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UDDI

Unit-4

what is UDDI ?

- UDDI is an XML-based standard for describing, publishing, and finding Web services.
- UDDI is a specification for a distributed registry of Web services.
- UDDI is platform independent, open framework.
- UDDI can communicate via SOAP, CORBA, Java RMI Protocol.
- UDDI uses WSDL to describe interfaces to web services.
- UDDI is seen with SOAP and WSDL as one of the three foundation standards of web services.
- UDDI is an open industry initiative enabling businesses to discover each other and define how they interact over the Internet.

History

- UDDI 1.0 was originally announced by Microsoft, IBM, and Ariba in September 2000.
- Since the initial announcement, the UDDI initiative has grown to include more than 300 companies inclduing Dell, Fujitsu, HP, Hitachi, IBM, Intel, Microsoft, Oracle, SAP, and Sun.
- May 2001, Microsoft and IBM launched the first UDDI operator sites and turned the UDDI registry live.
- June 2001, UDDI announced Version 2.0.
- As of this writing, the Microsoft and IBM sites implement the 1.0 specification and plan 2.0 support in the near future
- Currently UDDI is sponsored by OASIS

Motivation

- No single point of access to all markets of opportunity.
- Difficult for a business to find services that meet requirements.
- Lack of standard mechanism to figure out how to conduct electronic business with remote partner

Objective

- To enable businesses to quickly and dynamically discover and interact with each other on the Internet.
- Programmatically describe their services and business processes and their preferred methods for conducting business.
- Simplify the effort of integrating disparate business processes
- Advertise its business and services in a global registry

Partner Interface Processes - PIPs

- Partner Interface Processes (PIPs) are XML based interfaces that enable two trading partners to exchange data. Dozens of PIPs already exist. Few are listed here:
- **PIP2A2** : Enables a partner to query another for product information.
- **PIP3A2** : Enables a partner to query the price and availability of specific products.
- **PIP3A4** : Enables a partner to submit an electronic purchase order and receive acknowledgment of the order
- **PIP3A3** : Enables a partner to transfer the contents of an electronic shopping cart.
- **PIP3B4** : Enables a partner to query status on a specific shipment.

UDDI : Working Definition

- UDDI is to provide a standard, uniform service, readily accessible by applications via a programmatic interface or by people via a GUI, for describing and locating the following:
- Business and organizations that offer various services web services ; listed as service providers
- Technical information: As to how to locate, access, and utilize a particular service

Ctd.,

- UDDI is highly XML-centric.
- The core information model used by UDDI, irrespective of the kind of service being described, is based on an XML schema.

Overview

Broader B2B

A mid-sized manufacturer needs to create 400 online relationships with customers, each with their own set of standard and protocols

Describe Services

Smarter Search

A flower shop in Australia wants to be "plugged in" to every marketplace in the world, but doesn't know how

Discover Services

Easier Aggregation

A B2B marketplace cannot get catalog data for relevant suppliers in its industry, along with connections to shippers, insurers, etc.

Integrate Them Together

UDDI Registry Types

- UDDI -operational registries
- A business may deploy one or more:
  - Private registries:
    - Isolated from the public network, firewalled
    - Restricted access
    - No shared data
  - Public registries:
    - Unrestricted open and public access
    - Data is shared with other registries
  - Affiliated registries
    - Controlled environment
    - Access limited to authorized clients
    - Data shared in a controlled manner
- Affiliated registries supports all other infrastructural topologies e.g., involving delegation, distribution, replication, subscription, that reflects the realities and the relationship of the underlying business processes

Technical View

UDDI
Simple Object Access Protocol (SOAP)
Extensible Markup Language (XML)
Common Internet Protocols (HTTP, TCP/IP)

- An XML file describes a business entity and its services to UDDI Business Registry
- Access to and from the Business Registry is described by SOAP
- UDDI defines the framework of describing any kind of Web service.

How does UDDI work ?

1. 

SW companies, standards bodies, and programmers populate the registry with descriptions of different types of services

2. 

Businesses populate the registry with descriptions of the services they support

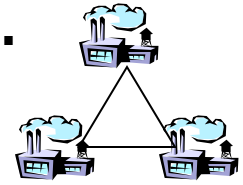
Business Registrations

Service Type Registrations

3. UBR assigns a programmatically unique identifier to each service and business registration

4. 

Marketplaces, search engines, and business apps query the registry to discover services at other companies

5. 

Business uses this data to facilitate easier integration with each other over the Web

Issues of UDDI

1. How organizations identifies each other
2. How describes themselves and services offer
3. How narrow down service providers that best fit its needs
4. How to obtain accurate detailed description of service
5. How to determine the mechanisms available to conduct e-business transactions
6. How could realize all the above using programmatic interfaces

Ctd.,

- A business or company can register three types of information into a UDDI registry. This information is contained into three elements of UDDI.
- These three elements are :
- 1. White pages
- 2. Yellow pages
- 3. Green pages
- Blue Pages Latest.,

UDDI (General Types)

1. White pages
    1. Description about business & services.
    2. D-U-N-S 9-8 identification sequence
    3. Thomas registry identification scheme
2. Yellow pages
    1. Categorization as per industry-standard taxonomy
    2. NAICS North American Industry Classification System
    3. UNSPSC United Nation Products and Services Code System
3. Green pages
    1. Technical information catalogue
4. Blue pages
    1. UDDIe

White Pages

- The white pages contain descriptive information about businesses and organizations providing various services.
- The business or organization name and a textual description of what they are will be included, where appropriate, in multiple languages.
- Contact information for that entity will also be included in terms of contact names, phone numbers, fax numbers, e-mails, and URLs.
- It will also list any known “industrial” identifiers
- The Thomas Registry identification scheme is another option.

