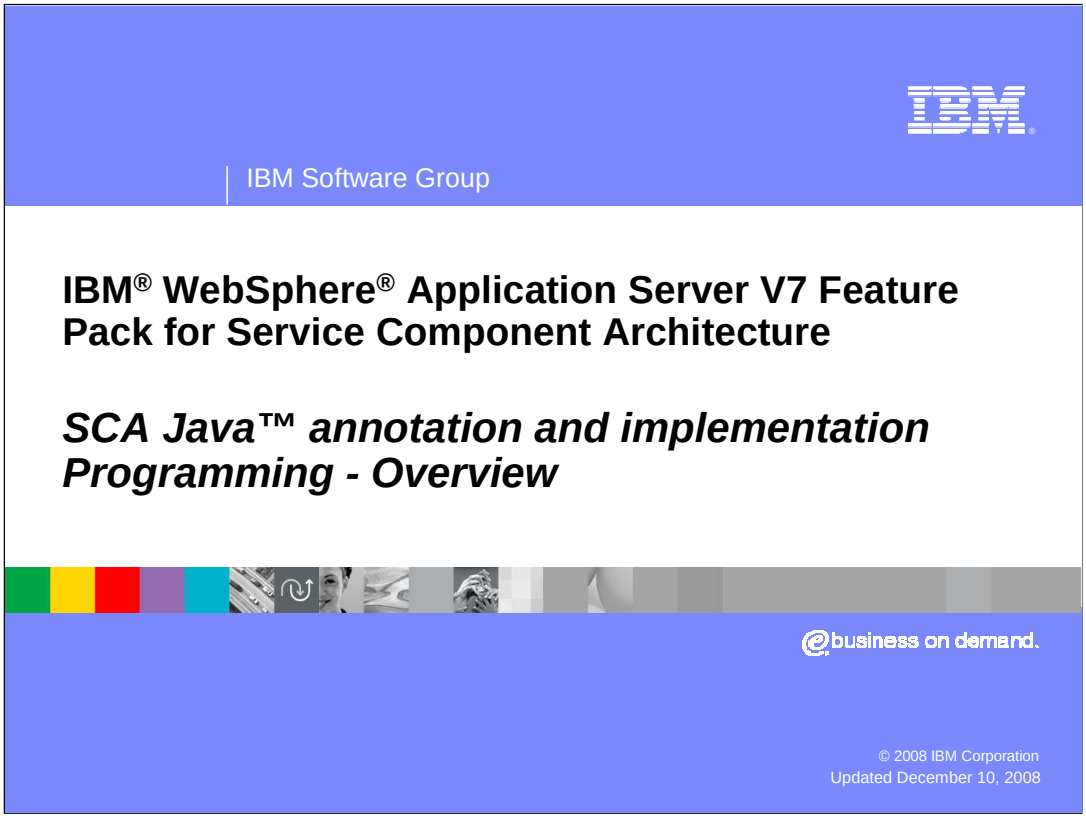
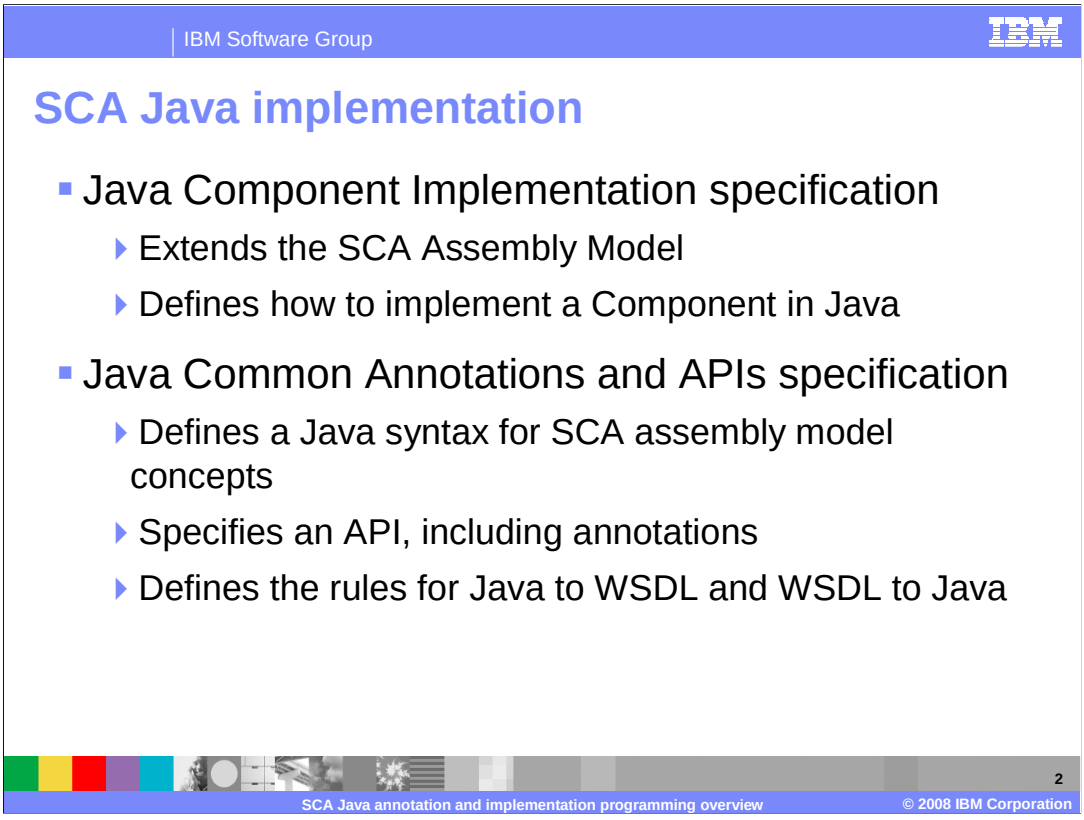


