



UDDI

*Universal Discovery,
Description and Integration*

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What is UDDI?

- Universal Description, Discovery and Integration
 - *“A common set of SOAP APIs that enable the implementation of a service broker”*
 - *“The power of UDDI is the power of ad-hoc discovery of new business partners and processes...UDDI lets companies do three things:*
 - *Discover each other;*
 - *Define how they can interact via the Internet; and*
 - *Share all this information via an open, global registry.”*
 - *“...a specification for distributed web-based information registries of Web Services. UDDI is also a publicly accessible set of implementations of the specification that allow businesses to register information about the Web Services they offer so that other businesses can find them.*

Web Services are the next step in the evolution of the World Wide Web (WWW) and allow programmable elements to be placed on web sites where other can access distributed behaviors. UDDI registries are used to promote and discover these distributed Web Services.”

Interop Stack	Universal Service Interop Protocols (these layers are not defined yet)
	Universal Discovery, Discription, Integration (UDDI)
	Simple Open Access Protocol (SOAP)
	Extended Markup Language (XML)
	Common Internet Protocols (HTTP, TCP/IP)

- Over 220 companies are members of the UDDI community:
 - IBM, Microsoft and Ariba
 - Main originators
 - Also behind SOAP/WebServices
 - So no surprise
 - HP, Boeing, British Telecommunications, Accenture, Cargill, Clarus, CommerceOne, Compaq, Dell, I2, ICG, Rational, Sabre, SAP, Sun, Tibco, WebMethods
 - All see it as a major step forward
 - Many of the companies involved in the project hope to build more specific directories on top of UDDI
 - Microsoft, IBM, and HP will maintain the servers that collect the registry information for about the next year, at which time the project will be turned over to an as-yet unnamed standards body
 - Microsoft has enabled RealNames Keywords as a UDDI identifier for companies/products/services throughout its UDDI registry site
 - *“a flower shop in Australia might take advantage of UDDI by discovering new tulip suppliers in Holland.”*

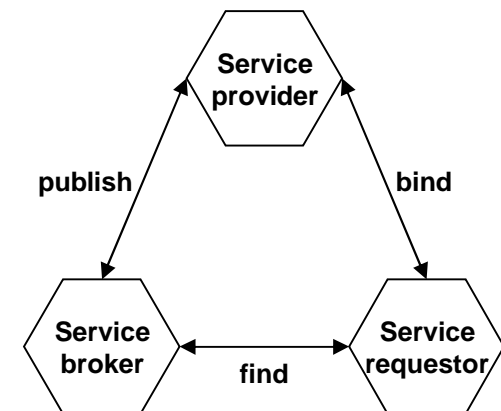
- *“The teams working on the UDDI are planning on extending the functionality...to address more than just technical discovery. Future features will address the ability to locate products and services, define Web Service implementation conventions and provide the ability to manage hierarchical business organizations, communities and trade groups. The driving goal is to provide a public specification for Web Service interoperability, whether the focus is marketplace-to-marketplace or business-to-business.”*
- *“The true power of UDDI will come when development tools automatically create the WDSL files to describe newly-created apps and delivers them seamlessly to the public UDDI databases.”*
 - InternetWeek June 7, 2001
- *‘UDDI is a “next layer” in an emerging stack enabling rich Web Services. UDDI uses standards-based technologies such as TCP/IP, HTTP, XML and SOAP to create a uniform service description format and service discovery protocol.’*
 - UDDI.org Technical white paper

- Problems the UDDI specification can help to solve:
 - Making it possible for organizations to quickly discover the right business from millions currently online
 - Defining how to enable commerce to be conducted once the preferred business is discovered
- Immediate benefits include:
 - Reaching new customers
 - Expanding offerings
 - Extending market reach
 - Increasing access to current customers
 - Solving customer-driven need to remove barriers to allow for rapid participation in the global Internet economy
 - Describing their services and business processes programmatically in a single, open, and secure environment
 - Using a set of protocols that enable businesses to invoke services over the Internet to provide additional value to their preferred customers.

Who Will Use UDDI?

