

Cloud Computing

Lab Exercise No: 1

2348548_Sai Darshan

1. Describe IaaS

Infrastructure as a Service (IaaS) is a type of cloud computing service that provides essential compute, storage, and networking resources on demand. Few of the key points are as follows:

- **Resource Provisioning:** IaaS offers scalable computing resources, including servers, storage, and networking components. Users can access these resources as needed, paying only for what they use.
- **Cost Savings:** By migrating to an IaaS solution, organizations reduce the need for maintaining on-premises data centers and save on hardware costs.
- **Flexibility and Scalability:** IaaS allows users to scale IT resources up or down based on demand. It also enables quick provisioning of new applications.
- **Managed Infrastructure:** Cloud providers (e.g., Azure, Google Cloud) manage the underlying infrastructure, while users handle their own software, including operating systems and applications.

2. List the Compute and Storage services available in AWS and GCP.

The list of the main Compute and Storage services available in AWS and GCP are:

AWS (Amazon Web Services)

Compute Services:

Amazon EC2 (Elastic Compute Cloud) - Scalable virtual servers.

Amazon ECS (Elastic Container Service) - Container orchestration service.

AWS Lambda - Serverless computing service.

Amazon EKS (Elastic Kubernetes Service) - Managed Kubernetes service.

AWS Fargate - Serverless compute for containers.

Amazon Lightsail - Easy-to-use cloud platform for simpler workloads.

AWS Batch - Fully managed batch processing at any scale.

AWS Elastic Beanstalk - Easy-to-use service for deploying and scaling web applications.

AWS Outposts - Run AWS infrastructure and services on-premises.

Storage Services:

Amazon S3 (Simple Storage Service) - Object storage service.

Amazon EBS (Elastic Block Store) - Block storage for use with EC2 instances.

Amazon EFS (Elastic File System) - Scalable file storage for EC2.

Amazon FSx - Fully managed file systems.

Amazon Glacier - Low-cost archival storage.

AWS Storage Gateway - Hybrid cloud storage with on-premises access.

AWS Backup - Centralized backup service to manage and automate backups.

Amazon S3 Glacier Deep Archive - Lowest-cost storage for long-term data archiving.

GCP (Google Cloud Platform)

Compute Services:

Google Compute Engine - Scalable virtual machines.

Google Kubernetes Engine (GKE) - Managed Kubernetes service.

Google App Engine - Platform-as-a-Service for building scalable applications.

Google Cloud Functions - Event-driven serverless compute.

Google Cloud Run - Fully managed compute platform for deploying containerized applications.

Google Anthos - Hybrid and multi-cloud Kubernetes management.

Google Cloud Workflows - Orchestrate and automate Google Cloud and HTTP-based API services.

Google Cloud Batch - Fully managed batch processing service.

Storage Services:

Google Cloud Storage - Object storage service.

Google Persistent Disk - Block storage for use with GCE instances.

Google Filestore - Fully managed file storage service.

Google Cloud Storage Nearline - Low-cost storage for data accessed less than once a month.

Google Cloud Storage Coldline - Even lower-cost storage for data rarely accessed.

Google Cloud Storage Archive - Lowest-cost storage for long-term data archiving.

Google Cloud Datastore - NoSQL document database built for automatic scaling.