This presentation will cover the overview of the two specifications for SCA v1.0 programming model – Java annotations and Java implementation.



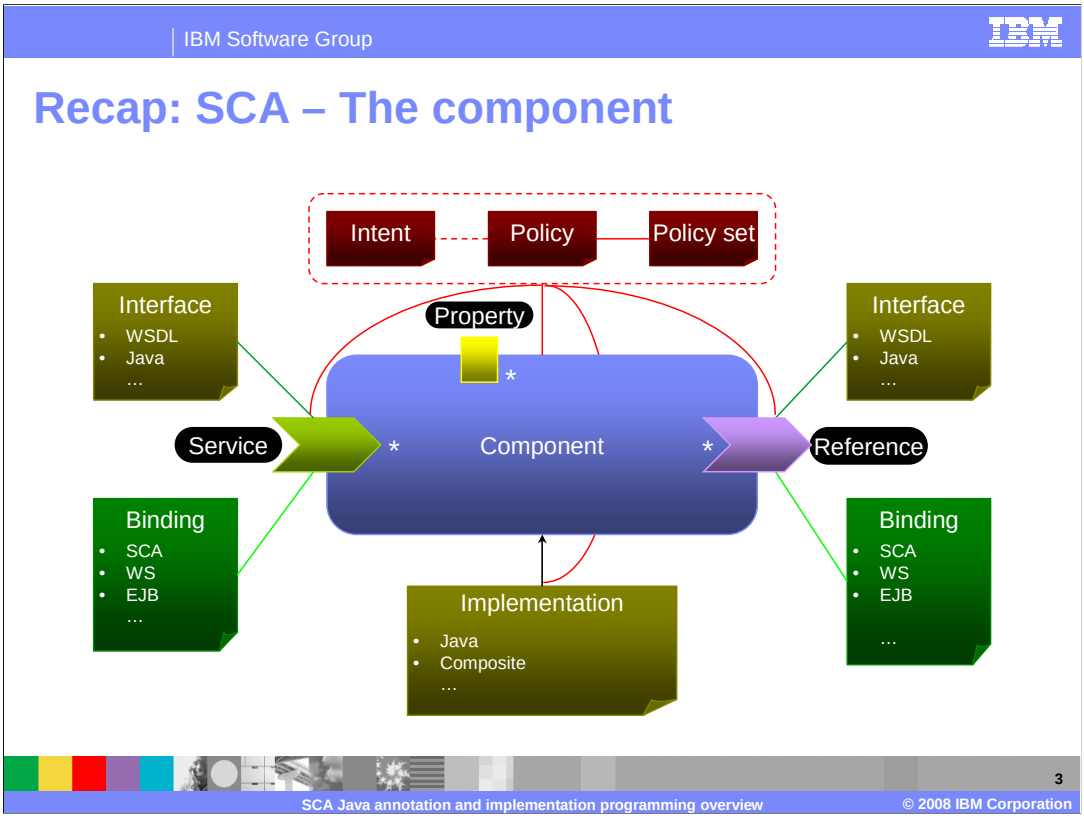
Programming model covers two specifications:

(1) Java Component Implementation specification

(2) Java Common Annotations and APIs specification

Java Component Implementation specification extends the SCA Assembly Model (the core spec) by defining how a Java class provides an implementation of an SCA component. Also be defining how that class is used in SCA as a component implementation type. This specification defines a simple Java POJO model for creating service components.

