
بسم الله الرحمن الرحيم


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- Deployment Models
- Service models
- Components
- Virtualization
- Hypervisor
- SU Private Cloud with VM Horizon
- Hands on with
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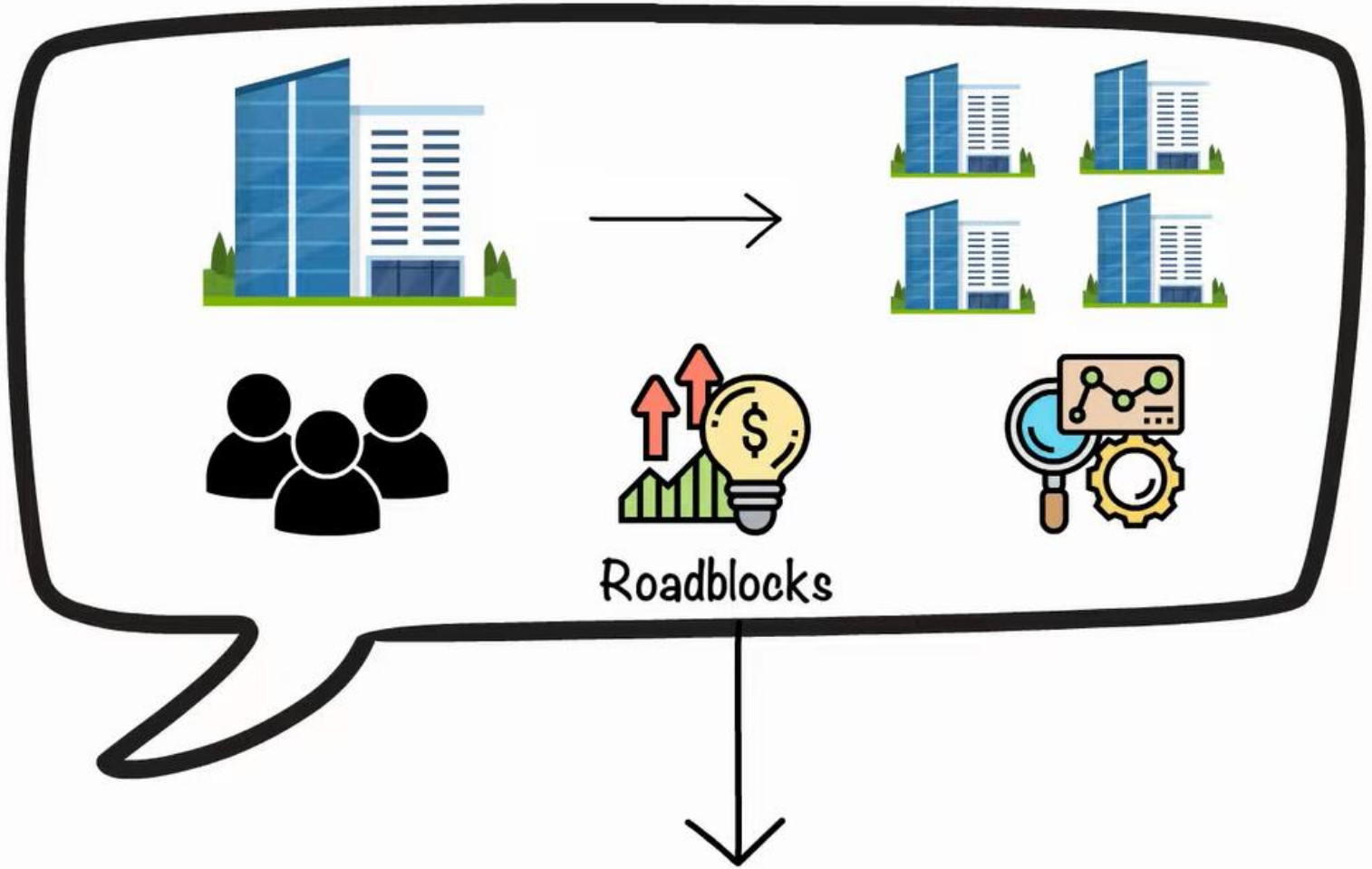


Cloud Computing

What is Cloud

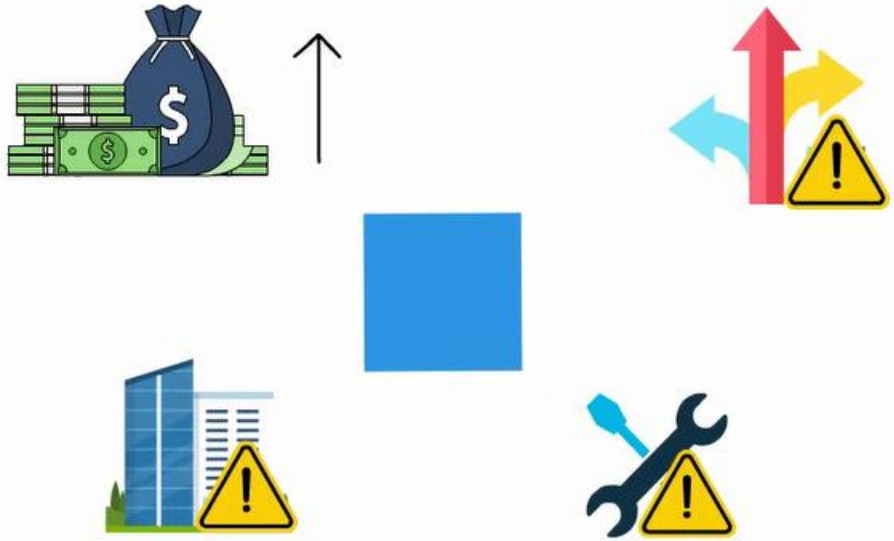
- The term Cloud refers to a Network or Internet
- We can say that cloud is something which is present on remote location and is accessible only through the internet

What is Cloud Computing

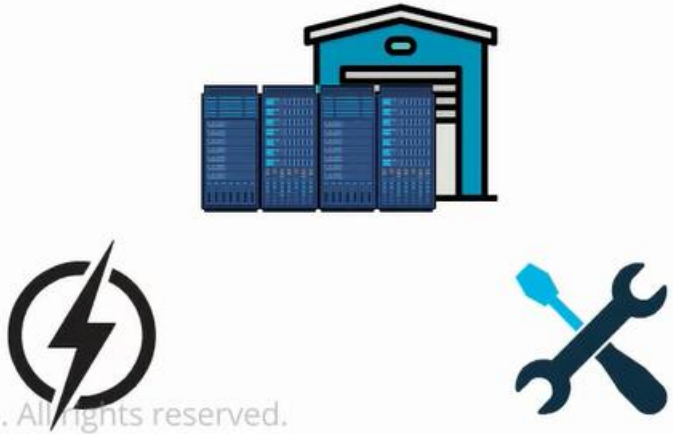
- Cloud Computing means storing and accessing data and programs over the internet instead of your computer's hardware
- We can create, configure and customize applications online
- With Cloud Computing users can access Cloud resources from anywhere in the world, you just need an access to the internet
- Cloud computing is both a combination of software and hardware based computing resources delivered as a network service
- Don't need to worry about the maintenance of your resources

