Title: Portal Standards support in WebSphere Application Server and WebSphere Portal (JSR 168 / 286, WSRP 1.0 / 2.0)

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Objectives

- Learn what’s new with JSR 286 and WSRP 2.0
- Learn what you can do with portlets in WebSphere Application Server
- Get to know the relationship of the WebSphere Application Server portlet runtime and WebSphere Portal 6.1
- Learn how to implement isolation scenarios using the WebSphere Application Server WSRP producer
Agenda

- Portlet Standards growth
- Portlet support in WebSphere Application Server
- Relationship with WebSphere Portal 6.1
- WebSphere Application Server WSRP producer
- Migrating to WebSphere Portal
- Outlook
- Summary
Agenda

- Portlet Standards growth
  - Portlet specification 1.0 (JSR 168) / 2.0 (JSR 286)
  - Webservices for Remote portlets (WSRP) 1.0 / 2.0
- Portlet support in WebSphere Application Server
- Relationship with WebSphere Portal 6.1
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Scope of the Portlet Specification (JSR 168 / JSR 286)

- Portlet API and portlet container
- Contract between the API and the container
- Deployment unit: portlet application
- Not:
  - Aggregation, layout management
  - Page personalization and configuration engines
  - Portal administration and configuration...
Scope of Webservices for Remote Portlet (WSRP)

- Enable the sharing of portlets over the Network with a common interface
  - Presentation-oriented WebServices
  - Cross vendor publishing and consuming of applications and content (also cross language: .NET, Java...)
- Pluggable, NO coding required to integrate new services
  - Proxy and stub are coded once or generated automatically
  - No service-specific UI required
Where do we want to go from 1.0?

- 1.0 design goal
  - Provide the programming model for **standalone**, pluggable UI application components
  - Portlet communication via common session
    - For portlets bundled into same web application
  - Applies to WSRP 1.0 & Java Portlet API 1.0 (JSR168)

- 2.0 design goal
  - Define how portlets may be **coordinated** and react as a whole
    - Allows building composite applications based on portlet components
  - Allow for a better user experience using AJAX patterns
  - Portlet communication cross web application / producer boundaries
  - Applies to WSRP 2.0 & Java Portlet API 2.0 (JSR286)
Portlet specification 2.0 (JSR 286) – Coordination Features

- Events
  - A portlet can declare events it wants to receive and events it wants to emit
  - The portal / portlet container will act as broker and distribute the events accordingly
  - Allows wiring of portlets at runtime
  - Used for complex data types – action semantic
    - New processEvent lifecycle method

- Public Render Parameter
  - Extension to the portlet navigational state, managed by the Portal
    - Shares render parameters between portlets
    - Enables portlets to react in a coordinated manner
  - Simple types – no extra lifecycle
Portlet specification 2.0 (JSR 286)

- Resource Serving
  - Primarily an AJAX driven feature to serve any content within the Portlet and have access to the full portlet state at the same time
  - Portlets will not be rendered as markup fragments and therefore control the output stream themselves
  - New serveResource lifecycle method

- Extended Request Dispatcher Capabilities:
  - Better support of web frameworks on top of portlets
  - Request dispatching is now allowed for all lifecycle methods
    - No markup can be returned for action / event
  - Request dispatcher forward if now allowed for all lifecycle methods
    - Delegate to servlets for action handling
    - Delegate to JSP’s for complete markup generation
Portlet specification 2.0 (JSR 286) - Miscellaneous

- Caching
  - New API allows to get and set cache settings
  - Shared cache entries
  - Validation based caching
- PortletFilter
  - Define filters to intercept the portlet Invocation or the URL creation
- Extended runtime Id’s
  - Portlet can now access the portlet window ID at the request
- PortletURL now accepts a writer
- CC/PP (JSR 188) support
- Restricting the custom window states for a given markup
- Lots of small clarifications and clean up...
WebServices for Remote Portlets (WSRP) 2.0

- Aligned with JSR 286
  - Supports Coordination Features:
    - Eventing
    - Public Render Parameter
  - Supports resource serving
  - ...

