

# CA Products for z/VM – Old Dogs with New Tricks

Yvonne DeMeritt  
Sr. Sustaining Engineer  
CA



# Objective

- Provide information on CA's z/VM product offerings that are available to assist you in meeting your z/VM with Linux initiatives
- Provide information on how these products can be used in the z/VM with Linux environment
- Demonstrate CA's commitment to the z/VM and zSeries Linux operating systems

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# CA's z/VM products

- **Origins**
- **CA z/VM product solutions today**
- **What is next?**

# 'Back in the day' (1980's)

- z/VM used by many large enterprises
  - Production work
  - Guest migration work
  - Supporting multiple VSE and/or MVS guests

# System issues that needed attention

- Great system, but there were solution gaps that needed to be filled
  - System Backups (DDR only available)
  - System Security
  - System Management and Automation

# Various ISVs, including CA, provided solutions to address those issues

- Most of CA's z/VM System Management solutions have origins back to a company that developed VM system software exclusively
- Many of the CA z/VM products were considered VM System Management industry standards

# Over the years

- Mainframe consolidations
- Customers moved into distributed environments
- Vendors stabilized many mainframe products
- Some vendors completely stopped mainframe software development

# What happened?

- CA acquired many mainframe ISVs or their mainframe products
- Added 'cream of the crop' solutions to an already rich mainframe product solution set
  - z/OS
  - z/VSE
  - z/VM
- CA became global leader in mainframe solutions

# What about CA and z/VM?

- CA became the largest z/VM solution provider
- Many large enterprise customers continued with z/VM
- CA stayed committed to those customers and the z/VM operating platform
  - z/VM products continued to be maintained and developed

# CA z/VM solutions are mature products

- First product developed in 1981
- Maturity gives you
  - Stability
  - Reliability
  - Feature rich due to high quality improvements over time

# The mainframe and z/VM today

- Linux has increased the relevancy of the mainframe to a broader base of users
- z/VM extends the power, flexibility, reliability, and scalability of Linux on the mainframe
- CA z/VM solutions are still valuable tools for effectively and efficiently automating and managing today's z/VM system

# CA and z/VM with Linux

- CA VM:Manager suite of products still play a major role for z/VM system management
  - Loyal large enterprise customers who have adopted new use of z/VM with Linux
  - Customers new to z/VM using it for Linux hosting

# CA VM:Manager VM Management Suite

## Enterprise Management

**CA VM:Account®**

**CA VM:Sort®**

**CA VM:Operator®**

**CA VM:Schedule®**

**CA VM:Spool®**

**CA Explore® Performance Management for VM**

## Security Management

**CA Top Secret® Security for VM**

**CA ACF2 for VM**

**CA VM:Director™**

**CA VM:Secure™**

*For IFL and non-IFL engines*



# CA VM:Manager VM Management Suite

## Storage Management

**CA VM:Backup® including HiDRO**

**CA VM:Tape®**

*For IFL and non-IFL engines*



# Storage Management Solutions

- CA VM:Backup including HiDRO option
- CA VM:Tape

# CA VM:Backup

CA VM:Backup Provides an efficient, secure and reliable means of backing up z/VM system, CMS and Linux data.

The CA VM:Backup HiDRO (High Speed Disaster Recover Option) feature adds stand alone backup and restore capability when no operating system is running on the processor

# Why use VM:Backup?

- Disaster recovery: What are you willing to lose?
- System data recovery
- VM specific backups and restores with no other operating system involvement.
- Delegate file or minidisk restore activities
  - How many people have to get involved on end user or departmental restores now?

# CA VM:Backup – Feature Highlights

- Robust backup and recovery with data integrity
- File level or 'logical' backups (CMS, SFS and BFS)
- Physical backups for Linux and other non-CMS disks
- Full, incremental and cumulative incremental backups

# CA VM:Backup – Feature Highlights

- Full and partial system restores
- Flexible cataloguing capabilities
- Flexible interfaces
  - Full-screen and line-mode commands
  - Template programming

# CA VM:Backup – Feature Highlights

- Data compression and encryption – AES, 3DES and DES
- DASD tape feature
  - No tape mount wait
  - Store Linux guest data for quick restores to clone Linux guests
  - Same interface used for all other VM:Backup requests

# CA VM:Backup – Disaster Recovery

- Fast Physical Backups - CA VM:Backup HiDRO option can be used to create physical backups that support the timely recovery in disaster recovery situations.
- Disaster Recovery Component - CA VM:Backup including HiDRO enables you to recover your entire z/VM system quickly and safely by enabling you to restore essential system components from physical backups. It then uses its incremental restore capabilities to recover the most current data on the system.

