IBM Systems Group

Information Center, Virtualization Engine planning advisor, Installation

Virtualization Team
ATS PSSC Montpellier

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Agenda

Topics to be covered are :

- **IBM Systems Software Information Center**
  - How to access ?
  - What information to find ?
- **IBM Virtualization Engine planning advisor**
  - How to access ?
  - How to use ?
- **IBM Virtualization Engine Installation**
  - Software Components
  - Installation Procedures / Product

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Learning Objectives

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

- Locate Virtualization Engine documentation by browsing the IBM Systems Software Information Center
- Understand the importance of planning in the deployment of the Virtualization Engine in your enterprise, and how the Virtualization Engine planning advisor can assist you
- Use the Virtualization Engine planning advisor in order to organize the deployment of the IBM Virtualization Engine in a given context
- Execute the installation of the different components of the IBM Virtualization Engine

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Agenda

1	**IBM Systems Software Information Center**
2	IBM Virtualization Engine planning advisor
3	IBM Virtualization Engine Installation

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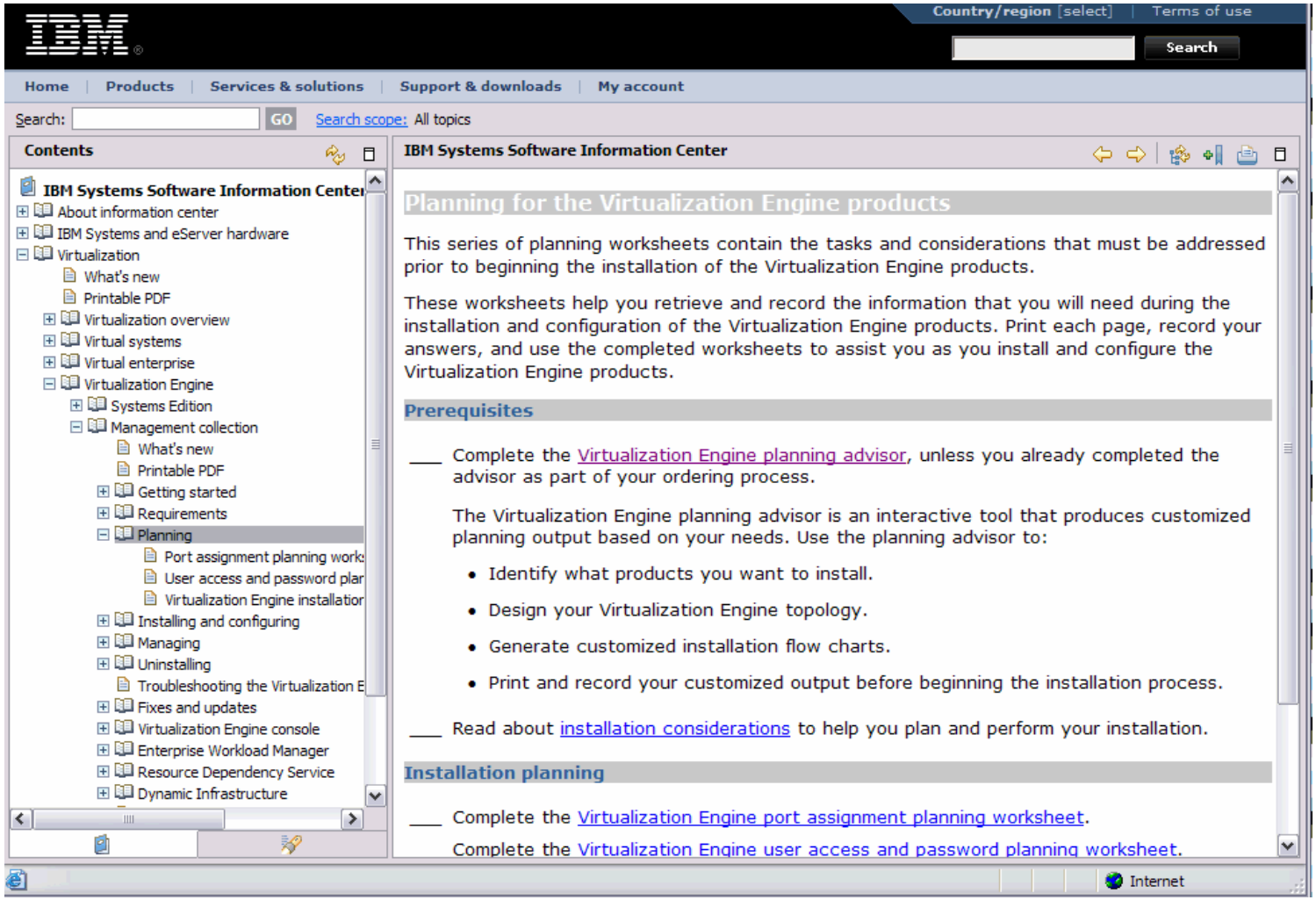
IBM Systems Software Information Center



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IBM Systems Software Information Center

http://publib.boulder.ibm.com/infocenter/eserver/v1r2/index.jsp

(Link available on VE v2r1 GA day)

- **The IBM Systems Software Information Center is the primary location for the IBM Virtualization Engine documentation on the web**

- **Topics covered include :**
  - Deployment Planning (See Virtualization Engine planning advisor)
  - Installation / Configuration / Updates
  - Lookup on each component :
    - Virtualization Engine Console
    - Enterprise Workload Manager
    - Resource Dependency Service

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Content / Areas

- **Virtualization Engine**
  - Overview & getting started
  - Planning (including an interactive planning advisor)
  - Scenarios
  - Installation
  - Management
  - Troubleshooting
  - Products
  - Systems technologies
  - Virtualizing a system
  - Managing a virtual system
  - Managing a virtual enterprise
- **Systems management**
  - Scenarios for effective systems management
  - Solutions for single platform and cross-platform systems management
- **Various other IBM Systems-related software topics**

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Content / Topics

- **Topics : Concise pieces of information**
- **Each article addresses one complete idea**
- **The IBM Systems Software Information Center has topic types of *procedure*, *concept*, *example*, *reference*, and *details***

Topic Type	Content
Procedure	How do I ?
Concept	What is this ?
Reference	Look up information
Example	Works through a scenario or supplies working code examples
Details	Secondary to another article

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Content / Interactive Resources

- More than just traditional text
- Content interactive and tailored to individual customers

Interactive Information	Description
eLearning	Allows the user to learn about task and concepts in an engaging, interactive, and user-driven manner. For example: **Virtualization Engine eLearning module**.
Advisors	Walks users through complex decisions; makes smart recommendations based on user input. For example: **Virtualization Engine planning advisor**.
Conceptual animations	Combines text, graphics, and sound to create a rich user experience. Illustrates complex concepts and relationships in an engaging format. For example: **EWLM conceptual animations**.
Custom checklists	Provides personalized procedures based on customer input.
Interactive tables	Allows the user to sort and filter complex sets of data in an interactive manner. No more sorting through pages and pages of data.
Finders	Allows the user to look up information fast; a mini-search.

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Agenda

1	IBM Systems Software Information Center
2	**IBM Virtualization Engine planning advisor**
3	IBM Virtualization Engine Installation

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The importance of planning

- **Careful planning is a must to successfully deploy the Virtualization Engine**

- **Among the planning considerations:**
  - Understand the functional capabilities of the Virtualization Engine products.
  - Understand the supported operating systems and minimum system requirements.
  - Determine which products are right for your business
  - Determine what you need to order
  - Determine where the products should be deployed in your enterprise
  - Identify prerequisites
    - Prerequisite software installation
    - Environment preparation
  - Understand the tasks that need to be completed to perform the installation

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Virtualization Engine planning advisor - Description

- **An interactive, Flash-based tool that asks you questions about your enterprise and how you plan to use the Virtualization Engine**

- **Produces customized recommendations for implementing (Ordering / Deploying / Installing) the Virtualization Engine in your enterprise**

- **Access through the IBM Systems Software Information Center :**
  Virtualization >> Virtualization Engine >> Management Collection >> Planning

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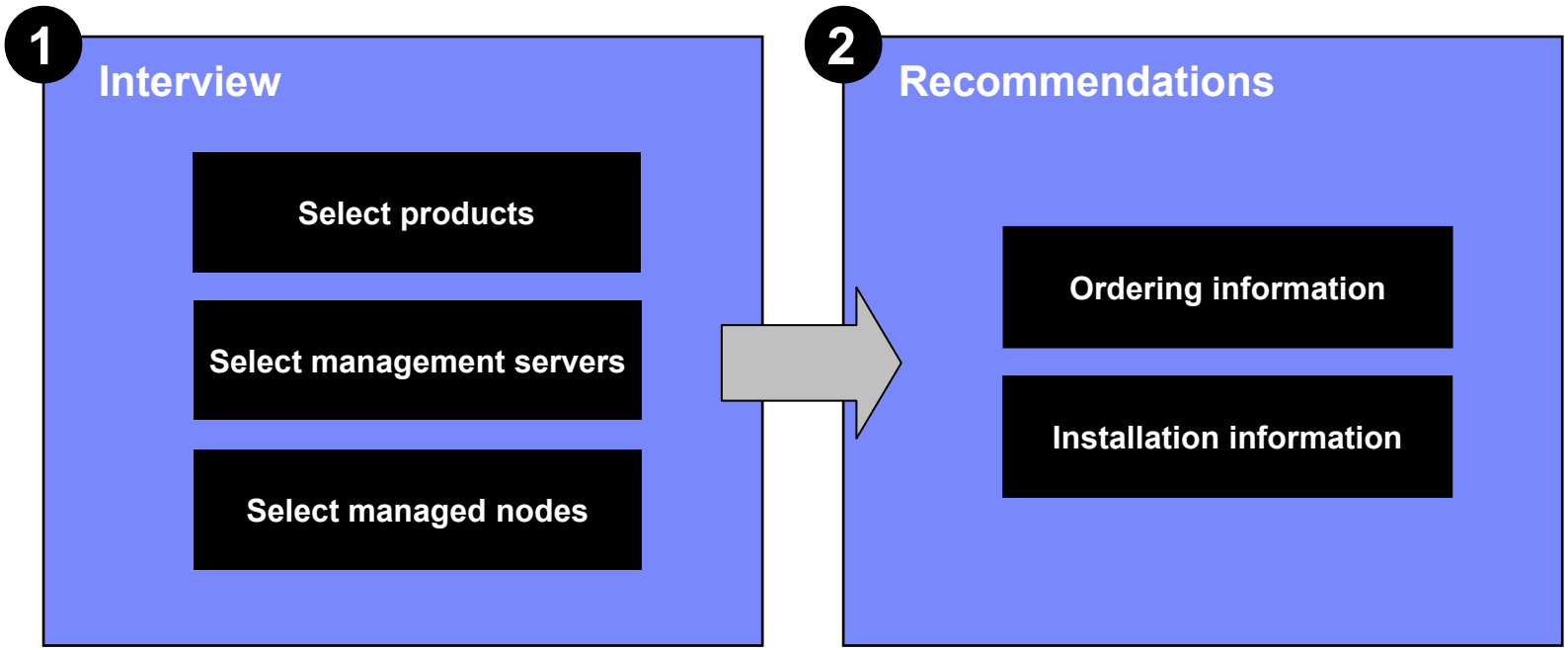
Virtualization Engine planning advisor - Principle

