

Web Services

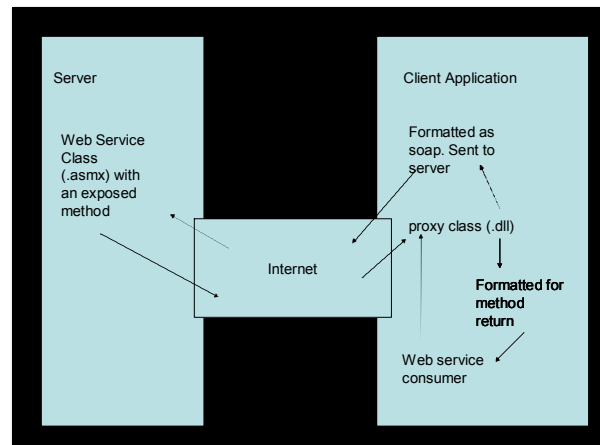
Introduction

Web Services

- No user interface
- Reachable through a public url
- Independent of OS or programming language
- Client and service just have to support http, xml, and soap

Web Services

- Allow an object on a server to expose program logic (**web methods**) to clients over internet
- Think of it as a method call made over the internet
- Client actually works with a proxy that resides on client's machine



Web Services

- Web Service files end with .asmx
- In VS, actual code placed in a .cs file kept in App_Code folder under folder containing .asmx file
- When compiled, becomes a dll
- <http://www.myserver.net/MyService.asmx>

The Proxy

- Is a substitute (stand in) for actual code you want to call
- Responsible for managing the call across the internet
- So must create proxy and register it with client – provides a list of exposed web methods and signatures
- Consumer may be desk top, web page, another web service

SOAP

- An xml based protocol for invoking methods on a remote server
- It is an encoding mechanism that combines with a transport protocol (html) to link nodes in a distributed environment

```
POST /TestService/Service1.asmx HTTP/1.1 ←Path
Host: localhost ←Host
Content-Type: text/xml; charset=utf-8
Content-Length: length
SOAPAction: http://tempuri.org/Multiply ←Method to execute

<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <Multiply xmlns="http://tempuri.org/">
      <a>int</a>
      <b>int</b>
    </Multiply>
  </soap:Body>
</soap:Envelope>
```

```
HTTP/1.1 200 OK
Content-Type: text/xml; charset=utf-8
Content-Length: length

<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <MultiplyResponse xmlns="http://tempuri.org/">
      <MultiplyResult>int</MultiplyResult> MethodNameResult
    </MultiplyResponse>
  </soap:Body>
</soap:Envelope>
```

SOAP

- Security, object activation, state management – not built into SOAP – must be provided by higher level mechanisms
- Knows nothing about whether the object whose method it wants to call has been activated

WSDL

- Web Service Description Language
- A specification that describes the structure and features of web services
- Clients examine these documents to learn about exposed methods, signatures, return values
- UDDI