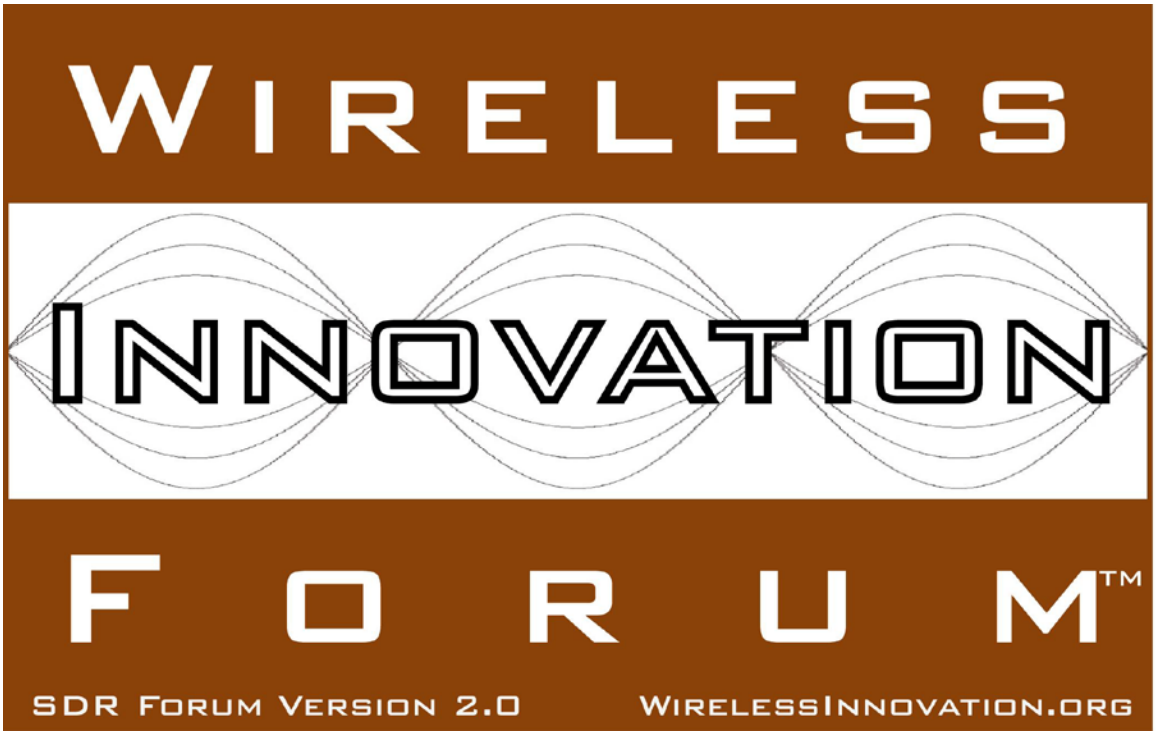

Request for Comment
on SCA Implementers Work Group
Change Proposals for SCA Next

Document WINNF-10-RFI-0003

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Preface

In August 2009, the JPEO and its JTRS SCA Next Working Panel, invited the WINNF to assist it in developing the specification of a new release of the SCA whose working title is "SCA Next." The WINNF has a "SCA Implementers Work Group" whose goal is to create a document that will provide guidance to SCA implementers. The Implementers work group has identified a number of topics from the SCA specification that are subject to interpretation. Each topic has been discussed with the ultimate goal to reach consensus on how to eliminate the potential for interpretation. The SCA Implementers Work Group will continue to identify issues with the specification. However, the attached document contains the current list of potential issues and some change proposals.

The WINNF SCA Implementers Work Group is pleased to contribute the attached list of issues and change proposals to the JTRS SCA Next Working Panel for use as part of SCA Next. We request your consideration and invite your comments.

Please respond with your comments to the WINNF SCA Implementers Work Group Chair: steve.bernier@crc.gc.ca

Request for Comment on Change Proposals for SCA Next

1. Title of Change Proposal: Make the SCA specification clearly state that application connections cannot become pending.

