

IBM Systems Director VMControl V2.3.1

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Agenda

- > VMControl V2.3.1 Overview
 - > Express Edition
 - Platform support – Power Systems, x86, z/VM
 - Performance Summary
 - > Standard Edition
 - Virtual Appliances
 - Capture, deploy, import, versioning
 - > Enterprise Edition
 - Workloads
 - Server System Pools
 - Storage System Pools
 - Resilience Policies
- > VMControl V2.3.1 Installation

What is IBM Systems Director VMControl?

Software that delivers consistent management of single virtual systems or pools of cooperating systems for all IBM server environments



VMControl features:

- Discover virtual resources
- Display inventory and topology
- Monitor virtual resource health
- Relocate virtual resources
- Create and manage virtual servers
- Deploy and manage workloads
- Provision and manage virtual images
- Manage virtual resource pools

VMControl encompasses virtual server lifecycle management, image management and system pool management as an extension to IBM Systems Director.



VMControl V2.3.1 Overview

> No-charge features

– Manage Virtual Servers, hosts, platforms

- PowerVM
- VMware, Microsoft
- z/VM

– Performance Summary

> Chargeable features

– Image Management

- Deploy
- Capture
- Import
- Versioning

– System Pools

- Resilience Policy
- Placement Plans
- Workloads

The screenshot displays the IBM Systems Director web interface. On the left is a navigation pane with categories like 'Automation', 'Availability', 'Inventory', 'Energy', 'Release Management', 'Security', 'System Configuration', 'System Status and Health', 'Task Management', and 'Settings'. The main content area shows a dashboard for 'Power System' with several management modules:

- Storage management 6.2.0**: Ready. Includes links for SMI-S Providers, Systems And Volumes, and Storage Subsystems And Volumes.
- Network Management 6.2.0**: Ready. Includes a link for View all network systems.
- BladeCenter and System x Management 6.2.0**: Ready. Includes links for View I/O module plug-ins, BladeCenter chassis and members, and Servers and service processors.
- Power Systems Management 6.2.0**: Ready. Includes links for AIX/Linux virtual servers and IBM i virtual servers.
- System z Management 6.2.0**: Ready. Includes links for z/VM hosts, Linux on System z, and HMC and managed System z servers.
- WPAR Manager 2.2.0.0**: Information icon. Message: 'Additional configuration required. WPAR-capable systems have not been identified. Setup advisor'.
- Service and Support Manager 6.2.0**: Information icon. Message: 'The state of Service and Support Manager can not be determined at this time. Getting Started with Electronic Service Agent View support files'.
- VMControl Enterprise Edition 2.3.0**: Ready. Includes links for Workloads, Virtual Servers and Hosts, Virtual Appliances, Server system pools, Storage Control, and Deploy Virtual Appliance. This module is highlighted with a red box.

At the top right of the interface, there are status indicators: 'Problems 3' (with a red X icon), '5' (with a yellow warning icon), and 'Compliance 0' (with a green check icon) and '1' (with a yellow warning icon).

VMControl V2.3.1 Editions

- > Express Edition (no-charge) → Included in Systems Director Express Edition
 - Create and Edit virtual servers
 - Manage and relocate virtual servers
 - Monitor, thresholds, automation

- > Standard Edition (chargeable, 60-day trial) → in Systems Director Standard Edition
 - Express edition features plus:
 - Discover existing image repositories
 - Import OVF images into repositories as virtual appliances
 - Capture a running virtual server, including OS, applications and server
 - Deploy virtual appliances quickly to create new virtual servers

- > Enterprise Edition (chargeable, 60-day trial) → in Systems Director Enterprise Edition
 - Standard Edition features plus:
 - Create server and storage system pools
 - Deploy virtual appliances into system pools
 - Manage workloads with availability policies



VMControl V2.3.1 Server and Licensing

- > VMControl V2.3.1 is a plug-in that installs on the IBM Systems Director Server running V6.2.1 or later. The following server operating systems are supported:
 - AIX
 - Linux on Power
 - Linux on x86
 - Linux on System z
 - Windows
- > VMControl V2.3.1 Standard and Express Editions are available on a 60-day trial period from the date of installation.
- > VMControl is licensed based on a per-server metric. A license is required for each server managed by VMControl based on the size of the server.
 - VMControl Enterprise Edition license includes the Standard Edition license functionality.



VMControl Express Edition Basic Page

> Basics

- Install agents
- Discover
- License
- Learn



> Virtual Servers/Hosts

> Discover and LIC tasks with TPM for Images for VMware and Hyper-V

The screenshot shows the VMControl Express Edition Basic Page. At the top, it says "VMControl Express Edition" and provides a brief description: "Use server system pools and virtual appliances to manage your data center more efficiently. Deploy virtual appliances and manage the resulting workloads. Pool your systems to increase resource utilization and automation." There is a "Learn more..." link.

Below the description are three summary tables:

Resources	Active Status	Jobs
1 Virtual appliances	Problems: - 1 -	Active: - -
2 Workloads	Compliance: - 1 -	Completed: 1 6
0 Server system pools		Scheduled: - 11

The interface has several tabs: Basics (selected), Workloads, Virtual Appliances, Server System Pools, and Virtual Servers/Hosts.

Under the Basics tab, there is a status message: "VMControl is ready." with a green checkmark icon. Below this are two links: "Deploy a virtual appliance" and "View workloads in your data center".

There are two "Common Tasks" sections:

- Common Tasks 1:** Install agents, Discover virtual appliances, Import, Capture, Storage Control.
- Common Tasks 2:** Set up virtualization management, Check for updates, Launch information center.


At the bottom, there is a "License" section listing three installed licenses:

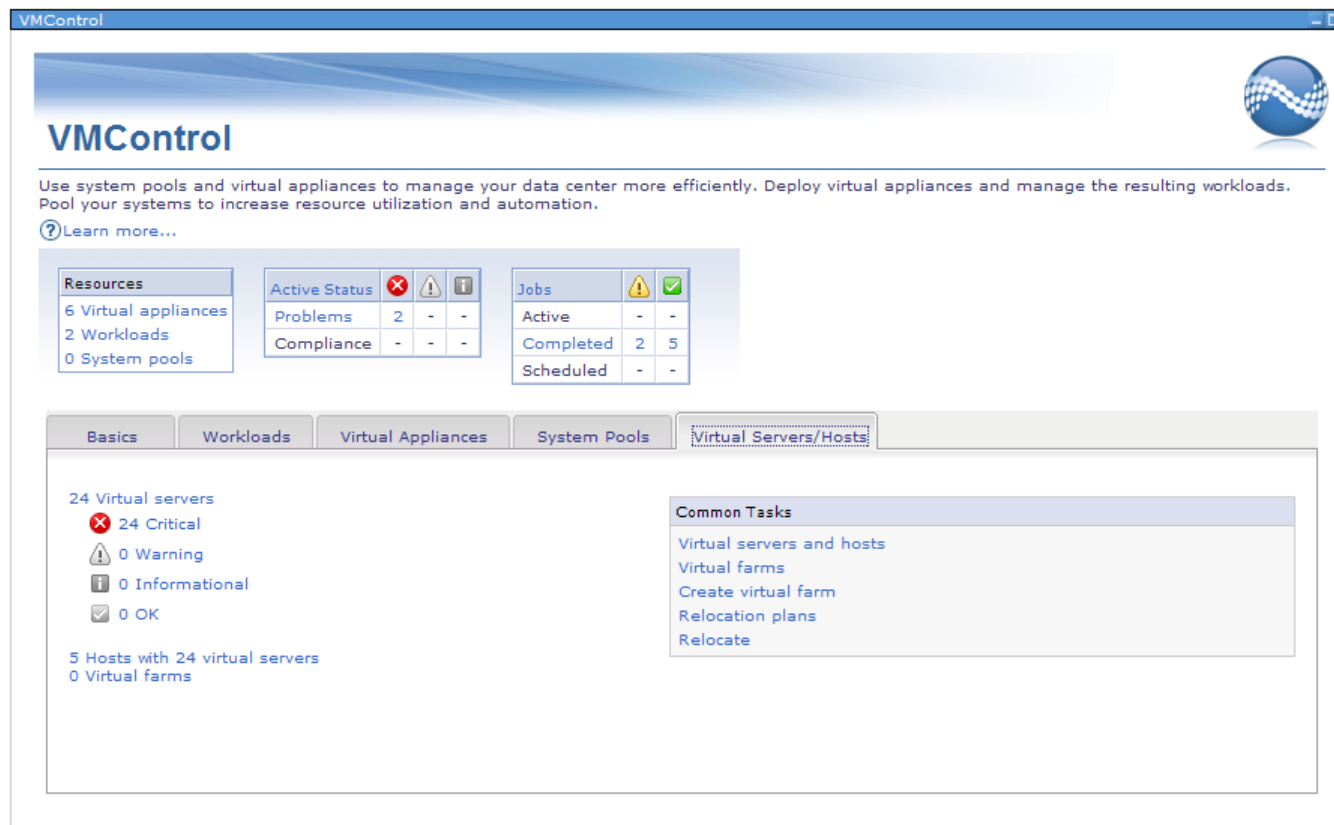
- VMControl Express Edition 2.3 License installed
- VMControl Standard Edition 2.3 License installed
- VMControl Enterprise Edition 2.3 License installed

Virtual Servers/Hosts

> Basics

> Virtual Servers/Hosts

- Active Status
- Performance Summary
- Virtual Servers & hosts
- Virtual farms 
- Relocation Plans
- Job Status



VMControl





Use system pools and virtual appliances to manage your data center more efficiently. Deploy virtual appliances and manage the resulting workloads. Pool your systems to increase resource utilization and automation.

[Learn more...](#)

Resources	Active Status	Jobs
6 Virtual appliances	Problems 2 - -	Active - -
2 Workloads	Compliance - - -	Completed 2 5
0 System pools		Scheduled - -

Basics Workloads Virtual Appliances System Pools **Virtual Servers/Hosts**

24 Virtual servers

-  24 Critical
-  0 Warning
-  0 Informational
-  0 OK

5 Hosts with 24 virtual servers
0 Virtual farms

Common Tasks

- Virtual servers and hosts
- Virtual farms
- Create virtual farm
- Relocation plans
- Relocate

Definition: a Virtual Server is an LPAR or a Virtual Machine; a container for an operating system



Multiplatform Virtualization Management

> Multi-Platform Management

- Manage virtual servers & hosts
- Manage PowerVM via HMC and IVM
- Manage x86 via VMware vCenter 4.x, ESX 4.x, ESX 3.x,
- Manage x86 Linux with KVM technical preview
- Topology maps
- Create empty virtual servers
- Monitoring, automation

> Edit virtual resources

> Relocate virtual servers

The image displays two screenshots from the IBM Systems Software interface. The top screenshot, titled "Virtual Servers and Hosts", shows a table of virtual servers and their hosts. The bottom screenshot, titled "Create Virtual Server", shows a network topology map with various components like hosts, switches, and network interfaces.

Select	Name	State	Access	Problems	Compliance	IP Address	CPU Utilization	Processors
<input checked="" type="checkbox"/>	vsmesx1-host		OK	OK	OK	9.5.23.51	1%	2
<input type="checkbox"/>	2003Server_Base	Stopped	OK	OK	OK		0%	2
<input type="checkbox"/>	2003Server_gwr59a	Suspended	OK	OK	OK		0%	2
<input type="checkbox"/>	bws_fc8	Suspended	OK	OK	OK		0%	1
<input type="checkbox"/>	hatteras	Stopped	OK	OK	OK		0%	1
<input type="checkbox"/>	Ken	Stopped	OK	OK	OK		0%	1
<input type="checkbox"/>	MIKE	Stopped	OK	OK	OK		0%	1
<input type="checkbox"/>	rh5install	Stopped	OK	OK	OK		0%	1
<input type="checkbox"/>	testgreg	Stopped	OK	OK	OK		0%	1
<input type="checkbox"/>	vm1	Stopped	OK	OK	OK		0%	1

Edit Virtual Server – Power Systems, VMware, etc.