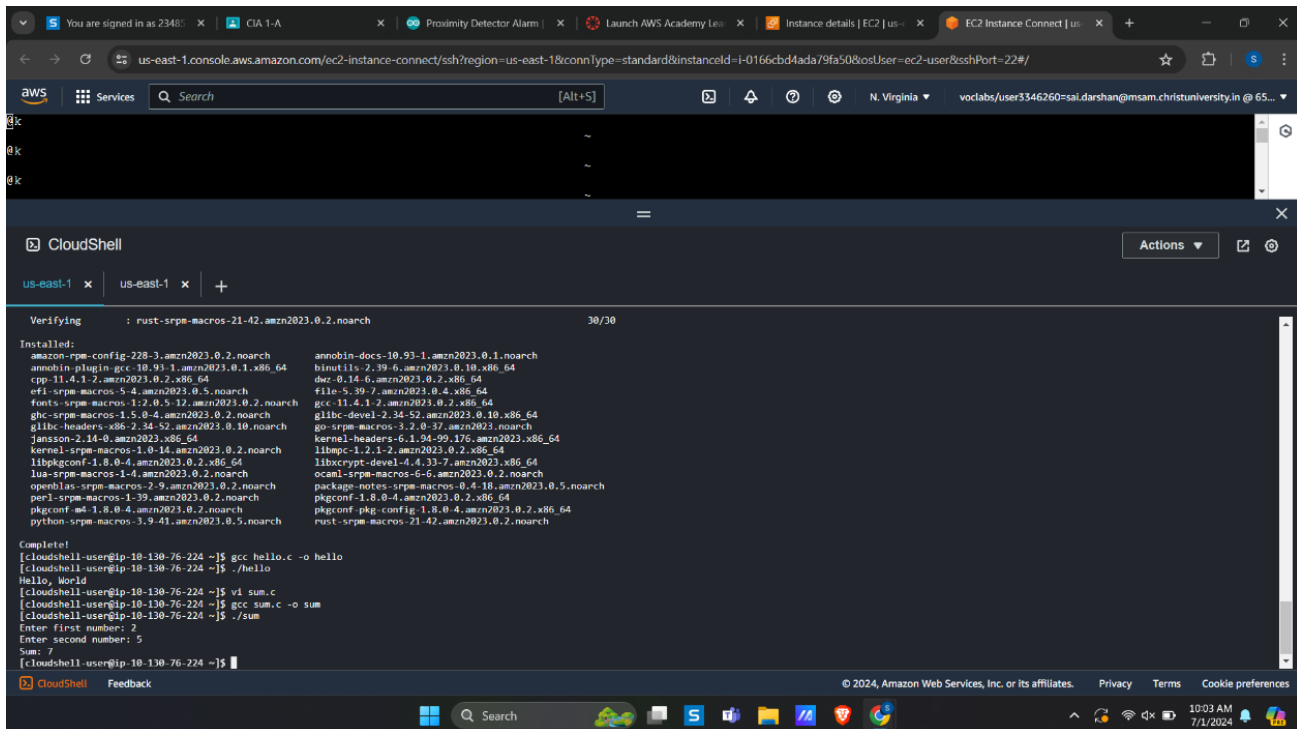
Google Cloud Spanner - Globally distributed, strongly consistent database service.

Google Cloud SQL - Fully managed relational database service for MySQL, PostgreSQL, and SQL Server.

Google Cloud Bigtable - Scalable NoSQL database for large analytical and operational workloads.

Google Cloud Firestore - NoSQL document database for mobile and web app development.

3. Create 2 Identical AWS EC2 Instances (Instance Name: Regno_EC2_VM1, Regno_EC2_VM2) and install the necessary packages to execute a program of your choice in 'Regno_EC2_VM1'.

