



IBM Software

Managing z/VM and Linux on System z Guests

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Managing z/VM and Linux on System z

- **Security**
 - RACF and zSecure Manager for z/VM
- **Performance monitoring**
 - OMEGAMON XE on z/VM and Linux
- **Automation and operational monitoring**
 - Operations Manager for z/VM
 - Including integration with existing monitoring and alert systems
- **Backup and recovery**
 - Backup and Restore Manager for z/VM
 - Tape Manager for z/VM
 - Tivoli Storage Manager
- **Archive**
 - Archive Manager for z/VM

Recommended Practices – Operational Management

View and issue commands on consoles of Linux guests and CMS service machines

- Operations staff monitoring multiple consoles or a central console of alerts
- System programmers debugging a problem on a guest or service machine

Generate alerts and/or automatically recover from

- Abend, termination, or error messages
- Service machine disks approaching full
- Critical user IDs or guests being logged off or entering error state
- Spool and/or page space approaching full

Schedule automated system maintenance procedures

- Spool cleanup based on policies
- Minidisk cleanup (from logs), including archiving
- Orderly startup and shutdown
 - Relocation of critical guests to another SSI member
- Backups of z/VM system

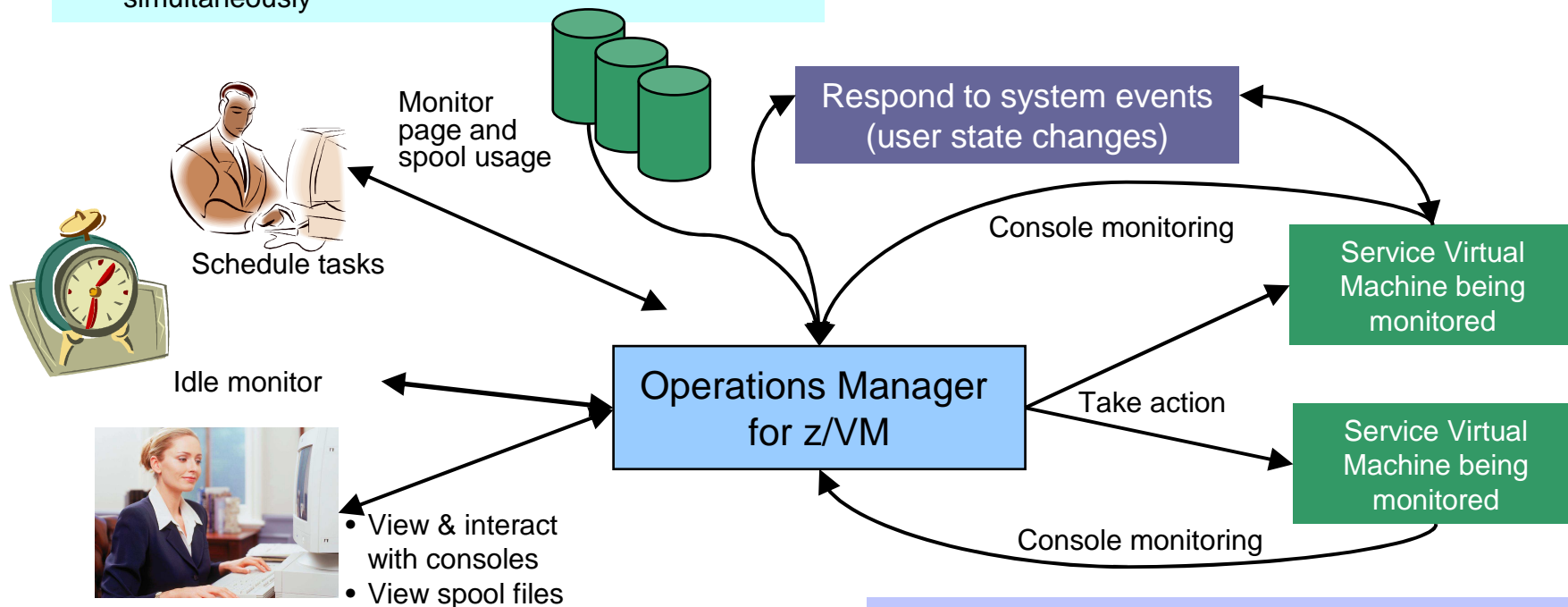
Operations Manager for z/VM

Increase productivity

- Authorized users to view and interact with monitored virtual machines without logging onto them
- Multiple users view/interact with a virtual machine simultaneously

