



The Solution is simple.

BUS-TECH
INC.

SIEMENS DEMATIC

Rapistan Material Handling Automation Division

Integrated Systems for the Supply Chain

MAINFRAME APPLIANCE FOR STORAGE UNIFIES, SIMPLIFIES AND EXPEDITES TOTAL SYSTEM BACKUP BUT ABOVE ALL ELIMINATES TAPE RELATED VULNERABILITIES

Automated, unattended, mistake-free 3-way mainframe backup includes offsite archival

Benefits Derived by Siemens Dematic

1. Integrate and unify mainframe backup and restore with the strategic IBM Tivoli Storage Manager responsible for total enterprise data backup and automatic offsite data archival.
2. Significantly reduces data integrity vulnerabilities associated with backing and restoring data from physical tapes.
3. Automated, unattended operation eliminates operators having to pull, mount, dismount and file approximately 120 tapes a night.
4. Expedited backup substantially reduces the overall time window for batch processing.
5. Minimize the physical space previously required to store the continually growing tape backup library.

Siemens Dematic's Requirements

Unified and consolidated data backup of all systems, including the mainframe, to the Tivoli Storage Manager to simplify operations while bolstering overall data backup integrity and disaster recovery capabilities.

Bus-Tech Solution

The ESCON-attached Mainframe Appliance for Storage for IBM z900, z800, S/390 and compatible mainframes

"The Bus-Tech MAS is a great success. Wonderful solution. The operators are happy and we now process more mainframe jobs at night. It has eliminated the vulnerability we had always felt with tape backups."

Dennis Kaminiski
Manager Technical Support
Siemens Dematic



Siemens Dematic's Material Handling Automation Division [www.rapistan.com] is a subsidiary of Siemens Dematic AG. The world headquarters for the Material Handling Automation Division is in Grand Rapids, Michigan. Siemens Dematic is an engineering company specializing in material handling system automation. In fact, it is the world's leading supplier of logistics and factory automation solutions.

Siemens Dematic designs, manufactures, and installs automated material handling systems that address the business needs and logistics requirements of companies around the world. As a systems integrator, it supplies a full range of products and services, from individual products and systems to complete turnkey facilities as a general contractor. It customarily operates as a business partner and system integrator, handling the entire implementation process for its clients. They have also developed an entire infrastructure to provide comprehensive, long-term, "life cycle" support for their customer's systems.

Siemens Dematic with approximately 11,500 employees worldwide, has a business volume of around \$3.2 billion. In addition to the Rapistan Material Handling Automation Division it has two other business units dealing with Postal Automation and Electronics Assembly Systems.



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Irrefutable Advantages of the Bus-Tech MAS solution

1. Effortlessly and seamlessly unifies and integrates mainframe data backup and restoration with the IBM Tivoli Storage Manager being used to protect corporate data on the other systems.
2. Ensures automated, unattended offsite archival of mainframe data.
3. 3-way backup of mainframe data -- i.e. on the MAS, on the Tivoli Storage Manager system and offsite.
4. Eliminates the mistakes and 'media-corruption' problems associated with tape backups.
5. Makes operators happier and more gainfully productive by not requiring them to continually scurry around mounting and dismounting tapes.
6. Frees up mainframe cycles that can be profitably used to run additional jobs.
7. Affordable with a very quick ROI.
8. Ultra-reliable.

The Unification and Data Integrity Needs at Siemens Dematic

Invincible backup and recovery of mission-critical data has always been highly critical to Siemens Dematic, given the complex and long-term system integration and system development projects they undertake not to mention their avowed commitment for maintaining total "life cycle" support for their customer's systems. Consequently, they have always tried not to cut-corners or compromise in anyway when it comes to data protection solutions.

Rigorously and reliably backing up all of their mission-critical data was nonetheless a constant challenge since Siemens Dematic has a large, disparate and growing repertoire of systems. Just some of the systems in use at Siemens Dematic include: HP-UX systems running SAP ERP applications, Linux systems acting as application servers, a Lotus Notes system for collaborative applications, Novell servers for departmental use, Microsoft SQL Server databases and a 45 MIPS Hitachi Pilot 15 mainframe running project management, accounting and business administration applications.

Siemens Dematic now uses IBM's highly-acclaimed Tivoli Storage Manager, running on a powerful, 4-way, IBM p660 Unix server, with 6 tape drives and a 600 tape auto-loader 'robotics' unit, to control and coordinate company wide data backup. The Tivoli Storage Manager provides multiple compelling and valuable advantages over prior approaches, key among them being automatic offsite archival and very-fast, 'wire-speed' incremental backups.

Siemens Dematic needed to easily and reliably integrate their mainframe backup and recovery with the Tivoli Storage Manager. Bus-Tech's Mainframe Appliance for Storage proved to be exactly what they needed to successfully and cost-effectively realize this goal.