1.1 Description of Problem

The SCA specification 2.2.2 does not clearly identify that application connections, the ones defined in the .SAD.XML file never become pending. Paragraph 3.1.3.2.3.6.4.3 is at the source of the confusion. It says:

[…] *Connections broken as a result of the unregisterDeviceManager operation shall be considered as "pending" for future connections when the component to which the device manager or its registered devices and services were connected still exists.*[…]

The usage of the word "component" in the unregistration behavior for unregisterDevice, Service and DeviceManager can be interpreted to include every type of component in the system including Resources which has led some to think that applications can have pending connections.

The concept of pending connections is covered in the description of the following member functions:

- DomainManager::registerDeviceManager [3.1.3.2.3.6.1.3]
- DomainManager:: registerDevice [3.1.3.2.3.6.2.3]
- DomainManager::unregisterDeviceManager [3.1.3.2.3.6.4.3]
- DomainManager:: unregisterDevice [3.1.3.2.3.6.5.3]
- DomainManager:: registerService [3.1.3.2.3.6.7.3]
- DomainManager:: unregisterService [3.1.3.2.3.6.8.3]

The word "component" is only used in the description of the unregister member functions.

What also contributes to the ambiguity is that the specification is silent about what happens when an application is instantiated while some of the Devices/services it requires are missing. The same is true about what should happen to an application when the Devices/services it is using are unregistered.

1.2 Recommended Change

Replace the word "component" by "Devices/services" in paragraphs 3.1.3.2.3.6.4.3, 3.1.3.2.3.6.5.3, and 3.1.3.2.3.6.8.3.

Paragraph 3.1.3.2.2.3.2 describes when the CreateApplicationError exception must be raised by ApplicationFactory::create(). That paragraph should also mention the exception must be raised when the create method of an Application Factory cannot establish connections with a Device or Service as specified by the Applications SPD connections element.

The specification could also contain an additional paragraph in section 3.2.1 “General Application Requirements” to indicate that an application shall not crash when a Device/service it is using unregisters or crashes.

1.3 Rational for Change

Remove ambiguity about what type of connections can be pending.

1.4 Impact on Existing CF/Applications

Applications will only be impacted if they depended on pending connections.

For instance, if an application is expected to successfully deploy even when some of the Devices/services it requires connections to, are missing. In such a case, it also means the application expects its connections to Devices/services to automatically be established when the missing Devices/services are launched. It might also mean the application expects its connections to be reestablished when Devices/services are restarted while the application is running.

2. Title of Change Proposal: Provide clear definition of the Size attribute of a FileSystem

2.1 Description of Problem

In the SCA 2.2.2, the meaning of the size of a file system is not clear.

It is stated in section 3.1.3.4.2.5.9.3 that the FileSystem::query() operation shall "return an unsigned long long containing the file system size (in octets)" for a fileSystemProperty ID value of "SIZE".

Furthermore, it is stated in section 3.1.3.4.3.5.5.3 that the FileManager::query() operation shall "return the combined total size of all the mounted file system" for a fileSystemProperty ID value of "SIZE".

But it is not clear whether "file system size" or "size of a file system" means the capacity of the file system or the current amount of allocated memory.

2.2 Recommended Change

Paragraph 3.1.3.4.2.5.9.3 defines the behavior for the FileSystem::query() operation. The recommendation is to add a sentence that would clearly define the relationship between SIZE and AVAILABLE_SPACE. Something along the following:

SIZE represents the total capacity of a file system in octets. AVAILABLE_SPACE represents the free capacity of a file system in octets. The amount of used space in a file system can be calculated by subtracting AVAILABLE_SPACE from SIZE (i.e. used space = SIZE - AVAILABLE_SPACE)

2.3 Rational for Change

Remove an ambiguity that could cause incompatibility problems between different SCA platforms.

2.4 Impact on Existing CF/Applications

Applications will only be impacted if it was expecting the Size property of a FileSystem to represent something different from the recommendation.