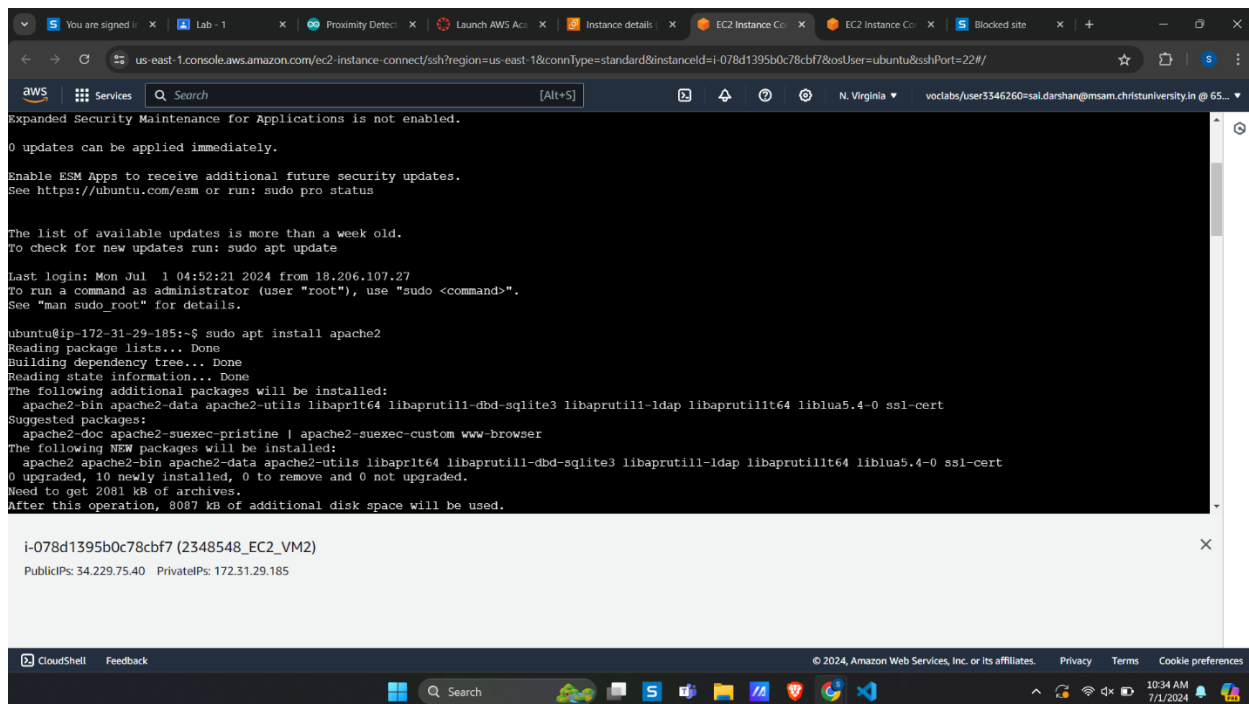


```
Verifying : rust-srpm-macros-21-42.amzn2023.0.2.noarch 38/38

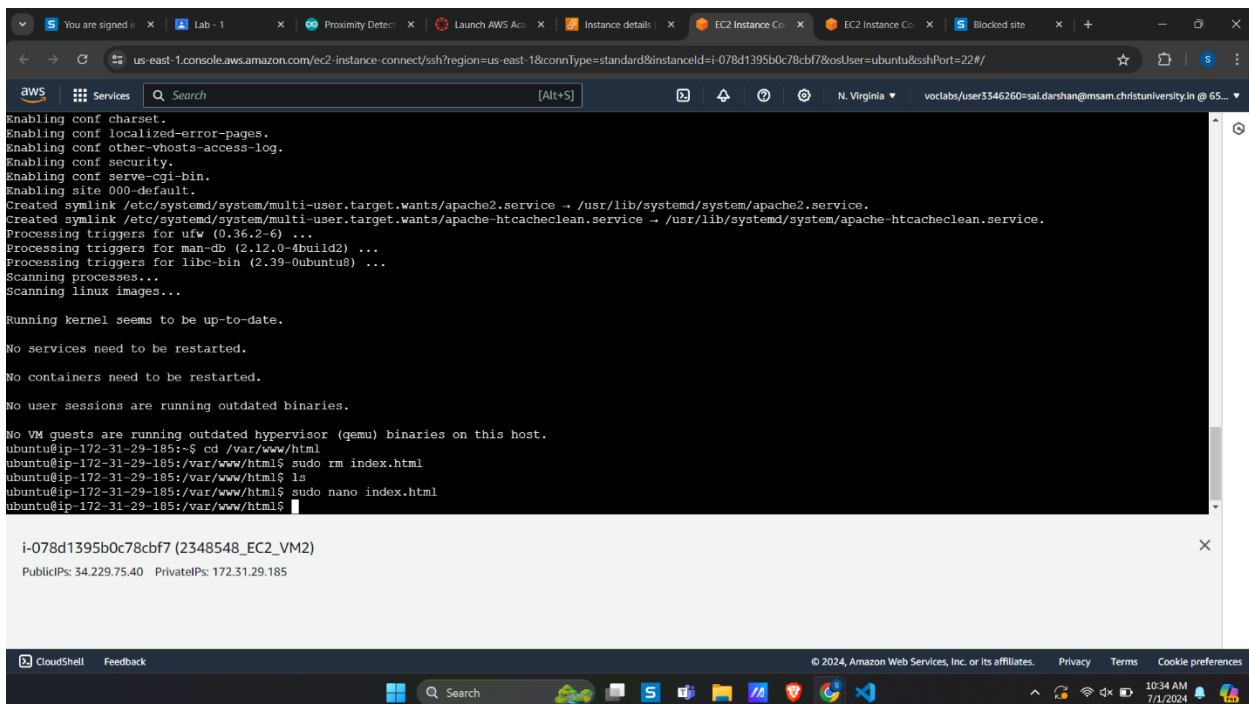
Installed:
amazon-rpm-config-228-3.amzn2023.0.2.noarch
anubis-plugin-gcc-10.93-1.amzn2023.0.1.x86_64
cpp-11.4.1-2.amzn2023.0.2.x86_64
efl-srpm-macros-5.4.amzn2023.0.5.noarch
fonts-srpm-macros-1:2.0.5-12.amzn2023.0.2.noarch
ghc-srpm-macros-1.5.0-4.amzn2023.0.2.noarch
glibc-headers-x86-2.34-52.amzn2023.0.10.noarch
jansson-2.14-0.amzn2023.x86_64
kernel-srpm-macros-1.0-14.amzn2023.0.2.noarch
libpkgconf-1.8.0-4.amzn2023.0.2.x86_64
lua-srpm-macros-1.4.amzn2023.0.2.noarch
openblas-srpm-macros-2.9.amzn2023.0.2.noarch
perl-srpm-macros-1.39.amzn2023.0.2.noarch
pkgconf-ad-1.8.0-4.amzn2023.0.2.noarch
python-srpm-macros-3.9.41.amzn2023.0.5.noarch
rust-srpm-macros-21-42.amzn2023.0.2.noarch
annobin-docs-10.93-1.amzn2023.0.1.noarch
binutils-2.39-6.amzn2023.0.10.x86_64
bzip-0.14-6.amzn2023.0.2.x86_64
file-5.39-7.amzn2023.0.4.x86_64
gcc-11.4.1-2.amzn2023.0.2.x86_64
glibc-devel-2.34-52.amzn2023.0.10.x86_64
go-srpm-macros-1.2.0-57.amzn2023.noarch
kernel-headers-6.1.94-99.176.amzn2023.x86_64
libmpc-1.2.1-2.amzn2023.0.2.x86_64
libxcrypt-devel-4.4.33-7.amzn2023.x86_64
ocaml-srpm-macros-6-6.amzn2023.0.2.noarch
package-notes-srpm-macros-0.4-18.amzn2023.0.5.noarch
pkgconf-1.8.0-4.amzn2023.0.2.x86_64
pkgconf-pkg-config-1.8.0-4.amzn2023.0.2.x86_64
rust-srpm-macros-21-42.amzn2023.0.2.noarch

Complete!
[cloudshell-user@ip-10-130-76-224 ~]$ gcc hello.c -o hello
[cloudshell-user@ip-10-130-76-224 ~]$ ./hello
Hello, World
[cloudshell-user@ip-10-130-76-224 ~]$ vi sum.c
[cloudshell-user@ip-10-130-76-224 ~]$ gcc sum.c -o sum
[cloudshell-user@ip-10-130-76-224 ~]$ ./sum
Enter first number: 2
Enter second number: 5
Sum: 7
[cloudshell-user@ip-10-130-76-224 ~]$
```