- > Multi-Platform Management
- > Edit virtual resources
 - Edit Hosts
 - Edit Virtual Servers
 - GUI or command line
- > Relocate virtual Servers

Edit Virtual Resources -- virtual server mpotestaix5

Edit Virtual Resources -- virtual server mpotestaix5

Processor Memory Network Physical Slots Virtual Disk Devices

Processor mode: Use Shared Processors

Shared priority: Medium(128)

Processors	Processing units
Minimum: 1 (1-4)	Minimum: 0.1 (0.1-0.2)
Assigned: 1 (1-4)	Assigned: 0.1 (0.1-0.2)
Maximum: 4 (1-4)	Maximum: 4 (0.1-4)

OK Cancel

Edit Host

Edit Host

Disk Memory Processor

Processor allocations across the host:

Virtual Server	Shared	Minimum Proce:	Assigned Proce:	Maximum Proce:	Sharing Priority	Minimum P
mpotestaix5	<input checked="" type="checkbox"/>	1	1	4	Medium(128)	
hy21vs1	<input checked="" type="checkbox"/>	1	1	4	Medium(128)	
mpotestaix2	<input checked="" type="checkbox"/>	1	1	4	Medium(128)	
mpotestaix3	<input checked="" type="checkbox"/>	1	1	1	None(capped)	
mpotestaix1	<input checked="" type="checkbox"/>	1	1	1	None(capped)	
pva0021.pdl.p...	<input checked="" type="checkbox"/>	1	4	4	Medium(128)	
pll0023_SuSE10	<input type="checkbox"/>	1	2	4	None(capped)	
zjltest1	<input type="checkbox"/>	1	1	2	None(capped)	

Total: 8, Displayed: 8

Edit Virtual Resources -- virtual server MIKE

Edit Virtual Resources -- virtual server MIKE

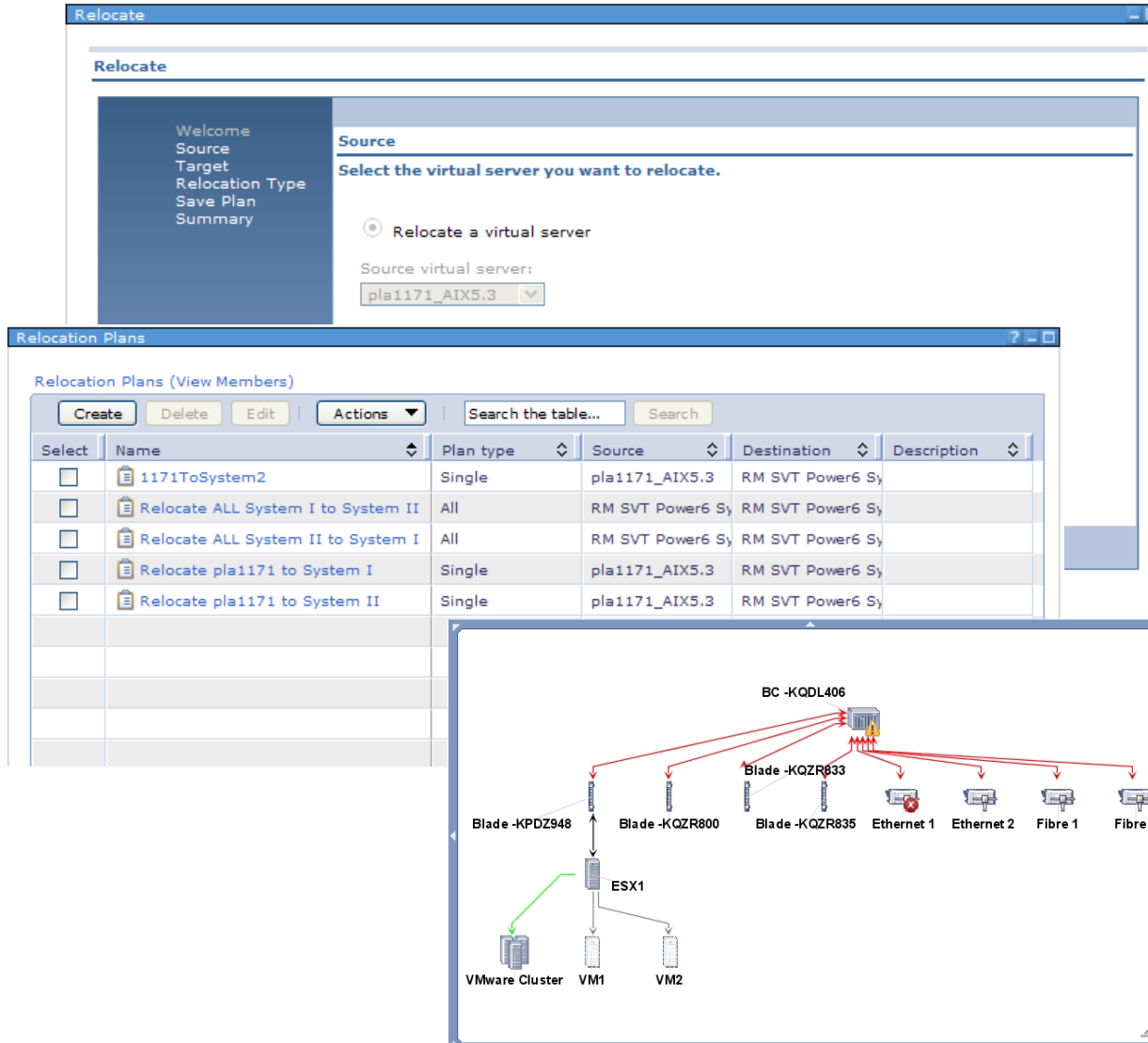
Processor Memory Virtual Disk

Number of processors: 1 (1-4)

OK Cancel

Relocate Virtual Servers

- > Multi-Platform Management
- > Edit virtual resources
- > Relocate virtual servers
 - Virtual Farms
 - Live relocation
 - PowerVM
 - VMWare VirtualCenter with ESX/ESXi
 - VMWare vCenter with ESX/ESXi
 - Static relocation
 - PowerVM
 - Microsoft Virtual Server
 - VMware ESX
 - Relocation plans



The image shows two screenshots from the IBM Systems Software interface. The top screenshot is the 'Relocate' window, which has a sidebar menu with options: Welcome, Source, Target, Relocation Type, Save Plan, and Summary. The main area is titled 'Source' and contains the instruction 'Select the virtual server you want to relocate.' Below this, there is a radio button for 'Relocate a virtual server' and a dropdown menu for 'Source virtual server:' currently set to 'pla1171_AIX5.3'.

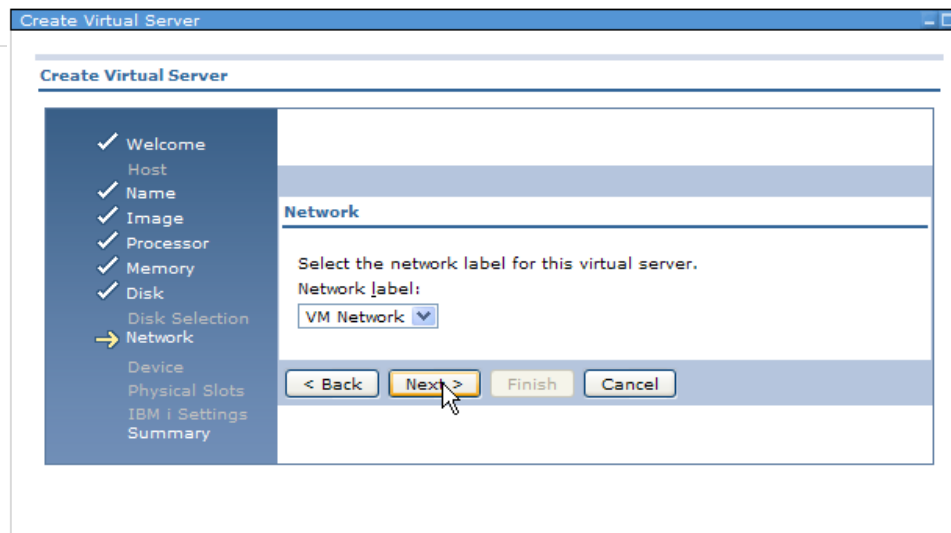
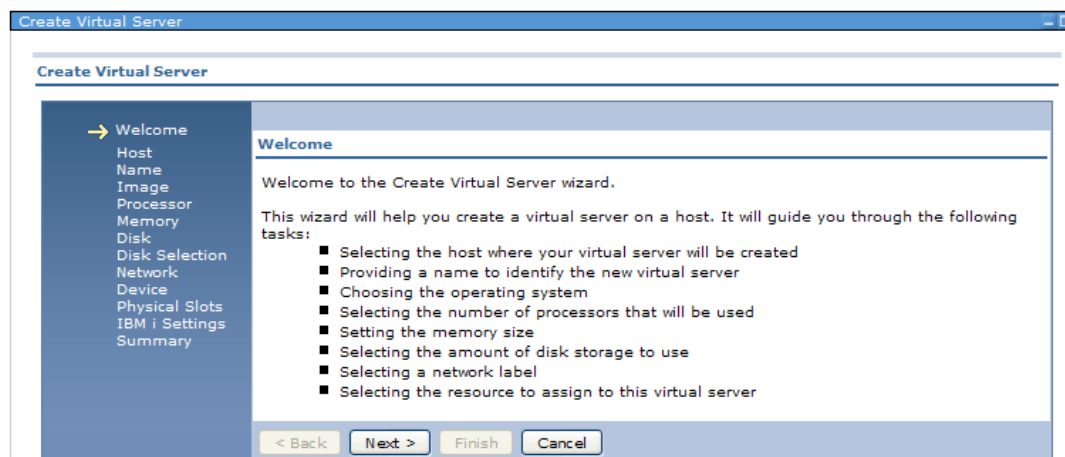
The bottom screenshot is the 'Relocation Plans' window, titled 'Relocation Plans (View Members)'. It features a table with columns for 'Select', 'Name', 'Plan type', 'Source', 'Destination', and 'Description'. The table contains five rows of relocation plans:

Select	Name	Plan type	Source	Destination	Description
<input type="checkbox"/>	1171ToSystem2	Single	pla1171_AIX5.3	RM SVT Power6 Sy	
<input type="checkbox"/>	Relocate ALL System I to System II	All	RM SVT Power6 Sy	RM SVT Power6 Sy	
<input type="checkbox"/>	Relocate ALL System II to System I	All	RM SVT Power6 Sy	RM SVT Power6 Sy	
<input type="checkbox"/>	Relocate pla1171 to System I	Single	pla1171_AIX5.3	RM SVT Power6 Sy	
<input type="checkbox"/>	Relocate pla1171 to System II	Single	pla1171_AIX5.3	RM SVT Power6 Sy	

Below the table is a network diagram showing a central server 'BC -KQDL406' connected to several blades: 'Blade -KPDZ948', 'Blade -KQZR800', and 'Blade -KQZR835'. The server is also connected to 'Ethernet 1', 'Ethernet 2', 'Fibre 1', and 'Fibre 2'. The 'Blade -KPDZ948' is connected to an 'ESX1' server, which in turn is connected to a 'VMware Cluster' containing 'VM1' and 'VM2'.

