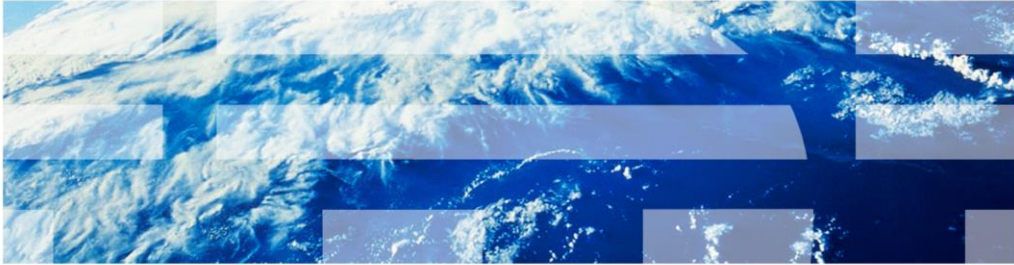


IBM Workload Deployer V3.0

The next evolution of WebSphere CloudBurst Appliance



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IBM Workload Deployer V3.0 is the next evolution of the WebSphere CloudBurst Appliance product line. IBM Workload Deployer is a hardware appliance that provides access to IBM middleware virtual images and patterns to easily, quickly and repeatedly create application environments that can be securely deployed and managed in a private cloud.

Agenda

- IBM Workload Deployer value
- Deployment models

This presentation will provide a high-level overview of IBM Workload Deployer V3.0, starting by exploring the product's value proposition as a rapid deployment platform for virtual systems and applications in your enterprise's private cloud. IBM Workload Deployer supports multiple deployment models to meet the needs of a wide variety of requirements for your middleware and application-serving environments. The second section of the presentation introduces these deployment models and explains how to identify which model is right for you.

Value proposition

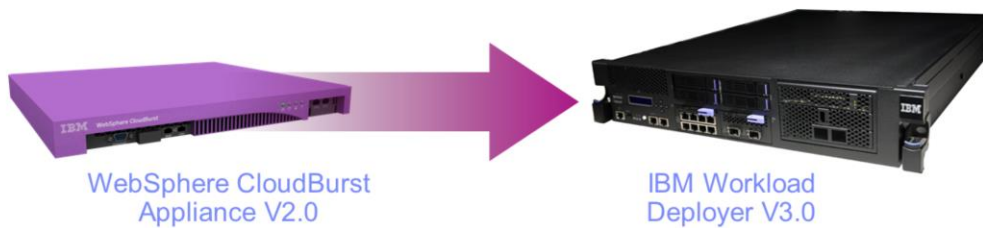
IBM WORKLOAD DEPLOYER

IBM Workload Deployer overview

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The first section of this presentation highlights the value proposition of IBM Workload Deployer as a rapid provisioning platform to quickly and easily build out middleware environments in your private enterprise cloud.

With IBM Workload Deployer V3.0, you get:



- New product branding to reflect broader-than-WebSphere scope
- Support for existing capabilities of WebSphere CloudBurst Appliance V2.0 and fix packs
 - Includes support for existing Hypervisor Edition images
- New capabilities for the V3.0 release, including support for workload-based virtual applications and more
- New physical appliance with more storage, memory, processing power, network capacity
 - Not compatible with WebSphere CloudBurst V2.0 hardware

IBM Workload Deployer V3.0 is the next evolution of the WebSphere CloudBurst Appliance. The re-branding of the product, to remove WebSphere from the name and focus on IBM, reflects the broader scope of IBM Workload Deployer as a deployment platform for multiple middleware environments that integrates across IBM's software brands. The IBM Workload Deployer product requires a new physical hardware appliance and is not compatible with earlier WebSphere CloudBurst Appliance hardware. The new hardware platform for IBM Workload Deployer offers expanded processing power, memory, network capacity, and storage. Additional storage is critical to enable you to store more images and patterns on your appliance that can be used to deploy tightly integrated, cross-product workloads. All of the existing capabilities of WebSphere CloudBurst Appliance V2.0 and its fix packs have been rolled into IBM Workload Deployer, including the ability to easily create custom middleware topology patterns using Hypervisor Edition images, and deploy those patterns to your private cloud. Your existing patterns, images, and custom content from WebSphere CloudBurst will continue to work with IBM Workload Deployer, including all of the product-specific Hypervisor Edition images provided by IBM. IBM Workload Deployer will come with migration tools that allow you to transition your existing WebSphere CloudBurst environments to the IBM Workload Deployer platform. In addition to WebSphere CloudBurst V2.0 functionality, IBM Workload Deployer V3.0 has been enhanced with many new product capabilities, including support for a new workload-based deployment model for virtual applications.

Increasing complexity, increasing cost

- **70¢ per \$1**
 - On average, 70% of the IT budget is spent on maintaining current IT infrastructures, versus adding new capabilities
- **2 – 4 months**
 - The average lead time to get a new application environment up and running
- **85% idle**
 - In distributed computing environments, up to 85% of computing capacity sits idle
 - Setting up environments is expensive, so old ones are kept around “just in case”
 - Building new environments requires new hardware
- **30% of bugs**
 - Introduced by inconsistent configurations
 - Very difficult to detect
 - Often emerge when moving between dev/test, QA, production



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IBM Workload Deployer overview

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IT environments are increasingly complex, and overall IT spending is on the rise. On average, 70% of IT budgets are spent on maintaining current IT infrastructures versus adding new capabilities. That is a significant amount of money spent on standing still, rather than moving forward. Using a smart deployment platform such as IBM Workload Deployer can help reduce the costs of maintaining and managing IT infrastructure, allowing you to re-allocate the people currently assigned to administration to do more interesting and valuable things.

Setting up a new environment typically involves procuring and configuring hardware, installing the operating system, installing and configuring middleware, and then loading your applications on top. In many cases, this process can take between 2 and 4 months to complete. Given this complexity and long lead time, there is a strong incentive to keep old environments around just in case, rather than releasing resources back into the pool for use in new environments. This type of usage model quickly consumes hardware resources, even though many application-serving environments are not actively being used. In many distributed computing environments, up to 85% of computing capacity sits idle because of the significant cost associated with building out new environments.

Another difficult aspect of managing your complex IT infrastructure is trying to keep environments in sync. Around 30% of bugs are introduced by inconsistent configurations – the type of error that is easily caused when manually re-configuring the same type of application-serving environment to meet different needs, such as moving from a development or test environment across to QA or production. These types of errors, caused by inconsistent configuration across application environments, are typically very difficult to detect and solve.

