



IBM Software Group

## WebSphere Development Studio Client Advanced Edition

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- ▶ This presentation reviews the Advanced Edition of WebSphere Development Studio Client for iSeries which consolidates the standard set of application tools for iSeries server and e-business development into one comprehensive, integrated and attractively priced iSeries product.

## Disclaimer

### Acknowledgment:

- This presentation is a collaborative effort of the IBM Toronto iSeries Application Development presentation team, including work done by:
  - ▶ Alison Butterill, David Muir

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- ▶ This presentation is a collaborative effort from the very team that brings you WDS!

## Agenda

- ▶ **Quick Overview**
- ▶ **EJB Tooling**
- ▶ **Profiling Tooling**
- ▶ **iSeries JCA Connector**
- ▶ **WebFacing Tool - Struts**
- ▶ **WebFacing Tool - CustomTags**
- ▶ **Reference**

## WDSC Advanced Edition

### ▶ **Quick Overview**

## WebSphere Products

### WebSphere Studio Application Developer

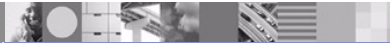
### WebSphere Studio Site Developer

**Eclipse**  
[www.eclipse.org](http://www.eclipse.org)

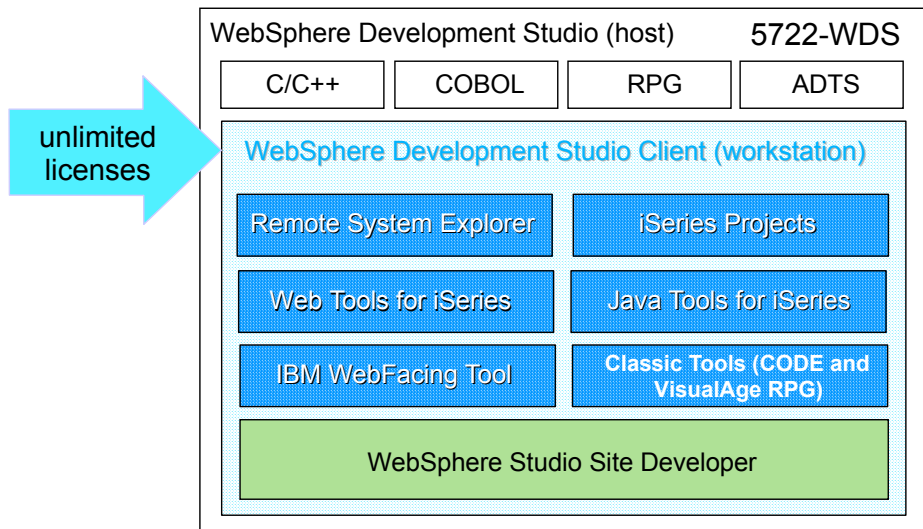


Java	XML
HTML	Web Services
JSP	Servlet
Unit Test Env	Database

EJB
EJB CMP
EJB QL
EJB CMR
EJB Test Env
Profiler

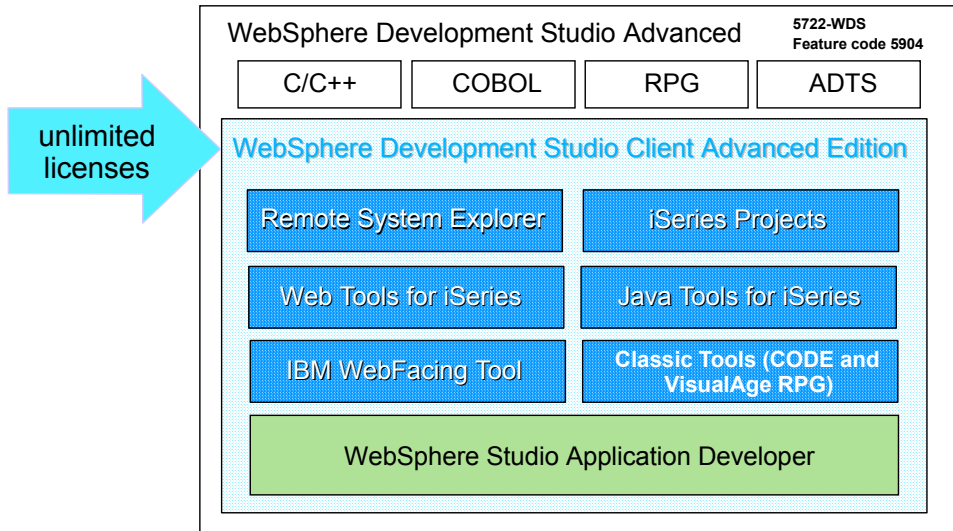


## iSeries Packaging for Version 5.0



- ▶ As of V4R5, there has been only one AD product sold by IBM for iSeries. This is WebSphere Development Studio, which includes all four host compilers, all traditional tools (ADTS = PDM+SEU+SDA+RLU+DFU+AFP+CGU), and unlimited licenses of the workstation-based toolset now named WebSphere Development Studio Client.
- ▶ Existing AD customers who have subscription can upgrade to WDS free of charge. Without SS, there is an upgrade fee.
- ▶ For customers of WDS, they receive a single copy of WDT but the right to install it on as many workstations as desired, as long as it is used by iSeries developers.
- ▶ For consultants who do not have an iSeries of their own, but still wish to have the client tools, WDT was also made available as a non-iSeries product so it can be purchased "off the shelf" from IBM Direct. This solved a long-standing problem with CODE/400 and VisualAge RPG, which were out of the reach for this important customer set.
- ▶ WDS has been a huge success, with over 70,000 licenses sold in the first year.
- ▶ Just as every development machine used to have PDM and SEU, every development machine now has all the modern AD tools from IBM.
- ▶ This ubiquity is especially important for business partners who build and sell customizable applications.

