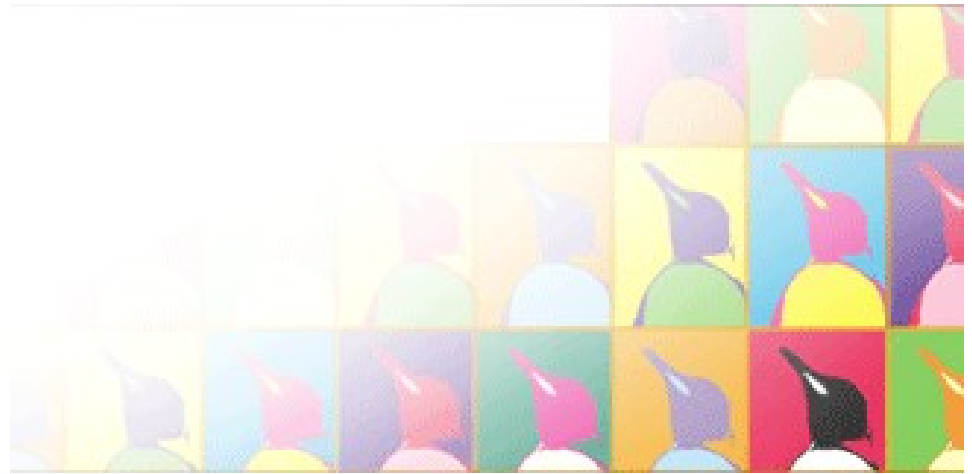


IBM Wave for z/VM



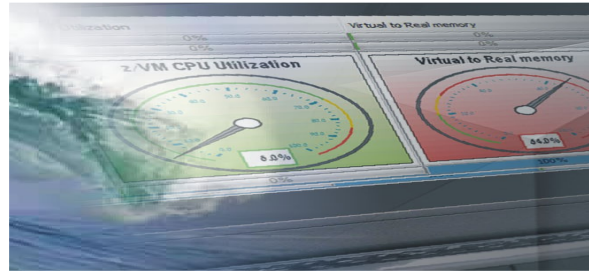
Extend the Reach of Skills with IBM Wave for z/VM

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

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

IBM Wave for z/VM Web Administration VM Environment

One-Pager

- **Monitors and manages virtual servers and resources** from a single graphical interface
- **Simplifies and Automates tasks**
- **Provisions virtual resources** (Guests, Network, Storage)
- **Supports advanced z/VM capabilities** such as Single System Image (SSI) and Live Guest Relocation (LGR)
- **Allows delegation of administrative capabilities** to the appropriate teams
- **Competitive and comparable** to other virtualization **center** solutions

The screenshot shows the IBM Wave for z/VM Web Administration interface. The main window displays a network diagram for a z/VM system named DEMO54. The diagram shows a central 'New z/VM System: DEMO54' connected to various network components including switches, routers, and virtual network segments. Below the diagram, a table lists the system's configuration details and a log of recent administrative actions.

Workload Name	Initiator	Start At	End At	Duration	Status	Progress
Activate z/VM Guests	admin	2011-10-24 10:31:00.0	2011-10-24 10:31:51.0	1 seconds	Done	100%
Create and Associate Device Pool with z/VM System	admin	2011-10-24 10:27:15.0	2011-10-24 10:27:44.0	1 seconds	Done	100%
Create and Associate Device Pool with z/VM System	admin	2011-10-24 10:27:33.0	2011-10-24 10:27:44.0	1 seconds	Done	100%
Create and Associate Device Pool with z/VM System	admin	2011-10-24 10:27:15.0	2011-10-24 10:27:44.0	1 seconds	Done	100%
Create and Associate Device Pool with z/VM System	admin	2011-10-24 10:14:36.0	2011-10-24 10:14:37.0	1 seconds	Done	100%
Create and Associate Device Pool with z/VM System	admin	2011-10-24 10:14:36.0	2011-10-24 10:14:37.0	1 seconds	Done	100%
Create and Associate Device Pool with z/VM System	admin	2011-10-24 10:14:36.0	2011-10-24 10:14:37.0	1 seconds	Done	100%
Add New Manage Entry	admin	2011-10-24 10:05:11.0	2011-10-24 10:05:22.0	1 seconds	Done	100%

A simple, intuitive graphical tool providing management, provisioning, and automation for a z/VM environment, supporting Linux virtual servers.