IBM Workload Deployer addresses these concerns by offering an efficient, rapid provisioning platform that lets you deploy consistent, repeatable environments into your private cloud. These extreme efficiencies in administration can reduce system idle time to make better use of your existing hardware resources. By reducing administration costs, you are free to re-direct your existing IT resources to more valuable tasks.

Value of cloud computing

**ORGANIZATION**

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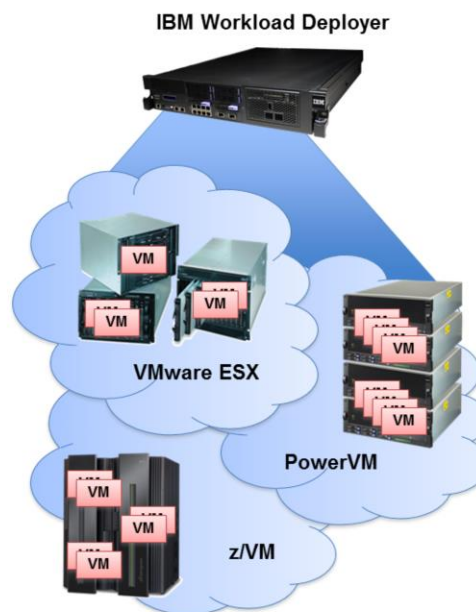
IBM Workload Deployer overview

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This cloud computing stack represents the key value drivers for adopting a cloud computing model. Using virtualization as a foundation, you are able to improve hardware utilization in your private cloud, making more efficient use of the hardware resources that you already have. IBM Workload Deployer enables standardization of your environments by allowing you to codify your system and application structures in patterns. By adopting these patterns, you can automate most of the deployment process for instantiating new environments because you have factored out repetitive, manual tasks. This drastically speeds up deployment times. Finally, using IBM Workload Deployer's rapid, repeatable deployment model enables you to better organize your private cloud resources – improving utilization and decreasing hardware costs.

VIRTUALIZE: Bring your own private cloud

- Rapidly provision virtual systems and applications into your private cloud
 - Hypervisors, network, storage
- IBM Workload Deployer supports deployments to:
 - VMware ESX (Linux)
 - PowerVM (AIX)
 - z/VM (Linux on System z)



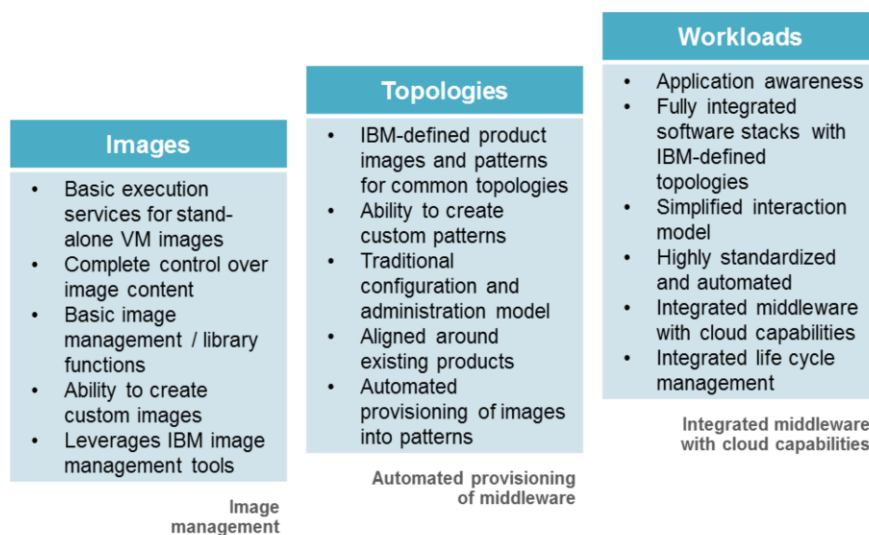
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IBM Workload Deployer overview

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IBM Workload Deployer supports deployments to your private cloud. The cloud is made up of the hardware, software, and network resources that house your deployed virtual systems. Cloud resources exist outside the scope of the appliance and need to be defined in the appliance configuration. To support virtualization of the physical servers in your cloud, those systems must be running some kind of hypervisor layer. A hypervisor is a virtualization platform that allows multiple instances of an operating system – running as partitions, or virtual machines – to have access to the underlying physical hardware. IBM Workload Deployer supports three hypervisor platforms – VMware ESX, PowerVM, and z/VM. When you deploy a new middleware environment from IBM Workload Deployer, the appliance creates a series of new virtual machines on the hypervisors in your cloud. Within your appliance configuration, you define your hypervisors in a pool called a cloud group. You can sub-divide your cloud into different logical groups. For example, you might want to deploy your development and test environments to a VMware ESX cloud group, and run your production environments in a PowerVM cloud group. With a single appliance, you can manage multiple cloud groups and hypervisor platforms.

STANDARDIZE: Deploy virtualized middleware – multiple models



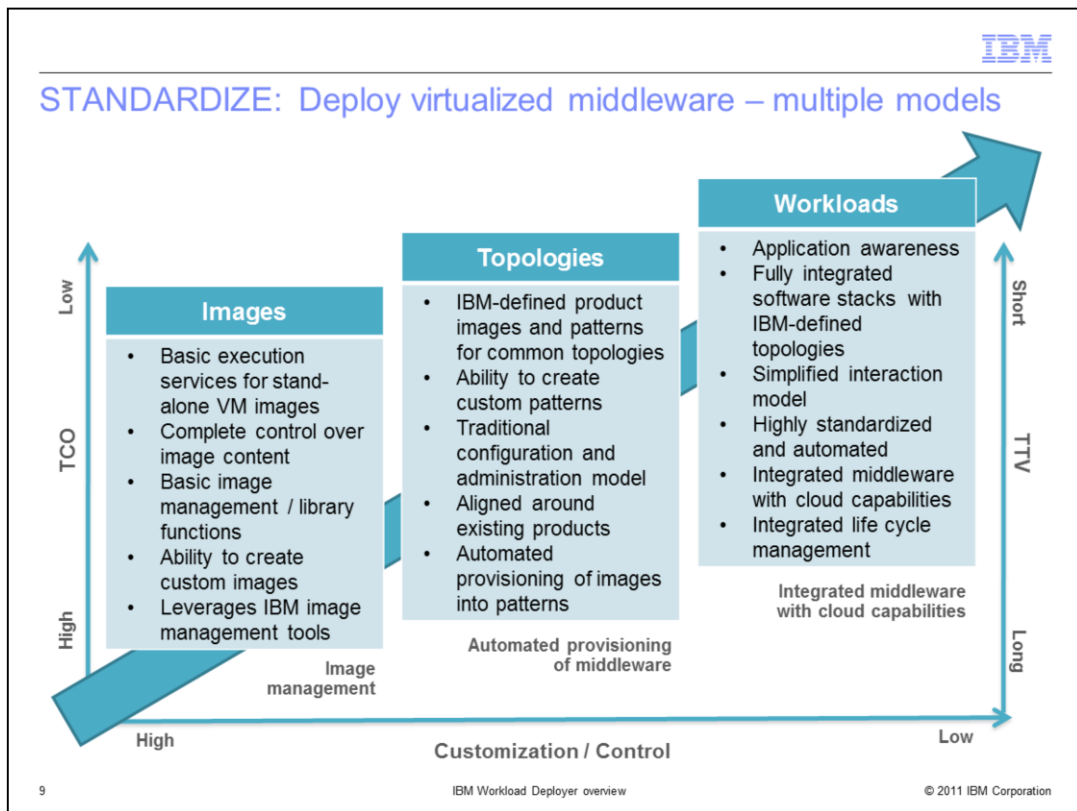
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IBM Workload Deployer overview

