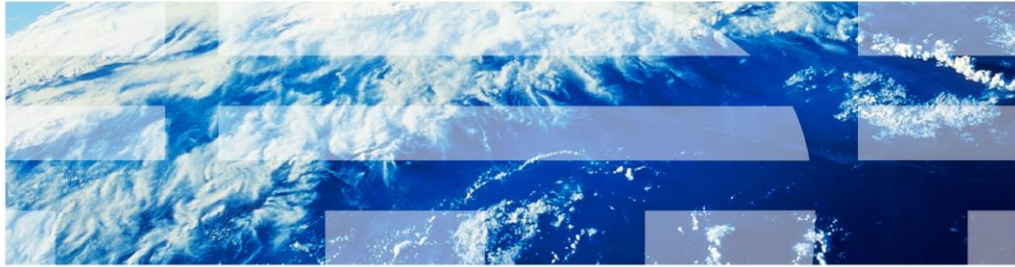


IBM Workload Deployer

Virtual images



This presentation will give a brief overview of virtual images.

Table of contents

- High level overview
- IBM supplied virtual images
- Virtual image defined
- Virtual image operations
- Image extension and capture

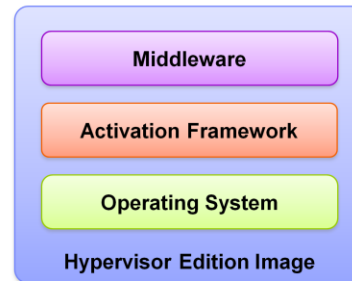
The agenda for this presentation starts with the high level overview of virtual images and progressively drills down into the details. You will go over what virtual images are supplied by IBM and the benefits of using an IBM provided virtual image. Next, you will drill down into what makes up virtual images. You will cover the operations that are supported by the virtual image. Finally, you will learn about extending and capturing an image.

High level overview

This section will give a high level overview of WebSphere Application Server Hypervisor Edition.

Hypervisor Edition images

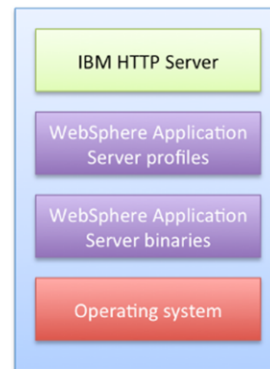
- IBM middleware shipped as an OVF virtual image, ready to run on a hypervisor
- The following products are available:
 - WebSphere Application Server
 - WebSphere Portal Server
 - DB2
 - WebSphere Message Broker
 - WebSphere Message Queue
- Products support various combinations of:
 - VMware ESX, z/VM and PowerVM hypervisors
 - Red Hat Enterprise Linux, SUSE Linux, AIX
- Maintenance, support, and fixes through IBM for both middleware and OS
 - New images include most recent GA components of IBM middleware, OS
 - Fixes also available through Fix Central



IBM middleware is shipped as an open virtualization format (OVF) image, ready to run on a hypervisor. Several WebSphere products are available, in addition to DB2. These products support various combinations of VMware ESX, z/VM and PowerVM hypervisors. Operating systems supported are Red Hat Linux, SUSE Linux, and AIX. Maintenance, support, and fixes are supplied by IBM for both the middleware and operating system. Fixes are also available on Fix Central.

WebSphere Application Server Hypervisor Edition

- WebSphere Application Server product designed to run in a virtualized cloud environment
- Packaged as a pre-installed and configured image in open virtualization format (OVF); includes
 - Operating system
 - Application server binaries
 - Application server profiles
 - HTTP server
- Image include parts that represent the application server topology components the image supports
 - Examples: deployment manager, custom node, stand-alone server



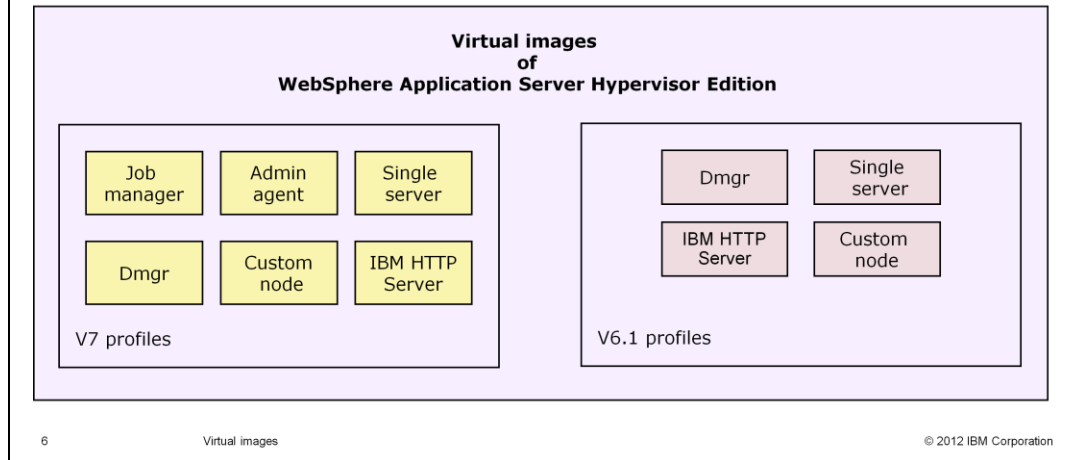
An example of a Hypervisor Edition image is the WebSphere Application Server Hypervisor Edition. The WebSphere Application Server Hypervisor Edition images are optimized for using WebSphere Application Server in virtualized environments on top of hypervisors. The Hypervisor Edition facilitates more agile usage of WebSphere Application Server by providing a rapid setup and teardown of application server environments.

