



IBM Software Group

IBM's New Operations Manager and Archive Manager for z/VM

Bay Bunch

February 23, 2006

Tracy Dean
tld1@us.ibm.com

Agenda

- Overview
- Archive Manager for z/VM
 - Key features
 - Product architecture
 - Configuration
- Operations Manager for z/VM
 - Key features
 - Product architecture
 - Configuration
- Other z/VM Tools (separate session)
 - Tape Manager for z/VM
 - Backup and Restore Manager for z/VM
- **New enhancements in red**

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

Operations Manager for z/VM

- Monitor service machines
- Schedule events/actions
- Automate tasks with Terminal Device Manager
- **V1.2.0**
 - Support for RACF or other External Security Manager
 - Flexible dataspace configuration
 - Define actions for specific action processing server
 - Enhanced viewing of monitored consoles
 - Support for SET OBSERVER
 - New scheduling options
 - New functions for HMF customers
 - Monitor logon status of specified user IDs
 - Limit scheduled actions to specific days of the week or hours of the day
 - Include holidays and dependencies in scheduling
 - Execute actions at specified intervals
 - Announce: February 21, 2006
 - GA: February 24, 2006

Archive Manager for z/VM

- **Archive - designed for users and administrators**
 - Manage disk space by moving infrequently used or accessed files to tape or other disk
 - Source data on CMS minidisk, SFS, ECKD images
 - Select files by filename filetype filemode
 - Wildcard support for filename filetype, SFS directory (including all subdirectories, or not)
 - Select non-CMS data by virtual device address
 - Target output (a parcel) to tape or disk
 - Always copied to staging disk first
- **Recall**
 - Source data on tape or disk
 - Target output to CMS minidisk, SFS, ECKD DASD, virtual reader
 - User or administrator requested
 - Search for file(s) to recall
 - Wildcard support for filename and filetype
 - Selection by date
 - Can include other files in that archive parcel
- **Product information**
 - Announced August 23, 2005
 - GA August 26, 2005



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Operations Manager for z/VM

Monitoring

Scheduling

Task automation

Key Features

- **Monitor service machines**
 - Take predefined actions based on message text matching
 - Suppress messages
 - Highlight messages with color, blinking, etc.
- **Schedule events/actions**
- **Automate tasks with Terminal Device Manager**
- **Supports multiple installations of Operations Manager on one z/VM system**
 - Performance (monitoring a large number of consoles)
 - Separation of access control
- **Supports your choice for security:**
 - Internal security mechanism from V1.1.0
 - RACF for z/VM
 - Other External Security Manager (ESM)

Monitor Service Machines

- **Monitor logon status of specified user IDs**
 - Take action if logged off to bring it to logged on status
 - Maximum number of retries can be specified
- **Capture console messages**
 - Must SECUSER or **OBSERVER** to Operations Manager GOMMAIN server
 - **Functional differences based on CP support of SECUSER vs OBSERVER**
 - Data spaces used to hold the log of captured messages/consoles
 - Console data passed from data space to the user when view is requested
 - One data space per monitored console
 - **Customizable data space sizes: per monitored console and/or per system**
 - Daily log includes captured message and meta data
 - Text, length, IUCV class, source
- **Define rules to**
 - Scan console messages for text matching
 - Includes wildcard support
 - Take actions based on matches
- **Multiple rules can apply to one message**
 - FINAL option available to indicate no additional rules should be evaluated

Monitor Service Machines

- Predefined actions
 - Suppress message from dataspace
 - Always sent to the log
 - Highlight message with color, blinking, etc.
 - Hold and change the display attributes of a specific messages when viewing a console and the message moves to the top of the screen
- Customer defined actions
 - CP or CMS command, or EXEC to be executed
 - Run on GOMMAIN, any available action processing server, or a specific action processing server
- View consoles
 - Authorize users to view individual consoles or a set of consoles
 - Message text only
 - Message text with the time stamp
 - Message text with the date and time stamp
 - "Fullscreen mode"
 - Scroll up and down
 - Autoscroll (on or off) as new output is displayed on the console
 - Access a console image before any output is available
 - Issue commands back to the monitored console via CP SEND

