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CDI and OSGi

So happy together!

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Disclaimer

Everything in this presentation is subject to change at any time as it consists of in-progress specification work.

CDI - Key Goals

Develop a simple and intuitive model for existing CDI developers

Simplify OSGi challenges for new adopters

Take advantage of CDI's SPI as much as possible to ensure compatibility

Enable the simplest migration path for existing applications

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OSGi - Key Goals

Provide services (of all service scopes)

Optional, greedy/reluctant, static/dynamic, unary/n-ary, ordered service dependencies

Integration with Configuration Admin (& factory configurations)

Lazy dependency management (**no damping!**)

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CDI **Container**

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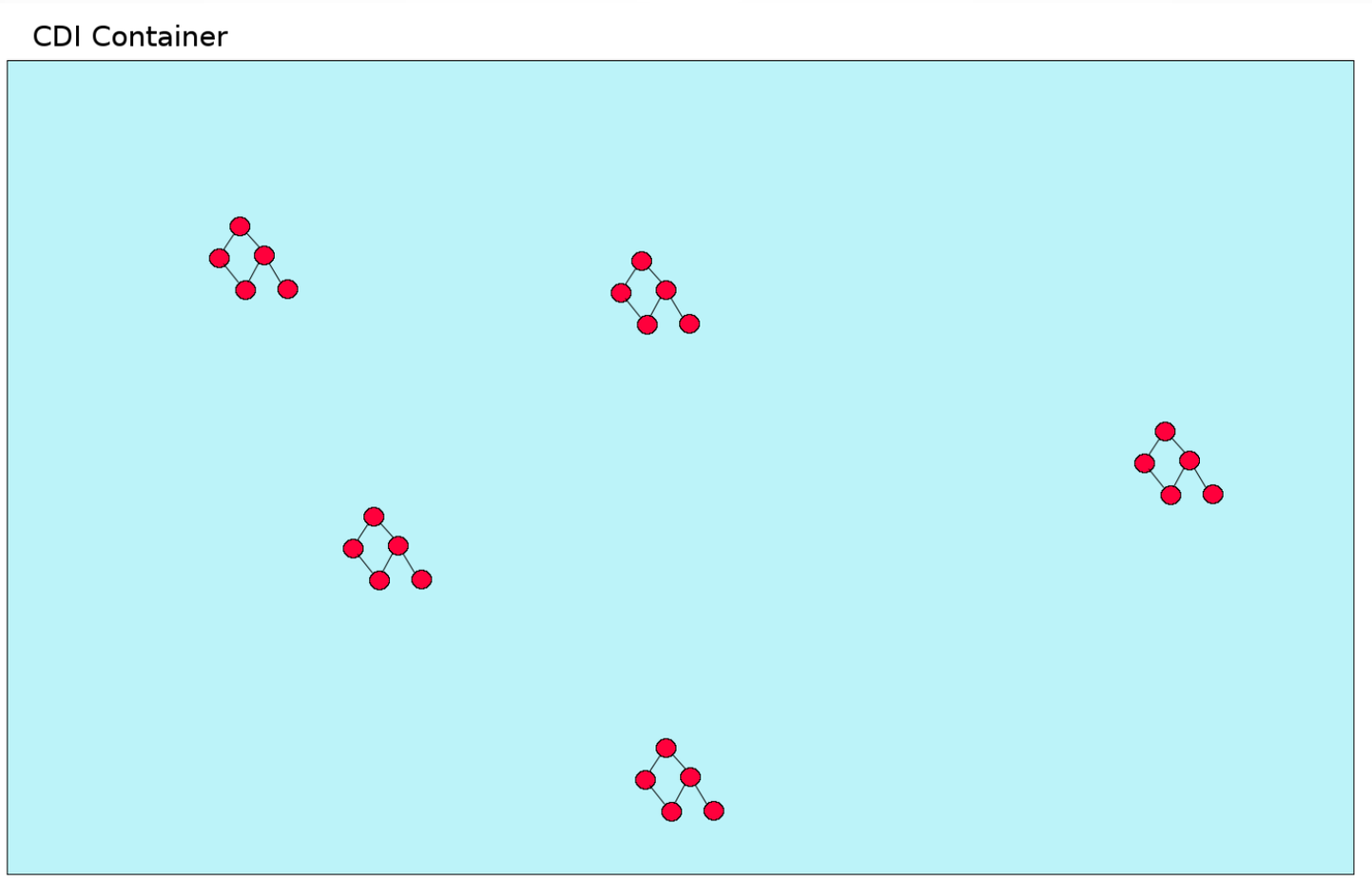
CDI Container holds **Managed Beans** define graphs instances



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Managed Beans have a **Scope**

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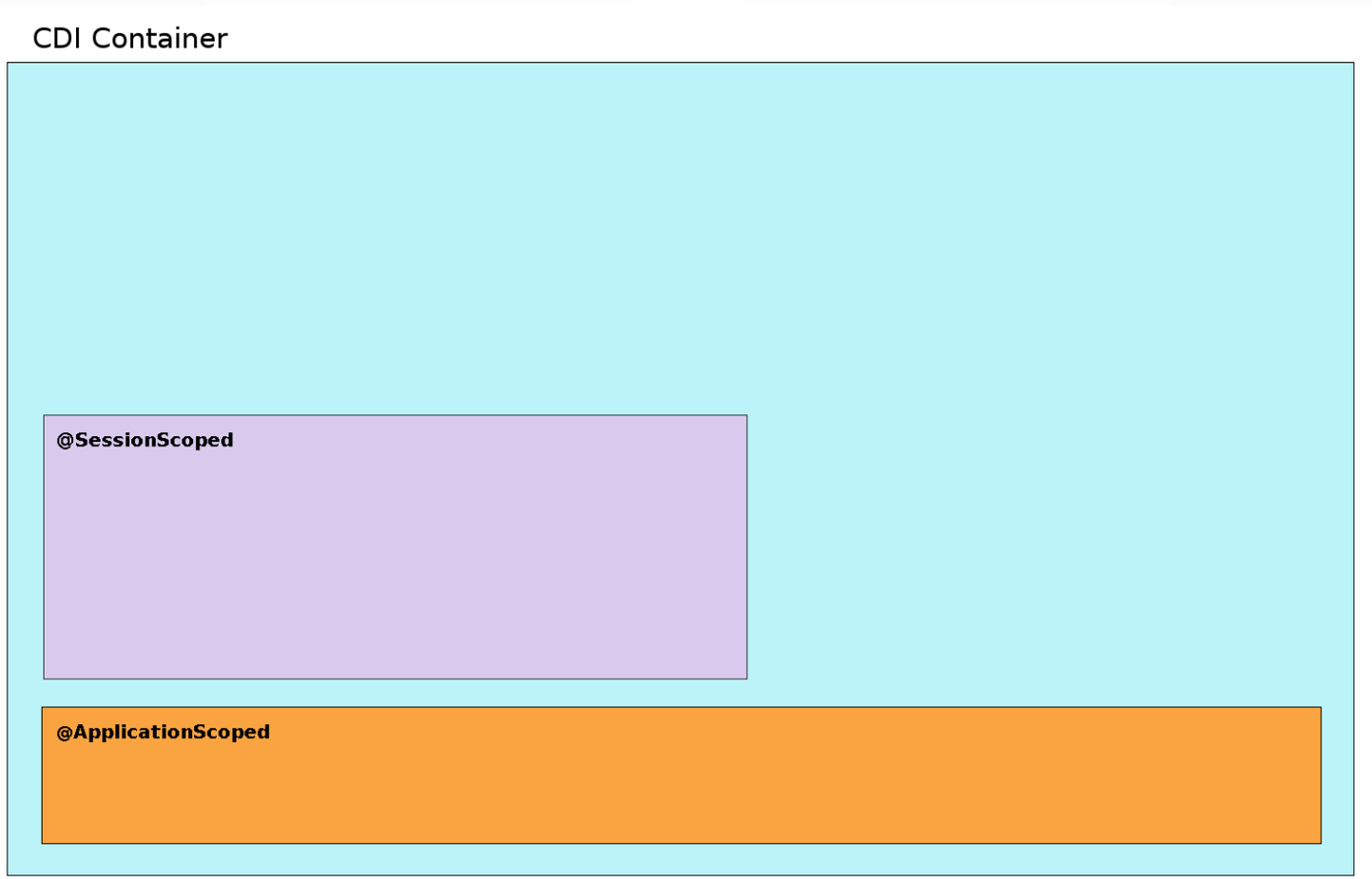
Scopes define **Lifecycle** of managed beans