The images contain a preinstalled, preconfigured, OS-included binary image of the application server from which virtual machines can be created and deployed on hypervisors.

The WebSphere Application Server Hypervisor Edition contains the operating system, IBM HTTP Server, WebSphere Application Server binaries, and all the profiles supported for that release. It also contains activation code that is started when creating virtual machines to configure the environment. The IBM provided Hypervisor Edition comes with the SUSE or Red Hat Linux operating system. The Hypervisor Edition uses open standard Open Virtualization format (OVA), which is an optimized format to store virtual images.

Virtual image parts (for WebSphere Application Server)

- Virtual images are made up of virtual image parts which are used to create patterns
- WebSphere Application Server image, each part “typically” corresponds to a profile



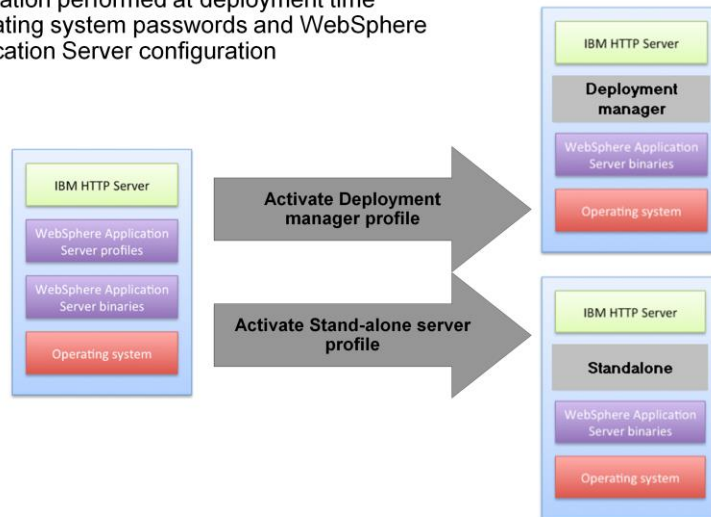
IBM Workload Deployer’s catalog contains all imported virtual images. IBM Workload Deployer efficiently stores virtual images in the catalog, only storing the differences (or delta). By storing virtual images in this way, the catalog has the capability to hold many unique virtual images.

This slide breaks down both the V7.0 and V6.1 WebSphere Application Server virtual images into their corresponding virtual image parts. Each part “typically” corresponds to a profile. “Typically” is emphasized, because you have noticed that “IBM HTTP Server” is not a profile, but it is listed as a virtual image part. These virtual image parts are what make up a pattern.

Other images such as DB2 have parts like: DB2 Enterprise, DB2 Enterprise HADR Primary, DB2 Enterprise HADR Standby, and DB2 Enterprise 90-day Trial.

Virtual image deployment

- Customization performed at deployment time
 - Operating system passwords and WebSphere Application Server configuration



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Virtual images

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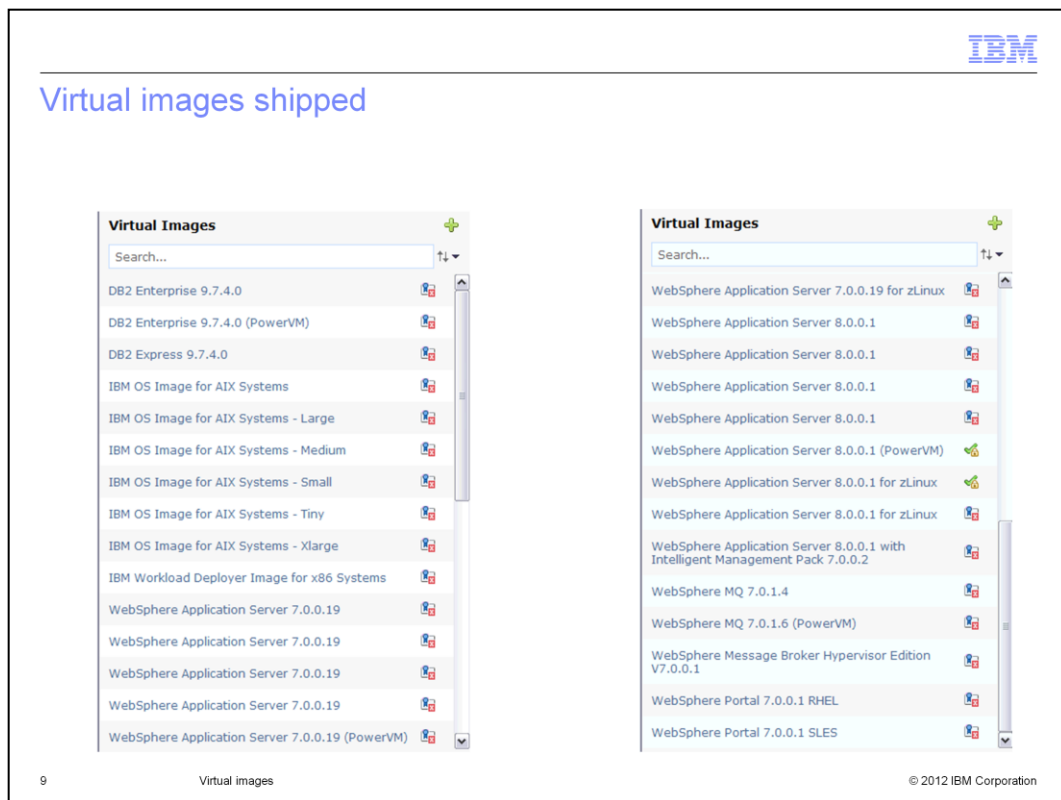
A single WebSphere Application Server virtual image can take on the characteristics of any supported WebSphere Application Server profile. All profiles have been expanded on the virtual image. They are essentially ready to go with a few minor configuration changes such as cell name, host name and passwords. If you are using IBM Workload Deployer facilities to deploy the virtual image, the only requirement is that you supply the operating system and WebSphere administrative passwords. All other configuration requirements are given default values unless you override the value. This customization process happens during a process called activation. Located on the virtual image is a piece of logic called the activation code. This code runs when the virtual machine starts. Its main responsibility is to configure the virtual machine. It configures host name, IP address and operating system password to name a few.