45MIPS Hitachi Pilot 15 mainframe ESCON channels



Running VM/ESA and VSE/ESA

1 ESCON channel at 17MBytes/sec

Chaparral RAID-5 Storage System with .5 TeraBytes



1 Ultra-2 SCSI connection at 40MBytes/sec

Bus-Tech Mainframe Appliance for Storage
virtual tape controller
with Tivoli Storage Manager client



IBM 4-way p660

Other systems and servers



IBM Tivoli Storage Manager



automatic, offsite archival





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The Solution for Siemens Dematic's Tivoli-based Data Backup

Siemens Dematic Needs Addressed by the Bus-Tech MAS

- /// Total integration of mainframe data backup, offsite archival and data restoration with the IBM Tivoli Storage Manager.
- /// Eliminate operators having to rush around pulling, mounting, dismounting and filing tapes.
- /// Eliminates the need to make more room to house the once fast growing tape library.
- /// Totally overcome the media and human-error related vulnerabilities associated with tape backup procedures.
- /// Unification of corporate-wide data backup and offsite archival through the Tivoli Storage Manager.
- /// Tangibly speed up mainframe data backup so that more jobs could be processed.
- /// Enhance operator satisfaction and productivity.

Bus-Tech's Mainframe Appliance for Storage is a leading-edge virtual tape solution for mainframe operations. It leverages Bus-Tech's acclaimed, high-throughput ESCON channel-attach technology. It acts as a flexible, very-fast and affordable virtual tape controller for IBM zSeries S/390, z900, z800 and compatible mainframes [where the mainframe at Siemens Dematic happens to be a Hitachi Pilot series model 15]. The MAS employs ESCON channel connectivity to mainframes, and SCSI or Fibre Channel connections to low-cost, open-system disk storage. To the mainframe software the MAS appears as an IBM 3480 tape drive. The MAS can emulate up to 16, concurrently active, IBM 3480 tape drives per ESCON connection.

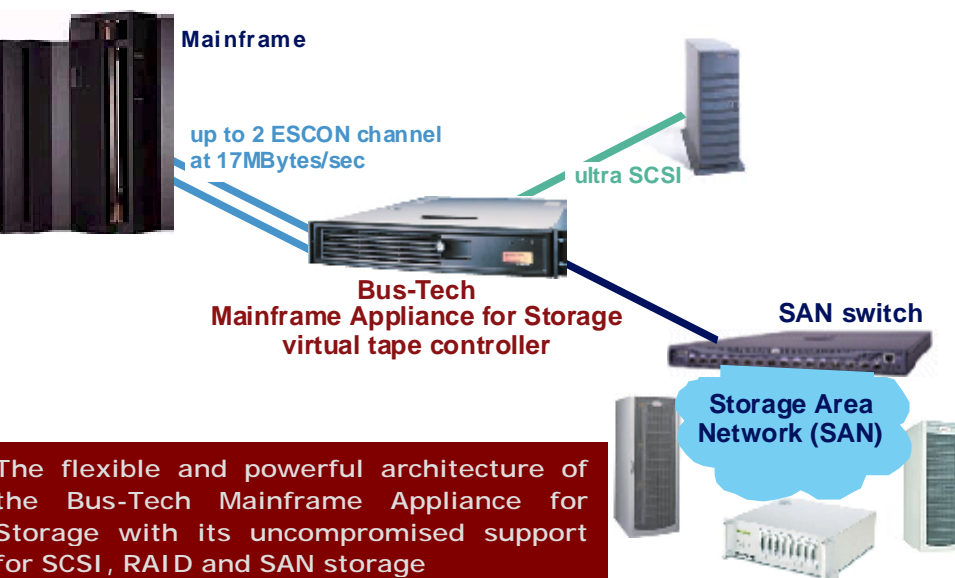
Mr. Dennis Kaminski, Siemens Dematic's Manager of Technical Support, found the Bus-Tech MAS in the fall of 2001 while doing a Web search for 'virtual tape controllers'. He considers it to have been a very serendipitous discovery, and has this to say: *"It sounded exciting. It proved to be exactly what we needed. I was very fortunate. I hope others are as lucky as finding such a solution as I was."*

Total, Seamless Integration with Tivoli Storage Manager

Mr. Kaminski discovered the MAS just as it was being released by Bus-Tech. Bus-Tech engineers worked with Mr. Kaminski to install the MAS and integrate it with the IBM Tivoli Storage Manager in early 2002. Seamless and full-function integration with the Tivoli was realized by implementing a Tivoli Linux client on the Bus-Tech MAS. The MAS automatically and transparently converts mainframe virtual tape volumes to Linux "Extended File System Version 2" (EXT2) files. The IBM Tivoli Storage Manager can thus treat mainframe data in the same way that it deals with data from 'open systems'. Thanks to the MAS, Siemens Dematic can thus unify, centralize and control all of their corporate-wide data backup and offsite archival via the extremely robust, highly proven and fail-safe Tivoli Storage Manager.