On-premises

Scalability



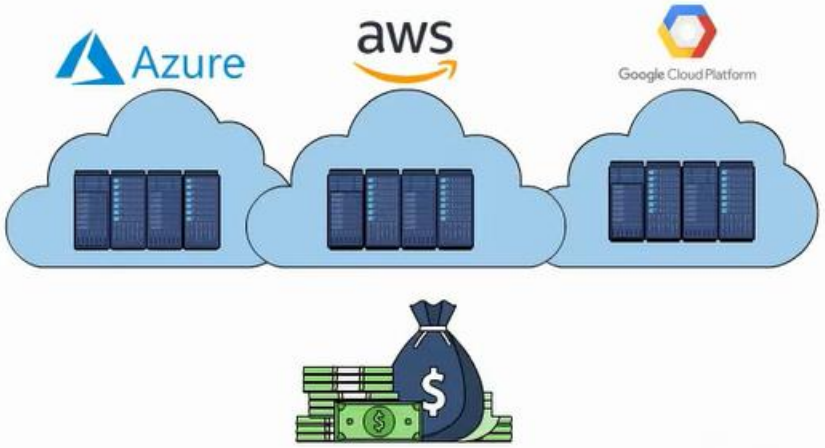
Server Storage



Cloud

Scalability

Server Storage



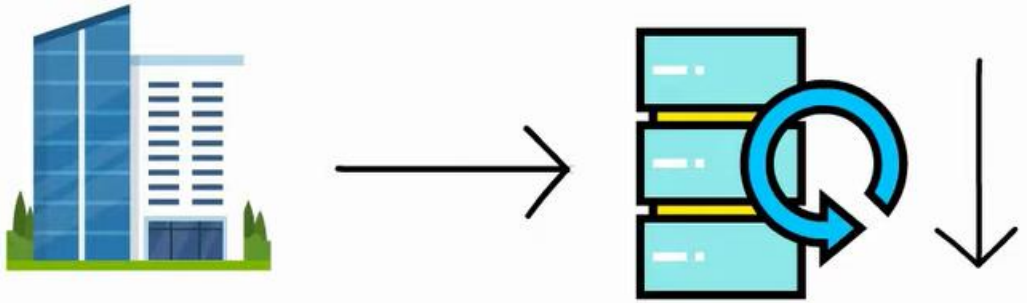
Server Storage

Data Security

Server Storage

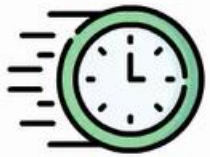
Data Security

Data Loss



Maintenance

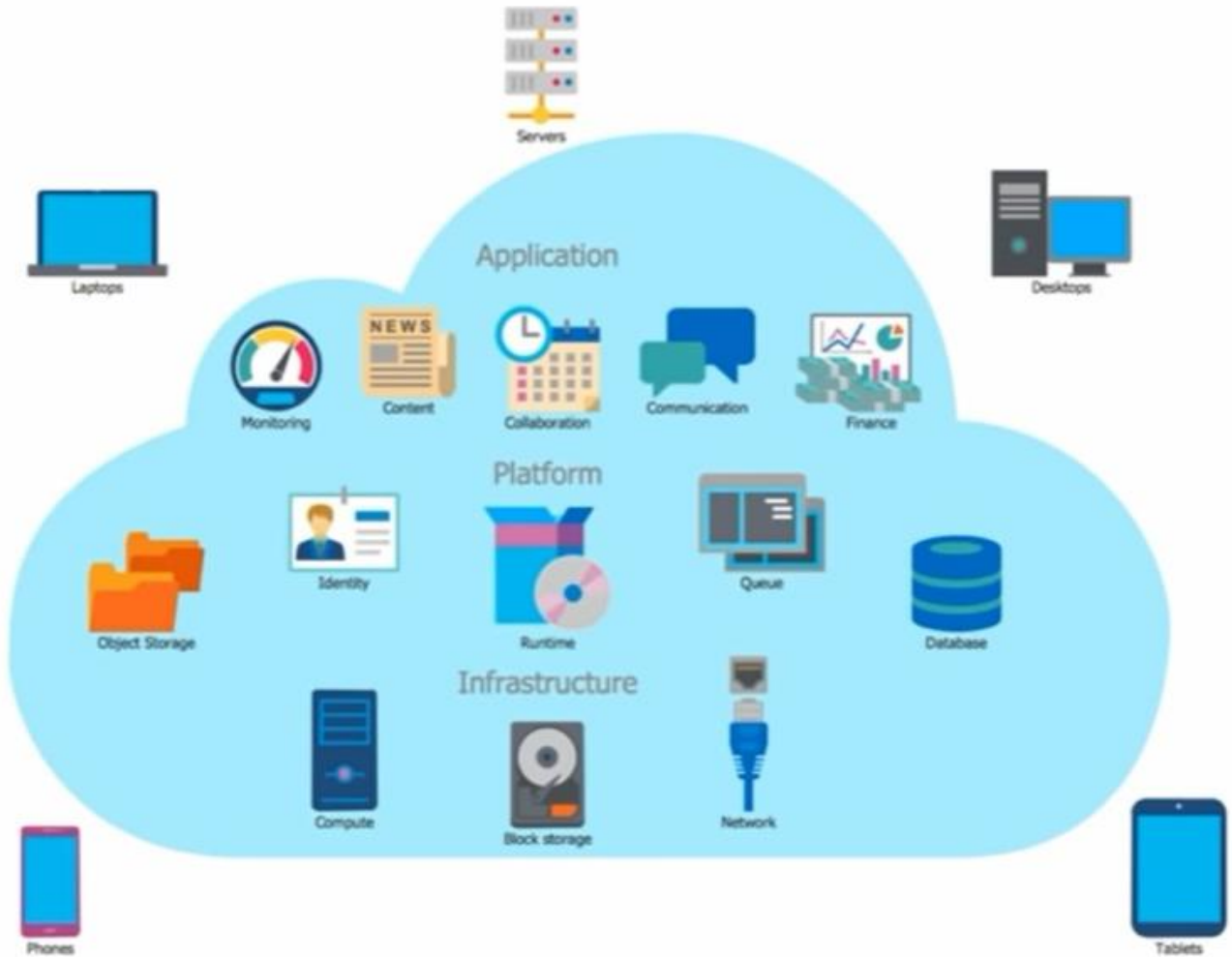
Data Loss



Data Recovery

Maintenance

Cloud Computing Architecture



Models for Cloud Computing

- There are some models working behind and making Cloud computing feasible and accessible to Cloud users

- Deployment Models
- Service Models

Deployment Models

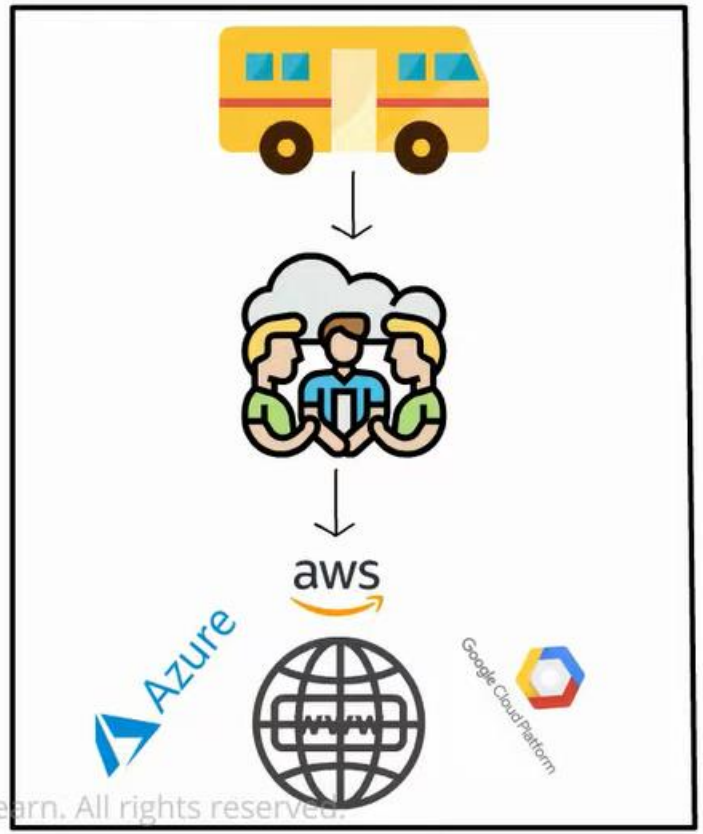
In deployment models you can say that how your cloud is configured

