z/VM 7.2 in 60 Minutes or Less

Version 2.14 – see https://www.vm.ibm.com/library/presentations/ for latest version.

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Abstract

Version 7 of z/VM started the era of a two-year release cadence. z/VM 7.2 is the second release in this era. This session starts with information on the newest release, z/VM 7.2; then reviews the current releases in service; and then begins a tour of five value areas and the recent enhancements in each of those areas. This presentation focuses on the business value of z/VM and its enhancements and other planning information. There is a companion presentation called “Leveraging the Newest Capability in z/VM” which goes into implementation details for the enhancements discussed here.

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Agenda

- Overview of z/VM Version 7 Release 2
- Summary of current releases and cadence
- Survey of enhancements in various areas
  - Scaling and TCO
  - Managing diverse workloads
  - Security
  - Resiliency and RAS
  - System Management improvements
- Other Highlights and News
  - Statements of Direction

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z/VM Version 7 Release 2 Overview

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z/VM 7.2

- GA September 18, 2020
  - Preview announce April 14, 2020
  - GA Announce August 4, 2020

- New Architecture Level Set of z13 and LinuxONE[1] or newer processor families

- Includes new function service shipped for z/VM 7.1 including:
  - 80 Logical Processor support, Dynamic Crypto, VSwitch Priority Queuing, etc.

- Additionally, includes:
  - Centralize Service Management
  - Multiple Subchannel Set Multi-Target Peer-To-Peer Remote Copy support for the GDPS environment
  - Adjunct virtual machine support
  - Foundational support for future new function APARs

1 – The machine type 2828 Rockhopper does not meet the ALS requirements and is not supported.

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z/VM 7.2 – System Default Changes

- TDISK clearing
  - The default has changed to Enabled.

- The SRM unparking model
  - The default unparking model has changed from LARGE to MEDIUM.

- System Recovery Boost
  - SRB has been enabled by default
  - Still requires z15 or newer and appropriate configuration.

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z/VM 7.2 – Other Default Changes

- z/VM Directory Maintenance (DirMaint)
  - NEEDPASS - the default value has changed to No
  - DVHWAIT BATCH and CLUSTER INTERVAL values have been updated to improve DirMaint's overall processing time in response to directory change requests.

- Telnet Server Certificate Check
  - Changed from CLIENTCERTCHECK NONE to CLIENTCERTCHECK PREFERRED
  - Change made to z/VM 7.1 with APAR PH18435

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z/VM 7.2 – Other Changes

- The PAGING63 IPL parameter and associated external interfaces have been removed.
  - Previously available as a chicken-switch.

- The Environmental Record Editing and Printing Program (EREP) functional executables will be preinstalled and delivered as part of the z/VM 7.2 product and serviced via the CP component, simplifying the process for applying EREP service.

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Upgrade Installation

- Upgrade installation is used to upgrade a z/VM 6.4 or 7.1 system to z/VM 7.2
  - Avoids a full and fresh install
  - Especially helpful in a Single-System-Image (SSI) environment
    - All members of the SSI cluster must be on the same release
    - Upgrade one member at a time

- If upgrading from z/VM 6.4 to z/VM 7.2
  - If a multi-member SSI cluster, all members must have VM65976 (PTF UM35063) applied before beginning your upgrade
  - RACF/VM 720 contains a new level of the RACF database template
    - If you have ***not*** installed VM65930 (PTF UV61335), verify your RACF database **before** beginning your upgrade
      - See white paper "Validating and Repairing RACF Database Integrity on z/VM" at *https://www.vm.ibm.com/security*

- See the *z/VM Installation Guide* for details

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IBM-Supplied User IDs

- IBM-Supplied user IDs are identified Appendix N of the *z/VM Installation Guide*
- Lists have been enhanced for z/VM 7.2 to provide descriptive information

User ID	Type	Default password	Owning component	Functional area	Description
ADM	USER	NOLOG	VM	Posix	POSIX group
AUDITOR	IDENTITY	LBYONLY	VM	Operations	SVM monitoring server
AUTOLOG1	IDENTITY	WD5JU8QP	VM	Operations	VM Default system startup user ID
AUTOLOG2	IDENTITY	LBYONLY	RACF	Security	RACF system startup user ID
AVSVM	IDENTITY	LBYONLY	VM	Networking	SNA LU 6.2 comm server
BIN	USER	NOLOG	VM	Posix	POSIX group
BLDCMS	USER	LBYONLY	VM	Service	System maintenance build server
BLDNUC	USER	LBYONLY	VM	Service	System maintenance build server
BLDRACF	USER	LBYONLY	VM	Service	System maintenance build server
BLDSEG	USER	LBYONLY	VM	Service	System maintenance build server
CBDIODSP	IDENTITY	WD5JU8QP	VMHCD	HCD	HCD dispatcher server machine
CMSBATCH	IDENTITY	LBYONLY	VM	CMS Batch	CMS batch facility server
CSMSERVE	IDENTITY	LBYONLY	TCP/IP	Networking	TCP/IP Centralized Service Management (CSM) FTP server
CSMWORK	USER	WD5JU8QP	VM	Service	Centralized Service Management FTP work system
DAEMON	USER	NOLOG	VM	Posix	POSIX group

- New lists have been added:
  - Special "dummy" user IDs to protect CP-defined areas from being overlaid
    - $ALLOC$, $DIRECT$, $PAGE$, etc.
  - User IDs supplied with prior releases that are not included with z/VM 7.2
    - Cannot be changed or deleted if doing an Upgrade Installation

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z/VM Releases and Cadence

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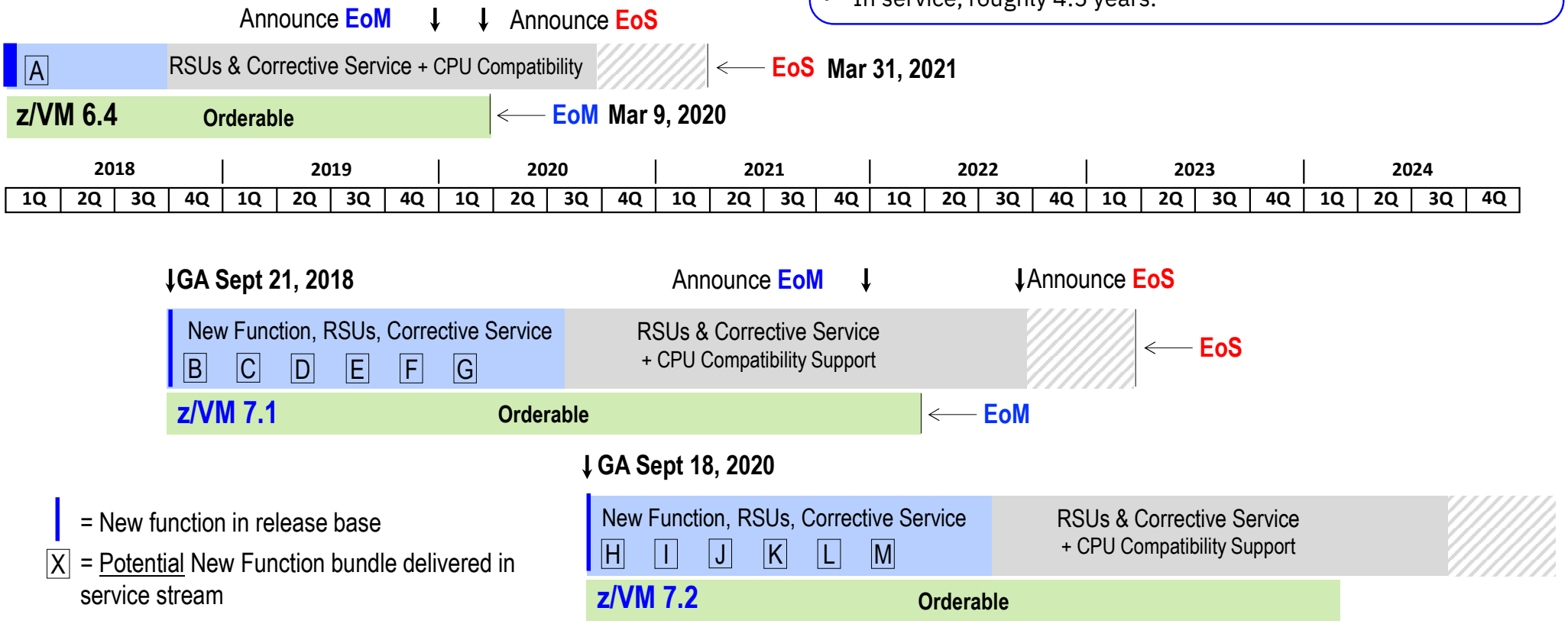
z/VM Release Cycle Cadence

- z/VM Release GAs: Every two years in 3rd Quarter of even years
- Releases remain orderable 18 months after GA of next release
- Last 6 months of release life cycle overlaps next two releases
- In service, roughly 4.5 years.



