Characteristics of Contemporary SOA

UNIT-III

Primary Characteristics (1)

- **Contemporary SOA (CSOA) is core of service-oriented computing platform:**

  - Distinct computing platform – called as Architecture
  - Ex. Client-server, n-tier
  - SOA application computing platform consist of web services technology and service orientation principles
  - A CSOA represents architecture that promotes service-orientation through web services

Primary Characteristics (2)

- **Contemporary SOA increases QoS:**
- SOA should implement enterprise level functionality safely and reliably
- **QoS requirements:**
- Execute task st. protect content of message, but enable access to services
- Execute task st. - Reliable message delivery or notification for failure
- Overhead of SOAP message not inhibit task execution
- Transaction capabilities, to protect task integrity
- **CSOA fills QoS gaps by WS-* Extension**

Primary Characteristics (3)

- **CSOA is fundamentally Autonomous:**

- SOA builds on service orientation principle of Autonomy – services self-contained, independent of underlying logic

- Also message level autonomy

- CSOA build on autonomy in entire enterprise environment

- **Achieved using abstraction layer – enables autonomy across solution boundaries**

Primary Characteristics (4)

- **CSOA based on Open Standards:**

- Web service – data exchange is governed by open standards

- Message Autonomy – SOAP, WSDL, XML, XML Schema

- Services Autonomy – need to know service descriptions for communications

- **CSOA fully leverage open, vendor-neutral communication framework**

Primary Characteristics (5)

- **CSOA supports vendor diversity:**
- Open framework bridges heterogeneous technology
- Allow to choose best environment for specific application
- Irrespective of proprietary solutions, if supports web service, communication possible using service adapters / middleware solutions
- Allows organizations to evolve / explore new offerings

Primary Characteristics (6)

- **CSOA promotes discovery:**
- Distributed architecture use web service with point-to-point communication, discovery not needed
- Some used service registry part of the environment
- Early web service use UDDI
- But CSOA need service discovery across enterprise
- So CSOA uses service registry and directory to manage service description

Primary Characteristics (7)

- **Contemporary SOA fosters intrinsic interoperability:**
- Intrinsic interoperability - Supporting open standards, a vendor diverse environment, discovery mechanism
- SOA application posses intrinsic interoperability as potential integration endpoints
- When standardized, solutions also achieve this
- Fostering this characteristic can alleviate cost and effort of future cross-application integration
- **Intrinsically interoperable services enable unforeseen integration opportunities**

Primary Characteristics (8)

- **Contemporary SOA promotes federation:**
- Web services enable federation, SOA promotes this cause by establishing and standardizing
- It encapsulates legacy and non-legacy application logic and exposes in open channels
- Leads to hybrid solutions
- communication channels using this are all uniform and standardized
- **Services enable standardized federation of disparate legacy systems**

Primary Characteristics (9)

- **Contemporary SOA promotes architectural composability**

- services are independent units of logic

- business process is broken down into series of services, executes a portion of the process

- second-generation Web services framework WS-* spec. support this

- Different solutions can be composed of different extensions

- **It can continue to interoperate as long as they support the common extensions required**

Primary Characteristics (10)

- **Contemporary SOA fosters inherent reusability:**
- SOA promotes reuse on many levels – designed on service-orientation principles
- SOA services are agnostic to business processes and the automation solutions – allowing to reuse
- **Inherent reuse accommodates unforeseen reuse opportunities**

Primary Characteristics (10)

- **Contemporary SOA emphasizes extensibility:**
- SOA encapsulates logic and expresses encapsulated functionality via service descriptions
- So extensibility is inherently build on SOA solutions
- It allows adding services or by merging with other service-oriented applications with less impact – loosely coupled nature

Primary Characteristics (11)

- **Contemporary SOA supports a service-oriented business modeling paradigm:**

- Partitioning business logic into services and composing helps to understand business processes

- analysts can leverage this features by incorporating service-orientation principle in business processes while implementing SOA applications

- **A collection (layer) of services encapsulating business process logic**

Primary Characteristics (12)

- **Contemporary SOA implements layers of abstraction:**

- Evolving nature of SOA is due to abstraction

- It introduce layers of abstraction - by positioning services as access points to a variety of resources and processing logic

- Application logic created with proprietary technology can be abstracted through a dedicated service layer

Primary Characteristics (13)

- **Contemporary SOA promotes loose coupling throughout the enterprise:**

- Through the implementation of service layers that abstract business and application technology logic, the loose coupling paradigm can be applied to the enterprise as a whole

Primary Characteristics (14)

- **Contemporary SOA promotes organizational agility:**
- Agility – ability to accommodate change or unplanned event
- Ex. internal reorganization - a corporate merger, a change in an organization's business scope, or the replacement of technology platform
- **A loosely coupled relationship between business and application technology allows each end to more efficiently respond to changes in the other**

Primary Characteristics (15)

- **Contemporary SOA is a building block:**

- An SOA consists of services within services within services, to the point that a solution based on SOA itself is one of many services within an SOE (service oriented enterprise)

Primary Characteristics (16)

- **Contemporary SOA is an evolution:**

- SOA supports and promotes reuse, componentization and distribution of application logic

- These and other established design principles are part of SOA, whereas in traditional distributed environments not so

Primary Characteristics (17)

- **Contemporary SOA is still maturing:**
- Even though SOA is being positioned as the next standard application computing platform, this transition is not yet complete
- major software vendors have produced supplementary extensions
- Also, the next generation of development tools and application servers build to support inherently

Primary Characteristics (18)

- **Contemporary SOA is an achievable ideal:**
- Organization need enormous amount of effort and time, to adopt SOA
- Every technical environment will undergo changes during such a migration
- various parts of SOA will be phased in at different stages and to varying extents
- This will result in countless hybrid architectures, consisting mostly of distributed environments that are part legacy and part service-oriented

Contemporary SOA Definition

- Contemporary SOA represents an open, agile, extensible, federated, composable architecture comprised of autonomous, QoS-capable, vendor diverse, interoperable, discoverable, and potentially reusable services, implemented as Web services.

Contd…

- Also,

- SOA can establish an abstraction of business logic and technology

- SOA is an evolution of past platforms

- SOA is ideally standardized throughout an enterprise