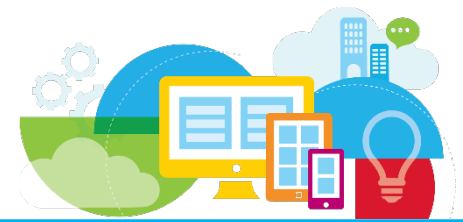


IBM Digital Experience 2015

13-16 October, 2015

Dublin, Ireland



TECH B01

IBM Digital Experience Solution Architectures and Operations

David J. Eyerman

Executive IT Consultant, ISSW IBM

Paul Kelsey

IBM WebSphere Portal and Web

Content Manager Operations and Cloud Architect

powered by
the IBM Global Training Providers

Organized by LearnQuest

#IBMDX2015

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Session Abstract

This session will help you understand and implement the many facets of operational considerations and best practices when deploying or upgrading WebSphere Portal and Web Content Manager in an enterprise. Conducted by an experienced developer and consultant, this session will cover the operational architectures supported and commonly implemented to support enterprise deployment requirements: Virtual Portals, Clusters, Farming, & Cloud. The best designs and newest designs for solution High Availability will be presented. It will cover the best and many ways to integrate WebSphere Portal based solutions with other social, process, storefront management and cloud solutions including IBM Connections and Connections Cloud, WebSphere Commerce, Smarter Process/BPM, and IBM SoftLayer. Numerous customer deployment examples will be cited. Come to this presentation to understand your options to manage successful enterprise Digital Experiences deployments.



Introductions

David J. Eyerman

Executive I/T Consultant

IBM Software Services for Collaboration
(ISSC)

Based in: Albuquerque, New Mexico

eyerman@us.ibm.com

Started working with WebSphere Portal in the WebSphere Portal SWAT team six months before the release of WPS v1.0 in January 2001. Technical team lead for the SWAT team and was responsible for bringing the product out of the lab, for training the original consultants and customers, and many other projects.

Joined ISSC in May 2007 and concentrates on large scale WebSphere Portal integration projects working with new and legacy applications, High Availability designs for Portal, and implementation of WebSphere Portal with Lotus® Social and Collaborative Software.

Paul Kelsey

Senior SWG Deployment Architect

IBM Software Group

Based in: Research Triangle, NC

pkelsey@us.ibm.com

Started working with WebSphere Portal in the WebSphere Portal dev team in January 2003. Various dev assignments starting in Portal 4.1 including security (LDAP, TAM®, Siteminder®), clustering, Site Management,

Joined group of developers and architects focused on reducing TCO in Portal in 2010. This includes alternative clustering models, cloning, S2P, and education on best practices. Most recently, virtualization and cloud deployments are quickly gaining momentum to help reduce TCO. Paul led the team to make Portal deployable on PureApp®, Amazon® EC2, SmartCloud®



Agenda

- **Introduction**
- **Operational Architectures**
- **Integration Patterns**
- **Application Integration**
- **Cloud**
- **Summary and Questions**

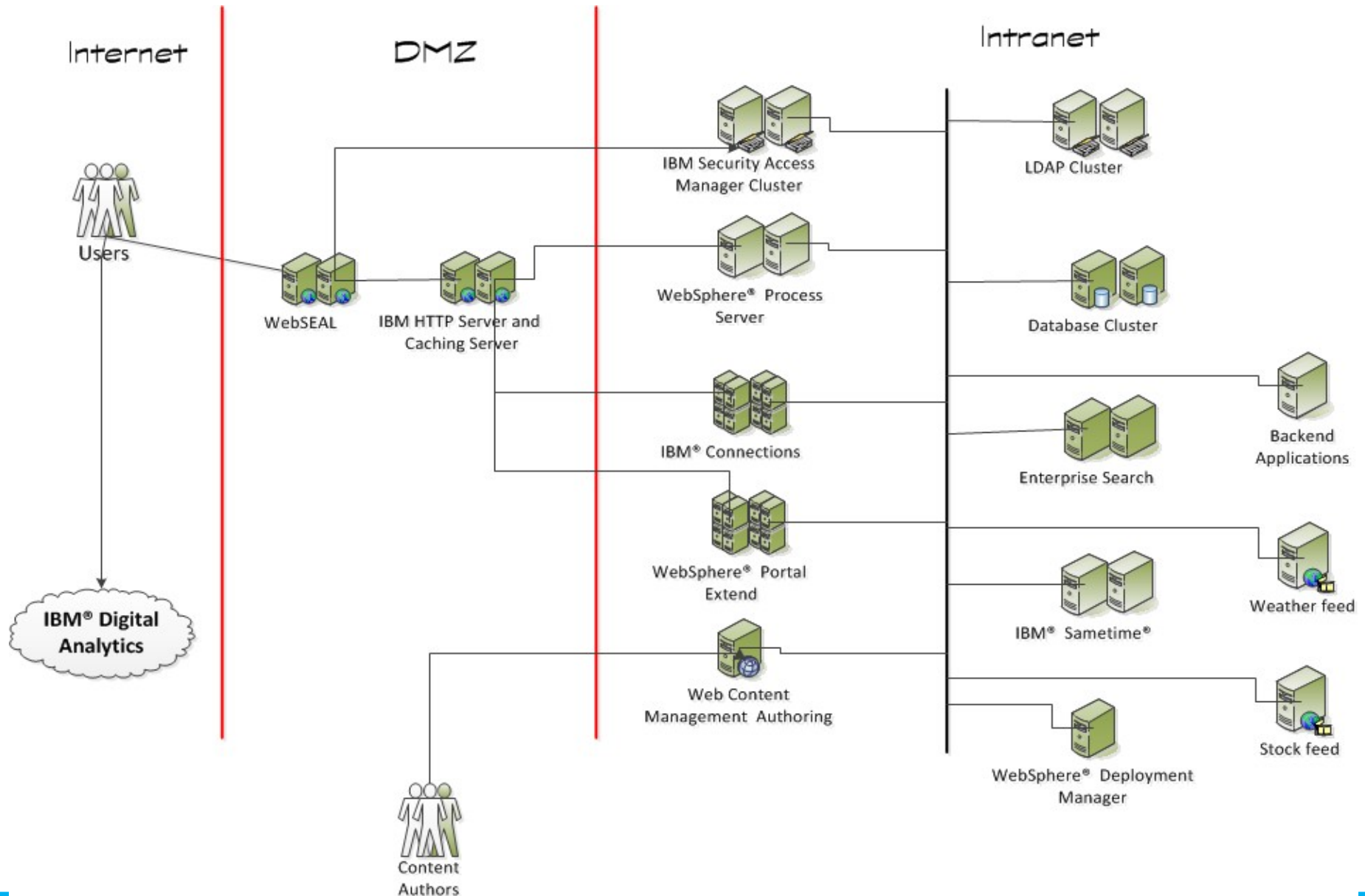


WebSphere Portal Architecture Overview

- The following designs for WebSphere Portal are “reference architectures”.
 - Culled from the experience in working with WebSphere Portal customers world wide.
 - All customer references have been removed.
 - All designs, however, are being used in production portals throughout the world.
 - A few have actually be used to continue operations due to natural disasters.
- All the designs can be implemented as-is and are supported.
- There are many variations of each design.
 - Perfectly acceptable.



Typical Functional Placement



WebSphere Portal Architecture Design Directions

What we are seeing in the field

- Everything is virtualized
- Social Portals with blogs, wikis, tags, ratings, etc.
- Mobile access is expected
- UIs are being implemented using Responsive Design
- Customer and Employee Self Service through the Social Portal.
 - Internet is the primary method of communication.
- Emphasis on cross team collaboration.
- Personalized content and services
 - Give users what they want when they need it.
- Multilingual Portals and Web Content
- Implementation of Active Site Analytics
 - Answer the question: “How is the site being used?”
- Search MUST work!
 - Find what you want with fewest key words.
- Portal Multi-tenancy