# CA VM:Backup – Interfaces with other CA products

- CA VM:Tape - Provides automatic tape drive allocation, robotic control and additional auditing capabilities for CA VM:Backup tape mounts
- CA VM:Schedule - Schedules the submission of CA VM:Backup jobs so that system backups are not forgotten, but automatically performed on a schedule that meets the operational needs of the installation
- CA VM:Archiver® – Provides file and disk archival capabilities for system and end users (not part of VM:Manager for Linux Suite)

# CA VM:Tape

CA VM:Tape is a full featured tape volume and tape drive management system for z/VM.

# Why use CA VM:Tape?

- If you use tapes, even virtual ones, on z/VM
- You want to have a reliable and automated way to keep track of z/VM tape volumes
- You want to share tape drives or tape systems across multiple z/VM systems

# Why use CA VM:Tape?

- You want to keep data for your z/VM tapes in your z/OS CA-1 TMC
- You want to provide a method to automate tape activities freeing staff for other tasks

# CA VM:Tape – Feature Highlights

- Supports
  - Automated Cartridge Systems (ACS)
  - Automated Tape Libraries (ATL)
  - Virtual Tape Systems (VTS)
- Tape Catalog – TMC

# CA VM:Tape – Feature Highlights

- Automated Tape Drive Allocation
- Shared Drive Control for z/VM (STAM)
- Shared Drive Control for z/VM and z/OS with CA MIA
- Automated Tape Mounting
  - Interfaces to all major robotic tape mounting systems (IBM, STK/SUN and, Sutmyn)

# CA VM:Tape – Feature Highlights

- Tape Volume Verification
- Foreign Tape Control
- Scratch Tape Pools
- Automatic Scratch Selection
- Retention Control

# CA VM:Tape – Reporting

- CA VM:Tape includes a report utility and seven sample report programs for reporting on CMS TMC and audit files. Reports are customizable to meet your needs
- Interface with CA-1 allows usage of that products reporting and management functions.

# CA VM:Tape – Interfaces with other CA products

- CA VM:Operator - Provides a tape manager window to display the status of tape drives and information regarding all active and pending tape mounts and tape drive allocations.
- CA VM:Account - Can be used to charge users, groups or departments for tape media and tape mount usage using the accounting records generated by the CA VM:Tape for CA VM:Account user exit.

# CA VM:Tape – Interfaces with other CA products

- CA VM:Backup - Automatically sends mount requests for backup and restore functions to CA VM:Tape allowing CA VM:Tape to manage scratch tape selection, saved volumes and tape drive allocation for all CA VM:Backup tape requirements.
- CA VM:Spool - Automatically sends mount requests for spool backup and restore functions to CA VM:Tape allowing CA VM:Tape to manage scratch tape selection, saved volumes and tape drive allocation for all CA VM:Spool tape requirements.

# CA VM:Tape – Interfaces with other CA products

- CA MIA Tape Sharing for z/VM - Interfaces with CA VM:Tape for z/VM to provide seamless automatic tape drive sharing among any combination of z/VM and z/OS systems.
- CA-1 Tape Management - CA VM:Tape for z/VM can seamlessly share the TMC and audit files with CA-1 Tape Management. This interface allows z/VM and z/OS to maintain a single tape catalog and audit trail for all tape usage across the enterprise.

# Enterprise Management Solutions

- CA VM:Operator
- CA VM:Director
- CA VM:Spool
- CA Explore for z/VM
- CA VM:Account
- CA VM:Sort
- CA VM:Schedule

# CA VM:Operator

CA VM:Operator automates z/VM systems operations by managing message traffic for z/VM system operators and making it easier to respond to system messages.

CA VM:Operator allows you to use action routines to automatically perform routine system tasks based on messages received at the system operator console.

# What does VM:Operator do for you?

- Provides automated operations management for virtual Linux server farm
  - Console management
  - Automated message response
- Centralized Linux console management
  - Make use of existing SECUSER functions for each Linux guest
  - Window into each Linux guest

# CA VM:Operator – Feature Highlights

- Provides automated z/VM and Linux console management
  - Automate system message routing and filtering
  - Operators see only messages they must react to
- Provides windows into each virtual machine and Linux guest without having to dedicate a terminal session to each one
- Provides Real-time and historical review of z/VM and Linux message traffic

# CA VM: Operator – Feature Highlights

- Automate processes such as updating of network configuration information or automatically resolving a problem causing a Linux guest to fail to boot properly.
- Remote windows for system programmer support
- SESSION facility provides logical device manager and automation tool
- CA-MIC Message Sharing forwards messages to CA-OPS/MVS Event Management and CA Automation Point

# CA VM:Director

- CA VM:Director is a robust z/VM directory management solution that allows you to efficiently and effectively manage your z/VM directory database as well as manage your system DASD.

