

ADDITIONAL REFERENCE MATERIALS FOR THE VE CONSOLE R2 MODULE

Agenda continued:

0 Preface: Learning Objectives & Target Audience

1 IBM VE Console Overview

2 **IBM VE Console Installation**

3 IBM VE Console Launch in Context

4 IBM VE Console Bridge Concepts

5 IBM VE Console Resource Topology

6 Wrap up - information sources and Q&A

Learning Objectives

At the conclusion of this chapter, you should be able to:

- Name the installable units of the console
- Understand the install prerequisites
- Understand common WebSphere profile and what products reside in it
- Know what the installation process and install panels in release 2

Installable units of the console

There are 6 components to a full installation of the VE Console:

1. Virtualization Engine console
2. Cluster Systems Management bridge to Virtualization Engine console
3. Enterprise Workload Manager bridge to Virtualization Engine console
4. IBM Director bridge to Virtualization Engine console
5. Management Central bridge to Virtualization Engine console
6. Resource Dependency Services

Installable prerequisites

There are five prerequisites for the VE Console:

1. Virtualization Engine environment
2. ITDS
3. WebSphere 6.0
4. WebSphere security
5. Common WebSphere profile (bridges)

Common WebSphere Application Server profile

- **A WebSphere profile is created and shared by six Virtualization Engine products**
 - Cluster Systems Management bridge to Virtualization Engine console
 - Enterprise Workload Manager bridge to Virtualization Engine console
 - IBM Director bridge to Virtualization Engine console
 - Management Central bridge to Virtualization Engine console
 - ODI:RM
 - Resource Dependency Services
- **Can be shared if these products are on the same machine**
 - Reduces RAM and disk space
 - Eases serviceability (less to service)

Simplified Installation process in release 2:

- **Virtualization Engine console**
 - Asks if you want the console to restart automatically on startup
- **Cluster Systems Management bridge to Virtualization Engine console**
 - No panels
- **Enterprise Workload Manager bridge to Virtualization Engine console**
 - No panels
- **IBM Director bridge to Virtualization Engine console**
 - Asks what platform and machine name Director is running on
 - Asks if you want install to verify connection to Director
- **Management Central bridge to Virtualization Engine console**
 - No panels
- **Common WebSphere profile**
 - Asks what port you want the profile's ports to start with
 - Asks if you want the common WebSphere profile to restart automatically on startup

Conclusion / Wrap-up

- **Name the installable units of the console**
- **Understand the install prerequisites**
- **Understand common WebSphere profile and what products reside in it**
- **Know what install panels are in release 2**

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Learning Objectives

At the conclusion of this material, you should be able to:

- Describe the Launch-in-Context functionality within VE console
- Launch tasks with context from VE console into client-based systems management consoles
- Utilize the R2 VE Launchpad enhancements

Agenda

Launch-in-Context Topics to be Covered:

- Introduction
- Overview
- Usage
- Prerequisites
- Task Launching
- Launch Points
- Launchpad
- SSO Support
- Conclusion/Wrap-up
- Additional Resources
- Questions

Introduction

➤ Goal

- To give the user an integrated console that they can use to manage their heterogeneous enterprise

➤ Current Situation

- We have many consoles specific to the different eServer platforms (e.g. iSeries Navigator for iSeries, WebSM for pSeries/AIX, IBM Director for supported agent platforms, etc)

➤ Strategic Interim Solution

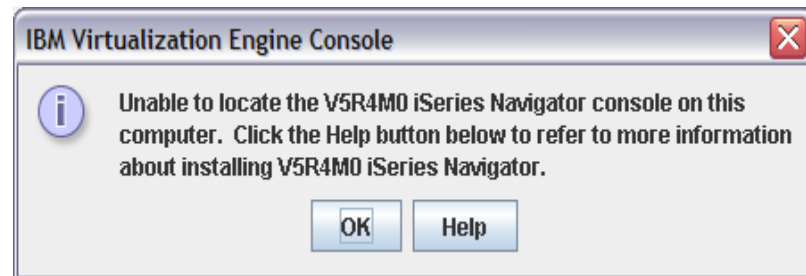
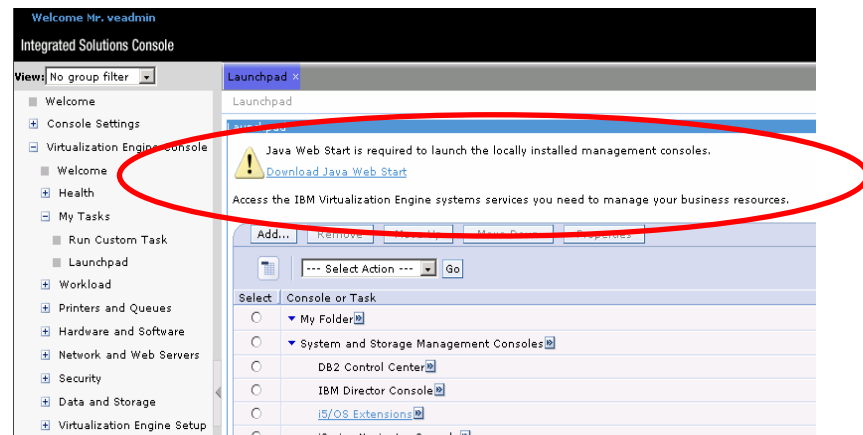
- Leverage existing function within current series/platform specific consoles through our heterogeneous console (VEC) until this function exists natively within the VEC

Overview

- **Next generation of client launch facility from R1 Launchpad**
 - Leverages Java Web Start for client Launch-in-Context function
- **Facility to exploit most popular tasks in current systems management console function**
 - Supported consoles include IBM Director, Web-based System Manager (WebSM), and iSeries Navigator
- **Automatic install capability**
 - Launch-in-Context provides support to automatically install the IBM Director console on a user's workstation if the console is not currently installed
- **Single Signon (SSO) support**
 - VE SSO support is used to alleviate multiple signons to the launched consoles provided that a valid mapping exists

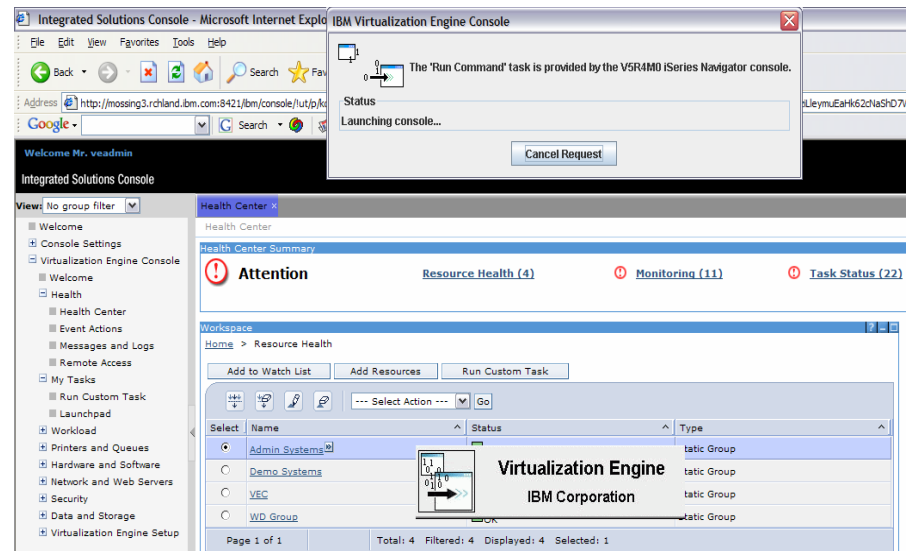
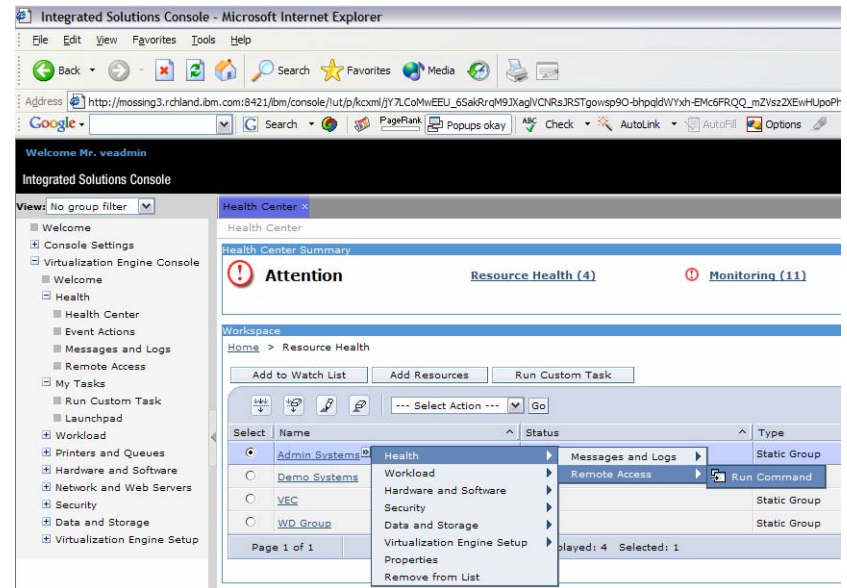
Prerequisites

- **Java Web Start (JWS) must be installed on the client system**
 - User will see a warning within the VEC is JWS is not installed
 - JWS is included as part of the Java Runtime Environment (JRE) starting with version 1.4
- **In order to launch tasks “in context”, the supported version of the client console must be installed on the client system**
 - IBM Director console 5.10 (auto-install support)
 - WebSM 5.3 (auto-install support)
 - iSeries Navigator V5R4



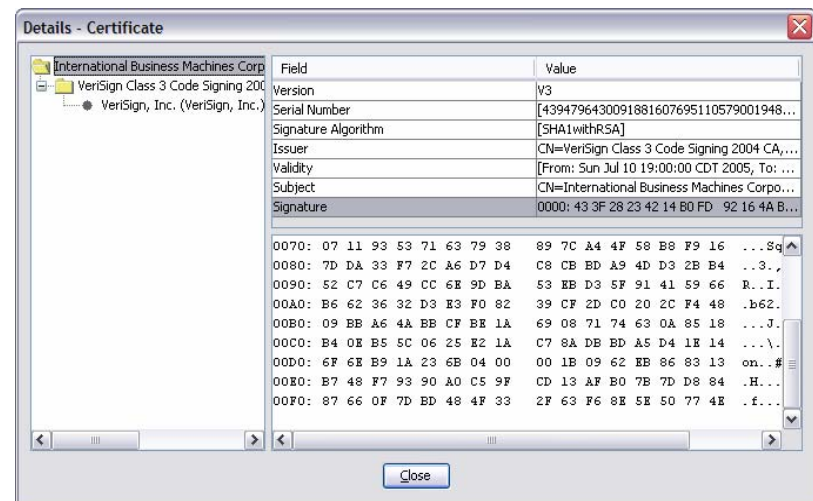
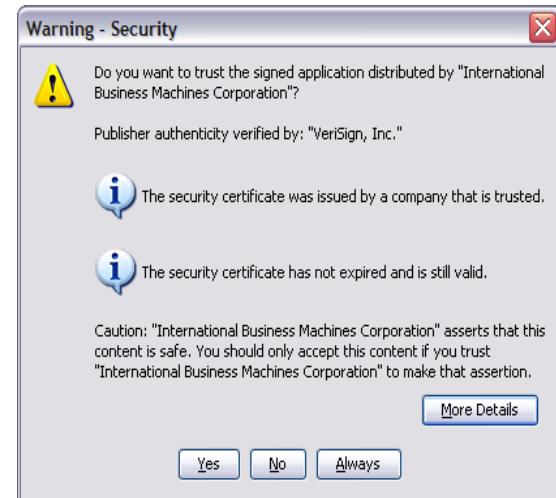
Task Launching

- The majority of tasks available in VE 2.0 are Launch-in-Context tasks that exploit function within IBM Director, iSeries Navigator, or Web-based System Manager
- “Virtualization Engine” splash screen and status dialog are shown after a Launch-in-Context task is selected
- If the console needed to perform the task is already running, it will be reused



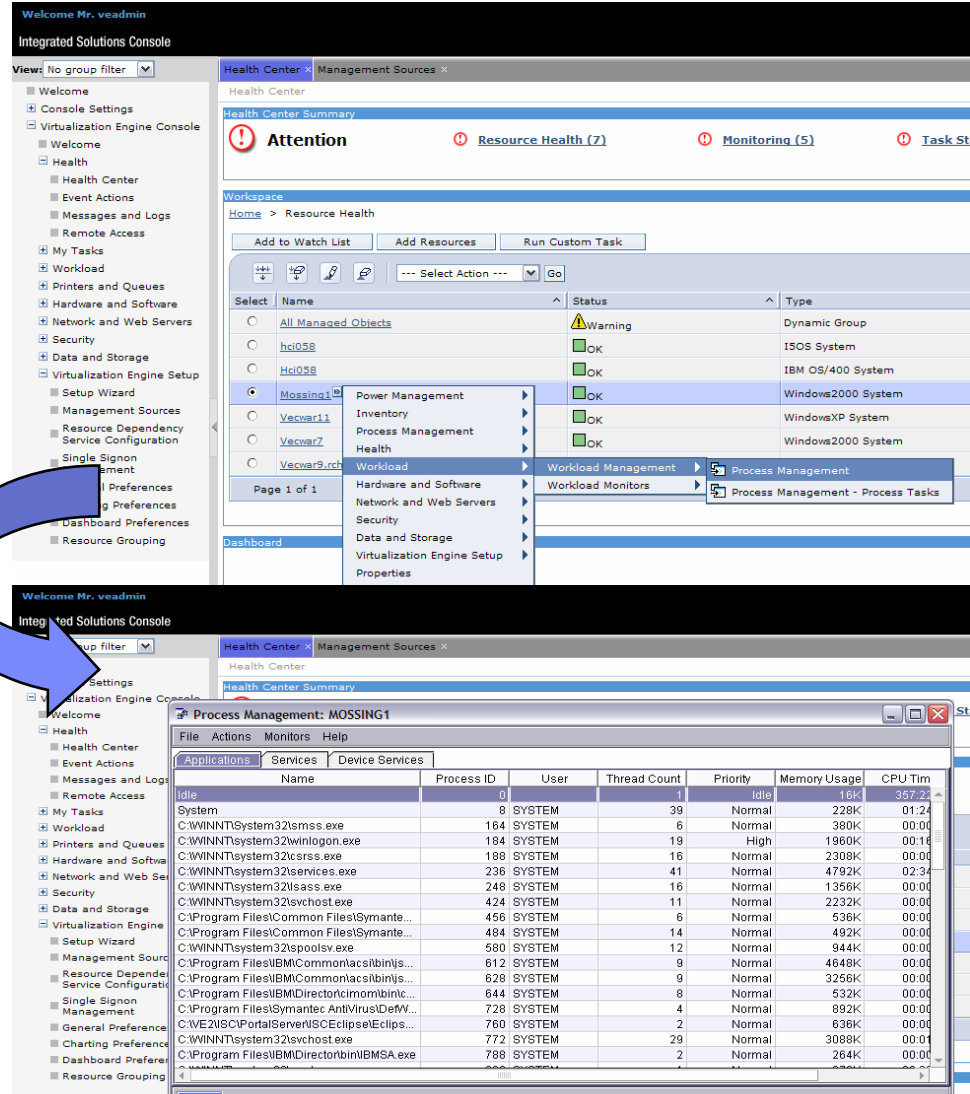
Task Launching - Security

- **When a Launch-in-Context task is performed the user is alerted that a small program digitally signed by IBM will be run on the client system**
- **The user can agree to this alert each time a Launch-in-Context is performed by answering Yes**
- **An answer of Always will place the signing certificate in the trust store eliminating any future prompts**



