



z/VM Platform Update

Introducing z/VM Version 6.1

SHARE Session #9303

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IBM Systems and Technology Group

The future runs on System z



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Topics

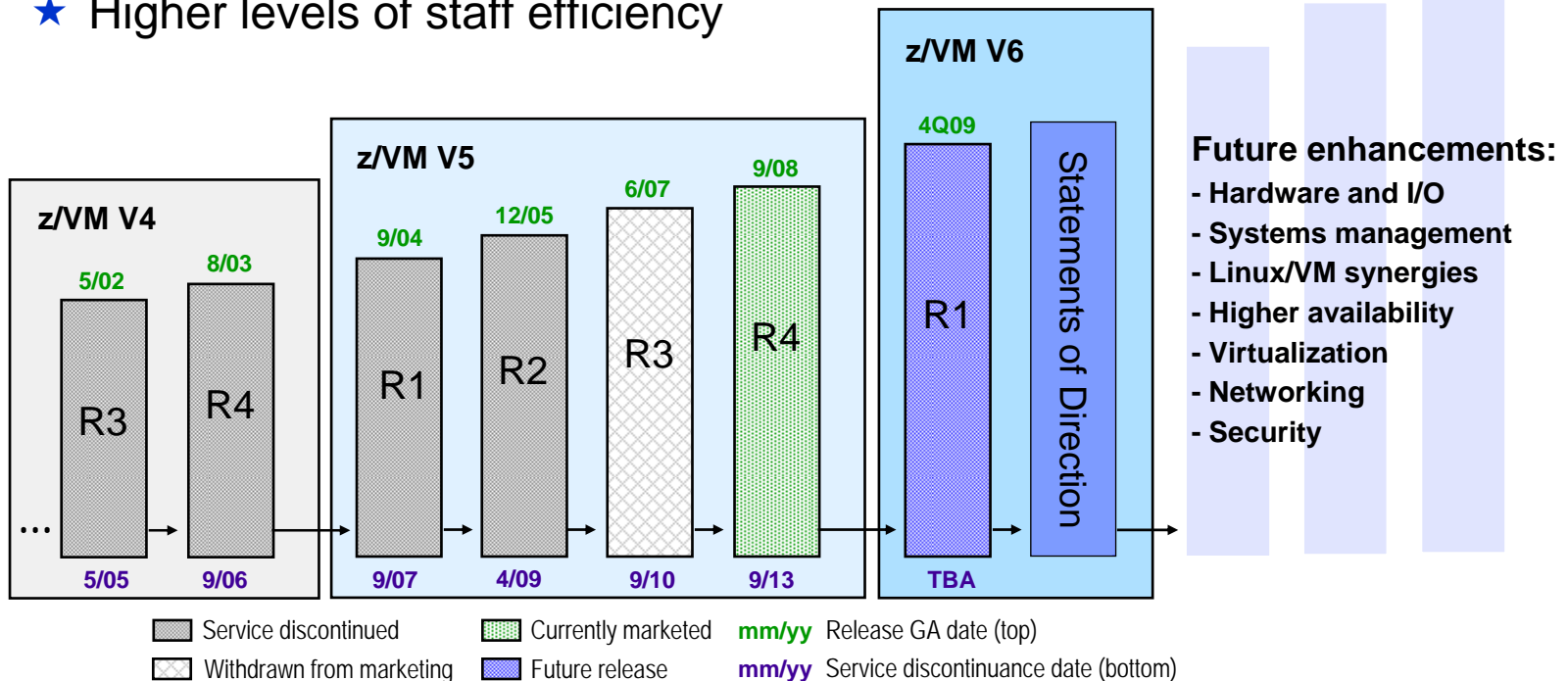
- **z/VM Version 6.1 release overview**
- **IBM statements of direction for future z/VM function**
- **Key Linux and z/VM product releases from IBM**
- **z/VM Version 5.4 release review**



z/VM Release History

z/VM helps clients “do more with less”

- ★ Higher core-to-core consolidation ratios
- ★ Higher levels of resource sharing and utilization
- ★ Higher levels of staff efficiency



IBM has received certification of z/VM V5.3 from the German Federal Office of Information Security (Bundesamt für Sicherheit in der Informationstechnik) for conformance to the Controlled Access and Labeled Security protection profiles (CAPP and LSPP) of the Common Criteria standard for IT security, ISO/IEC 15408, at [Evaluation Assurance Level 4+](#) (EAL 4+).

While z/VM V5.4 and V6.1 have not been officially evaluated for conformance, they are designed to meet the same standards.

Smarter Virtualization with IBM System z

- Do more with less
 - Consolidate more servers, more networks, more applications, and more data in a single machine with Linux and z/VM
 - Achieve nearly 100% utilization of system resources nearly 100% of the time
 - Enjoy the highest levels of resource sharing, I/O bandwidth, system availability, and staff productivity
- Reduce costs on a bigger scale
 - Consume less power and floor space
 - Save on software license fees
 - Minimize hardware needed for business continuance and disaster recovery
- Manage growth and complexity
 - Exploit extensive z/VM facilities for life cycle management: *provisioning, monitoring, workload mgmt, capacity planning, security, charge back, patching, backup, recovery, more...*
 - Add hardware resources to an already-running system without disruption – the epitome of Dynamic Infrastructure
 - Consolidation on a **scale up** machine like System z means fewer cables and fewer components to impede growth



z/VM Version 6.1

The Foundation for System z Virtualization Growth
Previewed July 7, 2009; Planned Availability: Q4 2009



- Establishes a new z/VM technology base for IBM System z10 and future systems
 - Acknowledges the highly attractive economics of workload consolidation on z10 servers
 - z/VM V6.1 only operates on z10 EC, z10 BC, and future generation servers
 - Allows optimization of z/VM function for greater business value on newer hardware
- New function and packaging in z/VM V6.1
 - Exploitation of the System z10 server cache management instructions to help improve the performance of z/VM virtual networking
 - Better integration with IBM Systems Director by shipping the Manageability Access Point (MAP) agent with z/VM V6.1 for easier installation of the agent
 - Support for FICON Express8* – designed to provide faster access to data with a link data rate of 8 Gigabits per second (Gbps)
 - Inclusion of several functional enhancements previously delivered in the z/VM V5.4 service stream
- Preview announcement includes statements of direction for future z/VM support
 - z/VM hypervisor clustering support: “Single System Image”
 - Linux virtual machine mobility support: “Live Guest Relocation”

* z/VM support for FICON Express8 was announced on July 21, 2009

Integrated New Function in z/VM Version 6.1

Previously Delivered in the z/VM V5.4 Service Stream

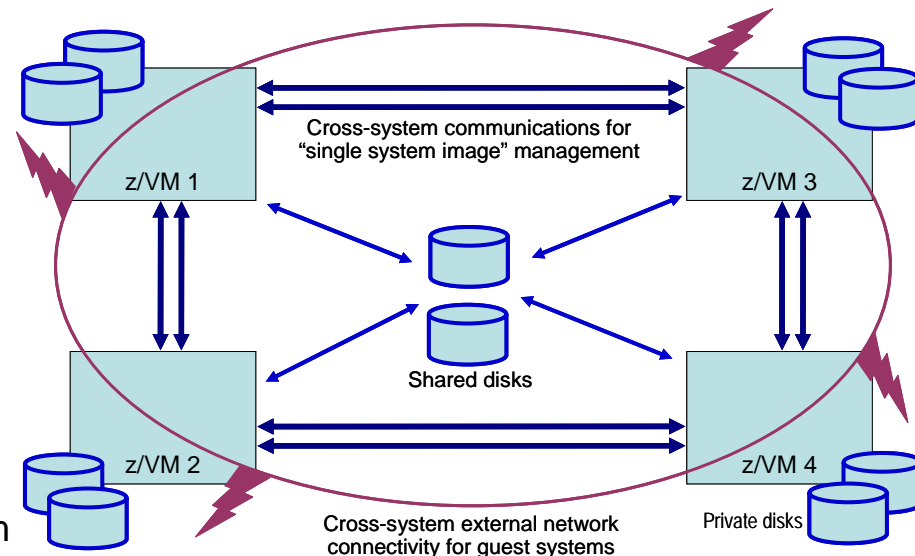
- Port isolation security that provides the ability to restrict guest-to-guest communications within a z/VM Virtual Switch by exploiting OSA-Express QDIO data connection isolation with required minimum MCLs
- Additional support for Linux guests using Dynamic Storage Reconfiguration (DSR)
- SSL server that operates in a CMS environment instead of requiring a Linux distribution
- Providing I/O device information from the I/O definition file (IODF) using Hardware Configuration Definition (HCD) for the World-Wide Port Name (WWPN) prediction tool
- Support for the IBM FlashCopy SE feature on the IBM DS8000 which provides a space-efficient snapshot capability that can greatly reduce the storage capacity needed for point-in-time copies
- Multiple file dump support
- Support for the IBM System Storage Enterprise 3592 Tape Controller Model C06 and 3592 Tape Drive Model E06, including DFSMS/VM

