Methods of using IBM Tivoli Storage Manager with IBM iSeries computers for enterprisewide, centralized and automated data protection
Introduction

As your organization grows, new business needs or organizational requirements will likely drive the expansion of your computing environment. Many organizations evolved from a host-centric, IBM® iSeries™-only environment to one that also incorporates a client/server or distributed computing architecture with computing platforms running UNIX®, Microsoft® Windows®, Macintosh and other operating systems. Although designed to simplify a wide range of e-business demands, today’s heterogeneous computing environments can complicate the task of protecting data. In an iSeries-only environment there’s a proven automated data protection tool—IBM Backup Recovery & Media Services (BRMS) software for iSeries.

If your IT resources include iSeries computers along with Microsoft Windows, IBM AIX®, Sun™ Solaris™, Hewlett-Packard HP-UX or other widely used operating systems, how can you most efficiently protect your company’s data? The answer—IBM Tivoli® Storage Manager.

Unlike other multiplatform data protection products, Tivoli Storage Manager server software runs on iSeries computers to provide data protection for your computers running all your operating systems except IBM OS/400®. Tivoli Storage Manager can also work with BRMS and other iSeries-specific data protection applications to provide a centralized data store for dispersed network-connected iSeries computers.
A technical discussion of data protection with IBM iSeries

Highlights

Many organizations that started out with primarily iSeries now have other computer platforms, too.

Data on those other platforms may not be adequately protected.

Computing environment #1

- iSeries data protection in place and managed by experienced administrators
- Other platforms need some data protection help

Many organizations that primarily used IBM AS/400® have now grown to include computers of many types—Windows, UNIX, Macintosh and Linux®.

Some of these organizations use the same systems administrators who implemented AS/400 to provide care for legacy and new iSeries computers. Although these organizations used their iSeries administration to implement well-organized data protection plans, they haven’t done the same for computers on the other side of the business. Perhaps data protection has been delegated to each department and is occasionally missed or left incomplete. Maybe each department has selected its own data protection application and hardware, or the other side of the organization has outgrown its once adequate data protection application and needs a more comprehensive product. Organizations that have free CPU cycles available on a recent-model iSeries computer may find the right solution with Tivoli Storage Manager.

Automating data protection for networked computers with Tivoli Storage Manager

Tivoli Storage Manager automates data protection for computers distributed across a network. It works across a wide variety of platforms, using an even wider variety of storage devices to hold copies of online data on offline storage. Operating as a client/server application, the Tivoli Storage Manager server portion can run on nine different computing platforms, including iSeries computers running OS/400, Version 5.1 or 5.2 with the Portable Application Solutions Environment (PASE). Running on iSeries OS/400 under PASE, Tivoli Storage Manager can coexist with iSeries-specific data protection programs and does not require their presence to operate. Tivoli Storage Manager can also share the same data tape library used by an iSeries-specific data protection program (for example, BRMS).

The client portion of Tivoli Storage Manager directly runs on more than a dozen different platforms and supports other client platforms, such as iSeries, through application program interfaces (APIs) used by other data protection programs. On iSeries computers the Tivoli Storage Manager server provides
A technical discussion of data protection with IBM iSeries

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Highlights

Tivoli Storage Manager is an award-winning, centralized and automated data protection application.

Tivoli Storage Manager running on other computer platforms can be a data protection repository for geographically disbursed iSeries computers running BRMS.

clients with data backup and restore, managed data archive and retrieve, hierarchical storage management (through the optional Tivoli Storage Manager for Space Management software module running on the client machines) and disaster preparation and planning (with the optional Tivoli Storage Manager Extended Edition software module). Its high scalability, intelligent data moves and stores and flexible administration make Tivoli Storage Manager the award-winning data protection choice for many large organizations around the world. For more information on Tivoli Storage Manager visit ibm.com/tivoli/storage

Computing environment #2

• Some iSeries computers need some data protection help

For other organizations data protection of some of their iSeries computers has become unwieldy due to a geographically dispersed implementation of iSeries servers throughout a facility or campus. Because of the physical distance between computers, limited personnel to collect data tape cartridges from those computers and a limited budget for robotic tape libraries at each iSeries computer, some iSeries computers may not have their data adequately protected at all times. For organizations in situations like this, a centralized Tivoli Storage Manager server running on a supported non-iSeries platform may be a viable option. Tivoli Storage Manager supports iSeries computers as clients only through the use of another data protection product built specifically for iSeries (for example, BRMS). By using the Tivoli Storage Manager API, other data protection products can send their backed-up data and retrieve stored data from a Tivoli Storage Manager server. BRMS is the IBM strategic product for protecting data on iSeries computers and works with Tivoli Storage Manager.

Automating data protection for iSeries with BRMS

BRMS is designed to efficiently handle a wide range of data protection tasks within your iSeries environment. It lets you plan, control and automate your backup and recovery, manage your offline data media and automate your data protection procedures—for a single iSeries machine or for multiple iSeries servers linked together through a network.
You can use BRMS to define policies for tasks such as data backup and archiving. The application also simplifies the process of tailoring a storage media strategy that is consistent with your organization’s operational requirements. You can use BRMS to schedule and automatically perform incremental or full backups of both system and user data and direct the backed-up data to specific types of storage media (for example, tape libraries, save files and so on). BRMS also provides media management services to help you track the location of saved files and manage the lifecycle of storage media from creation to expiration. For more information about the functionality of the BRMS application, visit the iSeries Web site at ibm.com/servers/eserver/iseries/service/brms.

