IBM Wave for z/VM continues to deliver simplified operation, user productivity, reduced dependence on expert skills, and less complexity for managing a scalable z/VM infrastructure

Overview

Organizations that want to expand their business by using virtualization technology often find that they are limited by budget, skills, management complexity, and other challenges. With IBM[(R)] Wave for z/VM[(R)] (IBM Wave), IT organizations can unleash the power of z/VM virtualization to help improve productivity, and simplify administration and management to jump start their journey to a highly virtualized private cloud environment by using enterprise-grade Linux[(R)] on IBM Z[(R)] and IBM LinuxONE.

Using a powerful content-rich user interface, IBM Wave:

- Enables IT organizations and service providers to dramatically simplify the control and management of even the most sophisticated virtualized computing environments.
- Helps reduce the cost and skills of managing z/VM and Linux environments on IBM Z and LinuxONE servers.
- Enables IT organizations and service providers to simplify and automate z/VM administration and management by using an intuitive graphical, content-rich interface to manage z/VM and Linux guests.
- Helps perform critical administrative and operational tasks quickly and reduces the possibility of costly errors.

The information-rich user interface in IBM Wave helps simplify the administration of virtual resources, monitor, and manage virtual guests, and provision new virtual servers. IBM Wave can help administrators manage z/VM accounts for systems and guests, which includes user profiles and permission settings, by using a centralized management focal point, and can also help with auditing functions. IBM Wave can reduce the time to execute several typical z/VM tasks by up to 80% on average, compared to manual execution.

While not explicitly following the IBM continuous delivery support model, IBM Wave V1.2 uses a delivery method that provides fixpacks on a regular basis. This model:

- Delivers new functions to address client requirements.
- Corrects defects.
- Increases support for Linux distributions and devices.
- Delivers additional enterprise-grade security and performance enhancements.

IBM Wave brings value to enterprise-grade Linux on IBM Z and Linux ONE solutions that simplify management and administrative functions, such as IBM Infrastructure Suite for z/VM and Linux, which comprises a suite of z/VM and Linux management tools.

Infrastructure Suite for z/VM and Linux (5698-IS2) includes IBM Wave. For more information about Infrastructure Suite, see Software Announcement AP14-0349, dated September 2, 2014.

For additional information on Infrastructure Suite for z/VM and Linux, see the IBM Infrastructure Suite for z/VM and Linux Wiki.

Key requirements

IBM Z and LinuxONE server that uses the currently supported release of z/VM.

For additional details, see the Technical information section.

Planned availability date

September 23, 2019

Description

IBM Wave further expands the capabilities by delivering increased support for Linux distributions and devices, exploitation of new functions, corrections of defects, and additional enterprise-grade security and performance enhancements.

Continuous delivery of IBM Wave V1.2 has provided the following enhancements:

- Technology upgrades
  - Manages guests that run on Ubuntu 16.04, RHEL 7.6, and SLES 15.
  - Supports:
    -- z/VM 6.4 and z/VM 7.1
    -- Java™ 1.8
    -- IBM z15 and IBM LinuxONE III
    -- IBM z14™, LinuxONE Emperor II, IBM z14 Model ZR1, and LinuxONE Rockhopper II
    -- IBM z13[(R)], LinuxONE Emperor I, IBM z13s[(R)], and LinuxONE Rockhopper I
  - Includes enhanced support for SSI clusters.
- Administration improvements
  - Enhanced Wave database management capabilities
  - What's New panel to summarize fix pack changes
  - Increased default Java heap size to improve performance
  - Improved Wave service machine resilience
  - Automation of more Wave administration functions
  - Reduced overhead associated with dormant guest connectivity checking
  - Configuration of multiple EDEVICEs on the same FCP subchannel
- New and improved user functionality
  - Expanded user preferences to control look and feel
  - Dynamic guest CPU and memory configuration
  - Extend Linux storage from existing Volume Group resources

- – Improved integration with LDAP
- – Updated RESTful API that allows IBM Wave functionality to be called from additional interfaces and tools.
- • Security enhancements
  - – Support for FTPS for Wave service machine maintenance delivery
  - – Reduced privilege level requirements
  - – Wave user deletion
  - – Improved code signing
  - – Default HTTP interfaces to use SSL/TLS
- • Support for the Linux distributions from Red Hat, SUSE, and Canonical that include:
  - – Red Hat Enterprise Linux (RHEL) 6, or 7
  - – SUSE Linux Enterprise Server (SLES) 11, 12, or 15
  - – Ubuntu 16.04

IBM Wave is developed using lean and agile principles, providing enhancements and new function on an ongoing basis. These enhancements have been made available with fix packs. For additional details on the fix packs delivered for IBM Wave 1.2, see the IBM Support website.

