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IBM

Virtualization and Systems Management of z/VM and Linux with IBM Wave for z/VM

9.0

Trademarks

Session objectives

In this session based on a live demonstration, we will introduce IBM Wave for z/VM and review how capabilities such as Intelligent Visualization Simplified Monitoring and Unified Management would reduce operational costs, reduce risks and speed up time to value. We will do a high level overview of the architecture and discuss some of the capabilities offered by IBM Wave that simplify the deployment of Linux on System z enabling application owners and/or authorized users to manage applications without the need of deep System z specific skills.

Agenda

- Introduction & Benefits

- Features and Architectural Overview

- Fit in Portfolio

- Resources and Education

- Live Demonstration

- Q&A

IBM Wave for z/VM

INTRODUCTION & BENEFITS

Today's challenges

- IT management is striving to achieve operational efficiencies and reduce spend on daily management

- Administrators need to become more self sufficient through self service, administration needs to be easier and simpler

- Organizations need better control of configuration and change management especially in a virtualized environment

- IT organizations want to accelerate their migration efforts to cloud and need tools that can help them get started quickly

- Internal and external IT customers expect even faster responsiveness due to ever changing business dynamics

- Faced with reduced budgets, IT management must extend the reach of their existing IT staff to do more with less without sacrificing quality

IBM Wave for z/VM V1.1 (IBM Wave)

NEW

- IBM Wave is a new virtualization management product for z/VM® and Linux® virtual servers that uses visualization to dramatically automate and simplify administrative and management tasks

- Enhanced Enterprise Linux Server (ELS*) solution is also available with IBM Wave for z/VM

- New! Jumpstart Services to help customers get started with IBM Wave

- General availability - February 28th, 2014

Supported IBM System z® processors: IBM System z10® Enterprise Class (z10 EC™), IBM System z10 Business Class™ (z10 BC™) and later

Supported z/VM versions/releases:
- z/VM 6.3
- z/VM 6.2
- z/VM 5.4

Enterprise Linux Server is an integrated solution comprised of Hardware, Hypervisor, Memory, Easy to Use Virtualization Management and 3 years Service and Support designed to get customers including FIEs started with low cost scalable computing environment

Dimensions of Systems Management & IBM Wave for z/VM primary use
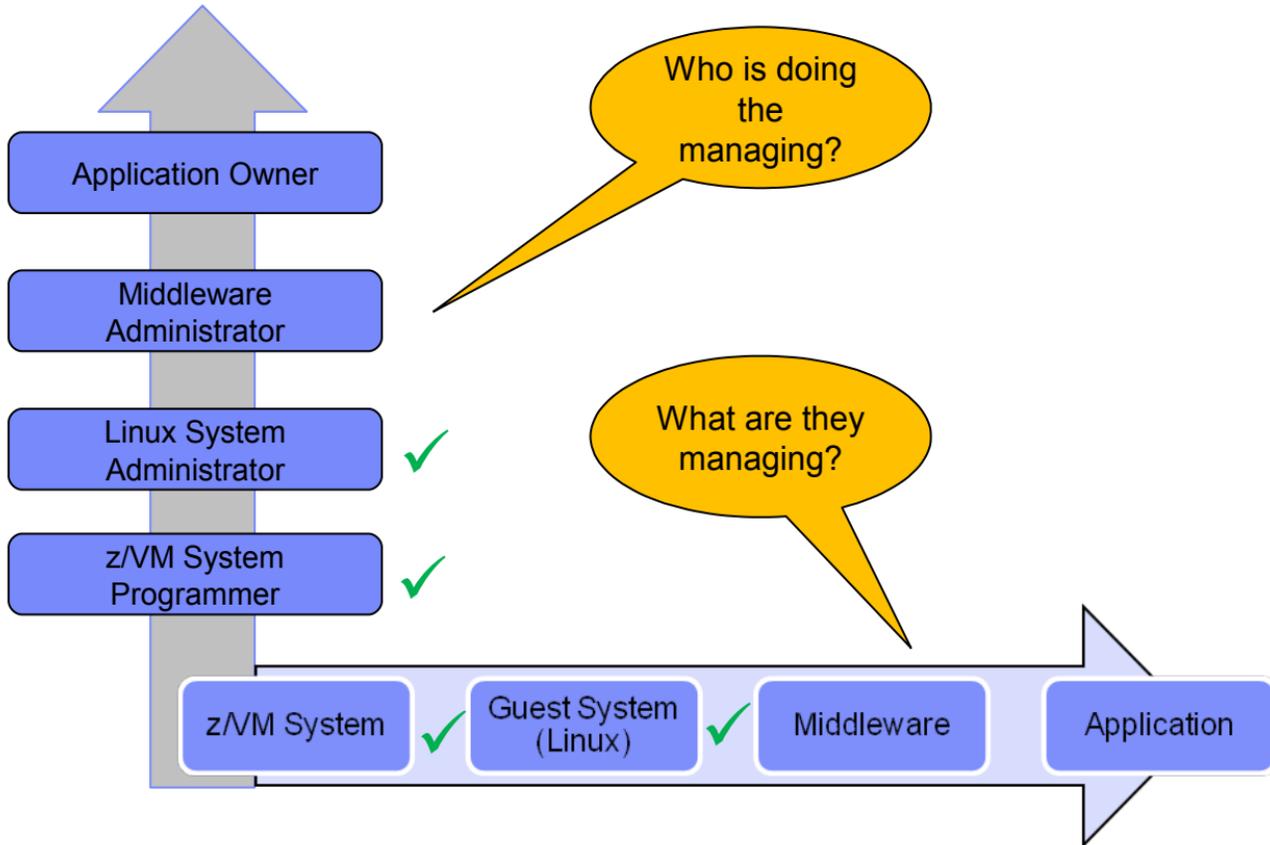
Simplify and Automate Virtualization Management

