

SOA ARCHITECT SUMMIT

Turn your ideas into **practical solutions.**

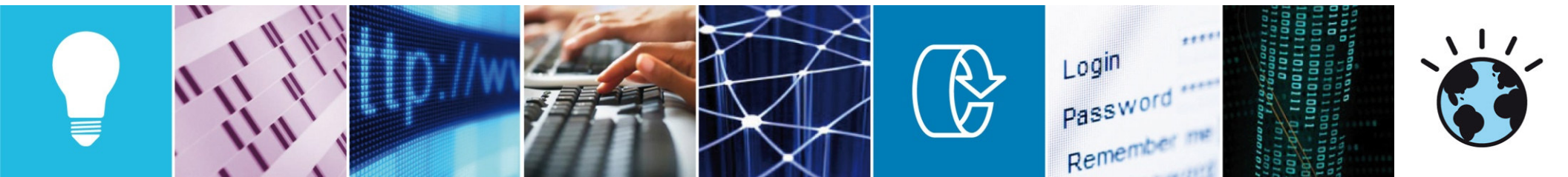


*Introducing **IBM WebSphere CloudBurst Appliance** and **IBM WebSphere Application Server Hypervisor Edition***



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Consulting IT Specialist
IBM Software Group

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A *Dynamic Infrastructure*

Business Needs

“Meet business objectives consistently, nimbly, cost-effectively”



Adoption Patterns

Application Foundation

“Enable applications to adapt to changing market conditions”



Intelligent Management

“Address extreme demands of clients & business models”



Extreme Transaction Processing

WebSphere intelligent management solutions optimize application infrastructure

- Virtualize Applications & Computing Environments
- Lower Operational & Energy Costs
- Increase Agility
- Proactively Manage Application H
- **Key offerings:**
 - WebSphere Application Server
 - WebSphere Virtual Enterprise
 - WebSphere CloudBurst Appliance



What is WebSphere CloudBurst?

1. An appliance from IBM...

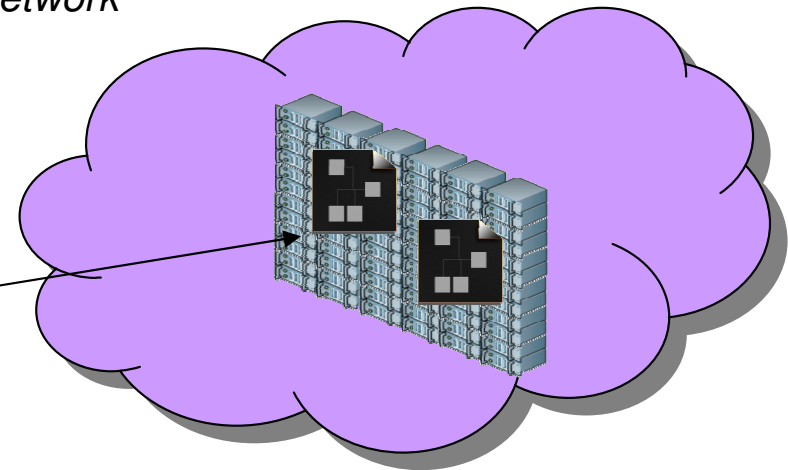
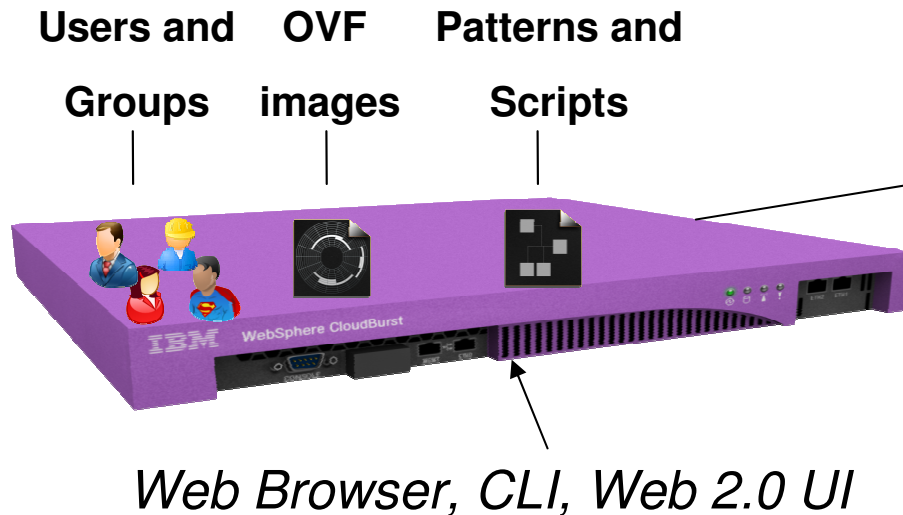
Includes

- hardware
- WebSphere CloudBurst function
 - WebSphere Application Server images
 - WebSphere Application Server patterns

2. ...that manages your on-premise cloud...

Bring your own Enterprise cloud

- hypervisors
- storage
- network

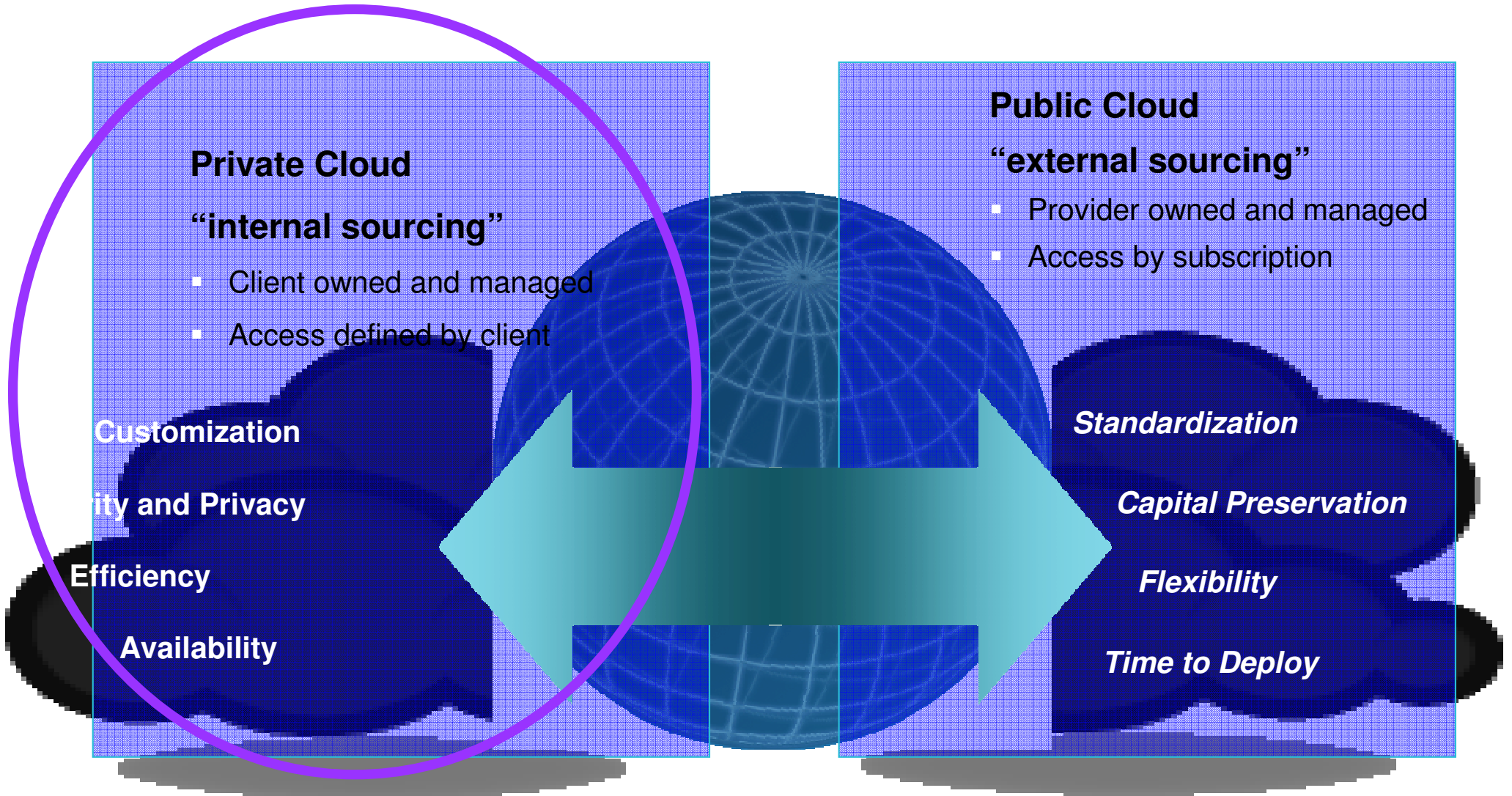


3. ... comprising WebSphere Virtual Systems

- Customize and extend images and patterns for your applications
- Dispense and run in the cloud
- Life-cycle management and optimization

Cloud Computing:

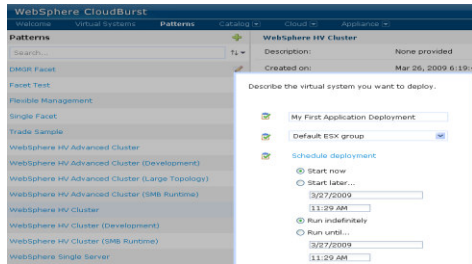
A style of computing where scalable and elastic IT-enabled capabilities are provided "as a service" to external customers using Internet technologies



