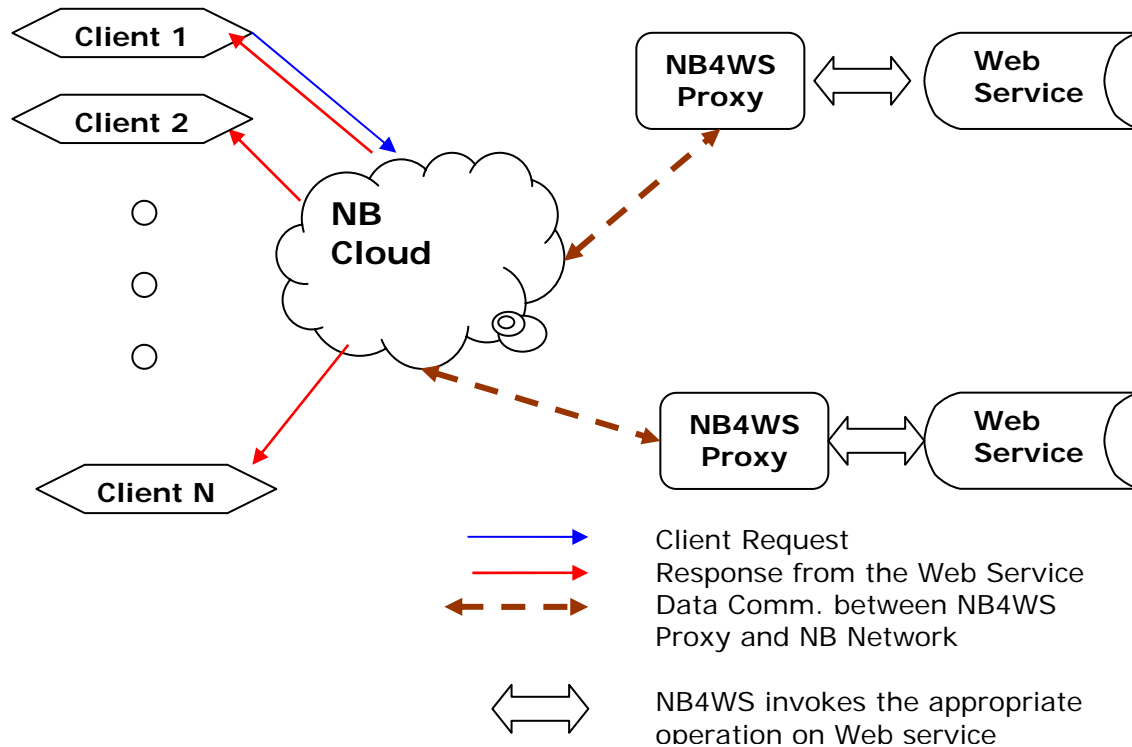


# Sharing Web-Services

## Overview:



NB4WS proxy is a bridge between the NaradaBrokering network and any arbitrary web-service. The job of the proxy is to convert the client requests to the appropriate SOAP calls and invoke the operations on the Web service. The results of the operation are routed back to the client via NaradaBrokering. Thus we can have multiple clients listening for response from the Web service resulting in a collaboration of peers using an existing Web Service.

## Implementation

Ideally the NB4WS proxy should be able to consume any Web service given the WSDL definition of the service. Currently it only allows invoking Web Services which define operations that take simple (base) type arguments and return a simple type result. For E.g.

```
int add (int num1, int num2);
```

We use Apache AXIS to do dynamic invocation of operations. **Support for complex type is future work.** We also employ a GUI where we present a list of available services. This

could be a predefined list but in general should be a list generated from querying a registry. The client chooses to select a particular service and then joins the service.

The architecture assumes that one or more NB4WS Proxies are available on the brokering network and would respond to the join request by creating a bridge between the NB network and the Web Service. The join response may depend on various factors such as load on the node and the network traffic, proximity to the service among others. NB4WS proxies are similar to web services but exist as NB services and may be discovered by publishing a discover request on a predefined NB topic.

The NB4WS proxy then creates two dynamic topics and returns the topic names to the client. We employ UUIDs to represent topic names. The client can then send commands on these topics and the proxy executes the operations defined by the commands.

Secondly, the client can also query an existing proxy for available bridges between the NB network and web-services. The client can then join an existing bridge by subscribing to an existing topic. Thus results of the operation may be shared among various clients.

This approach of using a proxy has the advantage that clients need not know of NaradaBrokering and no change is required to the exiting / growing infrastructure of Web Services.

## **Use Cases**

The idea of the proxy service stems from collaboration that can be achieved by using exiting Web Services, particularly visualization systems such as WEB-IS.

WEB-IS is a Web-based Interrogative System which allows remote, interactive visualization of large-scale 3-D data over the Internet, along with data analysis and data mining capabilities. Essentially, a user sends commands to the remote server and the remote server sends back a bitmap representing the modified visual representation of the data. At some point we expect to have a Web Service based front-end to the visualization system and would want a collaboration tool, such as NB4WS, to use the service.

## **Status**

We have developed a prototype of the NB4WS Proxy and a demo client GUI as a proof of concept. Currently the system works with simple types as input and output. We are investigating into using complex data type as input and output.