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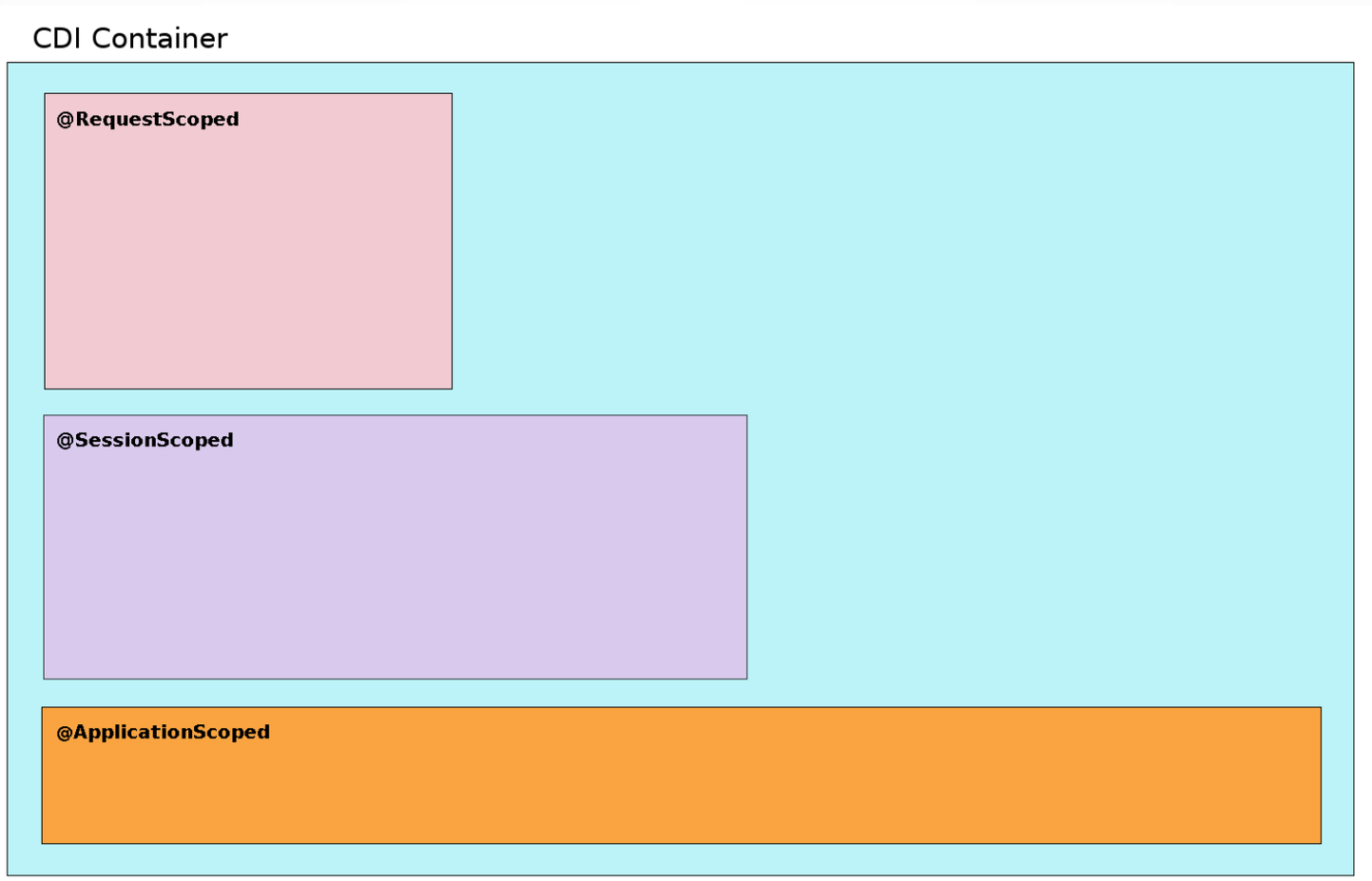
Lifecycle follow edges of business logic resulting in **Contexts** which hold *contextual instances*



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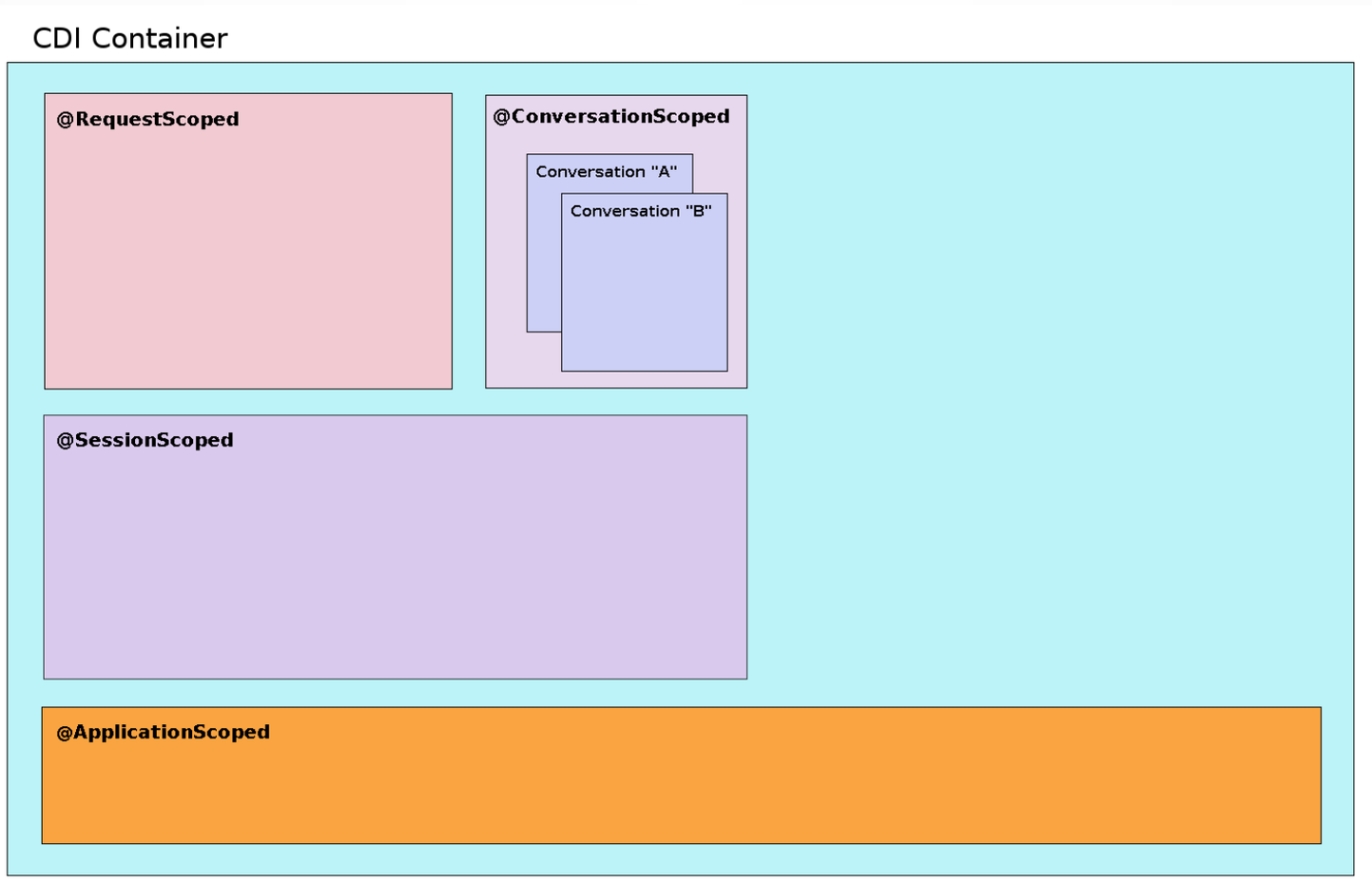
Scope's lifecycle is guided by business **rules,** may include aspects like **identity**



