



# Service Component Architecture JCA Binding Specification Version 1.1

Committee Draft 03 / Public Review 01

10 July 2009

**Specification URIs:**

**This Version:**

- <http://docs.oasis-open.org/opencsa/sca-bindings/sca-jcabinding-1.1-spec-cd03.html>
- <http://docs.oasis-open.org/opencsa/sca-bindings/sca-jcabinding-1.1-spec-cd03.doc>
- <http://docs.oasis-open.org/opencsa/sca-bindings/sca-jcabinding-1.1-spec-cd03.pdf> (Authoritative)

**Previous Version:**

- <http://www.oasis-open.org/committees/download.php/31231/sca-binding-jca-1.1-spec-cd02.doc>
- <http://www.oasis-open.org/committees/download.php/31232/sca-binding-jca-1.1-spec-cd02.pdf> (Authoritative)

**Latest Version:**

- <http://docs.oasis-open.org/opencsa/sca-bindings/sca-jcabinding-1.1-spec.html>
- <http://docs.oasis-open.org/opencsa/sca-bindings/sca-jcabinding-1.1-spec.doc>
- <http://docs.oasis-open.org/opencsa/sca-bindings/sca-jcabinding-1.1-spec.pdf> (Authoritative)

**Technical Committee:**

OASIS Service Component Architecture / Bindings (SCA-Bindings) TC

**Chair(s):**

Simon Holdsworth, IBM

**Editor(s):**

Simon Holdsworth, IBM  
Khanderao Kand, Oracle  
Anish Karmarkar, Oracle  
Sanjay Patil, SAP  
Piotr Przybylski, IBM

**Related work:**

This specification replaces or supersedes:

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

This specification is related to:

- OASIS Committee Draft 03, "Service Component Architecture Assembly Model Specification Version 1.1", March 2009  
<http://docs.oasis-open.org/opencsa/sca-assembly/sca-assembly-1.1-spec-cd03.pdf>
- OASIS Committee Draft 02, "SCA Policy Framework Version 1.1", February 2009  
<http://docs.oasis-open.org/opencsa/sca-policy/sca-policy-1.1-spec-cd02.pdf>

**Declared XML Namespace(s):**

<http://docs.oasis-open.org/ns/opencsa/sca/200903>

**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.

Technical Committee members should send comments on this specification to the Technical Committee's email list. Others should send comments to the Technical Committee by using the "Send A Comment" button on the Technical Committee's web page at <http://www.oasis-open.org/committees/sca-bindings/>.

For information on whether any patents have been disclosed that may be essential to implementing this specification, and any offers of patent licensing terms, please refer to the Intellectual Property Rights section of the Technical Committee web page (<http://www.oasis-open.org/committees/sca-bindings/ipr.php>).

The non-normative errata page for this specification is located at <http://www.oasis-open.org/committees/sca-bindings/>.

---

## Notices

Copyright © OASIS® 2007, 2009. All Rights Reserved.

All capitalized terms in the following text have the meanings assigned to them in the OASIS Intellectual Property Rights Policy (the "OASIS IPR Policy"). The full Policy may be found at the OASIS website.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published, and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this section are included on all such copies and derivative works. However, this document itself may not be modified in any way, including by removing the copyright notice or references to OASIS, except as needed for the purpose of developing any document or deliverable produced by an OASIS Technical Committee (in which case the rules applicable to copyrights, as set forth in the OASIS IPR Policy, must be followed) or as required to translate it into languages other than English.

The limited permissions granted above are perpetual and will not be revoked by OASIS or its successors or assigns.

This document and the information contained herein is provided on an "AS IS" basis and OASIS DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY OWNERSHIP RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

OASIS requests that any OASIS Party or any other party that believes it has patent claims that would necessarily be infringed by implementations of this OASIS Committee Specification or OASIS Standard, to notify OASIS TC Administrator and provide an indication of its willingness to grant patent licenses to such patent claims in a manner consistent with the IPR Mode of the OASIS Technical Committee that produced this specification.

OASIS invites any party to contact the OASIS TC Administrator if it is aware of a claim of ownership of any patent claims that would necessarily be infringed by implementations of this specification by a patent holder that is not willing to provide a license to such patent claims in a manner consistent with the IPR Mode of the OASIS Technical Committee that produced this specification. OASIS may include such claims on its website, but disclaims any obligation to do so.

OASIS takes no position regarding the validity or scope of any intellectual property or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; neither does it represent that it has made any effort to identify any such rights. Information on OASIS' procedures with respect to rights in any document or deliverable produced by an OASIS Technical Committee can be found on the OASIS website. Copies of claims of rights made available for publication and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementers or users of this OASIS Committee Specification or OASIS Standard, can be obtained from the OASIS TC Administrator. OASIS makes no representation that any information or list of intellectual property rights will at any time be complete, or that any claims in such list are, in fact, Essential Claims.

The names "OASIS", [insert specific trademarked names and abbreviations here] are trademarks of OASIS, the owner and developer of this specification, and should be used only to refer to the organization and its official outputs. OASIS welcomes reference to, and implementation and use of, specifications, while reserving the right to enforce its marks against misleading uses. Please see <http://www.oasis-open.org/who/trademark.php> for above guidance.

