



IBM Software Group

New z/VM Systems Management Products from IBM

Session 9147

SHARE Anaheim

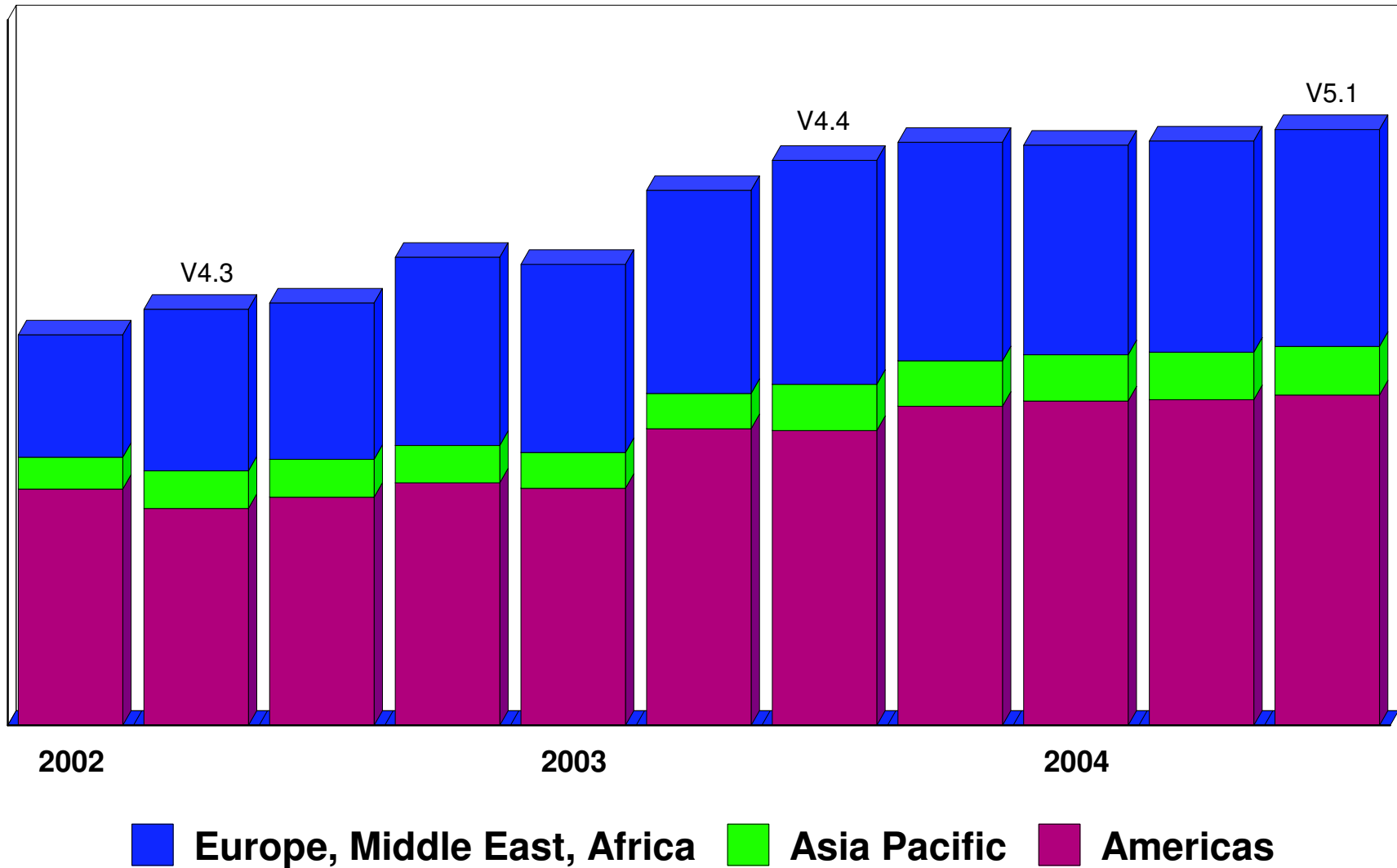
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Agenda

- Overview
- Tape Manager
 - Key features
 - Concepts and terms
 - Product architecture
 - Configuration for standalone
 - Configuration with RMM
- Backup and Restore Manager
 - Key features
 - Product architecture
 - Configuration
- Demo ??