Can be categorized in four types of deployment models

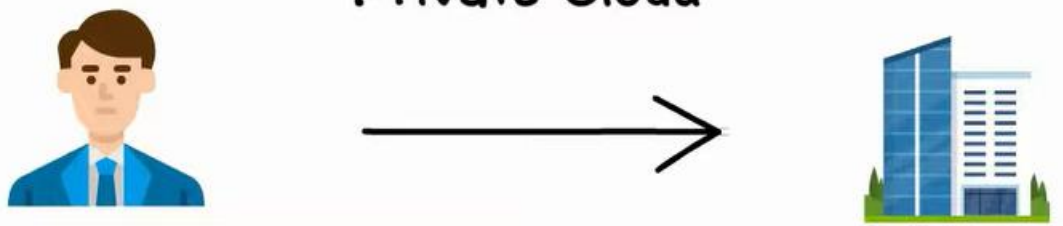
- Public
- Private
- Hybrid
- Community

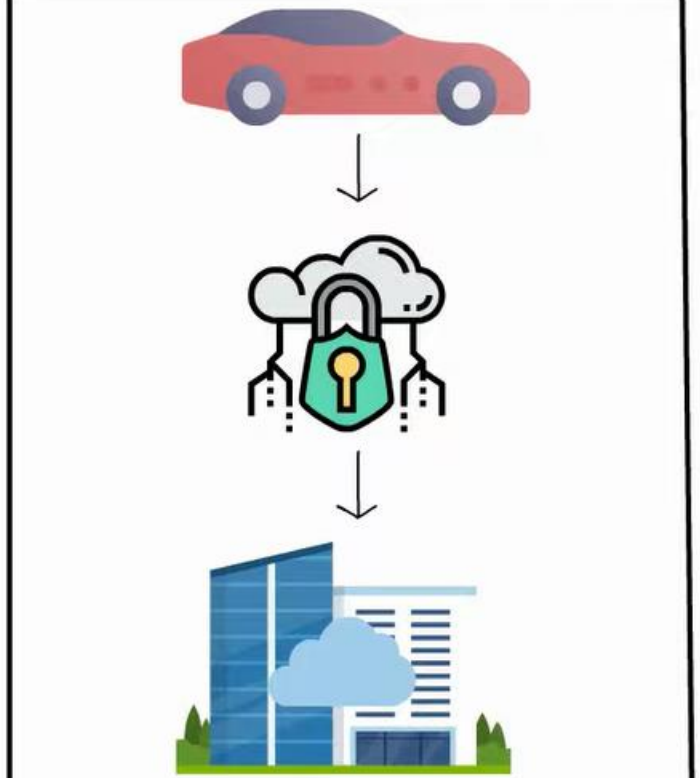
Deployment Model

Public Cloud

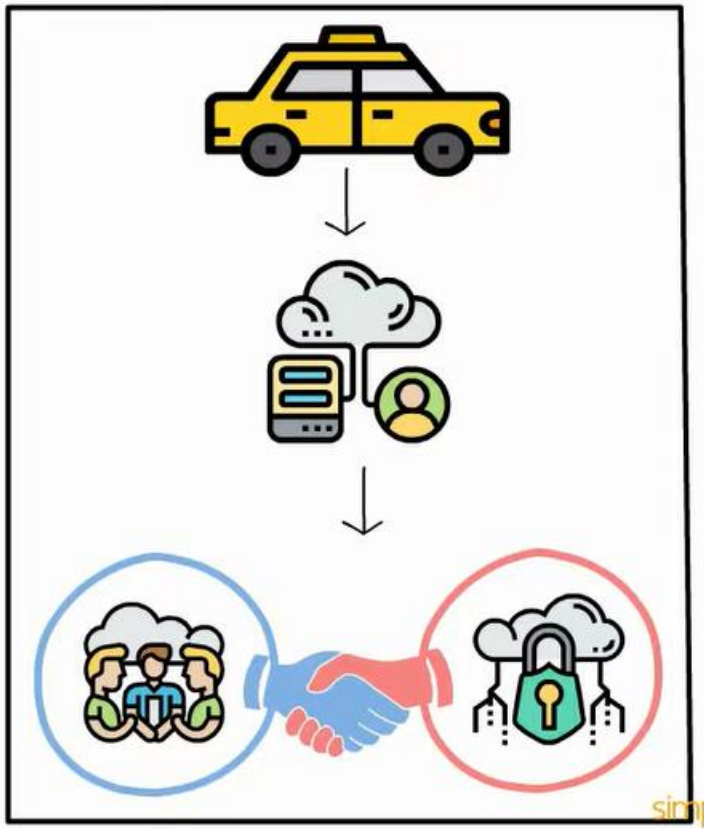


Private Cloud





Hybrid Cloud



Deployment Models

- **Public Cloud**: In public cloud your all resources and instances which you have configured are accessible to public over the internet. It is less secure. e:g webmail.

- **Private Cloud:** In private cloud your all instances are accessible only to your organization. It is more secure. We will discuss in detail that how these instances can be accessible from organization.

- **Community Cloud:** In community cloud your instances are accessible to some group of organizations.

- **Hybrid Cloud:** Hybrid cloud is basically a mixture of private and public cloud resources.

Service Models

In Service Models you can say that how your cloud computing is based

Can be categorized in three types of service models

- Infrastructure as a service (IAAS)
- Platform as a service (PAAS)
- Software as a service (SAAS)

Infrastructure as a Service (IAAS)

- Infrastructure as a Service (IAAS) is a form of Cloud Computing that provides virtualized computing resources over the internet
- IAAS provides access to fundamental resources such as physical machines, virtual machines, virtual storages etc.
- Usually billed on usage
- Usually multi tenant virtualized environment

Platform as a service (PAAS)

- Platform as a service (PAAS), as the name suggests, it provide you computing platforms which typically include operating systems, Database, Web server etc.
- For instance, if you are a PHP developer you don't need to setup the entire system.

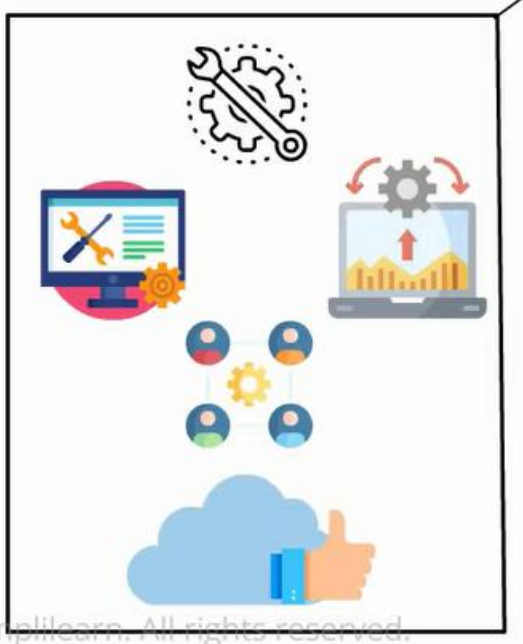
Software as a service (SAAS)

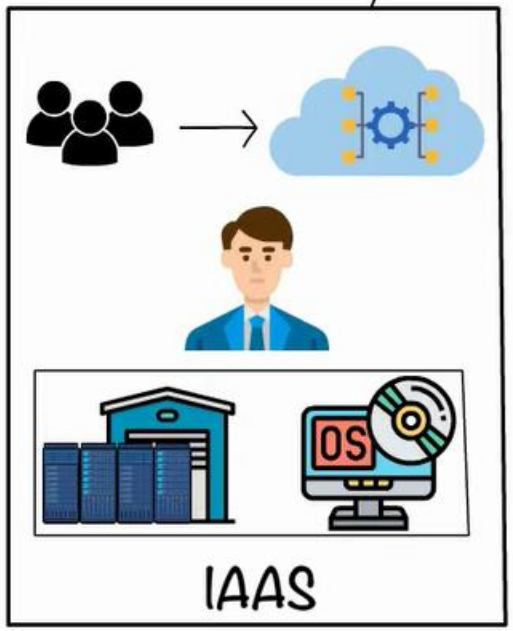
- Software as a service (SAAS) allows to use software applications as a service to end users
- SAAS is a software delivery methodology that provides licensed multi tenant access to software and its functions remotely as a web based service.
- A common example of a SaaS application is web-based email where you can send and receive email without having to manage feature additions to the email product or maintaining the servers and operating systems that the email program is running on.
- e:g (Remote Desktop Services)

On-Premises	IaaS Infrastructure as a Service	PaaS Platform as a Service	SaaS Software as a Service
Applications	Applications	Applications	Applications
Data	Data	Data	Data
Runtime	Runtime	Runtime	Runtime
Middleware	Middleware	Middleware	Middleware
o/s	o/s	o/s	o/s
Virtualization	Virtualization	Virtualization	Virtualization
Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage
Networking	Networking	Networking	Networking

You Manage

Other Manages





Advantages of Cloud Computing

- Cost Efficient
- Unlimited Storage
- Quick Deployment
- Easy access to your resources
- Scalable and Reliable
- Instant Software Updates
- Device Independence (Mobile, Tab, Laptop)
- Reduce maintenance

Disadvantages of Cloud Computing

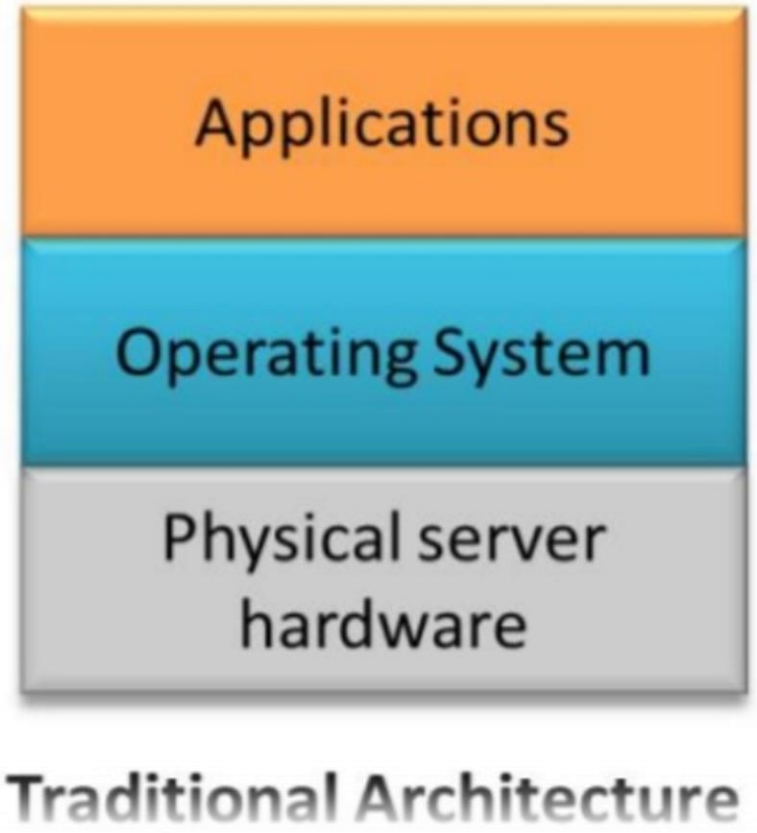
- Constant Internet Connection
- High Speed Internet Connection
- Security
- Stored data can be lost