- WSRP specific new features:
  - Leasing
    - Improve Producer resource management by providing lifetimes for portlet instances
Agenda

- Portlet Standards growth
- Portlet support in WebSphere Application Server
  - Motivation
  - Capabilities
  - Architectural Overview
  - Access Portlets
  - Demo
- Relationship with WebSphere Portal 6.1
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WAS Portlet Support - Motivation

- Encourage a consistent Programming model
  - IBM recommendation:
    - Use portlets as UI components
    - Use servlets to implement services
- Makes this programming model available for single components
  - Easy portlet integration into web applications
  - Same programming model can be used to define business mashups (aka composite applications) within WebSphere Portal
- Make the Portlet Programming Model as easy to develop and access as Servlet Programming Model
WAS Portlet Support - Capabilities

- Basic portlet support has been introduced with WAS 6.1
  - JSR 168 compliant portlet container
  - Two Basic Portals: „Url Addressability“ and the „aggregation Taglib“
- Extended support for JSR 286 with WAS 7.0
- Manage Portlets and the PortletContainer
  - Using ISC (admin console) as known from servlets and the webcontainer
- Access Portlets
  - Direct „URL Addressability“ of portlets
    - Portlets are accessible via URL as known for Servlets
    - http://<host>:@<port>/<context-root>/<portlet-name>
  - Aggregation of portlets using the „aggr. TagLib“
WAS Portlet Support - Capabilities

- Performance Measurement
  - Request Metrics
    - Log all portlet lifecycle invocations
  - Performance Measurement Infrastructure (PMI)
    - Displays average performance indicators for portlets

- Portlet Caching
  - Leverages Dynacache
  - Defined using cachespec.xml and the portlet.xml cache configuration
  - Fragment Caching

- Security
  - Define security constraints within the portlet.xml / web.xml
  - Standard J2EE security
WAS Portlet Support - Architectural Overview

- Aggregates Portlets in JSP pages using a simple JSP tag library
- Access Portlets as known from Servlets using direct URL "addressability"

- Portlet URL Addressability

- Aggregation TagLib

- Portlet API

- WAS Portlet Container

- Portlet app #1
  - Portlet A
  - Portlet B

- Portlet app #N
  - Portlet C

- Implements the Portlet Standards and enables Portals build on top to exploit those features by implementing defined extension points
- It is up to the Portal implementation what is supported and how a specific feature works e.g. Preference Persistence, URL handling...
- Provides capabilities for portlet and portletcontainer management using common WAS configuration means
WAS Portlet Support - Access Portlets - URL Addressability

- Complete portlet „URL Addressability“ – URL pattern with example

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>/&lt;context-root&gt;</td>
<td>/worldclock</td>
</tr>
<tr>
<td>/&lt;portlet-name&gt;</td>
<td>/StdWorldClock</td>
</tr>
<tr>
<td>/&lt;portletwindow&gt;</td>
<td>/default</td>
</tr>
<tr>
<td>/&lt;ver&gt;</td>
<td>/ver=2.0</td>
</tr>
<tr>
<td>/resource/&lt;id&gt;</td>
<td>/resource/id=image.jpg</td>
</tr>
<tr>
<td>/action</td>
<td>/action</td>
</tr>
<tr>
<td>/&lt;mode&gt;</td>
<td>/mode=edit</td>
</tr>
<tr>
<td>/&lt;state&gt;</td>
<td>/state=maximized</td>
</tr>
<tr>
<td>/&lt;rparam&gt;</td>
<td>/rparam=timezones=UTC=MEZ</td>
</tr>
<tr>
<td>&lt;query parameter&gt;</td>
<td>?timezone=UTC</td>
</tr>
</tbody>
</table>
<portlet:init portletURLPrefix="http://localhost/hello/framework/" portletURLSuffix="/something" portletURLQueryParams="pl=v1&p2=v2">
  
  <table>
    <tr>
      <td>{$weather.title}</td>
      <td><a href="{$weather.view}">view</a></td>
      <td><a href="{$weather.edit}">edit</a></td>
      <td>{$time.title}</td>
      <td><a href="{$time.view}">view</a></td>
      <td><a href="{$time.edit}">edit</a></td>
    </tr>
    <tr>
      <td colspan="3">{$weather.content}</td>
      <td colspan="3">{$time.content}</td>
    </tr>
  </table>
</portlet:init>
WAS Portlet Support - Access Portlets - Details

- Address portlets directly via URL request
  - Returning portlet output as HTML document, by default
  - Example: http://localhost:9080/worldclock/StdWorldClock
- Include portlets as fragments by any Servlet via RequestDispatcher
  - Returning portlet fragment only
  - Including portlets by portlets is NOT supported!
  - Example:
    servletRequestDispatcher.include("/worldclock/StdWorldClock");
- Access remote portlets via Remote Request Dispatcher
  - Normal Servlet Remote Request Dispatcher can detect this URL and render the portlet remotely (works only for JSR 168!)
  - allows the invocation of portlets outside of the current JVM within a Network Deployment single core group environment
WAS Portlet Support - Access Portlets - Details