Schedule Events and Actions

▪ Define schedules

- At a specific time
 - Hourly at a specified number of minutes past the hour
 - Daily at a specified time
 - Weekly on a specified day of the week and at a specified time
 - Monthly on a specified day of the month and at a specified time
 - Yearly on a specified month and day and at a specified time
 - Once on specified month, day, year, and time
- At regular intervals
 - Every x hours and y minutes
- Within a specified window of time
 - Specify start time
 - Specify conflicting schedules
 - Specify maximum time to defer this schedule, waiting for conflicts/dependencies to complete
 - No execution for this occurrence of the schedule if maximum time is reached
- Within limits
 - Restrict to specific days of the week: Monday through Sunday plus holidays
 - Restrict to certain hours of the day

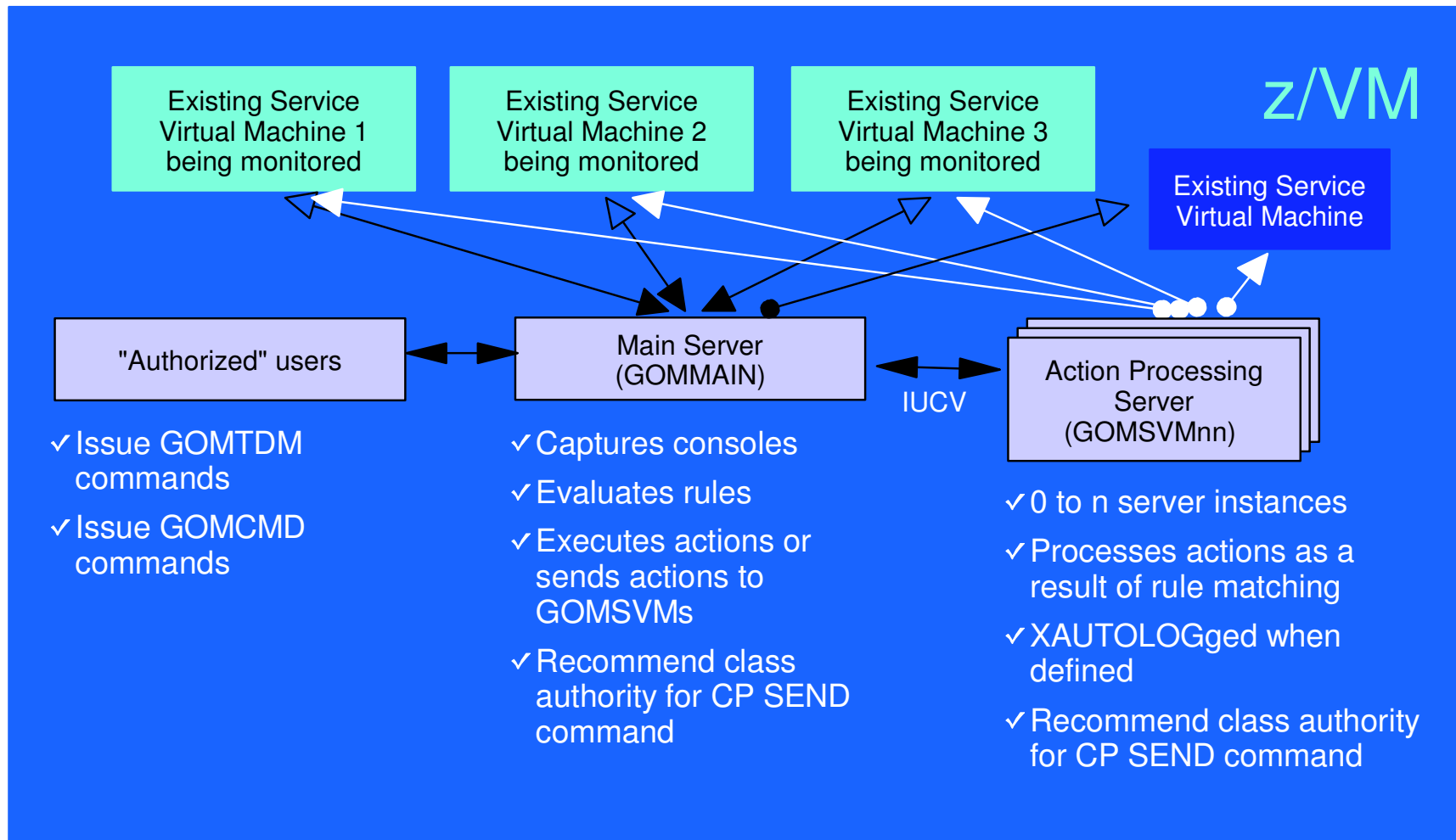
Schedule Events and Actions

- Time based on local time of system
 - Same as Query TIME
 - Picks up dynamic time zone changes
 - Must be restarted if hardware TOD clock is changed
- Specify the action associated with the timer
 - Actions specified the same as those for console rules
- Only future timers are activated on startup
 - Won't execute a timer scheduled for earlier today **that has reached its maximum deferral**
 - Will execute it at its next occurrence

Automate Multi-step Tasks

- Using Terminal Device Management (TDM)
 - Create scripts (REXX EXECs) to logon to a user and perform specific actions
 - EXEC contains special calls to Operations Manager GOMTDM functions
 - **OPTION:** set up the environment for this session
 - Suppressing or displaying messages
 - Imbedded delays after input or output displayed on console
 - Maximum wait for console response to a GOMTDM query
 - Stacking returned values LIFO vs. FIFO
 - Coded character set to use
 - Put all console output to a file or not
 - Wait for keyboard input lock to clear or not
 - **INIT:** start a new session at this z/VM system's logon screen and return session id (handle)
 - **INPUT:** enter data from session command line by specifying:
 - Handle
 - Data to enter
 - Cursor position