- The Virtualization Engine planning advisor is made up of two parts:
  - **The input gathered from the customer (Interview)**
  - **The resulting output / results (Recommendations)**



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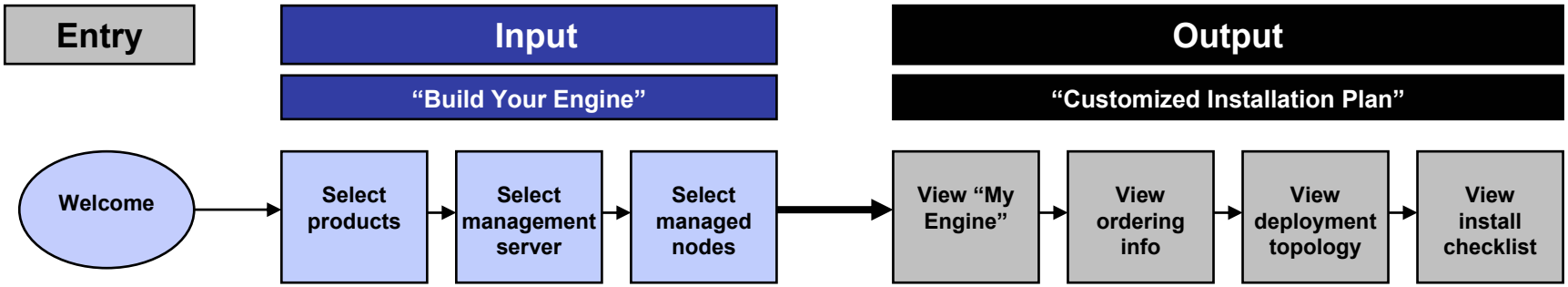
The entire Flow



Customer is guided through the task of selecting the VE products they are interested in, with the assistance of:

- Conceptual documentation
- Conceptual animations
- Solution scenarios
- Hardware requirements
- Software requirements

Once the combination of desired products has been established, the customer is guided through the process of selecting the hardware/operating systems on which they will deploy those desired products.

Upon completion of "building" their Virtualization Engine configuration, the customer is presented with customized recommendations:

Ordering
Instructions on how to go about ordering the Virtualization Engine, if it has not been ordered/obtained already
Explanation of the licensing model

Deploying
Graphical depiction of the deployment of the products and their components across VE enterprise

Installing
Customized checklist of tasks necessary to install, configure, and begin working with (with links to instructions/procedures)

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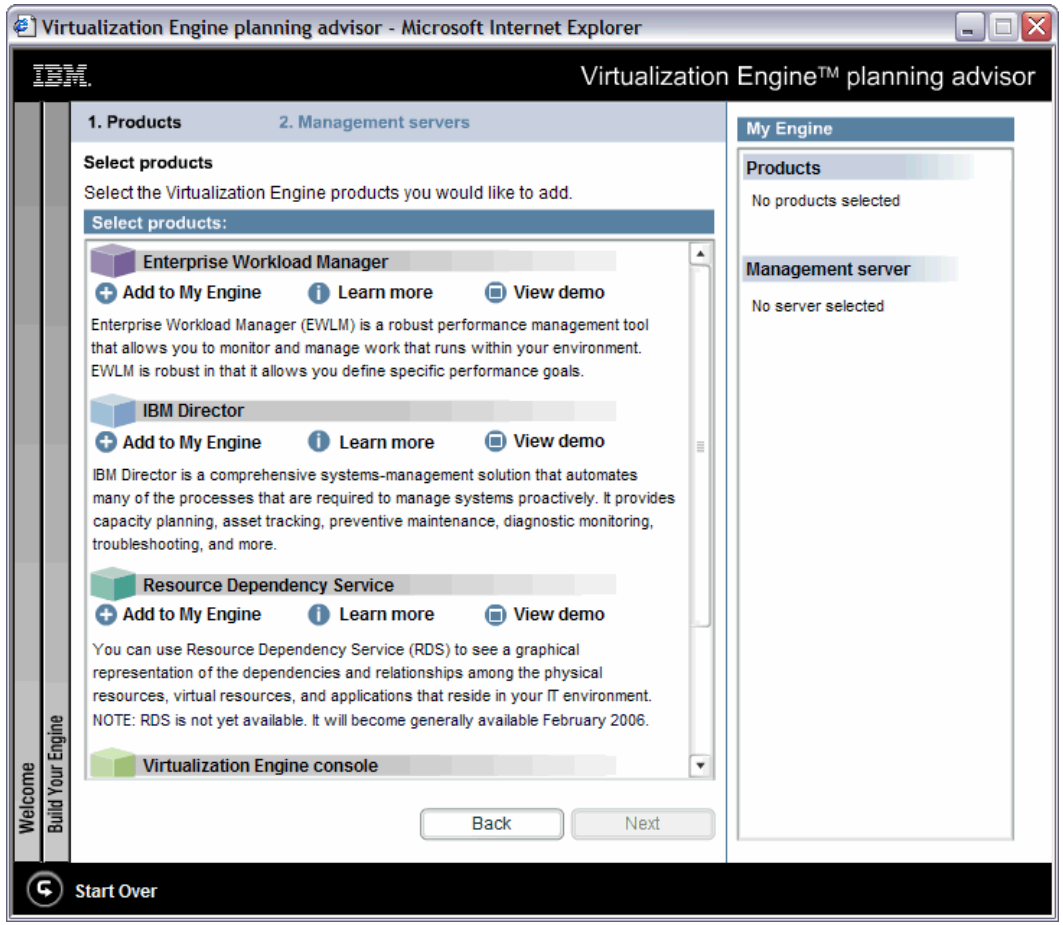
The Flow
► Build Your Engine / Products

This step allows to select the IBM Virtualization Engine components that the customer would like to include in its environment



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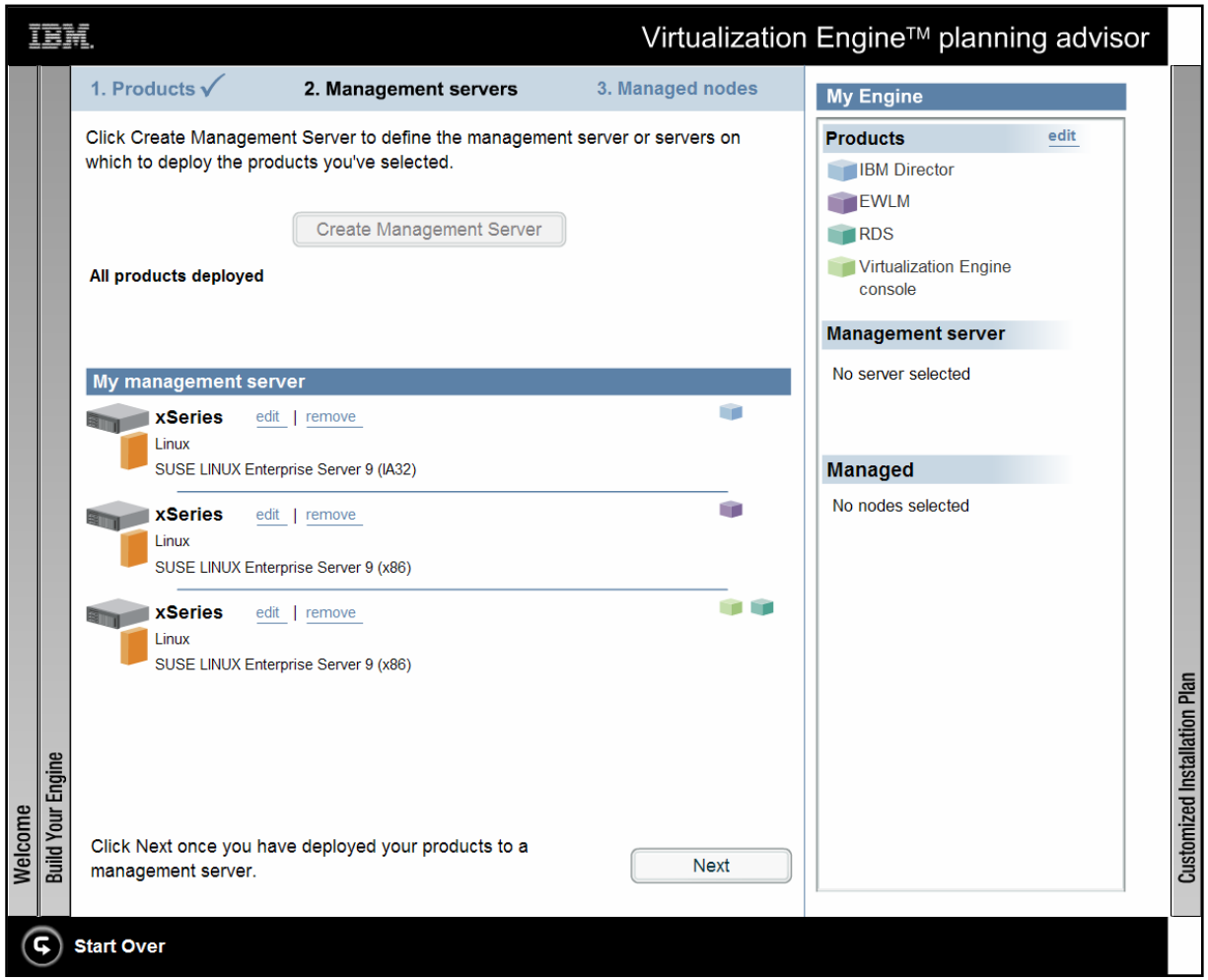
The Flow
► Build Your Engine / Select Management Server

Once product selection is complete, the Virtualization Engine planning advisor guides the customer through the process of selecting operating systems on which to deploy the desired Virtualization Engine components