Create Virtual Server – PowerVM, x86

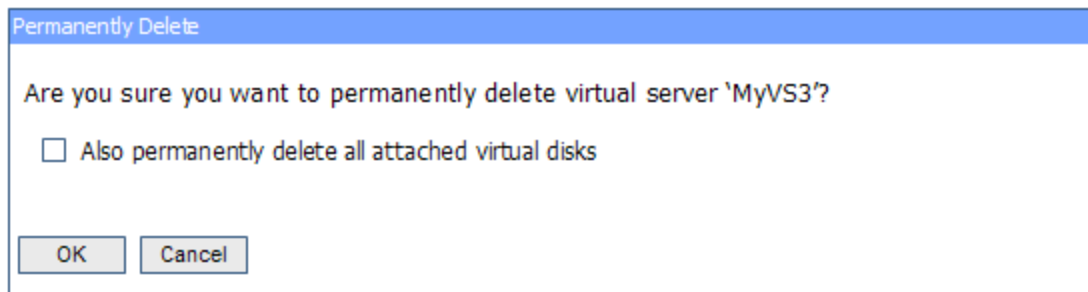
- > Creates a new, *empty* virtual server
- > Available from Create Virtual Server task on Host
- > PowerVM:
 - Virtual CPUs*, entitled capacity
 - Memory*
 - Disk (existing or new) required
 - Network
 - Optical devices
 - Dedicated slots
- > x86:
 - Image, processors
 - Memory, disk
 - Network
 - Discover and LIC tasks with TPM for Images for VMware and Hyper-V



* Min/Max values automatically calculated, can be re-configured later

Delete Virtual Servers

- > Virtual Server must be powered off before it can be deleted
- > Deleted server is removed from the HMC/IVM
- > Virtual disks are removed, if selected
- > IBM Systems Director is updated after removal





Performance Summary

- Hierarchical views, including shared CPU/memory pools
- Live data in columns
- Relationships between virtual resources
- Activate thresholds

Performance Summary

Select a target from the list or use Browse to select one or more targets. A target might be a server, virtual server or operating system.

pla0054,PLA9139_AIX,pva9214,ip9.12.33.34_AIX,NIMSRV_ip9.12.33.20

Select a monitor view to apply to the selected targets.

Virtualization Manager Monitors

Processor Memory Network

Shows processor performance summary results

Performance Summary (ip9.12.33.34_AIX, NIMSRV_ip9.12.33.20, pla0054...)

Select	Name	Processors	CPU Utilizat...	CPU Utilizat...	CPU Utilizat...	Available Pr...	Entitled Pro...	Available Pr...
<input type="checkbox"/>	IBM 8203 E4A 06243D4	4	0%	0.016	0.01	1	0.5	1.5
<input type="checkbox"/>	ip9.12.33.34_AIX	1	2%	0	0.01	1	0.5	1

Processor Memory Network

Shows network performance summary results

Performance Summary (NIMSRV_ip9.12.33.20, PLA9139_AIX, pva9214)

Select	Name	OS Type	Error Rate/sec	Pause Fra...	MC Packet...	Bytes Rec...	BC Packet...	Pause Fra...	Packets Tr...
<input type="checkbox"/>	IBM 8203 E4A 06243D4								
<input type="checkbox"/>	NIMSRV_ip9.12.33.20								
<input type="checkbox"/>	Port 1		4	13	13	3,491	24	0	0
<input type="checkbox"/>	pva9214								
<input type="checkbox"/>	IBM 8203 E4A 06243F4								
<input type="checkbox"/>	Port 0								
<input type="checkbox"/>	PLA9139_AIX								

Processor Memory Network

Shows memory performance summary results

Performance Summary (ip9.12.33.34_AIX, NIMSRV_ip9.12.33.20, pla0054...)

Select	Name	Memory (MB)	Page-In Delay...	I/O Entitled M...	Mapped I/O E...	Physical Mem...	Available Me...	Memory Overc...
<input type="checkbox"/>	IBM 8203 E4A 06243D4	16,384				16,384	9,920	
<input type="checkbox"/>	ip9.12.33.34_AIX	2,176				2,176		
<input type="checkbox"/>	NIMSRV_ip9.12.33.20	2,176				2,176		
<input type="checkbox"/>	pva9214	1,536				1,536		
<input type="checkbox"/>	IBM 8203 E4A 06243F4	16,384				16,384	8,192	
<input type="checkbox"/>	PLA9139_AIX	2,176				2,176		
<input type="checkbox"/>	IBM 8203 E4A 06244B4	16,384				16,384	3,648	
<input type="checkbox"/>	Shared Memory Pool	3,072	362	77	7	2,176	2,733	12,321
<input type="checkbox"/>	pla0054	2,176		77	8	1,421		

Technical white paper on VMControl Performance Summary:

<http://www.ibm.com/systems/power/software/management/whitepapers/perfsummary.html>



Agenda

> Standard Edition

- Virtual Appliances
- Capture, deploy, import, versioning

Standard Edition Overview

> Discover

- Existing image repositories

> Capture

- A running virtual server that is configured just the way you want, complete with guest operating system, running applications and virtual server definition. Can also capture an existing AIX mksysb and AIX NIM lpp_source resources.

> Import

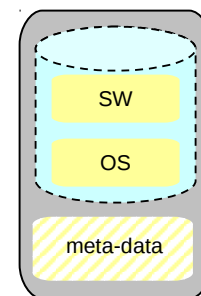
- Virtual appliance packages that exist in Open Virtualization Format (OVF).

> Deploy

- Virtual appliances quickly to create new virtual servers or into empty virtual servers

> Versioning

- Allows easier management of different levels of virtual appliances



Virtual Appliance

Virtual Appliances

> Definition:

- A package that contains a virtual server definition that meets the requirements to run its associated image; where the image contains the operating system and installed software

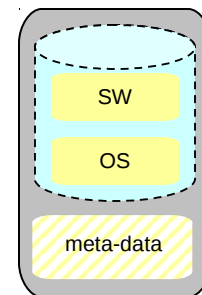
> Virtual Server image may contain

- A supported operating system (AIX, Linux on Power, Linux on System z)
 - Single AIX rootvg disk only
- Any software applications installed in that operating system image

> The Virtual Appliance is described using the methods described in the Open Virtualization Format (OVF) specification. OVF is an industry standard representation of a virtual server that contains a configured, tested operating system and optionally, middleware and software applications, along with the metadata that describes the virtual server.

> Virtual appliances can be

- A OS file and the associated metadata file (XML)
- An Open Virtualization Archive format (tar file containing OS+XML)



Virtual Appliance

Image Repositories & NIM

> Definition:

- Image repositories are the place where the OVF virtual appliances images are stored or managed

> Requires an Common Agent Sub-Agent to be installed on the repository system

- For AIX NIM servers, appliances only in /export/nim/appliances directory; suggest a separate file system for images

> After running the Discover Virtual Appliances task against the repository, they appear in the virtual appliance list.

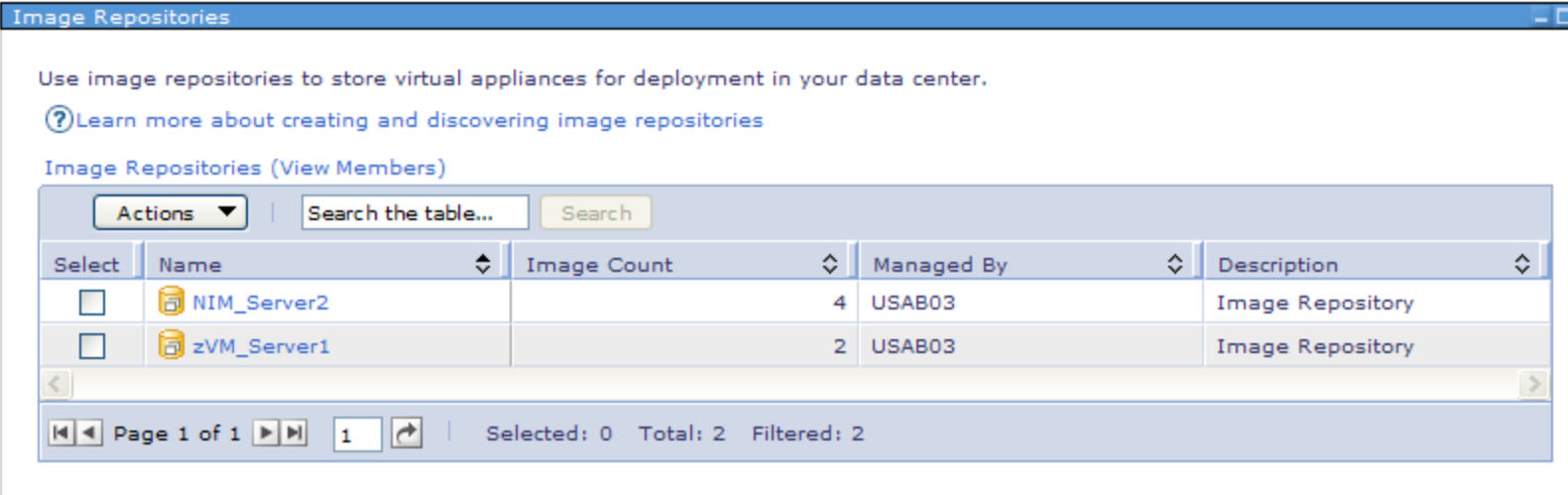


Image Repositories

Use image repositories to store virtual appliances for deployment in your data center.

[Learn more about creating and discovering image repositories](#)

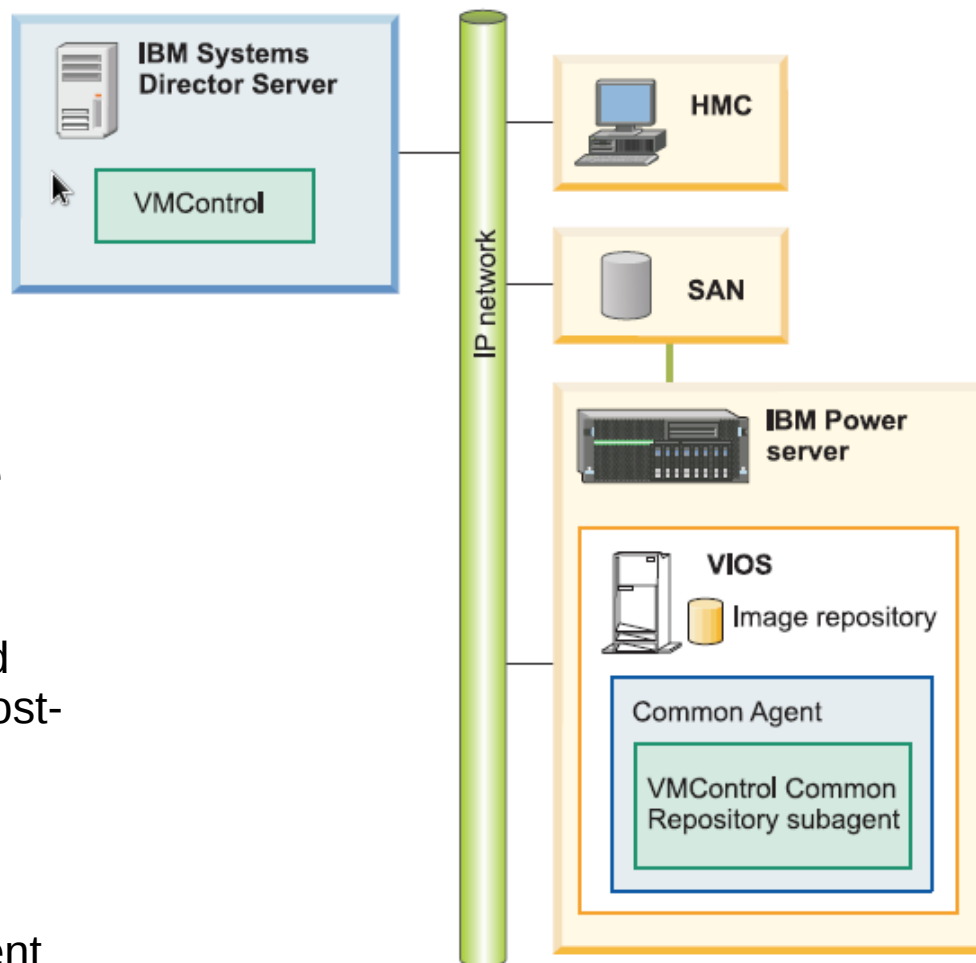
Image Repositories (View Members)