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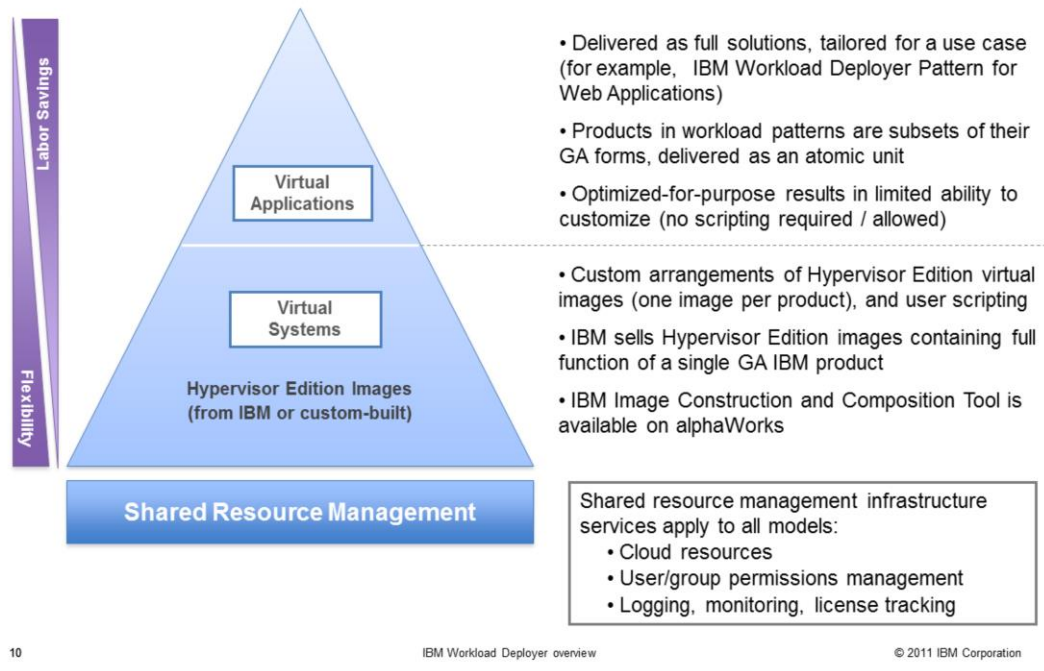
IBM Workload Deployer supports multiple deployment models that you can choose from, to meet the specific needs of your environment – images, topologies, and workloads. Images are the most generic type of deployment, in which you can push out any generic OVF from IBM Workload Deployer. The appliance provides management functions for your image catalog and basic execution services, such as stopping and starting virtual machines for your image deployments. In this model, you have full control over the image content and can build your own custom images. While this model is very flexible, building and maintaining your own custom images is typically very labor intensive. Topology deployments map to the original deployment model provided by WebSphere CloudBurst Appliance. In this model, you use IBM's Hypervisor Edition images with pre-installed middleware, define your topology as a pattern, customize it with script packages that represent your application, and then deploy that pattern into the cloud. This model provides rich customization capabilities and allows fast, automated provisioning of IBM middleware, based on the specific topology that you have defined. Workload deployments have built-in application awareness and are provided as fully integrated software stacks. Workload patterns are built with a specific use case in mind, so they are highly standardized and automated, and you can define them using a very simple interaction model that is application-focused, rather than product-focused. Workloads also have integrated life cycle management post-deployment.

STANDARDIZE: Deploy virtualized middleware – multiple models



IBM Workload Deployer provides different deployment models, allowing you to choose which model is best suited to your needs. Consider image deployments. At the image level, you have a high degree of customization and control since you can define your own custom images. However, with that level of control comes both a long time to value – building your own images takes time; and a high cost of ownership – maintaining your own custom-built environment is typically expensive. By moving to the topology model, you save time and ownership cost by relying on IBM’s pre-built Hypervisor Edition images for many product capabilities. You still have significant ability to customize your topology deployments – through image extension, by defining the specific topology and middleware levels for your application, and by using script packages to customize specific components. At the workload level, you have drastically reduced cost and time to value, because the solutions are pre-built and integrated for a specific use case. Rather than defining topologies, you simply provide your application artifacts, and the workload pattern will determine the appropriate underlying topology based on the service-level agreement that you provide. While using the workload model is the most cost-effective, its high level of standardization and cross-product integration results in fewer product configuration options being exposed for customization.

STANDARDIZE: Define patterns – two types



IBM Workload Deployer uses patterns to codify your environments, resulting in fast, repeatable deployments. There are two pattern types available with IBM Workload Deployer – virtual systems and virtual applications. The workload deployment model corresponds to virtual application patterns, and the topology deployment model corresponds to virtual system patterns. The image deployment model does not map to a pattern type. That is because generic images are deployed holistically, as black-box virtual appliances, and patterns are not required.

All patterns are deployed and managed using a shared resource infrastructure, including your private cloud resources, appliance security configuration for managing users and groups, and integrated logging, monitoring, and license tracking capabilities. Virtual system patterns are custom arrangements of Hypervisor Edition images, combined with user script packages to customize the environment – for example, defining configuration artifacts in the application server, or installing enterprise applications. Each Hypervisor Edition image contains a fully functional version of a single GA-level IBM product – for example, IBM provides images for WebSphere Application Server, DB2, WebSphere Process Server, and others. In addition to IBM's images, you can build custom Hypervisor Edition images using the IBM Image Construction and Composition Tool, currently available as an alphaWorks technology.