Accessibility by people with disabilities

A US Section 508 Accessibility Compliance Report containing details on accessibility compliance can be found on the Product accessibility information website.

Engine-based Value Unit pricing

Engine-based Value Unit pricing for IBM Wave is designed to provide a decreasing price curve as hardware capacities and workload grow, which may help improve price/performance.

There may also be a price benefit when you grow your capacity. Additional capacity is not priced starting at the base with a flat price per unit. Instead, additional capacity is priced starting at the capacity (processors) on which IBM Wave has already been installed, which may result in a lower unit price.

Note: Value Units of a given product cannot be exchanged, interchanged, or aggregated with Value Units of another product.

IPLA and Subscription and Support considerations

A no-charge Subscription and Support registration record will be established for each designated machine where IBM Wave is running. These no-charge Subscription and Support registration records will be linked to the billable Subscription and Support, and all billable Subscription and Support within the scope of the engine-based Value Units aggregation will be linked together.

Subscription and Support is an annual charge and should be kept at an annual term.

Product positioning

IBM Wave is a key product to strenghten the user experience of Linux on IBM Z and LinuxONE. It is an innovative z/VM management solution that not only drives superior insight into z/VM management and administrative functions, but delivers compelling management capabilities, such as grouping of resources, filtering, electronic notes, and dynamic displays. Designed for IT organizations,

which includes Managed Service Providers (MSPs), this solution helps simplify the management of even the most complex z/VM environments.

IBM Wave combines information-rich management with visualization to provide a user experience to help reduce the cost and complexity of operations, management, and administration. Innovations like digital reminder notes provide a policy-based management approach to effectively manage single and multiple systems.

IBM Wave:

- Is designed to reduce errors through innovative interfaces, dramatically simplifying z/VM management, and can be suitable for staff of various skill levels.
- Manages a broad spectrum of resources, clones or provisions Linux images, manages user accounts, and provides reporting functions, all quickly and intuitively.
- With its deep visibility into z/VM and Linux resources, you can organize and structure your environment and accelerate critical steps needed for building a private cloud.
- Provides value to system administrators, system programmers, and operators, who are challenged by the lack of time for complicated management tasks.
- Benefits the IT manager who must reduce the cost and delays of Linux deployment on z/VM and optimize the use of limited, highly skilled resources.
- Helps accelerate your path to a private cloud by using the skills you may already have available. Organizations that deploy Linux on z/VM can host more virtual servers than any other platform in a single footprint. The value of this cost-effective consolidation platform is amplified even further when using the rich management environment of IBM Wave.

IBM Wave is an essential tool for simplifying and automating z/VM and Linux virtual server management. Other IBM products, such as IBM Tivoli(R) OMEGAMON(R) XE on z/VM and Linux and IBM Operations Manager, are complementary products you should consider for additional z/VM management capabilities. IBM Wave is also included with IBM Infrastructure Suite for z/VM and Linux, which comprises a suite of z/VM and Linux management tools. For additional z/VM systems and storage management products, see the following z/VM websites:

- z/VM system management
- z/VM storage management

Reference information

For additional information on IBM Wave, see Software Announcements:

- AP15-0158, dated May 11, 2015
- AP14-0028, dated February 24, 2014

For information about Infrastructure Suite for z/VM and Linux, see Software Announcement AP14-0349, dated September 2, 2014.

For information about z/VM and the Performance Toolkit for VM, see the z/VM V7.1 Software Announcements:

- AP18-0514, dated October 16, 2018
- AP18-0295, dated August 7, 2018

For information about the z15, refer to Hardware Announcement AG19-0032, dated September 12, 2019.