## iSeries Packaging for Version 5.0



## WSAD V5 Features

- **J2EE 1.2 & 1.3**
  - ▶ Tooling supports both J2EE versions
  - ▶ Application migration tools assist moving from 1.2 to 1.3
- **Servlet 2.3**
- **JSP 1.2**
- **Concurrent support for J2EE 1.2 & 1.3**
  - ▶ WebSphere Application Server V4
    - ✓ J2EE 1.2 support
  - ▶ WebSphere Application Server V5
    - ✓ J2EE 1.2 & J2EE 1.3 support
  - ▶ WebSphere Application Server V5 Express
    - ✓ J2EE 1.2 & J2EE 1.3 support
    - ✓ Does not support EJB's

The key features of the Advanced Edition include:

- ▶ Support for J2EE 1.3 - EJB 2.0, Servlet 2.3 and JSP 1.2 specification
- ▶ Concurrent support for WebSphere Application Server V4 (J2EE 1.2) and WebSphere Application Server V5 (J2EE 1.3)



## New V5 Features

- **Enterprise Java Beans 2.0**
  - ▶ Require J2EE 1.3
- **Enterprise Java Bean Support**
  - ▶ Message Driven beans
  - ▶ Container Managed Persistence 2.0 (CMP 2.0)
  - ▶ Mapping tooling
  - ▶ EJB Query Language (EJB QL)
    - ✓ Similar to SQL language
  - ▶ EJB unit test environment

- ▶ New support for J2EE 1.3 specifications - EJB 2.0, servlet 2.3, JSP 1.2
- ▶ Full EJB 2.0 support includes EJB Query Language, CMP 2.0 and Message-driven beans

## WDS*c* Advanced Edition

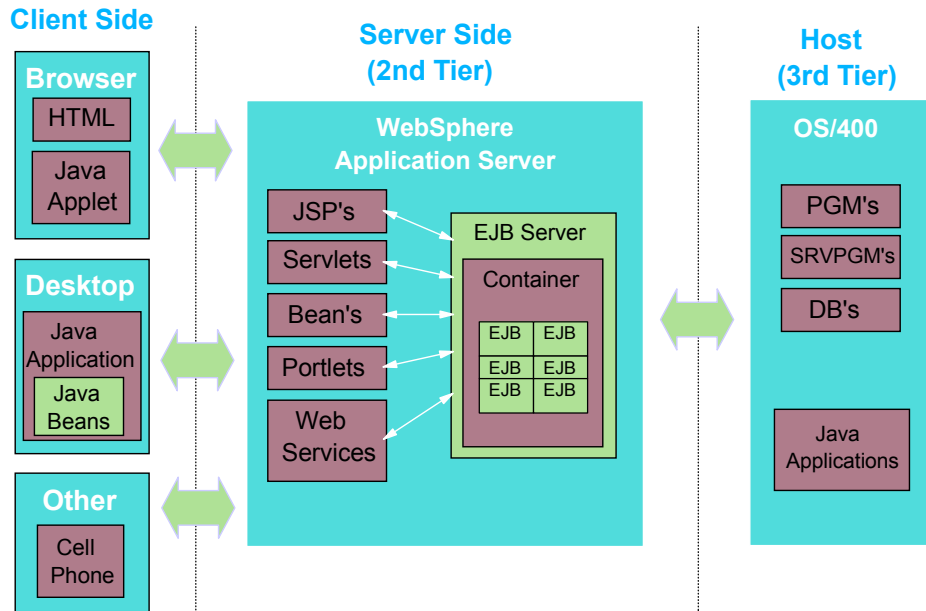
### ▶ **EJB Tooling**

## EJB Information

- EJB's now 4 years old
- Originated from CORBA and Remote method invocation (RMI)
- Focus on simplifying server-side logic implementation
- Provide automatic support for services such as
  - ▶ transactions
  - ▶ security
  - ▶ database connectivity
  - ▶ and more
- Great online tutorials:
  - ▶ IBM DeveloperWorks - <http://www.ibm.com/developerworks>
  - ▶ JavaSoft - [www.javasoft.com](http://www.javasoft.com)



# EJB Information : Where are they?



## EJB Applications

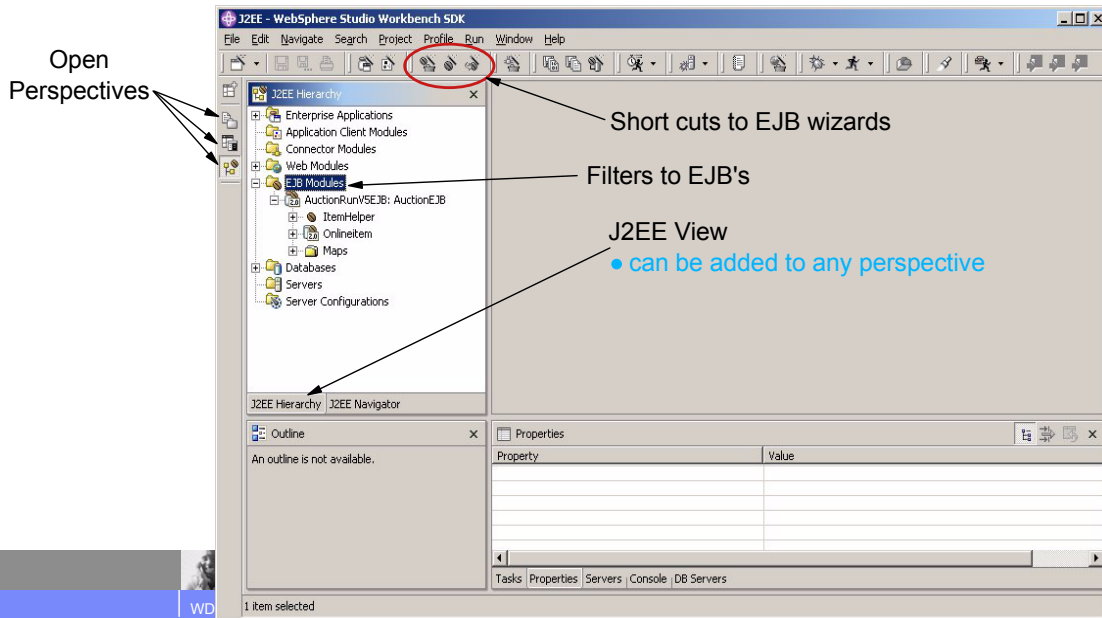
▶ **Steps to building an EJB application:**

- Setup an EJB project
- Define EJBs
- Add business logic
  - ▶ Details are very flexible, example:
    - ✓ Business logic can be referenced in Java Beans
    - ✓ EJB can call existing applications (\*PGM's etc)
    - ✓ Stored Procedures
- Optionally define relationships and inheritance
- Define finder methods
- Map entity beans to relational tables
- Generate the deployed code
- Test the EJBs in the built-in server using the universal test client
- Create client applications
  - ▶ These applications can be in separate Web Projects that share the same EAR Project

## EJB 2.0 Support

- **J2EE Perspective**

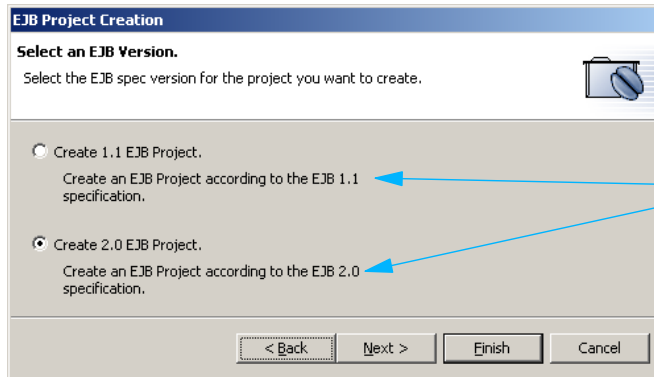
- ▶ Helps to focus development on EJB tools
- ▶ To open select "Window -> Open Perspective -> J2EE"



