IBM z Systems

IT Service Management: Monitor, Operate, Automate, and Back-up your z Cloud

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What Problems Are Clients Trying To Solve Via The Cloud?

Expectations of Cloud Computing

Potential Cost Reductions

Re-Focus on Business

Handling Usage Peaks

High Overhead
Related to Provisioning
New Users/Services

Switching form
CapEx to OpEx

Low Server Utilization

Secure Access to Data
for Mobile Workforce

Delays in Rolling
Out New Services

Application
Development &
Testing

Application Downtime /
Availability / Disaster
Recovery

Power / Space Constraints

Reaching new ecosystems

New Capabilities in z13 supporting Cloud Computing

Up to 10 TB Memory on z13
Improves consolidation ratios

GDPS for Linux on z Systems
Disaster Recovery solution for mission-critical workloads

Increase in # of LPARs on z13
Improves TCO

Cloud Manager w/ OpenStack V4.2
Heterogeneous platform management from z Systems

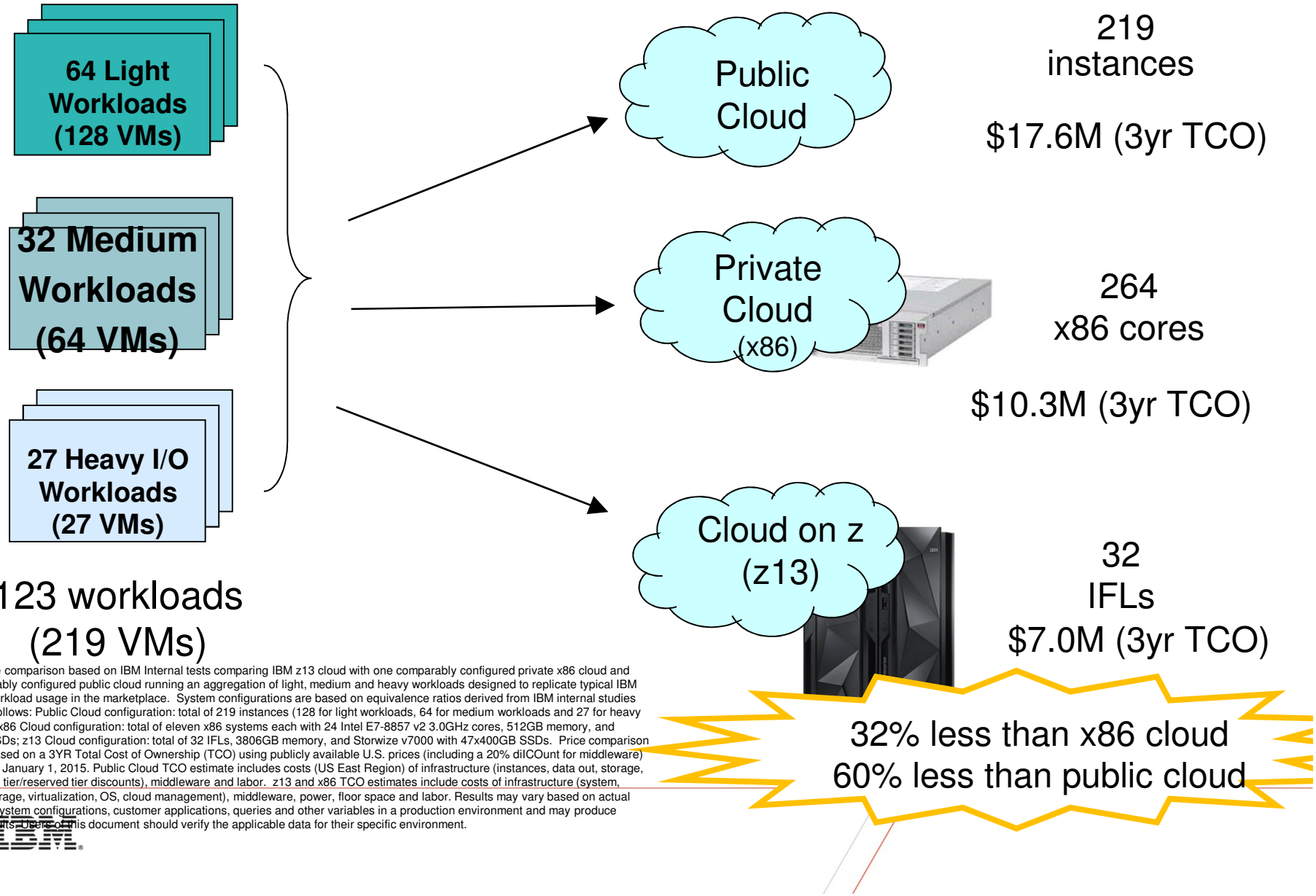
SMT-2 technology on z13
Improves performance and throughput of workloads