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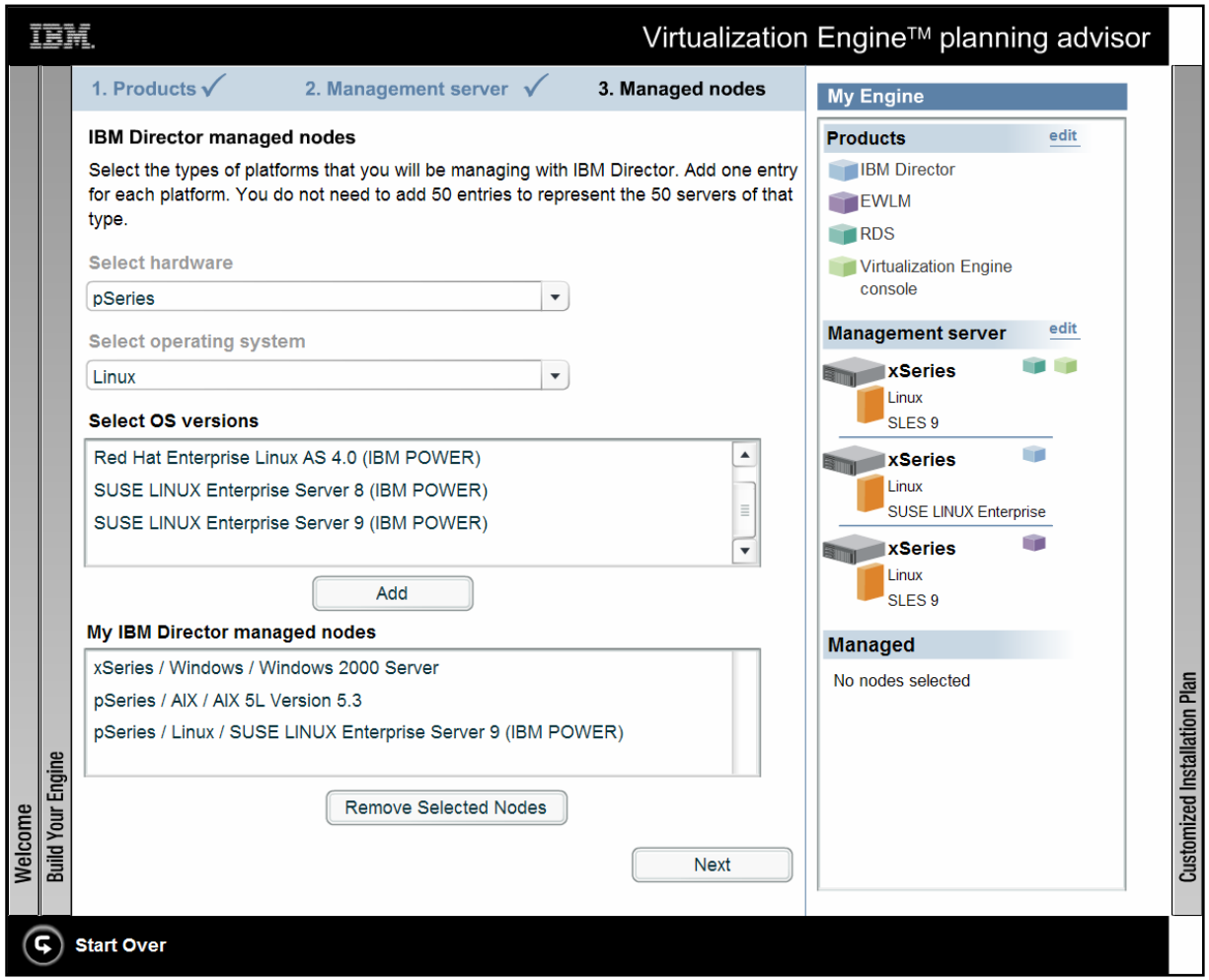
The Flow
► Build Your Engine / Managed Nodes

This step makes it possible to define the various combinations of Platforms and Operating Systems that will be managed by each of the services previously selected



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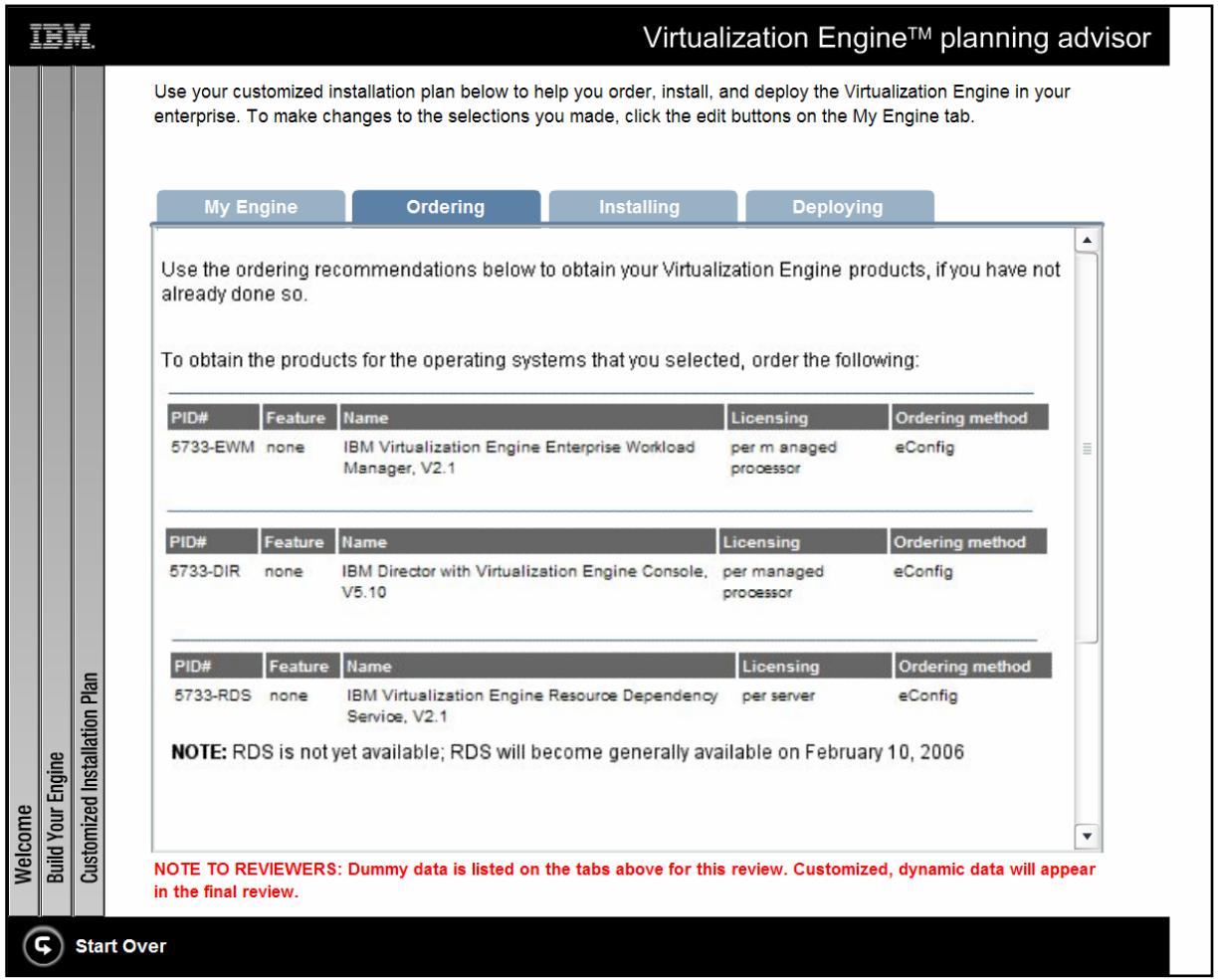
The Flow
► Customized Installation Plan / Ordering

Detailed list of the products to be purchased, with all information necessary to order



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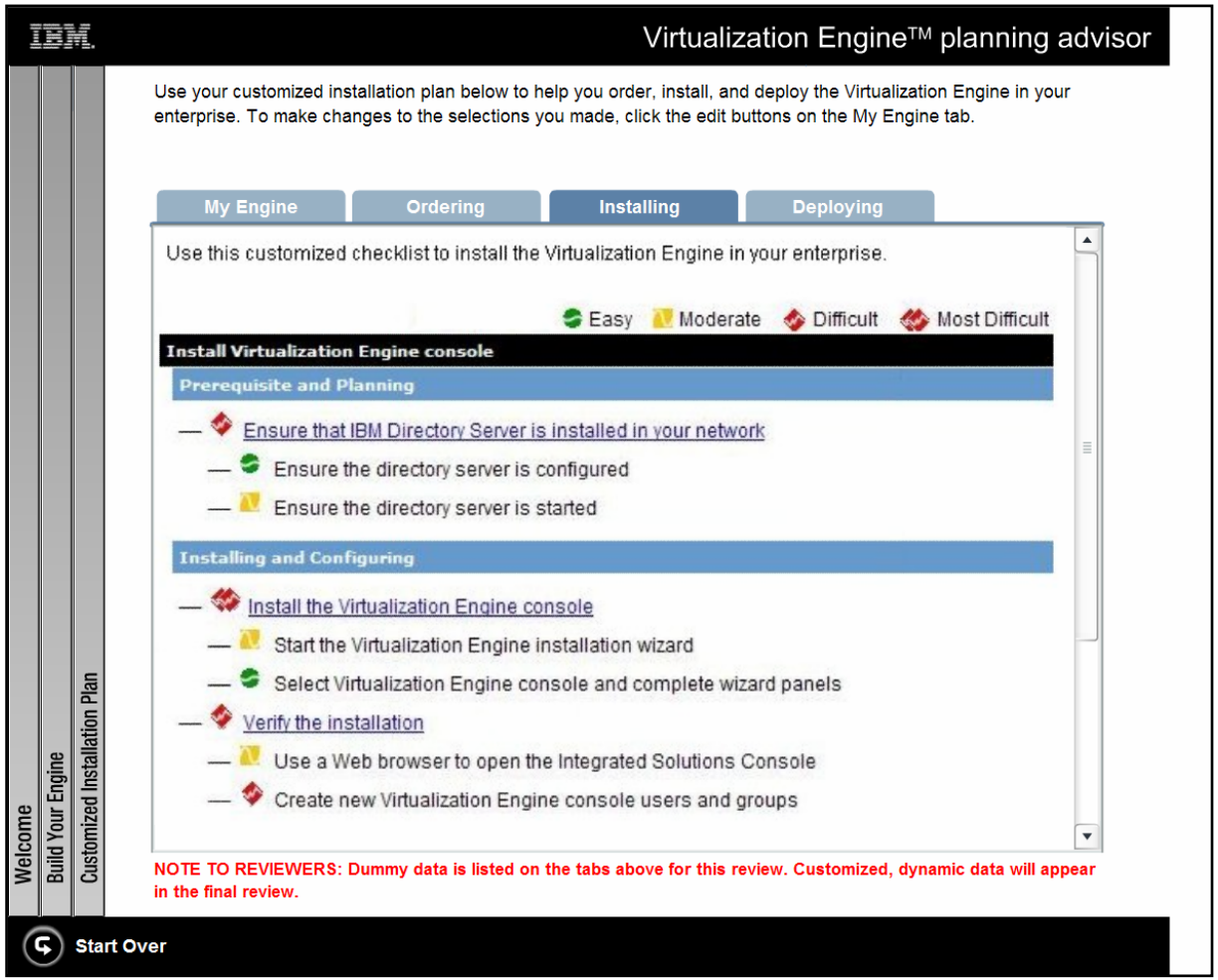
The Flow
► Customized Installation Plan / Installing