z/VM Statements of Direction

Clustered Hypervisor Support and Guest Mobility

Overview of Planned New Function

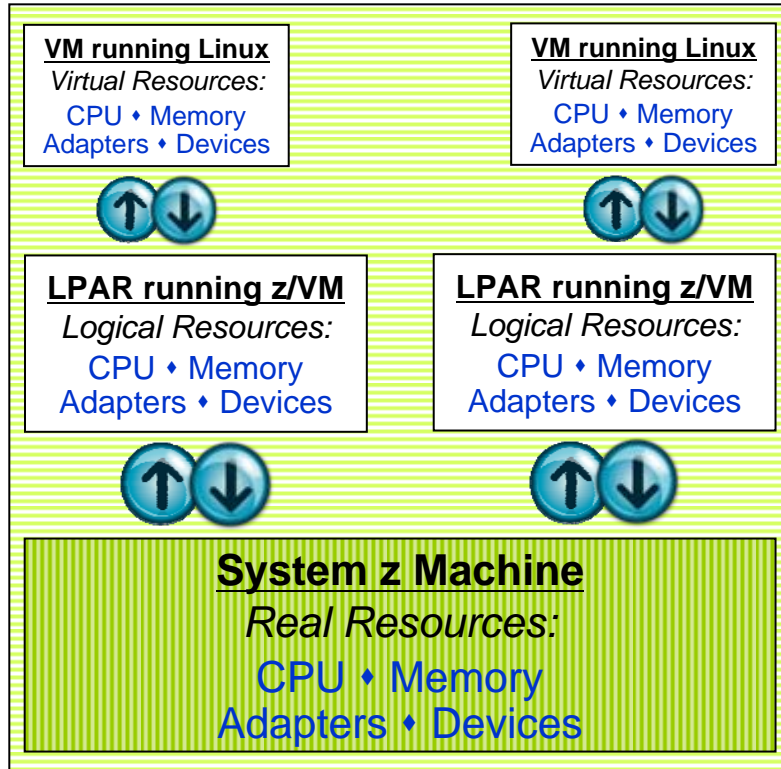
- Clients can cluster up to four z/VM systems in a **Single System Image (SSI)**
- Provides a set of shared resources that can be used by both z/VM and hosted virtual machines, with full awareness of sharing by the clustered z/VM systems – be they on the same and/or different z10 servers
 - Directory, minidisks, spool files, Virtual Switch MAC addresses
- Helps simplify systems management for a multi-z/VM environment
 - Single user directory
 - Cluster management from any system
 - Apply maintenance to all systems in the cluster from one location
 - Issue commands from one system to operate on another
 - Built-in cross-system capabilities
 - Service consolidation: run one copy of service virtual machines for the cluster
 - Resource coordination and protection: network and disks
- Dynamically move Linux guests from one z/VM system to another in the cluster via **Live Guest Relocation**
 - Helps reduce planned outages; enhances workload management
 - With z/VM: dynamically move work to available resources **and** dynamically move resources to work



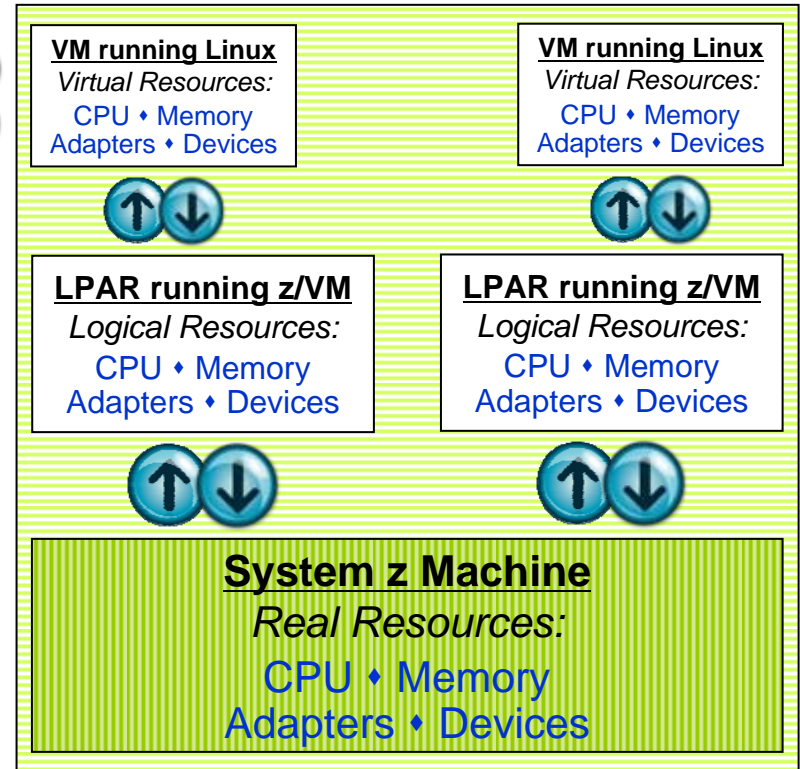
z/VM and System z Virtualization Leadership

Multi-Level Workload and Resource Management

Dynamically Adding Resources to Work and Moving Work to Resources



Concurrent Hardware Upgrade



Concurrent Hardware Upgrade

IBM Systems Director VMControl Image Manager for Linux on System z Version 2.1

Announced July 21, 2009; Available July 24, 2009



- VMControl Image Manager is a plug-in to IBM Systems Director V6.1
 - Effectively replaces the “z/VM Center” extension of IBM Director V5.20
- Provides support to manage and automate the deployment of virtual images from a centralized location
 - A virtual image consists of an operating system instance and the software stack, such as middleware and applications, running on that operating system
- VMControl Image Manager provides a graphical interface to create and deploy Linux images on z/VM and AIX images on Power systems
 - Definition of these system images is based on the industry-standard Open Virtualization Format (OVF) specifications – facilitates importation of virtual images
 - Deploy an all-in-one solution instead of OS, middleware, and application piece parts
 - Clone already-tested system configurations
 - Propagate virtual image updates to all instances
- IBM Systems Director and VMControl Image Manager help support a Dynamic Infrastructure
 - Helps improve responsiveness to changing business needs
 - May increase operational productivity
 - Can help reduce service and support costs



60-day Free Trial
Available via download

Topics

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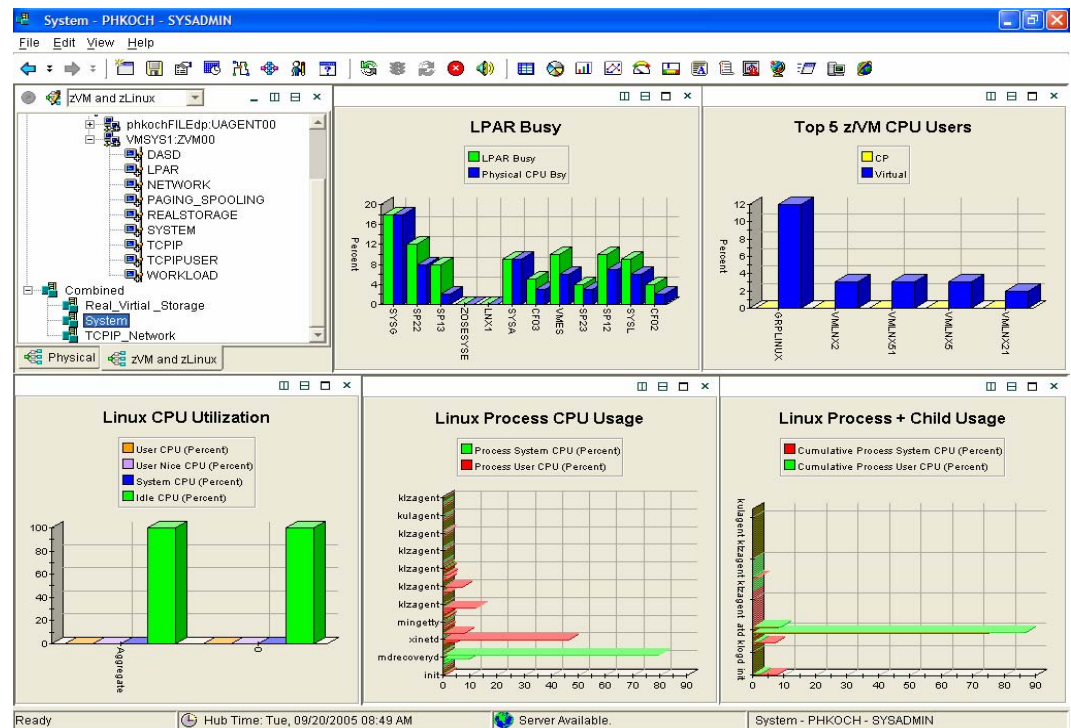
z/VM Systems Management Products from IBM

- **IBM Operations Manager for z/VM**
 - Helps improve the monitoring and management of z/VM virtual machines by automating routine maintenance tasks
 - Enables users to automatically respond to predictable situations that require intervention
 - Assists with monitoring and problem determination by allowing authorized users to view and interact with live consoles of z/VM service machines or Linux guests
- **IBM Backup and Restore Manager for z/VM**
 - Provides z/VM system administrators and operators the ability to efficiently and effectively backup and restore files and data on z/VM systems
 - Can also backup and restore images of non-z/VM guest systems such as Linux
- **IBM Tape Manager for z/VM**
 - Manages and monitors tape resources; helps increase data availability and improve operator efficiency
 - Automates common daily tape operations and helps eliminate tedious, often error-prone, manual tasks
- **IBM Archive Manager for z/VM**
 - Addresses storage and data management concerns by allowing users to archive historical or other infrequently used data to increase data availability
 - Helps companies comply with data storage requirements mandated by fiscal or legal regulations and policies

