

Productivity White Paper

**Deploying Dataram Memory in Mission-Critical Servers:
Practical Issues and Significant Cost Savings**



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Summary

Deploying Dataram memory in a mission-critical data center is a sound business decision. The risks are easily identified and evaluated, and the unique concentration of servers in a central data center makes the logistics of support significantly more manageable than distributed environments. Seeking and obtaining the cooperation of the OEM service provider is an important step, but may not be difficult. A careful business analysis of the additional cost and effort for service of Dataram memory is a worthwhile effort and one that every IT organization should undertake. By purchasing a minimum system configuration when new and adding Dataram memory, or by using Dataram for later upgrades, IT managers can create thousands of additional dollars out of the most tightly constrained budget.

The emergence of the data center

Since Y2K, the corporate data center has emerged as a key element of Information Technology (IT) strategy. This strategy places mission-critical computers, software and data at the heart of the corporate network on a global scale.

Instead of relying on a distributed network of decentralized departmental servers, single-user workstations and repetitive software installations, IT managers now choose to concentrate computational power for maximum impact. Combining the best of throughput and flexibility, this approach deploys strategically located “compute and storage farms” consisting of racks of powerful servers and massive disk arrays to dynamically allocate IT assets.

- For engineering needs such as EDA and design verification, this load-sharing approach provides the real-time capability to assign CPU cycles, main memory and disk storage to individual processing jobs on the fly. An engineer connected via a “thin client” achieves *maximum productivity* while only tying up resources as needed.
- Operational database applications like CRM and ERP are optimized by assigning data entry tasks, queries, transactions, and reports across centralized clusters of redundant servers -- all with *common access* to underlying storage area networks.
- Web services and e-commerce are *easily scalable* by the replication of low-cost racks of “appliance servers” piping data through the Internet at broadband speeds.
- Customer-specific analytical tools like data-mining and real-time modeling benefit from this centralized concept by providing *instant availability* to key decision makers globally.

The budget crunch

Post-Y2K economic realities present IT managers with conflicting needs to constrain spending, cut costs, and increase productivity at the same time.

Attempts to satisfy these conflicting needs vary. Co-locating, remote hosting or the outsourcing of IT services are common approaches. Porting to the “free” Linux operating system is increasingly popular. Innovative software licensing and computing-on-demand are gaining ground. All have trade-offs. Unfortunately, hardware cost reduction has often come to mean delaying new purchases and/or recycling older systems. This is no longer practicable.

Increasing productivity means investment in new hardware and updated software. More than ever, IT must look at *every possible approach* to leveraging “IT spend”.

A carefully planned deployment of Dataram memory in conjunction with the purchase of new systems is a very effective solution to improving IT return on investment. Purchasing Dataram memory to supplement a minimally configured OEM system can easily represent hundreds of thousands of dollars in annual savings. This strategy frees budget dollars to use for other critical needs or delivers the mandatory cost reduction without compromising compute power. A detailed cost savings analysis can be prepared by Dataram upon request.

The policy decision to use Dataram memory in mission-critical data centers assures the best long-term value in computer main memory. Dataram quality is renowned, its 35-year track record unparalleled in the industry, and responsiveness second to none. Equally important, the use of Dataram memory empowers IT management in OEM relationships, signaling a desire for cooperation without being bound to high-cost proprietary hardware.

Planning is critical

Economic reality has forced rethinking of what it means to maximize uptime. Reducing cost is now the No. 1 IT priority for U.S. businesses, according to a recent study from Meta Group Inc. Nevertheless maximizing uptime remains an objective of all organizations. “Mission-critical” continues to be the operative term for data centers. IT organizations spend significant budget dollars on service contracts, often requiring OEM field service technicians to arrive on location within two hours.

It is a reality that a hardware component will occasionally fail and a replacement needed. Dataram memory products are extremely reliable and manufactured to the highest quality standards. The statistical likelihood of component failure is literally one in a million. Mean time between failures (MTBF) is measured in decades. Dataram goes to extraordinary lengths to design and manufacture memory products that often exceed OEM standards for reliability and performance. Even so, planning for the unanticipated downtime caused by a memory failure is imperative.

Implementing a carefully thought out service and support plan for Dataram memory is equally “mission-critical” to success. On-site support for Dataram memory must include the fastest possible response, problem identification and resolution so the decision to use Dataram will not compromise data center uptime and reliability when properly implemented.