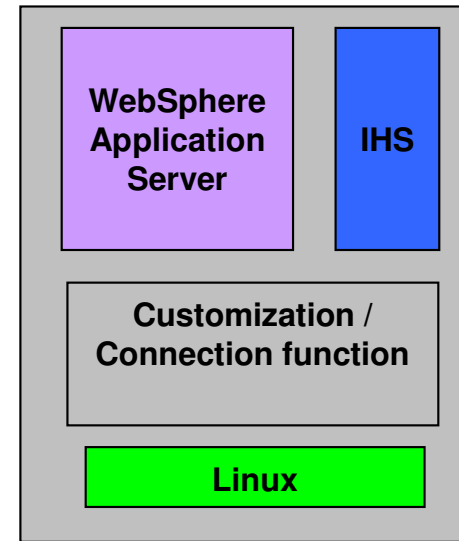
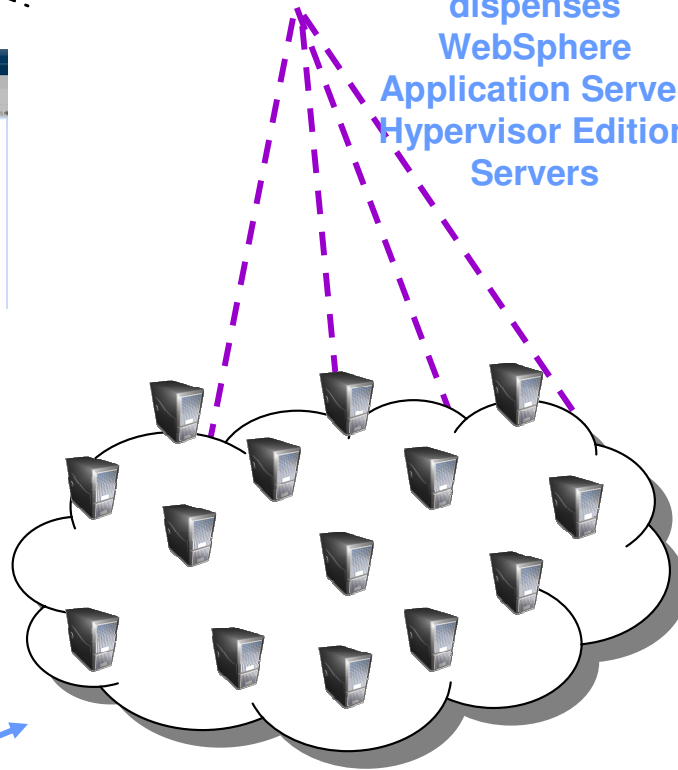
WebSphere CloudBurst Appliance & WAS Hypervisor Edition

1) WebSphere CloudBurst Appliance (hardware)

2) WAS HV (Virtual Image-software)



2) CloudBurst dispenses WebSphere Application Server Hypervisor Edition Servers



1) User requests WebSphere Application Server Hypervisor Edition Environment to be dispensed



3) User can access WebSphere Application Server Hypervisor Edition Servers (Virtual Image)

The WebSphere CloudBurst appliance dispenses these virtual images into a private cloud

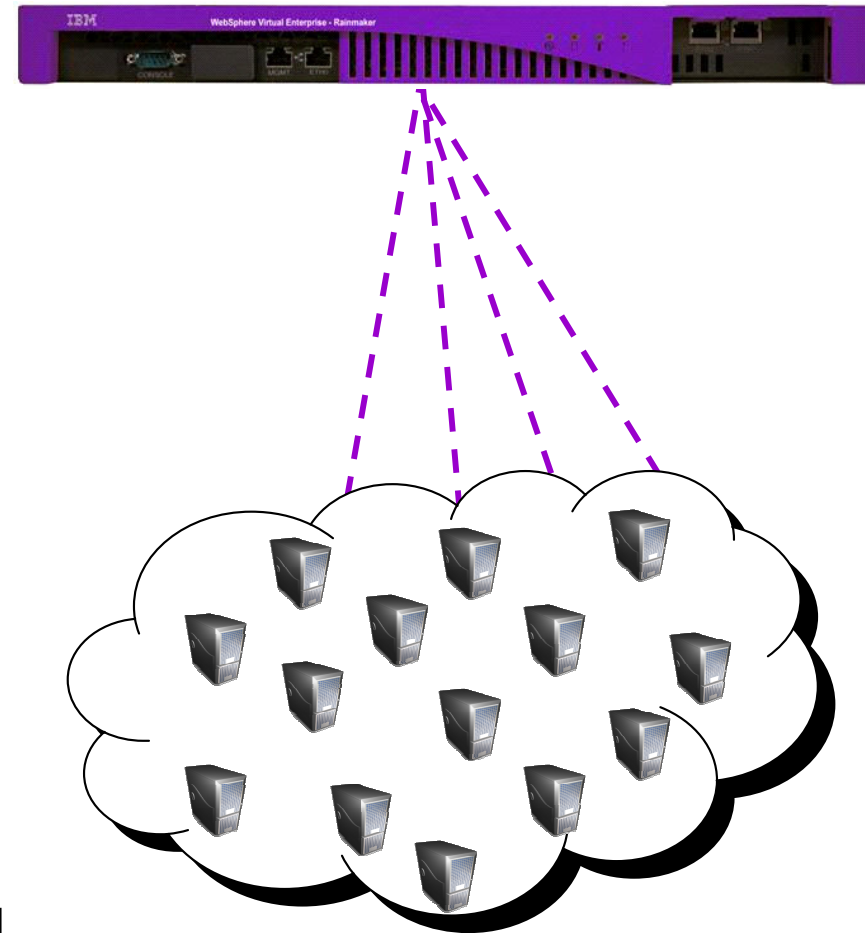
WebSphere CloudBurst Vision

■ Description

- WebSphere CloudBurst is a **new class of hardware appliance** that sits in a datacenter and **dispenses hardened WAS patterns** into a **pool/cloud** of **virtualized** hardware running a supported hypervisor.
- It is a self-service cloud management device that delivers **immediate ROI through increased hardware utilization and decreased labor cost** to IT operations.

■ Key Points

- **Secure Appliance**
- **Unmatched WAS virtualization management**
- **Support of multiple hypervisors**
- **Codifying 10 years of WAS best practices into reusable, well-tested patterns**
- **WAS technology delivered and supported in virtual image form**
- **Dramatically reduce deployment time by deploying pre-configured virtual images of WebSphere products**

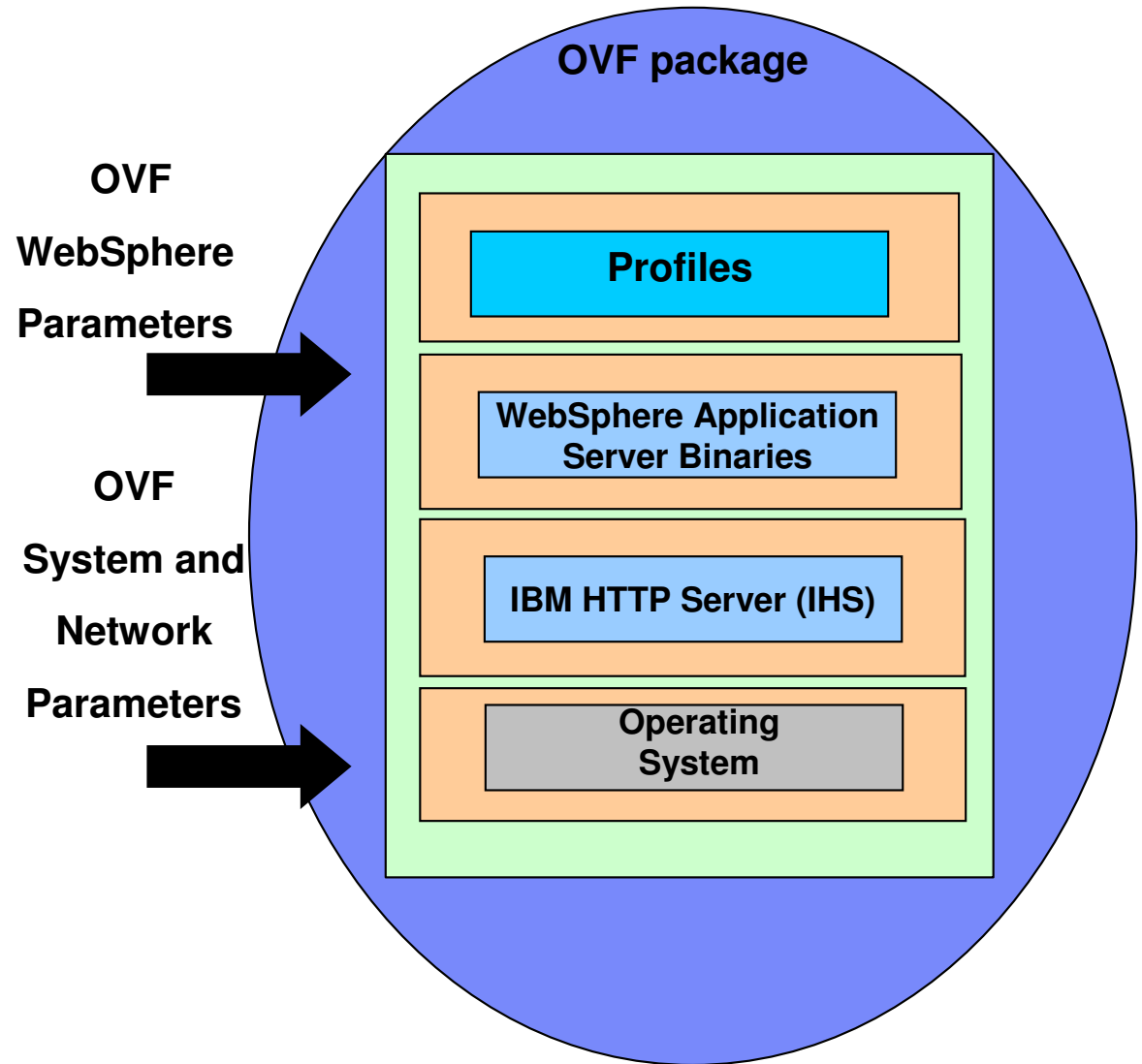


WebSphere CloudBurst Capabilities and Features

- **Delivers as an appliance form factor**
 - Secure platform including catalog of images, pre-defined patterns, and cloud management capabilities
 - Access via Web 2.0 User Interface, Command Line Interface, or REST APIs
- **Define one or more internal clouds from your existing hardware resources**
 - VMware ESX 3.0.2, ESX 3.5, or ESX3i hypervisor support, , pSeries, z/VM beta
 - User and group permissions with fine-grained access control for images, patterns, and virtual systems
 - Authentication with existing LDAP directory
- **Create a set of reusable patterns specific for your company**
 - WebSphere Application Server Hypervisor versions 6.1 and 7.0
 - Images include SLES 10.2 operating system, or create your own image using RedHat.5.2
 - Multiple pre-defined pattern topologies (from standalone to highly available cluster patterns)
 - Tools to support image customization
 - Tools to create and modify patterns and add your own applications and scripts
 - Supports maintenance of images and patterns
- **Provide a self-service platform to deploy and use the patterns**
 - Deploy, start, stop, store, snap-shot, restore, delete, and apply maintenance
- **Manage your shared resource pool**
 - Intelligent placement to optimize resource utilization
 - Cloud resource utilization monitoring and reporting
 - Data on users and group usage of virtual systems and cloud resources for charge back
 - Integration with IBM License Metric Tool for sub-capacity license tracking
- **Integrate with existing solutions**
 - Use TPM workflows to initiate WebSphere CloudBurst operations via the APIs
 - Integrate RAFW to install and configure applications as part of pattern deployment