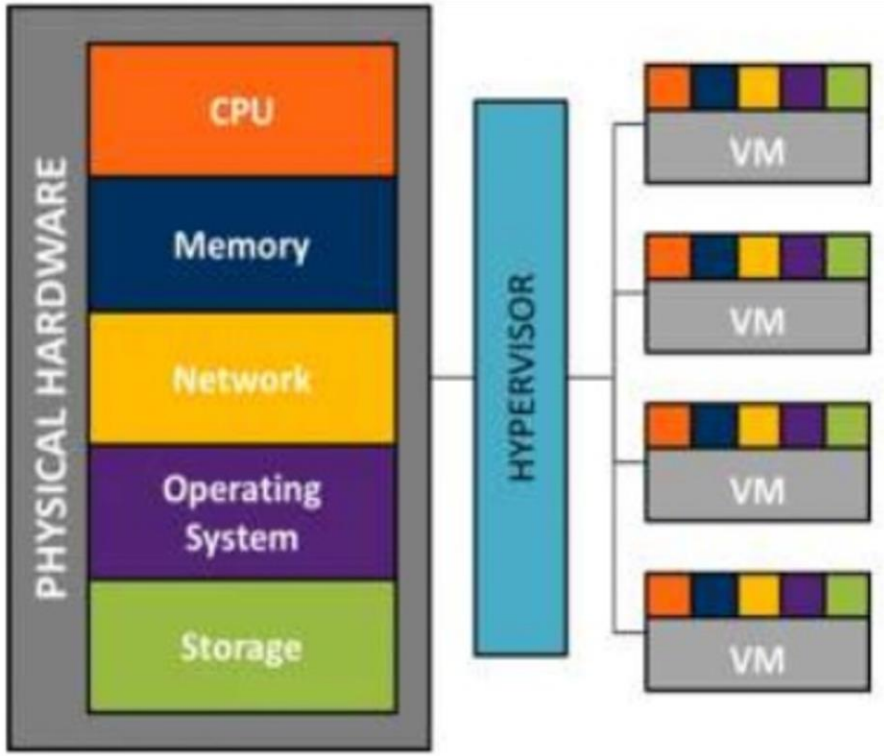
Virtualization

- Virtualization refers to the creation of a virtual resource such as a server, desktop, operating system, file, storage or network.

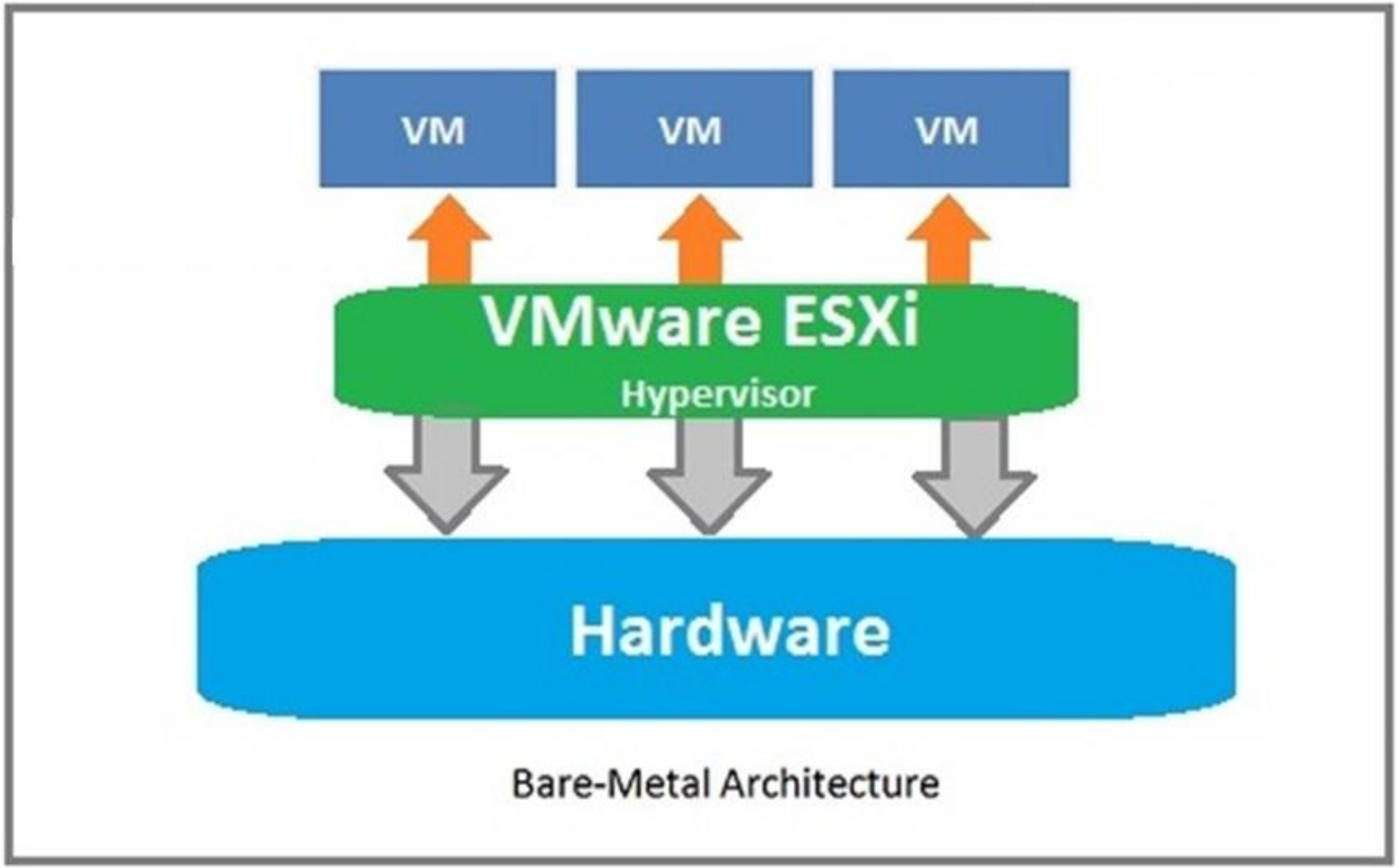
- The main goal of virtualization is to manage workloads by radically transforming traditional computing to make it more scalable. Virtualization has been a part of the IT landscape for decades now, and today it can be applied to a wide range of system layers, including operating system-level virtualization, hardware-level virtualization and server virtualization.

Traditional Vs Virtualization



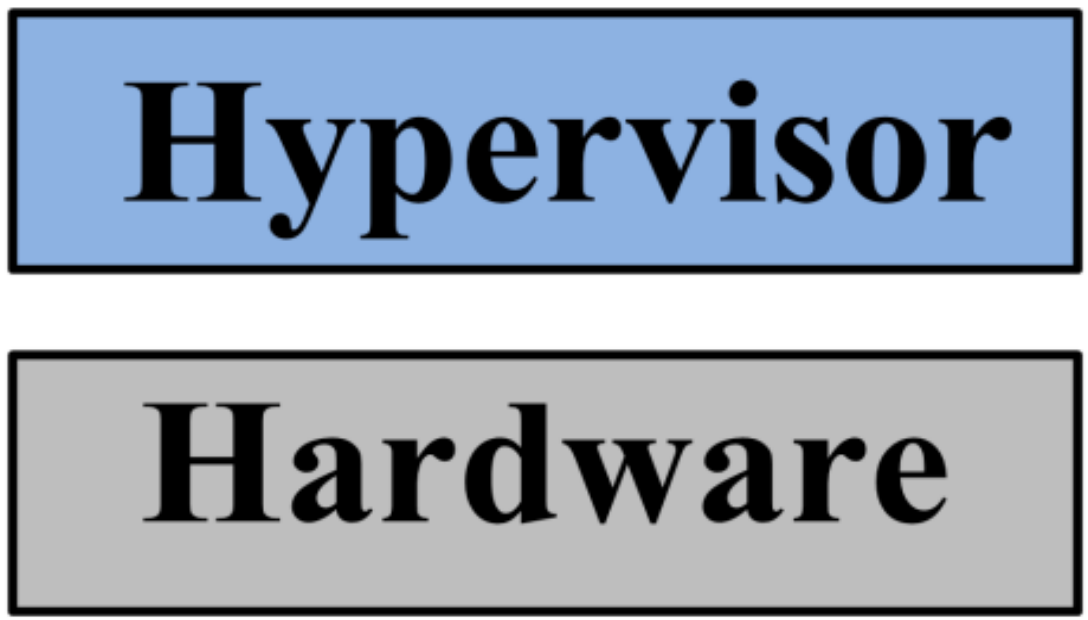


Hypervisor


VM
VM
VM
VMware ESXi
Hypervisor
Hardware
Bare-Metal Architecture

Types Of Hypervisor

- **Type 1 (native) Hypervisor**: Hypervisors run directly on the system hardware – A "bare metal" embedded hypervisor.



