The Promise of Virtualization

System Administrator

Easily deploy new applications and adjust priorities

Easily provision, configure, and manage systems

Virtual Environment

- Virtual resources are easy to deploy, grow, and migrate
- Many physical constraints are hidden or overcome
- Impact of physical resource changes is greatly reduced

Virtual Application Servers

Virtual Storage

Virtual Networks

Physical Environment

- Fixed sizes
- Limited ports/slots
- Incompatible versions

System x, p, i, z, BladeCenter, Enterprise Storage Server, FASTT

Virtualization

Data Center Operations

Make changes transparently, without “change windows”

Separation of virtual and physical environments facilitates required changes and limits their impact

- Rigid configurations
- Workloads bound to boxes
- Etc.

Sun

HP

EMC

Hitachi

Dell

Network Hardware

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Virtualization Management Challenges

**Physical Servers**
- Single workload per server
- Disparate management tools
- Manual provisioning

**Today’s Virtualized Servers**
- Consolidated workloads, but
- Difficult to see physical / virtual relationships
- Disparate management tools
- Manual provisioning, disruptive migration
IBM Virtualization Manager

Simplified management of virtualized systems via standard interfaces regardless of platform or virtualization technology

- Remove barriers to virtualization
- Remove pain points of virtualization

Industry standards-based virtualization mgmt interfaces (DMTF)
Virtualization Manager Xen Architecture

Web based console

Server

Agent

System X Hardware

XEN

Dom U

Dom U

Dom U

Dom U

Dom U

Dom U

VSM Server Extension

Director Server

Virtualization Manager UI

CIMOM

Dom 0
Virtualization Challenges

- Virtual to Physical mapping
  - How are virtual resources associated with physical resources?
  - Which virtual adapters are on same VLAN?
  - Where are virtual disks physically located?
- How do multiple VMs in single physical system affect one another?
- Disruptive firmware fixes for hypervisor affects multiple VMs
- Performance analysis is complex and fragmented
- Yet another layer of tools to learn
- Managing software licenses can become confusing
- Security (who has access to what?)
- Physical to Virtual migration
- Saving a snapshot of the environment
IBM Virtualization Manager

Overview

- “Industry leading single point of management for both physical and virtual systems”
- Objectives
  - Simplify virtualization for IBM hardware customers
  - Extend IBM Director virtual machine management with latest hypervisor support for Intel/AMD server space
  - Provide common IBM Director based management tool for hypervisors System x, BladeCenter, System p, and System i
- Product Offering
  - Available for no additional charge with IBM Systems
  - Works with IBM Director 5.10
IBM Virtualization Manager
Key Design Points

- Provide unified management of Heterogeneous Virtualization technologies.
- Discover and visualize resources and relationships
  - Out-of-the-box discovery, easily find resources and relationships, analyze environment, etc.
- Show health and tasks from all resources and relationships
  - Define and monitor health, drill down on problems quickly to find root cause
  - Provide common tasks that work across all resources
  - Provide detailed tasks to perform platform-specific tasks
- Grow existing workload by expanding or migrating
  - Increase virtual server’s memory, storage, processing, networking capabilities
  - Growing virtual server workload can be moved to more powerful physical server
- Use virtualization to help maintain, repair, and upgrade of servers
- Add new resources and work into virtual environment
  - Easily allocate, configure, and manage virtual servers
  - Make changes transparently without “change windows”
- Consolidate existing environments
  - Two or more OS instances combined onto one physical host
Virtual Servers and Hosts

This page shows all virtual servers and their physical hosts, regardless of platform or virtualization technology. You can dynamically track overall health and CPU/memory utilization, as well as run tasks. Some tasks launch IBM Director or the HMC in context.
And in this topology view, a network diagram is displayed. Relationships between components are indicated by colored arrows between systems.
In this relationship view of the Resource Navigator, it is clear how each piece of the virtualization environment relates to the other components.
Health Summary

The Health Summary page is the dashboard view, providing an overall view of the health of the entire infrastructure, including any resource monitors that have been configured. Drilling down into the Monitoring list provides further detail.
IBM Director thresholds can be viewed, graphed and added to the dashboard for at-a-glance viewing.
IBM Virtualization Manager adds several tasks optimized for virtual environments.