## EJB 2.0 Projects

- **EJB Projects**

- ▶ Based on Web Projects
  - ✓ Inherits all the properties and capabilities of Web projects
- ▶ Can be associated with an existing EAR file
  - ✓ By associating it with an EAR file, other Web Applications in the same EAR file can reference the EJB logic



Can create both  
EJB 1.1 or EJB 2.0

# EJB 2.0 Wizards

## Wizard can create:

- Message-driven bean
- Session bean
- Bean-managed persistence
- Container-managed persistence

**Create an Enterprise Bean.**

**Create a 2.0 Enterprise Bean**  
Select the EJB 2.0 type and the basic properties of the bean.

Message-driven bean  
 Session bean  
 Entity bean with bean-managed persistence (BMP) fields  
 Entity bean with container-managed persistence (CMP) fields  
 CMP 1.1 Bean    CMP 2.0 Bean

EJB project: AuctionRunVSEJB

Bean name:

Source folder:

Default package:

## Wizard help wrapper database with EJB - Can select fields to expose

**Add an Access Bean**

**Data Class Access Bean**  
Select Finish to accept all defaults for all access beans. To modify an access bean, select an enterprise bean from the list and update.

Enterprise beans:

Interfaces to use:  Remote    Local    Remote and Local

Factory package name:

Access bean name:

Package name:

Attribute helpers:  catalognumber  
 description  
 imagelocn



## EJB 2.0 Wizards

- **EJB Converter Wizard**
  - ▶ Generates a Java Bean that assists in converting a Database field to a Java field
  - ▶ EJB containers call the converter by default for all required mappings that meet its transformation
- **EJB Composer Wizard**
  - ▶ More Complex
  - ▶ Helps map multiple fields to multiple Database fields

i.e.: Conversion code is required if

- Database field is a **"PackedDecimal"**
- Java field could be **"java.math.BigDecimal"**

**EJB Converter or Composer Wizard**

Create new EJB converter

Create a new:

Converter  Composer

EJB project: AuctionRunVSEJB

Transformation Information:

Fully qualified converter name: My\_PackedDecimalConverter

Fully qualified supertype: com.ibm.vap.converters.VapAbstractConverter

Fully qualified target type: java.math.BigDecimal Browse...

Generate a converter stub class.

< Back Next > Finish Cancel

## EJB 2.0 Support

- **EJB 2.0 Unique functionality**
  - ▶ Integration of EJB with JMS.
  - ▶ Message-driven beans.
    - ✓ A message-driven bean is an asynchronous message consumer.
    - ✓ EJB can now act as JMS clients.
    - ✓ Prior to this it was hard for EJB's to handle asynchronous services.
  - ▶ EJB query language (EJB QL)
    - ✓ A standardized query language for finding and locating beans.
    - ✓ Portable across EJB containers
    - ✓ Navigate across EJB relationships
    - ✓ Although it is not actually SQL, it is a SQL-like language that supports a subset of SQL functions.
    - ✓ An EJB QL query can be used in three situations:
      - ✓ To define a finder method of an entity bean (findXxxx)
      - ✓ To define a select method of an entity bean (selectXxxx)
      - ✓ To dynamically specify a query using the executeQuery dynamic API

- ▶ Full EJB 2.0 support includes EJB Query Language, CMP 2.0 and Message-driven beans.

## EJB 2.0 Support

- **Message Driven bean wizard**

- ▶ Transaction-aware components that process asynchronous JMS messages
- ▶ Essentially acts like a JMS message listener from outside processes
  - ✓ **JMS** - Java Message Services, a clever way of talking between processes/jobs/etc
  - ✓ Same idea as - **DataQueues**

**Create an Enterprise Bean.**

**Create a 2.0 Enterprise Bean**  
Select the EJB 2.0 type and the basic properties of the bean.

Message-driven bean  
 Session bean  
 Entity bean with bean-managed persistence (BMP) fields  
 Entity bean with container-managed persistence (CMP) fields  
     CMP 1.1 Bean    CMP 2.0 Bean

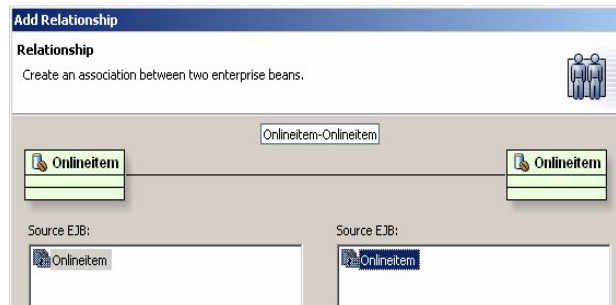
EJB project: AuctionRunVSEJB  
Bean name: My\_MessageBean  
Source folder: ejbModule   Browse...  
Default package: com.acme.cics   Browse...

< Back   Next >   Finish   Cancel

## EJB 2.0 Support

- **Container Manager**

- ▶ Container Manager Persistence (CMP 2.0)
  - ✓ Provides distributed, transactional, secure access to persistent data, with a guaranteed portable interface
- ▶ Container Manager Relations (CMR)
  - ✓ Originally managed by developers
  - ✓ Ability to specify relationships between EJB's
  - ✓ 1 to 1 - employee name with employee address
  - ✓ 1 to many - employee name with team members
  - ✓ many to many - employee's with benefits



## EJB - Database mapping

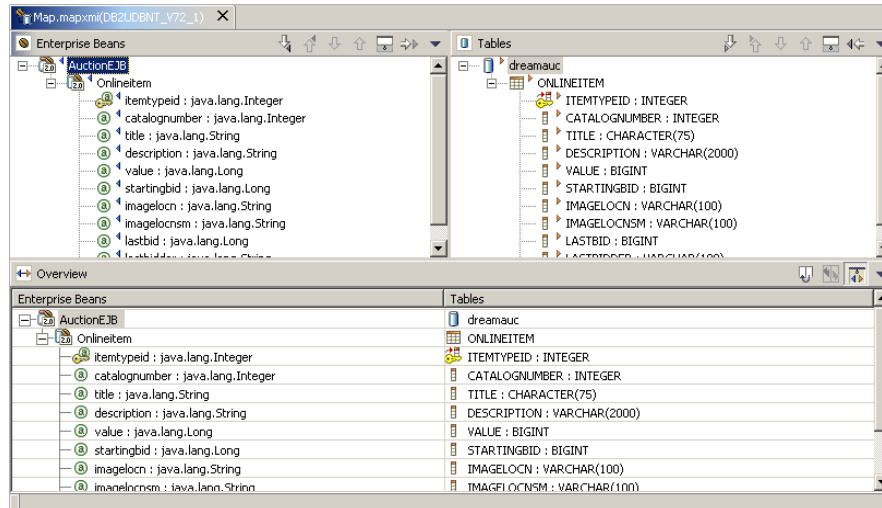
- **Easily map EJB <--> database**
  - ▶ Provide persistence while saving developers from complex, low-level SQL coding
- **EJB to Database mapping approaches**
  - ▶ Bottom Up
    - ✓ Map existing databases tables to EJB entities
  - ▶ Top Down
    - ✓ Wizard creation of EJBs
    - ✓ Generate Database/Tables from EJB Entities
  - ▶ Meet in the Middle

- ▶ EJB-to-RDB mapping that provides the model, run-time, environment and interface for editing the mapping between EJBs and relational database tables with top-down, meet-in-the-middle and bottom-up capability.