# What can I do with VM:Director?

- Linux guest machine management
  - Linux guest creation
  - Linux guest cloning
  - Linux guest updating and deletion
- All other needed guest and system user management

# CA VM:Director – Feature Highlights

- Interface with ESM allows central authentication and access control
- Full auditing of directory changes
- DASD management
- Full-screen and line-mode user interfaces
- SMAPI interface points
- Decentralized management capabilities

# CA VM:Director – Feature Highlights

- Skeletons for easy guest duplication
- Ability to create master Linux directory entries that represent various 'flavors' of Linux servers
- Line-mode commands add new directory entry and required minidisks for each server
  - Full programmatic interface for CA VM:Director commands
  - SMAPI interface

# CA VM:Director – Interfaces with other CA products

- ESM interface allows your ESM to control command authorizations
- CA VM:Account - verifies account numbers being added to directory entries

# CA VM:Spool

CA VM:Spool is a spool space management and backup solution for z/VM.

# What does CA VM:Spool provide?

- Online review of open and historical Linux guest and system consoles
- Complete backup and restore of spool files
- Automated monitoring of spool system reducing risk of system failure
- With VM:Spool V/SEG-Plus, manage system segments (DCSS/NSS)

# CA VM:Spool – Interfaces with other CA products

- CA VM:Account – enables spool usage tracking and chargeback
- CA VM:Tape - allows automated tape drive and volume allocation during spool backup and restore processes

# CA Explore for z/VM

CA Explore for z/VM is a monitoring and performance solution for z/VM.

# What does CA Explore for z/VM provide?

- Virtual machine status tracking and system tuning
  - Real time monitoring
  - Past performance monitoring
    - Tabular and plot panels
  - Pinpointing bottlenecks
  - Balancing workload
- Event notification and escalation
  - Post alerts to CA VM:Operator
    - CA-MIC Message Sharing forwards messages to CA-OPS/MVS Event Management and CA Automation Point

# CA Explore for z/VM – Feature Highlights

- Lookout Facility
  - Monitors resource availability to ensure that service virtual machines, such as Linux servers are logged on, not in a disabled wait state, and responding properly
  - Automatically restarts virtual machines
- Configurable threshold to warn for minimum and maximum thresholds by virtual machine
- Both line mode commands and menus

# CA VM:Account

CA VM:Account is a comprehensive accounting, chargeback and capacity planning solution for z/VM.

# How can using VM:Account benefit a Linux guest system?

- Provides accounting and chargeback for Linux guests
  - System resources
  - Tape usage
  - DASD usage
  - Gives the ability to divide the actual cost of running z/VM to the Linux guests
- Capacity planning for z/VM system and Linux usage
  - Data collection and reporting utilities

# CA VM:Account – Feature Highlights

- Collection and reporting of all z/VM accounting records
- DASD minidisk and SFS usage accounting
  - Produced by CA VM:Account
  - Supported in reporting and costing
- Full screen costing and master file updates
- Project or customer accounting capable
- Full set of report utilities supplied with the product
- Report output customizable through selection and control criteria
- Allows for collection of data for trend analysis

# CA VM:Account – Interfaces with other CA products

- Accounting records can be sent to other packages for actual processing and costing
  - CA MICS® Resource Management
  - CA MICS Resource Management Analyzer Option for z/VM - CMS
- CA VM:Tape – to audit and chargeback tape mounts and volume storage
- CA VM:Spool – to audit and chargeback spool usage
- CA VM:Archiver – to audit and chargeback archival storage
- CA VM:Batch® – to audit and chargeback CA VM:Batch usage

# CA VM:Sort

- Used by CA VM:Account
- Provides z/VM full featured sorting package for other sorting needs

# CA VM:Sort – Feature Highlights

- CA VM:Sort quickly rearranges data in a user specified sequence.
- Supports fixed or variable length files
- Designed specifically for z/VM
  - Control statement compatibilities with z/OS
- Dynamic allocation of work space for large files

# CA VM:Sort – Feature Highlights

- CA VM:Sort allows input or output data to reside on any device supported by CMS.
  - Up to 16 input files to sort/merge
- Interface through line mode commands or program interfaces
  - Module and TXTLIB supplied
- Can change, delete and modify information in existing records
- Integrated with CA VM:Account.