IBM® WebSphere Application Server Hypervisor Edition

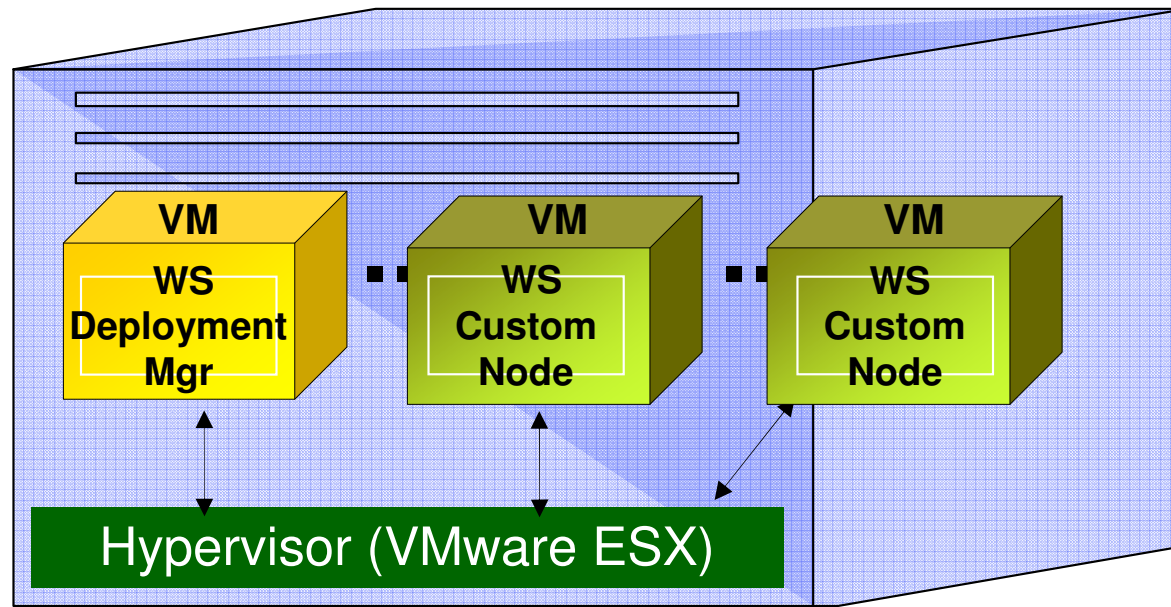
- Preinstalled, configured, and tuned
- Open Virtualization Format standard packaging
- Attended and unattended activation
- WebSphere Application Server 6.1 and 7.0
- Available as a stand-alone image, or with WebSphere CloudBurst



Benefits of Server Virtualization

Allows you to run more than one logical machine on one physical machine; benefits being ...

1. **Increased resource utilization**
2. **Increased agility:** (start/stop and copy/modify of different configs quicker)
3. **Isolation**
4. **Portability**

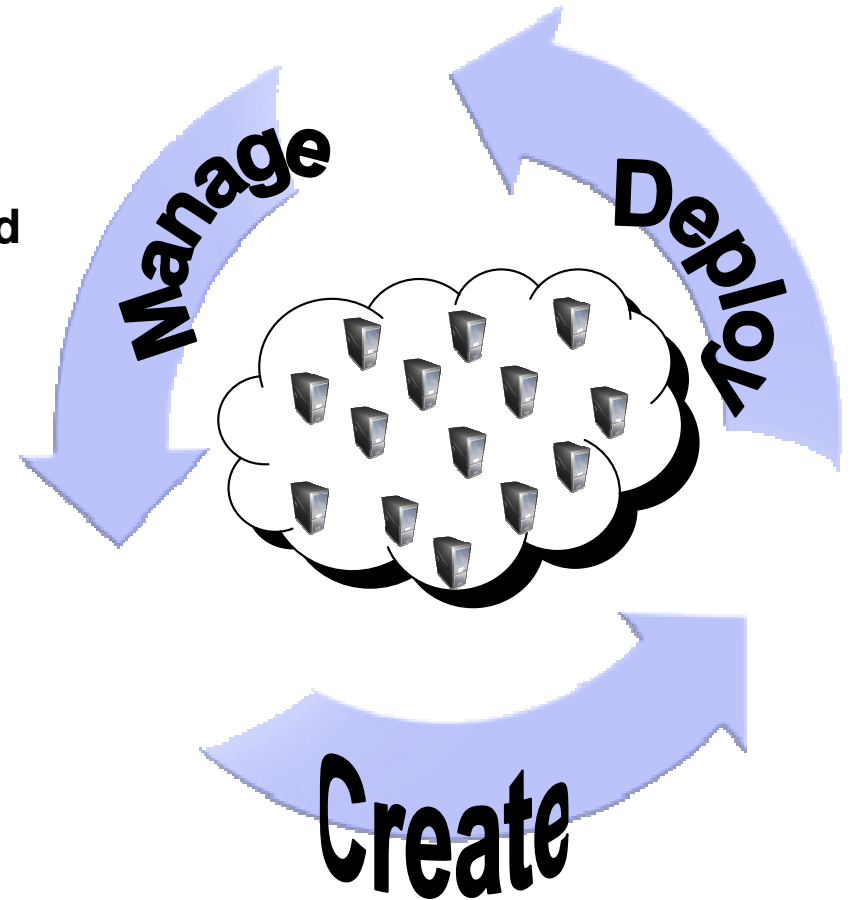


Life-Cycle in the Cloud

- **Create custom WebSphere environments**
 - Create custom virtual images
 - Create custom WebSphere patterns

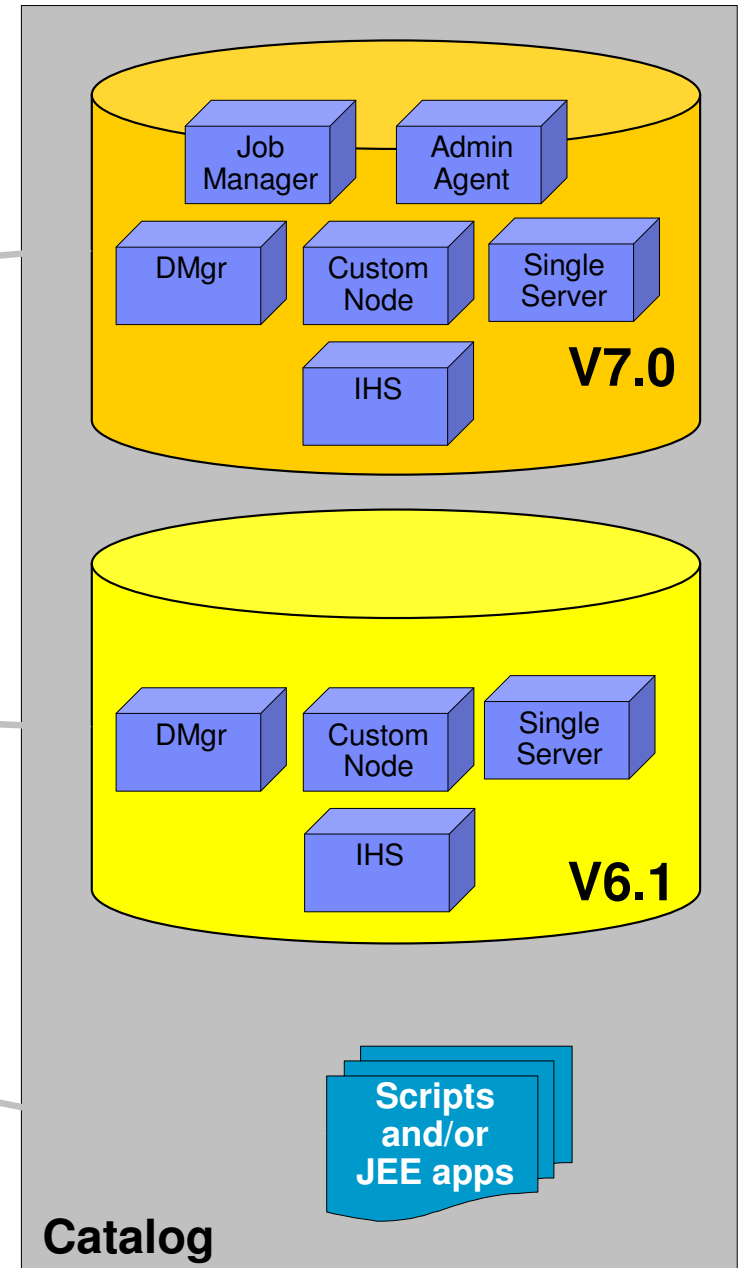
- **Deploy WebSphere patterns to a private cloud**
 - Provide custom deployment information

- **Manage WebSphere virtual systems**
 - Monitor resource usage
 - Start, stop, and remove virtual systems
 - Create snapshots of virtual systems
 - Apply fixes and service level upgrades