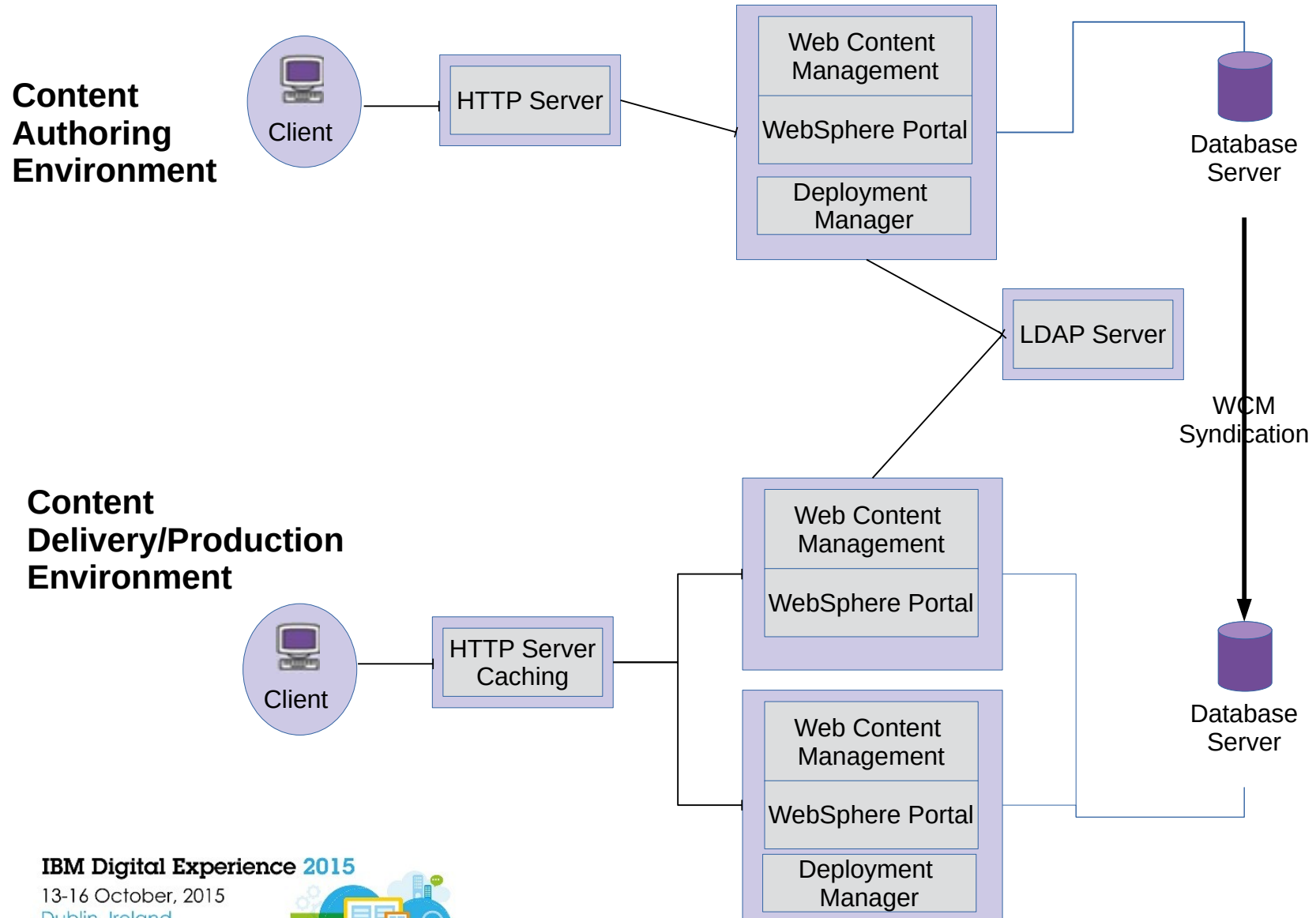


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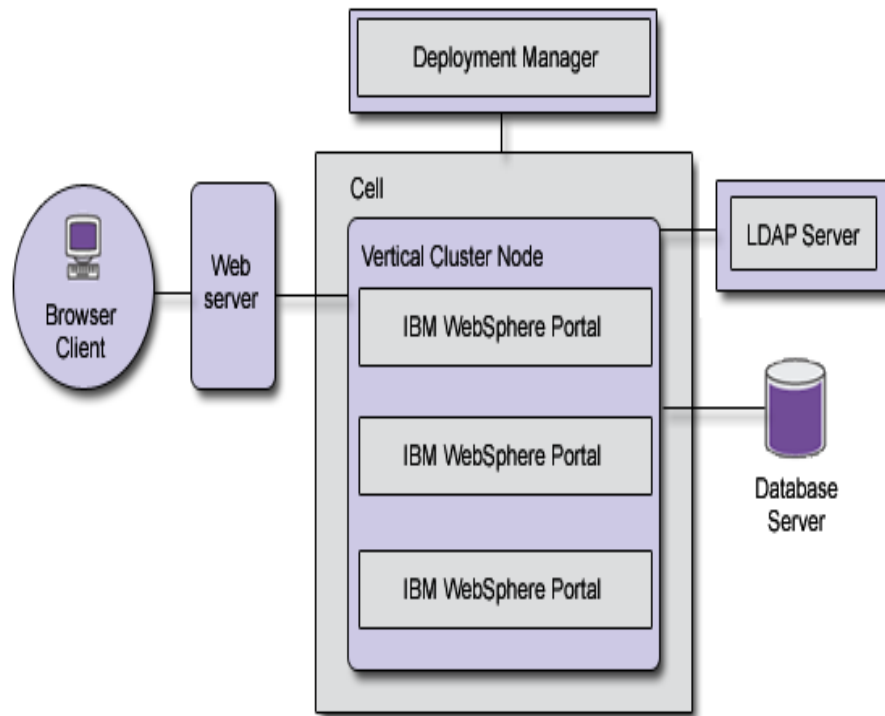