z/VM Market - Licenses and Releases/Versions



Overall z/VM Marketplace

- **Traditional z/VM customers**
 - Longtime z/VM (VM/ESA, VM/SP) customers
 - Running business applications on z/VM
 - Also installing and using Linux on zSeries
 - Require full set of systems management solutions for z/VM and the Linux guests

- **Customers using z/VM to host Linux only**
 - New to z/VM
 - Understand the benefits of using z/VM to host Linux guests
 - Prefer Linux-based tools for systems management of Linux guests
 - Also need basic systems management tools for z/VM host

- **Total cost of ownership being scrutinized**
 - Automation
 - Efficiency and productivity
 - Software costs

Tape Manager for z/VM

■ Tape management

- Define tapes in a catalog, including:
 - Free or used
 - Internal or external
 - Retention/expiration information
 - ATL or manual mount
- Group tapes together into pools
 - Ownership and access control
 - Media type
 - Include free and used tapes, with an optional link to a free pool

■ Device management

- Define devices
 - Dedicated or assignable
- Group devices
 - ATL or manual mount
 - Any other grouping you choose (read only vs. write, location, etc.)

■ Product information

- Announced February 22, 2005
- GA planned for April 29, 2005

Backup and Restore Manager for z/VM

■ Backup

- Full or incremental
- Source data on CMS minidisk, SFS, CKD images
- Target output to tape, twin tapes, disk
- Include/exclude minidisks or filepools
- Mask by filename

■ Restore

- Source data on tape or disk
- Target output to CMS minidisk, SFS, CKD DASD, virtual reader
- User or administrator requested
- Selection of data to restore
 - Individual files (with wildcard support), by minidisk, by volume, or by backup instance

■ Catalog

- Contains all metadata for backup jobs and files

■ Product information

- Announced February 22, 2005
- GA planned for April 29, 2005



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Tape Manager for z/VM

Automation

Efficiency

Productivity

Key Features

- **Dynamic sharing of existing tape devices between multiple images**
 - Devices must be assignable and not using multiuser attach feature of z/VM
- **Effective management of tapes in ATLs**
 - Granular access control
 - Expiration processing
 - Notification of low threshold for tape resource
 - Utilization information provided per pool
 - Report created and sent to administrator after expiration processing
- **Improved accuracy of manual tape processing**
 - Automatic request and notification of manual mounts
 - Internal label verification at attach/give and detach
- **Optional use of RMM as the tape catalog**
 - Tapes, access control, and retention managed by existing RMM catalog
 - Accessible via commands on z/VM

Concepts and Terms

■ Tape pool

- Private pool
 - Logical group of physical tapes owned by a CMS userid
 - Free or used
 - Same media type, access control, and defaults
- System free pool
 - One (and only one) list of free tapes which are not in private pools

