

# SERVICE ORIENTED ARCHITECTURE

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# Definition of SOA

- *“A service-oriented architecture is essentially a collection of services. These services communicate with each other. The communication can involve either simple data passing or it could involve two or more services coordinating some activity. Some means of connecting services to each other is needed.”*

# What is a service?

- Services are software chunks, or components, constructed so that they can be easily linked with other software components. The idea behind these services is simple: Technology should be expressed in chunks that business people can understand rather than as an arcane application such as ERP or CRM.

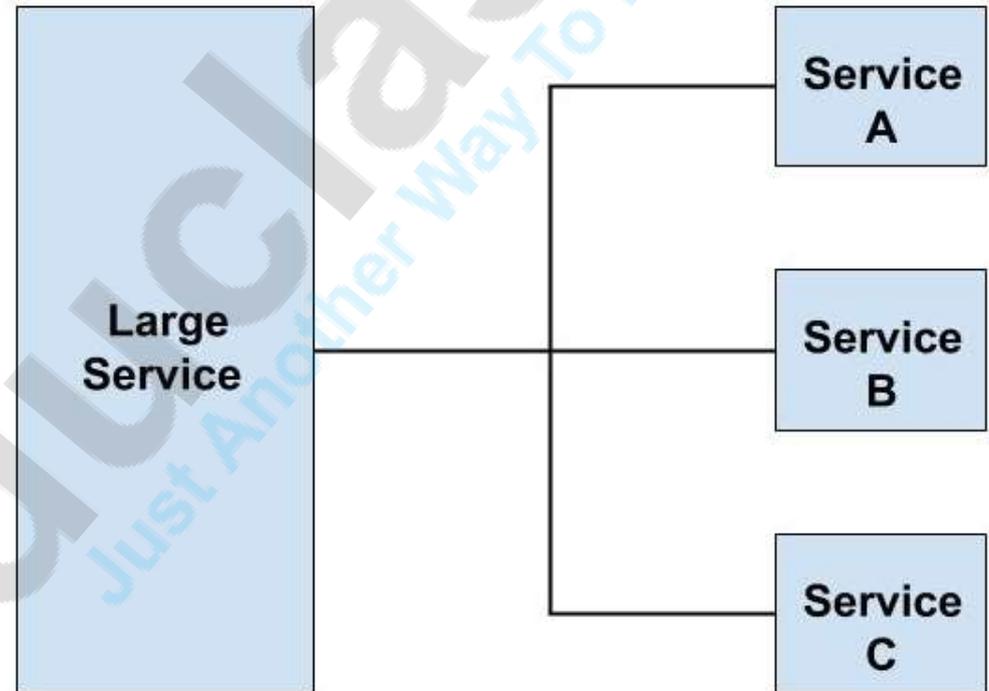


# What is a service?

- It has three components: an **interface**, a **contract**, and **implementation**.
- The interface defines how a service provider will perform requests from a service consumer, the contract defines how the service provider and the service consumer should interact, and the implementation is the actual service code itself.
- Because the interface of a service is separate from its implementation, a service provider can execute a request without the service consumer knowing how it does so; the service consumer only worries about consuming services.

# Service composition

- Service composition is a collection of services where, many smaller services are combined together to a larger service.



# 7 Steps to SOA

1. Create/Expose Services
2. Register Services
3. Secure Services
4. Manage (monitor) Services
5. Mediate and Virtualize Services
6. Govern the SOA
7. Integrate Services



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# 1. Create & Expose Services

- Three primary choices
  - Rebuild existing applications using SOA paradigm
  - Expose existing application logic as a set of services
  - A combination of rebuild and expose
- Enterprises typically use a combination of rebuild & expose
- **Granularity** is a key criterion for Web Service
  - Functionality must be sufficiently coarse-grained
  - If coarse-grained, potential to be useful to different applications

## 2. Register Services

- An SOA Service Registry is the core component of SOA Governance.
- The Service registry allows service providers to discover and communicate with consumers efficiently, creating a link between service providers and service customers.
- The primary focus of Service Registry is to provide fast, easy access to communication, and to operate among different applications with a limited human intervention.

## 3. Secure Services

- My have exposed sensitive information
- 5 principles of security
  1. Authentication
    - Basic HTTP authentication, SAML, X.509 signature
  2. Authorization
    - Leverage solutions such as CA SiteMinder, IBM TAM
  3. Privacy
    - XML-Encryption
  4. Non-Repudiation
    - Requestor & Sender cannot deny activities
  5. Auditing
    - Accurate accounting of requests & responses

## 4. Manage Services

- Look for potential disaster
  - Too many applications consuming a service?
  - Is the load reasonable?
  - Is there a degradation in performance?
- Need to be able to monitor for
  - Basic Availability
  - Performance
  - Throughput
  - SLA agreement

## 5. Mediate & Virtualize Services

- As SOA matures may need to:
  - Introduce new versions
  - Increase capacity by running multiple instances
  - Provision applications to use specific instances of services
- Solution is Virtualization
  - Virtual service is a new service
    - Doesn't implement business logic
    - Acts as proxy to one or more physical services
    - Routes, load-balances, transforms, mediates
- XML transformation can be used to allow consumers to use an old version of service that no longer exists

## 6. Govern the SOA

- SOA increases the level of cooperation and coordination required between business and information technology (IT), as well as among IT departments and teams. This cooperation and coordination is provided by SOA governance, which covers the tasks and processes for specifying and managing how services and SOA applications are supported.
- Use a governance framework

## 6. Govern the SOA

### Design Time Issues

What types of services can be published?

Who can publish them?

What types of schema and messages services can accept?

What are the rules for the services?

### Run Time Issues

Security

Reliability

Performance

Compliance with policies

THANK YOU



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