White Paper

SGI InfiniteStorage 220:
A Pain-Free Path to Storage Area Networks (SANs)

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1.0 Introduction: An Easy Entry to the World of External Storage

The IT teams supporting enterprises, governments, educational institutions, and other large organizations currently place priority on initiatives for consolidation and centralization for data infrastructures. No one can dispute the potential benefits, especially in the case of storage, that can be gained when dealing with today's explosion of data. However, moving from server-based storage to storage area networks (SANs) has typically required the skills of highly specialized IT professionals.

What about small and medium businesses (SMBs) or small, remote branch offices? With much more limited IT resources, can these organizations realistically introduce SANs? With higher data growth rates than enterprises, SMBs often outgrow the capacities of direct-attached server storage. In addition, many other requirements have created an opportunity for SAN solutions within this market and the time is right to bring the benefits of consolidated storage platforms to these groups.

SGI® InfiniteStorage 220 solutions meet this demand and introduce aggressive price-performance-density points for SMBs and branch offices. The simplicity of this storage appliance—with pre-installed and fully configured software and an intuitive GUI—make it a practical solution for even the smallest businesses or offices with a few employees. This paper overviews the trends that are behind the entry-level requirements for SAN solutions, and describes how the SGI InfiniteStorage 220 allows SMBs and branch offices to lower operating costs while increasing data reliability, enhancing collaborative environments, and gaining a flexible growth path for the future.

2.0 Background: SMB Storage Requirements

2.1 The Need for More

The annual data growth rate for small (less than 100 employees) and medium (100 to 1,000 employees) businesses is estimated to be 12.5 percent—higher than the growth rate for enterprises. This growth rate, combined with the growth in total numbers of SMBs adds up to a high-volume opportunity for storage solutions. Additionally, other forces are driving the demand for external storage alternatives for SMBs and branch offices:

- **Limited server capacities** – internal storage restricts many businesses and offices today, making SAN and NAS solutions a necessity. The proliferation of broadband connectivity have increased reliance on data-intensive communications such as email, making it crucial that online data can be archived, protected, and constantly available.
- **Cost pressures** – Distributed storage, compared to consolidated storage on higher-capacity SAN/NAS platforms, results in duplicated efforts for management and administration functions and wasted capacity on servers that require extra storage to accommodate peak requirements.
- **Compliance** – Governance issues and requirements are forcing many companies to introduce more formal data management policies for backup, disaster recovery, and other mission-critical functions.
- **Security** – Internet threats, human error, and privacy requirements make it more difficult to protect data when storage is distributed on multiple servers.
- **Collaboration and data sharing between multiple offices** – The majority of medium businesses today include operations at more than one site. To facilitate data sharing for collaborative projects, these groups need a simple solution for external storage.
- **Microsoft cluster changes** – In the past, some SMBs have configured two-node server clusters using Microsoft WHQL for sharing data on direct-attached internal storage. Recently, Microsoft has discontinued support for internal clustering, requiring external RAID for this capability.

2.2 The Requirement to Make Do With Less

While the previously mentioned forces are increasing demands for higher-capacity and more structured data management solutions, SMBs must overcome formidable challenges to go beyond internal storage:

- **Budget constraints** – Cost is always paramount when making any purchase.
- **Ease of use** – Limited IT resources and a lack of storage expertise restrict the ability for small offices to introduce external storage solutions, which can significantly increase complexity in terms of installation, management, and file sharing.
- **Cost of downtime** – While enterprises use redundancy and hot spares to minimize the impact of failures on employees and business processes, small offices cannot afford these resources. A failure can impose the delays and expense of a service call and can severely impact productivity and the revenue stream.

2.3 The Solution: Getting More For Less

Today's small offices can look to the enterprise world for the answer to the storage dilemma. The benefits of consolidation and centralization of storage are well proven within large infrastructures. By converging server storage into a simplified, centralized storage farm, companies can gain a more flexible storage allocation system and take advantage of a pay-as-you-grow storage strategy that avoids unused capacity. External storage also allows offices to take advantage of redundant arrays of independent disks (RAID) to increase data availability. In terms of cost, pooling storage allows an office to purchase fewer, larger platforms with lower cost per megabyte compared to multiple distributed disk drives dedicated to specific servers.

