





control. When scaling in and out, you are just including or expelling the quantity of cases you're utilizing to your armada of process assets. This offers a critical favorable position contrasted with on-premise arrangements, from a cost-viewpoint alone.

**Economy of scale:** Because of the tremendous size of assets open cloud contributions give, which are streamlined and shared between various associations, the end client profit by extraordinarily low asset costs contrasted with customary facilitating.

**Flexibility and elasticity:** Distributed computing offers tremendous adaptability and flexibility to your structure approach. You can have the same number of or as couple of assets as you require. You choose how much and to what extent you need it for, and at what scale.

**Development:** Distributed computing offers your association the capacity to develop utilizing a wide scope of assets and administrations. Couple with the on-request component, and your development requirements are fundamentally decreased contrasted with an exemplary on-premises condition. This development additionally incorporates the capacity to achieve worldwide clients easily, by provisioning assets over the cloud seller's worldwide system.

**Utility-based metering:** With many cloud administrations, you pay for what you use. On the off chance that you just have an example running for two hours, and afterward closed it down, at that point you pay for two hours worth of register assets. So it's a similar charging process for some assets and administrations. You pay for assets when you are utilizing them.

**Shared infrastructure:** Hosts inside the cloud are virtualized. Therefore, different occupants can be running cases on a similar bit of equipment. This essentially lessens the measure of physical equipment required, which thus decreases the measure of intensity, cooling, and space required in the server farm. Also, thus, assists with the economy of scale, all subsequent in less expensive expenses to you as the client.

**Highly available:** By plan, a considerable lot of the center administrations inside the open cloud and its fundamental foundation are repeated crosswise over various geographic zones and districts. Having information duplicated to numerous better places naturally, encourages you to guarantee the strength and accessibility of your information and administrations, without arranging and modeler for this flexibility.

**Security:** Open cloud merchants, for example, AWS and Microsoft Purplish blue are viewed as more secure than your own server farm. This is down to the way that they need to stick to worldwide consistence programs over numerous enterprises and by applying the common duty model. The seller will work to an extraordinarily exclusive expectation of security for the fundamental framework of the cloud, and it's down to you, the end client, to then designer security in the cloud, utilizing the devices, administrations and applications accessible.

### 3.3. Single sign on

#### Problem definition

Single sign on is a client validation mechanism with a centralized session, in which users can access various applications with a solitary arrangement of client qualifications or credentials. It is the best way to oversee users. It is also used for access control. It is a third party, cloud based Identity management provider that to implement the Single Sign On.

#### Introduction to AWS

Amazon Web Services(AWS) is an exhaustive, advancing distributed computing platform given by Amazon[3].

- AWS gives administrations from many served farms known as "datacenters" spread crosswise over availability zones(AZs) .
- An AZ speaks to an area that typically contains multiple data centers, where as a region is a combination of AZs in geographic proximity.
- An AWS user can be able to turn up virtual machines (VMs) and recreate information in different AZs to obtain a profoundly dependable infrastructure that is resistant to failures of unique servers or the whole data centre.

