



Service Component Architecture EJB Session Bean Binding Specification Version 1.1

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Abstract:

This document explains the SCA EJB session bean binding. It describes how to integrate a previously deployed session bean into an SCA assembly, and how to expose SCA services to clients which use the EJB programming model.

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1 Introduction

EJB session beans are a common technology used to implement business services. The ability to integrate SCA with session bean based services is useful because it preserves the investment incurred during the creation of those business services, while enabling the enterprise to embrace the newer SCA technology in incremental steps. The simplest form of integration is to simply enable SCA components to invoke session beans as SCA services. There is also a need to expose SCA services such that they are consumable by programmers skilled in the EJB programming model. This enables existing session bean assets to be enhanced to exploit newly deployed SCA services without the EJB programmers having to learn a new programming model.

This document explains the EJB SCA binding. This proposal describes how to integrate a previously deployed stateless session bean into an SCA assembly, and how to expose SCA services to clients which use the EJB programming model.

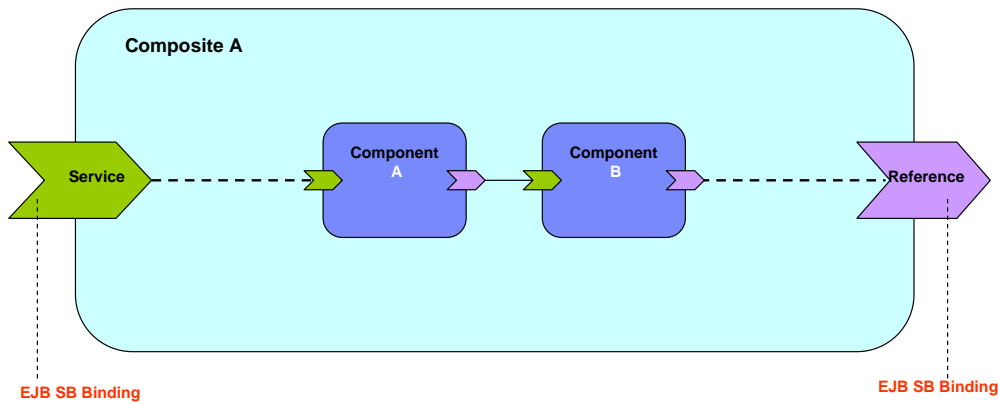
The EJB Session Bean binding enables:

- SCA developers to treat previously deployed stateless session beans as SCA services, by wiring them into an SCA assembly (SCA reference).
- SCA service deployers to expose a SCA service as a stateless session bean for consumption by Java EE applications.

Stateful session beans are out of scope for this specification. The terms 'session bean' and 'stateless session bean' are interchangeable for the purpose of this specification.

The use of EJBs and EJB modules as SCA component implementations is beyond the scope of this specification and is described in the [Java EE integration specification \[SCAJEE\]](#). [Figure 1-1](#) shows the use of the EJB SCA binding on both SCA services and references.

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EJB SB Binding

EJB SB Binding

Figure 1-1: EJB Binding used on SCA Services and References

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1.1 Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

Deleted: <#>Figure 1: EJB Binding used on SCA Services and References¶<#>¶

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30 **1.2 Normative References**

31 **[RFC2119]** S. Bradner, *Key words for use in RFCs to Indicate Requirement Levels*,
32 <http://www.ietf.org/rfc/rfc2119.txt>, IETF RFC 2119, March 1997.

33 **[SCAJEE]** SCA Java EE Implementation Specification,
34 <http://www.osea.org/display/Main/Service+Component+Architecture+Specifications>
35

36 **[EJB]** Enterprise JavaBeans Specification,
37 <http://java.sun.com/products/ejb/docs.html>

38 **[CORBA]** CORBA Naming Service Specification,
39 <http://www.omg.org/docs/formal/04-10-03.pdf>

40 **[ASSEMBLY]** OASIS Committee Draft 03, SCA Assembly Model Specification Version 1.1,
41 March 2009.
42 <http://docs.oasis-open.org/opencsa/sca-assembly/sca-assembly-1.1-spec-cd03.pdf>
43

44 **[JAVACAA]** OASIS Committee Draft 03, Service Component Architecture SCA-J Common
45 Annotations and APIs Specification Version 1.1, May 2009
46 <http://docs.oasis-open.org/opencsa/sca-j/sca-javacaa-1.1-spec-cd03.pdf>

47 **[POLICY]** OASIS Committee Draft 02, SCA Policy Framework Specification Version 1.1,
48 February 2009
49 <http://docs.oasis-open.org/opencsa/sca-policy/sca-policy-1.1-spec-cd02.pdf>

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2 Session bean binding schema

The EJB session bean binding element is defined by the pseudo-schema in Snippet 2-1.

```
<binding.ejb homeInterface="NCName"?
   .ejb-link-name="string"?
   .ejb-version="EJB2 or EJB3"?
    name="NCName"?
    policySets="sca:listOfQNames"?
    requires="sca:listOfQNames"?
    uri="anyURI"?
    <wireFormat ... />?
    <operationSelector ... />?
</binding.ejb>
```

