

JAVA means DURGA SOFT

Design Patterns

Enterprise Application Level Design Patterns

3. Business Delegate



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Business Delegate

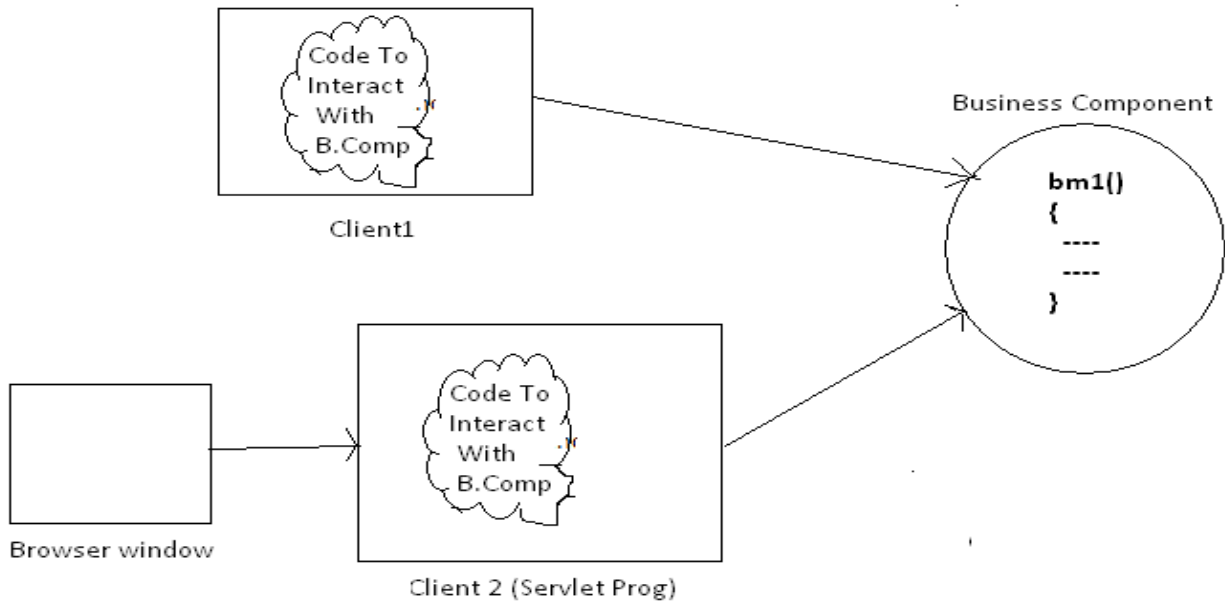
Problem:

Presentation-tier components interact directly with business services. This direct interaction exposes the underlying implementation details of the business service application program interface (API) to the presentation tier. As a result, the presentation-tier components are vulnerable to changes in the implementation of the business services: When the implementation of the business services change, the exposed implementation code in the presentation tier must change too.

Additionally, there may be a detrimental impact on network performance because presentation-tier components that use the business service API make too many invocations over the network. This happens when presentation-tier components use the underlying API directly, with no client-side caching mechanism or aggregating service.

In distributed applications, lookup and exception handling for remote business components can be complex. When applications use business components directly, application code must change to reflect changes in business component APIs.

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In other words, if client application is directly having code to interact with business component and to call the business methods of business component, then if we perform any modifications in business component then we have to disturb the code of the client application.

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Solution:

Use a **Business Delegate** to reduce coupling between presentation-tier clients and business services. The Business Delegate hides the underlying implementation details of the business service, such as lookup and access details of the EJB architecture.

The Business Delegate acts as a client-side business abstraction; it provides an abstraction for, and thus hides, the implementation of the business services. Using a Business Delegate reduces the coupling between presentation-tier clients and the system's business services. Depending on the implementation strategy, the Business Delegate may shield clients from possible volatility in the implementation of the business service API. Potentially, this reduces the number of changes that must be made to the presentation-tier client code when the business service API or its underlying implementation changes.

Def: An intermediate class decouples between presentation-tier clients and business services.

Advantages:

- ✓ Simplify the complicated relationship.
- ✓ Reduce coupling.
- ✓ Cache results and references to remote business services.
- ✓ Cut potentially costly round trips
- ✓ Hide the underlying implementation details of business service.

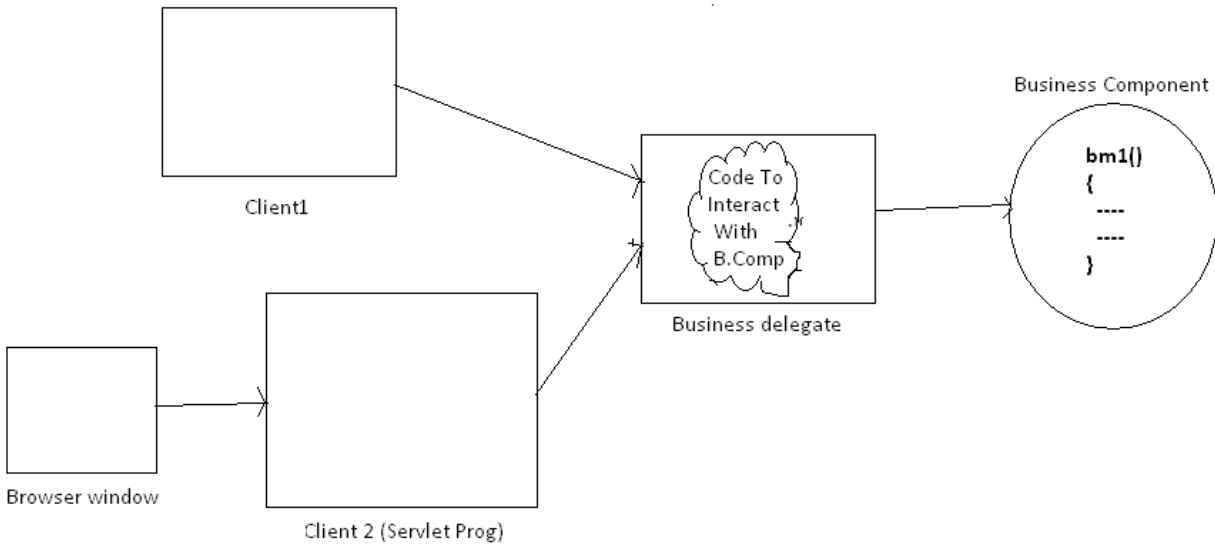
Business delegate handle all the code that access the business services in the selected vendor software. When the vendor or the vendor software changes only changes that need to be made is to the company's allocation software are changes to Business delegate, to access the business services. The presentation layer need not to be modified.