 - Key to simulate (Enter, Clear, PA1-PA3, PF1-PF24, Forward tab, Backward tab, Up, Down, Left, Right, Newline, Home, EraseEOF)
 - **QUERY:** get information about the session
 - Cursor position
 - Position of next occurrence of a specified string on the screen, based on cursor position
 - Put copy of the screen in a specified file
 - Version of Operations Manager code running
 - **TERM:** end a session specified by a handle
 - Using DIAG '7C' for logical device support

Operations Manager - Architecture



Monitoring GOMMAIN using the GOMCMD command

- Issued by users with access to the command
- Executes an Operations Manager command on GOMMAIN
 - User must have authorization to issue the command on GOMMAIN
 - Includes any valid Operations Manager control or configuration command
- Passes output back to user console
 - "Fullscreen mode" for log and console viewing
 - Scrolling up and down
 - Autoscrolling (on or off) as new output is displayed on the console
 - **Hold and change the display attributes when specific messages move to the top of the screen based on message matching rules**
 - Issue commands back to the monitored console via CP SEND
 - "Linemode" for other commands
- Typically used to view a log or query status
 - Can be used to troubleshoot a service machine or user problem
 - Multiple administrators can view a console simultaneously

Access Control

- Users defined with access to one or more:
 - Control commands
 - Manage the Operations Manager infrastructure
 - Define additional service machines to execute actions
 - Authorize users
 - Display status
 - Issue CP and CMS commands on an Operations Manager service machine
 - Define data space sizes
 - Configuration commands
 - Define rules, timers, actions
 - Define holidays
 - Define user IDs to monitor for logoff status
 - Define groups
 - Consoles
 - Define user access to monitored consoles
- Security
 - Internal to Operations Manager (as in V1.1.0)
 - RACF or other External Security Manager
 - Uses RACROUTE and new Facility classes for Control, Configuration, and Console access
- Additional access based on access to modules
 - GOMCMD: issue commands on GOMMAIN and return output
 - Must be authorized to the commands issued
 - GOMTDM: terminal device management