The **SCA Java Common Annotations and APIs specification** defines Java APIs and annotations that enable service components and service clients to be built in the Java programming language. There are closely related models describing how other Java-based frameworks and models can be used in the context of SCA, such as Spring and EJBs, which also use the common annotations and APIs.



Before venturing into the Java specifications where component will be mentioned several times, a recap of what the component and it's surroundings programmatically are will be helpful. As shown on the diagram, the component has very busy surroundings. Components describe the *services* they provide and the services they depend on or *reference*. Components also point at the chunk of code which provides the *implementation* of the service. Components can tailor their behavior by exposing configurable *properties*. Policy and quality of service *intents* are used to decorate services or references (called *interaction intents*), and components (called *implementation intents*) in order to configure additional semantics that are provided by the SCA runtime. Last but not least, Services and references are bound to specific protocols (such as Web services) through the usage of *bindings*.

Java implementation type

- A Java class provides an implementation of an SCA component
- Services provided by a Java-based implementation may have a:
  - Java interface
  - Java class
  - Java interface generated from a WSDL

A Java class provides an implementation of an SCA component, including its various attributes such as services, references, and properties. In addition, it details the use of metadata and the Java API in the context of a Java class used as a component implementation type

The services provided by a Java-based implementation may have an interface defined in one of these ways. Interface may be defined as a Java interface, a Java class and a Java interface generated from a Web Services Description Language (WSDL) portType.