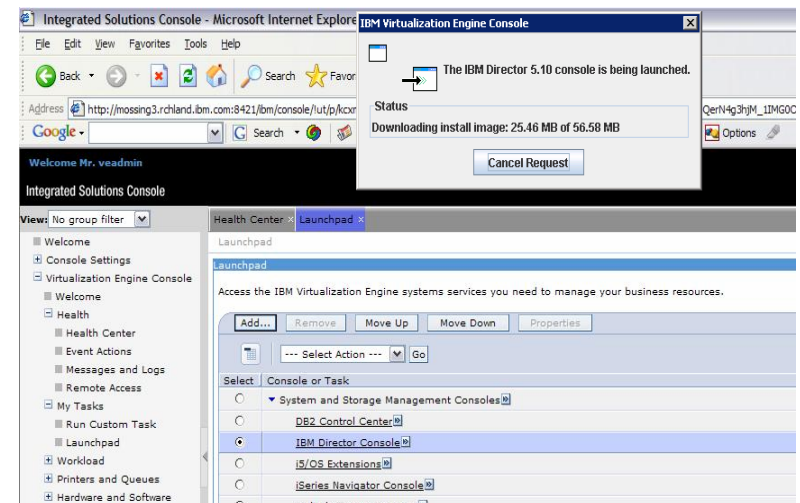
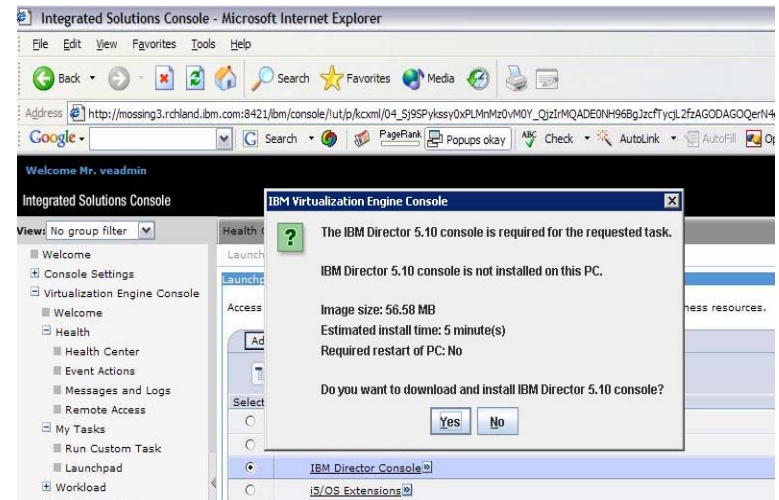
Task Launching – IBM Director

- **Launch-in-Context tasks are supported in IBM Director console 5.1**
- **Automatic installation/upgrade of the Director console is supported on the AIX/Linux/Windows platforms**



Task Launching - IBM Director Auto-installation

- **Director 5.1 console is downloaded from the VEC host machine, installed, and launched if the user agrees to the download and install dialog**
- **The user must be in the Administrators group on Windows and logged in as root for AIX/Linux**
- **If a down level Director console is installed on the system, the user will be given the opportunity to upgrade**
- **The specified task is carried out in the Director console following the installation**



Task Launching – Web-based System Manager

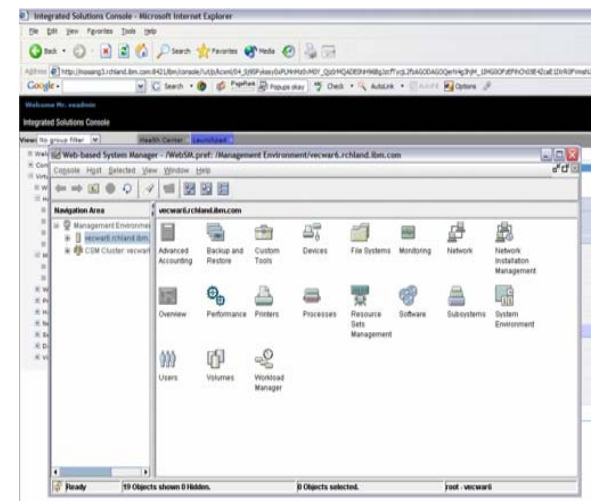
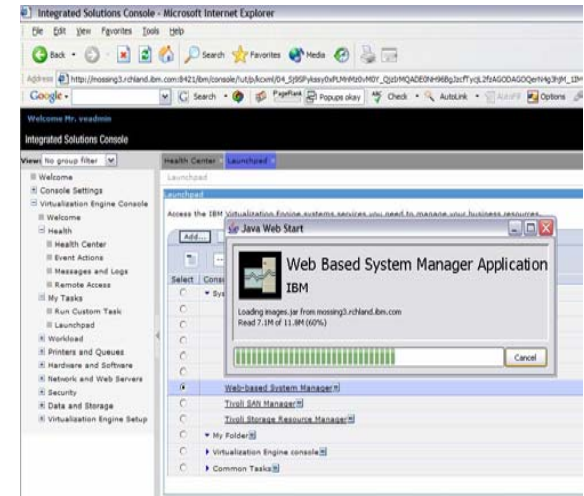
- **Launch-in-Context tasks are supported in Web-based System Manager 5.3**
- **Web-based System Manager 5.3 is included with VEC and will be downloaded and installed from the VEC host if necessary**

The screenshot displays the IBM Web-based System Manager interface. On the left is a navigation tree with categories like 'Welcome', 'Console Settings', 'Health Center', 'My Tasks', 'Workload', 'Printers and Queues', 'Hardware and Software', 'Network and Web Servers', 'Security', 'Data and Storage', and 'Virtualization Engine Setup'. The main area shows a 'Health Center Summary' with an 'Attention' icon and a table of resources. A context menu is open over the 'friends.austin.ibm.com' resource, showing options like 'Power Management', 'Health', 'Workload', 'Printers and Queues', 'Hardware and Software', 'Network and Web Servers', 'Security', 'Data and Storage', 'Virtualization Engine Setup', 'Properties', and 'Remove from List'. The 'Workload' option is expanded to show 'Workload Management' with sub-options: 'Workload Manager: Configuration Sets', 'Workload Manager: Configuration/Classes', 'Workload Manager: Resources', 'Processes: All Processes', 'Processes: Scheduled Jobs', and 'Subsystems: All Subsystems'. Below this, a 'Web-based System Manager' window shows a 'Processes: All Processes' table with columns for Command, Owner name, Process ID, Parent ID, Started, Current CPU, Total CPU, TTY, and Ctl.

Command	Owner name	Process ID	Parent ID	Started	Current CPU	Total CPU	TTY	Ctl
init	root	1	0	Aug 24	0	00:00:35	-	-
srmcstr	root	10102	1	Aug 24	0	00:00:04	-	-
syslogd	root	10348	10102	Aug 24	0	00:00:02	-	-
rpc.stalld	daemon	10802	10102	Aug 24	0	00:00:00	-	-
rpc.lockd	root	11104	10102	Aug 24	0	00:00:00	-	-
qdaemon	root	11880	10102	Aug 24	0	00:00:06	-	-
rpc.mountd	root	11938	10102	Aug 24	0	00:00:00	-	-
biod	root	12146	10102	Aug 24	0	00:00:00	-	-
uprintfd	root	12394	1	Aug 24	0	00:00:00	-	-
writesrv	root	12654	10102	Aug 24	0	00:00:00	-	-
diagd	root	13184	1	Aug 24	0	00:00:00	-	-
gufly	root	13422	1	Aug 24	0	00:00:00	-	-
java	root	13676	17030	Sep 09	0	00:27:29	pts/2	-
consrver	root	13928	15740	Aug 24	0	00:00:08	-	-
hwsdagent	root	14728	10102	Aug 27	0	00:00:22	-	-
IBM.HostRmd	root	15030	10102	Sep 08	0	00:00:01	-	-
IBM.ConfigRmd	root	15166	10102	Sep 08	0	00:00:11	-	-
ksh	root	15592	22676	Sep 09	0	00:00:00	pts/0	-
consrver	root	15740	1	Aug 24	0	00:00:00	-	-

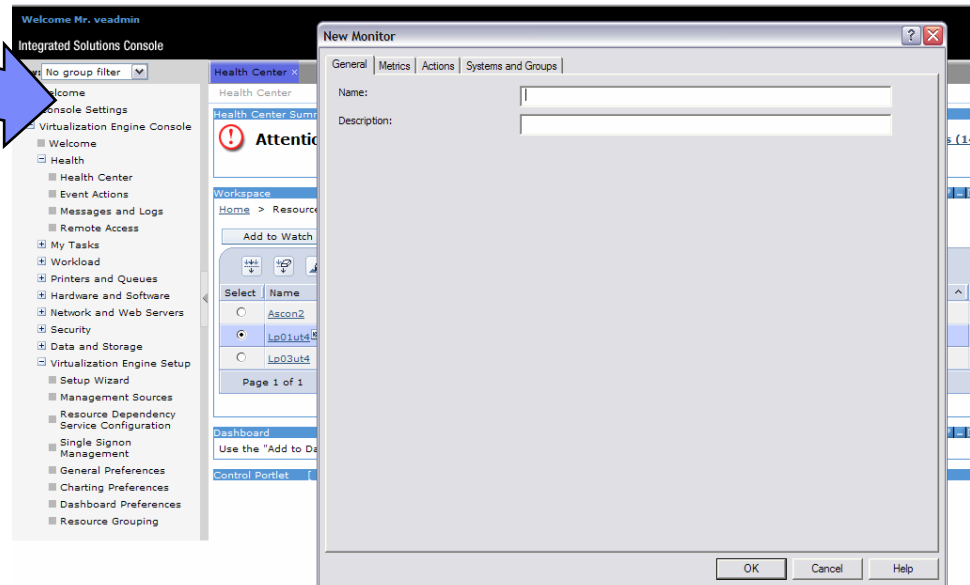
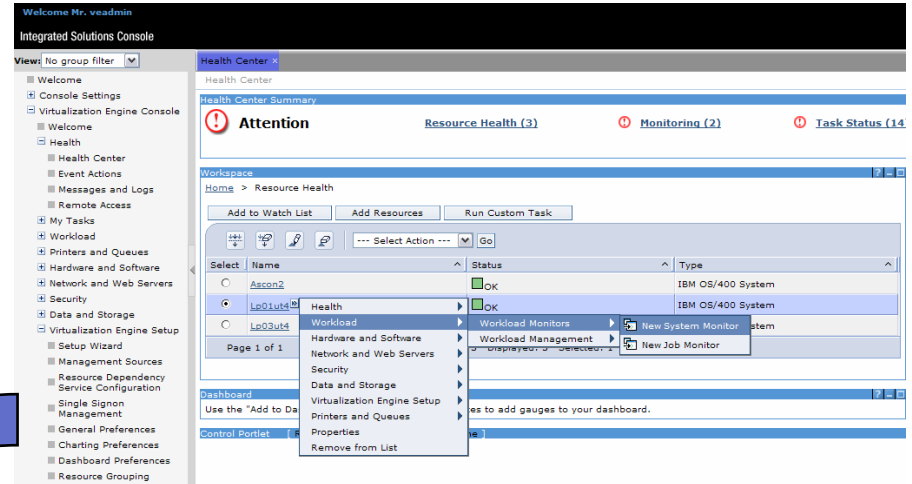
Task Launching - WebSM Auto-installation

- **Web-based System Manager will be downloaded from the VEC host machine via Java Web Start and launched if not already installed**
- **The specified task will be carried out following the installation**



Task Launching – iSeries Navigator

- **Launch-in-Context tasks are supported in iSeries Navigator V5R4**
- **iSeries Navigator must be installed prior to task launch**



Launch Points

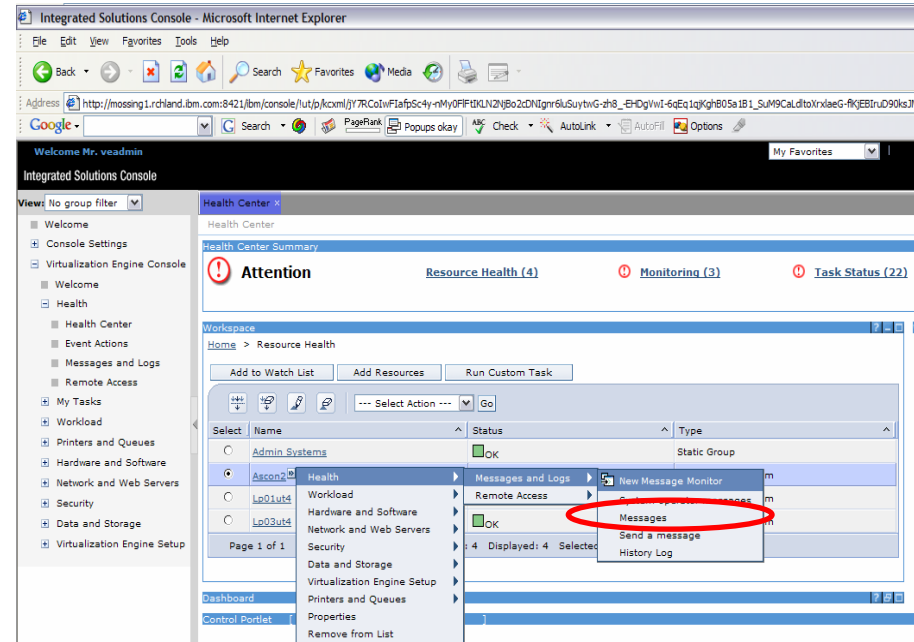
- **Tasks may be launched from Health Center resource context menus**
 - User selects target resource, brings up a context menu, and selects task

