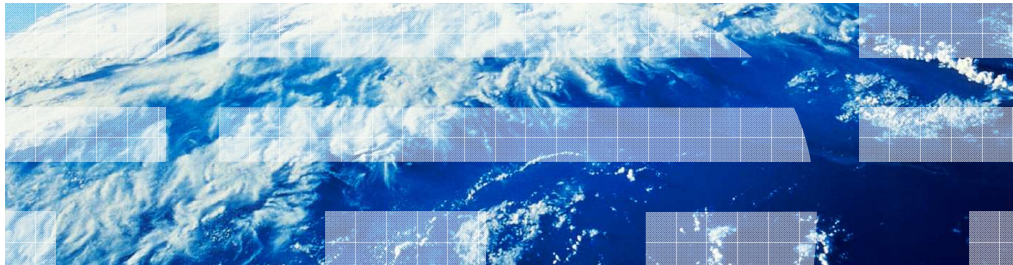




# WebSphere Business Process Management

WebSphere Integration Developer  
WebSphere Enterprise Service Bus  
WebSphere Process Server

## SOACore - Overview of new function in V7



WebSphere software

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This presentation looks at the new SOACore functionality added to the WebSphere® Business Process Management products in version seven. The products to which this applies are the WebSphere Integration Developer, the WebSphere Enterprise Service Bus and the WebSphere Process Server.

## Agenda

- New SCA runtime for V7
- EJB bindings
- Messaging binding enhancements
- Event sequencing for WebSphere Enterprise Service Bus

The topics to be addressed are listed here. There is a new implementation of SCA provided by the runtime and supported by the deployment tools. EJB bindings have been added and there have been some enhancements made to the messaging bindings. Finally, event sequencing support has been enabled in WebSphere Enterprise Service Bus.

## ***SCA runtime for V7***

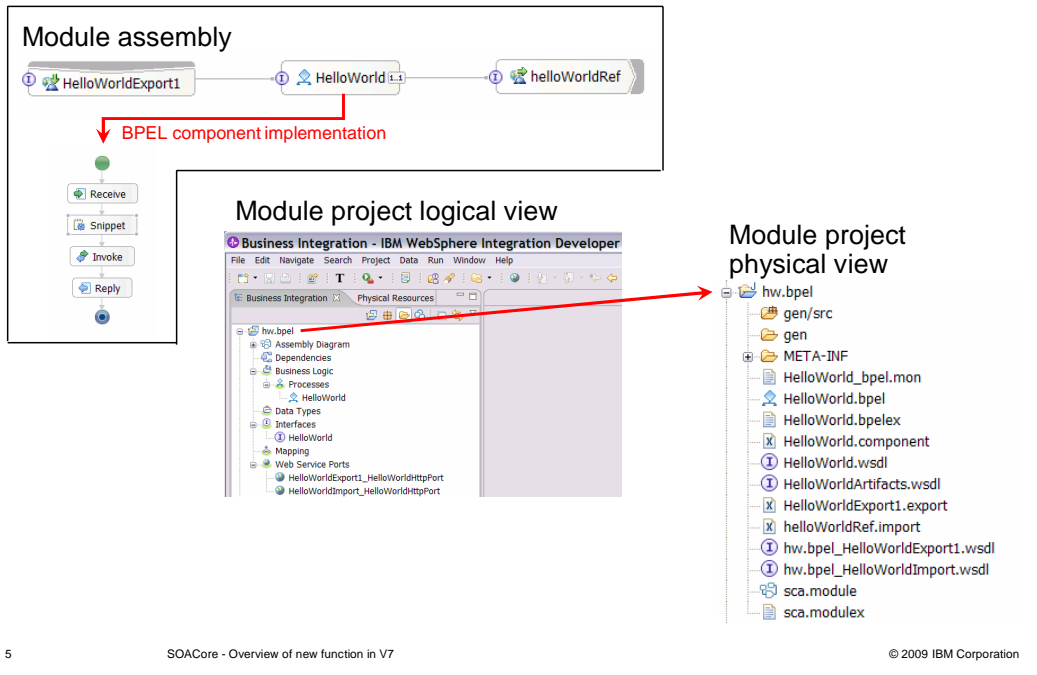
This first section of the presentation provides an introduction to the new SCA runtime for version seven.

