



A REPORT OF

ONE WEEK ONLINE STUDENT DEVELOPMENT

PROGRAMME

ON

CLOUD COMPUTING WITH AWS

&

FULL STACK DEVELOPMENT WITH PHP & MYSQL

ORGANIZED BY

DEPARTMENT OF COMPUTER SCIENCE AND

APPLICATION

ATAL BIHARI VAJPAYEE VISHWAVIDYALAYA, BILASPUR (C.G.)

IN ASSOCIATION WITH

E & ICT ACADEMY, IIT KANPUR

(UNDER MoU)

SUPPORTED BY

IEEE CHAPETER

DEPARTMENT OF COMPUTER SCIENCE AND APPLICATION

ATAL BIHARI VAJPAYEE VISHWAVIDYALAYA, BILASPUR (C.G.)

FROM

14-19 OCTOBER, 2024

EVENT DETAIL

The Department of Computer Science and Application at Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur, in collaboration with E & ICT Academy, IIT Kanpur, and supported by the IEEE Chapter of the department, organized a one-week online Student Development Programme (SDP) on “Cloud Computing with AWS & Full Stack Development with PHP & MySQL.” Held from October 14 to October 19, 2024, the program was aimed at providing students with a comprehensive understanding and practical exposure to cloud computing, specifically focusing on Amazon Web Services (AWS), and full-stack development using PHP and MySQL. The event was convened by Dr. H.S. Hota, Head of the Department of Computer Science and Application, with Dr. Shriya Sahu, Assistant Professor, serving as the coordinator.

The primary objectives of this training program were to introduce students to the fundamentals of cloud computing, which has become an essential technology for modern enterprise environments, and to build proficiency in full-stack development. The course structure ensured that participants gained both theoretical understanding and practical hands-on skills in these domains. The curriculum covered a broad spectrum of topics, starting with the essentials of cloud computing and progressing through the intricate features of AWS, such as EC2, EBS, RDS, and IAM, which are widely used by organizations worldwide. The training also introduced students to the foundational concepts of full-stack development, equipping them with skills in PHP for back-end development and MySQL for database management, making them capable of building and deploying secure web applications.

The program began with an overview of cloud computing, covering the history, benefits, and reasons for the technology’s adoption across various sectors. In the following sessions, students were introduced to the different cloud service models – Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS), alongside the deployment models such as public, private, hybrid, and community cloud models. The program provided a global overview of the top ten cloud service providers, with a detailed focus on Amazon Web Services (AWS), which was used as the primary cloud platform throughout the training. Participants were also briefed on AWS certification paths, including the Associate and Professional levels, guiding them on how to become certified AWS professionals.

EVENT DETAIL

AWS core concepts, such as Regions and Availability Zones (AZs), which represent AWS's geographical data distribution strategy, were discussed to provide students with a deeper understanding of cloud infrastructure. The training sessions also covered Amazon EC2 (Elastic Compute Cloud) and Elastic IPs, which are essential for provisioning and managing virtual servers in the cloud. Students were taught the concept and practical uses of Amazon Elastic Block Store (EBS), a scalable storage solution, including its volume types, features, and benefits. The sessions included real-world case studies and company references that utilize EBS, making it easier for students to understand its relevance in business environments.

The training then delved into identity management and security on AWS, where participants explored Identity Access Management (IAM) for role-based access control, along with snapshots for backup and disaster recovery. AWS's Multi-Factor Authentication (MFA) and Virtual MFA applications were introduced to highlight the importance of robust security practices. Additionally, the Elastic Load Balancing (ELB) and Auto Scaling Groups were covered to explain how AWS manages and scales resources based on demand, ensuring high availability and cost-efficiency.

Another significant focus of the program was Amazon RDS (Relational Database Service), where students learned about database management, pricing structures, and practical applications of RDS in cloud environments. The program also provided insights into Amazon S3 (Simple Storage Service) and its S3 Glacier storage class, ideal for archival and long-term data storage. Other services, such as Amazon Macie, which helps with data security and privacy, were also discussed to give students a holistic view of AWS's capabilities.