WebSphere Portal and Web Content Management

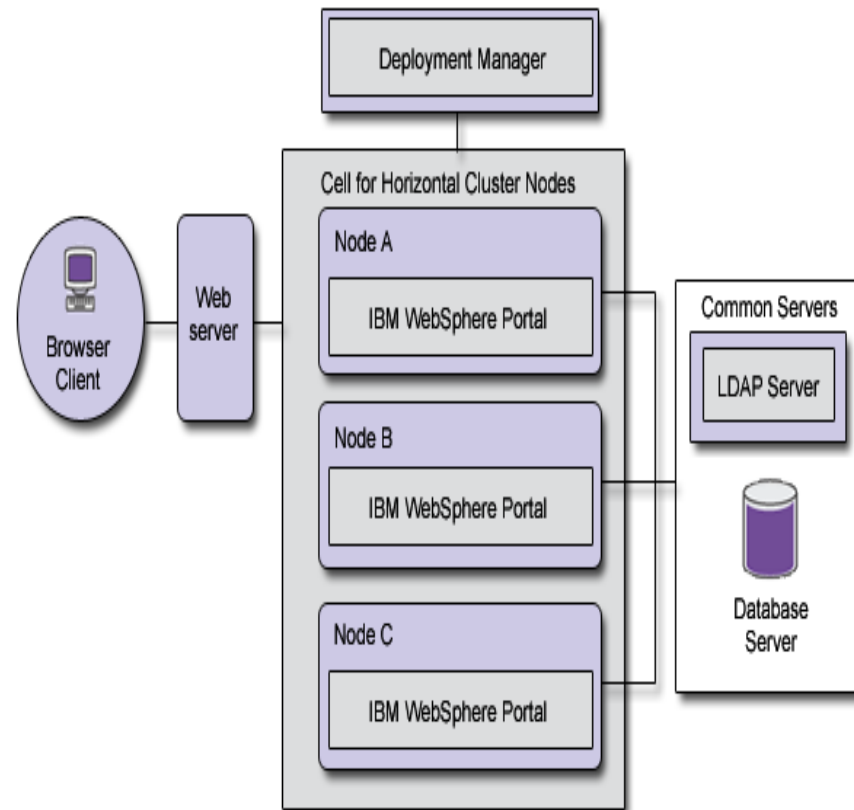


Horizontal and Vertical Clustering

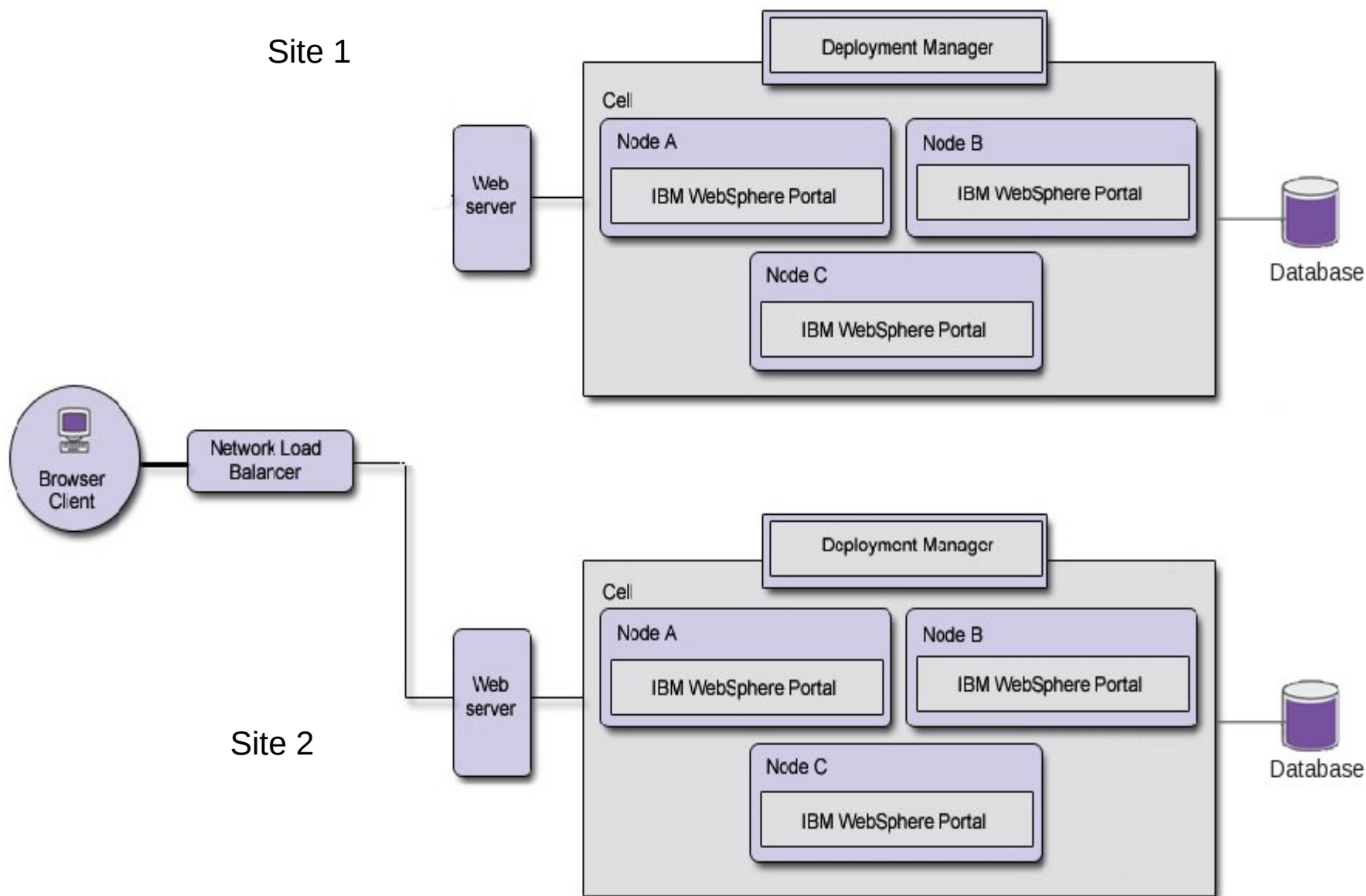
* Vertical Clustering *



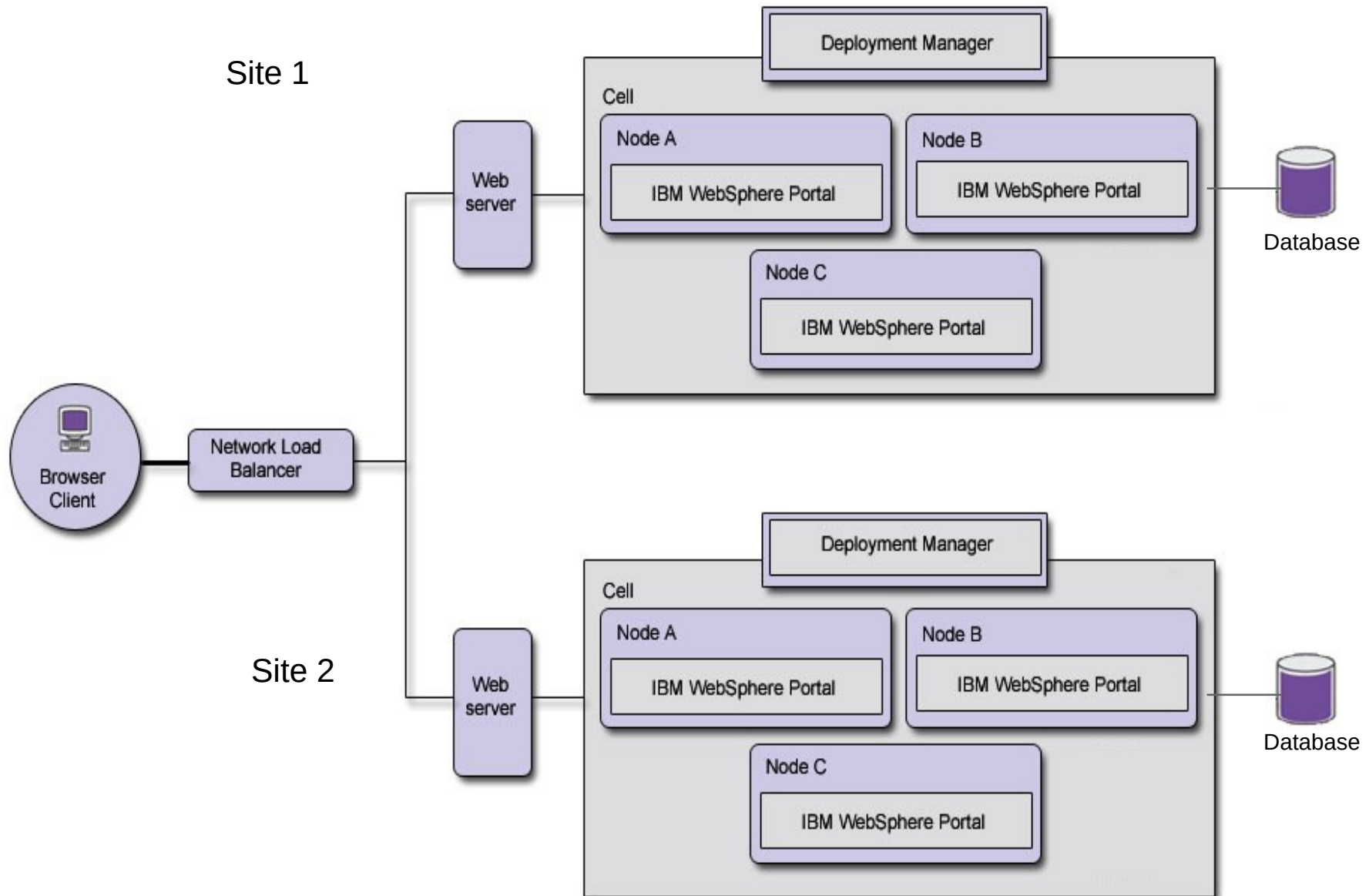
Horizontal Clustering



HA Gold Standard – Active/Passive Operation



HA Gold Standard – Active/Active Operation



Why Implement a Two Site Architecture

- Companies have implemented a two site architecture for a number of reasons including, but not limited to:
 - Maintenance windows are very short.
 - Many stakeholders need to test the site.
 - Too many tests need to be completed in the maintenance window.
 - Too many software changes need to happen in the maintenance window.
 - Too many reboots need to happen in the maintenance window
 - Want to perform all testing during regular business hours.
 - More changes need to happen faster.
- It is usually a combination of these factors occurring at the same time.
- In summary, maintenance windows are too short to permit all the deployments and tests to be executed that will fully validate a new release.



Portal Database Tables – DB active/active synchronization

- Release
 - Synchronization managed by S2P (Release Builder)
 - Managed Pages ***
- JCR
 - Synchronization managed by WCM syndication / PZN export/import
 - WCM content, design and artifact store
- Customization
 - Synchronization managed by 2 way database replication
 - Private Pages and other functions
- Community
 - Synchronization managed by 2 way database replication
 - Portal Tags and other functions
- Feedback
 - Synchronization managed by 2 way database replication
 - (Extremely low traffic)
- Like Minds
 - Synchronization managed by 2 way database replication
 - (Extremely low traffic)