Monitoring System z Virtual Linux Servers

Using IBM Tivoli OMEGAMON XE on z/VM and Linux V4.1.2

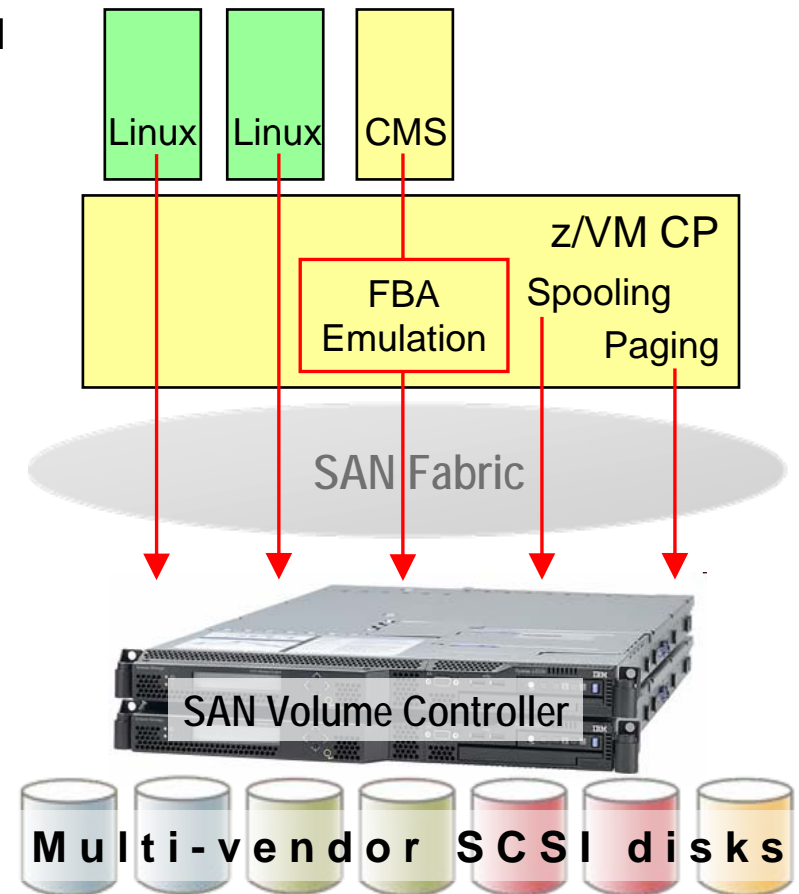
- **Combined product offering that monitors z/VM and Linux for System z**
- **Provides work spaces that display:**
 - Overall system health
 - Workload metrics for logged-in users
 - Individual device metrics
 - LPAR data
- **Provides composite views of Linux running on z/VM**
- **New function in V4.1.2:**
 - Additional monitoring to help identify bottlenecks in the I/O subsystem
 - Processor spin lock wait statistics



Learn more at: ibm.com/software/tivoli/products/omegamon-xe-zvm-linux

IBM System Storage SAN Volume Controller Software V4.3

- **z/VM and Linux for System z support SAN Volume Controller (SVC) V4.3**
- **SVC allows z/VM and Linux to access SCSI storage from multiple vendors as a single pool of disk capacity**
- **z/VM FBA emulation allows CMS users to access SVC-managed disk space**
- **New function in SVC V4.3:**
 - Space-Efficient Virtual Disks use disk space only when data is written
 - Space-Efficient FlashCopy uses disk space only for changes between source and target data
 - Virtual Disk Mirroring helps improve availability for critical applications by storing two copies of a virtual disk on different disk systems
- **Supported in z/VM V5.3 and V5.4**
 - z/VM V5.2 support available with PTF for APAR VM64128



Learn more at: ibm.com/storage/support/2145

IBM XIV – Next Generation Virtual Storage Meets Linux on System z Virtualization

▪ Benefits of XIV Architecture

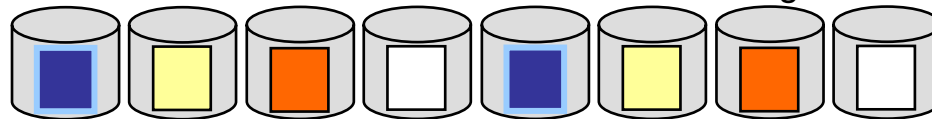
- Intuitive Management Interface
- Reuse and rebalance data resources “on the fly”
- Snapshot technology enables granular Guest OS recover
Quickly mount snapshot to pick and choose with Guest OS to restore
Snapshot used for backup

▪ Benefits of Linux-on-z/VM Virtual Infrastructure

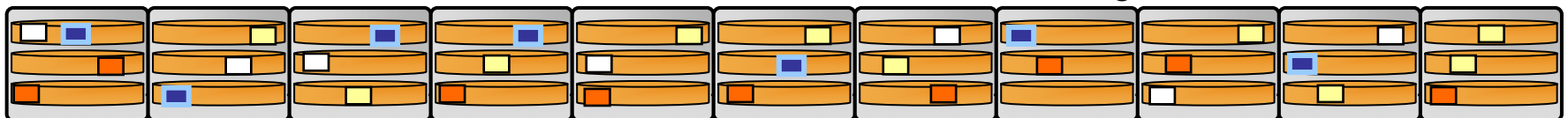
- Maximum consolidation to reduce data center footprint
- Streamline deployment and configuration processes
- Automatic and dynamic load balancing



Conventional virtual machine disk storage



XIV Load Balanced Virtual Machine Storage



IBM Integrated Removable Media Manager (IRMM) V1.1.1

IRMM functional summary

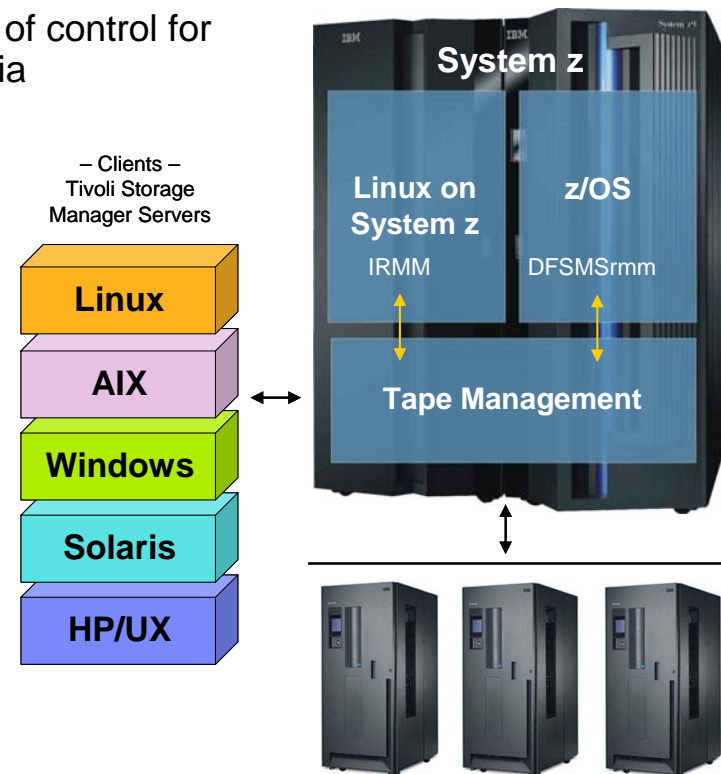
- Complements products like SVC, IBM Tivoli Storage Manager, and IBM TotalStorage Productivity Center to provide storage virtualization and advanced storage management for open system removable media
- Integrates with z/OS DFSMSrmm to offer a single point of control for managing mainframe and open system removable media

Announced August 5, 2008

Planned availability: December 2008

New function in IRMM V1.1.1:

- Enhanced synchronization with DFSMSrmm
 - Uses new DFSMSrmm information fields introduced with z/OS V1.10
 - Tomcat application server can be used to communicate with DFSMSrmm Web Service
- Client support for x86 Linux servers running TSM
- Support for latest generation of tape hardware
- Support for generic SCSI tape libraries
- IPv6 support



Learn more at: ibm.com/systems/z/os/linux/solutions/irmm

IBM System z Virtualization Infrastructure

- IBM System z hardware (including LPAR hypervisor)
- IBM z/VM Version 5

Monitoring for Virtualization Infrastructure

- z/VM Virtual Machine Resource Manager (included with z/VM)
- IBM z/VM Performance Toolkit for VM (z/VM priced feature)
- IBM Director
- IBM Tivoli OMEGAMON XE on z/VM and Linux
- IBM Tivoli Monitoring
- IBM Tivoli Composite Application Manager for SOA
- IBM Tivoli Usage and Accounting Manager

Automation for Virtualization Infrastructure

- IBM Operations Manager for z/VM
- IBM Tivoli Netcool OMNibus
- IBM Tivoli Workload Scheduler

Provisioning Management

- IBM z/VM DirMaint (z/VM priced feature)
- z/VM Center task of IBM Director
- IBM Tivoli Provisioning Manager

Resiliency Management

- IBM Tivoli System Automation for Multiplatforms

Application Layer Management

- IBM Tivoli Application Dependency Discovery Manager
- IBM Tivoli OMEGAMON XE for Messaging
- IBM Tivoli Composite Application Manager for Response Time
- IBM Tivoli Composite Application Manager for Web Resources
- IBM Tivoli Composite Application Manager for Transactions
- IBM Tivoli License Compliance Manager

Extended Infrastructure Management (*Security*)

- IBM z/VM RACF Security Server (z/VM priced feature)
- IBM Tivoli zSecure
- IBM Tivoli Access Manager for e-business
- IBM Tivoli Access Manager for OS
- IBM Tivoli Federated Identity Manager
- IBM Tivoli Identity Manager
- IBM Directory Server
- IBM Directory Integrator

Extended Infrastructure Management (*Storage*)

- IBM SAN Volume Controller (SVC)
- IBM Tivoli Storage Manager
- IBM TotalStorage Productivity Center
- IBM Backup and Restore Manager for z/VM
- IBM Tape Manager for z/VM
- IBM Archive Manager for z/VM

Extended Infrastructure Management (*Network*)