## SCA V7 runtime - Introduction

- Significantly changes packaging, deployment, code generation and validation
- Goals
  - Pay as you go
    - Deploy only what is authored (componentization)
  - Significantly improve iterative development performance
    - WebSphere Integration Developer deployment to the unit test environment
    - serviceDeploy to application installation
    - Direct deployment using the interactive design feature of WebSphere Business Modeler
  - Simplified administration and problem determination
    - Runtime better reflects SCA model

In version seven the internal implementation of SCA has significantly changed, affecting packaging, deployment, code generation and validation. There were several goals associated with making this implementation change. One goal is to get much greater componentization within an SCA application, providing a pay as you go paradigm where deployment is based on what you have authored, thus reducing extraneous overhead. The most significant goal is to improve overall performance, in particular, performance affecting iterative development. This includes deployment to the unit test environment from WebSphere Application Developer. It also applies to serviceDeploy and the installation of SCA applications. For those working with WebSphere Business Modeler it affects the use of direct deployment when using the interactive design feature. Another overall goal is to simplify administration and problem determination. This is accomplished because the runtime artifacts used by the new SCA version seven runtime more closely match the authored artifacts.

## Illustrated scenario - The V6 versus V7 story



The next few slides illustrate the difference in deployed artifacts between version six and version seven SCA applications. At the upper left you can see an SCA assembly diagram showing a very simple SCA application. It is composed of a Web service export, a BPEL component with a simple process, and a Web service import. In the center of the slide you can see the business integration panel that shows the logical view that you typically work with. In it you can see links to the assembly diagram, the business process, the interface definition and the Web service ports. On the right is the physical view, showing the actual files that make up the process. You can see that there is a relatively straight forward mapping from the assembly and logical view to the physical files contained in the project. So far, what is shown here is common to both version six and version seven.

## Illustrated scenario - The V6 story

**Module project physical view**

- hw.bpel
  - gen/src
  - gen
  - META-INF
    - HelloWorld\_bpel.mon
    - HelloWorld.bpel
    - HelloWorld.bpelex
    - HelloWorld.component
    - HelloWorld.wSDL
    - HelloWorldArtifacts.wSDL
    - HelloWorldExport1.export
    - helloWorldRef.import
    - hw.bpel\_HelloWorldExport1.wSDL
    - hw.bpel\_HelloWorldImport.wSDL
  - sca.module
  - sca.modulex

**Generated projects**

**Application (hw.bpelApp)**

- EarContent
- META-INF
  - ibmconfig
    - application.xml
    - ibm-application-ext-pme.xml
    - ibm-application-ext.xml
    - MANIFEST.MF

**Web (hw.bpelWeb)**

- src
- WebContent
  - META-INF
    - wsdl
      - HelloWorld.wSDL
      - hw.bpel\_HelloWorldExport1.wSDL
    - MANIFEST.MF
  - WEB-INF
    - ibm-web-bnd.xml
    - ibm-web-ext.xml
    - web.xml

**EJB (hw.bpelEJB)**

- ejbModule
  - com.ibm.bpe.framework.sca
    - EJSLocalStatelesscomponent\_HelloWorld\_4bc70495.java
    - EJSLocalStatelesscomponent\_HelloWorldHome\_4bc70495.java
    - EJSStatelesscomponent\_HelloWorldHomeBean\_4bc70495.java
  - com.ibm.ejs.container
    - \_EJSWrapper\_Stub.java
    - \_EJSWrapper\_Tie.java
  - com.ibm.websphere.csi
    - \_CSIServant\_Stub.java
    - \_TransactionalObject\_Stub.java
  - com.ibm.wsspi.sca.ejb.module
    - EJSLocalStatelessModule\_43132892.java
    - EJSLocalStatelessModuleHome\_43132892.java
    - EJSStatelessModuleHomeBean\_43132892.java
  - com.ibm.wsspi.sca.webservice.ejb
    - \_EJSRemoteStatelessexport\_HelloWorldExport1\_c31e5bec\_Tie.java
    - \_EJSRemoteStatelessexport\_HelloWorldExport1Home\_c31e5bec\_Tie.java
    - \_WebServiceHome\_Stub.java
    - \_WebServiceRemote\_Stub.java
    - EJSRemoteStatelessexport\_HelloWorldExport1\_c31e5bec.java
    - EJSRemoteStatelessexport\_HelloWorldExport1Home\_c31e5bec.java
    - EJSStatelessexport\_HelloWorldExport1HomeBean\_c31e5bec.java
  - hw\_bpel
    - HelloWorld20080514T192119EntityAbstractBase.java
    - HelloWorld20080514T192119EntityBase.java
    - HelloWorld20080514T192119EntityAbstractBase\$JSE\_8.java.smap
    - HelloWorld20080514T192119EntityAbstractBase\$JSE\_8\_jsrc
  - org.omg.stub.javax.ejb
    - \_EJBHome\_Stub.java
    - \_EJBObject\_Stub.java
    - \_Handle\_Stub.java
    - \_HomeHandle\_Stub.java