4. Configure a Webserver on 'Regno_EC2_VM2' Instance and host your organizations website (Static Website) and provide access only to your machine.



```
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-078d1395b0c78cbf7&osUser=ubuntu&sshPort=22#/  
Expanded Security Maintenance for Applications is not enabled.  
0 updates can be applied immediately.  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
The list of available updates is more than a week old.  
To check for new updates run: sudo apt update  
  
Last login: Mon Jul 1 04:52:21 2024 from 18.206.107.27  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
ubuntu@ip-172-31-29-185:~$ sudo apt install apache2  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following additional packages will be installed:  
  apache2-bin apache2-data apache2-utils libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 liblua5.4-0 ssl-cert  
Suggested packages:  
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser  
The following NEW packages will be installed:  
  apache2 apache2-bin apache2-data apache2-utils libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 liblua5.4-0 ssl-cert  
0 upgraded, 10 newly installed, 0 to remove and 0 not upgraded.  
Need to get 2081 kB of archives.  
After this operation, 8087 kB of additional disk space will be used.  
  
i-078d1395b0c78cbf7 (2348548_EC2_VM2)  
PublicIPs: 34.229.75.40 PrivateIPs: 172.31.29.185
```



```
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-078d1395b0c78cbf7&osUser=ubuntu&sshPort=22#/  
Enabling conf charset.  
Enabling conf localized-error-pages.  
Enabling conf other-vhosts-access-log.  
Enabling conf security.  
Enabling conf serve-cgi-bin.  
Enabling site 000-default.  
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service -> /usr/lib/systemd/system/apache2.service.  
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service -> /usr/lib/systemd/system/apache-htcacheclean.service.  
Processing triggers for ufw (0.36.2-6) ...  
Processing triggers for man-db (2.12.0-4build2) ...  
Processing triggers for libc-bin (2.39-0ubuntu8) ...  
Scanning processes...  
Scanning linux images...  
  
Running kernel seems to be up-to-date.  
  
No services need to be restarted.  
  
No containers need to be restarted.  
  
No user sessions are running outdated binaries.  
  
No VM guests are running outdated hypervisor (qemu) binaries on this host.  
ubuntu@ip-172-31-29-185:~$ cd /var/www/html  
ubuntu@ip-172-31-29-185:/var/www/html$ sudo rm index.html  
ubuntu@ip-172-31-29-185:/var/www/html$ ls  
ubuntu@ip-172-31-29-185:/var/www/html$ sudo nano index.html  
ubuntu@ip-172-31-29-185:/var/www/html$
```

10:29

Vol 1 8.08
LTE2 KB/s 5G 95%



34.229.75.40



Welcome to Sai's Page

Amazon Web Service

This is an Lab Excercise of Cloud
Computing.

Get Started