Customized checklists to guide the customer through the installation, providing a recommended order of tasks, links to procedural documentation to complete each task, as well as "level of difficulty" icons to indicate the amount of time/expertise required to complete a task



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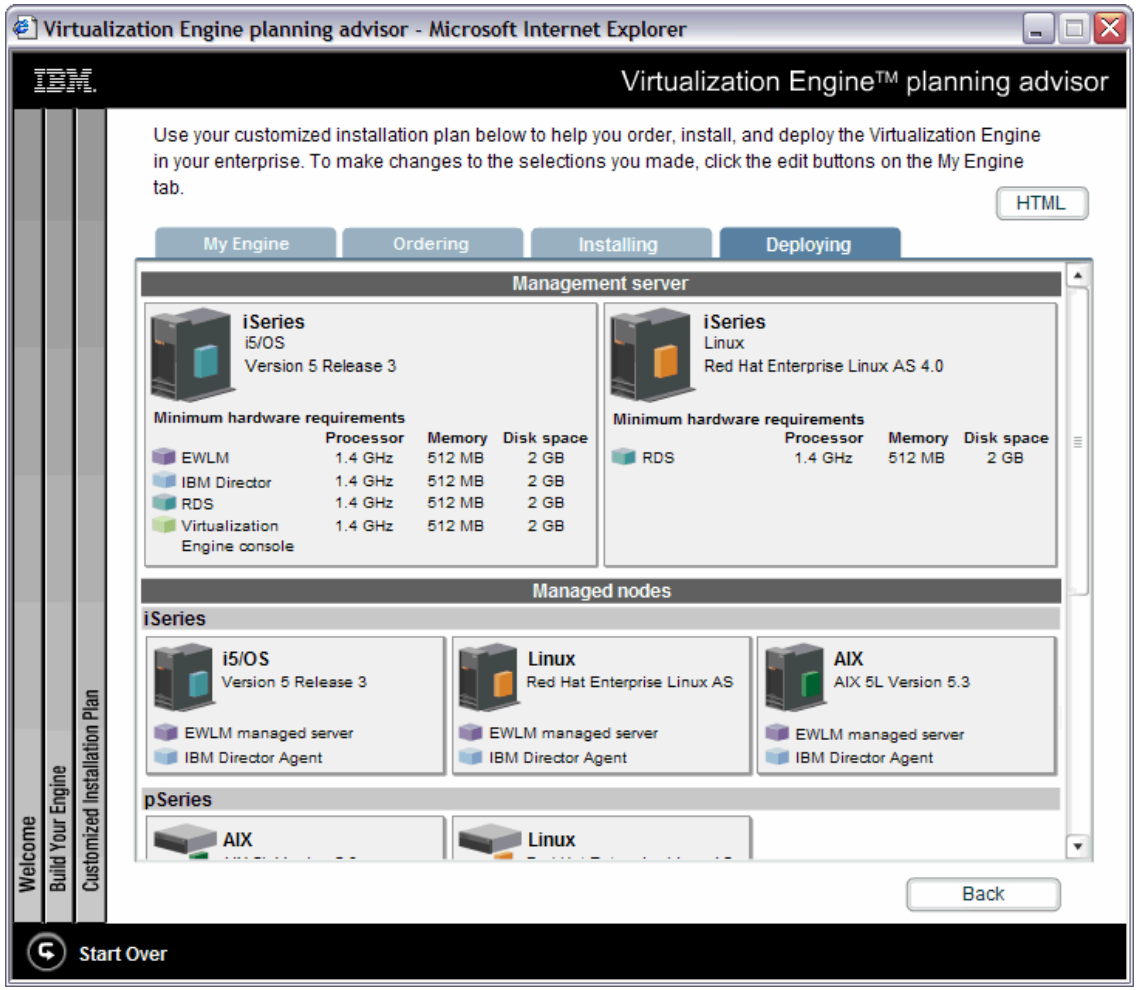
The Flow
► Customized Installation Plan / Deploying

Graphical representations of where the various components need to be installed in the enterprise are provided, with information about hardware and system requirements



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Agenda

1 IBM Systems Software Information Center
2 IBM Virtualization Engine planning advisor
3 **IBM Virtualization Engine Installation**
- **3.1 Software Components**
- 3.2 IBM Virtualization Engine Installation Procedure
- 3.3 IBM Director Installation
- 3.4 Agents Installation
- 3.5 Additional Information

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IBM Virtualization Engine Software Components

- **Virtualization Engine Services**
  - IBM Enterprise Workload Manager (EWLM)
  - IBM Director
  - Resource Dependency Service
- **End-Point Packages**
  - IBM Enterprise Workload Manager Managed Servers
  - IBM Director Agents
- **Common Infrastructure**
  - IBM Virtualization Engine Console
  - Virtualization Engine Bridges
  - Resource Modeling
  - Common Components

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Common Components - Detail

- **Characteristics :**
  - Common Components include a set of middleware infrastructure that is commonly used by multiple VE management servers ► Aligns management servers to share a common versions and levels of the infrastructure
  - Installed on Management Servers only, not on end-points
  - Automatically installed based on their pre-requisite relationship to other VE offerings

- **Software Components :**
  - WebSphere Application Server : WAS 6.0.2 (+ VE iFixes)
  - DB2 Universal Data Base : DB2 UDB 8.2 SP1
  - IBM Tivoli Directory Server : ITDS 6.0 SP1
  - IBM Integrated Solutions Console : ISC 6.0.1
  - Core Elements :
    - Java Runtime Environment : JRE 1.4.2 SP2
    - IBM Solution Install Framework : SI 1.2.1.10
    - iLog Jviews
    - International Components for Unicode : ICU4J
    - IBM Common Logging Module : ICL
    - Fix Acquisition Services
    - Deployment Services

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Supported Platforms Overview

	Windows	Linux	AIX	i5/OS
IBM Virtualization Engine Console	☑	☑	☑	☑
VE Console Bridges	☑	☑	☑*	☑
Resource Dependency Service	✖	☑	✖	✖
IBM Director	☑	☑	☑	☑
IBM Enterprise Workload Manager	☑	☑	☑	☑

- * : IBM Director Bridge to VE Console will require a fix pack to be fully supported
- Note : Full compatibility matrix can be found at the end of this presentation

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Installation Dependencies

	Virtualization Engine Console	Console Bridges	Resource Dependency Service	EWLM Domain Manager
WebSphere	**L**	**L**	**L**	**L**
DB2	**E**	**E**	**L / R / E**	**E**
Directory Server	**E**	**E**	**E**	**E**
ISC	**L**			
Resource Manager			**L**	
Core Components	**L**	**L**	**L**	**L**

- L = Local = The component must reside on the same system as the Virtualization Engine service
- E = Environment = The component is part of the Virtualization Engine environment
- R = Remote = The component may reside on a remote system

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Directory Server : Virtualization Engine Repository

- **Configuration repository**
  - Logical grouping of systems with Virtualization Engine software installed
  - Root entity is a named “Virtualization Engine Environment”
  - Includes Installation + Configuration settings
  - Any instance of the Virtualization Engine can belong to only one environment from installation to uninstallation
- **WebSphere Application Server security user registry**
  - Used by the console, bridges and Resource Dependency Service
- **Identity Mapping Repository**
  - Containing identity data for the enterprise
  - Collection of defined identifiers, associations and user registries
  - Used by systems for identity lookup

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What's part of the VE Installer ?

	VE Installer	External
IBM Director		
Director Server	**i5/OS only(1)**	✖
Director Bridge to VE Console	✖	
Director Agents		✖(2)
Resource Dependency Service	✖	
IBM Enterprise Workload Manager		
EWLM Domain Manager	✖	
EWLM Bridge to VE Console	✖	
EWLM Agents		✖(3)
IBM Virtualization Engine Console	✖	

(1) : Director Server is installed through the VE Installer on i5/OS
(2) : Director Agents are extracted from the installation media by the VE Installer on i5/OS, but actual installation is not part of the installer
(3) : EWLM Agents are extracted from the installation media by the VE Installer but actual installation is not part of the installer

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1 IBM Systems Software Information Center

2 IBM Virtualization Engine planning advisor

3 IBM Virtualization Engine Installation

- 3.1 Software Components
- **3.2 IBM Virtualization Engine Installation Procedure**
- 3.3 IBM Director Installation
- 3.4 Agents
- 3.5 Additional Information

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Getting Started Sheet

Start here for the IBM Virtualization Engine

GC09-7801-01

The IBM(R) Virtualization Engine™ is a collection of technologies and software that can help you virtualize your physical resources and then view and manage those virtual resources. In a virtualized environment, the IBM Virtualization Engine delivers the following benefits:

- Helps simplify network infrastructure
- Reduces cost and complexity by optimizing resource use
- Increases the business value of your IT investments

For information about the IBM Virtualization Engine, go to the IBM Systems Software Information Center:

http://www.ibm.com/servers/library/infocenter

Select the Software Information Center, then the version you want. The IBM Systems Software Information Center is the single location for the Virtualization Engine documentation.

To get started with the IBM Virtualization Engine, follow these steps:

1 Complete the Virtualization Engine planning advisor

To successfully install the IBM Virtualization Engine, planning is essential. The Virtualization Engine planning advisor is an online, interactive tool that produces customized planning recommendations based on your needs.

If you have not completed the planning advisor or you do not have the results of the planning advisor, go to the IBM Systems Software Information Center. From the navigation bar, click **Virtualization > Virtualization Engine > Virtualization Engine management collection > Planning**

2 Verify that prerequisites are satisfied

Some software that you install might require that you first meet certain prerequisites.

The planning advisor identifies the necessary Virtualization Engine prerequisites for your deployment, and it guides you through the process of satisfying them.

3 Find the Virtualization Engine installation media

To begin installation, find the Virtualization Engine installation media. Begin with the IBM Virtualization Engine Common Components media, which is labeled:

START HERE - Installation

Ensure that autorun is turned on. If you are installing the Virtualization Engine on i5/OS, go to a PC that is connected to your network. See the IBM Systems Software Information Center and the online help for the install program for help with problems or questions you may have during installation.

4 Download and install product updates and fixes

Be sure you have the latest updates and fixes installed for your Virtualization Engine products. Download updates and fixes from the Virtualization Engine support site:

http://techsupport.services.ibm.com/server/VirtualizationEngine/

OVER

Virtualization is about simplification and power; it is the key to unlocking the full benefits of On Demand Business. The IBM Virtualization Engine is a platform designed to help you manage your IT environment more efficiently. It gives you a logical, rather than physical, view of data, computing power, storage capacity, and other resources. This allows you to automate resource management and manage disparate systems. Virtualization is commonly applied to physical hardware resources, but it can also be applied to non-physical resources, such as software. Virtualization often pulls multiple resources together into shared pools from which users receive virtual resources.