- PortletPreferences are stored within cookies
- Using resource Serving to have complete control over the markup (WAS 7.0)
- Aggregate multiple portlets on a page via Aggregation Tag Library
  - The URL contains only the state of one portlet on the page
  - The page state (state of all portlets) is managed via session
    - NO bookmarkability or back-button support
- Supports Public Render Parameter (WAS 7.0)
  - Share the navigational state between portlets by defining a page scope using a specific JSP tag
- NO Eventing support
WAS Portlet Support - Demo

- Installation
- URL addressability
- Aggregation
  - Public Render Parameter
- (PMI)
Agenda

- Portlet Standards growth
- Portlet support in WebSphere Application Server
- Relationship with WebSphere Portal 6.1
  - Architectural Overview
  - Features
- WebSphere Application Server WSRP producer
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Relationship with WebSphere Portal – Architectural Overview

- On a Portalserver node, URL addressability and the aggregation TagLib portlet access is disabled (by default) to avoid security problems.

- WebSphere Portal 6.1 on WAS 6.1 uses a backport of the WAS 7.0 portletcontainer (JSR 286) instead of the original JSR 168 portletcontainer in WAS 6.1.
- WebSphere Portal 6.1.0.1 and future versions on WAS 7.0 will use the WAS 7.0 portletcontainer directly.
### Relationship with WebSphere Portal – Standard Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>WebSphere Portal 6.1</th>
<th>WAS 6.1</th>
<th>WAS 7.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSR 168</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>JSR 286</td>
<td>✓</td>
<td>x</td>
<td>(✓)</td>
</tr>
<tr>
<td>Eventing (JSR 268)</td>
<td>✓</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Public Render Parameter (JSR 286)</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
</tr>
<tr>
<td>Resource Serving (JSR 286)</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
</tr>
<tr>
<td>WSRP 1.0 Producer</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>WSRP 1.0 Consumer</td>
<td>✓</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>WSRP 2.0 Producer</td>
<td>✓</td>
<td>x</td>
<td>(✓)</td>
</tr>
<tr>
<td>WSRP 2.0 Consumer</td>
<td>✓</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
Relationship with WebSphere Portal – Pitfalls

- Portlet URL length management differs
- User management and security aspects
  - Embed backend-systems via WebSphere Member Manager
- Portlet Preferences and modes
  - Persistency guaranteed by use of databases instead of Cookie or Session persistence
- Customizations and default values defineable via corresponding modes
- Portlet Fragment Caching
- Portlets on a portlet page must take care about namespaceing themselves
- No Access to WebSphere Portal programming model extensions
  - Property Broker, Credential Vault, Content Access Service ...
Agenda

- Portlet Standards growth
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- WebSphere Application Server WSRP producer
  - Architectural Overview
  - Usage Scenarios
  - Demo
- Migrating to WebSphere Portal
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WAS WSRP Producer – What is it?

- Lightweight IBM WebSphere Application Server WSRP 1.0 Producer
  - Builds on top of WAS Portlet Container
    - Exposes JSR168 portlets as WSRP services
    - Enables all WSRP 1.0 Consumers to interact with WAS portlets
- “Silent” integration
  - Easily deployable (just drop an EAR file on WAS)
  - Seamless integration with JSR168 container in WebSphere Application Server
  - No new admin UI
    - Directly integrated into existing WebSphere Application Server admin console
- Supported on all platforms and available as free Catalog download
- Covers the same WSRP 1.0 protocol spectrum as WebSphere Portal 6.1
WAS WSRP Producer – Architectural Overview

[Diagram showing the architectural overview of WAS WSRP Producer]
WAS WSRP Producer – Architectural Overview

Portal Users

WebSphere Portal 6.1 (Consumer)

Portlet API

WAS Portlet Container

Aggr. TagLib

URL Addressability

WSRP Proxy#N

Generic

Portlet app #N

WAS WSRP Producer

Portlet API

WAS Portlet Container

Portlet app #1

Portlet C

JVM 0 - Portal

SOAP

JVM 1 - WAS

Administrator

JVM N - WAS
WAS WSRP Producer – Usage Scenarios

- Lightweight means to integrate content into Enterprise Portals
- Provide access to JSR168/JSR 286 (soon) portlets deployed on WebSphere Application Server
- Exploit WebSphere Application Server features from portlets and integrate them to WebSphere Portal
- JVM Isolation & Workload Distribution
  - Distribute portlets to different JVMs
  - Protect Enterprise front-end portal from “malicious” portlets tearing down the JVM
  - Spread out load to Producer servers
    - If many applications need to be served
    - Applications using much memory
    - Applications causing high cpu load on central server
WAS WSRP Producer – Exposing Portlets