The one-week online program concluded successfully, meeting its objectives and equipping students with an in-depth understanding of cloud computing and full-stack development. Participants left the program with enhanced knowledge and skills in managing cloud-based resources, utilizing identity and security management, scaling solutions, and full-stack development techniques. The program not only deepened students' technical expertise but also prepared them to meet industry standards and requirements in their future careers. This initiative by the Department of Computer Science and Application, supported by E & ICT Academy, IIT Kanpur, and IEEE, provided a valuable opportunity for students to stay competitive in a rapidly evolving technological landscape.

FLYER



Department of Computer Science & Application
Atal Bihari Vajpayee University, Bilaspur (C.G.)

ONE WEEK

ONLINE STUDENT DEVELOPMENT PROGRAMME

Cloud Computing with AWS

&

Full Stack Development With PHP & MySQL



— in Association with —
EICT Academy, IIT Kanpur
(Under MOU)

Supported by
IEEE Chapter
Department of Computer Science & Application

 **14 -19 Oct , 2024**

Convenor

DR. H. S. HOTA
Prof. & Head, Dept. of CSA
Atal Bihari Vajpayee University
Bilaspur (C.G.)

Coordinator

DR. SHRIYA SAHU
Assistant Professor
Atal Bihari Vajpayee University
Bilaspur (C.G.)