To illustrate the virtual image's ability to take on the characteristics of any WebSphere Application Server profile type a graphic has been included. If you look at the graphic you see that on the left you have the virtual image. This single virtual image is deployed twice. In one case it became the deployment manager profile and in another case this same virtual image took on the single server profile role.

IBM supplied virtual images

This section will cover the IBM supplied virtual images.

Virtual images shipped



IBM makes available a set of virtual images. This graphic shows the virtual images that come pre-loaded on the IBM Workload Deployer V3.1 appliance. Images are available for VMware ESX, PowerVM and z/VM hypervisors. Where you see 'duplicate entries' in the list, this reflects the availability of different underlying operating systems for the hypervisor edition product. For example, WebSphere Application Server 7.0.0.19 is available for RedHat Enterprise Linux 64-Bit, version 5 or SLES 64-Bit, version 11 (Novell SUSE Linux Enterprise Server 11 64bit) to name two of the versions.

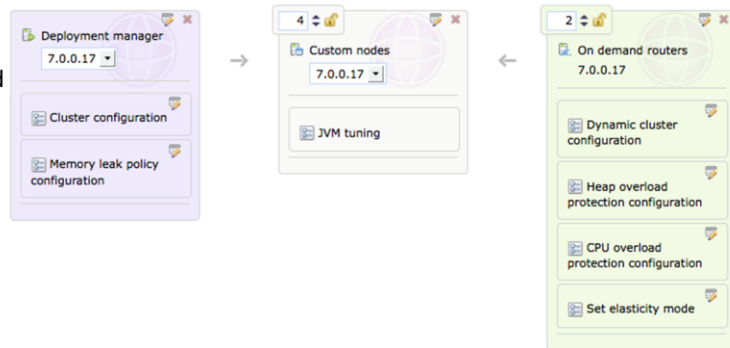
The entire stack that makes up the virtual image is tested by IBM as a single unit. IBM also claims support for IBM supplied virtual images. What this means to you is that if you have a problem with any component that makes up the virtual image, you go to IBM for support.

Each time a WebSphere Application Server fix pack becomes available, an updated virtual image is made available for download. Importing an updated virtual image will result in two artifacts being created in the catalog. First, an updated virtual image that can be used for pattern deployments. All you need to do to make use of this new virtual image is to navigate to your pattern, click edit and update the virtual image. Second, an emergency fix that can be used to apply the fix pack directly against a running virtual system. This can be used as a temporary measure until you are able to update the pattern and redeploy.

Intelligent Management Pack

- Intelligent Management Pack exposes a subset of WebSphere Virtual Enterprise functionality in IBM Workload Deployer
 - On-demand router
 - Dynamic clusters, including elasticity mode
 - Policy-based management
 - Full WebSphere Virtual Enterprise capabilities available from the middleware interface

- Must be explicitly enabled in the virtual image; additional license required



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Virtual images

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You have the ability to enable the Intelligent Management Pack in Workload Deployer. The Intelligent Management pack is a subset of WebSphere Virtual Enterprise functionality in Workload Deployer. It includes an On-demand router, dynamic clusters including elasticity mode, and policy-based management. Full WebSphere Virtual Enterprise capabilities are available from the middleware interface. The Intelligent Management pack must be explicitly enabled in the virtual image, and an additional license is required.

Pre-loaded image content – WebSphere Portal Server

Product	Version	Operating System	Hypervisor
WebSphere Portal Server, Standalone	7.0	32-bit SLES 11	ESX
WebSphere Portal Server, Standalone	7.0	32-bit RHEL 5	ESX

- Full images also uses Lotus Web Content Management V7.0, DB2 Enterprise Server Edition V9.7

Single Portal Server

Description: A single instance of IBM WebSphere Portal provides a fully functional application server and a Web site that is capable of serving a medium to small user community. Single server topology is ideal for development, test, demonstration and education.

Topology for this pattern:

Deploys to ESX hypervisors.

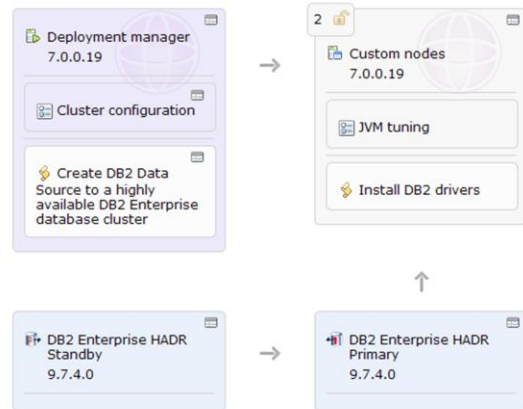
Standalone server
7.0.0.0

This table shows the pre-loaded WebSphere Portal Server images that are shipped with Workload Deployer v3.1. There is an image with the SUSE Linux operating system, and the Red Hat Linux operating system. The full images also use Lotus Web Content Management V7.0, and DB2 Enterprise Server Edition V9.7.