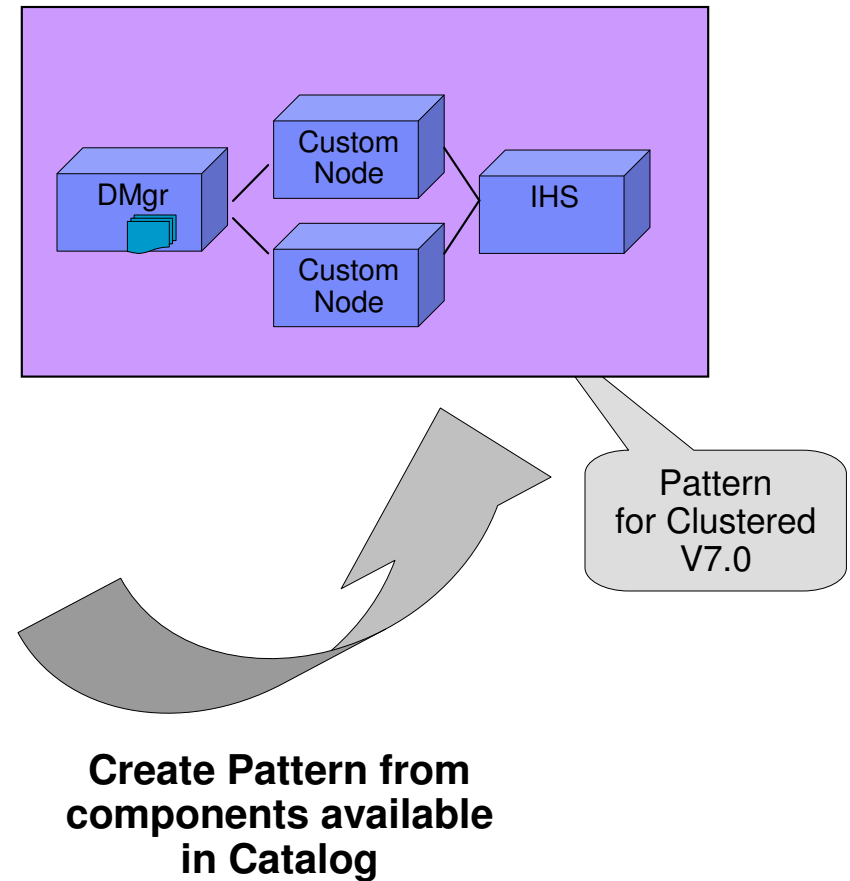
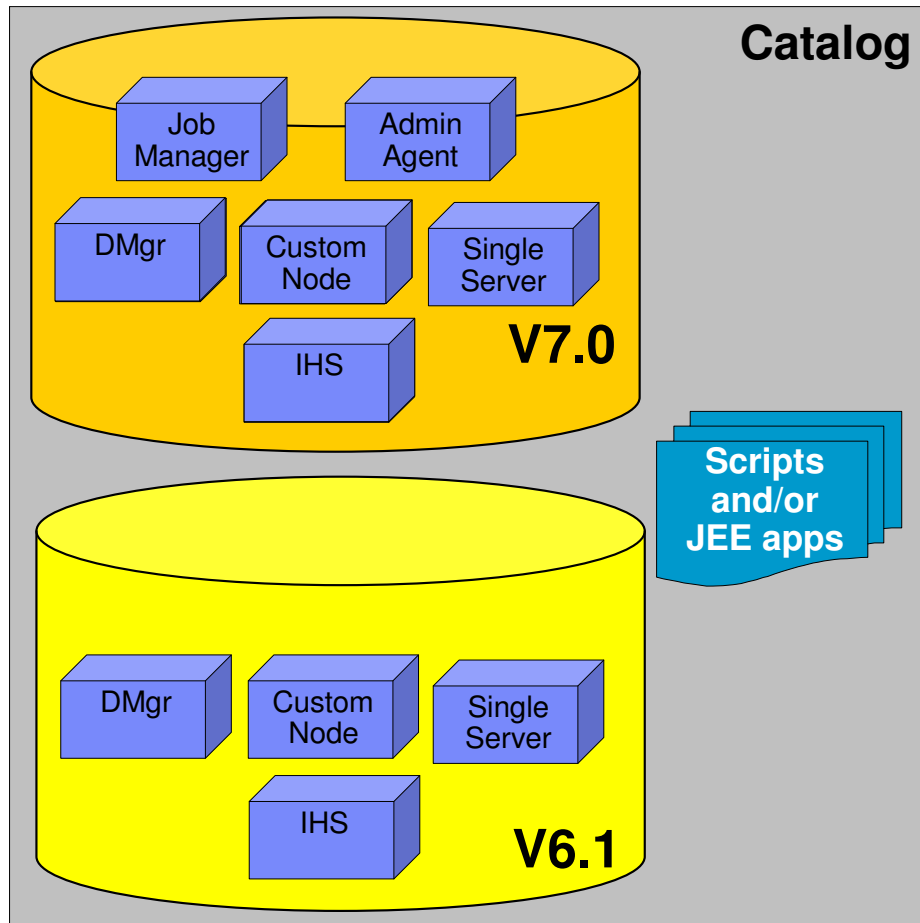
WebSphere CloudBurst Catalog

- IBM provided Virtual Images of WebSphere Application Server Hypervisor Edition
 - V7.0.0.3
 - V6.1.0.23
- User supplied Script packages
 - wsadmin or other scripts
 - JEE applications



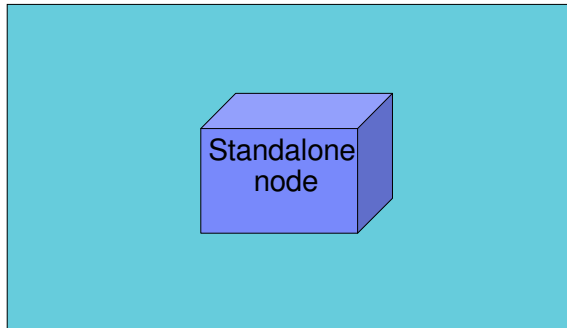
Patterns

- WebSphere patterns represent an entire middleware environment
- Contain both virtual image parts and script packages from the catalog

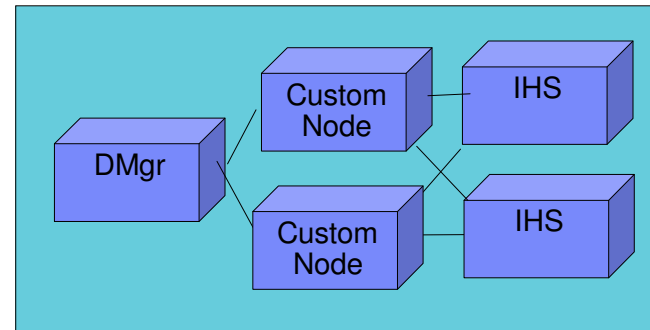


Preloaded Patterns

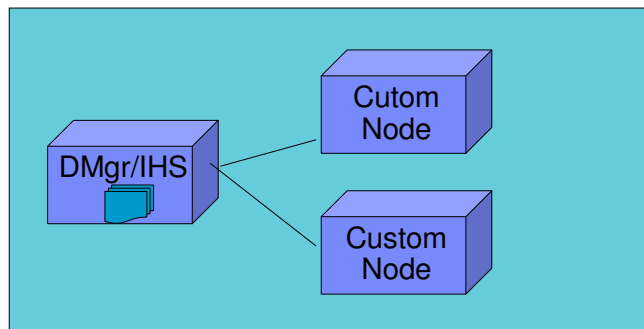
Single Server



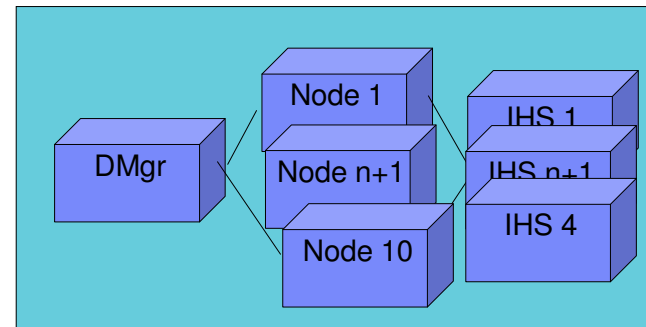
WebSphere cluster



WebSphere cluster (dev)

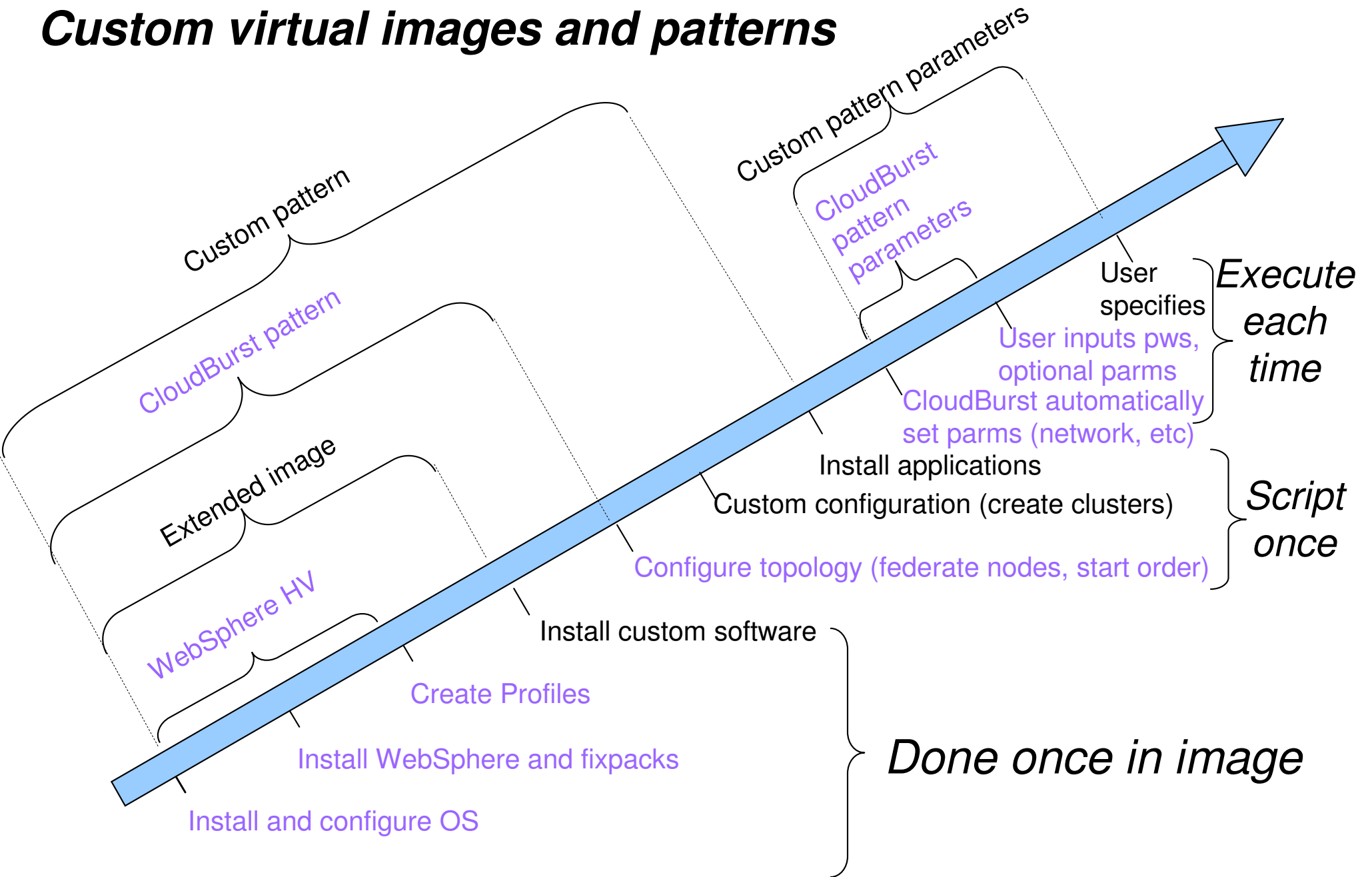


WebSphere cluster (large)