- Businesses of all sizes
- A sampling:
 - Large Organizations
 - Global 2000, Fortune 500, large manufacturers with hundreds of suppliers, national financial institutions, healthcare providers, etc.
 - Small / medium enterprises
 - Regional distributor, services / consulting firm, local retailer of goods and services, small sporting goods shop, etc.
 - Independent Software Vendors (ISVs) and integrators
 - ERP vendors, networking companies, Big-5 consulting firms, local software houses, etc.
 - Marketplace creators
 - Net Market Makers, horizontal Marketplaces, Corporate Exchanges, etc.
 - Industry and standards organizations
 - IT standards bodies and industry vertical organizations and associations.

- Consists of:
 - An XML schema for SOAP messages
 - Defines three core types of information that provide the kinds of information that a technical person would need to know in order to use a partner's WebServices, plus metadata:
 - businessEntity element
 - » businessEntity structures contain all information about advertised WebServices
 - » includes support for "yellow pages" interaction
 - businessService and bindingTemplate elements
 - » Service and binding information supports "green pages" service for working with live data
 - (Meta)Information about services
 - » Held in "tModels", this information is metadata about a service, including its name, publishing organization, and URL pointers to the actual specifications themselves
 - A description of the UDDI API specification
 - Divided into two logical parts:
 - Inquiry API
 - » *find_xx* and *get_xx* calls
 - Publishers' API
 - » *save_xx* and *delete_xx* functions



Simple Java Find Example

```
import com.ibm.uddi.*;
import com.ibm.uddi.datatype.business.*;
import com.ibm.uddi.response.*;
import com.ibm.uddi.client.*;
import org.w3c.dom.Element;
import java.util.Vector;
import java.util.Properties;

public class FindBusinessExample {
    public static void main (String args[]) {
        System.setProperty("java.protocol.handler.pkgs", "com.sun.net.ssl.internal.www.protocol");
        java.security.Security.addProvider(new com.sun.net.ssl.internal.ssl.Provider());
        new FindBusinessExample().run();
        System.exit(0);
    }
    public void run() {
        // Construct a UDDIProxy object. Enables SSL support
        UDDIProxy proxy = new UDDIProxy();
        try {
            proxy.setInquiryURL("http://www-3.ibm.com/services/uddi/testregistry/inquiryapi");
            // Find businesses who's name starts with S
            BusinessList bl = proxy.find_business("S", null, 0);
            Vector businessInfoVector = bl.getBusinessInfos().getBusinessInfoVector();
            for (int i = 0; i < businessInfoVector.size(); i++) {
                BusinessInfo businessInfo = (BusinessInfo)businessInfoVector.elementAt(i);
                System.out.println(businessInfo.getNameString());
            }
            // Handle possible errors
        } catch (UDDIException e) {
            DispositionReport dr = e.getDispositionReport();
            if (dr!=null) {
                System.err.println("UDDIException faultCode:" + e.getFaultCode() + "\n operator:" + dr.getOperator() +
                    "\n generic:" + dr.getGeneric() + "\n errno:" + dr.getErrno() + "\n errCode:" + dr.getErrCode() +
                    "\n errInfoText:" + dr.getErrInfoText());
            }
            e.printStackTrace(System.err);
            // Catch any other exception that may occur
        } catch (Exception e) {
            e.printStackTrace(System.err);
        }
    }
}
```


- Search for businesses named "Acme, Inc."

```
'// Declare the objects from the UDDI SDK
Dim req As New UDDIEnv.RequestManager ' the request manager
Dim env As New UDDIEnv.Envelope      ' for our request
Dim respEnv As UDDIEnv.Envelope      ' for our response
Dim inqMsg As New UDDI10.find_business ' Request Doc Object
Dim inqRsp As New UDDI10.businessList ' Response Doc Object
Dim result As UDDI10.businessInfo    ' iterator

'// Set up the request document with the request envelope
Set env.Plugin = inqMsg

'// Set our search criteria
inqMsg.Name = "Acme Inc."

'// Send the request, and get back the response envelope
Set respEnv = req.UDDIRequest(env)

'// Add the document object to the envelope to read the response
Set respEnv.Plugin = inqRsp

'// Loop through the results
For Each result In inqRsp.businessInfos
    Debug.Print result.Name
Next
```

