

## WHITE PAPER

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# Managing Midsize Storage: Enter the Super-Appliance

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## IDC OPINION

IT managers of midsize companies are under increasing pressure to manage their storage more effectively. Email and file data continue to grow at a relentless rate, while compliance regulations demand a rigorous approach to long-term storage and retrieval.

IDC user surveys frequently identify high levels of dissatisfaction with the ability of the data protection infrastructure to meet the company's business needs. Backup and restore performance, email archive problems, laptop data protection and scalability issues are regularly cited.

Increasing numbers of SMBs are turning to appliance-based solutions like virtual tape libraries (VTLs) to help alleviate the issues. However, a form of storage super-appliance has been introduced recently to the European market. This product offers a broader range of functions intended to deliver an end-to-end data protection and life-cycle management capability in a single automated unit.

IDC believes that such an approach has the potential to offer significant benefits to those midsize companies struggling with data protection issues.

## IN THIS WHITE PAPER

This paper is aimed at IT managers of midsize companies (100–1,000 employees) with an interest in the potential benefits offered by highly automated multifunction storage appliances. It presents the results of a recent study, in which customers were questioned about their experience with the gingcom integrated NAS storage appliance.

The paper contains the following sections:

- Overview of common storage issues faced by midsize companies
- Outline of gingcom's objectives and vision
- Overview of the gingcom solution
- Future outlook and conclusions
- Case studies

## METHODOLOGY

IDC interviewed a sample of IT directors and datacentre managers in Germany who had deployed gingcom storage in their companies. Through telephone interviews we aimed to understand their infrastructure needs, how they are using the gingcom product to meet those needs, and the challenges and opportunities created by their technology choice.

The companies surveyed came from various backgrounds, including medical, manufacturing and automotive. IDC also used the results of the recent European End-User Storage Survey of 500 companies in the UK, France, Germany, Italy and the Nordics, covering all major vertical segments and company sizes from 50 staff upwards.

## SITUATION OVERVIEW

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### What do SMBs Think About Storage Investment?

Based on IDC research of SMB users, we can identify a number of commonly held views and preferences that we frequently hear with respect to storage issues and procurement. These include:

- ☒ SMB systems administrators are generally resource constrained and do not usually have the time or resources to evaluate IT solutions on their merits. Solutions are often purchased from a single trusted supplier rather than as multiple best-of-breed components from a range of suppliers.
- ☒ SMBs typically prefer simple, scalable, easily managed solutions that are priced within their normal server/storage price comfort zone. Solutions priced too far above this level would require a particularly rigorous ROI justification.
- ☒ Investment in storage is often driven by the need to address the current pain issues rather than by proactive prevention of anticipated future problems.
- ☒ An attraction to automated storage management techniques that minimise the need for hands-on attention. SMBs do not typically employ storage management specialists, and so benefit from a common set of server and storage management tools. With the above preferences and attitudes in mind, let us consider the common issues that SMB users face in relation to the management and maintenance of their storage.

### *What's Causing the Pain?*

Almost irrespective of the market or industry in which they operate, SMBs display a notable degree of consistency when asked to define the storage issues and problems that they are facing. The following "pain points" are regularly cited as being among the most problematic:

- ☒ **Difficult capacity expansion** — What should be a routine and non-disruptive task generally involves taking applications offline, migrating data off the old storage, installing and formatting the new storage, and then replacing the user data.

- ☒ **Poor utilisation of storage capacity** — The pain of expansion and fear of application outage can drive system administrators to over-specify the amount of storage allocated to an application. This means large amounts of unused capacity and poor return on investment.
- ☒ **Backup and restore performance** — IDC research has repeatedly identified high levels of dissatisfaction with the performance of backup and restore infrastructure. For many SMB users, relentless data growth has outstripped the ability of their tape systems to execute a backup or restore within the available window, causing a negative impact on their production systems.
- ☒ **Difficult to share data among applications** — "Islands" of DAS can isolate data and make it hard work for applications to share common datasets. While this list is not exhaustive, SMB users across the business spectrum tend to have a relatively narrow and consistent range of storage-related problems. This would support the contention that directly attached server storage has some inherent limitations that should be recognised and addressed before they become an obstacle to the operation of the user's storage infrastructure.
- ☒ **Compliance with data retention and protection legislation** — Although historically this has been a higher priority for SMBs in the US than in Europe, increasing numbers of midsize European companies are concerned about the potential difficulty of locating and recovering files or emails from their long-term archive. Also the audit readiness and compliance requirements, either statutory or company internal, are becoming more important.
- ☒ **Difficulty in protecting laptop data** — Infrequent connection and lack of bandwidth can compromise the data protection offered to mobile users.