- IBM z/VM RSCS (z/VM priced feature)
- IBM Tivoli Network Manager IP Edition

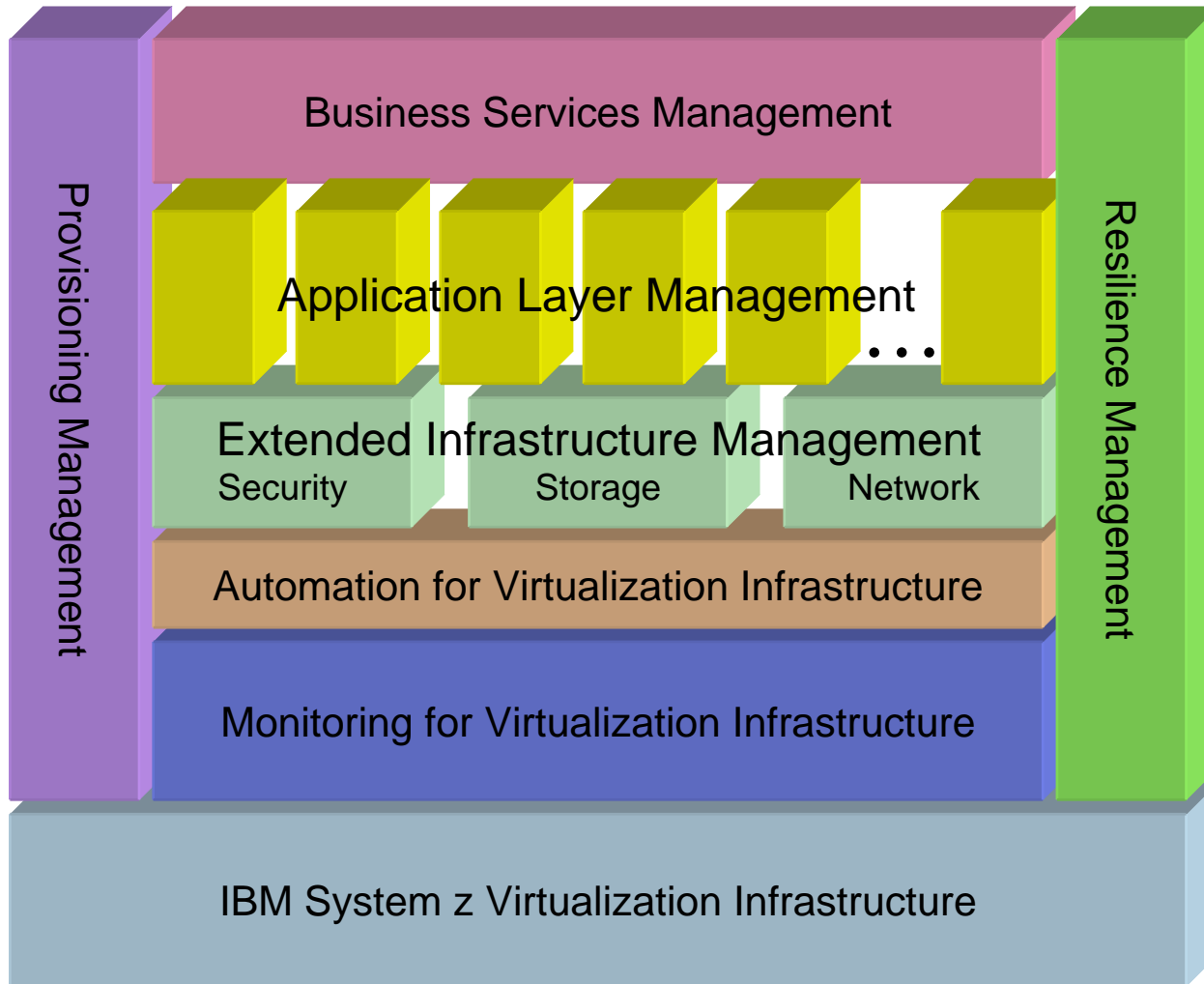
Business Services Management

- IBM Tivoli Business Service Manager
- IBM Tivoli Service Request Manager
- IBM Change and Configuration Management Database (CCMDB)

For specific releases, refer to Tivoli Platform Support Matrix at: ibm.com/software/sysmgmt/products/support/Tivoli_Supported_Platforms.html

IBM Tivoli Virtualization Management for System z

Helping Clients Manage and Control Their Virtualized IT Infrastructure



Topics

- z/VM Version 6.1 release overview
- IBM statements of direction for future z/VM function
- Key Linux and z/VM product releases from IBM
- **z/VM Version 5.4 release review**



z/VM Version 5 Release 4 New Function Highlights

Announce August 5, 2008 – Available September 12, 2008

- **Processor support**
 - System z10 processor instruction exploitation
 - DAT table performance enhancements
 - Dynamic LPAR memory upgrade
- **Virtualization support**
 - Dynamic virtual machine memory upgrade
 - z/VM-mode LPAR support
 - Virtual CPU SHARE redistribution
 - DCSS addressability above 2 GB
 - Guest FCP dump
 - OSA-Express3 Four-Port Connectivity
 - Virtual Switch networking management
- **Networking**
 - z/VM TELNET IPv6 support
 - Path MTU discovery
 - TCP/IP OSD Layer 2 support
- **Security**
 - LDAP upgrade
 - RACF change logging and password/phrase enveloping
 - SSL server re-host
- **Systems management**
 - z/VM system management API enhancements
 - Linux-on-z/VM installation using the Hardware Management Console (HMC)
 - Service and installation improvements
 - Performance Toolkit and DirMaint support enhancements
 - LE, C/C++, and Binder upgrades
 - System SHUTDOWN verification
- **Withdrawn**
 - 3480 tapes no longer supported as product distribution media

Refer to announcement letter: 208-249 (US), AP08-0242 (AP), A08-1178 (CAN), ZP08-0349 (EMEA)

z/VM V5 Now Available for Download at ShopzSeries

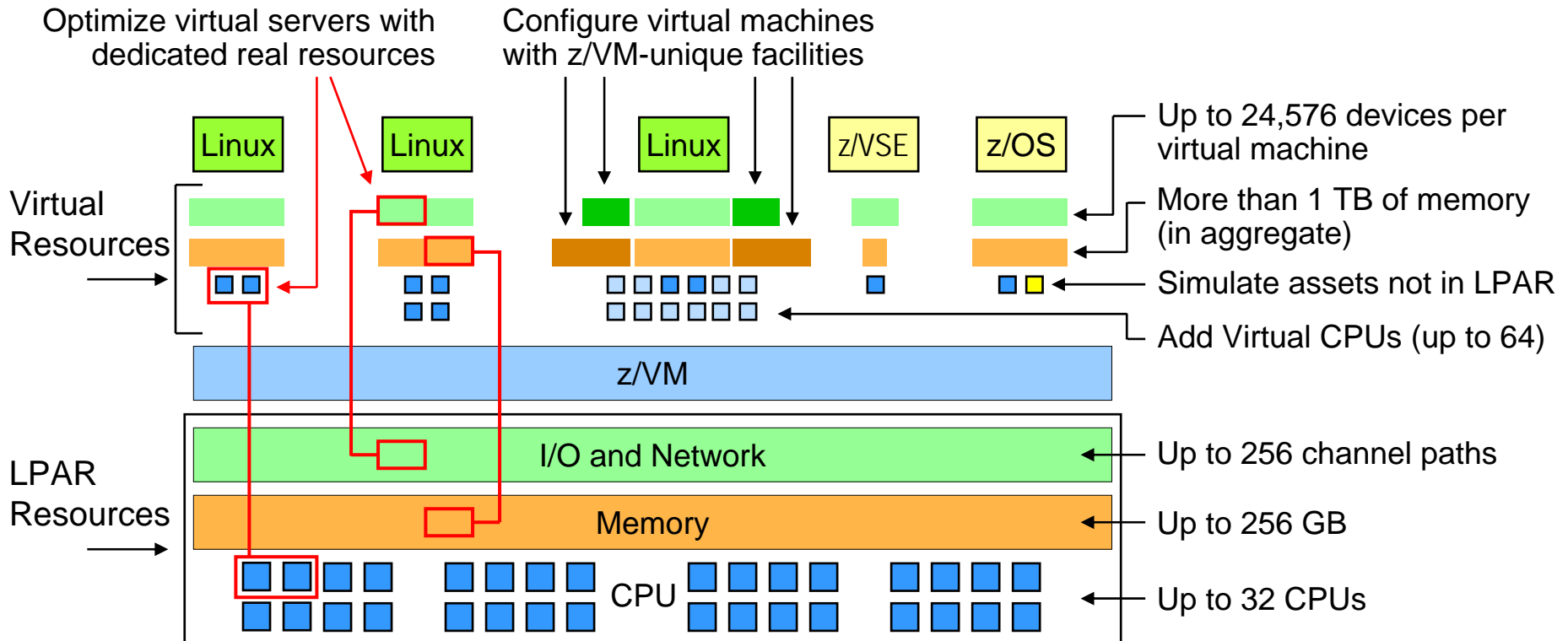
- Base z/VM operating system and features can now be ordered and delivered electronically via ShopzSeries
- Learn more at:
 - ibm.com/software/ShopzSeries
 - www.vm.ibm.com/buy/edelivery
- Other z/VM V5.4 product media options include DVD and 3590/3592 tape

The screenshot shows the IBM ShopzSeries website. At the top left is the IBM logo. To the right is a navigation bar with "Country/region [select]" and a search box. Below the navigation bar are links for "Home", "Solutions", "Services", "Products", "Support & downloads", and "My IBM". A welcome message "Welcome [IBM Sign in] [Register]" is displayed. The main content area is titled "ShopzSeries" and includes a list of links: "ShopzSeries", "Product catalog", "Help", "News", "Feedback", and "Customer service". A "Related links" section lists "zSeries home", "zSeries software", "Operating systems", and "Enhanced HOLDDATA". The main text welcomes users and lists capabilities: ordering tailored product and service packages, reviewing software licenses, and planning for future upgrades. A "Sign in" button is visible. On the right, a "My ShopzSeries" section offers "Sign in" and "Register" options, with a note for users without access. A banner at the bottom right reads "zSeries software for the on demand world" and "Make on demand a reality".

