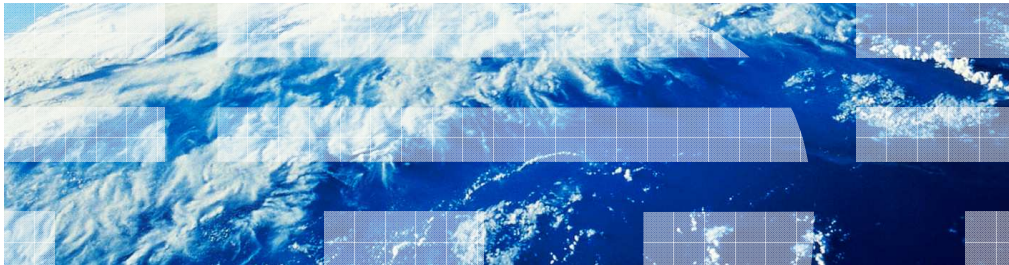


# IBM WebSphere CloudBurst Appliance

## Virtual image overview



This presentation will give a brief overview of virtual images.

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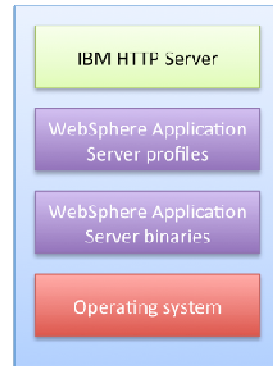
The agenda for this presentation starts with the high level overview of virtual images and progressively drills down into the details. You will go over what virtual images are supplied by IBM and the benefits of using an IBM provided virtual image. Next, you will drill down into what makes up virtual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

## ***High level overview***

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

## 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
- Availability
  - Preloaded on the appliance
  - Stand-alone product (VMware ESX images only)



A new addition to the WebSphere Application Server family of products is the new WebSphere Application Server Hypervisor Edition.

The 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.

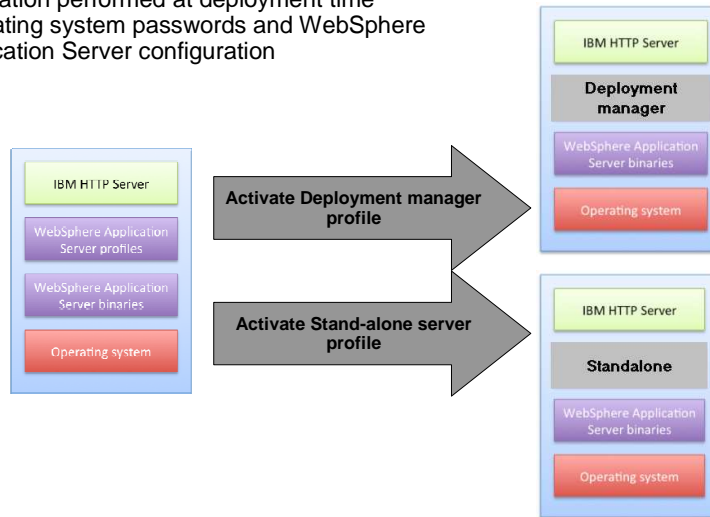
The Hypervisor Edition contains the operating system, IBM HTTP Server, WebSphere Application Server binaries, and all the profiles supported for that release. It also contains activation code that is started when creating virtual machines to configure the environment.

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.

WebSphere Application Server Hypervisor Edition is also available as a stand-alone product for the VMware ESX hypervisor.

## Virtual image deployment

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



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Virtual image overview

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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 WebSphere CloudBurst™ facilities to deploy the virtual image, the only requirement is that you supply the operating system 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.

## IBM supplied virtual images

- IBM makes available a set of virtual images
- IBM supplied virtual images are completely tested and supported by IBM
  - For example, if you have a problem with SUSE which resides on the virtual image you contact IBM

Virtual Images		+
<input type="text" value="Search..."/>		↑↓
DB2 Enterprise 9.7.0.0 32-bit Trial		✓
WebSphere Application Server 6.1.0.31		✓
WebSphere Application Server 6.1.0.31 (PowerVM)		✓
WebSphere Application Server 6.1.0.31 (Feature Packs)		✓
WebSphere Application Server 6.1.0.31 (Feature Packs) (PowerVM)		✓
WebSphere Application Server 7.0.0.11		✓
WebSphere Application Server 7.0.0.11		✓
WebSphere Application Server 7.0.0.11 (PowerVM)		✓
WebSphere Application Server 7.0.0.11 for zLinux		✓

IBM makes available a set of virtual images. The VMware ESX compatible virtual image comes preloaded on the appliance. 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 future 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.