Pre-loaded image content – DB2

Product	Version	Operating System	Hypervisor
DB2 Enterprise	9.7 FP4	64-bit RHEL	ESX
DB2 Express	9.7 FP4	64-bit RHEL	ESX
DB2 Enterprise	9.7 FP4	64-bit AIX 6.1	PowerVM

- DB2 Enterprise for ESX includes a 90-day trial
- ESX images provide built-in HADR parts (primary, standby)
- Supporting script packages are available in the appliance catalog
 - Create data source, create database, install drivers



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Virtual images

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This table shows the pre-loaded DB2 images available in Workload Deployer v3.1. The DB2 Enterprise for ESX image includes a 90-day trial. Both the ESX images provide built-in HADR primary and standby parts. Supporting script packages are available in the catalog to create a data source, create a database, and install drivers.

Pre-loaded image content – other middleware

Product	Version	Operating System	Hypervisor
WebSphere MQ	7.0.1.4	64-bit RHEL 5	ESX
WebSphere MQ	7.0.1.6	64-bit AIX 6.1	PowerVM
WebSphere Message Broker	7.0.0.1	64-bit RHEL 5	ESX

- All three images contain a Basic part and an Advanced part
- Script packages available for WebSphere Message Broker configuration (for example, configure clustering, create execution group)

WebSphere Message Broker Hypervisor Edition V7.0.0.1	
Description:	WebSphere Message Broker Hypervisor Edition V7.0.0.1
Hypervisor type:	ESX
Operating system:	RedHat Enterprise Linux 64-Bit, version 5 (RedHat Enterprise Linux 5)
Version:	7.0.0.1
Contains parts:	WebSphere Message Broker - Advanced [part product IDs...] WebSphere Message Broker - Basic [part product IDs...]
Included in patterns:	WebSphere Message Broker 7.0.0.1 (Basic) WebSphere Message Broker 7.0.0.1 (Advanced)

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Virtual images

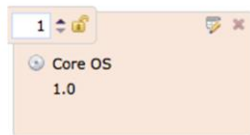
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This table shows other middleware that is pre-loaded on the appliance: WebSphere MQ and Message Broker. All three of these images contain a Basic and Advanced part. There are script packages available for WebSphere Message Broker to configure clustering, create an execution group, and so forth.

Pre-loaded image content – base image

Product	Version	Operating System	Hypervisor
IBM OS Image for AIX Systems	N/A	64-bit AIX 6.1.0.5	PowerVM
IBM Workload Deployer Image for x86 Systems	N/A	64-bit RHEL 5.7	ESX

- Provides the operating environment for workload patterns (operating system, shared services)
- Contains a deployable operating system part, can be used as a base for extension and image customization



With version 3.1, there are now two base images pre-loaded onto the appliance. One image is for Red Hat Linux, and the other for AIX. These images provide the operating environment for workload patterns as well as the shared services. They also contain a deployable operating system part that can be used to extend and customize images, such as images containing non-IBM software.

Virtual image defined

This section will cover the details of virtual images.

Virtual image attributes

- Attribute definitions
 1. Action toolbar
 2. Must read and accept license before using virtual image
 3. Intelligent Management Pack enablement
 4. What hypervisor this virtual image can be deployed to
 5. Operating system
 6. Product IDs for licensed products in the image
 7. Virtual image parts that this virtual image contains that can be used when constructing virtual system patterns

WebSphere Application Server 7.0.0.17	
Description:	IBM WebSphere Application Server Hypervisor Edition 7.0.0.17
Created on:	Jun 4, 2011 6:45:41 AM
Current status:	Read-only
Updated on:	Aug 17, 2011 10:54:03 AM
License agreement:	Accepted [view...]
Intelligent Management Pack:	Disabled more patterns are using this image. You can click here to change this setting.
Hypervisor type:	ESX
Operating system:	SLES, version 11 (Novell SUSE Linux Enterprise Server 11)
Version:	7.0.0.17
Image reference number:	32663.638
Product IDs (e.g., 5724-X89):	5724-X89 (PVM license) 5725-C00 (PVM license) 5725-A27 (PVM license) Click to add
Contains parts:	Administrative agents [part product IDs...] Custom nodes [part product IDs...] Deployment manager [part product IDs...] IBM HTTP servers [part product IDs...] [show more]

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Virtual images

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Each virtual image has a unique set of attributes that you view and in some cases modify. This slide and the follow-up slide will go over the more interesting options that will affect your deployment scenarios. Number one is the action toolbar for actions that can be performed on each image. Number two shows where you need to accept the license agreement for this virtual image. Before you are allowed to use a virtual image that you have imported you are required to read and accept the license agreement. To read and accept the license agreement, click the “**view...**” link. Number three shows where you can enable the Intelligent Management Pack feature on the WebSphere Application Server virtual images. For more information on this, see the presentations detailing the Intelligent Management Pack function. Number four indicates the type of virtual image and what environment this virtual image can be deployed into. This value can be **ESX**, **PowerVM** or **zVM**. In the case of “**ESX**” you can only deploy to a VMware ESX hypervisor. In the case of “**PowerVM**” you can only deploy to an IBM PowerVM hypervisor. Finally in the case of “**zVM**”, you can only deploy to an IBM z/VM hypervisor. Number five shows the operating system that the image is based on. Number six contains the Product IDs that make up the image and finally number seven contains the virtual image parts that make up the virtual image. You will use these virtual image parts when you are assembling your patterns.