= New function in release base

X = Potential New Function bundle delivered in service stream

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z/VM Releases

Release	ProdId	GA	EOM	EOS	Notes
z/VM 7.2	5741-A09	Sept 18, 2020	TBD	TBD	
z/VM 7.1	5741-A09	Sept 21, 2018	TBD	TBD	Start of 2 Year Cadence[1]
z/VM 6.4	5741-A07	Nov 11, 2016	Mar 9, 2020	Mar 31, 2021	
z/VM 6.3	5741-A07	July 26, 2013	Nov 11, 2016	Dec 31, 2017	

Release[3]	z15 & LinuxONE III	z14 & LinuxONE II	z13 & LinuxONE Emperor	z13s & LinuxONE Rockhopper	zEC12	zBC12	z196	z114	z10 EC	z10 BC
z/VM 7.2	Yes	Yes	Yes	Yes[5]						
z/VM 7.1	Yes	Yes	Yes	Yes	Yes	Yes				
z/VM 6.4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
z/VM 6.3[2]		Some[4]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

1. z/VM GA every 2 years with in service for ~4.5 years.
2. z/VM 6.3 no longer supported but referenced what machines were supported when it was.
3. Service may be required for support of various servers.
4. There was support for the enterprise class z14 and Emperor, but not for ZR1 and LR1 (Rockhopper).
5. The Rockhopper machine type 2828 does not meet ALS requirements and is not supported, but the rest of the LinuxONE machines are.

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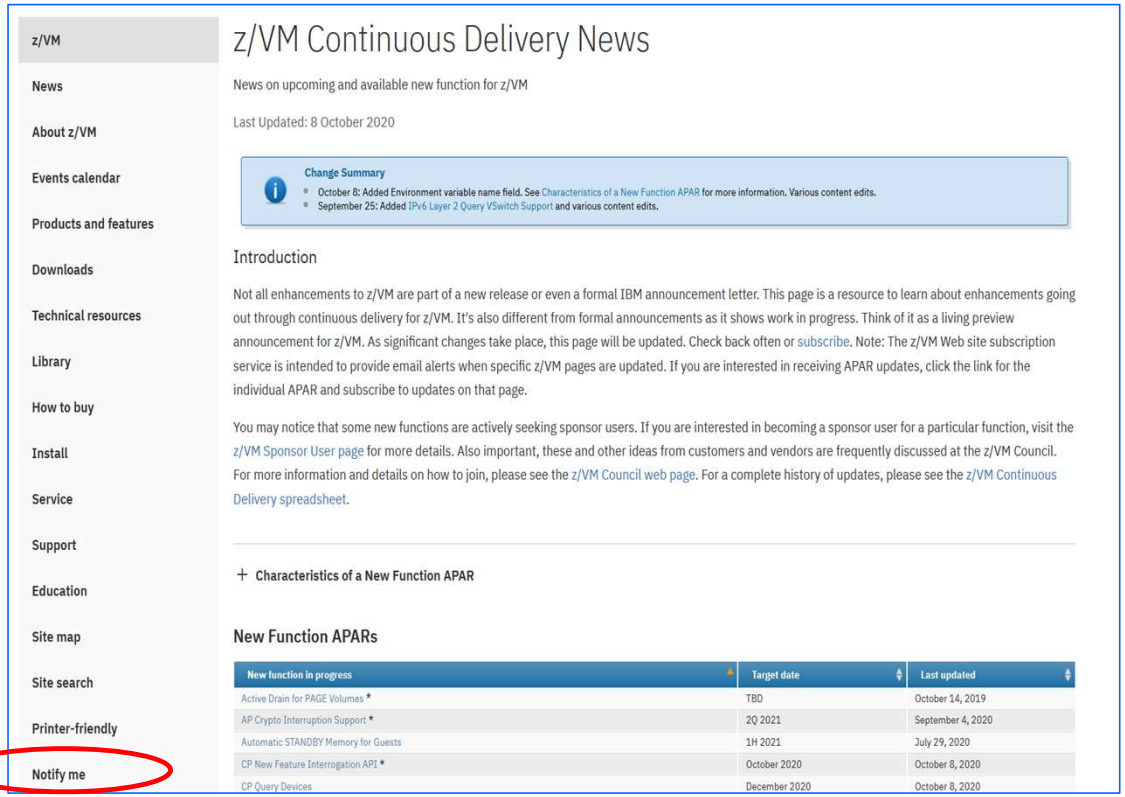
z/VM Continuous Delivery Page

- Gives an overview of new function that is under consideration. Allows clients to:
  - Express interest in being a sponsor user for an item.
  - Plan for new support coming out in the future.
  - Understand the value, benefit, and impact of new enhancements.
- https://www.vm.ibm.com/newfunction/
- Subscribe for updates via “Notify me” link on left navigation bar.



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z/VM Continuous Delivery Page

- Each item has information as seen in this example.
- The “Target availability” may also be listed as TBD or less granular such as a quarter or month.
- Since this is work in progress, the target availability dates can move multiple times and in different directions.

Encrypted Paging	
Name	Encrypted Paging
Description	Encrypted Paging will improve system security for z/VM 6.4 by exploiting z14 hardware to encrypt guest page data. Ciphering will occur as data moves from active memory onto a paging volume owned by CP (ECKD, SCSI, or native FBA). This will make customer data defensible from attack or breach of volumes, even in cases where a system administrator has unintended access to those volumes.
Status	Available December 11, 2017
Target availability	December 15, 2017
Compatibility	No known incompatibilities.
Enablement	Apply PTFs, re-IPL z/VM, SET ENCRYPT command within CP.
Effect	For the workloads studied, total CPU/tx did not increase more than 5% when compared back to an EP disabled configuration. Compared to a z13, the z14 with EP enabled performed better. As paging rate increases, the total amount of CPU used on EP will increase. Detailed performance report
ISV impact	Some monitor changes are needed. If you have a performance product, please see your vendor.
Linux or hardware interaction	z14 required
Release(s)	z/VM 6.4
Service details	See below for the IBM service information.
APAR	VM65993
PTF	UM35257
RSU	TBD

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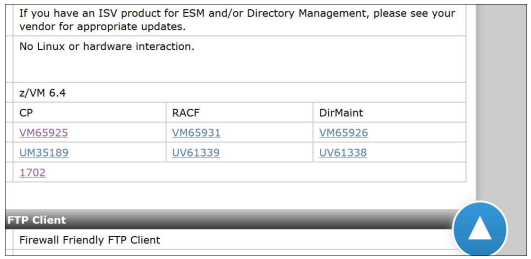
Navigating Continuous Delivery Page

- Near top of page are two tables with hyperlinks and some summary information
  - New function in progress
  - Available new function
- A floating navigation triangle will take you back to the top of the page from any where.



New function in progress	Target date	Last updated
4TB Main Memory Support *	TBD	May 29, 2018
80 Logical Processor Support	July 2019	June 5, 2019
Active Drain for PAGE Volumes *	TBD	April 23, 2019
Automatic STANDBY Memory for Guests *	4Q 2019	April 23, 2019
Centralized Service Management	3Q 2020	February 20, 2019
CPU Measurement Facility Host Sampler Exploitation	TBD	May 13, 2019
Dynamic Crypto	3Q 2019	May 13, 2019
Dynamic Memory Downgrade	TBD	December 11, 2018
EAV Paging	July 2019	June 5, 2019
Fast Minidisk Erase *	3Q 2019	June 5, 2019
Group Memory Limiting *	TBD	July 23, 2018
MSS Multi-Target PPRC Exploitation *	3Q 2020	July 23, 2018
Multifactor Authentication for z/VM *	TBD	April 9, 2018
SSI Eight Member Clusters	TBD	June 21, 2018
TLS / SSL Client Certificate Verification *	4Q 2019	December 11, 2018
ZHPM Application *	TBD	March 8, 2018

* Denotes the z/VM team is seeking Sponsor Users. See New Function APAR for more information.

