IBM WebSphere CloudBurst

CloudBurst - hypervisor integration

This presentation covers CloudBurst's integration with hypervisors.

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Overview

- Hypervisors

- WebSphere® Application Server Hypervisor Edition

- CloudBurst and the hypervisor

- Summary

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First, an explanation of what hypervisors are is provided, followed by a description of how CloudBurst integrates with hypervisors.

Section

Hypervisors

This section provides a definition of hypervisors.

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Hypervisors

- Hypervisors are virtualization software that allow multiple operating systems to run on the same computer concurrently

- CloudBurst supports VMware ESX and ESXi hypervisors

- Hypervisor infrastructure software allows you to manage the hypervisor

- CloudBurst allows the hypervisor to be easily used to deploy WebSphere Application Server pre-deployed on a virtual operating system

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CloudBurst   hypervisor integration

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A hypervisor is a program that allows multiple operating systems – or multiple instances of a single operating system - to run on a host computer concurrently. Examples of hypervisors include VMware ESX and ESXi, Citrix Xen, and z/VM®. The target operating system environment, including any software like WebSphere Application Server that runs on that operating system, is referred to as the virtual machine.

CloudBurst allows administrators to easily deploy and manage WebSphere Application Server and its deployed enterprise applications and services in a private cloud.

Hypervisor and hypervisor cloud

Hypervisor
(VMware ESX)
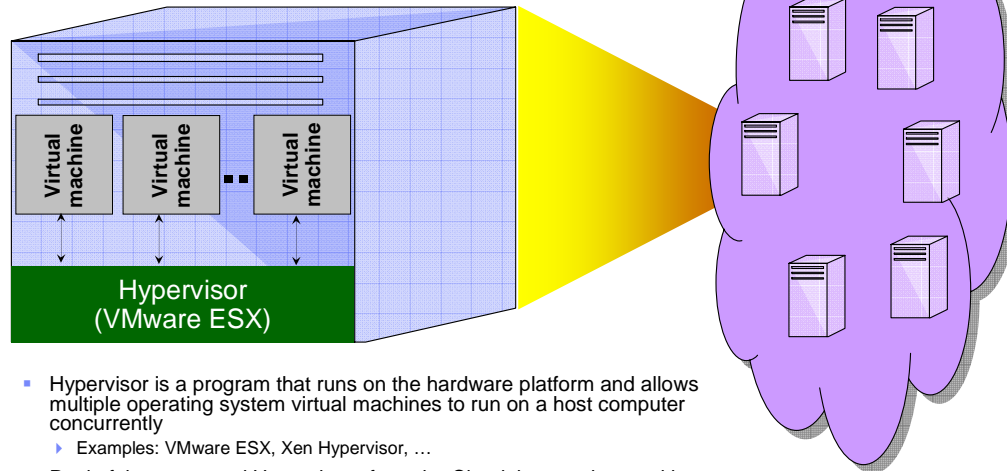
- Hypervisor is a program that runs on the hardware platform and allows multiple operating system virtual machines to run on a host computer concurrently
  - ▶ Examples: VMware ESX, Xen Hypervisor, …
- Pool of the supported Hypervisors form the Cloud that can be used by CloudBurst appliance to deploy WebSphere virtual images

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The machine illustrated here shows the physical hardware on which the hypervisor is installed.

On this hardware, one or more virtual machines can be deployed - such as VMWare ESX.

The virtual machines can run various operating systems such as Linux or Windows®.

A pool of hypervisors form what is called a cloud, and this cloud can be managed using IBM WebSphere CloudBurst.

CloudBurst allows you to set up your WebSphere Application Server environment and automatically deploy it in an operating system onto your hypervisor cloud.

The diagram on the left shows the physical hardware on which the hypervisor is installed, and on which one or more virtual images like VMware can run. A pool of such hypervisors form the cloud - shown on the right - that is then defined within the CloudBurst appliance to be used for deployment of WebSphere Application Server virtual images.
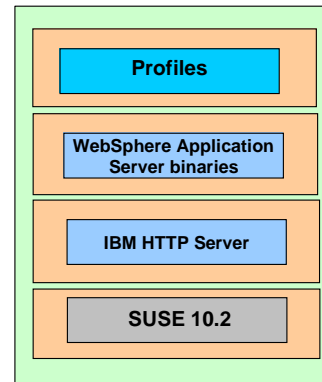
Section

WebSphere Application Server Hypervisor Edition

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This section covers WebSphere Application Server Hypervisor Edition.

IBM WebSphere Application Server Hypervisor Edition

- WebSphere Application Server Hypervisor Edition is a new addition to WebSphere Application Server family of products optimized to run in virtualized environments
  ▸ Available for V6.1 and V7.0 release
- Contains preinstalled, preconfigured, OS-included binary image of the application server, its profiles, IBM HTTP Server
- Contains activation code to create virtual machines for different profiles to run on top of the hypervisors
- Image provided using industry standard Open Virtualization format (OVF) 1.0
- Included in CloudBurst appliance, also available as a stand-alone product

Profiles

WebSphere Application Server binaries

IBM HTTP Server

SUSE 10.2

WebSphere Application Server Hypervisor Edition

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

The Hypervisor Edition is optimized for using WebSphere Application Server in virtualized environments on top of the hypervisors. The Hypervisor Edition facilitates more agile usage of WebSphere Application Server by providing a rapid setup or teardown of the Application Server environments.

