IBM Magstar 3494 Model B18 Virtual Tape Server Features Enhance Interoperability and Functionality

Overview
The Magstar® 3494 Model B18 Virtual Tape Server (VTS) is now available with new features and previews additional capabilities. The new features increase usability and allow more enterprise data under the control of the IBM Virtual Tape Server. This fulfills the Product Preview included in the Magstar 3494 Model B18 VTS (refer to Hardware Announcement 198-128, dated June 2, 1998).

An Advanced Function feature, supported under DFSMS/MVS® Version 1.4.0, and later, will initially provide logical volume import and export using stacked Magstar 3590 tape cartridges to allow key activities such as disaster backup/recovery, volume archive, or workload movement. Host facilities will initiate the movement of logical volumes to exported stacked volumes or the copy of logical volumes from exported stacked volumes into a VTS.

Enhanced VTS connectivity is provided by a new SCSI Host Attachment feature. This feature provides attachment to multiple SCSI-2 fast and wide buses to allow sharing a VTS between S/390® and RS/6000™ systems.

Also announced is the ability to have additional Disk Storage Capacity (#3702) available as a field upgrade for currently installed Magstar 3494 Model B18 VTSs.

Product Preview: Additional Magstar Virtual Tape Server functions and features planned for future delivery include:
- Remote logical volume copy
- Coupled VTS subsystems
- Expanded disk storage capacity
- Improved performance
- Support of new 3590 Tape Drive models

Previews provide insight into IBM plans and directions. Planned availability dates, prices, ordering information, and terms and conditions will be provided when the features are announced.

Key Prerequisites
- The Advanced Function feature requires a VTS to have at least four Magstar 3590 Model B1A Tape Drives and the 3494 Tape Library must have a Convenience I/O Station (#5210 or #5230).
- The SCSI Host Attachment feature is supported on selected RS/6000 systems running AIX® Version 4.2.1, and later.

Both of the above features require the VTS to have the ESCON® High Performance Option (#3200).

Planned Availability Dates
- April 30, 1999 — Field installation of feature number 3702
- May 28, 1999 — Advanced Function and SCSI Host Attach

At a Glance
IBM 3494 B18 VTS expanded capabilities include:
- The Advanced Function feature, which provides import and export of logical volumes for:
  - Disaster backup and recovery
  - Workload movement between VTS subsystems
  - Volume Archive
- The SCSI Host Attachment feature enables access by RS/6000 and RS/6000 SP™ systems so they and S/390 systems can have:
  - Shared access to logical volumes and virtual tape drives
  - Shared usage of a VTS
- Field installation of Disk Storage (#3702) for increased configuration flexibility

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Reference: YE010

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**Advanced Function Feature**

The new 3494 B18 Advanced Function Feature (#4000) will provide host controlled functions to further exploit the use of tape and disk subsystems in the virtual tape server. The first of these functions is Import/Export. The ESCON High Performance Option (#3200) is a prerequisite for this feature (#4000).

**Import/Export**

The 3494 B18 VTS data portability will be provided by a set of functions called Import and Export. The Import and Export functions allow you to move data between VTSs without having to copy the logical volumes back through the host channels or lose the VTS benefits of volume stacking, which exploits the storage capacity of the 3590 cartridge. Exported logical volumes are not accessible any longer in the VTS after the Export, and become accessible in a VTS after an Import.

**Export:** The Export function allows you to identify a set of logical volumes as a group and have those volumes placed on a set of physical volumes that can then be removed from a VTS. The host-initiated export operation will copy logical volumes from a physical stacked volume to the target physical exported stacked volume and delete the logical volumes from the VTS. The export operation allows multiple destinations to be specified and will create one or more exported stacked volumes for each destination. An exported logical volume will only be included on one exported stacked volume.

**Import:** The Import function allows you to identify a set of logical volumes that reside on physical volumes exported from one VTS to be added to another VTS. The host-initiated import operation provides a number of options:

- Import an entire exported stacked volume
- Import selected logical volumes from an exported stacked volume
- Import logical volumes as scratch volumes
- Import logical volumes as newly initialized volumes

An empty exported stacked volume can be reused by a VTS or a native 3590 application.

VTS Import/Export will support customer activities such as:

- **Disaster Backup**

  You have a need to protect your enterprise’s data assets. In many industries, data is the corporate product. Without these assets you would be unable to run your business or compete effectively in your industry. Most customers protect their data assets by periodically making a copy of critical data and placing it in a remote site for recovery in the event there is a disaster at the local site. The data can either be physically moved after copying or the copy operation can transfer the data over a communication facility to a remote site to eliminate physical movement and reduce the exposure to loss of backup data. Currently, the preferred method is physical offsite movement of tape volumes.