Sample Configuration File

```
* Define holidays
*
DEFDATE NAME(LAST2WKS),HOLIDAY(2006/12/18-00:00 2007/01/03-00:01)
DEFDATE NAME(JULY4),HOLIDAY(2006/07/01-00:00 2006/07/05-00:01)
*
* Dataspace sizes
*
DEFDSPS USER(*SFS*),SIZE(2097152)
DEFDSPS USER(*),SIZE(1048576)
*
* Monitor logon status of these user IDs
*
DEFMMON NAME(SFS),USER(BKRSFS),ACTION(LOGONUSR),INTERVAL(5),PARM(BKRSFS),DAYS(*****),RETRY(3)
DEFMMON NAME(TAPEMGR),USER(TMTMM),ACTION(LOGONUSR),INTERVAL(10),PARM(TMTMM),DAYS(*T*TF**H),RETRY(1)
*
* Imbed other configuration information
*
CONFIG FN(MYLOCAL),FT(TIMERS),FM(A)
CONFIG FN(MYLOCAL),FT(CONTROL),FM(A)
*
* Define groups of user IDs
*
DEFGROUP NAME(SFS),USER(*SFS)
DEFGROUP NAME(TAPEMGR),USER(TM%%%)
```

Sample Configuration File

```
* Define users with control authority to Operations Manager
*
AUTH USER(USER1),CONTROL(Y)
AUTH USER(USER2),CONTROL(Y)
*
* Define users with config authority to Operations Manager
*
AUTH USER(USER1),CONFIG(Y)
AUTH USER(USER3),CONFIG(Y)
*
* Define users and the consoles they can access to Operations Manager
* Must have control authority
*
AUTH USER(USER1),CONSOLE(SFS)
AUTH USER(USER1),CONSOLE(TAPEMGR)
AUTH USER(USER2),CONSOLE(RSCSVM1)
AUTH USER(USER3),CONSOLE(*)
*
* Define servcie machines to Operations Manager
*
DEFSRVM USER(GOMSVM01)
DEFSRVM USER(GOMSVM02)
DEFSRVM USER(GOMSVM03)
DEFSRVM USER(GOMSVM04)
```

Sample Configuration File

```
* Define rules to Operations Manager
*
DEFRULE NAME (CPREAD) , MATCH (*HCP*150A*CP*) , ACTION (CPREAD)
DEFRULE NAME (VMREAD) , MATCH (*HCP*150A*VM*) , ACTION (VMREAD)
DEFRULE NAME (PSWAIT) , MATCH (*HCP*450W*) , ACTION (PSWAIT)
* Define timers to Operations Manager
*
DEFTIMR NAME (STATUS) , WHEN (00) , ACTION (STATUS)
DEFTIMR NAME (H00) , WHEN (00) , ACTION (STORMAP)
DEFTIMR NAME (WMON) , WHEN (MON-00:00) , ACTION (ACCOUNTS) , PARM (WEEKLY)
DEFTIMR NAME (FIRSTM) , WHEN (01-00:00) , ACTION (NEWMONTH) , PARM (MONTHLY)
*
* Define actions to Operations Manager
*
DEFACTN NAME (CPREAD) , COMMAND (CP SEND &2 BEGIN) ,
INPUT (LOG, CRE) , OUTPUT (LOG) , ENV (LVM)
DEFACTN NAME (VMREAD) , COMMAND (CP SEND &2 BEGIN) ,
INPUT (LOG, CRE) , OUTPUT (LOG) , ENV (LVM)
DEFACTN NAME (PSWAIT) , COMMAND (CP SEND &U IPL CMS) ,
INPUT (LOG, CBL) , OUTPUT (LOG) , ENV (LVM)
DEFACTN NAME (STATUS) , COMMAND (STATUS) , OUTPUT (LOG) , ENV (GOM)
DEFACTN NAME (STORMAP) , COMMAND (STORMAP) , OUTPUT (LOG) , ENV (LVM)
DEFACTN NAME (ACCOUNTS) , COMMAND (EXEC DOACCTS &P) , OUTPUT (LOG) , ENV (SVM)
DEFACTN NAME (NEWMONTH) , COMMAND (EXEC DOACCTS &P) , OUTPUT (LOG) , ENV (SVM)
```