- **Tasks may be launched by drilling down into a functional category via the navigation task area folders**
 - User selects a functional task category in left hand navigation pane, chooses target, and selects task

- **Favorite tasks can be added to and launched from the Launchpad**
 - Any task surfaced via a task category can be added to the Launchpad

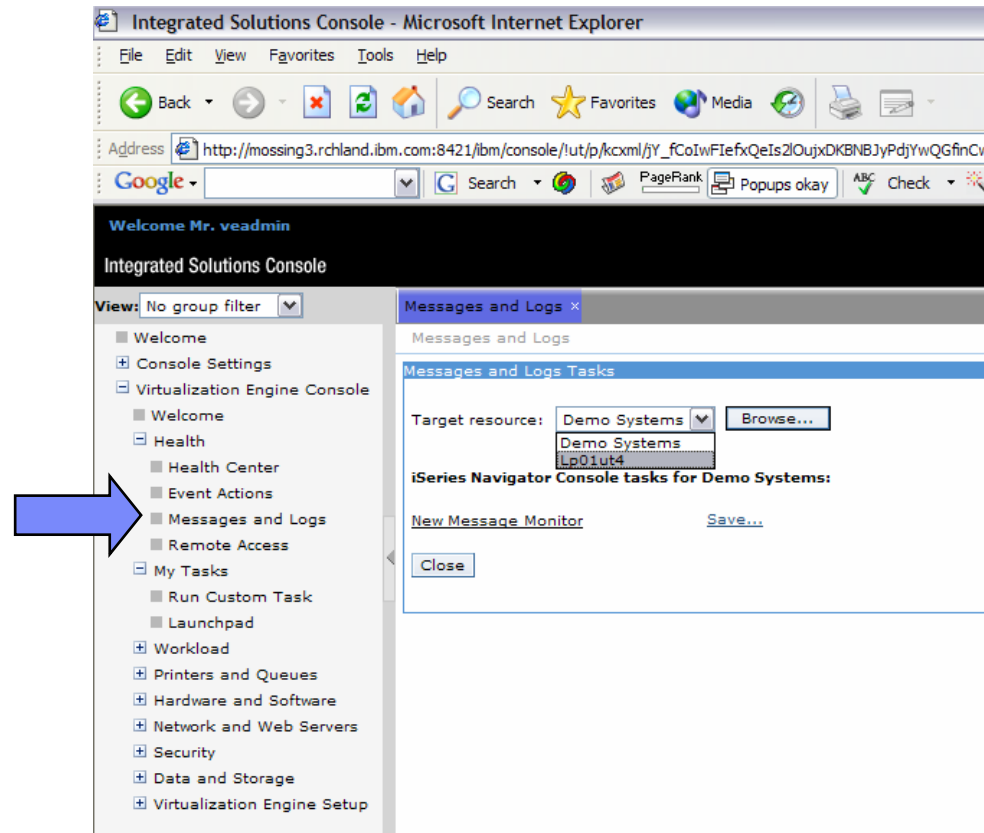
Launch Points – Resource-based

- **Launching from the Health Center**
 - User selects target resource, brings up a context menu, and selects task
 - The launch icon represents a client Launch-in-Context action
 - Notice the task categories in the resource context menu are mirrored in the left hand navigation area



Launch Points – Category-based

- **Drill down into functional category via left hand navigation area**
- **Browse for the target with dropdown box or Browse dialog**
- **All applicable tasks for the selected target will be shown within the task launch portlet**
- **Task may be launched by selecting the respective link**



Launch Points – Category-based - Browse

- All resources known by the defined management sources that support tasks of the selected category
- Past targets that have been chosen for this category will persist in the dropdown box in the task portlet

The top screenshot shows the 'Messages and Logs' task portlet in the Integrated Solutions Console. The 'Browse...' button is highlighted in the 'Select' column of the task portlet.

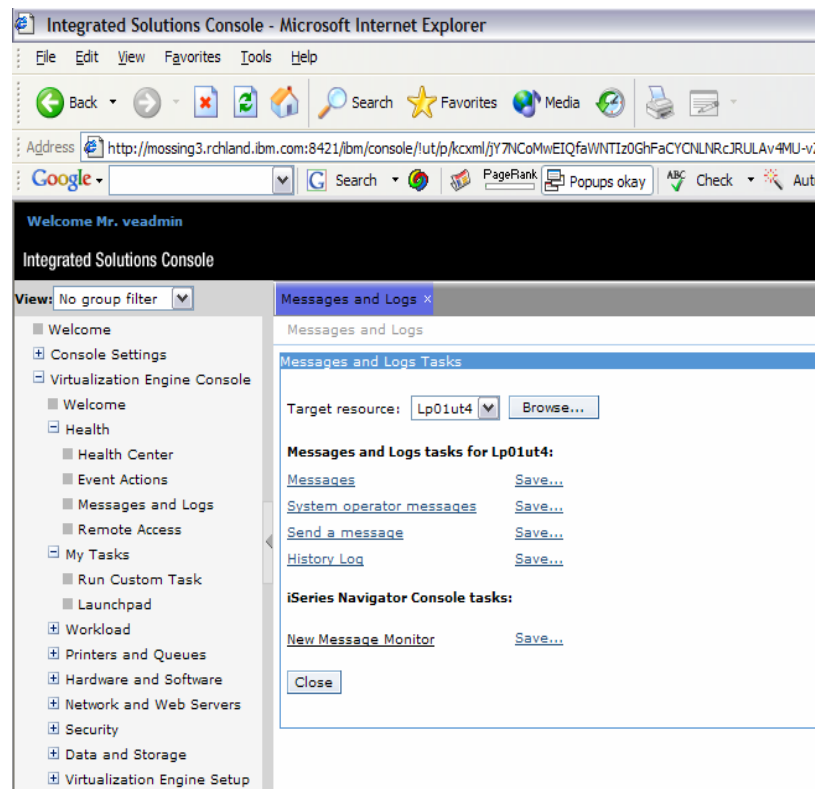
The bottom screenshot shows the 'Select the target resource for this task' dialog box. The table below lists the resources available for selection:

Select	Name	System	Management Source
<input type="radio"/>	Ghz400.rchland.ibm.com	System	lp01ut4.rchland.ibm.com_MC
<input type="radio"/>	Hzi047.pdl.pok.ibm.com	System	lp01ut4.rchland.ibm.com_MC
<input type="radio"/>	Hzi058.pdl.pok.ibm.com	IBM OS/400 System	lp01ut4.rchland.ibm.com_MC
<input type="radio"/>	Hzi238.pdl.pok.ibm.com	System	lp01ut4.rchland.ibm.com_MC
<input type="radio"/>	Hei043.pdl.pok.ibm.com	System	lp01ut4.rchland.ibm.com_MC
<input type="radio"/>	Kiyashi	System	lp01ut4.rchland.ibm.com_MC
<input type="radio"/>	Kiyashi.rchland.ibm.com	System	lp01ut4.rchland.ibm.com_MC
<input type="radio"/>	Lp016ab	System	lp01ut4.rchland.ibm.com_MC
<input type="radio"/>	Lp01d2d	System	lp01ut4.rchland.ibm.com_MC
<input checked="" type="radio"/>	Lp01ut4	IBM OS/400 System	lp01ut4.rchland.ibm.com_MC
<input type="radio"/>	Lp01ut4.rchland.ibm.com	IBM OS/400 System	lp01ut4.rchland.ibm.com_MC
<input type="radio"/>	Lp01ut5	System	lp01ut4.rchland.ibm.com_MC

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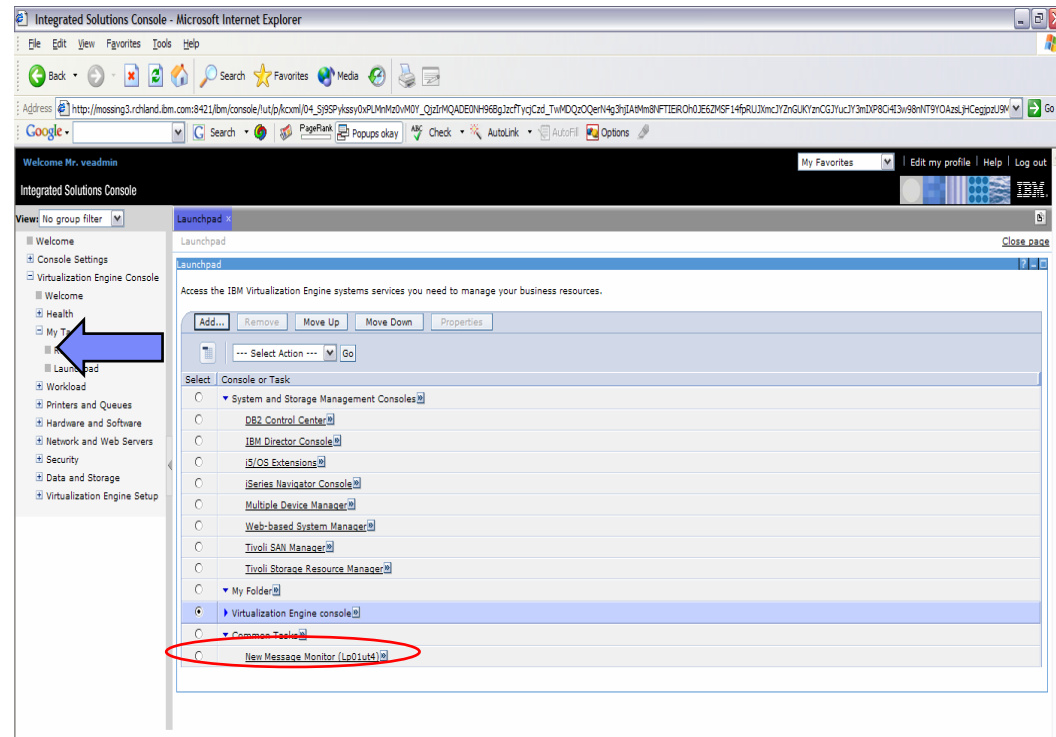
Launch Points – Category-based – Available Tasks

- **Supported tasks for the selected resource will be displayed after selection in the dropdown or Browse dialog**
- **Any of these links can be saved to the VEC Launchpad using the “Save...” link**



Launchpad

- **Launch VE and other related consoles including i5/OS extensions**
- **Launch user-defined customer applications and consoles**
- **Detects VE web consoles in the environment (e.g., EWLM Control Center) and automatically creates links for them**
- **Launchpad entries and categories can be arranged**



Launchpad - Task Integration

- Create “Favorites with context” links with ability to group and organize
 - One-click to run a task on desired system
 - Subset favorite tasks on favorite systems
 - Create custom task list for users integrating VE tasks and customer tasks

Integrated Solutions Console - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media Print Mail

Address <http://mossing3.rchland.ibm.com:8421/ibm/console/!ut/p/kcxml/jY7NCoMwEIQfaWNTIz0GhFaCYCNLNRcJRULAv4MU-v...>

Google Search PageRank Popups okay ABC Check Aut

Welcome Mr. veadmin

Integrated Solutions Console

View: No group filter

- Welcome
- + Console Settings
- ▣ Virtualization Engine Console
 - Welcome
 - ▣ Health
 - Health Center
 - Event Actions
 - Messages and Logs
 - Remote Access
 - ▣ My Tasks
 - Run Custom Task
 - Launchpad
 - + Workload
 - + Printers and Queues
 - + Hardware and Software
 - + Network and Web Servers

Messages and Logs

Messages and Logs Tasks

Target resource: Lp01ut4 Browse...

Messages and Logs tasks for Lp01ut4:

Messages	Save...
System operator messages	Save...
Send a message	Save...
History Log	Save...

