ACTIVE AETHER

WEB SERVICES - THE BASIC IDEA

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June 2017

1   SOFTWARE SERVICES AND SERVICE-ORIENTED COMPUTING

Software services are understood to be autonomous, platform-independent computational elements that can be described, published, discovered and composed for the purpose of developing distributed applications. Software services are the primary unit of computation in service-oriented computing.

Service-oriented computing (SOC) promotes the assembly of application components into networks of services that can be loosely coupled to create flexible, dynamic business processes and agile applications that span organizations and computing platforms [1]. Service-oriented computing has emerged as the leading approach to evolving tightly-coupled, component-based distributed systems into wider networks of services which use uniform techniques to address, bind to and invoke service operations.

Service-oriented computing provides a way to create new architectures that reflect trends toward autonomy and heterogeneity [2]. Distributed architectures which enable the flexible and loosely-coupled processes of service-oriented computing are called service-oriented architectures (SOAs), of which software services are the primary component. The guiding characteristics of SOAs are the interoperation between loosely coupled autonomous services, the promotion of code reuse at a macro (service) level, and architectural composability.

SOAs are composed of three primary entities – a provider, a consumer, and a registry – as shown in Fig. 1. Providers publish service locations in a registry; consumers use a registry to locate services to program against and invoke. SOA implementations specify the language used to describe services, provide the means to publish and discover them, and dictate the protocols and communication mechanisms used to interact with them. The deployment of software services on the Internet is increasingly achieved using one such set of standards collectively known as 'Web Services' [3].
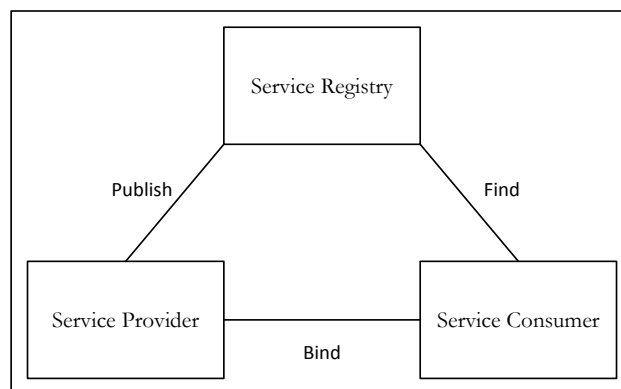

Fig. 1 The three main components of a service-oriented architecture: a provider, a consumer, and a registry

2 THE WEB SERVICES MODEL

Web Services are based on platform-independent standards developed through the efforts of the W3C working group [4]. These standards define the protocols, message formats, and service description language which enable interaction between clients and services on heterogeneous computing platforms across the Internet.

Web Services are widely used in industry and academia, exposing functionality ranging from basic mathematical operations to fully automated online booking systems. They have become the de-facto choice for providing Web-accessible business logic, consolidating and linking geographically dispersed operational entities and resources, and providing a common means of interaction between previously isolated business entities.

The standards introduced by Web Services provide the means to evolve distributed systems from tightly-coupled distributed applications into loosely-coupled systems of services. The standards enable interoperation between heterogeneous computing platforms through the exchange of messages (in SOAP [5] format) using well-defined interfaces (described with WSDL [6]). By abstracting over implementation and hosting technology, the platform-independent Web Service standards provide a means of homogenizing access to existing heterogeneous services while promoting the development of new services without forcing the adoption of any one particular implementation or hosting technology. The Web Services model is well suited to the emergence of Internet-wide service-oriented computing.

REFERENCES

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