Combining Tivoli Storage Manager with BRMS

For iSeries organizations that match the computing environment #2 description on page 4, both BRMS and Tivoli Storage Manager can be combined to back up and archive copies of user data from iSeries computers and store them on a centralized Tivoli Storage Manager server across a network. You can implement this combination by obtaining a set of Tivoli Storage Manager APIs for BRMS. These APIs make it possible to create a BRMS application client to a Tivoli Storage Manager server running on any of eight supported non-iSeries server platforms. The addition of the BRMS application client software allows BRMS to save only user data to the Tivoli Storage Manager server across a TCP/IP network. iSeries system data is still saved to a local data tape device connected to the iSeries computer, using BRMS or OS/400 commands. OS/400 software includes a scheduler that automates the scheduling of BRMS operations. This approach is recommended only for organizations having a small number of geographically dispersed iSeries computers with high-bandwidth network connections between them and the Tivoli Storage Manager server.

Case study

Fashion statement: Tivoli Storage Manager and BRMS combine to deliver a comprehensive data protection strategy at Diesel

After more than two decades of rapid growth, Diesel—one of Italy’s premier designer fashion houses—faced a dilemma of how to create an efficient, highly automated data backup and recovery strategy for an IT infrastructure that had
After evaluating a number of options, Diesel chose Tivoli Storage Manager to augment its BRMS backup and recovery solution.

The company’s computing network had to process data from Diesel’s headquarters (located in Molvena, near Vicenza in northern Italy), support several subsidiaries and consolidate data from its 50 company-owned retail shops. “In 1998 we started to run into problems with our server backup solution, which even then was expanding rapidly,” explains Giulio Tonin, Diesel’s IT manager. “We had 15 servers with about 150GB of data to save every night, and we had reached the limit with respect to both data capacity and the time available for backups. The solution we were using at the time only allowed for complete backup of the data. We also had to manually manage the data version that the restore was carried out on.” Diesel wanted a backup management solution that could identify new versions of file systems, database records and e-mails without having to copy everything from scratch.

Initially Diesel adopted BRMS to automate the backup of management data compiled by the company’s central computers. Satisfied with this BRMS solution, Diesel then sought to develop a centralized backup system that would take into account departmental servers, provide full compatibility and scalability and use a data protection system that would effectively support its disaster-recovery plan. After evaluating a number of options, Diesel chose Tivoli Storage Manager to augment its BRMS backup and recovery solution. Today Diesel has about 800 users who access the central system applications from company headquarters and subsidiaries through dedicated high-speed lines. These applications include a management information system, financial system, e-mail system, data warehousing system, departmental budgeting systems and applications for managing the finished product and raw materials warehouses. The company has a fleet of 35 servers to monitor and 370,000 files to back up each night.

The Tivoli Storage Manager and BRMS solution has proved to be highly effective. It allows data that has been modified since the previous version to be put on a hard disk and provides successive implementation of asynchronous tape dumps. The backup system manages 170GB of memory for Microsoft Office applications, 40GB for Lotus Notes® e-mail applications and an
additional 200GB for departmental systems. Backups of various servers and the
central computer are completed in just a few hours every night. After imple-
menting the backup module, Diesel also implemented the disaster-recovery
module; the first version provided copies of all the archives on tape through
a single server. A more recent version tracks the backup of every server.

Summary
If your organization’s computing infrastructure has grown beyond an iSeries-
only environment to include Windows, AIX, Solaris, HP-UX or any of more
than a dozen other widely used computing platforms and operating systems,
these systems can now receive the benefits of a centralized, automated data
protection application based on the iSeries platform. Tivoli Storage Manager
uses your spare iSeries CPU cycles to back up and archive the data on your
other platforms to a centralized data tape library connected to the iSeries
data protection server. In some situations Tivoli Storage Manager may also
be the right solution to provide network-connected data protection to iSeries
computers running the BRMS iSeries-specific data protection product. This
combination of software products is the IBM strategic solution for data
backup, data archive, hierarchical storage management, disaster preparation
planning and recovery and offline media management.

IBM software integrated solutions
Tivoli software supports a wealth of other offerings from IBM software. IBM
software solutions can give you the power to achieve your priority business
and IT goals.

- **DB2®** software helps you leverage information with solutions for data
  enablement, data management and data distribution.
- **Lotus®** software helps your staff be productive with solutions for authoring,
  managing, communicating and sharing knowledge.
- **Tivoli software** helps you manage the technology that runs your e-business
  infrastructure.
- **WebSphere®** software helps you extend your existing business-critical
  processes to the Web.
To learn more
For information on IBM Backup Recovery & Media Services, IBM Tivoli Storage Manager and integrated solutions from IBM, contact your IBM sales representative or visit ibm.com/tivoli

Tivoli software from IBM
An integral part of the comprehensive IBM e-business infrastructure solution, Tivoli technology management software helps traditional enterprises, emerging e-businesses and Internet businesses worldwide maximize their existing and future technology investments. Backed by world-class IBM services, support and research, Tivoli software provides a seamlessly integrated and flexible e-business infrastructure management solution that uses robust security to connect employees, business partners and customers.