"Bus-Tech is a great company to work with. The engineers are helpful, very knowledgeable, friendly and professional. The MAS was a great solution for us."

Dennis Kaminski



The flexible and powerful architecture of the Bus-Tech Mainframe Appliance for Storage with its uncompromised support for SCSI, RAID and SAN storage

The MAS identifies its "tapes" by a user-settable vol-ser prefix (BTxxxx, BUxxxx,BZxxxx). Each unique prefix provides 9,999 virtual tape volumes. Each such volume corresponds to a mainframe disk file. At Siemens Dematic it is these virtual tape volumes that the MAS represents as Linux EXT2 files for optimum integration with the Tivoli Storage Manager. The MAS created virtual tape volumes appear to mainframe applications (and the operating system) as *bona fide* tapes -- albeit tapes that seem to get mounted extremely quickly and operate at very high speeds. If a mainframe application requests a 'scratch' tape to create a new volume, the MAS immediately assigns it the next available 'BTxxxx' volume serial number and creates a corresponding disk file with that name. The whole process takes milliseconds.



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Distinguishing Strengths of the Bus-Tech MAS

- /// Built around Bus-Tech's acclaimed, highly proven, high-performance ESCON channel-attach technology.
- /// Sustained data rate of 10MBytes/sec [80Mbps].
- /// Works totally transparently with z/OS, OS/390 and VSE operating systems.
- /// No changes required to the mainframe applications, just trivial changes to JCL.
- /// Ultra SCSI and Fiber Channel interfaces to support all contemporary disk storage options including SAN and NAS.
- /// Includes utilities to support RMM, CA's Dynam/T and Bi Moyle Associates' BIM-EPIC tape management systems.
- /// Designed for totally unattended, 'lights-out' operation.
- /// Comes with all necessary mainframe software and utilities to ensure 'turn-key' mode deployment and activation.

"Ensuring that we have excellent data backup and recovery capabilities has always been very important to us. We have tried other systems in the past. Most were too expensive and slow. With MAS and Tivoli we have a wire-speed, very safe system that does not require operators to mount, pull and file tapes. We were running out of room to store all these tapes anyway. If you have a mainframe you must evaluate the MAS."

Dennis Kaminiski

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If an application requests a mount of a specific volume, MAS checks that the corresponding data set exists and honors the mount. The mainframe applications are totally oblivious to the fact that the tape operations being emulated by the MAS are being realized using a RAID-5 storage system on Linux EXT2 files. The automated and near instantaneous tape volume mounts made possible with the MAS makes a huge difference to data center operations.

With a MAS, operators no longer have to scurry around mounting tapes and punching 'ready' buttons. Applications also no longer incur significant tape related wait-states. Furthermore, once a virtual tape volume is mounted via the MAS, tape-related data transfers occur at disk-speed, as opposed to the slower tape speed. The MAS works at a sustained data transfer rate of 10MBytes/sec (80Mbps). The MAS also obviates the need to dismount tapes and then file them away in a tape library.

Prior to the highly successful adoption of the Bus-Tech MAS solution, Siemens Dematic was using upwards of 120 tapes a night for data backup. This was a laborious and time consuming process. It was also susceptible to human error and the media-related data corruption vulnerabilities always inherent when using tapes. Siemens Dematic was also running out of room to store their growing tape library.

The MAS proved to be an incisive and cost-effective solution that addressed all of these issues in addition to enabling mainframe data backup and restore to be integrated with the Tivoli Storage Manager that was protecting the data on the other non-mainframe systems. Integration with the Tivoli Storage Manager also ensured that mainframe data would be automatically archived, offsite, without the need for any additional effort or procedures. The Tivoli Storage Manager is an intelligent, policy-based, fool-proof, 24x365 comprehensive data management system for today's information-driven corporations -- such as Siemens Dematic. The MAS-based mainframe integration with the Tivoli Storage Manager has proved to be a true win-win solution and Siemens Dematic as can be gauged by Mr. Kaminiski's unstinted praise is delighted that they discovered the MAS on the Web.

About Bus-Tech

Bus-Tech, Inc., founded in 1987 is the industry's leading provider of state-of-the-art connectivity solutions for the data center to Original Equipment Manufacturers. IBM is one of its leading customers. The company's powerful suite of adapter and platform solutions satisfy even the most rugged demands of data processing professionals for high-bandwidth, high-availability and high-performance connectivity. With more than 15,000 installed sites worldwide, Bus-Tech is a recognized leader in the data center interconnect market. Headquartered in Burlington, MA, the company is privately held with locations around the world. For more information about Bus-Tech and its products, please visit the Bus-Tech World Wide Web site at <http://www.bustech.com>, send email to info@bustech.com, or call 800.284.3172.