Select	Name	Image Count	Managed By	Description
<input type="checkbox"/>	NIM_Server2	4	USAB03	Image Repository
<input type="checkbox"/>	zVM_Server1	2	USAB03	Image Repository

Page 1 of 1 | Selected: 0 Total: 2 Filtered: 2

Image Repository - Storage Copy Services

- > Uses the Virtual I/O Server to make Virtual Appliances directly from provisioned SAN LUNs
 - Only LPARs from SAN-based storage pool
- > Speedier capture and deployment
 - LPAR must be stopped for capture
 - Raw disk image only
 - Rootvg only
 - Activation Engine must be installed on OS before capture for proper post-deploy customization
- > Create and delete SCS Repositories
 - Requires Common Agent Sub-Agent installed on VIOS





Virtual Appliances – User Interface

- > Basics
- > Virtual Appliances
 - What to deploy
 - Where to deploy
 - What to capture
 - Where to store
 - Import
 - List of VA



- > Virtual Servers/Hosts

The screenshot shows the VMControl web interface. At the top, there's a header with the VMControl logo and a description: "Use system pools and virtual appliances to manage your data center more efficiently. Deploy virtual appliances and manage the resulting workloads. Pool your systems to increase resource utilization and automation." Below this is a "Learn more..." link.

There are three summary tables:

- Resources:** 6 Virtual appliances, 2 Workloads, 0 System pools.
- Active Status:** Problems: 2, Compliance: -.
- Jobs:** Active: -, Completed: 2, Scheduled: -.

The main content area has tabs for "Basics", "Workloads", "Virtual Appliances" (selected), "System Pools", and "Virtual Servers/Hosts".

Under "Virtual Appliances", there are sections for:

- What to deploy:** 6 Virtual appliances
- Where to deploy:** 60 Existing virtual servers, 60 Hosts and system pools
- What to capture:** 2 Workloads, 60 Virtual servers
- Where to store:** 2 Image repositories
- Common Tasks:** Deploy, Capture, Import, View active and scheduled jobs

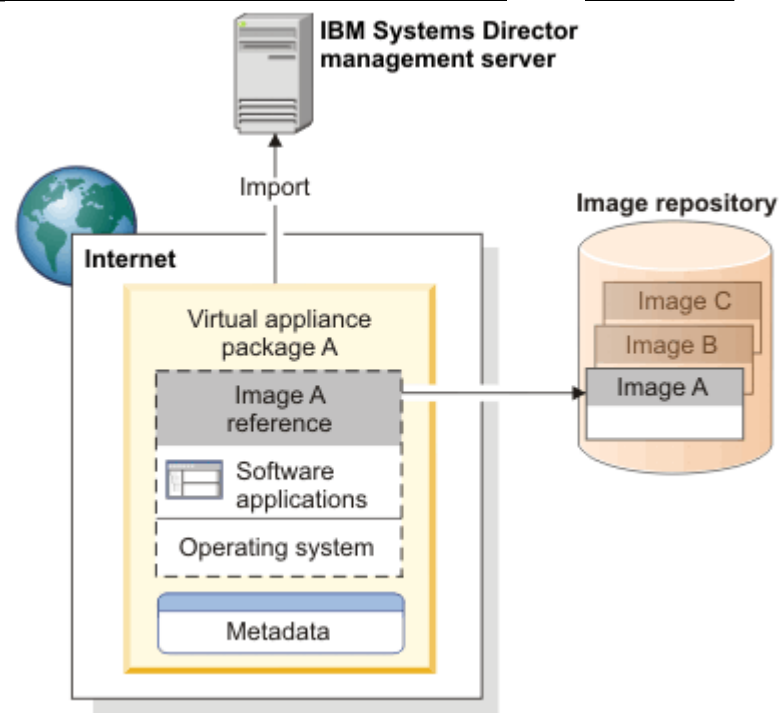
Below this is a table titled "Virtual Appliances (View Members)". It has columns for "Select", "Name", "Operating System", "Repository", and "Description".

Select	Name	Operating System	Repository	Description
<input type="checkbox"/>	asdfsadfs	Unknown	zVM_Server1	Virtual Appliance
<input type="checkbox"/>	asfd	Unknown	NIM_Server2	Virtual Appliance
<input type="checkbox"/>	testcapturename	Unknown	NIM_Server2	Virtual Appliance
<input type="checkbox"/>	tim's appliance	Unknown	NIM_Server2	Virtual Appliance
<input type="checkbox"/>	tims kitchen appliance	Unknown	NIM_Server2	Virtual Appliance

At the bottom of the table, there's a pagination bar showing "Page 1 of 2", "Selected: 0", "Total: 6", and "Filtered: 6".

Importing a Virtual Appliance

- > Import task stores the virtual appliance (VA) package on the designated repository
- > Virtual appliance package must be in OVF format (.ovf or .ova file)
- > Import from the Internet (http), system on the local network (Windows share) or local directory on the Director Server



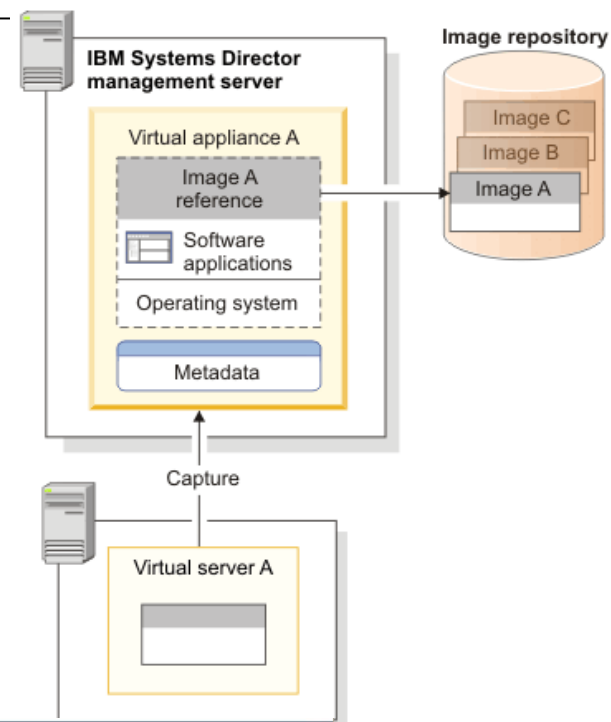
The screenshot shows the 'Import' wizard in IBM Systems Director. The 'Source' step is active, showing a text input field for the location of the virtual appliance package. Examples are provided for Internet (http://) and Network (\\computername\folder\image.ovf).



Capturing a Virtual Appliance

> Capture:

- Existing PowerVM virtual server running AIX or Linux
- Existing AIX mksysb image, mksysb resource, lpp_source via CLI



Capture

✓ Welcome
 Name
 Source
 Summary

Name
 Specify a name and description for the virtual appliance that you want to create.

*Name:

Description:

Limit of 256 characters

Search tags:

Enter tags separated by commas. Example

< Back Next > Finish Cancel

Capture

Welcome
 Name
 Source
 Summary

Source
 Select the virtual server to capture.

Select a valid target then add it to the selected list.

Show: Virtual Servers

Available:
 Virtual Appliance Sources

Select	Name	State	Access
<input type="radio"/>	169.254.16.102		Offline
<input type="radio"/>	49xtst1.rchland.ibm.com		Offline
<input type="radio"/>	9.10.111.11		No access
<input type="radio"/>	9.10.111.16		Offline
<input type="radio"/>	9.10.111.26		Offline
<input type="radio"/>	9.10.111.29		No access
<input checked="" type="radio"/>	hcl062.pdf.pok.ibm.com		OK
<input type="radio"/>	IBM 2084314 000000000...		OK
<input type="radio"/>	IBM 9196 A49 LKDMGYA		No access
<input type="radio"/>	ibm-7962c3f6618.rchland...		No access

Page 1 of 2 Total: 18

< Back Next > Finish Cancel

Run - Capture virtual appliance

Schedule Notification Options

Job name and schedule

*Job Name:
 Capture virtual appliance - June 30, 2009 11:37:53 AM

Choose when to run the job.

Run Now
 Schedule

OK Cancel Help



Versioning a Virtual Appliance

> Versioning

- Replace with version
- Version tagging capability
- Advanced search

Replace with Revision

Virtual Servers
Select a valid target then add it to the selected list.

Show: Virtual Servers

Available:
Replace with Revision 'asdfsadfs'

Actions ▾
Search the table...
Search

Select	Name	State

Add >
< Remove

Selected:

Advanced Search

Query: [? Learn more about creating a search query](#)

Name ▾ Equals ▾ Add Condition

AND (all must match) ▾ Add Operator

Search
Clear

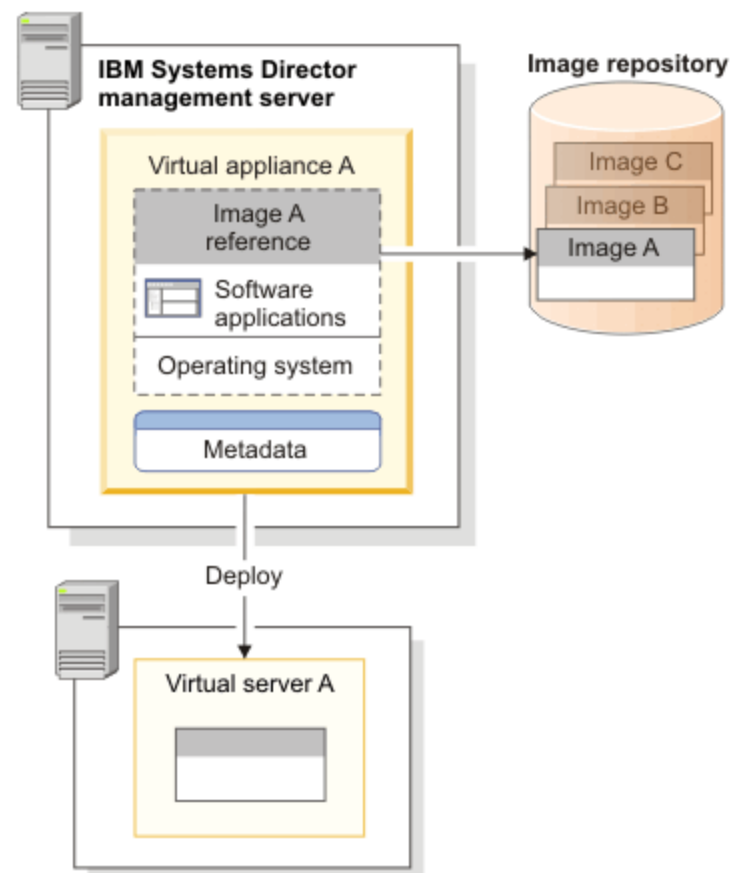
Virtual Appliances

Deploy... Import... Capture... Actions ▾ Search the table... Search

Select	Name	TrunkName	Revision	Operating...	Repository	Description
<input type="checkbox"/>	asdfsadfs	asdfsadfs	1.1	Unknown	zVM_Server1	Virtual Appla...
<input type="checkbox"/>	asfd	asfd	1.1	Unknown	NIM_Server2	Virtual Appla...
<input type="checkbox"/>	testcapturename	testcapturena...	1.1	Unknown	NIM_Server2	Virtual Appla...
<input type="checkbox"/>	tim's appliance	tim's appliance	1.1	Unknown	NIM_Server2	Virtual Appla...
<input type="checkbox"/>	tims kitchen appliance	tims kitchen ...	1.1	Unknown	NIM_Server2	Virtual Appla...
<input type="checkbox"/>	tims kitchen appliance2	tims kitchen ...	1.1	.	zVM_Server1	Virtual Appla...