Improve system availability

- Monitor virtual machines and processes
- Take automated actions based on console messages
- Reduce problems due to operator error



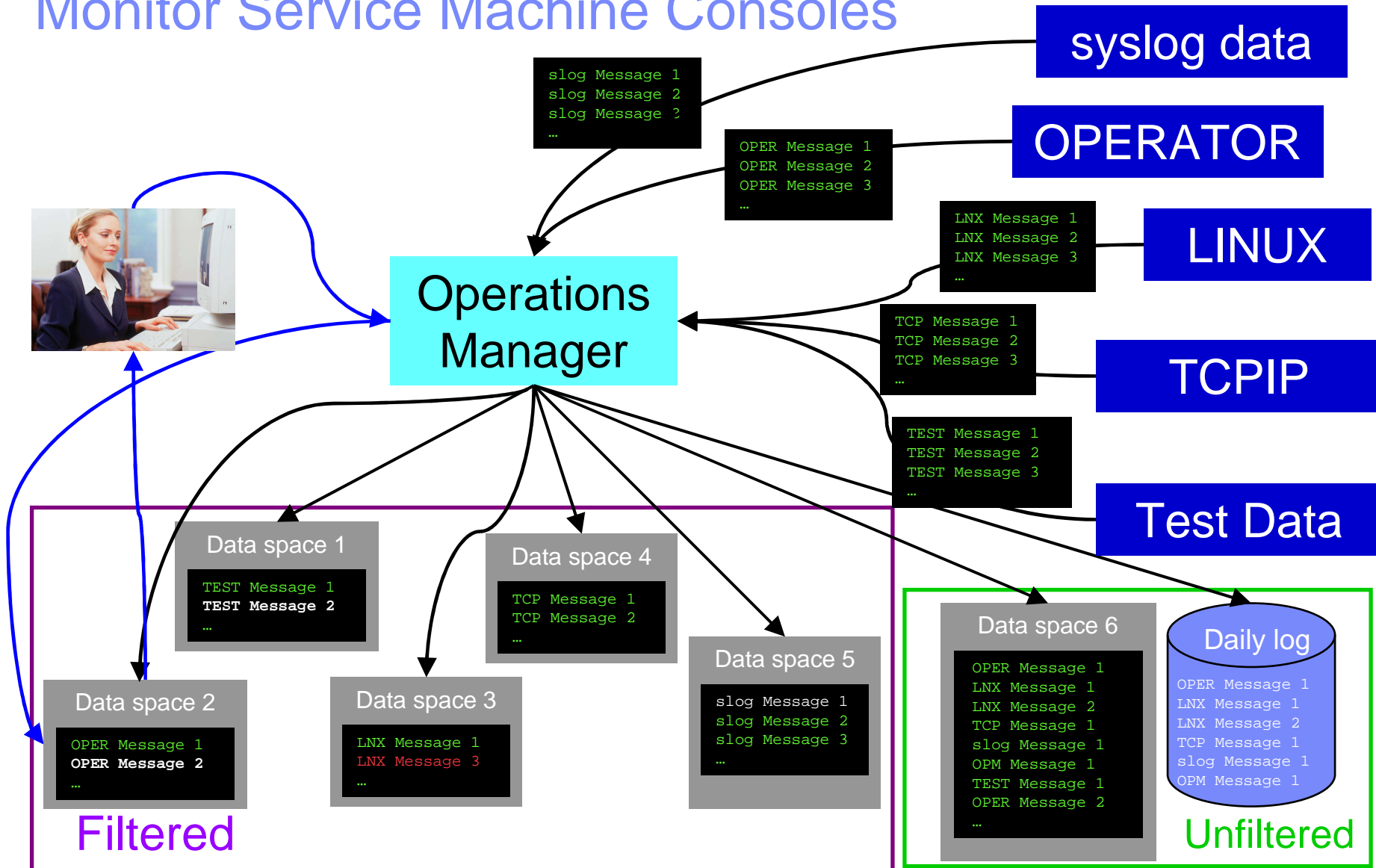
Automation

- Routine activities done more effectively with minimal operations staff
- Schedule tasks to occur on a regular basis

Integration

- Fulfill take action requests from performance monitoring products (e.g. OMEGAMON XE on z/VM and Linux)
- Send alerts to email, central event management systems (e.g. Netcool\OMNIBus), etc.