---

# Table of Contents

1	Introduction.....	5
1.1	Terminology .....	5
1.2	Normative References .....	5
1.3	Non-Normative References .....	6
1.4	Naming Conventions .....	6
2	JCA Binding.....	7
2.1	Extensibility.....	10
3	Policy.....	11
4	Operation Selectors and Wire Formats.....	12
5	Binding Properties .....	13
6	Examples.....	15
6.1	Minimal JCA Binding.....	15
6.2	Existing resources .....	15
6.3	Resource Creation.....	15
6.4	Existing Resources specified in the definition file.....	16
7	Conformance .....	17
7.1	SCA JCA Binding XML Document.....	17
7.2	SCA Runtime .....	17
A.	JCA XML Binding Schema: sca-binding-jca.xsd.....	18
B.	Conformance Items .....	21
C.	Java EE Connector Architecture .....	22
C.1	Introduction.....	22
C.2	Selected JCA CCI Interfaces .....	23
D.	Acknowledgements .....	24
E.	Revision History.....	25

# 1 Introduction

This document presents a binding describing access and connectivity to the services provided by Enterprise Information Systems (EIS). This document focuses on 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 [RFC Keywords \[RFC2119\]](#).

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	"http://www.w3.org/2001/XMLSchema"	Defined by XML Schema 1.0 specification
sca	"http://docs.oasis-open.org/ns/opencsa/sca/200903"	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]** J2EE 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]** OASIS Committee Draft 03, "Service Component Architecture Assembly Model Specification Version 1.1", March 2009  
<http://docs.oasis-open.org/opencsa/sca-assembly/sca-assembly-1.1-spec-cd03.pdf>
- [SCA-Policy]** OASIS Committee Draft 02, "SCA Policy Framework Specification Version 1.1", February 2009  
<http://docs.oasis-open.org/opencsa/sca-policy/sca-policy-1.1-spec-cd02.pdf>

## 41 1.3 Non-Normative References

42 TBD TBD

## 43 1.4 Naming Conventions

44 This specification follows some naming conventions for artifacts defined by the specification. In addition  
45 to the conventions defined by section 1.3 of the [SCA Assembly Specification \[SCA-Assembly\]](#), this  
46 specification adds three additional conventions:

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

## 2 JCA Binding

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

```
<binding.jca connectionInfo="QName"?
  initialContextFactory="xs:anyURI"?
  jndiURL="xs:anyURI"?
  name="NCName"?
  requires="list of xs:QName"?
  policySets="list of xs:QName"?
  uri="xsd:anyURI"?>

  <outboundConnection managed="xs:boolean"?>
    <resourceAdapter name="NMTOKEN" type="NMTOKEN">
      <property name="NMTOKEN" type="NMTOKEN">*
    </resourceAdapter?
    <connection name="NMTOKEN"? type="NMTOKEN" create="string"?>
      <property name="NMTOKEN" type="NMTOKEN">*
    </connection>
    <resAuth>container|application</resAuth?
  </outboundConnection?
  <inboundConnection>
    <resourceAdapter name="NMTOKEN"? type="NMTOKEN">
      <property name="NMTOKEN" type="NMTOKEN">*
    </resourceAdapter>
    <activationSpec name="NMTOKEN"? type="NMTOKEN" create="string"?>
      <property name="NMTOKEN" type="NMTOKEN">*
    </activationSpec>
  </inboundConnection?

  <outboundInteraction>
    <connectionSpec type="NMTOKEN">
      <property name="NMTOKEN" type="NMTOKEN">*
    </connectionSpec?
    <interactionSpec type="NMTOKEN">
      <property name="NMTOKEN" type="NMTOKEN">*
    </interactionSpec?
    <operation name="NMTOKEN">
      <interactionSpec type="NMTOKEN"?>
        <property name="NMTOKEN" type="NMTOKEN">*
      </interactionSpec?
    </operation>*
  </outboundInteraction?
  <inboundInteraction>
    <listener type="NMTOKEN">?
    <inboundOperation name="NMTOKEN" nativeOperation="NMTOKEN">*
  </inboundInteraction?
  <wireFormat ... />?
  <operationSelector ... />?
</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".

- 112 The **@uri** attribute, the **@connectionInfo** attribute and the **inboundConnection** or  
 113 **outboundConnection** elements are mutually exclusive and the SCA runtime MUST raise an  
 114 error if more than one is present [BJC20001].
- 115 • **/binding.jca/@connectionInfo** identifies the jca.binding element present in the definitions  
 116 document and whose child or children (one or more of inboundConnection, outboundConnection,  
 117 inboundInteraction, outboundInteraction) are used to define characteristics of connection and  
 118 interaction characteristics for this binding.
  - 119 • **/binding.jca/@initialContextFactory** – the name of the JNDI initial context factory.  
 120 The **@initialContextFactory** attribute MUST NOT be specified if the **@uri** attribute is not present  
 121 [BJC20002].
  - 122 • **/binding.jca/@jndiURL** – the URL for the JNDI provider.  
 123 The **@jndiURL** attribute MUST NOT be specified if the **@uri** attribute is not present [BJC20003].
  - 124 • **/binding.jca/@name** - as defined in the [SCA Assembly Specification \[SCA-Assembly\]](#).
  - 125 • **/binding.jca/@requires** - as defined in the [SCA Assembly Specification \[SCA-Assembly\]](#).
  - 126 • **/binding.jca/@policySets** - as defined in the [SCA Assembly Specification \[SCA-Assembly\]](#).
  - 127 • **/binding.jca/outboundConnection** defines the outbound connection characteristics.  
 128 The **outboundConnection** element MUST NOT be specified for services [BJC20004].
  - 129 • **/binding.jca/outboundConnection/@managed** attribute that determines whether the interaction  
 130 with the EIS system is to be performed in the managed or non-managed mode. If the value is true  
 131 (default), the JNDI name is used to obtain connection to the EIS and use adapter in the managed  
 132 mode. If the value is false, the connection information is used to invoke adapter in the non-  
 133 managed mode i.e. by creating instance of the ManagedConnectionFactory and using it to create  
 134 Connection. For the full description of the managed and non-managed mode refer to section 6.9  
 135 of the [JCA 1.5 specification \[JCA15\]](#).
  - 136 • **/binding.jca/outboundConnection/resourceAdapter** – specifies name, type and properties of  
 137 the Resource Adapter Java bean.  
 138 The SCA runtime MAY restrict valid properties of the outbound connection's Resource Adapter  
 139 Java bean depending on the deployment platform [BJC20005].  
 140 The **outboundConnection/resourceAdapter** element MUST NOT be specified when the  
 141 **@managed** attribute value is **"false"** [BJC20006].
  - 142 • **/binding.jca/outboundConnection/resourceAdapter/@type** – the fully qualified name of the  
 143 class implementing the JCA ResourceAdapter interface
  - 144 • **/binding.jca/outboundConnection/resourceAdapter/@name** – the optional name that uniquely  
 145 identifies the existing instance of the resource adapter.
  - 146 • **/binding.jca/outboundConnection/resourceAdapter/property** element contains the subset of  
 147 the properties of the Resource Adapter Java Bean that need to be set in order to access specified  
 148 EIS service. The full list of Resource Adapter properties can be obtained by introspecting the  
 149 Java Bean.
  - 150 • **/binding.jca/outboundConnection/connection** element specifies the properties of the  
 151 connection factory used to create connections to the service endpoint.
  - 152 • **/binding.jca/outboundConnection/connection/@type** – the fully qualified name of the class  
 153 implementing the JCA ManagedConnectionFactory interface
  - 154 • **/binding.jca/outboundConnection/connection/@name** – if the **@create** attribute is **"never"**,  
 155 the name uniquely identifies an existing instance of the managed connection factory.  
 156 If the **connection/@create** attribute is **"always"**, the **@name** value MUST be unique within the  
 157 domain [BJC20007].
  - 158 • **/binding.jca/outboundConnection/connection/property** element contains the subset of the  
 159 properties of the Managed Connection Factory Java Bean that need to be set in order to access  
 160 specified EIS service. The full list of Managed Connection Factory properties can be obtained by  
 161 introspecting the Java Bean.

- 162 • **/binding.jca/outboundConnection/connection/@create** attribute indicates whether the  
163 element containing the attribute should be created when the containing composite is deployed.  
164 Valid values are “**always**”, “**never**” and “**ifNotExist**”. The default value is “**ifNotExist**”.  
165 The SCA runtime SHOULD raise an error if the **connection/@create** attribute value is “**always**”  
166 and the element with the given name already exists [BJC20008].
- 167 • **/binding.jca/outboundConnection/connection/resAuth** element specifies the authentication  
168 mechanism used by the resource adapter in the managed environment