KVM
New industry-standard hypervisor (SOD)

Elastic Storage for Linux on z Systems
Enables new class of workloads

Private Cloud **Hybrid Cloud** **Public Cloud**

Z13 TCO by the numbers…



Performance comparison based on IBM Internal tests comparing IBM z13 cloud with one comparably configured private x86 cloud and one comparably configured public cloud running an aggregation of light, medium and heavy workloads designed to replicate typical IBM customer workload usage in the marketplace. System configurations are based on equivalence ratios derived from IBM internal studies and are as follows: Public Cloud configuration: total of 219 instances (128 for light workloads, 64 for medium workloads and 27 for heavy workloads); x86 Cloud configuration: total of eleven x86 systems each with 24 Intel E7-8857 v2 3.0GHz cores, 512GB memory, and 7x400GB SSDs; z13 Cloud configuration: total of 32 IFLs, 3806GB memory, and Storwize v7000 with 47x400GB SSDs. Price comparison estimates based on a 3YR Total Cost of Ownership (TCO) using publicly available U.S. prices (including a 20% dilCOunt for middleware) current as of January 1, 2015. Public Cloud TCO estimate includes costs (US East Region) of infrastructure (instances, data out, storage, support, free tier/reserved tier discounts), middleware and labor. z13 and x86 TCO estimates include costs of infrastructure (system, memory, storage, virtualization, OS, cloud management), middleware, power, floor space and labor. Results may vary based on actual workloads, system configurations, customer applications, queries and other variables in a production environment and may produce different results. Users of this document should verify the applicable data for their specific environment.

Complete solutions for cloud workloads on z Systems

Cloud Management

IBM Cloud Orchestrator

Pre-defined menu of Services

IBM Cloud Manager with OpenStack

Cloud Automation | **Open,** scalable platform

Cloud Marketplace

Pattern sharing/re-use, from engine | Rich set of ready to use **patterns**

Add on:

- **Cost management**
- **High Availability**
- **Security**
- **Application Performance Management**

Infrastructure Management

IBM Wave

Simple, intuitive, graphical **z/VM management tool**

OMEGAMON XE

Monitor performance of z/VM and Linux guests

Ops Mgr, Backup/Restore , TSM

Operational management **Backup/recovery** of z/VM & Linux

Complete Solution for Administration and Management of z/VM and Linux on z Systems

IBM Infrastructure Suite

Linux on z Systems

OMEGAMON XE on z/VM and Linux

Performance monitoring of z/VM and Linux virtual machines

Tivoli Storage Manager

File Level backup and recovery for Linux virtual machines

z/VM

IBM Wave

Simple, intuitive, graphical z/VM management tool

Operations Manager for z/VM

Facilitate operational monitoring and automated operations, take action based on events