Sharable

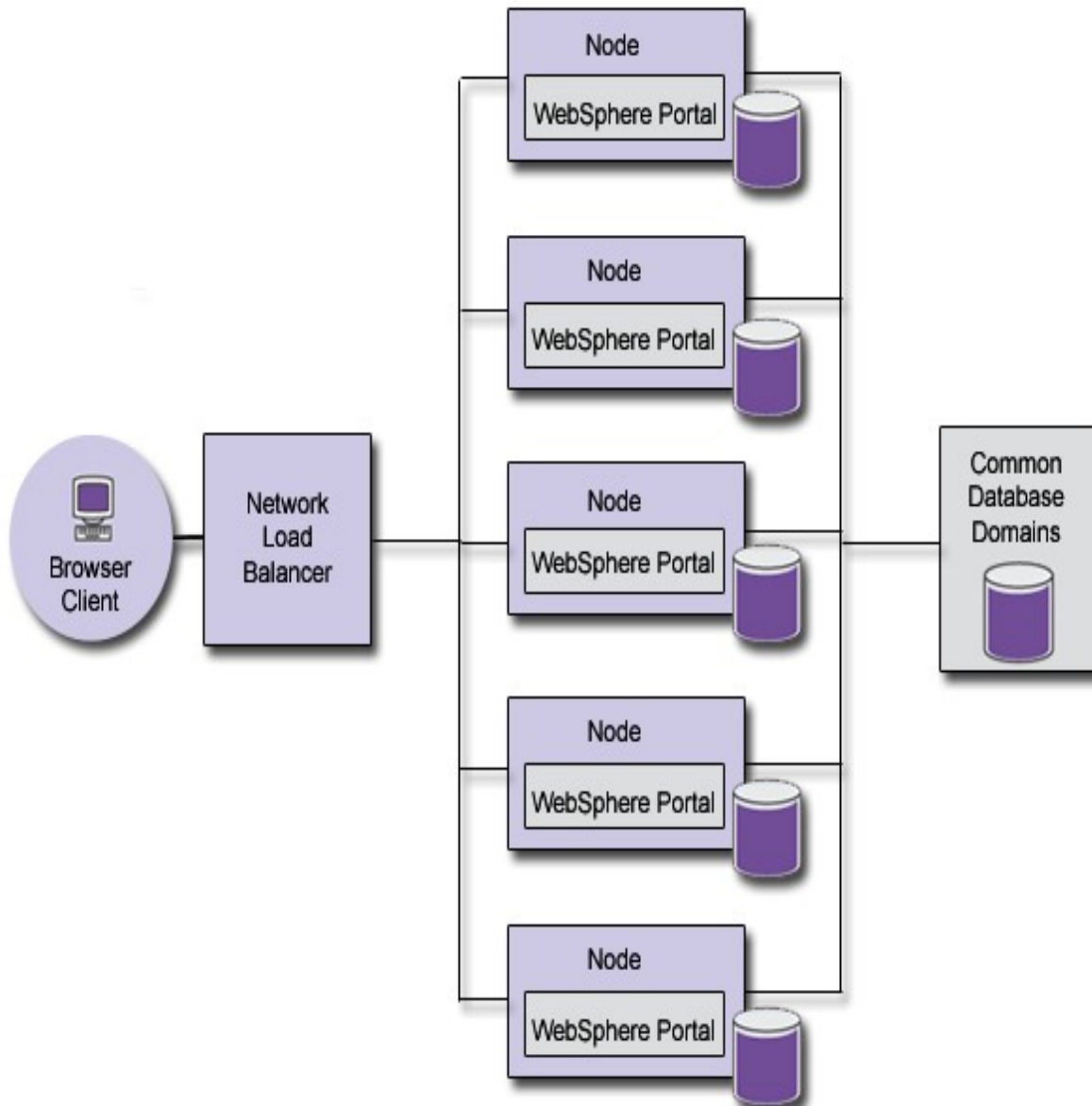


Portal Farming

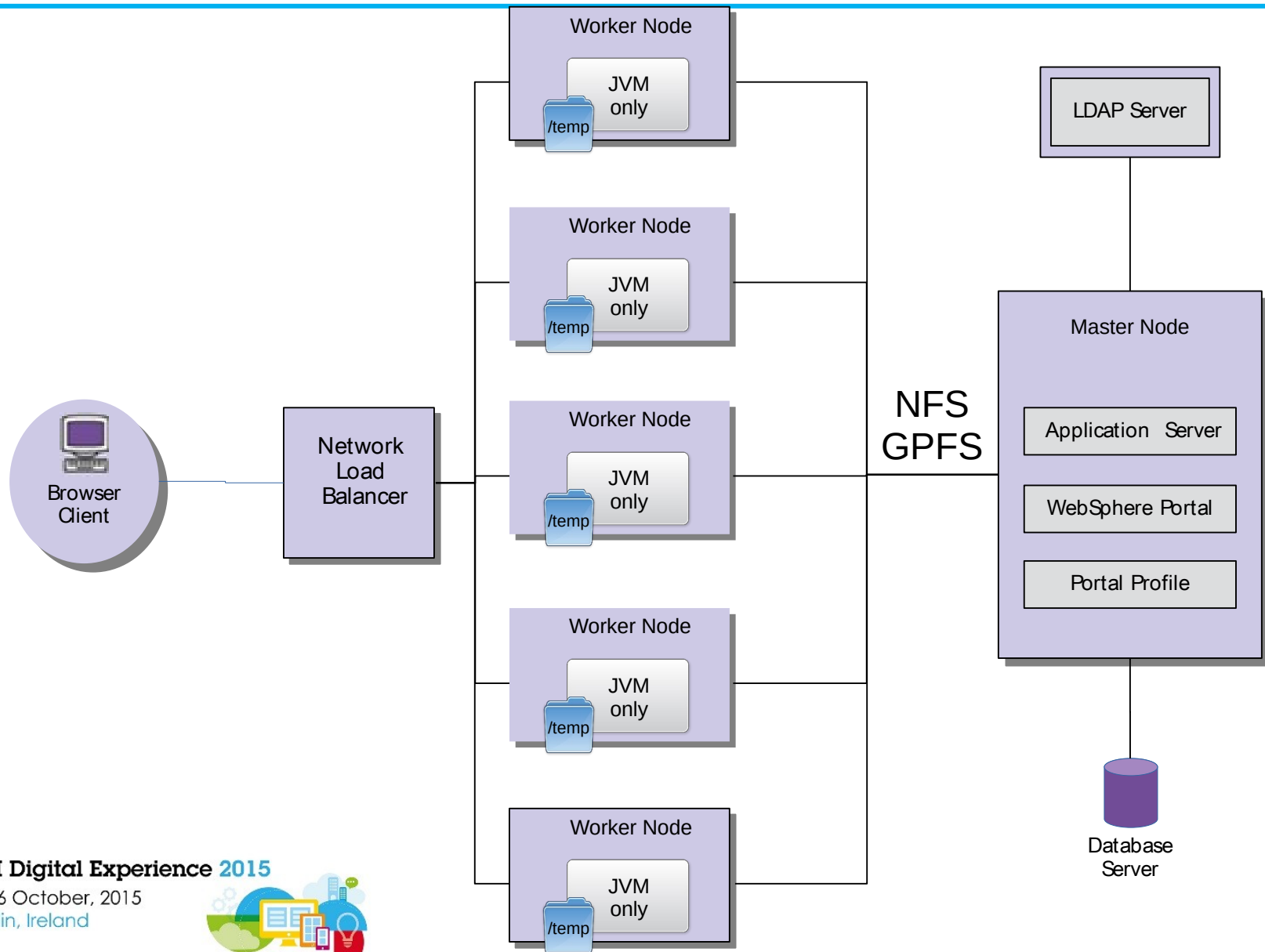
- A series of identically configured, stand-alone portal instances
- No managed cell, no clustering, no Deployment Manager
- Workload management handled using any load balancer
- HTTP Server plugin can be used with manual configuration
- Server instances treated as commodities
- Rip-n-replace
- Can more easily mix/match maintenance levels
- Extremely simple to grow/shrink capacity based on demand
- Simplicity comes at a cost – this is not for everyone !
- Limitations:
 - R/O file systems
 - DB or grid-based session persistence and failover only
 - No distributed cache management – Warning for WCM
 - No distributed EJB usage
 - No synchronized configuration (without the aid of file system utilities)
 - No coordinated task scheduling
 - No cluster-scoped administrative actions
 - Start/stop applications



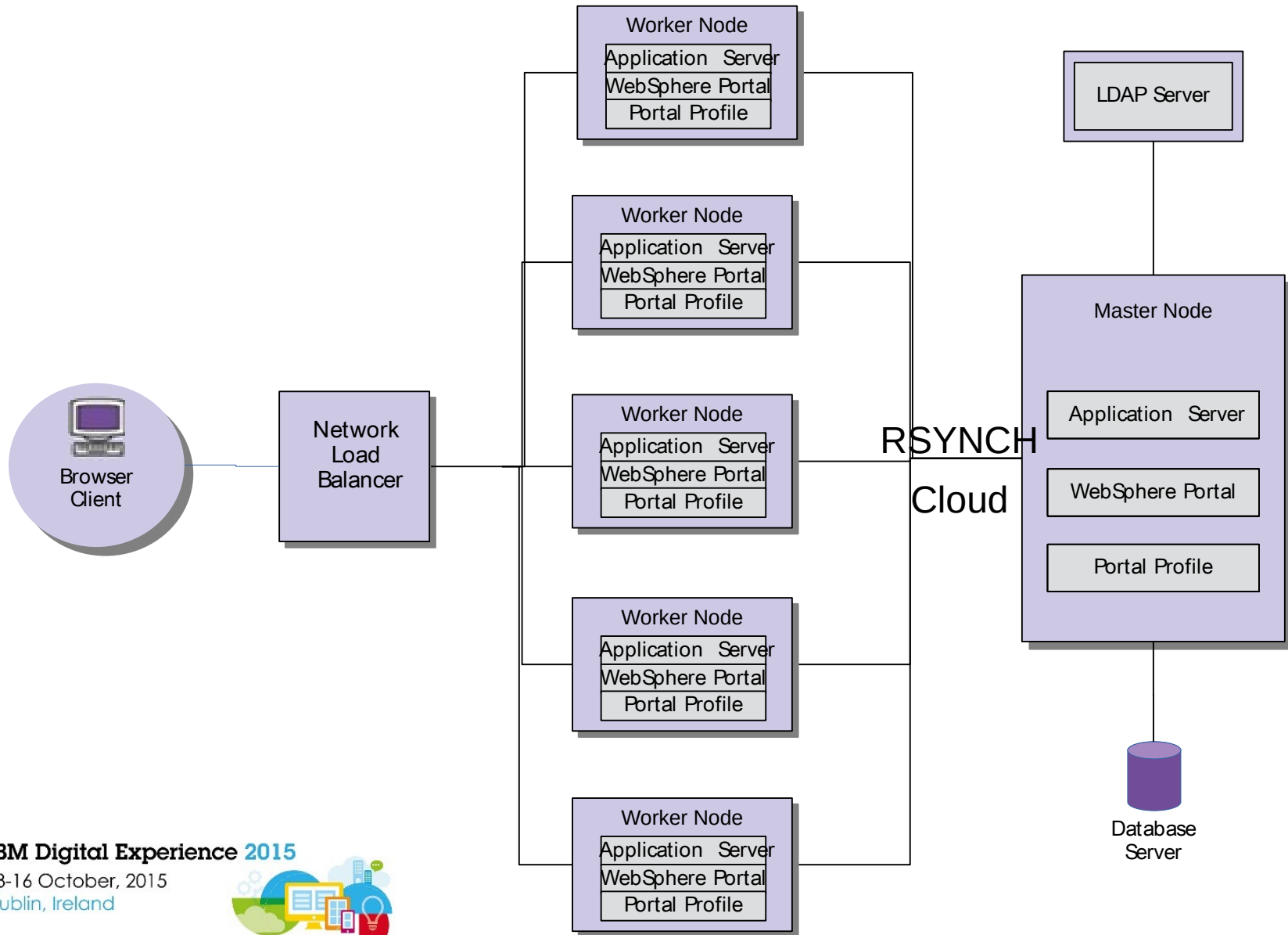
Portal Farming – unique installation



Portal Farming – shared file system installation



Portal Farming – cloned file system installation

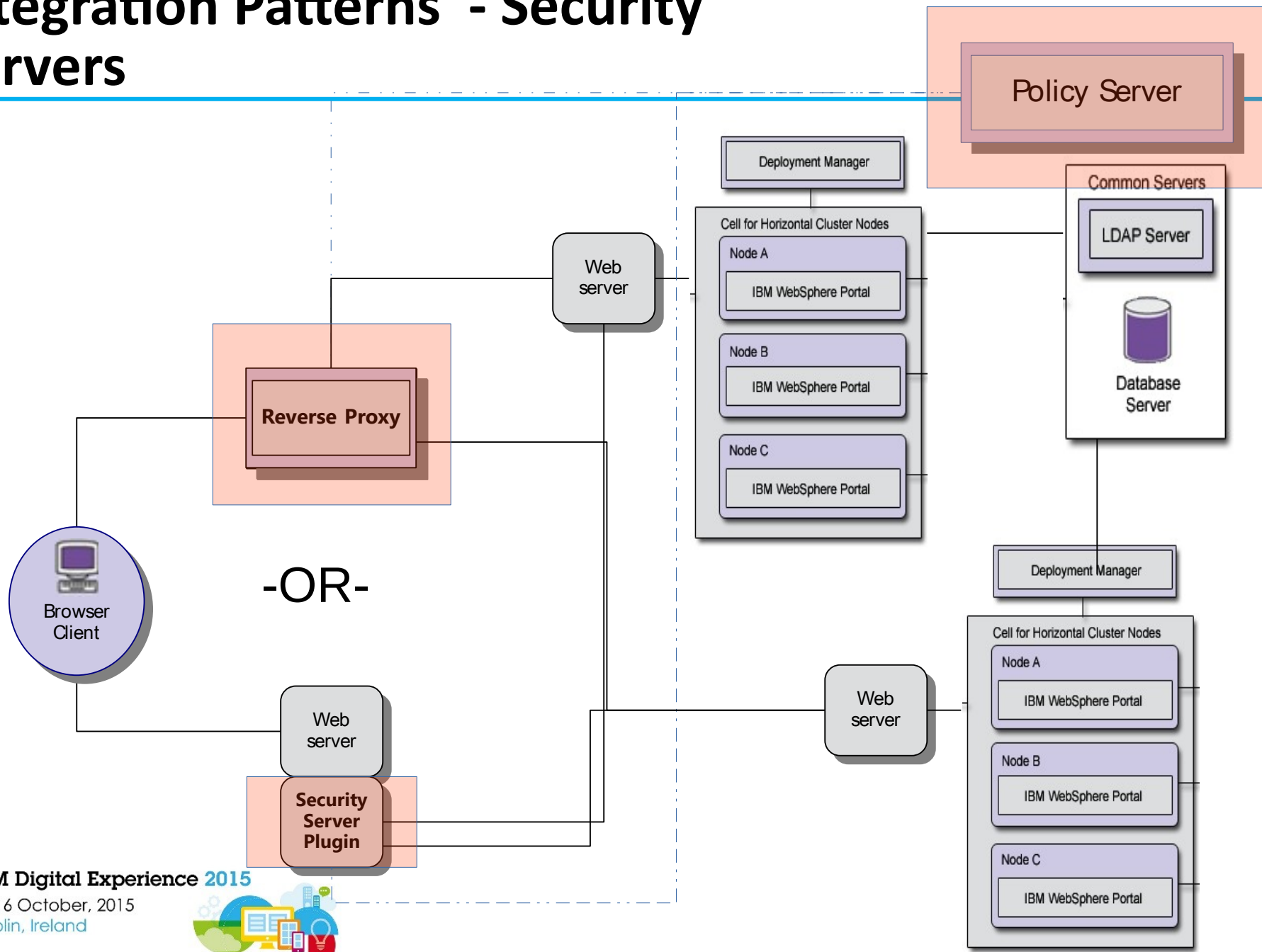


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Integration Patterns - Security Servers