■ Device pool

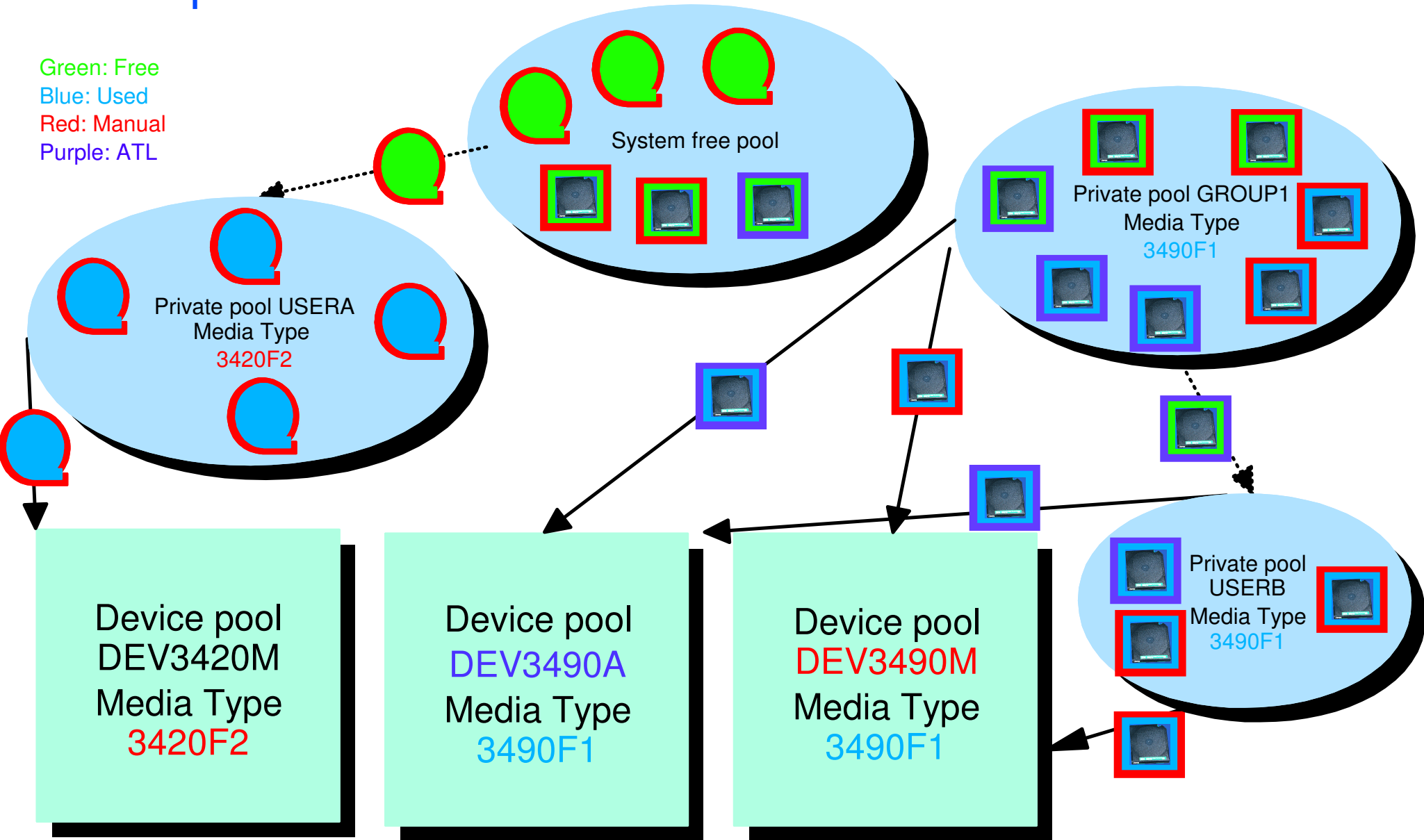
- Logical group of physical devices that can handle the same physical media
- Same mount attribute and media type
- Can define one or more
- One device can be in more than one pool
- Admin-specified name

■ Media type

- Admin defined name that associates devices in device pools with tapes in tape pools
- One media type can be associated with more than one device pool
- Example: 3590 drives on 1st floor vs. 3590 drives on 2nd floor