- XML-based interactions

```
<?xml version="1.0" encoding="UTF-8"?>
<Envelope xmlns="http://schemas.xmlsoap.org/soap/envelope/">
  <Body>
    <find_business xmlns="urn:uddi-org:api" generic="1.0" maxRows="100">
      <name>Acme Inc.</name>
    </find_business>
  </Body>
</Envelope>
```



```
<?xml version="1.0" encoding="utf-8"?>
<Envelope xmlns="http://schemas.xmlsoap.org/soap/envelope/">
  <Body>
    <businessList generic="1.0" operator="Microsoft Corporation" truncated="false"
      xmlns="urn:uddi-org:api">
      <businessInfos>
        <businessInfo businessKey="01A3C678-C135-40A1-BB1F-F5B9351BA39C">
          <name>Acme Inc.</name>
          <description xml:lang="en">Industrial Supplier</description>
          <serviceInfos>
            <serviceInfo serviceKey="1EE822F6-EC50-448C-9447-300352F4F1C0">
              <name>Catalog</name>
            </serviceInfo>
            <serviceInfo serviceKey="E74C1108-6CF9-419A-85B3-38CADD61713">
              <name>Purchasing</name>
            </serviceInfo>
          </serviceInfos>
        </businessInfo>
      </businessInfos>
    </businessList>
  </Body>
</Envelope>
```



VB Publish Example

```
Dim be As New save_business
Dim bd As New businessDetail
Dim env As New UDDIEnv.Envelope
Dim ret As UDDIEnv.Envelope
Dim req as new UDDIEnv.requestManager

Req.authenticate "MyUserID", "MyPassword"

Set env.Plugin = be
With be.AddbusinessEntity
  .Name = "Contoso Manufacturing"
  .Adddescription = "We make components for business"
  With .businessServices.AddbusinessService
    .Name = "Buy components"
    .Adddescription = "Bindings for buying our components"
    With .bindingTemplates.AddbindingTemplate
      .accessPoint = "http://www.contoso.com/buy.asp"
      .addescription = "BASDA invoices over HTTP post"
      With .tModelInstanceDetails.AddtModelInstanceInfo
        .tModelKey = GUID_BASDA_INVOICE
      End With
    End With
  End With
End With
Set ret = req.UDDIRequest(env)
If req.UDDIErrno = 0 Then
  Set ret.Plugin = bd
  Debug.print bd.businessEntity.businessKey
End If
```

- Fairly vague statements are made...the gist is:
 - Key operating principal: only allow authorized individuals to publish or change information
 - Changes and deletions are only allowed if a change request (via API call) is made by the same individual registered as being the one that originally created the effected information
 - Each instance of a UDDI business registry, called an Operator Site, is allowed to define its own end user authentication mechanism
 - All UDDI Operator Sites are required to meet certain minimum criteria that provide similar security protections

Issue: Registry

- The UDDI registry will contain three types of information:
 - *White Pages*: business names, descriptions of the type of business, what kind of services a vendor uses and what protocols they support
 - *Yellow Pages*: adopt current government codes for tagging types of business operations as well as various naming protocols
 - Also arranges companies by geographical location
 - *Green Pages*: provide dynamic information on what types of documents a company can receive, the entry points for transactions, and the technology they currently interact with and support
- Companies involved in the project hope to build more specific directories on top of UDDI
 - An open, common starting point with consistent identifiers for companies' business practices
 - vendors can offer other services on top of the directory which could allow them to generate additional revenue



- *“What will restrict the success of a directory like UDDI is the same thing that handicapped marketplaces: the real needs of enterprises. It's more about working well with partners you know, rather than finding new ones.”*
- *“UDDI's Problem: Technology Cannot Replace Relationships”*
 - *KEN VOLLMER , InternetWeek*

References

- Microsoft's UDDI site
 - <http://ddi.microsoft.com>
- Online 'Yellow Pages' goes live with a bang
 - <http://www.infoworld.com/articles/hn/xml/01/05/02/010502hnuddi.xml>
- UDDI Technical White Paper
 - uddi.org
- The True Nature of Web Services
 - <http://www.techmetrix.com/trendmarkers/tmk0501/tmk0501-2.php3>
- UDDI's Problem: Technology Cannot Replace Relationships
 - <http://www.internetweek.com/columns01/beat062001.htm>