IBM Wave Architecture

Client

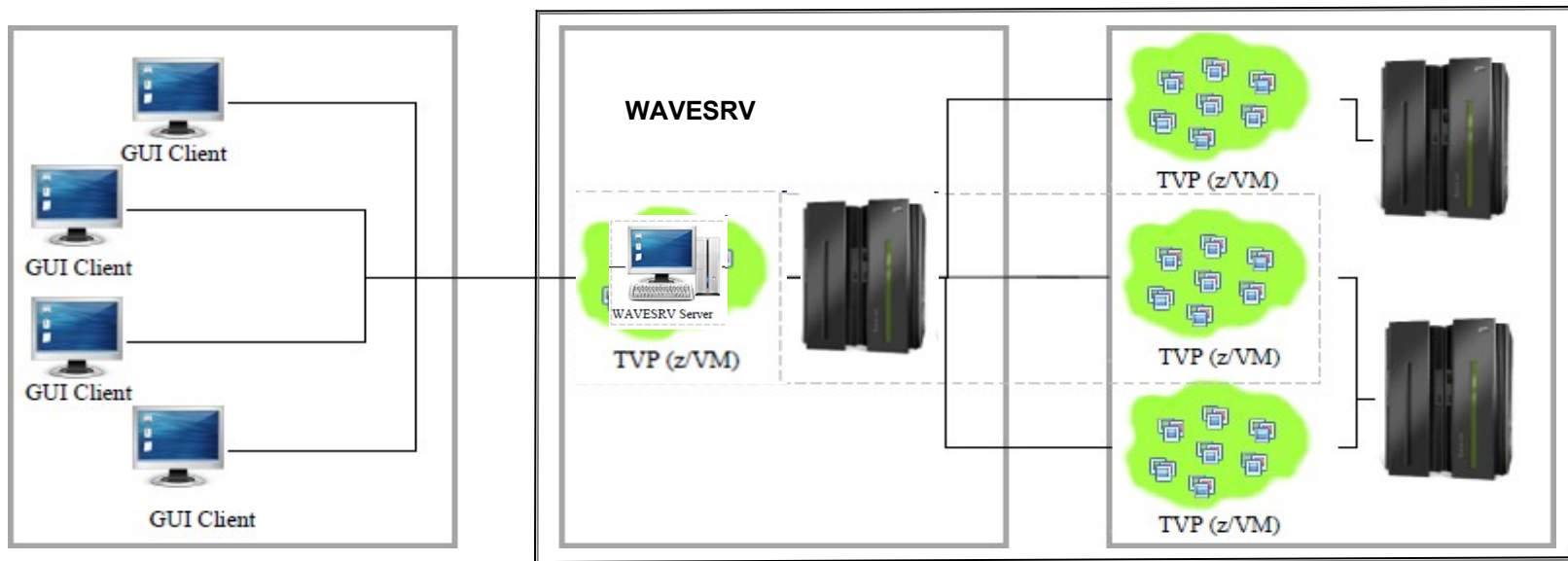
- The Client can run on Microsoft® Windows®, running Java™ 1.7
- Graphic interpretation of the TVP through communication with WAVESRV using Point-and-Click and Drag-and-Drop operations

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

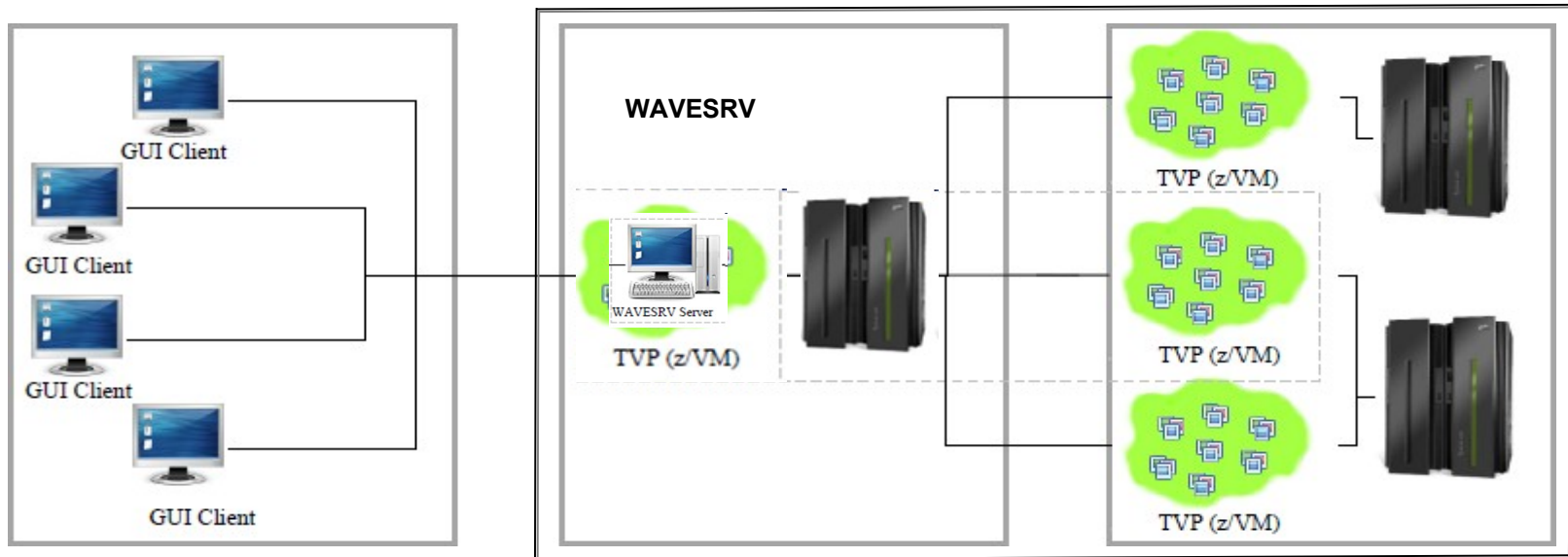
- Windows 7 Workstation
- Internet Explorer or Firefox
- Java Runtime 1.7 with Web Start Support
- PuTTY or equivalent telnet/SSH client

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)



Single System Image and Live Guest Migration

CSL-WAVE 3.1.0 (WAVESERV Hostname: tmcc-123-24.boeblingen.de.ibm.com, IP Address: 192.168.9.24)