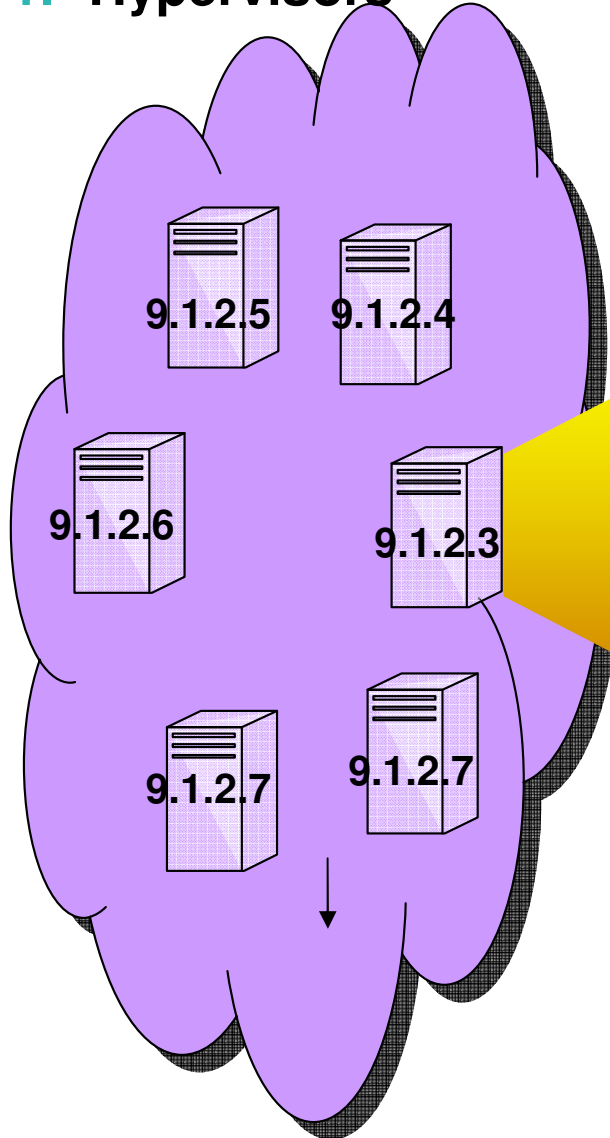
Advanced Options for messaging, session persistence, and global security available

Custom virtual images and patterns

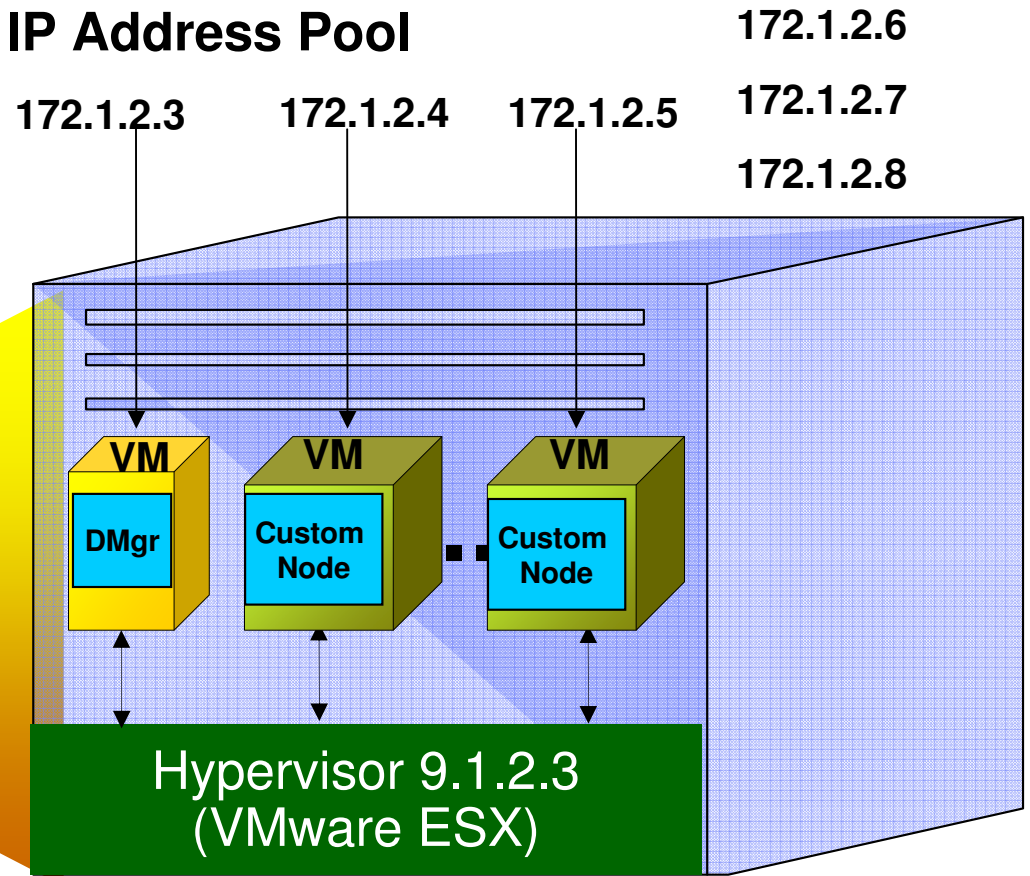


Bring your own private cloud

1. Hypervisors



3. IP Address Pool



2. Storage



Configuring WebSphere pattern deployments

- Configuration details for each WebSphere profile type
- Only configure what is unique for each deployment (i.e. cell names, node names, passwords, etc.)
- Some of this can be locked into the pattern

The image shows two overlapping dialog boxes from the WebSphere configuration tool. The top dialog, titled "Fill in the required values for this part of the pattern.", contains the following fields:

Number of Virtual CPUs:	1
Memory Size (MB):	1024
Cell Name:	RainmakerCell
Node Name:	RainmakerNode
Autostart Servers:	true
Root Password:	
Virtuser Password:	
Enable VNC:	true

Below these fields is a checkbox labeled "Copy these settings for all parts of this type".

The bottom dialog, titled "Describe the...", shows a list of virtual parts: "DMGR", "Custom Node", and "Custom Node". Each item has a question mark icon to its right. A red box highlights the "Custom Node" entries. A yellow callout bubble labeled "2. Click part to configure" points to the question mark next to the second "Custom Node".

At the bottom left of the bottom dialog, there is a toolbar with a green play button icon. A yellow callout bubble labeled "1. Deploy" points to this icon.

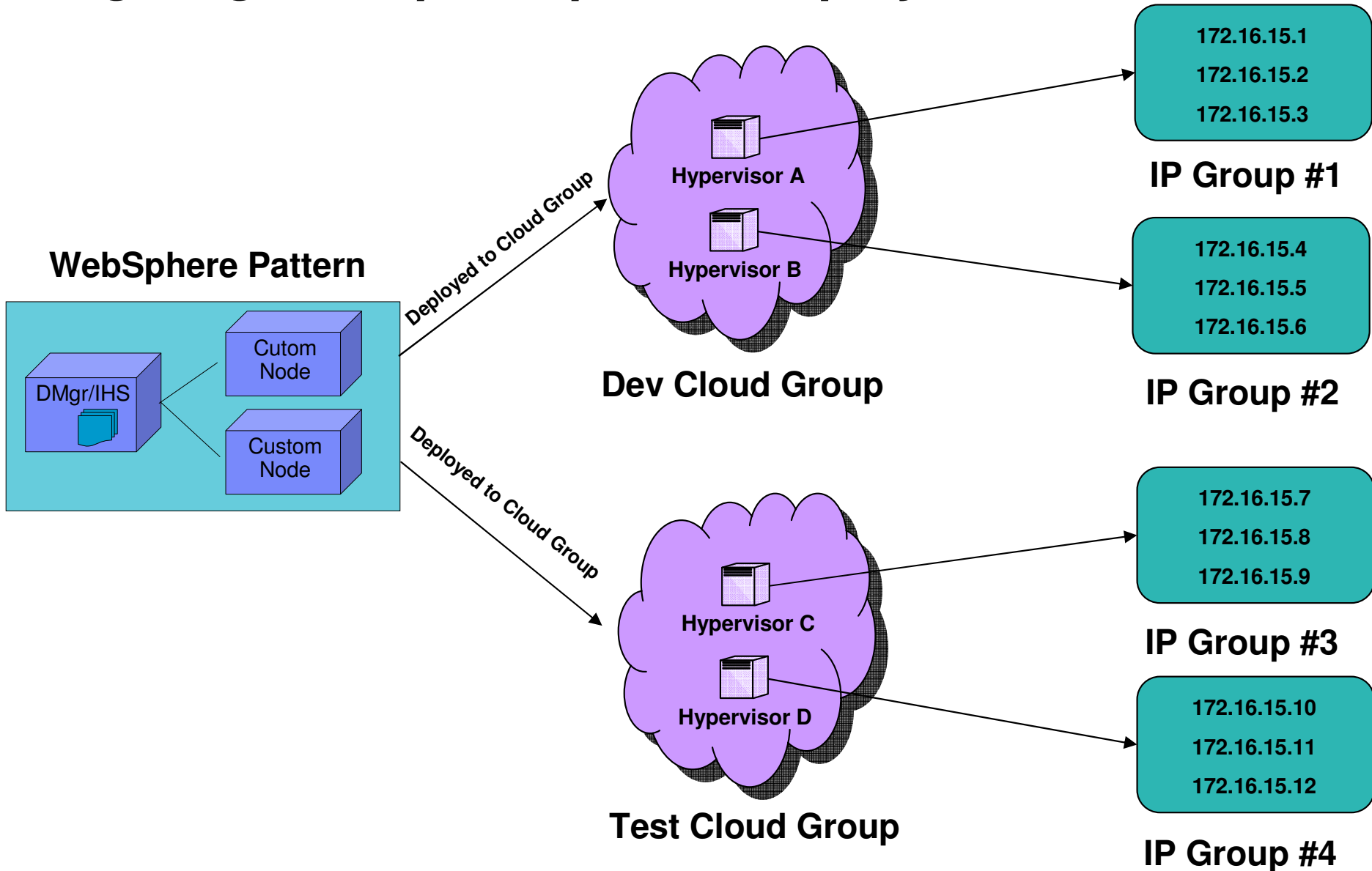
At the bottom right of the top dialog, there is a yellow callout bubble labeled "3. Configurable options" pointing to the "OK" and "Cancel" buttons.