For information about the LinuxONE III, see Hardware Announcement AG19-0015, dated September 12, 2019.

For information about the z14, see Hardware Announcements:

- AG17-0093, dated November 28, 2017
- AG17-0044, dated July 17, 2017

For information about the Emperor II, see Hardware Announcements:

- AG17-0093, dated November 28, 2017
- AG17-0065, dated September 12, 2017

For information about the z14 Model ZR1, see Hardware Announcement AG18-0018, dated April 10, 2018.

For information about the LinuxONE Rockhopper II, see Hardware Announcement AG18-0019, dated April 10, 2018.

For information about the z13[R], see Hardware Announcements:

- AG16-0058, dated June 7, 2016
- AG16-0002, dated February 16, 2016
- AG15-0001, dated January 14, 2015

For information about the z13s[R], see Hardware Announcements:

- AG16-0058, dated June 7, 2016
- AG16-0002, dated February 16, 2016

Program number

IBM Wave for z/VM

Program number	VRM	Program name
5648-AE1	1.2.0.13	IBM Wave for z/VM
5648-AE2	1.1.0	IBM Wave for z/VM S&S

IBM Infrastructure Suite for z/VM and Linux

Program number	VRM	Program name
5698-IS2	1.1.0	Infrastructure Suite for z/VM and Linux
5698-IS1	1.1.0	Infrastructure Suite for z/VM and Linux S&S

IBM Wave for z/VM

Program PID number	Subscription and Support PID number
5648-AE1	5648-AE2

IBM Infrastructure Suite for z/VM and Linux

Program PID number	Subscription and Support PID number
5698-IS2	5698-IS1

Offering Information

Product information is available on the IBM Offering Information website.

Publications

The IBM Wave for z/VM product information includes three publications in Adobe™ PDF format and one license information DVD:

Title	Order number
IBM Wave for z/VM Agreements and License Information (DVD)	LC27-6120
IBM Wave for z/VM: License Information (PDF)	GI13-3435
IBM Wave for z/VM: Administration and Customization (PDF)	SC27-6118
IBM Wave for z/VM: User Guide and Reference (PDF)	SC27-6119

One copy of the license information DVD is supplied with IBM Wave when physical media are ordered. When ordering IBM Wave from Shopz, the license information can also be viewed or downloaded from Shopz.

The IBM Wave publications are available in IBM Knowledge Center.

IBM Wave product page

IBM Redbooks(R) and Redpapers are developed and published by the IBM International Technical Support Organization (ITSO). They are intended to develop and deliver skills, technical know-how, and materials to IBM technical professionals, IBM Business Partners, clients, and the marketplace in general.

IBM Redbooks can be found on IBM Redbooks website.

Technical information

Specified operating environment

Hardware requirements

IBM Wave requires one of the following IBM Z server that runs on a currently supported release of z/VM:

- z15 or LinuxONE III
- z14 or LinuxONE Emperor II
- z14 Model ZR1 or LinuxONE Rockhopper II
- z13 or LinuxONE Emperor I
- z13s or LinuxONE Rockhopper I
- zEnterprise(R) EC12 or BC12

Before installing, see the following Preventive Service Planning (PSP) buckets for the minimum MCL level and any required updates or PTFs:

- Upgrade 8561DEVICE, Subset 8561/ZVM, for the z15 and LinuxONE III
- Upgrade 3906DEVICE, Subset 3906/ZVM, for the z14 and LinuxONE Emperor II
- Upgrade 3907DEVICE, Subset 3907/ZVM, for the z14 Model ZR1 and LinuxONE Rockhopper II
- Upgrade 2964DEVICE, Subset 2964/ZVM, for the z13 and LinuxONE Emperor I
- Upgrade 2965DEVICE, Subset 2965/ZVM, for the z13s and LinuxONE Rockhopper I
- Upgrade 2827DEVICE, Subset 2827/ZVM, for the zEnterprise EC12 (zEC12)
- Upgrade 2828DEVICE, Subset 2828/ZVM, for the zEnterprise BC12 (zBC12)