Extreme Virtualization with z/VM V5.4

z/VM can massively scale a virtual server environment with a mix of virtual and real resources for each virtual machine

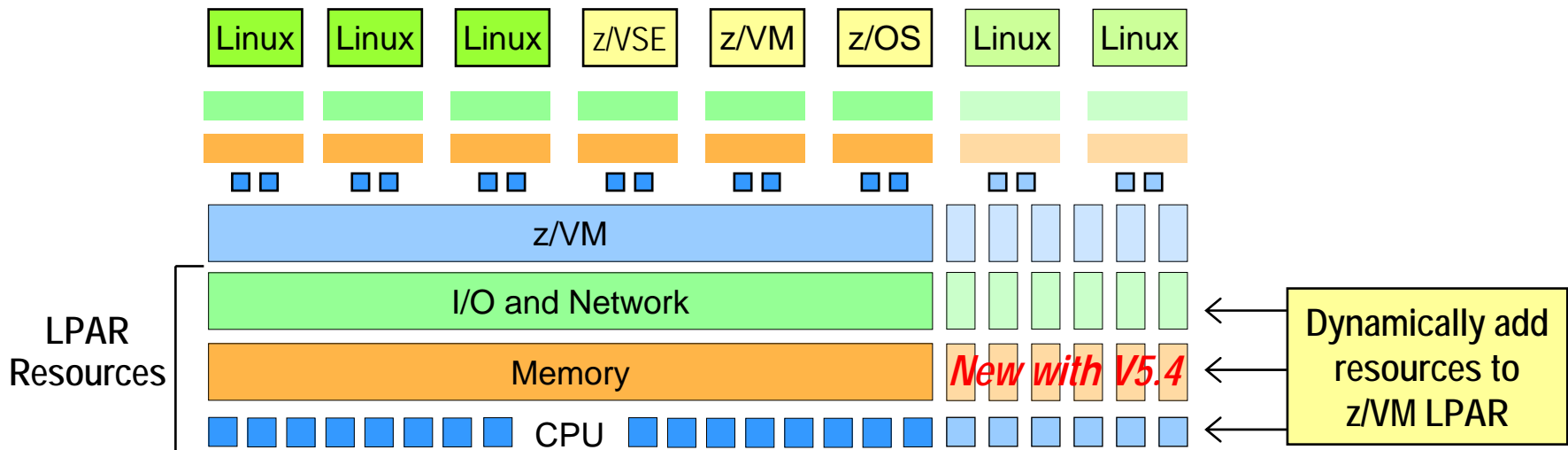
- ➔ With exceptional levels of performance, availability, and security
- ➔ Virtual and real assets can be non-disruptively added when needed



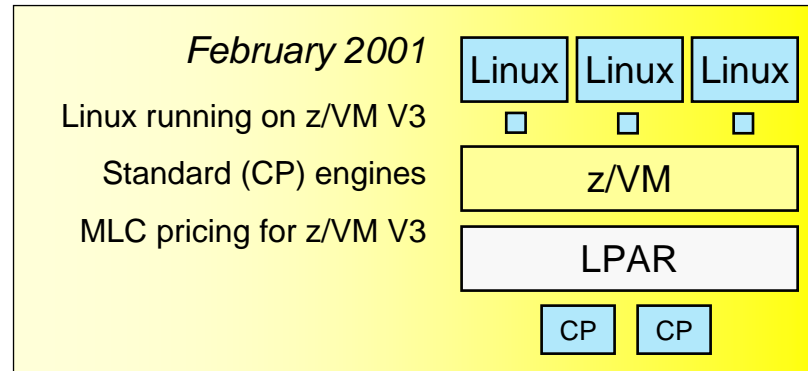
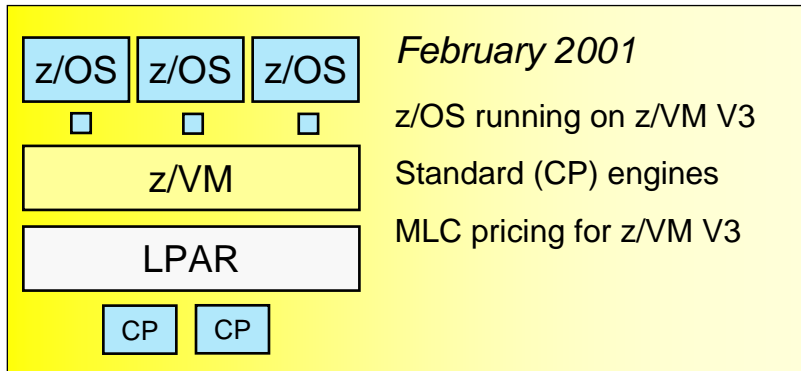
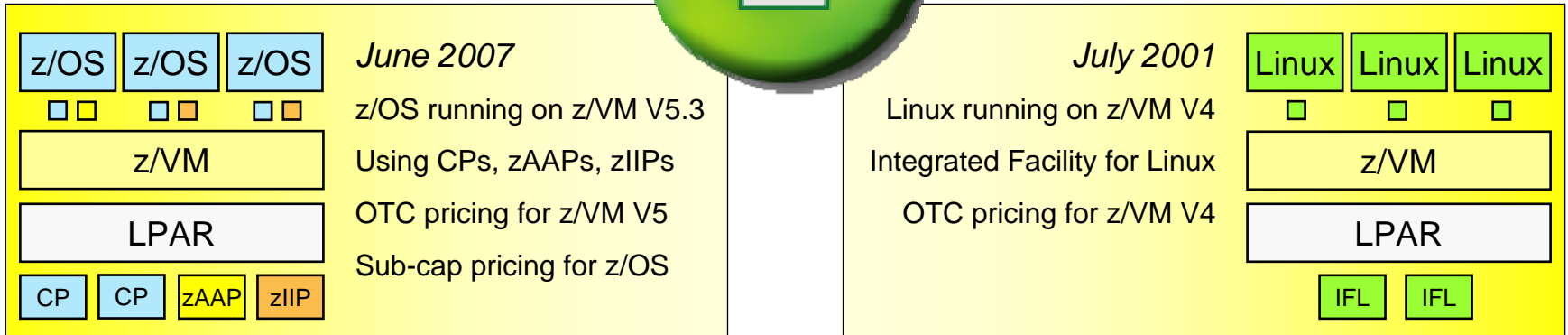
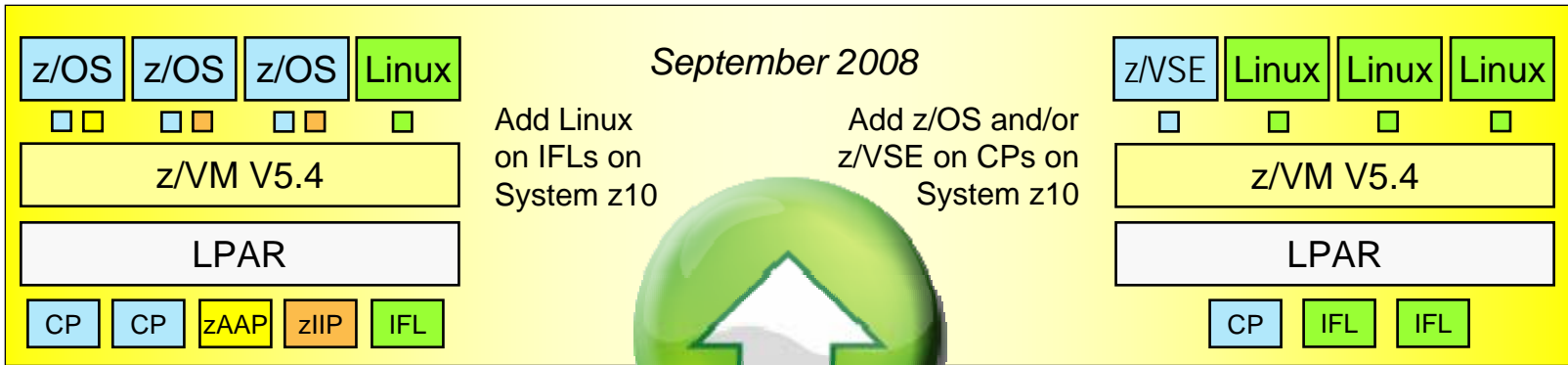
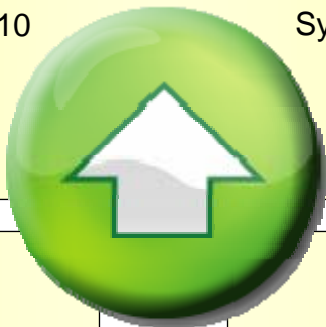
z/VM Dynamic Memory Upgrade

New z/VM V5.4 Function Enhances System Availability

- **Users can non-disruptively add memory to a z/VM LPAR**
 - Additional memory can come from: a) unused available memory, b) concurrent memory upgrade, or c) an LPAR that can release memory
 - Memory *cannot* be non-disruptively removed from a z/VM LPAR
- **z/VM virtualizes this hardware support for *guest machines***
 - Currently, only z/OS and z/VM support this capability in a virtual machine environment
- **Complements ability to dynamically add CPU, I/O, and networking resources**