Monitor Service Machine Consoles



Operations Manager for z/VM - Features and Functions

- **Monitor service machine consoles**
- **Monitor page space and spool usage**
- **Monitor system events**
- **Schedule events/actions**
- **Monitor other monitors for lack of activity**
- **Take actions automatically based on monitoring results**
- **View and interact with monitored consoles from authorized user IDs**
- **Find and view spool files**
- **Dynamic configuration**
- **Separation of access control**

Automation Demos Available

- 1. Send an e-mail based on a console message**
- 2. Send an alert to Netcool/OMNIBus based on a console message, hold and unhold messages**
 - a. Using POSTZMSG interface to Netcool/OMNIBus
 - b. Using SNMP interface to Netcool/OMNIBus
- 3. Send a message or email if spool approaches full**
 - a. Send a message if spool usage is too high on any member of an SSI Cluster
 - b. Send an email if spool usage is too high on a single system
- 4. View and clean up spool files**
- 5. Automated spool cleanup**
- 6. Archiving DIRMAINT's log files when disk gets full**
- 7. Process a file of test messages as a console**
- 8. Process Linux syslog data as a console**
- 9. Create a central operations console on one z/VM system**
- 10. Create a central operations console across multiple z/VM systems**
 - a. When the systems are in an SSI cluster
 - b. When the systems are not in an SSI cluster
- 11. Integration with OMEGAMON XE on z/VM and Linux - take action based on CPU usage of Linux guest**
- 12. Monitor service machines for logoff – and autolog them**
- 13. Send an email if page space approaches full**
- 14. Monitor SSI connectivity between 2 cluster members**
- 15. Suppress passwords on Linux consoles**
- 16. Autolog a Linux Guest and Send Message if Doesn't Start Successfully**
- 17. View consoles of Linux guests, Linux syslog data, and CMS user IDs or service machines**

Recommended Practices – Backup and Recovery

Image level backup of z/VM

- Operating system

File level backup of z/VM data

- Directory information
- Configuration files
- Log files
- Tools – REXX EXECs, automation scripts, etc.

Image level backup of Linux guests

- Operating system
- Applications
- Application data (maybe)

File level backup of Linux guests

- Configuration files
- Log files
- Tools

Backup and Restore Manager for z/VM - Product Overview

■ Backup

- Requested by administrators
- Full or incremental
- Flexible selection of disks and files to back up
- Review job before submitting for backup