Backup and Restore Manager for z/VM

Image and file level backup and restore of z/VM environment

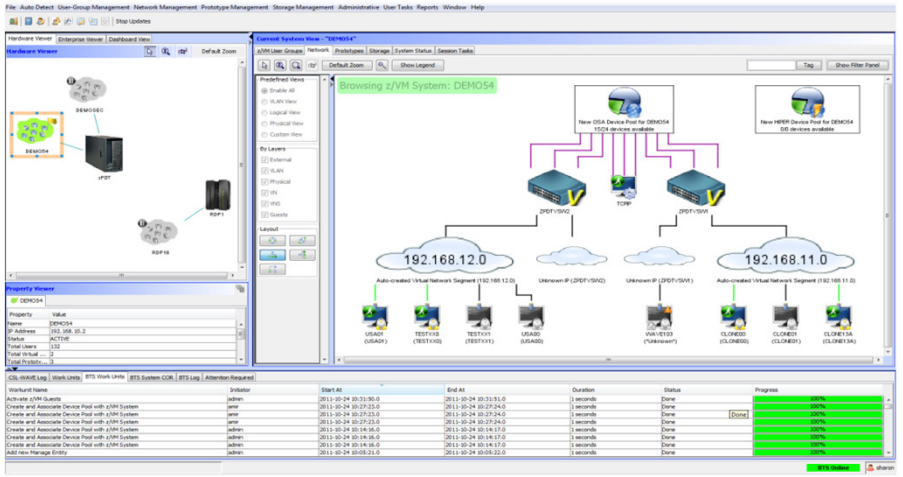
File level backup of z/VM data

IISz Components

IBM Wave for z/VM

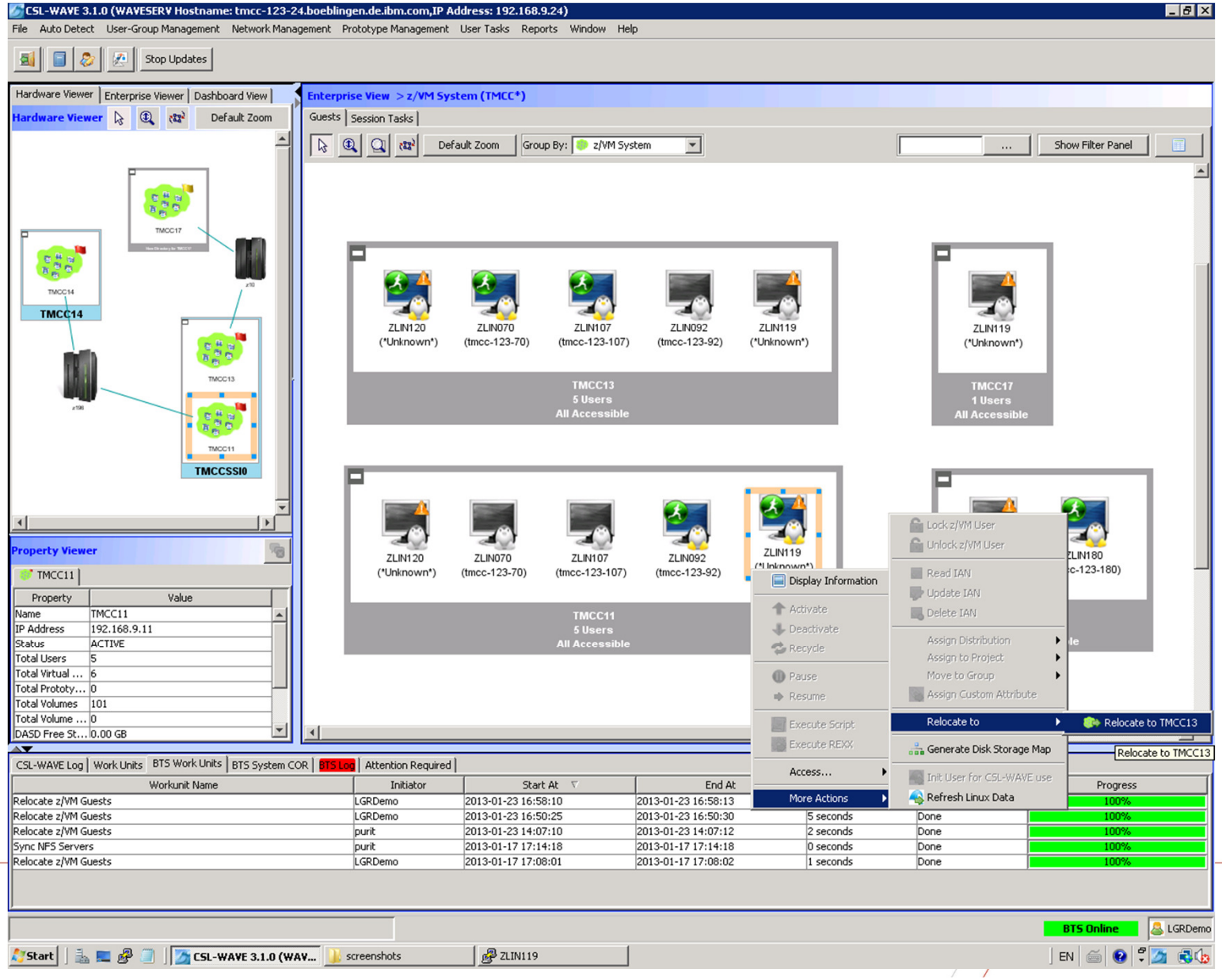
IBM Wave for z/VM (formerly CSL-WAVE) provides the graphical interface that simplifies and helps to automate the management of z/VM and Linux on System z virtual servers.