European SMBs are increasingly facing many of the same data protection and compliance challenges that much larger companies had to deal with in the past.

To meet these needs, there now appears to be a growing requirement for a class of storage solution offering enterprise levels of automated data protection and retrieval capability, but without the enterprise-level complexity.

### ***The Storage Industry Evolves SMB Solutions***

When new storage management or data protection functions are brought to the market by storage vendors, the product life cycle tends to follow an established sequence of events:

- ☒ The new technology is usually targeted initially at large enterprise customers that are the traditional early adopters of new technology. Vendors will provide detailed technical and commercial propositions in support of their direct sales campaigns.
- ☒ As the technology becomes established in the enterprise space, focus shifts to the midsize companies and cost-reduced versions are typically offered via the indirect sales channels. This may happen years after the initial launch to the enterprise sector.

This approach typically results in stable, powerful and cost-effective storage solutions for small and midsize companies. However, new advances can raise potential issues for SMBs:

- ☒ **Increased complexity** — As new data protection capabilities are introduced by the vendors, there can be an increase in complexity for the user that offsets the benefits of the technology. IDC research routinely shows that SMBs typically prefer simple and automated solutions where possible.
- ☒ **Need for storage specialists** — Many SMBs now operate sophisticated storage infrastructures that allow them to manage, protect and archive rapidly expanding data volumes. Staff with a detailed understanding of storage technologies are typically needed to manage the systems. For some SMBs, effective storage management is moving beyond the realm of the ordinary non-specialist user.

Several storage vendors that specialise in solutions for midsize companies have recognised these trends and are offering storage appliances that offer a range of storage and data protection functions in an integrated unit.

gingcom has taken this approach further still, and created a kind of "super-appliance". Let us now consider in more detail what it is trying to achieve.

#### ***What is gingcom Trying to Achieve?***

gingcom is a wholly-owned subsidiary of BDT, an established German manufacturing company known for its OEM tape library and autoloader mechanisms supplied to major storage solution vendors. In the branded storage solutions business, it is effectively a start-up and thus has great freedom in the way it approaches the market, the product and its sales channels.

Based on its own market research of the storage requirements of midsize companies, it conceived a storage solution with the following characteristics:

- ☒ A single-box storage solution that is focused on meeting the needs of small and midsize companies.
- ☒ Utilise advanced storage functions in order to deliver high levels of performance and efficiency, but in a way that an ordinary person can operate and manage.
- ☒ Bring enterprise-class storage features to SMB customers at a realistic price level with low complexity.
- ☒ Specifically target the common SMB storage pain points, including ease of management, backup/recovery performance, email archive/recovery, laptop data protection, managing rapid data growth, consolidating storage islands and meeting data retention compliance legislation.
- ☒ Solution to be delivered to end users by accredited resellers that have a direct technical and commercial relationship with gingcom.

These aspirations are similar to several other vendors with a focus on SMB storage. But with the freedom of thought that comes with being a new business, gingcom's approach is currently unique in the storage market. Let us consider the system in more detail.

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## Overview of the gingcom Solution

The gingcom storage appliance is an integrated solution intended to provide a holistic set of data protection and storage management functions for midsize companies. Let us consider the key elements of the unit and the functions that are offered.

### *Hardware*

The gingcom NAS appliance is presented as a single-rack solution including the following hardware components:

- ☒ A 1U dual-core AMD x64 server running the gingcom application with an SAS-based RAID 1.
- ☒ One or more 2U trays of SATA and SAS drives, offering tiered usable storage of 2.2, 4.4, 8.8 or 17.6TB. Each hard disk based storage tier operates on RAID 5 with a hot spare.
- ☒ The library, developed and produced by gingcom's parent company BDT, operates with dual LTO 2 or LTO 3 tape drives and offers between 24 and 96 slots. A gingcom internal function called media manager controls spare media handling and cleaning cycles.

Thus online, backup and archive storage hardware are integrated into a single unit and managed through a common Web interface.

