

z/VM Platform Update: Efficiency at Scale

Frederik Hartmann z/VM Development frederik.hartmann@de.ibm.com





Agenda

- Summary of current releases and cadence
- Preview of z/VM 7.4
 Linear Service Model
- Overview of z/VM Version 7 Release 3
- Survey of recent Continuous Delivery enhancements in various focus areas
 - Scaling and TCO
 - Managing diverse workloads
 - -Security
 - -Resiliency and RAS
 - System Management improvements
- Other Highlights and News



z/VM Releases and Cadence

z/VM Release Cycle Cadence

For illustrative purposes, not a commitment.

		20	22			20	23			20	24			20	25			20	26			20	27	
	1Q	2Q	3Q	4Q	1Q	2Q	3 Q	4Q	1Q	2Q	3 Q	4Q	1Q	2Q	3 Q	4Q	1Q	2Q	3 Q	4Q	1Q	2Q	3 Q	4Q
7.2	R					R						R												
	Ν	Ν	SC	SC	SC	SC	SC	SC	WFM	SC	SC	SC	EOS											
7.3			R		R		R		R					R						R				
			GA	Ν	Ν	Ν	Ν	Ν	Ν	Ν	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC			
7.4											R		R		R		R					R		
											GA	SC	Ν	SC	Ν	SC	Ν	SC	SC	SC	SC	SC	SC	SC

— Expected z/VM 7.2 EOS – March 31, 2025

 GA 3rd Quarter of even years
 In service ~ 4.5 years
 New Function every 6 months until GA of next release, and then service, RSU, processor compatibility
 Six RSUs for life of a release, One with GA, next 3 are every 6 months

z/VM Releases

Release	ProdId	GA	EOM	EOS	Notes
z/VM 7.4	5741-A09	3Q2024	TBD	TBD	First release with linear service strategy
z/VM 7.3	5741-A09	Sept 16, 2022	TBD	TBD	
z/VM 7.2	5741-A09	Sept 18, 2020	Mar 4, 2024	Mar 31, 2025	

Release ²	IBN z16 & IBM LinuxONE Emperor IV	IBM z15 & IBM LinuxONE III	IBM z14 & IBM LinuxONE II	IBM z13 & IBM LinuxONE Emperor	IBM z13s & IBM LinuxONE Rockhopper
z/VM 7.4	✓	\checkmark			
z/VM 7.3	✓	\checkmark	~		
z/VM 7.2	✓	\checkmark	✓	✓	√ 3

- 1. z/VM GA every 2 years with in service for ~4.5 years.
- 2. Service may be required for support of various servers.
- 3. The Rockhopper machine type 2828 does not meet ALS requirements and is not supported, but the rest of the IBM LinuxONE machines are.



z/VM Continuous Delivery Page

z/VM

Events

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Downl Techni

Library

How to

Install

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Query SCPI

- 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.

I	Lasi opoaleo. 12 rebruary 2024				
c	z/VM New Function APARs z/VM 6.4 Function	z/VM 7.1 Function	Suspended Projects	Continuous Delivery	
ducts & Solutions ∨ Consu	lting & Services 🏏 Learn & Support 🌱 Explore more 🗸	,		Q	ĉ
ts calendar	z/VM Continuous Delivery News				
ucts and features	Upcoming and available new function for z/VM 7.2 and 7.3	·			_
nloads	Change Summary February 12, 2024: VM Pass-Through ESA Support is no January 26, 2024: Added Added Query SCPID	w available.			
nical resources	Introduction				2
ıry	Not all enhancements to z/VM are part of a new release or	even a formal IBM announcement l	letter. This page is a resource to	o learn about enhancements go	oing
to buy	out through continuous delivery for z/VM. It's also differer announcement for z/VM. As significant changes take place				
all	service is intended to provide email alerts when specific z individual APAR and subscribe to updates on that page.	'VM pages are updated. If you are ir	nterested in receiving APAR upo	dates, click the link for the	
ice	We invite you to shape the future of z/VM by submitting an Portal.	d voting for ideas that matter most	to you with the IBM Z Hardwar	e and Operating Systems Ideas	i.
ort					
ation	You may notice that some new functions are actively seek z/VM Sponsor User page for more details. Also important, For more information and details on how to join, please se	these and other ideas from custome		-	
map					
search	+ Characteristics of a New Function APAR				
er-friendly					
y me	New Function APARs				_
	New function in progress		Target date	Last updated	\$
act z/VM	Active Drain for PAGE Volumes		TBD	August 4, 2022	
	CPU Measurement Facility Host Sampler Exploitation		TBD	September 28, 2022	
	Digital Signature Verification of z/VM Service Packages		1Q 2024	November 17, 2023	