  The disaster backup data can be utilized to:
  - Test disaster recovery procedures
  - Recover from a disaster at the local site
  - Recover from a data loss at the local site

- **Work Load Move**

  Occasionally, you have a need to move selected data from one location to another using a portable media that uses devices common to the sending and receiving sites. In most cases, but not all, the source data will be moved (as opposed to sending a copy) to the receiving site. With a VTS, it is also possible as your workload grows, the data in a single VTS will need to be split between two VTSs.

- **Archive**

  Your VTS configuration may not have the physical capacity to contain all the data you decide to store in the VTS. Thus, you need to have a capability to move data out of the VTS but still have it available for ready access should it be required at some future time. Archive data is data that has a low frequency of usage and can be moved out of a VTS with minimal impact on your operations.

- **Interchange**

  Customers have a continuing need to exchange data with other sites within their enterprise, or with vendors, customers, or governments. Interchange occurs on mutually agreed upon media, which can be processed at sites within the sending and receiving organizations. Including interchange data within the VTS reduces the number of external devices required and extends the VTS benefits to more data.

**Open Systems SCSI Host Attachment**

The SCSI Host Attachment feature permits open systems host attachment through industry-standard SCSI buses. Each SCSI Host Attachment (#3422) provides two SCSI bus attachments and includes data compression compatible with the ESCON High Performance Option. Each bus provides up to 16 virtual devices and emulates 3490E tape drives. Each feature supports a maximum of 16 virtual devices. The feature supports attachment to the SCSI-2 standard interface on selected RS/6000 systems. One or two SCSI attachment features can be installed in the 3494 Model B18 and require the ESCON High Performance Option (#3200) with an attached ESCON host system and the VTS Open Systems Device Drivers (#9201) as a prerequisite.

The SCSI Host Attachment feature allows sharing of the VTS resource between mainframes and open systems. Virtual volumes can be serially shared between mainframes and open systems. With the virtual capability of a VTS, one or more SCSI-attached virtual devices can be dedicated to an open system.

**Product Preview**

The following previewed product features and functions would further expand the capability of the Virtual Tape Server to allow inclusion of more data or improve the processing of data already committed to the Virtual Tape Server:

- **Remote logical volume copy**

  Duplex logical volumes would be stored in different 3494 Tape Libraries, which can be physically separated at distances up to 27 kilometers. Remote volume copy can eliminate the need to move physical media for disaster backup and potentially speeds up the disaster recovery processing.
• Coupled VTS subsystems
A new capability would provide coupling facilities to connect two VTS subsystems together to form a coupled VTS. Each VTS within a coupled VTS would have a copy of each virtual volume in the combined subsystem, which can be retrieved from either VTS. With the new coupling facilities in a VTS configuration, virtual volumes would continue to be accessible after any single failure and in some cases multiple component failures. Service on any single component in a coupled configuration can be performed concurrently with customer operation. The coupled VTS can be separated by ESCON distances up to 27 kilometers. Your current 3494 Model B18 VTS can be included in a coupled server configuration, protecting your investment. The coupled VTS subsystem is designed for customers requiring 7 x 24 access to tape data.

• Expanded disk storage capacity
The maximum disk storage capacity of the VTS would be increased. This can increase the average residency time of a virtual volume in the tape volume cache, thus improving its availability to be re-read while still in the cache. This can result in an improvement in overall mount performance.

• Improved performance
The VTS will be enhanced to reduce run times for bandwidth-limited jobs.

• Support new 3590 Tape Drive models
The Magstar 3494 Model B18 VTS would support attachment of the new Magstar 3590 Tape Drive models in today’s preview announcement. Refer to Hardware Announcement 199-038, dated February 16, 1999.

Previews provide insight into IBM plans and directions. Availability dates, prices, ordering information, and terms and conditions will be provided when the features are announced.

Year 2000
This product does not have date dependencies and is therefore Year 2000 ready.

Product Positioning
With this announcement of SCSI-2 attachment, the Magstar Virtual Tape Server becomes an Enterprise Tape Server. The Magstar 3494 Model B18 VTS exploits the unique performance and capacity of the Magstar 3590 to reduce the total cost of ownership of tape solutions for MVS®, VM, and VSE environments. The 3494 Model B18 has the broadest range of delivered system attachments (VM, VSE under VM, and AIX are IBM exclusives).