### *Data Protection and Management Functionality*

The unit has a broad range of data protection functions and uses a number of relatively advanced storage management technologies. However, a key objective is that these technologies are kept "under the bonnet" and do not add unnecessary complexity for the administrator or client. Many of the functions take place transparently to the user.

Let us consider how the gingcom solution approaches storage, backup and archive function in turn.

### **Online Storage**

**Storage tiers with automatic migration** — The disk storage is divided into performance-oriented SAS and capacity-oriented SATA RAID storage tiers. System software including the CAS and indexing databases are held on the SAS RAID partition. User files are held on the SATA drives and are automatically migrated to the near line tape tier according to policies based on age, frequency of use or other factors.

**Single instancing** — The gingcom appliance uses content-addressable storage technology (CAS) in order to apply single-instancing across the online, backup and tape archive tiers. Multiple copies of files are replaced by

a reference to a single original copy, allowing significant potential benefits in storage utilisation. Since file duplicates are identified with a client agent in real time, only new or changed files are sent over the network to gingcom. This helps to minimise network traffic and allows the use of conventional Ethernet infrastructure for backup and restore operations.

## **Backup/Restore**

**Near-continuous data protection** — IDC end-user research consistently identifies dissatisfaction with backup and restores performance as a common SMB storage pain point. Rapid data growth can outstrip the capability of the storage infrastructure to execute the backup or restore operation within the available window. The gingcom unit seeks to overcome this problem by employing near-continuous data protection. This means that user files or files residing on the NAS storage are routinely monitored for changes. The changed files are sent to the gingcom backup storage at regular intervals through the day to build up a series of point-in-time copies of the data. Users can initiate a restore using a Google-like browser interface either from the most recent backup copy or from an earlier version. Thus backup becomes a transparent and continuous automated process.

**Laptop data protection** — Laptop data protection for some SMBs can be compromised by infrequent or slow connection to the company servers. The gingcom appliance seeks to alleviate this problem with a client laptop agent that monitors the available bandwidth and automatically backs up changed files to the central gingcom unit in accordance with the data protection policies and without user intervention. The single-instancing function means that only changed files are transferred, so minimising the bandwidth requirements.

## **Archive**

**Policy-based migration** — Files and emails are automatically migrated to the tape archive based on policies dictated by the user's data protection and regulatory compliance regime. Defining the policies may require specialist advice so that the company can prove compliance in the event of an audit.

**Single-instancing** — Most tape archives contain high levels of redundancy due to duplicate files being backed up and archived repeatedly. The gingcom appliance extends its single-instancing functionality into the tape archive in order to increase tape utilisation and improve backup and restore performance. At the time of writing gingcom may be the only storage vendor that offers deduplication in the tape archive. The unit will typically manage two complete copies of the tape archive, with one library being located remotely for disaster recovery purposes.

**Search capability** — Locating the correct files or emails to recover from a tape archive can be problematic. The gingcom appliance creates metadata and index data automatically so that keyword searches can be executed more effectively. The index engine used is a full text engine, so that files, emails and attachments may be searched based on their content and metadata. Search activity within the archive may be logged by the system for audit and security purposes.

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## **Implications for Users**

### ***Administrators Are Cautious***

Most storage administrators are understandably cautious of taking on infrastructure upgrades that could disrupt their users or the company's production systems. Incremental enhancements that preserve existing processes are generally preferred to forklift upgrades.

The gingcom unit would appear to fall into the forklift category, since it is designed to entirely replace rather than complement a user's existing data protection infrastructure. For example, the gingcom unit writes to archive tapes in a proprietary format. A new user would typically have to migrate the existing tape archive from the old tape format to the gingcom format.

### ***Users Can do Their Own File and Email Recovery***

Administrators who are used to handling user requests for file and email restore will have to adjust to letting the users take care of it themselves via a Web browser interface. Users have the ability to search the backup and archive to recover lost files or emails, without intervention from the system administrator. User access is restricted according to policies by the administrator.

### ***Data Retention Policies Need to be Defined***

Managing the long-term archive storage in accordance with data compliance regulations is becoming an increasing priority for many European SMBs. Regulatory requirements vary by vertical sector and can be confusing to non-specialists. Implementing an archive solution requires that the archive policies are carefully considered and defined before the solution is deployed.