File Auto Detect User-Group Management Network Management Prototype Management User Tasks Reports Window Help

Stop Updates

Hardware Viewer Enterprise Viewer Dashboard View

Hardware Viewer Default Zoom

Enterprise View > z/VM System (TMCC*)

Guests Session Tasks

Default Zoom Group By: z/VM System Show Filter Panel

TMCC14

TMCC17

TMCC13

TMCC11

TMCCSS10

ZLIN20 ("Unknown") ZLIN070 (tmcc-123-70) ZLIN107 (tmcc-123-107) ZLIN092 (tmcc-123-92) ZLIN119 ("Unknown")

TMCC13 5 Users All Accessible

TMCC17 1 Users All Accessible

ZLIN20 ("Unknown") ZLIN070 (tmcc-123-70) ZLIN107 (tmcc-123-107) ZLIN092 (tmcc-123-92) ZLIN119 ("Unknown")

TMCC11 5 Users All Accessible

ZLIN180 ("Unknown")

Property Viewer

TMCC11

Property	Value
Name	TMCC11
IP Address	192.168.9.11
Status	ACTIVE
Total Users	5
Total Virtual ...	6
Total Proto...	0
Total Volumes	101
Total Volume ...	0
DASD Free St...	0.00 GB

CSL-WAVE Log | Work Units | BTS Work Units | BTS System COR | **BTS Log** | Attention Required

Workunit Name	Initiator	Start At	End At	Progress
Relocate z/VM Guests	LGRDemo	2013-01-23 16:58:10	2013-01-23 16:58:13	100%
Relocate z/VM Guests	LGRDemo	2013-01-23 16:50:25	2013-01-23 16:50:30	100%
Relocate z/VM Guests	purit	2013-01-23 14:07:10	2013-01-23 14:07:12	100%
Sync NFS Servers	purit	2013-01-17 17:14:18	2013-01-17 17:14:18	100%
Relocate z/VM Guests	LGRDemo	2013-01-17 17:08:01	2013-01-17 17:08:02	100%

CSL-WAVE 3.1.0 (WAV... screenshots ZLIN119

BTS Online LGRDemo

EN

Inventory Management Screen Example

File Auto Detect User-Group Management Network Management Prototype Management Storage Management Administrative User Tasks Reports Window Help

Hardware Viewer Enterprise Viewer Dashboard View

Hardware Viewer Default Zoom

Current System View - "CSLDemo"

z/VM User Groups Network Prototypes Storage System Status Session Tasks

Default Zoom Group By: Location

Tag Show Filter Panel

The screenshot displays a software interface for system inventory management. On the left, a 'Hardware Viewer' shows a tree structure with 'CSLDemo' at the top, branching into 'CSLS02' and 'CSLS01', which further branch into 'CSLS02' and 'CSLS01' respectively. Below this is a 'Property Viewer' for 'CSLDemo' and 'UNPOOL'.

The main area, 'Current System View - "CSLDemo"', shows a grid of user groups categorized by location. Each group is represented by a box containing user icons and a summary bar at the bottom. The locations and their respective user counts are:

- London: 3 Users, All Accessible
- Jerusalem: 3 Users, All Accessible
- Not Assigned: 4 Users (2 Hidden), All Accessible
- Tel-Aviv: 14 Users, All Accessible
- Hafia: 4 Users, All Accessible
- NewYork: 3 Users, All Accessible

At the bottom, a red banner indicates 'Filter Active Show Empty Groups = No'.

Network Management Screen Example

File Auto Detect User-Group Management Network Management Prototype Management Storage Management Administrative User Tasks Reports Window Help

Hardware Viewer Enterprise Viewer Dashboard View

Hardware Viewer Default Zoom

Current System View - "CSLDemo"

z/VM User Groups Network Prototypes Storage System Status Session Tasks

Default Zoom Show Legend

Tag Show Filter Panel

Browsing z/VM System: CSLDemo

Predefined Views

- Enable All
- VLAN View
- Logical View
- Physical View
- Custom View

By Layers

- External
- VLAN
- Physical
- VN
- VNS
- Guests

Layout

Property Viewer

CSLDemo

Property	Value
Name	CSLDemo
IP Address	192.168.10.4
Status	ACTIVE
Total Users	159
Total Virtual ...	4
Total Prototy...	2
Total Volume	47
Total Volume ...	2
CLAS Frase Ct	7.13.0R

Filter Active Show Empty VNS = No

Performance Gauges Screen Example

File Auto Detect User-Group Management Network Management Prototype Management Storage Management Administrative User Tasks Reports Window Help

Hardware Viewer Enterprise Viewer Dashboard View

Enterprise Status Viewer

Filter selection
CPC = * +

Clear Go

Property Viewer
CSLDemo LNXPOOL

z/VM System Name	CPU Utilization	Virtual to Real Ratio	Page Space Utilization	Spool Space Utilization
CSLSSI1	z/VM CPU Utilization: 5.0%	Virtual to Real Ratio: 181.0%	z/VM Page Space Utilization: 0.0%	z/VM Spool Space Utilization: 28.0%
CSLSSI2	z/VM CPU Utilization: 5.0%	Virtual to Real Ratio: 178.0%	z/VM Page Space Utilization: 0.0%	z/VM Spool Space Utilization: 32.0%
CSLDemo	z/VM CPU Utilization: 16.0%	Virtual to Real Ratio: 87.0%	z/VM Page Space Utilization: 1.0%	z/VM Spool Space Utilization: 47.0%

Property Viewer details for CSLDemo LNXPOOL:

Property	Value
Group Name	LNXPOOL
Description	
Group Size	41.66 GB
Free Space	8.13 GB
Regions Ass...	12
Modified By	WAVE Daemon Updater on 2012-11-25 1...
Create By	WAVE Daemon Updater on 2012-11-25 1...