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Focused Value Areas of Enhancements

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Focused Value Areas

- Improved Scaling and TCO
  - More virtual machines in a single z/VM system
  - Lower costs of running a system
- Improved resource management for large diverse workloads
  - Fair and accurate resource control
  - Guest exploitation of IBM Z and LinuxONE hardware
- Enhanced Security
  - Protecting data
  - Policy management
- Improved Resiliency and RAS
  - Scripting and automation frameworks
  - Problem determination
- Improved System Management
  - Including things that make a system programmer happy

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Improved Scaling and TCO

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IBM z15 Models T01 & T02 and LinuxONE III Models LT1 & LT2

- Support availability September 23, 2019 with z/VM 6.4 and z/VM 7.1
  - See https://www.vm.ibm.com/service/vmreqz15.html for details

- z/VM 6.4 and 7.1 PTFs include support for:
  - Synchronous execution support for on-chip data compression
  - Enhanced Vector and Vector packed decimal
  - Crypto Express7S adapter and cryptographic enhancements
  - OSA-Express7S
  - FICON Express16SA adapter

- z/VM 7.1 PTF support for System Recovery Boost
  - General purpose processors running at subcapacity can be boosted to full capacity for a limited time during z/VM system initialization, system shutdown processing, and system abend processing.
  - Primarily benefits z/VSE and z/TPF guest environments

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80 Logical Processor Support

August 2019

- Increases the number of logical processors that z/VM will support to from 64 to 80 logical processors
  - The number of virtual CPUs per individual virtual machine remains at 64

- Benefits:
  - Allows for greater scalability
  - Increases number of cores that SMT-1 can have from 32 to 40

- Requirements
  - z13 and newer processor families for greater than 32 logical processors
  - z14 and newer processor families for greater than 64 logical processors

Component	APAR	PTF	RSU
CP	VM66265	z/VM 7.1 UM35474	2001
Stand Alone Dump	VM66296	z/VM 7.1 UM35499	
Performance Toolkit	VM66292	z/VM 7.1 UM35501	2001

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EAV Paging Support

June 2019

- Support for Extended Address Volumes (EAV) for z/VM paging space.

- Allows use of ECKD (3390) paging volumes to be up to ~812GB with EAV
  - Previous limit was ~45 GB

- Benefits:
  - Can use fewer volumes to meet the page space requirements
  - Increases the total page space possible when using ECKD paging space
  - Will be helpful when increasing the amount of virtual memory used in conjunction with future increases in real memory supported

Component	APAR	PTF	RSU
CP	VM66263	z/VM 7.1 UM35475	1902
CMS (CPFMTXA)	VM66297	z/VM 7.1 UM35483	1902
Performance Toolkit	VM66293	z/VM 7.1 UM35484	1902

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Fast Erase for 3390 Disks

December 2019

- Faster erase utility that can be used by solutions such as DirMaint

- Enhancement to CPFMTXA utility
  - Not considered secure erase

- Performance results showed response time improvement:
  - 10 times over CMS FORMAT
  - 4 times over CPFMTXA FORMAT

Component	APAR	PTF	RSU
CP	VM66288	z/VM 7.1 UM35563	2001
DirMaint	VM65784	z/VM 7.1 UV99356	2001
ICKDSF	PH14249	z/VM 7.1 UI64239	

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4TB Main Memory Support

1H 2021

- Support the definition and use of real memory up to the 4TB line for first level z/VM systems.
- Continue to support over-commitment of total virtual memory.
- Per guest limit of 1 TB of virtual memory would remain unchanged.

Component	APAR	PTF	RSU
CP	TBD	z/VM 7.2 TBD	TBD

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Improved Resource Management of Diverse Workloads

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Virtual Switch Priority Queuing

May 2019

- Introduces multiple priority levels for transmissions on a Virtual Switch
- Allows virtual switch management communication (IVL) to operate at highest priority to ensure better management
- Three optional user priority levels allow:
  - Different SLAs for different groups of guests
  - Combining different priority workloads onto fewer, or a single, VSwitch
  - Eliminating need for separate heartbeat network in some clustering solutions

Component	APAR	PTF	RSU
CP	VM66219	z/VM 7.1 UM35465	1902
TCP/IP	PH04703	z/VM 7.1 UI62768	1902
DirMaint	VM66223	z/VM 7.1 UV99352	1902

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Dynamic Memory Downgrade

1H 2021

- Allows for real memory to be removed from a running z/VM system
- Complements the existing ability to add memory to a system
- Benefits:
  - Add and remove memory for workload shifts and other load balancing
  - Assist in DR scenarios
- Requires z15, LinuxONE III, z14, LinuxONE Emperor II, LinuxONE Rockhopper II, or newer

Component	APAR	PTF	RSU
CP	VM66173	z/VM 7.2 TBD	TBD

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Enhanced Security

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RACF for z/VM 7.1 FixPack 1 – Usability Enhancements

June 2019

#	Description of the functional enhancement
1	Query RACF Database Template Level So sysprog or security admin can determine if a forthcoming APAR will require a database update or RACFCONV.
2	Halt RACFVM initialization when server detects a down-level database More immediate presentation of problem details, to enable sysprog to fix with minimum fuss
3	Remove contradictory information from RACFPERM Correction to bring help text in line with functional behavior.
4	Improve error messages when A-disk can't be written by RAC EXEC Check A-disk accessibility before executing RACF commands, so an environment error isn't mistaken for a security problem.
5	Improve consistency of SETROPTS error messages Addition of warning messages around invalid parameter use.
6	Enable RACFVM to accept SMSG from the current system operator Eliminate assumptions that OPERATOR is always the current OPERATOR
7	Message fixes for ROAUDIT Correction to bring certain RACF messages in-line with functional behavior.

Component	APAR	PTF	RSU
RACF	VM66278	z/VM 7.1 UV99353	1901

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Multifactor Authentication for z/VM

May 2020

Multifactor Authentication support enables a system administrator to logon to the hypervisor with one or several authentication credentials without requiring a traditional password or password phrase

Combination of:

- A newer product (IBM Z Multifactor Authentication) running in a Linux on Z guest
- z/VM with an External Security Manager updates
- TCP/IP communication from ESM to MFA (may require TLS server configuration)
- CP updates (apply the PTF for APAR VM66324)

- https://www.vm.ibm.com/newfunction/#mfa

Component	APAR	PTF	RSU
RACF	VM66338	z/VM 7.1 UV99363	TBD

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z/VM TLS/SSL Certificate Verification

June 2020

- **Client Certificate Authentication -** Allows a server to verify a client by ensuring that the client certificate
  - has been signed by a certificate authority that the server trusts
  - has not expired
  - Default Telnet certificate check change to CLIENTCERTCHECK PREFERRED

- **Host Name Validation -** Allows a client to verify the identity of a server using either
  - Host Name
  - Domain Name
  - Host IP Address

- **New APIs** to allow fields to be extracted from a client or server certificate

Component	APAR	PTF	RSU
TCP/IP	PH18435	z/VM 7.1 UI69975	TBD
CMS	VM66348	z/VM 7.1 UM35651	TBD
LE	VM66349	z/VM 7.1 UM35650	TBD

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CMS Pipelines – SSL Support

June 2020

- Enhance existing CMS applications to use secure TCP/IP connections
  - Using z/VM System SSL to inherit the settings defined
  - Continue to use existing applications and comply with company security policy
- Integrate CMS applications and CMS-based data with cloud-based services
  - Interface with enterprise applications when replaced by web services
  - Exploit new web services for use in CMS applications
- Implicit SSL – application transparent secure “tunnel”
  - Suitable for HTTPS client (including RESTful services)
  - Trivial change to make a pipeline-based client application use SSL
- Explicit SSL – application protocol determined SSL (aka STARTTLS) *
  - Suitable for FTP and LDAP with secure connections
- New built-in stage to exchange data through FTP with secure connection *
  - Read file from FTP server into the pipeline for further processing
  - Write the data from the pipeline into a file on an FTP server

* Extra deliverables because of sponsor user feedback

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CMS Pipelines – SSL Support

June 2020

- Upward compatible enhancements to
  - `tcpclient` stage
  - `tcpdata` stage

- Possible Use Cases
  - store CMS data in cloud databases
  - post messages in a Slack channel
  - manage CMS files with GitHub
  - get data from Internet to use in CMS

Component	APAR	PTF	RSU
CMS	VM66365	z/VM 7.1 UM35658	TBD

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TLS / SSL OCSP Support

December 2020

- Peer certificate cross-checking against external source
  - OCSP (Online Certificate Status Protocol)
  - CDP (CRL Distribution Points)
    - CRL (Certificate Revocation List)

- Cross-checking mechanisms imbedded as part of z/VM System SSL Cryptographic Library

- Enhances security by verifying that a client certificate has not been revoked.