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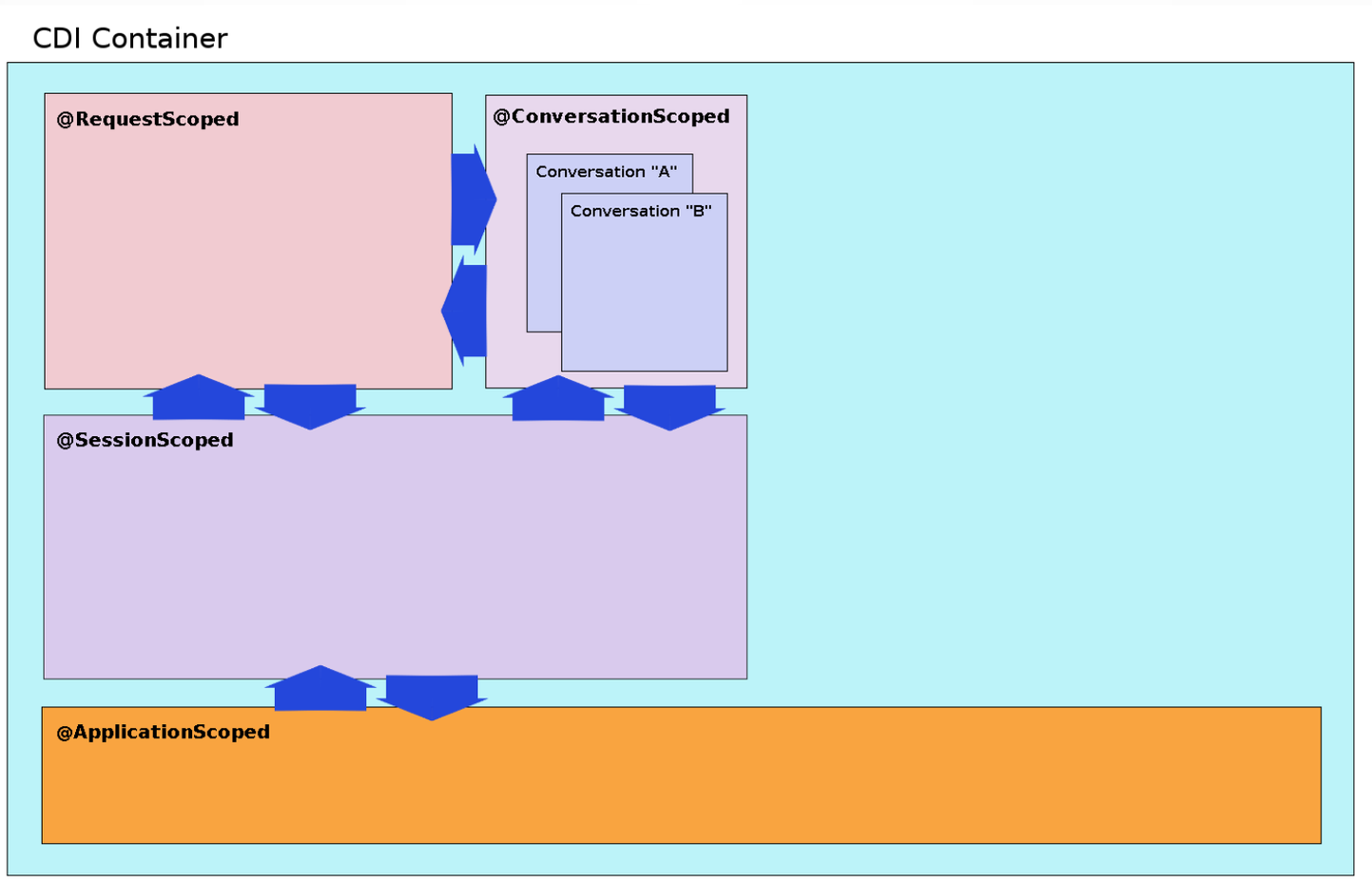
Interactions defined by which scopes are **Active** as well as business rules



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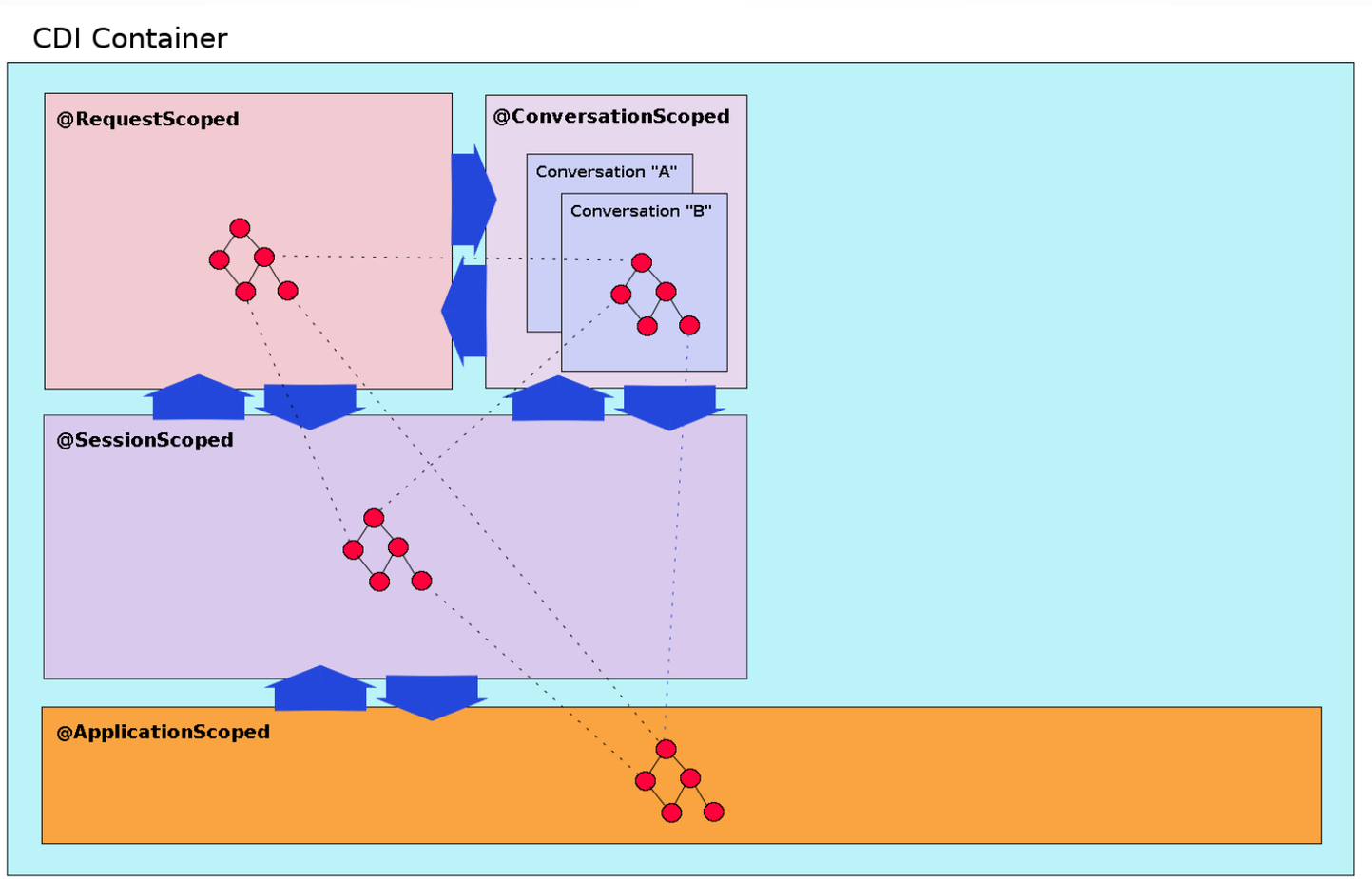
Injection across scopes requires visibility