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SOACore - Overview of new function in V7

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On this slide, the physical view of the project files from the previous slide is shown here again on the left. On the right are the generated projects which represent what is actually deployed for this SCA application in version six. There are three projects, the Application project, the Web project, and the EJB project. Much of the SCA runtime infrastructure is implemented through the Java™ EE EJB container. There are some implications resulting from this implementation. First, deployment of the SCA application requires the EJB deployment step, a process that typically is the longest part of an application installation. Secondly, the EJB structure does not closely correspond to the actual authored SCA artifacts. This makes it more difficult for problem determination and debugging, as the errors are seen in Java EE EJB terms rather than mirroring the SCA application.

## Illustrated scenario – Now in V7

The screenshot displays three project views for a module named 'hw.bpel':

- Module project physical view:** Shows the physical source files including 'gen/src', 'gen', 'META-INF', 'HelloWorld.bpel.mon', 'HelloWorld.bpel', 'HelloWorld.bpellex', 'HelloWorld.component', 'HelloWorld.wsdl', 'HelloWorldArtifacts.wsdl', 'HelloWorldExport1.export', 'helloWorldRef.import', 'hw.bpel\_HelloWorldExport1.wsdl', 'hw.bpel\_HelloWorldImport1.wsdl', 'sca.module', and 'sca.modulex'.
- Generated projects:** Shows two generated projects:
  - Application:** Contains 'EarContent', 'META-INF' (with 'ibmconfig', 'application.xml', 'ibm-application-ext-pme.xml', 'ibm-application-ext.xml', 'MANIFEST.MF'), and 'build'.
  - Web:** Contains 'src', 'WebContent', 'META-INF' (with 'wsdl' containing 'HelloWorld.wsdl', 'hw.bpel\_HelloWorldExport1.wsdl', 'MANIFEST.MF'), and 'WEB-INF' (with 'ibm-web-bnd.xml', 'ibm-web-ext.xml', 'web.xml').
- hvw.bpelEJB:** This project is crossed out with a large red 'X', indicating it is no longer generated in V7. It lists various Java classes such as 'com.ibm.bpe.framework.sca', 'EJSLocalStatelesscomponent\_HelloWorld\_4bc70495.java', and 'org.omg.stub.javax.ejb'.

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SOACore - Overview of new function in V7

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In the version seven SCA runtime the EJB project is no longer generated. However, the deployment packaging still produces a Java EE EAR file. Because of this, the Web project is still generated, with sufficient content to allow deployment as a Java EE EAR. This Web project does not have to be regenerated during iterative development cycles, eliminating overhead from the iterative development process. The runtime uses and interprets the physical artifacts to define the application. This allows the runtime to closely mirror the actual artifacts used to define the SCA application, making debugging and problem determination more straight forward.

## Key points

- There are no programming model changes
- No dependency on the EJB container
  - No generation of EJB project (in most cases)
- No regeneration of generated projects when SCA project changed
  - Key to performance of iterative development

One of the key points to highlight about the version seven SCA runtime is that there are no programming model changes. Therefore, no source level migration is required and building an SCA application involves no new concepts. The dependency on the EJB container is gone. This must be qualified, in that there are still a couple of things that result in the EJB project being generated, one of which is the use of JAX-RPC Web service bindings. To avoid the generation of the EJB project, JAX-WS Web service bindings can be used. The generated projects do not have to be regenerated when the SCA project is changed, which is key to the performance improvements for iterative development.



## Migration and coexistence

- V7 runtime contains both:
  - V6 SCA runtime implementation
  - V7 SCA runtime implementation
- WebSphere Integration Developer and serviceDeploy deploy for V7 mode only
  - V6 projects imported into WebSphere Integration Developer are deployed in V7 mode
- V6 EARs run as is in V6 mode
- Modules running in V6 mode and V7 mode interoperate

The version seven runtime contains both the version six and version seven SCA runtime implementations. When deploying a new application from WebSphere Integration Developer or serviceDeploy, the EAR file that is built is targeted for the version seven runtime implementation. Even a version six project imported into WebSphere Integration Developer is targeted for the version seven runtime when deployed. However, when a version six EAR file is installed into a version seven runtime, it will run using the version six runtime implementation. If you have both version six and version seven applications running, they do interoperate.