- 169 • **/binding.jca/outboundInteraction** defines characteristics of the outbound interaction.  
170 The **outboundInteraction** element MUST NOT be specified for services [BJC20009].
- 171 • **/binding.jca/outboundInteraction/connectionSpec** identifies the name of the class  
172 implementing javax.resource.cci.ConnectionSpec interface and the set of connectionSpec  
173 properties to be specified when creating a connection, a client level connection properties e.g.  
174 user name or password. The ConnectionSpec object is used in several patterns that justify its  
175 definition in the interaction binding.
- 176 • **/binding.jca/outboundInteraction/interactionSpec** type specifies the name of the class  
177 implementing javax.resource.cci.InteractionSpec interface. This **interactionSpec** applies to all  
178 operations that do not have one defined via an **operation** element.
- 179 • **/binding.jca/outboundInteraction/operation** element gathers characteristics of one operation of  
180 the service, the data bindings of the inbound and outbound arguments as well as interaction type  
181 and the properties.
- 182 • **/binding.jca/inboundConnection** defines the inbound connection characteristics.  
183 The **inboundConnection** element MUST NOT be specified for references [BJC20010].
- 184 • **/binding.jca/inboundConnection/resourceAdapter** – specifies name, type and properties of  
185 the Resource Adapter Java bean.  
186 The SCA runtime MAY restrict valid properties of the inbound connection’s Resource Adapter  
187 Java bean depending on the deployment platform [BJC20011].  
188 The **inboundConnection/resourceAdapter** element MUST NOT be specified when the  
189 **@managed** attribute is “**false**” [BJC20012].
- 190 • **/binding.jca/inboundConnection/resourceAdapter/@type** – the fully qualified name of the  
191 class implementing the ResourceAdapter interface
- 192 • **/binding.jca/inboundConnection/resourceAdapter/@name** – the optional name that uniquely  
193 identifies the existing instance of the resource adapter.
- 194 • **/binding.jca/inboundConnection/activationSpec** element specifies the name of the class  
195 implementing javax.resource.spi.ActivationSpec interface and its properties.
- 196 • **/binding.jca/inboundConnection/activationSpec/@type** – the fully qualified name of the class  
197 implementing the ActivationSpec interface
- 198 • **/binding.jca/inboundConnection/activationSpec/@name** – if the @create attribute is “**never**”,  
199 the name uniquely identifies an existing instance of the activation spec.  
200 If the **activationSpec/@create** attribute is “**always**”, the **@name** value MUST be unique within  
201 domain [BJC20013].
- 202 • **/binding.jca/inboundConnection/activationSpec/@create** attribute indicates whether the  
203 element containing the attribute should be created when the containing composite is deployed.  
204 Valid values are “**always**”, “**never**” and “**ifNotExist**”. The default value is “**ifNotExist**”.  
205 The SCA runtime SHOULD raise an error if the **activationSpec/@create** attribute value is  
206 “**always**” and the element with the given name already exists [BJC20014].
- 207 • **/binding.jca/inboundInteraction** defines characteristics of the inbound interaction.  
208 The **inboundInteraction** element MUST NOT be specified for references [BJC20015].
- 209 • **/binding.jca/inboundInteraction/listener** type specifies the listener interface supported by this  
210 group of interactions.  
211 If the **inboundInteraction/listener** element is not specified, the SCA runtime MUST interpret it as

212 a listener implementing `javax.resource.cci.MessageListener` interface from the JCA specification  
213 [BJC20016].

- 214 • ***/binding.jca/inboundInteraction/inboundOperation*** element that maps the name of the EIS  
215 event received by ResourceAdapter to the name of the operation of the Service.
- 216 • ***/binding.jca/wireFormat*** – identifies the wire format used by requests and responses sent or  
217 received by this binding as defined in the [SCA Assembly Specification \[SCA-Assembly\]](#).
- 218 • ***/binding.jca/operationSelector*** – identifies the operation selector used when receiving requests  
219 for a service as defined in the [SCA Assembly Specification \[SCA-Assembly\]](#).

220 The ***binding.jca*** element MUST conform to the XML schema defined in `sca-binding-jca.xsd` [BJC20017].

## 221 **2.1 Extensibility**

222 The JCA Binding allows further customization of the binding element and its subelements with vendor  
223 specific attributes or elements. This is done by providing extension points in the schema; refer to  
224 Appendix A, “JCA XML Binding Schema: `sca-binding-jca.xsd`” for the locations of these extension points.

---

225 **3 Policy**

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

---

## 228 4 Operation Selectors and Wire Formats

229 In general JCA resource adapters deal with records. There is not usually a built-in concept of “operation”  
230 that corresponds to that defined in a [WSDL \[WSDL\]](#) portType. Records have a format which corresponds  
231 in some way to the schema of an input or output message of an operation in the interface of a service or  
232 reference, however additional Resource Adapter-specific information is required in order for an SCA  
233 runtime to know how to identify the operation and understand the format of records.

234 The process of identifying the operation to be invoked is **operation selection**; the information that  
235 describes the contents of messages is a **wire format**. The binding element as described in the [SCA](#)  
236 [Assembly Specification \[SCA-Assembly\]](#) provides the means to identify specific operation selection via  
237 the **operationSelector** element and the format of messages received and to be sent using the  
238 **wireFormat** element.

239 This specification does not define default behavior for the operation selection or wire format of a JCA  
240 binding. This choice had been made because the implementations of generic Record interfaces that  
241 define the data exchanged between JCA adapter and its client are specific to a particular adapter and,  
242 unlike JMS, cannot be used in a generic manner.

243 No standard means is provided for linking the **wireFormat** or **operationSelector** elements with the  
244 runtime components that implement their behaviour.

---

## 245 5 Binding Properties

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

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