External Search Integration

- Usually implemented in production environment as separate, stand alone server.
 - Required if WebSphere Portal is clustered
- IBM Installation Manager supports installation of Portal Search.
 - Will need to install WAS first.
- Determine search sources and security
 - Will impact search collections and search operations.
- Determine if search needs to be clustered
 - Either for HA or capacity
- If there is a requirement for clustering, see if search engine can support it.
 - WebSphere Portal Search cannot be clustered.
 - A custom search portlet will have to be created if there are multiple search servers.
- External Search will include multiple engines
 - Crawler
 - Index
 - Search



IBM Connections Integration

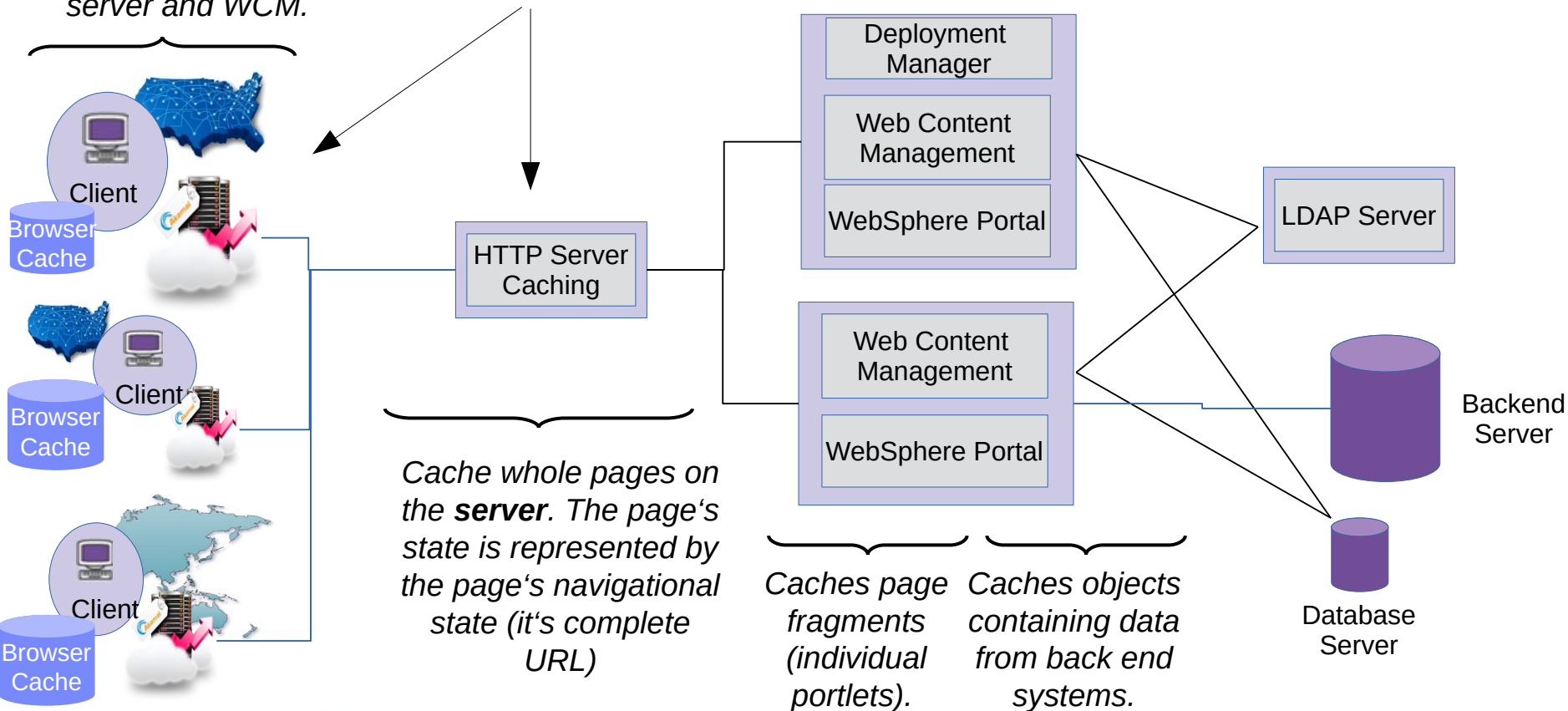
- **WCM Social Rendering Lists**
- **Social Media Publisher**
- **Connections Business Card Integration**
- **Federated Documents**
- **Tag Federation**
- **Search Integration**
- **Out of the Box Portlets**
 - Up to 14 available portlets
- **Digital Data Connector (DDC)**
 - More to follow on the DDC
- **Community pages**
 - Portal pages associated with communities from IBM Connections communities.
 - Portlets on community pages are automatically scoped to the community membership and display content from the community in the portlets.



Portal Caching

*Caches whole pages on the **client**. The expiry of these pages needs to be managed by the portal server and WCM.*

Themes/WCM images, scripts, static content provide content expiry which is honored here



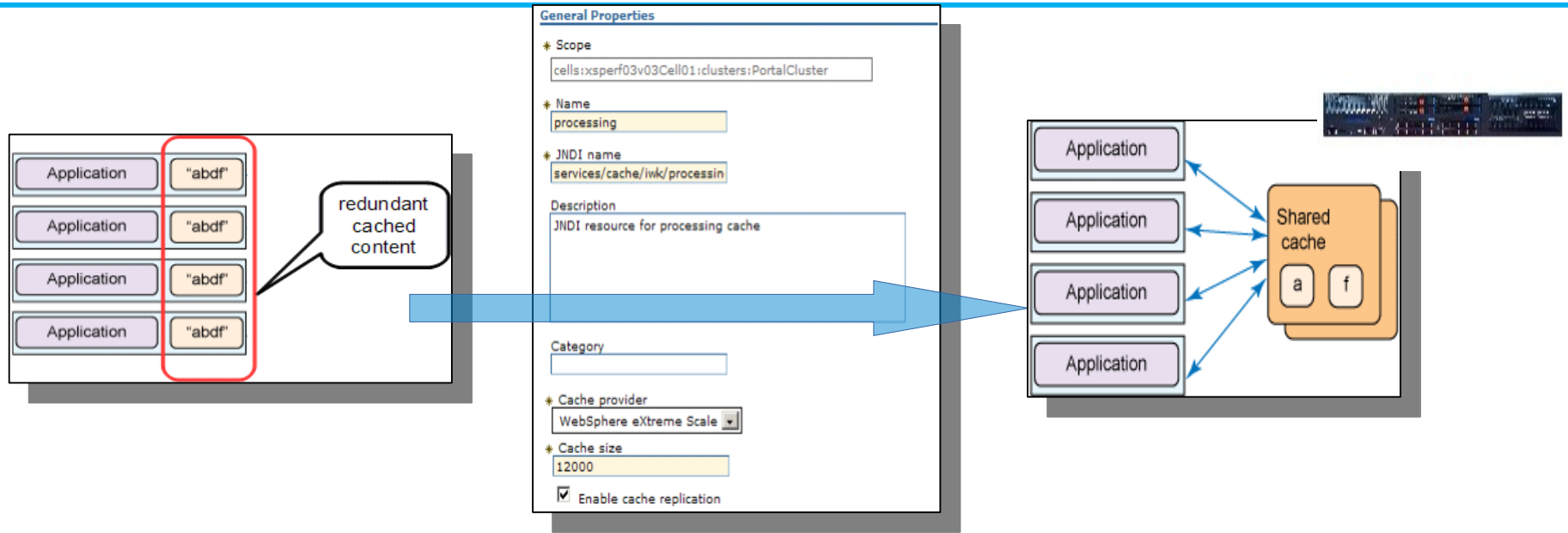
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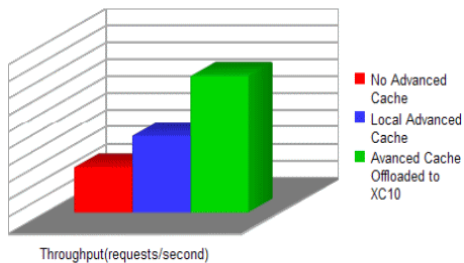
Dublin, Ireland



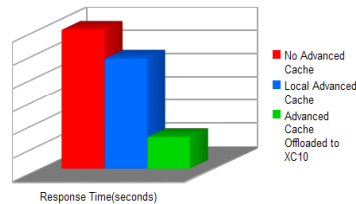
Integration Patterns - Extreme Scale Caching Certified



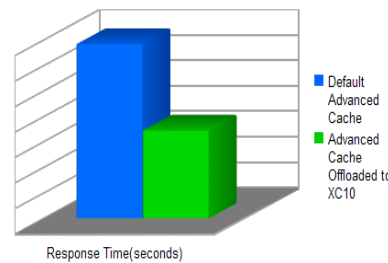
Steady state throughput



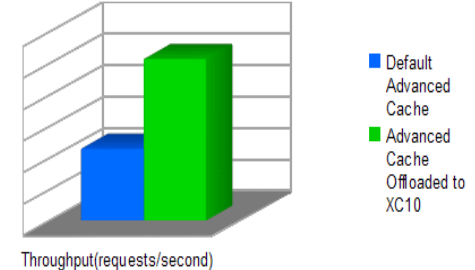
Steady state throughput wiki



Cold start response time



Cold start throughput



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http://www.ibm.com/developerworks/websphere/techjournal/1206_inreach/1206_inreach

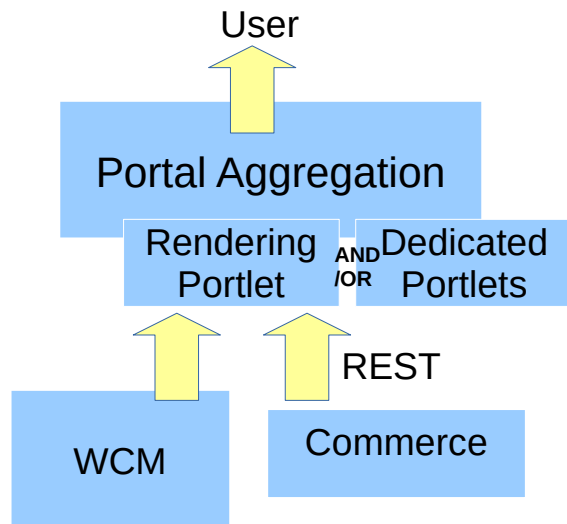
IBM WebSphere Business Process Manager Integration