The announced features, SCSI Host Attachment and logical volume import/export included in the Advanced Function, along with the functions indicated in the Product Preview and Statement of General Direction sections will further enhance the Model B18 VTS’s value. The capability to include RS/6000 system attachments to the VTS will allow resource and data sharing with other mainframes to reduce the cost of enterprise tape and improve data usage. Logical volume import/export Advanced Function will allow inclusion of more data in the VTS by allowing removal of logical volumes for the purpose of disaster backup, archive, and workload movement. It can also reduce the number of cartridges that need to be handled. Together these features and functions expand the capability of the VTS and protect your investment.

The previewed features and functions will provide additional value and further protect your investment in the Magstar 3494 Model B18 VTS by expanding its capability. These features and functions extend IBM’s VTS leadership and provide functions not announced or available from other virtual tape subsystem solutions.

The Magstar 3494 Model B18 is a second generation Seascape solution incorporating key IBM technologies such as Magstar 3590, Magstar 3494, SSA disk, and the RS/6000 to decrease the cost of tape processing for large system customers. The enhancements announced today further demonstrate IBM’s commitment to the Seascape architecture and the power of the Seascape architecture to bring products to the marketplace.

Suggested Uses
The Magstar 3494 Model B18 VTS is an easy-to-use, cost/performance solution intended for environments with a large number of partially full tape volumes. It provides the “volume stacking” capability to stack multiple virtual volumes onto a single High Performance 3590 Cartridge Tape. It is especially beneficial to installations with IBM automation systems, installations with tape automation systems from other vendors, and non-automated installations that have not previously been able to justify tape automation. For installations with an existing automation system, the Magstar 3494 Model B18 VTS in a Magstar 3494 Tape Library can be used to contain tape growth. The SCSI-2 attachment capability allows sharing of virtual volumes between mainframes and open systems. This announcement extends virtual concepts to open systems and allows dedication of virtual addresses to open system servers without dedicating real devices, thus reducing the tape support costs for open system servers.

The Magstar 3494 Model B18 VTS is a key component of IBM’s tape storage solutions for environments requiring high performance and high capacity sequential processing. Solution components are:

• Magstar 3494 Model B18 Virtual Tape Server
• Magstar 3494 Tape Library
• Magstar 3590 Model B1A and B11 Tape Drives
• Magstar 3590 Model A50 ESCON Controller
• Magstar 3590 Models C12 or C14 Silo Compatible Attachment

These components, when used together, provide an excellent solution to address your large system tape processing requirements.

Statement of General Direction
IBM plans to extend the capability of the VTS Advanced Function feature to include functions such as tape volume cache management, logical volume affinity, and selective logical volume dual copy. All information being released represents IBM’s current intent, is subject to change or withdrawal, and represents only goals or objectives.
Reference Information


Refer to Hardware Announcement 199-038, dated February 16, 1999.

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Advanced Function: The Magstar 3494 Model B18 VTS functions is Import/Export. The Advanced Function feature is supported on ES/3090, ES/9000, and S/390 systems with the appropriate software support (refer to the Software Requirements section). The Model B18 must have the following:

- The ESCON High Performance Option (#3200), with an attached ESCON host system
- VTS Open Systems Device Drivers (#9201)
- RS/6000 Attachment (#9106)

The Model B18 cannot have the Additional Enhanced ESCON Channel Attachments (#3302) installed. One or two appropriate length SCSI cables should be specified per feature (refer to the Cables section).

The SCSI Host Attachment (#3422) is supported for attachment to RS/6000 and RS/6000 SP systems with any of the following adapters:

- Enhanced SCSI-2 Differential Fast/Wide Adapter/A (#2412)
- PCI SCSI-2 Fast/Wide Differential Adapter (#6209)
- PCI Differential Ultra SCSI Adapter (#6207)

It has been tested on the following RS/6000 processors:

- 7017—S70, S7A
- 7025—F50
- 7026—H50
- 9076—308

Attachment to the #2412 adapter requires the use of a Double Byte Wide Interposer (#9702) with the appropriate SCSI cable.

Cables: One or two of the following SCSI cables (#5001, #5002, #5003, or #5004) should be ordered with each SCSI Host Attachment (#3422) on the 3494 Model B18:

- 4.5 meter SCSI cable (#5001)
- 10 meter SCSI cable (#5002)
- 20 meter SCSI cable (#5003)
- 10 meter SCSI VHDCI cable (#5004)

Software Requirements

MVS Advanced Function Support: Functional exploitation of the VTS Advanced Function feature is provided in DFSMS/MVS® Version 1.4.0, and later. Support is provided as an SPE for DFSMS/MVS Versions 1.4.0 and 1.5.0. There are no associated changes required for MVS/SP™ or OS/390®.