Deploying a Virtual Appliance

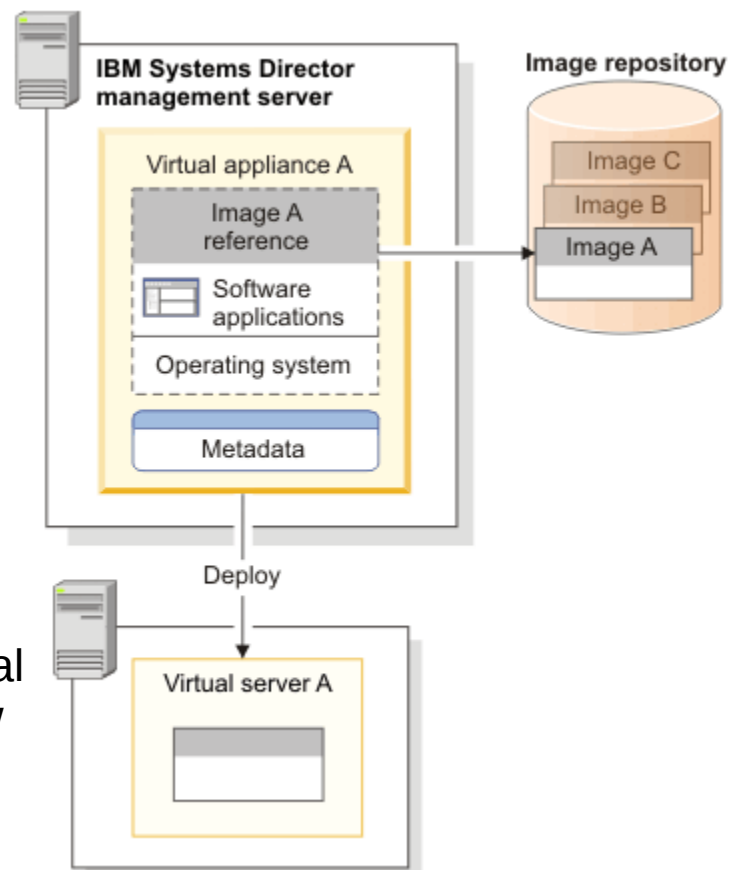
- > Deploy a virtual appliance to:
 - A new virtual server on designated host
 - An existing virtual server (empty or not)
 - A system pool (with VMControl Enterprise Edition)
- > Customization of attributes:
 - Network settings
 - Hostname, IP address, default route
 - DNS settings, netmask, etc
 - Network mapping
 - Unique NIM customization script
- > Image repository of source virtual appliance must be available
- > Cannot use deploy task to create an empty VS



Deploying a Virtual Appliance – PowerVM Details

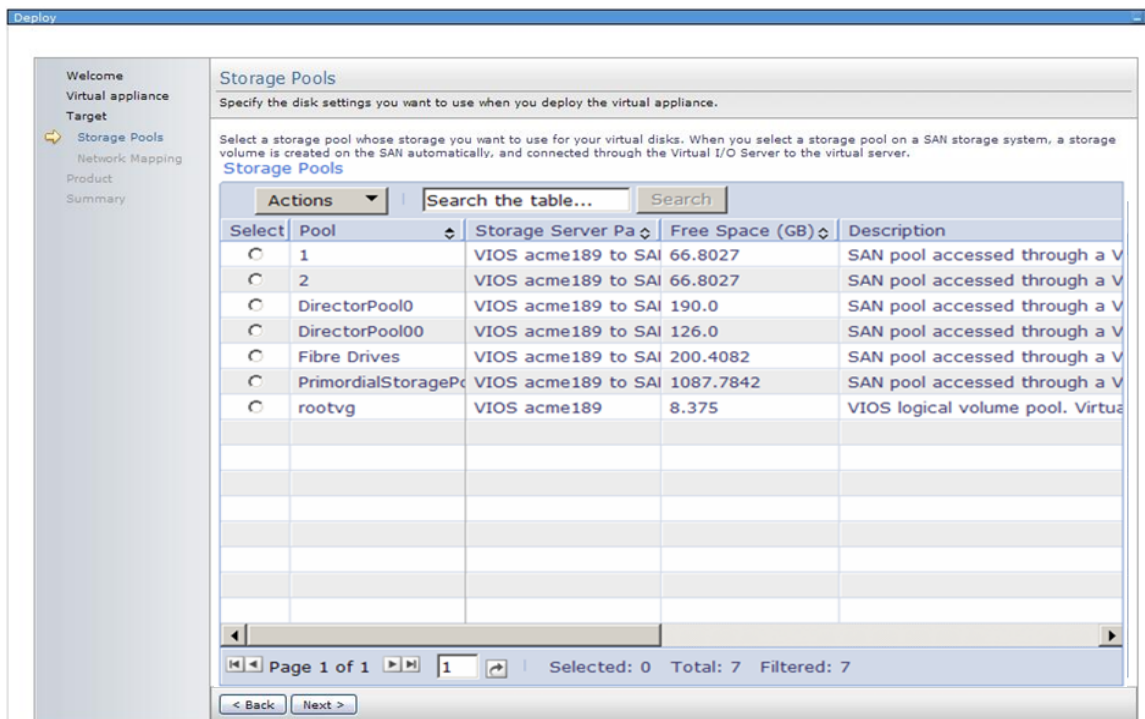
> Steps in deployment include:

- Reading of the virtual appliance's virtual server metadata for resource information
- Verification the target host, VS or pool has the required resources available
- Creation (if new) of the virtual server, including the storage and multiple VIOS I/O paths
- For NIM performs the netboot via the virtual server's platform manager (HMC or IVM)
- For AIX or Linux on Power using SCS, the virtual appliance's LUN contents are copied to the new virtual server's LUN
- The virtual server is booted from the installed image



Deploying a Virtual Appliance – PowerVM storage

- > Storage used for new virtual server can be
 - Allocated from IBM Systems Director-managed SAN storage system pool
 - Allocated from local storage pool on the VIOS (not LPM-capable)
 - Utilize multi-path I/O (multiple VIO Servers) – based on VA attributes
 - Disk types supported are vSCSI only today
- > Storage used for an existing virtual server can also be existing NPV disk



Storage Pools

Specify the disk settings you want to use when you deploy the virtual appliance.

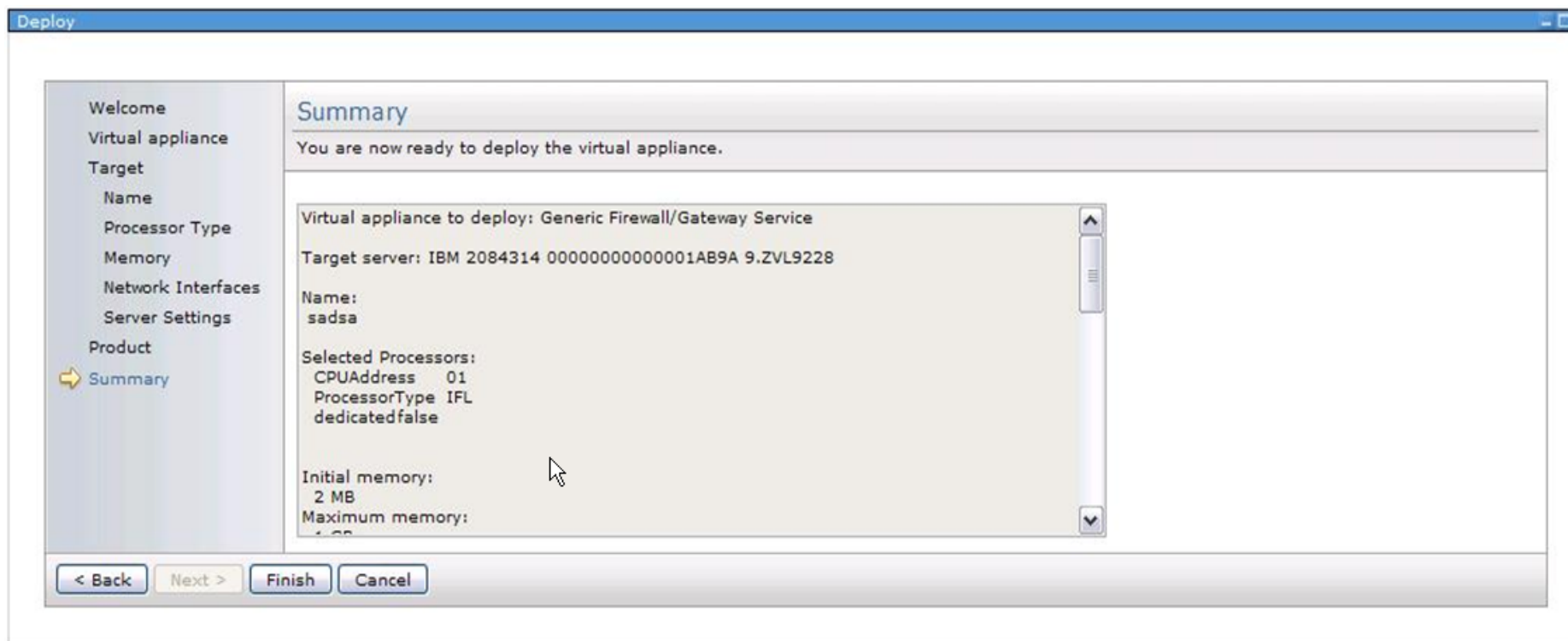
Select a storage pool whose storage you want to use for your virtual disks. When you select a storage pool on a SAN storage system, a storage volume is created on the SAN automatically, and connected through the Virtual I/O Server to the virtual server.