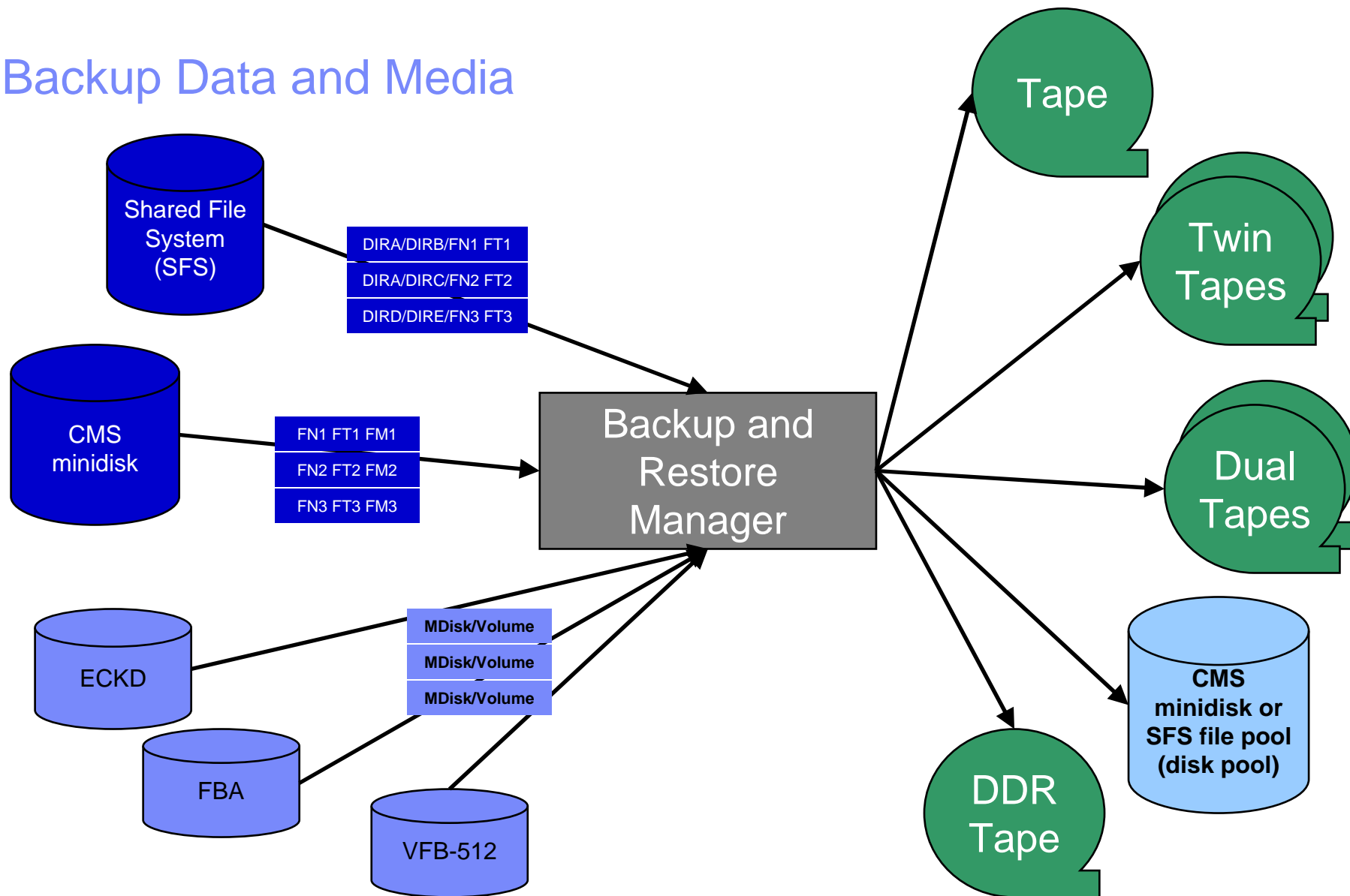
■ Restore

- Restore data via full screen interface or commands
- Performed by users for their own data
- Extending to other users available via exit
- Performed by administrators for any data

Catalog in Shared File System (SFS) – presentation on web site for installation and setup

- **Integration with Tape Manager for z/VM**
- **Optional compression of data during backup via exits**
 - Call your own compression algorithm
 - Use IBM provided routine
- **Encryption available via exits**
 - Call your own routine
 - Use vendor-written routine, such as V/Soft Software's Encrypt/Backup for z/VM
 - Use encryption capable tape devices