Scheduling WebSphere pattern deployments

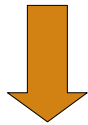
- Deploy immediately
- Deploy at some later date and time
- Run forever or until some later date and time

The image shows a screenshot of the WebSphere deployment wizard interface. The main window is titled "Describe the virtual system you want to deploy." and contains a "Virtual system name" text box, a "Schedule deployment" link, and two radio button options: "Start now" (selected) and "Start later...". Below "Start later..." are two text boxes for a date ("3/13/2009") and a time ("2:59 PM"). There are also "Run indefinitely" and "Run until..." options with corresponding date and time boxes. At the bottom of the window are "OK" and "Cancel" buttons. A yellow callout bubble points to the "Schedule deployment" link with the text "2. Click to schedule deployment". Another yellow callout bubble points to the "OK" button with the text "3. Start deployment now or later". A third yellow callout bubble points to the "OK" button of a smaller, partially visible window below with the text "1. Deploy".

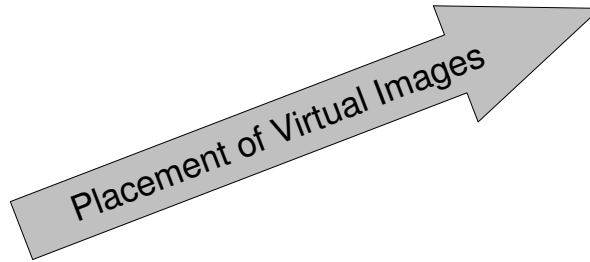
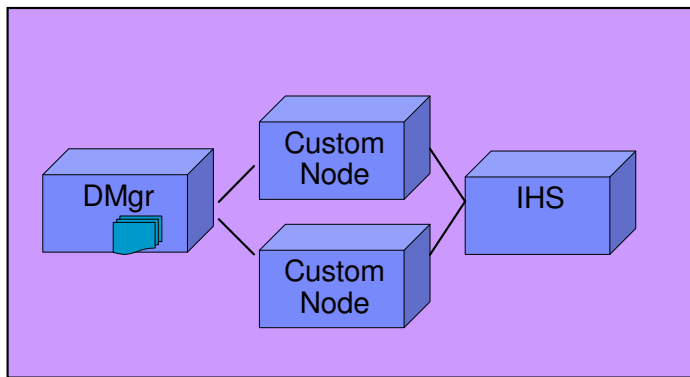
Targeting WebSphere pattern deployments



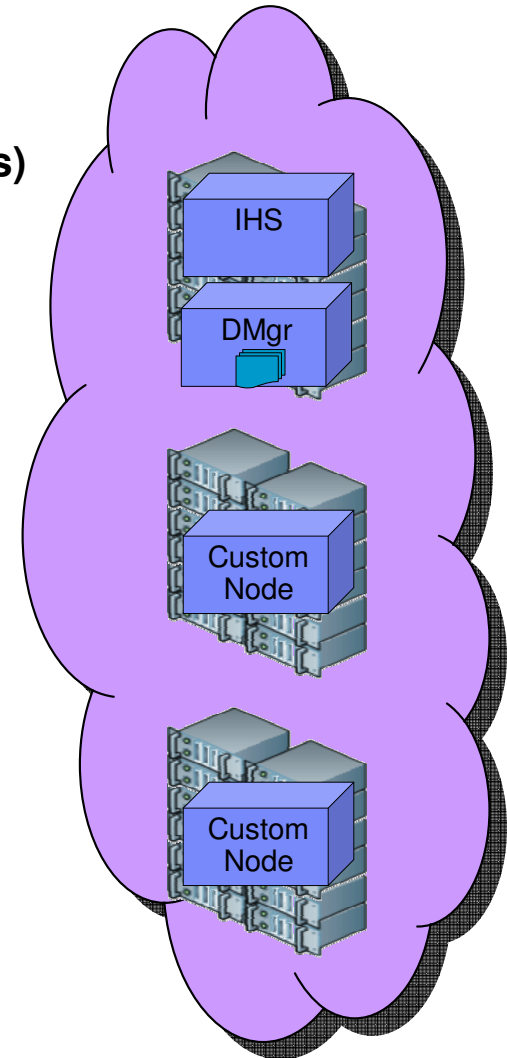
Deploying WebSphere patterns

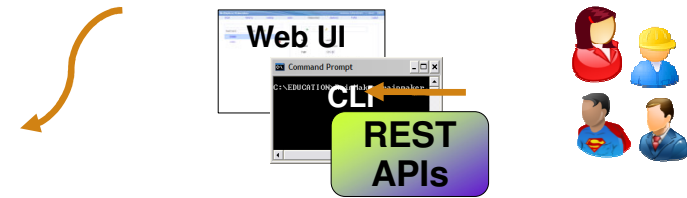


1. Choose hypervisor(s)
2. Create virtual machines
3. Inject IP addresses
4. Start VMs and WAS
5. Run scripts



Pattern

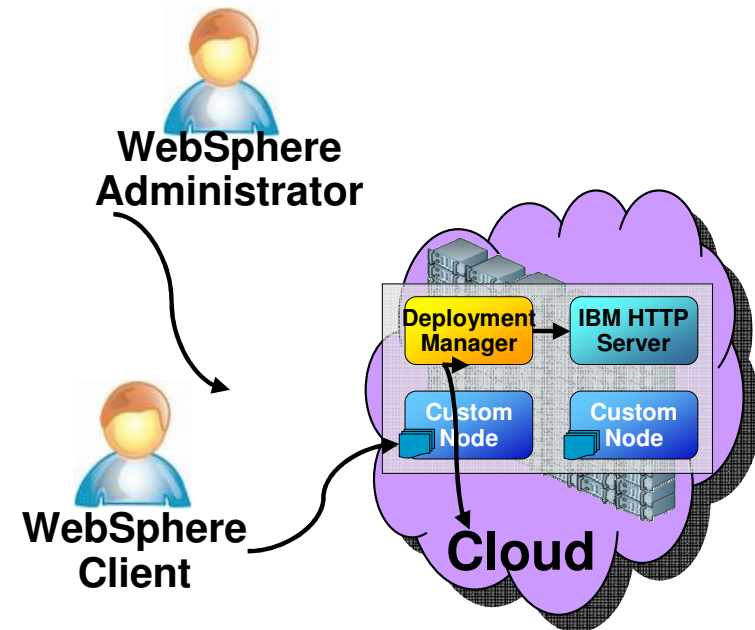




WebSphere management



- Access deployed WebSphere environments as if it were a normal deployment
- Apply interim fixes to the deployed WebSphere environments
- Apply service level upgrades to the deployed WebSphere environments



Virtual system administration

- View virtual system and WebSphere Application Server metrics
- Access WebSphere Application Server administrative console
- Access the operating system using SSH or VNC

Virtual machines

Name	CPU	Memory	SSH
My Cloned Lab Virtual System aimcp149 dmgr	<div style="width: 100%; height: 10px; border: 1px solid green; display: inline-block;"></div> 1%	<div style="width: 81%; height: 10px; background-color: yellow; display: inline-block;"></div> 81%	Login

General information

Created on: Apr 16, 2009 9:47:55 PM

From virtual image: [WebSphere Application Server HyperVisor Edition 7.0.0.3](#)

Current status: ▶ Virtual machine has been started

Updated on: Apr 16, 2009 11:44:54 PM

Located at: 9.3.75.149 (aimcp149.austin.ibm.com)

Virtual CPU count: 1

Virtual machine memory (MB): 1024

On hypervisor: [HV-aimcp061](#)

WebSphere configuration

Cell name: MyLabCell0

Node name: MyLabManager10

Profile name: DefaultDmgr01

[Show all environment variables](#)

Script Packages

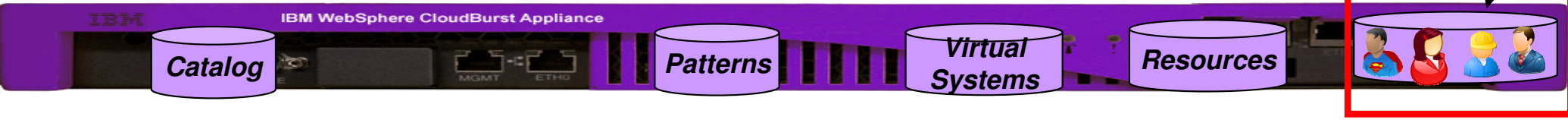
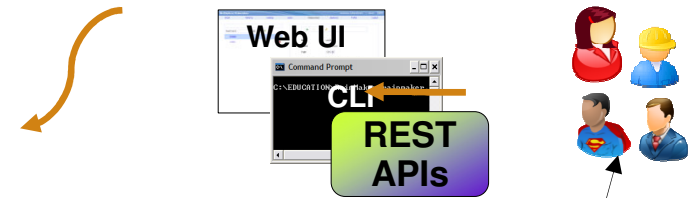
My Lab Application: [remote_std_out.log](#)
[remote_std_err.log](#)
[cloudburst_collect1239943475084.zip](#)

WebSphere Hypervisor Edition Startup Logs: [remote_std_out.log](#)
[remote_std_err.log](#)
[cloudburst_collect1239943507654.zip](#)