```
252 <reference name="EISHelloWorldReference">  
253   <binding.jca connectionInfo="JCA_Services">  
254     </binding.jca>  
255 </reference>
```

256 This element can contain the interaction properties, for example properties of the connectionSpec.

```
257 <definitions targetNamespace="http://acme.com"  
258   xmlns="http://docs.oasis-pen.org/ns/opencsa/sca/200903">  
259   <binding.jca name="JCA_Services">  
260     <outboundInteraction >  
261       <connectionSpec name="FAConnectionSpec">  
262         <property name="group">GROUP1</property>  
263         <property name="userid">SYSAD</property>  
264         <property name="password">SYSAD</property>  
265       </connectionSpec>  
266       ...  
267     </outboundInteraction>  
268   </binding.jca>  
269 </definitions>
```

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

```
274 <outboundInteraction >  
275   <connectionSpec  
276     name="connector.file.outbound.FAConnectionSpec">  
277     <property name="group">GROUP1</property>  
278     <property name="userid">SYSAD</property>  
279     <property name="password" source="$password"/>  
280   </connectionSpec>  
281 </outboundInteraction>
```

282 The property value is the specified in the binding element that refers to the element in the definitions file.

```
283 <reference name="JCAHelloWorldReference">  
284   <binding.jca connectionInfo="JCA_Services">  
285     <property name="password">SYSAD</property>  
286   </binding.jca>  
287 </reference>
```

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

```
290 <composite xmlns="http://docs.oasis-pen.org/ns/opencsa/sca/200903"  
291   name="EISHelloWorld">  
292   <reference name="EISHelloWorldReference">  
293     <binding.jca connectionInfo="JCA_Services">  
294       <property name="userid" source="$UID"/>  
295     </binding.jca>  
296   </reference>
```

```
296     </binding.jca>
297     </reference>
298
299
300     <property name="UID">SYSAD</property>
301 </composite>
```

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

---

## 304 6 Examples

### 305 6.1 Minimal JCA Binding

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

```
310 <!-- JCA reference, connection is configured in JNDI context -->  
311 <reference name="EISHelloWorldReference">  
312   <binding.jca uri="java:comp/env/eis/EISMCF" />  
313 </reference>
```

### 314 6.2 Existing resources

315 The sample reference with the JCA Binding, the binding's uri attribute specifies the existing resource - the  
316 JNDI name under which the connection factory object is located. The interaction properties are specified  
317 explicitly in the inlined **outboundInteraction** element.

```
318 <reference name="EISHelloWorldReference">  
319   <binding.jca uri="java:comp/env/eis/EISMCF">  
320     <outboundInteraction>  
321       <connectionSpec name="FAConnectionSpec">  
322         <property name="userid">SYSAD</property>  
323       </connectionSpec>  
324       <interactionSpec name="FAInteractionSpec">  
325       </interactionSpec>  
326       <operation name="hello">  
327         <interactionSpec>  
328           <property name="dir">temp</property>  
329           <property name="fileMode">read</property>  
330         </interactionSpec>  
331       </operation>  
332     </outboundInteraction>  
333   </binding.jca>  
334 </reference>
```

### 338 6.3 Resource Creation

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

```
341 <reference name="JCAHelloWorldReference">  
342   <binding.jca>  
343     <outboundConnection managed="true">  
344       <resourceAdapter  
345         name="connector.file.FAResourceAdapter">  
346         <property name="logDrive">D</property>  
347       </resourceAdapter>  
348       <connection name="FAManagedConnectionFactory">  
349         create="always">  
350         <property name="host">localhost</property>  
351         <property name="drive">C</property>  
352       </connection>  
353     </outboundConnection>
```

```
354     </binding.jca>
355 </reference>
```

## 356 6.4 Existing Resources specified in the definition file

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

```
359 <definitions targetNamespace="http://acme.com"
360             xmlns="http://docs.oasis-pen.org/ns/opencsa/sca/200903">
361
362     <binding.jca name="JCA_Inbound">
363         <inboundConnection>
364             <resourceAdapter name="FAResourceAdapter">
365                 <property name="logDrive">D</property>
366             </resourceAdapter>
367             <activationSpec name="FAActivationSpec">
368                 <property name="directory_type">temp</property>
369                 <property name="drive">C</property>
370             </activationSpec>
371         </inboundConnection>
372     </binding.jca>
373 </definitions>
```

374 The service with the JCA Bindings uses the connectionInfo attribute to identify the resources in the  
375 definition file

```
376 <service name="JCAHelloWorldService">
377     <binding.jca connectionInfo=" JCA_Inbound ">
378         <inboundInteraction>
379             <listener>MyInboundListener</listener>
380             <inboundOperation name="hello" nativeOperation="TXPN"/>
381             <inboundOperation name="bye" nativeOperation="ETXPRN"/>
382         </inboundInteraction>
383     </binding.jca>
384 </service>
```

385

---

## 386 7 Conformance

387 The XML schema pointed to by the RDDDL document at the namespace URI, defined by this specification,  
388 are considered to be authoritative and take precedence over the XML schema defined in the appendix of  
389 this document. There are two categories of artifacts for which this specification defines conformance:

- 390 a) SCA JCA Binding XML Document
- 391 b) SCA Runtime

### 392 7.1 SCA JCA Binding XML Document

393 An SCA JCA Binding XML document is an SCA Composite Document, an SCA Definitions Document or  
394 an SCA ComponentType Document, as defined by the [SCA Assembly specification Section 13.1 \[SCA-](#)  
395 [Assembly\]](#), that uses the *binding.jca* element.

396 An SCA JCA Binding XML document MUST be a conformant SCA Composite Document, SCA Definitions  
397 Document or a SCA ComponentType Document, as defined by the [SCA Assembly Specification \[SCA-](#)  
398 [Assembly\]](#), and MUST comply with all statements in Appendix B: "Conformance Items" related to elements  
399 and attributes in an SCA JCA Binding XML document, notably all "MUST" statements have to be  
400 implemented.

### 401 7.2 SCA Runtime

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

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

## A. JCA XML Binding Schema: sca-binding-jca.xsd