## EJB - Database mapping

- **Mapping Editor**

- ▶ Provides high level overview of associations in the EJB

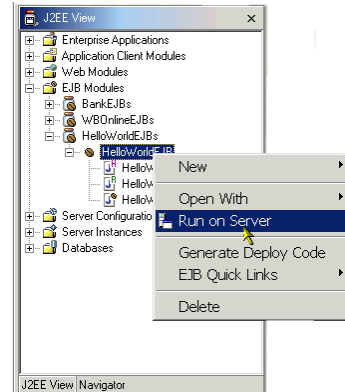
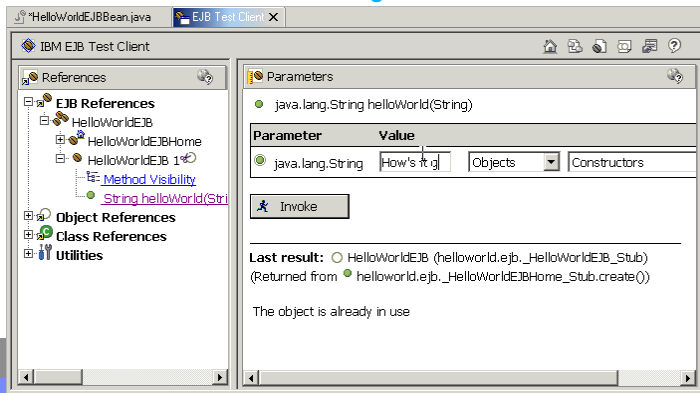


- ▶ New multiple-mapping support

## EJB 2.0 Support

- **EJB unit test environment**

- ▶ EJB containers provide a large portion of functionality which can make testing a challenge
- ▶ Unit test environment allows user to simulate the calling of a bean
  - ✓ Can access fields
  - ✓ Pass in test data
  - ✓ Watch "Converters" translate data based on associations
- ▶ Hot-redeploy supported
  - ✓ While testing, can make changes to code, and continue testing



## WDS*c* Advanced Edition

### ▶ **Profiling Tooling**



- ▶ Improve application performance with profiling and tracing tools to detect, isolate, and fix performance issues early in the development cycle



## Profiling Support

- **What is it?**
  - ▶ Tool that collects local/remote data on a Java program's run-time behavior
  - ▶ Based on JVMPI standard
  - ▶ Present this data in the profiling views.
    - ✓ Helps visualize program execution easily, and explore patterns
  - ▶ Views include
    - ✓ Object creation & garbage collection
    - ✓ Execution sequences
    - ✓ Thread interaction
    - ✓ Object references
  - ▶ Views help with
    - ✓ finding operations that take the most time
    - ✓ find and solve memory leaks
    - ✓ easily identify repetitive execution behavior and eliminate redundancy
- **Where can it be used?**
  - ▶ Any Java program
    - ✓ Java Application - Java beans
    - ✓ Web Application - Servlets, EJB's, JSP's, etc...

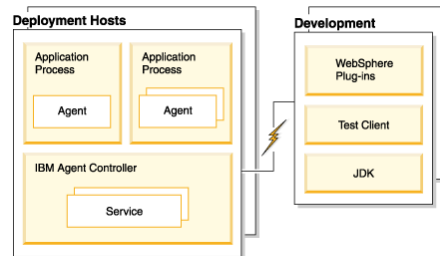
## Profiling Support

- **How does it work?**

- ▶ Profiling depends on agents to monitor JVM
- ▶ The "Agent Controller" works with agents to retrieve data
- ▶ Each application process being profiled may have a profiling agent running within it
- ▶ A single workbench, can interactively profile any one or many of these applications

- **What deployment hosts are supported?**


- ▶ To interact with remote hosts, the Agent controller must be installed remotely:
  - ✓ iSeries
  - ✓ zOS
  - ✓ AIX
  - ✓ Linux\_390, Linux\_x86
  - ✓ Windows
  - ✓ HP
  - ✓ Solaris

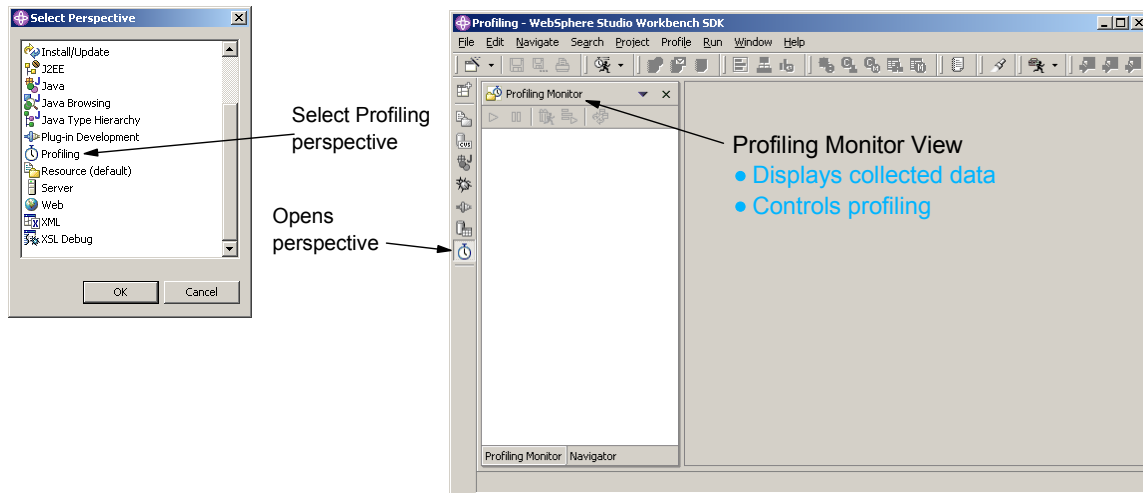


## Profiling Support

- **Profiling Perspective**

- ▶ Helps you work with profiling data

- ▶ To start profiling launch the application via the "Profile" button 



- ▶ The Profiling perspective traces and determines performance issues for iSeries Java programs