Virtual image attributes (continued)

- Attribute definitions
 1. What patterns are currently associated with this virtual image
 2. Virtual systems associated with this virtual image
 3. Users or user groups that can use this virtual image
 4. Sizes of virtual disks that make up the virtual image

Included in patterns: [WebSphere cluster](#)

1 WebSphere cluster (development)
WebSphere cluster (large topology)
WebSphere single server with sample

In the cloud now: 2 (none)

Access granted to: Administrator [owner]
3 Everyone [read] [remove]
[Add more...](#)

Hardware

General information

Virtual CPU count: 1
Virtual memory (MB): 2048
Network interfaces: 1

Disk

Label	File name	Capacity (GB)
disk1	SLES11SP1-32.vmdk	12.0
disk2	WebSphere_Binaries.vmdk	8.0
disk3	WebSphere_Profiles.vmdk	2.0
disk4	WebSphere_IHS.vmdk	2.0

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Virtual images

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Number one lists the patterns that are currently associated with this virtual image. You cannot delete a virtual image until all associated patterns are removed from this list. To remove a pattern from the list you will need to remove the pattern completely or remove the dependency on the virtual image.

Number two shows the currently deployed virtual systems that are associated with this virtual image by way of a pattern. As with the “**Included in patterns**” field in the previous slide, if this field is populated, you are not allowed to delete the virtual image from the catalog.

Number three shows the users that have access to view or use the virtual image. By default, the user ID who imported the virtual image has authority over the virtual image. If you want other users or user groups to have authority to view or use the virtual image you need to explicitly grant them access by clicking the “**Add more...**” field. Access has been granted to “**Administrator**” and “**Everyone**” for the preloaded pattern shown here.

Number four shows a view of the virtual disks that make up the virtual image. From here you can view the virtual disk sizes. These are read-only. If you want to modify the disk sizes you will need to clone or clone and extend the virtual image. During the clone operation you are given a chance to modify the disk sizes. Starting with IBM Workload Deployer V3, you can also get additional space by using the virtual machine **Add-Ons** also found in the **Catalog** menu.

Virtual image operations

This section will briefly cover virtual image operations

Overview of virtual image operations



1. Export
 - Save virtual image on an external server to be imported into another Workload Deployer system
2. Clone
 - Copy virtual image in the catalog
3. Extend
 - Deploy virtual image, so that you can add additional features or capabilities
4. Capture
 - Take a virtual image that was previously extended and store in catalog for deployments
5. Lock
 - Used in conjunction with extend/capture operation; you are allowed to repeatedly capture your extended virtual image until you lock the virtual image
6. Import (not listed here)
 - Import a virtual image into the catalog

Virtual images support several operations. Each of the operations are covered briefly here. A more in-depth discussion of each of the operations can be found in other supporting presentations.

Export is used to export a virtual image from Workload Deployer. The exported virtual image is saved onto an external server where SCP is enabled. This virtual image can then be imported into the same or a different Workload Deployer. Clone is used to create a copy of an existing virtual image in the catalog.

Extend is used to extend a virtual image to add additional features or capabilities. For example, say your company requires that each system deployed requires a specific type of security auditing software to be installed. With the extend feature, you can extend the virtual image and then install your security auditing software.

Capture is used in conjunction with the extend feature. For the example in number three, once you have installed your security auditing software, you will capture the virtual image back into the catalog. This captured virtual image can now be used in any deployments and it will contain your security auditing software automatically.

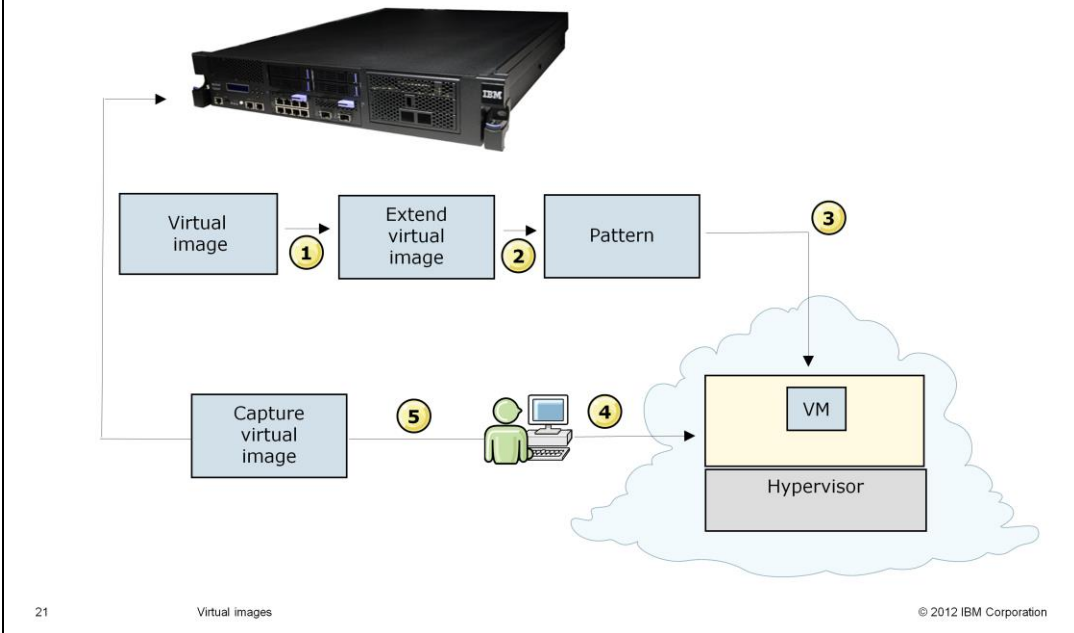
Lock is used in conjunction with the Extend/Capture operation. Until you lock the virtual image, you can repeatedly capture the virtual image pulling in the latest changes made to the deployed virtual system. An example will help illustrate this; you extend your virtual image, make changes, capture those changes and test those changes. You now realize that those changes were not correct, you make further updates to the extended virtual image and capture your changes. At this point you are satisfied with your changes, so you will lock the virtual image to prevent anyone from intentionally or unintentionally capturing additional untested changes.

