



# IBM Integrated Removable Media Manager for the Enterprise on System z V1.1 provides automated tape media management for datacenters

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## At a glance

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IRMM is designed to provide:

- Consolidated, mainframe-class media management services
- A centralized repository, access control and administration
- Centralized monitoring and reporting
- Integration with z/OS DFSMSrmm to provide a central point of management and control for open systems and z/OS removable media management
- Access to a cluster of multiple physical libraries as one large logical library
- Dynamic sharing of resources across heterogeneous application boundaries and heterogeneous operating systems
- Security features to permit or prevent application access to tapes
- Virtualization of the media changer interface
- Dynamic drive and drive path configuration and provisioning for Tivoli Storage Manager

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## Overview

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The IBM Integrated Removable Media Manager for the Enterprise on System z™ (IRMM) is a robust middleware product for the open systems environment that is designed to help reduce the Total Cost of Ownership (TCO) for managing removable media in data centres.

IRMM helps enable function from the mainframe's z/OS® operating system functional component IBM Data Facility Storage Management Subsystem (DFSMS) for open systems. IRMM collaborates with DFSMSrmm™, which manages removable media resources for the z/OS environment. IRMM helps enable z/OS customers to manage tape media in the distributed environment and optionally tape media in the z/OS environment from a single point of control.

IRMM complements IBM's open storage software family to provide storage virtualization and advanced storage management for tape libraries and removable media. IRMM is an implementation of IEEE Standard 1244 for Media Management Systems. The IRMM package includes an adapter that enables Tivoli® Storage Manager servers and storage agents to use the IRMM services. IRMM automatically configures drives for Tivoli Storage Manager and provides an audit trail and statistical data for the complete lifecycle of a tape cartridge.

Through its tape library virtualization capabilities, IRMM can increase drive utilization, availability, and administrator productivity and efficiency. In addition, it combines the capacity from multiple heterogeneous libraries into a single reservoir of tape storage that can

be managed from a central point.

With IRMM, all applications can now share a common pool of tape drives. There is no longer a need for exclusively assigning drives to applications. Instead, IRMM is designed to distribute application workloads across all working tape drives so that users can gain substantial utilization benefits.

Advanced monitoring and reporting capabilities of IRMM can increase administrator productivity. IRMM also provides reporting capabilities for error statistics. This data can be used by an administrator to do root causal analysis for problems, identify and correct performance bottlenecks, and perform preventive and predictive maintenance.

For the most current information on IRMM, refer to the IRMM Web site at

<http://www.ibm.com/systems/z/os/linux/solutions/irmm>

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## Key prerequisites

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Refer to the Hardware requirements and Software requirements sections for details.

### Planned availability date

September 14, 2007

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## Description

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The need for a tape management system and/or library management system in the open systems environment has been a long-standing requirement by IBM customers. This is especially true for existing z/OS DFSMSrmm customers who have asked for extensions to their existing tape management procedures and policies so that they are able to manage open systems. IBM is responding with a new product for this environment with the IBM Integrated Removable Media Manager for the Enterprise on System z (IRMM).

IRMM is designed to provide the following functions:

### Consolidated, mainframe-class media management services

IRMM is designed to consolidate all media management services for open systems. Services include tracking of the whole cartridge lifecycle as well as tracking of state changes, such as scratch and private, and changes of the location. Therefore, it is possible to locate a single cartridge within the enterprise. Additionally, IRMM provides the capability for grouping and pooling of resources.

### A centralized repository, with consolidated access control and administration

In large customer environments, removable media management systems must be able to catalogue hundreds to thousands of media, storing not only the media and their attributes, but also a history of access, duration of use, corresponding data about errors, and other necessary information. In addition, since it is possible to store the media separately from drives, the location of a medium must be known at all times, whether the location is a manually-managed store or an automatic library.

IRMM's highly-scalable architecture provides such a central repository for tape resources in an enterprise. Furthermore, administrators are provided with a centralized tool for tape management related operations. These operations include access control as well as dynamic reconfiguration of the tape infrastructure.

### Centralized monitoring and reporting

IRMM's advanced monitoring and reporting capabilities can increase administrator productivity. Drive utilization, data throughput, compression rates, error statistics, and much more information is stored in IRMM's database. By using this data, an administrator may be able to do faster root cause analysis in case of problems, to exhibit performance bottlenecks, and to implement preventive and predictive maintenance. With IRMM, storage administrators now have a tool that is designed to maximize the investment in tape resources by increasing tape resource utilization and reducing downtime. This is intended to help reduce operational costs by centralizing proactive tape resource management.

### Integration with the z/OS DFSMSrmm priced feature

IRMM collaborates with DFSMSrmm, which helps enable management of removable media

resources in the enterprise from one central control point. You get a unified treatment of all removable media resources in the enterprise because all cartridges are contained in the DFSMSrmm database. All of the DFSMSrmm reporting and monitoring tools and procedures that were previously available only to z/OS users are now available to the distributed environment as well. In addition, IRMM provides a command line interface (CLI) for z/OS that permits a z/OS administrator to fully administer, control, and monitor the distributed tape infrastructure from z/OS. All IRMM function is available through the command line interface so the z/OS and Linux™ on System z tape media can be managed from a central z/OS system.