Snippet 2-1: binding.ejb Pseudo-schema

- **/binding.ejb/@homeInterface : NCName (0..1)** - The homeInterface attribute of the EJB binding is the session bean's home interface, and is used when exposing SCA services as EJB 2.x session beans. For <binding.ejb/>, if @ejb-version="EJB2", then @homeInterface MUST be specified and MUST have a value that is the fully qualified package name of the Java interface class of the EJB's home interface. [BSB20001]
- **/binding.ejb/@ejb-link-name : string (0..1)** - The ejb-link-name attribute provides a means for integrating EJB reference resolution with SCA. When used on a binding for an SCA reference, it allows a SCA client to bind to an EJB that is packaged in the same Java EE EAR file as the SCA client. When used on an SCA service binding, it exposes an <ejb-link/> target for Java EE clients that want to use Java EE assembly to wire to the SCA service. This attribute is functionally equivalent to using the <ejb-link/> subelement of the <ejb-ref/> element in an EJB deployment descriptor. The value of this attribute is supplied by an application assembler, and is in the form as specified by the Java EE specification [SCAJEE] (i.e. <jar-name>#<ejb-name>).
When <binding.ejb/> applies to an SCA reference, if @ejb-link-name attribute is specified it MUST contain the value of an <ejb-link/> target packaged within the same Java EE EAR file as the SCA component containing the SCA reference. [BSB20002]
When <binding.ejb/> applies to an SCA service, if @ejb-link-name attribute is specified, it MUST contain a value in the form "<jar-name>#<ejb-name>" which MUST be unique amongst the <ejb-link/> targets contained within the same Java EE EAR file as the SCA component containing the SCA service. [BSB20003]
- **/binding.ejb/@ejb-version : VersionValue (0..1)** - The ejb-version attribute is used to indicate the EJB client view exposed by the EJB binding when used on an SCA service. This attribute has no meaning when used on an SCA reference. The value 'EJB2' indicates the desire to expose an EJB 2.x client view. The value 'EJB3' indicates the desire to expose an EJB 3.0 client view. The default value is 'EJB3'. When <binding.ejb/> applies to an SCA service and the @ejb-version attribute is set to 'EJB2', the SCA Runtime MUST support invocation of the SCA service using the EJB 2.x client view as specified in the Java EE specification [SCAJEE]. [BSB20004] When <binding.ejb/> applies to an SCA service and the @ejb-version attribute is set to 'EJB3', the SCA Runtime MUST support invocation of the SCA service using the EJB 3.x client view as specified in the Java EE specification [SCAJEE]. [BSB20005]
- **/binding.ejb/@name : NCName (0..1)** - As defined in the SCA Assembly Specification [ASSEMBLY]
- **/binding.ejb/@requires : QName (0..1)** - A list of policy intents as defined in the SCA Policy Framework Specification [POLICY]
- **/binding.ejb/@policySets : QName (0..1)** - A list of policy sets as defined in the SCA Policy Framework Specification [POLICY]

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101 | The base SCA binding schema provides an attribute called uri, that is used to denote the URI of an
102 | endpoint. In the context of the SCA EJB binding, the uri attribute is defined as follows:

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103 | • **/binding.ejb/@uri : anyURI (0..1)** – Specifies the URI of a session bean endpoint. For EJB 2.x, this
104 | is the endpoint of the session home. For EJB 3.x, this is the endpoint of the session bean. The value
105 | of the @uri attribute MUST take the form of an Object URL as specified in the CORBA Services
106 | specification [CORBA], [BSB20006] This is a standard URI form for referring to remotable CORBA
107 | objects. Briefly, the corbaname URI format looks like this:

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108 | – corbaname:iiop:<hostName>:<port>/<key string>#<path to home>

109 | Typically, a corbaname URI doesn't include all these components. The following example shows a
110 | corbaname URI that uses the default ORB configuration to find an EJB home at ejb/MyHome in the
111 | JNDI directory:

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112 | – corbaname:rir:#ejb/MyHome

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113 | Other forms of URI specification are admissible when interoperability is of no concern.

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- 114 | • **/binding.ejb/wireFormat** – As defined in the SCA Assembly Specification [ASSEMBLY]. This
115 | specification does not define any new wireFormat elements.
- 116 | • **/binding.ejb/operationSelector** – As defined in the SCA Assembly Specification [ASSEMBLY]. This
117 | specification does not define any new operationSelector elements.

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118 | When <binding.ejb/> applies to an SCA reference, the @uri and @ejb-link-name attributes MUST NOT
119 | be specified together in the same binding configuration. [BSB20007]

120 | The <binding.ejb/> element MUST conform to the XML schema defined in the sca-binding-ejb.xsd.
121 | [BSB20008]

122 | The implementation MUST reject a SCA Session Bean Binding XML Document that is not conformant per
123 | Section 9.1. [BSB20009]

124 | 2.1 Additional binding configuration data

125 | SCA runtime implementations can provide additional metadata that is associated with an EJB binding.
126 | This is done by providing extension points in the schema; refer to Appendix B: EJB Binding Schema for
127 | the locations of these extension points.

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128 3 Interface Mapping

129 When used with the EJB binding, an SCA runtime MUST ensure that an SCA service or reference
130 interface is compatible with a session bean interface, according to the rules defined in the section
131 "Compatibility of Interfaces used for SCA Services & References with EJB Session Bean Interfaces".
132 [BSB30001]

133 3.1 Compatibility of Interfaces used for SCA Services & References 134 with EJB Session Bean Interfaces

135 This section defines the compatibility of the interface used by an SCA reference with the interface
136 provided by an EJB, when the SCA reference is wired to the EJB. It also defines the compatibility of the
137 interface used by an EJB reference with the interface of an SCA service when the EJB reference is wired
138 to the SCA service.

139 If an SCA reference is wired to an EJB remote session bean interface, the SCA reference interface is
140 compatible if it is remotable.