Import is not shown in the graphic on this slide, but the import operation is used to upload virtual images into the catalog. These virtual images can be from IBM, from a previous export operation or from the Image Construction and Composition Tool where you have created your own custom image.

Virtual image extend and capture

This section will give an overview of extending and capturing a virtual image.

Extend and capture process



It is important to understand the details of what happens to a virtual image when it is extended. The appliance creates a copy of an existing virtual image as shown by item one. Item two shows that the copy of the virtual image is made and a pattern is automatically deployed into the cloud. Deployment of the pattern to the cloud, shown by item three, creates a new virtual system in the cloud. As shown in item four, you log into the virtual system and make any necessary changes to the virtual system. You then return to the appliance interface, item five, to capture changes made to the virtual system. The changes made to the virtual system are copied from the hypervisor to the appliance. Once the copy process is done, a new virtual image is created based on the modified virtual system.

Extend and capture uses and limitations

- Use image extension (extend / capture) to embed custom content in a virtual image, re-use across multiple patterns
 - Good for large, time-consuming changes (for example, product installation) and operating system updates
 - Cannot modify the WebSphere profiles disk
 - Cannot add additional activation bundles through extend and capture
 - Use ICON tool to add/modify activation bundles in a virtual image

The extend and capture procedure is helpful in situations where you want to make system modifications or changes to the product environment, like adding maintenance files or other product installation packages, that are common among all deployments. The resulting custom virtual image can then be used to create new virtual systems that already contain the changes you made when you created the new virtual image. Therefore, you perform the changes once, and by creating this custom image through the extend and capture process, you can easily generate additional virtual systems without having to make the same change again across the new systems in your environment. A limitation of extend and capture is that you cannot make any changes to the WebSphere Application Server profiles directory in the extended image. If changes are made, those changes are ignored.

Initial steps for extending a virtual image

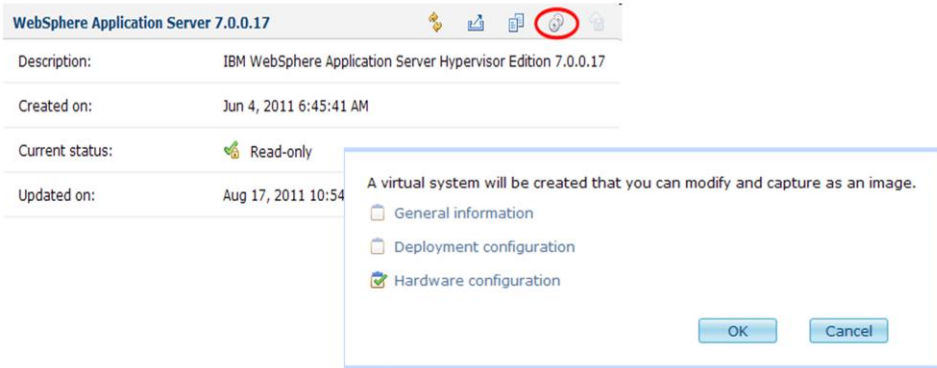
- Pre-requisite: User must be assigned “Create new catalog content” or “Appliance administration” permission and licenses must be accepted
- Navigate to virtual images panel under **Catalog > Virtual images**

The screenshot displays the IBM Workload Deployer interface. At the top, there is a navigation bar with tabs for 'Welcome', 'Instances', 'Patterns', 'Catalog', 'Reports', 'Cloud', and 'Appliance'. The 'Catalog' tab is selected, and a dropdown menu is open, showing options like 'Reusable Components', 'Virtual Application Templates', 'Virtual Images' (highlighted with a red circle), 'Virtual Appliances', 'Script Packages', 'Add-Ons', 'Emergency Fixes', and 'Database Tools'. Below the navigation, the 'Virtual Images' panel is visible, featuring a search bar and a list of images. The first image listed is 'WebSphere Application Server 7.0.0.17', which is highlighted. To the right of this image, there is a detailed view showing the image name, version, creation date (Jun 4, 2011 6:45:41 AM), and status (Read-only). Below this, there is a section for 'Intelligent Management Pack' with a status of 'Disabled' and a note: 'One or more patterns are using this image. You can do change this setting.'

Before you begin, ensure that you are assigned either the “Create new catalog content” permission and granted all access to the virtual image you want to extend or you can also perform an extend if you are assigned the Appliance administration role with full permissions. Once permissions are set and licenses are accepted, the clone can be created and the new virtual image you will ultimately generate can be saved to the catalog. To begin the image extension process, navigate to the “Virtual Images” panel from the “Catalog” menu at the top of the Workload Deployer web console.