- Unified Task List Portlet
 - Unified Task List Portlet features a service provider layer that accesses, retrieves, and formats workflow events from a back-end system.
 - Unified Task List portlet can be configured to retrieve tasks from IBM® Forms Experience Builder, WebSphere® Lombardi Edition, and IBM Business Process Manager.
- Business Process Manager Coaches
 - Coaches are the web-based user interfaces that provide process-related data to Process Portal users and collect input from those users.
 - Coaches are implemented in human services, which manage the flow from one coach to another.
 - Coaches can be made into portlets the IBM Integration Designer component of BPM
 - Use the Portlet Generator wizard to select the tasks.
 - Generate the portlet(s)
 - Install the portlet(s) on the WebSphere Portal instance and configure.
 - Communication is by WSRP



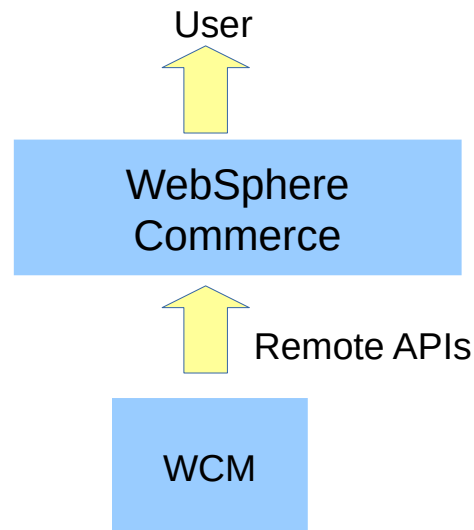
IBM WebSphere Commerce Server Integration Scenarios

Portal Front-End



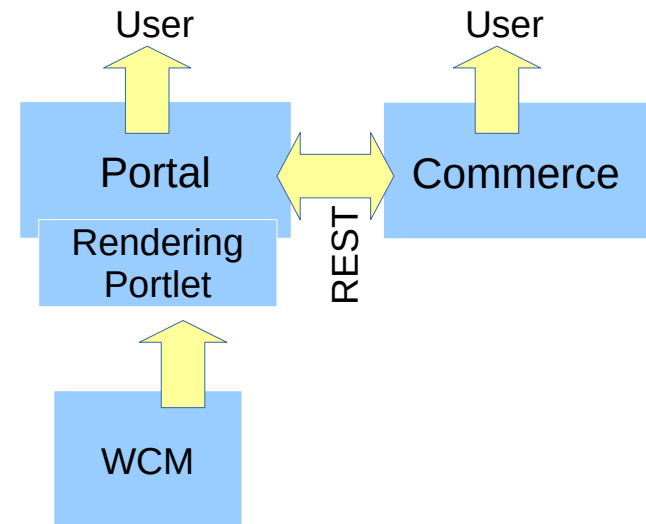
- Page aggregation is done by WebSphere Portal
- Generic WCM Rendering Portlet presents data from various sources.
- Dedicated portlets interact with various sources. Commerce can be one of them
- Can use DDC

Commerce Front-End



- Page aggregation is done by WebSphere Commerce
- WCM content is injected into Commerce via Remote services
- Support for this scenario is available as a Solution Catalog deliverable + Commerce Feature Pack

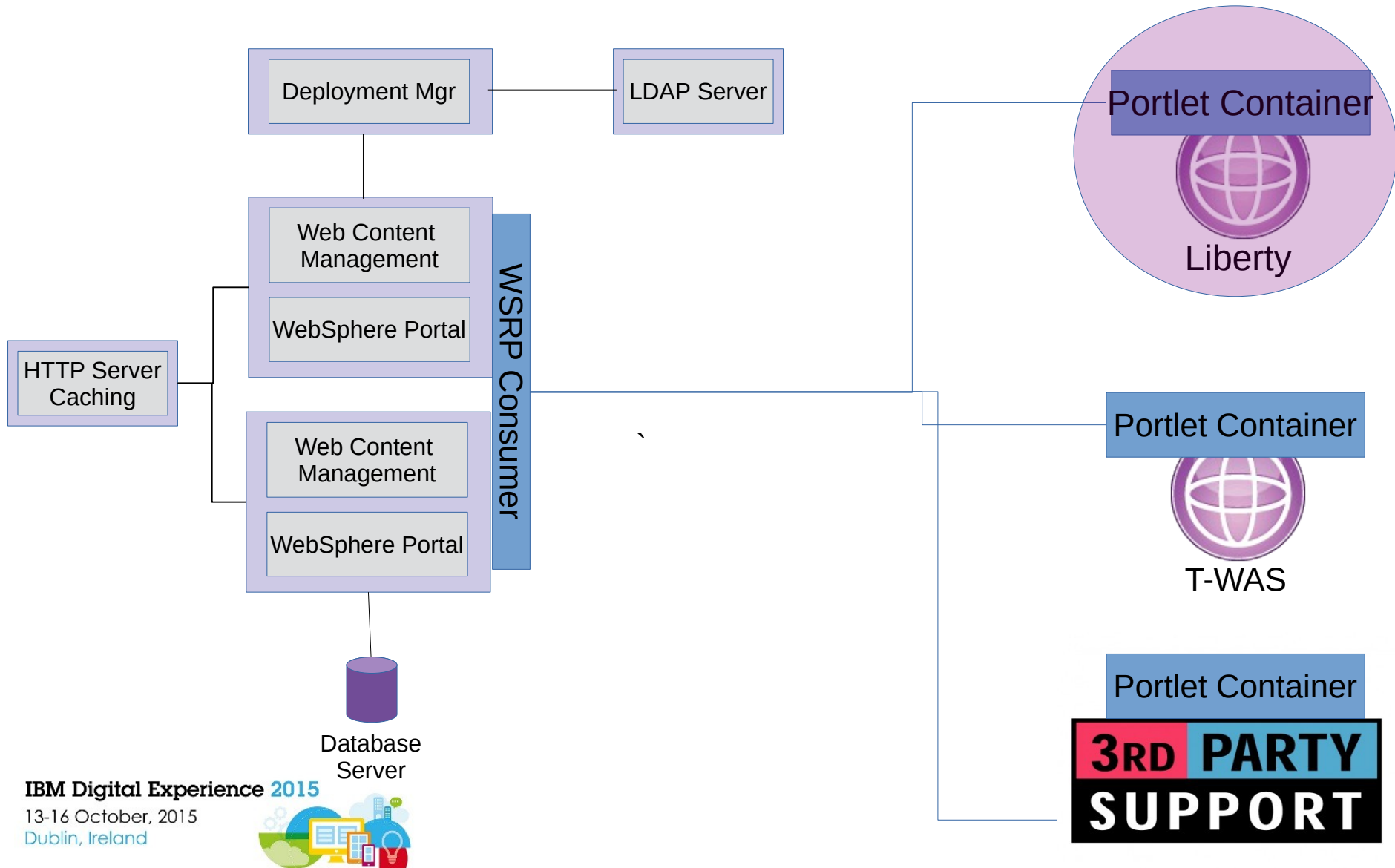
Side-By-Side



- User accesses either Portal or Commerce, depending which page he is looking at. Portal pages show web content & social, whereas Commerce shows shopping cart and product catalog.
- To some extent commerce information can be displayed on Portal pages and vice versa. The information is exchanged via REST services.
- Custom implementation



Integration with WAS Liberty Profile – WSRP and portlet container



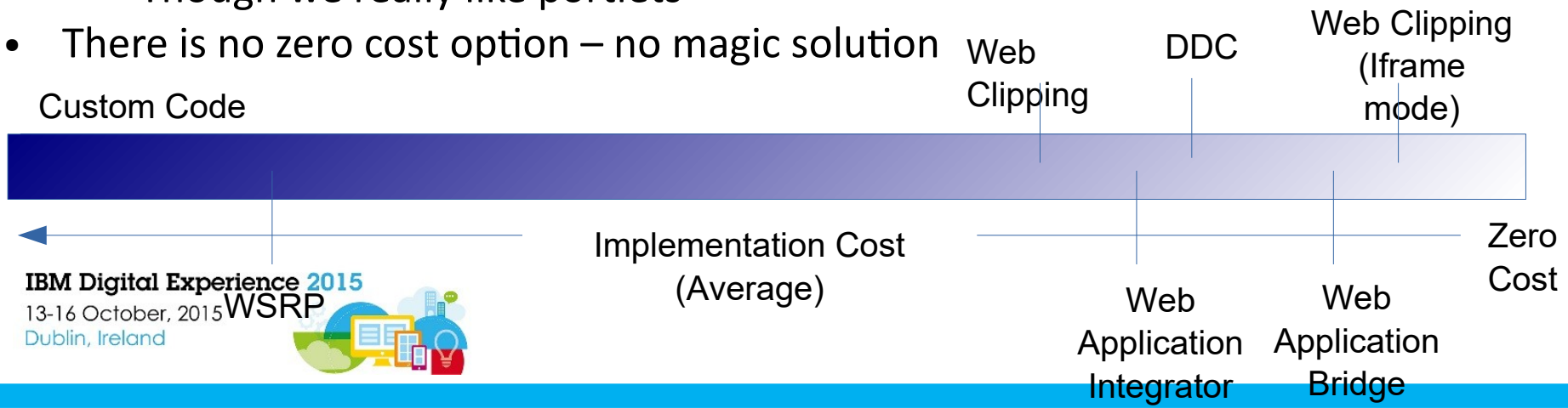
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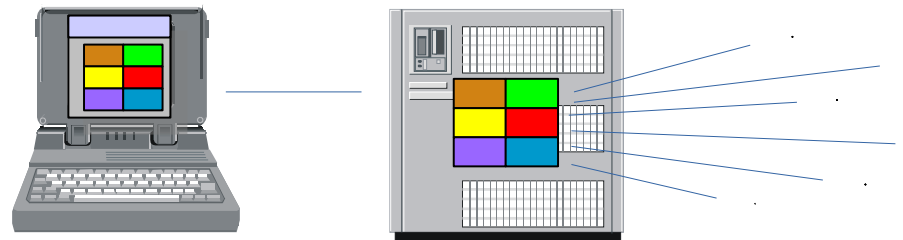
Application Integration Principles