Select	Pool	Storage Server Pa	Free Space (GB)	Description
<input type="radio"/>	1	VIOS acme189 to SAI	66.8027	SAN pool accessed through a V
<input type="radio"/>	2	VIOS acme189 to SAI	66.8027	SAN pool accessed through a V
<input type="radio"/>	DirectorPool0	VIOS acme189 to SAI	190.0	SAN pool accessed through a V
<input type="radio"/>	DirectorPool00	VIOS acme189 to SAI	126.0	SAN pool accessed through a V
<input type="radio"/>	Fibre Drives	VIOS acme189 to SAI	200.4082	SAN pool accessed through a V
<input type="radio"/>	PrimordialStorageP	VIOS acme189 to SAI	1087.7842	SAN pool accessed through a V
<input type="radio"/>	rootvg	VIOS acme189	8.375	VIOS logical volume pool. Virtua

Page 1 of 1 | Selected: 0 Total: 7 Filtered: 7

Deploying a Virtual Appliance – Summary

- > Summary lists all parameters
- > Run immediately or schedule for later deployment



VMControl Standard Edition Details - NIM

AIX NIM Server requirements:

- Already configured as a NIM server, running AIX 6.1.3 or later
 - Running the Common Agent with latest updates (6.2.1 or later)
 - Installed filesets: dsm.core, openssh/openssl
 - Installed VMControl NIM Sub-Agent
- > Virtual Appliances (mksysb and OVF-based metadata) are stored in /export/nim/appliances file directory (recommend a separate file system)
 - > Image Manager only captures/deploys from/to Virtual Servers
 - Only LPARs managed by an HMC or IVM, not standalone
 - Only LPARs under a VIOS
 - > Systems Director Server must be at 6.2.1 level or later
 - > Minimum of HMC 7.3.5 (P5/P6) / 7.7.2 (P7) or IVM 2.1.0.10 (P5/P6) / 2.1.2 (P7) required
 - > With VMControl V2.3.1.2, support for deploying to an existing VS with NPIV



VMControl Standard Edition Details – SCS

- > Image Repository server requirements:
 - Running the Common Agent with latest updates (6.2.1 or later)
 - Installed VMControl Common Repository subagent
- > Cannot use VIOS internal storage pools for OS disk, must be SAN-based Storage Pool
- > Virtual appliances are captured to provisioned SAN LUNs
- > AIX or Linux Activation Engine installed and enabled on target capture VS
- > Before Virtual Server capture:
 - Network must be unconfigured (using Activation Engine)
 - Virtual server must be powered off (Stopped)



Agenda

> Enterprise Edition

- Workloads
- Server System Pools
- Storage System Pools
- Resilience Policies

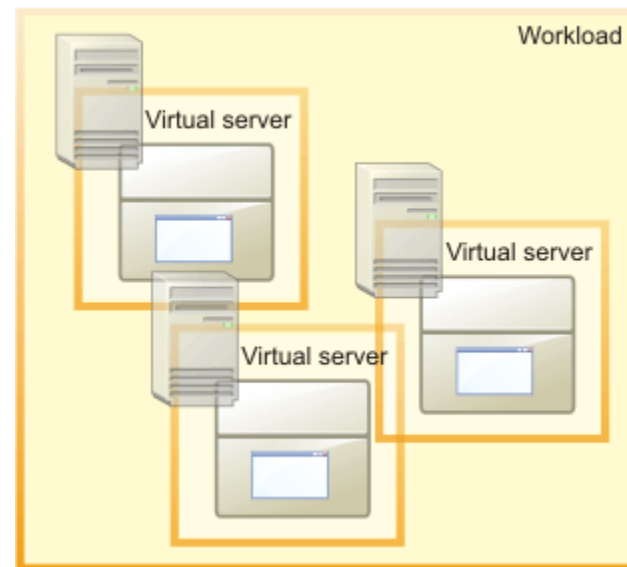
Workloads

> Definition:





- A deployed virtual appliance that allows you to monitor and manage one or more virtual servers as a single entity

> Workloads

- Created from 'deploy' task
- Edit
- Group as Workload
- Dashboard




Workloads (View Members)

Select	Name	State	Problems	Average ...	Peak CPU...	Created By	Description	Re
<input type="checkbox"/>	 Cool	Started	 Critical	2%	3%	USAB03\test...	Workload	Not
<input type="checkbox"/>	 Tims Test Workload	Started	 Critical	USAB03\Admi...	Workload	Not

Page 1 of 1 | Selected: 0 Total: 2 Filtered: 2

Workloads - User Interface

- > Basics
- > Workloads
 - Status
 - Lists 
 - Deploy
 - Group as workload
 - Dashboard
- > Virtual Appliances
- > System Pools
- > Virtual Servers/Hosts

VMControl

Use system pools and virtual appliances to manage your data center more efficiently. Deploy virtual appliances and manage the resulting workloads. Pool your systems to increase resource utilization and automation.

[Learn more...](#)

Resources	Active Status	Problems	Compliance	Jobs
6 Virtual appliances	✖	2	-	Active
2 Workloads	⚠	-	-	Completed 2 5
0 System pools	ℹ	-	-	Scheduled

Basics | **Workloads** | Virtual Appliances | System Pools | Virtual Servers/Hosts

2 Workloads

- ✖ 2 Critical
- ⚠ 0 Warning
- ℹ 0 Informational
- 0 OK

Common Tasks

- Deploy
- View active and scheduled jobs
- Create workload
- Workloads and members

Workloads (View Members)

Select	Name	State	Problems	Average ...	Created By	Description	Resilience
<input type="checkbox"/>	Cool	Started	✖ Critical	.	USAB03\test...	Workload	Not active
<input type="checkbox"/>	Tims Test Workload	Started	✖ Critical	.	USAB03\Admi...	Workload	Not active

Page 1 of 1 | Selected: 0 Total: 2 Filtered: 2

Workload Dashboard

- > Grouped virtual servers that contribute to the business
- > Summarize resources used
- > Aggregated monitoring

Dashboard - Wokload1

Workload1 – my web application serving the world

Source virtual appliance: MyVirtApp
Availability policy: Active

Virtual Servers

Virtual Server	State	Problems	Compliance	CPU Utilization
Linux Good	Active	OK	OK	30%
Sales App	Active	OK	OK	40%
Web Site	Active	OK	Warning	80%
My App	Active	OK	OK	30%
AIXplus	Active	OK	OK	95%
TestApp A	Active	Warning	OK	20%
TestApp B	Active	OK	Warning	30%

Scoreboard

Active Status	✖	⚠	ℹ
Hardware	1	-	-
Virtualization	-	3	-
LED	-	2	-
Threshold	-	1	-
Compliance	1	-	-

Workload Dashboard

WL - Workload

Resilience policy: Not Active

Scoreboard

Active Status	✖	⚠	ℹ
Hardware Status	-	1	-
Virtualization Status	-	-	-
Threshold Status	-	-	-

Monitors

Monitor	Average	Peak
CPU Utilization %	1.01	1.01

Virtual Servers

Select	Name	State	Access	Problems	Compliance	IP Addresses	CPU Utilization
<input type="checkbox"/>	IBM 8203E4A 06243D4 2	Started	Unknown	Minor	OK	9.12.33.20	1%

Resources being used by this workload:

Resource	Total
Memory(MB)	2176.0
Virtual Disks	2
Hosts	1
Entitled Processing Units	0.5

Server System Pools

> Definition:

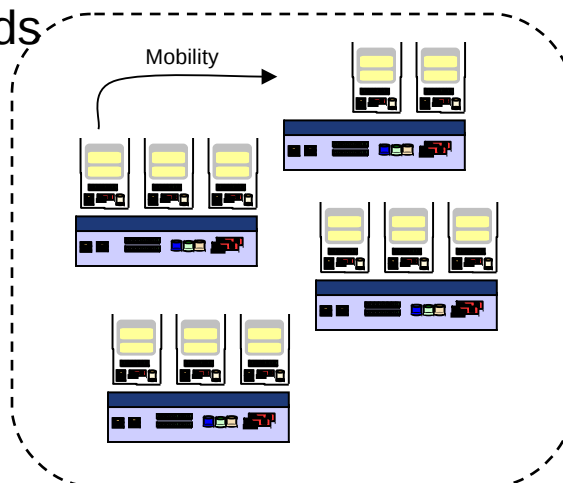
- A logical group of like hosts and their virtual servers with the goal of better resource usage and workload resilience.



> Capabilities:

- Create Server System Pool
- Add/remove hosts
- Monitor resilient workloads
- Automatic placement during deploy
- Dashboard

A type of system with IBM System Director, allowing the pool to be managed a single logical entity in the data center





Server System Pools – User Interface

- > Basics
- > Workloads
- > Virtual Appliances
- > Server System Pools
 - Status
 - Lists
 - Create
 - Add Hosts
 - Dashboard
- > Virtual Servers/Hosts

The screenshot displays the VMControl web interface. At the top, there's a header with the 'VMControl' logo and a globe icon. Below the header, a navigation bar includes tabs for 'Basics', 'Workloads', 'Virtual Appliances', 'System Pools' (which is selected), and 'Virtual Servers/Hosts'. The main content area shows a summary of resources: 6 Virtual appliances, 2 Workloads, and 0 System pools. It also includes a table for 'Active Status' with columns for Problems (2), Compliance (-), and a 'Jobs' table with columns for Active, Completed (2/5), and Scheduled. A 'Common Tasks' panel on the right lists options like 'Health summary', 'Monitors', 'Problems', 'Create system pool', and 'System pools and members'. Below this is a table titled 'System Pools (View Members)' with columns for Select, Name, State, Problems, Platform, Average, Peak CPU, and Allocated. The table is currently empty. At the bottom, there's a pagination bar showing 'Page 1 of 1', '1' items, and 'Selected: 0 Total: 0 Filtered: 0'.

Server System Pools Dashboard

- > Workloads running in a Server System Pool
- > Resources used/available
- > Aggregated monitoring
- > Aggregated status

Dashboard - SysPool1

SysPool1 – my pool that is so cool

Platform: PowerVM
State: ■ Active

Scoreboard

Active Status	✖	⚠	i
Hardware	1	-	-
Virtualization	-	3	-
LED	-	2	-
Threshold	-	1	-
Resilience	1	-	-
Compliance	-	-	-

Workloads

Workload	State	Problems	Compliance	CPU Utilization
Linux Good	Active	■ OK	■ OK	<div style="width: 30%;"></div> 30%
Service	Suspended	■ OK	■ OK	<div style="width: 0%;"></div> 0%
Sales App	Active	■ OK	⚠ Warning	<div style="width: 40%;"></div> 40%
Web Site	Active	■ OK	■ OK	<div style="width: 80%;"></div> 80%
My App	Active	■ OK	■ OK	<div style="width: 30%;"></div> 30%
AIXplus	Active	⚠ Warning	■ OK	<div style="width: 95%;"></div> 95%
TestApp A	Active	■ OK	⚠ Warning	<div style="width: 20%;"></div> 20%
TestApp B	Active	■ OK	■ OK	<div style="width: 30%;"></div> 30%
App Tool A	Active	■ OK	■ OK	<div style="width: 30%;"></div> 30%

Monitors

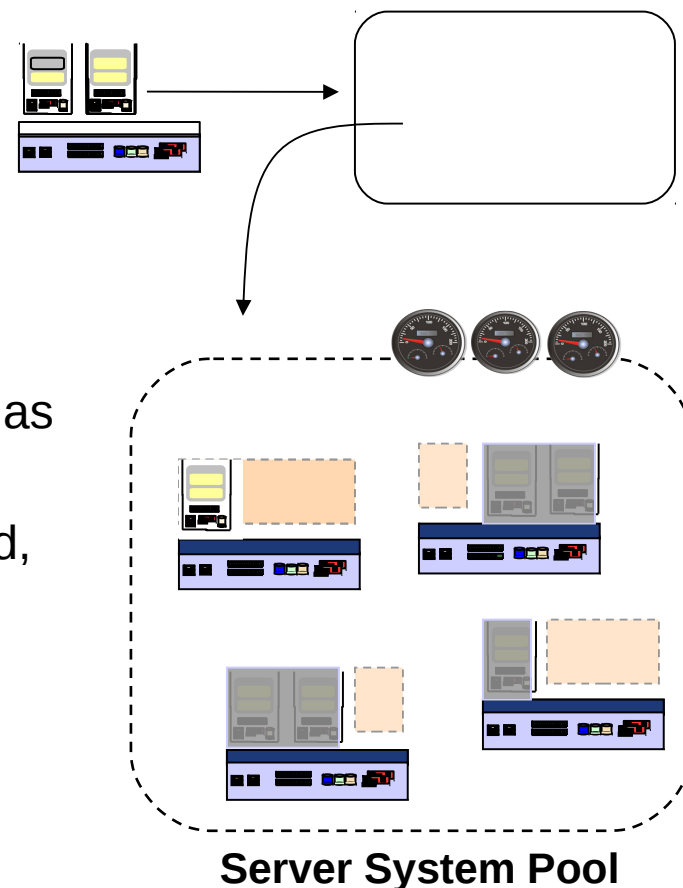
Monitor	Avg	Peak
CPU Utilization %	70%	95%