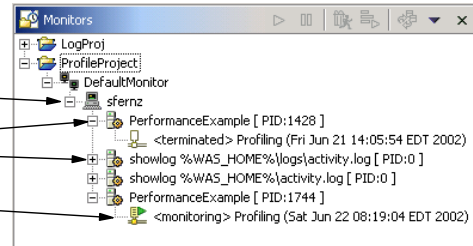
## Profiling Support

- **Information display**

- ▶ Default monitor configured for local development workbench
  - ✓ Java applications
  - ✓ WebSphere unit test environment

- **Monitors View**

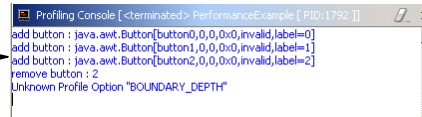
- ▶ Filters by host, in this case the local development machine
- ▶ Shows all applications being monitored on the selected machine
- ▶ Shows current status of collected data
  - ✓ Is it still collecting, or has it ended
  - ✓ Timestamp of start and end



## Profiling Support

- **Profiling Console**

- ▶ Shows output (including error messages) and input to your application

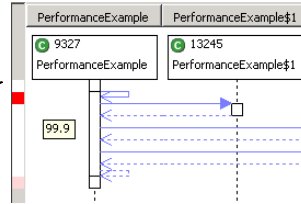


```

Profiling Console [sterminated> PerformanceExample [ PID:1792 ]]
add button : java.awt.Button[button0,0,0,0x0,invalid,label=0]
add button : java.awt.Button[button1,0,0,0x0,invalid,label=1]
add button : java.awt.Button[button2,0,0,0x0,invalid,label=2]
remove button : 2
Unknown Profile Option "BOUNDARY_DEPTH"
  
```

- **Monitor Views**

- ▶ Represent data graphically for easier understanding
- ▶ Statistical profiling views
  - ✓ Package Statistics
  - ✓ Class Method Statistics
  - ✓ Method Statistics
  - ✓ Class Instance Statistics
  - ✓ Instance Statistics
- ▶ Graphical profiling views
  - ✓ Execution Flow
  - ✓ Object Reference
  - ✓ Method Execution
  - ✓ Method Invocation
  - ✓ Heap



## WDS*c* Advanced Edition

### ▶ **iSeries JCA Connector**

- ▶ JCA Program Call connector provides a standard interface to call any \*PGM, based on the J2EE Connector Architecture.

## iSeries JCA Connectors

- **JCA Connectors**
  - ▶ J2EE Connector Architecture (<http://java.sun.com/j2ee/connector>)
  - ▶ Provide a standard consistent interface for connecting to back end Enterprise Integrated Systems (EIS)
- **Configure once access from many**
  - ▶ Configure JCA Connector in WAS Server
  - ▶ Accessible from all Web Applications which run in the server
- **iSeries JCA Connector**
  - ▶ Customized for accessing a \*PGM on the iSeries
  - ▶ Manages PCML support and signon support

# iSeries JCA Connectors

- **JCA Connector Configuration**

- ▶ Tooling provides simple interface for configuring the Connector

- Pressing "Add..." searches IDE for installed JCA Connector projects

The screenshot shows the WebSphere v5.0 Test Environment interface. On the left, the 'J2C Options' window is open, displaying 'Node Settings' for the scope 'localhost/localhost/server1'. Under 'J2C Resource Adapters', there is a table with columns for 'Resource Adapter name', 'Display name', 'Vendor name', and 'Spec version'. An 'Add...' button is circled in red, with an arrow pointing to the 'Create Resource Adapter' dialog box on the right. The dialog box shows the following configuration:

Resource Adapter Name:	SeriesRarPri
Display name:	iSeries Program Call Resource Adapter
Version:	1.0
Description:	
Vendor name:	IBM
Spec version:	1.0
EIS type:	ILE Program Call
License required:	
License:	
Transaction support:	NoTransaction
Reauthentication support:	False
Managed connection factory:	com.ibm.connector2.iseries.pgmcall.ISeriesPgmCallManagedConn
Connection factory interface:	javax.resource.cci.ConnectionFactory
Connection factory impl:	com.ibm.connector2.iseries.pgmcall.ISeriesPgmCallConnectionFac
Connection interface:	javax.resource.cci.Connection
Connection impl:	com.ibm.connector2.iseries.pgmcall.ISeriesPgmCallConnection
Archive path:	
Native path:	
Classpath:	D:\WUTemp\out\workspace2\SeriesRarPri\connectorModule\140



## iSeries JCA Connectors

- **More Connector tooling**
  - ▶ Provided in WebSphere Studio Application Developer Integration Edition
  - ▶ WSAD-IE contains everything in WSAD plus more
  - ▶ Tooling designed to focus on
    - ✓ Connectors
    - ✓ Business Flow



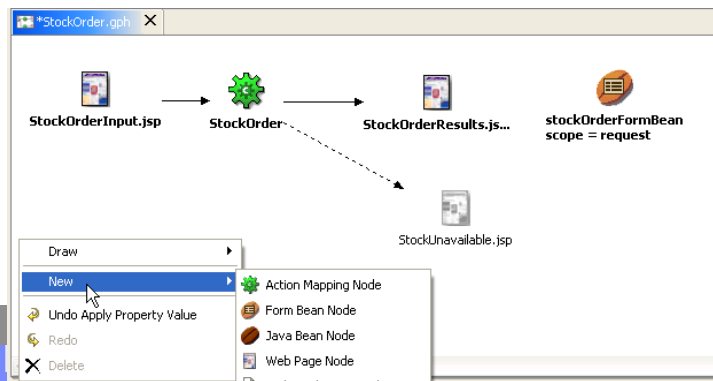
## WDS Advanced Edition

▶ **WebFacing - Struts**

- ▶ IBM is also making it easier to leverage and extend Web applications created with the IBM WebFacing Tool. IBM has provided an option during the code generation phase to output Struts-compliant Web application infrastructure that can be easily enhanced. The Struts-compliant runtime can now leverage the Struts tools to provide more customization capability.