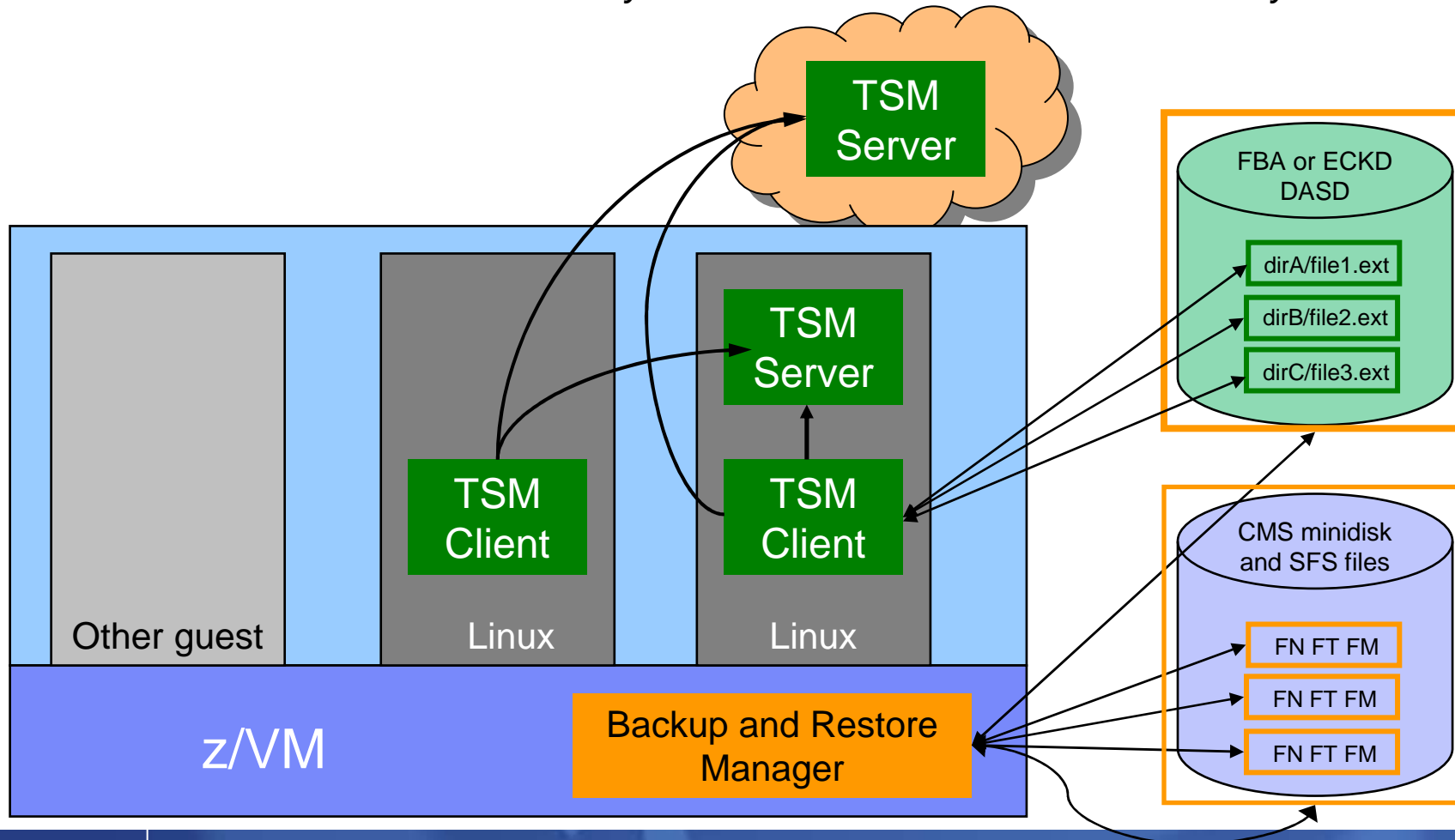
Backup Data and Media



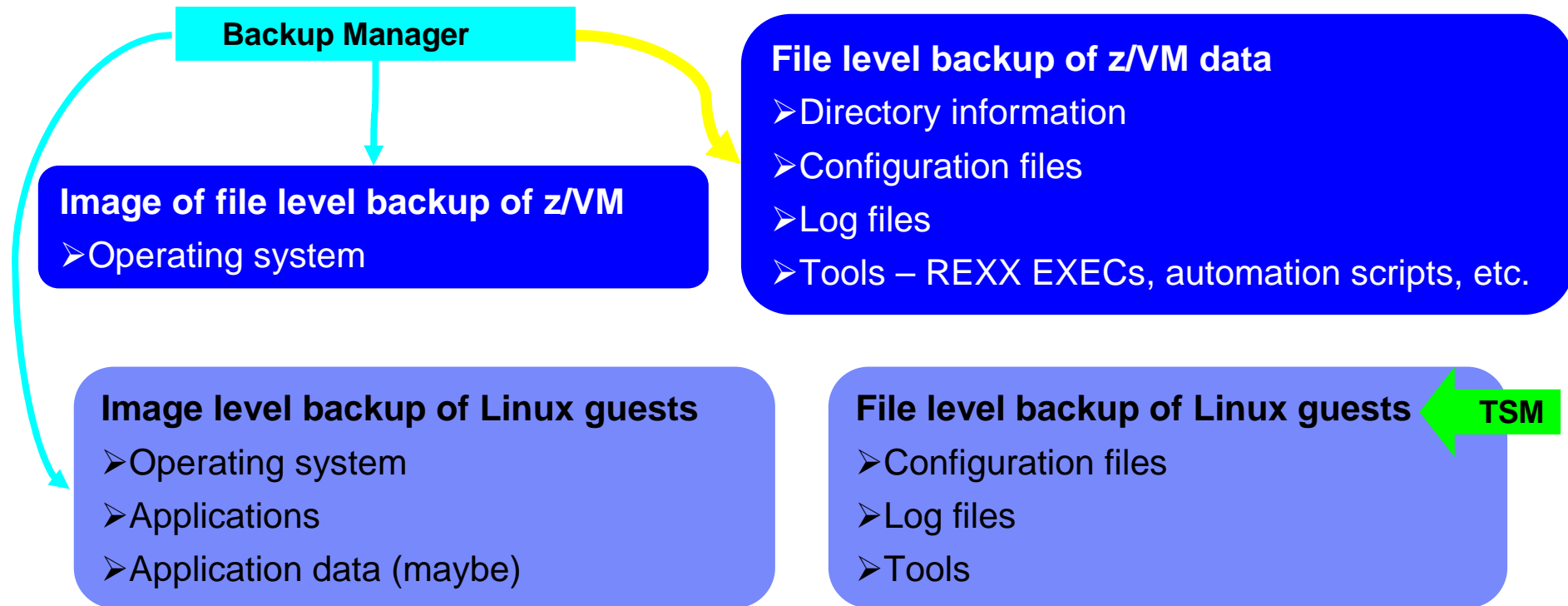
Backup and Restore Manager and Linux Guests

Using Backup and Restore Manager with Tivoli Storage Manager

Choose the solution that meets your needs – or combine for file recovery and DR



Recommended Practices – Backup and Recovery



Backup Demos Available (Including Automation)

- A. Perform an incremental backup**
- B. Find and restore a file from the backup catalog**
- C. Backup and restore single and multiconfiguration users in an SSI environment**
- D. Automatically shut down, back up, and restart a Linux guest**
- E. Suspend and resume a Linux guest**
- F. Reviewing a disaster recovery backup**
- G. Reviewing other ways to find data in the backup catalog**

Tape Manager for z/VM - Product Overview

▪ Manage tapes

- Define tapes in a catalog, including:
 - Free or used
 - Retention/expiration information
 - ATL/VTs or manual mount
 - Data Security Erase
- Group tapes together into pools
 - Ownership and access control
 - Media type

▪ Manage devices

- Define available devices
 - Dedicated or assignable
- Group devices together into device pools
 - ATL/VTs or manual mount
 - Any other grouping you choose
(read only vs. write, location, etc.)
- Share devices with other systems

▪ Manage mount requests

- Volume specific and scratch requests
 - Standard Label
 - Non-Label
 - Bypass Label Processing