Component	APAR	PTF	RSU
TCP/IP	PH28216	z/VM 7.2 TBD	TBD

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Improved Resiliency and RAS

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Dynamic Crypto

September 2019

- Enables dynamic changes to AP Cryptographic environments
  - Addition and removal of crypto hardware
  - Maintenance and repair when needed
  - Less disruption to the z/VM guests

- Additional information via QUERY commands

Component	APAR	PTF	RSU
CP	VM66266[2]	z/VM 7.1 UM35531	2001
CP[1]	VM66206	z/VM 6.4 UM35448 z/VM 7.1 UM35449	TBD 1902

[1] – This PTF needs to be on all members in an SSI cluster regardless of whether the dynamic crypto PTF is on that member.
[2] – There is additional service beyond this, that you will want to have.

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MSS MT PPRC Support for GDPS Environment

z/VM 7.2 Base

- Multiple Subchannel Set (MSS) Multi-Target Peer-To-Peer Remote Copy (MT PPRC) support for the GDPS environment
  - Disk device can be the primary for up to three secondary devices in each of three alternate subchannel sets.
  - ACTIVE Configuration – devices currently in use by z/VM
  - STANDBY Configuration – devices not in the ACTIVE configuration

- Device addressing of STANDBY configuration is done by subchannel number (0-3) prefix of device number
  - Subset of commands now present five digit device numbers
  - Independent of whether MSS MT PPRC is being exploited
  - Examples:
    - QUERY 2793

      Old response: `DASD 2793 CP SYSTEM FR2793 1`

      New response: `DASD 2793 CP SYSTEM FR2793 1`
    - QUERY 22793

      New response: `DASD 22793 CP SYSTEM FR2793 1`

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DirMaint Health Checker

December 2020

- Automated set of procedures to validate the configuration and health of the DirMaint servers daily and/or on demand.

- May specify:
  - Who to contact with results of the tests
  - What level of results causes results to be sent (any warning or only significant warnings)
  - Which tests to run and on which DirMaint servers

- Avoids configuration errors that could cause larger problems or affect availability of certain tasks

Component	APAR	PTF	RSU
DirMaint	VM66175	z/VM 7.2 UV99389	TBD

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FlashCopy Preserve Mirror Support

October 2020

- New operands to the **FLASHCOPY** command to allow relationships between PPRC primary devices without affecting the PPRC status of the target devices.
  - Avoids PPRC suspend conditions on the target device of a FlashCopy

- An exception to the rule with PTFs for both 7.1 and 7.2

Component	APAR	PTF	RSU
CP	VM66433	z/VM 7.1 UM35762 z/VM 7.2 UM35780	TBD TBD

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Improved System Management

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Centralized Service Management

z/VM 7.2 Base

- Deploy service to multiple z/VM systems
  - A centralized primary location
    - Manages distinct levels of service
    - The “Principal” system
  - Remote traditional z/VM systems
    - Transfer data over TCP/IP
    - Different remote systems can have different levels

- For non-SSI environments
  - SSI already provides centralized management within the SSI cluster

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CP New Function Indication API

October 2020

- Provides an interface for interrogating characteristics about new CP-related function in a running z/VM system
  - Utilizes CP Environment Variables and the **QUERY VARIABLE** command (Class G)
  - Allows for scripting by customer and ISV for automation for new function, or the lack of new function
  - See https://www.vm.ibm.com/newfunction/varlist.html for a reference list of the new variables.

Component	APAR	PTF	RSU
CP	VM66439	z/VM 7.2 UM35761	TBD

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CP Query Devices

December 2020

- Adds the **DEVICES** subcommand to the **CP QUERY** command
  - Reports real device settings established by the **DEVICES** configuration statement and the **SET DEVICES** command.

- Allows clients to confirm settings.

Component	APAR	PTF	RSU
CP	VM66469	z/VM 7.2 UM35797	TBD

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Guest 1-End HyperPAV Aliases

December 2020

- Allows clients to use the **DEFINE HYPERPAVALIAS** command to configure HyperPAV Alias devices with Base minidisks define with MDISK directory statement from real cylinder 1 to END.

- Allows the performance benefit of HyperPAV and management benefits of minidisks

Component	APAR	PTF	RSU
CP	VM66421	z/VM 7.2 UM35784	TBD

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Performance Toolkit SMT Support

December 2020

- Additional reports and information will be added to Performance Toolkit on the use of Simultaneous Multi-Threading (SMT)

- Various new reports to allow one to see
  - Thread related SMT metrics
  - Various views of processor time (raw, MT-1 equivalent, prorated core)

Component	APAR	PTF	RSU
Performance Toolkit	VM66215	z/VM 7.2 UM35495	TBD

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Automatic Standby Memory for Guests

1H 2021

- Allow for easier management of virtual machine memory
  - When the maximum memory of a virtual machine is increased, no longer need to issue a new DEFINE STORAGE command in order to increase “Standby” memory

- Does require new option on the original DEFINE STORAGE command

Component	APAR	PTF	RSU
CP	VM66173	z/VM 7.2 TBD	TBD

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Identify Previous Service Included in z/VM 7.2

- In general, all service for z/VM 7.1 is included in the z/VM 7.2 base product
  - Due to processing time requirements, a few PTFs released just prior to z/VM 7.2 General Availability could not be included in the base

- z/VM CP and CMS APARs Released Between 7.1 GA and 7.2 GA
  - Tables listing APARs that are
    - Included in the z/VM 7.2 base
    - Not included in the z/VM 7.2 base
    - Required for specific z/VM 7.2 function

- CP4ZVM72 tool in z/VM Download library
  - Run on your z/VM 7.1 system to create a report that identifies CP APARs:
    - On your z/VM 7.1 system that are already in the base of 7.2
    - On your z/VM 7.1 system that are not in the base of 7.2
    - In the base of z/VM 7.2 that you do not have on z/VM 7.1

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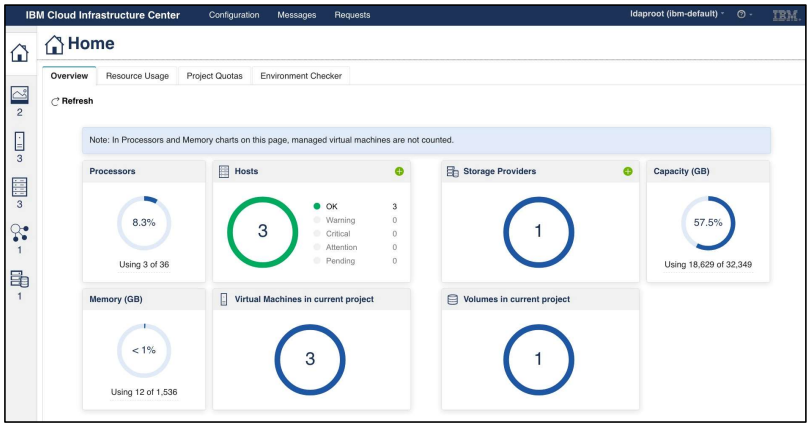
IBM Cloud Infrastructure Center

A new IBM Z and LinuxONE on premises software offering

Empower how you deploy and manage Infrastructure as a Service (IaaS).