## ***EJB bindings***

This section looks at EJB bindings for imports and exports.

## EJB bindings

- V6 supports:
  - Imports with bindings for EJB 2.1 (remote enterprise beans only)
- V7 adds support for:
  - Exports
    - Allows SCA components to be called using the EJB programming model
  - EJB 3.0 specification
    - Support for both EJB 2.1 and EJB 3.0 from both imports and exports
  - Local enterprise beans
    - Support calling an export as a local EJB
    - Support calling of a local EJB from an import
- Support is provided for both WSDL and Java interfaces

In version six, the only EJB binding support is for SCA import bindings to remote enterprise beans that follow the EJB 2.1 specification.

In version seven, EJB bindings are enhanced to provide full support for enterprise beans. The first part of this support is in SCA exports, allowing SCA components to be exposed to clients as enterprise beans. Also, support is added for EJB 3.0 in addition to EJB 2.1. This support is for both imports and exports. Finally, local enterprise beans are also supported, from both imports and exports. The support provided is enabled for either WSDL or Java interfaces.

## ***Messaging binding enhancements***

This section looks at the enhancements to messaging bindings.

## Messaging binding enhancements

- Support for MQ V7 has been added
  - MQ and MQ JMS bindings now use the MQ V7 JCA resource adapter
    - Provides connectivity to MQ V7 and previous versions of MQ
    - Activation specs used for receiving messages rather than listener ports
      - Can be automatically created at application installation
      - User can specify pre-configured one if they choose
  - MQ binding connection type support
    - Previously only supported CLIENT and CCDT connections
    - Supported added for BINDINGS and BINDINGSTHENCLIENT connections

Support has been added for MQ version seven. The implementation of MQ bindings and MQ JMS bindings make use of MQ version seven JCA resource adapters. These resource adapters provide connectivity to MQ version seven and to previous versions of MQ. One of the side effects of this change is that MQ and MQ JMS bindings now use activation specs rather than listener ports for receiving messages. Similar to the activation specs used with JMS bindings, these can be automatically created at application installation or you can specify a pre-configured one in the binding configuration.

The MQ binding connection type support is enhanced. In version six, only CLIENT and CCDT connections are supported, but in version seven support is added for BINDINGS and BINDINGSTHENCLIENT connections.

## Messaging binding enhancements

- Support for publish subscribe added to JMS
  - Applies to all JMS, MQ JMS and Generic JMS bindings
  - Specify topics rather than queues for send/receive destinations

In addition to point to point, version seven contains support for the JMS publish subscribe style of messaging. This applies to all the JMS binding types, JMS, MQ JMS, and generic JMS. During configuration, you specify topics rather than queues as the send and receive destinations.

## ***Event sequencing for WebSphere Enterprise Service Bus***

This section looks at the event sequencing support for WebSphere Enterprise Service Bus.

## Event sequencing

- Event sequencing support – V6
  - Only supported in WebSphere Process Server, not in WebSphere Enterprise Service Bus
  - Projects with event sequencing configured:
    - Can be deployed in WebSphere Enterprise Service Bus
    - However, configuration settings are ignored
- Event sequencing support – V7
  - Now supported in WebSphere Enterprise Service Bus
  - No change to configuration settings

In version six event sequencing is supported in the WebSphere Process Server but it is not supported in the WebSphere Enterprise Service Bus. Projects with event sequencing configured can be deployed into a version six WebSphere Enterprise Service Bus server, but they are ignored by the runtime. In version seven, the event sequencing support has been enabled in WebSphere Enterprise Service Bus. There are no changes to how event sequencing is configured.



## Summary

- Covered these topics:
  - New SCA runtime for V7
  - EJB bindings
  - Messaging binding enhancements
  - Event sequencing for WebSphere Enterprise Service Bus

In this presentation an overview of the new functions in version seven was presented. The topics covered included the new implementation of SCA provided by the runtime and supported by the deployment tools. The enhancements for EJB bindings and messaging bindings were reviewed. Finally, event sequencing support for WebSphere Enterprise Service Bus was addressed.



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