Consoles

SSH VNC WebSphere

CloudBurst: Users and Groups



- Users and Groups can be given granular permission to:
 - Virtual images
 - Script packages
 - Emergency fixes
 - Patterns
 - Virtual systems
- Administrator has all permissions – no restrictions
- All users are given default permission to “Deploy patterns in the cloud”

Users and Groups with fine grained authorization permissions for managing appliance

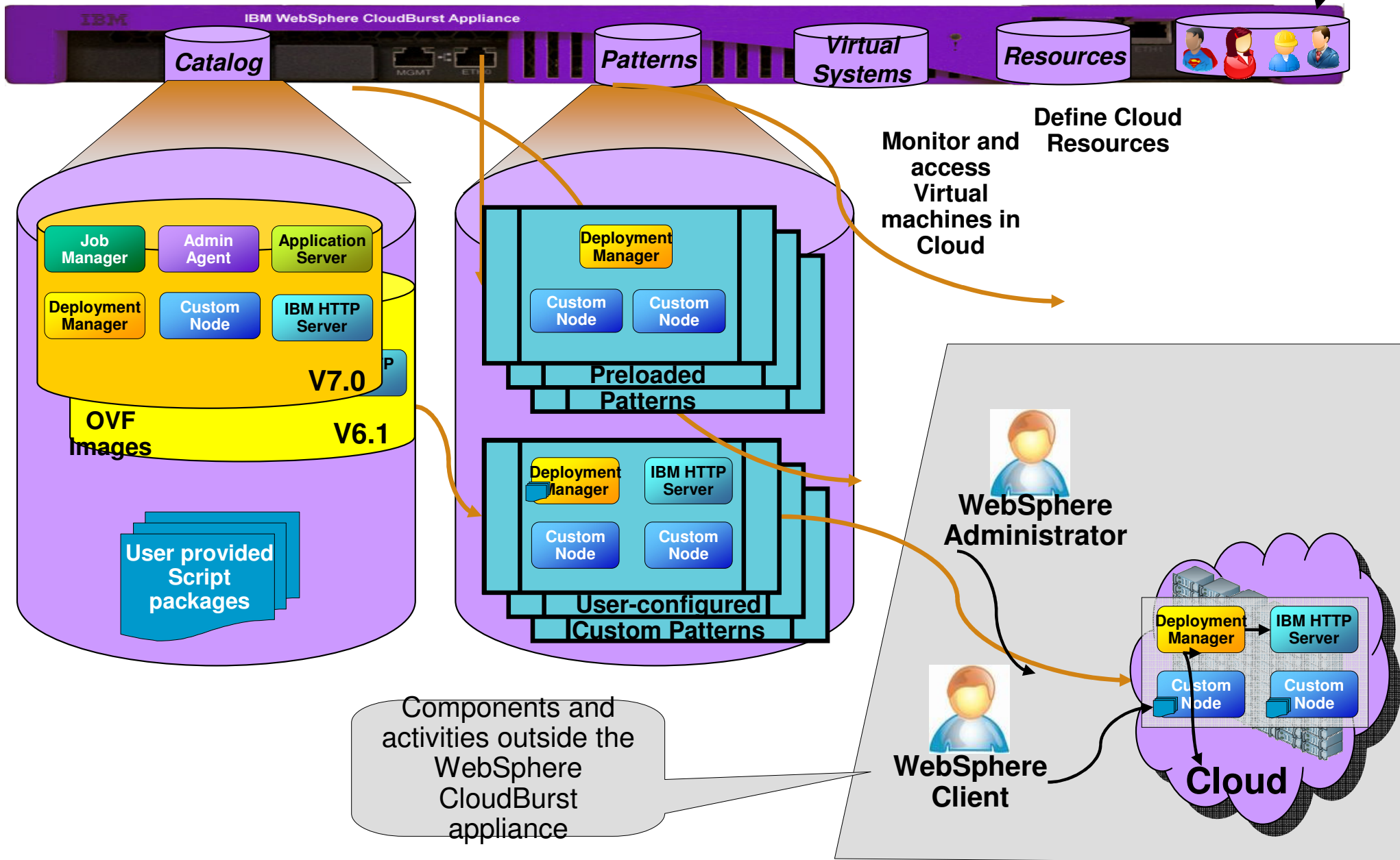
- Deploy patterns in the cloud
- Create new patterns
- Create new catalog content

Admin permissions

User permissions

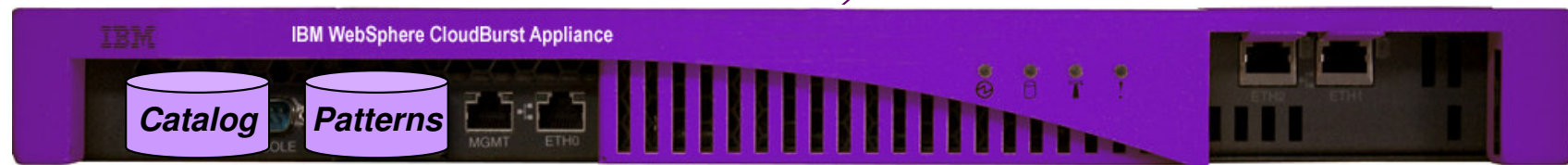
- Cloud administration
- Appliance administration