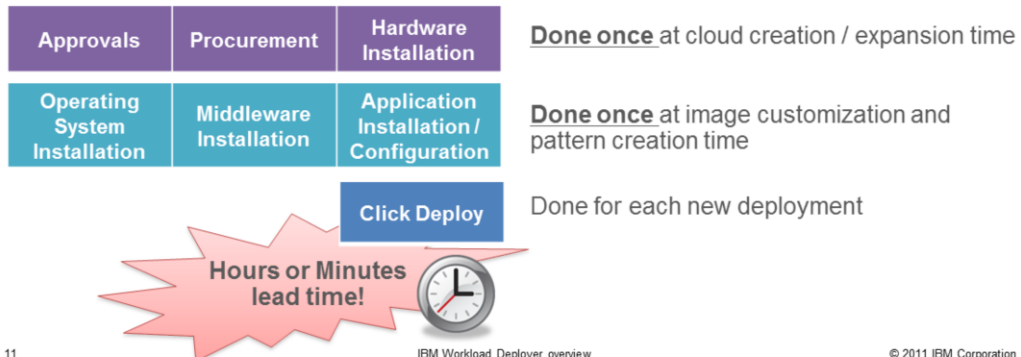
Rather than being arranged around specific middleware components, virtual application patterns focus on the application being deployed. Virtual applications are delivered as full solutions that are tailored for a specific use case. One new virtual application pattern being delivered in conjunction with V3.0 is the IBM Workload Deployer Pattern for Web Applications. These patterns contain multiple products in a subset of their GA forms, all delivered as a tightly integrated, atomic unit. For example, virtual applications do not provide direct access to the administrative tools for your application. Instead, IBM Workload Deployer itself provides administrative and life cycle management tools for your applications. Because of this, the administrative console component is not shipped as a part of the embedded WebSphere Application Server product provided with the Pattern for Web Applications. Virtual application patterns are optimized for a specific purpose, so IBM Workload Deployer only exposes a limited set of customization and configuration options. In these patterns, no user-level scripting is required for configuring your applications.

AUTOMATE: Factor out repetitive tasks

These processes are executed serially for each application environment:



Factor out repetitive tasks to reduce lead time:



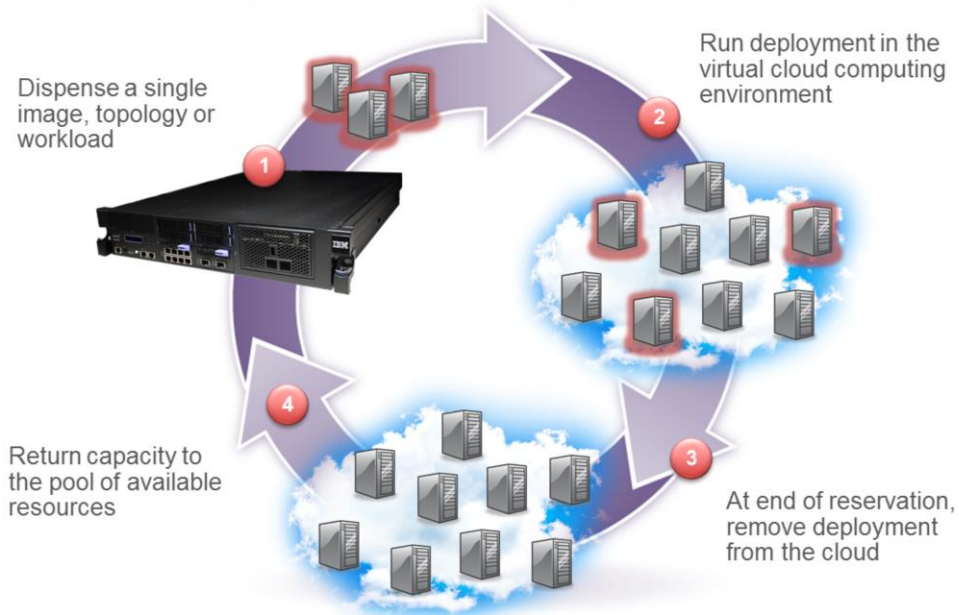
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IBM Workload Deployer overview

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In many organizations today, creating new middleware environments requires a long sequence of serial processes. The average lead time to get a new environment up and running is between 2 and 4 months. IBM Workload Deployer allows you to factor out repetitive configuration tasks so that you can automate the process of creating new environments. You acquire and configure all of your hardware resources once, at cloud creation time. By virtualizing your hardware resources, you improve utilization and reduce overall hardware spending. IBM Workload Deployer supports fast, consistent, repeatable deployments, using a customizable pattern-based deployment model. Define your workload or topology once, as a pattern, and then you can instantiate that pattern as many times as needed in your cloud. Deploying new patterns is easy, just push the button to deploy your pattern into the cloud, and your new environment is ready in minutes.

ORGANIZE: Manage cloud resource usage



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IBM Workload Deployer overview

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Once you have the IBM Workload Deployer platform in place, with your patterns defined for standardized, automated deployments of virtualized environments, then you have more power to control how you organize and use your cloud resources. You can dispense your patterns quickly and easily – whether they are image, topology, or workload deployments – and then run that virtualized environment in your private cloud. Run the deployment as long as it is needed, then remove it from the cloud at the end of the reservation. This allows you to return the capacity to the general cloud pool of available resources so that it is available to host new deployments.

