the ability to replicate data between their main site and a remote facility 10 miles away.

Organizations of all types and sizes are finding these types of results. By combining the flexibility, cost-effectiveness, and scalability of SANmelody-virtualized SANs running on Intel Modular Servers, they can build an advanced infrastructure under tight budgets. This new class of storage solutions meets the requirements of next-generation computing while reducing complexity and positioning organizations for flexible growth.

Take the Next Step

DataCore solutions built on Intel Modular Server give growing businesses of all sizes cost-effective access to cutting-edge SAN technology with the flexibility to grow on demand. Learn more:

Intel® Modular Server: www.intel.com/go/mft

DataCore solutions: www.datacore.com

Solution provided by:



¹ Membership in the Intel ESAA program is free for direct OEMs and Intel® Channel Partner Program Members at the Premier and Associate levels. For more information on membership requirements, visit www.esaa-members.com/index.php/users/register.

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