Type 1 Hypervisor

- **VMware ESX and ESXi :** Offer advanced features and scalability, but require licensing, so the costs are higher.
- **Microsoft Hyper-V :** Doesn't offer many of the advanced features. available in both a free edition, 4 commercial editions
- **Citrix XenServer :** Just as Red Hat Enterprise Virtualization uses KVM (Kernel Based VM), Citrix uses Xen in the commercial XenServer.
- **Oracle VM :** The Oracle hypervisor is based on the open source Xen. However, if you need hypervisor support and product updates, it will cost you.

Types Of Hypervisor

- **Type 2 (hosted) Hypervisor**: Hypervisors run on a host operating system that provides virtualization services, such as I/O device support and memory management.

Type 2 Hypervisor

- **VMware Workstation/Fusion/Player :** It is free & some advanced features, such as record-and-replay and VM snapshot support.

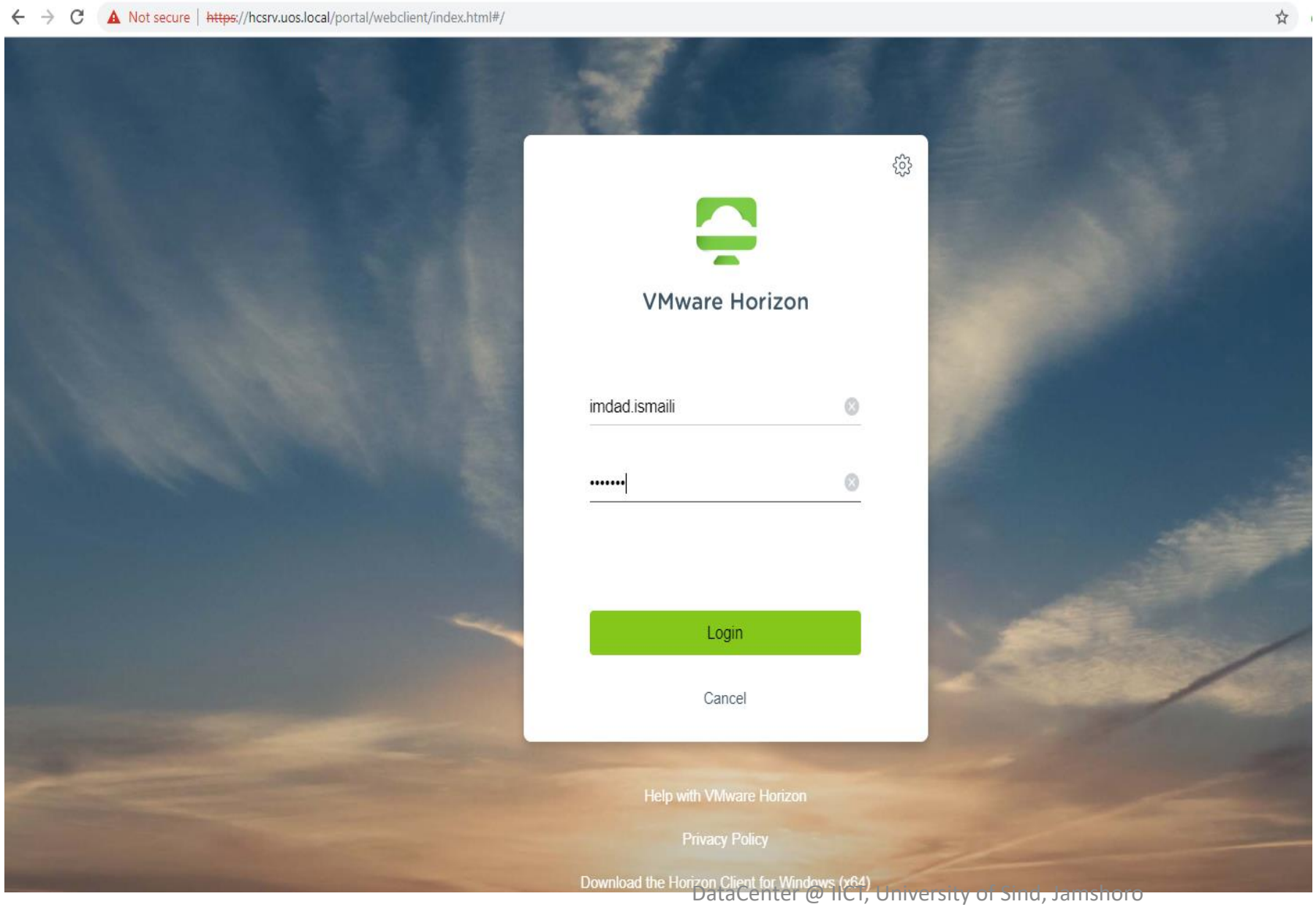
- **Microsoft Virtual PC :** Runs only on Windows 7 and supports only Windows operating systems running on it.

- **Oracle VM VirtualBox :** Despite being a free, hosted product with a very small footprint, VirtualBox shares many features with VMware vSphere and Microsoft Hyper-V.

- **Red Hat Enterprise Virtualization :** Has qualities of both a hosted and a bare-metal virtualization hypervisor. It can turn the Linux kernel itself into a hypervisor so the VMs have direct access to the physical hardware.

SU Private Cloud

Accessing Cloud Applications



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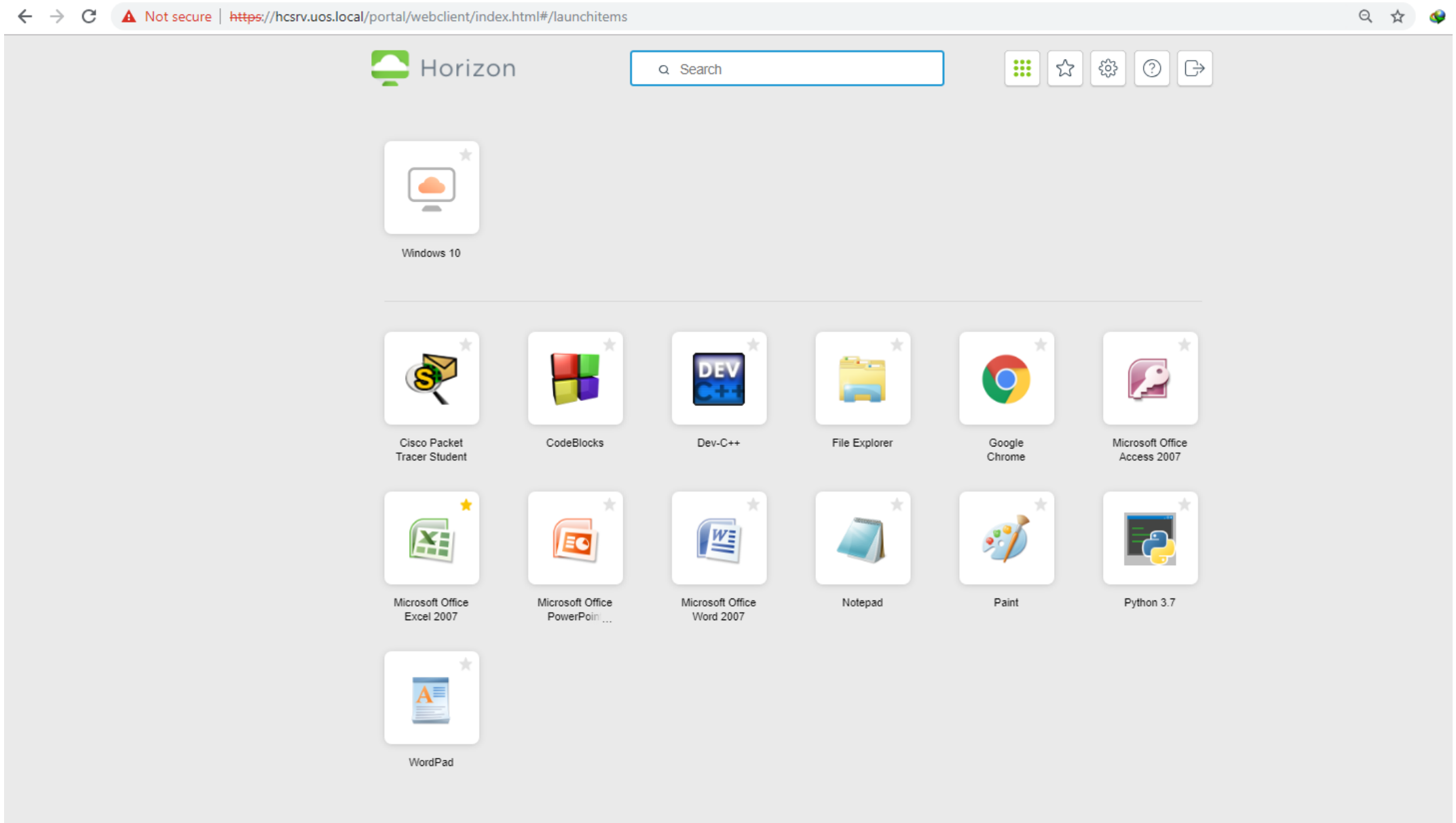