- Automate, simplify management and monitor virtual servers and resources-all from a single dashboard
- Perform complex virtualization tasks in a fraction of the time compared to manual execution
- Provision virtual resources (Servers, Network, Storage) to accelerate the transformation to cloud infrastructure
- Supports advanced z/VM® management capabilities such as Live Guest Relocation with a few clicks
- Delegate responsibility and provide more self service capabilities to the appropriate teams
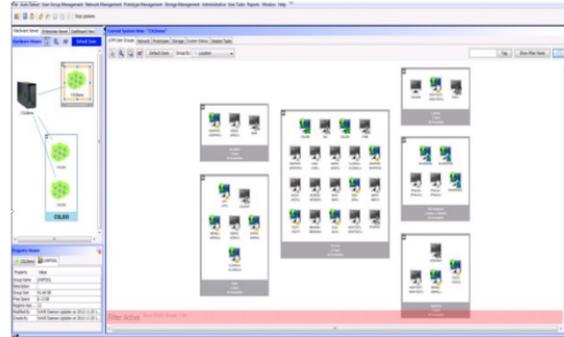
A simple, intuitive virtualization management tool providing management, provisioning, and automation for a z/VM environment supporting Linux® virtual servers

Extend the Reach of Skills

Intelligent Visualization

- Shorten the learning curve needed to manage complex environments

- Organize and simplify management of z/VM and virtual Linux servers

- View servers and storage utilization graphically; understand the status of system resources with Intelligent icons

- Reduce unnecessary steps using highly customizable views

- Graphical or tabular displays with layered drill down

- Make existing staff more self-sufficient

Simplified Monitoring

- Monitor the status of z/VM systems through an innovative interface

- Monitor performance of CPU, paging devices, spool disks and more;

- Use agentless discovery to detect an accurate view of your environment

- Use advanced filters, tagging, layout and layer selection to make monitoring and management more meaningful

- Complements IBM OMEGAMON® XE used for in-depth performance monitoring

Unified Management

- Manage your system from a single point of control

- Assign and delegate administrative access with role based assignments

- Provision, clone, and activate virtual resources . Define and control virtual network and storage devices

- Perform management tasks such as live guest relocation

- Annotate resources for additional policy based management

- Execute complex scripts with a single mouse click

Value of IBM Wave for z/VM

- Complete provisioning and management solution for z/VM environment
  - Offers provisioning of all aspects of the z/VM hypervisor, including server, network and storage provisioning