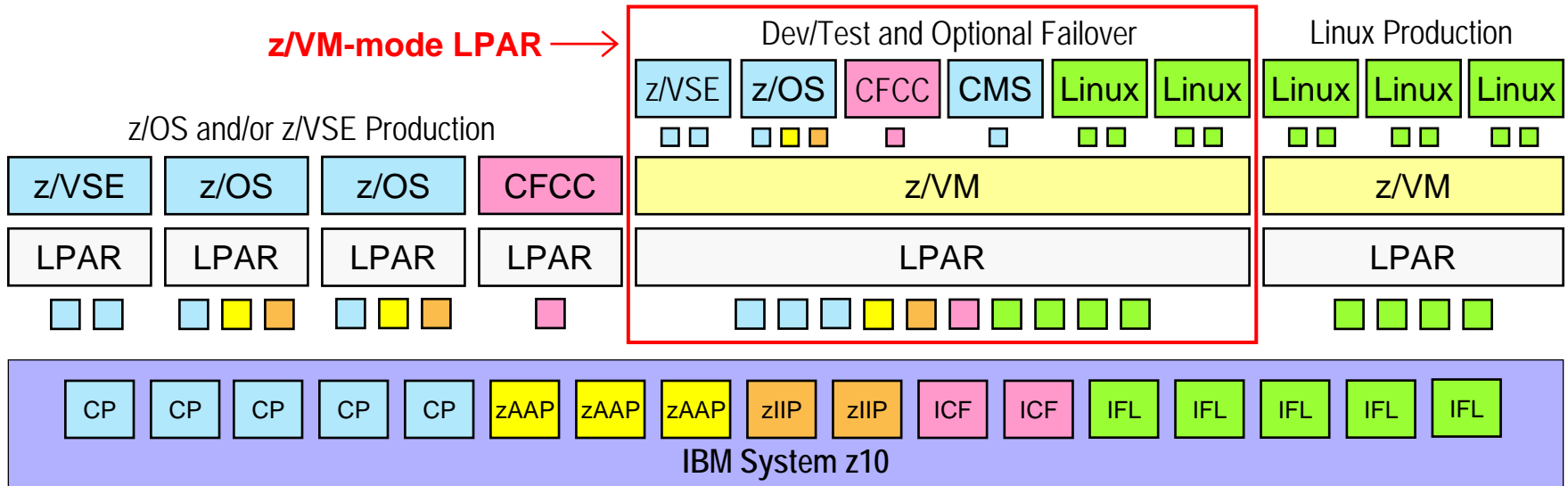


Smart economics: non-disruptively scale your z/VM environment by adding hardware assets that can be shared with every virtual server



z/VM-Mode LPAR Support for IBM System z10

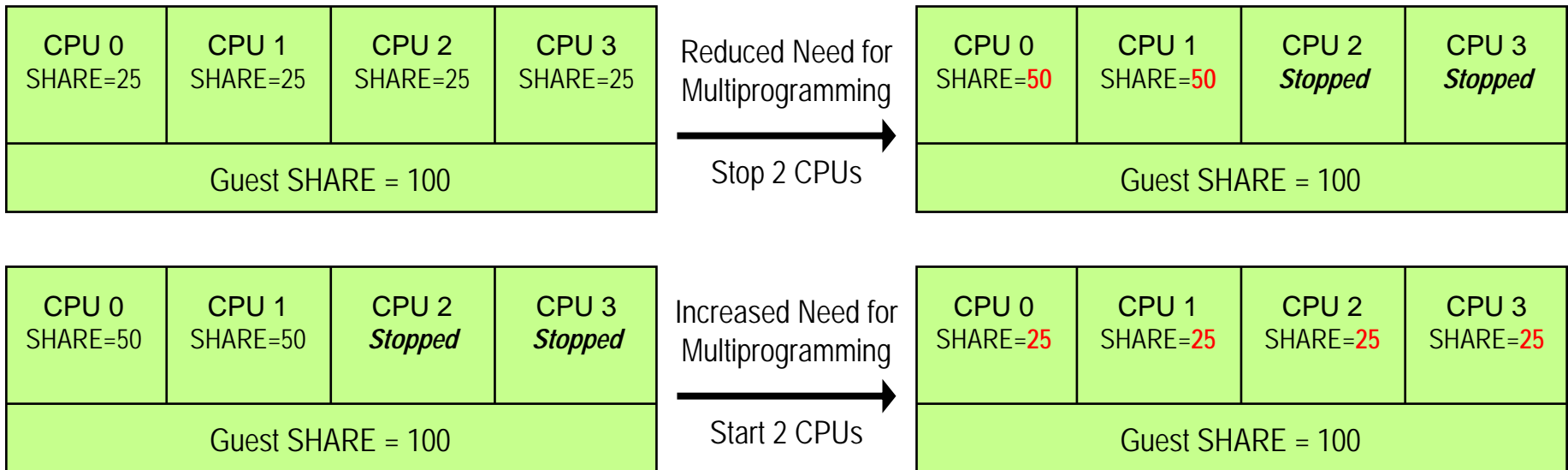
- **New LPAR type for IBM System z10: z/VM-mode**
 - Allows z/VM V5.4 users to configure all CPU types in a z10 LPAR
- **Offers added flexibility for hosting mainframe workloads**
 - Add *IFLs* to an existing standard-engine z/VM LPAR to host Linux workloads
 - Add *CPs* to an existing IFL z/VM LPAR to host z/OS, z/VSE, or traditional CMS workloads
 - Add *zAAPs* and *zIIPs* to host eligible z/OS specialty-engine processing
 - Test integrated Linux and z/OS and z/VSE solutions in the same LPAR
- **No change to IBM software licensing terms and conditions**
 - Software continues to be licensed according to CPU type



Virtual CPU SHARE Redistribution

Dynamic Virtual Processor Management

- **Allows z/VM guests to expand or contract the number of virtual processors it uses without affecting the overall CPU capacity it is allowed to consume**
 - Guests can dynamically optimize their multiprogramming capacity based on workload demand
 - Starting and stopping virtual CPUs does not affect the total amount of CPU capacity the guest is authorized to use
 - Linux CPU hotplug daemon starts and stops virtual CPUs based on Linux Load Average value
- **Helps enhance the overall efficiency of a Linux-on-z/VM environment**

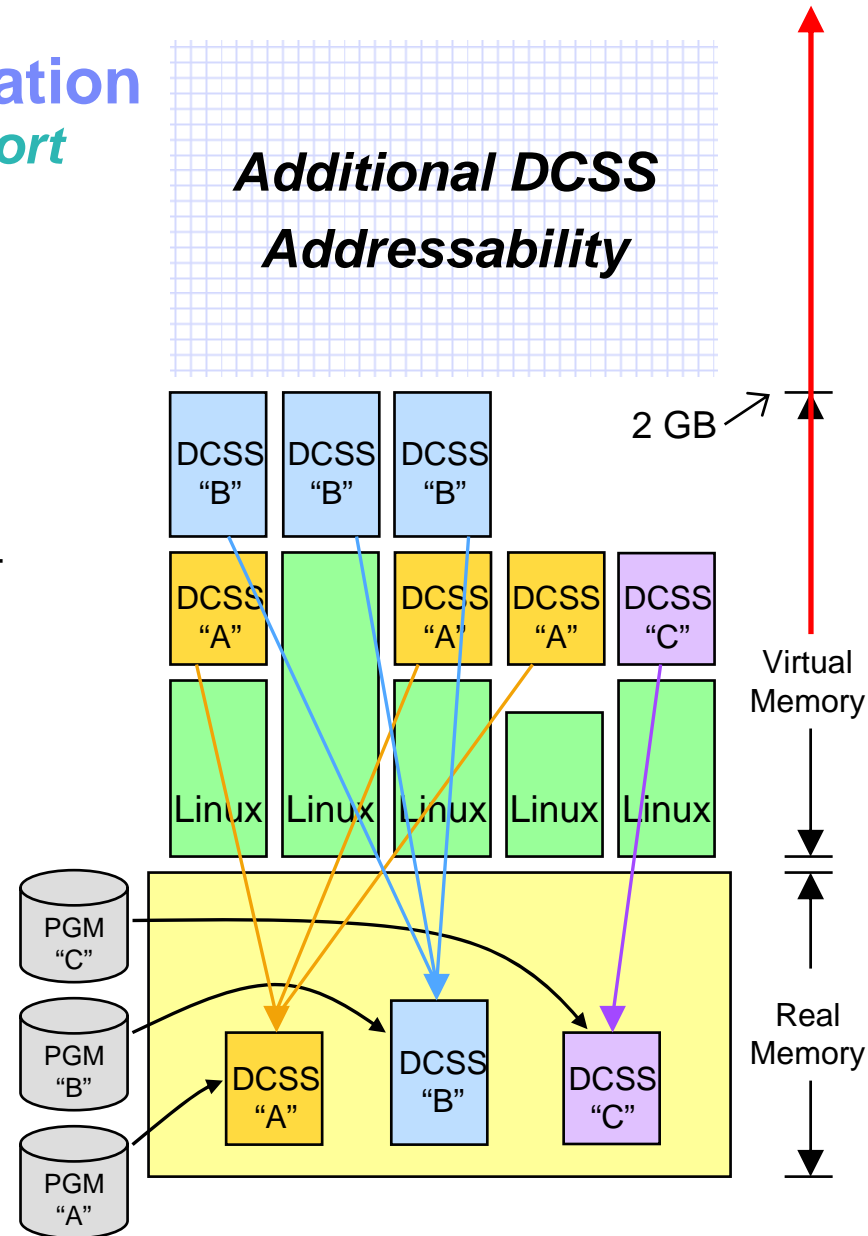


Note: Overall CPU capacity for a guest system can be dynamically adjusted using the SHARE setting