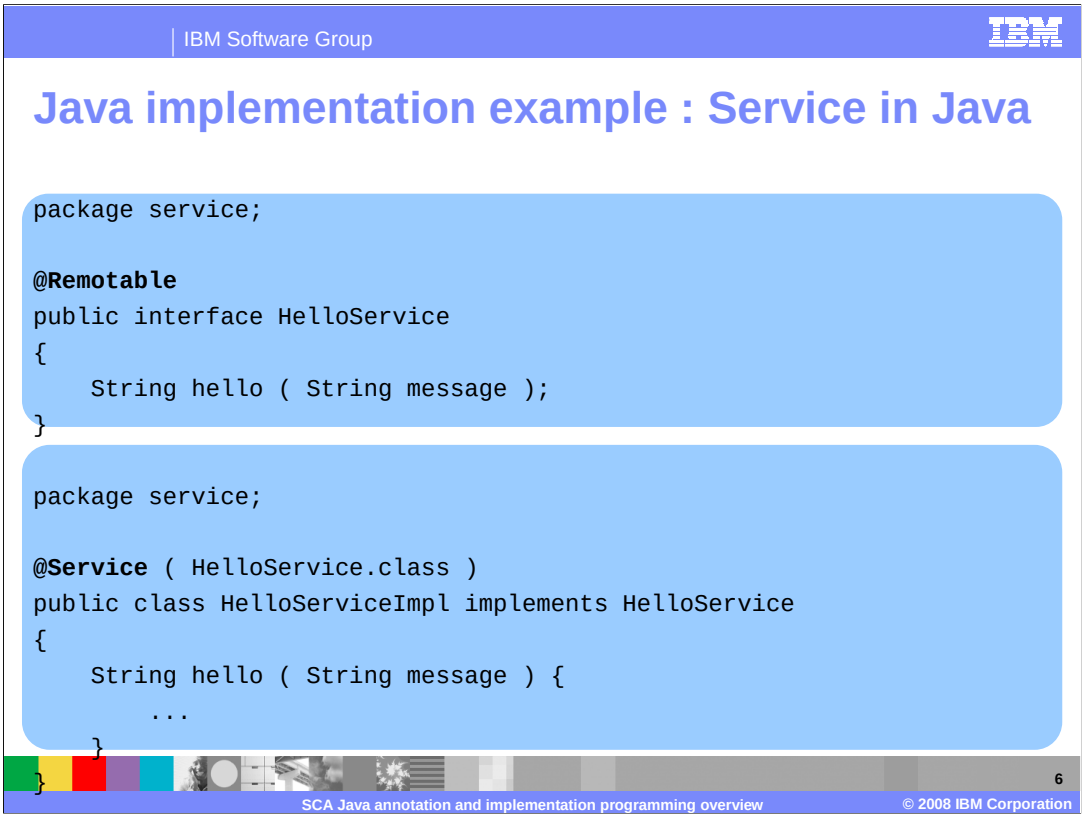
Java implementation: services

- Java implementation classes must implement all the operations defined by the service interface
- A service whose interface is defined by a Java class (as opposed to a Java interface) is not remotable
- A Java implementation type may specify the services it provides explicitly through the use of @Service

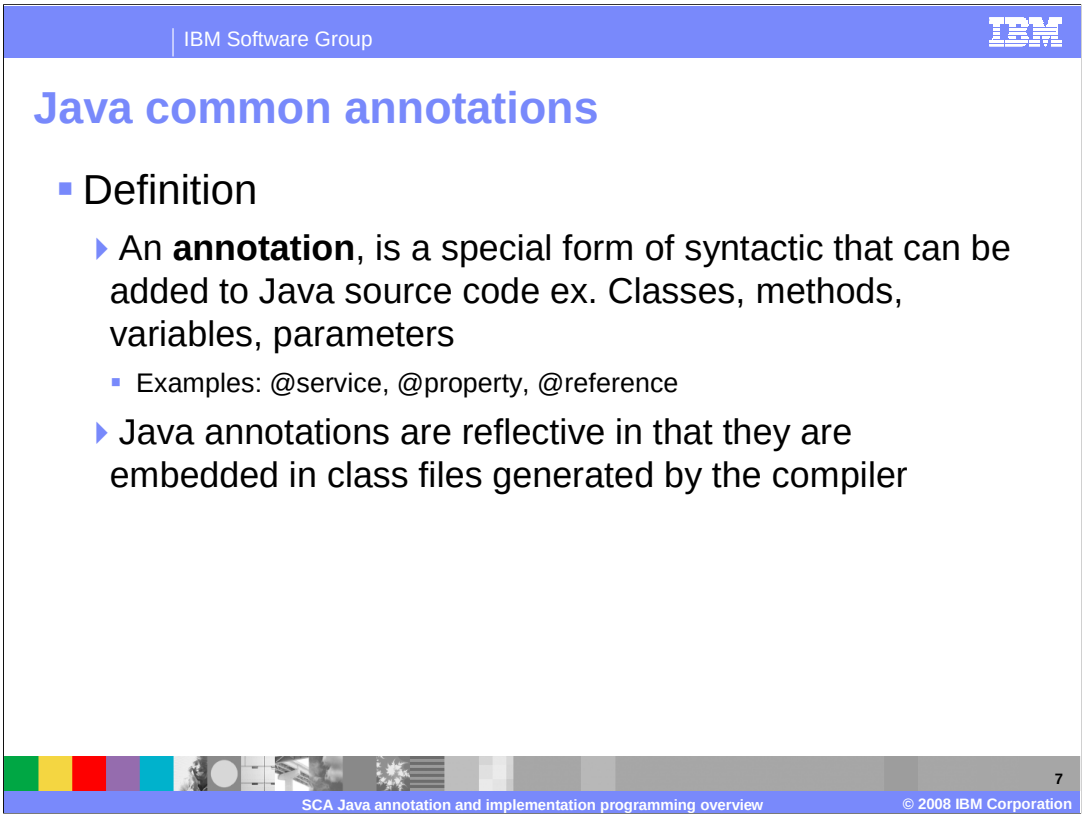
For the services, aspect, Java implementation classes must implement all the operations defined by the service interface. If the service interface is defined by a Java interface, the Java-based component can either implement that Java interface, or implement all the operations of the interface.

A service whose interface is defined by a Java class (as opposed to a Java interface) is not remotable. Java interfaces generated from WSDL portTypes are remotable

A Java implementation type may specify the services it provides explicitly through the use of @Service annotation. In certain cases, the use of @Service is not required and the services a Java implementation type offers may be inferred from the implementation class itself. @Service may be used to specify multiple services offered by an implementation.



Here is an example of a Java service interface and a Java implementation, which provides a service using that interface. Notice how the infrastructure logic is all but removed from the business logic. Java 5 annotations make service implementation, declaration and use easy.



