# THE STORY OF POWERBAK

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## Abstract

In 1999, at the end of the speculative dot-com bubble, ManagedStorage, a US company launches PowerBAK, a network solution for backup of PCs running Windows. The company attempts to penetrate the European market and Toulouse is chosen as central site.

Despite of the company's advantages and the qualities of the solution, the PowerBAK project will be abandoned in 2001 and the entire French team will be affected by a redundancy plan.

In this paper, we try to trace the elements (economic context, technological choices, technical means, marketing strategy, business decision...) that played a role in this story, the story of PowerBAK.

## 1. THE ECONOMIC CONTEXT

**the "dot-com bubble":**

1995–2000, this period is marked by the founding of a group of new Internet-based companies commonly referred to as dotcoms.The Internet bubble is a bubble, which affected the "tech stocks", that is those areas related to computer and telecommunications markets of shares in the late 1990s. Its peak occurred in March 2000. The Internet bubble is related to what is called the "immaterial" in the modern economy.

## 2. THE BUSINESS

**Computer Storage:**

"According to a study of 400 U.S. companies, less than 4 users make regular backups of their computer. A considerable amount especially if one considers that more than 50 users have critical information about their businesses." [1]

In terms of computer storage, needs are becoming more important and being able to offer outsourcing this service was a very innovative approach and particularly interesting.

Due to the complex nature of information processing, the increasing dependence of firms related the data and the emergence of numerous applications related to the time the growth of virtual business on the Internet businesses in this new economy was indeed supposed to find a more profitable and more effective in meeting their needs for storage and retrieval of data.

Dataquest, a consulting firm put forward in February 2000 the following specific factors:

• Exploding demand for storage.

• Cyclical nature of demand for storage: a storage facility at the request would then meet the needs of cyclic storage capacity of Internet companies without requiring significant infrastructure.

• Purchase cost compared to operating costs: sil es storage resources are relatively less expensive to purchase, their management is extremely costly because it involves tools and especially special teams expert very expensive to create, organize and maintain at the right level of expertise.

• Finance startup companies by venture capital: the storage management services to fit perfectly into the strategy prior to investment companies and venture capital adequacy to meet increasing capacity compared to actual activity of enterprises.

• Focusing on companies developing their business: rather than investing heavily in new infrastructure (hardware and software) and in the recruitment of additional IT staff, many companies considering outsourcing on site or remotely from numerous activities support, including management and storage capacity.

## 3. THE COMPANY

**ManagedStorage International, e-storage for e-business:**

In 1999, ManagedStorage International (M.S.I.) is the pre-eminent provider of network storage. The company's products and services are used to store, transport and secure more than 100 petabytes of the world's information, ranging from mainframe data to client/server applications to video, audio and static images.

M.S.I. was the first company to invest heavily in the U.S. and Europe to provide warehousing services data based on a model of "pay what you consume, including storage on demand offerings backup service information on central units of information systems, another offer can provide backup data from mobile PCs based on proprietary value added.
The business model was based so exclusively on an active partnership with other actors in the Internet market: the Internet Data Centers (IDC) and a few strategic partners such as StorageTek.

**An exhaustive set of services...**

M.S.I. has developed from scratch a set of value added services requiring all significant investments would then be sold to the final customer in the form of "you pay what you consume."

The portfolio of services of M.S.I. can be divided into three main categories:

*Capacity*

The service at the request of Storage offers secure access, virtually unlimited storage infrastructure developed on an operating mode such as "pay what you want." This service is available in different technological alternatives that all required heavy investment, whether in the form of NAS or SAN and offers solutions like "mirror Remote" which offers very high levels of security.

*The archive*

The service offering from M.S.I. in the archive provider allows "content": televisions, hospital networks, etc.. benefit always in the form of services that you pay depending on what you use the service absorption digitized information, indexing information, so you can more easily find and return the application the same information, while ensuring customers the preservation, safe custody and delivery of these items available archived possibly through tools on the Internet. These services are delivered, either in the form of integration projects, whether in the form of services for a monthly fee calculated on the volumes used and the type of archived data objects.

*Protection*

The service server backup data backup offer a completely secure charged only on the basis of space actually used each month by the customer, regardless of the heavy infrastructure to implement.
The service called PowerBAK is a backup service that allows mobile PCs across the Internet. Fully automated, it required its own infrastructure for even heavier investment in terms of equipment and a full team for support and maintenance of proprietary software that was used for its operation.