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Archive Manager for z/VM

Efficiency

Productivity

Control

Key Features

- **Based on design of Backup and Restore Manager**
 - Modular data handlers and media drivers
 - Catalog housed as a hierarchical structure in SFS
 - Standard CMS interfaces
 - Recalls with original date
 - Expiration processing
- **Asynchronous user interface**
 - Immediate (synchronous) notification if no files found to archive
 - User warned not to modify files until archive complete
 - User notified when archive or recall is complete
- **Concurrent processing available when tapes are involved**
 - Multiple service machines available
 - 1 job assigned to 1 service machine
 - Assigned by master server
- **Automatic aging and pruning of the archive catalog and data**
 - Tape consolidation available to remove gaps created by expired archives

Access Control

■ Administrators

- Submit archive and recall requests for any data
- Archive and recall from anywhere to anywhere
- Manipulate contents of archive catalog
- Receive all service machine consoles
- Full screen interface for navigating the catalog and requesting recalls

■ Users

- Archive and recall files they own
- Archive to any authorized storage class
- Full screen interface to find files available for recall

■ Groups

- Can recall files belonging to any storage group to which they are a member

Storage Groups and Storage Classes

AMVSRVR CONFIG

```

Begin_Groups
ALLUSERS
DSKUSERS
End_Groups
Begin_Classes
Define_Class DEFAULT TAPE SIMPLEX 1 365 365 SCRATCH ALLUSERS - N Y Y N N N N
Define_Class ADMINDSK EDF SIMPLEX 1 365 2555 E00 DSKUSERS - Y Y Y Y Y N N
End_Classes
    
```

DEFAULT Storage Class

- Archives to single tape
- Default retention 365 days
- Min retention 1, max 365 days
- All users on system can archive here
- Users can remove and transfer archives
- Users can not extend expiration, move parcels to another storage class, create image parcels

ALLUSERS GROUPLST

EVERYONE

DSKUSERS GROUPLST

ADMINS
DEPTABC

EVERYONE ROSTER

*

ADMINS ROSTER

OPS*

DEPTABC ROSTER

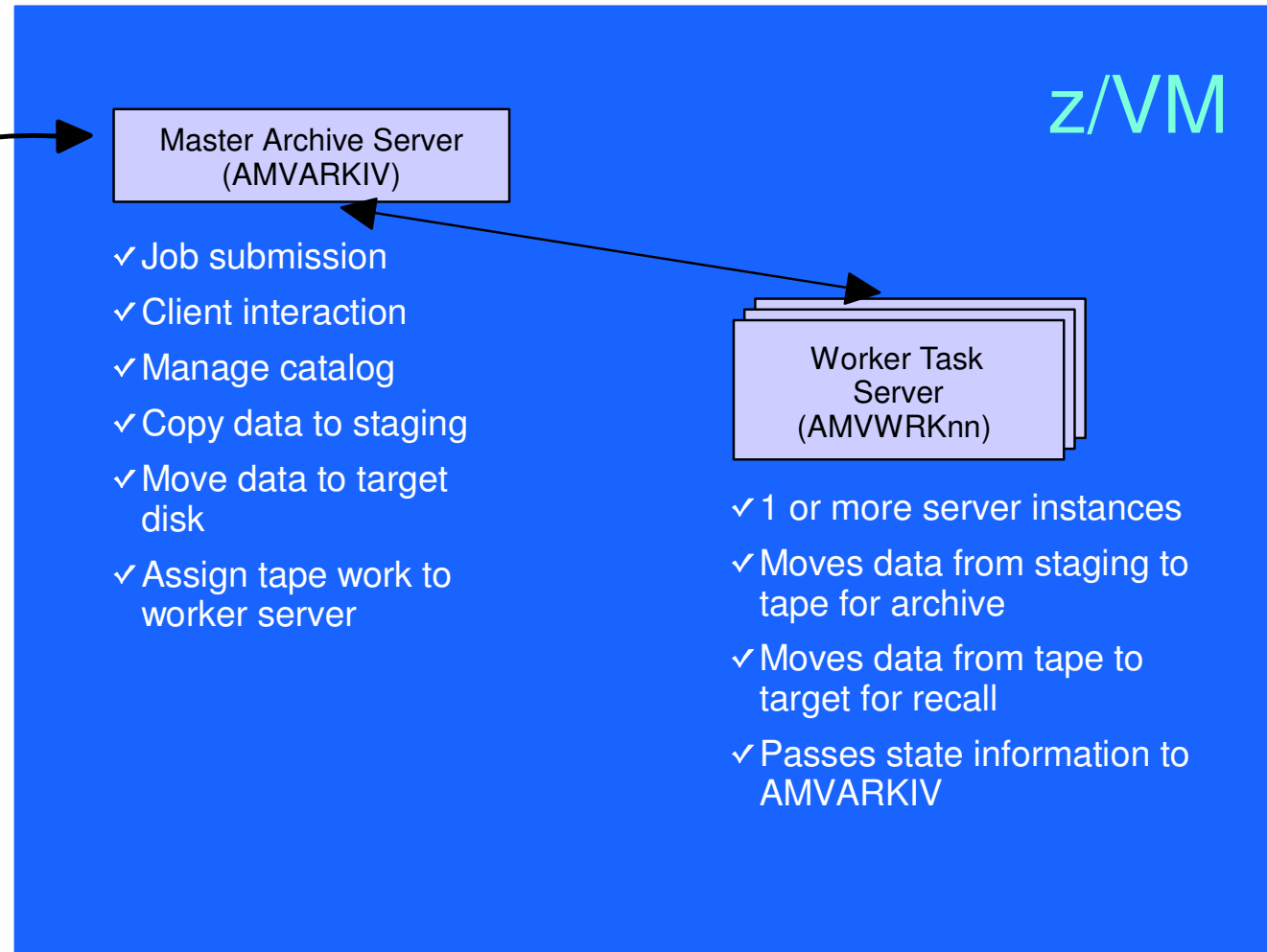
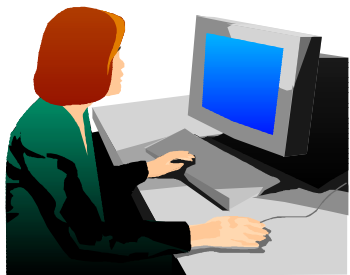
USERA
USERB
USERC

