An Overview of Web Services

presented by:

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Who Am I?

- 10 years of Internet development experience
- Worked with Web Services since 2001
- Designed and developed a healthcare application that used Web Services to bridge Windows/COM with Linux/Java
- Maintain and teach Web Services Using Java course for OCI.

Defining Web Services

- It's hard to find a universal definition
- Generally:
    - Used to invoke services on a remote machine
    - XML is the data representation
    - HTTP is the network transport
- But:
    - It can be local (client and server on same host)
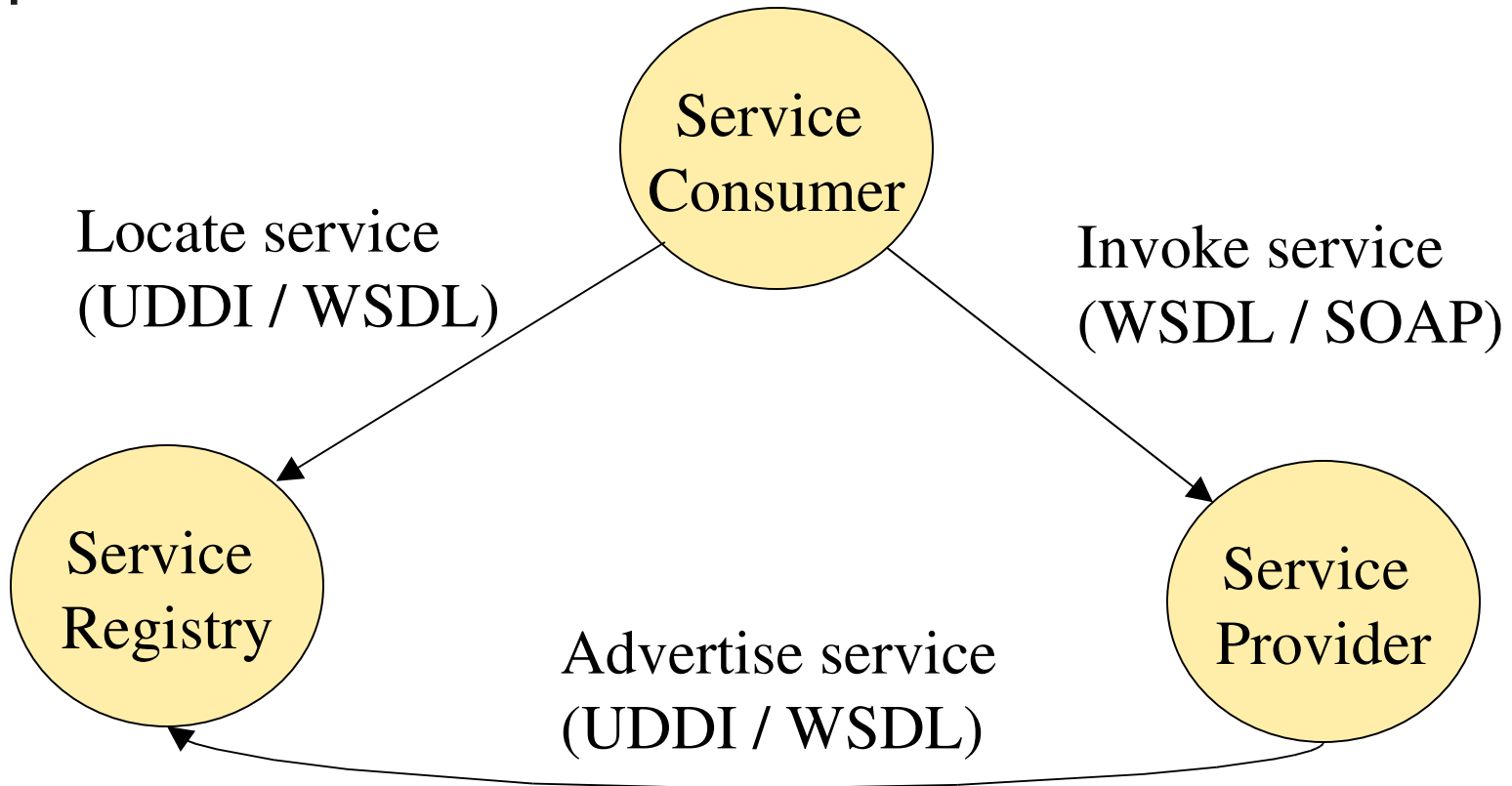   - It can use other transport protocols such as SMTP

A Collection of Specifications

- Web Services is really a collection of specifications that address:
  - The description of the service (WSDL)
  - How the message is formatted (SOAP)
  - How services are located (UDDI)
- There are also specifications for security, workflow and other concerns.

The Big Picture

Service Consumer

Locate service
(UDDI / WSDL)

Invoke service
(WSDL / SOAP)

Service Registry

Service Provider

Advertise service
(UDDI / WSDL)

Web Service Example

- Suppose you work for Ford Motors
- You want efficiency in your factory
  - You want parts when they're needed
  - You don't want to run out of stock
- You write a Web service for vendors
  - They can monitor stock on hand
  - They can ship items as needed
- Wal-Mart does this (though I don't know what technology they use).