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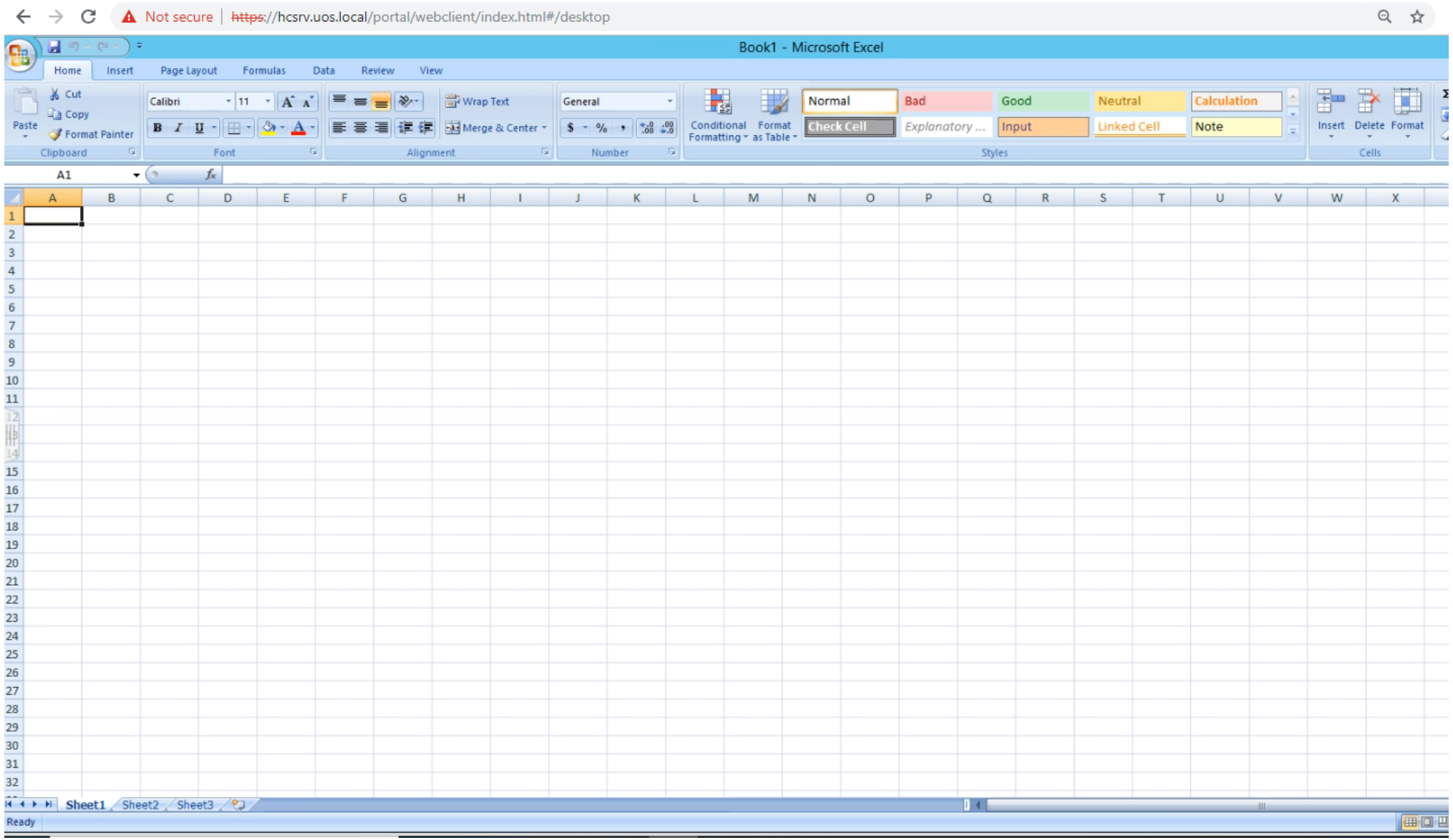
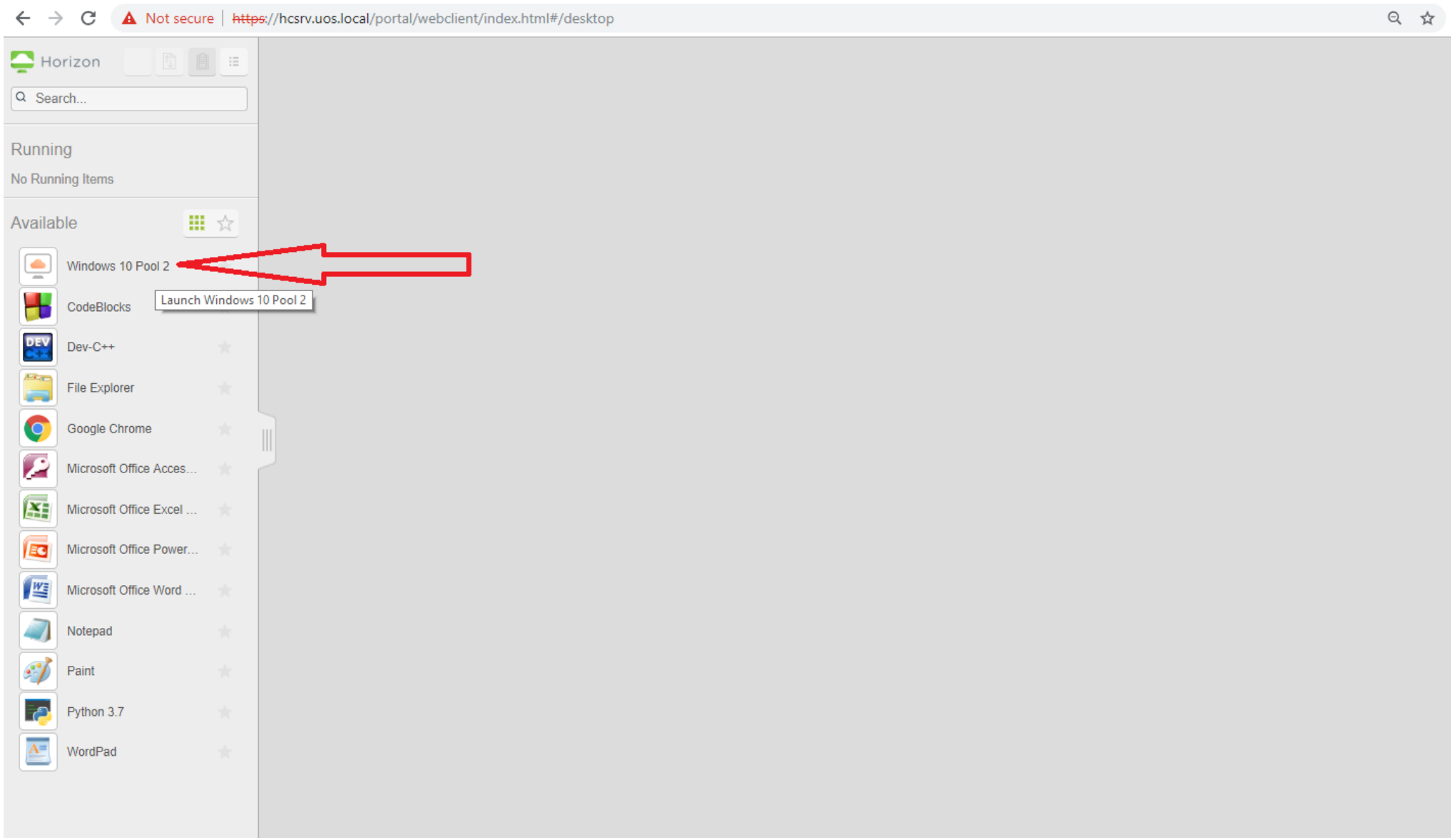