Software requirements

IBM Wave requirements

- IBM Wave requires one of the following operating systems:
  - z/VM V7.1
  - z/VM V6.4
- IBM Wave utilizes the z/VM System Management API (SMAPI) interface and requires the optionally priced IBM Directory Maintenance Facility (DirMaint) or an equivalent systems management product to perform various directory management functions.
- For networking, the following is required:
  - TCP/IP for z/VM (IPv4) must be configured and active.
  - Telnet (3270) access must be enabled.
  - FTP server must be running.
  - SSL/TLS recommended on all communications.
- The following prerequisites must be met on every workstation that runs the IBM Wave GUI client:
  - Microsoft™ Windows™ with Java™ V1.8 installed (64-bit installation is recommended)
  - IP access to all managed z/VM systems and to the IBM Wave WAVESRV server
- The following prerequisite components must be installed on all Linux on IBM Z and LinuxONE guests this is being managed by IBM Wave:
  - Secure Shell (SSH) server
  - Linux z/VM CP interface device driver (VMCP)
  - CMS File System (CMSFS)

Linux on IBM Z and LinuxONE requirements

To operate Linux on IBM Z and Linux ONE as a guest of z/VM, a Linux on IBM Z distribution must be obtained from a Linux distribution partner. The IBM Wave server requires one of the following Linux distributions:

- Red Hat Enterprise Linux (RHEL) 6 or 7
- SUSE Linux Enterprise Server (SLES) 11 or 12

For specific function and for the most current information on Linux distributions, see the Linux on IBM Z website.

Companion products

IBM Wave utilizes the Performance Toolkit for VM feature of z/VM (Performance Toolkit for VM), if present, to collect performance information from z/VM and Linux guests for monitoring of the system behavior. High-level performance data can be viewed for every active z/VM guest, as well as globally for the entire z/VM system.

For more detailed performance management and alerting, IBM offers OMEGAMON XE on z/VM and Linux. For additional information about OMEGAMON XE on z/VM and Linux, see Software Announcement AP10-0073, dated April 27, 2010.

The IBM Support Community

The IBM Support Community is your gateway to technical support tools and resources that are designed to help you save time and simplify support. Support Community tools can help you find answers to questions, download fixes, troubleshoot, automate data collection, submit and track problems, and build skills.

You can also access the Service requests and PMRs tool for more support.

Planning information

Client responsibilities

If you want the level of service provided under the IBM ICA license agreement with IBM Z and z/VM licensed products, you are strongly encouraged to order the IBM Wave for z/VM Subscription and Support (S&S), program number 5648-AE2. S&S provides enhanced support that includes telephone assistance (voice support for defects during normal business hours) and access to updates, releases, and versions of the program for as long as support is in effect. IBM Wave for z/VM S&S will be automatically added to your order. If you do not want the S&S license for IBM Wave for z/VM, you must take specific action to decline this support.

To host Linux guests on z/VM, you must also obtain a Linux for IBM Z distribution. Information about Linux distribution partners that have a marketing relationship with IBM see the Linux on IBM Z website.

Packaging
IBM Wave

The IBM Wave product package is distributed with the following:

- License information on DVD (LC27-6120)
- Basic machine-readable material on one DVD (LCD7-6058)

Security, auditability, and control

The announced product uses the security and auditability features and functions of host hardware, host software, and application software.

The client is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Ordering information

Consult your IBM representative.

The programs in this announcement all have Value Unit-based pricing.

Program number	Program name	Value Unit exhibit
5648-AE1	IBM Wave for z/VM	VUE021

For each IBM Z IPLA program with Value Unit pricing, the quantity of that program needed to satisfy applicable IBM terms and conditions is referred to as the *required license capacity.* Your required license capacity is based upon the following factors:

- The IBM Z IPLA program you select.
- The applicable Value Unit Exhibit.
- The applicable terms.
- Whether your current mainframes are full capacity or sub-capacity.

Charge metric

The charge metric for this licensed product can be found in the following License Information document:

Program identifier	License Information document title	License Information document number
5648-AE1	IBM Wave for z/VM V1.2	L-RWHE-AZPJT6

Select your language of choice and scroll down to the Charge Metrics section. Follow-on releases, if any, may have updated terms. See the License Information documents website for more information.