Resource usage details:

Resource	Free	Largest Slice	Allocated	Unavailable	Total
Processors	18	2	550	3	571
Memory	200 GB	3 GB	30 TB	30 GB	3230 GB
Virtual Disk	-	-	24	-	24
Hosts	4	-	98	3	105
Storage Provider	34 TB	1 TB	254 TB	-	288 TB

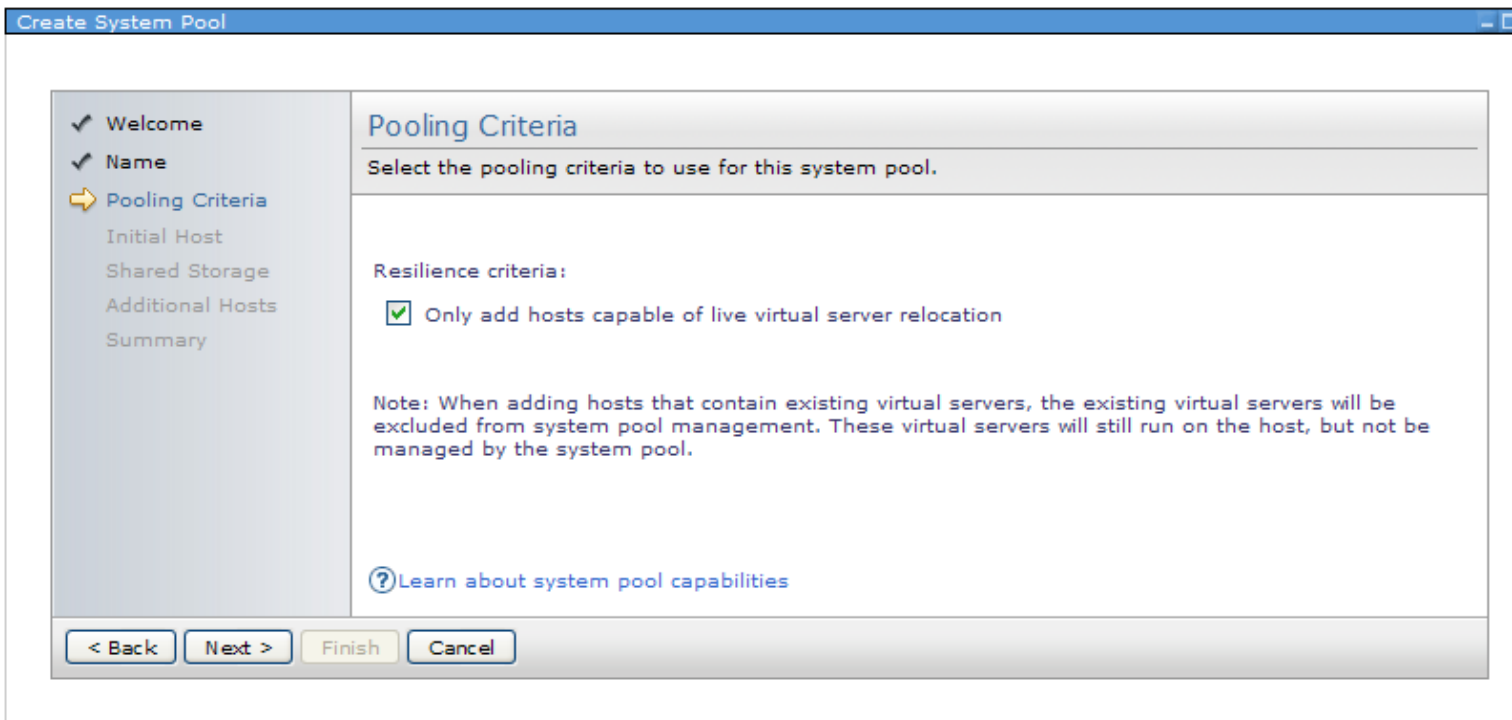
Server System Pools and Existing Systems

- > Server System Pools can be defined from a combination of new or existing servers
 - For new systems, all of the system's capacity is added to the server system pool
 - For existing systems, all of the remaining system's capacity is added and managed as part of the server system pool
 - Any pre-existing workloads are recognized, but not managed as part of the system pool
- > Existing Workloads can be migrated to a system pool:
 - Capture the existing virtual appliances
 - Deploy as a workload into a system pool



Workload Resilience within a Server System Pool

- > Resilience Policy can:
 - Relocate virtual servers between hosts in the Pool
 - Supports both single VS and host evacuation
 - Move virtual servers away from a failing host



The screenshot shows a window titled "Create System Pool" with a sidebar on the left containing a list of steps: Welcome, Name, Pooling Criteria (highlighted with a yellow arrow), Initial Host, Shared Storage, Additional Hosts, and Summary. The main area is titled "Pooling Criteria" and contains the text "Select the pooling criteria to use for this system pool." Below this, under the heading "Resilience criteria:", there is a checked checkbox labeled "Only add hosts capable of live virtual server relocation". A note below states: "Note: When adding hosts that contain existing virtual servers, the existing virtual servers will be excluded from system pool management. These virtual servers will still run on the host, but not be managed by the system pool." At the bottom of the main area is a link: "? Learn about system pool capabilities". The bottom of the window features four buttons: "< Back", "Next >", "Finish", and "Cancel".

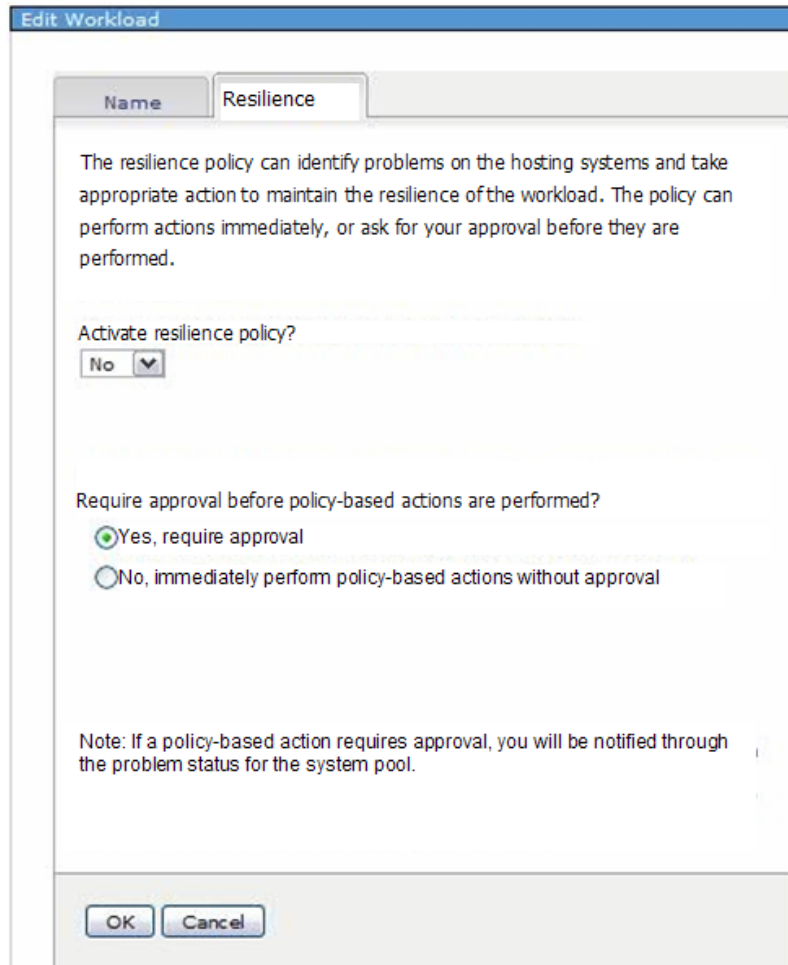
Workload Resilience Policy

> Resilience Policy associated with the Workload

- Provide Workload resilience: yes/no
- Enables host system monitoring for predictive failures
- Automates recovery action based on admin choice
- Users can add automation for customer thresholds

> Automation Policy associated with the Workload

- Require approval: VMControl makes a recommendation
- Automate: VMControl takes the action without prompting



The screenshot shows the 'Edit Workload' dialog box with the 'Resilience' tab selected. The dialog contains the following text and controls:

The resilience policy can identify problems on the hosting systems and take appropriate action to maintain the resilience of the workload. The policy can perform actions immediately, or ask for your approval before they are performed.

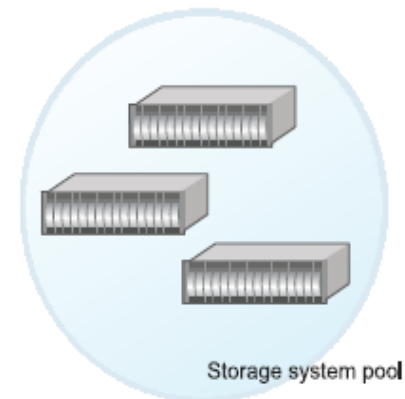
Activate resilience policy?

Require approval before policy-based actions are performed?
 Yes, require approval
 No, immediately perform policy-based actions without approval

Note: If a policy-based action requires approval, you will be notified through the problem status for the system pool.