January 26, 202



Filter by: Status
Showing 372 of 3277

Sort by: Trending

z/VM Continuous Enhancements

- Continuous Delivery means continuous improvements
- New function ideas come from many sources, including our clients
- The Ideas Portal is a great way to:
 - Submit the functionality you need
 - Vote on other suggestions
 - Get latest status on what our team is considering.
- Visit the Ideas Portal today: <u>https://ibm.biz/zvmIdeas</u>

Create new class B command to refresh stored DASD info without VARY OFF/ON the device

z/VM

 VOTE
 At present, for CP to see updated DASD info (like VOLSER, VTOC, etc), a device must be varied off/on to refresh the data. If the disk has been relabeled by a guest using full-pack minidisk, then the guest sees different information than a user wit...

 Image: Comparison of the comparison

- As z/VM RACF is not sharing with z/OS anymore we need a z/VM face on RACF, remove irrelevant CLASSes
- - Remove all references to JES on output of RACF commands on z/VM
- VOTE I consider this an incorrout defect. My idea is to remove any references to JES and additional z/OS references that have no bearing on the z/VM product. It is distracting and confusing to me a VM sysprog. As RACF is pulling apart on z/VM from the ... **O** 8 months ago in z/VM PO
 Future consideration
- 7 DIRMAINT EXTENT CONTROL statements need to check with RACFVM for authorization with SECLABEL Mandatory Access Control

We require DIRMAINT to respect RACF SECLABELS for DASD devices when working with MDISKs. Our directory and storage management is provided through DIRMAINT. DIRMAINT'S EXTENT CONTROL is the single source of storage definitions. We need to have DIRM...

R months ago in z/VM □ 1
 Not under consideration



New to z/VM?

- Welcome new people to the z/VM Community
- Some resources beyond this presentation:
 - The z/VM 7.3 Library Page https://www.vm.ibm.com/library/730pdfs.html
 - The z/VM Presentations Page https://www.vm.ibm.com/library/presentations/index.html
 - -The z/VM Ideas Portal https://ibm.biz/zvmIdeas
 - The IBMVM Mailing List, see <u>https://www.vm.ibm.com/techinfo/listserv.html#Section_0.1</u> for details on subscribing.
 - -The z/VM related events calendar https://www.vm.ibm.com/events/
 - -z/VM Education Overview and Roadmaps https://www.vm.ibm.com/education/
 - -z/VM Playlist on YouTube <u>https://ibm.biz/zvmhowto-yt</u>
 - MVMUA (Metropolitan VM Users Association) http://www.mvmua.org/
 - -The VM Workshop
 - Webpage <u>http://www.vmworkshop.org/</u>
 - YouTube Channel <u>https://ibm.biz/vmworkshopyoutube</u>





z/VM Version 7 Release 4 Preview



z/VM 7.4 – At a Glance

- Preview announce February 6, 2024
 - Planned availability 3Q 2024

-<u>https://www.ibm.com/docs/en/zvm/7.3?topic=2024-zvm-74-preview-announcement</u>

- Architecture Level Set of IBM z15 and IBM LinuxONE III or newer processor families
- New service strategy implementing a Linear Service Model
- New function delivered in the z/VM 7.3 service stream using the Continuous Delivery model, including:
 - -z/VM Performance Data Pump
 - Reduced guest logoff time
 - Support for 2TB guest memory
 - -Secure guest IPL
 - New security compliance interface
 - Digital Signature Verification of service
 - Ease-of-use enhancements for z/VM system programmers

z/VM 7.4 – Removal of Obsolete Crypto Support

- Removal of support for obsolete crypto operands in the user directory
 - CRYPTO operand on the CPU statement
 - -CSU, KEYENTRY, MODIFY, and SPECIAL operands on the CRYPTO statement
- Above must be removed from the directory prior to:
 - Running the z/VM 7.4 DIRECTXA MODULE
 - IPLing z/VM 7.4
 - -Any DirMaint directory updates