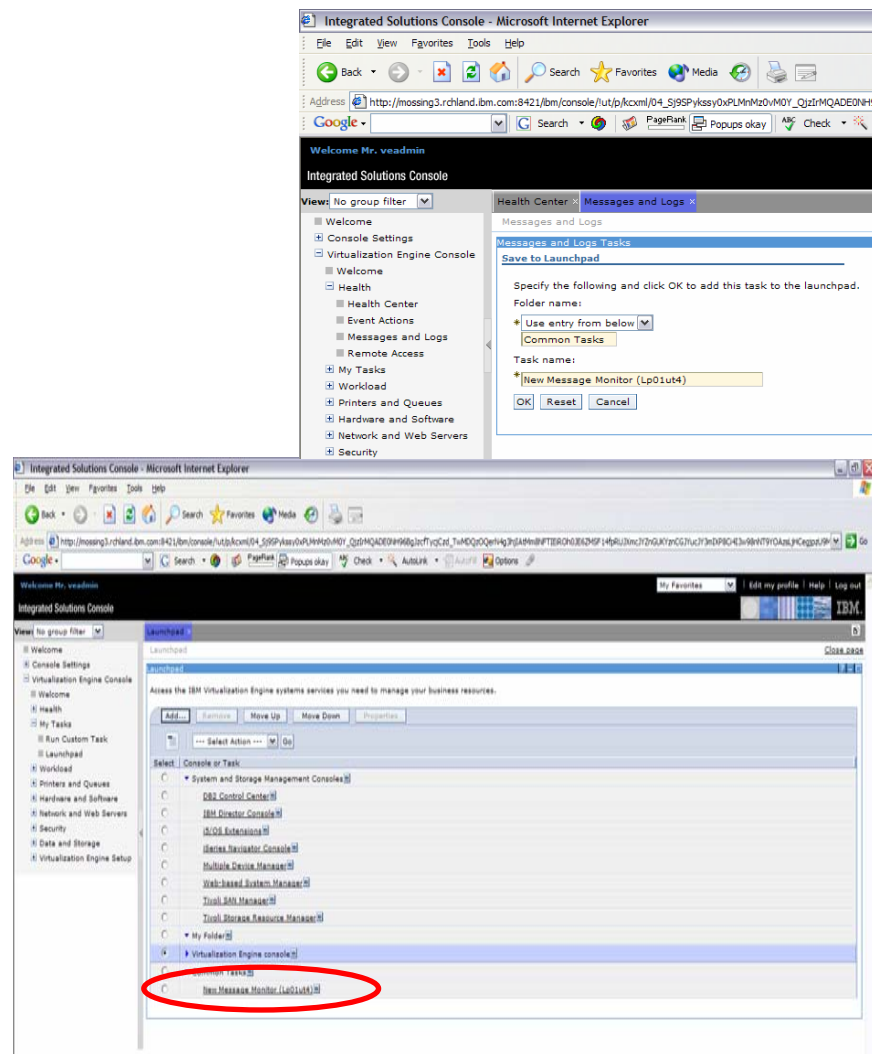
iSeries Navigator Console tasks:

New Message Monitor	Save...
-------------------------------------	-------------------------

Close

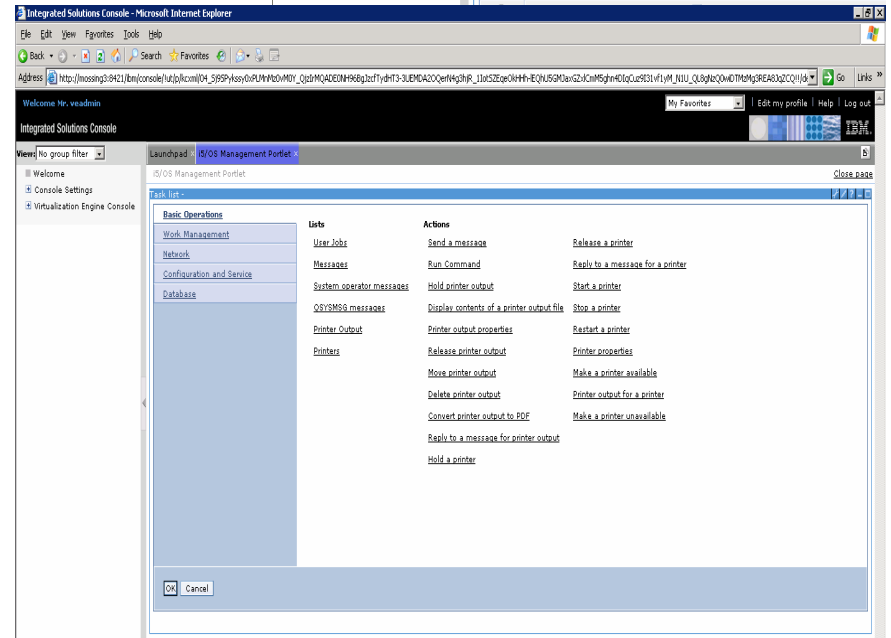
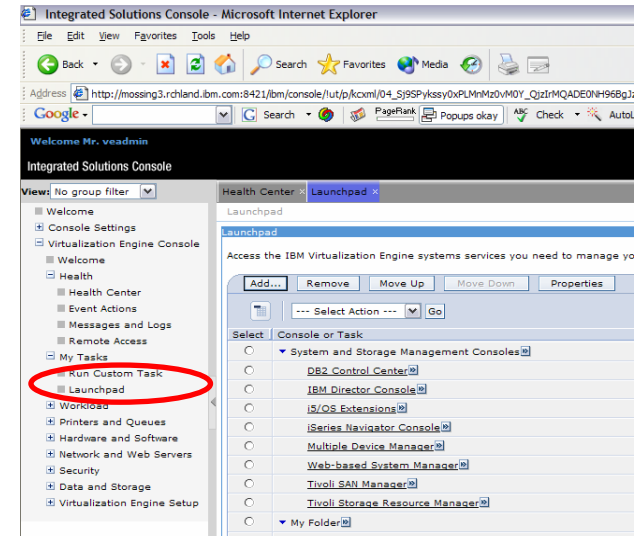
Launchpad - Task Integration (2)

- Choose from existing Launchpad folders or define a new one
- Option to edit the task name – default behavior is to use task link text
- Link is then saved into Launchpad folder for future use
- Task bookmarking system that is browser and PC independent



Launchpad - i5/OS Extensions

- Integration of iSeries Navigator Tasks for the Web into VEC
- Approximately 90 integrated Web-based iSeries tasks
- Also visible on an individual basis through Health Center resource context menus and the category task portlet



SSO Support

- **Launch-in-Context uses user mappings (if available) for every task launch to eliminate a separate authentication to the client console**
- **These mappings exist in the Manage User Identity Associations portlet**

The screenshot shows the Integrated Solutions Console interface. The main content area displays the 'Manage User Identity Associations' portlet for the user 'veadmin'. The portlet shows a table of user identity associations with the following columns: Console User, System, Type, Password Required, and System User.

Console User	System	Type	Password Required	System User
<input type="checkbox"/> veadmin	ho008-pdi.pok.ibm.com	IS/OS	Yes	VEADMIN
<input type="checkbox"/> veadmin	lp01u4-rci.land.ibm.com	IS/OS	Yes	ISADMIN
<input type="checkbox"/> veadmin	lp03u4-rci.land.ibm.com	IS/OS	Yes	ISADMIN
<input type="checkbox"/> veadmin	lp12u4b-rci.land.ibm.com	IS/OS	No	MINEINERS
<input type="checkbox"/> veadmin	mossing1.rci.land.ibm.com	Windows - local workstation	Yes	VEBMO
<input type="checkbox"/> veadmin	mossing2.rci.land.ibm.com	Windows - local workstation	Yes	MOSSING
<input type="checkbox"/> veadmin	rchasrm.rci.land.ibm.com	IS/OS	No	ISADMIN

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

Note: To view additional user identity associations that may work for this user, change the view to "Default associations for all console users."

Conclusion / Wrap-up

- **Launch-in-Context provides a means to integrate key eServer systems management tasks into VEC**
- **Launch-in-Context keeps the systems management observation and corrective action duties within the same scenario**
- **This is an initial step towards the goal of complete task convergence and integration**

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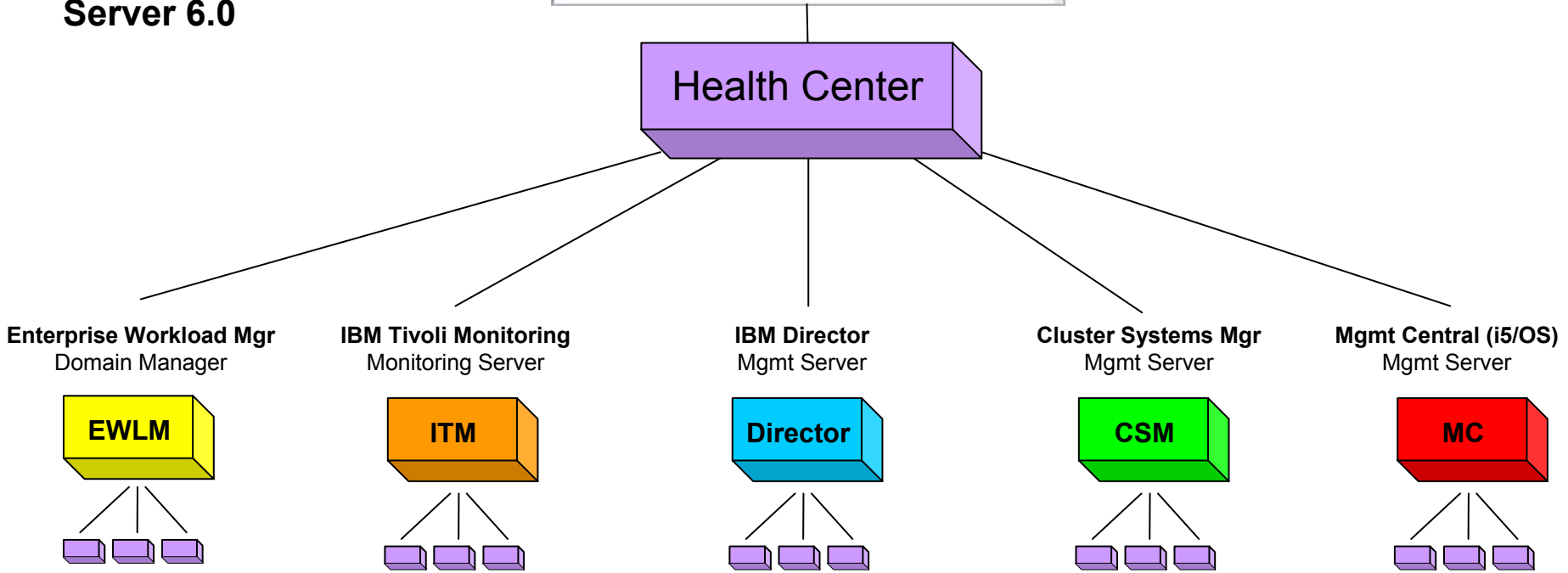
Learning Objectives

At the conclusion of this material, you should be able to:

- Understand what a bridge is
- Understand our four bridges and platform support
- Be able to name the main functions of each bridge
- Understand how to service each bridge

What is a bridge?

- Communicates with existing servers and sends information in web services format to console (Health Center)
- Runs within a common WebSphere profile on WebSphere Application Server 6.0



Our four bridges

- **Cluster Systems Management bridge to Virtualization Engine console**
 - AIX

- **Enterprise Workload Manager bridge to Virtualization Engine console**
 - Windows, xLinux, i/pLinux, zLinux, i5/OS, AIX (zOS post R2)

- **IBM Director bridge to Virtualization Engine console**
 - Windows, xLinux, i/pLinux, zLinux, i5/OS (AIX post R2)

- **Management Central bridge to Virtualization Engine console**
 - i5/OS

(AIX 5.3, i5/OS V5R3, Linux SLES 9 and RHAS 4.0, Windows 2003 Standard and Enterprise Editions)

Main function of bridges

➤ **Cluster Systems Management bridge to Virtualization Engine console**

- Resource = an individual pSeries® node running the AIX® operating system or a node group of endpoint systems running the AIX operating system
- Monitor = a Resource Monitoring and Control (RMC) condition that can be used to monitor one or more resources on one or more of the endpoint systems managed in the CSM cluster
- Task = actions that result in Cluster Systems Management (CSM) tasks and Distributed Command Execution Manager (DCEM) tasks

➤ **IBM Director bridge to Virtualization Engine console**

- Resource = a physical system, device, or a logical group managed by the IBM® Director Server
- Monitor = an IBM® Director threshold that can be used to monitor an attribute of a resource managed by the Director Server
- Task = actions that will result in task and high level custom tasks which will create an IBM Director Task Activation to track the history of the task

Main function of bridges (2)

- **Enterprise Workload Manager bridge to Virtualization Engine console**

- New for R2
- Resource = a collection of EWLM managed servers and a domain manager. The domain manager coordinates the activation of policies on managed server and the collection of performance data. A managed server is a server whose work requests are monitored and sends performance data to the domain manager.
- Monitor = A “Workload” object represents a collection of service classes that have been grouped together by the administrator. The workloads are generally grouped to represent business objectives such as “Web Site”, “Banking”, and “Inventory and Shipping”. If all service class objects in the workload are meeting or exceeding their goals, the health of the workload will be set to “OK”. If at least one service class is not meeting its goals, the health of the workload will be set to “Attention”.

- **Management Central bridge to Virtualization Engine console**

- Resource = Management Central Systems and System Groups
- Monitor = Monitor system performance, jobs and servers, message queues, changes to selected files, and B2B transaction activity
- Task = Delete custom tasks, view the status of the task on systems, run a custom task

Servicing bridges

- **Logs located at:**

- <log_location_selected_at_install_time>/VEMS/logs/VEMS
 - Logs are VEBridge_out.log, VEBridge_err.log, SystemOut.log, SystemErr.log
 - For instance, on i5: /QIBM/ProdData/VE2/VEMS/logs/VEMS/

- **Administrative console located at:**

- If customer takes default port choice during install (18551), WebSphere administrative console URL = http://<fully-qualified_machine_name>:18552/ibm/console
 - Use administrative console to change LDAP password, LTPA keys, etc.

Conclusion / Wrap-up

- **Understand what a bridge is**
- **Understand our four bridges and platform support**
- **Be able to name the main functions of each bridge**
- **Understand how to service each bridge**

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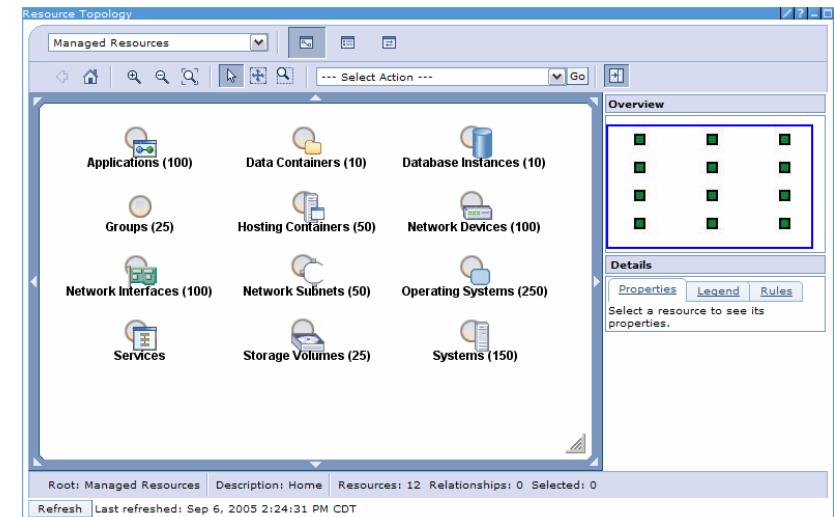
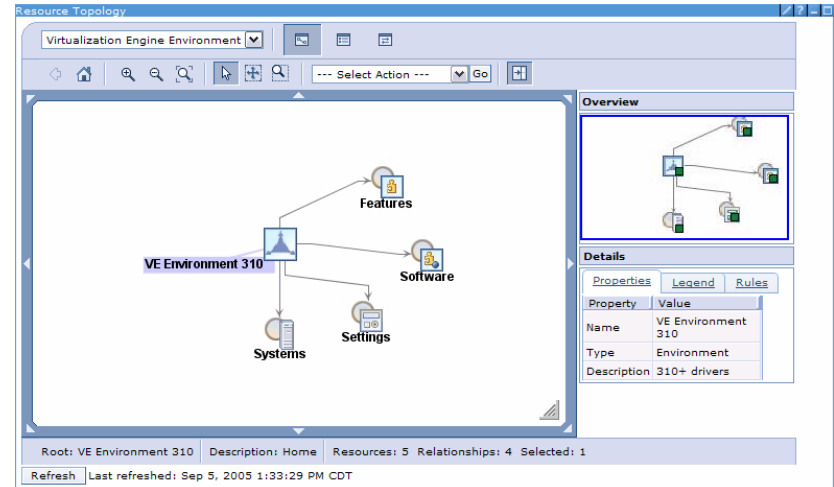
5 IBM VE Console Resource Topology

6 Wrap up - information sources and Q&A

Agenda

Topics to be covered:

- Introduction
- Virtualization Engine Environment
- Managed Resources
 - Creating/deleting resources
 - Creating/deleting relationships
 - Editing properties
 - Logical groups
 - Launching RDS Configuration GUI
- Topology views
 - Graphical view
 - Resource table view
 - Relationship table view
- Topology Preferences
- Additional GUI Features
- Conclusion/questions



Resource Topology

- **Introduction**
- Virtualization Engine Environment
- Managed Resources
- Topology Views
- Topology Preferences
- Additional GUI Features
- Conclusion/questions

Resource Topology Introduction

- **Component of the Virtualization Engine Console.**

- **Allows users to visualize, explore, and work with resources and relationships in a graphical topology viewer.**

- **Users can choose from two distinct data sources:**
 - Virtualization Engine Environment
 - Allows users to visualize the resources and the relationships between them which make up their Virtualization Engine environment.
 - Managed Resources
 - Allows users to visualize the resources and relationships discovered by Resource Dependency Services (RDS). In addition, users can create/delete resources and relationships, edit resource properties, etc.