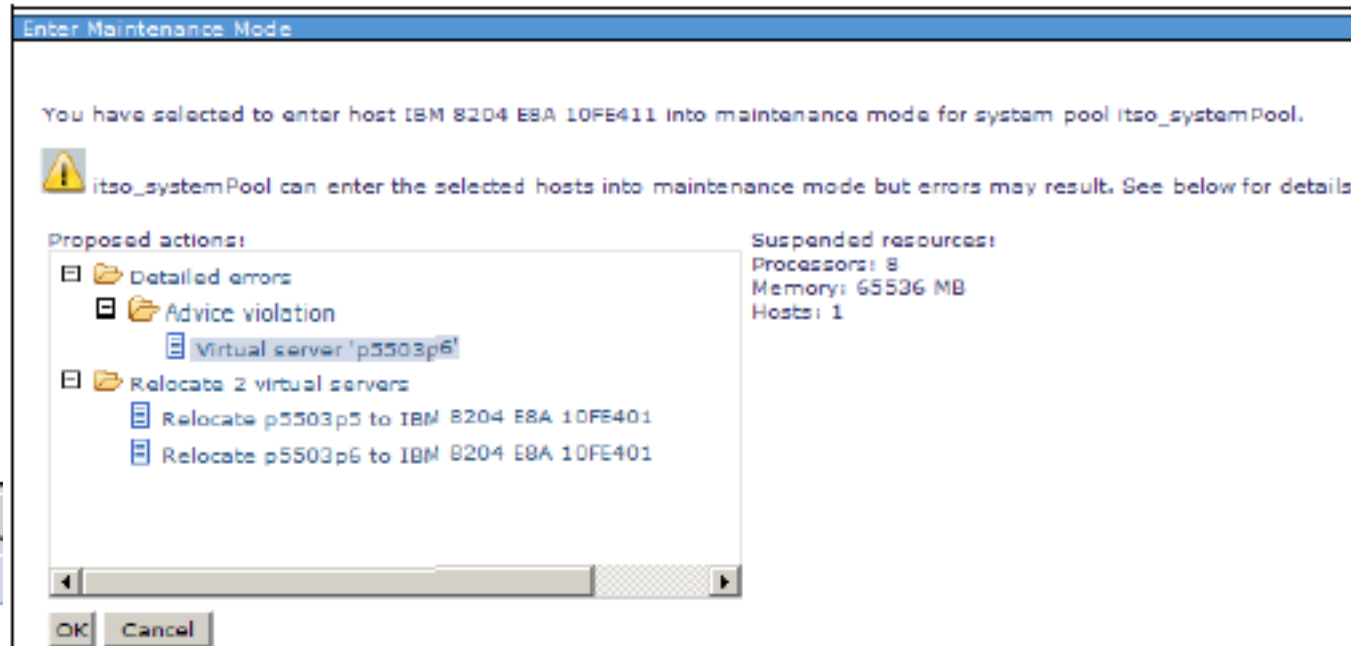
Storage System Pools

- > Definition:
 - A logical group of similar storage subsystems to facilitate the allocation of storage for Server System Pools
- > Storage System Pools must be created before Server System Pools in order to use the two together
- > Capabilities:
 - Creating / Deleting
 - Adding / Removing storage
 - View dashboard
 - Rename pool



Server Maintenance Mode

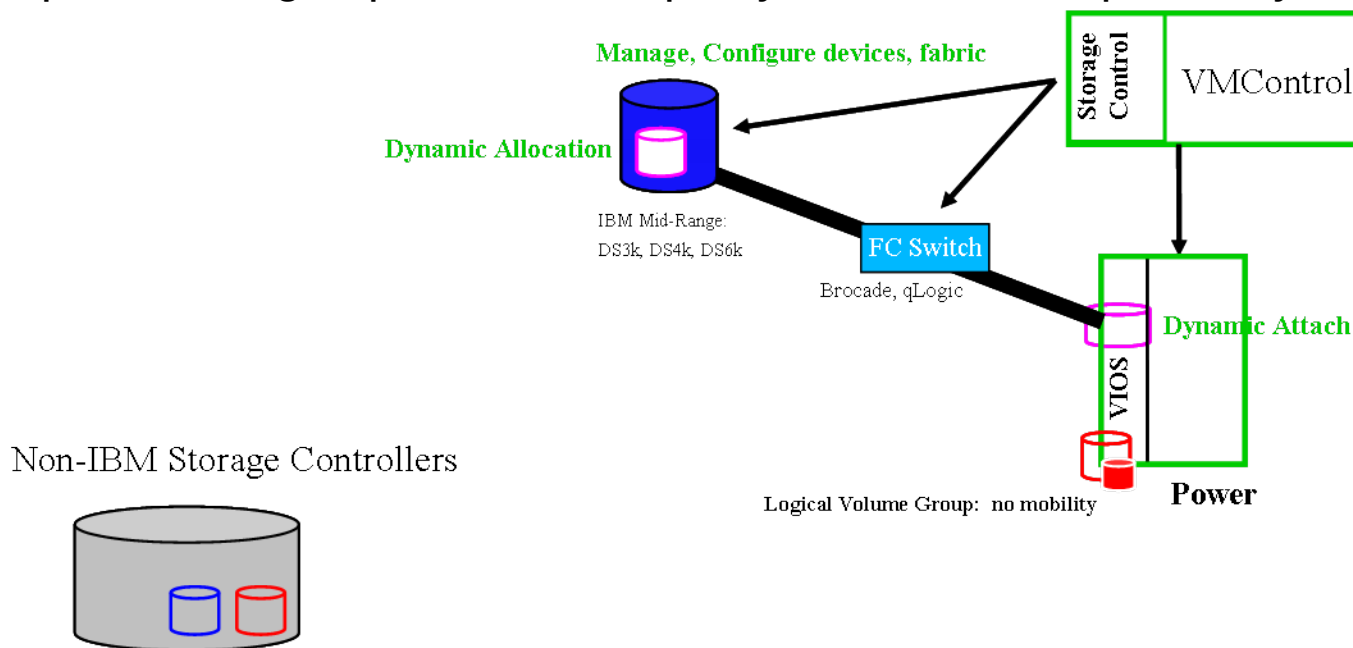
- > Hosts are suspended for server system pool activity
- > Hosts are not valid targets for Deploy while in Maintenance Mode
- > A relocation plan for Virtual Servers to other hosts in the server system pool is created



Select	Name	Status	OK	OK
<input type="checkbox"/>	itsso_systemPool			
<input type="checkbox"/>	IBM 8204 E8A 10FE401	Started	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	IBM 8204 E8A 10FE411	In Service	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

VMControl and Storage: Mid-Range

- > Managing storage with IBM Systems Director + VMControl:
- > Configuration support for storage fabric/switches inherent to ISD
 - IBM mid-range storage products: DS3/4/5/6000
 - Various SAN switches (see documentation)
 - Requires storage-specific SMI-S proxy installed on separate system



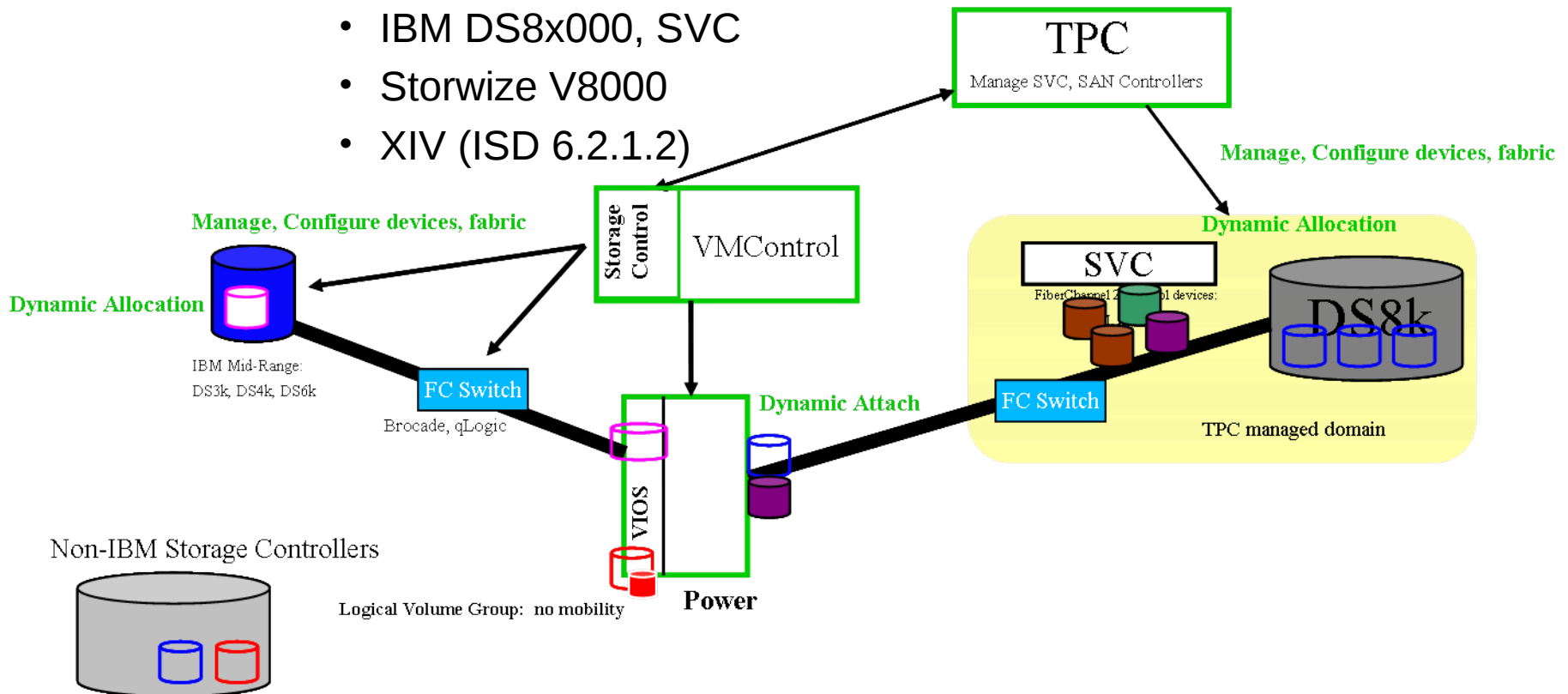
VMControl and Storage: High-End

> IBM Systems Director + VMControl + Storage Control plug-in

– Storage Control has embedded TPC V4.2.1 for inventory and provisioning of storage for deployment and Storage Pools (standalone TPC is also an option)

– Supports IBM high-end storage:

- IBM DS8x000, SVC
- Storwize V8000
- XIV (ISD 6.2.1.2)





VMControl V2.3.1 Installation

- > Download code from web (includes sub-agent)
 - SysDir_VMControl_Linux_AIX.tar.gz
 - Power AIX, Power Linux, x86 Linux, Linux for System z
 - SysDir_VMControl_Windows.zip
- > Default installer is GUI-based (Windows or X11)
- > Alternative is console-based
 - Modify the installer.properties file

INSTALLER_UI=Silent
LICENSE_ACCEPTED=true
 - Installer script/command is invoked with “-i silent” flag
 - Detailed output goes to
<DIRECTOR_HOME>/VMControlManager/installLog.txt



VMControl V2.3.1 Installation

- > Subagent installation via “Install Agents” task in base ISD
 - All < V2.3 subagents must also be upgraded
- > List of subagents
 - VMControl_NIM-2.3.1 (AIX NIM Server)
 - VMControl_CommonRepository_2.3.1 (on VIOS for SCS)
 - VSM_VC4x-6.2.1 (VMware vCenter 4.x)
 - VSM_VC2x-6.2.1 (VMware VirtualCenter 2.x)
 - VSM_ESC4x-6.2.1 (VMware ESX 4.x)
 - VSM_ESX3x-6.2.1 (VMware ESX 3.x)
- > z/VM requires Manageability Access Point Agent for each z/VM system managed
- > The permanent license key installation is a separate task from plug-in installation

VMControl Enterprise Edition Details for AIX Systems

> Requirements VMControl Enterprise Edition

- IBM Systems Director Server must be at 6.2.1 level or later
- For predictive failure notification for automated relocation:
 - HMC V7.3.5 or later, IVM 2.1.2 or later
- For creation of, and deployment into, a Storage System Pool, you must have shared storage managed by IBM Systems Director either directly or via TPC (standalone or part of Storage Control) in addition to the SAN switch(s) in IBM Systems Director
- Relocation within a Server System Pool requires LPM-capable (and appropriate PowerVM licensed) environment

Additional References

> IBM Systems Director InfoCenter:

publib.boulder.ibm.com/infocenter/director/v6r2x/index.jsp

> IBM Systems Director Best Practices wiki:

www.ibm.com/redbooks/community/display/director/VMControl+for+Power+Troubleshooting+Guide

> IBM Systems Director customer forum:

www.ibm.com/developerworks/forums/forum.jspa?forumID=759

> VMControl V2.2 Implementation Guide (Redbook)

www.redbooks.ibm.com/abstracts/sg247829.html