Basic license

To order, specify the program ID number and the appropriate license or charge option.

Program name: IBM Wave for z/VM

Program ID: 5648-AE1

Entitlement identifier	Description	License option/Pricing metric
S017GXR	IBM Wave for z/VM	Basic OTC, per Value Unit

Orderable supply ID	Language	Distribution medium
S017GXP	US English	DVD

You choose the delivery method when you order the software. IBM recommends internet delivery from Shopz. However, if you still require physical media, you can choose DVD.

Program name: IBM Wave for z/VM S&S

Program ID: 5648-AE2

Entitlement identifier	Description	License option/Pricing metric
S017GXV	IBM Wave for z/VM S&S	Basic ASC, per Value Unit SW S&S
		No charge, decline SW S&S
		No charge, SW S&S registration

Orderable supply ID	Language	
S017GXT	US English	

On/Off CoD

IBM Wave is eligible for On/Off CoD with a temporary use charge calculated based on MSUs per-day usage.

Program name: IBM Wave for z/VM

Program number: 5648-AE1

Entitlement identifier	Description	License option/Pricing metric
S017GXR	IBM Wave for z/VM	Basic OTC, Per Processor-day TUC

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The information provided in this announcement letter is for reference and convenience purposes only. The terms and conditions that govern any transaction with IBM are contained in the applicable contract documents such as the IBM International Program License Agreement, IBM International Passport Advantage[(R)] Agreement, and the IBM Agreement for Acquisition of Software Maintenance.

Licensing

IBM International Program License Agreement including the License Information document and Proof of Entitlement (PoE) govern your use of the program. PoEs are required for all authorized use.

Software Maintenance

The *IBM Agreement for Acquisition of Software Maintenance* (Z125-6011) applies for Software Subscription and Support (Software Maintenance) and does not require client signatures.

These programs are licensed under the IBM International Program License Agreement (IPLA) and the associated Agreement for Acquisition of Software Maintenance, which provide for support with ongoing access to releases and versions of the program. These programs have a one-time license charge for use of the program and an annual renewable charge for the enhanced support that includes telephone assistance (voice support for defects during normal business hours), as well as access to updates, releases, and versions of the program as long as support is in effect.

License Information number

The following License Information document applies to the offering in this announcement:

Program identifier	License Information document title	License Information document number
5648-AE1	IBM Wave for z/VM V1.2	L-RWHE-AZPJT6

Follow-on releases, if any, may have updated terms. See the License Information documents website for more information.

Limited warranty applies

Yes

Limited warranty

IBM warrants that when the program is used in the specified operating environment, it will conform to its specifications. The warranty applies only to the unmodified portion of the program. IBM does not warrant uninterrupted or error-free operation of the program or that IBM will correct all program defects. You are responsible for the results obtained from the use of the program.

IBM provides you with access to IBM databases containing information on known program defects, defect corrections, restrictions, and bypasses at no additional charge. For further information, see the IBM Support Guide.

IBM will maintain this information for at least one year after the original licensee acquires the program (warranty period).

Program technical support

Technical support of a program product version or release will be available for a minimum of five years from the general availability date, as long as your Software Subscription and Support (also referred to as Software Maintenance) is in effect.

This technical support allows you to obtain assistance (by telephone or electronic means) from IBM for product-specific, task-oriented questions regarding the installation and operation of the program product. Software Subscription and Support (Software Maintenance) also provides you with access to updates (modifications or fixes), releases, and versions of the program. You will be notified, through an announcement letter, of discontinuance of support with 12 months' notice. If you require additional technical support from IBM, including an extension of support beyond the discontinuance date, contact your IBM representative or IBM Business Partner. This extension may be available for a fee.

For additional information on the IBM Software Support Lifecycle Policy, see the IBM Software Support Lifecycle Policy website.

Money-back guarantee

If for any reason you are dissatisfied with the program and you are the original licensee, you may obtain a refund of the amount you paid for it, if within 30 days of your invoice date you return the program and its PoE to the party from whom you obtained it. If you downloaded the program, you may contact the party from whom you acquired it for instructions on how to obtain the refund.