- Product page at ibm.com
- Documentation at IBM Knowledge Center
- Shopz ("Linux on z-Standalone products" catalog)
- Request a Demo
- Announcement (10/2020), Announcement (04/2020), Announcement (12/2019)

Comprehensive cloud management

Improves administrator productivity and simplifies the lifecycle management of Linux virtual machines and related resource on IBM Z and LinuxONE

Software-defined infrastructure

Infrastructure mgmt of z/VM and Red Hat Enterprise Linux KVM based virtual machines for compute, network, and storage resources

Integration with multicloud automation tooling

VMware vRealize Automation/Orchestration can consume Cloud Infrastructure Center via OpenStack compatible RESTful APIs to connect, provision, orchestrate Linux-based virtual machine instances for Z and LinuxONE

Contact:

Stev Glodowski - Cloud Infrastructure Center, Lead Offering Manager
stev.glodowski@de.ibm.com

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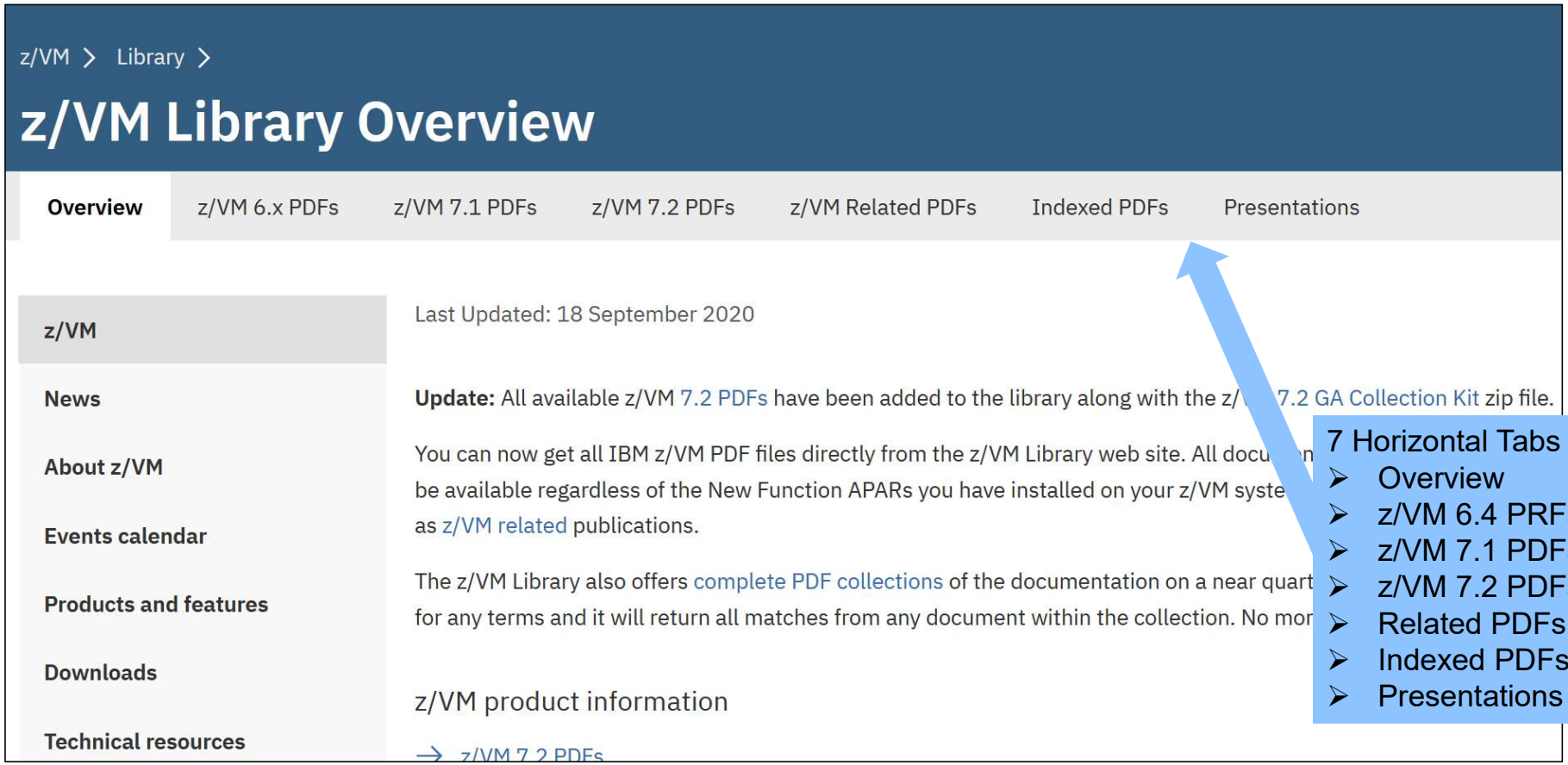
z/VM Library Web Page Updates - https://www.vm.ibm.com/library/



7 Horizontal Tabs
- Overview
- z/VM 6.4 PRFs
- z/VM 7.1 PDFs
- z/VM 7.2 PDFs
- Related PDFs
- Indexed PDFs
- Presentations

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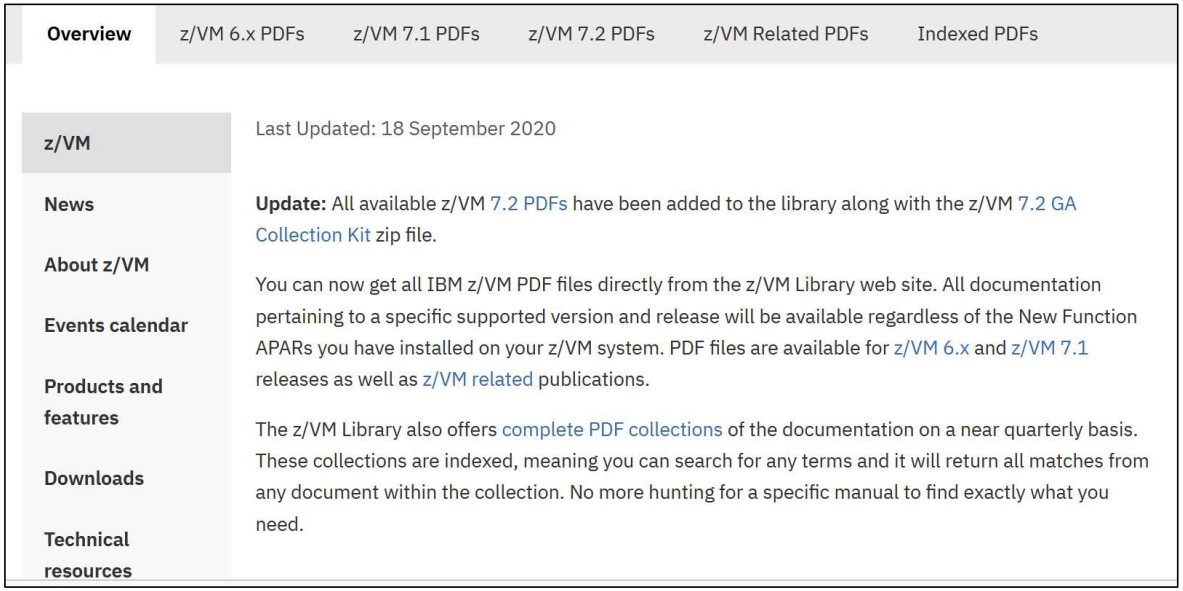
z/VM Library Web Page Updates - Overview

- Includes following categories of links:
  - z/VM product information
    - Knowledge Center links
  - Linux on IBM Z documentation
  - White papers, consultant results, performance reports
  - Data sheets, brochures
  - Reference guides



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z/VM Library Web Page Updates – z/VM PDF Files

z/VM 7.1 PDF files

Overview | z/VM 6.x PDFs | **z/VM 7.1 PDFs** | z/VM Related PDFs | Indexed PDFs

Designed based on sponsor user feedback.