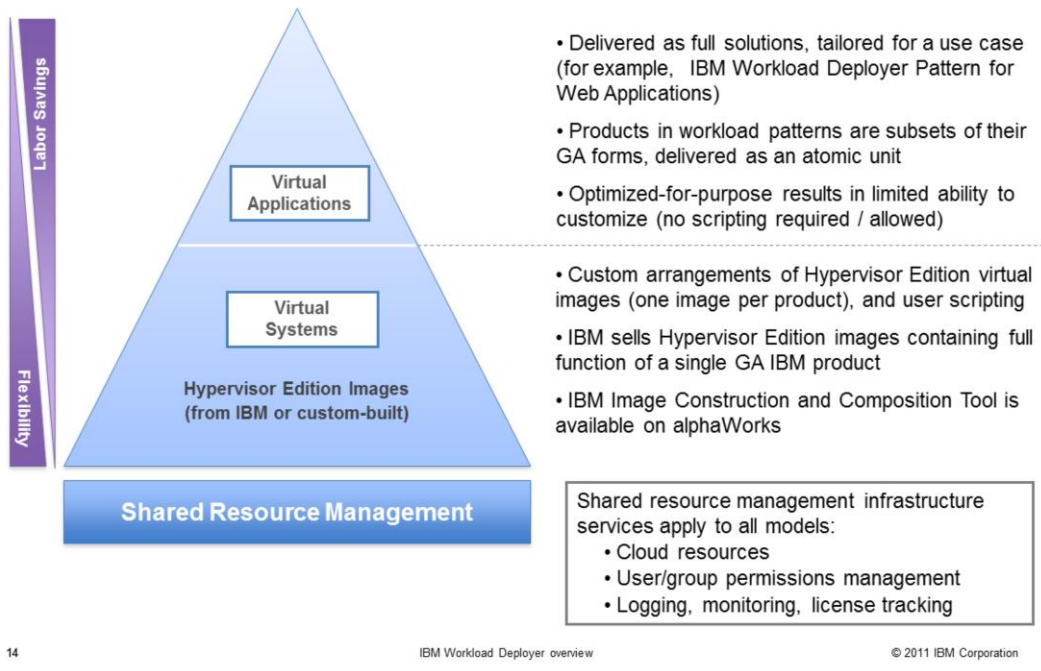
Using the rapid, repeatable deployment model provided by IBM Workload Deployer, you no longer have to worry about keeping environments around “just in case” they are needed again. If you do need an environment back after it has been removed, all you need to do is re-deploy the pattern, and a new copy of the environment will be ready for you in minutes.

Finding the model that's right for you

DEPLOYMENT MODELS

This section of the presentation reviews the virtual system and virtual application deployment models that are available from IBM Workload Deployer and provides some guidance for helping to determine which deployment model is right for you.

Workload models

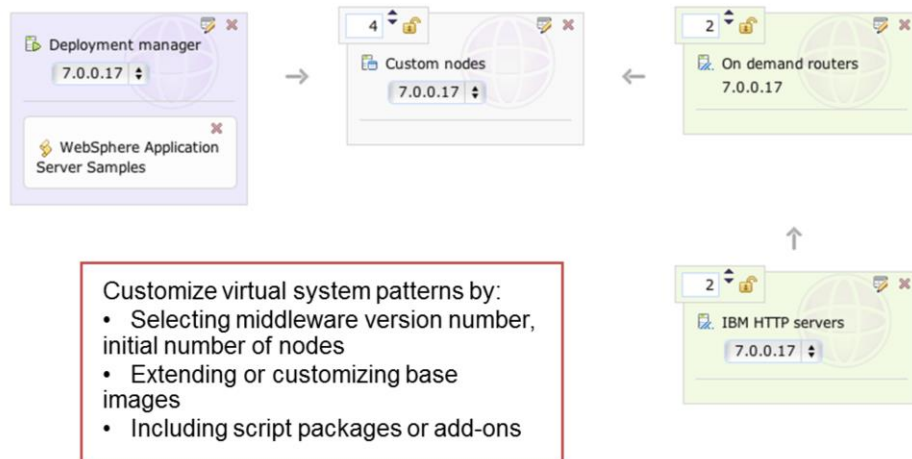


There are two main types of patterns that you can build and deploy with IBM Workload Deployer – virtual applications and virtual systems. These patterns are built and instantiated using the shared resource management infrastructure at the base of the pyramid, including the Workload Deployer device itself, your private cloud resources, and other resource management capabilities. Virtual systems are arrangements of Hypervisor Edition image parts that map to the topology that you want to deploy; these can be customized extensively using image extension, script packages, and add-ons. Virtual applications are integrated solutions that are built-for-purpose to meet the needs of a specific use case or workload. The IBM Workload Deployer Pattern for Web Applications is one virtual application pattern that is available with IBM Workload Deployer. As you move up the deployment model pyramid, you trade some flexibility and customization capabilities to achieve additional labor savings in your optimized virtual applications.

Example: Virtual system pattern

Deploys to ESX hypervisors.

Last updated on Mar 28, 2011 2:10:28 PM | [Ordering](#) | [Advanced Options](#)



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IBM Workload Deployer overview

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The picture shown here is an example of a virtual system pattern that is built using advanced virtualization components from WebSphere Application Server Hypervisor Edition with the Intelligent Management Pack enabled. To build a virtual system pattern, you determine the exact structure of your topology – including which image parts are included, how many nodes to start with, and the middleware version number. You can also perform advanced customizations using image extension to customize the content in the underlying Hypervisor Edition images – for example, by adding in new operating system packages or installing security monitoring tools. Finally, pattern parts can be customized with script packages and add-ons. In this example, there is a WebSphere Application Server Samples script package associated with the deployment manager part in the pattern; this is one of the pre-loaded script packages provided with IBM Workload Deployer to install the standard application server sample applications. You can create your own custom script packages to perform a variety of configuration tasks. Add-ons provide a way to perform advanced virtual machine configurations on your parts, for example, adding multiple network interfaces, virtual disks, or user accounts.