- Gives Linux administrators the freedom to manage their Linux servers without the need to employ a z/VM system programmer for every VM USER environment change needed for their Linux servers
  - System administrators do not need to have any knowledge or understanding of the physical or virtual infrastructure hosting their virtual servers

- Fully abstracts the virtual and physical resources while providing automation of operating procedures

IBM Wave for z/VM

FEATURES & ARCHITECTURE

Feature overview - Automation and simplification

- View the entire server farm laid out graphically
- Ordered Activation/Deactivation of servers
- Execution of customer's REXX as part of the cloning process to allow local z/VM customization
- Run Linux shell scripts against dynamically grouped/filtered servers, as IBM Wave for z/VM background tasks, listing the results for each selected server - All via the GUI
- Run REXX EXECs against any virtual object with customized parameters and results listing - All via the GUI
- WAVECLI – A CLI for IBM Wave for z/VM actions that can be utilized from Linux shell scripts or Windows Batch files
- Access z/Linux guests directly from the GUI using SSH, 3270 or CLC– No hostnames or IP addresses to remember, simply right-click on the server and select the desired access

Feature overview - Provisioning

- Sophisticated guests cloning including Cross System Clone (across LPARs and CPCs)
- Ability to customize the first boot of a cloned server (before TCP/IP is initialized)
- Simple creating and manipulation of Vswitches and Guest LANs
- Connect/disconnect guests to Vswitches or Guest LANs via the GUI
- Storage management and provisioning at the z/VM and Linux levels (including LVM support)
- Automatic handling of Real or Dedicated devices via IBM Wave for z/VM's user defined Device Pool

Feature overview – Graphical control

- Rich GUI with graphical views of all managed objects
- Advanced filters, tagging, layouts and layers for every display
- Multiple objects may be selected

Feature overview – Auto-detection

- Agentless technology
- Automatic initial detection of all virtual server farms components (servers, prototypes, networks, network devices and storage)
- Ongoing monitoring of changes made outside of IBM Wave for z/VM after the initial auto-detection

Feature overview – Network support

- Centralized, layer based view of the entire network topology per z/VM system
- Define and control all network devices such as VSwitches and guest LANs
- Manipulation of servers-to-network connect/disconnect using GUI
- Support for VLAN usage
- Management of VSwitches with protocol layer 2 or 3
- Customize network topology view with external resources such as routers, LPARs etc.

IBM Wave Architecture

Client

▪The Client can run on Microsoft® Windows®, running Java™ 1.7

▪Graphic interpretation of the TVP through communication with WAVESRV using Point-and-Click and Drag-and-Drop operations

WAVESRV

▪This server (virtual or physical) hosts the application database and Background Task Scheduler

▪One BTS server can manage many Target Virtualization Platforms.

TVP

▪The Target Virtualization Platform (TVP) represents the hypervisor which hosts the virtual guests that are managed.

▪The BTS utilizes the TVP API to query and perform changes to the TVP and hosted virtual guests.
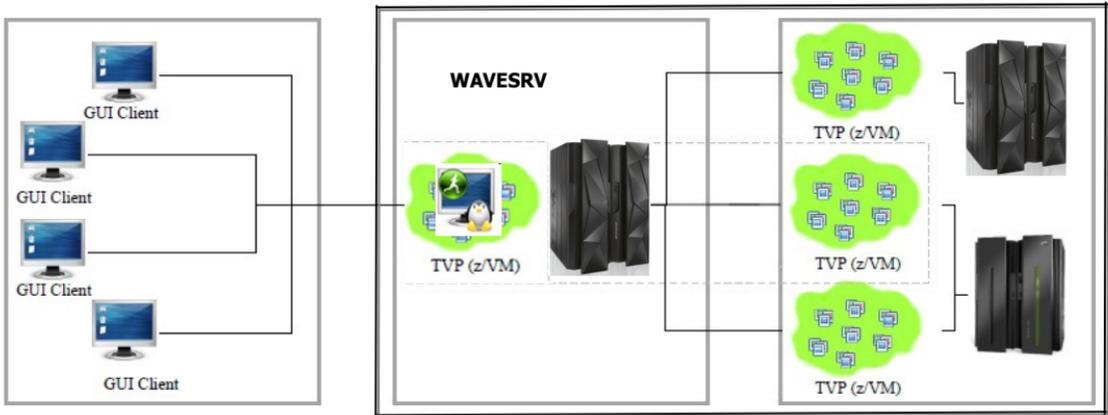
IBM Wave Requirements