- z/VM
- News
- About z/VM
- Events calendar
- Products and features
- Downloads
- Technical resources
- Library

Last Updated: 10 December 2018

Update: Revised publications are now available for newly released December 2018 z/VM 7.1 New Function APARs.

The table below contains the documentation for z/VM 7.1 in PDF format. The table can be sorted by the column headers or you can filter the results in the table by using the input box below.

Filter:

Category	Title	Order #	Latest Content	Last Update
Application Programming	z/VM: Language Environment User's Guide	SC24-6293-00	7.1 - 2018 3Q GA	September 2018
Application Programming	z/VM: CMS Application Development Guide	SC24-6256-00	7.1 - 2018 3Q GA	September 2018
Application Programming	z/VM: CMS Callable Services Reference	SC24-6259-00	7.1 - 2018 3Q GA	September 2018

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z/VM Library Web Page Updates – z/VM PDF Files

z/VM 7.1 PDF files

Overview | z/VM 6.x PDFs | **z/VM 7.1 PDFs** | z/VM Related PDFs | Indexed PDFs

- z/VM
- News
- About z/VM
- Events calendar
- Products and features
- Downloads
- Technical resources
- Library

Last Updated: 10 December 2018

Update: Revised publications are now available for new

The table below contains the documentation for z/VM 7
filter the results in the table by using the input box belo

- Includes all editions of books
- Sort on columns
- View in browser
- Download with meaningful name (e.g. zVM 710 CP Planning and Administration SC24-6271-00.pdf)
- Filter ability

Filter:

Category	Title	Order #	Latest Content	Last Update
Application Programming	z/VM: Language Environment User's Guide	SC24-6293-00	7.1 - 2018 3Q GA	September 2018
Application Programming	z/VM: CMS Application Development Guide	SC24-6256-00	7.1 - 2018 3Q GA	September 2018
Application Programming	z/VM: CMS Callable Services Reference	SC24-6259-00	7.1 - 2018 3Q GA	September 2018

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z/VM Library Web Page Updates – z/VM PDF Files

Filter on any text in the table

Filter: Performance

Category	Title	Order #	Latest Content	Last Update
Customization and Tuning	z/VM: Performance	SC24-6301-00	7.1 - 2018 3Q GA	September 2018
Customization and Tuning	z/VM: Performance	SC24-6301-01	7.1 - 2018 4Q NFA	December 2018
PerfKit for z/VM	z/VM: Performance Toolkit Reference	SC24-6303-00	7.1 - 2018 3Q GA	September 2018
PerfKit for z/VM	z/VM: Performance Toolkit Guide	SC24-6302-00	7.1 - 2018 3Q GA	September 2018

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z/VM Library Web Page Updates – Indexed PDF Files

z/VM 7.1 PDFs | z/VM Related PDFs | **Indexed PDFs**

1. Download the zip file and extract to a folder.
2. Open the "Open Me First File"

+ **Instructions on how to use the indexed PDF collection**

Filename	Description	Size (MB)	Latest Content
2019 1Q zVM710 Collection.zip	**z/VM 7.1 2019 1Q indexed PDF collection** - This collection includes all z/VM 7.1 and related publications including any changes to publications as part of the New Function APARs released in 4th Quarter 2018. New Function APARs in this collection include: • Support for the IBM Adapter for NVMe (APAR: VM66180) • Elliptic Curve Cryptography (APAR: PI99184) • Query RSCS service level (APAR: VM66174)	344.9	7.1 - 2018 4Q NFA
2018 3Q zVM710 GA Collection.zip	**z/VM 7.1 2018 3Q GA indexed PDF collection** - This collection includes all z/VM 7.1 and related publications that were published when the version became generally availabile (GA). z/VM 7.1 includes all previously released New Function APARs.	345.7	7.1 - 2018 3Q GA

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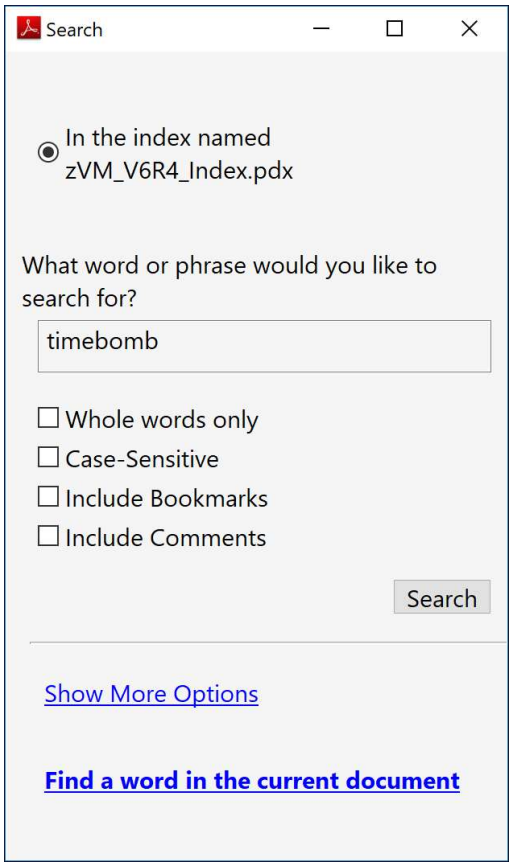
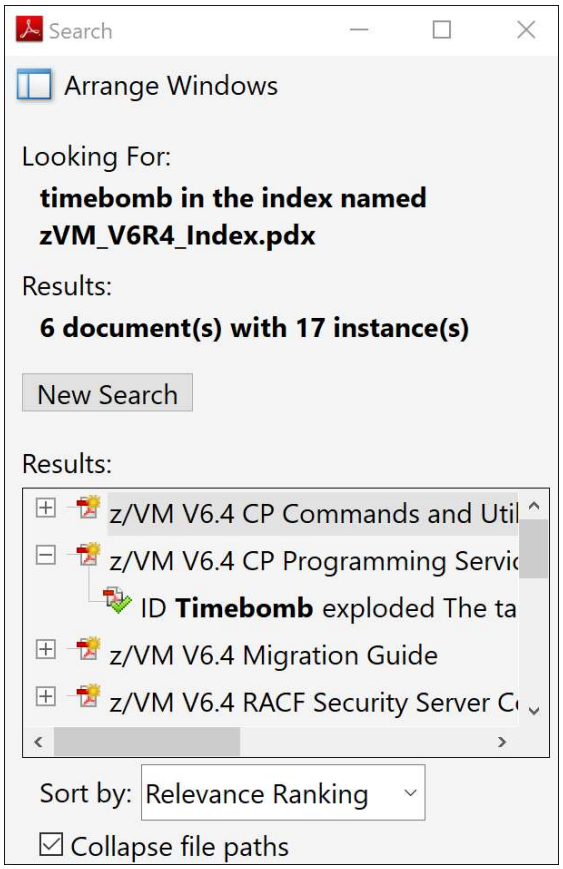
z/VM Adobe Indexed PDF Collection

- Opening the .PDX file allows searching entire z/VM Library





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Other Highlights

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Anonymous FTP to Testcase Gone

- October 5, 2020
  - IBM no longer allows anonymous FTP to site testcase.boulder.ibm.com

- Will need the following for authentication
  - IBM id
  - IBM Support File Transfer ID

- See https://www.vm.ibm.com/service/vmgdpr.html for more details.