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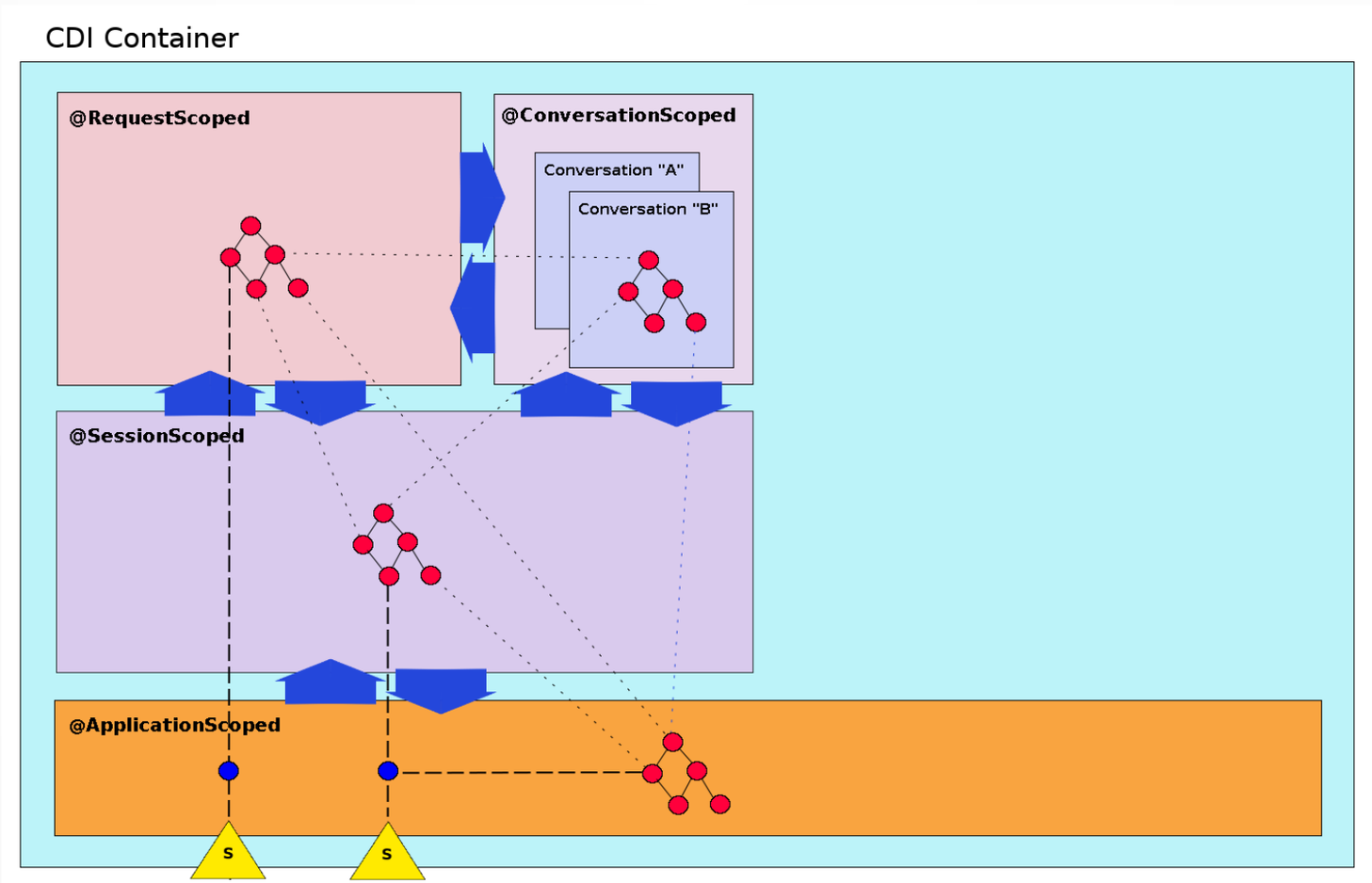
Services are available to traditional scopes via *synthetic reference bean*



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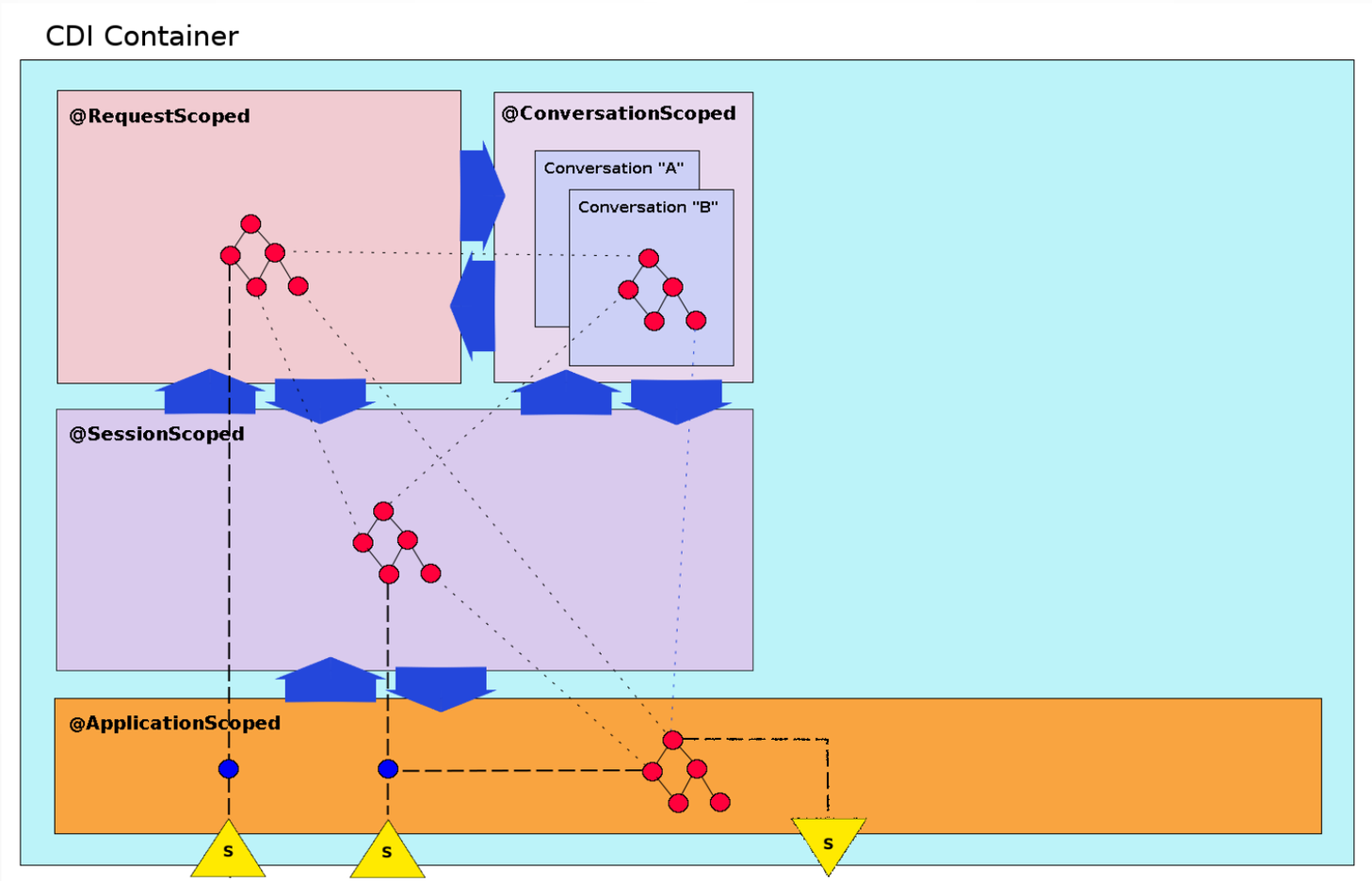
@ApplicationScoped beans can **provide services**



