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IS7108 Web Service Technologies

### 1. Create/Expose Services

* Designing and creating reusable services that contain business operations is the first stage in service-oriented architecture (SOA). To guarantee flexibility and reusability, these services should be independent, modular, and loosely connected.
* Services can be made available to customers via technologies like SOAP, RESTful APIs, and micro services.

**2. Register Services**

* Once services are created, they need to be registered in a service registry to allow service discovery.
* The registry acts as a directory that stores service metadata, endpoints, and policies.
* Consumers (clients) can query the registry to locate and consume available services dynamically.

**3. Secure Services**

* Security is critical in SOA to protect services from unauthorized access and data breaches.
* Common security measures include:
  + **Authentication**
  + **Authorization**
  + **Encryption**
  + **Threat protection**
* Secure communication ensures trust between service providers and consumers.

**4. Manage (Monitor) Services**

* SOA services need continuous monitoring, logging, and management to ensure availability and performance.
* This step involves:
  + Monitoring service uptime, response times, and failures.
  + Logging requests and errors for debugging and compliance.
  + Implementing load balancing and auto-scaling for performance optimization.

**5. Mediate and Virtualize Services**

* Service mediation ensures smooth communication between different services by handling protocol translation, message transformation, and routing.
* Service virtualization helps in testing and simulating services before deployment.
* Enterprise Service Bus (ESB) or API gateways are often used for mediation and orchestration.

**6. Govern the SOA**

* Governance ensures that SOA services adhere to standards, policies, and best practices for consistency and scalability.
* Governance includes:
  + Defining service lifecycle policies.
  + Setting compliance and regulatory requirements.
  + Enforcing versioning and backward compatibility of services.
* Tools like API management platforms help in governance.

**7. Integrate Services**

* The final step is to integrate SOA services with applications, databases, and third-party systems.
* Integration can be done using:
  + API-based integration (REST/SOAP)
  + Message queues (Kafka, RabbitMQ)
  + Middleware solutions (MuleSoft, WSO2)
* Proper integration ensuresseamless business process automation and efficient data exchange across systems.