The software components of the IBM Virtualization Engine are the following:

IBM Virtualization Engine console
The Virtualization Engine console is a web based console that makes enterprise systems management easier by providing a consolidated view of your virtualized resources across heterogeneous platforms.

IBM Enterprise Workload Manager (EWLM)
Enterprise Workload Manager (EWLM) is a robust performance management tool that allows you to manage the performance of application-level transactions, operating system processes, and partitions. EWLM allows you to define performance goals for work that runs in your business environment then provides an end-to-end view of actual performance relative to those goals.

Resource Dependency Service
Resource Dependency Service provides a graphical representation of the dependencies and relationships among the physical resources, virtual resources, applications, and processes in your enterprise.

IBM Director
IBM Director enables you to view and track the hardware configuration of remote systems in detail and monitor the use and performance of critical components, such as processors, disks, and memory. You can take action on important events.

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Printed in the United States of America
December 2005
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Installation Procedure

1. Virtualization Engine Environment setup
2. Virtualization Engine Services selection
3. Media copy
4. Pre-installation configuration
5. Product installation
6. Post-installation configuration

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Step 1 : Virtualization Engine Environment Setup

- **Accept software license agreements**
- **Define installation and logging directories**
- **Verify basic system requirements**
- **Establish the LDAP directory server for the installation**
  - Use an existing IBM Tivoli Directory Server
  - Install a local directory server via the wizard
  - Requires OS user IDs and passwords for DB2 and directory instance owners
- **Provide the name of the Virtualization Engine environment**
  - Create a new one in an existing directory server
  - Join a previously created environment
  - Automatic for a subsequent installation in the same install root directory

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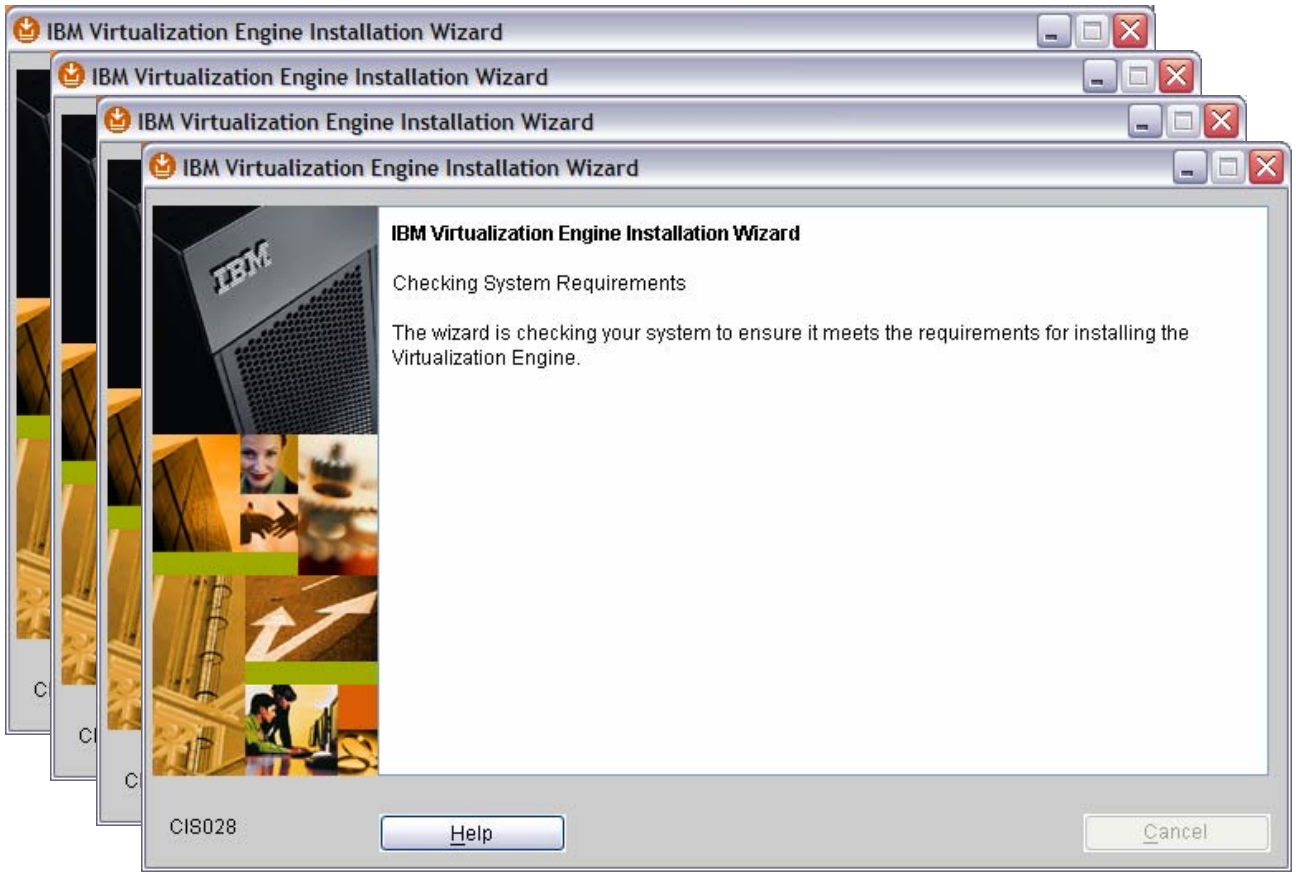

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LDAP Discovery

- **VE requires an LDAP Directory Server for 3 different uses**
  - VE environment repository (Global Configuration Repository)
  - WAS security users and groups
  - Identity Mapping Repository
- **VE supports ITDS 5.1, 5.2, 6.0, and IBM Directory Server for iSeries**
- **VE installer provides the option to use an ITDS already installed in the network, or to install it locally**
  - If the choice is to install locally, the installer will query the user for some basic information and will then install the directory server silently
  - There is a media copy step for a local installation
  - Option to install directory server is not provided on i5/OS, since the directory server and DB2 are bundled with i5/OS

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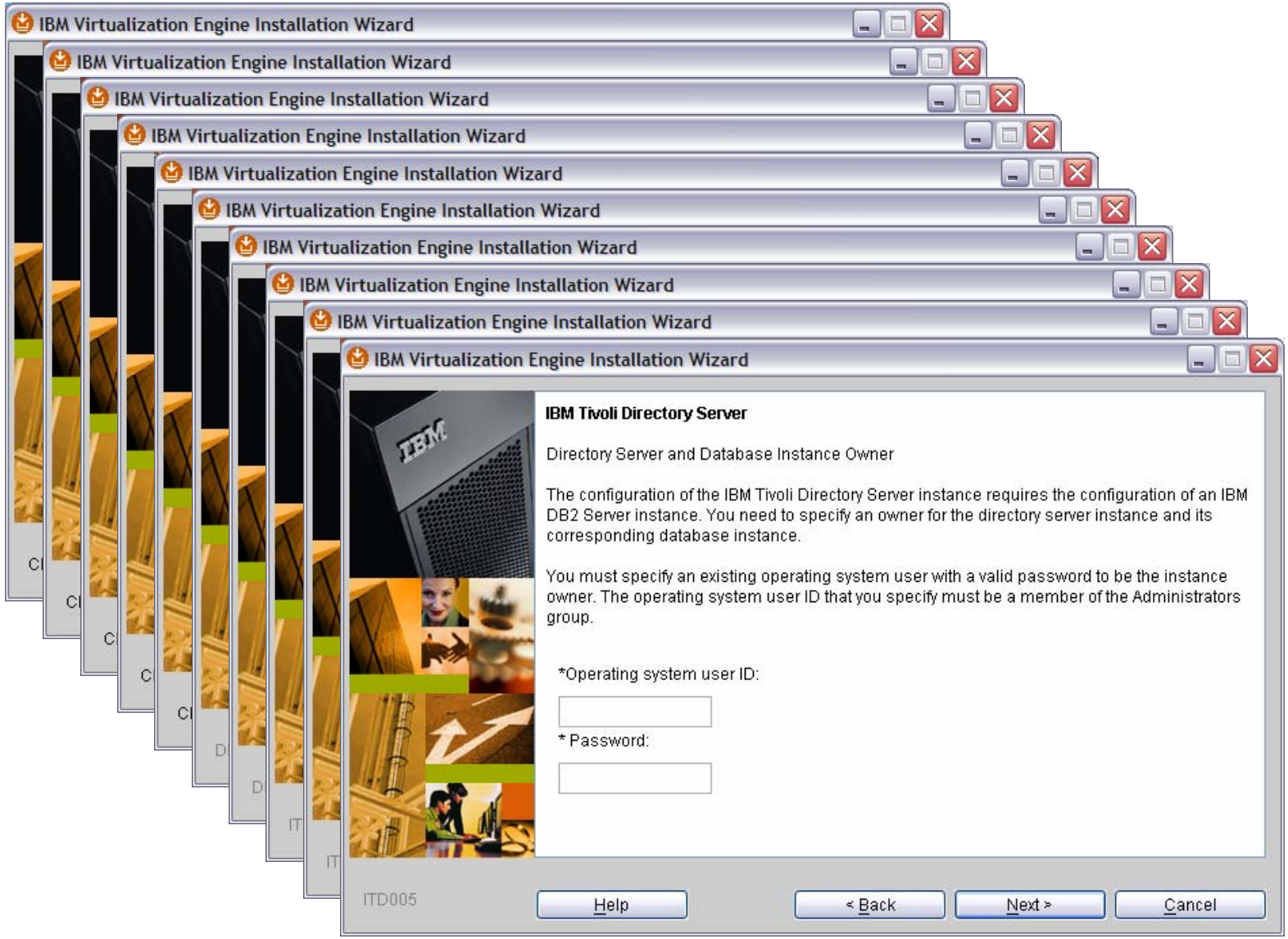

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Global Configuration Repository (GCR) Setup

- **The GCR stores "global" data for an entire deployment of VE**
  - A deployment, or VE environment, could include installations of VE on multiple systems or partitions
- **Stores data that applies to machines across the environment**
  - Security settings, LTPA keys for communication between WebSphere Application Servers, WAS security settings, and single sign on information
- **Settings will apply to all systems that join a VE environment**
  - Installation choice presented to create a new VE environment or to join any existing one
- **Once the environment is established for the VE installation, it persists until all of the VE software is uninstalled from that installation directory**