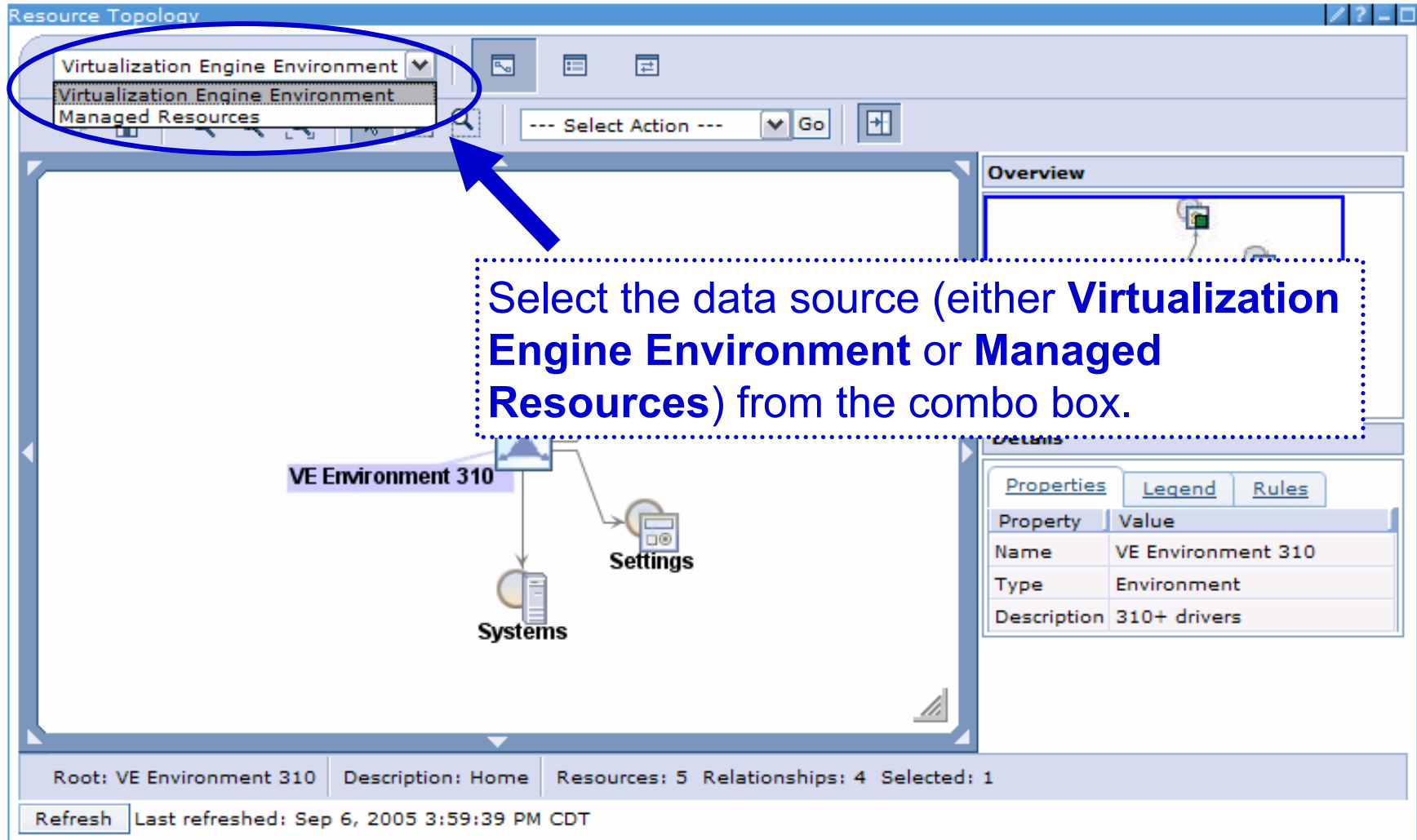
Resource Topology Introduction — Launching

- Located at Virtualization Engine Console -> Hardware and Software -> Resource Topology

The screenshot displays the Integrated Solutions Console interface. On the left, a navigation tree under 'Hardware and Software' has 'Resource Topology' selected and circled in blue, with a blue arrow pointing to it. The main content area shows the 'Resource Topology' view for 'VE Environment 310'. The central diagram illustrates a hierarchy: 'VE Environment 310' is the root, branching into 'Systems', 'Settings', 'Software', and 'Features'. An 'Overview' panel on the right shows a smaller version of this hierarchy. Below the diagram, a status bar indicates: 'Root: VE Environment 310', 'Description: Home', 'Resources: 5', 'Relationships: 4', 'Selected: 1'. A 'Refresh' button and 'Last refreshed: Sep 8, 2005 4:35:54 PM CDT' are also visible.

Property	Value
Name	VE Environment 310
Type	Environment
Description	310+ drivers

Resource Topology Introduction – Selecting Data Source



The screenshot shows the Resource Topology interface. A blue oval highlights a dropdown menu in the top-left corner with the following options:

- Virtualization Engine Environment
- Virtualization Engine Environment
- Managed Resources

A blue arrow points from this menu to a text box containing the instruction:

Select the data source (either **Virtualization Engine Environment** or **Managed Resources**) from the combo box.

The main area of the console displays a tree view with the following structure:

- VE Environment 310
 - Settings
 - Systems

The right-hand side of the console shows an Overview pane and a Details pane. The Details pane has tabs for Properties, Legend, and Rules. The Properties tab is active, showing the following table:

Property	Value
Name	VE Environment 310
Type	Environment
Description	310+ drivers

The bottom status bar displays the following information:

Root: VE Environment 310 | Description: Home | Resources: 5 | Relationships: 4 | Selected: 1

Refresh | Last refreshed: Sep 6, 2005 3:59:39 PM CDT

Resource Topology

- Introduction
- **Virtualization Engine Environment**
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Virtualization Engine Environment Data Source

- **Allows users to visualize the following resource types making up their Virtualization Engine environment:**

Systems	The computer systems where Virtualization Engine features and software have been installed.
Features	Virtualization Engine offerings (e.g. EWLM, VE Console, etc.) that are comprised of multiple software components.
Software	Pieces of software (e.g. ISC, WAS, etc.) that come together to form features.
Settings	Data shared by Virtualization Engine applications (e.g. security information, etc.).

- **Users can navigate topologies showing relationships between these resource types (e.g. a system contains installations which in turn contain pieces of software).**
- **This information is mined from data accumulated in an LDAP repository as Virtualization Engine applications are installed and uninstalled.**
- **For visualization only — data cannot be modified.**
- **Always available (that is, nothing else needs to be installed or configured for it to work).**

Virtualization Engine Environment Data Source

Resource Topology

Virtualization Engine Environment

--- Select Action --- Go

```

graph TD
    Root[VE Environment 310] --> Features
    Root --> Software
    Root --> Settings
    Features --> Systems
    
```

Overview

Details

Properties Legend Rules

Property	Value
Name	VE Environment 310
Type	Environment
Description	310+ drivers

Root: VE Environment 310 Description: Home Resources: 5 Relationships: 4 Selected: 1

Refresh Last refreshed: Sep 6, 2005 3:59:39 PM CDT

Virtualization Engine Environment Example

Resource Topology

Virtualization Engine Environment

--- Select Action --- Go

VE Environment 310

Features

Software

Settings

System

Open -> Next Level

Properties

Zoom To

Center

Property	Value
Name	VE Environment 310
Type	Environment
Description	310+ drivers

Root: VE Environment 310 Description: Home Resources: 5 Relationships: 4 Selected: 1

Refresh Last refreshed: Sep 6, 2005 3:59:39 PM CDT

Invoke context menu by right-clicking on resources (in this case **Systems**). Choose **Open -> Next Level** to see the systems in the environment.

Virtualization Engine Environment Example

The screenshot shows the 'Resource Topology' application window. The main area displays a tree view of systems under a 'Virtualization Engine Environment'. A context menu is open over the 'indiana.rchland...' system, with 'Open' selected and a sub-menu showing 'Next Level' and 'All Levels'. A blue arrow points from the text box to the 'All Levels' option.

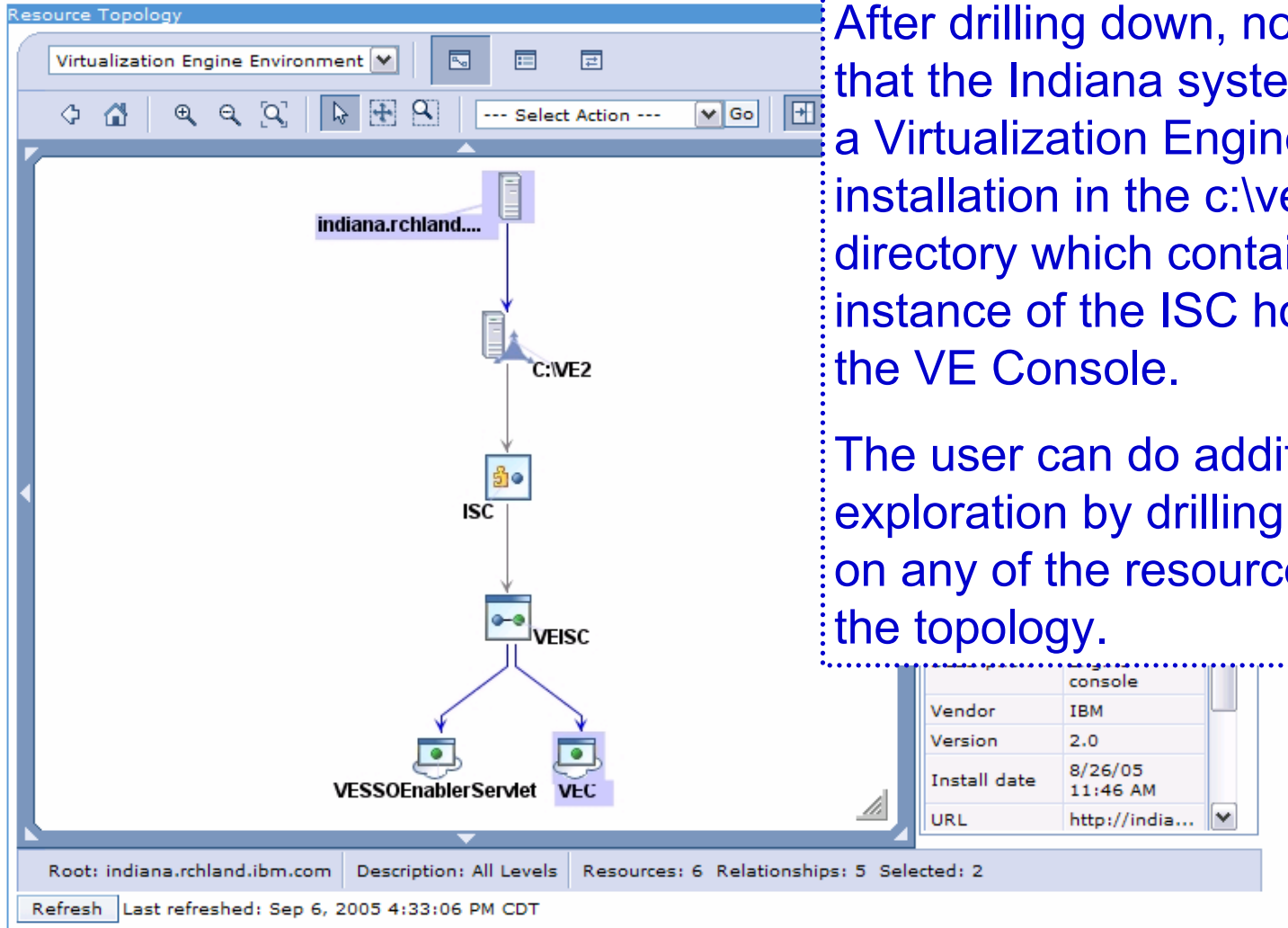
Overview

Details

Property	Value
Name	indiana.rchland.ibm.com
Type	System
Architecture	x86
Operating system	Windows 2003
Operating system version	5.2

To drill down into a specific system in order to see what's installed on it, choose **Open-> All Levels**.

Virtualization Engine Environment Example



After drilling down, notice that the Indiana system has a Virtualization Engine installation in the c:\ve2 directory which contains an instance of the ISC hosting the VE Console.

The user can do additional exploration by drilling down on any of the resources in the topology.