Benefits of Web Services

- Uses XML, so it is human-readable
- Implementations exist for many languages/platforms
- Uses simple protocols
- Easy to pass through firewalls
- Dynamic code generation

Criticisms of Web Services

- Messages are text-based (verbose)
- Interoperability can be a problem
- Many competing specifications
- Rapidly evolving (hard to keep up)
- Performance concerns

Other Distributed Protocols

- CORBA
  - Many languages/platforms
  - Complex
- COM/DCOM
  - Several languages/one platform
  - Limited lifespan
- RMI
  - One language/many platforms
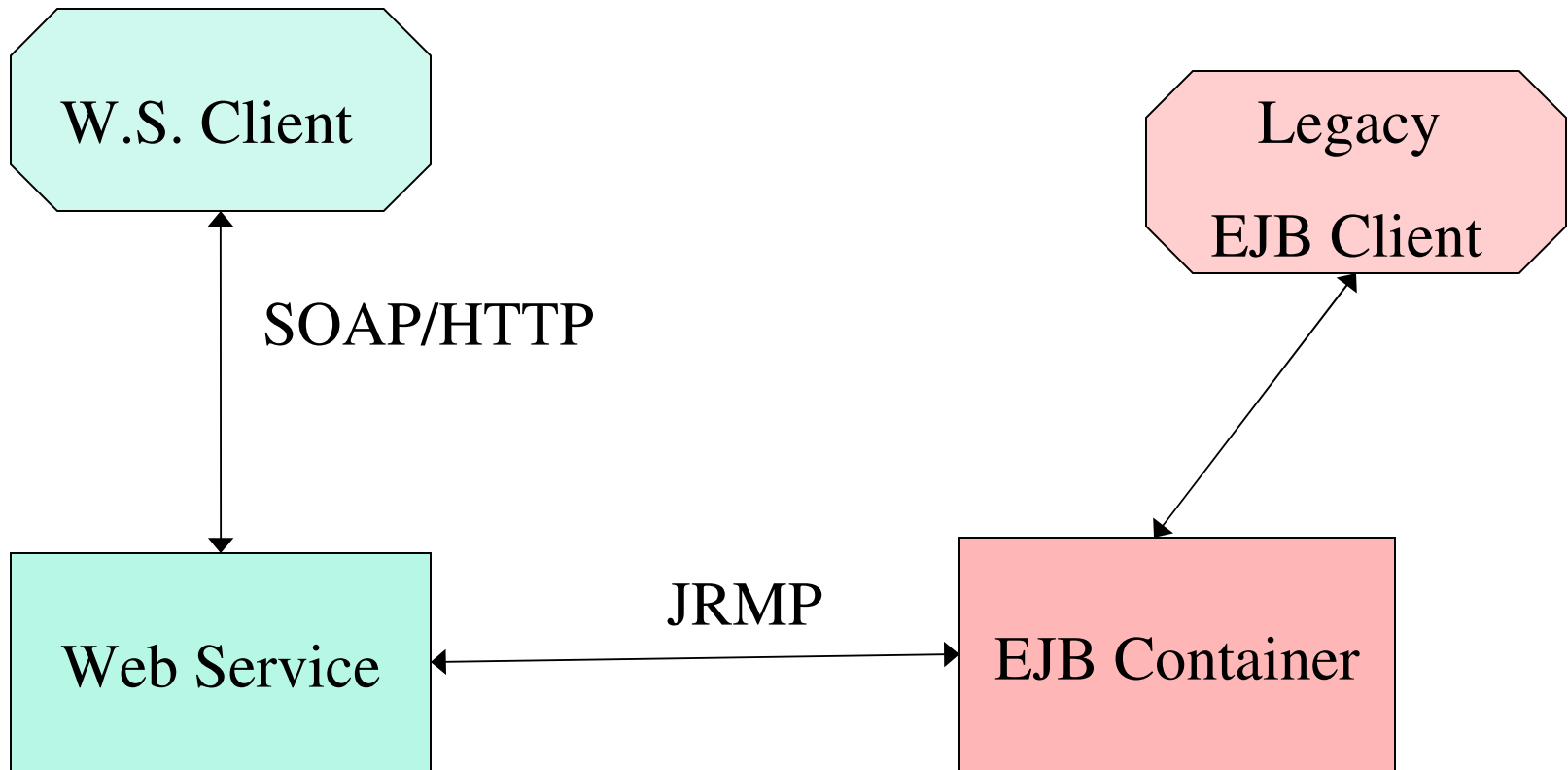 - Interoperability is a problem

The Silver Bullet?

- Probably not
- Performance is not a strong point of SOAP, but it's good enough for many applications.
- Message size can be addressed through compression.
- Interoperability is improved through the WS-I Basic Profile

Replace CORBA/EJB/DCOM?

- In some cases you could replace other protocols with Web Services

- However, a you can also wrap a CORBA, EJB or DCOM service with Web Services

- The Web Service just makes a client call to the "legacy" service

- This is a popular approach to systems integration.

EJB Integration Diagram

Web Services Toolkits

- Java
  - Apache AXIS
  - WebMethods GLUE
  - Sun JWSDP
- C++
  - Microsoft .NET
  - Systinet WASP
- Implementations exist for Perl, Python, Ruby and many others

Where to find out more…

- OCI Web Services Using Java Class
- World Wide Web Consortium
  - http://www.w3.org/
- Sun Microsystems Web Site
  - http://java.sun.com/webservices/
- Microsoft Web Site
  - http://msdn.microsoft.com/webservices/
- Web Services Interoperability Org.
  - http://www.ws-i.org/

Thanks for having me…

- Questions?