## WebFacing Tool - Struts

- **What is Struts**
  - ▶ A framework for building web applications based on Model-View-Controller
  - ▶ Provides internal caching and lower runtime memory requirements
- **Easier integration**
  - ▶ Extension points can integrate with other Struts-based services
  - ▶ Dedicated diagram editor helps organize your web application



## WebFacing Tool - Struts

- **Enabling Struts in WebFacing Projects**

- ▶ When creating a new project select "Enable Struts support"

- **When project is created**

- ▶ Struts enabled WFRun.jar
- ▶ Logon.jsp becomes starting point

**WebFacing Project**  
WebFacing Project  
Project name must be specified

Project name:

Use default

New project location:

Enterprise Application Project:  New  Existing

Existing project name:

Context root:

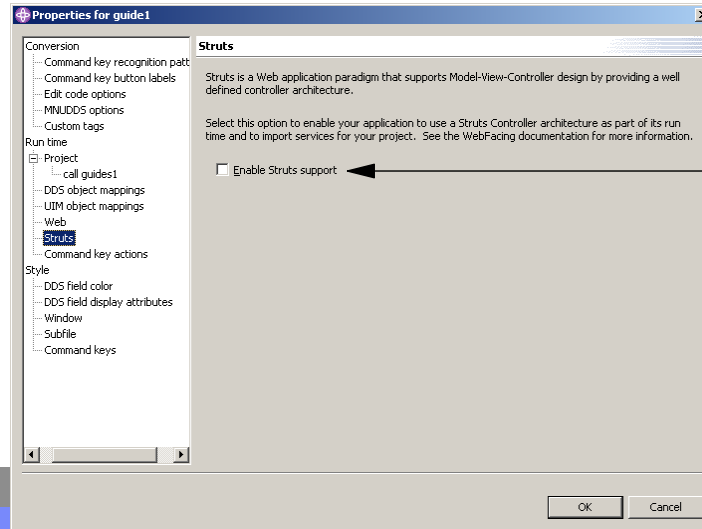
WebFacing project features:

<input checked="" type="checkbox"/> Enable Struts support	Enables a run-time architecture based on the Struts framework and imports services for WebFacing projects. See the WebFacing documentation for more information.
<input type="checkbox"/> Generate JSP custom tags	

< Back    Next >    Finish    Cancel

## WebFacing Tool - Struts

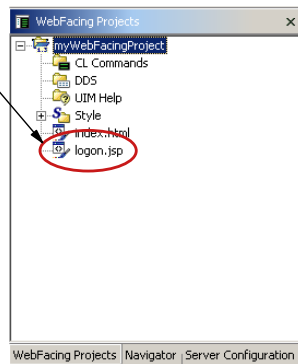
- **Enabling Struts in existing WebFacing Projects**
  - ▶ Project properties can also enable the Struts support
- **Enabling Struts has the same effect as project creation**
  - ▶ Struts enabled WFRun.jar
  - ▶ Logon.jsp becomes starting point



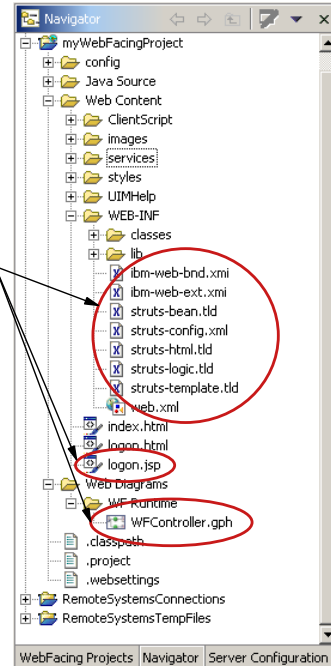
## WebFacing Tool - Struts

- **New objects added to projects**
  - ▶ Logon.jsp becomes the new entry point into the WebFacing project
  - ▶ Additional runtime support is also included, IBM Toolbox for Java

**WebFacing Projects view helps point to new items**



**New objects**

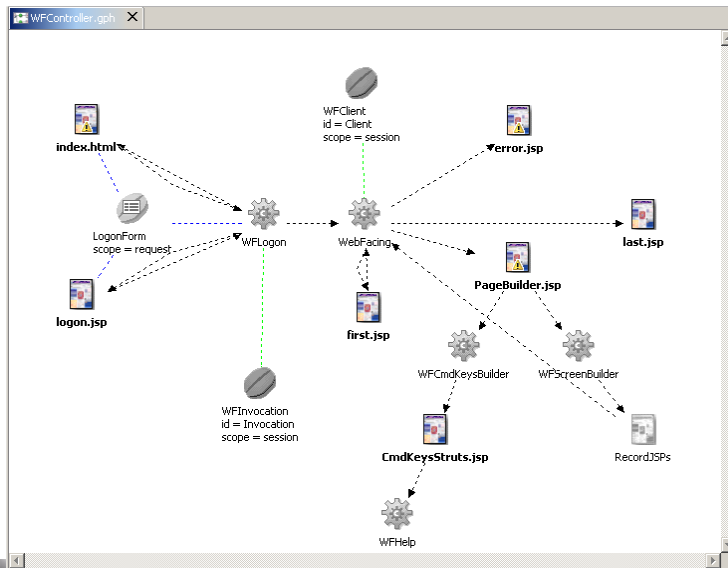


## WebFacing Tool - Struts

- **Struts Diagram helps understand structure**
  - ▶ WebFacing diagram is read-only and provided for documentation

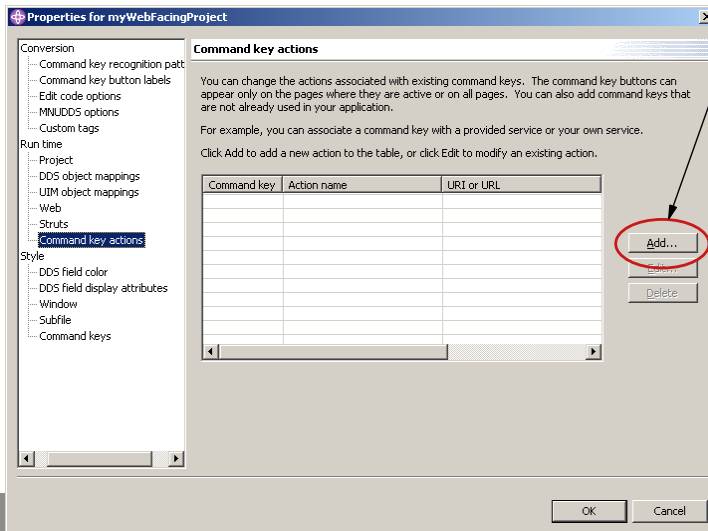
- **This diagram is a representation of all WebFacing Applications.**

- **Helps extend a WebFacing Application**
- **First extension:**  
✓ **WRKSPLF**



## WebFacing Tool - Struts

- **WRKSPLF Support (Report Service)**
  - ▶ First extension to WebFacing Struts runtime
  - ▶ No conversion required to enable
  - ▶ Associated with "Command key actions"



▶ Clicking the "Add..." button allows you to associate the "Report Service" with any command key

- ▶ IBM is also providing a Web interface to the most requested system support - WRKSPLF.