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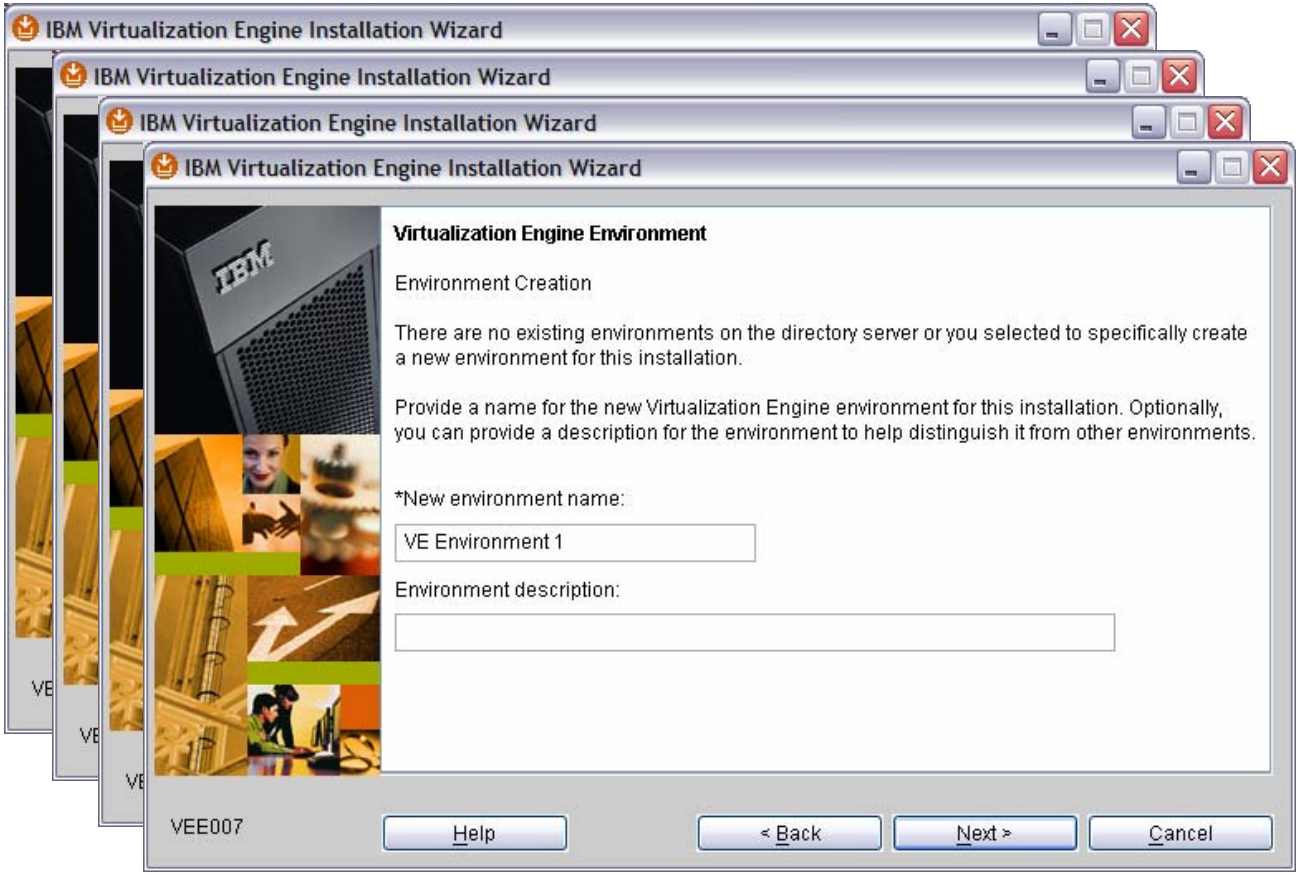

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Step 2 : Virtualization Engine Services Selection

- **Selecting an outer level selects all sub-selections**
  - Individual levels can be toggled
- **Space required changes with selections**
- **Same selection panel is shown for all VE offerings for each OS target platform**
  - Note “If licensed” for EWLM and RDS
  - It is possible to select something that has not been ordered
- **Product selection affects dependent installation actions**
  - Installation of required common components
  - Media prompting
  - Repository creations
  - Services installed

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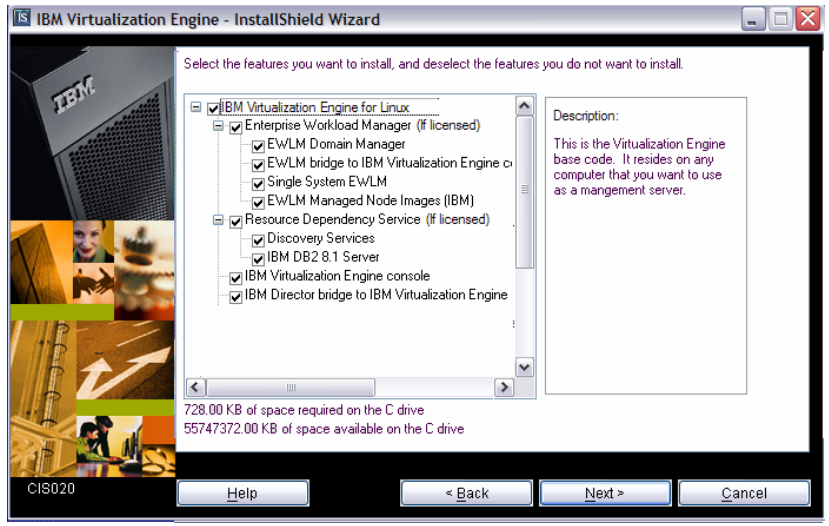
Available Services Tree

- **IBM Virtualization Engine**
  - Enterprise Workload Manager
    - EWLM Domain Manager
    - EWLM Bridge to IBM Virtualization Engine Console
    - Single System EWLM
    - EWLM Managed Node Images (IBM)
  - Resource Dependency Service
    - Discovery Services
    - IBM DB2 8.1 Server
  - IBM Virtualization Engine Console
  - IBM Director Bridge to IBM Virtualization Engine Console



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Step 3 : Media Copy

- **Installer prompts for each medium based on services selected and medium descriptor**
- **Provides a staging of necessary files to hard disk**
  - Assures all files available before starting the installation processing
  - Allows core portion of installation to be unattended
  - Allows preloading of media images to a file server
- **Does not prompt for previously copied media if install is run again**
- **If prompted for a media you do not have**
  - Select “Back” and deselect the product(s) that need the media
  - Cancel, obtain the media and restart the installer
- **Media images should be deleted when no longer needed**

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Step 4 : Pre-Installation Configuration

- **WebSphere Application security registry**
- **Identity mapping repository**
- **Product specific install panels**
  - Console port assignments
  - EWLM domain manager directory (not in this presentation)
  - Console auto-start option

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WebSphere Application Security Registry

- **WAS security configuration is now automated in a wizard**
  - One of the major release 1 usability problems was the detailed directory server configuration that was required as a pre-requisite to installing VE console
- **By clicking through and accepting default values, the wizard will configure LDAP users and groups with minimal user input**
  - Defaults to use the same directory server that hosts the VE environment
  - Default VE administrator named VEAdmin is created and is added to the VEAdministrator group.
- **Creates five user groups on the directory server**
  - **VEAdministrator:** Administrator who can do everything
  - **VEMonitor**: User who can access some Administration functions
    - Read only access
  - **VEUser**: Any authenticated user
  - **VEAnonymous**: Any unauthenticated user
  - **VEManager**: User who can perform management operations
    - Subset of functions that an Administrator can perform

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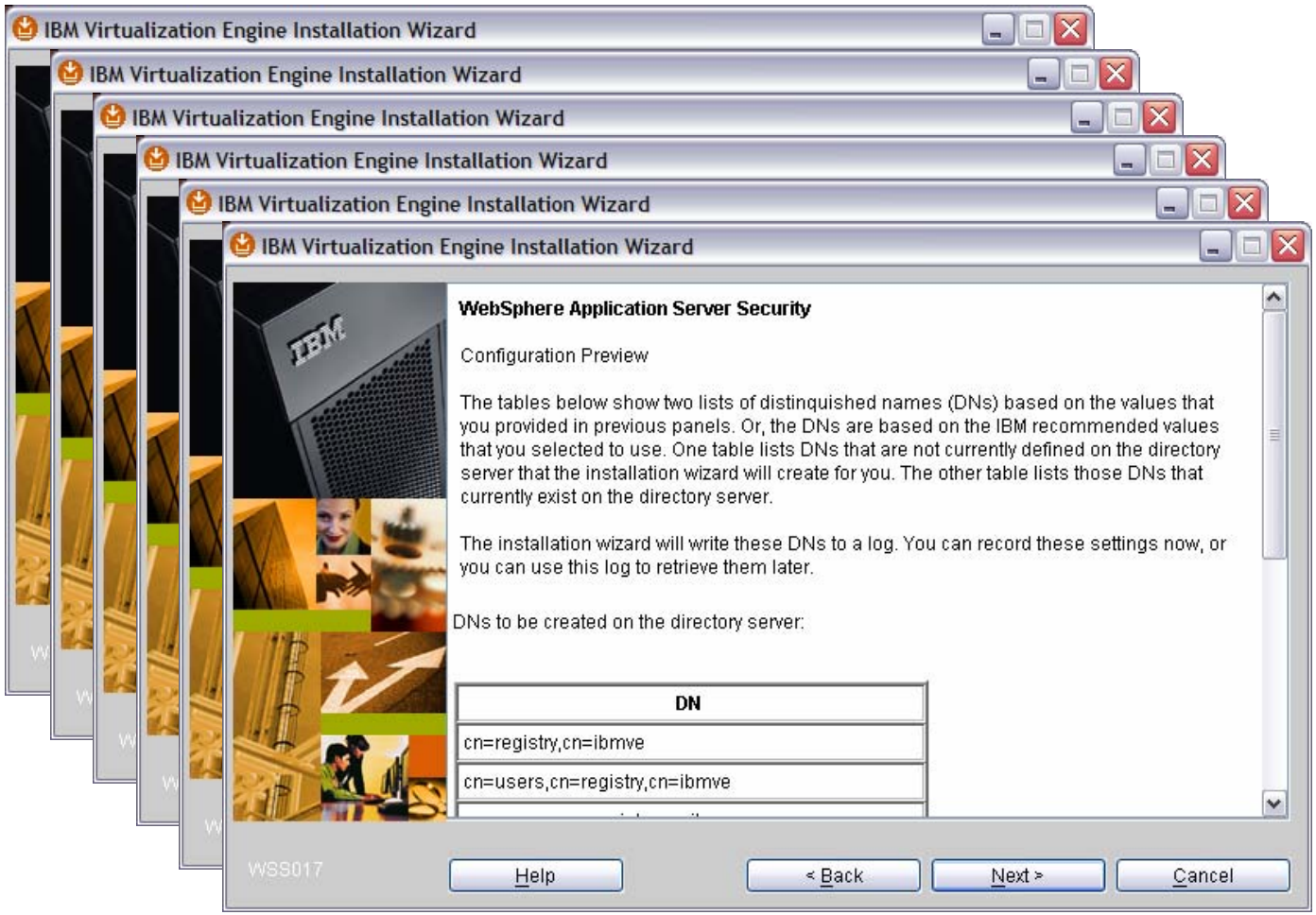