Storage Screen Example

File Auto Detect User-Group Management Network Management Prototype Management Storage Management Administrative User Tasks Reports Window Help

Hardware Viewer Enterprise Viewer Dashboard View

Hardware Viewer Default Zoom

Current System View - "CSLDemo"

z/VM User Groups Network Prototypes Storage System Status Session Tasks

Distribution Groups Volumes

CSLDemo

CSLSS1

CSLSS2

CSLSS1

WRK002 Free : 0.01 GB

WRK006 Free : 0.10 GB

WRK004 Free : 0.10 GB

WRK008 Free : 0.10 GB

WRK00A Free : 0.09 GB

WRK00C Free : 2.41 GB

WRK00D Free : 3.62 GB

WRK00B Free : 1.40 GB

WRK009 Free : 0.10 GB

WRK007 Free : 0.10 GB

WRK003 Free : 0.03 GB

WRK005 Free : 0.10 GB

Filter Active S.G. Name = LNPOOL

S.G. Name = LNPOOL

Go

Reset

Property Viewer

CSLDemo LNPOOL

Property	Value
Group Name	LNPOOL
Description	
Group Size	41.66 GB
Free Space	8.13 GB
Regions Assi...	12
Modified By	WAVE Daemon Updater on 2012-11-25 1...
Create By	WAVE Daemon Updater on 2012-11-25 1...

Summary – 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
- ✓ Extend the reach of existing skills to manage even the most
- ✓ Improve the quality and consistency of operations with a current and accurate view of
- ✓ 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



Thank you – Questions ?

Obrigado

Portuguese

Merci

French

Thank You

English

Gracias

Spanish

Danke

German



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IBM Wave for z/VM Announcement



5648-AE1 1.1. IBM Wave for z/VM
5648-AE2 1.1. IBM Wave for z/VM S&S

▪ IBM Wave for z/VM V1.1 (IBM Wave)

- Announced February 24th, 2014
- General availability February 28th, 2014
- Learn more:
 - [IBM Wave for z/VM](#)
 - IBM Redbooks Publication with recorded demos: [IBM Wave for z/VM Installation, Implementation and Exploitation](#)
- [Shopz](#) ordering available
- Enterprise Linux Server is now offered with IBM Wave
- Solution Edition for Enterprise Linux now includes IBM Wave for z/VM

A simple, intuitive virtualization management tool providing management, provisioning, and automation for a z/VM environment supporting Linux virtual servers

Enterprise Linux Server features IBM Wave for z/VM

■ 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 can be snapped out
- 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.



Performance Resource Monitoring - Single Guest

Display IONPWR1 Details
X

General Information

z/VM Guest Name: IONPWR1
 z/VM System Name: CSLDemo
 SDG Name: USER-LOCAL

Data | z/VM View | zLinux View | **Performance View** | Custom Attributes

z/VM Performance Data

Linux Performance Data

CPU

Memory

Swap

N/A

Load Average

1 Minute	5 Minutes	15 Minutes
0.61	0.14	0.05

Cache

Type	Amount
Buffers	18.62 MB

Tasks (46 total)

Status	Amount
Running	2

Processes

Process Name	PID	User	Prio.	Nice	Virtual	Resident	Share	Status	% CPU	% Memory	Time
sshd	1901	root	15	0	9.10 KB	2.91 KB	2.34 KB	S	35.2	2.5	0:09.14
ls	1932	root	25	0	2.86 KB	1.32 KB	984	R	34.2	1.1	0:08.34
top	1979	root	16	0	2.59 KB	1.24 KB	1004	R	1.0	1.1	0:00.07
pdf flush	71	root	15	0	0	0	0	S	0.3	0.0	0:02.21
init	1	root	16	0	848	320	272	S	0.0	0.3	0:02.62
migration/0	2	root	RT	0	0	0	0	S	0.0	0.0	0:00.00
ksoftirqd/0	3	root	34	19	0	0	0	S	0.0	0.0	0:00.00
events/0	4	root	10	-5	0	0	0	S	0.0	0.0	0:02.36
khelper	5	root	20	-5	0	0	0	S	0.0	0.0	0:00.01