ADMINDSK Storage Class

- Archive to AMVARKIV's E00 mdisk
- Default retention 365 days
- Min retention 1 day, max 7 years
- USERA, USERB, USERC, and OPS* userids can archive here
- Users can extend expiration, remove and transfer archives, move parcels to another storage class, create image parcels

Archive Manager - Architecture

→ Communication via
MSG/IUCV



System Configuration Information

```
* Identify administrative user and top-level service virtual machines:
*
Local_Archive_Admin_ID   = AMVADMIN
Local_Archive_Server_ID  = AMVARKIV
Local_Archive_Catalog_ID = AMVCATLG
*
* Control archivist use of DEFINE MDISK versus LINK for minidisk access
*
* Valid settings are:  "LINK"      - use CP LINK (requires OPTION LKNOPAS)
*                      "DEFMDISK" - use CP DEFINE MDISK (requires OPTION DEVMAINT)
*
* Note:  Use of "DEFMDISK" allows archive processing of T-Disk contents. This
*        feature is unavailable if the "LINK" is specified.
*
* Archive_Minidisk_Via = LINK
Archive_Minidisk_Via   = DEFMDISK
*
* "Drop Dead" idle timer for worker task virtual machines
*
Worker_Idle_Timeout = +00:01:00
*
*
* Temporary staging area info for worker virtual machines
* Worker_Stage_Type = Some valid argument for DEFINE Txxxx -or- DEFINE VFB-512
*                   command.  Supported values are T3380, T3390, or VFB-512.
*
*
Worker_Stage_Type = T3380
```

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
 - Improved user management of disk space with archive functions
 - Automated operations
- **April 29, 2005**
 - GA Tape Manager for z/VM V1.1
 - GA Backup and Restore Manager for z/VM V1.1
- **August 24, 2005**
 - GA Archive Manager for z/VM V1.1
 - GA Operations Manager for z/VM V1.1
- **February 24, 2006**
 - GA Tape Manager for z/VM V1.2
 - GA Operations Manager for z/VM V1.2
- **Gathering and prioritizing additional customer requirements**
- **Web site: <http://www.ibm.com/software/stormgmt/zvm/>**