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Identity Mapping Repository (IMR)

- **The Identity Mapping Repository wizard performs configuration for identity mapping**
  - Works in a similar fashion to the WebSphere Application security registry performs user and group configuration
- **By clicking through and accepting default values, the IMR wizard will configure an identity mapping repository on the directory sever with minimal user input**
- **By default, uses the same directory server that hosts the VE environment**
- **The default IMR is named “IBM Identity Mapping Repository”**

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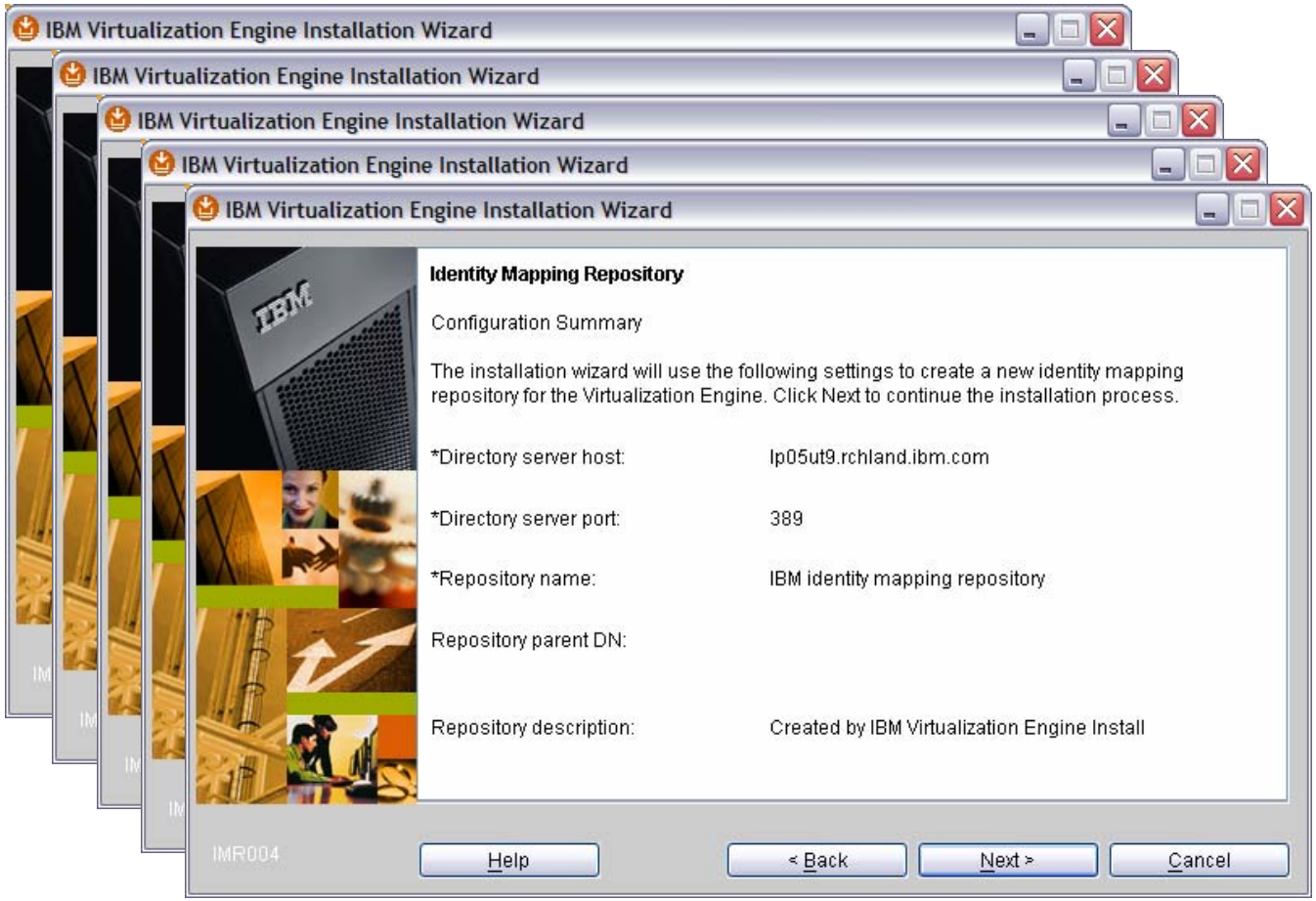

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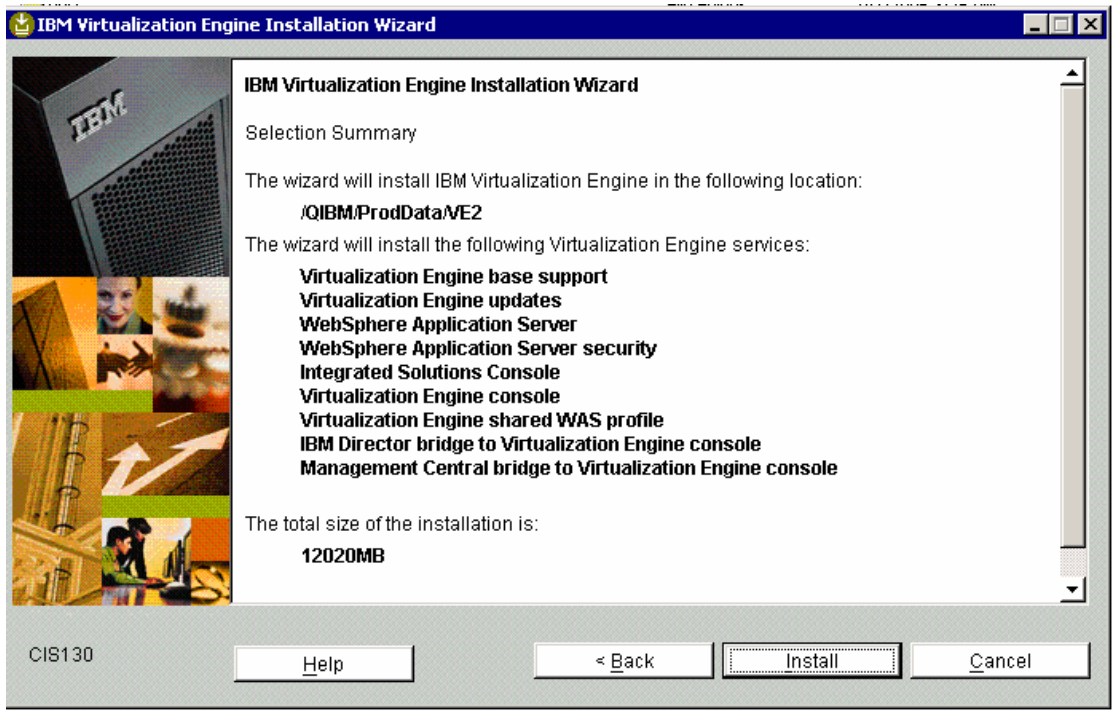
Step 5 : Product Installation

- **Pre-install summary**
  - Last chance to click the ‘Back’ button before the actual installation starts !
- **Install progress indicators**
- **Post-install summary**



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Step 6 : Post-Installation Configuration

- Virtualization Engine console launch URL and option
- EWLM post-install setup
- EWLM domain manager configuration
- Readme files
- Reboot if required

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Agenda

1 IBM Systems Software Information Center
2 IBM Virtualization Engine planning advisor
3 IBM Virtualization Engine Installation
- 3.1 Software Components
- 3.2 IBM Virtualization Engine Installation Procedure
- **3.3 IBM Director Installation**
- 3.4 Agents
- 3.5 Additional Information

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IBM Director Components

- **IBM Director Server**
  - The management server
  - Comes together with Director Agent + Director Console
- **IBM Director Core Services**
  - A « light » version of the Director Agent
- **IBM Director Agent**
  - Two ways of installing :
    - From the installation media, directly on the target machine
    - From the Director Server, deployed through Software Distribution
- **IBM Director Console**
  - The IBM Director GUI

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IBM Director Installation

- **Does not have dependency on the IBM Virtualization Engine Common Components**
- **Installed as a "soft prerequisite" for other services**
  - Update assistant for end point deployment and service
  - End point consolidator for Virtualization Engine Console
- **Separate installation (except on i5/OS)**
- **Joins an environment when a Director Bridge to the Virtualization Engine Console is installed on the same system**

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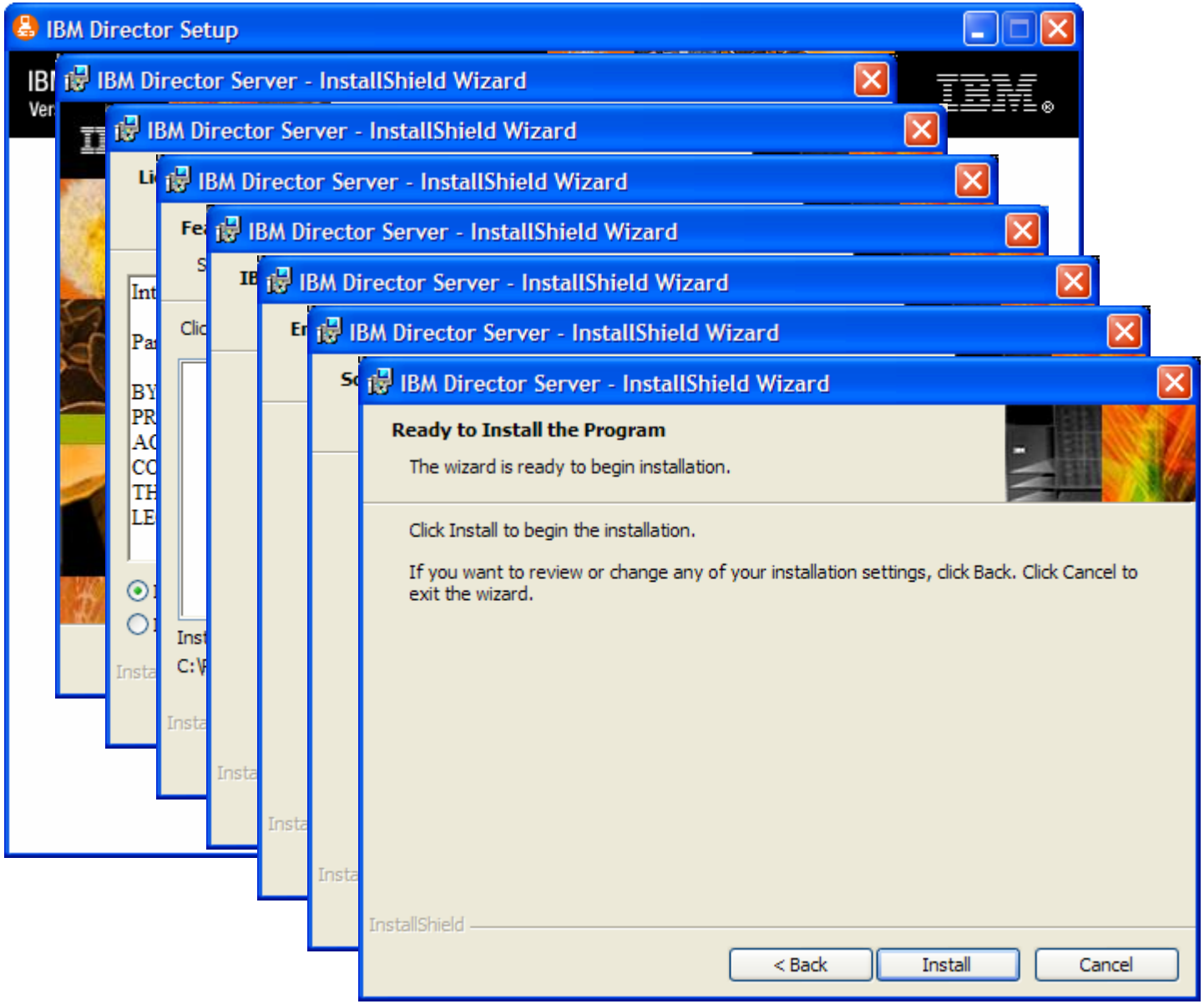