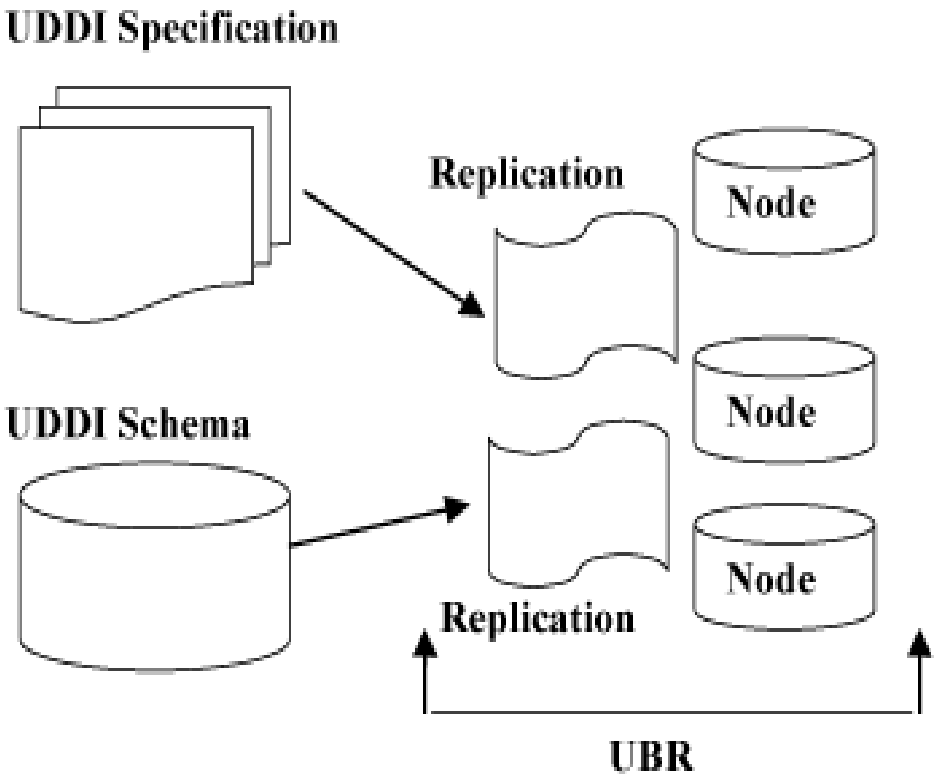
Yellow Pages

- The yellow pages, on the other hand, categorize businesses and organizations per industry-standard taxonomies.
- At a minimum, businesses and organizations will be categorized in terms of their industry, the products and services they offer, and their geographic location.
- The North American Industry Classification System (NAICS), Standard Industrial Classification (SIC) system, is one of the taxonomies that can be used to specify industry classification.
- Similarly, the United Nations Standard Products and Services Code System (UNSPSC) can be used to specify product/service classifications.

Green Pages

- The green pages, in effect, contain the information contained in the bindingTemplate and tModel data structures for a given service as listed in a business Service entry
- To wrap up this phone book analogy, note that the
- white pages contain the information found in the businessEntity data structures of a UDDI Registry
- yellow pages categorize, per accepted taxonomies, the information maintained in the businessService data structures.
- The green pages, then, augment the entries in the yellow pages by including the information found in the bindingTemplate and tModel structures for that particular service.

UDDI Technical Architecture



UDDI Technical Architecture

This is operator sites that provide implementations of the UDDI specification and synchronize all data on a scheduled basis.

UDDI (V 3)

What is new in Version 3? (Topics)

- Registration key generation and management (integrity)
- Registration subscription API set
- XML digital signatures (security)

All to enhance Registry Interaction

UDDI (Cont)

- Registration key generation and management (integrity)
  - The UDDI specification defines syntax for the development of UDDI keys that will preserve the integrity of each registry. Essentially, the intent is to provide a structure for creating unique keys for publication in multiple UDDI registries.

UDDI (Cont)

- Registration subscription API set
  - Publishing Services
  - Subscribing to Services

(Cont)

- XML digital signatures (security)
  - Data has not been altered since it was signed and published
  - Ownership of a particular registry entity can be validated
  - Confidence that data transferred among registries can be assured

UDDI Interaction

- Publisher and user are free to communicate directly as soon as the former has published on a UDDI registry and the latter has performed his queries
- Standards for communicating are important, also considering that we are not only talking about data retrieval but also function/methods calling (web services) and workflow executions (processes)

UDDI Business Registry

- Business individually register information about the Web services to it.
- Provides programmatic description of web services
- Physically distributed with multiple root nodes
- Data replicated on each server

Registry Data

- Businesses register public information about themselves.
  - White pages
    address, contact and known identifies
  - Yellow pages
    contains industrial categorization
  - Green pages
    Technical information about the services that are exposed by the businesses
- Standards bodies, Programmers, Businesses register information about their Service Types

UDDI: Elements - Data Types

- White Pages – Business entity
- Yellow Pages – Business Service
- Green Pages- Business Template and tModel
- Blue Pages- UDDIe