3. Title of Change Proposal: Application identifier attribute needs clarification

3.1 Description of Problem

The specification does not clearly define what value the identifier attribute of the Application component must be set to. The problem is caused by the fact that section 3.1.3.2.1 which describes the Application component only covers the additional attributes of the Application. It does not define the attributes inherited from the Resource interface since those are already defined in section 3.1.3.1.6.4.1.

In section 3.1.3.1.6.4.1, the Identifier is defined as follows: "*the readonly identifier attribute shall contain the unique identifier for a Resource instance.*". This statement does not however define a clear link between the identifier of an instantiated component and where the identifier is defined in the profile.

However, the specification also states the ApplicationFactory must feed a special input argument called "COMPONENT_IDENTIFIER" to every component it launches. This is stated in paragraph 3.1.3.2.2.5.1.3. And that paragraph defines that the identifier must be a string of the following format: "Component_Instantiation_Identifier:Application_Name" where "Component_Instantiation_Identifier" comes from the SAD profile.

The problem with the Application identifier is that the Application component is never listed explicitly in a SAD profile and therefore the ApplicationFactory cannot set the Application identifier to a predetermined value.

3.2 Recommended Change

Add a paragraph 3.1.3.2.1.4 which says the following:

3.1.3.2.1.4 identifier

The readonly identifier attribute shall be set to a value of type string in the format of "SoftwareAssembly_Identifier:Application_Name". The "SoftwareAssembly_Identifier" shall be the softwareassembly element id attribute for application's SAD file. The "Application_Name" shall be identical to the ApplicationFactory::create operation's input name parameter.

3.3 Rational for Change

Remove an ambiguity that could cause incompatibility problems between different SCA platforms and SCA modeling and runtime monitoring tools.

3.4 Impact on Existing CF/Applications

No impact on existing applications.

4. Title of Change Proposal: Need clarification for the definition of Operating Environment

4.1 Description of Problem

The current definition of Operating Environment found in section 2.2.3 does not include the Board Support Package (BSP) which forms the foundation with which the O/S and middleware are built upon. It also does not mention the Log service.

Lastly, it is unclear how to classify the devices and services of the platform. The definition of the OE found in section 2.2.3 does not include the devices and services although they are provided as part of a platform and not as part of a waveform.

4.2 Recommended Change

Figure 3.1 should clearly distinguish between Core Framework Control/File Access on one hand and System Components (services and devices) on the other hand. Furthermore, depending on the final definition of the OE, the Systems Components should be shown outside of the OE area. Also, figure 3.1 should clearly depict the following CORBA services: naming service, event service and the log service.

4.3 Rational for Change

Remove an ambiguity that could cause confusion related to requirements describing who must provide which components of an SCA radio set.

4.4 Impact on Existing CF/Applications

No impact on existing applications.

5. Title of Change Proposal: Definition of Application attributes needs clarification

5.1 Description of Problem

The definition of the Application attributes (3.1.3.2.1.4) does not clearly define what happens when a ResourceFactory is used. For instance, should be the componentImplementations sequence contain the implementation id for Resources that have been created by a ResourceFactory? And if so, what should the implementation id be since there Resources have not been launched using an SPD implementation code file? Also, should the ResourceFactory implementation id be included in the componentImplementations sequence? The same questions are application for the componentNamingContexts and componentProcessIds attributes.

The general consensus seems to be that the SCA specification did not intend the Resources created by factories to be listed in any of Application Attributes. But that brings another more fundamental question; what are those attributes used for? Certainly not to record the launch information of an application since ResourceFactory Resources are not included.

It seems that the attributes of the Application contain partial launch information. And that information is insufficient for monitoring or tracking tools.

One possible conclusion might be that the Application does not need any of the sequence attributes.

5.2 Recommended Change

Unfortunately, the SCA Implementers Work Group did not have time to discuss this issue enough to be able to provide a recommendation.

5.3 Rational for Change

Clarify what the Application attributes may be used for.

5.4 Impact on Existing CF/Applications

No impact on existing applications.