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

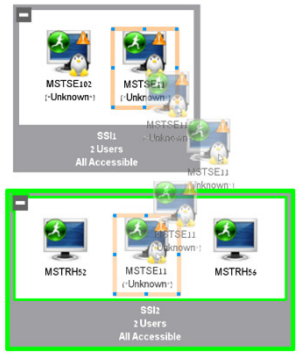


A simple, intuitive graphical tool providing management, provisioning, and automation for a z/VM environment, supporting Linux virtual servers.

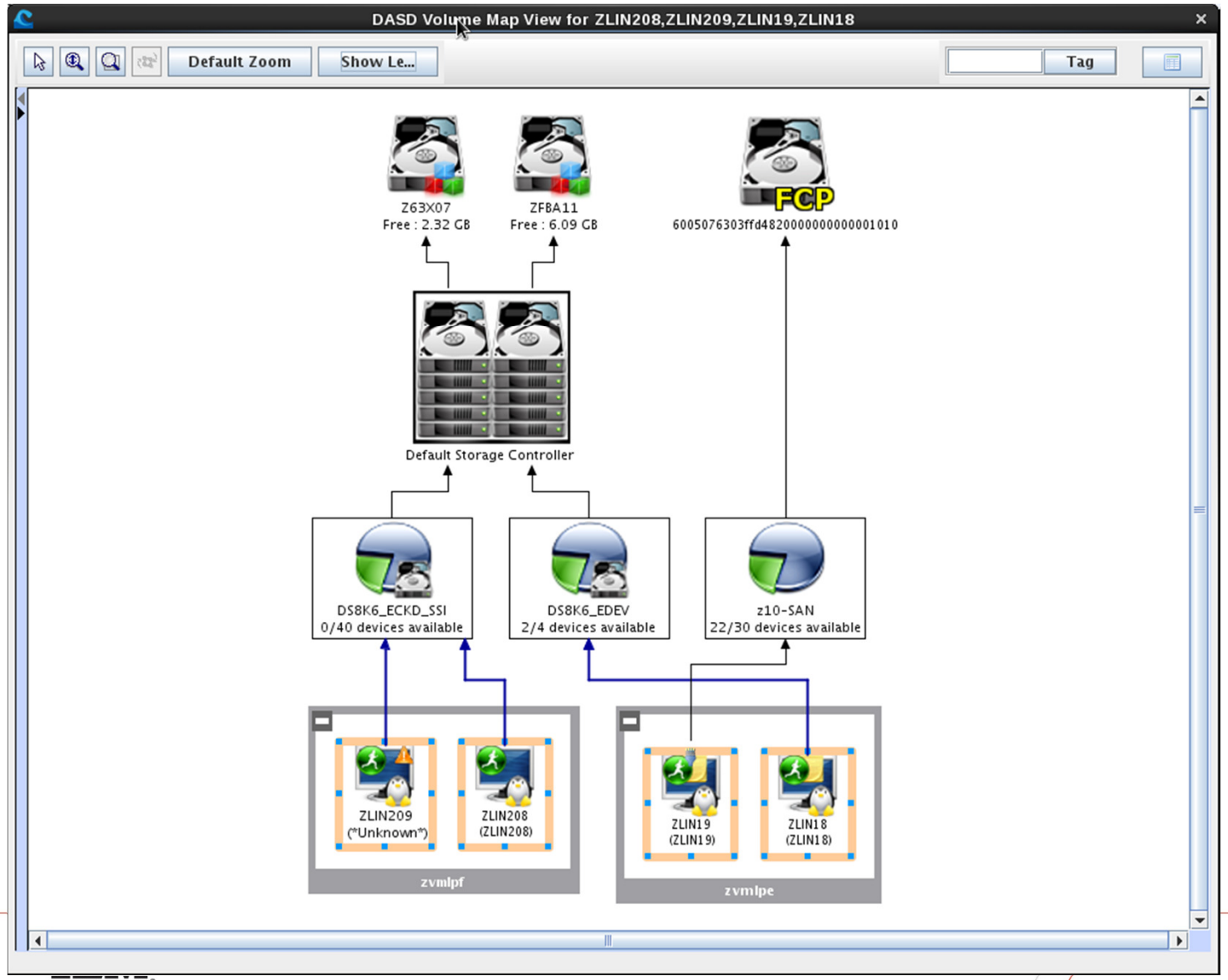
Single System Image and Live Guest Migration Example



migration using either the guests' context menu or drag-and-drop ...