Client

- Windows 7 Workstation
- Internet Explorer or Firefox
- Java Runtime 1.7 with Web Start Support
- PuTTY or equivalent telnet/SSH client

WAVESRV

- z/VM Guest or LPAR
- RHEL 6 or SLES 11
- MySQL V12.22 or higher
- Java SE Runtime 1.7
- Apache

TVP

- IBM System z10® or later
- z/VM V5.4, V6.2 or higher with Systems Management API configured
- IBM Directory Maintenance for z/VM (DirMaint™) or equivalent
- Performance Toolkit for VM™ (Perfkit, optional but suggested)
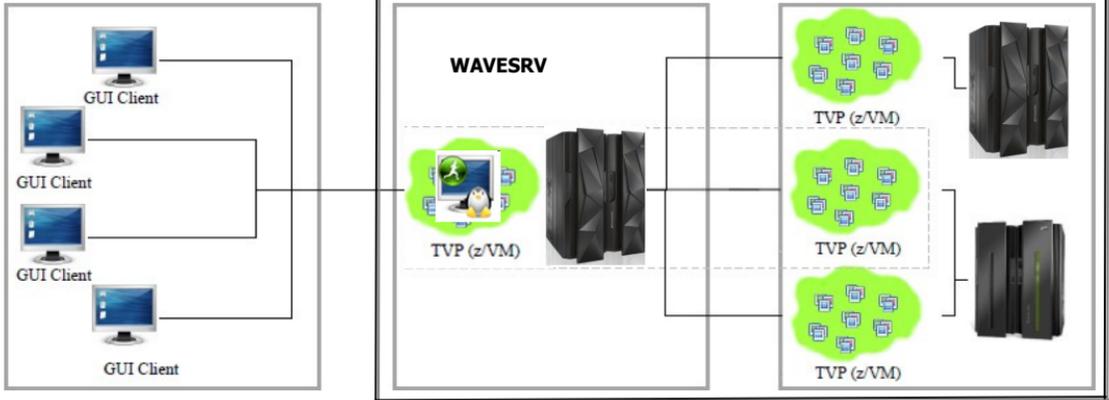
IBM Wave for z/VM: Tier 2 – WAVESRV server
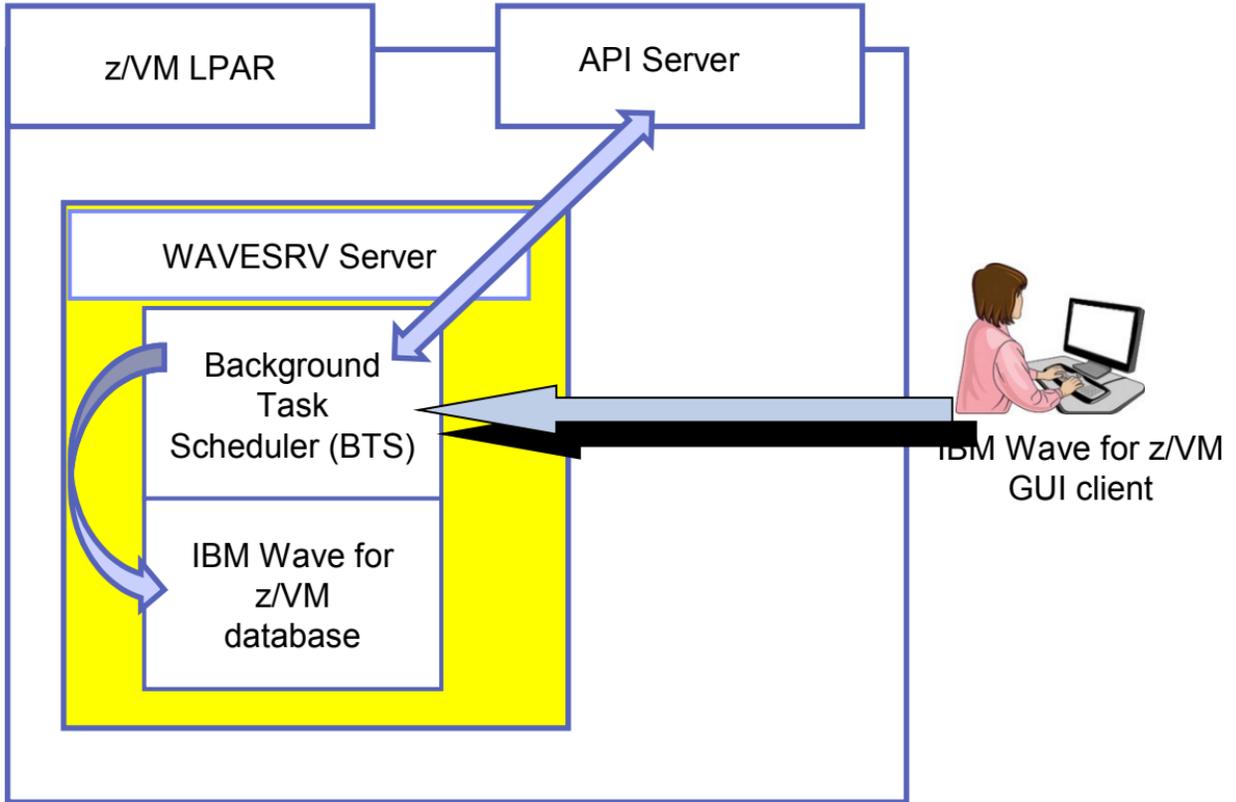
IBM Wave for z/VM Target Virtualization Platform (TVP)