php

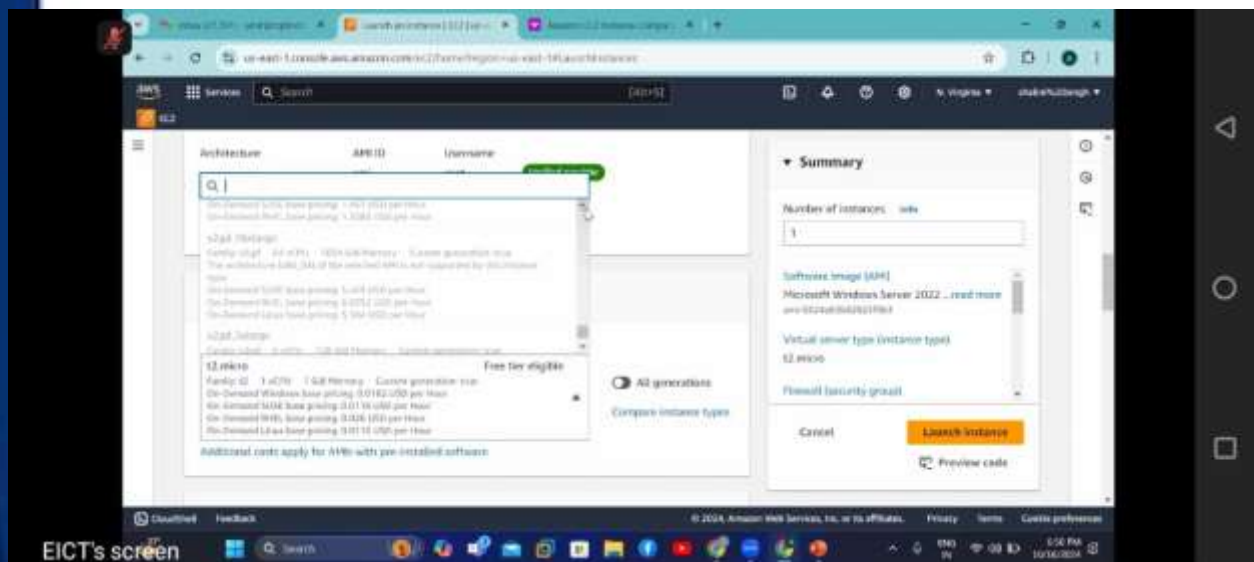
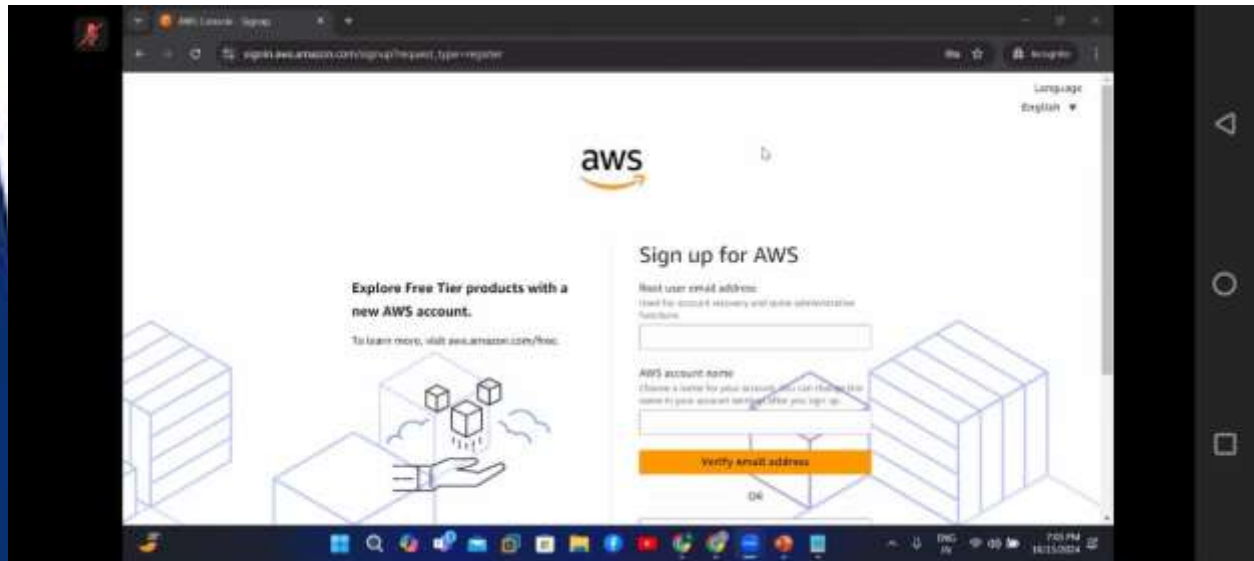
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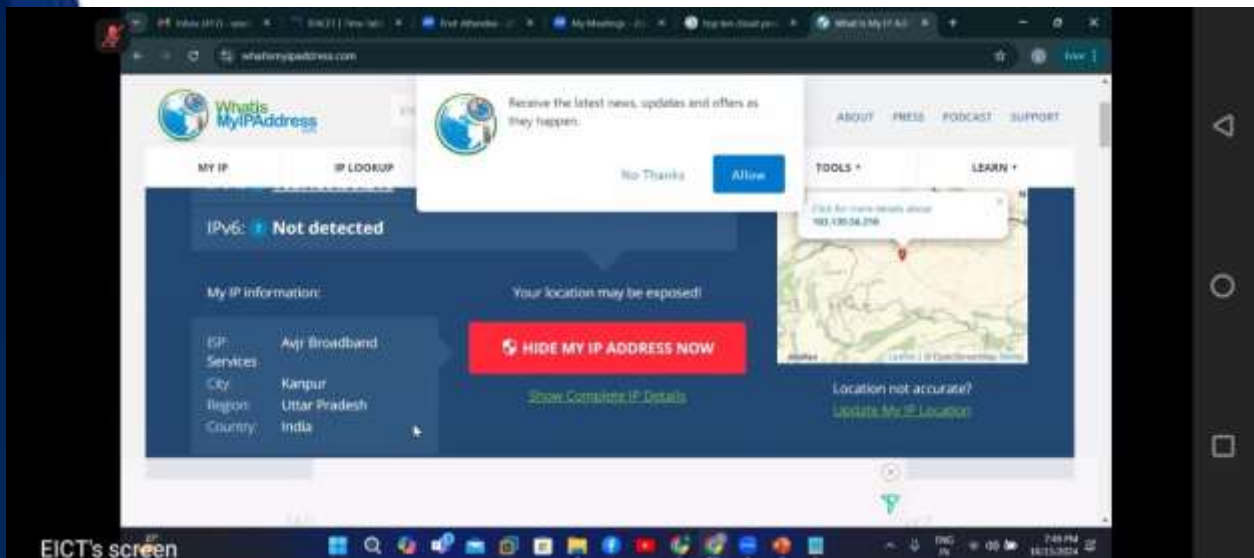
Certificate by IIT Kanpur