- By default all portlets installed into WebSphere Application Server are exposed as WSRP remote portlets
  - WSRP Consumers can access portlets right out-of-the-box
  - No additional administrative tasks necessary

- Administrator can control access to these portlets
  - Portlet exclude list
    - Portlets can be excluded from being provided over WSRP in general
    - Controlled via WAS admin console
  - Access Control checks
    - Tied to JavaEE security
    - Can be enabled/disabled by admin
WAS WSRP Producer – Security

- Authentication, Integrity, Confidentiality, Non-Repudiation
  - Realized by WS stack (WS-Security)
  - And/or transport level (SSL)
- Supports SSO using WS-Security identity assertion
  - LTPA token forwarding
  - Signed UsernameToken
  - UsernameToken for asserted identity + UsernamePasswordToken for trust identity
- In general everything WebSphere Application Server Supports with WS-Security
- Access Control handled by WSRP 1.0 Producer & WebSphere Application Server Security
  - Authorization checks against JavaEE security role specified by the portlet
WebSphere Application Server WSRP Producer - Demo

Client

WebSphere Portal 6.1

Portlet URL Addressability

WAS Portlet Container

Portlet API

Portlet app #1

Portlet A

Portlet B

Generic WSRP Proxy#N

WAS WSRP Producer

Portlet URL Addressability

WAS Portlet Container

Portlet API

Portlet app #1

Portlet A

Portlet B

Portlet C

Portlet app #N

server: WebSphere_Portal

server: server1

SOAP
## WAS WSRP Producer – How does it compare to Portal?

<table>
<thead>
<tr>
<th>Feature</th>
<th>WebSphere Portal 6.1</th>
<th>WAS WSRP 1.0 Producer</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSRP 1.0 conformance</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Bridge JSR 168 portlets to WSRP</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Cluster support</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Persistent State Management</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Pushed to Consumer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session Management</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Remote config mode</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Edit defaults support</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>WSRP caching support</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SSO using WS-Security</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Authorization</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Granular control (by mode)</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Personalization (WSRP P3P profiles)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Puma User support</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>WebSphere Application Server 6.1</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
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Migrating to WebSphere Portal

- No direct migration from "URL Addressability" or "aggr. TagLib"
  - reuse the portlets directly
- Install Portal on top of an existing WAS with portlets
  - Use the XML Access "predeployed" app task
  - Mind the Pitfalls:
    - Caching
    - Security
    - ...
- Integrate portlets running on WAS in a portal node
  (using the WAS WSRP producer)
  - no changes in the portlets
  - Isolation to run your applications on multiple JVMs
  - Step by step migration
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Outlook (subject to change)

- Portlet and Portletcontainer management will be more aligned with the standard WAS configuration means as in previous Portal versions
- WebSphere Portal profile and configuration management will be easier
  - e.g. Use the Dmgr for your cluster deployment directly
- WAS WSRP 2.0 producer
  - On WAS 7.0
- WAS 7.0 will support all component model features of JSR 286
  - Portlet filters
  - Resource Serving
  - Validation based Caching
  - Public Render Parameters
  - ...

Summary

- The major theme of the second version of the Portlet Standards is Coordination and building composite applications based on portlet components
- Use the WAS portlet support for easy developing and testing your applications
  - WAS 6.1 supports JSR 168
  - WAS 7.0 supports JSR 286 (partially)
- WebSphere Portal 6.1 builds upon the WAS internal portlet support instead of shipping its own container
  - Enables advanced Portal features as aggregation, personalization...
- Use the WAS WSRP producer for Isolation and Migration scenarios
  - WAS WSRP 1.0 producer available (can be used on WAS 6.1 and WAS 7.0)
  - WAS WSRP 2.0 producer will be available soon (WAS 7.0)
Additional Information and Resources

- „Exploiting the portlet runtime in WebSphere Application Server 6.1“
  developer works article series:

  ▶ Part 1: Introduction

  ▶ Part 2: Extended Capabilities

  ▶ Part 3: Performance Measurement

  ▶ Part 4: Migrating to WebSphere Portal
Additional Information and Resources

- “Leveraging J2EE roles in JSR 168 portlets running in WebSphere Portal”

- Q&A on developing portlets in WAS 6.1

- WAS WSRP producer download

- Register predeployed portlet applications in Portal
Thanks for your attention!

Questions?

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