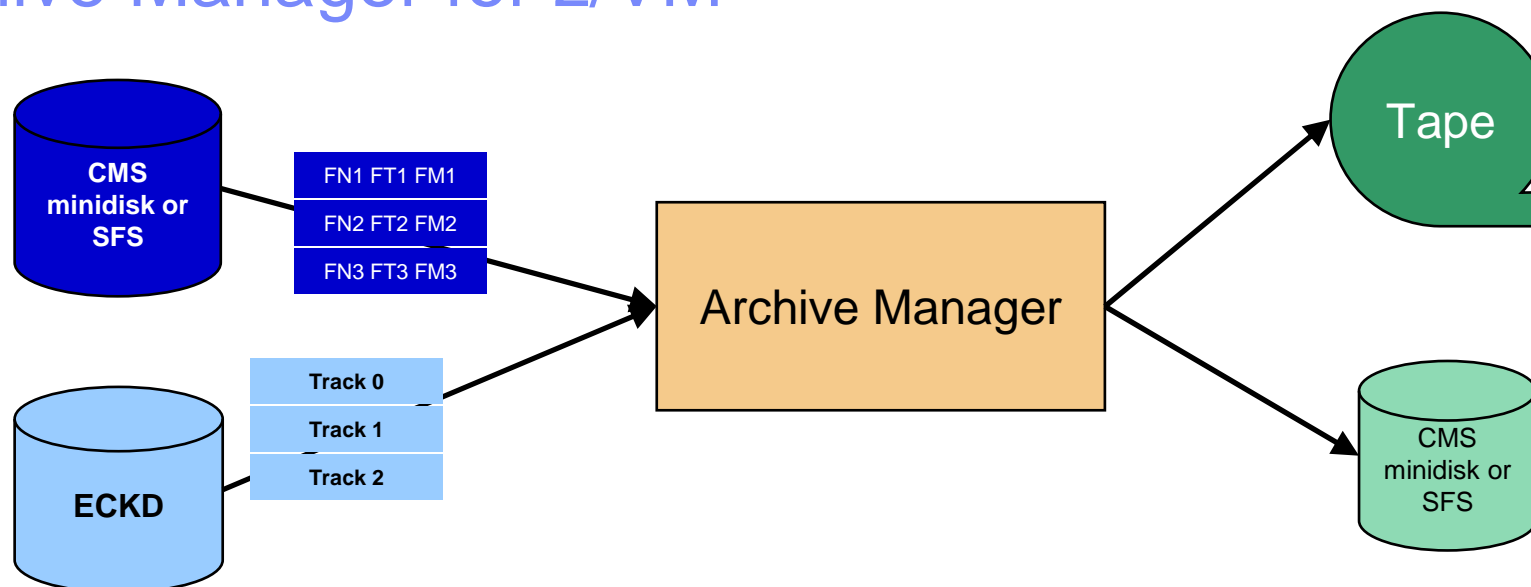
Tape Manager for z/VM - Key Benefits

- **Effective management of tapes in ATL or VTS**
 - Granular access control
 - Expiration processing
 - Notification for low threshold for tape resources
 - Interacts with IBM devices through DFSMSRMS on z/VM
 - Interacts with STK devices through STK Host Software Component for VM, or STK VM Client

- **Improved accuracy of manual tape processing**
 - Granular access control
 - Automated interface to Operator for manual mounts
 - Internal label verification at attach/give and detach (SL only)
 - Read/Write verification at attach/give

- **Integrated management of z/OS and z/VM tapes using DFSMSrmm on z/OS**
 - Optionally use RMM on z/OS as the tape catalog for z/VM and z/OS tapes
 - Tapes, access control, and retention managed by the existing RMM catalog
 - Accessible via Tape Manager on z/VM
 - Tapes managed by RMM
 - Devices managed by Tape Manager
 - Not available for STK libraries

Archive Manager for z/VM



▪ Improve end user satisfaction and productivity

- Users manage their own disk space
- Move infrequently used files to tape or other disk
- Archive and recall functions are initiated and controlled by the user
- Archived data staged to DASD, then tape if applicable
 - Users don't wait for a tape mount for archive request to complete

▪ Reduce DASD space requirements

- Archive older files to less expensive storage media
- Continue to provide users access to the archived data/files

▪ Control location, retention, and access to archived data

▪ Integration with Tape Manager for z/VM

Summary

- **Use Archive Manager to**
 - Improve management of disk space
 - Easily and immediately archive data when a disk is approaching full
 - Manage retention of archived data

Reference Information

- **Product Web site**
 - Start at <http://www.ibm.com/software/stormgmt/zvm/>
 - Product pages include
 - Publications
 - Pre-requisites
 - Announcements
 - Presentations
 - White papers
 - Support
- **e-mail**
 - Mike Sine, sine@us.ibm.com, Technical Marketing
 - Tracy Dean, tld1@us.ibm.com, Product Manager
- **White papers on Operations Manager website (Library page)**
 - Routing Linux syslog data
 - Sending alerts from Operations Manager to Netcool/OMNIBus
 - Using Shared File System to store Operations Manager configuration files and automation EXECs
 - Automatically logging on a user at Linux system boot time for easier console management
- **White paper and presentation on Backup and Restore Manager website (Library page)**
 - Getting Started with Installation, including SFS server creation and installation of Backup Mgr
 - Backing up z/VM and Linux on System z – Tivoli Storage Manager vs Backup Manager