Accessing Windows 10 on Cloud



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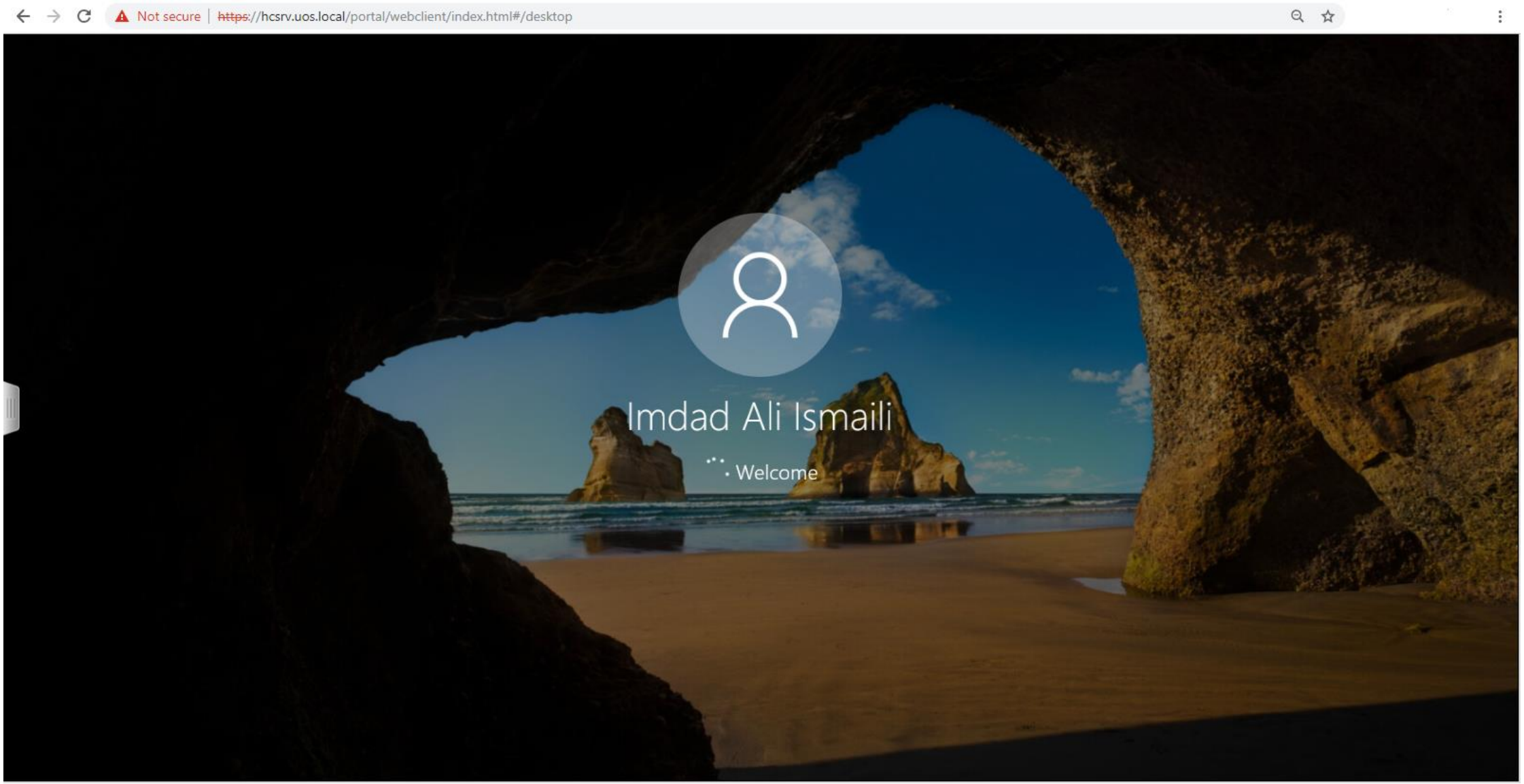

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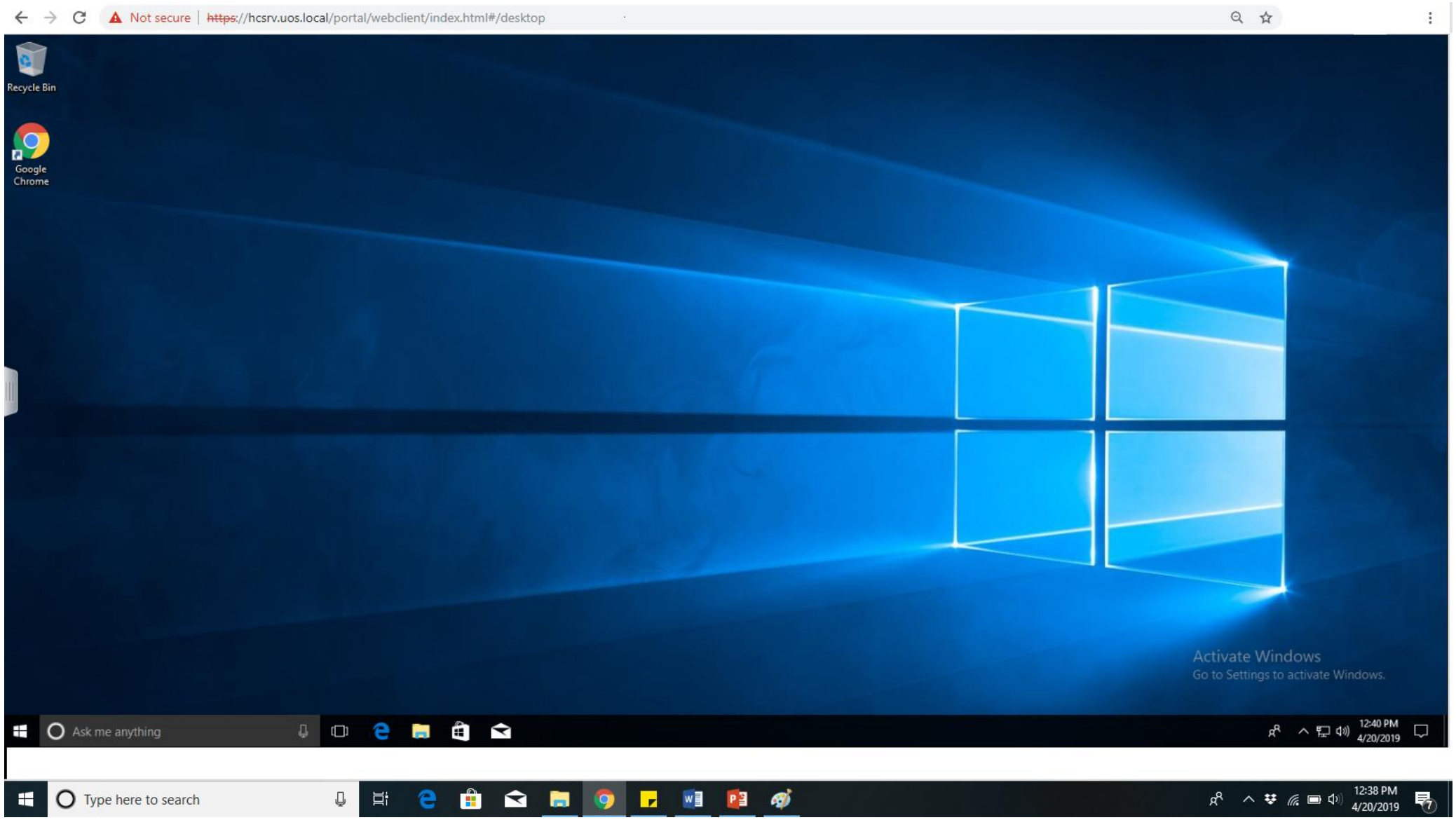

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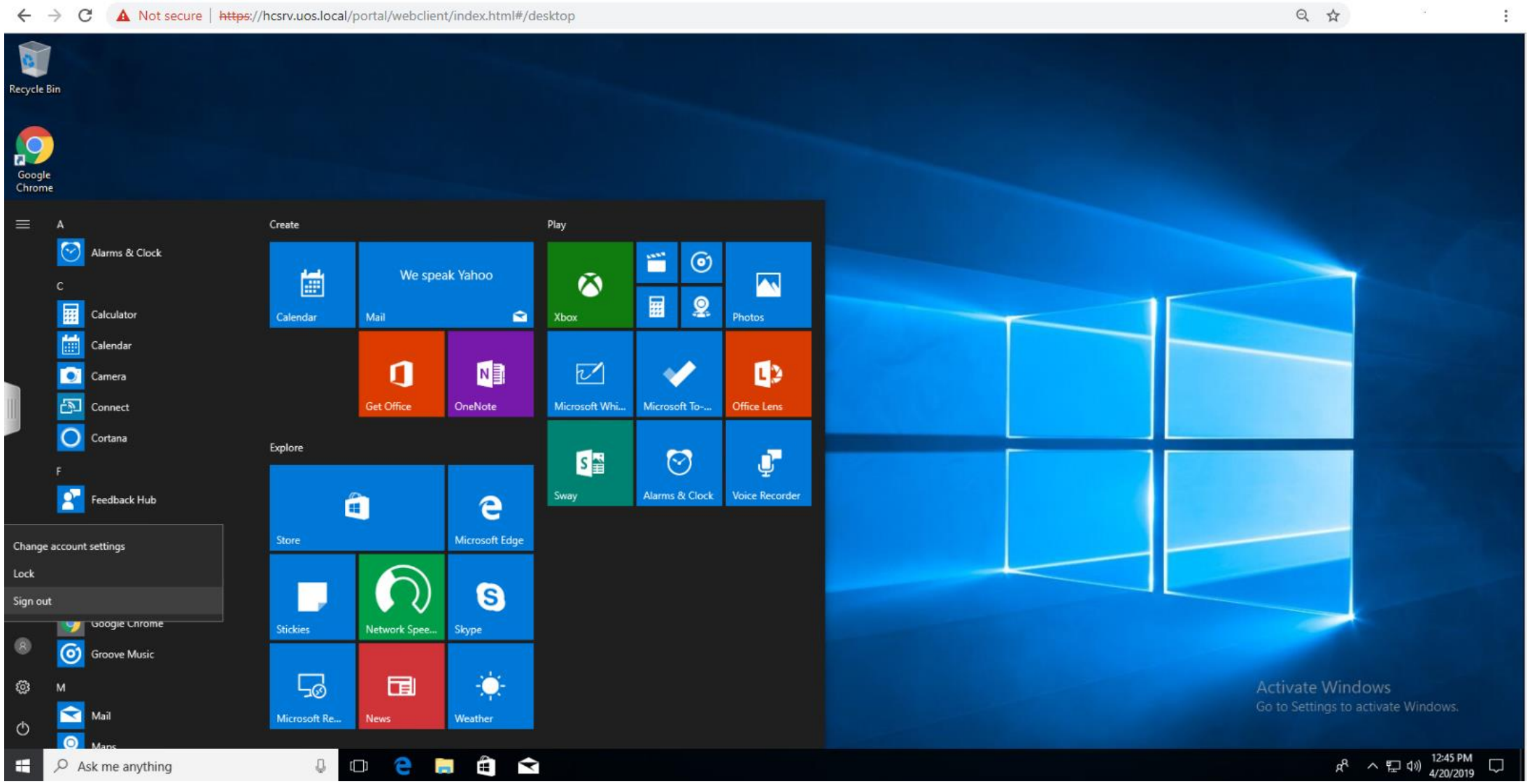