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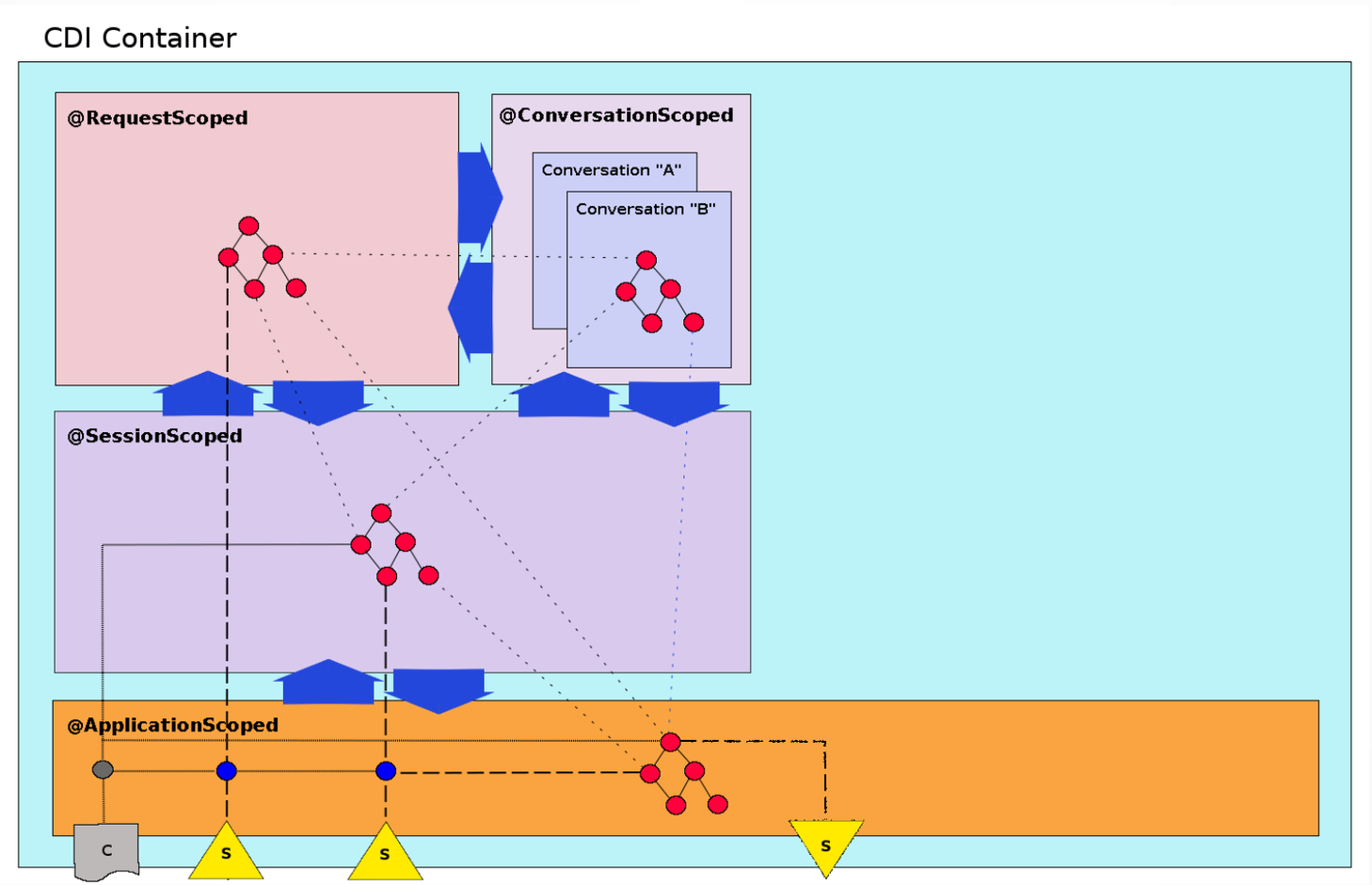
Configuration available for direct injection, to configure references and published services



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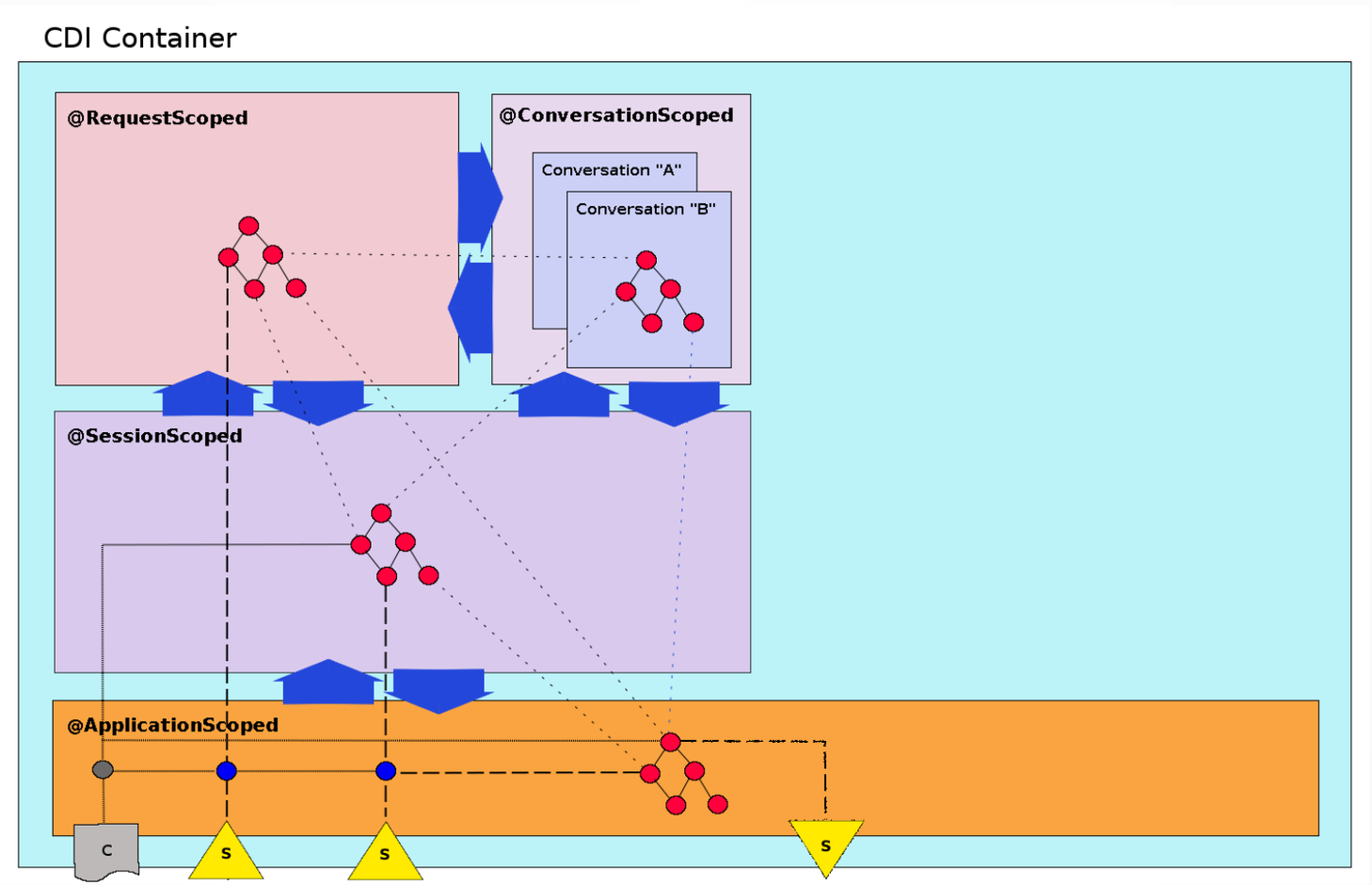
Dynamism of dependencies affect this whole region of the container as a single component: **Application Component**