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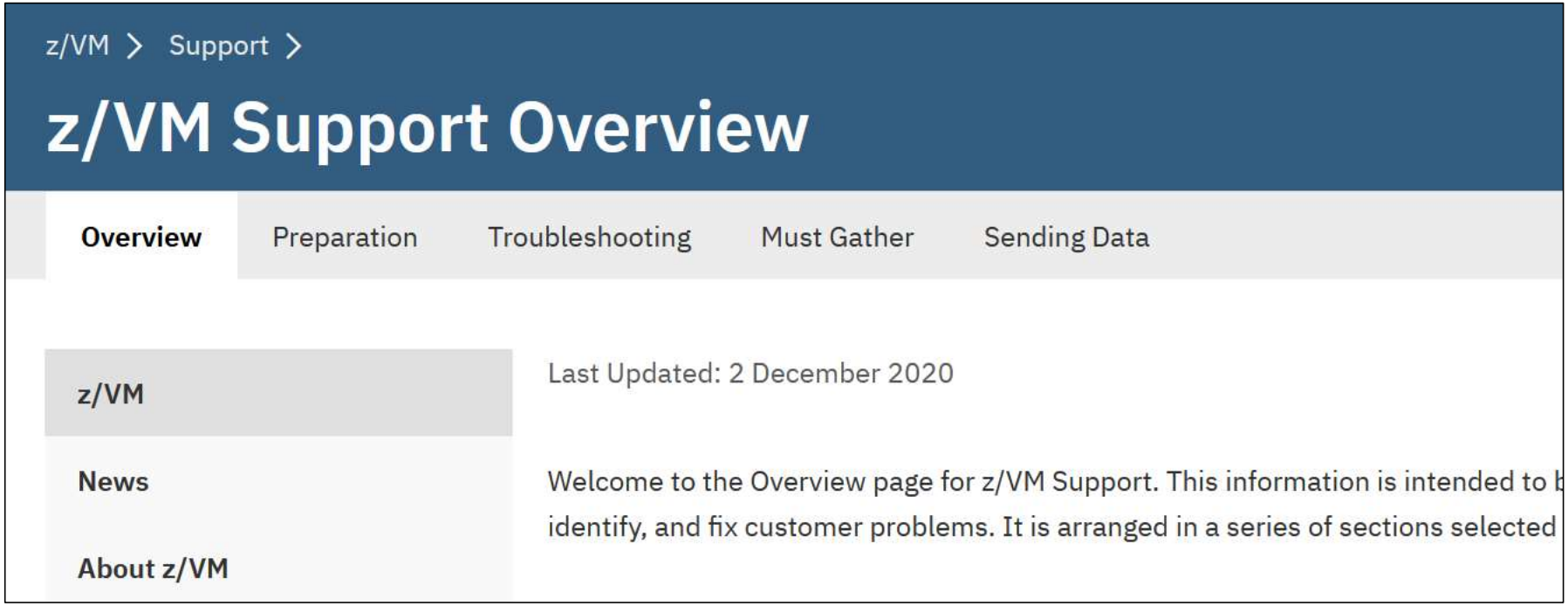
z/VM Must Gather Web Site

- https://www.vm.ibm.com/support/



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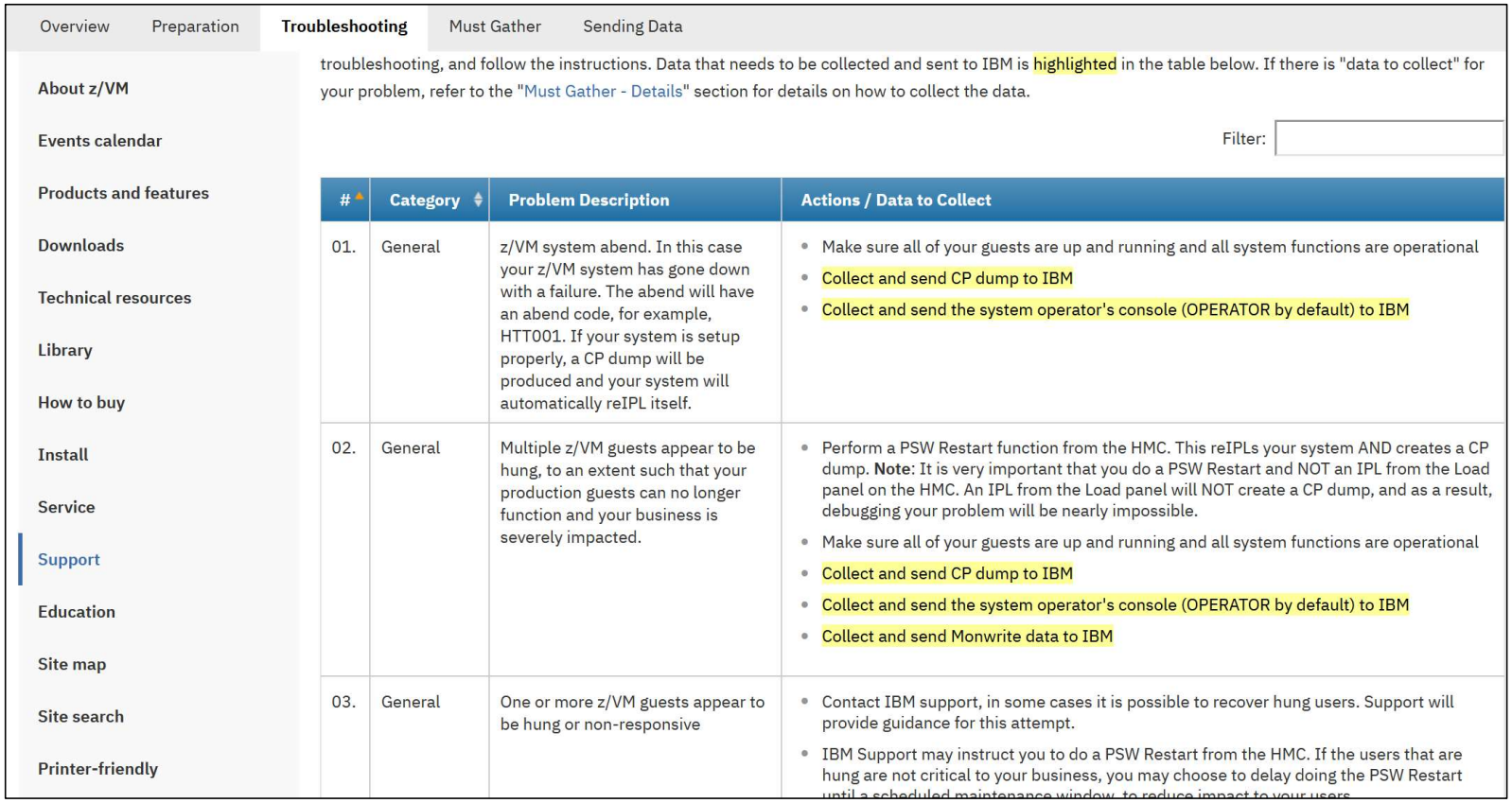
Troubleshooting Page



Overview | Preparation | **Troubleshooting** | Must Gather | Sending Data

- About z/VM
- Events calendar
- Products and features
- Downloads
- Technical resources
- Library
- How to buy
- Install
- Service
- Support
- Education
- Site map
- Site search
- Printer-friendly

troubleshooting, and follow the instructions. Data that needs to be collected and sent to IBM is highlighted in the table below. If there is "data to collect" for your problem, refer to the "Must Gather - Details" section for details on how to collect the data.

Filter:

#	Category	Problem Description	Actions / Data to Collect
01.	General	z/VM system abend. In this case your z/VM system has gone down with a failure. The abend will have an abend code, for example, HTT001. If your system is setup properly, a CP dump will be produced and your system will automatically reIPL itself.	• Make sure all of your guests are up and running and all system functions are operational • Collect and send CP dump to IBM • Collect and send the system operator's console (OPERATOR by default) to IBM
02.	General	Multiple z/VM guests appear to be hung, to an extent such that your production guests can no longer function and your business is severely impacted.	• Perform a PSW Restart function from the HMC. This reIPLs your system AND creates a CP dump. **Note**: It is very important that you do a PSW Restart and NOT an IPL from the Load panel on the HMC. An IPL from the Load panel will NOT create a CP dump, and as a result, debugging your problem will be nearly impossible. • Make sure all of your guests are up and running and all system functions are operational • Collect and send CP dump to IBM • Collect and send the system operator's console (OPERATOR by default) to IBM • Collect and send Monwrite data to IBM
03.	General	One or more z/VM guests appear to be hung or non-responsive	• Contact IBM support, in some cases it is possible to recover hung users. Support will provide guidance for this attempt. • IBM Support may instruct you to do a PSW Restart from the HMC. If the users that are hung are not critical to your business, you may choose to delay doing the PSW Restart until a scheduled maintenance window, to reduce impact to your users.