Extreme Linux-on-z/VM Virtualization

Linux Exploitation of z/VM DCSS Support

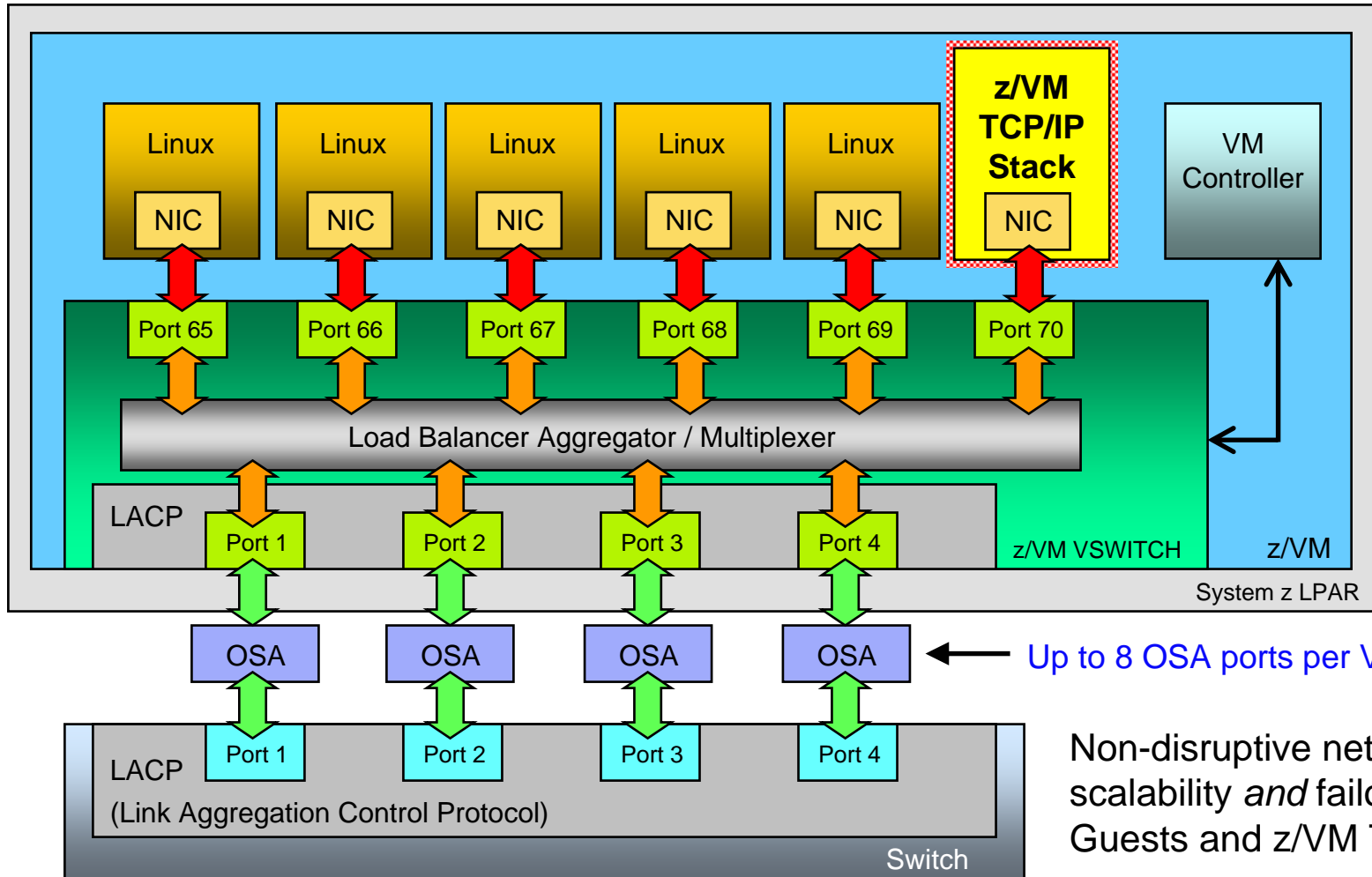
- Discontiguous Saved Segments (DCSS)
 - Share a single, real memory location among multiple virtual machines
 - Can reduce real memory utilization
- Linux exploitation: shared program executables
 - Program executables are stored in an execute-in-place file system, then loaded into a DCSS
 - DCSS memory locations can reside outside the defined virtual machine configuration
 - Access to file system is at memory speeds; executables are invoked directly out of the file system (no data movement required)
 - Avoids duplication of virtual memory
 - Helps enhance overall system performance and scalability
- **z/VM V5.4 support enhancements:**
 - Segments can reside above 2 GB address line
 - Enables even greater system scalability
 - New addressing limit is 512 GB



Note: Maximum size of a single DCSS is 2047 MB

z/VM Virtual Switch Link Aggregation

With z/VM TCP/IP Stack Connectivity Support in z/VM V5.4



← Up to 8 OSA ports per VSWITCH

Non-disruptive networking scalability *and* failover for Guests and z/VM TCP/IP.



Questions?

The future runs on System z

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Backup Material

z/VM V5.4 Product Information

- **Runs on IBM System z10 (z10 EC), IBM System z9 (z9 EC and z9 BC) and IBM eServer zSeries (z800, z900, z890, z990) systems**
 - The z/VM V5.4 Control Program requires 64-bit addressing (z/Architecture)
 - 64-bit and 31-bit (ESA/390) virtual machines are supported
- **Runs on Integrated Facility for Linux engines as well as standard (CP) processors**
 - zIIP and zAAP specialty processors are supported for z/OS guest use
 - ICF processors are supported for Coupling Facility Control Code (CFCC) guest images
- **IPLA software product (5741-A05)**
 - One-time charge license fee, priced on a per-engine basis (CP and IFL engines only)
 - Price/engine decreases (on a tiered basis) as more engines are licensed
 - Engines can be aggregated across an enterprise for licensing purposes
 - Ordered via the System Delivery Option (SDO) (5741-A06)
- **Optional Software Subscription & Support (S&S) product (5741-SNS)**
 - Annual, renewable license charge; required to receive IBM support center services
 - Entitles customers to future z/VM releases and versions
- **Includes priced features**
 - DirMaint, RACF Security Server, Performance Toolkit for VM, RSCS
 - Pre-installed, but disabled (license required; same pricing model as base product)

Processor Support

- **System z10 processor instructions**

- Execute-Extensions facility
 - Execute Relative long (EXRL)
- General-Instruction-Extension Facility
 - 71 new instructions
 - 4 new instruction formats
 - 7-character mnemonics
- Parsing-Enhancement Facility
 - Translate and Test Extended, Translate and Test Reverse Extended

- **DAT table performance enhancements**

- z/VM Control Program now supports full width of 64-bit Control Registers
- Allows upper-level DAT tables (Region and Segment tables) to reside above the 2 GB address line in host real memory
- Offers opportunity for improved performance and scalability
 - Particularly for large main memory and large virtual memory configurations



Guest FCP Dump Support

- **Provides the capability to dump Linux guests to FCP-attached SCSI disks**
- **Compared to VMDUMP, or dumping to ECKD disks, this new capability may provide the following advantages:**
 - More guest virtual memory can be dumped because SCSI disks can be larger than ECKD disks
 - Dumping on SCSI disks avoids the need to convert a VMDUMP into Linux tool format
 - The same SCSI dump mechanism can be used when running Linux in a logical partition and in a z/VM virtual machine
- **Works cooperatively with SCSI Linux system dumper and can be used to generate system dumps viewable with Linux dump analysis tools “crash” and “lcrash”**

OSA-Express3 Four-Port Connectivity

- **System z10 OSA-Express3 support**
- **Multiple ports per adapter on one CHPID (card)**
 - Provides more physical connectivity to service the network
 - Reduces the number of required resources such as CPU cycles, I/O slots, I/O cages, and CHPIDs to define and manage
 - Reduces the number of CHPIDs required to construct a Link Aggregation port group
 - One port can be shared while second port can be a member of a port group
 - OSA-Express3 GbE is designed for bandwidth-hungry applications: double the port density, reduced latency, and improved throughput
 - Up to 45% reduction in latency compared to OSA-Express2 GbE
- **Allows port number to be specified for Virtual Switch and QDIO Guest LAN**
- **Supported in z/VM V5.4 base product**
 - Support for z/VM V5.2 and V5.3 is available via PTFs for APARs VM64277 and PK50120



z/VM TCP/IP Support Enhancements

- **TELNET IPv6 support**

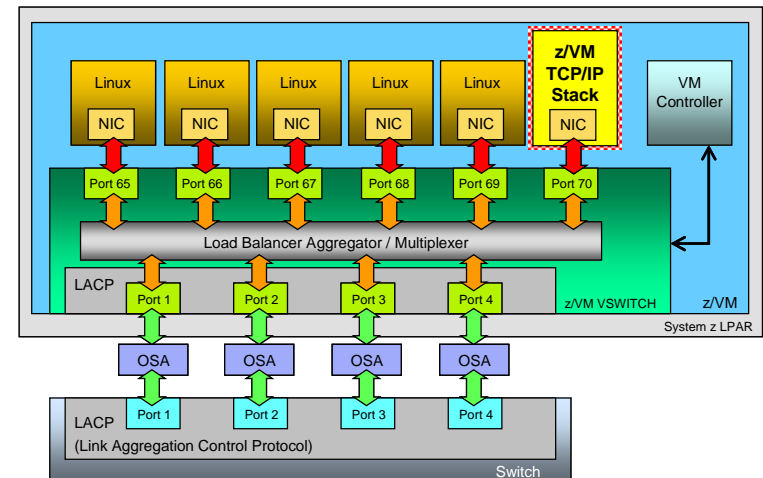
- z/VM V5.4 provides an IPv6-capable TELNET client and server

- **Path MTU discovery**

- Allows a TCP/IP server to determine the Maximum Transmission Unit (MTU) for a given IPv4 or IPv6 connection
- Helps optimize network throughput by reducing unnecessary fragmentation of large datagrams