Resource Topology

- Introduction
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Managed Resources Data Source

- **Allows users to visualize the managed resources and relationships discovered by Resource Dependency Services (RDS).**
- **RDS must be installed in the user's Virtualization Engine environment for this data source to work within the VE Console.**
- **When working within the managed resources data source, the following operations are available:**
 - Creating/deleting resources
 - Creating/deleting relationships
 - Editing resource properties
 - Creating logical groups of resources
 - Launching the RDS Admin and Configuration GUI for fine tuning RDS

Managed Resources Home Page

Resource Topology

Managed Resources

--- Select Action --- Go

Overview

Details

Properties Legend Rules

Root: Managed Resources Description: Home Resources: 12 Relationships: 0 Select

Refresh Last refreshed: Sep 6, 2005 4:46:10 PM CDT

Applications (100) Data Containers (10) Database Instances (10)

Groups (25) Hosting Containers (50) Network Devices (100)

Network Interfaces (100) Network Subnets (50) Operating Systems (250)

Services (400) Storage Volumes (25) Systems (150)

The Managed Resources “home” topology contains icons representing all of the managed resource types that RDS can discover.

Managed Resources — Resource Types

Applications	An application is a program that runs within a hosting container or an operating system instance.
Data Containers	Data containers are like file systems, containing collections of files and attributes associated with those files.
Database Instances	A database instance is a collection of interrelated or independent data items stored together to serve one or more applications.
Groups	Use groups to organize unrelated resources, creating personal views of specific resources from your environment.
Hosting Containers	Hosting containers are programs or applications that host other applications (e.g. WAS).
Network Devices	Network devices are special purpose, dedicated computers like routers and load balancers that help manage network traffic.
Network Interfaces	A network interface (also known as a network interface controller or NIC) provides the interface control between a system and an external high-speed network.
Network Subnets	A subnet is an interconnected, but independent segment of an entire network that is identified by its Internet Protocol (IP) address.
Operating Systems	An operating system is a collection of system programs that control the overall operation of a computer system.
Services	A service is a process or sub-process used to automate common tasks such as verifying security credentials or calibrating system clocks.
Storage Volumes	A storage volume represents a medium used for storage of data on a computer. A storage volume can be an entire physical hard disk, or portions of a hard disk.
Systems	A system represents physical computers or virtual computers, such as logical or physical partitions.

Managed Resources — Drilldown Example

The screenshot displays the 'Resource Topology' window with a grid of resource categories. A context menu is open over the 'Systems' category, with the 'Open' option selected, showing sub-options 'All Systems' and 'By Operating System'. A blue arrow points from a text box to the 'All Systems' option.

Resource Category	Count
Applications	100
Data Containers	10
Database Instances	10
Groups	25
Hosting Containers	50
Network Devices	100
Network Interfaces	100
Network Subnets	50
Operating Systems	250
Services	400
Storage Volumes	25
Systems	12

Open → All Systems
By Operating System

Resources: 12 Relationships: 0 Selected: 0

To see all of the systems which RDS has discovered, select the **Open -> All Systems** context menu option.

Managed Resources — Drilldown Example

The screenshot shows the 'Resource Topology' application window. The main area displays a grid of system icons labeled from sys107 to sys2. A context menu is open over the 'sys11' icon, with the 'Open' option expanded to show a sub-menu where 'All' is selected. A blue arrow points from the 'All' option to a callout box.

To see all resources related to a system, choose the **Open -> All context menu option.**

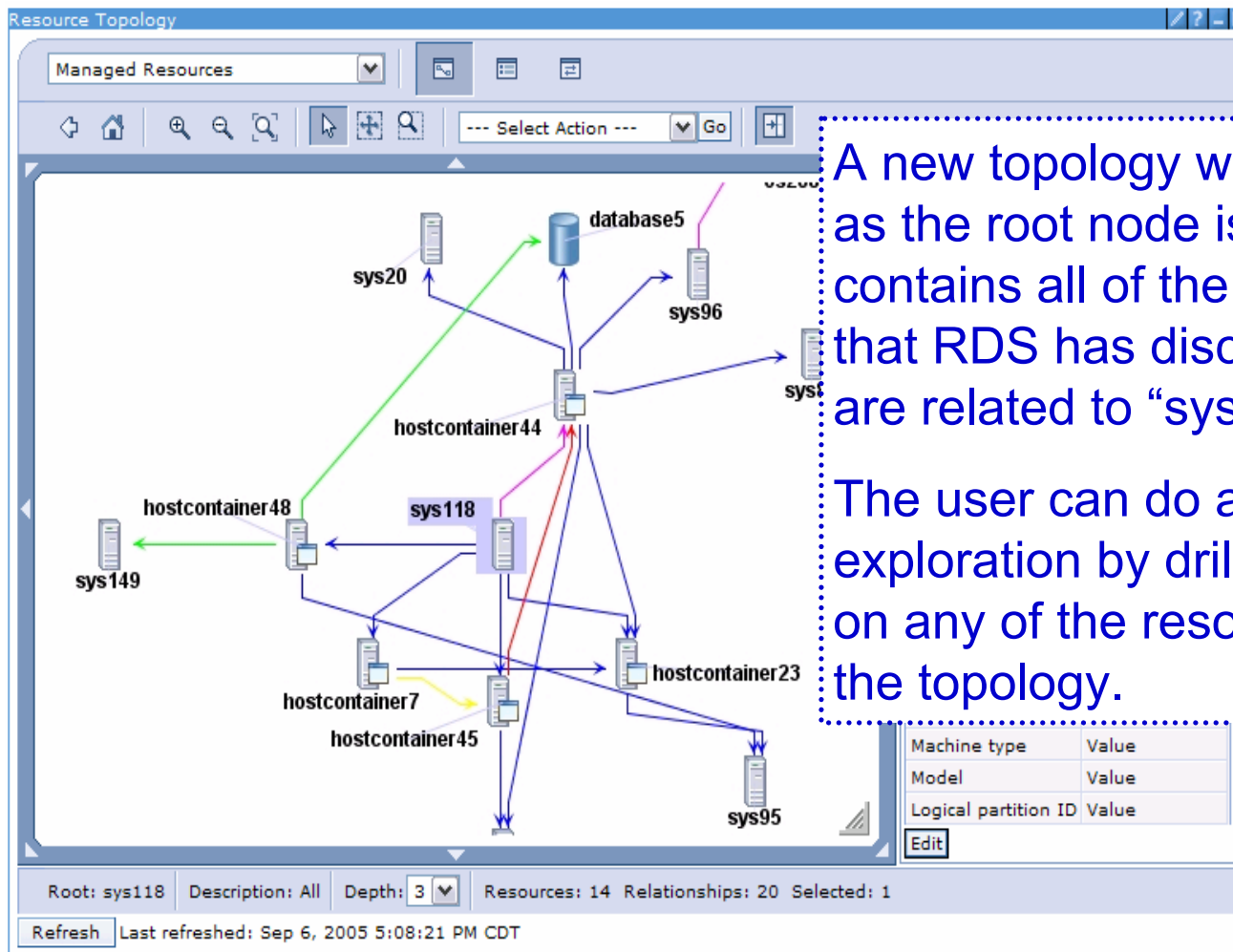
Overview

Properties and Legend	
Property	Value
Name	Value
Type	System
Description	Value

Root: Systems Description: All Systems Resources: 150 Relationships: 0 Selected: 1

Refresh Last refreshed: Sep 6, 2005 4:46:10 PM CDT

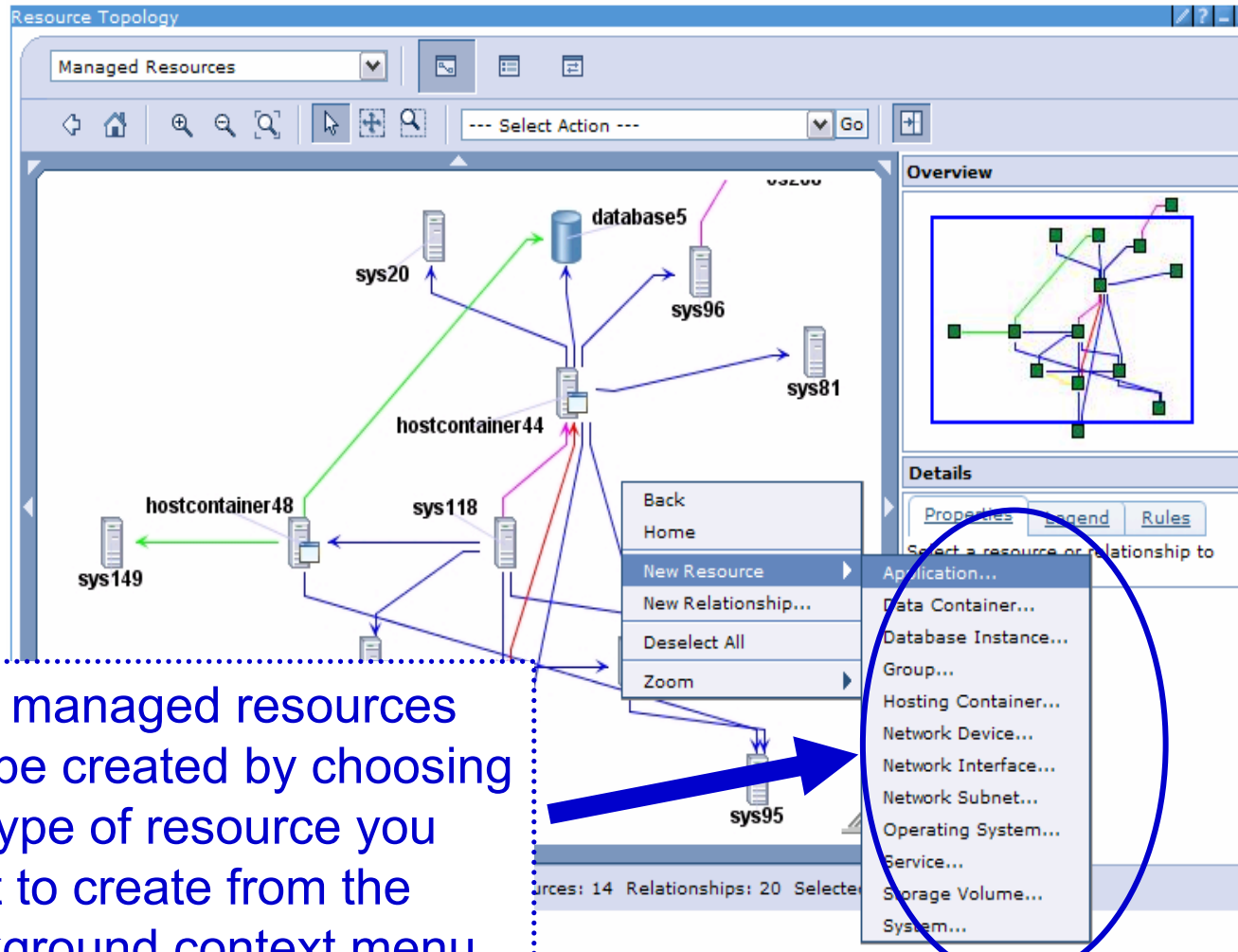
Managed Resources — Drilldown Example



A new topology with “sys118” as the root node is shown. It contains all of the resources that RDS has discovered that are related to “sys118.”

The user can do additional exploration by drilling down on any of the resources in the topology.

Managed Resources — Creating Resources



New managed resources can be created by choosing the type of resource you want to create from the background context menu.

Managed Resources — Creating Resources

Resource Topology

New Application

Complete the information below to create a new Application.

Name: * My New Application

Description: This is an application that I'm creating for a demo.

Application name: * DB/2

Product: * DB/2

Version:

Vendor: IBM

Languages:

Priority:

System ID:

Supported operating systems:

Software type:

Update version:

Major version:

Minor version:

OK Reset Cancel

Complete the form and click OK to create a new managed resource that will appear in the current topology.

Managed Resources — Deleting Resources

The screenshot displays the 'Resource Topology' interface. The main area shows a network diagram with resources like 'sys0', 'hostcontainer28', 'hostcontainer38', 'sys80', 'sys70', 'tcontainer46', 'hostcontainer30', and 'hostcontainer7'. A context menu is open over a resource, with the 'Delete' option highlighted. A blue arrow points to the 'Delete' option. A dashed box contains text explaining the process.

Select the resource(s) that you wish to delete and choose the **Delete** context menu option.

Root: sys0 Description: All Depth: 3 Resources: 14 Relationships: 20 Selected: 4
Refresh Last refreshed: Sep 1, 2005 11:19:08 AM CDT

Managed Resources — Deleting Resources

Resource Topology

Delete Managed Resource

Are you sure you want to permanently delete the following resources?

- hostcontainer38
- sys56
- database9
- sys80

Confirm your wishes to permanently delete the resource(s) you've selected.

Managed Resources — Creating Relationships

The screenshot displays the 'Resource Topology' application window. The main area shows a network diagram with nodes representing resources: sys20, database5, sys96, hostcontainer44, sys87, hostcontainer48, sys149, and sys118. Colored arrows indicate relationships between these resources. A context menu is open over the diagram, with the 'New Relationship' option selected. A sub-menu is visible, showing 'Hosts' and 'Hosted by' options. A blue arrow points from the text box to the 'Hosted by' option. The 'Overview' pane on the right shows a smaller version of the network diagram. The status bar at the bottom indicates 'Selected: 2'.

To create a new relationship between two resources, select them and then choose the context menu item for the type of relationship you wish to create.

Managed Resources — Creating Relationships

The screenshot shows the 'Resource Topology' application interface. The main window displays a hierarchical diagram of resources. A blue circle highlights resource 'sys82', and a blue arrow points to a new relationship being established between 'sys118' and 'sys82'. A callout box with a dotted border contains the text: 'A new relationship is created between the two resources.' The 'Details' panel on the right shows the following relationship data:

From	Type	To
sys118	→ Hosts	sys82
sys82	→ Hosted by	sys118

At the bottom of the interface, the status bar indicates: 'Root: sys118 Description: All Depth: 3 Resources: 14 Relationships: 22 Selected: 1'. A 'Refresh' button and the timestamp 'Last refreshed: Sep 8, 2005 5:29:58 PM CDT' are also visible.

Managed Resources — Editing Properties

The screenshot shows the 'Resource Topology' window with a 'Managed Resources' dropdown. A context menu is open over a resource, with 'Properties' highlighted. A blue arrow points from the 'Properties' menu item to a callout box. The callout box contains the following text:

To edit the properties for a resource, choose the **Properties** context menu item for the resource OR click the **Edit** button.