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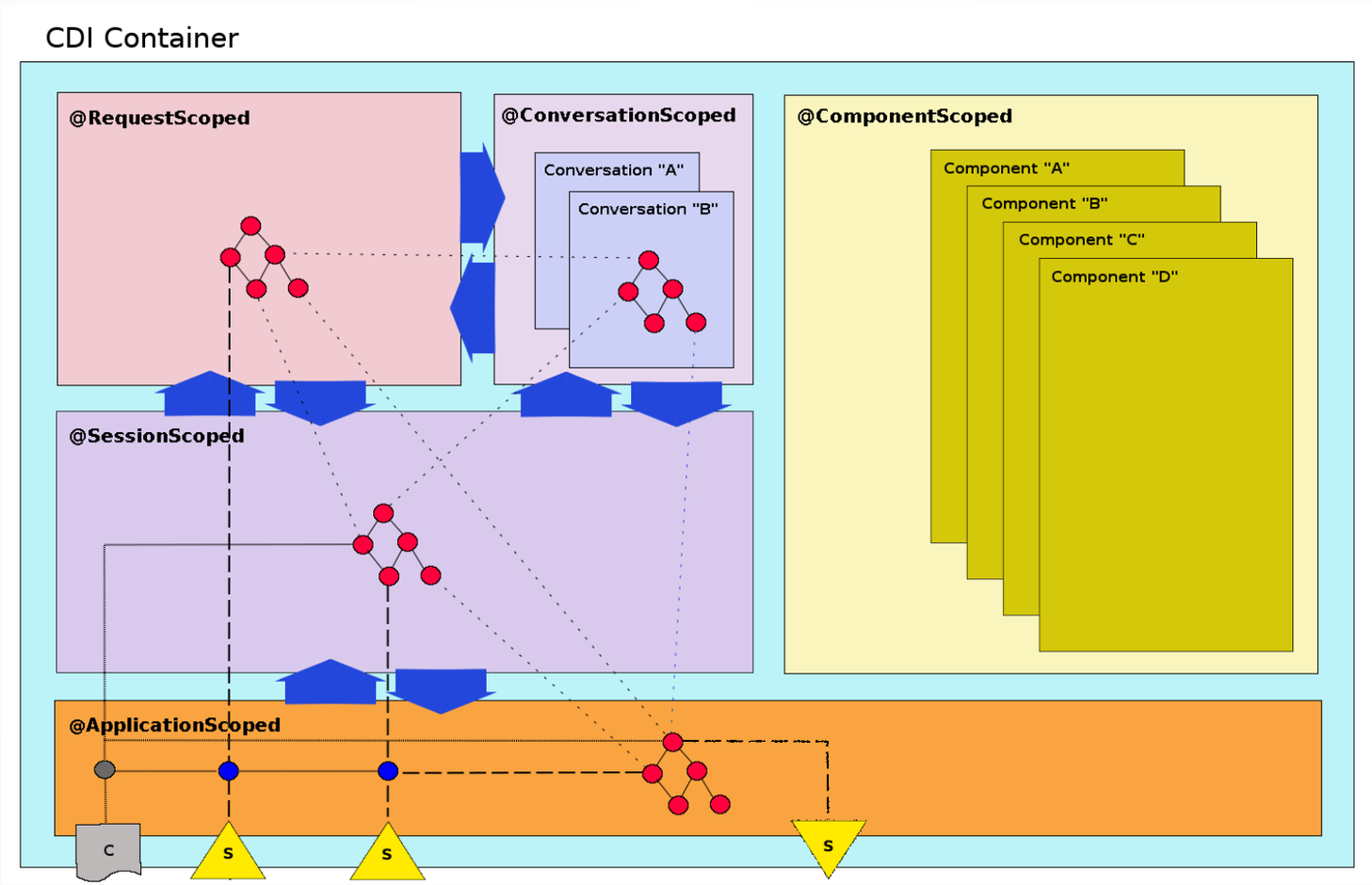
Pseudo **@ComponentScoped** encapsulates OSGi's business rules



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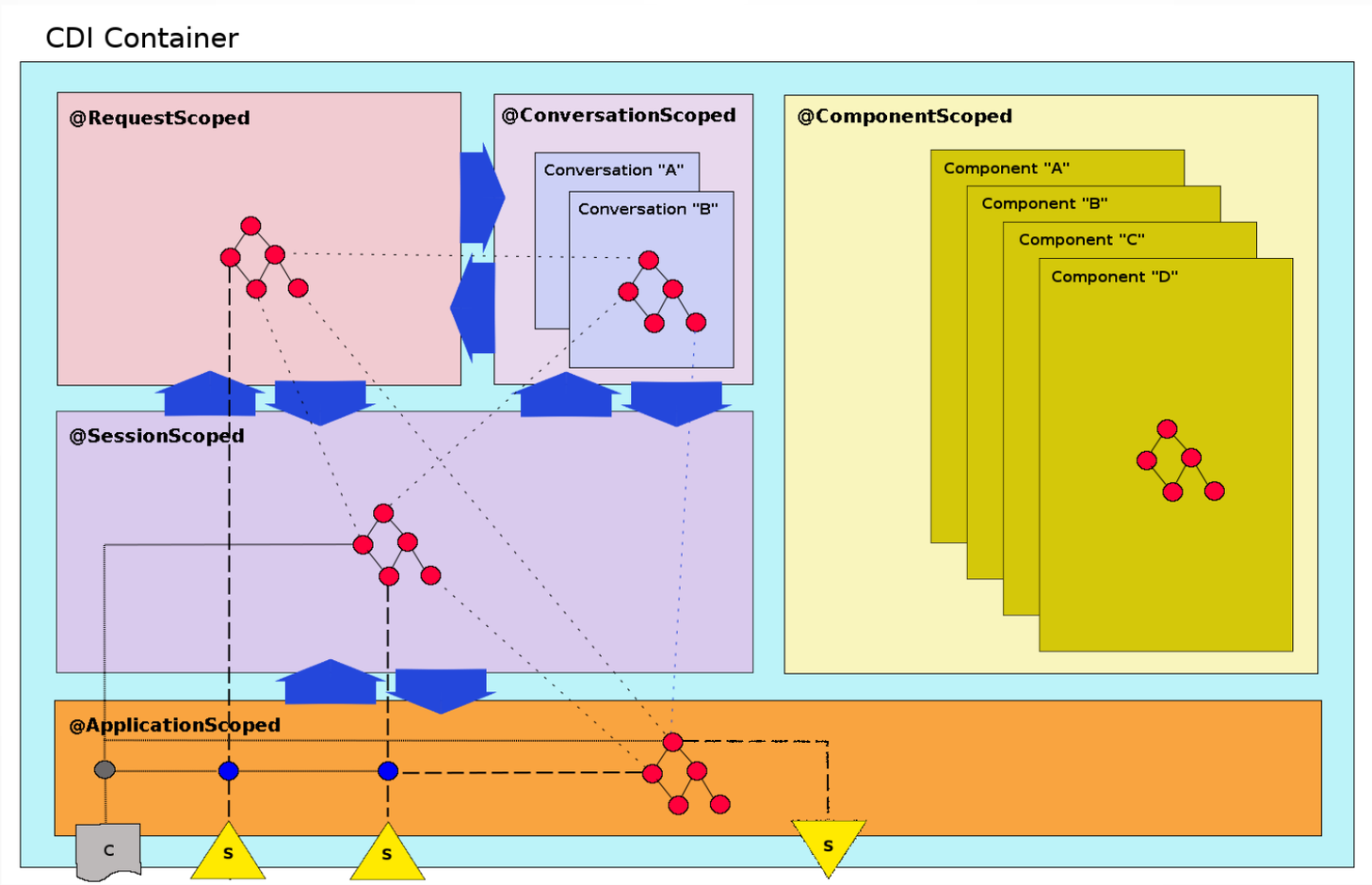
@ComponentScoped beans form a graph of contextual instances within a context rooted in the **@Component** bean, *identified by name*



