# RFC 119 with Tuscany SCA

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A sample scenario

Scenario: A Distributed Calculator

- There are two OSGi bundles: The calculator bundle and the operations bundle.
  - The calculator bundle registers the CalculatorService and it looks up the Add/Subtract/Multiply/Divide services (which are remote over RMI or Web Service protocols) from the service registry.
  - The operations bundle registers four remote services (Add/Subtract/Multiply/Divide). These two bundles are installed to two separate OSGi runtimes.
- The distribution is provided by SCA. The osgi bundle is represented as an SCA component with implementation.osgi. The services and references for the component map to OSGi services and service references.

The Calculator Scenario: OSGi RFC 119 with SCA runtime as the distribution software
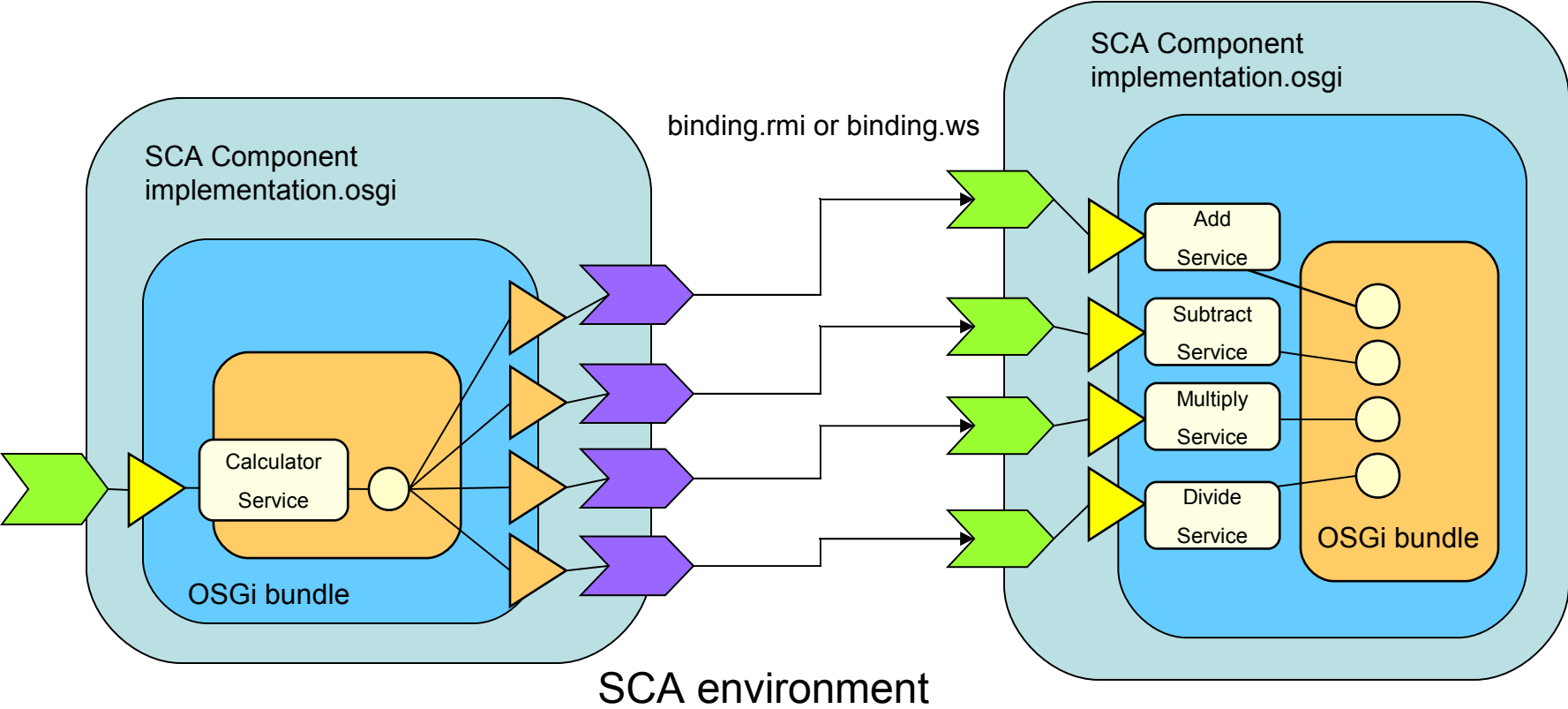
High-level Work Items

Consuming remote services from OSGi

- Understand the references to remote services
  - Static:
    - Use the service-descriptions file (Remote-Service header, for client side only)
    - Use componentType files by SCA
    - Introspect the components defined by OSGi Declarative Services (Service-Component header)
    - Introspected the RFC 124 buleprint module components (Bundle-BluePrint)
  - Dynamic:
    - Listen on the service lookup using service registry hooks
- Register service proxies into the consumer-side service registry
  - Pre-registration for static cases
  - On-demand registration for dynamic cases
- Dispatch the remote service invocations

Exposing OSGi services over various protocols

– Understand the OSGi services to be exposed

  • Static:

    – Use componentType files by SCA

    – Introspect the components defined by OSGi Declarative Services (Service-Component header)

    – Introspected the RFC 124 buleprint module components (Bundle-BluePrint)

  • Dynamic:

    – Listen on the service registration using service listener/tracker or registry hooks

– Register transport listeners for the protocol over which OSGi services are exposed

– Receive the requests from the remote client and dispatch to the local OSGi service

SCA implementation.osgi

- The SCA implementation.osgi component will be used to encapsulate one or more OSGi bundles.
  - OSGi View: implementation.osgi provides the metadata and infrastructure to enable the distribution of OSGi services
  - SCA View: implementation.osgi allows OSGi bundles to participate in the SCA assembly.
- The references for an SCA OSGi component represents the OSGi services to be consumed by the bundles
- The services for an SCA OSgi component represents the OSGi services to be provided by the bundles

Handling Dynamicity

- SCA domain
  - Contributions can come and go in an OSGi env
  - Components can come and go in an OSGi env
  - Be sensitive to the changes for the SCA domain composite
- Maintain a dynamic SCA componentType as OSGi services can come and go
  - References: Listen on the service lookup using service registry hooks (Dependency on RFC 126)
  - Services: Listen on the service registration using service registry hooks (or service listeners/trackers ?)