- IBM Wave utilizes the SMAPI interface in order to mediate requests from the BTS and the GUI Client.
- Specific functions executed on the z/VM System using the following Service Machines:

  - **WAVEWRKS**

    - The Short Service Machine executes various compiled REXX EXECs to interact with the z/VM environment

  - **WAVEWRKL**

    - The Long Service Machine provides an additional thread of execution to run longer scripts or executes some directory manager commands

  - **WAVEWRKC**

    - This Cross-System Cloning Service Machine is used to stream minidisks from a source z/VM system to a target z/VM system during cloning actions.

- As part of the auto-detection process when adding a new z/VM System to IBM Wave management, these 3 service machines are created and started on the z/VM System automatically.

IBM Wave for z/VM

FIT IN PORTFOLIO

Cloud Computing - Based on Virtualization and Standardization

To position the various technologies in this space, we need to first understand that Cloud computing is a journey beginning with virtualization and consolidation of environments and ending with workload pattern-based deployment of IT services.

This is not always a step-wise progression. Some clients may require advanced cloud capabilities from the start, while others will begin by optimizing their virtualization foundation and then gradually move to cloud.

Others require capabilities from the beginning and may start with entry or advanced cloud solutions.

Not all customers will want/need to get to the final step!

WORKLOAD PATTERN DEPLOYMENT

SELF SERVICE

AUTOMATION

STANDARDIZATION

VIRTUALIZATION

Virtualization	Entry Level Cloud	Advanced Cloud
Infrastructure & Virtualization Management	Standardization & Automation	Orchestration & Optimization
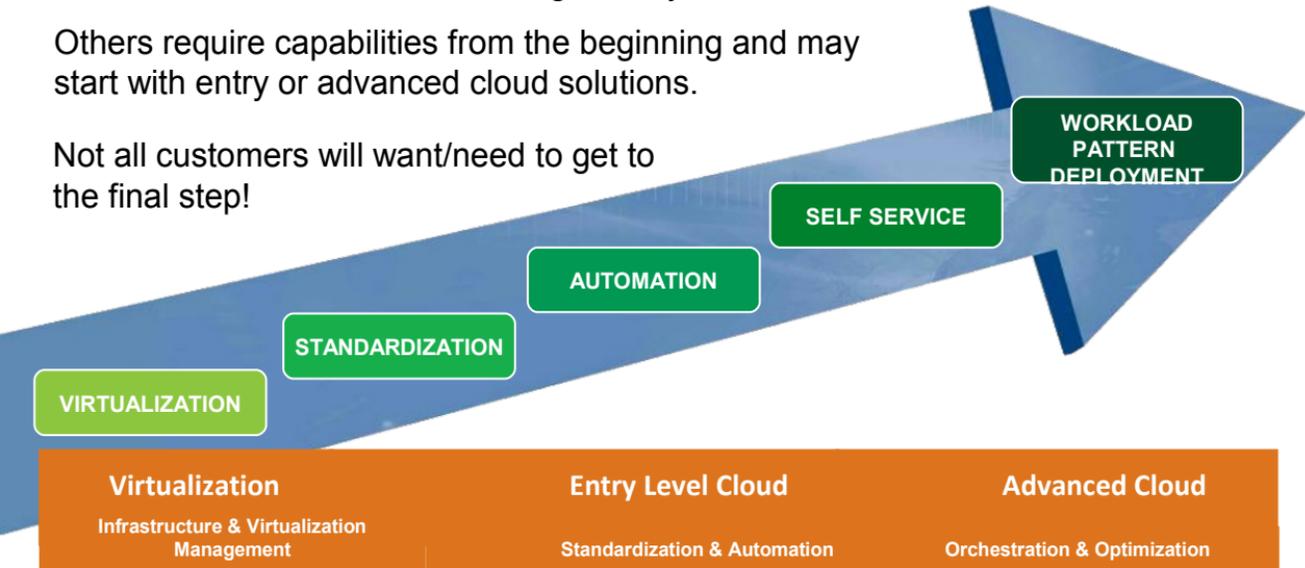
How IBM Wave fits into the Cloud Blueprint

Integrate

Virtualization
Infrastructure & Virtualization Management

Differentiation

- Rapid deployment of Linux virtual servers for less than $1 a day
- Industry leading "gold standard" security for tenant isolation
- Elastic scaling achieved by dynamically adjustable capacity at sustained performance