Sample Pool Structure

Green: Free
Blue: Used
Red: Manual
Purple: ATL

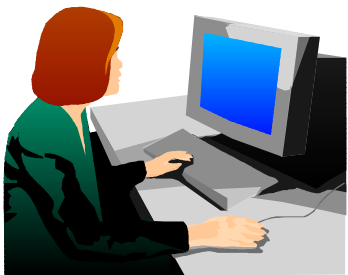
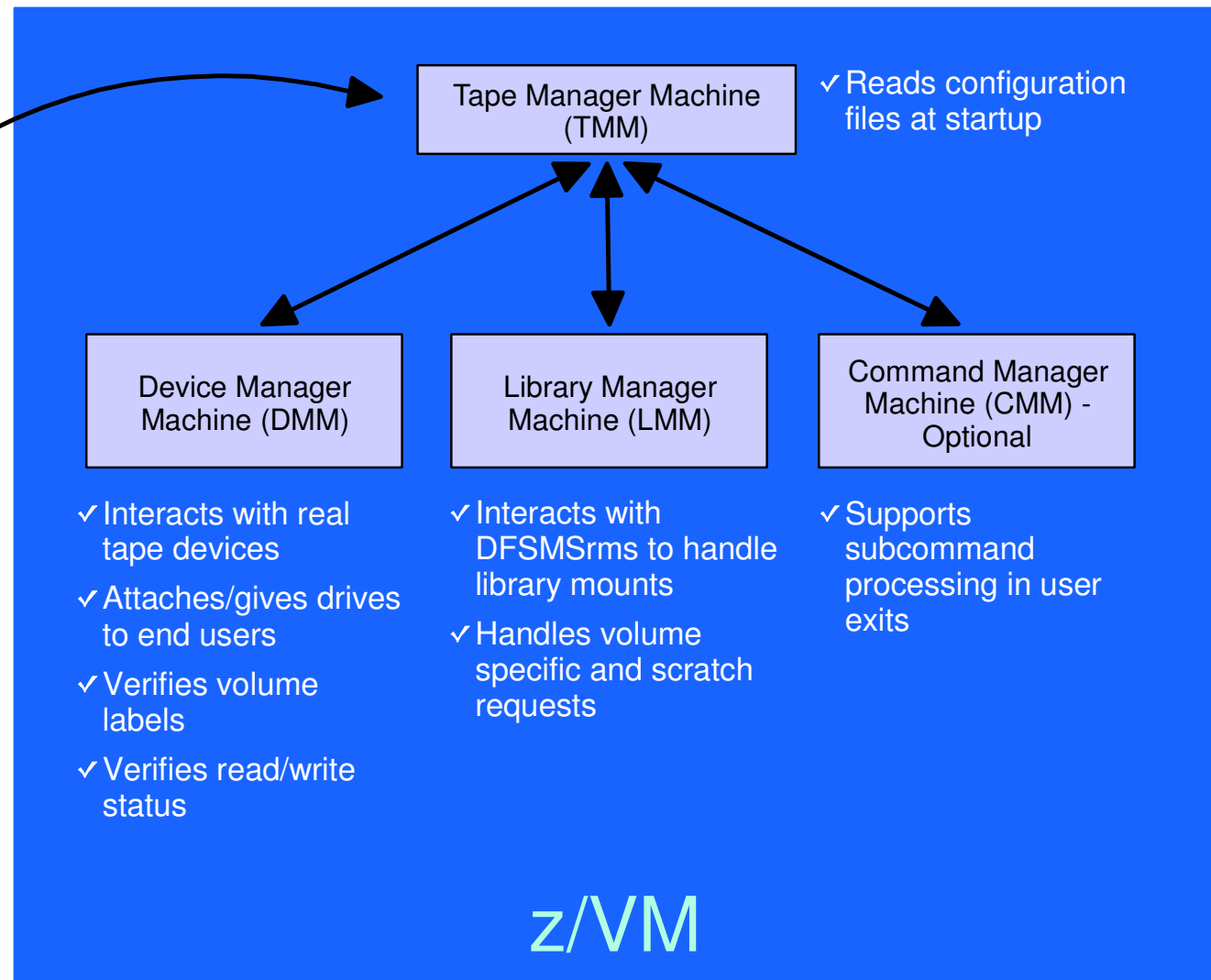