Begin extending a virtual image

- Select the virtual image you want to extend
- Click the extension icon and to start to create a new extension



Then click the name of the existing virtual image you want to use as the basis for your extension. Click the extension icon to begin the image extension.

Extending a virtual image - deployment information

- Provide name and version information for the virtual system
- Select a cloud group as a deployment target
- Set the password for the virtual system (root and virtuser)

A virtual system will be created that you can modify and capture as an image.

General information

- Name: Copy of WebSphere Application Server 7.0.0
- Description: Extended version of WAS V7.0.0.7 virtual im
- Version: 1.0

Deployment configuration

Hardware configuration

OK Cancel

A virtual system will be created that you can modify and capture as an image.

General information

Deployment configuration

- In cloud group: ESX CloudGroup
- Password:
- Verify password:

Hardware configuration

OK Cancel

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Virtual images

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Enter your custom values for the virtual system in the image extension window, such as a system name, a version number for the administrator to keep track of the changes made, and which cloud group to deploy to. When you deploy the virtual system, two user IDs are configured, “virtuser” and “root”. You can then log in to the virtual system with the password specified here and either of those two user IDs.

Extending a virtual image – volume resizing

- During image extension, optionally modify the sizes of the different volumes that make up the image
- A copy of the existing virtual image is generated
- A new virtual system is created using the default pattern and the values you enter

A virtual system will be created that you can modify and capture as an image.

- General information
- Deployment configuration
- Hardware configuration**

* Network interfaces:	<input type="text" value="1"/>
* SLES10SP2-32.vmdk (GB):	<input type="text" value="12"/>
* WebSphere_Binaries.vmdk (GB):	<input type="text" value="6"/>
* WebSphere_Profiles.vmdk (GB):	<input type="text" value="2"/>
* WebSphere_IHS.vmdk (GB):	<input type="text" value="1"/>

OK Cancel

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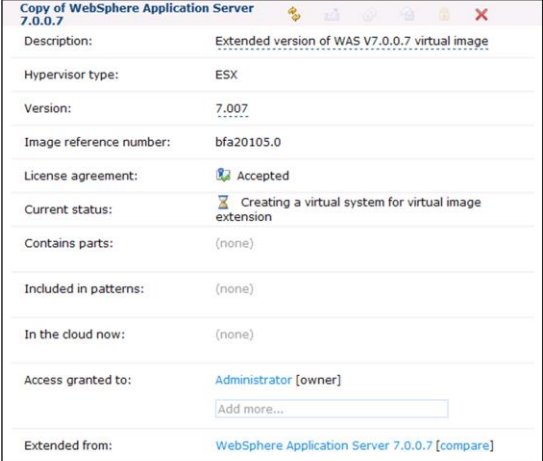
Virtual images

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Continue entering the “Hardware configuration” section parameters into the image extension window. When extending a virtual image, you have the option of adjusting the volume size for different parts of the image, including the operating system, the application server binaries, the application server profiles, and the HTTP server. The volume sizing options are an important feature in Workload Deployer, because this is the only time that you get the opportunity to change the sizing of the virtual disks inside the image. Click the “OK” button and a clone of the existing virtual image is generated and a default pattern from that virtual image, along with the values you entered, is automatically deployed into the cloud to create a new virtual system.

Verifying the new virtual system details

- Click extended virtual image name to view the details of the new virtual system
- Status changes to **Draft** when virtual system is available to customize



Copy of WebSphere Application Server 7.0.0.7	
Description:	Extended version of WAS V7.0.0.7 virtual image
Hypervisor type:	ESX
Version:	7.007
Image reference number:	bfa20105.0
License agreement:	Accepted
Current status:	Creating a virtual system for virtual image extension
Contains parts:	(none)
Included in patterns:	(none)
In the cloud now:	(none)
Access granted to:	Administrator [owner] <input type="text" value="Add more..."/>
Extended from:	WebSphere Application Server 7.0.0.7 [compare]

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Virtual images


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You can verify the details of the new virtual system you just created, by clicking the extended virtual image name. The “current status” will change from “Creating a virtual system for virtual image extension” to “Draft” when the new virtual system is successfully deployed into the cloud. The deployment does not happen instantly and the amount of time it takes depends on the level of system activity in progress and on the size of the virtual image. You will need to manually refresh the webpage occasionally to get updated status messages.

Verifying the deployment of the new virtual system

- Navigate to **Instances > Virtual Systems**
- Select the virtual system you created during the image extension process
- Status changes to **The virtual system has been deployed and is ready for use** when virtual system is available to customize

The screenshot shows the details of a virtual system named "Copy of WebSphere Application Server Hypervisor Edition 7.0...". The "Current status" field is highlighted with a red circle and contains a green checkmark icon and the text "The virtual system has been deployed and is ready to use". Other fields include "Created on: Aug 17, 2011 11:59:28 AM", "From pattern: Copy of WebSphere Application Server Hypervisor Edition 7.0.0.17 1.0", "Using Environment profile: None provided", "Updated on: Aug 17, 2011 1:23:03 PM", "Access granted to: Administrator [owner]", and "Snapshot: Create (none)".

