Service Oriented Software Engineering

Chapter 31

Sommerville 8th Edition

Service-oriented architectures

- A means of developing distributed systems where the components are stand-alone services

- Services may execute on different computers from different service providers

- Standard protocols have been developed to support service communication and information exchange

Service-oriented architecture
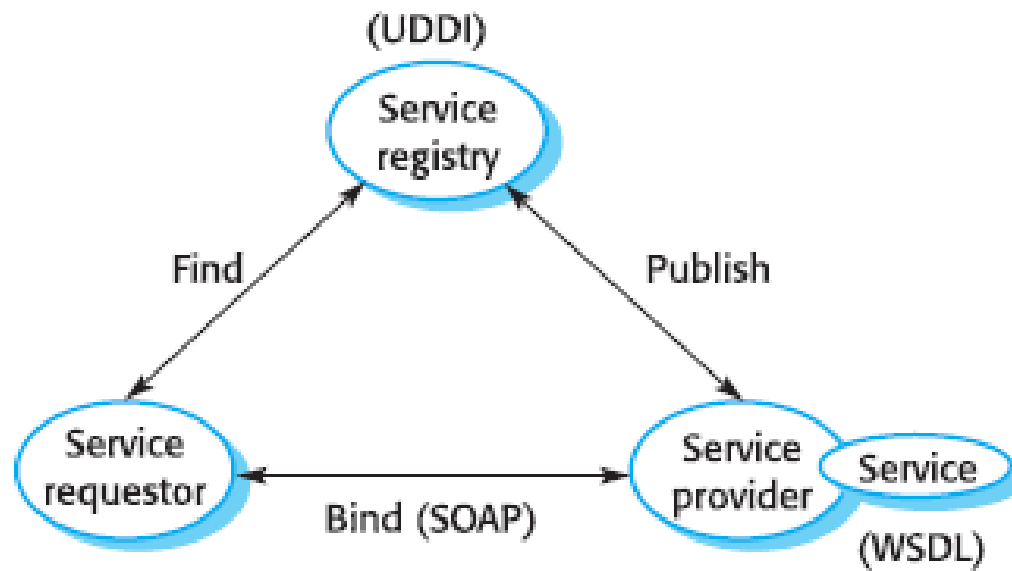
Service Oriented Architecture

Service provider

It creates a web service and provides its information to the service registry. Each provider debates upon a lot of how's and whys like which service to expose, whom to give more importance: security or easy availability, what price to offer the service for and many more. The provider also has to decide what category the service should be listed in for a given broker service and what sort of trading partner agreements are required to use the service.

Service broker, service registry or service repository

Its main functionality is to make the information regarding the web service available to any potential requester. Whoever implements the broker decides the scope of the broker. Public brokers are available anywhere and everywhere but private brokers are only available to a limited amount of public.

Service requester/consumer

It locates entries in the broker registry using various find operations and then binds to the service provider in order to invoke one of its web services. Whichever service the service-consumers need, they have to take it into the brokers, bind it with respective service and then use it. They can access multiple services if the service provides multiple services.

Advantages of SOA

- Services can be provided locally or outsourced to external providers.

- Services are language-independent.

- Services are re-usable.

- Investment in legacy systems can be preserved.

- Inter-organisational computing is facilitated through simplified information exchange.

- Services are easily maintained, reliable and available.

Key standards

- SOAP
  - A message exchange standard that supports service communication

- WSDL (Web Service Definition Language)
  - This standard allows a service interface and its bindings to be defined

- UDDI
  - Defines the components of a service specification that may be used to discover the existence of a service

- WS-BPEL
  - A standard for workflow languages used to define service composition

Services as reusable components

- A service can be defined as:
  - *A loosely-coupled, reusable software component that encapsulates discrete functionality which may be distributed and programmatically accessed. A web service is a service that is accessed using standard Internet and XML-based protocols*
- A critical distinction between a service and a component as defined in CBSE is that services are independent
  - Services do not have a 'requires' interface
  - Services rely on message-based communication with messages expressed in XML

Thank You!!!