• CRYPTO and NOCRYPTO operands are not allowed with CPU operation of Diagnose x'84'





z/VM 7.4 – Packaging Changes

- DVD-R is no longer a supported System Image distribution media (satisfies Statement of Direction)
- **TCPIP** user directory entry will IPL 990 (ZCMS)
- Removal of option to use the default password during installation
- Installation support for **DATAPUMP** user ID
- Integration of HCD into CP base
- Hash value is added to DVDIMAGE file for each file on each DVD/ZIP
- Installation password for **DIRMAINT** userid is changed from AUTOONLY to LOGONBY
- Removal of the RLDSAVE option from the \$PPF file used to build the CPLOAD MODULE



z/VM 7.4 – EREP Removal

- EREP has announced
 - Withdrawal from Marketing May 6, 2024
 - End of Service February 28, 2025
- EREP product executables are bundled in z/VM 7.3
 - Executables will no longer be available in z/VM 7.4
- RECORDING function defaults will likely change in z/VM 7.4



z/VM 7.4 Linear Service Model



How does z/VM deliver service today?

- z/VM ships all service as APARs
 - Corrective Service APARs
 - -New Function APARs
- Recommended Service Upgrade are released regularly containing a selection of APARs with pre-applied PTFs for the core z/VM components (CP, RACF, TCPIP, ...)
- Corrective Service APARs contain the fix for a single issue and only has the minimum pre-requisites such as file intersections or logical pre-requisites
- Challenges with the current service process
 - Time consuming and challenging process of selecting service to be applied
 - Problematic to compare service levels of z/VM Systems or check if a system is current on service
 - -Huge New Function APARs create extensive APAR drag, leading to an "Illusion of Choice"
 - Huge number of valid configurations, creating service and validation challenges

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What is linear service?

- z/VM will continue to ship all service as APARs
 - -Hot Fix APAR
 - Fix Pack APAR
 - -Feature Pack APAR
 - Hardware Support APAR
- All APARs will have a pre-requisite against the APAR that was released last in its component
- A **Hot Fix APAR** will contain a critical fix or a security issue that must be released immediately due to its critical nature or the severity of the security exposure
- Fix Pack APARs will be released on a regular cadence, containing all available fixes since the last released Fix Pack
- Feature Pack APARs will be released every 6 months, containing new features
- Hardware Support APARs will be released in support of new hardware and provide the necessary hardware toleration or exploitation
- Recommended Service Upgrades (RSUs) will be released shortly before a Feature Pack and will contain all available APARs pre-applied for the core components

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z/VM Version 7 Release 3 Overview



z/VM 7.3 - At a Glance

- GA September 16, 2022
 - See <u>https://www.vm.ibm.com/zvm730/</u> for more details
- Architecture Level Set of IBM z14 and IBM LinuxONE II or newer processor families
- Includes all new function service shipped for z/VM 7.2 including:
 - –4 TB Real Memory
 - Dynamic Memory Downgrade
 - -Improved LGR for Shared Crypto
 - -z/Architecture Extended Configuration (z/XC) support
 - Direct to Host Service Download



New with z/VM 7.3

- Eight-Member SSI support
- NVMe EDEVICE support
- 4-character time zone identifier support
- External Security Manager (ESM) Control of Define MDISK Command
- Centralized Service Management (CSM) Usability Enhancements
- Default changes for the interest of
 - -Security
 - Performance
 - Dropping function no longer needed
- Synergy for New Function APARs

– Changing defaults at a release boundary rather than in service stream

z/VM 7.3 - Related Statements of Direction

- IBM intends z/VM 7.3 to be the last release to provide TCP/IP support for the LAN Channel Station (LCS) device driver
- The release after z/VM 7.3 will continue to support ESA/390 CMS as the default (previous statement of direction was that z/VM 7.3 would be the last to support ESA/390 CMS as the default).
- IBM has no plans to include support for ProxyArp with any z/VM TCP/IP device drivers developed in the future
- IBM intends to remove DVD as a medium to receive an order for the z/VM product or z/VM service in a future z/VM release.

– Satisfied in z/VM 7.4

z/VM 7.3 - Related Statements of Direction (continued)

- z/VM 7.3 is the last z/VM release planned to support the ability to apply service in a selective fashion. A
 future z/VM release intends to implement a linear service model whereby applying one PTF will require all
 previous service for the same component to be installed.
 - Satisfied with Linear Service Model in z/VM 7.4
- IBM intends to change how z/VM service is delivered in a future z/VM release, moving to full-partreplacement files instead of CMS update files. Full-part-replacement files will no longer contain sequence numbers.
- IBM plans to provide the capability to verify digitally signed, electronically delivered z/VM service in a future z/VM deliverable.
 - Satisfied with Continuous Delivery APAR VM66732