- **OSA-Express QDIO Layer 2 Support**

- z/VM TCP/IP can now use a Layer 2 connection on an OSA-Express adapter
- Enables consolidation with Linux guests on a single Layer 2 virtual switch
- Increases bandwidth and availability for the z/VM TCP/IP stack



z/VM Security Enhancements

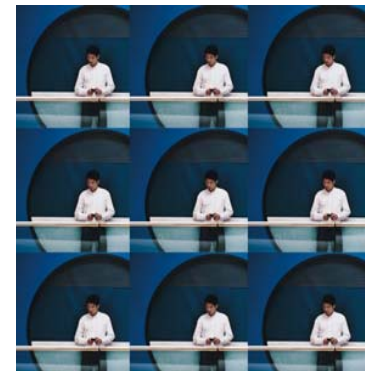


- **LDAP server upgrade**
 - Upgraded to the z/OS 1.10 level of IBM Tivoli Directory Server
- **RACF change logging and password / phrase enveloping**
 - Enables user, group, and password synchronization between z/VM and z/OS using IBM Tivoli Directory Integrator
 - Provides RACF change logging in LDAP
- **SSL server re-host**
 - The z/VM SSL server now operates in a CMS environment and no longer requires a Linux distribution
 - Simplifies installation, service, and release-to-release migration
 - New functions include:
 - New encryption/decryption engine – uses z/OS 1.10 SSL technology
 - New certificate management services – renewal, signing, exportation
 - Network-free SSL server administration
 - Requires PTFs for several APARs available December 2008
 - PK65850, PK65850, PK73085, PK75268, VM64540, VM64569, VM64570

Enhanced z/VM Systems Management Functions

For Allocating and Managing Guest Resources

- **z/VM Systems Management Application Programming Interface (API)**
 - Programming interfaces that enable platform provisioning applications like IBM Director to create and manage a large number of virtual system images running on z/VM
 - z/VM V5.4 offers improved processing speed, enhanced error recovery, and increased scalability of the Systems Management API via use of shared queues instead of files
- **New APIs include support to:**
 - Grant users access to a virtual LAN and determine which users have been authorized
 - Add, query, and delete virtual processors in a virtual image's configuration or directory
 - Manage profile directory entries
 - Accept and validate password phrases
 - Query the level of the Systems Management API to determine what functions are available
 - Allow a sort ordinal to be defined for local tags in directory entries
- **Enhancements to existing functions include:**
 - Allow creation (and deletion) of virtual network LANs to be either persistent or temporary
 - Increase the length of a virtual image's local tag to 1024 characters



IBM z10 BC and z10 EC GA2 HMC Support for z/VM

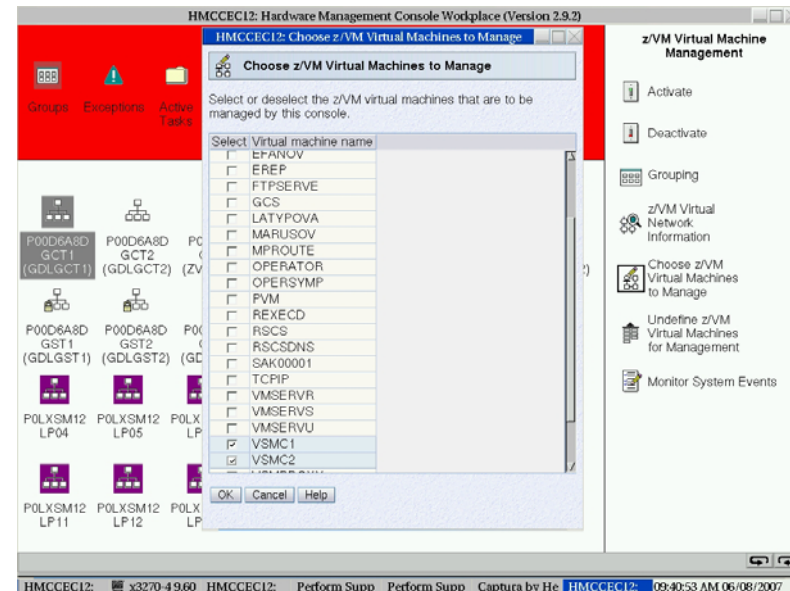
Enhancing the End-User Interface for Managing z/VM Virtual Machines

■ **New HMC support that exploits z/VM Systems Management APIs:**

- Define and change shared user definitions via:
 - Profile Create | Delete | Replace | Query *
- Define and change virtual hardware resources via:
 - Virtual Network LAN Access | Create | Delete | Query *
 - CPU Allocate | Deallocate | Query
 - I/O Allocate | Deallocate | Query
 - Virtual Memory Allocate | Deallocate | Query
 - Volume Create | Delete | Query
- Virtual Machine Resource Manager (VMRM)
 - View VMRM measurement data
 - Edit the VMRM active configuration file*

■ **Improved performance for HMC-to-z/VM communications in z/VM V5.4**

- Integration of SCLP interface into the Systems Management APIs reduces time required to process HMC tasks



* Requires new APIs introduced in z/VM V5.4

z/VM Installation and Service Enhancements

- **Linux-on-z/VM installation using the Hardware Management Console (HMC)**
 - Eliminates the need to find an FTP or NFS server with mainframe connectivity in order to install Linux
 - Both z/VM and Linux can be installed in a virtual machine from the HMC DVD drive
 - z/VM FTP server supports new `/. . /HMC:` path to access HMC
- **Improved installation logging (e.g., console logs saved at end of each exec)**
- **LOCALMOD exec enhanced to support a list of parts to modify**
- **SERVICE exec enhanced to support a list of products to build**
- **Allow changing default labels for attached DASD**
- **Document USER DIRECT migration procedures**
- **Procedure to upload contents of z/VM installation DVD**



Performance Toolkit for VM Enhancements

- **The Performance Toolkit for VM feature is a performance and reporting tool for the z/VM system and its guest images**
 - Real time and historical reporting
 - Offers threshold monitoring and user loop detection
 - Can monitor remote z/VM systems
 - Results can be viewed graphically with a web browser
- **z/VM V5.4 enhancements:**
 - New data to support dynamic memory upgrade
 - Ability to create a customized banner for the web interface
 - Displays for 5 seconds after initial banner page and before the logon screen
- **IBM Tivoli OMEGAMON XE for z/VM and Linux requires the Performance Toolkit for data collection**



Directory Maintenance (DirMaint) Enhancements

- **The DirMaint feature helps manage a z/VM system user directory**
 - Directory entries can be dynamically added, deleted, or altered using DirMaint commands
 - DirMaint provides automated validation and extent allocation routines to reduce the chance of operator error
- **Key z/VM V5.4 enhancements:**
 - Authentication and setting of External Security Manager password phrases
 - Enables DirMaint use with directory entries that have an ESM-controlled password phrase – function not available in prior z/VM release
 - Automatic communications with the z/VM RACF server are now configurable
 - New `USE_RACF` option allows users to turn automatic communication with RACF on or off for specific exits
 - DirMaint now uses `IUCV SMSG` to receive command requests
 - More reliable communication mechanism ensures DirMaint will not miss commands when communicating with RACF



z/VM Programming Language Enhancements

- **Language Environment (LE) Upgrade**
 - The integrated LE runtime libraries have been updated to the z/OS 1.9 level
 - The z/VM Binder code has also been updated to the z/OS 1.9 level
 - Provides necessary support for new C/C++ compiler
- **C/C++ Compiler Upgrade**
 - IBM XL C/C++ for z/VM V1.2 (requires z/VM V5.4)
 - Matches the z/OS 1.9 level of C/C++
 - Part of family of C and C++ compilers that supports all major IBM platforms
 - Same code base makes source-level portability easier than ever before
- **IBM High Level Assembler for z/OS, z/VM and z/VSE V1.6**
 - Offers improved programmer productivity and application reliability
 - Includes new feature for Linux on System z – licensed for standard CPUs
 - PRPQs *5799-TCQ* and *5799-TCR* should be ordered to execute HLASM on IFLs

z/VM Statements of Direction – August 5, 2008

- IBM intends to enhance z/VM FlashCopy capabilities to support the FlashCopy SE function of the IBM DS8000 with the PTF for APAR VM64449 in fourth quarter 2008.



- FlashCopy SE offers a space-efficient snapshot capability that reduces the storage capacity needed for point-in-time copies.
- This function is especially useful for short-lived testing or backups, such as flash to intermediate volume for backup to tape.
- TCP/IP functions: IBM intends to withdraw support in a future z/VM release for the Kerberos Authentication System.
- MMC (Mainframe to Micro Channel) card: IBM intends to withdraw support in a future z/VM release for the MMC card, which enabled communication between the PS/2 (PWSCS) and VM (PWSCF or ISFC).

Note: All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

z/VM Service Updates



- **Two-port connectivity for GbE and 1000BASE-T 2P features of z10 BC**
 - z/VM V5.2, V5.3 support available via PTFs for APARs VM64277 and PK50120
 - Support included in z/VM V5.4 GA code base
- **OSA QDIO data connection isolation support**
 - z/VM V5.3 and V5.4 support available via PTFs for APARs VM64463 and PK67610
- **OSA-Integrated Console Controller (OSA-ICC) 3215 Support for System z9 RPQ**
 - z/VM V5.3 and V5.4 support available via PTF for APAR VM64388
- **IBM 3592 Tape Controller Model C06 and 3592 Tape Drive Model E06**
 - z/VM V5.2, V5.3, V5.4 support available via PTFs for APARs VM64458 and VM64459
- **IBM DS8000 FlashCopy SE Support**
 - z/VM V5.4 support available via PTF for APAR VM64449
- **New network diagnose instruction (used by OpenSolaris on z/VM)**
 - z/VM V5.3 via PTF for APAR VM64531; z/VM V5.4 via PTF for APAR VM64471
- **Multiple file dump support**
 - z/VM V5.2, V5.3 V5.4 support available via PTF for VM64459
- **Linux guest dynamic storage reconfiguration support**
 - z/VM V5.4 support available March 2009 via PTF for APAR VM64542

z/VM Virtual Switch and OSA-Express Port Isolation

- **Allows users to restrict guest-to-guest communications within a Virtual Switch by exploiting OSA-Express QDIO data connection isolation**
- **Provides a mechanism to isolate a QDIO data connection on an OSA port**
 - Enables network isolation for operating systems sharing physical network connectivity