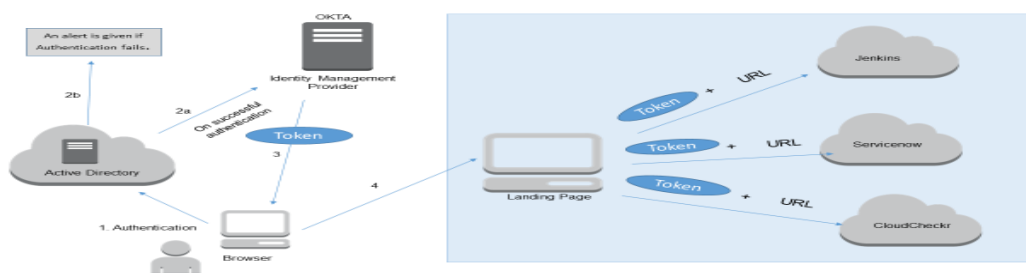


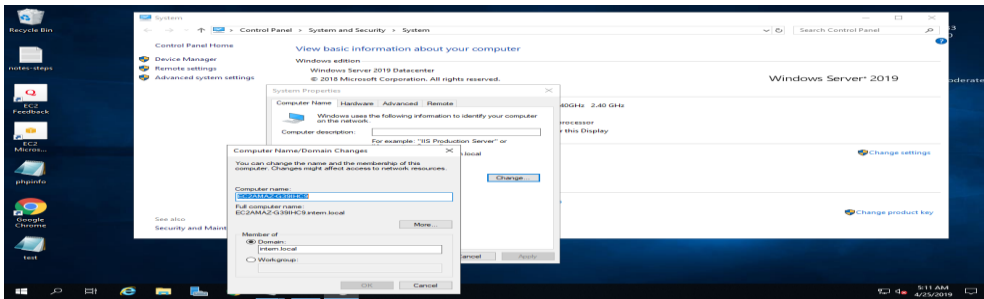
Figure 3 Single Sign On



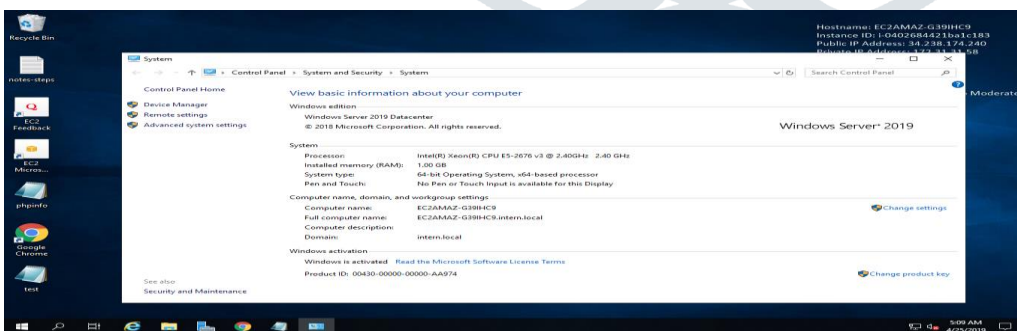
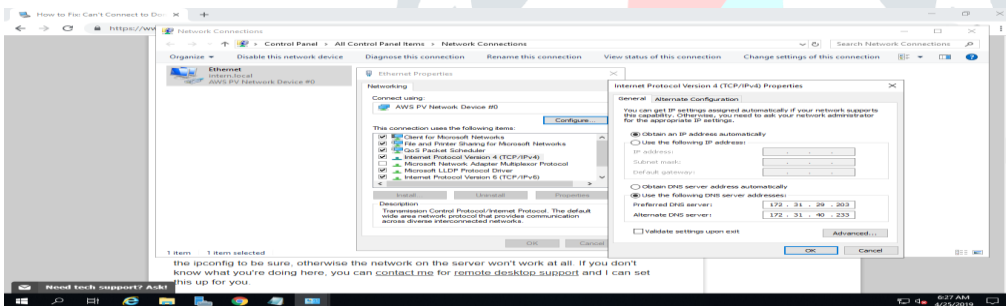
and Security>System. Under that, check the domain name to which the Virtual machine is attached to. To connect EC2 to a directory service, create a Role EC2RoleForSSM. Join the EC2 to a domain.

Single sign on implementation is a cloud venture[8] or a project that enables clients and employees of an organization to seamlessly access various applications without re-entering the credentials. A custom login page and landing page are part of this project, where a user is remembered. Single sign on project uses AWS cloud services and OKTA to provide seamless navigation among various websites. Token plays a crucial role in this project. Single sign on project involves authentication process as well as access control of multiple software systems, that enables a client to get to numerous applications with one lot of login certifications. Cloud services are a new emerging trend in the IT industry and more and more companies are opting to shift their infrastructure on cloud as well as they can utilize various other software services offered by cloud service providers. Cloud services are relatively cheaper than maintaining an on premise infrastructure and provide additional features. The whole project will be deployed in an Amazon EC2 instance.