Storage Screen Example – Volume Map

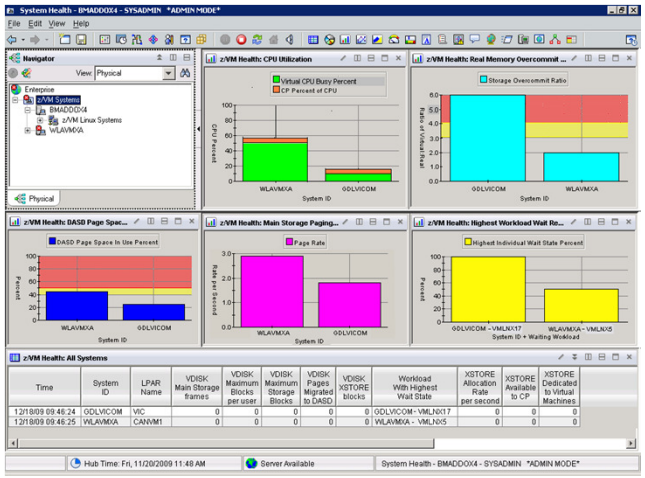


OMEGAMON XE on z/VM and Linux

Bringing z/VM and Linux monitoring into the Enterprise View

Enterprise-Ready

Cloud Monitoring



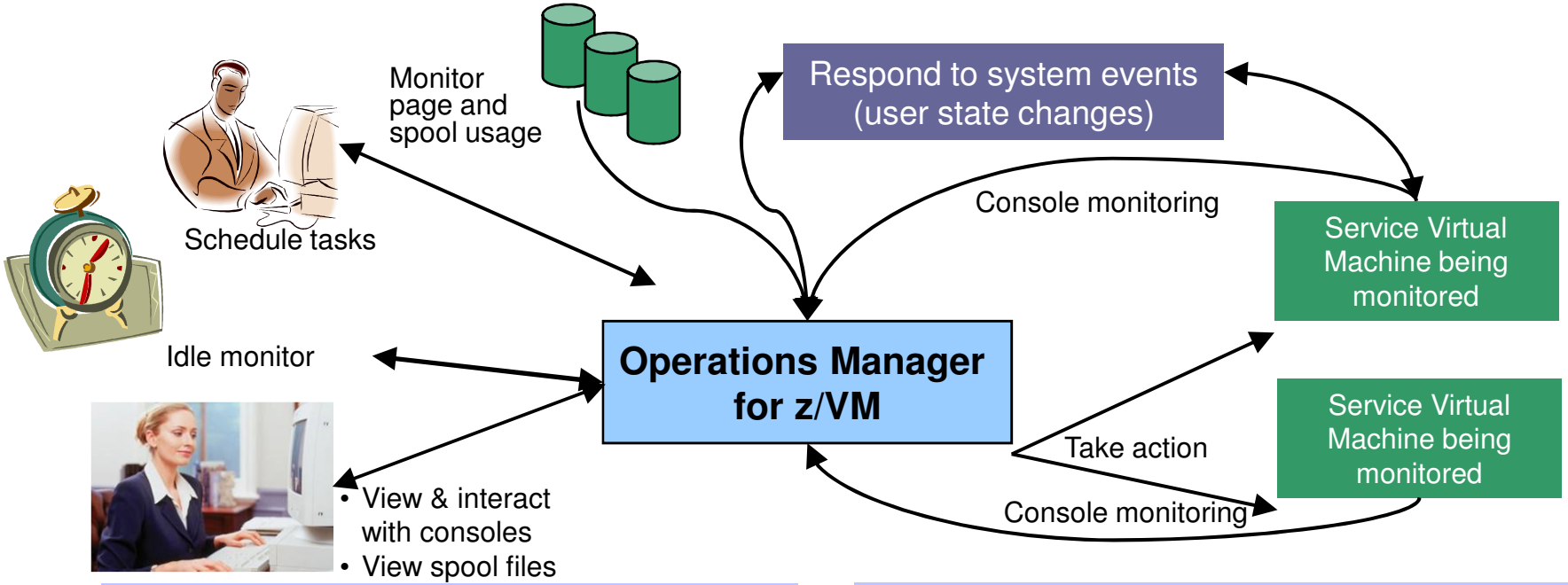
Increased Performance & Availability

- Provides insight into the health and performance of z/VM and Linux
  - Rich collections of attributes monitor thresholds for z/VM and Linux best practices.
  - Reflex automation provides timely resolution and/or notification.
  - Lightweight visibility to the z/VM hypervisor, Linux OS, and Linux Log data in one tool.
  - Deep integration with Cloud and Smarter Infrastructure Suite integrating z/VM and Linux data to the Enterprise view (Cross platform workflow management).
  - Persistent Historical views allows management of real and virtual resources across peak periods and downtimes for clear view of resource usage and constraints.