# CA VM:Schedule

CA VM:Schedule is a full featured and comprehensive scheduling product for z/VM. It allows users to schedule tasks off hours so interactive tasks are not impeded. Systems personnel can use CA VM:Schedule to schedule system tasks such as backups.

# What can VM:Schedule provide?

- Schedule system management tasks for automation
  - Weekly full physical backups
  - Nightly incremental backups
  - Reporting
  - Other system tasks
  - Scheduling guest startups
- Provides the ability to run 'batch type' work at off hours
  - Promotes prime time productivity for interactive tasks

# CA VM:Schedule – Feature Highlights

- Line mode or full-screen interface
  - Novice to Expert full screen selections
- Ensures tasks are executed automatically and accurately
  - Reduces/removes human intervention
- Very flexible and powerful scheduling options
  - Hourly, Daily, Weekly, Every weekend day
  - End/Beginning of each month, don't run on holidays
  - 1<sup>st</sup> business day of the month
- ... and much more

# Security Solutions

- CA Top Secret for z/VM
- CA ACF2 for z/VM
- CA VM:Secure

# What do the security solutions provide?

- Control user access to VM resources
- Single point of administration for all VM security
  - Full file sharing with z/OS and z/VSE (not available with VM:Secure)
- Secure the Linux virtual machines from the outside world
- Rules-based resource control
- Full auditing of system activity
- Prevents
  - Unauthorized access
  - Human errors

# Why should I chose one over the other?

- CA Top Secret for z/VM and ACF2 have z/OS counterparts
  - Other features not present in CA VM:Secure
- CA VM:Secure provides VM:Director directory management plus rule based security

# z/VM and Linux usage at CA

- Six production Linux guests
  - Multi-Application Database
    - Supports internal systems such as Charitable gifts
  - FTP Servers
    - 2 for product eDelivery
    - One for CA License Management
  - Web server for Product Advisory Council
  - Web server for CA internal system
  - 'Slew' of Linux research and development guests
- Product development on z/VM

# Infrastructure Management Issues

- Security Management
  - z/VM security
  - Linux security at the guest level
  - Directory management
- Enterprise Management
  - Automated operations and system management
  - Spool management
  - Resource management
  - Accounting and capacity planning
- Storage Management
  - System backup and recovery

# How we Manage it

- All the z/Series Linux Guests
  - Backups
    - CA VM:Backup HiDRO feature
  - Security
    - CA Top Secret Security
    - Access Control
  - New Guests and directory maintenance (new guests can be generated in about 20 minutes).
    - CA VM:Director
  - Archival of Linux guests disks
    - CA VM:Archiver

# How we Manage it continued

- All the z/Series Linux Guests Management
  - VM: Manager Suite
    - CA VM:Operator
    - CA VM:Spool
    - CA VM:Schedule
    - CA VM:Account
    - CA Explore for VM
    - CA VM:Tape
  - The Rest
    - AMO
    - NSM (Network Systems Manager)
    - Anti Virus
    - Software Delivery Manager

# What's next for CA in the z/VM and Linux environment?

- CA remains committed to provide our customers with the tools they need for Enterprise Management on the mainframe and beyond
- z/VM commitment
  - Continue to provide first day support for IBM z/VM releases
  - Ongoing product development to meet evolving customer needs and exploit emerging technology
- Continued partnership with our customers to provide the solutions needed for total enterprise management on all platforms
  - Where do we need to go? Talk to us.

# Coming Soon – CA VM:Operator r3

## - Major Features

- Support for SYSLOGD to allow consolidate logging of VM and Linux guest messages
- Support for arbitrary 3270 screen sizes
- Improved interoperability among VM:Operator systems
- Support for 2<sup>nd</sup> level of Include files
- Conversion to use VM Common Nucleus
  - 31-bit addressing
  - TCP/IP and CSL calls

## - Status

- Alpha version undergoing internal quality assurance testing
- Now seeking beta customers



# Summary

- CA z/VM solutions are a set of mature, reliable and stable products
  - Products specifically built to address z/VM system management needs that are still relevant today
- CA is committed to continuing our partnership with customers to provide the best solutions for total Enterprise IT Management for the mainframe and beyond.