

Directory Services

Objective:

Explain different directory Services.

- “What is the name of the user with telephone number 020-5559980?”
- Sometimes users require wish to find a particular person or resource, but they don’t know its name, only some of its (other) attributes.
- “Where can I print a high-resolution color image?”
- Sometimes users require a service, but they are not concerned with that system entity supplies that service.
- Attributes may be used as values to be looked up.

- Directory service: a service that stores collections of bindings between names and attributes and that looks up entries that match attribute-based specifications.
- Sometimes called yellow pages services or attribute-based name services.
- A directory service returns the sets of attributes of any objects found to match some specified attributes.

Example: the request “TelephoneNumber = 020-5559980” might return {“Name = John Smith”, “TelephoneNumber = 020-5559980”, ...}

- The client may specify that only a subset of the attributes is of interest.

In the previous lecture, you have studied the different ways to store collections of <name, attribute> pairs by the name services which looked up attributes by a name. A directory service is a customizable information store that functions as a single point from which users can locate resources and services that are distributed throughout the network. It maps the network names of network resources to network addresses and defines a naming structure for networks.

It often uses attribute values to be looked up to. In these services, textual names can be considered to be just another attribute. Here, a directory server stores the collections of bindings between names and attributes and that looks up entries that match attribute-based specifications is called a directory service. The common example of directory services is Microsoft's Active Directory Services, X.500 and LDAP. It is analogous to traditional types of telephone directory which has yellow pages services and white pages services.

The Universal Directory and Discovery Service (UDDI), is a special kind of registry and directory structure that provides both white pages and yellow pages services to provide information about organizations along with the types of web services they offer.

A directory service returns the sets of attributes of any objects that are found to match some specified attributes.

For example, the request to

‘Contact Number = 02264888304’

might return the attributes

{ ‘Name =TSEC Organizations’ and ‘email Address = xyz@tsec.edu, ...’ }.

In UDDI, the term discovery service is used for finding the service which is requested by consumers that denotes the special case of a directory service for services that are provided by devices in a spontaneous networking

environment. The difference between a discovery service and directory services is that the address of a directory service is normally well known and preconfigured in clients, whereas a device that enters a spontaneous networking environment has to resort to multicast navigation, at least the first time when it accesses the local discovery service.

In directory service, the attributes are clearly more powerful than names as designators of objects where programs can be written to select objects according to precise attribute specifications and names which are not well known. The attributes do not expose the structure and that is why textual names make them unlikely to be replaced by attribute-based naming in many applications.

References:

- 1] George Coulouris, Jean Dollimore, Tim Kindberg, “Distributed Systems: Concepts and Design”, 4th Edition, Pearson Education, 2005.
- 2] S. Tanenbaum and M. V. Steen, “Distributed Systems: Principles and Paradigms”, Second Edition, Prentice Hall, 2006.