Encore: Selected z16 Statements of Directions



Encore: Selected z16 Statements of Directions

- Removal of support of the transactional execution and constrained transactional execution facility: In a future IBM Z hardware system family, the transactional execution and constrained transactional execution facility will no longer be supported. Users of the facility on current servers should always check the facility indications before use.
- Firmware update process: IBM z16 is planned to be the last server family to support IBM service support representatives (SSRs) onsite performing firmware updates without an additional premium service contract. The IBM Z Remote Code Load (RCL) option, which was introduced on IBM z15, is available without an additional premium service contract. With IBM z15, and now IBM z16, clients can request a remote code load or they can choose the SSR onsite method for their firmware update. IBM recommends that clients try the RCL option on IBM z15 or IBM z16 to see for themselves that IBM provides the same quality service through RCL.

Transition to PCIe-based adapters like RoCE Express as the strategic adapter for Linux on IBM Z

In the future, IBM plans to shift from OSA-Express to PCIe-based networking devices like RoCE Express as the target strategic adapter type for IBM Z direct access networking connection to Linux operating systems.

IBM plans to continue to work toward common networking adapters for all operating systems on IBM Z, IBM LinuxONE, and Linux on IBM Z.

...



Focused Value Areas of Enhancements



Focused Value Areas

Scalability

– Improve memory scalability to fully exploit available physical memory

- Simplification
 - Improve defaults for next z/VM release to minimize necessary configuration changes
 - Improve virtual machine définition and share management
- Resiliency
- IO Recovery & Stability Improvements
- Enhanced security

 - Protecting data
 Policy management
- Improved system management
 - Including things that make a system programmer happy





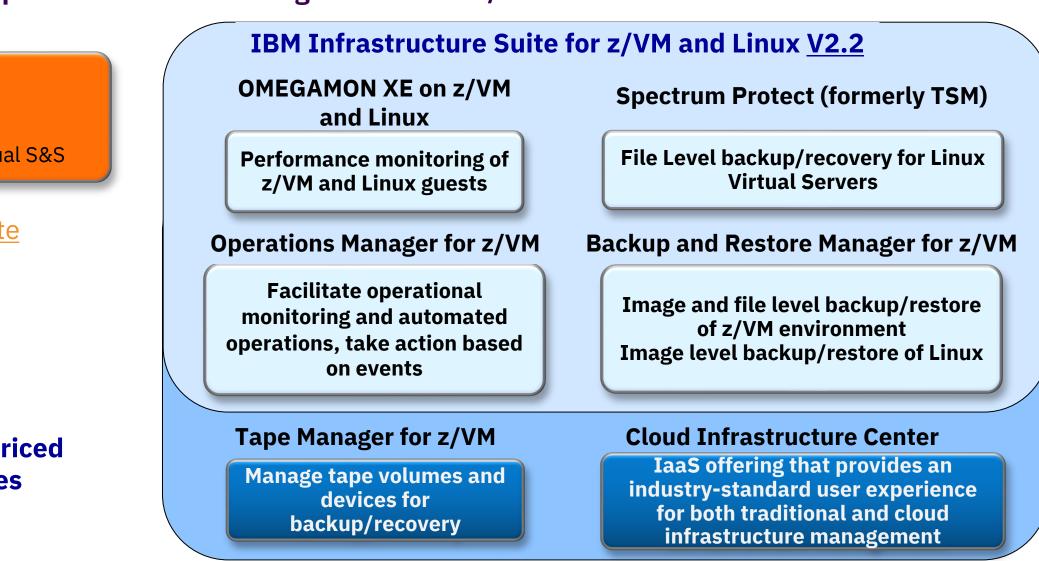
Other Highlights

Complete Solution for management of the z/VM and Linux on IBM Z environment

Single PID 5698-K01 OTC 5698-K02 Annual S&S

Web Site

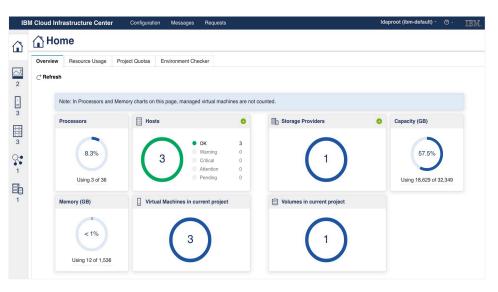
Optional Priced Features



IBM Cloud Infrastructure Center

Scalable IaaS management for containerized and non-containerized workloads across the enterprise