The business delegate object abstracts the business services API and provides standard interface to all the client components. It hides the underlying implementation detail such as lookup mechanism and the API of the business services. This reduces the coupling between the clients and the business services.

Another benefit is that the delegate may cache results and references to remote business services. Caching can significantly improve performance, because it limits unnecessary and potentially costly round trips over the network.

A Business Delegate uses a component called the Lookup Service. The Lookup Service is responsible for hiding the underlying implementation details of the business service lookup code. The Lookup Service may be written as part of the Delegate, but we recommend that it be implemented as a separate component, as outlined in the **Service Locator** pattern.

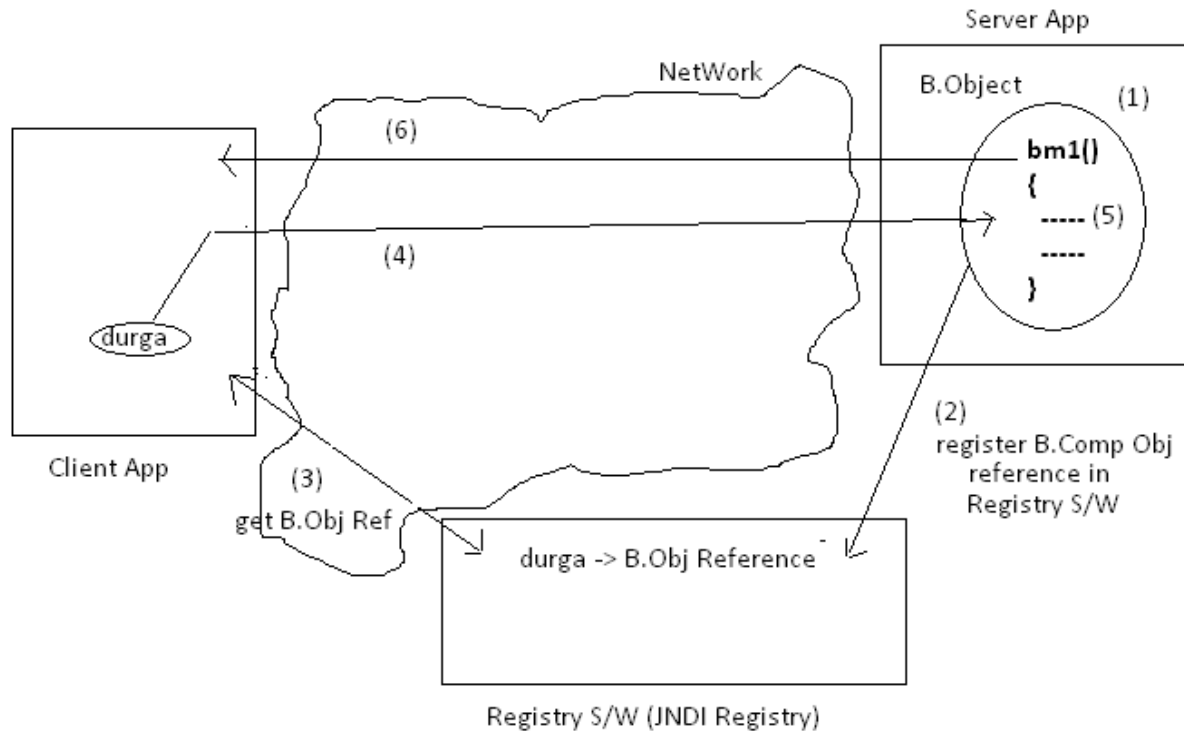


Note: The logic of the business delegate class can be used by multiple client applications having **reusability** to interact with business component.

- ❖ In struts 1.x, we can say **Action** class as business delegate class because it help the **ActionServlet** (controller) to interact with the model layer like EJB components, Spring applications by having code to interact with them.
- ❖ If multiple struts **Action** classes want to interact with separate model layer like EJB components, spring applications etc then we can take one separate user defined business delegate class.

Note: The distributed applications are **Location Transparency** because they take the support of Registry software's. Location transparency means the client application can dynamically recognizes the location changes of server application. Registry software's can manage objects & its references by having nick names or alias names.

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In distributed applications the client should always talk with JNDI (Java Naming and Directory Interface) registry to get business component reference and it uses that business component reference to call the business methods of business objects.

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