Operations Manager for z/VM

Increase productivity
- Authorized users to view and interact with monitored virtual machines without logging onto them
- Multiple users view/interact with a virtual machine simultaneously

Improve system availability
- Monitor virtual machines and processes
- Take automated actions based on console messages
- Reduce problems due to operator error

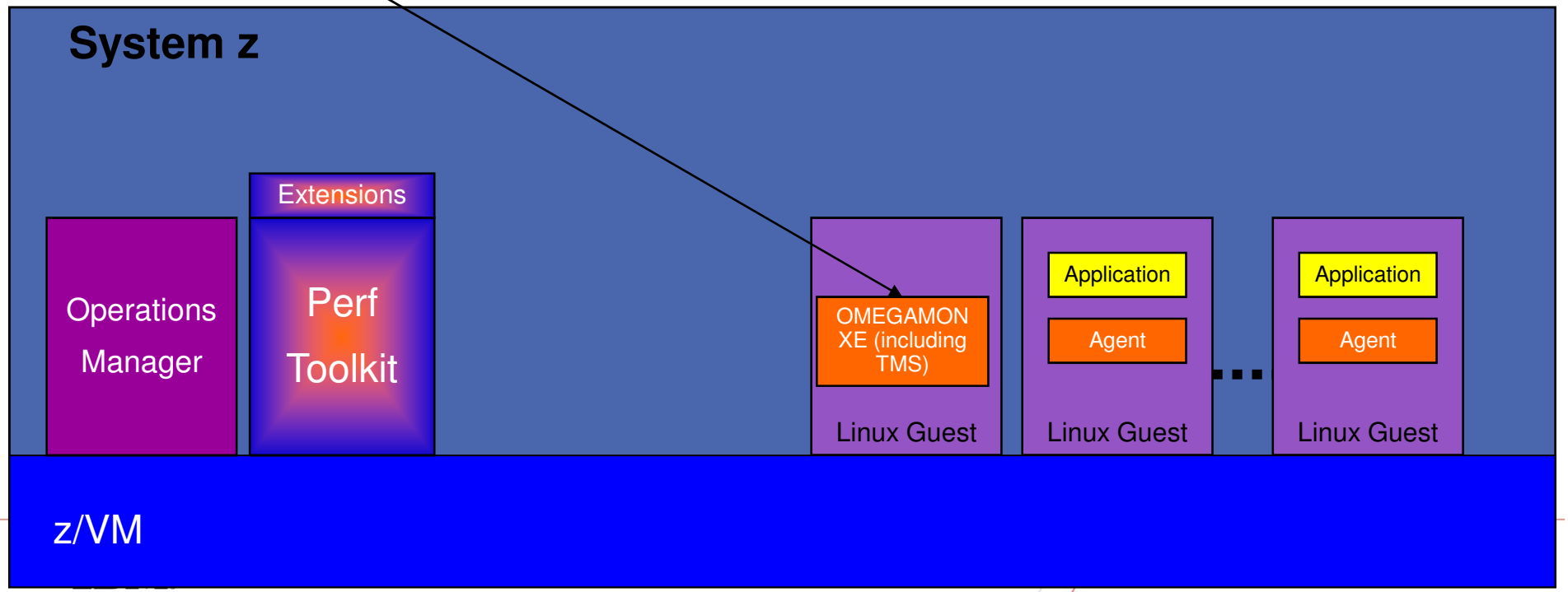


Automation
- Routine activities done more effectively with minimal operations staff
- Schedule tasks to occur on a regular basis

Integration
- Fulfill take action requests from performance monitoring products (e.g. OMEGAMON XE on z/VM and Linux)
- Send alerts to email, central event management systems (e.g. Netcool\OMNIbus), etc.

Operations Manager for z/VM and OMEGAMON XE on z/VM and Linux

- OMEGAMON XE on z/VM and Linux
  - Performance monitoring for z/VM and Linux guests
  - Part of Tivoli Management Services (TMS) infrastructure
- Operations Manager for z/VM
  - Monitor consoles of z/VM service machines and guest user IDs
  - Take actions based on console messages
    - Respond to “take action” requests from OMEGAMON
  - Schedule routine tasks



Tivoli Storage Manager Extended Edition

Cloud on System z workload backup and recovery

Cloud Backup/Recovery

Performance: High-performance, scalable backups and restores that minimize network traffic .