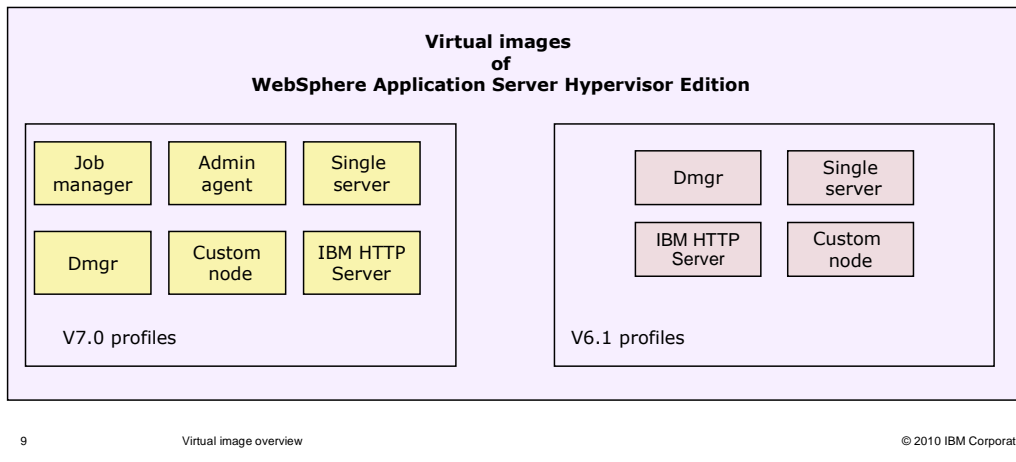
## ***Virtual image defined***

This section will cover the details of virtual images.



## Virtual image parts

- Virtual images are made up of virtual image parts which are used to create patterns
- Each part “typically” corresponds to a profile



WebSphere CloudBurst’s catalog contains all imported virtual images. WebSphere CloudBurst 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 between 30 to 50 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.

## Virtual image attributes

- Attribute definitions
  1. Must read and accept license before using virtual image
  2. Intelligent Management Pack enablement (V7 only)
  3. What hypervisor this virtual image can be deployed to
  4. Virtual image parts that this virtual image contains

WebSphere Application Server 7.0.0.11	
Description:	IBM WebSphere Application Server Hypervisor Edition 7.0.0.11
Created on:	May 3, 2010 9:59:01 PM
Current status:	Read-only
Updated on:	May 5, 2010 1:05:49 PM
License agreement:	Accepted <a href="#">[view...]</a> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1</span>
Intelligent Management Pack:	<div style="border: 1px solid gray; padding: 2px;">           Disable <span style="float: right;">One or more patterns are using this image. You can done it to change this setting.</span> </div> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">2</span>
Hypervisor type:	ESX <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">3</span>
Operating system:	LINUX (SLES11)
Version:	7.0.0.11
Image reference number:	344
Product IDs (e.g., 5724-X89):	5724-X89 5725-A27
Contains parts:	Administrative agents Custom nodes Deployment manager IBM HTTP servers <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">4</span> <a href="#">[show more]</a>

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Virtual image overview

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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 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 two shows where you can enable the Intelligent Management Pack feature on V7 virtual images. For more information on this, see the presentations detailing the Intelligent Management Pack function. Number three 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 four 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

The screenshot displays the 'Virtual image overview' page with the following sections:

- Included in patterns:** A list of patterns including 'WebSphere single server', 'WebSphere cluster', 'WebSphere cluster (development)', and 'WebSphere cluster (large topology)'. A '[show more]' link is present. A circled '1' is next to this section.
- In the cloud now:** A list showing 'My Virtual System'. A circled '2' is next to this section.
- Access granted to:** A list of users including 'Administrator' and 'Everyone [remove]'. An 'Add more...' button is at the bottom. A circled '3' is next to this section.
- Hardware:** A section with a sub-section for 'General information' showing 'Virtual CPU count: 1', 'Virtual memory (MB): 2048', and 'Network interfaces: 1'. Below this is a 'Disk' section with a table:
 

Label	File name	Capacity (GB)
disk1	SLES11-32.vmdk	12.0
disk2	WebSphere_Binaries.vmdk	6.0
disk3	WebSphere_Profiles.vmdk	2.0
disk4	WebSphere_IHS.vmdk	2.0

 A circled '4' is next to the 'disk3' row.

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Virtual image overview

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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.

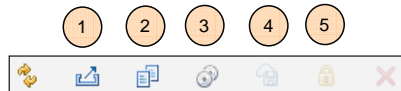
Number four shows a view of the virtual disks that make up the virtual image. From here you can view the virtual disk sizes. These are read-only. If you want to modify the disk sizes you will need to export the virtual image. During the export operation you are given a chance to modify the disk sizes.

## ***Virtual image operations***

This section will briefly cover virtual image operations

## Brief overview of virtual image operations

1. Export
  - Save virtual image on an external server to be imported into another appliance
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 future 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 the appliance. The exported virtual image is saved onto an external server that supports SCP. This virtual image can then be imported into the same or different appliance.

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 two, 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 future deployments.

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 or from a previous export operation.

## Summary

- High level overview of the WebSphere Application Server Hypervisor Edition
  - What it is made up of
  - How it works
- Covered the IBM supplied virtual images
  - Tested and supported by IBM
- Covered the meaning and usage of the virtual image attributes
- Briefly touched upon the supported virtual image features

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. Finally, you were shown briefly the various operations that the virtual image supports.

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