- Smaller is faster, lighter, and better
 - Think SOA
 - Service enable everything
 - Let another tier own the business logic (controller) and the data (model)
 - Let Portal pick the right face for the result
- Federated portals are better than monolithic portals
- Portlets/portals can be service providers too, not just service consumers
- Portal should be resilient against, or at least protected from, back end failures
 - **When something in the back end fails, it is always Portal's fault**
- Where an application runs is not always a final decision
- To integrate with Portal, it doesn't have to be a portlet
 - Though we really like portlets
- There is no zero cost option – no magic solution



Web Services

- Many enterprise applications and frameworks have built-in Web Services capabilities
- Push the business logic (model and controller) outside the portal
 - Relegates portal to building the UI (view)
 - Minimizes competition for resources
 - Better scalability
- Promotes SOA and WebSphere Portal's proper place in it
 - Web Service reusable in other business contexts
- Leverages strengths in platform tooling
 - Rational Application Developer
 - IBM Web Experience Factory
- Flexible security model
- Open standards based
 - Cross product/platform interoperability



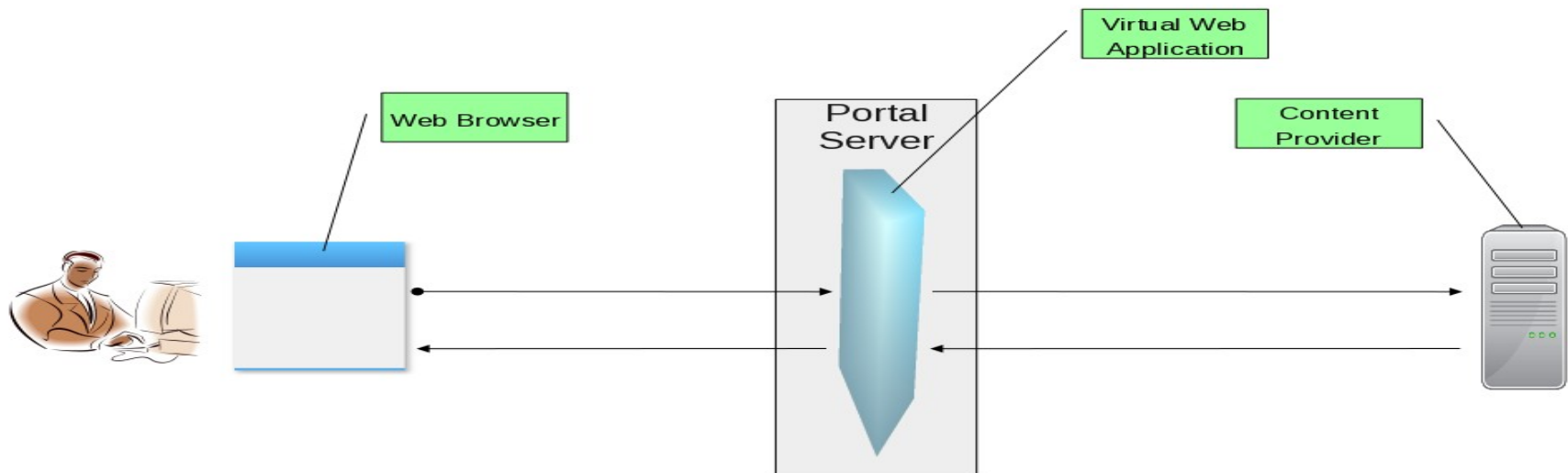
Web Application Integrator (WAI)

- Allows Portal customers to further leverage their investment in Portal by using it to centralize access to external web applications within the enterprise.
- Integration of web applications occurs by injecting Portal navigation into external web applications.
- No portlet development required. Portal theme may have to be updated to accommodate WAI code.
- How it works:
 - Leverages the Portal URL page feature and a new Portal entry point which returns JavaScript that generates Portal page navigation markup (e.g. page tabs, banner and actions).
 - This markup is “injected” into an external web application by adding an HTML <script> tag to the web app.
 - The user experience suggests that the user is still within the Portal environment even though they are, in reality, natively browsing the external web application.
- **Good for existing J2EE web applications that need to be brought into a Portal.**



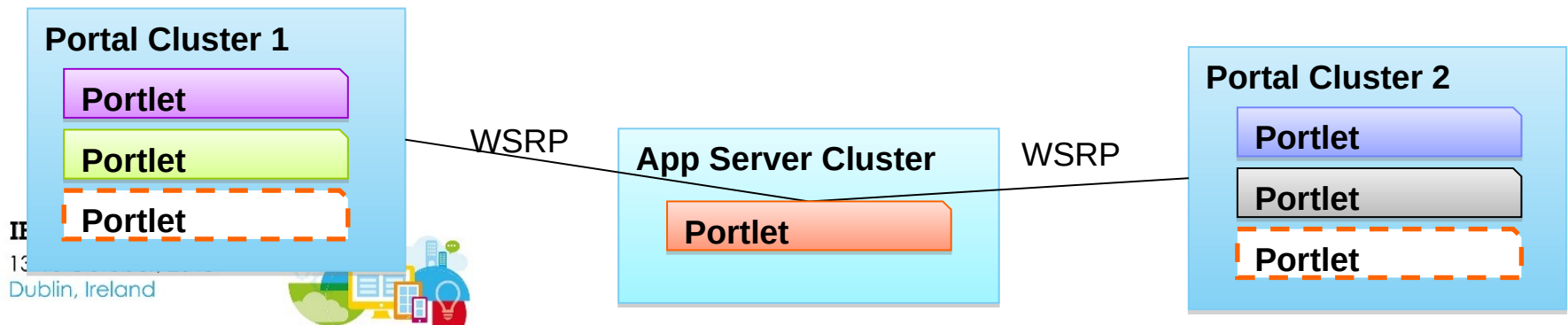
Web Application Bridge (WAB)

- The IBM Web Application Bridge for WebSphere Portal is a feature built on top of WebSphere Portal and WebSphere Application Server that facilitates low-cost, “At the glass” integration of existing Web applications.
- The Web Application Bridge uses HTML IFrames and reverse proxy technology to provide an integration solution conforming to the following major requirements.
 - Little to no content pre/post processing
 - Direct access to back-end applications is not allowed
 - Access to applications can be provisioned by URI
 - Authentication requirements and request handling can vary depending on an end users location



Web Services for Remote Portlets (WSRP)

- Run a traditional portlet in a remote container
 - WebSphere Portal (WP) or WebSphere Application Server (WAS) or third party
 - Can transition from local to remote, and back if necessary
- Open standards based
 - Cross product interoperability
- Test portlet outside WP in light-weight portlet containers
- Application runtime isolation
 - No competition for portal resources
 - Prevents stability concerns
- Promotes the application as a service provider (SOA)
- Allows non-portal technologies to integrate organically with WP
 - e.g. Cognos, BPM Coaches



Digital Data Connector (DDC)

- New in WebSphere Portal v8.5
- Extends what was done with WCM Social Rendering to enable IBM Web Content Manager (WCM) design components to render data being served from other external systems
- Provide a public plug-point to allow integration of all kinds of data
- Use WCM contents items to describe what data to include and what design component to use to render the data
- Support dynamic context overwrites of source and filter attributes using public render parameters
- Make it easy integrate remote XML data: No custom coding
 - Instead, use DDC list rendering profiles to transform external data into lists that can be rendered using WCM presentation templatesw



The Script Portlet

- Leverage Scripting Skills
- Enable exploitation of key portlet and portal concepts
 - Start the programmer off requiring only the skills they already have.
 - Progressively disclose to them additional Portal/Portlet capabilities

The diagram illustrates the architecture of the Script Portlet. On the left, three stacked boxes represent 'Scripts', 'CSS', and 'HTML'. On the right, four black circles represent 'Services'. Double-headed arrows connect the 'Scripts' and 'CSS' boxes to the 'Services' group, indicating bidirectional communication. Below this diagram is a screenshot of the 'Script Portlet Editor' interface. The editor shows a 'script portlet content' area with a text editor for HTML/JavaScript and a preview area. The HTML editor contains code for a jQuery Chart Sample, including a title, a link to a stylesheet, and a chart container. The JavaScript editor contains code for preparing chart data. The preview area shows a table of restaurant items with their prices.

Script Portlet Editor

script portlet content

Last modified Dec 21, 2013 12:41:54 PM GMT 05:30 by wpsadmin | Created by wpsadmin

1 <title id='Description'>jQuery Chart Sample</title> HTML | <head> 2 <link rel='stylesheet' href='http://www.jqwidgets.com/jquery-widgets-documentation/jqwidgets/styles/jqx.base.css' type='text/css' /> 3 <body style='background:white;'> 4 <div id='chartContainer' style='width:600px; height: 400px/'>

1 2 3 \$(document).ready(function () { 4 5 // prepare chart data 6 var sampleData = [7 { Day:'Monday', Books:30, Toys:15, Apparels: 25}, 8 { Day:'Tuesday', Books:25, Toys:25, Apparels: 30}, 9 { Day:'Wednesday', Books:30, Toys:20, Apparels: 25}, 10 { Day:'Thursday', Books:35, Toys:25, Apparels: 45}, 11 { Day:'Friday', Books:20, Toys:20, Apparels: 25}, 12 { Day:'Saturday', Books:30, Toys:20, Apparels: 20}, 13 { Day:'Sunday', Books:30, Toys:20, Apparels: 20}]

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Gold Card All Categories Last 30 Days

Filter items

November 20, 2012	
Category is Restaurant	
CHEESE CAKE FACTORY	21.55
Category is Restaurant	
MCDONALDS	3.23
Category is Restaurant	
BURGER KING	6.18

Access to

- Shared render parms
- Portlet preferences
- Portal AJAX proxy
- Script snippets
- Portal Styles
- etc

Managed by WCM

- Updates can be made in a project, previewed in isolation, approved, etc
- Changes can be published without an IT help

Portlet Load Monitoring Plug-In

- Monitor portlets (JSR168 + JSR 286) by
 - Maximum number of concurrent requests
 - Maximum average processing time for requests
- If maximum number of requests reached, or if average processing time exceeded
 - Throw an exception in portlet markup
 - Prevent further requests to portlet
- Allows to protect from more and more requests being blocked in non responsive portlet
 - Prevents “hang” of portal due to thread exhaustion
- Supports WebSphere Portal 6.1.x and later
 - Built into product from v7 onwards