For clarification, note that for programs acquired under any of IBM's On/Off Capacity on Demand (On/Off CoD) software offerings, this term does not apply since these offerings apply to programs already acquired and in use by you.

Volume orders (IVO)

No

Passport Advantage applies

No

Usage restrictions

Yes.

- IBM Wave for z/VM V1.2 (the "Program") operates on the following hardware:
  - z15 and LinuxONE III
  - z14 and LinuxONE Emperor II
  - z14 Model ZR1 and LinuxONE Rockhopper II
  - z13 and LinuxONE Emperor I
  - z13s and LinuxONE Rockhopper I
  - zEnterprise EC12 (zEC12)
  - zEnterprise BC12 (zBC12).
- Licensee's entitlement is for only the quantity of engine-based Value Units licensed. These engine-based Value Units can be for either standard processors (referred to as "Central Processors" or "CPs") or Integrated Facility for Linux processors ("IFLs").
- The designated measure for the purpose of Value Unit calculation is Engines. An Engine is a central processor (CP) or a specialty processor, such as an Integrated Facility for Linux (IFL) processor, configured for use on an IBM Z server. If the Program is used on any CP Engine on an IBM Z server, Licensee must acquire entitlements sufficient to cover all CP Engines on that server. If the Program is used on any IFL Engine on an IBM Z server, Licensee must acquire entitlements sufficient to cover all IFL Engines on that IBM Z server.
- Licensee may only transfer the Program to another party, in connection with Licensee's transfer of the machine on which Licensee is entitled to operate the Program (referred to as a "Limited Transfer"), provided that any such Limited Transfer of the Program requires Licensee to transfer Licensee's rights and obligations under the Agreement to the transferee and therefore terminates Licensee's authorization to continue to use the Program. When the machine and the Program are transferred, Licensee must either provide a printed copy of the Agreement or, if electronic licensing is used for the Program, take the necessary actions that will require electronic acceptance of the Agreement by the transferee prior to the transferee's first use of the Program.
- This Program is not designed, licensed or intended for use in the design, construction, operation or maintenance of any nuclear facility.

Software Subscription and Support applies

Yes. During the Software Subscription and Support period, for the unmodified portion of a program, and to the extent problems can be recreated in the specified operating environment, IBM will provide the following:

- Defect correction information, a restriction, or a bypass.
- Program updates: Periodic releases of collections of code corrections, fixes, functional enhancements and new versions and releases to the program and documentation.
- Technical assistance: A reasonable amount of remote assistance by telephone or electronically to address suspected program defects. Technical assistance is available from the IBM support center in the organization's geography.

Additional details regarding Technical Assistance, which includes IBM contact information, are provided in the IBM Support Guide.

Software Subscription and Support does not include assistance for:

- The design and development of applications
- Your use of programs in other than their specified operating environment
- Failures caused by products for which IBM is not responsible under the IBM Agreement for Acquisition of Software Maintenance

Software Subscription and Support is provided only if the program is within its support timeframe as specified in the Software Support Lifecycle policy for the program.

Variable charges apply

No

Educational allowance available

15%, to qualified educational institution clients.

On/Off CoD

To be eligible for On/Off CoD pricing, you must be enabled for temporary capacity on the corresponding hardware, and the required contract, Attachment for IBM System z$^{(R)}$ On/Off Capacity on Demand (Z125-7883) must be signed prior to use.

Statement of good security practices

IT system security involves protecting systems and information through intrusion prevention, detection, and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed, or misappropriated or can result in misuse of your systems to attack others. Without a comprehensive approach to security, no IT system or product should be considered completely secure and no single product or security measure can be completely effective in preventing improper access. IBM systems and products are designed to be part of a regulatory compliant, comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products, or services to be most effective.

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Prices

For all local charges, contact your IBM representative pr IBM Business Partner.

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AP distribution

Country/Region	Announced
AP	
ASEAN *	Yes
India/South Asia **	Yes
Australia	Yes
Hong Kong	Yes
Macao SAR of the PRC	Yes
Mongolia	Yes
New Zealand	Yes
People's Republic of China	Yes
South Korea	Yes
Taiwan	Yes

* Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Vietnam

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