Bringing it all together



The Appliance Form Factor

- *Plug and play*
- *Software on the appliance*

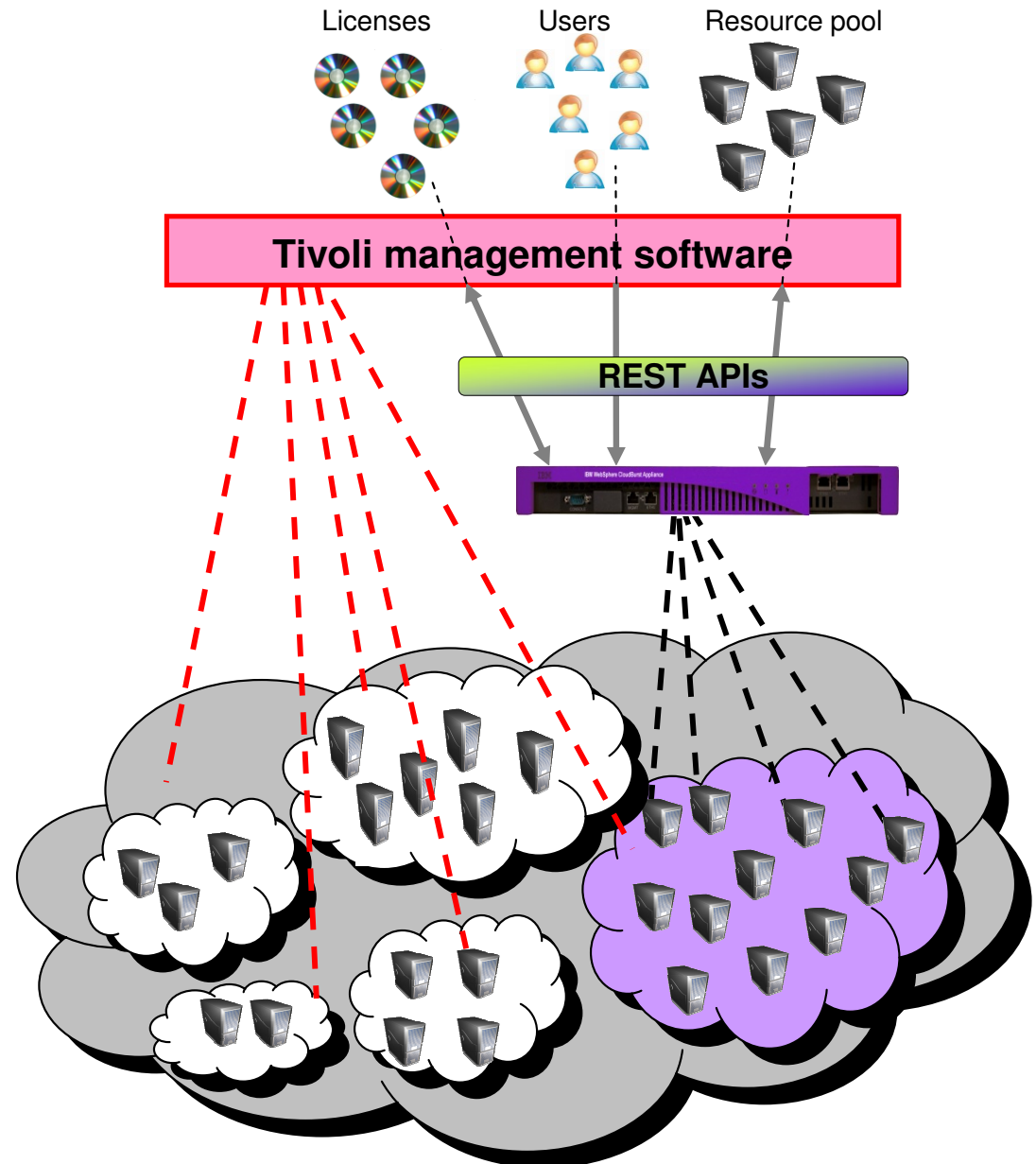


- *Dedicated storage*
- *Dedicated processing power*

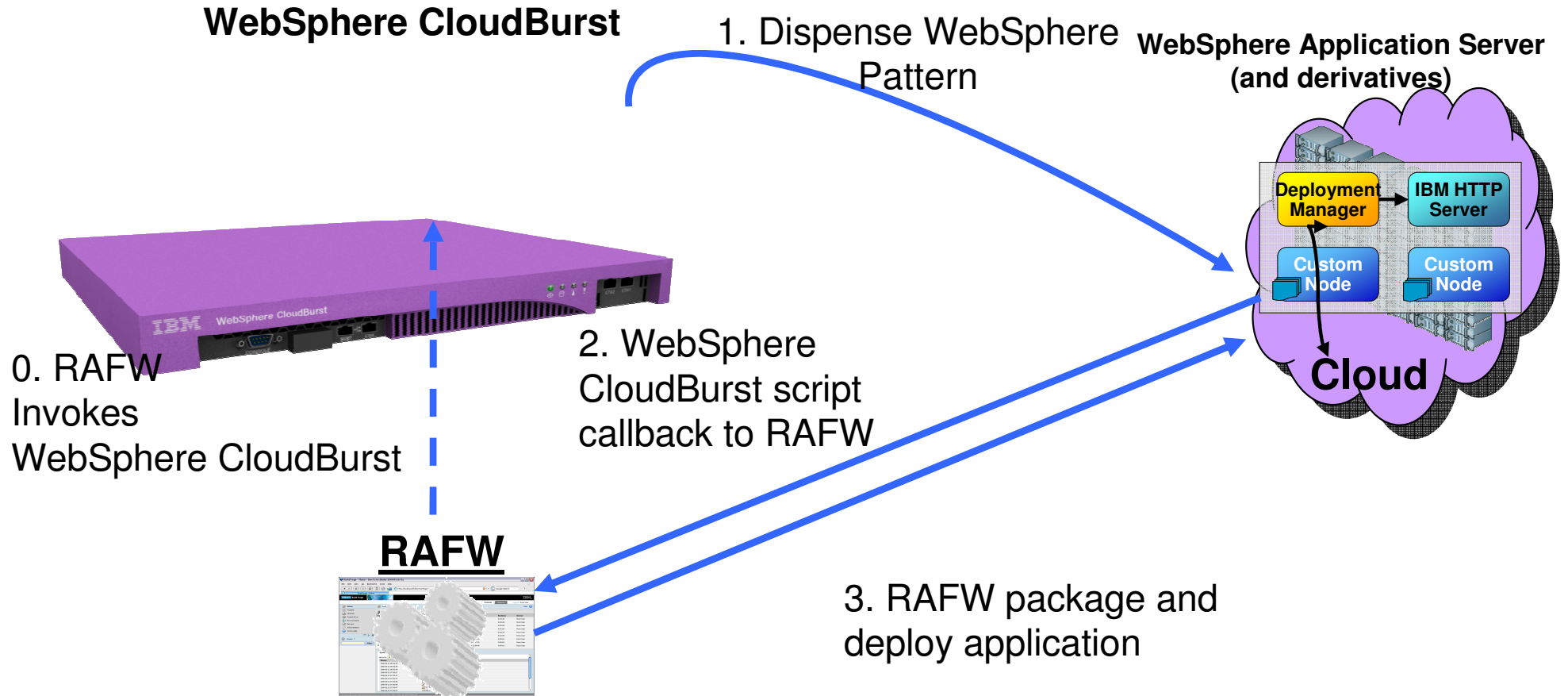
- *Highly secure, tamper-resistant vault*
- *Secures sensitive information:*
 - *Passwords*
 - *Virtual Images*
 - *Applications*
 - *Scripts*
 - *SSL Certificates*

Datacenter integration

- Automation / resource provisioning
- Monitoring
- User management
- License management



Rational Application Framework for WebSphere and WebSphere CloudBurst



Note: This scenario can be extended to include additional Rational components including Rational Asset Manager, Rational AppScan, and Rational Software Architect

WebSphere Virtual Enterprise vs. CloudBurst

WebSphere Virtual Enterprise

is part of your RUNTIME

- Virtualizes applications in a WAS topology
- Assumes that WAS instances are installed and configured ahead of time
- Supports, but does NOT require a hypervisor environment
- Moves application workload among clusters within a WAS topology
- Efficient utilization and management of WAS applications in production topologies

CloudBurst

is for DEPLOYMENT, not runtime

- Virtualizes entire WAS images
- Creates, dispenses, configures and manages WAS instances (virtual images)
- Requires a hypervisor based environment (e.g. VMWare) exists on the target hardware
- Moves WAS images among hypervisors
- Efficient set up and tear down of single WAS instances or entire topologies

WebSphere CloudBurst Requirements

- From “go” to “running app,” how many people have to move to get an application environment running?
- Does your test team spend too much time preparing/destroying environments?
- Does your environment experience virtual machine sprawl when resources are not relinquished?
- Do bugs come out late in your dev cycle due to inconsistencies between dev/test, QA, and production?
- Is your infrastructure team’s productivity hindered by process?

Testing Challenges

- 30% of all defects are caused by wrongly configured test environments
- 30% to 50% of all Servers are dedicated to testing
- Most Test Servers run at less than 10% utilization

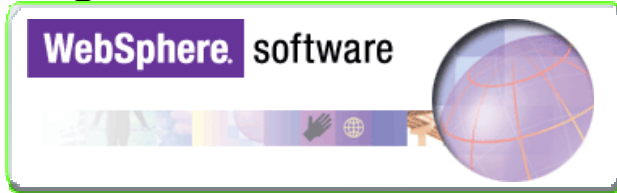
Today's Challenges

- Poor Configuration of Server Resources
- Poor server allocation and utilization



*According to Gartner Group Study, 2008

IBM Lab Increases Productivity and Agility Using Smart SOA Infrastructure: CloudBurst



Industry Pains

- Poorly managed Virtualization has historically introduced OS security compliance issues into the Lab
- Low Rates of Hardware Utilization
- Agile Dev't requires high quality, which requires broader testing

Smarter Business Outcomes

- Zero OS compliancy violations in 4 months of deployment (and overwhelming support from developers who don't want to manage security compliance)
- Cloudburst/VMware HW utilization 75% and 90%
- Simple dynamic reallocation of physical resources
- Leveraged existing hardware and Lab Structure
- Reduced standardized topology deployment from an 1 ½ to 2 ½ hours down to 8 to 18 minutes

Why Smart SOA Infrastructure?

"The ability to provide compliant patterns and images in our public lab while leveraging the speed and rapid deployment of virtualization is significant for our efforts to consolidate hardware, and reduce costs while at the same time providing onDemand access to development and test environments necessary for Agile development". **Frank Varone, Test and Quality Manager for WebSphere Application Server**

WebSphere CloudBurst – Value Delivered

- Lower cost

- Higher hardware utilization
- Less power utilization
- More efficient license management

- Faster time to value

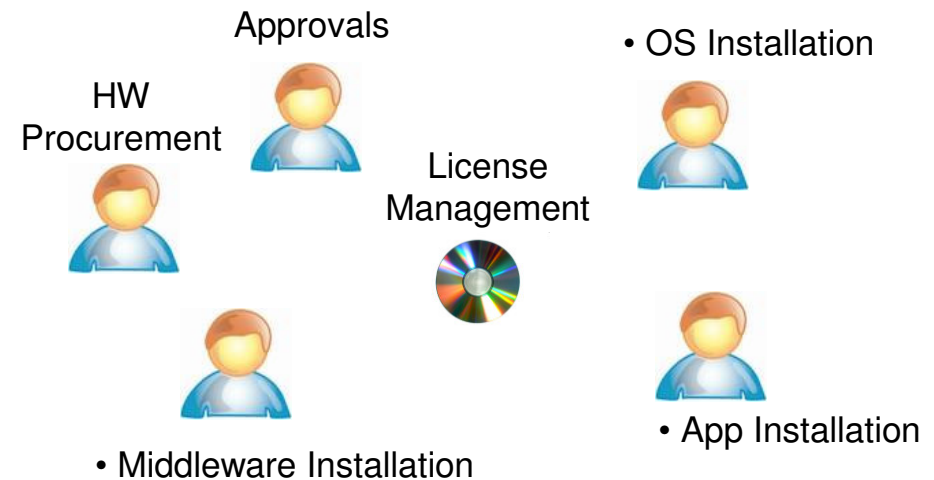
- Repetitive, time-consuming, manual tasks factored out and automated
- Empowers individual application managers/ developers/testers to perform business without lengthy approval process

- Increased repeatability

- WebSphere CloudBurst includes environment “patterns” out of the box, which codify 10 years of WebSphere management best practices
- Additionally, environments can be customized and captured once, then able to be dispensed at the push of a button

- Increased Agility

- Rapid setup/teardown of WAS environments means less time spent managing WAS and more time



OR



WebSphere CloudBurst Value Assessment

How is Value Quantified?

➤ TCO data is captured in a multi-year cost model

- Compares current application server environment vs. WebSphere CloudBurst Appliance environment
- Includes IT cost components related to implementation and operations

➤ Five Step Process

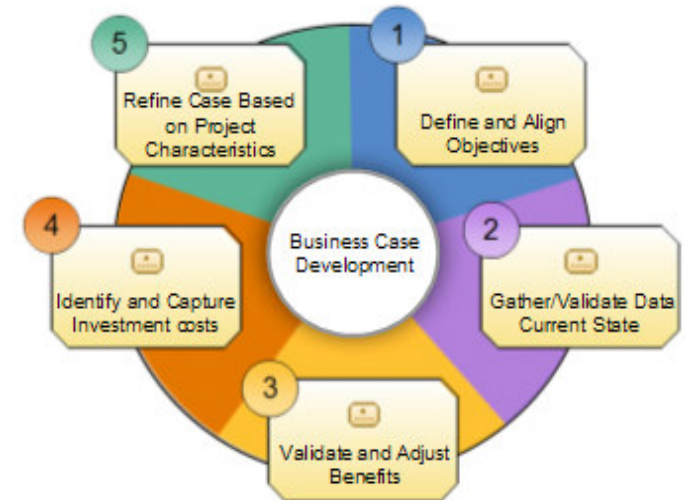
- Customer objectives & scope verified
- Server environment data collection
- Data validation & refinement of benefits
- Identify & capture investment costs
- TCO model assembly and Business Case development

➤ Deliverables

- WebSphere Cloudburst TCO Model
- Business Case Presentation
- Solution Architecture – “to-be” WebSphere Cloudburst environment

Comes in (2) flavors

- 1) Express format often referred to as a “Quick TCO”
- 2) Onsite format which is a more detailed assessment



For more information

- Overview video at:
 - <https://www14.software.ibm.com/iwm/web/cc/earlyprograms/websphere/cloudburst/cloudburstpog.html>
- WebSphere Cloudburst demonstration on youtube:
 - <http://www.youtube.com/websphereclouds>
- WebSphere Cloudburst InfoCenter:
 - <http://publib.boulder.ibm.com/infocenter/wscloudb/v1r0/index.jsp>
- WebSphere Cloudburst Appliance homepage:
 - <http://www-01.ibm.com/software/webservers/cloudburst/>
- WebSphere Hypervisor Edition homepage:
 - <http://www-01.ibm.com/software/webservers/appserv/hypervisor/>
- Developerworks Article (Willenborg, Amrhein)
 - http://www.ibm.com/developerworks/websphere/techjournal/0906_amrhein/0906_amrhein.html

SOA ARCHITECT SUMMIT

Turn your ideas into **practical solutions.**



Greg Turner
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WebSphere. software