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Become a z/VM Sponsor User

- Look for items that interest you and you'd work to make a reality with IBM
  - New web page to subscribe to:
    - https://www.vm.ibm.com/newfunction/
  - Request For Enhancements (RFE) that you submit
  - Other dialogues with IBM

- Express interest in being a sponsor user for an item
  - Link on the continuous delivery page
  - Email to Kerry Wilson (kerryw@us.ibm.com)
  - https://www.vm.ibm.com/sponsor_user/

- Requirements
  - Program is free
  - Must have an IBMID
  - Must sign Feedback Program Agreement (FPA)
  - Commit to work with IBM on the candidate items

"I helped build z/VM"
- Sponsor User

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Sponsor Users Wanted:

Specifically looking for sponsor users for:

- Active Drain for Page Volumes
- AP Crypto Interruption Support
- EDEVICE Path Management
- Fast z/VM Dump Distiller
- Guest 1-End HyperPAV Aliases
- Mixed-APVIRT Live Guest Relocation
- z/XC Architecture Support
- z/VM Education / Videos

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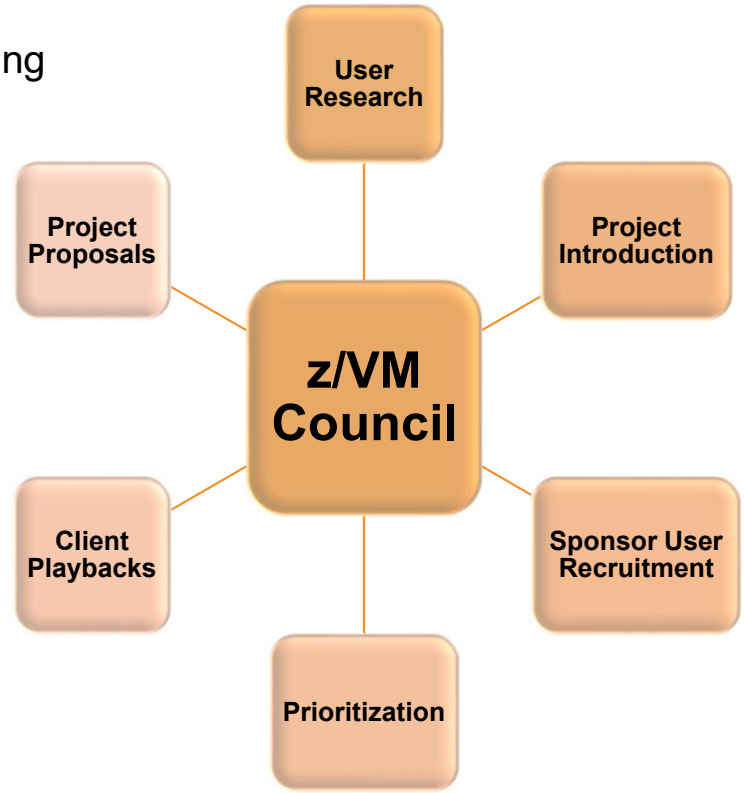
z/VM Council – Client Communication and Collaboration

- z/VM-centric community started in June 2018
  - Meeting about once a month via telephone and web conferencing
  - Other collaboration done via membership web site

- Membership Requirements
  - IBM Z Feedback Program Agreement (FPA)
  - Regular participation
  - Sponsor User for at least one project per year
  - Homework assignments

- Additional details:
  - http://www.vm.ibm.com/sponsor_user/zvm_council.html
  - Contact: Kerry Wilson – kerryw@us.ibm.com



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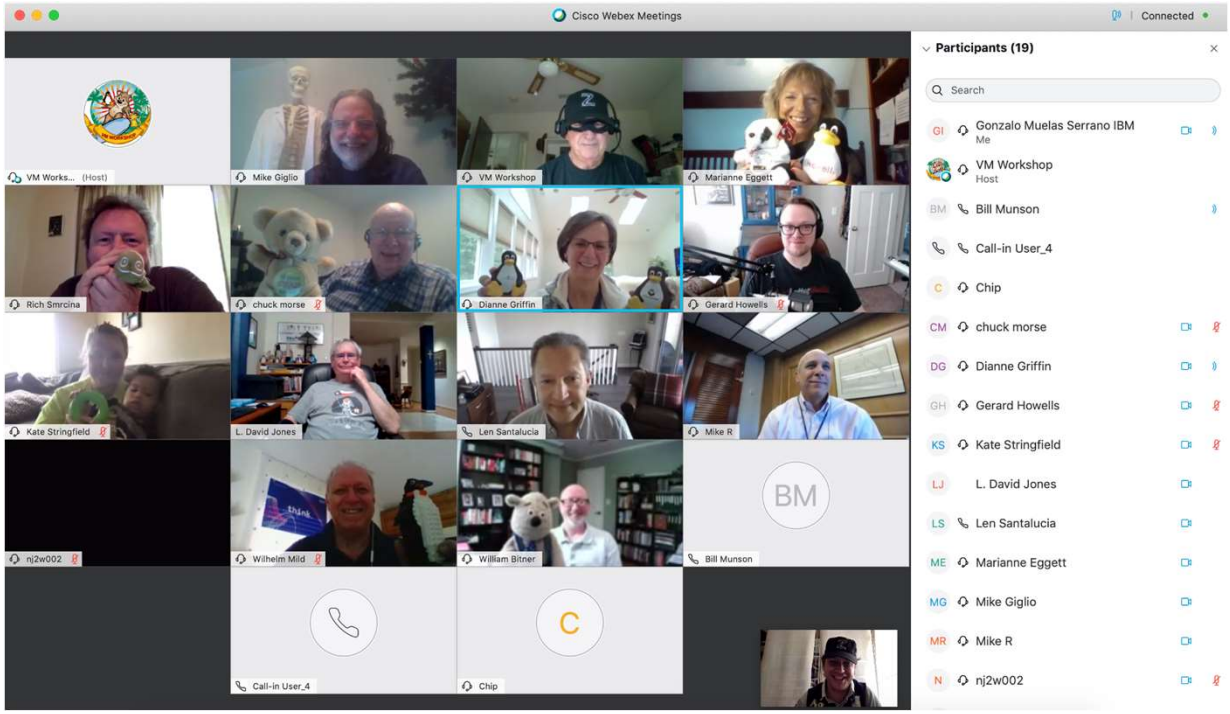
VM Workshop

- Online event was June 16-19
- Presentations PDFs available at http://www.vmworkshop.org/2020pres.shtml
- Recordings available on YouTube Channel: http://ibm.biz/vmworkshopyoutube
- 2021 Event
  - June 10th to 12th
  - Ohio State University



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z/VM Related Statements of Direction

- Subset of IBM Statements of General Direction that are most important to the z/VM environment. See announcement materials for additional statements.
- Subject to change or withdrawal without notice, representing IBM goals and objectives only.

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Removal of RACF for z/VM support for RACF database sharing between z/VM and z/OS

April 14, 2020 Announcement

Removal of RACF for z/VM support for RACF database sharing between z/VM and z/OS

z/VM V7.2 is intended to be the last z/VM release to support sharing RACF databases between z/VM and z/OS systems. While databases may remain compatible, sharing between operating systems is discouraged due to the distinct security and administration requirements of different platforms. A future z/VM release will be updated to detect whether a database is flagged as a z/OS database and reject its use if so marked. Sharing of databases between z/VM systems, whether in a Single System Image cluster or in stand-alone z/VM systems, is not affected by this statement.

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Summary

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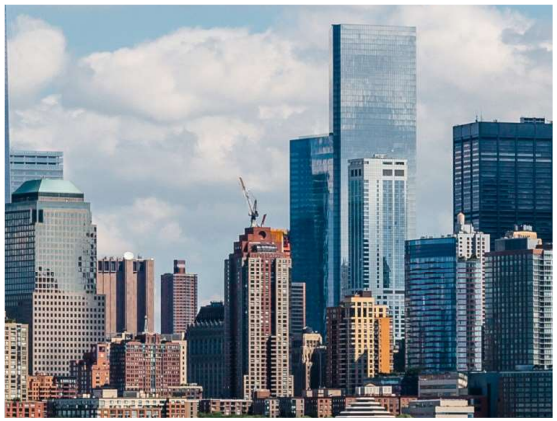
z/VM – Expanding the Horizon



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z/VM – Expanding the Horizon

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