The 'Details' panel on the right shows a table of properties for a selected resource:

Property	Value
Name	Value
Type	System
Description	Value
Serial number	Value
Manufacturer	Value
Machine type	Value
Model	Value
Logical partition ID	Value

An 'Edit' button is circled in the bottom right of the details panel, with a blue arrow pointing to it from the callout box.

Managed Resources — Defining a Logical Group

The screenshot shows a 'Resource Topology' window with a toolbar and a main area displaying a hierarchical diagram of resources. The diagram includes nodes for 'sys20', 'database5', 'sys96', 'sys81', 'hostcontainer44', 'sys118', 'er23', 'sys95', 'hostcontainer48', 'sys149', 'hostcontainer7', and 'hostcontainer45'. A context menu is open over the 'er23' node, with the 'Add To Group...' option highlighted in blue. A blue arrow points from the text box to this menu item. The status bar at the bottom indicates 'Root: sys118', 'Description: All', 'Depth: 3', 'Resources: 14', 'Relationships: 20', and 'Selected: 5'. A 'Refresh' button and the text 'Last refreshed: Sep 6, 2005 5:08:21 PM CDT' are also visible.

In Company X, the selected resources make up the payroll system. So, the user selects the **Add to Group...** menu item enabling him to group them together. This will allow him to more easily monitor the resources in the future.

Name	Value
Type	System
Description	Value
Serial number	Value
Manufacturer	Value
Machine type	Value
Model	Value
Logical partition ID	Value

Managed Resources — Defining a Logical Group

Resource Topology

Add To Group

Select a Group to which to add the following resources:

- sys118
- sys81
- sys20
- sys96
- sys149

Click **OK to add the resources to the **Payroll** group.**

New...

--- Select Action --- Go

Select ^	Group ^	Description ^
<input checked="" type="radio"/>	Payroll	
<input type="radio"/>	WebStoreFront	

Page 1 of 1 Total: 2 Filtered: 2 Displayed: 2

OK Cancel

Managed Resources — Launching RDS GUI

The screenshot displays the 'Resource Topology' window. The main area shows a tree view of managed resources including Applications (100), Groups (2), Network Interfaces (100), Services (400), Network Subnets (50), Storage Volumes (25), Operating Systems (250), and Systems (150). A context menu is open over the 'Applications' node, with the 'Launch Resource Dependency Services' option highlighted and circled in blue. A blue arrow points from this option towards the text box on the right. The 'Overview' panel on the right shows a grid of green status indicators. The bottom status bar indicates 'Root: Managed Resources', 'Description: Home', 'Resources: 12', 'Relationships: 0', and a 'Refresh' button. The last refresh time is 'Sep 6, 2005 5:41:44 PM CDT'.

RDS will need to be configured for discovery to work properly. As a convenience, users can launch the RDS Administration and Configuration GUI (which also resides in the VE Console) from Resource Topology.

Resource Topology

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Topology Views

Virtualization Engine Environment

--- Select Action --- Go

Overview

Details

Properties Legend Rules

Property	Value
Name	Systems
Type	System List
Description	All computer systems in your Virtualization Engine environment

Root: Systems Description: All Levels Resources: 38 Relationships: 37 Selected: 1

Refresh Last refreshed: Sep 6, 2005 6:20:05 PM CDT

Systems

indiana.rchland...

ip03ut4.rchland...

dData/VE2

auimlwas.rchland...

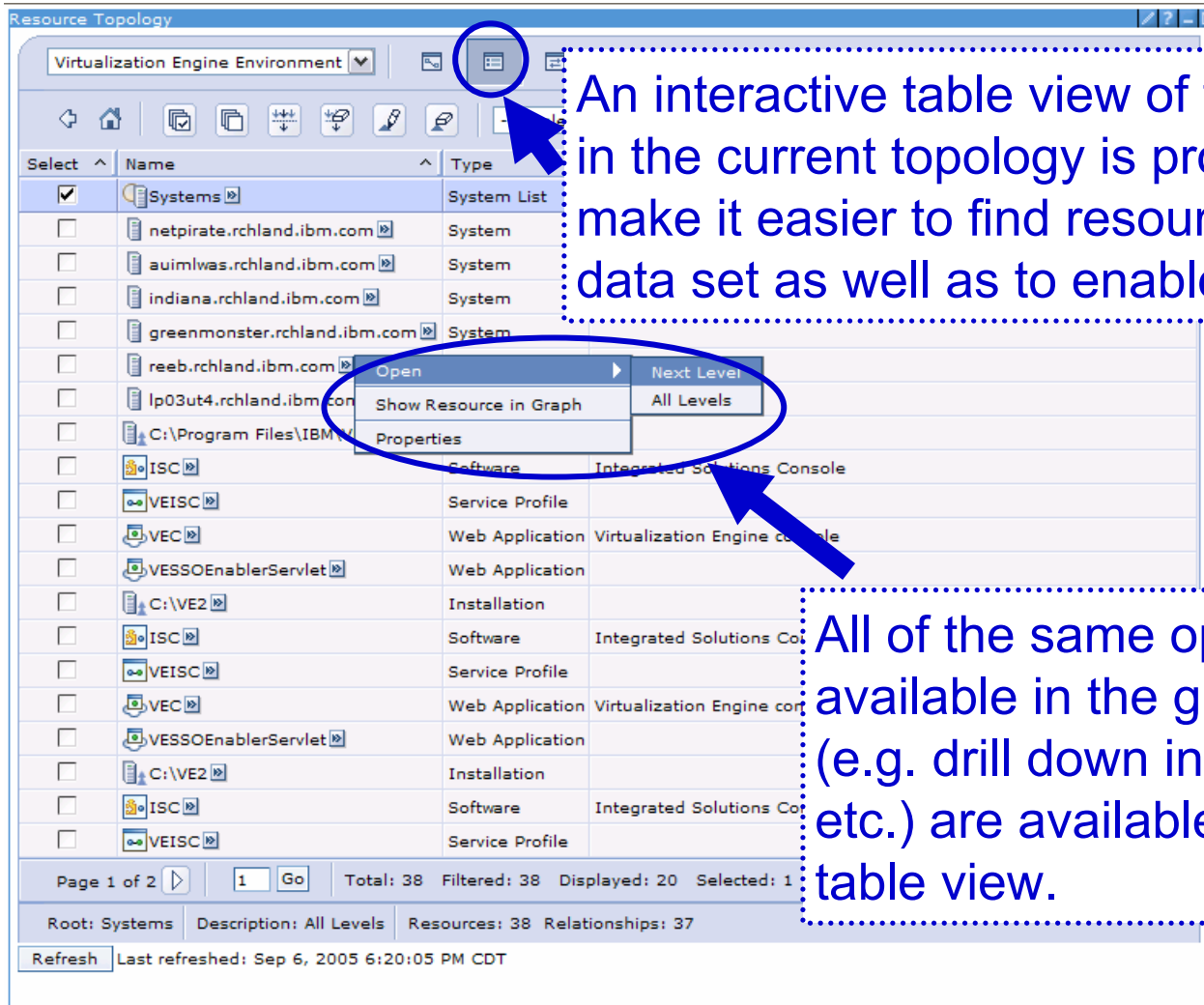
netpirate.rchlan...

C:ME2

C:M

Toggle buttons allow you to switch between graph view, resource table view, and relationship table view.

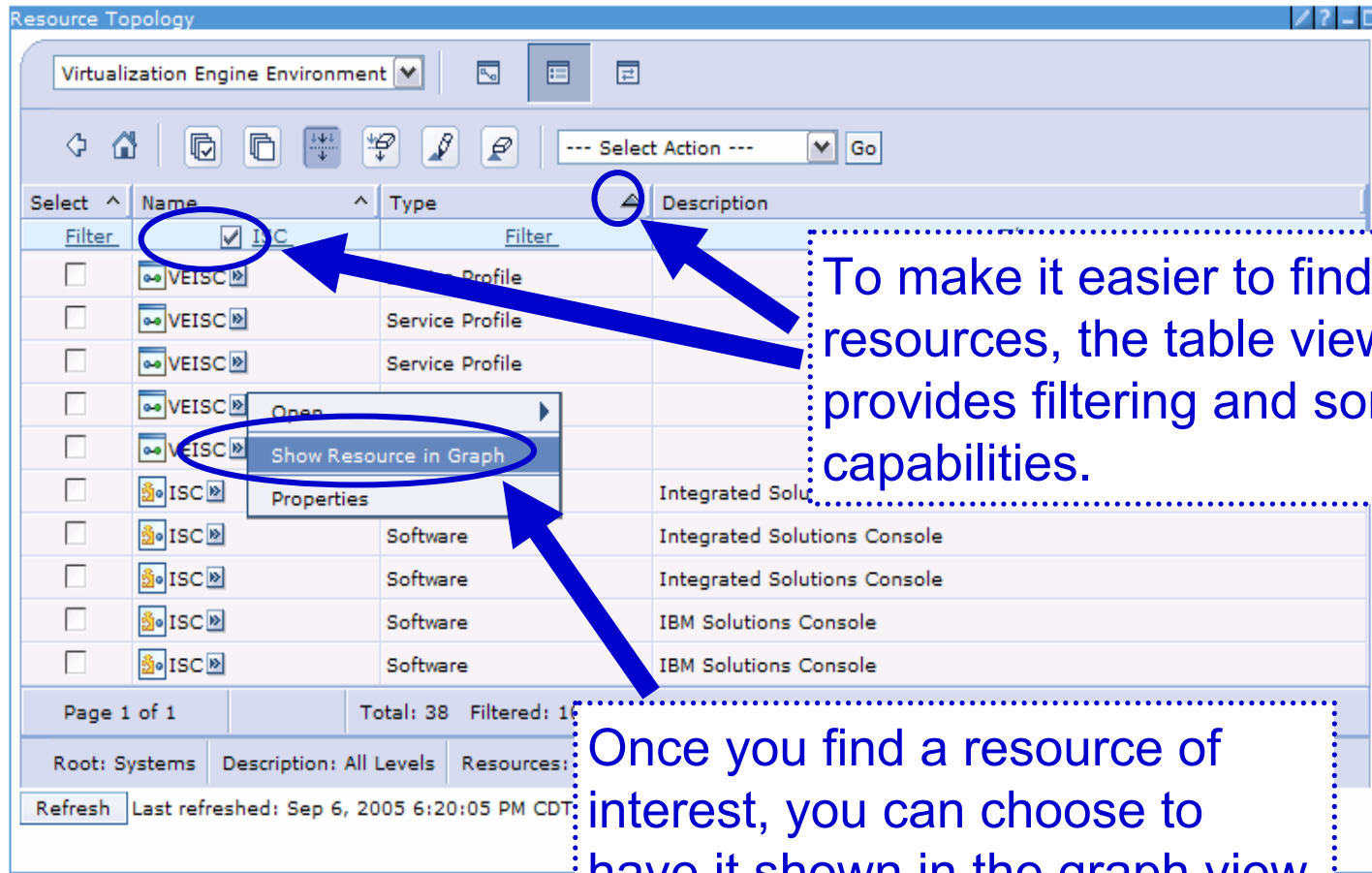
Topology Views — Resource Table



An interactive table view of the resources in the current topology is provided to make it easier to find resources in a large data set as well as to enable accessibility.

All of the same operations available in the graph view (e.g. drill down into a node, etc.) are available in the table view.

Topology Views — Resource Table Filter/Sort



To make it easier to find resources, the table view provides filtering and sorting capabilities.

Once you find a resource of interest, you can choose to have it shown in the graph view.

Topology Views — Relationship Table

The relationship table view shows all of the relationships in the topology graph in an interactive table view.

Select	From	Type	To
<input type="checkbox"/>	Ip03ut4.rchland.ibm.com	→ Hosts	/QIBM/
<input type="checkbox"/>	Systems	→ Contains	auimlwa
<input type="checkbox"/>	netpirate.rchland.ibm.com	→ Hosts	C:\Prog
<input type="checkbox"/>	auimlwas.rchland.ibm.com	→ Hosts	C:\VE2
<input type="checkbox"/>	indiana.rchland.ibm.com	→ Hosts	C:\VE2
<input type="checkbox"/>	greenmonster.rchland.ibm.com	→ Hosts	C:\VE2
<input type="checkbox"/>	reeb.rchland.ibm.com	→ Hosts	C:\VE2
<input type="checkbox"/>	Systems	→ Contains	greenmonster.rchland.ibm.com
<input type="checkbox"/>	Systems	→ Contains	indiana.rchland.ibm.com
<input type="checkbox"/>	C:\Program Files\IBM\VE2	→ Contains	ISC
<input type="checkbox"/>	C:\VE2	→ Contains	ISC
<input type="checkbox"/>	C:\VE2	→ Contains	ISC
<input type="checkbox"/>	C:\VE2	→ Contains	ISC
<input type="checkbox"/>	C:\VE2	→ Contains	ISC
<input type="checkbox"/>	C:\VE2	→ Contains	ISC
<input type="checkbox"/>	Systems	→ Contains	Ip03ut4.rchland.ibm.com
<input type="checkbox"/>	Systems	→ Contains	netpirate.rchland.ibm.com
<input type="checkbox"/>	Systems	→ Contains	reeb.rchland.ibm.com
<input type="checkbox"/>	VEISC	→ Hosts	VEC
<input type="checkbox"/>	VEISC	→ Hosts	VEC
<input type="checkbox"/>	VEISC	→ Hosts	VEC