- Simplified and empowered virtualization management with IBM Wave

Automate

Entry Level Cloud
Standardization & Automation

Standardization

- Automated provisioning and de-provisioning
- Pool standardized virtualized building blocks
- Plug-and-play capacity across hardware generations
- Capture and catalog virtual images in the data center
- Automated methods for faster delivery of services with higher levels of control

Orchestrate

Advanced Cloud
Service Lifecycle Management

Service Management

- Integrated virtualization management with IT service delivery processes
- Self-service provisioning
- Automated service lifecycle management including dynamic instantiation of cloud services
- Pay for use
- Optimize IT resources to reinvent business processes

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z/VM

IBM Wave for z/VM

Linux on IBM System z®

xCAT

IBM Cloud Manager with OpenStack*

Cloud Ready for Linux on System z

SmartCloud Provisioning*

SmartCloud Orchestrator*

* System z support currently in development

Enterprise Linux Server features IBM Wave for z/VM

Enterprise Linux Server includes IBM zEnterprise® hardware, hardware maintenance, IBM virtualization and management software components and software support & subscription.

- **Hardware options**
  - IBM zEnterprise server
  - 32 GB memory
  - Connectivity
  - S&S

- **Virtualization software**
  - IBM z/VM Version 6
  - z/VM basic features:
    - Dirmaint™, RACF®, Performance Toolkit for VM™, RSCS
  - **NEW! IBM Wave for z/VM** included
  - 3-5 years S&S
  - Note: Linux ordered from Red Hat or SUSE

Enterprise Linux Server
Includes IFLs, memory, I/O adapters, z/VM software including
3-to-5 years of S&S, and maintenance

Solution Edition for Enterprise Linux
Acquire incremental Linux CPUs (IFLs), memory, z/VM software and 3-5 years of subscription and support, and maintenance.

Deploy up to 40 virtual servers per core or 520 in a single footprint

As low as $1.00/day
per virtual server

Save up to 55%
on TCO over 5 years

[1] 28-32 GB memory on zBC12, 24 GB memory per core up to 5 IFLs on z114.