*...Available on a model you pay for what you use...*

The Company believes that storage requirements are critical for companies and especially for companies living in the transportation and provision of information on the Internet. In wanting to reduce the risks of these Internet companies, it was positioned as the de facto replacement potential in taking financial risks. These risks are even greater than we wanted to cover an area of very significant storage services with added value. Beyond the financial risks, the complexity of advanced technical solutions used also required a lot more investment to achieve the creation of competitive solutions and services.

*...Worldwide, 24 hours a day.*

With offices in the United States, England, France (Paris and Toulouse) and the Netherlands, the company positioned itself as a global player in this market with the associated costs. This investment strategy and presence in upstream also included the installation of the storage system in the IDC before signing customer contracts, which generated very significant investments in staff, software and hardware without the certainty of generating billing from these systems. For information, the establishment of a structure to deliver service offerings PC backup type requires the installation of equipment costing nearly $ 1M in addition to the support teams necessary for its operation.

## 4. THE SOLUTION

**PowerBAK, complete solution for data protection and recovery:**

PowerBAK is a network solution for backup of PCs running Windows. Fully automated, it ensures the

user a flexible backup data via the Internet and the ability to restore the system.

The service implements infrastructure equipment and a full team for support and maintenance of proprietary software and for operating the server platform.
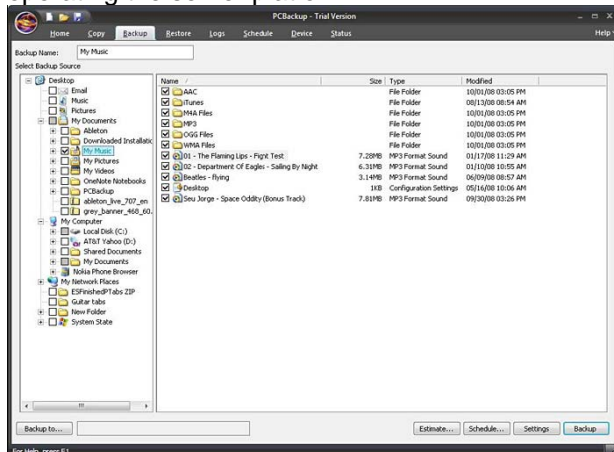


**Figure 1**. The user interface

## A Turnkey appliance on the client site

ManagedStorage offers clear advantages over other Internet and dialup backup and recovery services. These include:

*Full System Backup and Recovery:*

PowerBAK not only offers the ability to backup and restore documents, but also the entire operating system, applications setup files and important data (e.g., security features). In the event of a disaster, the complete file can be restored by a system administrator who can burn a single CDROM

*Security:*

Data transmission is secure when using PowerBAK. Users register online and receive a PIN number. If a user's PC is stolen, the system will not allow access without the unique password.

*Automated, efficient Process:*

To back up a PC, a user simply must tell the computer what time of day the system should be backed up. The process is initiated from the computer, not from the storage device, so the user doesn't have to remember when scheduled backup occurs.

PowerBAK server is the world's first turnkey solution for PC backup and full system recovery via the Internet and dialup.

The PowerBAK server also provides a Y2K readiness level for companies that have not addressed Y2K computer issues at the mobile user level. Due to the high percentage of corporate data located on PCs, mobile users and Telecommuters face the common threats of damage, theft and loss of their computers. This indicates that the ability to protect and recover data remotely is crucial. ManagedStorage's PowerBAK server streamlines the process of automatically safeguarding files and personal computers by allowing thousands of corporate users to schedule routine backup of valuable data through modem and Internet access See how to access the Internet.

*"With the PowerBAK server, Managedtorage is providing Internetenabled storage with data centerclass reliability to a user market where remote backup solutions are needed most."*

Jean Reiczyk, ManagedStorage corporate vice president and general manager, Solutions business Group.

*A Y2K Solution for PCs*

M.S.I. guarantees that the user's data is securely stored and accessible 24 hours a day, 7 days a week. If a user's system is ever damaged, lost or stolen, a replacement CDROM based image is delivered by the next business day. Additionally, the user is not required to maintain a separate disk of system software.

## PowerBAK also is available as utility through leading Internet service providers Internet service provider (ISP)

With M.S.I., you have the option of subscribing to storage on demand, server backup, PC backup (called PowerBAK), and content management services à la carte or as a package. Each service is available in both public and private utility versions.

Pricing for public storage at a data centre starts at $30 per gigabyte per month. If your business requires a service level of 100 percent uptime and redundant servers, you'll pay much more. A server backup cost about $20 per month for each gigabyte of protected storage and includes six incremental backups and one full backup each week.

For restoring files, the company holds the tapes for four weeks, and you can request offsite tape storage for extra protection. PC backup works the same way, except that the provider makes one full

backup, then daily incremental backups, for $6 to $20 per month (based on the level of service and restore features required).

## 5. THE TECHNOLOGY

**Proprietary software and storage networks:**

The platform is composed of 3 servers (that communicate by Fibre Channel protocol) and a Storagetek library with 6 DAT drives. Data are recorded on tape in a strategic cycle managed by Veritas Netbackup software.

The *"Control Server"* is in charge of the dialogue with the client. It is connected to the Internet via an Ethernet card and runs the proprietary software program based on the protocol FTP developed by the U.S. Team.

The *"Shared Data Server"* hosts the common data to all clients (Windows system files, pack OS, libraries etc.) This is an useful way to optimize the speed of backups. Common files are saved once and for all users using the same version.

The *"Private Data Server"* controls the data users hosted in a B-tree database.

A *Binary-tree* [2] is a method of placing and locating files (called records or keys) in a database. The B-tree algorithm minimizes the number of times a medium must be accessed to locate a desired record, thereby speeding up the process. B-trees are preferred when decision points, called nodes, are on hard disk rather than in random-access memory (RAM). It takes thousands of times longer to access a data element from hard disk as compared with accessing it from RAM, because a disk drive has mechanical parts, which read and write data far more slowly than purely electronic media. B-trees save time by using nodes with many branches (called children), compared with binary trees, in which each node has only two children. When there are many children per node, a record can be found by passing through fewer nodes than if there are two children per node.
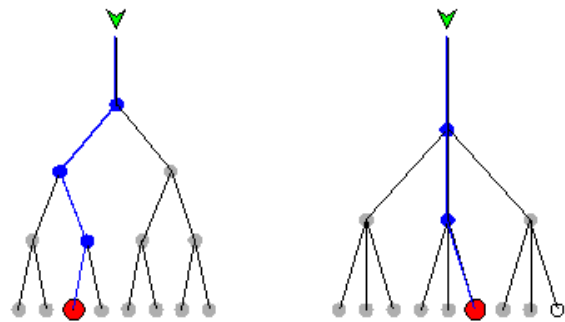


**Figure 2.** A simplified example of the B-tree principle.
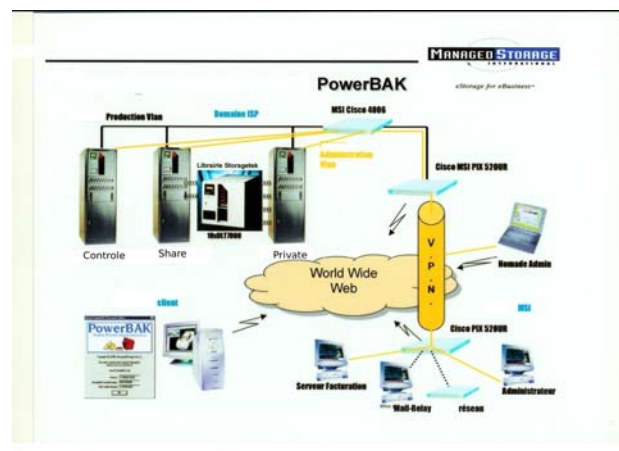


**Figure 3.** The central platform

*Fibre Channel* is a gigabit speed network technology primarily used for storage networking. Fibre Channel was used primarily in the supercomputer field, but has become the standard connection type for storage area networks (SAN) in Enterprise storage. Despite its name, Fibre Channel signal can run on both twisted pair copper wire and fiberoptic cables. It is a transport protocol (similar to TCP used in IP networks) which predominantly transports SCSI commands over Fibre Channel networks.

See below the details on the technical diagram of the central platform located in the Level3 ISP site in Denver, Colorado.
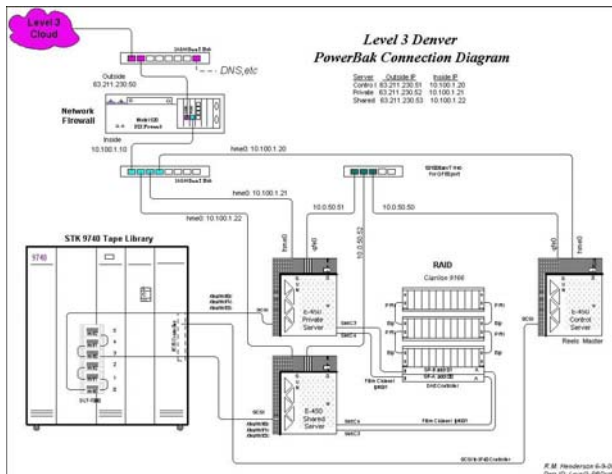
**Figure 4.** The Level 3 central platform diagram