141 If an SCA reference is wired to an EJB local session bean interface, the SCA reference interface is
142 compatible if it is local.

143 The interface used by an SCA reference which is wired to a session bean is a compatible subset
144 [ASSEMBLY] of the interface used by the session bean. In particular, the interface used by the SCA
145 reference can omit any methods inherited from EJBObject or EJBLocalObject that appear in the session
146 bean interface.

147 The interface used by an SCA service which is wired to by an EJB reference is a compatible superset
148 [ASSEMBLY] of the interface used by the EJB reference. In particular, the interface used by the SCA
149 service can omit any methods inherited from EJBObject or EJBLocalObject that appear in the EJB
150 reference interface.

151 Compatibility for an individual method is defined by the SCA Assembly Model Specification [ASSEMBLY],
152 and can be stated simply as compatibility of the signature. That is, the method name, input types, output
153 types, and faults are identical.

154 The interface used by an SCA service or reference can be an SCA business interface or an EJB 3.0
155 remote or local interface.

156 3.2 EJBObject and EJBLocalObject Interfaces

157 The interfaces exposed from EJB 2.X beans inherit from either EJBObject or EJBLocalObject. EJBObject
158 and EJBLocalObject contain methods directed toward the management of bean instances, meaning that
159 the exposed 2.X interfaces mix business and infrastructure methods in a way that makes them poorly
160 suited for use as an SCA business interface. However, EJB 2.X beans developed using the "Business
161 Interface Pattern" will already have an interface that is a suitable SCA business interface. An EJB 2.x
162 session bean interface itself MUST NOT be used as the interface of an SCA reference. [BSB30002]

163 Section 6.1 describes the behavior associated with each inherited method when <binding.ejb/> is used on
164 an SCA service.

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165 4 SCA Reference Binding

166 When used on an SCA reference, the EJB binding specifies the means for connecting an SCA
167 component to a previously deployed or co-deployed session bean.

168 The SCA reference interface used with the EJB binding can be either a remote or local interface. SCA
169 deployment logic and the binding implementation will introspect the SCA reference interface class to
170 determine whether it is local or remote. If an SCA component needs to access both the local and remote
171 interface of a session bean, then this can be modeled in SCA assembly through two SCA references, one
172 with a local interface and one with a remote interface.

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173 [Snippet 2-1](#) shows a reference binding using a corbaname URI:

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174

```
175 <reference name="CandidateCheck">  
176 <interface.java interface="com.app.jobbank.CandidateCheck"/>  
177 <binding.ejb uri="corbaname:rir:#ejb/CandidateCheckHome"/>  
178 </reference >
```

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179 [Snippet 4-1: Reference Using a Corbaname URI](#)

180

181 The specific uri would be supplied prior to the completion of deployment.

182 [Snippet 4-2](#) is a reference binding using an ejb-link.

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183

```
184 <reference name="CandidateCheck">  
185 <interface.java interface="com.app.jobbank.CandidateChk"/>  
186 <binding.ejb ejb-link-name="candidateEJB.jar#CandidateChk"/>  
187 </reference >
```

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188 [Snippet 4-2: Reference Using an EJB-link](#)

189 4.1 Exception Handling

190 Exception handling for interactions with session beans has been specified in chapter 14 of the EJB 3
191 specification [EJB] and in Chapter 18 of the EJB 2.1 specification [EJB]. The EJB [EJB] specifications
192 define non-business exceptions that can be thrown to the EJB client. When <binding.ejb/> applies to an
193 SCA reference, the SCA Runtime MUST wrap non-business exceptions in a ServiceRuntimeException
194 that is thrown to the client [JAVACAA], [BSB40001]

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195 **5 Packaging**

196 There is no requirement to package the session bean home interface or client stubs with an SCA
197 component that uses the Session bean binding. The EJB Session Bean binding implementation can
198 dynamically lookup, create and invoke the bean without the usual EJB client classes.

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199 6 SCA Service Binding

200 When used on an SCA service, the EJB SCA binding causes the SCA service to be exposed as a
201 session bean. This enables a client that is using the EJB programming model to call the SCA service
202 using its native programming model.

203 The `/binding.ejb/@homeInterface` attribute is used to indicate the Session Home interface that an EJB
204 client will use to bootstrap itself with the SCA service, just as it would with any other session bean. **When**
205 **<binding.ejb/>** applies to an SCA service, the Java interface class specified on the `@homeInterface`
206 **attribute MUST have one and only one create method [EJB]. [BSB60001]**

207 Snippet 6-1 is an example of a service using the EJB binding.

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208

```
209 <service name="JobBank">  
210 <interface.java interface="com.app.jobbank.JobBankService"/>  
211 <binding.ejb  
212 uri="corbaname:rir:#ejb/JobBankServiceHome"  
213 homeInterface="com.app.jobbank.JobBankServiceHome"  
214 ejb-link-name="jobbankEJB.jar#JobBankComponent"/>  
215 </service>
```

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216 Snippet 6-1: Service Using an EJB Binding

217

218 A corresponding local home interface `com.app.jobbank.JobBankServiceHome` is shown in Snippet 6-2.

Deleted: looks like this

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219

```
220 package com.app.jobbank;  
221  
222 import javax.ejb.CreateException;  
223 import javax.ejb.EJBLocalHome;  
224  
225 public interface JobBankServiceHome extends EJBLocalHome {  
226     JobBankService create() throws CreateException;  
227 }
```