In order to allow import/export enhanced hosts to share an Import/Export capable VTS with other MVS or OS/390 host systems that do not have Import/Export capability, toleration PTFs are provided for DFSMS/MVS Versions 1.1.0, 1.2.0, 1.3.0, 1.4.0, and 1.5.0.

DFSMS/MVS support for VTS Import/Export includes programming and interactive interfaces that improve overall host management of virtual tape resources, as well as enabling control of import and export operations for virtual volumes. Enhancements include:
• Additional and expanded programming interfaces: An assembler macro provides two new tape processing functions, IMPORT and EXPORT. These functions enable import and export operations to be initiated under program control.

• Enhanced entry processing: The cartridge entry installation exit is enhanced to support import processing of logical volumes on stacked volumes.

• Enhanced eject processing: The cartridge eject installation exit is enhanced to support export processing of logical volumes on stacked volumes.

• Expanded operator command support: New LIBRARY IMPORT and LIBRARY EXPORT commands are provided to enable interactive initiation of import and export processing. In addition, DISPLAY SMS commands for VOLUME, LIBRARY, and OAM are enhanced to provide specific details associated with status and attributes of VTS library resources.

• New pre-ACS exit for tape management systems: Storage Management Subsystem (SMS) supports a new user exit routine invoked before calling automatic construct selection (ACS) routines to allow the tape management system to influence construct selection.

• Expanded console message support: New messages are added and existing messages are enhanced to provide status information on VTS import and export processes and to enable problem determination/resolution.

Tape Management Systems Support: Using DFSMSrmm™ (or independent software vendor tape management systems), you can initiate the movement of logical volumes to exported stacked volumes or the copy of logical volumes from exported stacked volumes into a VTS. Independent software vendors for tape management systems should be contacted regarding their support plans for exploitation of the import/export capability.

RS/6000 SCSI Host Attachment Support: SCSI host attachment to a RS/6000 system requires AIX® Version 4.2.1, or later.

VTS Open Systems Device Drivers (#9201) provides device driver support for RS/6000 host systems attached to SCSI buses in the Magstar 3494 Model B18 VTS. RS/6000 Attachment (#9106) should also be specified to indicate attachment to an RS/6000 host system. Application programs supporting library-attached 3490E devices (3490 Models C1A, C2A, or F1A) should operate without change with a VTS. Support is not provided for the import or export of logical volumes capability included in the Advanced Function (#4000).

Compatibility: The SCSI Host Attachment feature allows sharing of the virtual volumes in the VTS between S/390 and RS/6000 systems.

Limitations

• The device driver support for SCSI Host Attachment does not include the support for the import or export of logical volumes capability included in the Advanced Function (#4000).

• The total SCSI bus cable length cannot exceed 20 meters.

Planning Information

Customer Responsibilities: Physical planning is a customer responsibility. Detailed physical planning information is in the Magstar 3494 Introduction and Planning Guide (GA32-0279).

Cable Orders: Required SCSI cables for attaching the Magstar 3494 Model B18 VTS to SCSI host system adapters are supplied by specifying feature number 5001, 5002, 5003, or 5004 on the Model B18. The appropriate length SCSI cables for your installation environment should be selected.

Direct Customer Support: Eligible customers can obtain installation and usage assistance through ASKQ Support. To obtain information on customer eligibility and registration procedures, refer to HONE SUPPORTINFO, using the search word 3494, or IBMLink™ ASKQ.

Supplies: None required with these features.

Security, Auditability, and Control

This product uses the security and auditability features of host hardware, host software, and/or application software to which it is attached.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

Terms and Conditions

Feature Section

This product is available for purchase under the terms of the IBM Customer Agreement.

IBM hardware products are manufactured from new parts and used parts. In some cases, the hardware product may have been previously installed. Regardless, IBM’s warranty terms apply.

MES Discount Applicable: Equal to the volume commitment discount

Field-Installable Feature: Yes

Warranty Period: One year

Customer Setup: No

Licensed Internal Code: Same license terms and conditions as designated machine
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<th>Description</th>
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<th>Purchase Price</th>
<th>Monthly Charge</th>
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<td>VTS Open System Device Drivers</td>
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<td></td>
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1. These features were previously announced on other models.
2. This feature was previously announced, but field install has been added.

**Plant Install Only:** No

**Field Install Only:** No

**Minimum Maintenance Charge**
- $400 (Disk Storage Capacity #3702)
- No charge (all other features)

**MES Removal**
- Disk Storage Capacity (#3702): No
- All other features: Yes

**ESA Maintenance Charges**

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