```

411 <?xml version="1.0" encoding="UTF-8"?>
412 <!-- Copyright(C) OASIS(R) 2005,2009. All Rights Reserved.
413       OASIS trademark, IPR and other policies apply. -->
414 <schema xmlns="http://www.w3.org/2001/XMLSchema"
415       targetNamespace=" http://docs.oasis-open.org/ns/opencsa/sca/200903"
416       xmlns:sca=" http://docs.oasis-open.org/ns/opencsa/sca/200903"
417       elementFormDefault="qualified">
418
419   <include schemaLocation="sca-core-1.1-cd03.xsd" />
420
421   <complexType name="JCABinding">
422     <complexContent>
423       <extension base="sca:Binding">
424         <sequence>
425           <element name="outboundConnection"
426             type="sca:JCAOutboundConnection" minOccurs="0" />
427           <element name="inboundConnection"
428             type="sca:JCAInboundConnection" minOccurs="0" />
429           <element name="outboundInteraction"
430             type="sca:JCAOutboundInteraction" minOccurs="0" />
431           <element name="inboundInteraction"
432             type="sca:JCAInboundInteraction" minOccurs="0" />
433           <element name="property" type="sca:Property" minOccurs="0"
434             maxOccurs="unbounded" />
435           <any namespace="##other" processContents="lax" minOccurs="0"
436             maxOccurs="unbounded" />
437         </sequence>
438         <attribute name="connectionInfo" type="anyURI" use="optional" />
439         <attribute name="initialContextFactory" type="anyURI"
440           use="optional" />
441         <attribute name="jndiURL" type="anyURI" use="optional" />
442       </extension>
443     </complexContent>
444   </complexType>
445
446   <simpleType name="JCACreateResource">
447     <restriction base="string">
448       <enumeration value="always" />
449       <enumeration value="never" />
450       <enumeration value="ifNotExist" />
451     </restriction>
452   </simpleType>
453   <simpleType name="ResAuth">
454     <restriction base="string">
455       <enumeration value="container" />
456       <enumeration value="application" />
457     </restriction>
458   </simpleType>
459   <complexType name="JCAOutboundConnection">
460     <sequence>
461       <element name="resourceAdapter" type="sca:ResourceAdapter"
462         minOccurs="0" />
463       <element name="connection" type="sca:Connection" />
464       <element name="resAuth" type="sca:ResAuth" minOccurs="0" />
465       <any namespace="##other" processContents="lax" minOccurs="0"
466         maxOccurs="unbounded" />
467     </sequence>
468     <attribute name="managed" type="boolean" use="optional"
469       default="true" />

```

```

470     <anyAttribute namespace="##other" processContents="lax" />
471 </complexType>
472 <complexType name="JCAInboundConnection">
473     <sequence>
474         <element name="resourceAdapter" type="sca:ResourceAdapter" />
475         <element name="activationSpec" type="sca:ActivationSpec" />
476         <any namespace="##other" processContents="lax" minOccurs="0"
477             maxOccurs="unbounded" />
478     </sequence>
479     <anyAttribute namespace="##other" processContents="lax" />
480 </complexType>
481 <complexType name="JCAOutboundInteraction">
482     <sequence>
483         <element name="connectionSpec" type="sca:ConnectionSpec"
484             minOccurs="0" />
485         <element name="interactionSpec" type="sca:InteractionSpec"
486             minOccurs="0" />
487         <element name="operation" type="sca:Operation" minOccurs="0" />
488         <any namespace="##other" processContents="lax" minOccurs="0"
489             maxOccurs="unbounded" />
490     </sequence>
491     <anyAttribute namespace="##other" processContents="lax" />
492 </complexType>
493 <complexType name="JCAInboundInteraction">
494     <sequence>
495         <element name="listener" type="string" minOccurs="0" />
496         <element name="inboundOperation" type="sca:InboundOperation"
497             minOccurs="0" maxOccurs="unbounded" />
498         <any namespace="##other" processContents="lax" minOccurs="0"
499             maxOccurs="unbounded" />
500     </sequence>
501     <anyAttribute namespace="##other" processContents="lax" />
502 </complexType>
503 <complexType name="ResourceAdapter">
504     <sequence>
505         <element name="property" type="sca:Property" minOccurs="0"
506             maxOccurs="unbounded" />
507         <any namespace="##other" processContents="lax" minOccurs="0"
508             maxOccurs="unbounded" />
509     </sequence>
510     <attribute name="name" type="NMTOKEN" use="optional" />
511     <attribute name="type" type="NMTOKEN" use="required" />
512     <anyAttribute namespace="##other" processContents="lax" />
513 </complexType>
514 <complexType name="Connection">
515     <sequence>
516         <element name="property" type="sca:Property" minOccurs="0"
517             maxOccurs="unbounded" />
518         <any namespace="##other" processContents="lax" minOccurs="0"
519             maxOccurs="unbounded" />
520     </sequence>
521     <attribute name="name" type="NMTOKEN" use="optional" />
522     <attribute name="type" type="NMTOKEN" use="required" />
523     <attribute name="create" type="sca:JCACreateResource" use="optional"
524         default="ifNotExist" />
525     <anyAttribute namespace="##other" processContents="lax" />
526 </complexType>
527 <complexType name="ActivationSpec">
528     <sequence>
529         <element name="property" type="sca:Property" minOccurs="0"
530             maxOccurs="unbounded" />
531         <any namespace="##other" processContents="lax" minOccurs="0"
532             maxOccurs="unbounded" />
533     </sequence>

```