Virtualization Tasks

- Discover/Setup environment
- Create
  - Virtual server
  - Virtual farm
  - System template
- Edit virtual resources (host and virtual server)
- Resource views
  - Health Summary
  - Topology Map
  - Virtual Servers and Hosts
- Power on/off suspend/resume
- Relocate
- Properties
- Manage system templates and system plans
- Launch to all IBM Director tasks (event log, inventory, etc…)
- Manage storage using integrated tasks
- …
IBM Virtualization Manager adds Actions to the EAP Builder for managing virtual environments.
Event Filters

The VSM tree adds new Event Filters for managing virtual environments. Many events unique to these environments can now be detected and acted upon by Event Action Plans.
New Automation Possibilities

In this example, an Event Action Plan has been configured to migrate all virtual machines to the host with the lowest CPU utilization if a hardware PFA event occurs on a VMware host.
Create Virtual Server

Welcome

Welcome to the Create Virtual Server wizard.

This wizard will help you create a virtual server on a host. It will guide you through the following tasks:

- Selecting the host where your virtual server will be created
- Providing a name to identify the new virtual server
- Choosing the operating system
- Selecting the number of processors that will be used
- Selecting the amount of disk storage to use
- Setting the memory size
- Selecting a network label
- Selecting the resource to assign to this virtual server

Same wizard, regardless of target. Use a system template or existing virtual server as a source.
Create System Template

Welcome

Welcome to the Create System Template wizard.

This wizard helps you create a system template that you can use to quickly deploy a new virtual server into your environment.

You are guided through the following tasks:
- Naming your template
- Selecting the system image on which to base your virtual server
- Selecting the hardware resources required to run the new virtual server
- Customizing the operating system settings to be used when you deploy the virtual server
Relocate Virtual Server Task

Selecting any virtual server presents the Relocate Virtual Server task. Simply name the Task and select a destination host.
Relocate Virtual Server Task

The named task appears in the Tasks pane of IBM Director Console. From here it can be activated via drag-and-drop or as an Event Action.
Review of Virtualization Manager Capabilities
IBM Virtualization Manager
*Product Content (1 of 3)*

- Runs under Linux on POWER and z/VM in addition to Windows and Linux on Intel and AMD
- Virtualization Platforms supported:
  - Xen
  - HMC
  - IVM
  - VMware
  - Microsoft Virtual Server
- Topology and tree views
- Visualize and navigate virtual to physical resources and relationships
- Real time display of CPU utilization and resource allocations
- Refresh only changes on web UI, not full page

* Planned
IBM Virtualization Manager

Product Content (2 of 3)

- Dashboard summary format
- System health
- Drill-down capabilities
- Tasks
  - Start/Stop (Intel, AMD, Power on x, p, i, Blades)
  - Suspend/Resume (Intel, AMD on x and Blades only)
  - Create (from scratch)/Delete/Modify virtual systems (Intel, AMD on x and Blades only)
    - Network and storage configuration performed through other means
  - Migrate virtual server (VMware (live & static) and Microsoft Virtual Server (static) only)
  - Launch of HMC WebSM UI for System p and System i
- Storage management integration
  - Launch of Total Storage Productivity Center
  - Launch of Storage Manager
- Planning for a new system
  - Link to System Planning Tool website (planning for POWER only)
IBM Virtualization Manager

Product Content (3 of 3)

- VMware VirtualCenter provides management of homogeneous VMware environments
  - Dynamic (live) migration via VMotion
  - Supports cloning and P2V
  - Single point of management for multiple virtual hosts
  - Focuses on virtualization management, not physical systems
- IBM Virtualization Manager complements VMware VirtualCenter, providing one management interface for both the virtual and physical resources
- IBM Virtualization Manager provides common interface for hardware and virtual machine management
  - VMware, with or without VirtualCenter
  - Microsoft Virtual Server
  - Xen hypervisor support in SLES 10
  - pHype endpoints managed by HMC (System p and System i)
- Availability and failover with Event Action Plans
  - Actual or predicted system failure
  - Static migration for VMware and Microsoft Virtual Server
  - Dynamic migration via VMotion for VMware environments
Summary

IBM Virtualization Manager:
- Simplifies virtualization for IBM hardware customers
- Provides a single point of management for both physical and virtual systems
- Provides consistent management across multiple virtualization environments
- Provide common IBM Director based management tool for hypervisors running on System x, BladeCenter, and System p
- Available for no additional charge with IBM Systems
Resources on the Web

- Information about Virtualization and Systems Director
  - www.ibm.com/systems/virtualization/systemsdirector

- Information about IBM Director
  - www.ibm.com/systems/management/director

- Information about IBM Director Extensions
  - www.ibm.com/systems/management/director/extensions

- Information about Virtualization Manager
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