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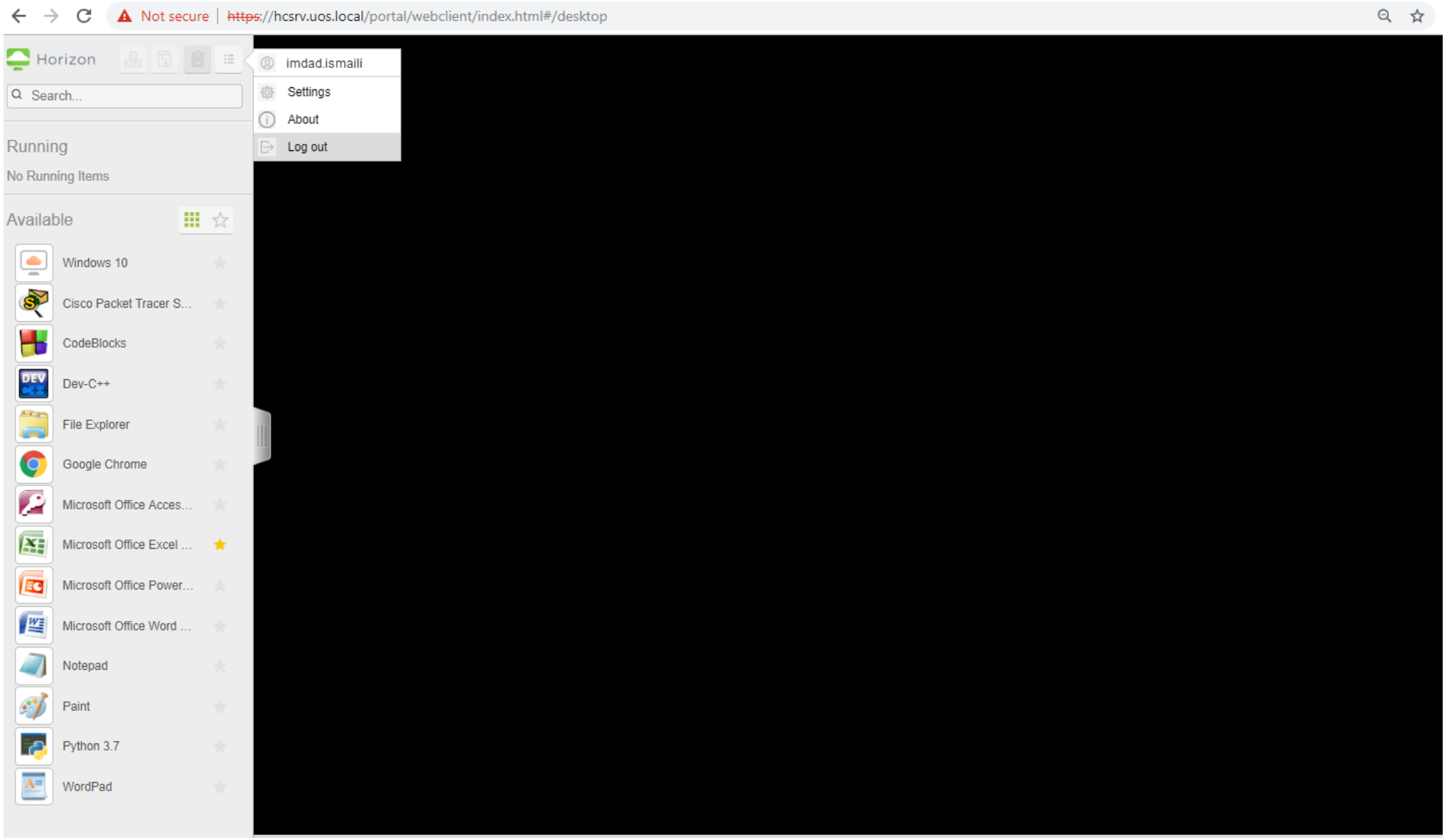

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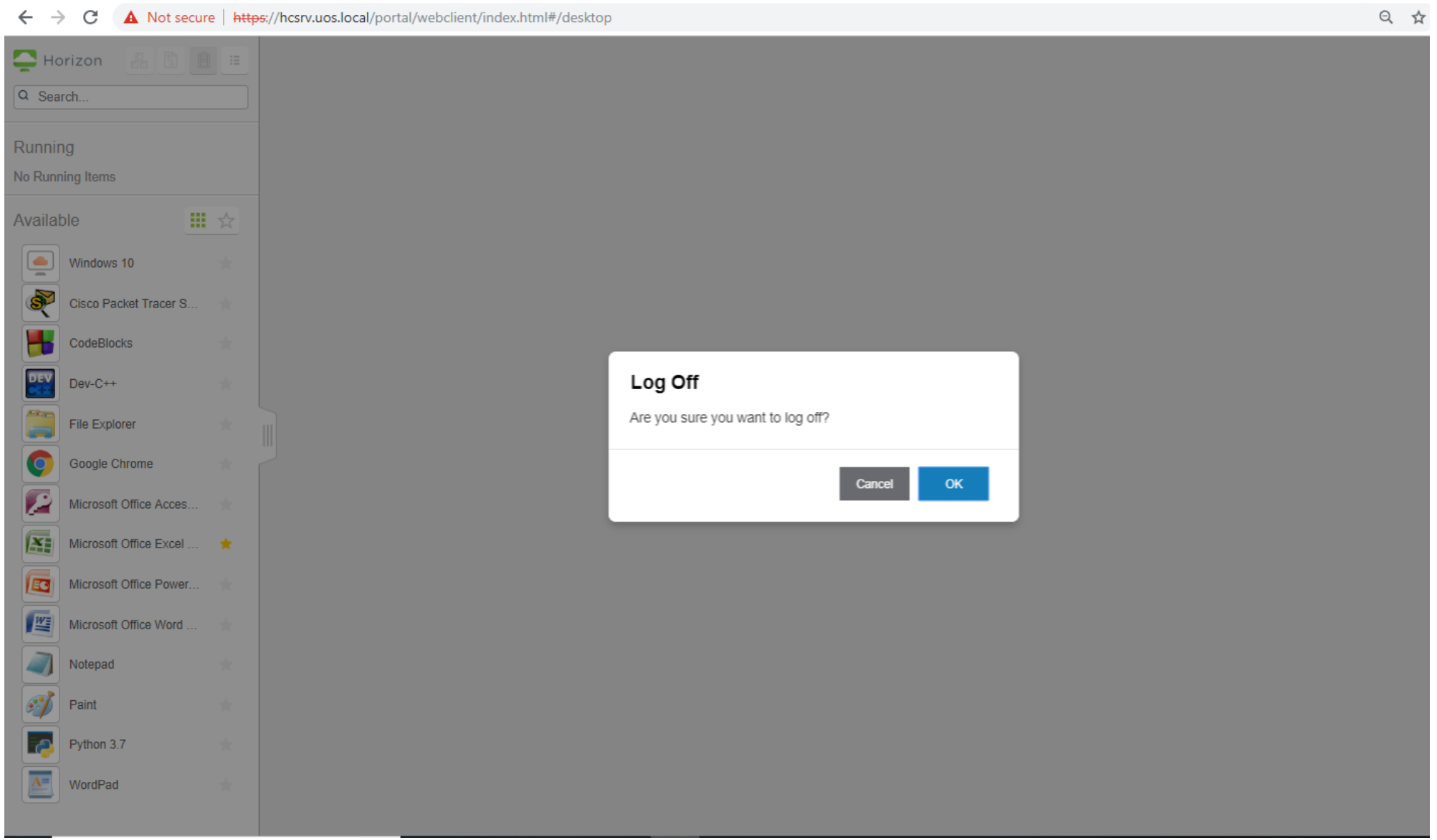

Thank you