The Dataram warranty program

Dataram’s warranty program guarantees the responsiveness needed so that Dataram users will not have to incur unbudgeted maintenance fees or extended downtime. Dataram has worked for many years with organizations around the world to create an effective support program that includes the following elements:

- All Dataram-branded memory products are backed by a lifetime warranty, which means no additional warranty costs for material or labor. Dataram pioneered the lifetime warranty for memory in 1986 and still supports memory for systems from that era.
- Dataram will express-ship advanced field replacement, enabling customers to receive a replacement server memory within 24 hours of notification of need in the USA, often within 1-2 days globally.
- Onsite spares for mission-critical data centers are highly recommended and can be cost-effectively added at the time of the initial purchase of Dataram memory.
- Service call reimbursement is a Dataram-unique option whereby Dataram will reimburse the customer, or service provider, for any costs associated with the repair or failure due to Dataram memory, up to and including any time and materials charges.

Understanding Dataram's warranty program is instrumental to developing a service response level with the primary service provider— usually the OEM.

Negotiating with the Service Provider

Service arrangements can usually be accomplished by simply asking the OEM Service Provider to provide break/fix and replacements services, with the understanding that Dataram spares will be stocked at the data center and that Dataram will reimburse the service provider for unanticipated time and materials charges.

On occasion, the OEM may try to resist this request and further negotiations could be required. IT managers must understand the dynamics of this resistance and the tactics that may be employed. IT organizations need to be armed with these facts:

- **Fact #1: The use of Dataram memory does not violate any warranties.** No organization is required to use the OEM's components for system add-ons and the OEM cannot void the system warranty if their customer chooses to do so. Both IBM and Sun have acknowledged so in writing. Customers in the USA may refer to the Magnuson-Moss Act (passed in 1975 in the US Congress) for more information.
- **Fact #2: OEMs will support Dataram memory products** -- on a case-by-case basis-- in the interest of customer satisfaction. Here is what one system manufacturer's company-confidential support policy states:

[manufacturer] does not support non-[manufacturer] memory installed inside [manufacturer] equipment under standard Terms and Conditions of support. However, at its discretion, [manufacturer] will consider specific customer requests to support non-[manufacturer] memory in [manufacturer] equipment...

Dataram can provide references of IT organizations that have successfully negotiated servicing arrangements with OEMs.

- **Fact #3: Dataram memory quality standards equal OEM standards.** Some OEMs equate Dataram’s lower prices with lower quality controls. Nothing could be further from reality. In fact, most OEMs do not manufacture their memory. To reduce fixed manufacturing costs, virtually all OEMs outsource production and quality control to independent manufacturers under contract. Dataram itself is a contract manufacturer to high-quality global OEMs such as GE Medical Systems, SGI, Alcatel, Ericsson, Intel, and NCR.

Dataram invests millions in state-of-the-art manufacturing lines and sophisticated test equipment -- strategically located in USA and European facilities. Dataram’s quality management system adheres to ISO and CE (Europe) – the world’s highest standards for quality. The company rigorously maintains approved vendor lists (AVL) and bill-of-material (BOM) controls on all of its products to assure product quality and consistency. Furthermore, Dataram acquires dozens of OEM systems annually to validate and certify its memory designs.

Dataram procures 100% pre-tested, Grade A DRAMs, under direct contract with the world’s leading suppliers of DRAMs. Memory purchased from Dataram frequently contains identical DRAMs from the same manufacturer as a memory purchased from the OEM.

The reason Dataram memory is priced substantially less is because the company is an efficient, tightly managed organization focused exclusively on memory upgrades, with a much lower overhead and cost of operations.

- **Fact #4: Memory diagnostics do not distinguish between Dataram and OEM memory.** A claim is frequently made by OEMs that their systems' diagnostics will not recognize Dataram memory because of inferior memory design. Once again, this is an incorrect assertion. Software diagnostics treat all memory equally regardless of origin and are essentially designed to isolate a failure to a specific memory slot location to facilitate replacement.

Understanding the competitive reality is important. Sales of OEM main memory are a major moneymaker and consequently Dataram threatens OEM profits. In fact, some OEMs markup memory products ten times over cost.