Disaster recovery: Performs automated, scheduled asynchronous replication of backup data and metadata

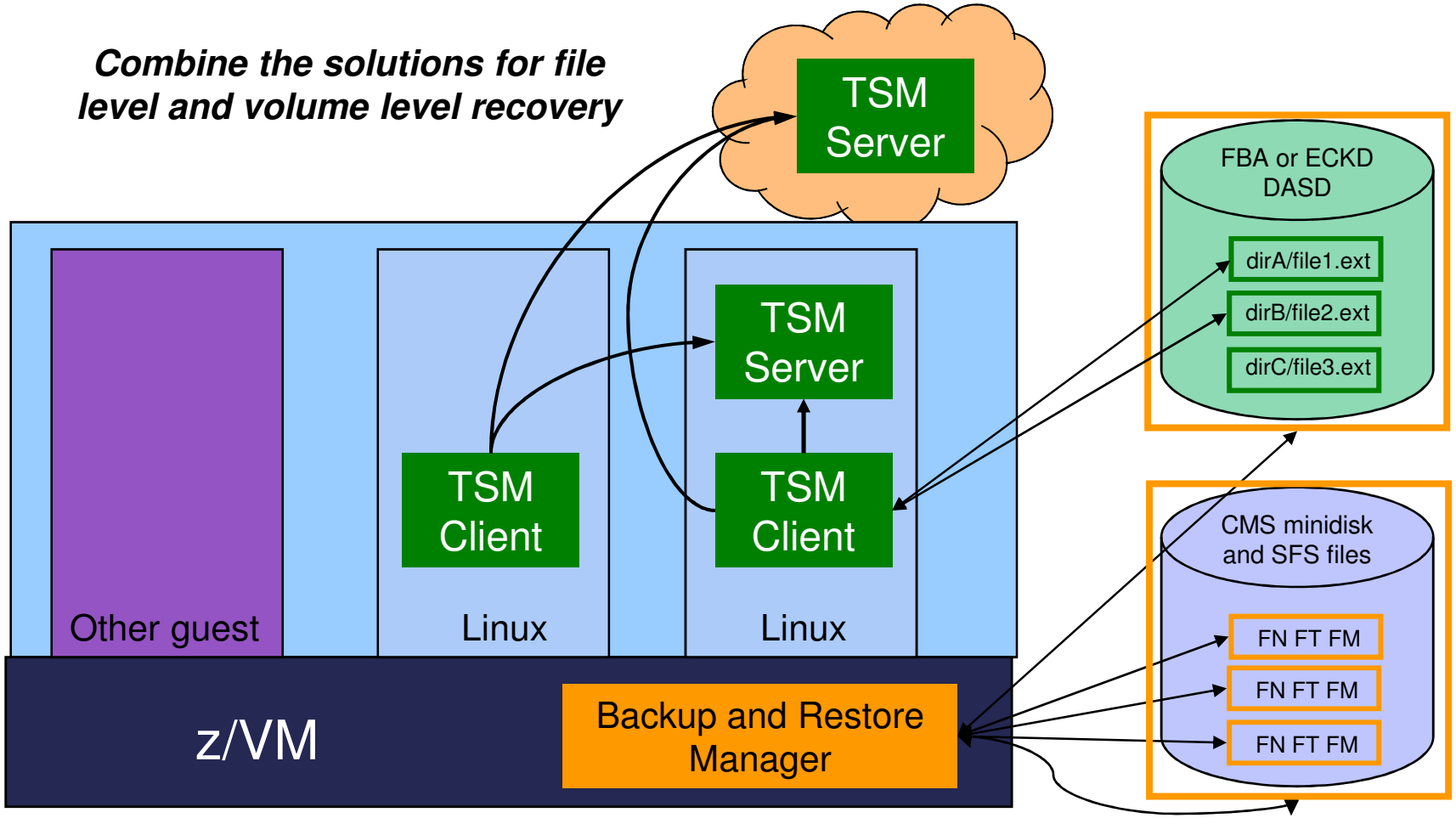
Flexibility: Data protection and disaster recovery for more than 500 different disk, tape and virtual tape storage

Scalability and reliability Management of up to four billion data objects on single server architecture built on IBM DB2®