Update

Close IAN

Waiting for user input

Simplify and Automate Management - Improve Accuracy

Business Value

How

- ✓ Gain efficiencies in virtualization management

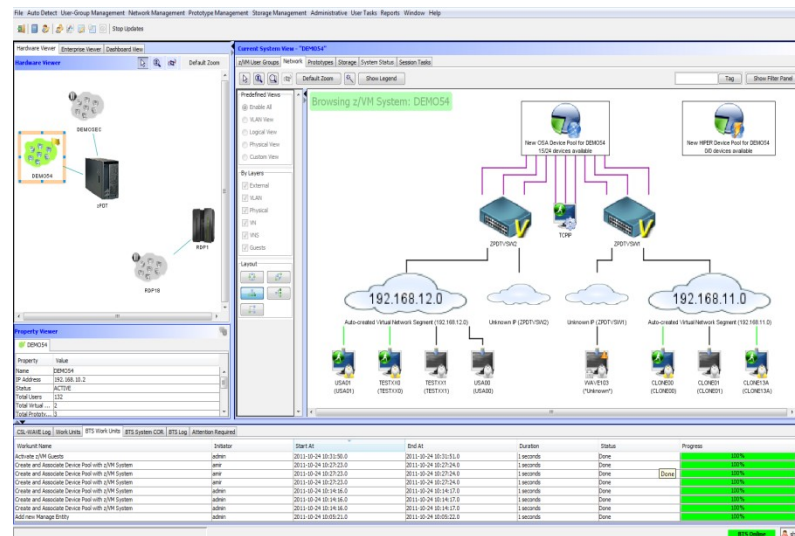
Easily view high level status of performance, storage usage, networks at a glance without needing multiple tools

Get an up to date, accurate view of the IT environment through IBM Wave discovery to plan or modify virtualized resources

Enable automation of management tasks; incorporate existing automation such as scripts

Benefits:

- IT managers who want to see resource information and high level status indicators at a glance
- IT systems staff or administrators who need to manage disk, network, virtual servers and get a handle on performance and utilization



Drive Down Management Costs

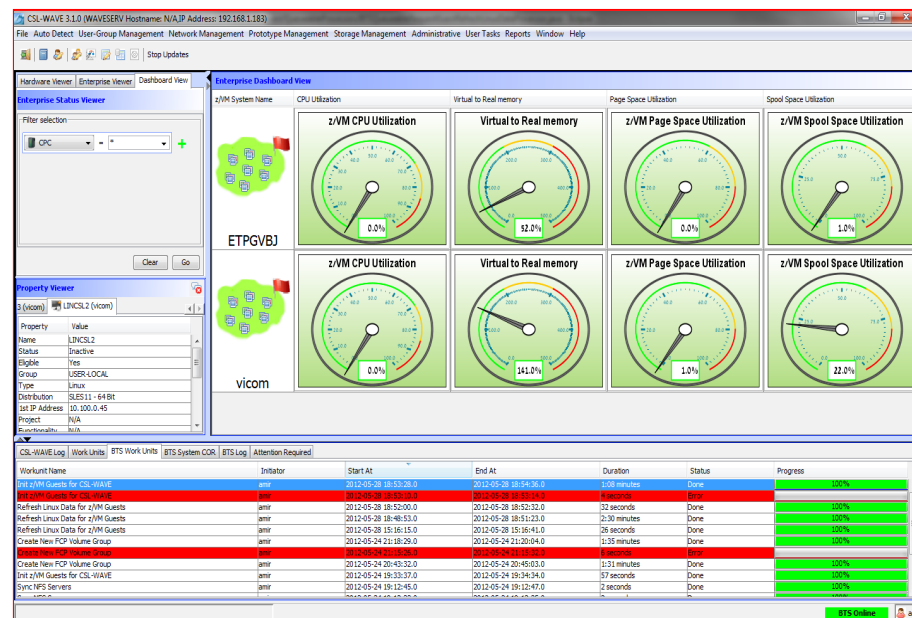
Business Value

How

- Extend the reach of your existing IT staff –reduce reliance on experts
- Enable self service for common management tasks
- Reduce chance of error
- Simplify and automate management tasks that would otherwise potentially take hours and require significant expert z/VM knowledge
- Enable self service of common management tasks even for complicated tasks such as Live Guest Relocation, Server Cloning, Storage provisioning and more

Benefits:

- IT managers facing z/VM skills shortages
- Organizations expanding Linux on IBM System z into new areas
- Organizations that want to make individual teams more self reliant and better leverage existing skills
- Organizations that may have multiple internal customers requiring grouping and reassignment of resources



Respond with Agility to Changing Business Needs

Business Value

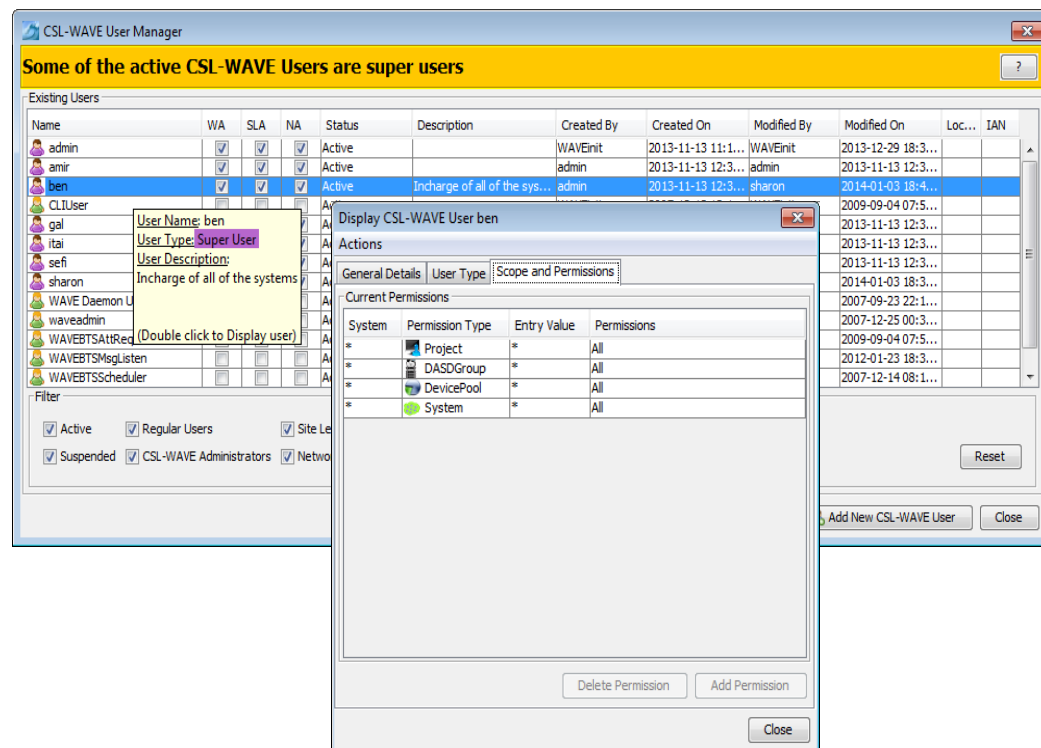
How

- ✓ Align permissions to business requirements

Provide segregation and mapping of virtual servers across the server farm at the individual administrator and group level
Respond quickly to changing business dynamics by setting needed segregation and permission grants

Benefits

- IT managers who must respond quickly to business needs by making z/VM administrative changes
- Organizations who may have multiple internal customers whose service requirements vary requiring realignment of resources
- Organizations who need highly isolated environments where administrators need different access levels to these environments



Accelerate Migration to Cloud

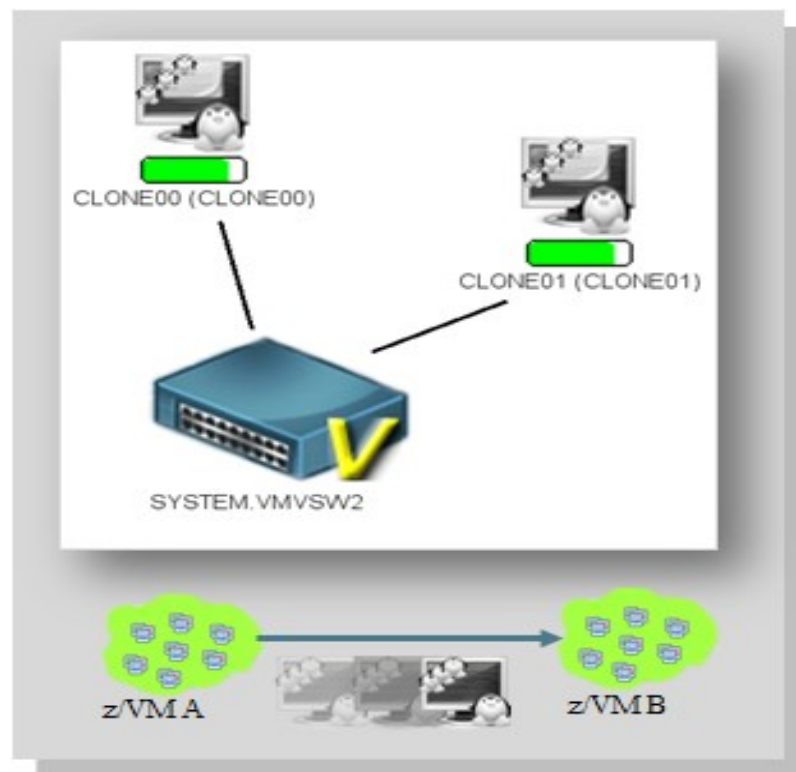
Business Value

How

- | | |
|---|--|
| <ul style="list-style-type: none"> ✓ Jumpstart your cloud journey on System z ✓ Make management of virtualized environments simpler | <p>Help provision new servers and clone Linux virtual servers easily, even across z/VM instances</p> <p>Customize a golden master with REXX scripts</p> <p>Simplify the first vital steps in the transition to a cloud environment</p> |
|---|--|

Benefits:

- IT managers who want to quickly get to a highly virtualized or private cloud environment up and running
- Organizations who want to use the z/VM environment they already have to start cloud efforts
- Organizations becoming familiar with self service provisioning and cloning methods



Manage Change and Reduce Risk

Business Value

How

- ✓ Reduce risk with logs of all IBM Wave users' activities

List tasks and status requested by the users according to scope. The logs may be routed to a centralized logging mechanism

Log each operation that changes the system including logging-on and off the system to provide an audit trail

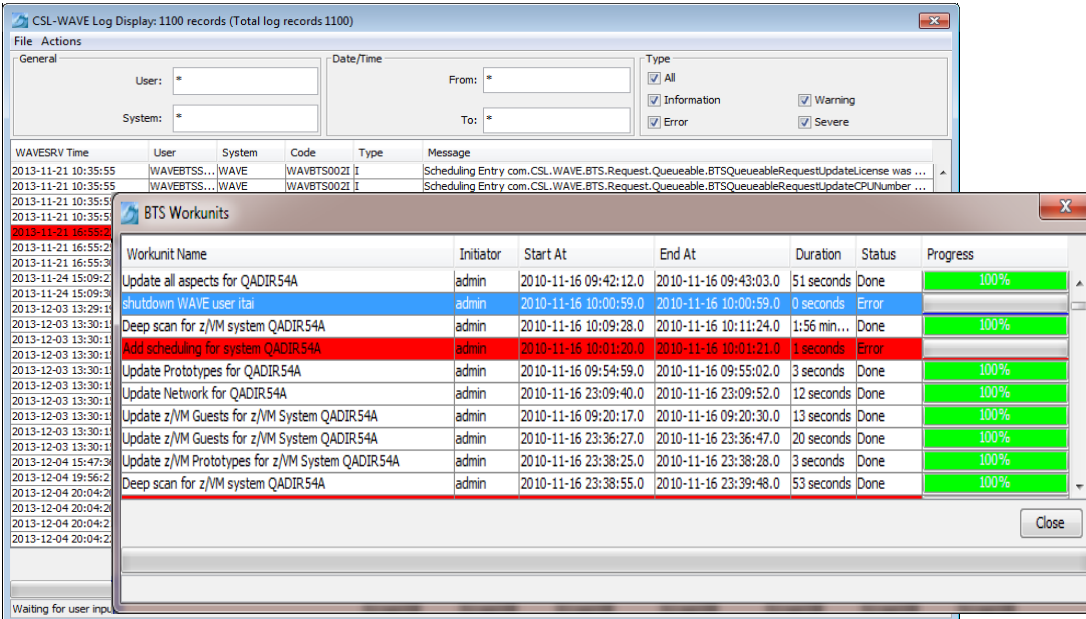
Further filter this table by originating user, date-time, and other criteria for more detailed reporting

Restrict activities by setting appropriate scope and permissions

- ✓ Reduce risk of unauthorized changes

Benefits:

- IT managers that need to meet compliance requirements, and require audit trails of changes
- Security administrators, help desk who need to perform troubleshooting



The screenshot displays two windows from the CSL-WAVE system. The top window, titled 'CSL-WAVE Log Display: 1100 records (Total log records 1100)', shows a table of log entries with columns for WAVESRV Time, User, System, Code, Type, and Message. The bottom window, titled 'BTS Workunits', shows a table of workunit tasks with columns for Workunit Name, Initiator, Start At, End At, Duration, Status, and Progress.

WAVESRV Time	User	System	Code	Type	Message
2013-11-21 10:35:55	WAVEBTSS...	WAVE	WAVBTS002I	I	Scheduling Entry com.CSL.WAVE.BTS.Request.Queueable.BTSQueueableRequest.UpdateLicense was ...
2013-11-21 10:35:55	WAVEBTSS...	WAVE	WAVBTS002I	I	Scheduling Entry com.CSL.WAVE.BTS.Request.Queueable.BTSQueueableRequest.UpdateCPUNumber ...

Workunit Name	Initiator	Start At	End At	Duration	Status	Progress
Update all aspects for QADIR54A	admin	2010-11-16 09:42:12.0	2010-11-16 09:43:03.0	51 seconds	Done	100%
shutdown WAVE user itai	admin	2010-11-16 10:00:59.0	2010-11-16 10:00:59.0	0 seconds	Error	
Deep scan for z/VM system QADIR54A	admin	2010-11-16 10:09:28.0	2010-11-16 10:11:24.0	1:56 min...	Done	100%
Add scheduling for system QADIR54A	admin	2010-11-16 10:01:20.0	2010-11-16 10:01:21.0	1 seconds	Error	
Update Prototypes for QADIR54A	admin	2010-11-16 09:54:59.0	2010-11-16 09:55:02.0	3 seconds	Done	100%
Update Network for QADIR54A	admin	2010-11-16 23:09:40.0	2010-11-16 23:09:52.0	12 seconds	Done	100%
Update z/VM Guests for z/VM System QADIR54A	admin	2010-11-16 09:20:17.0	2010-11-16 09:20:30.0	13 seconds	Done	100%
Update z/VM Guests for z/VM System QADIR54A	admin	2010-11-16 23:36:27.0	2010-11-16 23:36:47.0	20 seconds	Done	100%
Update z/VM Prototypes for z/VM System QADIR54A	admin	2010-11-16 23:38:25.0	2010-11-16 23:38:28.0	3 seconds	Done	100%
Deep scan for z/VM system QADIR54A	admin	2010-11-16 23:38:55.0	2010-11-16 23:39:48.0	53 seconds	Done	100%

Gain Productivity

Business Value

How

- ✓ Spend less time on routine administrative tasks
- ✓ Reduce chance of error
- ✓ Direct efforts to more complex tasks

IBM Wave automates the performance of VM commands, reducing steps needed for common tasks—and ensuring that tasks are performed in a consistent and repeatable way

IBM Wave provides the leverage to let your team manage additional servers without requiring additional personnel

Benefits:

- IT Managers facing business expansion without having budget for additional z/VM skills
- Organizations who are consolidating environments and need to expand the scope of system administrators
- Organizations who want to improve quality and reduce cost or rework by automating routine tasks

Clone a Guest Linux Server in 1/20th the time

Activate/deactivate a guest in 1/6th the time



Manage Resources More Intuitively

Business Value

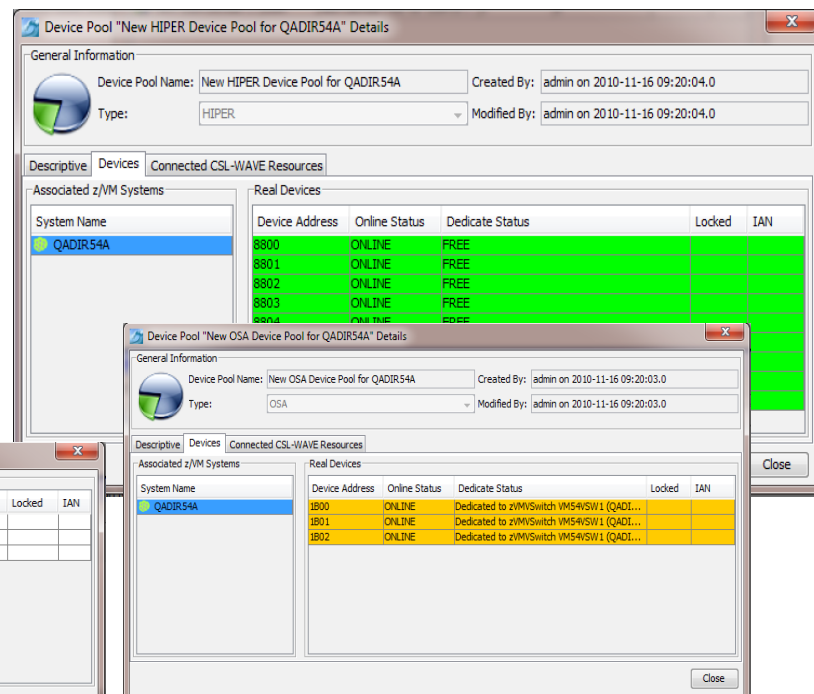
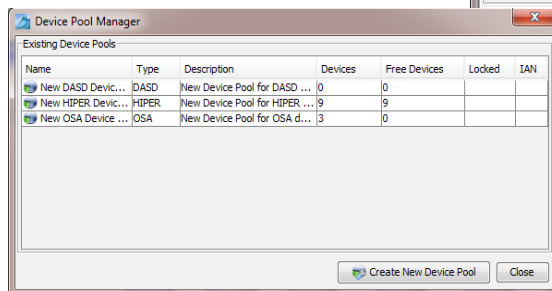
- ✓ Readily manage storage devices and quickly access necessary information
- ✓ Easily manage groups of resources according to projects or other meaningful classification schemes.

How

- Dedicated devices are managed in pools using the Device Pools Manager
- Manage multiple pools for each device class
 - Storage
 - HiperSockets™
 - OSAs

Benefits

- Simplifies administration of devices- allows you to group and manage resources for teams, projects, roles, etc.
- Improves the ability for IT administrators to relate to Pool users (e.g.; programmers) using terminology they are familiar with



Manage Resources More Intuitively

Network management example: create a virtual switch

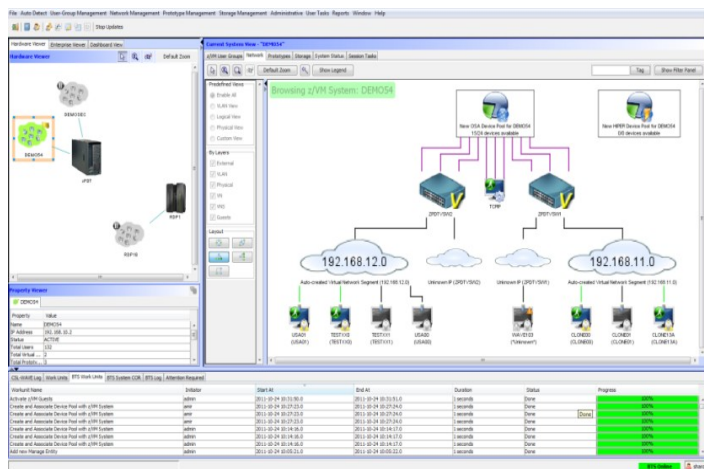
Business Value

How

- ✓ Simplify tasks that are error prone
- Graphical user interface
- Enter required data into pop-up window
- Automatically detects and display the Virtual Network topology of managed z/VM LPARs

Benefits

- Simplifies administration of networks- allows you to manage resources easily without having to look up complex commands
- Reduces chance of costly errors



Create virtual switch with IBM Wave	Task Steps using z/VM CP commands
Login as maint to define vswitch vsw1	<ul style="list-style-type: none"> ■ Using PCOM, log into z/VM instance ■ maint main
access and edit z/VM configuration	<ul style="list-style-type: none"> ■ link * cf1 cf1 mr ■ acc cf1 f ■ x system config f ■ bo1 ■ def vswitch.vsw1 rdev 900 portname port900 ■ modify vswitch vsw1 grant http3 ■ file
Verify configuration	<ul style="list-style-type: none"> ■ access 193 h ■ cpsyntax system config f
connect http3 to vsw1	<ul style="list-style-type: none"> ■ x user direct c ■ /http3 ■ a ■ nicdef 700 type qdio lan system vsw1 ■ file ■ directxa user

Optimize Service Levels while Leveraging Skills

✓ Business Value

How

- ✓ Manage service levels easily
 - ✓ Improve flexibility and responsiveness
 - ✓ Make it easier to enforce policies
- Deliver higher qualities of service through a convenient access to performance and management information
 - Administer and provision resources like servers, storage, user accounts – quickly and easily
 - Fine tune assignments of virtual resources to meet changing requirements.
 - Provide tagging of resources with meaningful reminder notes to help enforce your policies

Benefits:

- Organizations who need faster access to high level performance information
- Organizations who want to automate changes in server or other resource assignments and quickly assess performance