## 6. SOME TECHNOLOGICAL MISHAPS

The "try and buy" commercial strategy requires a special effort in the delivery process. Integration of the appliances, testing and delivery must be fast. So, sometime, technical problems are detected after the delivery, on the client site. See below, a non exhaustive list of problems met with the appliance in some European sites:

• *WorldOnLine (Zurich):* the Chief Information Security Officer (CISO) refuses the use of the ftp protocol claiming a crypted channel for backups.

• *Telefonica (Madrid):* the FTP passive mode of the appliance is not compatible with the local proxy. The PowerBAK client software must be patched.

• *Telecom Italia (Roma)* : No ethernet packet sent because of failure in the Ethernet auto negotiation. The Sun Ultra 450 eeprom was not properly set.

Each time, the integration specialist is sent to the client site in order to provide an accurate diagnostic and find a quick solution.

## 7. A TURNAROUND IN THE COMPANY'S DEVELOPPEMENT

A turnaround appeared very early in the company's development. Indeed, in the third quarter of 2000, signs of slowing from the comet Internet began to emerge, impacting most significant factors for the development of M.S.I.:

*The cyclical nature of demand for storage services "storage on demand" was a catalyst of crisis:*

The decline in storage is due to reduced traffic on the Internet, which made de facto invalid argument mall. As there were more needs exponential solutions to control them automatically lost their value.

The purchase cost compared to the costs of management suffered the same impact as defined above, and also lost all value for our potential customers.

*Financing startup*

by private equity risk: this also impacts the full brunt of M.S.I. customers and potential partners, so they had to fight to survive, an approach allowing them to optimize their competitiveness became (unfortunately) almost incongruous ..

Focusing on companies developing their business: it remains valid for the surviving firms, however, the sales focus that we had developed with IDC fell into the void because these I.D.C. Did not have enough resources available to work with us to develop our joint activity. They were and are still working on finalizing the affairs related to their core businesses to sustain their market presence.

This investment strategy and presence in upstream also included the installation of the storage system in the IDC before signing customer contracts, which generated very significant investments in staff, software and hardware without the certainty of generating billing from these systems.

For information, the establishment of a structure to deliver service offerings PC backup type requires the installation of equipment costing nearly $ 1M in addition to the support teams necessary for its operation.

*A set of services too ambitious...*

Too ambitious in relation to his development capabilities and sales, M.S.I. wanted to do too much, too fast and in too many places at once when the market has actually returned in late 2000. Carried away by a legitimate ambition to build a significant business in a market in constant evolution, M.S.I. had not seen the dangers that were beginning to loom on the horizon. M.S.I. then invested too much in too many directions hoping offset these financial losses by creating a business portfolio growing but M.S.I. could not materialize.

*...Available on a model you pay for what you use...*

*Systems* Editorial O'Reilly 2007

Attractive for M.S.I. customers, this model is difficult to sustain when you have little active customers, because you must support the enormous costs of infrastructure and personnel so that you generate too little income.

*Capacity*

The service demand storage require significant investment in infrastructure as technology available in different variants, must be reviewed and optimized by creating solutions smaller and more flexible, less expensive. M.S.I. also plan to offer a consulting around these services in order to optimize the use of internal resources.

*The archive*

The service offering from M.S.I. in the archive was smart most successful since virtually all income generated by the company in 2000 have been in this field. It was decided to continue investing in this offer to realize the success of this early activity.

*Protection*

The service Backup servers returned in the same category as storage on demand and we will have around him a new approach equivalent.

PowerBAK is much more problematic because, as stated above, it requires for its own infrastructure at a time more burdensome in terms of hardware investment and a full team for support and maintenance software owner that is used for its operation. For the survival of society, it was decided to stop the service.

PowerBAK was dead.

# 8. REFERENCES

[1] Business Wire, www.businesswire.com March 10, 1999

[2] SQL Server Database Modeling and Design http://searchsqlserver.techtarget.com/resources/SQL-Server-Database-Modeling-and-Design

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W. Curtis Preston Backup and Recovery: *Inexpensive Backup Solutions for Open*