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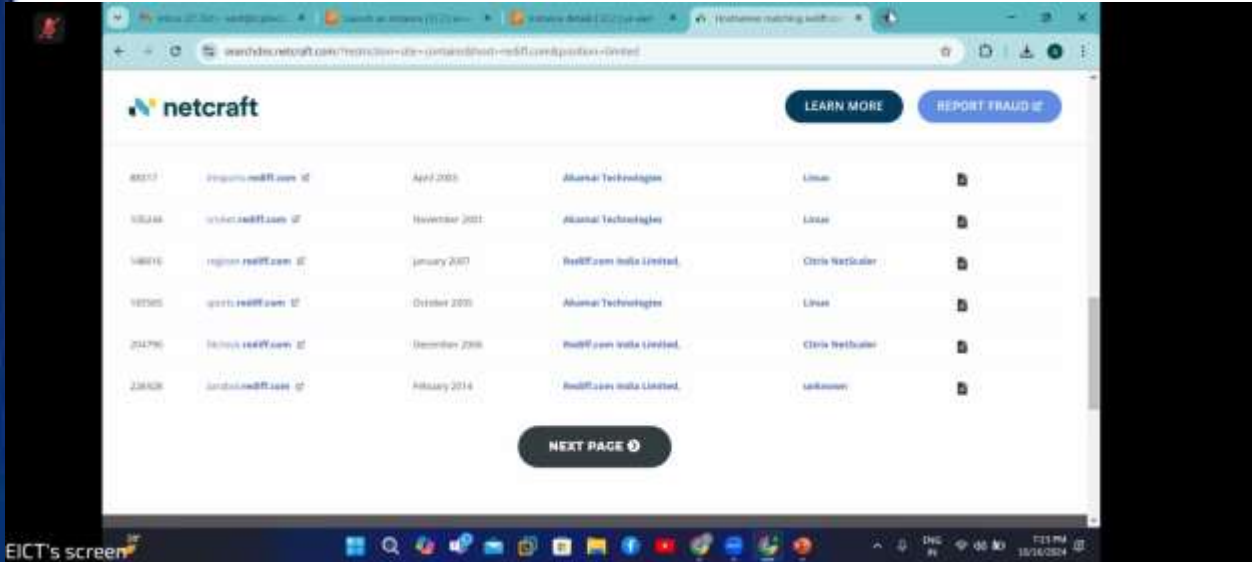
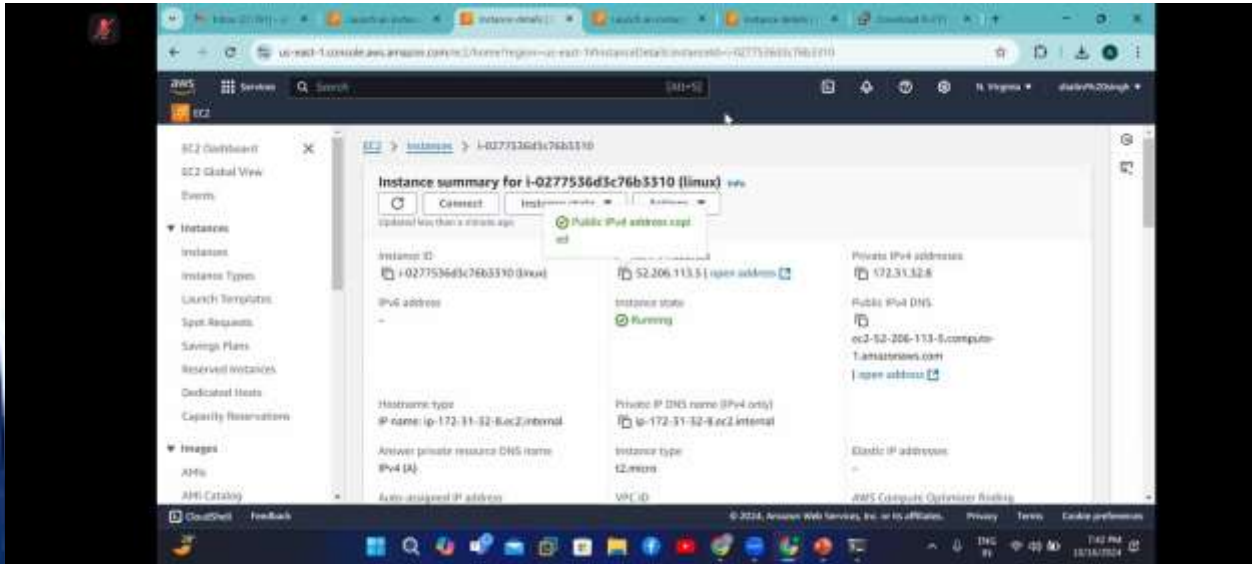