Access Control

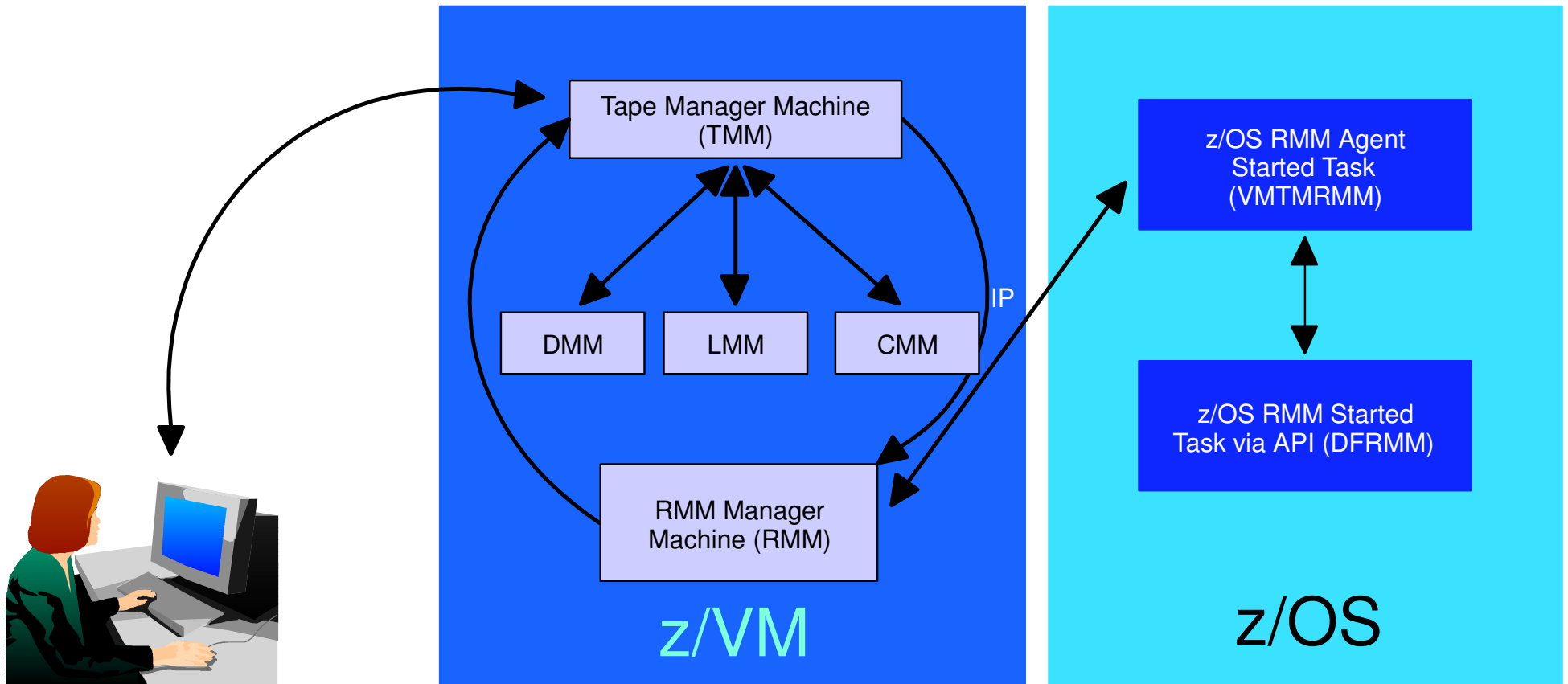
Authority	Modify Pool Attributes and Delete Pool	Modify Tape Attributes	Add/Delete Tapes to the Pool	Modify Tapes	Read Tapes	Tape Attributes Modified Only as a Byproduct of Other Commands	Use Tape Pool as a Free Pool
Sys Admin	✓	✓	✓			✓	
Pool Admin	✓	✓	✓	✓	✓	✓	
Tape			✓	✓	✓	✓	
Write				✓	✓	✓	
Read					✓	✓	
Free							✓
None							

- ▶ Defined using POOL commands
- ▶ Can set defaults for each pool, then add or restrict access via specific user authorization

Tape Manager - Standard Mode



Tape Manager - Integration with RMM



- Communication within z/VM via SMSG/IUCV
 - ▶ IP for TMM to RMM
- Communication between z/VM and z/OS via TCP/IP

Configuration File - Standard Mode

```

/* SAMPLE CONFIG FILE FOR STANDARD IMPLEMENTATIONS          */
/*                                                            */
ADMINS      TMADMN          /* Authorized users          */
/*                                                            */
ATTACH      500            /* Dedicated device list    */
/*                                                            */
/*      Init status Exit ID Xmit ACTN Intervals TO ACTN  SubCmd Secs */
/*      -----      - - - - -      - - - - -      - - - - -      - - - - -      */
CMDEXIT ENABLE      TMCMM      RUN      3      RUN      60
/*                                                            */
/* Non-ATL device pool statement                             */
/*      Name      Devices                                     */
DEVPOOL      3490L      600-601
DEVPOOL      3490M      500-501
/*                                                            */
/* ATL device pool statements showing device list continuation */
DEVPOOL      3590A      ATL NWAATL1 530-531
DEVPOOL      3590A      630-631
/*                                                            */
DEVWAIT      4            /* Max device wait time in minutes */
/*                                                            */
/*      Name      Vaddr Mode                                 */
DISK DB1      0200      U
DISK DB2      0210      V
DISK USER     0191      Z

```

... Configuration File - Standard Mode

```

DMM          TMDMM          /* Userid for the Dev. Mgt. Machine */
/*
EXPSTART     13:30:00      /* Start time for expiration processing */
/*
FREEACC      NONE        /* Allow private pool use of sys scratch */
FREEAUTH     Y           /* Auth required for system scratch use */
/*
FILEOFF      OPERATIONS
/*
LIBRARY      NWAATL1 ONLINE TMLM1 /* Library / Initial status / Server */
/*
LIBTYPPRI   M           /* Primary scratch source MAN/ATL */
LIBTYPSEC   A           /* Secondary scratch source MAN/ATL */
/*
OPERATIONS  OPERATOR
/*
POOLAUTH    Y           /* Auth required to define pools */
POOLDEF     NONE        /* Auth required to define pools */
POOLMAX     1000        /* System default for maximum pool tapes */
POOLWARN    80          /* System default for pool warn percent */
RETNDFLT    100         /* Default retention days */
RETNMAX     1000        /* Maximum retention days */
/*
SCROWNER    *           /* Default scratch pool owner */
SCRNAME     POOL1       /* Default scratch pool name */
/*
VOLMIN      6           /* Minumum length of volume serial */
VOLMAX      6           /* Maximum length of volume serial <= 16 */
VOLWAIT     10         /* Max retries (1/min) for volume wait */

```

... Configuration File - RMM Mode

```

FILEOFF      OPERATIONS
/*
LIBRARY      NWAATL1 ONLINE TMLM1 /* Library / Initial status / Server */
/*
OPERATIONS CSHOWA
/*
DISK TCPIP  0592  Z
/*
/*  .- VM RMM service machine name
/* |      .- VM TCPIP service machine name
/* |      |      .- VM RMM service machine IP address
/* |      |      |      or Host Name
/* |      |      |      .- VM service machine port
/* |      |      |      |      .- z/OS agent IP address
/* |      |      |      |      |      or Host Name
/* |      |      |      |      |      .- z/OS agent port
/* '      '      '      '      '      '
RMM TMRMM TCPIP RS54          9999 RS52          35042
/*
RMMCMDWAIT 3
RMMSCRPOOL ATL ATL1 NWAATL1 SCRATCH0 VOL
RMMSCRPOOL MAN NOATL
/*
RMMSCRDFLT DEVP 3590A
/* RMMSCRDFLT SCRIP ATL1
/* RMMSCRDFLT DEVP 3590A
/* RMMSCRDFLT RDEV 530

```


Tape Manager Summary

- Automate daily tape operations
 - Manage mount requests
 - Control tape access
 - Perform label verification
 - Expire tapes
- Efficiently manage tapes and tape devices
 - Share devices
 - Control access to individual tapes in an ATL
- Improve productivity
 - Notify and interact with operator on behalf of user
 - Support manual and ATL mount requests
 - Perform label verification before and after tape use



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Backup and Restore Manager for z/VM

Flexibility

Productivity

Control

Key Features

- **Modular design with an eye to the future**
 - Data handlers for each data type (minidisk, SFS, CKD, reader)
 - Media drivers for each media type (tape, twin tapes, CMS file)
- **Standard CMS interfaces**
 - Support for new hardware when CMS supports it
 - Backup/restore catalog housed as a hierarchical structure in SFS
- **Documented interfaces to data packaging tools**
- **Review of a defined backup job before submission**
- **Reduced backup window with concurrent processing**
 - Multiple service machines sharing the job
 - Assigned by master server
- **Automatic aging and pruning of the backup catalog**

Access Control

■ Administrators

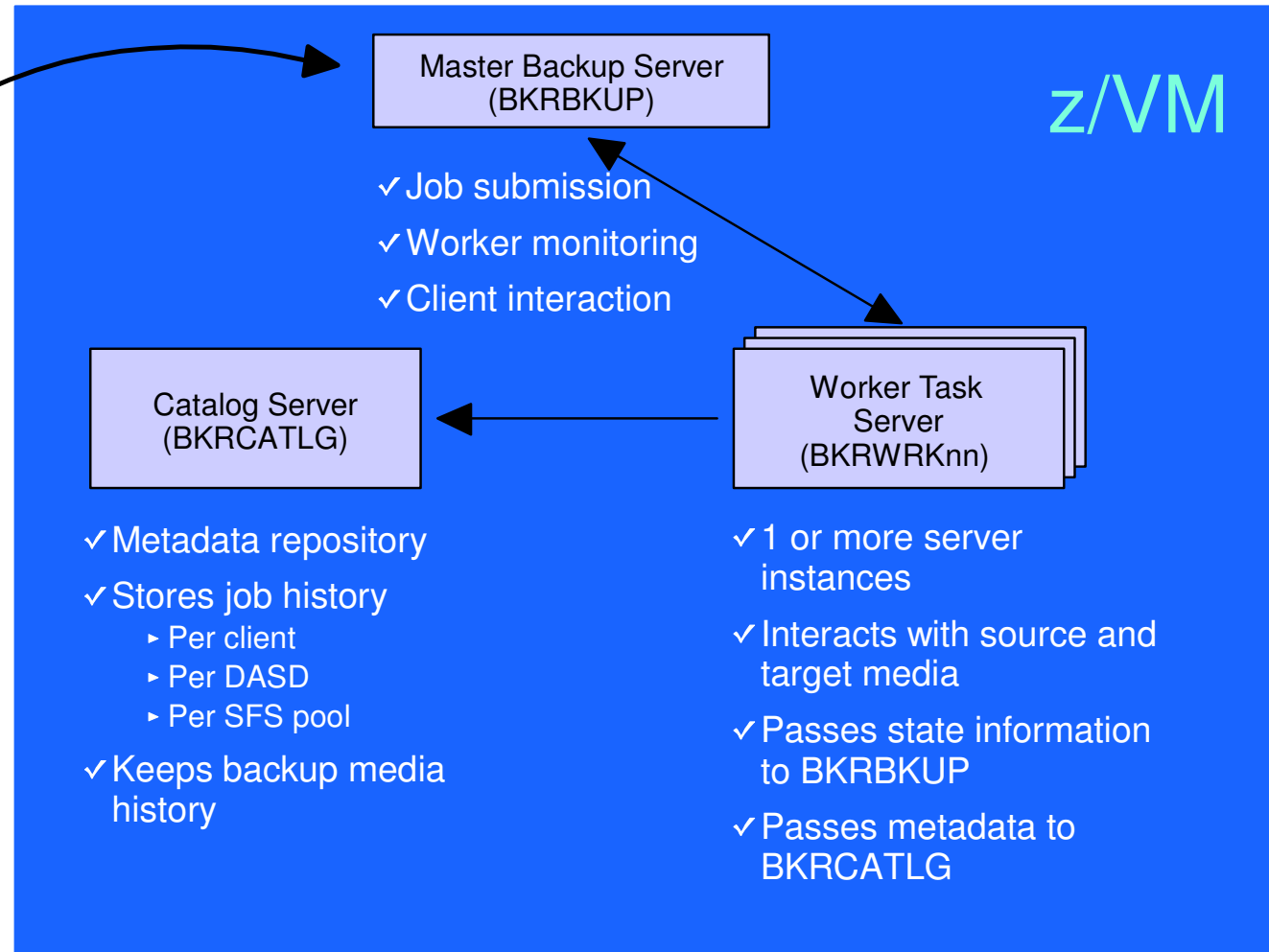
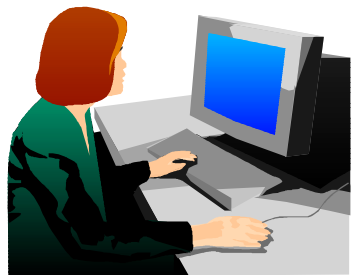
- Review and submit jobs
- Manipulate contents of backup catalog
- Backup and restore from anywhere to anywhere
- Receive all service machine consoles
- Full screen interface for navigating the catalog and requesting restores
 - By job, then instance, ownerid, resource type, resource (specific filespace or minidisk)
 - By user, then resource, resource type, job name, instance objects
 - By DASD volid, then extent start, extent size, ownerid, minidisk address, job name, instance
 - By DASD volid, then ownerid, minidisk address, extent start, extent size, job name, instance

■ Users

- Restore files they own
- Full screen interface to find files available for restore

Backup and Restore Manager - Architecture

→ Communication via SMSG/IUCV



Configuration File

```
Local_Backup_Admin_ID   = BKRADMIN
Local_Backup_Master_ID = BKRBKUP
Local_Backup_Catalog_ID = BKRCATLG
*
Worker_Idle_Timeout = +00:15:00

* Temporary staging area info for worker virtual machines
Worker_Stage_Type = VFB-512

* Tunes the number of buffer pages allocated by GETMDSK for VMUDQ (diag 25c)
* reply during INCLUDE/EXCLUDE processing. For every 1MB (256 pages) of
* buffer allocated, GETMDSK can process 17,746 minidisk definitions.
Template_MDISK_Buffer_Pages = 512

BKR-Allow_EDF_Target_Format = 1

* Configuration for tape handling exits (BKRMOUNT, BKRMUNT, BKREOV):
Tape_Exit_Context = BKR
Tape_Operator = OPERATOR
Tape_Request_Method = EXEC TELL
Tape_Delay_Interval = +00:00:60
Tape_Times_To_Poll = 5
TAP1_Virtual_Address = 181
TAP2_Virtual_Address = 182
Tape_Retain_After_EOJ = 0

* Master Backup Catalog configuration:
CatalogPool = ROCKSFS2
CatalogSpace = RVBCATLG
```