Infrastructu manageme		Auton	nation	Cloud integration			
capture, and mar	Instantiate, define, capture, and manage the lifecycle of virtual machines		rvices' for nated ructure gement	Integrate via compatible OpenStack APIs with cloud management tools			
		Use d	cases				
Simplified experience with virtualization	experience with on-		IaaS managemen for service providers		Deployment of Red Hat OpenShift clusters		
Simplified standard operations	implified Automated tandard deployment		Vendor- agnostic				

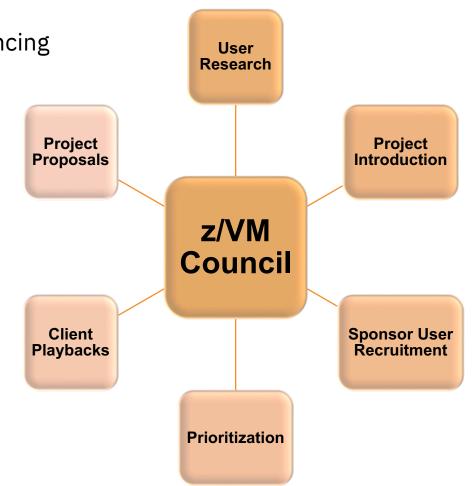


Learn more

- Watch <u>IBM Cloud Infrastructure Center webpage</u>
- Read the technical blogs and announcements
- Check out the technical details at the IBM Documentation
- Get started using the <u>Content solution</u>
- Request a demo from your IBM or BP representative
- Contact: 'Janet' Jia Wu, PM: wujia@cn.ibm.com

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:
 - more information
 - http://www.vm.ibm.com/sponsor_user/zvm_council.html
 - -Link to z/VM community https://ibm.biz/zvmCouncil
 - Contact: Kerry Wilson <u>kerryw@us.ibm.com</u>



z/VM Council – Educational Workgroup

- Workgroup focused on creating educational videos
 - Goal of shortening the time required to become comfortable with z/VM
- Two types of videos planned
 - Pure education
 - -Shorter "How to" videos
- Goal of providing roadmaps for education



z/VM Education Pages

- https://www.vm.ibm.com/education/
- Newly renovated landing page for z/VM education.
- View a tailored list of z/VM education videos based on experience levels via the z/VM Education Roadmaps.
- Access existing z/VM education resources.

z/VM education roadmaps

New z/VM education videos are now available. These videos have been created by the IBM z/VM Development team along with others within the IBM zSystems organization. Videos range from basic introductory courses to more advanced z/VM topics. Several roadmaps have been created for you to find the appropriate level of z/VM education for your role. More videos are being added to the roadmaps on a continuous basis.



More z/VM education resources



z/VM Education Pages

- <u>https://www.vm.ibm.com/ed</u> <u>ucation/</u>
- Easily prioritize the education that matches your need and skill level.
- New videos added regularly

z/VM education roadmap coverage

Reference the table below to find which videos are contained on the various z/VM education roadmaps.

Video Name	z/VM Basic Education Roadmap	New z/VM System Programmer Roadmap	z/VM Advanced Education Roadmap
100 - What is z/VM?	\odot	\odot	×
101 - z/VM Virtualization Basics	\odot	\odot	×
102 - CP and CMS Customization	\odot	\odot	×
103 - Twelve Pillars of System Management	\odot	\odot	×
104 - Introduction to System Administration	\odot	\odot	×
105 - Introduction to CMS Pipelines	\odot	\odot	×
106 - Introduction to RACF	\odot	\odot	×
200 - Rexx Coding Techniques - Part 1	×	\odot	×
201 - Rexx Coding Techniques - Part 2	×	\odot	×
202 - Problem Determination	×	\odot	×
203 - z/VM Virtual Switch (VSwitch): The Basics	×	\odot	×
204 - z/VM Introduction to the Directory Maintenance (DirMaint)	×	\odot	×
300 - What's Going Wrong? LPAR Weights	×	\odot	\odot
301 - z/VM Virtual Switch (VSwitch): Advanced Topics	×	\odot	\odot

z/VM Education Pages

- <u>https://www.vm.ibm.com/ed</u> <u>ucation/</u>
- View video's right from our education webpage, or go directly to Youtube to watch and subscribe.