We have to change the domain by choosing the **Change domain** option. There we have to provide our domain name, which is **intern.local**. Then it will prompt for Admin credentials. Once the machine is connected to the domain, we have to restart the virtual machine and login using active directory credentials. Which means that, now actually we are accessing the domain that we have created.

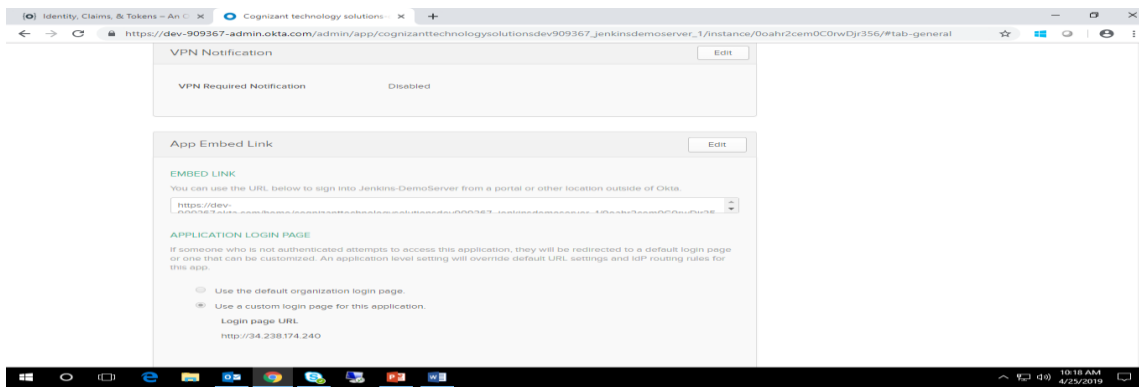


Sometimes, it will show an error while connecting the domain. In that case we have to provide the DNS of the Active directory we have created in the cloud, manually here in the virtual machine that we have created. In the Control Panel select All control Panel mode and choose Network Connections, followed by Ethernet. Select that by right clicking on Ethernet, choose IPV4 properties, There in the box provided, specify the DNS in the two boxes available and then click ok and save. This will fix the error.



Next step is to create Users in the active directory. In the start> search for the Active directory users and computers. There in the dashboard, find the BIOS name here it is intern. Under that folder, select USERS. Right click on it, and choose Add new User. Thus Users can be added in the active directory. The authentication in the project that we have created, will be done against this users in the active directory.





This application embed link is used along with the token for redirecting from landing page to various applications. Single sign on implementation is a cloud venture or a project that enables clients and employees of an organization to seamlessly access various applications without re-entering the credentials. A custom login page and landing page are part of this project, where a user is remembered. Single sign on project uses AWS cloud services and OKTA[5] to provide seamless navigation among various websites. Token plays a crucial role in this project. Single sign on project involves authentication process as well as access control of multiple software systems, that enables a client to get to numerous applications with one lot of login certifications. Cloud services are a new emerging trend in the IT industry and more and more companies are opting to shift their infrastructure on cloud as well as they can utilize various other software services offered by cloud service providers. Cloud services are relatively cheaper than maintaining an on premise infrastructure and provide additional features. The whole project will be deployed in an Amazon EC2 instance.

## 6. Testing

The reason for testing is to find mistakes. Testing is the way toward attempting to find each possible flaw or shortcoming in a work item. It gives an approach to check the usefulness of parts, sub congregations as well as a completed item. It is the way toward practicing programming with the purpose of guaranteeing that the product framework live up to its prerequisites and client desires and does not bomb in an unsuitable way. There are different kinds of tests. Each test type tends to a particular testing necessity.