Hypervisor Edition images available from IBM



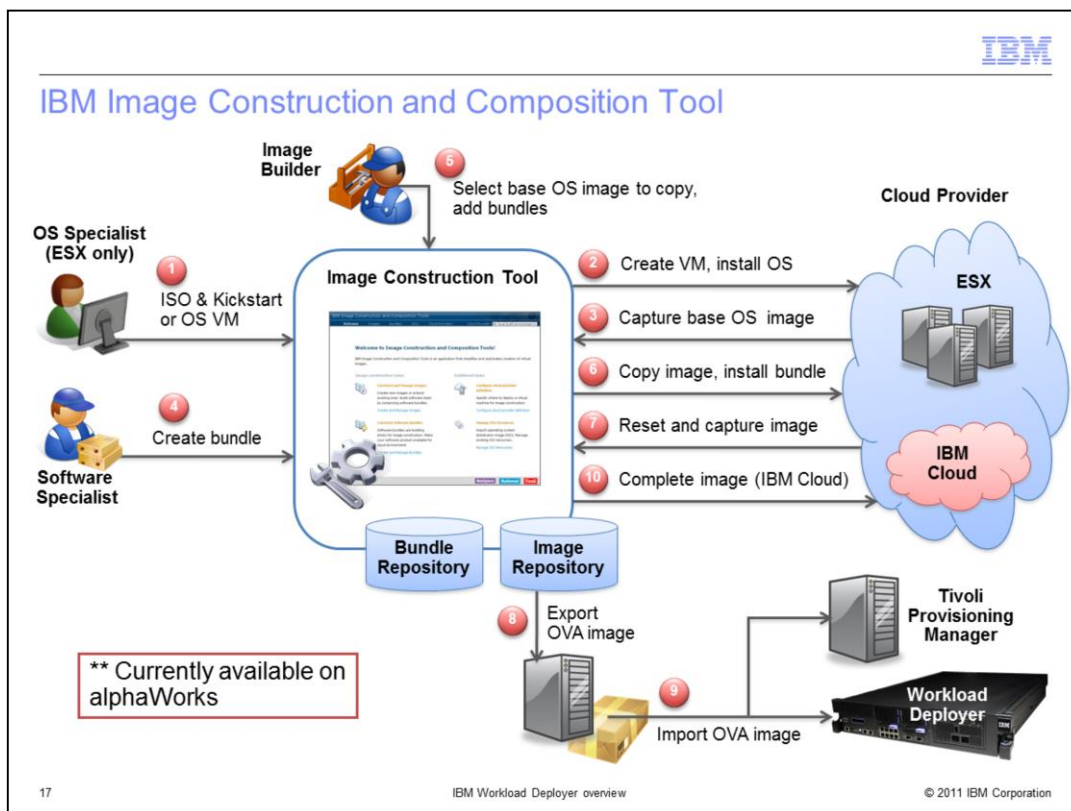
	RedHat ESX	AIX PowerVM	SUSE zLinux zVM	RedHat zLinux zVM	SUSE Linux (64-bit) ESX	SUSE Linux (32-bit) ESX
Portal						
Portal/WCM V6.5.1						X
Portal/WCM V7.0	32-bit					X
Database						
DB2 V9.7		X			X	X
BPM						
WPS V6.2		X	X			X
WPS V7.0	32-bit	X	X			X
WPS V7.5						
Monitor V7.0						X
Monitor V7.5						
ILOG						
Cognos						
Connectivity						
Cast Iron						
WMQ v7.0.1	64-bit					
WMB v7.0	64-bit					
WSRR v7.5						
WTX v8.4						
Application Infrastructure						
WebSphere Application Server v6.1	32-bit	X				X
WebSphere Application Server v7.0	64, 32-bit	X	X	X	X	X
WebSphere Application Server v8.0						
IBM HTTP Server for WAS HV	64, 32-bit	X	X	X	X	X
	2010 or earlier	1H 2011				

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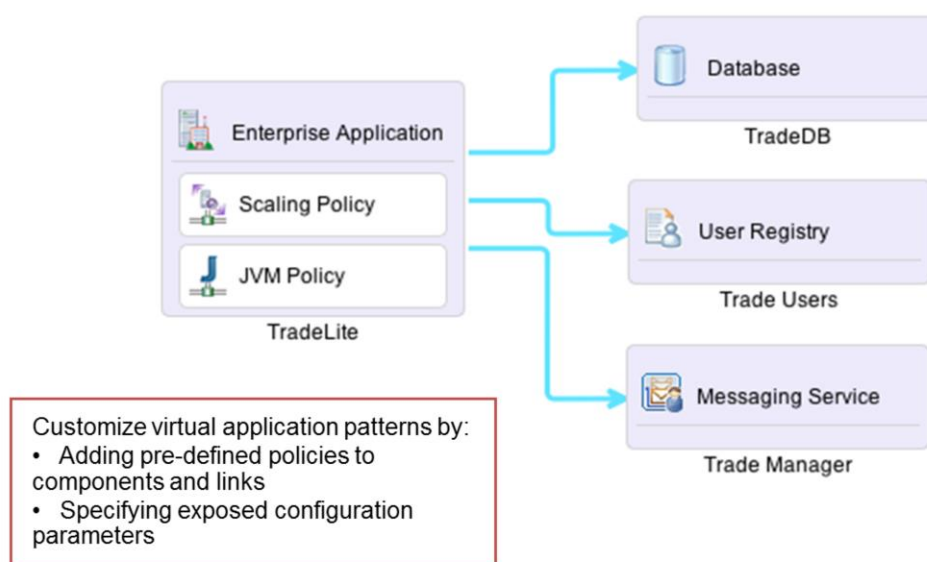
IBM provides Hypervisor Edition images for several middleware products, including Portal, DB2, WebSphere Process Server, and WebSphere Message Broker. The flavors of an image that are available – which operating systems and hypervisor platforms are supported – vary from product to product. The light green areas of this table represent the newest additions to the Hypervisor Edition family, including WebSphere Message Queue, new application server images that include a 64-bit operating system, Red Hat images for z/VM, and separation of the HTTP server from the application server, for licensing purposes. Note that, for WebSphere Application Server, VMware ESX images that are built with a 64-bit operating system include a 32-bit version of the application server.

IBM Image Construction and Composition Tool



If IBM does not provide a Hypervisor Edition image that contains your required combination of operating system and middleware components, one option you have is to build your own custom image using the IBM Image Construction and Composition Tool. This tool is currently available on alphaWorks, and you can use it to build Linux images that are deployable to VMware ESX hypervisors from Workload Deployer and other deployment tools. The Image Construction and Composition Tool exposes a modular approach to image building, allowing you to capture existing domain expertise for operating system and middleware installation, and then dynamically combine pre-defined components to build new image packages. These images contain all of the activation logic required to be deployed as virtual systems using the IBM Workload Deployer.

Example: Virtual application pattern



Virtual application patterns are new in IBM Workload Deployer V3.0. These patterns are defined using application components and related services, rather than topology components. For example, this virtual application pattern contains one enterprise application that connects to three services – a database, a user registry, and a messaging service. The blue arrows are links from the application to its required services. Virtual applications can connect to existing cloud resources, or deploy new resources to meet the application's needs. When defining the pattern, you choose whether to create a new database, for example, or connect to an existing database in your enterprise. The components in a virtual application have a fixed set of exposed configuration parameters that you can customize. For example, the enterprise application component requires that you provide the EAR file that represents your application. You can also define qualities-of-service for your application using service policies. In this example, the enterprise application components includes both a scaling policy and a JVM policy. These policies allow you to define how your application will scale in response to load, and to set JVM options, such as heap size and generic JVM parameters.