```

534     <attribute name="name" type="NMTOKEN" use="optional" />
535     <attribute name="type" type="NMTOKEN" use="required" />
536     <attribute name="create" type="sca:JCACreateResource" use="optional"
537         default="ifNotExist" />
538     <anyAttribute namespace="##other" processContents="lax" />
539 </complexType>
540 <complexType name="Operation">
541     <sequence>
542         <element name="interactionSpec" type="sca:InteractionSpec"
543             minOccurs="0" />
544         <any namespace="##other" processContents="lax" minOccurs="0"
545             maxOccurs="unbounded" />
546     </sequence>
547     <attribute name="name" type="NMTOKEN" use="required" />
548     <anyAttribute namespace="##other" processContents="lax" />
549 </complexType>
550 <complexType name="InboundOperation">
551     <sequence>
552         <any namespace="##other" processContents="lax" minOccurs="0"
553             maxOccurs="unbounded" />
554     </sequence>
555     <attribute name="name" type="NMTOKEN" use="required" />
556     <attribute name="nativeOperation" type="string" use="required" />
557     <anyAttribute namespace="##other" processContents="lax" />
558 </complexType>
559 <complexType name="ConnectionSpec">
560     <sequence>
561         <element name="property" type="sca:Property" minOccurs="0"
562             maxOccurs="unbounded" />
563         <any namespace="##other" processContents="lax" minOccurs="0"
564             maxOccurs="unbounded" />
565     </sequence>
566     <attribute name="type" type="NMTOKEN" use="required" />
567     <anyAttribute namespace="##other" processContents="lax" />
568 </complexType>
569 <complexType name="InteractionSpec">
570     <sequence>
571         <element name="property" type="sca:Property" minOccurs="0"
572             maxOccurs="unbounded" />
573         <any namespace="##other" processContents="lax" minOccurs="0"
574             maxOccurs="unbounded" />
575     </sequence>
576     <attribute name="type" type="NMTOKEN" use="required" />
577     <anyAttribute namespace="##other" processContents="lax" />
578 </complexType>
579
580     <element name="binding.jca" type="sca:JCABinding"
581         substitutionGroup="sca:binding" />
582 </schema>

```

## B. Conformance Items

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

Conformance ID	Description
[BJC20001]	The <b>@uri</b> attribute, the <b>@connectionInfo</b> attribute and the <b>inboundConnection</b> or <b>outboundConnection</b> elements are mutually exclusive and the SCA runtime MUST raise an error if more than one is present
[BJC20002]	The <b>@initialContextFactory</b> attribute MUST NOT be specified if the <b>@uri</b> attribute is not present
[BJC20003]	The <b>@jndiURL</b> attribute MUST NOT be specified if the <b>@uri</b> attribute is not present
[BJC20004]	The <b>outboundConnection</b> element MUST NOT be specified for services
[BJC20005]	The SCA runtime MAY restrict valid properties of the outbound connection's Resource Adapter Java bean depending on the deployment platform
[BJC20006]	The <b>outboundConnection/resourceAdapter</b> element MUST NOT be specified when the <b>@managed</b> attribute value is <b>"false"</b>
[BJC20007]	If the <b>connection/@create</b> attribute is <b>"always"</b> , the <b>@name</b> value MUST be unique within the domain
[BJC20008]	The SCA runtime SHOULD raise an error if the <b>connection/@create</b> attribute value is <b>"always"</b> and the element with the given name already exists
[BJC20009]	The <b>outboundInteraction</b> element MUST NOT be specified for services
[BJC20010]	The <b>inboundConnection</b> element MUST NOT be specified for references
[BJC20011]	The SCA runtime MAY restrict valid properties of the inbound connection's Resource Adapter Java bean depending on the deployment platform
[BJC20012]	The <b>inboundConnection/resourceAdapter</b> element MUST NOT be specified when the <b>@managed</b> attribute is <b>"false"</b>
[BJC20013]	If the <b>activationSpec/@create</b> attribute is <b>"always"</b> , the <b>@name</b> value MUST be unique within domain
[BJC20014]	The SCA runtime SHOULD raise an error if the <b>activationSpec/@create</b> attribute value is <b>"always"</b> and the element with the given name already exists
[BJC20015]	The <b>inboundInteraction</b> element MUST NOT be specified for references
[BJC20016]	If the <b>inboundInteraction/listener</b> element is not specified, the SCA runtime MUST interpret it as a listener implementing <b>javax.resource.cci.MessageListener</b> interface from the JCA specification
[BJC20017]	The <b>binding.jca</b> element MUST conform to the XML schema defined in <b>sca-binding-jca.xsd</b>

585

## C. Java EE Connector Architecture

586

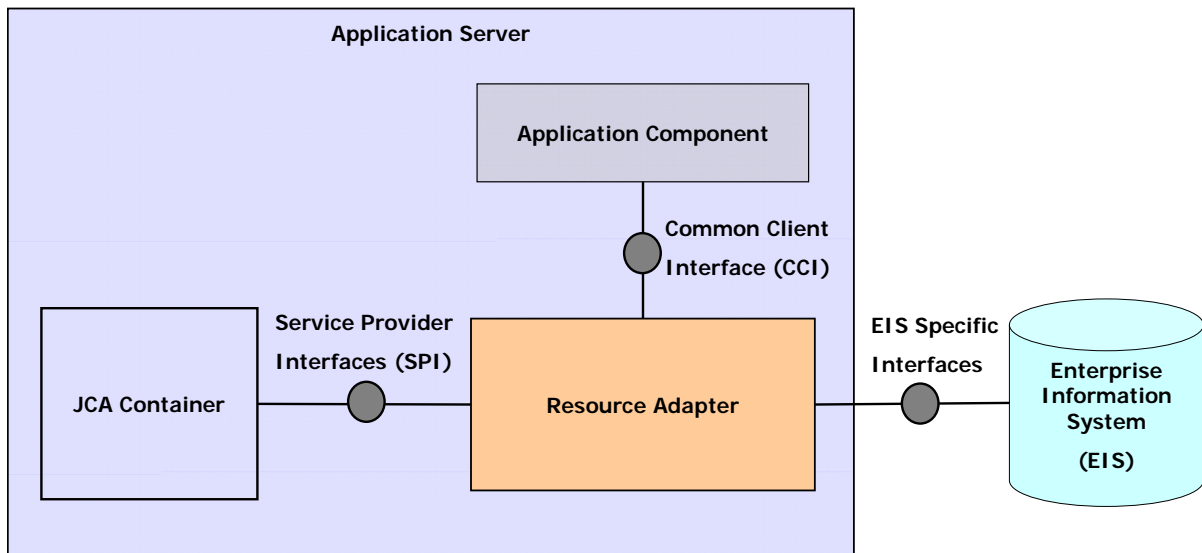
### C.1 Introduction

587

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

589

591



592

593

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

594

596

- Lifecycle management allows application server to control the startup of the adapter and notification to allow it to shutdown in an orderly fashion

597

598

- 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.

599

600

- Connection management lets the server control the pooling, reusing and caching of the physical connections to the EIS system thus allowing for better scalability.

601

602

- Transactions allow the server to control EIS resource managers and provide application clients with the transactional access to external resources.

603

604

- Security contract allow for secure access to the EIS systems with security information configured and provided by the application server

605

606

- Message inflow contract allows Resource Adapter to deliver events initiated by the EIS system to the application component executing on the application server.

607

608

- Transaction inflow contract allow the application server to participate and execute in the context of the transaction initiated by the EIS system.

609

610

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

613

## 614 C.2 Selected JCA CCI Interfaces

### 615 Record