Utilitarian Testing:

Utilitarian testing is a quality affirmation (QA) process and a kind of discovery testing that puts together its experiments with respect to the particulars of the product segment under test. Capacities are tried by nourishing them input and inspecting the yield, and inward program structure is once in a while considered. Utilitarian testing normally depicts what the framework does. Utilitarian Testing is fixated on the accompanying things:

Substantial Info: Distinguished classes of legitimate information must be acknowledged

Invalid Information: Distinguished classes of invalid information must be rejected

Capacities: Distinguished capacities must be worked out

Yield: Distinguished classes of use yield must be worked out.

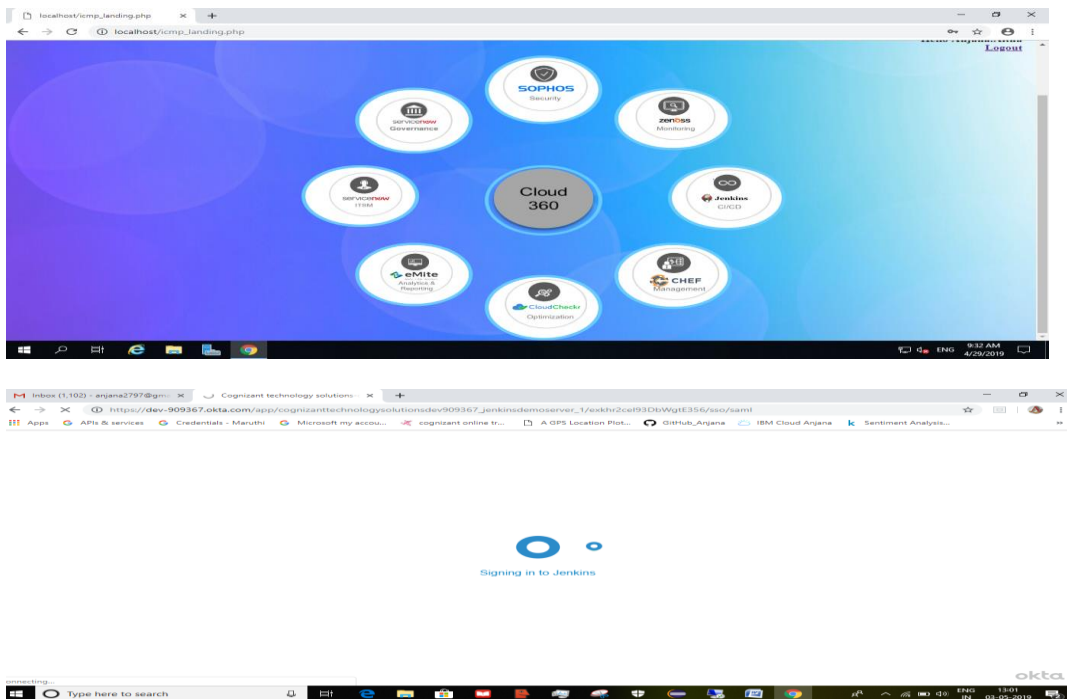
## Framework Test

Framework testing guarantees that the whole coordinated programming framework meets prerequisites. It tests a design to guarantee known and predictable outcomes. A case of framework testing is the setup arranged framework incorporation test. Framework testing depends on procedure portrayals and streams, underscoring pre driven procedure connections and coordination focuses.

## IV. IMPLEMENTATION RESULTS

The implementation work and generated screens of outputs are shown as in the above and following figures.





## V. CONCLUSION AND FUTURE WORK

The single sign on implementation for an organization is a best way to allow users i.e. employees of the company to access various on-premises or any other applications seamlessly without the heck of remembering multiple set of credentials. PHP provides supportive code implementation to connect to Active Directory using LDAP protocol. There is a way in Active Directory to group various users under a single category and provide restrictions or special provisions for a particular group.

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