## **CHALLENGES AND OPPORTUNITIES FOR GINGCOM**

Many of the major storage solution vendors have identified the midsize market as being of strategic importance, making it an area of particularly intense competition. The incumbent vendors have spent years of effort in developing their sales channels and partnerships, marketing messages, support infrastructure and product portfolios. Despite this, gingcom has shown that over its first year of sales operation that it has been able to recruit and train a group of resellers in Germany and to deliver innovative storage solutions that appear to meet or surpass many of their customers' expectations.

The challenges gingcom faces in consolidating and growing its business in Europe would make a lengthy list, but the potential for growth is significant: there are currently about 247,000 companies of 100–999 employees in Western Europe alone.

## **FUTURE OUTLOOK**

From discussions with gingcom customers we find that there are certainly IT professionals in medium-sized companies who are attracted to the multifunction approach and the unified user interface. These individuals may well have already come to the realisation that their businesses would benefit from these functions, but have hesitated building a solution by themselves due to the complexity and risk of bolting point solutions/products together.

In order for gingcom to capitalise on such prospects it is important to understand that a clear desire needs to be present for file/email archival, multitier storage and network client support to justify the price tag of around €40,000. Nonetheless, gingcom's is a compelling proposition, which customers from a variety of sectors are already investing in.

Today, the competitive landscape for multifunction archive appliances like gingcom's is fairly limited and includes companies such as Breece Hill and Intradyn. However, we expect that more large and small vendors will launch hybrid solutions into the storage market, which will embed functions that previously resided as functions at the application server level.

## **CONCLUSION**

IDC research shows that the storage "pain points" for European SMB customers have remained relatively consistent over recent years. Despite a plethora of potential solutions and an increasing SMB focus from the storage vendors, many SMBs still struggle with backup/restore performance and ongoing difficulties in recovering files and emails efficiently.

These concerns have helped to drive demand for appliance-based point solutions like VTLs that offer a performance lift without undue disruption to the company's processes. However, IDC believes that gingcom has taken the concept of the SMB storage appliance to a significantly higher level of effectiveness and functionality.

By starting with a clean slate and keeping a clear focus on the need for ease of use, gingcom has developed a unit that conceivably represents a step-change in data protection capability for midsize companies.

The company has seen a positive reception to its product in the German market, with early adopters enthusing to IDC that the solution closely meets their requirement for performance and simplicity. This may prove to be an early indicator for how the SMB storage appliance market may develop over the next few years.

## CASE STUDY 1 — ESCHA

### *Data Protection, Server Consolidation and Email Archive*

ESCHA Bauelemente GmbH develops and manufactures a range of specialist industrial connectors and housing technology solutions for the industrial automation industry. The 300 employees are based at two locations in Halver, Germany. The company's IT is managed by Peter Herzog with his staff of four, and he discussed his recent deployment of a gingcom storage appliance with IDC.

#### **What Were the Storage Issues ESCHA Faced?**

- ☒ Backup and restore performance was becoming an exposure. Full backups could take over a day, and restores were awkward and typically required close supervision to ensure that they executed correctly. Often large volumes of data would be restored in order to get access to the required files. Therefore it was important to improve the backup and restore performance and reduce the operator overhead in executing restore requests.
- ☒ ESCHA needed to ensure compliance with data retention and recovery regulations, particularly for email data. This meant establishing a tiered storage architecture with automated policies governing the correct movement of data through the tiers.

#### **Deploying the Solution**

ESCHA was looking for a step-change in performance and decided to take a relatively aggressive approach to revamping its IT infrastructure. The servers were replaced with an HP blade server and virtualised with VMWare, in order to improve utilisation, flexibility and resilience. The gingcom NAS appliance with 4.4TB of total storage capacity was connected via an updated network. The whole solution was installed and operational in five days, including time taken to train users.

#### **Impact on the Business**

The new solution has brought a number of changes to the way the IT infrastructure serves the business.

- ☒ The lengthy backup operations have been eliminated by the near-CDP functionality of the gingcom unit.
- ☒ Restore operations are now typically initiated by users via a search engine-like browser interface, without intervention from the IT staff. Individual files or emails can be recovered as required from the tape archive.
- ☒ The gingcom appliance manages the migration of data between tiers and into the tape archive. At the time of writing, the migration policies were being developed to ensure regulatory compliance.
- ☒ Total storage utilisation is 35%, partly as a result of the single-instancing functionality included in the gingcom appliance. The single instancing factor is approximately 8:1, with 8 million objects to backup and approximately 1 million physically stored.