Page 1 of 2 | 1 Go | Total: 37 Filtered: 37 Displayed: 20 Selected: 0

Root: Systems Description: All Levels Resources: 38 Relationships: 37

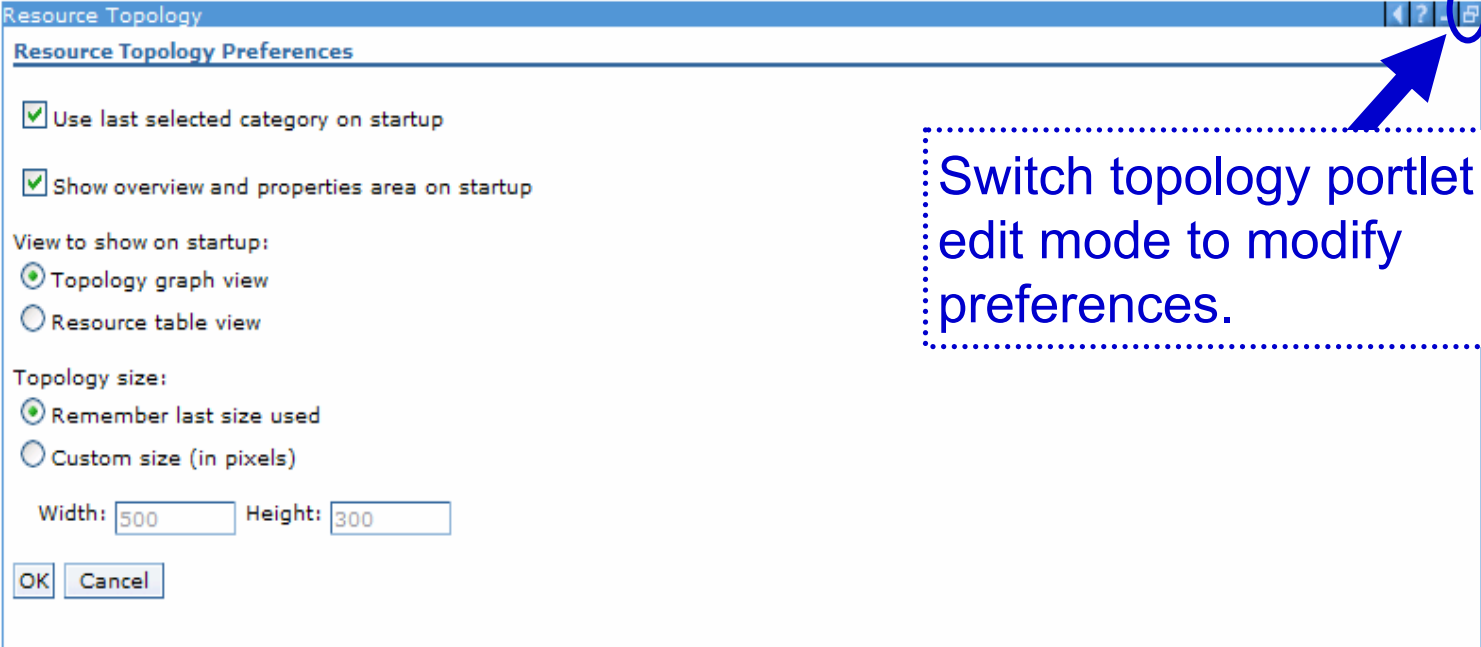
Refresh Last refreshed: Sep 6, 2005 6:20:05 PM CDT

Resource Topology

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Resource Topology – Preferences

- Various topology settings are customizable for use across sessions:
 - Which data source to use on startup
 - Whether or not to show the support area on startup
 - Which view to show on startup (graph or table)
 - What graph size to use on startup



Switch topology portlet to edit mode to modify preferences.

Resource Topology

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Resource Topology – Going Back and Home

Buttons to go back to the previous topology or to the home topology of the current data source.

Property	Value
Name	Systems
Type	System List
Description	All computer systems in your Virtualization Engine environment

Root: Systems | Description: All Levels | Resources: 44 | Relationships: 43 | Selected: 1

Refresh | Last refreshed: Sep 5, 2005 2:27:47 PM CDT

Resource Topology – Zooming

The screenshot shows the 'Resource Topology' application window. The main area displays a hierarchical network diagram with a central 'Systems' node and various peripheral nodes like 'greenh...', 'reeb.rchland.ibm.com', 'ip03ut4.rchland...', 'QIBM/ProdData/VE2', 'indiana.rchland...', 'netpirate.rchlan...', 'auimlwas.rchland...', and 'C:VE2'. A blue arrow points to the zooming icons in the toolbar, which are circled in blue. A dashed blue box highlights the text 'Zoom in, Zoom out, and Fit Content' overlaid on the diagram.

Zoom in, Zoom out, and Fit Content

Overview

Details

Properties	
Property	Value
Name	Systems
Type	System List
Description	All computer systems in your Virtualization Engine environment

Root: Systems | Description: All Levels | Resources: 44 | Relationships: 43 | Selected: 1

Refresh | Last refreshed: Sep 5, 2005 2:27:47 PM CDT

Resource Topology – Overview Area

The screenshot displays the 'Resource Topology' application window. The main area shows a hierarchical graph of systems under the root 'Systems'. Nodes include 'C:VE2', 'greenmonster.rchland...', 'reeb.rchland.ibm.com', 'ip03ut4.rchland...', 'QIBM/ProdD...', 'vacation.rchland...', 'indiana.rchland...', and 'C:VEZ'. A blue arrow points from the 'Overview' area to the main graph.

The 'Overview' area on the right shows a smaller version of the graph with a blue box highlighting a specific portion. A blue arrow points from this box to the main graph.

The 'Details' panel on the right contains tabs for 'Properties', 'Legend', and 'Rules'. Below these is a table:

Property	Value
Systems	
System List	
	All computer systems in your Virtualization Engine environment

At the bottom of the window, there is a status bar with the following information: Root: Systems | Description: All Levels | Resources: 44 | Relationships: 43 | Selected: 1. A 'Refresh' button and the text 'Last refreshed: Sep 5, 2005 2:27:47 PM CDT' are also present.

Overview shows which portion of the graph is currently visible. In addition, the box in the overview area can be dragged to pan to other portions of the graph.

Resource Topology – Properties Area

The screenshot displays the 'Resource Topology' application window. The main area shows a network diagram with a central 'Systems' node and several peripheral nodes like 'greenmonster.rch...', 'vacation.rchland...', 'indiana.rchland...', 'auimlwas.rchland...', 'Ip03ut4.rchland...', 'reeb.rchland.ibm.com', and 'C:VE2'. A blue box highlights the 'Systems' node, and a blue arrow points from this box to the 'Properties' tab in the 'Details' panel on the right. The 'Properties' panel shows a table with the following data:

Property	Value
Name	Systems
Type	System List
Description	All computer systems in your Virtualization Engine environment

At the bottom of the window, a status bar shows: 'Root: Systems | Description: All Levels | Resources: 44 | Relationships: 43 | Selected: 1'. A 'Refresh' button and the text 'Last refreshed: Sep 5, 2005 2:27:47 PM CDT' are also visible.

Properties of the currently selected resource or relationship are displayed.

Resource Topology – Relationship Legend

The screenshot displays the 'Resource Topology' application interface. The main window shows a hierarchical diagram of resources including 'fancy_applicatio...', 'device3', 'sys42', 'fancy_applicatio...', 'sys124', 'fancy_applicatio...', 'hostcontainer44', and 'hostcontainer2'. Relationships are represented by colored lines connecting these nodes. A blue arrow points from a text box to the 'Legend' tab in the 'Details' panel.

Legend:

Color	Type
(Grey)	Contains
(Pink)	Controls
(Green)	Federates
(Blue)	Hosts
(Yellow)	Installed OS
(Black)	Multiple
(Red)	Uses

Text Box: The legend describes the meaning of all of the relationship line colors.

Status Bar: Root: fancy_application_prefix0 | Description: All | Depth: 3 | Resources: 12 | Relationships: 13 | Selected: 1

Footer: Refresh | Last refreshed: Sep 5, 2005 2:51:47 PM CDT

Resource Topology – Relationship Rules

The screenshot shows the IBM Resource Topology tool interface. On the left, a network diagram displays several application nodes (app5, app10, app34, app35, app56, app59, app87) connected by arrows. On the right, the 'Details' pane is open, showing a 'Rules' tab. A blue arrow points from the 'Rules' tab to the text box below.

Rule Type	From	Type	To
Include	Group	→ Contains	Any
Include	Network Subnet	→ Federates	Network Subr
Include	Network Subnet	→ Federates	System
Include	Service	→ Federates	Hosting Cont
Include	Service	→ Federates	Service
Include	Application	→ Hosts	Application
Include	Database Instance	→ Hosts	Database Ins
Include	Data Container	→ Hosts	Data Contain

Relationship rules describe all the combinations of node and relationship types that could possibly appear in the current topology.

Resource Topology – Status Line

The screenshot displays the 'Resource Topology' application window. The main area shows a hierarchical tree structure of resources. At the top is the 'Systems' node, which is highlighted. Below it, several other nodes are visible, including 'greenmonster.rch...', 'vacation.rchland...', 'indiana.rchla...', 'netpirate.rchlan...', 'aumlwas', 'Ip03ut4.rchland...', 'reeb.rchland.ibm.com', and 'QIBM/ProdData/VE2'. A blue arrow points from the 'netpirate.rchlan...' node to the status line at the bottom.

The status line at the bottom of the window contains the following information:

Root: Systems	Description: All Levels	Resources: 44	Relationships: 43	Selected: 1
---------------	-------------------------	---------------	-------------------	-------------

Below the status line, there is a 'Refresh' button and the text 'Last refreshed: Sep 5, 2005 2:27:47 PM CDT'. An 'Overview' window on the right side of the main area shows a smaller, more complex network diagram of the resources.

Summary of the topology: root resource, topology description, number of resources, number of relationships, and number of selected items

Resource Topology – Refresh Button

Refresh button and last refresh time stamp.
The refresh button will go back to the underlying data source and retrieve any updated data.

Root: Systems | Description: All Levels | Resources: 44 | Relationships: 43 | Selected: 1

Refresh | Last refreshed: Sep 5, 2005 2:27:47 PM CDT

Resource Topology – Panning

The screenshot shows the 'Resource Topology' window. The main area displays a network diagram with nodes and connections. A text box with a dotted border is overlaid on the diagram, containing the text: "Arrow buttons allow panning in each direction." Six blue arrows point from this text box to the arrow buttons located at the corners and midpoints of the diagram's frame.

On the right side, there is an 'Overview' section with a small thumbnail of the network and a 'Details' section with a table of properties.

Property	Value
Name	Systems
Type	System List
Description	All computer systems in your Virtualization Engine environment

At the bottom of the window, there is a status bar with the following information: "Root: Systems | Description: All Levels | Resources: 44 | Relationships: 43 | Selected: 1". A 'Refresh' button and the text "Last refreshed: Sep 5, 2005 2:27:47 PM CDT" are also visible.

Resource Topology – Resizing

Virtualization Engine Environment

--- Select Action --- Go

Overview

Details

Properties Legend Rules

Property	Value
Name	Systems
Type	System List
Description	All computer systems in your Virtualization Engine environment

Root: Systems Description: All Levels Resources: 44 Relationships: 43 Selected: 1

Refresh Last refreshed: Sep 5, 2005 2:27:47 PM CDT

Resource Topology – Menu Actions

The screenshot displays the 'Resource Topology' application window. The main area shows a hierarchical network graph with nodes and connecting lines. A context menu is open over the graph, listing actions such as 'Open > Next Level', 'Open > All Levels', 'Properties', 'Deselect All', and 'Zoom To Center'. Another context menu is visible at the bottom left, showing 'Open', 'Properties', 'Zoom To Center', and sub-menus for 'Next Level' and 'All Levels'. A blue arrow points from the text box to the context menu at the bottom left.

Actions are available from context menus (right-click on the graph) as well the main menu.

Root: Systems | Description: All Levels | Resources: 44 | Relationships: 43 | Selected: 1

Refresh | Last refreshed: Sep 5, 2005 2:27:47 PM CDT

Resource Topology – Support Area

The screenshot shows the Resource Topology application window. The main area displays a hierarchical tree of systems. A blue callout box with a dotted border points to a toolbar icon (a square with a plus sign) and contains the text: "Toggle visibility of the support area (containing overview, properties, legend, and rules)".

The main window contains the following elements:

- Virtualization Engine Environment** dropdown menu.
- Navigation icons: Home, Back, Forward, Search, and a toolbar with a plus sign icon circled in blue.
- Overview** panel on the right showing a network diagram with a blue box highlighting a central node.
- Details** panel on the right with tabs for **Properties**, **Legend**, and **Rules**.
- Properties** table:

Property	Value
Name	Systems
Type	System List
Description	All computer systems in your Virtualization Engine environment

At the bottom of the window, a status bar shows: "Root: Systems | Description: All Levels | Resources: 44 | Relationships: 43 | Selected: 1". A "Refresh" button and "Last refreshed: Sep 5, 2005 2:27:47 PM CDT" are also visible.

Resource Topology – Mouse Modes

Virtualization Engine Environment

--- Select Action --- Go

Overview

Details

Property	Value
Name	Systems
Type	System List
Description	All computer systems in your Virtualization Engine environment

Root: Systems Description: All Levels Resources: 44 Relationships: 43 Selected: 1

Refresh Last refreshed: Sep 5, 2005 2:27:47 PM CDT

Choose between select, pan, and zoom mouse modes.

Conclusion / Wrap-up

- **Allows users to visualize, explore, and work with resources and relationships in a graphical topology viewer.**

- **Users can choose from two distinct data sources:**
 - Virtualization Engine Environment
 - Managed Resources (driven by RDS)

Agenda continued:

0 Preface: Learning Objectives & Target Audience

1 IBM VE Console Overview

2 IBM VE Console Installation

3 IBM VE Console Launch in Context

4 IBM VE Console Bridge Concepts

5 IBM VE Console Resource Topology

6 Wrap up - information sources and Q&A

Bibliography

- **System Sales**

- [IBM Virtualization Engine Resource Kit](#)

- **IBM eServer Software Information Center**

- [IBM VE Console](#) > Topic Overview > VE Console

- **IBM links**

- [IBM Virtualization Engine](#)

- [Virtual management and Access](#)

- **pSeries Cluster System Management**

http://www-1.ibm.com/servers/aix/wsm/csm_cluster.html

- **iSeries Navigator - Management Central**

<http://publib.boulder.ibm.com/infocenter/series/v5r3/ic2924/index.htm> (Systems Management topic)

- **Lightweight Directory Access Protocol (LDAP)**

<http://publib-b.boulder.ibm.com/Redbooks.nsf/RedbookAbstracts/sg244986.html?Open>

- **Enterprise Identity Mapping (EIM)**

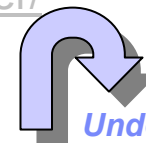
<http://publib.boulder.ibm.com/infocenter/series/v5r3/ic2924/index.htm> (eBusiness and Web Serving
→ Security and Directory Server Topic)

- **IBM Directory Server**

<http://www-306.ibm.com/software/tivoli/products/directory-server/>

- **WebSphere Application Server**

<http://www-306.ibm.com/software/webservers/appserv/was/>



Underlined text is hyperlinked

Questions



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End Of Presentation