While these and other benefits are not disputed, the challenges of budget constraints and lack of SAN storage experts have held small offices back from the world of consolidated storage. Clearly, if SMBs could acquire an easy-to-use SAN solution with lower price per megabyte, the business advantages would outweigh any resistance to change in the infrastructure.

3.0 The SGI 220 Alternative: Bringing Choice to Entry-Level SAN and RAID Capabilities

Unlike traditional SAN solutions, the SGI InfiniteStorage 220 avoids complexity. The plug-and-play solution is as simple to deploy as local storage. With only basic server and storage knowledge, SMBs can evolve to a centralized SAN platform, add affordable high-performance storage to an existing SAN, and introduce RAID protection for increased availability. A choice of interfaces (SAS and Fibre Channel) and drives (SAS or SATA) and the ability to upgrade from single- to dual-controller configurations means that the SGI InfiniteStorage 220 can fit into any office without requiring costly replacements of existing equipment.

3.1 Fast, Easy Deployment and Management

Installation is carried out with the ease of an appliance, and users can choose either SAS or Fiber Channel connections to optimally integrate into the existing environment. Software is factory installed, and an intuitive GUI streamlines all configuration and management tasks. The browser-like interface speeds capacity planning, RAID group set up and changes, and other day-to-day functions.

SGI Storage Management Interface software comes pre-installed on every SGI InfiniteStorage 220 platform. The mature code includes advanced functionality for automating everyday tasks, and simplifying management of the storage platforms throughout the complete lifecycle. For managing RAID arrays, SGI Storage Management Interface software supports RAID levels 0, 1, 5, and 0+1.

Optional SnapCopy and Volume Copy utilities are available to simplify data replication within dual-controller configurations. For quick backups, SnapCopy creates a backup copy of the source data where the source and backup are on the same controller. SnapCopy supports a maximum of 32 snaps per array and 4 snaps per volume (128 total). Volume Copy, which creates a volume clone for backup, applications testing or data analysis, supports a maximum of 255 volumes.

3.2 Start Small—Pay as you Grow Expansion

The entry-level configurations of the SGI InfiniteStorage 220 allow offices of any size to introduce SAN solutions and expand capacity as needed. Each platform can be configured with one or two controllers, each capable of supporting two Fiber Channel or three SAS ports. Single-controller units can be upgraded to a dual-controller configuration at any time, allowing groups to minimize up-front investments by starting small and adding on only when needed.

Up to 12 integrated disk drives and up to 36 add-on drives (in three add-on enclosures) allow a single storage solution to expand to a total of 36 TB of storage. A single platform can support multiple drive technologies to further simplify management while enabling maximum flexibility.

3.3 The Cost Efficiencies of Consolidation

With the SGI InfiniteStorage 220, SMBs and small branch offices can eliminate redundant administration efforts and simplify backup efforts. By combining storage requirements across groups and eliminating disparate “islands” of storage, SMBs can gain immediate savings with improved cost-per-megabyte ratios and storage asset utilization. All organizations will also benefit from the introduction of data management policies and affordable disaster recovery (data replication) capabilities enabled by the increased capacity and external storage configuration.

4.0 Conclusions: The Changing Storage Roadmap

For SMBs and growing enterprises struggling to manage expansion and meet data capacity requirements—without breaking the budget or requiring the addition of a costly staff of storage experts—the SGI InfiniteStorage 220 represents a breakthrough SAN technology. By eliminating multiple pain points, the entry-level RAID-capable platform solves current business problems and enables a smooth path to external storage paradigms and more cost-efficient data management models. The main benefits of the new platforms include:

- Choice of disk technologies (SAS, SATA, Fiber Channel)
- Affordable storage consolidation platform, enabling shared storage with centralized management and administration
- Cost-effective scalability—pay-as-you-grow model
- Ease of use with plug-and-play installation and intuitive browser-like interface for integrated management software
- Enterprise-class data backup and archiving, for compliance and for protection of mission-critical data

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