## **IDC View**

The forklift approach taken by this user has delivered the storage performance and regulatory compliance that the business required. The integrated CAS, CDP, HSM and email archive functions of the gingcom appliance have blended effectively to deliver an increase in storage functionality, but with a reduction in complexity from the user perspective.

## **CASE STUDY 2 — MEDOS**

### ***Data Protection and Archive***

MEDOS AG has for 30 years specialised in supplying IT infrastructure to hospitals, clinics and specialised medical practices. The company has 50 employees at a location in Langenselbold, Germany. The company develops custom medical workflow applications and deployed a gingcom appliance to support its in-house data protection requirements. MEDOS is unusual in that the data it creates and manages is closer in quantity to what would be expected from a much larger company.

### **What Were the Storage Issues MEDOS Faced?**

- ☒ The company's server and storage infrastructure had grown organically over the years, creating islands of storage that were increasingly difficult to scale, manage and protect.
- ☒ Recovery operations were becoming more problematic as data was spread between multiple systems, each with its own tape system. The need to meet retention and recovery compliance regulations was important, particularly as MEDOS' parent company is publicly listed.
- ☒ Multiple tape drives meant that a 30-minute manual tape management and rotation regime was required each day.

### **Deploying the Solution**

The approaching expiry of the maintenance contracts on the existing servers and storage provided MEDOS with the opportunity to revise and upgrade the system. The gingcom solution was chosen for its price/performance and ability to unify the storage under a single management interface.

The installation took about three hours, which included time for initial operator and user training.

### **Impact on the Business**

- ☒ Restoring data and emails has become easier and quicker since it is now centralised under the control of the gingcom unit. Restore requests are initiated directly by the user.
- ☒ Manual tape rotation is no longer necessary as the gingcom unit migrates data to the tape library automatically based on automatic data protection policies.
- ☒ The company can now show compliance with data retention and recovery regulations. Total storage utilisation is about 72%, partly as a result of the

single-instancing functionality included in the gingcom appliance. The single-instancing factor is about 10.5:1, with 32 million objects to backup and approximately 3 million being physically stored.

#### **IDC View**

MEDOS was encountering problems commonly seen by smaller companies when its IT infrastructure grows in a piecemeal way. Resources become fragmented, scaling capacity becomes more difficult and data protection is compromised. MEDOS' experience illustrates the widely established benefits of storage consolidation.

## **CASE STUDY 3 — LÜRSSEN BARDENFLETH**

### ***Archive and Recovery***

Lürssen Bardenfleth GmbH & Co. KG is a shipyard in Berne, Germany, building motor yachts, patrol boats, ferries and other specialist vessels. The company has 87 employees.

#### **What Are the Storage Issues Lürssen Bardenfleth Faced?**

- The company was concerned that its storage infrastructure did not allow it to scale capacity in a simple and non-disruptive way.
- Lürssen Bardenfleth employees routinely need to be able to search the storage archive to recover documents from earlier projects. This was typically a time-consuming task.
- The ability to search for and recover files effectively was expected to become more problematic as the storage capacity was scaled up in future.
- The company considered that its current storage infrastructure could potentially compromise its ability to meet current and future compliance regulations.

#### **Deploying the Solution**

Following a workshop with gingcom in order to size and architect the solution, the user reported that installation took place within one day and encountered no serious problems. Operator training for the IT staff took only about one hour.

#### **Impact on the Business**

- The users find that search operations within the archive are faster and easier to conduct. The full-text search capability means that searches are possible even with incomplete metadata keywords or when the filename is not known. Users are able to initiate the archive search without intervention from the IT staff.
- The company considers that its storage and archive infrastructure is now fully compliant with compliance regulations.
- The impression from the IT staff is that the new system is significantly easier to use and manage.

## **IDC View**

The experience of Lürssen Bardenfleth illustrates the difficulty some companies have in recovering information from the tape archive, particularly when metadata such as the filename, sender/receiver or date is unknown or incomplete. The ability to demonstrate such recovery capability is an important part of regulatory compliance and the automatic indexing and metadata creation of the gingcom unit has helped this user to achieve the required level of search and recovery.

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