EICT's screen

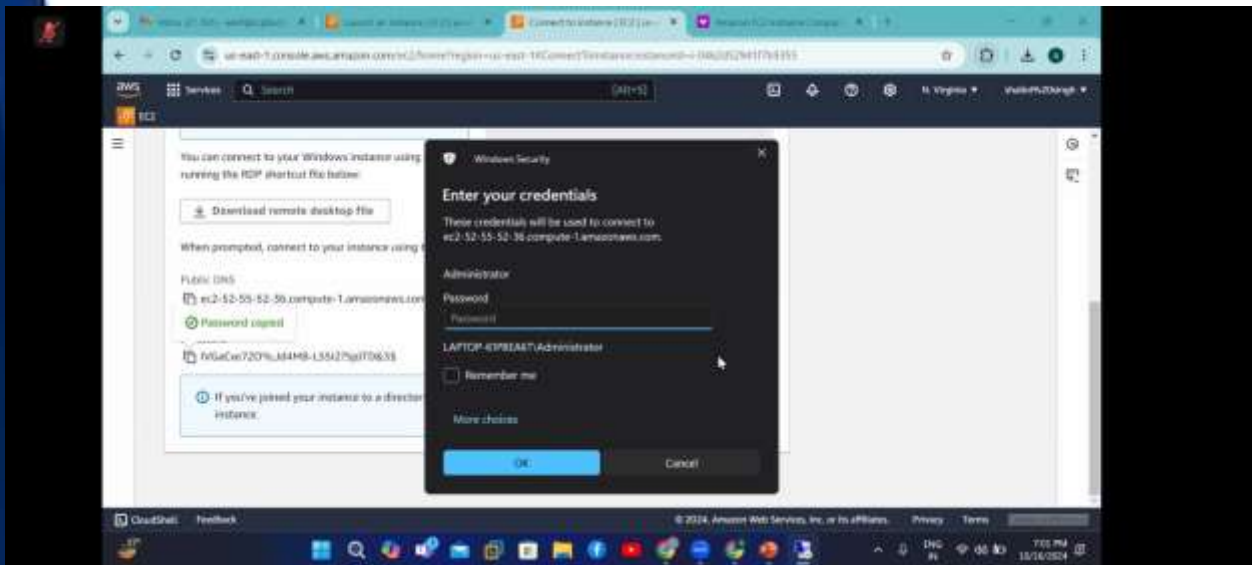


EICT's screen

