Service Oriented Architecture

Wednesday, February 3, 2021 8:27 AM

HTTP Protocol: characters converted to ascii, platform independent (client on one platform, server on another)
(Rest web services use HTTP)

SOAP Protocol: Simple object access protocol, better security than http

If we want to validate a credit card
Boolean DoValidate(Name, CCNo, Amount, DOE)
{
    //takes parameter, processes and returns values
}

ISP publishes information about a web service (web service architecture)
This architecture is not there for PHP
Amazon, Netflix uses this architecture

Develop a SOAP enabled web service using NetBeans IDE

Multiple web services => web application

```
<?xml>
    <purchaseOrder>
        <Item>
            <Name></Name>
            <Quantity></Quantity>
        </Item>
    </purchaseOrder>
</xml>
```

Amazon does not host services itself (costly)
Third party providers for Purchase Order submission:

1. Check inventory (inventory service)(FEDX)
2. Billing service
3. Shipping service ()

Composition: can only be done through web services:

Request for web service <====> Response by provider

History:
2 leaders: Microsoft and Oracle (Java)
Instead of creating monolithic applications using simple modules, build components and assemble it

- Component based software architecture
- Discovered creation of components and make them available across networks
- **SOA**

1. Microsoft: DCom (weather forecast, stock quote) (unique 128-bit UID to recognize the Dcom across the registry, they are only **intranet enabled services**)
   - Limitations: platform dependent services (binary protocol/not digital)(binary protocol: you wish to invoke a method, ascii + extra bits for each char and sent across the network, when client invokes it any attacker cant make meaning of the code. But this will not work across internet (Dcom is platform dependent)
   - Limitation: service needs multiple copies of code for multiple clients. Client contacts DCom registry will have port number (address to distinguish between applications, intranet or internet), major organizations have a firewall port number should be 80 (port number changed), firewall blocks it and request will not pass to the client (No firewall within the intranet).
   - **ESRI** - GIS => Dcom <= wrapper code
   - Wrapper code (to work across the internet)
   - ESRI: highest pain provider using component based architecture
2. Enterprise Java Beans:
   - Stateful EJB, stateless EJB, Entity EJB
   - Bankers use EJB tech to build applications (**works within intranet**)
   - Uses RMA (remote method invocation) protocol (non-standard)
   - Only works with Java (language dependent) but **platform independent**

RMA, DCOM use non-standard ports
HTTP uses standard port 80 (any client can invoke service through internet(**firewall-traversal enabled**)

SOAP request: to get stock price
XML contains:

```
<?XML>
<envelope>
<body>
..
..
..
</body>
</envelope>
</XML>
```