```
616     public interface javax.resource.cci.Record
617         extends java.lang.Cloneable, java.io.Serializable {
618
619     public String getRecordName();
620     public void setRecordName(String name);
621     public void setRecordShortDescription(String description);
622     public String getRecordShortDescription();
623         public boolean equals(Object other);
624         public int hashCode();
625         public Object clone() throws CloneNotSupportedException;
626     }
```

627

### 628 Interaction

629

```
630     public interface javax.resource.cci.Interaction {
631
632         public Connection getConnection();
633         public void close() throws ResourceException;
634         public boolean execute(InteractionSpec ispec,
635             Record input, Record output) throws ResourceException;
636         public Record execute(InteractionSpec ispec,
637             Record input) throws ResourceException;
638     }
639
```

### 640 MessageListener

641

```
642     interface javax.resource.cci.MessageListener {
643
644         Record onMessage(Record inputData) throws ResourceException;
645     }
```

646

647

648

## D. Acknowledgements

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

651 **Participants:**

Participant Name	Affiliation
Bryan Aupperle	IBM
Ron Barack	SAP AG
Michael Beisiegel	IBM
Henning Blohm	SAP AG
David Booz	IBM
Martin Chapman	Oracle Corporation
Jean-Sebastien Delfino	IBM
Laurent Domenech	TIBCO Software Inc.
Jacques Durand	Fujitsu Limited
Mike Edwards	IBM
Billy Feng	Primeton Technologies, Inc.
Nimish Hathalia	TIBCO Software Inc.
Simon Holdsworth	IBM
Eric Johnson	Software Inc.
Uday Joshi	Oracle Corporation
Khanderao Kand	Oracle Corporation
Anish Karmarkar	Oracle Corporation
Nickolaos Kavantzas	Oracle Corporation
Mark Little	Red Hat
Ashok Malhotra	Oracle Corporation
Jim Marino	Individual
Jeff Mischkinsky	Oracle Corporation
Dale Moberg	Axway Software
Simon Nash	Individual
Sanjay Patil	SAP AG
Plamen Pavlov	SAP AG
Peter Peshev	SAP AG
Piotr Przybylski	IBM
Luciano Resende	IBM
Tom Rutt	Fujitsu Limited
Vladimir Savchenko	SAP AG
Scott Vorthmann	TIBCO Software Inc.
Tim Watson	Oracle Corporation
Owen Williams	Avaya, Inc.

652

## E. Revision History

653 [optional; should not be included in OASIS Standards]

654

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
cd02-rev1	2009-05-22	Simon Holdsworth	Updates to resolve issue BINDINGS-63 (conformance statement numbering) Updated assembly namespace to 200903
cd02-rev2	2009-05-22	Simon Holdsworth	Updates to resolve following issues: BINDINGS-22 BINDINGS-45 BINDINGS-58 BINDINGS-69 Fixed errors in schema
cd02-rev3	2009-06-19	Simon Holdsworth	Updates to resolve following issues: BINDINGS-75 Added acknowledgements
cd02-rev4	2009-06-24	Simon Holdsworth	Updates to resolve following issues BINDINGS-78 Renamed document to old form Editorial fixes around external references; changed all links to hyperlinks

cd02-rev5	2009-06-24	Simon Holdsworth	Fixed broken cross-reference
cd03	2009-06-29	Simon Holdsworth	Update name to cd03

655