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228 Snippet 6-2: Local Home Interface for Service in Snippet 6-1

229

230 Similarly, the remote home interface can be formulated by extending `javax.ejb.EJBHome` and making
231 sure to declare a `RemoteException`, is shown in Snippet 6-3

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232

```
233 package com.app.jobbank;  
234  
235 import java.rmi.RemoteException;  
236 import javax.ejb.CreateException;  
237 import javax.ejb.EJBHome;  
238  
239 public interface JobBankServiceHome extends EJBHome {  
240     JobBankService create() throws CreateException, RemoteException;  
241 }
```

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242 Snippet 6-3: Remote Home Interface for Service in Snippet 6-1

243

244 In the corbaname used in this example, the first part of the URI (up to the #) would logically be supplied
245 by the target deployment environment. See the SCA Assembly Model Specification [ASSEMBLY] for a
246 discussion of base URIs provided by an SCA domain configuration. The remainder of the name would be
247 provided prior to completion of deployment. The example above shows the URI that a client would use

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248 after deployment. Prior to deployment, an assembler or developer can specify only the last portion of the
249 URI (i.e. everything following the #).

250 The SCA service interface used with the EJB binding can be either a remote or local interface. SCA
251 deployment logic and the binding implementation will introspect the interface class to determine whether it
252 is local or remote. If an SCA component needs to be exposed as both a local and remote session bean,
253 this can be modeled in SCA through two SCA services, one with the local interface and one with the
254 remote interface.

255 When used on an SCA service binding, **ejb-link-name** and **uri** are NOT mutually exclusive. They each
256 provide a means for wiring to the SCA service depending on the locality of the client EJB reference. For
257 example, an SCA service packaged with an JEE EJB application could be exposed for consumption by
258 local EJB clients (using the **ejb-link-name** element) and remote EJB clients (using the **uri**).

259 From the perspective of an EJB client (local and remote), SCA services that are exposed as session
260 beans are not distinguishable from ordinary session beans. When `<binding.ejb/>` applies to an SCA
261 service and `@ejb-version` is set to 'EJB2', the binding implementation MUST implement the methods from
262 the `EJBObject` or `EJBLocalObject` interface. [BSB60002]

263 Specifically, this means that a local client will be able to reference the SCA service as a session bean
264 using `ejb-(local)-ref` declarations in the appropriate locations and by issuing JNDI lookups or relying on
265 dependency injection mechanisms. If the SCA service is exposed as EJB 2.x session bean, by virtue of a
266 home interface specification, the client needs to be aware of the EJB 2.x home interface contract.

267 Similarly remote EJB clients are expected to be able to consume SCA services that are exposed as
268 session beans just as they are able to consume ordinary session beans.

269 6.1 Handling methods from `EJBObject` and `EJBLocalObject`

270 This section describes the SCA specific behavior of the methods that EJB 2.X service bindings inherit
271 from the `EJBObject` and `EJBLocalObject` interfaces.

272

Method	Behavior
<code>isIdentical</code>	Tests whether the SCA component, which the binding exposes, is the same instance as the one exposed by the specified object.
<code>getEJBHome</code> <code>getEJBLocalHome</code>	Returns an implementation of the interface specified as <code>/binding.ejb/@homeInterface</code> . The instance can be used to create or remove bean instances.

273 *Table 6-1: Behavior for EJB 2.X Methods*

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275

7 Callbacks

276 The SCA Assembly Model Specification [ASSEMBLY] defines the callback feature which enables
277 asynchronous interactions between two SCA components. This specification does not support the
278 callback feature. However, implementations can choose to support the callback feature, in conjunction
279 with this binding, by creating extensions to this specification.

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281

8 EJB Session Bean Binding bindingType

282

The bindingType for the Session Bean binding is defined in [Snippet 8-1](#);

283

284

```
<bindingType type="binding.ejb" alwaysProvides="EJB"/>
```

285

Snippet 8-1: Pseudo-schema for EJB bindingType

286

287

The EJB intent is defined in the SCA Policy Specification [POLICY] document in the section entitled "Miscellaneous Intents".

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290 9 Conformance

291 The XML schema pointed to by the RDDL document at the namespace URI, defined by this specification,
292 are considered to be authoritative and take precedence over the XML schema defined in the appendix of
293 this document.

294 There are two categories of artifacts for which this specification defines conformance:

- 295 a) SCA EJB Session Bean Binding XML Document
- 296 b) SCA Runtime

297 9.1 SCA EJB Session Bean Binding XML Document

298 An SCA EJB Session Bean Binding XML document is an SCA Composite Document, or an SCA
299 ComponentType Document, as defined by the SCA Assembly Model Specification [ASSEMBLY], that
300 uses the <binding.ejb> element.

301 An SCA EJB Session Bean Binding XML document MUST be a conformant SCA Composite Document or
302 a SCA ComponentType Document, as defined by the SCA Assembly Model Specification [ASSEMBLY],
303 and MUST comply with all statements in Appendix C: Conformance Items related to elements and
304 attributes in an SCA EJB Session Bean Binding XML document, notably all "MUST" statements have to
305 be implemented.

306 9.2 SCA Runtime

307 An implementation that claims to conform to the requirements of an SCA Runtime defined in this
308 specification has to meet the conditions:

- 309 1. The implementation MUST comply with all statements in Appendix C: Conformance Items related to
310 an SCA Runtime.
- 311 2. The implementation MUST conform to the SCA Assembly Model Specification Version 1.1
312 [ASSEMBLY] and to the SCA Policy Framework Version 1.1 [POLICY].

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314 A Use cases (non-normative)

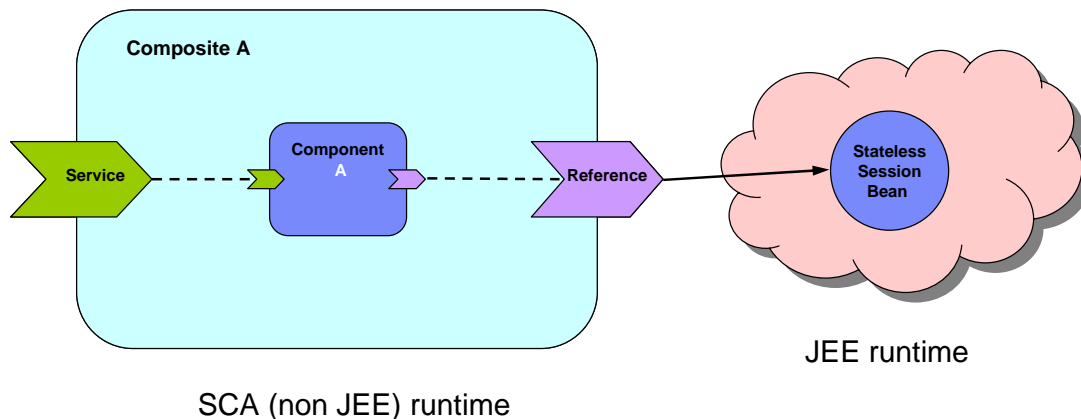
315 The following use cases provide some examples of the usage of the SCA EJB Session Bean binding.

316 A.1 Consuming an Existing EJB SOA Service

317 An SCA service is developed that needs to call a business service which is already deployed and running
318 in a Java EE server. The SCA service will be deployed into an SCA runtime somewhere in the enterprise
319 that is not necessarily a Java EE runtime. The business service was implemented as a session bean.

320 The SCA component defines a SCA reference to the business service, and the deployer attaches an EJB
321 binding to the SCA reference. In this use case, the EJB remote interface is the business interface.

322



323

324 *Figure A-1: SCA Reference invoking EJB Session Bean*

325

326 The reference in the deployed sca.composite file [is shown in Snippet A-1](#).

327

```
328 <reference name="CandidateCheck">  
329 <interface.java interface="com.app.jobbank.CandidateChk"/>  
330 <binding.ejb uri="corbaname:rir:#ejb/CandidateChkHome"/>  
331 </reference >
```

332 [Snippet A-1: Reference Using binding.ejb](#)

333 A.2 Exposing an SCA Service with an EJB SCA Binding

334 An SCA service is developed that will be called from a Java EE environment. The Java EE programmer
335 doesn't know the SCA programming model and therefore wants to use the Java EE programming model
336 that he knows in order to invoke the SCA service (i.e. `new initialContext()`, `nc.lookup()`, etc.). In this case,
337 the SCA service has to be deployed into a runtime that is capable of supporting the EJB binding. Note
338 that deployment of this SCA service can result in the generation and deployment of a session bean, along
339 with its home interface. This aspect is significantly different from the previous use case.

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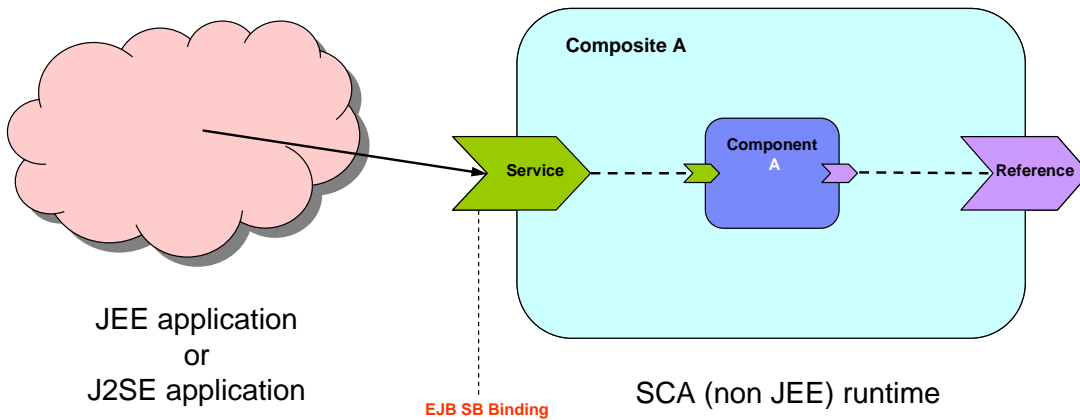


Figure A-2: SCA Service accessed as an EJB Session Bean

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Since the client will use the standard Java EE programming model, the client needs to know the home interface of the SCA service. The service in the SCA composite is shown in Snippet A-2.

Deleted: file will look like this:

```
<service name="CompanyInfo">
  <interface.java interface="com.app.jobbank.CompanyInfo" />
  <binding.ejb uri="corbaname:rir:#ejb/CompanyInfoHome"
    homeInterface="com.app.jobbank.CompanyInfoHome"
    ejb-version="EJB2" />
  <reference>CompanyInfoComponent/CompanyInfo</reference>
</service>
```

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Snippet A-2: Service Using binding.ejb

The client code as per the standard Java EE programming model is shown in Snippet A-3.

Deleted: looks like this:

```
Context initialContext = new InitialContext(env);
CompanyInfoHome companyInfoHome= (CompanyInfoHome)
    initialContext.lookup("corbaname:rir:#ejb/CompanyInfoHome");

CompanyInfo companyInfo = companyInfoHome.create();
companyInfo.getCompanyInfo("ACME Corp");
```

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Snippet A-3: Client Code for Service in Snippet A-2

A.3 Consuming Existing Local EJB SOA Services

This use case is similar to the use case in section A.1, except that the SCA service is going to be deployed into a Java EE capable JVM, and it is the same JVM as the EJB service. In this use case, the EJB's local interface is used as the business interface.

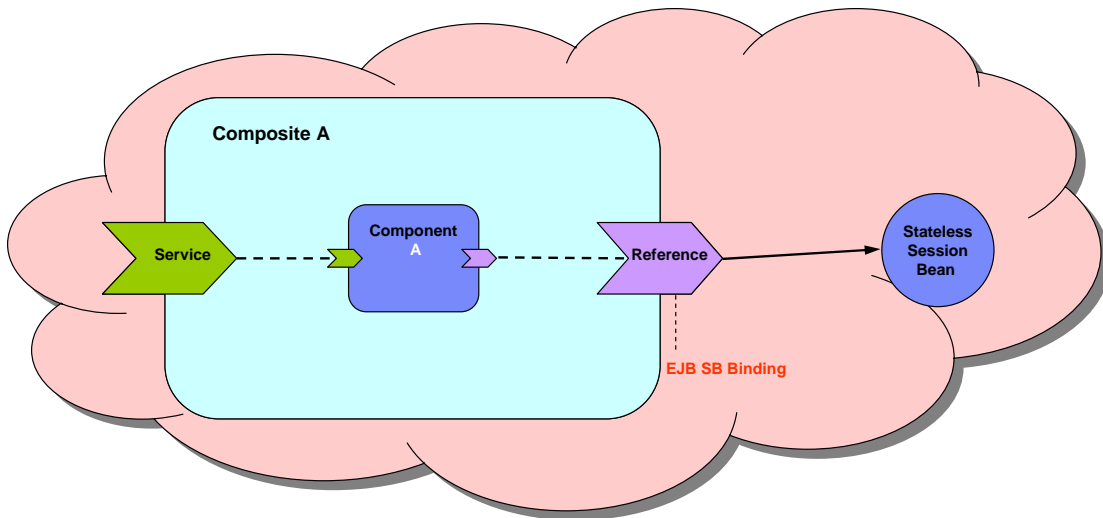
Note that the SCA client could also use the EJB remote interface. If an SCA component wanted to access both the local and remote interface, then it would declare 2 SCA references (one with the local interface, one with the remote interface).

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Hybrid SCA/JEE runtime – all in one JVM

Figure A-3: SCA reference consuming a Local EJB service

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Snippet A-4 shows the usage of a local interface in the reference definition.

Deleted: The example below

```
<reference name="CandidateCheck">
  <interface.java interface="com.app.jobbank.CandidateCheckLocal" />
  <binding.ejb uri="corbaname:rir:#ejb/CandidateCheckHome" />
</reference>
```

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Snippet A-4: Using a Local Interface

A.4 Exposing an SCA Service with a Local SLSB SCA Binding

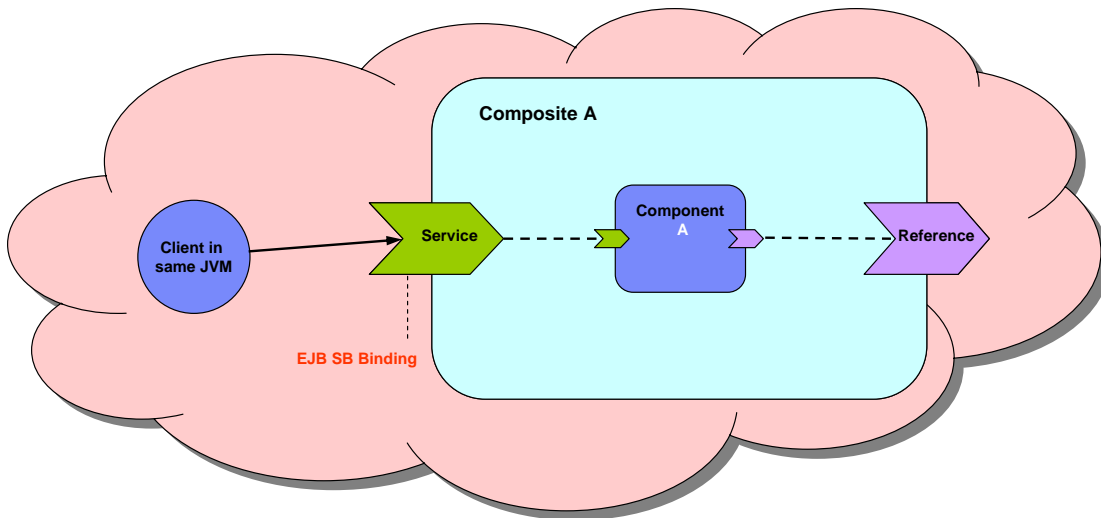
This use case is similar to the use case in section A.2, except that the SCA service is going to be deployed into the same JVM as the client. This use case allows for the possibility that the SCA service is exposed as a local EJB interface. Note that deployment of this SCA service will effectively result in the generation and deployment of a session bean with a local interface and a local home interface.

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Hybrid SCA/JEE runtime – all in one JVM

Figure A-4: SCA Service exposed as a Local session bean

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Snippet A-5 is an example:

Deleted: The following

```
<service name="CompanyInfo">
  <interface.java interface="com.app.jobbank.CompanyInfoLocal"/>
  <binding.ejb uri="corbaname:rir#ejb/CompanyInfoHome"
    homeInterface="com.app.jobbank.CompanyInfoLocalHome"/>
  <reference>CompanyInfoComponent/CompanyInfo</reference>
</service>
```

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Snippet A-5: A Service Implemented as a Local Session Bean

A.5 Consuming an EJB Service inside a Java EE EAR file

This use case is similar to sections A.1 and A.3, except that the SCA service is going to be packaged inside a Java EE EAR file. By packaging it in this way, the SCA reference binding can be configured as if it were an <ejb-ref> with the <ejb-link> subelement.

Snippet A-6 is an example of the SCA reference binding.

Deleted: The following

```
<reference name="CandidateCheck">
  <interface.java interface="com.app.jobbank.CandidateChk"/>
  <binding.ejb ejb-link-name="candidateEJB.jar#CandidateChk"/>
</reference >
```

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Snippet A-6: Reference Using binding.ejb

Snippet A-7 is an <ejb-ref/> that is functionally equivalent to the SCA reference above.

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```
<ejb-ref>
  <ejb-ref-name>CandidateCheck</ejb-ref-name>
  <ejb-ref-type>Session</ejb-ref-type>
```

```

418 <home>com.app.jobbank.CandidateChkHome</home>
419 <remote>com.app.jobbank.CandidateChk</remote>
420 <ejb-link>candidateEJB.jar#CandidateChk</ejb-link>
421 </ejb-ref>

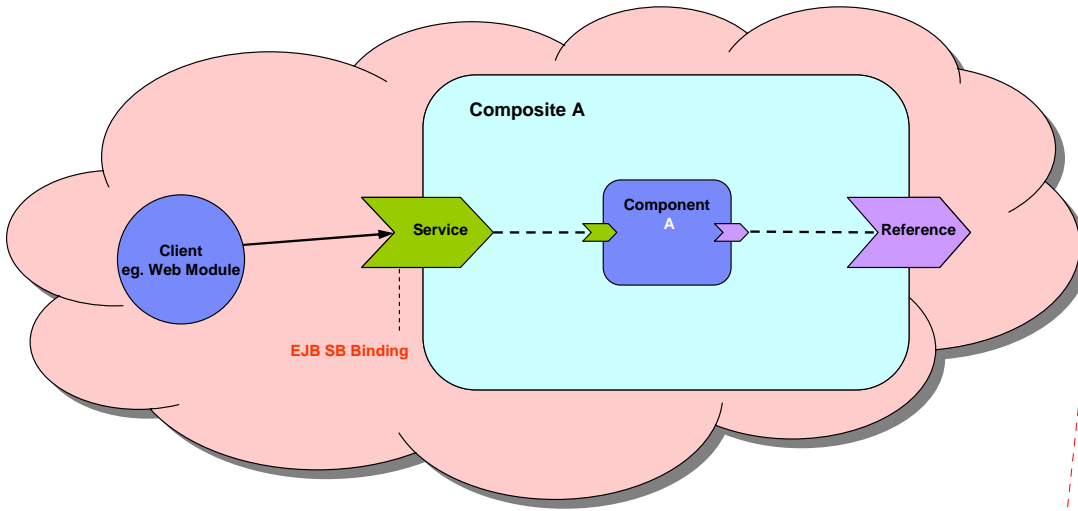
```

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422 *Snippet A-7: ejb-ref Equivalent to Reference in Snippet A-6*

423 A.6 Exposing an SCA Service inside a Java EE EAR file

424 This use case is similar to sections A.2 and A.4, except that the SCA service is going to be deployed
 425 inside a Java EE EAR file so that it can be referenced by an EJB client, using the EJB assembly model.
 426



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427 Caller and SCA Composite within one EAR file

428 *Figure A-5: SCA Service with client within one EAR file*

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430 *Snippet A-8* is an example of the SCA service binding.

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```

431
432 <service name="CompanyInfo">
433 <interface.java interface="com.app.jobbank.CompanyInfo" />
434 <binding.ejb
435   homeInterface="com.app.jobbank.CompanyInfoHome"
436   ejb-link-name="companyInfoEJB.jar#CompanyInfoComponent" />
437 <reference>CompanyInfoComponent/CompanyInfo</reference>
438 </service>

```

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439 *Snippet A-8: Service Using binding.ejb*

441 *Snippet A-9* is an example of an EJB deployment descriptor created by the client that is wired to the SCA
 442 Service binding.

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```

443
444 <ejb-ref>
445 <ejb-ref-name>ejb/CompanyInfo</ejb-ref-name>
446 <ejb-ref-type>Session</ejb-ref-type>
447 <home>com.app.jobbank.CompanyInfoHome</home>

```

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```
448 <remote>com.app.jobbank.CompanyInfo</remote>
449 <ejb-link>companyInfoEJB.jar#CompanyInfoComponent</ejb-link>
450 </ejb-ref>
```

451 *Snippet A-9: Deployment Descriptor Wired to Service in Snippet A-8*

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452
453 Note: There is a variant of this use case that needs to be considered. If the SCA service is in the same
454 EJB module as the client, then the ejb-link specified by the client does not have to include the EJB
455 module jar name.

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B EJB binding schema

```

457 <?xml version="1.0" encoding="UTF-8"?>
458 <!-- Copyright(C) OASIS(R) 2005,2009. All Rights Reserved.
459 OASIS trademark, IPR and other policies apply. -->
460 <schema xmlns="http://www.w3.org/2001/XMLSchema"
461 xmlns:sca="http://docs.oasis-open.org/ns/opencsa/sca/200912"
462 targetNamespace="http://docs.oasis-open.org/ns/opencsa/sca/200912"
463 elementFormDefault="qualified">
464
465 <include schemaLocation="sca-core-1.1-cd04.xsd" />
466
467 <element name="binding.ejb" type="sca:EJBSessionBeanBinding"
468 substitutionGroup="sca:binding" />
469
470 <simpleType name="VersionValue">
471 <restriction base="string">
472 <enumeration value="EJB2"/>
473 <enumeration value="EJB3"/>
474 </restriction>
475 </simpleType>
476
477 <complexType name="EJBSessionBeanBinding">
478 <complexContent>
479 <extension base="sca:Binding">
480 <sequence>
481 <any namespace="##other" processContents="lax"
482 minOccurs="0" maxOccurs="unbounded"/>
483 </sequence>
484 <attribute name="homeInterface" type="NCName"
485 use="optional"/>
486 <attribute name="ejb-link-name" type="string"
487 use="optional"/>
488 <attribute name="ejb-version" type="sca:VersionValue"
489 use="optional" default="EJB3"/>
490 </extension>
491 </complexContent>
492 </complexType>
493 </schema>

```

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C Conformance Items

This section contains a list of conformance items for the SCA EJB Session Bean Binding specification.

Conformance ID	Description
[BSB20001]	For <binding.ejb/>, if @ejb-version="EJB2", then @homeInterface MUST be specified and MUST have a value that is the fully qualified package name of the Java interface class of the EJB's home interface.
[BSB20002]	When <binding.ejb/> applies to an SCA reference, if @ejb-link-name attribute is specified it MUST contain the value of an <ejb-link/> target packaged within the same Java EE EAR file as the SCA component containing the SCA reference.
[BSB20003]	When <binding.ejb/> applies to an SCA service, if @ejb-link-name attribute is specified, it MUST contain a value in the form "<jar-name>#<ejb-name>" which MUST be unique amongst the <ejb-link/> targets contained within the same Java EE EAR file as the SCA component containing the SCA service.
[BSB20004]	When <binding.ejb/> applies to an SCA service and the @ejb-version attribute is set to 'EJB2', the SCA Runtime MUST support invocation of the SCA service using the EJB 2.x client view as specified in the Java EE specification [SCAJEE].
[BSB20005]	When <binding.ejb/> applies to an SCA service and the @ejb-version attribute is set to 'EJB3', the SCA Runtime MUST support invocation of the SCA service using the EJB 3.x client view as specified in the Java EE specification [SCAJEE].
[BSB20006]	The value of the @uri attribute MUST take the form of an Object URL as specified in the CORBA Services specification [CORBA].
[BSB20007]	When <binding.ejb/> applies to an SCA reference, the @uri and @ejb-link-name attributes MUST NOT be specified together in the same binding configuration.
[BSB20008]	The <binding.ejb/> element MUST conform to the XML schema defined in the sca-binding-ejb.xsd.
[BSB20009]	The implementation MUST reject a SCA Session Bean Binding XML Document that is not conformant per Section 9.1.
[BSB30001]	When used with the EJB binding, an SCA runtime MUST ensure that an SCA service or reference interface is compatible with a session bean interface, according to the rules defined in the section "Compatibility of Interfaces used for SCA Services & References with EJB Session Bean Interfaces".
[BSB30002]	An EJB 2.x session bean interface itself MUST NOT be used as the interface of an SCA reference.
[BSB40001]	The EJB [EJB] specifications define non-business exceptions that can be thrown to the EJB client. When <binding.ejb/> applies to an SCA reference, the SCA Runtime MUST wrap non-business exceptions in a ServiceRuntimeException that is thrown to the client [JAVACAA].

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[BSB60001]	When <binding.ejb/> applies to an SCA service, the Java interface class specified on the @homeInterface attribute MUST have one and only one create method [EJB].
[BSB60002]	When <binding.ejb/> applies to an SCA service and @ejb-version is set to 'EJB2', the binding implementation MUST implement the methods from the EJBObject or EJBLocalObject interface.

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500 D Acknowledgements

501 The following individuals have participated in the creation of this specification and are gratefully
502 acknowledged:

503 Participants:

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E Revision History

[optional; should not be included in OASIS Standards]

Revision	Date	Editor	Changes Made
1	2007-09-26	Anish Karmarkar	Applied the OASIS template + related changes to the Submission
2	2007-10-04	David Booz	Issue 5: Ending a conversation should invoke the remove method of EJBOject or EJBLocalObject.
wd02	2007-11-02	David Booz	Applied OSOA Errata
wd03	2009-06-04	David Booz	Editorial upgrade of namespaces, attribute descriptions, etc Applied Issues 86, 140
wd04	2009-07-20	David Booz	Applied 24, 122, 118
wd05	2009-08-14	David Booz	Applied 107, 170
cd01	2009-09-02	David Booz	Creation of CD01
cd01-rev1	2010-01-18	David Booz	Updated to latest Assembly namespace Applied issues 183, 191
cd01-rev2	2010-01-22	David Booz and Bryan Aupperle	OASIS Formatting, copyright updates

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