## WebFacing Tool - Struts

- **Associating a key with Report Service**

- ▶ Can specify any command key
- ▶ If other vendors have provided services, they would appear in this list
- ▶ You can also specify the button label

- **The last option allows you to control visibility**

- ▶ Unchecked, the command key will appear on screens even if the DDS screen did not have it.
- ▶ Checked, you are replacing the function of an existing key.
  - ✓ The new key will only appear on screens that have enabled the selected command key
  - ✓ This can be controlled by the RPG application

Dialog box: Add command key action

Fields:

- Command key: F9
- Action name: Report Service
- URI or URL: RetrieveListOfReports.do
- Target frame: \*NEW
- Button label: List Reports

Checkbox:  Enable only when the command key is active

Buttons: OK, Cancel

# WebFacing Tool - Struts

- **WRKSPLF example:**

- ▶ Our original screen has no reference to F9
- ▶ Add button called "List Reports" →

Notice no printing button →

The screenshot shows a web browser window displaying a web application interface. The browser's address bar shows the URL: `http://localhost:9080/wfrest/WFLogin?inv=c951654&turnCacheOff=1046820077375`. The application title is "call guides1". The page content includes the date "03/04/03" and the heading "CeDial - Customer Inquiry". Below this, there is a prompt: "Enter a customer number and press Enter." followed by a text input field labeled "Customer number . . . . .". To the right of the input field, there is a note: "Number, F4 for list". On the left side of the page, there is a vertical menu with the following items: "Enter", "Exit", "Prompt", "Print", "Cancel", and "HELP". A red circle highlights this menu, and an arrow points from the text "Notice no printing button" to it. An "Add command key action" dialog box is open in the top right corner. The dialog box has the following fields: "Command key:" set to "F9", "Action name:" set to "Report Service", "URI or URL:" set to "RetrieveListOfReports.do", "Target frame:" set to "\*NEW", and "Button label:" set to "List Reports". There is also a checkbox for "Enable only when the command key is active" which is currently unchecked. "OK" and "Cancel" buttons are at the bottom of the dialog.

## WebFacing Tool - Struts

- **WRKSPLF example:**

- ▶ After adding the command key, just restart application
- ▶ This key is now accessible via F9 or the button
- ▶ And based on our decision, its available on every page.

Notice new  
"List Reports"  
button



# WebFacing Tool - Struts

- **WRKSPLF example:**

- ▶ Pressing F9 or the button launches support
- ▶ Can control browser with "Target Frame"
  - ✓ \*NEW will launch a new browser to handle the output from the service
  - ✓ \*SAME will use the existing browser

**Add command key action**

Command key:

Action name:

URI or URL:

Target frame:

Button label:

Enable only when the command key is active

List of Spooled Files - Microsoft Internet Explorer

Address: http://localhost:9080/wfrest/RetrieveListOfReports.do

## List of Spooled Files

Views 1,2,3

File	User	Device or Queue	User Data	Sts	Total Pages	Cur Page	Copy	Form Type	Pty	File Nbr	Job	Number
<a href="#">BARSMP</a>	VOUTSIN	IGSYS.LIB/QGPL.LIB/QPRINT.OUTQ	BARSMP	*READY	1	0	1	*STD	5	13	QPADEV000F	905327
<a href="#">BARSMP</a>	VOUTSIN	IGSYS.LIB/QGPL.LIB/QPRINT.OUTQ	BARSMP	*READY	1	0	1	*STD	5	12	QPADEV000F	905327
<a href="#">BIGLTR</a>	VOUTSIN	IGSYS.LIB/QGPL.LIB/QPRINT.OUTQ	BIGLTR	*READY	1	0	1	*STD	5	19	QPADEV000F	905327
<a href="#">BIGLTR</a>	VOUTSIN	IGSYS.LIB/QGPL.LIB/QPRINT.OUTQ	BIGLTR	*READY	1	0	1	*STD	5	2	QPADEV000F	905327
<a href="#">BIGLTR</a>	VOUTSIN	IGSYS.LIB/QGPL.LIB/QPRINT.OUTQ	BIGLTR	*READY	1	0	1	*STD	5	29	QPADEV000F	905327
<a href="#">SEARS</a>	VOUTSIN	IGSYS.LIB/QGPL.LIB/QPRINT.OUTQ	SEARS	*READY	1	0	1	*STD	5	9	QPADEV000F	905327
<a href="#">BARSMP</a>	VOUTSIN	IGSYS.LIB/QGPL.LIB/QPRINT.OUTQ	BARSMP	*READY	1	0	1	*STD	5	1	QPADEV000F	905327
<a href="#">BIGLTR</a>	VOUTSIN	IGSYS.LIB/QGPL.LIB/QPRINT.OUTQ	BIGLTR	*READY	1	0	1	*STD	5	21	QPADEV000F	905327
<a href="#">BARSMP</a>	VOUTSIN	IGSYS.LIB/QGPL.LIB/QPRINT.OUTQ	BARSMP	*READY	1	0	1	*STD	5	28	QPADEV000F	905327

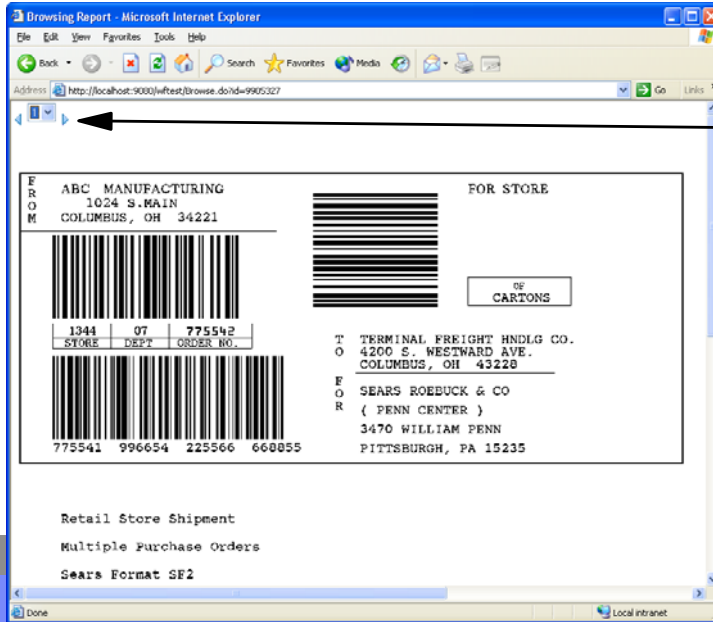
Done Local intranet

- Lots of spooled files for my userid, so 3 pages were created.
- Spooled files become links.