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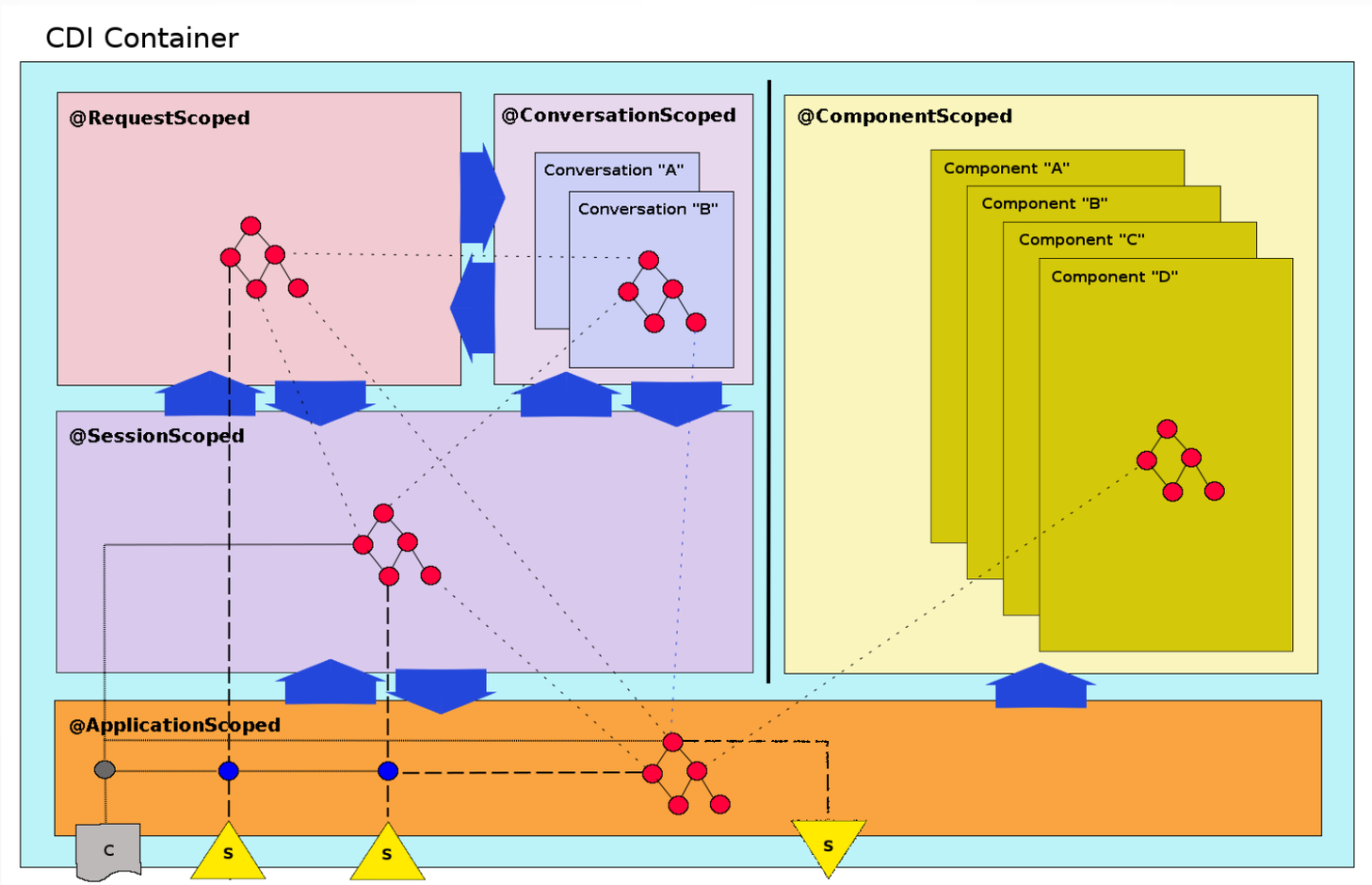
Controlled visibility allows OSGi's integration to fully support **Dynamic Component Lifecycle**



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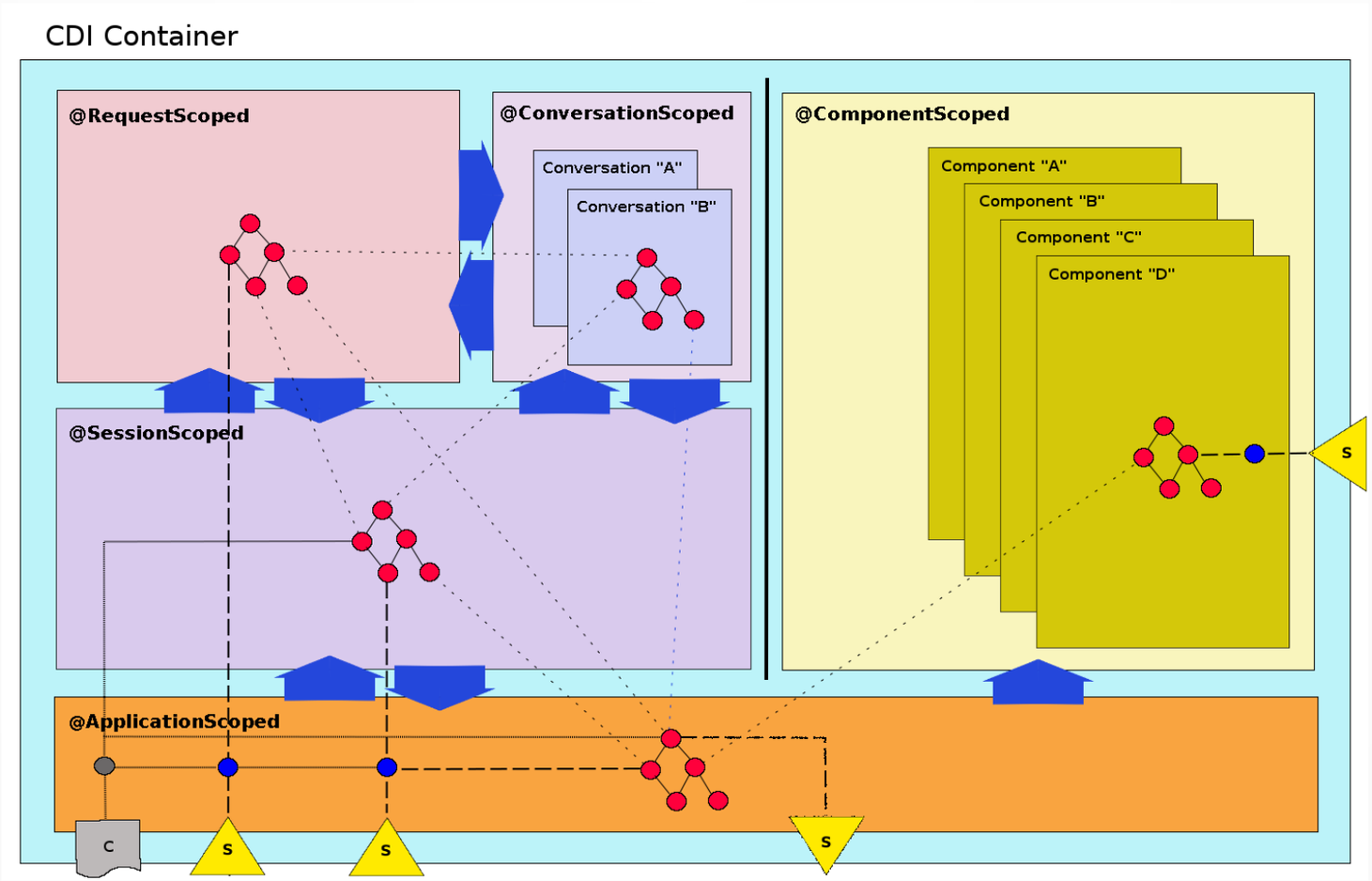
@Reference to a service provided via synthetic bean scoped to the *component context*