Because Dataram is a competitor, many OEMs will not officially certify or support Dataram memory. By bundling on-site service with memory products, OEMs hope to justify a significant premium and sway customers to use OEM memory. And by not offering to support Dataram memory under standard terms and conditions, OEMs can subtly influence memory-purchasing decisions. As a result, billions of dollars are needlessly expended on OEM memory annually. This need not be the case.

Two “playing cards” give IT managers a strong hand in negotiations. The first is the competitive threat posed by other OEMs who clamor to displace the incumbent and will gladly offer Dataram support. This card must be presented when faced with reluctance by the primary

OEM. The second is the threat posed by third-party service providers, all of who offer unequivocal support of Dataram memory. These independent providers offer the best of both worlds: operational cost savings on maintenance and capital cost savings on hardware by supporting the deployment of Dataram and other third-party peripherals. Going with a third-party service provider is an option that every IT Manager must present to a reluctant OEM.

When negotiating OEM service on Dataram products, it important to remember that the request is to provide "in warranty" support. The Dataram memory is always under warranty (lifetime), and the job of any service provider is merely to accomplish an "in warranty" swap. Thus, the OEM service provider never has the problem of fault diagnosis and repair of Dataram memory.

In summary, smart IT managers understand that Dataram service is negotiable – usually with very little additional effort. With OEM competitors, not to mention third-party service providers, waiting in the wings, primary OEMs will cooperate when given the alternative. All OEMs understand that openness, choice and flexibility are important, particularly when it comes to service arrangements. IT managers must make this fact clear at all times and insist on support of Dataram memory.

The Game Plan

Once Dataram support has been arranged with the OEM service provider, a real world action plan needs to be put in place.

IT organizations put tremendous effort into training front line data center staff to resolve problems quickly. System administrators can resolve problems through consultation with the OEM technical support team via telephone in break/fix analysis. Correcting memory problems, whether OEM or Dataram, is a task system administrators are often able to complete. This onsite capability translates into reducing both response and resolution time to minutes versus hours, particularly with Dataram spares stored at the data center.

IT often turns to the OEM to provide front line support and resolve hardware problems -- the "one throat to choke" approach. Upon the arrival of a field service technician, a suspect memory module is quietly swapped out and replaced without fanfare. The same diagnostic and installation procedures apply to OEM memory and Dataram memory. With Dataram spares on site, no additional site visit is required or time lost awaiting the arrival of OEM memory from a logistics depot.

A carefully thought out support plan for Dataram memory can help corporations achieve real-time response to those extremely rare occasions when a memory problem occurs. A typical "what if" scenario might look something like this:

1. Dataram memory is purchased, installed and becomes operational.
2. Spares are purchased and stored in the data center logistics cage or placed under key systems administrators' direct control.

3. A service response level is negotiated with the OEM service provider – typically a single page addendum to a standard service policy whereby Dataram will pay time and material charges involving Dataram memory.
4. Sometime later, a system problem notification is received. Typically, this problem occurs as a system reboot coupled with a de-allocation of a memory bank. Or an increase in ECC error logging is reported. In newer generations of servers, sophisticated diagnostics with “self-healing” features enable a system to recover from hard memory failures without system downtime. IBM and Intel’s ChipKill Technology best exemplify this high-reliability capability.
5. Upon notification, a system administrator or OEM field service technician is dispatched to the data center where the problem is isolated by running hardware diagnostics. Upon removal, the failure is identified as either OEM or Dataram.
6. If Dataram memory, the service call reverts to billable time and material charges for OEM support and the onsite Dataram spare is installed. The problem is fixed and the server returned to operation.
7. The administrator or OEM representative contacts Dataram’s customer support desk and requests an advance replacement. Dataram issues a return material authorization (RMA) for the faulty memory and simultaneously ships a replacement that arrives the next morning. This replacement is used to replenish the spares inventory. The faulty memory is returned to Dataram.
8. A copy of the service call report and/or paid invoice is faxed to Dataram where upon a reimbursement check is issued.

Conclusion

The mission-critical data center has become the paradigm in IT strategy. Dataram offers the potential for significant cost savings in these data centers. The responsibility for a comprehensive plan belongs to the IT manager, and it is imperative that this plan be put into place with the deployment of Dataram memory. Dataram offers a unique combination of lifetime warranty, advance field replacements, on-site spares, and service call reimbursement to facilitate the goal. The result can be hundreds of thousands of dollars of budget savings that can be redirected to other critical IT needs and reduce overall costs.