Created on:	Aug 17, 2011 11:59:28 AM
From pattern:	Copy of WebSphere Application Server Hypervisor Edition 7.0.0.17 1.0
Using Environment profile:	None provided
Current status:	 The virtual system has been deployed and is ready to use
Updated on:	Aug 17, 2011 1:23:03 PM
Access granted to:	Administrator [owner] <input type="text" value="Add more..."/>
Snapshot:	<input type="button" value="Create"/> (none)

History: The virtual system has been deployed and is ready to use

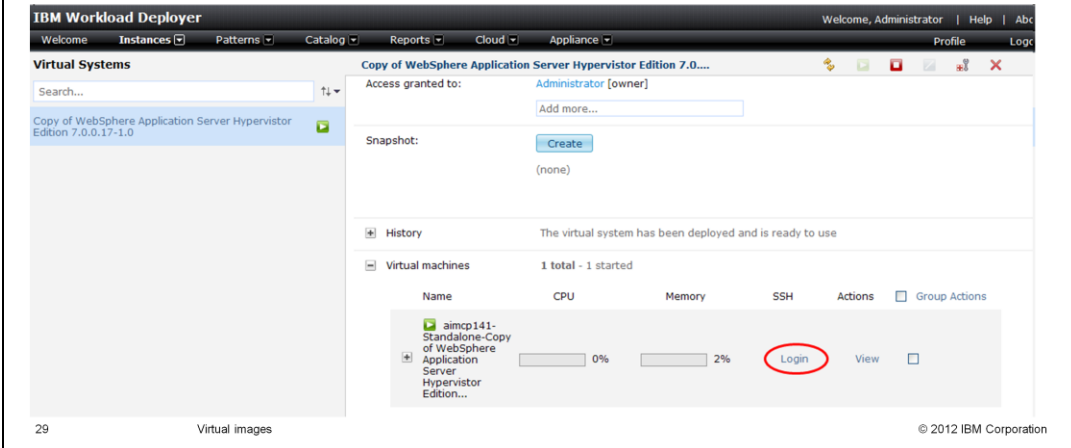
Virtual machines: 1 total - 1 started

28 Virtual images © 2012 IBM Corporation

Click the “Virtual Systems” menu at the top of the Workload Deployer web console and select the virtual system you just created during the image extension process. You can verify the details of the new virtual system you just created in the panel to the right. Verify that the current status states “The virtual system has been deployed and is ready for use” before customizing.

Making modifications to the virtual system

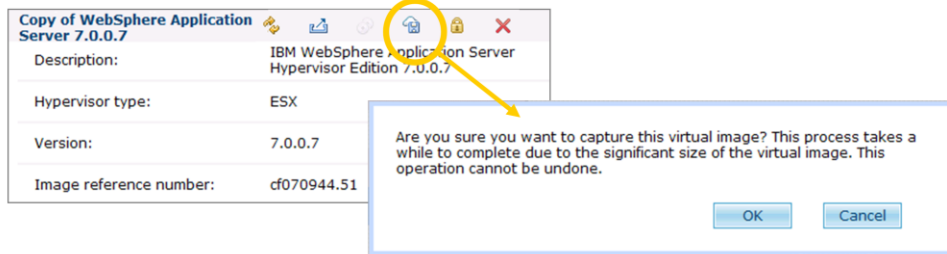
- Navigate to **Instances > Virtual Systems**
- Select the virtual system you created during the image extension process
- Expand Virtual machines, and log in to make the necessary modifications



Once your virtual system is successfully deployed, you can log in and make the modifications you intend to store in your new virtual image. These modifications can be changes to the product environment or changes to the operating system. To access the virtual system, click the “Login” link under the “SSH” column header. When you deployed the virtual system, two ids were configured, “virtuser” and “root”. Login with one of these user IDs and with the password you specified when you extended the virtual image. A new window will open that is connected through SSH directly to the native operating system console. The key limitation of image extension is that you cannot capture any changes that are made to the WebSphere Application Server profiles directory.

Capturing the virtual system

- Navigate back to virtual images panel under **Catalog > Virtual images**
- Select the virtual image you want to capture
- Click the capture icon and to create a new virtual image in your catalog based upon the extended virtual image



After you have made your changes, return to the “Virtual images” Workload Deployer web console panel to store the changes. Click the capture icon to copy the changes you made to the virtual system from the hypervisor to the appliance. Like the displayed message states, there is a significant amount of data processing required to capture the image, so the process will take a while to complete. Also, while more than one image capture can be scheduled and added to the task queue, no more than two image captures are performed concurrently. After successfully completing these steps, you have a new virtual image in your catalog that is based upon the virtual image you extended.

Summary

- High level overview of Hypervisor Edition images
 - What they are made up of
 - How they work
- IBM supplied virtual images
 - Tested and supported by IBM
- Virtual image attributes
- Virtual image operations
- Image extension and capture

This presentation presented a high level overview of WebSphere Application Server Hypervisor Edition which included its make up and how it works. IBM supplies several virtual images ready to use. The advantage to using an IBM supplied virtual image is that IBM has tested and will support the IBM supplied virtual images. Next, you were introduced to the virtual image component pieces, called virtual image parts, and associated attributes. You were shown briefly the various operations that the virtual image supports. Finally, you were shown image extension and capture.

Reference

- WebSphere Application Server Hypervisor Edition main page
 - <http://www.ibm.com/software/webservers/appserv/hypervisor/>
- WebSphere Application Server Hypervisor Edition Information Center
 - http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.virtualimages.doc/info/ae/ae/welcome_virtual.html

This section provides references for WebSphere Application Server Hypervisor Edition.

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