

Sharing Data Through Web Services



Web Services

- What are they
- Benefits
- Connecting Applications
- Creating a Web Service
- Sample Code



What are Web Services

- Definitions
 - describes a standardized way of integrating Web-based applications using the XML, SOAP, WSDL and UDDI open standards over an Internet protocol backbone
 - An approach that helps a business or organization to connect to its clients, partners and employees
 - A two-way dialog between applications that passes data back and forth



What are Web Services

- Powered by four core technologies:
 - XML – eXtensible Markup Language
 - WSDL – Web Service Description Language
 - SOAP – Simple Object Access Protocol
 - UDDI – Universal Description Discovery and Integration



XML

(eXtensible Markup Language)

- XML is a specification that defines a meta-language for describing data
- Text based tags describe data
- Hierarchical structures
- Application independent
- Easily readable



WSDL

(Web Service Description Language)

- XML-based format for describing web services
- Provides clients with the information they need to access the web service
 - Tells where the service can be accessed
 - What operations the service can perform
 - What protocols the service supports
 - What format is needed to send to the service



SOAP

(Simple Object Access Protocol)

- XML-based protocol for exchanging data over HTTP
- Standard based method for sending XML messages between applications
- Messages can be sent between services and/or clients regardless of platform and programming language



UDDI

(Universal Description Discovery and Integration)

- Specification for creating an XML-based registry that lists information about web services
- Uniform way of listing and discovering services offered by organizations
- Registering a web service in a UDDI is optional
- Registries can be public or private



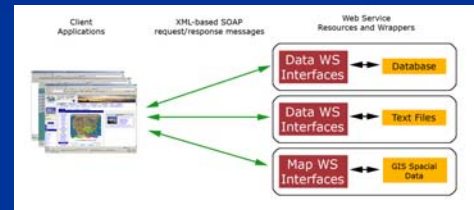
Benefits of Web Services

- Opens the door to new business opportunities by making it easier to connect with partners
- Save time and money by cutting development time
- Increase data sharing by enabling organizations to easily make their own web services available to others
- Application and data integration
- Platform independent



Connecting Applications

- Communication through SOAP messages
- Platform and programming language independent



Creating a Web Service

- What service am I trying to provide to my users?
- What technology will I use to create my web service? (VB.NET, C#, C++, J2EE, etc.)
- What functions will my service need to perform?
- Who will I expose my services to?



ASP.NET Sample Code

```
Imports System.Web.Services

<System.Web.Services.WebService(amespace:=""http://tempuri.com/Sample"> _
Public Class Sample
    Inherits System.Web.Services.WebService

    Web Services Designer Generated Code

    ' WEB SERVICE EXAMPLE
    ' The HelloWorld() example service returns the string Hello World.
    '
    ' You can add database connections and retrieve specific data. Just
    ' modify the function and set the return value to the same data type
    ' as the function declaration.

    <WebMethod()> _
    Public Function HelloWorld() As String
        Return "Hello World"
    End Function
End Class
```



Sample SOAP Messages

```
SOAP
The following is a sample SOAP request and response. The placeholders shown need to be replaced with actual values.

Request:
POST /webservice/conservation/soap.svc HTTP/1.1
Host: localhost
Content-Type: text/xml; charset=utf-8
Content-Length: length
SOAPAction: http://www.conservation.org/Webservices/conservation/Soap.svc/GetListByID

<?xml version='1.0' encoding='utf-8'?>
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope" xmlns:ns1="http://www.w3.org/2003/05/soap-envelope" xmlns:ns2="http://www.conservation.org/Webservices/conservation/">
  <soap:Header />
  <soap:Body />
</soap:Envelope>

Response:
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:soap="http://www.w3.org/2003/05/soap-envelope" xmlns:ns1="http://www.w3.org/2003/05/soap-envelope" xmlns:ns2="http://www.conservation.org/Webservices/conservation/">
  <soap:Header />
  <soap:Body />
</soap:Envelope>
```



Conclusion

- Web services are a simple way to easily share data with other organizations
- Easy to maintain and update
- They are platform and programming language independent.
- Provide many benefits to an organization