Agenda

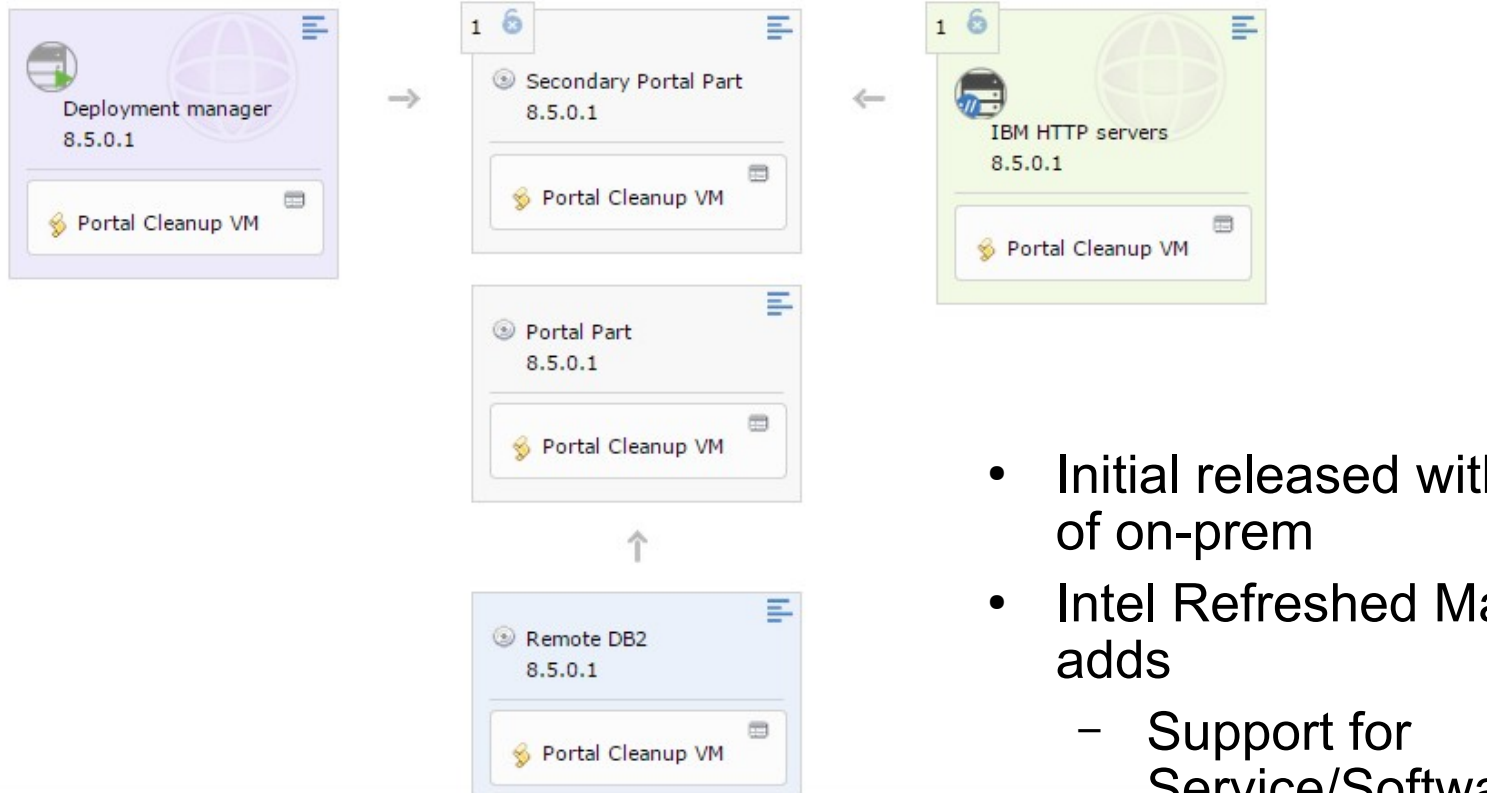
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Digital Experience Classic Pattern

WebSphere Portal 8.5.0.1 Elastic Cluster

Deploys to PureSystems_ESX hypervisors.



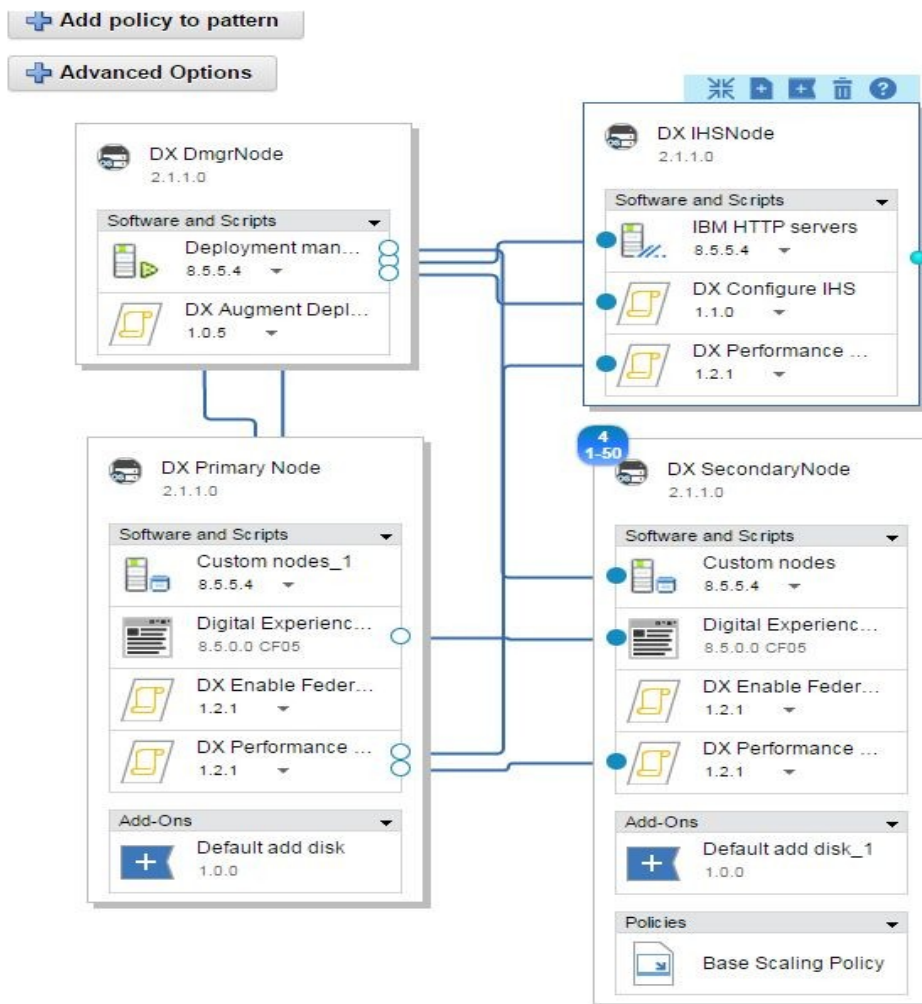
- Initial released within 30 days of on-prem
- Intel Refreshed May 2015 adds
 - Support for Service/Software
 - Bug fixes
- RHEL 6.4 64-bit and AIX 7.1
- WAS ND and IHS 8.5.5.2, DB2 10.5.0.4, Portal 8.5

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Digital Experience Pattern V2.0



- “Pattern.next”, “vsys.next”
- Released Aug 2015
- Prereqs WAS and DB2
- Much more flexibility
 - Scaling
 - Multi-rack
 - OS Portability
- More Default Script Packages

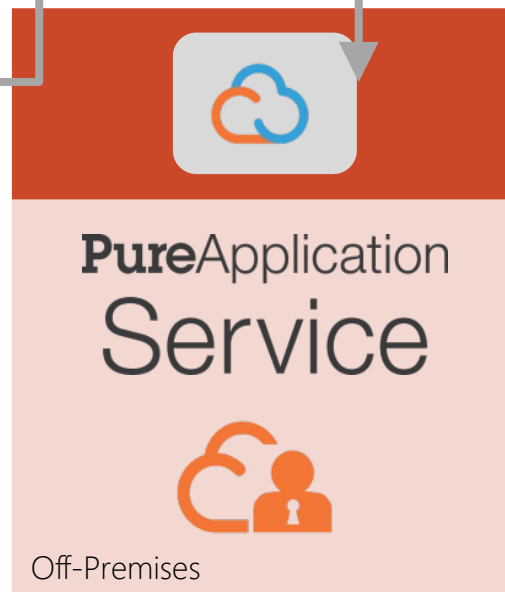


Digital Experience Classic Pattern – deploys to ...

**The same
pattern...**



**...on any
platform.**



Digital Experience on Cloud

Digital Experience on Cloud

I want to develop and run my website.

I need great availability and management taken care of.

I just need a production environment

I can use a WCM authoring environment for testing.

2 environments

25% Client
Success Manager

VPN

Software

SLA

Helpdesk

Hosting

Upgrades

Service
mgmt

5725-T31

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Digital Experience Plus on Cloud

I need full application development options.

I need great availability and management taken care of.

I need non-production environments for testing java applications.

4 environments

50% Client
Success Manager

VPN

Software

SLA

Helpdesk

Hosting

Upgrades

Service
mgmt

5725-T32

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Conclusion

- **Operational Architectures**
 - Layout general architectures for WebSphere Portal and WCM.
 - Reviewed options for High Availability
 - Reviewed the Farm Design for WebSphere Portal
- **Integration Patterns**
 - Presented ways to integrate IBM Software products with WebSphere Portal
- **Application Integration**
 - Presented ways to bring existing and third party applications into WebSphere Portal
 - The Script Portlet and the DDC are the newest methods for application integration
- **Cloud**
 - Presented cloud options and operations for WebSphere Portal



Questions?



IBM Digital Experience 2015

13-16 October, 2015

Dublin, Ireland



Thank you!

TECH B01

IBM Digital Experience Solution Architectures and Operations

Your feedback is important to us.

Please complete your evaluations on the IBM EventConnect Portal

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For Additional Information

- **IBM Digital Experience Solutions**
<http://www-01.ibm.com/software/collaboration/digitalexperience>
- **WebSphere Portal and IBM Web Content Manager Information Center Wiki**
<http://www-10.lotus.com/ldd/portalwiki.nsf/>
- **IBM Digital Experience Demonstrations:**
<http://www.youtube.com/user/IBMXWebX>
- **IBM Digital Experience Developer**
<http://developer.ibm.com/digexp>
- **IBM Software Business Solutions Catalog**
<https://greenhouse.lotus.com/catalog/>