Virtual Application Builder

IBM Workload Deployer - [Pattern type: webapp 1.0] Virtual Application Builder - [Beta Tradelite 09]

Diagram | ListView | Source

Save | Save As | Layout | Undo | Redo

Assets

Application Components

- Enterprise Application
- External archive file
- Web Application

Database Components

- Database
- Remote Database

Messaging Components

OSGI Components

User Registry Components

Other Components

Add policy for application

Enterprise Application

JVM Policy

Enterprise Application

Database

Beta 09 DB2

Enterprise Application

WebSphere Application Server

Name: Enterprise Application

EAR File: artifacts/tradelite.ear [Browse] [Delete]

Total transaction lifetime timeout (sec): 120

Async response timeout (sec): 120

Client inactivity timeout (sec): 60

Maximum transaction timeout (sec): 300

JVM Policy

WebSphere Application

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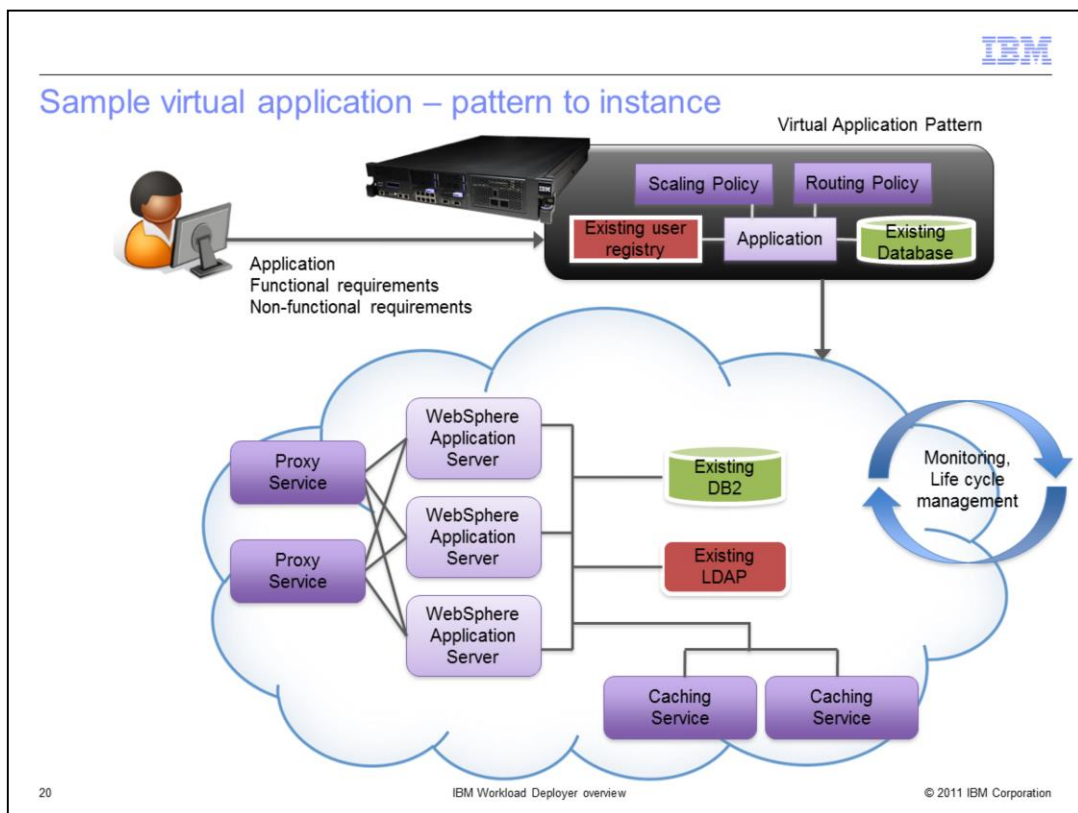
Drag assets onto the canvas to define application and related resources

Define cross-component links and add policies; respond to warning messages to build well-formed applications

Specify configuration details for components, policies, and links

IBM Workload Deployer provides a specialized Virtual Application Builder that you can use to build your virtual application patterns. The graphical editor is simple to use and supports drag-and-drop pattern assembly, without the need to write any custom script packages to configure and deploy your application. To create an application, drag the required assets from the palette on the left over to the canvas in the middle of the editor. Assets can represent either components that you are deploying as a part of your virtual application or external resources that your application depends on. In the application canvas, you can define links between your components – in this case, there is a blue arrow connecting the enterprise application to a database. If your application has any non-functional requirements, define them by adding policies to your application. For example, you might have a logging policy that specifies logging levels for your application, or a scaling policy that defines how your application will respond to load. The rightmost pane in the Virtual Application Builder is where you provide configuration details for the components in your application, including the assets themselves, along with any parameters for the links or policies that you include. The set of exposed parameters is designed to be small and contained to make it very simple to create your applications.

Sample virtual application – pattern to instance



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IBM Workload Deployer overview

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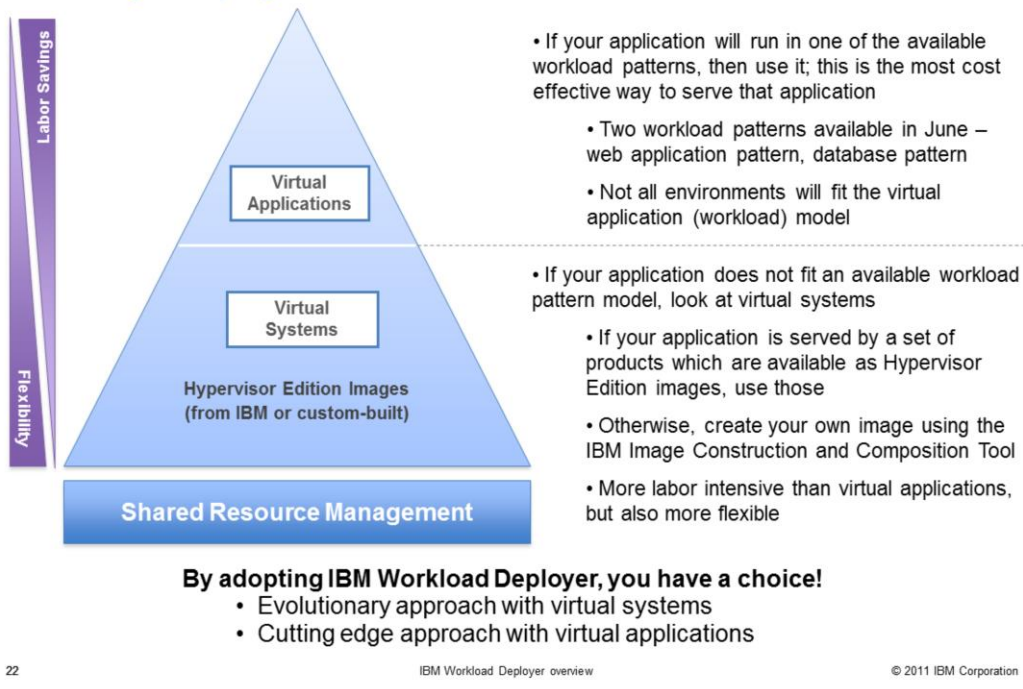
When you deploy a virtual application pattern, IBM Workload Deployer automatically determines and instantiates the appropriate underlying topology to support your application. Notice that the virtual application pattern shown at the top of this page is very simple – it contains an application that depends on an existing database and user registry, and there is also a scaling policy associated with the application. At deployment time, IBM Workload Deployer might choose to instantiate this pattern using a topology similar to the one shown. In this virtual application instance, there is a clustered group of application servers, fronted by load balancers to balance workload capacity across the cluster, and backend caching. The application server is also automatically connected to an existing database and user registry to support the application’s requirements. Once the application has been deployed to your private cloud, IBM Workload Deployer provides full life cycle management services for monitoring, failure recovery, growth, and problem determination.