An **annotation**, in the Java programming language is a special form of syntactic metadata that can be added to Java source code. Classes, methods, variables, parameters and packages may be annotated. Unlike Javadoc tags, Java annotations are reflective in that they are embedded in class files generated by the compiler and may be retained by the Java VM to be made retrievable at run-time.

The nice thing about annotations is that they do not interfere with your business logic.

You can write a POJO which does some business function and you would not need to worry about the middleware framework (like EJB, SCA, JAX-WS). Unlike the old programming style where annotations were not used, if say using EJB2-style, a class that extends EJBObject is loaded in a J2SE environment, there will be a NoClassDefined error

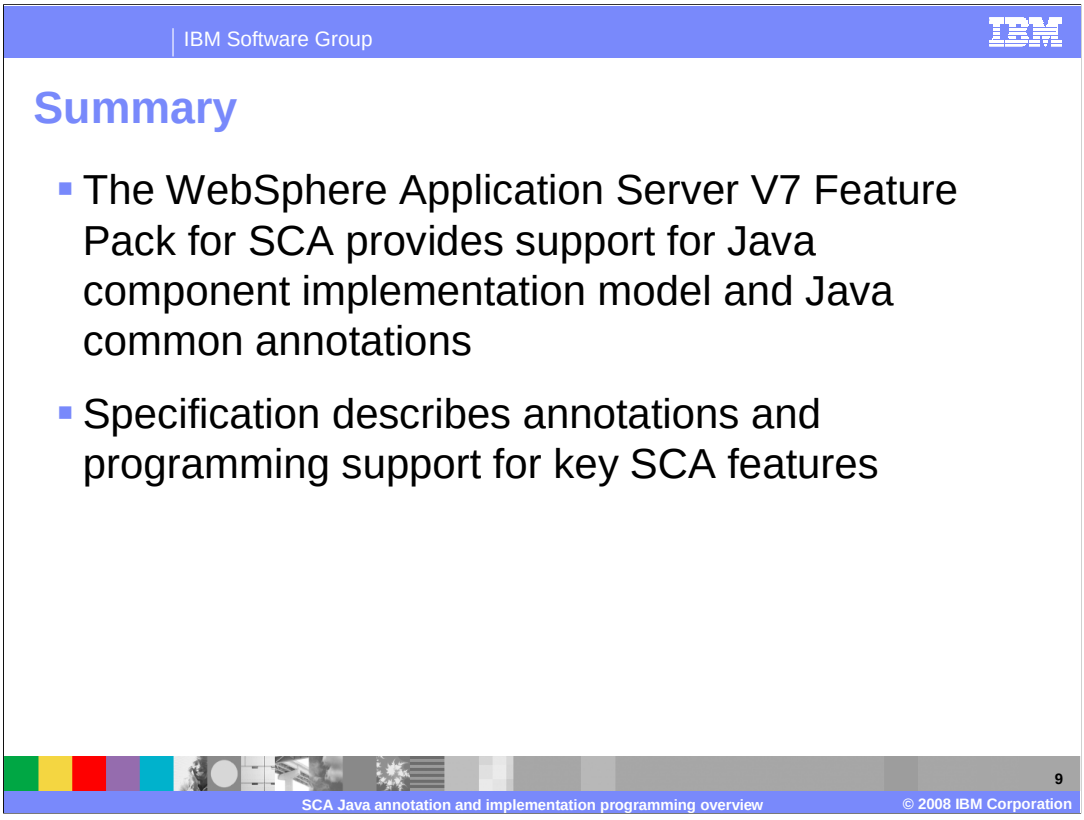
In the annotation world, that will not be an issue. That is why JEE, Java5 and others went to this model.

** Reference the spec for more examples of annotations.

** Aside note: SCA did not invent annotations. Annotations are constructs within the Java Programming Language that were added in JDK 1.5. SCA provides a set of SCA specific annotations within its programming model.

Section

Summary and references



So there are many features of Java implementation model supported in the SCA feature pack.

In summary, Unlike the older JEE technologies, SCA's Java implementation model relies on annotations rather than API calls. This approach makes creating a basic service quite easy.

Reference

- Annotations specification

http://www.osoa.org/download/attachments/35/SCA_JavaAnnotationsAndAPIs_V100.pdf?version=1

- Component implementation specification

http://www.osoa.org/download/attachments/35/SCA_JavaComponentImplementation_V100.pdf?version=1

Here is a reference to the specs.

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