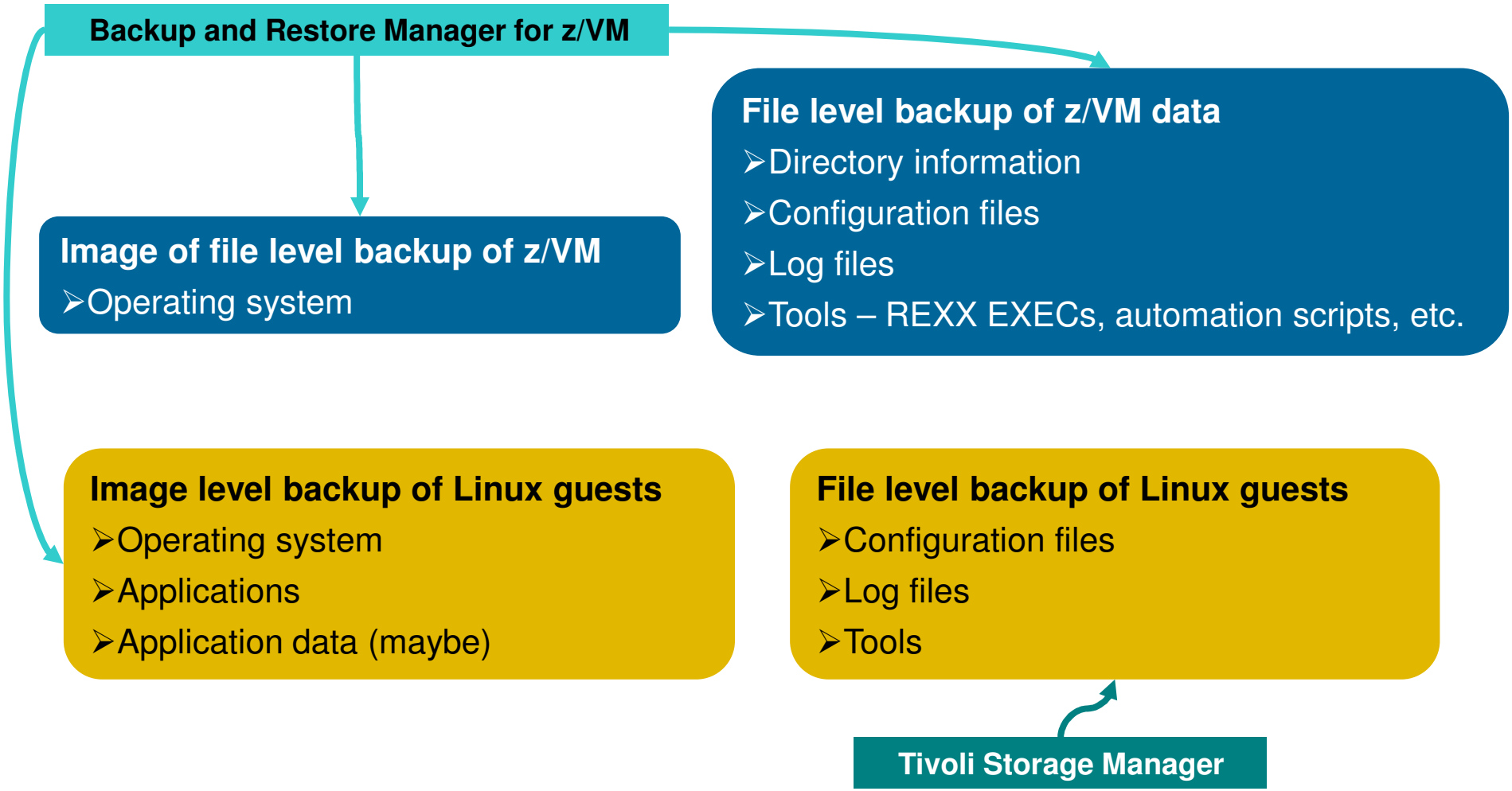
Backup and Restore Manager for z/VM

Using Backup and Restore Manager with Tivoli Storage Manager

Combine the solutions for file level and volume level recovery



Recommended Practices – Backup & Recovery



धन्यवाद

Hindi

多謝

Traditional Chinese

감사합니다

Korean

Спасибо

Russian

Gracias

Spanish

Thank You

English

شكراً

Arabic

Obrigado

Brazilian Portuguese

Danke

German

多谢

Simplified Chinese

Grazie

Italian

Merci

French

நன்றி

Tamil

ありがとうございました

Japanese

ขอบคุณ

Thai