## WebFacing Tool - Struts

- **WRKSPLF example:**

- ▶ Selecting a Spooled File link brings up the GIF image of each page



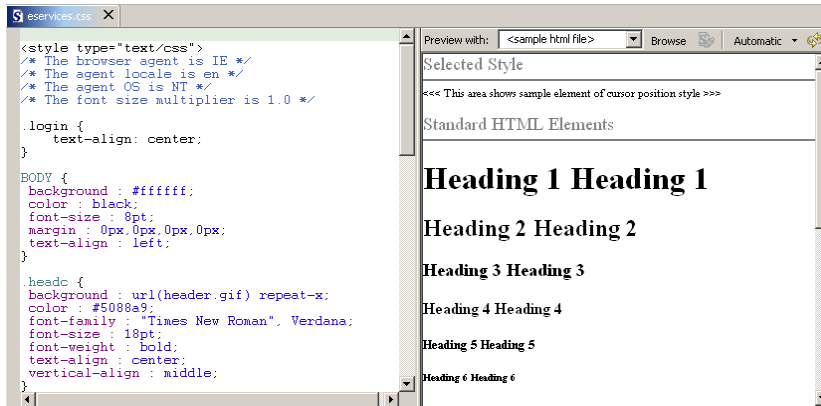
- User can page through using previous & next buttons
- User can also select a page from the drop-down

## WebFacing Tool - Struts

- **WRKSPLF example:**

- ▶ You can customize the Spooled Files list by editing the `eservices.css`

- ✓ The Cascading Style Sheet editor helps to simplify this process



Helps Change:

- Colours
- Fonts
- Font sizes
- Table size
- Table colours
- etc...

## WebFacing Tool - Struts

- **Associating a key with any web application**

- ▶ This includes a URL
- ▶ The Action name helps you find the action in the generated code.

- **Same controls as before**

- ▶ Unchecked, the command key will appear on screens even if the DDS screen did not have it.
- ▶ Checked, you are replacing the function of an existing key.
  - ✓ The new key will only appear on screens that have enabled the selected command key
  - ✓ This can be controlled by the RPG application

Dialog box titled "Edit command key action" with the following fields:

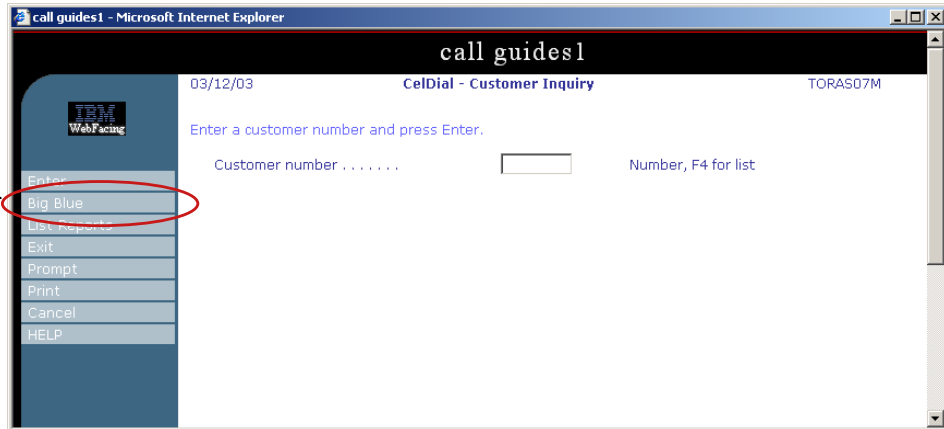
- Command key: F8
- Action name: go to ibm
- URI or URL: http://www.ibm.com
- Target frame: \*NEW
- Button label: Big Blue
- Enable only when the command key is active

Buttons: OK, Cancel

## WebFacing Tool - Struts

- **Web Site call example:**
  - ▶ After adding the command key, just restart application
  - ▶ Can be any web application

Notice new  
"List Reports"  
button





## WDSC Advanced Edition

### ▶ **WebFacing Tool - Custom Tags**

- ▶ Visual Custom Tags bring some of the power of DDS to Web pages.
- ▶ You can use IBM and user-defined custom tags to enhance customization

## WebFacing Tool - Custom Tags

- **What is it?**
  - ▶ WebFacing is now extensible
  - ▶ At WebFacing conversion time it is now possible to interact with the DDS to JSP conversion process
  - ▶ Change the HTML that is emitted into the JSP for each field
    - ✓ Example: Date field becomes an icon that launches another link
- **Who is it for?**
  - ▶ Advanced users who are interested in writing a custom tag library for use with WebFacing Tool
  - ▶ Requires advanced understanding of HTML, Java and JSP tags
  - ▶ Could be for internal use
  - ▶ Could also offer support to others

## WebFacing Tool - Custom Tags

- **How to extend?**
  - ▶ Based on Eclipse extension points
    - ✓ Requires knowledge of Eclipse ([www.eclipse.org](http://www.eclipse.org))
  - ▶ Create a plugin that extends the WebFacing Tool by providing appropriate Generators
    - ✓ Eclipse tooling helps build plugins
  - ▶ These Generators would then be called by WebFacing during conversion
- **3 Generator Types**
  - ▶ 1: Handle all fields types that are directed to it
    - ✓ `com.ibm.etools.iseries.webfacing.convert.external`
    - ✓ (Interface) `IFieldTagGenerator`
  - ▶ 2: Generator will key off of WebSettings values on the field
    - ✓ `com.ibm.etools.iseries.webfacing.convert.external`
    - ✓ (Interface) `IWSTagGenerator`
  - ▶ 3: The main HTML construct that is emitted
    - ✓ `com.ibm.etools.iseries.webfacing.convert.external`
    - ✓ (Interface) `IWSSubTagGenerator`



## WebFacing Tool - Custom Tags

- **Future**
  - ▶ More to come
  - ▶ Future extensions based on user feedback



## WDS Sc Advanced Edition

### ▶ **Reference**

- ★ **WebSphere Studio Tools for the Enterprise Kits**
  - ★ <http://www.ibm.com/websphere/enterprisetools/>
- ★ **WebSphere Studio family**
  - ★ <http://www-3.ibm.com/software/ad/adstudio/>
  - ★ <http://www-3.ibm.com/software/info1/websphere/index.jsp?tab=products/studio>
- ★ **WebSphere Studio Developer Domain (WSDD)**
  - ▶ [www.ibm.com/websphere/developer/zones/studio](http://www.ibm.com/websphere/developer/zones/studio)
- ★ **WSAD Migration Guides**
  - ▶ [www.ibm.com/websphere/developer/zones/studio/migration.htm](http://www.ibm.com/websphere/developer/zones/studio/migration.htm)
- ★ **WebSphere Studio Partner Program**
  - ★ [www.ibm.com/partnerworld](http://www.ibm.com/partnerworld)
- ★ **WebSphere Studio Plug-in Central**
  - ★ <http://www7b.boulder.ibm.com/wsdd/downloads/plugin/>
- ★ **Education**
  - ★ <http://www-4.ibm.com/software/ad/studioappdev/education>
- ★ **Eclipse**
  - ★ <http://www.eclipse.org>