Key differentiators for workloads

- **Awareness and optimizations for specific workloads**
 - Integrated stacks of middleware optimized for particular workloads
- **Consolidating workloads under a simplified management system**
 - Expose radically simplified management model optimized for specific workloads
 - Pattern based deployments for most common workloads
- **Full life cycle management**
 - Go beyond provisioning to full life cycle (update, failure recovery, growth, problem determination)
- **Elastic, efficient, multi-tenant and automated management and execution of application workloads**
 - Integrated monitoring, metering, logging, security, caching
 - Automated policies for resource consumption and balancing
 - Optimized resource utilization of middleware in virtualized environments

The virtual application model provides enhanced value for application deployment and management. Workloads that are designed to be deployed with IBM Workload Deployer are self-aware and optimized to meet the needs of the specific workload use case, built on a tightly integrated middleware stack. These workloads are built with the goal of simplifying the end-to-end management process, including a pattern-based deployment model that focuses on application components rather than topologies, and a simple drag-and-drop graphical editor for building new applications. In addition to providing a simple model for building and deploying common workloads, IBM Workload Deployer offers full life cycle management capabilities, including application updates, failure recovery, monitoring, and problem determination. Application workloads are designed to be elastic and efficient. You can use automated policies in your applications to balance load and resource consumption across your environment. Some applications also make use of shared services for proxying and data caching, so that you do not need to create and configure multiple resource instances to support each application. These integrated capabilities help optimize your overall resource utilization.

Choosing a deployment model



IBM Workload Deployer offers two deployment models – workloads, that are typically deployed using virtual application patterns; and topologies, which are deployed using virtual system patterns. There are two workload patterns that will be available at general availability for IBM Workload Deployer V3.0 – the Pattern for Web Applications and the Pattern for Database Applications. If your application will run in one of these patterns, then use it; this is the most cost effective way to serve that application. Of course, not all applications will fit into one of the available workload pattern models – in that case, consider using topology-based virtual systems. IBM provides many middleware products as Hypervisor Edition images, so start by using that content, if it suits your application topology. Alternatively, if IBM does not offer an image that meets your needs, you can create your own custom images using the IBM Image Construction and Composition Tool, currently available on alphaWorks. The virtual system model offers rich customization capabilities and greater flexibility than virtual applications, but it is also more labor intensive.

By adopting IBM Workload Deployer, you have a choice to determine the deployment model that best suits your needs. You can use an evolutionary approach with virtual systems, or a more cutting edge approach with the new virtual application model.

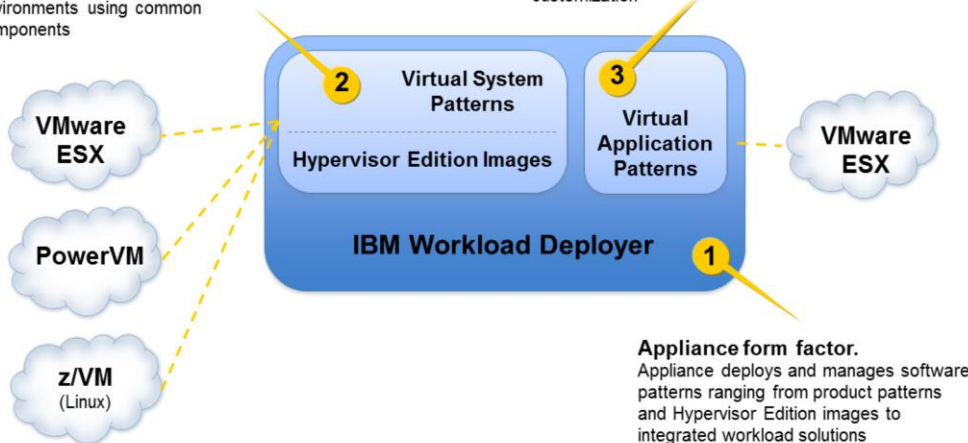
IBM Workload Deployer architecture

Virtual system patterns.

Set of optimized product configurations (Hypervisor Edition products + base patterns) using IBM best practices; users build fully customized environments using common components

Virtual application patterns.

Integrated solutions, such as the Pattern for Web Applications, delivered with integrated monitoring, life-cycle management, elasticity; limited ability for customization



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IBM Workload Deployer overview

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IBM Workload Deployer V3.0 is the next evolution of the WebSphere CloudBurst Appliance. The product integrates all of the existing capabilities of WebSphere CloudBurst Appliances and expands on the platform by offering new, cutting edge integrated workload deployments.

IBM Workload Deployer will be delivered in an appliance form factor with enhanced processing power, networking, and storage capabilities. The appliance acts as a central deployment and management endpoint for your software patterns, ranging from existing product patterns and Hypervisor Edition images to integrated workload solutions. Virtual system patterns are built using Hypervisor Edition images and are standardized using IBM best practices. You can use these images and patterns to build and deploy fully customized environments based on common, standardized components. Virtual system patterns can be deployed to multiple hypervisor platforms, depending on the images you are using. IBM Workload Deployer introduces a new deployment model for integrated workload solutions that can be deployed to VMware ESX hypervisors. There are two workload patterns available with IBM Workload Deployer V3.0 – the Pattern for Web Applications and the Pattern for Database Applications. These workloads are delivered as fully integrated solutions, with built-in monitoring, elasticity, and life-cycle management. They offer limited customization capabilities, but are extremely easy to build and deploy, offering exceptional value.

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- Announcement letter, Pattern for Web Applications
 - <http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?infotype=an&subtype=ca&apname=gpateam&supplier=897&letternum=ENUS211-140>
- IBM Image Construction and Composition Tool
 - Tool download: <http://www.alphaworks.ibm.com/tech/iicct>
 - Article: <http://www.ibm.com/developerworks/cloud/library/cl-buildcloudimageICCT/index.html?ca=drs->

This page provides links to references with product information about IBM Workload Deployer, the Pattern for Web Applications, and the alphaWorks technology for the IBM Image Construction and Composition Tool.

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