It contains 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 is available for WebSphere Application Server V6.1 and V7.0 releases. For each release, the base image contains the Linux operating system, IBM Http Server, WebSphere Application Server binaries, and all the profiles supported for that release. It also contains activation code that is used when creating virtual machines of specific profiles to run on top of the hypervisors.

The IBM provided Hypervisor Edition comes with the SUSE Linux operating system V10.2. Instructions are provided to create your own image using other Linux operating systems, like RedHat. The Hypervisor Edition uses open standard Open Virtualization format, which is an optimized format to store virtual images.

WebSphere Application Server Hypervisor Edition is also available as a stand-alone product.

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Section

CloudBurst and the hypervisor

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This section discusses CloudBurst's integration with hypervisors.

CloudBurst and hypervisor

- Hypervisors are registered with the CloudBurst device

- CloudBurst then interacts with the hypervisor by deploying virtual systems to it

- A WebSphere Application Server pattern is created using CloudBurst then a virtual system is deployed on the hypervisor

- Information is polled from the hypervisor and information is shown in the administrative console
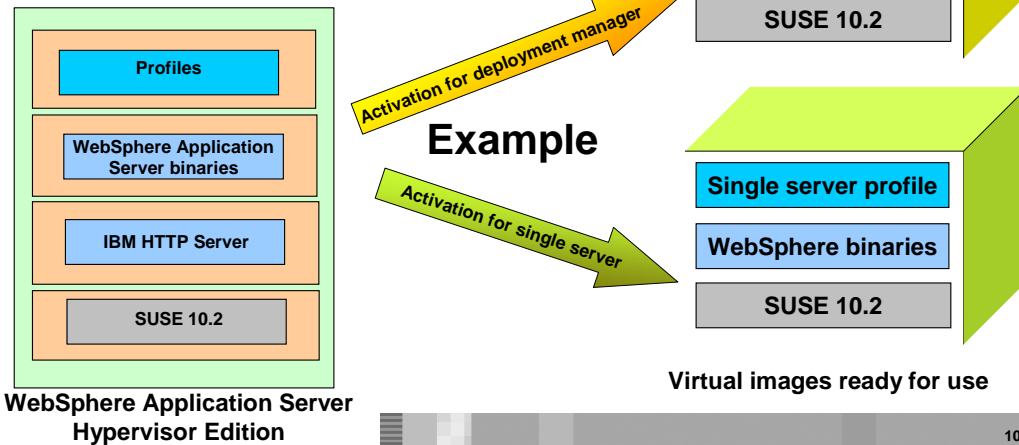
You can register various hypervisors with the CloudBurst device to allow CloudBurst to deploy virtual systems to your hypervisor cloud. This allows CloudBurst to have access to the hardware in your cloud running the hypervisors, and allows you to take advantage of easy rapid deployment of an operating system with your WebSphere Application Server deployed on it and ready to go.

CloudBurst allows you to design the layout of WebSphere Application Server that you will deploy in what is called a pattern. Patterns describe the topology of your WebSphere Application Server deployment, for example a WebSphere Application Server V7.0.0.3 with a single node and a deployment manager environment, including your enterprise application and any scripting it may need. This pattern can then be deployed to one of the hypervisors available in the cloud quickly and easily.

The virtual system can be monitored using CloudBurst that polls information from the hypervisor about the deployed virtual system and displays it in the administrative console and using the CloudBurst command line tool.

Deploying virtual images of WebSphere Hypervisor Edition

- During deployment, activation is performed with customization parameters provided by administrator
  - Example: OS passwords, WebSphere configuration information like profile type, cell, node, server names …

Profiles

WebSphere Application Server binaries

IBM HTTP Server

SUSE 10.2

WebSphere Application Server Hypervisor Edition

Activation for deployment manager

Example

Activation for single server

Deployment manager profile

WebSphere binaries

SUSE 10.2

Single server profile

WebSphere binaries

SUSE 10.2

Virtual images ready for use

Before the Hypervisor edition can be deployed as a virtual machine, it needs to be activated. The process of activation requires that you provide customization information like operating system root password, WebSphere specific information to create a ready to run virtual image of a specific profile of WebSphere Application Server on the supported hypervisor.

Shown on this page are examples of deploying specific profiles of the WebSphere Hypervisor edition to create virtual images of Deployment manager and Single server. Once the customization parameters are provided, the activation is performed and the images are deployed as virtual machines on the cloud hypervisors.

Summary

- Hypervisors allow multiple operating systems to run concurrently on the same computer

- Hypervisors are registered with the CloudBurst device

- WebSphere Application Server Hypervisor Edition is deployed on an ESX or ESXi hypervisor using CloudBurst

CloudBurst   hypervisor integration

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In summary, Hypervisors allow you to run multiple operating systems simultaneously on the same computer. You can deploy several hypervisors on hardware that you have available to make a hypervisor cloud.

You can register your hypervisors with IBM WebSphere CloudBurst to allow it to deploy and manage virtual systems running WebSphere Application Server Hypervisor Edition in your cloud.

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