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Agents Installation

- **Agents may be installed through different ways :**
  - EWLM Agents only : By using RPD scripts that are installed by the Virtualization Engine installer to distribute and install the EWLM agent on the remote systems
  - By using the Software Distribution feature of the Director Server to distribute and install automatically on the remote systems
  - By distributing the installation files on the target system by any mean (FTP, Media copy, …) and running the installer locally

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Platform Support / Full Matrix [1/4 - xSeries]

	Microsoft Windows (32 bits)	Microsoft Windows (64 bits)	x/Linux (32 bits)	x/Linux (64 bits)
IBM Director				
Director Server	2000 S/AS Server 2003 SE/EE		RHEL AS 3.0/4.0 SLES 8/9	
Director Agent	2000 S/AS Server 2003 SE/EE	Server 2003 SE/EE	RHEL AS 3.0/4.0 SLES 8/9	RHEL AS 4.0 SLES 9
Resource Dependency Service	Discovery only		RHEL AS 4.0 SLES 9	
IBM Enterprise Workload Manager				
Domain Manager	Server 2003 SE/EE		RHEL AS 4.0 SLES 9	
Managed Node	2000 S/AS Server 2003 SE/EE		SLES 9 (SP2)	
IBM Virtualization Engine Console	Server 2003 SE/EE		RHEL AS 4.0 SLES 9	
VE Console Bridges				
Cluster System Management				
Director	Server 2003 SE/EE		RHEL AS 4.0 SLES 9	
EWLM	Server 2003 SE/EE		RHEL AS 4.0 SLES 9	
Management Central				

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Platform Support / Full Matrix [2/4 – i/pSeries]

		AIX	p/Linux	i5/OS	i/Linux
IBM Director					
	Director Server	5.3	RHEL AS 4.0 SLES 9	5.3	RHEL AS 4.0 SLES 9
	Director Agent	5.2/5.3	RHEL AS 3.0/4.0 SLES 8/9	5.3	RHEL AS 3.0/4.0 SLES 8/9
Resource Dependency Service		Data Source only	RHEL AS 4.0 SLES 9	Data Source only	RHEL AS 4.0 SLES 9
IBM Enterprise Workload Manager					
	Domain Manager	5.3	RHEL AS 4.0 SLES 9	5.3	RHEL AS 4.0 SLES 9
	Managed Node	5.2/5.3	SLES 9 (SP2)	5.3	SLES 9 (SP2)
IBM Virtualization Engine Console		5.3	RHEL AS 4.0 SLES 9	5.3	RHEL AS 4.0 SLES 9
VE Console Bridges					
	Cluster System Management	5.3			
	Director		RHEL AS 4.0 SLES 9	5.3	RHEL AS 4.0 SLES 9
	EWLM	5.3	RHEL AS 4.0 SLES 9	5.3	RHEL AS 4.0 SLES 9
	Management Central			5.3	

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Platform Support / Full Matrix [3/4 – zSeries]

		z/OS	z/Linux (32 bits)	z/Linux (64 bits)
IBM Director				
	Director Server		RHEL AS 4.0 SLES 9	RHEL AS 4.0 SLES 9
	Director Agent		RHEL AS 4.0 SLES 9	RHEL AS 4.0 SLES 9
Resource Dependency Service		Data Source only		RHEL AS 4.0 SLES 9
IBM Enterprise Workload Manager				
	Domain Manager	1.6		RHEL AS 4.0 SLES 9
	Managed Node	1.6 w/Pre-Req. SPE	SLES 9 (SP2)	SLES 9 (SP2)
IBM Virtualization Engine Console				RHEL AS 4.0 SLES 9
VE Console Bridges				
	Cluster System Management			
	Director			RHEL AS 4.0 SLES 9
	EWLM			RHEL AS 4.0 SLES 9
	Management Central			

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Platform Support / Full Matrix [4/4 – Others]

		Solaris	HP/UX
IBM Director			
	Director Server		
	Director Agent		
Resource Dependency Service		Data Source only	
IBM Enterprise Workload Manager			
	Domain Manager		
	Managed Node	Solaris 9	HP/UX 11i V1
IBM Virtualization Engine Console			
VE Console Bridges			
	Cluster System Management		
	Director		
	EWLM		
	Management Central		

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Sizing Information

	Diskspace*	Memory
Common Components	2.5 GB	300 MB
Virtualization Engine Console	2 GB	*Not Yet Evaluated*
EWLM Domain Manager (+ VE Console Bridge)	2 GB	*Not Yet Evaluated*
Director Server (+ VE Console Bridge)	2 GB	100 MB (Server) 200 MB (Bridge)

- * : Diskspace represents the final space used by the components, but extra diskspace is required during installation for file copy and extraction from media
- Note : Values shown here are approximate ; actual values may differ, depending on the installation / the platform type

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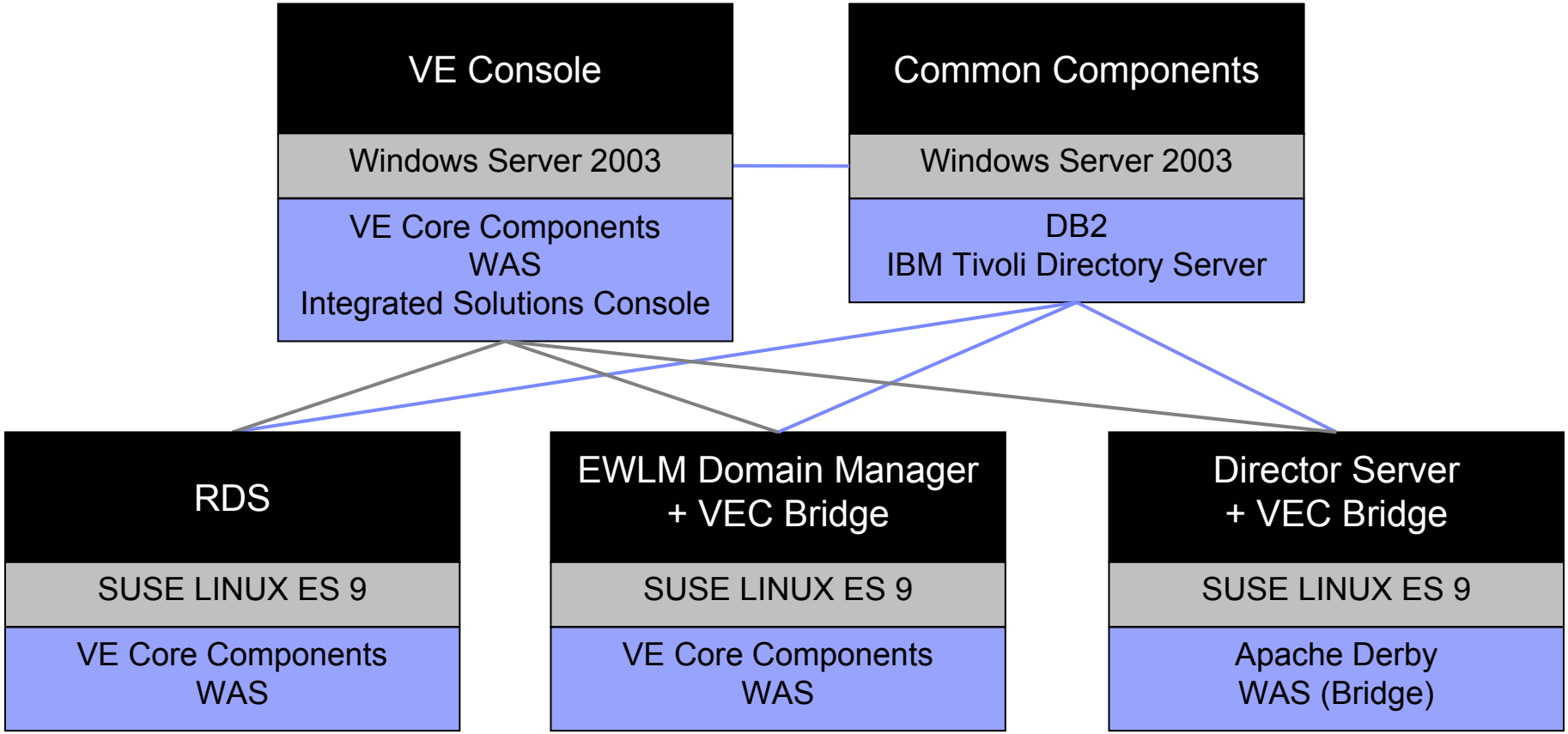
An Example of Implementation (Management Servers only)



Note : Does not constitute an implementation recommendation in any way ; Please refer to the compatibility matrix for full supported platforms information

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Special Considerations

- i5/OS
  - Installation is driven remotely from an attached PC
  - Check the information center for special requirements, such as host servers being started
  - WAS may be shared with non-VE applications, so be aware when uninstalling
  - Mapped network drive required for uninstallation
- zLinux:
  - 31/64 bit installer must match the environment
  - Remote media
    - Many target systems will not have an attached optical device
    - Must copy the correct 31/64 bit installer to match the target
- AIX
  - Script is provided on media for a geninstall launch
- Uninstalling
  - Consult the information center about using the uninstallation wizard to maintain system consistency

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End Of Presentation

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