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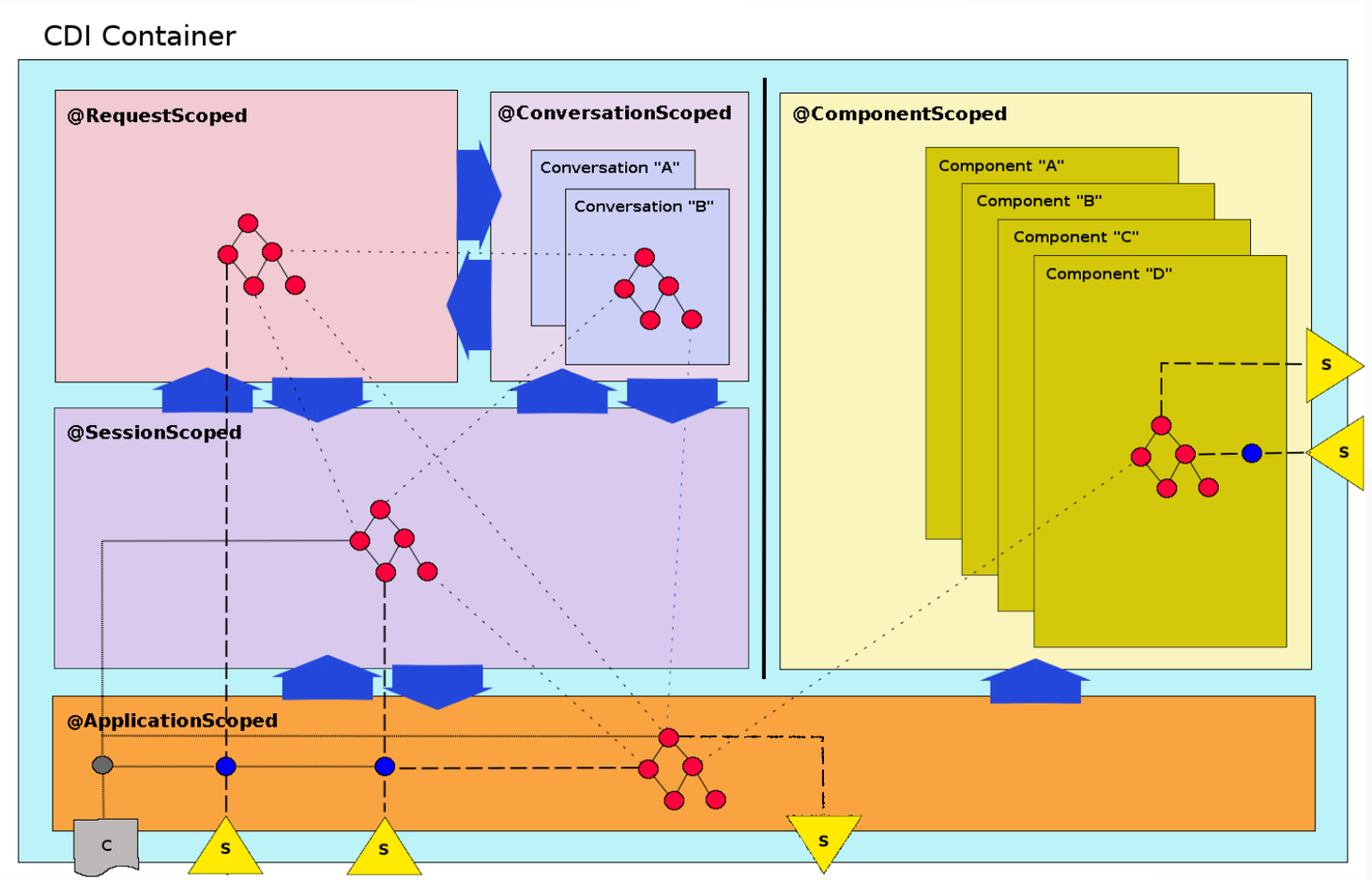
@Component can provide services



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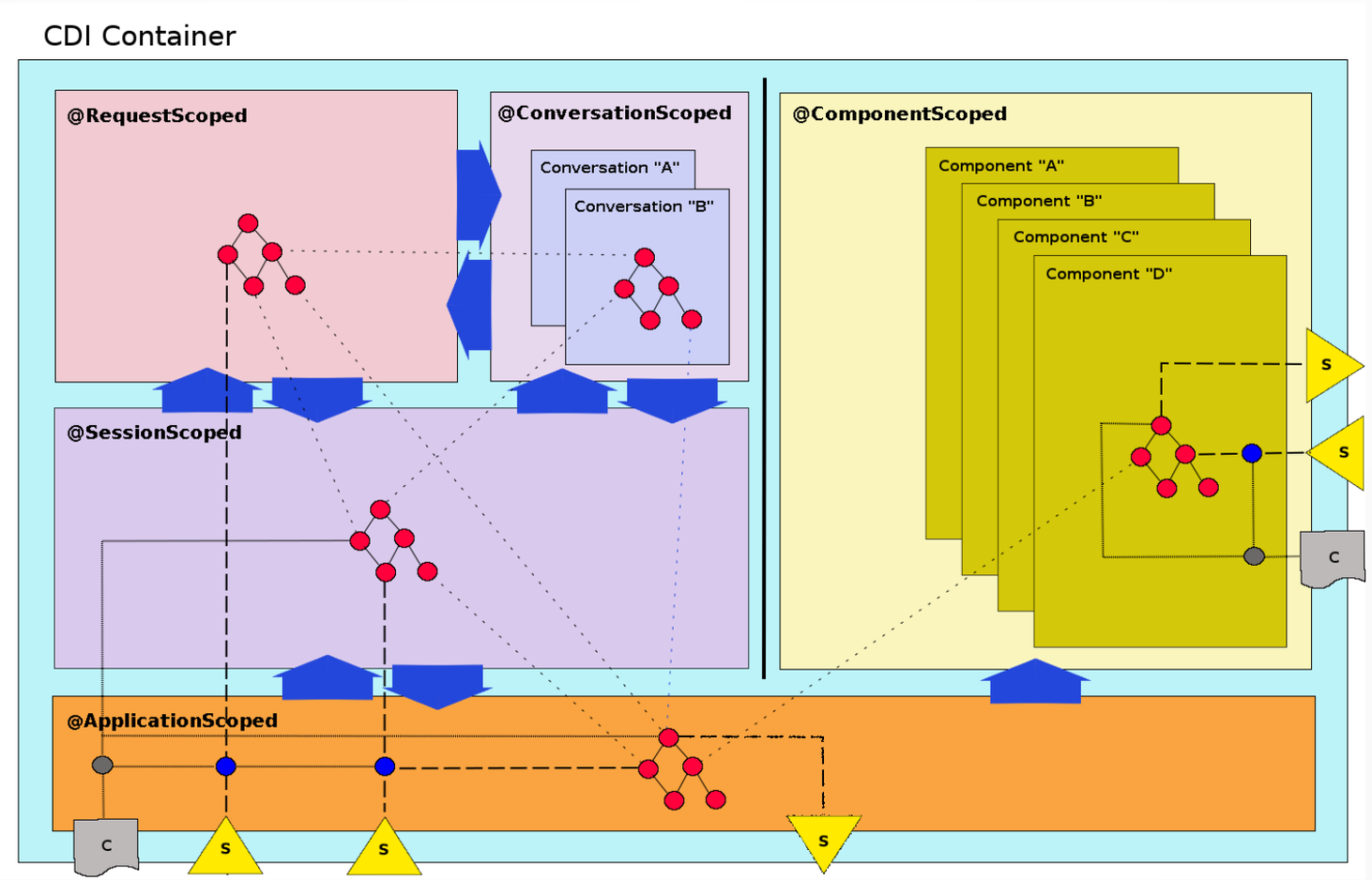

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That's **a lot of detail**, but...

What does it look like?

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@Reference a service in a normal bean

```
@ApplicationScoped
public class E4_a {

    @Inject
    @Named("application.function")
    @Reference(target = "(foo=bar)")
    Function<String, Integer> function;

}
```

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Provide a **@Service** from regular bean

```
@ApplicationScoped
@Service
public class E2 {

    @Inject
    E1 e1;

}
```

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@Configuration @Property @Service

```
@ApplicationScoped
@Service
@Property("foo=bar")
@Property("foo=fum")
@ServiceRanking(200)
public class E3 {

    @Inject
    @Configuration
    Config config;

}
```

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Producer method, **@SessionScoped** instance, prototype service

```
public class E6 {

    @Produces
    @SessionScoped
    public Function<String, Integer> getFunction(
        @Named("session.function")
        @Reference(scope = ReferenceScope.PROTOTYPE_REQUIRED)
        ComponentServiceObjects<Function<String, Integer>> function) {

        return function.getService();
    }

}
```

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Optional @Reference

```
@ApplicationScoped
public class E9_a {

    @Inject
    @Named("application.function")
    @Reference
    Optional<Function<String, Integer>> function;

}
```

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@Component with @Reference & multi-configuration interests

```
@Component
@PID("com.foo")
@PID
public class C4 {

    @Inject
    @Reference
    Function<String, Integer> function;

}
```

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Factory component providing a service

```
@Component
@PID
@FactoryPID("com.factory")
@Service
public class C5 {

    @Inject
    @Reference
    Function<String, Integer> function;

}
```

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