Job Template

```
*CONFIG BKR_OUTPUT_SPEC = IBMTAPE SCRATCH RW 1
*CONFIG BKR_OUTPUT_SPEC = IBMTWIN SCRATCH RW 1 SCRATCH
*CONFIG BKR_OUTPUT_SPEC = CMSFILE DISK POOL X
*
CONFIG BKR_JOB_WORKERS = 3
CONFIG BKR_JOB_NAME      = RS54FULL
*
CONFIG BKR_JOB_CMS_FILEMASK = * * *
CONFIG BKR_JOB_SFS_PATHMASK = *
*
CONFIG BKR_JOB_CATALOG = Y
CONFIG BKR_CATALOG_RETENTION = 30
CONFIG BKR_CATALOG_VERBOSE = N
CONFIG BKR_OUT_EDF_VERBOSE = N
CONFIG BKR_OUT_TAPE_VERBOSE = N
*
CONFIG BKR_EDF_INCR_TOGGLE = N
CONFIG BKR_SFS_INCR_TOGGLE = N
```

... Job Template

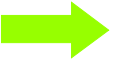
```

/*****/
/* Include/Exclude definitions */
/*****/

```

FUNCTION	MEDIATYPE	OWNER	VDEV	VOLUME	DEVTYPE	START	END	SIZE	RESERVED
INCLUDE	MINIDISK	*	= *	*	*	= *	= *	= *	*
EXCLUDE	MINIDISK	FDISK	= *	*	*	= *	= *	= *	*
EXCLUDE	MINIDISK	\$ALLOC\$	= *	*	*	= *	= *	= *	*
EXCLUDE	MINIDISK	MACK0*	= *	*	*	= *	= *	= *	*
INCLUDE	MINIDISK	MACK0*	= 019*	*	*	= *	= *	= *	*
EXCLUDE	MINIDISK	MAINT	= 0123	*	*	= *	= *	= *	*
EXCLUDE	MINIDISK	MAINT	= 0124	*	*	= *	= *	= *	*
EXCLUDE	MINIDISK	ROCKSFS*	= *	*	*	= *	= *	= *	*
INCLUDE	MINIDISK	ROCKSFS*	= 019*	*	*	= *	= *	= *	*
EXCLUDE	MINIDISK	VMSESV*	= *	*	*	= *	= *	= *	*
INCLUDE	MINIDISK	VMSESV*	= 019*	*	*	= *	= *	= *	*
EXCLUDE	MINIDISK	*	= *	*	*	= *	= *	> 3300	*
EXCLUDE	MINIDISK	*	= *	*	*	= *	= *	= END	*
INCLUDE	MINIDISK	MAINT	= 012*	*	*	= *	= *	= *	*

FUNCTION	MEDIATYPE	POOLNAME	OWNER	FS
INCLUDE	SFS	VMSYSU:	*	SFS
EXCLUDE	SFS	VMSYSU:	DFSMS*	*
INCLUDE	SFS	ROCKSFS2:	*	*
EXCLUDE	SFS	ROCKSFS2:	RVBCATLG	*
INCLUDE	SFS	VMDEVU:	*	*



Backup and Restore Manager Summary

■ Flexibility

- Backup only what is needed via include, exclude, and masking statements
- Mix and match source and target types

■ Productivity

- Review of backup job before submission
- User driven restores with no administrator interaction

■ Control

- Each user can only access restore data owned by him/her
- Automatic aging and pruning of backup catalog
- Consistent backups using the object directory (not source)

Summary

- **New z/VM tools for systems and storage management**
 - Improved flexibility, productivity, and control of backup and restore operations
 - Automated, efficient, and productive tape management and operations
- **V1.1 scheduled for GA on April 29, 2005**
- **Open for additional beta participants**
- **Gathering and prioritizing additional customer requirements**
- **Investigating additional systems and storage management products**
- **Web sites:**
 - <http://www.ibm.com/software/stormgmt/zvm/tape/>
 - <http://www.ibm.com/software/stormgmt/zvm/backup/>