### **Access to a cluster of multiple physical libraries as one large logical library**

With IRMM's tape library virtualization features, applications can use a set of physical libraries as one large virtual library image. IRMM balances scratch-mount workload among all physical libraries. It is also possible to create multiple virtual libraries on top of one large physical library. In fact, logical libraries can be dynamically reconfigured such that a service provider could provide a library with 10 drives from 6 am to 6 pm and a library with 20 drives for the rest of the time to the client. This may help with implementing Service Level Agreements for tape usage and client charging.

### **Dynamic sharing of resources across heterogeneous application boundaries and heterogeneous operating systems**

IRMM is an implementation of IEEE Standard 1244 for Media Management Systems. This standard was designed to not require any particular hardware, operating system, or application. IRMM's interface specification is published in this standard and helps enable third-party vendors to connect to the system and utilize IRMM services. When properly configured, Tivoli Storage Manager exploits the IRMM interface to make use of the services provided by IRMM.

### **Security features to permit or prevent application access to tape**

Sharing resources among several applications connected to the storage network requires corresponding mechanisms for access control, access synchronization, and access prioritization. IRMM provides mechanisms to control who may access which hardware when. Thus, IRMM is designed to allow applications to access all resources available in the storage network. IRMM also manages private data and moves cartridges to a private pool as soon as a volume has been allocated by an application. Only the application that "owns" the volume is designed to access the cartridge while other applications are denied access to the private data.

### **Virtualization of the media changer interface**

IRMM allows users to virtualize tape libraries by actually virtualizing the media changer interface application they are using to control libraries. Therefore, it is possible to combine the capacity from multiple heterogeneous libraries into a single reservoir of tape storage which can be managed from a central point. This allows all applications to share a common pool of tape drives and helps eliminate the need to exclusively assign drives to applications. Instead, IRMM can distribute application workload among all working tape drives.

### **Dynamic drive/path configuration and provisioning for Tivoli Storage Manager**

IRMM is designed to automatically detect and configure drives and drive paths on every Tivoli Storage Manager (or LAN-free storage agent) host. This feature can reduce administration efforts, especially in large environments. For example, assume a setup with 3 Tivoli Storage Manager servers, 30 storage agents, and 30 drives. Without IRMM, nearly 1000 drive paths have to be defined and maintained. Furthermore, IRMM keeps track of the right path from the Tivoli Storage Manager server storage agent to the drive even if drive paths change because of connection problems, drive maintenance, or failures.

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## **Product positioning**

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If you have multiple tape resources, IRMM provides a centralized management system for removable media management and dynamic sharing of tape resources. IRMM extends the IBM virtualization strategy to tape library resources (drives and cartridge pools) to complement Linux on System z consolidation efforts. IRMM provides integrated solutions and opportunities for existing z/OS DFSMSrmm and Tivoli Storage Manager users to be managed with Linux on System z. IRMM is an implementation of IEEE Standard 1244 for Media Management Systems. IRMM includes an adapter that enables Tivoli Storage Manager servers and storage agents to use the IRMM services.

IRMM is intended to enhance tape usage on the mainframe by integrating tape management for mainframe and open systems. IRMM helps enable you to select best-of-breed tape hardware and technology.

IRMM is intended to help reduce Total Cost of Ownership (TCO) through infrastructure simplification and resource optimization. Benefits may include:

- Increased administrative productivity through centralized management and administration.
- Increased resource utilization due to IRMM's robust tape library virtualization capabilities that can increase drive utilization. You can implement a common scratch pool and still keep private cartridges in separate pools with the intent of preventing private data from being read by another application.
- Preventive failure analysis designed to provide you with a warning by Tivoli Enterprise™ Console alert or an e-mail, as well as a complete overview of the system from just one available console.
- New efficiencies with z/OS DFSMSrmm by having one consolidated view of all tape resources (mainframe and open). In addition, you can use the same policies for z/OS on the mainframe and open systems tape for retention, movement, and vaulting.

IRMM is designed to help you establish and protect the business continuity aspects of your investments by:

- Establishing System z as the management hub for removable media for z/OS and distributed systems
- Adding value to IBM tape hardware technology by providing extended function
- Providing integration with Tivoli Storage Manager products that can easily make use of the IRMM technology

Virtualization of servers and virtual images is a popular subject, but tape library virtualization is a relatively new concept in the IT field. In this relatively new realm of virtualizing tape libraries, IRMM is designed to:

- Combine the capacity from multiple heterogeneous libraries into a single reservoir of tape storage that can be managed from a central point
- Increase utilization, availability, administrator productivity, and efficiency
- Reduce downtime for planned and unplanned outages and maintenance

In summary, IRMM running on Linux for System z is positioned to help you manage open systems tape media in heterogeneous distributed environments, provide you with tape library virtualization, and help you enhance consolidated tape resource management.

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## Statement of direction

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IBM will provide IRMM client support for the following platforms in fourth quarter 2007: Tivoli Storage Manager (5608-ISM) V5.2, or later or Tivoli Storage Manager Extended Edition (5608-ISX) V5.2, or later on Windows™ 2000, Windows 2003, Sun Solaris 8, or later, and HP-UX 11.

All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

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## Reference information

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For new capabilities available for z/OS DFSMSrmm, refer to the z/OS V1.9 Software Announcement [A07-1816](#), dated August 7, 2007.

### Trade-marks

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