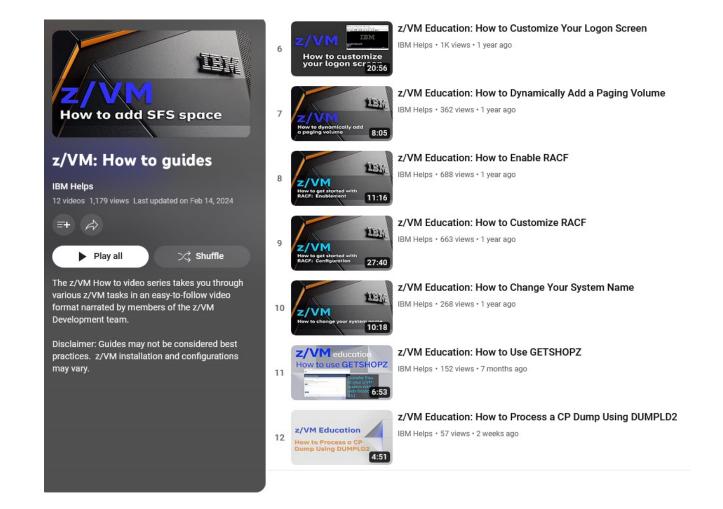
Basic z/VM Knowledge Roadmap

This track assumes you have little or no experience with the IBM mainframe, and your role will only require a basic knowledge of the product. The courses in this roadmap will touch on the basics, but will not include some of the more technical courses intended for z/VM System Programmers.

Examples of this role may include: Architect, Sales, Manager, General Operator

+ Session 100 - What is z/VM?
+ Session 101 - z/VM Virtualization Basics
+ Session 102 - CP and CMS Customization
+ Session 103 - Twelve Pillars of System Management
+ Session 104 - Introduction to System Administration
+ Session 105 - Introduction to CMS Pipelines
+ Session 106 - Introduction to RACF
Youtube: Basic z/VM Knowledge Roadmap playlist

- Short videos that provide guides on different z/VM related tasks.
- Part of the IBM Support and Training YouTube channel.
- Playlist <u>https://ibm.biz/zvmhowto-yt</u>
- Please like and subscribe



Problem Determination - Must Gather Information

There is a new set of web pages at <u>https://www.vm.ibm.com/support/</u>

Overview P	reparation	Troubleshooti	ng Must Gather	Sending Data
z/VM	Last U	Ipdated: 17 Febr	uary 2021	
News	This p	age provides a s	ummary of materials	for you to collect when you have a problem with your z/VM
About z/VM	that n	eeds to be collec	ted and sent to IBM	m you are troubleshooting, and follow the instructions. Dat is highlighted in the table below. If there is "data to collect
Events calendar	for yo	ur problem, refei	to the "Must Gather	- Details" section for details on how to collect the data. Filter:
Products and				
features	# .	Category 🍦	Problem Description	Actions / Data to Collect
Downloads	13.	Performance	z/VM system	z/VM Support may request the data below. Note: Thi
	10.		performance	data should be collected from time periods in which
Technical			problems	the system was performing well, as well as from time periods in which the system was running poorly:
Technical resources				,
				Collect and send MONWRITE data to IBM



Open Mainframe Project – Project Feilong

Project Mission:

Contribute and further develop the RESTful API server that simplifies interaction with the IBM z/VM Hypervisor

Community Benefits:

- Have a strong codebase to use, contribute, and further develop thanks to the IBM contributions to the project
- The RESTful API server makes using z/VM easier especially for developers without deep knowledge of z/VM
- Enable development of self-service Infrastructure-as-a-Service automation of z/VM Guests, networking, and storage used by z/VM.

For more information: <u>https://www.openmainframeproject.org/all-projects/feilong</u>



Open Source – Ansible for z/VM

Project Mission:

Provide a set of ansible modules, roles, and playbooks for managing z/VM via SMAPI and zthin.

Requirements

- z/VM SMAPI
- Directory Manager
- ICIC Compute node or Feilong zthin installed on virtual machine running Linux on Z

For more information: https://github.com/IBM/zvm_ansible



Summary



Summary

- z/VM 7.4 coming later this year
 - Includes all Continuous Delivery enhancements shipped as service in z/VM 7.3
 - New Linear Service Model
- z/VM 7.3 is the current z/VM release

- New function will continue to be delivered with the Continuous Delivery model
 - Heavy dependence on the sponsor user program
 - Plans for new function are published on the z/VM website
 - <u>https://www.vm.ibm.com/newfunction/</u>
- Subscribe to or follow the websites referenced throughout this presentation for the latest news on new function, required service, and more



Thank you!

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