Enterprise Cloud System

- **Server:**
- – IBM zEnterprise® EC12 **or** IBM zEnterprise BC12 (zEC12, zBC12)

- **Storage:**
- – IBM DS8870 **or** Storwize® V7000

- **Software:**
- – z/VM® 6.3 with following features:
    - Directory Maintenance (DirMaint™) Feature
    - Resource Access Control Facility (RACF®)
    - Performance Toolkit for VM™ Feature
    - Single System Image (SSI) Feature – (Requires ECKD DASD)

- – IBM Wave for z/VM

- – Cloud Management Suite:
    - OMEGAMON® XE on z/VM and Linux
    - Tivoli Storage Manager
    - SmartCloud Orchestrator

- – Operations Manager for z/VM
- – Backup and Restore Manager for z/VM

IBM Wave for z/VM

RESOURCES & EDUCATION

zGrowth IBM Wave Tiger Team

Marty Horan, Manager

Ivan Dobos

Eduardo Oliveira, Team lead

Ernest Horn

Luis Ferreira Ramos

IBM-WAVE for z/VM Test Drive

IBM Advanced Technical Support
Washington Systems Center
Gaithersburg, MD

Hands on IBM-WAVE for z/VM Environment now available

- Client hands-on experience using IBM-WAVE for z/VM on a IBM zEnterprise® EC12 (zEC12)
- Secure remote access from client site to zEC12 in Gaithersburg, MD
- Accessible 24 hours a day, 7 days a week (except for occasional planned outages)
- Guided exercises provide hands on experience with IBM-WAVE for z/VM
- Send customer name, adddress and SalesConnect Opportunity ID to Susan Greenlee (sgreenle@us.ibm.com) or call 845-435-4838

Client Sites Worldwide

STG Lab Services & Training – IBM Wave Jumpstart Services for zEnterprise

- This Jumpstart service can help to accelerate your IBM Wave implementation.
- This service offering provides planning, installation, and usage assistance.
- We tailor the installation to your environment and provide skills transfer by reviewing common use cases of the interface with your support staff.

Key Features:
▪This service helps accelerate the implementation and ROI with IBM Wave

▪Assistance in planning the implementation by those who have implemented and used for several years

▪Provide recommendations on integration and configuration in your environment

▪Demonstrate how to implement custom REXX™ Execs with IBM Wave to extend functionality

▪Integration with your AD for authentication

▪Demonstration and review of common IBM Wave use cases with your staff in a workshop setting

▪Demonstrate how to enable existing Linux servers to be managed by IBM Wave

▪The Jumpstart is usually typically complete in one week depending upon the size of the deployment

Target Audiences:
▪zEnterprise z/VM and Linux Administrators
▪Existing and First in Enterprise customers
▪Organization who want augment the System z support staff with less experienced IT professionals

Business Drivers:
- Reduced staff z/VM experience requirements
- Increased IT staff productivity
- Reduce systems management costs

Contact:
- **stgls@us.ibm.com** for questions specific to this service.

STG Lab Services & Training – ZV22 IBM Wave for z/VM course*

- Three days course designed to assist the z/VM system administrator with the implementation of the IBM Wave for z/VM product and all of it's additional required products.

Objectives:
▪After completing this course, you should be able to:

> ▪Implement the DirMaint product on a z/VM 6.3.0 system
>
> ▪Implement the Performance Toolkit for z/VM on a z/VM 6.3.0 system
>
> ▪Implement the IBM Wave for z/VM product on a z/VM 6.3.0 guest Linux system
>
> ▪Clone new Linux for System z instances using the IBM Wave for z/VM product

Target Audiences:
▪This course is intended for IT professionals who will be responsible for the installation and configuration of the IBM Wave for z/VM product. This person should be familiar with basic z/VM system programmer skills.

Prerequisites:
▪ The students would need to attend the ZV06 or ZL00 courses or have equivalent knowledge to successfully complete this course.

*In development, planned availability 2014

IBM Redbooks

IBM Wave for z/VM

LIVE DEMONSTRATION

Overall Benefit of IBM Wave for z/VM

✓ Simplify the administrative and management of virtualized servers all from a single dashboard

✓ Reduce the time it takes to perform complex virtualization management tasks

✓ Extend the reach of existing skills to manage even the most complex tasks like live guest relocation

✓ Improve the quality and consistency of operations with a current and accurate view of your system using IBM Wave discovery

✓ Reduce risk of errors by delegating management scope to the appropriate teams

✓ Accelerate virtualization steps like virtual server cloning and provisioning to make the transformation to cloud easier

IBM Wave for z/VM

Q & A

THANK YOU!

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IBM System z Tiger Team: