



# Service Component Architecture JCA Binding Specification Version 1.1

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**Related work:**

This specification replaces or supersedes:

- Service Component Architecture JCA Binding Specification Version 1.00 20 September 2007

This specification is related to:

- Service Component Architecture Assembly Model Specification Version 1.1
- Service Component Architecture Policy Framework Specification Version 1.1

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**Abstract:**

This document presents bindings describing access and connectivity to the services provided by the Enterprise Information System (EIS).

This version of the document describes JCA Bindings thus narrowing connectivity down to the connectivity to the EIS system external to the SCA system, based on the Java EE Connector Architecture specification and implemented in Java.

Further specification is necessary to define EIS Bindings between different SCA runtimes within SCA system, for example J2EE and EIS based runtimes.

The binding specified in this document applies to the composite's references and services.

The connection to exchange data with the EIS is characterized by two sets of configuration parameters, the connection and interaction parameters. The former set determines the location of the target system the latter determines characteristics that need to be specified to invoke one specific service available at the endpoint. JCA Binding model captures these parameters as separate sets to allow their reuse and reconfiguration.

**Status:**

This document was last revised or approved by the OASIS Service Component Architecture / Bindings (SCA-Bindings) TC on the above date. The level of approval is also listed above. Check the "Latest Version" or "Latest Approved Version" location noted above for possible later revisions of this document.

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# 1 Introduction

This document presents [a bindingbindings](#) describing access and connectivity to the services provided by the Enterprise Information Systems (EIS). This ~~version of the~~ document [focuses on](#)~~describes~~ JCA Bindings thus narrowing connectivity down to the connectivity to the EIS system external to the SCA system, based on the J2EE Connector Architecture specification and implemented in Java. Further specification is necessary to define EIS Bindings between different SCA runtimes within SCA system, for example J2EE and EIS based runtimes. The JCA Bindings are applicable to the composite's references and services. The connection to exchange data with the EIS is characterized by two sets of configuration parameters, the connection and interaction parameters. The former set determines the location of the target system the latter determines characteristics that need to be specified to invoke one specific service available at the endpoint. JCA Binding model captures these parameters as separate sets to allow their reuse and reconfiguration. [This binding places no requirement to support bidirectional interfaces, SCA runtimes can implement support for bidirectional interfaces via extensions.](#)

## 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 [\[RFC2119\]](#). This specification uses predefined namespace prefixes throughout; they are given in the following list. Note that the choice of any namespace prefix is arbitrary and not semantically significant. Table 1-1 Prefixes and Namespaces used in this specification

Prefix	Namespace	Notes
xs	" <a href="http://www.w3.org/2001/XMLSchema">http://www.w3.org/2001/XMLSchema</a> "	Defined by XML Schema 1.0 specification
sca	<a href="http://docs.oasis-open.org/ns/opencsa/sca/200903">"http://docs.oasis-open.org/ns/opencsa/sca/200903"</a> <a href="http://docs.oasis-open.org/ns/opencsa/sca/200712">"http://docs.oasis-open.org/ns/opencsa/sca/200712"</a>	Defined by the SCA specifications

## 1.2 Normative References

- [RFC2119] S. Bradner, *Key words for use in RFCs to Indicate Requirement Levels*, <http://www.ietf.org/rfc/rfc2119.txt>, IETF RFC 2119, March 1997.
- [JCA15] Java Connector Architecture Specification Version 1.5 <http://java.sun.com/j2ee/connector/>
- [WSDL] E. Christensen et al, *Web Service Description Language (WSDL) 1.1*, <http://www.w3.org/TR/2001/NOTE-wsdl-20010315>, W3C Note, March 15 2001.  
R. Chinnici et al, *Web Service Description Language (WSDL) Version 2.0 Part 1: Core Language*, <http://www.w3.org/TR/2007/REC-wsdl20-20070626/>, W3C Recommendation, June 26 2007.
- [SCA-Assembly] <http://docs.oasis-open.org/opencsa/sca-assembly/sca-assembly-1.1-spec.html>
- [SCA-Policy] <http://docs.oasis-open.org/opencsa/sca-policy/sca-policy-1.1-spec.pdf>

38 **1.3 Non-Normative References**

39 TBD TBD

40 **1.4 Naming Conventions**

41 This specification follows some naming conventions for artifacts defined by the specification. In  
42 addition to the conventions defined by section 1.3 of the Assembly [SCA-Assembly]  
43 specification, this specification adds three additional conventions:

- 44 • Where the names of elements and attributes consist partially or wholly of acronyms, the letters of the  
45 acronyms use the same case. When the acronym appears at the start of the name of an element or  
46 an attribute, or after a period, it is in lower case. If it appears elsewhere in the name of an element or  
47 an attribute, it is in upper case. For example, an attribute might be named "uri" or "jndiURL".
- 48 • Where the names of types consist partially or wholly of acronyms, the letters of the acronyms are in  
49 all upper case. For example, an XML Schema type might be named "JCABinding" or "MessageID".
- 50 • Values, including local parts of QName values, follow the rules for names of elements and attributes  
51 as stated above, with the exception that the letters of acronyms are in all upper case. For example, a  
52 value might be "JMSDefault" or "namespaceURI".

---

## 2 JCA Binding

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## 2 ~~Operation Selection and Data Binding~~

~~The operation selection is a process used to identify the operation of the service to be invoked.  
The data binding is a process of data conversion between EIS and runtime formats.~~

~~This specification does not define default behavior for the operation selection nor data binding. This choice had been made because the interfaces describing data exchanged between JCA adapter and its client are specific to a particular adapter and, unlike JMS, cannot be used in a generic manner.~~

~~The JCA Binding implementation however, MUST use or provide the operation selection and data binding functionality. To support multiple adapters in a generic fashion, the binding MUST expose a mechanism for selecting or specifying the implementations of data bindings or operation selector. This protocol MUST be followed by providers of this functionality. This can be achieved in a variety of ways, for example by providing the metadata information or specific pluggability points. This document does not specify such a mechanism, it is left to the binding implementation.~~



71

### 3 JCA Binding

72 The JCA binding element is defined by the following pseudo-schema:

```

73 <binding.jca connectionInfo="QName"?
74     _____initialContextFactory="xs:anyURI"?
75     _____jndiURL="xs:anyURI"?
76     _____name="NCName"?
77     _____requires="list of xs:QName"?
78     _____policySets="list of xs:QName"?
79     _____uri="xsd:anyURI"?>
80
81     <outboundConnection _____<jca.outbound.connection managed="xs:boolean"-?>
82         _____<resourceAdapter name="NMTOKEN" type="NMTOKEN">
83             _____<property name="NMTOKEN" type="NMTOKEN">*
84         _____</resourceAdapter?>
85         _____<connection name="NMTOKEN"? type="NMTOKEN" create="string"?>
86             _____<property name="NMTOKEN" type="NMTOKEN">*
87         _____</connection>
88
89         _____<resAuth>container|application</resAuth?>
90         _____<resAuth>Container|Application</resAuth?>
91         _____<!-- Vendor specific extensions -->
92     _____</outboundConnection?>
93     _____<inboundConnection>
94     _____</jca.outbound.connection?>
95     _____<jca.inbound.connection>
96         _____<resourceAdapter name="NMTOKEN"? type="NMTOKEN">
97             _____<property name="NMTOKEN" type="NMTOKEN">*
98             _____</resourceAdapter>
99             _____<activationSpec name="NMTOKEN"? type="NMTOKEN" create="string"?>
100                 _____<property name="NMTOKEN" type="NMTOKEN">*
101             _____</activationSpec>
102             _____<!-- Vendor specific extensions -->
103         _____</inboundConnection?>
104         _____<outboundInteraction>
105         _____</jca.inbound.connection?>
106         _____<jca.outbound.interaction>
107             _____<connectionSpec type="NMTOKEN">
108                 _____<property name="NMTOKEN" type="NMTOKEN">*
109             _____</connectionSpec?>
110             _____<interactionSpec type="NMTOKEN">
111                 _____<property name="NMTOKEN" type="NMTOKEN">*
112             _____</interactionSpec?>
113             _____<operation name="NMTOKEN">
114                 _____<interactionSpec type="NMTOKEN"?>
115                     _____<property name="NMTOKEN" type="NMTOKEN">*
116                 _____</interactionSpec?>
117             _____</operation>*
118             _____<!-- Vendor specific extensions -->
119         _____</outboundInteraction?>
120         _____<inboundInteraction>
121         _____</jca.outbound.interaction?>

```

```

123 <jca.inbound.interaction>
124 <listener type="NMTOKEN"?-/?>
125 <inboundOperation name="NMTOKEN" nativeOperation="NMTOKEN"*
126 </inboundInteraction?>
127 <wireFormat/>?
128 <operationSelector/>?
129 </inboundOperation>
130 </jca.inbound.interaction?>
131 </binding.jca>

```

The **binding.jca** element has the following attributes:

- **/binding.jca/@uri** the binding's @uri attribute allows for the specification of the endpoint. For the reference, it defines the endpoint allowing connecting to the target EIS by providing JNDI name under which the ConnectionFactory is located. For the service, the @uri defines the endpoint to allow the EIS system to connect to the SCA system by defining the JNDI lookup name of the ActivationSpec, for example @uri="java:comp/env/eis/TRAN\_EIS".  
**The @uri attribute, the @connectionInfo attribute and the inboundConnection or outboundConnection elements are mutually exclusive and the SCA runtime MUST raise an error if more than one is present [BJC20001].** The binding's @uri attribute is mutually exclusive with the connectionInfo element as well as jca.inbound.connection or jca.outbound.connection elements and the SCA runtime MUST raise an error if both are present
- **/binding.jca/@connectionInfo** identifies the jca.binding element present in the definitions document and whose child or children (one or more of [inboundConnection](#), [outboundConnection](#), [inboundInteraction](#), [outboundInteraction](#)) [jca.inbound.connection](#), [jca.outbound.connection](#), [jca.inbound.interaction](#), [jca.outbound.interaction](#)) are used to define characteristics of connection and interaction characteristics for this binding.
- **/binding.jca/@initialContextFactory** – the name of the JNDI initial context [factory](#).  
**The @initialContextFactory attribute MUST NOT be specified if the @uri attribute is not present [BJC20002].** factory, MUST NOT be specified if the @uri attribute is not present
- **/binding.jca/@jndiURL** – the URL for the JNDI [provider](#).  
**The @jndiURL attribute MUST NOT be specified if the @uri attribute is not present [BJC20003].** provider, MUST NOT be specified if the @uri attribute is not present.
- **/binding.jca/@name** - as defined in the SCA Assembly Specification [SCA-Assembly].
- **/binding.jca/@requires** - as defined in the SCA Assembly Specification [SCA-Assembly].
- **/binding.jca/@policySets/binding.jms/@policySets** - as defined in the SCA Assembly Specification [SCA-Assembly].
- **/binding.jca/outboundConnection /binding.jca/jca.outbound.connection** defines the outbound connection [characteristics](#).  
**The outboundConnection element MUST NOT be specified for services [BJC20004].** characteristics, MUST NOT be specified for services
- **/binding.jca/outboundConnection/@managed /binding.jca/jca.outbound.connection/@managed** attribute that determines whether the interaction with the EIS system is to be performed in the managed or non-managed mode. If the value is true (default), the JNDI name is used to obtain connection to the EIS and use adapter in the managed mode. If the value is false, the connection information is used to invoke adapter in the non-managed mode i.e. by creating instance of the ManagedConnectionFactory and using it to create Connection. For the full description of the managed and non-managed mode refer to section 6.9 of [JCA15]
- **/binding.jca/outboundConnection/resourceAdapter /binding.jca/jca.outbound.connection/resourceAdapter** – specifies name, type and properties of the Resource Adapter Java bean.  
**The SCA runtime MAY restrict valid properties of the outbound connection's Resource Adapter Java bean depending on the deployment platform [BJC20005].**

- 175 | **The `outboundConnection/resourceAdapter` element MUST NOT be specified when the**  
 176 | **`@managed` attribute value is `false`** [BJC20006]. The SCA runtime MAY restrict valid  
 177 | properties of the Java Bean depending on the deployment platform. This element MUST NOT be  
 178 | specified in the non-managed mode.
- 179 | • **`/binding.jca/outboundConnection/resourceAdapter/@type/binding.jca/jca.outbound.con`**  
 180 | **`nection/resourceAdapter/@type`** – the fully qualified name of the class implementing the JCA  
 181 | ResourceAdapter interface
  - 182 | • **`/binding.jca/outboundConnection/resourceAdapter/@name/binding.jca/jca.outbound.co`**  
 183 | **`nnexion/resourceAdapter/@name`** – the optional name that uniquely identifies the existing  
 184 | instance of the resource adapter.
  - 185 | • **`/binding.jca/outboundConnection/resourceAdapter/property/binding.jca/jca.outbound.c`**  
 186 | **`onnection/resourceAdapter/property`** element contains the subset of the properties of the  
 187 | Resource Adapter Java Bean that need to be set in order to access specified EIS service. The full  
 188 | list of Resource Adapter properties can be obtained by introspecting the Java Bean.
  - 189 | • **`/binding.jca/outboundConnection/connection/binding.jca/jca.outbound.connection/conn`**  
 190 | **`ection`** element specifies the properties of the connection factory used to create connections to  
 191 | the service endpoint.
  - 192 | • **`/binding.jca/outboundConnection/connection/@type/binding.jca/jca.outbound.connectio`**  
 193 | **`nl/connection/@type`** – the fully qualified name of the class implementing the JCA  
 194 | ManagedConnectionFactory interface
  - 195 | • **`/binding.jca/outboundConnection/connection/@name/binding.jca/jca.outbound.connecti`**  
 196 | **`on/connection/@name`** – if the `@create` attribute is `never`, the name uniquely identifies an  
 197 | existing instance of the managed connection factory.  
 198 | **If the `connection/@create` attribute is `always`, the `@name` value MUST be unique**  
 199 | **within the domain** [BJC20007]. If the `@create` attribute is `always`, the name MUST be  
 200 | unique within domain.
  - 201 | • **`/binding.jca/outboundConnection/connection/property/binding.jca/jca.outbound.connect`**  
 202 | **`ion/connection/property`** element contains the subset of the properties of the Managed  
 203 | Connection Factory Java Bean that need to be set in order to access specified EIS service. The  
 204 | full list of Managed Connection Factory properties can be obtained by introspecting the Java  
 205 | Bean.
  - 206 | • **`/binding.jca/outboundConnection/connection/@create/binding.jca/jca.outbound.connect`**  
 207 | **`ion/connection/@create`** attribute indicates whether the element containing the attribute should  
 208 | be created when the containing composite is deployed. Valid values are `always`, `never` and  
 209 | `ifNotExist`. The default value is `ifNotExist`.
- 210 | **The SCA runtime SHOULD raise an error if the `connection/@create` attribute value is**  
 211 | **`always` and the element with the given name already exists** [BJC20008]. **`ifNotExist`**. The  
 212 | SCA runtime SHOULD raise an error if the attribute value is `always` and the element with the  
 213 | given name already exists.
- 214 | • **`/binding.jca/outboundConnection/connection/resAuth/binding.jca/jca.outbound.connect`**  
 215 | **`ion/connection/resAuth`** element specifies the authentication mechanism used by the resource  
 216 | adapter in the managed environment
  - 217 | • Vendor specific extensions allow to customize the model to support the specific runtime  
 218 | characteristics, for example pool size or maximum number of connections
  - 219 | • **`/binding.jca/outboundInteraction/binding.jca/jca.outbound.interaction`** defines  
 220 | characteristics of the outbound [interaction](#).
- 221 | **The `outboundInteraction` element MUST NOT be specified for services**  
 222 | **[BJC20009].** `interaction`, MUST NOT be specified for the services
- 223 | • **`/binding.jca/outboundInteraction/connectionSpec/binding.jca/jca.outbound.interaction/c`**  
 224 | **`onnectionSpec`** identifies the name of the class implementing  
 225 | `javax.resource.cci.ConnectionSpec` interface and the set of `connectionSpec` properties to be  
 226 | specified when creating a connection, a client level connection properties e.g. user name or

227 password. The ConnectionSpec object is used in several patterns that justify its definition in the  
 228 interaction binding.

- 229 • [/binding.jca/outboundInteraction/interactionSpec/binding.jca/jca.outbound.interaction/i](#)  
 230 [nteractionSpec](#) type specifies the name of the class implementing  
 231 javax.resource.cci.InteractionSpec interface. The interaction specified outside of all operation  
 232 applies to all the operations defined
- 233 • [/binding.jca/outboundInteraction/operation/binding.jca/jca.outbound.interaction/operati](#)  
 234 [on](#) element gathers characteristics of one operation of the service, the data bindings of the  
 235 inbound and outbound arguments as well as interaction type and the properties.
- 236 • [/binding.jca/inboundConnection/binding.jca/jca.inbound.connection](#) defines the inbound  
 237 connection characteristics.  
 238 **The [inboundConnection](#) element MUST NOT be specified for references**  
 239 [\[BJC20010\]](#), characteristics, MUST NOT be specified for the references
- 240 • [/binding.jca/inboundConnection/resourceAdapter/binding.jca/jca.inbound.connection/re](#)  
 241 [sourceAdapter](#) – specifies name, type and properties of the Resource Adapter Java bean.  
 242 **The SCA runtime MAY restrict valid properties of the inbound connection’s Resource**  
 243 **Adapter Java bean depending on the deployment platform [BJC20011].**  
 244 **The [inboundConnection/resourceAdapter](#) element MUST NOT be specified when the**  
 245 **[@managed](#) attribute is “false” [BJC20012].** The SCA runtime MAY restrict valid properties of  
 246 the Java Bean depending on the deployment platform. This element MUST NOT be specified in  
 247 the non-managed mode.
- 248 • [/binding.jca/inboundConnection/resourceAdapter/@type/binding.jca/jca.inbound.connec](#)  
 249 [tion/resourceAdapter@type](#) – the fully qualified name of the class implementing the  
 250 ResourceAdapter interface
- 251 • [/binding.jca/inboundConnection/resourceAdapter/@name/binding.jca/jca.inbound.conn](#)  
 252 [ection/resourceAdapter@name](#) – the optional name that uniquely identifies the existing  
 253 instance of the resource adapter.
- 254 • [/binding.jca/inboundConnection/activationSpec/binding.jca/jca.inbound.connection/acti](#)  
 255 [vationSpec](#) element specifies the name of the class implementing  
 256 javax.resource.spi.ActivationSpec interface and its properties.
- 257 • [/binding.jca/inboundConnection/activationSpec/@type/binding.jca/jca.inbound.connecti](#)  
 258 [on/activationSpec/@type](#) – the fully qualified name of the class implementing the  
 259 ActivationSpec interface
- 260 • [/binding.jca/inboundConnection/activationSpec/@name/binding.jca/jca.inbound.connec](#)  
 261 [tion/activationSpec@name](#) – if the [@create](#) attribute is “never”, the name uniquely identifies  
 262 an existing instance of the activation spec.  
 263 **If the [activationSpec/@create](#) attribute is “always”, the [@name](#) value MUST be unique**  
 264 **within domain [BJC20013]. If the [@create](#) attribute is “always”, the name MUST be unique**  
 265 **within domain.**
- 266 • [/binding.jca/inboundConnection/activationSpec/@create/binding.jca/jca.inbound.connec](#)  
 267 [tion/activationSpec/@create](#) attribute indicates whether the element containing the attribute  
 268 should be created when the containing composite is deployed. Valid values are “always”,  
 269 “never” and “ifNotExist”. The default value is “ifNotExist”.  
 270 **The SCA runtime SHOULD raise an error if the [activationSpec/@create](#) attribute value**  
 271 **is “always” and the element with the given name already exists [BJC20014]. “ifNotExist”-**  
 272 **The SCA runtime SHOULD raise an error if the attribute value is “always” and the element with**  
 273 **the given name already exists.**
- 274 • [/binding.jca/inboundInteraction/binding.jca/jca.inbound.interaction](#) defines characteristics  
 275 of the inbound [interaction](#).  
 276 **The [inboundInteraction](#) element MUST NOT be specified for references**  
 277 [\[BJC20015\]](#), interaction, MUST NOT be specified for the references

Comment [SAJH1]: This wording needs clarifying

- 278 | • [/binding-jca/inboundInteraction/listener/binding-jca/jca.inbound.interaction/listener](#) type  
279 | specifies the listener interface supported by this group of interactions.  
280 | **If the `inboundInteraction/listener` element is not specified, the SCA runtime MUST**  
281 | **interpret it as a listener implementing `javax.resource.cci.MessageListener` interface from**  
282 | **the JCA specification [BJC20016].** If the listener is not specified, the SCA runtime MUST  
283 | interpret it as a listener implementing `javax.resource.cci.MessageListener` interface from the JCA  
284 | specification
- 285 | • [/binding-jca/inboundInteraction/inboundOperation/binding-jca/jca.inbound.interaction/i](#)  
286 | [nboundOperation](#) element that maps the name of the EIS event received by ResourceAdapter  
287 | to the name of the operation of the Service.
- 288 | • [/binding-jca/wireFormat](#) – identifies the wire format used by requests and responses sent or  
289 | received by this binding as defined in the SCA Assembly Specification [SCA-Assembly].
- 290 | • [/binding-jca/operationSelector](#) – identifies the operation selector used when receiving requests  
291 | for a service as defined in the SCA Assembly Specification [SCA-Assembly].

292 | **Extensibility** - the JCA Bindings provide an extensibility mechanism that allows further customization of  
293 | the bindings with the vendor specific attributes or elements using extensibility element in the schema as  
294 | follows:

- 295 | • `<anyAttribute namespace="##any" processContents="lax" />`  
296 | • `<any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>`

297

---

## 43 Policy

298

This JCA Binding specification does not support intents such as `mayProvide` or `alwaysProvides` as JCA Specification does not define generic Resource Adapter characteristics that could be set using intents.

299

---

## 300 4 Operation Selectors and Wire Formats

301 In general JCA resource adapters deal with records. There is not usually a built-in concept of  
302 “operation” that corresponds to that defined in a WSDL portType [WSDL]. Records have a  
303 format which corresponds in some way to the schema of an input or output message of an  
304 operation in the interface of a service or reference, however additional Resource Adapter-  
305 specific information is required in order for an SCA runtime to know how to identify the  
306 operation and understand the format of records.  
307 The process of identifying the operation to be invoked is *operation selection*; the information  
308 that describes the contents of messages is a *wire format*. The binding element as described in the  
309 SCA Assembly specification [SCA-Assembly] provides the means to identify specific operation  
310 selection via the *operationSelector* element and the format of messages received and to be sent  
311 using the *wireFormat* element.  
312 This specification does not define default behavior for the operation selection or wire format of a  
313 JCA binding. This choice had been made because the implementations of generic Record  
314 interfaces that define the data exchanged between JCA adapter and its client are specific to a  
315 particular adapter and, unlike JMS, cannot be used in a generic manner.  
316 No standard means is provided for linking the *wireFormat* or *operationSelector* elements with  
317 the runtime components that implement their behaviour.

## 318 5 Binding Properties

319 The JCA Binding contains properties necessary to interact with the EIS system, properties that are,  
320 however, not related to the service location or type of services available. Such properties ought to be  
321 configurable but not require overwriting connection or interaction elements. Examples of such properties  
322 are user ID or password.

323 The binding.jca element contains connectionInfo attribute that specifies the name of the binding.jca  
324 element in the definition file.

```
325 |  
326 | <reference name="EISHelloWorldReference">  
327 |   <binding.jca uri="java:comp/env/eis/EISMCF"  
328 |             connectionInfo="JCA_Services">  
329 |   </binding.jca>  
330 | </reference>
```

331 |  
332 | This element can contain the interaction properties, for example properties of the connectionSpec.

```
333 | <definitions targetNamespace="http://acme.com"  
334 |             xmlns="http://docs.oasis-  
335 | pen.org/ns/opencsa/sca/200903">xmlns="http://docs.oasis-  
336 | pen.org/ns/opencsa/sca/200712">  
337 |   <binding.jca name="JCA_Services">  
338 |     <outboundInteraction<jca.outbound.interaction >  
339 |       <connectionSpec name="FAConnectionSpec">  
340 |         <property name="group">GROUP1</property>  
341 |         <property name="userid">SYSAD</property>  
342 |         <property name="password">SYSAD</property>  
343 |       </connectionSpec>  
344 |       ...  
345 |     </outboundInteraction>  
346 |   </jca.outbound.interaction>  
347 | </binding.jca>  
348 | </definitions>
```

349 |  
350 | In the example above, the connectionSpec element specifies all the properties it overwrites in place and  
351 | needs to be updated when there is a need to modify any of the properties. This could be inefficient at  
352 | times and the method of passing properties from the bindings is defined. To get the value from the  
353 | bindings, the property specifies the source attribute as follows.

```
354 | <outboundInteraction >  
355 |  
356 | <jca.outbound.interaction >  
357 |   <connectionSpec  
358 |     name="connector.file.outbound.FAConnectionSpec">  
359 |     <property name="group">GROUP1</property>  
360 |     <property name="userid">SYSAD</property>  
361 |     <property name="password" source="$password"/>  
362 |   </connectionSpec>  
363 | </outboundInteraction> </jca.outbound.interaction>
```

364 |  
365 | The property value is the specified in the binding element that refers to the element in the definitions file.

```
366 |  
367 | <reference name="JCAHelloWorldReference">  
368 |   <binding.jca uri="java:comp/env/eis/MCF-"  
369 |             connectionInfo="JCA_Services">  
370 |     <property name="password">SYSAD</property>  
371 |   </binding.jca>
```



372 </reference>

373  
374 The properties can also be specified by the composite, in that case the reference or service would contain  
375 the source attribute pointing to the property of the composite:  
376

```
377 <composite xmlns="http://docs.oasis-  
378 pen.org/ns/opencsa/sca/200903" xmlns="http://docs.oasis-  
379 pen.org/ns/opencsa/sca/200712"  
380     name="EISHelloWorld">  
381  
382     <reference name="EISHelloWorldReference">  
383     <binding.jca uri="java:comp/env/eis/EISMCF"  
384     connectionInfo="JCA_Services">  
385         <property name="userid" source="$UID"/>  
386     </binding.jca>  
387     </reference>  
388  
389     <property name="UID">SYSAD</property>  
390 </composite>  
391
```

392 The indirection level of the binding, required even if the property value is specified in the composite  
393 prevents introducing hidden dependencies between the composite and definitions file.  
394

## 395 6 Examples

### 396 6.1 Minimal JCA Binding

397 The minimal JCA Binding only contains the binding's uri attribute with JNDI name of the connection  
398 factory. It allows to obtain the Connection to execute request against EIS using adapter. Since no  
399 interaction properties are specified, it is assumed that Resource Adapter accepts the null values for the  
400 invocation methods.

```
401 |  
402 |  
403 | <!-- JCA reference, connection is configured in JNDI context -->  
404 | <reference name="EISHelloWorldReference">  
405 |   <binding.jca uri="java:comp/env/eis/EISMCF"/>  
406 | </reference>
```

### 408 6.2 Existing resources

409 The sample reference with the JCA Binding, the binding's uri attribute specifies the existing resource - the  
410 JNDI name under which the connection factory object is located. The interaction properties are specified  
411 explicitly in the inlined [outboundInteraction](#) element.  
412

```
413 | <reference name="EISHelloWorldReference">  
414 |   <binding.jca uri="java:comp/env/eis/EISMCF">  
415 |     <outboundInteraction>  
416 |       <jca.outbound.interaction>  
417 |         <connectionSpec name="FAConnectionSpec">  
418 |           <property name="userid">SYSAD</property>  
419 |         </connectionSpec>  
420 |         <interactionSpec name="FAInteractionSpec">  
421 |           <operation name="hello">  
422 |             <interactionSpec>  
423 |               <property name="dir">temp</property>  
424 |               <property name="fileMode">read</property>  
425 |             </interactionSpec>  
426 |           </operation>  
427 |         </interactionSpec>  
428 |       </outboundInteraction>  
429 |     </binding.jca>  
430 |   </reference>
```

### 437 6.3 Resource Creation

438 The following sample presents the reference with JCA bindings where the connection resources do not  
439 exist and need to be created.

```
440 | <reference name="JCAHelloWorldReference">  
441 |   <binding.jca>  
442 |     <outboundConnection managed="true">  
443 |       <jca.outbound.connection
```

```

444         <resourceAdapter
445             name="connector.file.FAResourceAdapter">
446             <property name="logDrive">D</property>
447         </resourceAdapter>
448         <connection name="FAManagedConnectionFactory"
449             create="always">
450             <property name="host">localhost</property>
451             <property name="drive">C</property>
452         </connection>
453     </outboundConnection>
454 </jca.outbound.connection>
455 </binding.jca>
456 </reference>

```

457

## 458 6.4 Existing Resources specified in the definition file

459 This sample shows the resources specified in the definitions file and referred to by the binding elements.  
460 The definitions file contains the following

```

461 <definitions targetNamespace="http://acme.com"
462             xmlns="http://docs.oasis-
463 pen.org/ns/opencsa/sca/200903" xmlns="http://docs.oasis-
464 pen.org/ns/opencsa/sca/200712">
465     <binding.jca name="JCA_Inbound">
466         <inboundConnection>
467             <jca.inbound.connection>
468                 <resourceAdapter name="FAResourceAdapter">
469                     <property name="logDrive">D</property>
470                 </resourceAdapter>
471                 <activationSpec name="FAActivationSpec">
472                     <property name="directory type">temp</property>
473                     <property name="drive">C</property>
474                 </activationSpec>
475             </inboundConnection>
476         </jca.inbound.connection>
477     </binding.jca>
478 </definitions>

```

480

481 The service with the JCA Bindings uses the connectionInfo attribute to identify the resources in the  
482 definition file

```

483 <service name="JCAHelloWorldService">
484     <binding.jca connectionInfo=" JCA_Inbound ">
485         <inboundInteraction>
486             <jca.inbound.interaction>
487                 <listener>MyInboundListener</listener>
488                 <inboundOperation name="hello" nativeOperation="TXPN"/>
489                 <inboundOperation name="bye" nativeOperation="ETXPRN"/>
490             </inboundInteraction>
491         </jca.inbound.interaction>
492     </binding.jca>
493 </service>

```

494

495 **7 Conformance**

496 Any SCA runtime that claims to support this binding MUST abide by the requirements of this specification.

497  
498 The XML schema [pointed to by the RDDDL document available](#) at the namespace URI, defined by this  
499 specification, [are](#) considered to be authoritative and takes precedence over the XML Schema defined  
500 in the appendix of this document. [There are two categories of artifacts for which](#)

501 [Within](#) this specification [defines](#) the following conformance targets are used:

- 502 a) [SCA JCA Binding XML Document](#)
- 503 b) [SCA Runtime](#)

505 **7.1 SCA JCA Binding XML Document**

506 [An SCA JCA Binding XML document is an SCA Composite Document, an SCA Definitions](#)  
507 [Document or an SCA ComponentType Document, as defined by the SCA Assembly](#)  
508 [specification Section 13.1 , that uses the <binding.jca> element.](#)

509 [An SCA JCA Binding XML document MUST be a conformant SCA Composite Document, SCA](#)  
510 [Definitions Document or a SCA ComponentType Document, as defined by the SCA Assembly](#)  
511 [specification , and MUST comply with all the applicable requirements specified in this](#)  
512 [specification.](#)

513 **7.2 SCA Runtime**

514 [An implementation that claims to conform to the requirements of an SCA Runtime defined in](#)  
515 [this specification has to meet the following conditions:](#)

- 516 1. [The implementation MUST comply with all statements in Appendix B: Conformance](#)  
517 [Items related to an SCA Runtime, notably all "MUST" statements have to be](#)  
518 [implemented](#)
- 519 2. [The implementation MUST conform to the SCA Assembly Model Specification Version](#)  
520 [1.1 , and to the SCA Policy Framework Version 1.1 \[SCA-Policy\]](#)
- 521 3. [The implementation MUST reject an SCA JCA Binding XML Document that is not](#)  
522 [conformant per Section 7.1](#)

- 523 ● [XML document elements and attributes, including binding.jca and its children, and bindingType](#)
- 524 ● [The SCA runtime — this refers to the implementation that provides the functionality to support the SCA](#)  
525 [specifications, including that specific to the JCA binding as well as other SCA capabilities](#)
- 526 ● [JCA objects, including ConnectionFactories and ActivationSpecs](#)
- 527 ● [WSDL documents](#)

Comment [SAJH2]: Added Definitions document as <binding.jca> can appear there

## 528 A. JCA Binding Schema

```
529 <?xml version="1.0" encoding="UTF-8"?>
530   <!-- (e) Copyright (C) OASIS (R) 2005,2009. All Rights Reserved.
531   OASIS trademark, IPR and other policies apply. --2007, 2008 -->
532   <schema xmlns="http://www.w3.org/2001/XMLSchema"
533     targetNamespace="http://docs.oasis-
534     open.org/ns/opencsa/sca/200903" http://docs.oasis-open.org/ns/opencsa/sca/200712"
535     xmlns:sca="http://docs.oasis-open.org/ns/opencsa/sca/200903" http://docs.oasis-
536     open.org/ns/opencsa/sca/200712" elementFormDefault="qualified">
537
538     <include schemaLocation="sca-core-1.1-cd03.xsd" schemaLocation="sca-core.xsd"
539     />
540
541     <complexType name="JCABinding">
542       <complexContent>
543         <extension base="sca:Binding">
544           <sequence>
545             <element name="outboundConnection"
546             name="jca.outbound.connection"
547               type="sca:JCAOutboundConnection"
548               minOccurs="0" />
549             <element
550             name="inboundConnection" name="jca.inbound.connection"
551               type="sca:JCAInboundConnection"
552               minOccurs="0" />
553             <element
554             name="outboundInteraction" name="jca.outbound.interaction"
555               type="sca:JCAOutboundInteraction"
556               minOccurs="0" />
557             <element
558             name="inboundInteraction" name="jca.inbound.interaction"
559               type="sca:JCAInboundInteraction"
560               minOccurs="0" />
561             <element name="property" type="sca:Property" minOccurs="0"
562             maxOccurs="unbounded" />
563             <any namespace="##other" processContents="lax"
564             minOccurs="0"
565             maxOccurs="unbounded" />
566           </sequence>
567           <attribute name="connectionInfo" type="anyURI"
568             use="optional" />
569           <attribute name="initialContextFactory"
570             type="anyURI"
571             use="optional"/>
572           <attribute name="jndiURL" type="anyURI" use="optional"/>
573           <anyAttribute namespace="##any" processContents="lax" />
574         </extension>
575       </complexContent>
576     </complexType>
```

577

```
578 <simpleType name="JCACreateResource">name="CreateResource">
579 <restriction base="string">
580 <enumeration value="always" />
581 <enumeration value="never" />
582 <enumeration value="ifNotExist" value="ifnotexist" />
583 </restriction>
584 </simpleType>
585 <simpleType name="ResAuth">
586 <restriction base="string">
587 <enumeration value="container" value="Container" />
588 <enumeration value="application" value="Application" />
589 </restriction>
590 </simpleType>
591 <complexType name="JCAOutboundConnection">
592 <sequence>
593 <element name="resourceAdapter" type="sca:ResourceAdapter"
594 minOccurs="0" />
595 <element name="connection" type="sca:Connection" />
596 <element name="resAuth" type="sca:ResAuth" minOccurs="0" />
597 <any namespace="##other"
598 processContents="lax" minOccurs="0"
599 maxOccurs="unbounded" />
600 </sequence>
601 <attribute name="managed" type="boolean" use="optional"
602 default="true" />
603 <anyAttribute namespace="##any" processContents="lax" />
604 </complexType>
605 <complexType name="JCAInboundConnection">
606 <sequence>
607 <element name="resourceAdapter" type="sca:ResourceAdapter" />
608 <element name="activationSpec" type="sca:ActivationSpec" />
609 <any namespace="##other" processContents="lax" minOccurs="0"
610 maxOccurs="unbounded" />
611 </sequence>
612 </complexType>
613 <complexType name="JCAOutboundInteraction">
614 <sequence>
615 <element name="connectionSpec" type="sca:ConnectionSpec"
616 minOccurs="0" />
617 <element name="interactionSpec" type="sca:InteractionSpec"
618 minOccurs="0" />
619 <element name="operation" type="sca:Operation" minOccurs="0" />
620 <any namespace="##other" processContents="lax" minOccurs="0"
621 maxOccurs="unbounded" />
622 </sequence>
623 </complexType>
624 <complexType name="JCAInboundInteraction">
625 <sequence>
626 <element name="listener" type="string" minOccurs="0" />
627 <element name="inboundOperation" type="sca:InboundOperation"
628 minOccurs="0" maxOccurs="unbounded" />
629 <any namespace="##other" processContents="lax" minOccurs="0"
630 maxOccurs="unbounded" />
631 </sequence>
632 </complexType>
```

```

633 <complexType name="ResourceAdapter">
634 <sequence>
635 <element name="property" type="sca:Property" minOccurs="0"
636 <maxOccurs="unbounded" />
637 <any namespace="##other" processContents="lax" minOccurs="0"
638 <maxOccurs="unbounded" />
639 </sequence>
640 <attribute name="name" type="NMTOKEN" use="optional" />
641 <attribute name="type" type="NMTOKEN" use="required" />
642 <anyAttribute namespace="##any" processContents="lax" />
643 </complexType>
644 <complexType name="Connection">
645 <sequence>
646 <element name="property" type="sca:Property" minOccurs="0"
647 <maxOccurs="unbounded" />
648 <any namespace="##other" processContents="lax" minOccurs="0"
649 <maxOccurs="unbounded" />
650 </sequence>
651 <attribute name="name" type="NMTOKEN" use="optional" />
652 <attribute name="type" type="NMTOKEN" use="required" />
653 <attribute name="create"
654 type="sca:JCACreateResource" type="sca:CreateResource" use="optional"
655 <default="ifNotExist" />
656 <default="ifNotExist" />
657 <anyAttribute namespace="##any" processContents="lax" />
658 </complexType>
659 <complexType name="ActivationSpec">
660 <sequence>
661 <element name="property" type="sca:Property" minOccurs="0"
662 <maxOccurs="unbounded" />
663 <any namespace="##other" processContents="lax" minOccurs="0"
664 <maxOccurs="unbounded" />
665 </sequence>
666 <attribute name="name" type="NMTOKEN" use="optional" />
667 <attribute name="type" type="NMTOKEN" use="required" />
668 <attribute name="create"
669 type="sca:JCACreateResource" type="sca:CreateResource" use="optional"
670 <default="ifNotExist"/>
671 <default="ifNotExist" />
672 <anyAttribute namespace="##any" processContents="lax" />
673 </complexType>
674 <complexType name="Operation">
675 <sequence>
676 <element name="interactionSpec" type="sca:InteractionSpec"
677 <minOccurs="0" />
678 <any namespace="##other" processContents="lax" minOccurs="0"
679 <maxOccurs="unbounded" />
680 </sequence>
681 <attribute name="name" type="NMTOKEN" use="required" />
682 <anyAttribute namespace="##any" processContents="lax" />
683 </complexType>
684 <complexType name="InboundOperation">
685 <sequence>
686 <any namespace="##other" processContents="lax" minOccurs="0"
687 <maxOccurs="unbounded" />
688 </sequence>

```

```

689     <attribute name="name" type="NMTOKEN" use="required" />
690     <attribute name="nativeOperation" type="string" use="required" />
691     <anyAttribute namespace="##any" processContents="lax" />
692   </complexType>
693   <complexType name="ConnectionSpec">
694     <sequence>
695       <element name="property" type="sca:Property" minOccurs="0"
696         maxOccurs="unbounded" />
697       <any namespace="##other" processContents="lax" minOccurs="0"
698         maxOccurs="unbounded" />
699     </sequence>
700     <attribute name="type" type="NMTOKEN" use="required" />
701     <anyAttribute namespace="##any" processContents="lax" />
702   </complexType>
703   <complexType name="InteractionSpec">
704     <sequence>
705       <element name="property" type="sca:Property" minOccurs="0"
706         maxOccurs="unbounded" />
707       <any namespace="##other" processContents="lax" minOccurs="0"
708         maxOccurs="unbounded" />
709     </sequence>
710     <attribute name="type" type="NMTOKEN" use="required" />
711     <anyAttribute namespace="##any" processContents="lax" />
712   </complexType>
713
714   <element name="binding.jca" type="sca:JCABinding"
715     substitutionGroup="sca:binding" />
716 </schema>

```



717

## B. Conformance Items

718

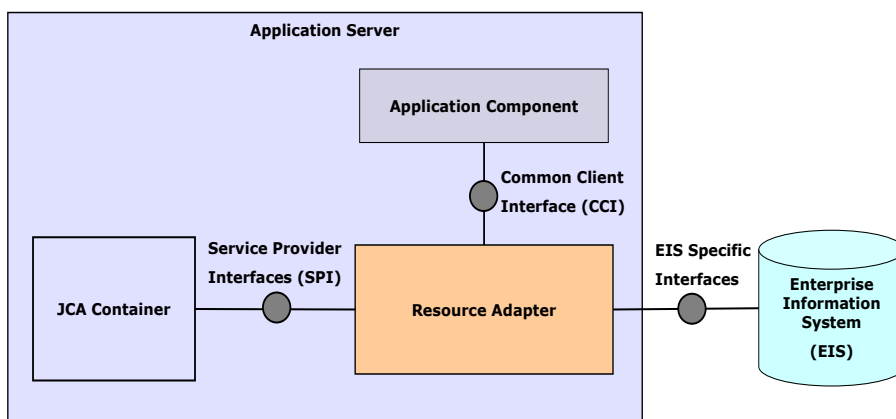
This section contains a list of conformance items for the SCA JCA Binding specification.

Conformance ID	Description
<a href="#">[BJC20001]</a>	The <i>@uri</i> attribute, the <i>@connectionInfo</i> attribute and the <i>inboundConnection</i> or <i>outboundConnection</i> elements are mutually exclusive and the SCA runtime MUST raise an error if more than one is present
<a href="#">[BJC20002]</a>	The <i>@initialContextFactory</i> attribute MUST NOT be specified if the <i>@uri</i> attribute is not present
<a href="#">[BJC20003]</a>	The <i>@indiURL</i> attribute MUST NOT be specified if the <i>@uri</i> attribute is not present
<a href="#">[BJC20004]</a>	The <i>outboundConnection</i> element MUST NOT be specified for services
<a href="#">[BJC20005]</a>	The SCA runtime MAY restrict valid properties of the outbound connection's Resource Adapter Java bean depending on the deployment platform
<a href="#">[BJC20006]</a>	The <i>outboundConnection/resourceAdapter</i> element MUST NOT be specified when the <i>@managed</i> attribute value is "false"
<a href="#">[BJC20007]</a>	If the <i>connection/@create</i> attribute is "always", the <i>@name</i> value MUST be unique within the domain
<a href="#">[BJC20008]</a>	The SCA runtime SHOULD raise an error if the <i>connection/@create</i> attribute value is "always" and the element with the given name already exists
<a href="#">[BJC20009]</a>	The <i>outboundInteraction</i> element MUST NOT be specified for services
<a href="#">[BJC20010]</a>	The <i>inboundConnection</i> element MUST NOT be specified for references
<a href="#">[BJC20011]</a>	The SCA runtime MAY restrict valid properties of the inbound connection's Resource Adapter Java bean depending on the deployment platform
<a href="#">[BJC20012]</a>	The <i>inboundConnection/resourceAdapter</i> element MUST NOT be specified when the <i>@managed</i> attribute is "false"
<a href="#">[BJC20013]</a>	If the <i>activationSpec/@create</i> attribute is "always", the <i>@name</i> value MUST be unique within domain
<a href="#">[BJC20014]</a>	The SCA runtime SHOULD raise an error if the <i>activationSpec/@create</i> attribute value is "always" and the element with the given name already exists
<a href="#">[BJC20015]</a>	The <i>inboundInteraction</i> element MUST NOT be specified for references
<a href="#">[BJC20016]</a>	If the <i>inboundInteraction/listener</i> element is not specified, the SCA runtime MUST interpret it as a listener implementing <code>javax.resource.cci.MessageListener</code> interface from the JCA specification
<b>Error! Reference source not found.</b>	Any SCA runtime that claims to support this binding MUST abide by the requirements of this specification

719 **B.C. Java EE Connector Architecture**

720 **B.1C.1 Introduction**

721 The connector architecture specification defines set of contracts that allow interoperability of the resource  
722 adapters and application server environments. The specification also defines set of client interfaces that  
723 can be optionally supported by the adapter and allow the use of adapter functionality by the application  
724 clients. The following figure illustrates the relationships of these interfaces.  
725



726 The SPI defines the following management contracts that give adapter consistent view of the  
727 infrastructure provided by the server and give sever consistent view of all the adapters thus helping with  
728 integration of adapters and servers.  
729

- 730
- 731 • Lifecycle management allows application server to control the startup of the adapter and notification to allow it to shutdown in an orderly fashion
  - 732 • Work management allows the adapter to use the server resources such as threads in an efficient way and allows server to manage system resources appropriately.
  - 733 • Connection management lets the server control the pooling, reusing and caching of the physical connections to the EIS system thus allowing for better scalability.
  - 734 • Transactions allow the server to control EIS resource managers and provide application clients with the transactional access to external resources.
  - 735 • Security contract allow for secure access to the EIS systems with security information configured and provided by the application server
  - 736 • Message inflow contract allows Resource Adapter to deliver events initiated by the EIS system to the application component executing on the application server.
  - 737 • Transaction inflow contract allow the application server to participate and execute in the context of the transaction initiated by the EIS system.

738 The CCI defines set of interfaces to access EIS functionality, through the resource adapter, from the  
739 application client. The CCI also provides access to some of the SPIs for transactions and security  
740 management to allow for executions of clients running in the non-managed mode, without the presence of  
741 the Application Server.  
742

748 **B.2C.2 Selected JCA CCI Interfaces**

749 **Record**

```
750     public interface javax.resource.cci.Record
751         extends java.lang.Cloneable, java.io.Serializable {
752
753     public String getRecordName();
754     public void setRecordName(String name);
755     public void setRecordShortDescription(String description);
756     public String getRecordShortDescription();
757     public boolean equals(Object other);
758     public int hashCode();
759     public Object clone() throws CloneNotSupportedException;
760 }
```

761

#### 762 **Interaction**

763

```
764     public interface javax.resource.cci.Interaction {
765
766         public Connection getConnection();
767         public void close() throws ResourceException;
768         public boolean execute(InteractionSpec ispec,
769             Record input, Record output) throws ResourceException;
770         public Record execute(InteractionSpec ispec,
771             Record input) throws ResourceException;
772     }
773 }
```

#### 774 **MessageListener**

775

```
776     interface javax.resource.cci.MessageListener {
777
778         Record onMessage(Record inputData) throws ResourceException;
779     }
```

780

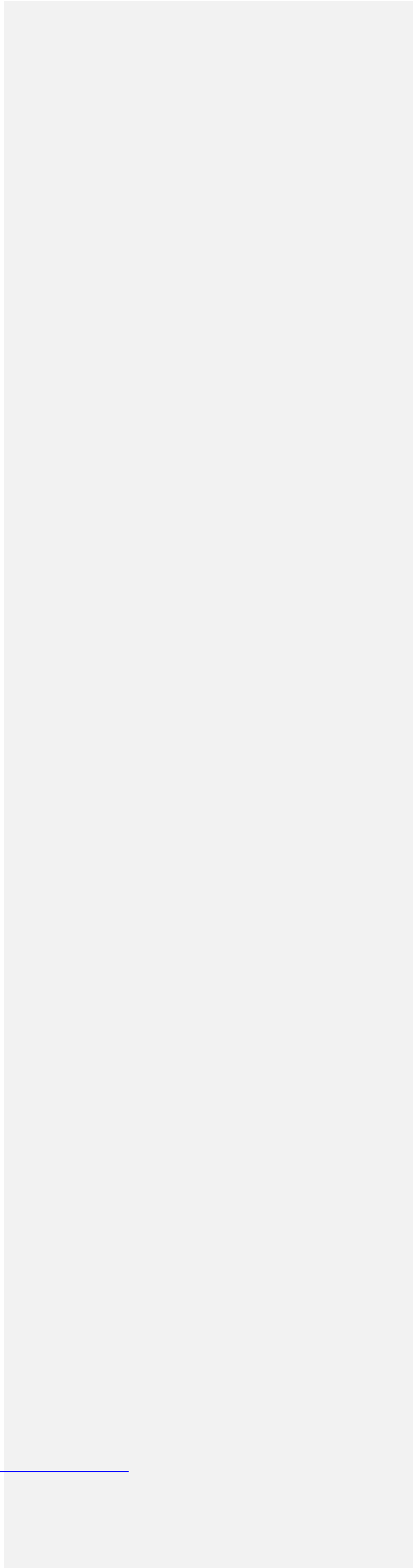
781

782 **C.D. Acknowledgements**

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- 785 **Participants:**  
786 [Participant Name, Affiliation | Individual Member]  
787 [Participant Name, Affiliation | Individual Member]

788



**D.E. Non-Normative Text**

790

## E.F. Revision History

791

[optional; should not be included in OASIS Standards]

792

Revision	Date	Editor	Changes Made
1	2008-01-16	Anish Karmarkar	Applied the OASIS template + related changes to the Submission
2	2008-08-06	Piotr Przybylski	Updates for consistency with JMS Binding and to resolve the following: BINDINGS-13 BINDINGS-14 BINDINGS-28 BINDINGS-30 BINDINGS-32 BINDINGS-38
cd01-rev1	2008-10-16	Simon Holdsworth	Updates to resolve following issues: BINDINGS-41
cd01-rev2	2008-10-20	Piotr Przybylski	Update for RFC2119 conformance Updated to resolve following issues: BINDINGS-53
cd02	2009-02-16	Simon Holdsworth	Renamed and applied editorial issues
<a href="#">cd02-rev1</a>	<a href="#">2009-05-22</a>	<a href="#">Simon Holdsworth</a>	<a href="#">Updates to resolve issue BINDINGS-63 (conformance statement numbering)</a> <a href="#">Updated assembly namespace to 200903</a>
<a href="#">cd02-rev2</a>	<a href="#">2009-05-22</a>	<a href="#">Simon Holdsworth</a>	<a href="#">Updates to resolve following issues:</a> <a href="#">BINDINGS-22</a> <a href="#">BINDINGS-45</a> <a href="#">BINDINGS-58</a> <a href="#">BINDINGS-69</a> <a href="#">Fixed errors in schema</a>

793