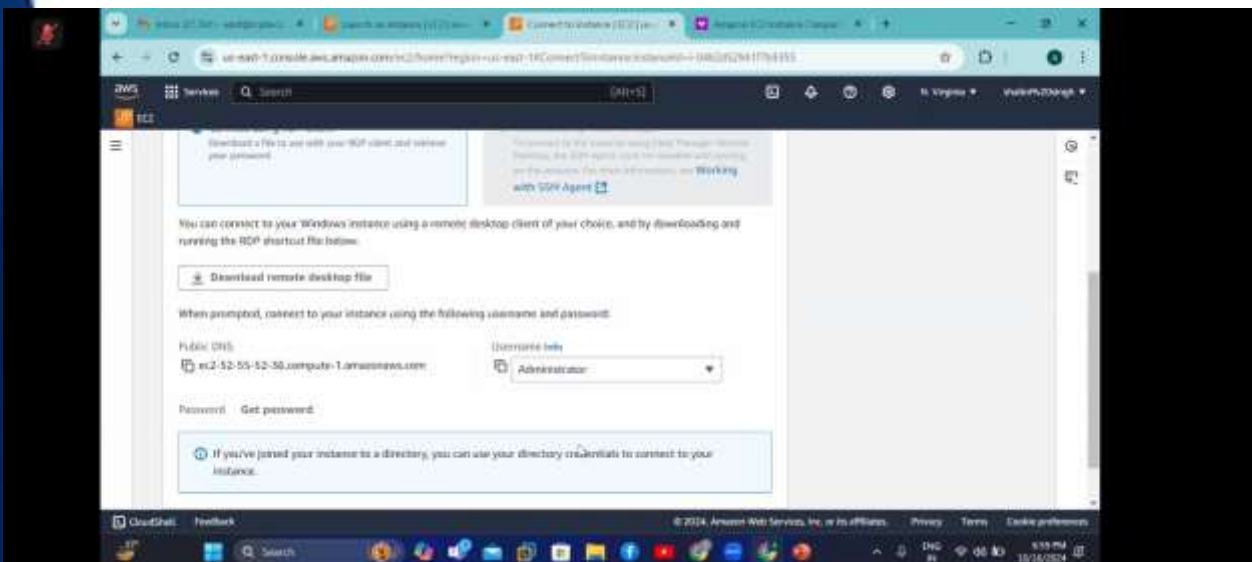
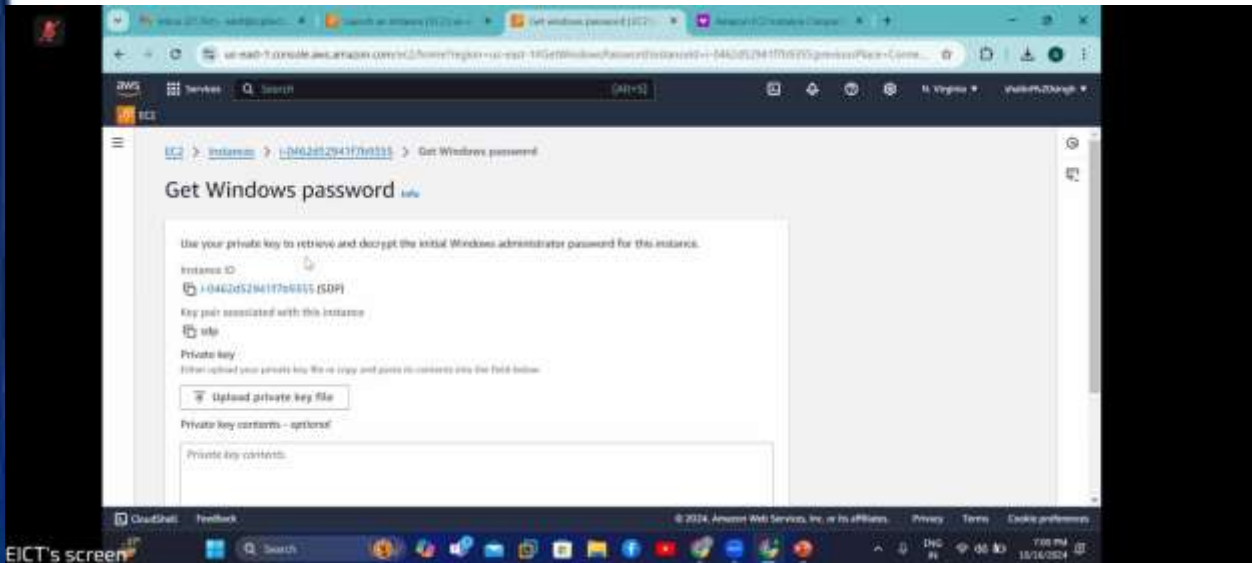
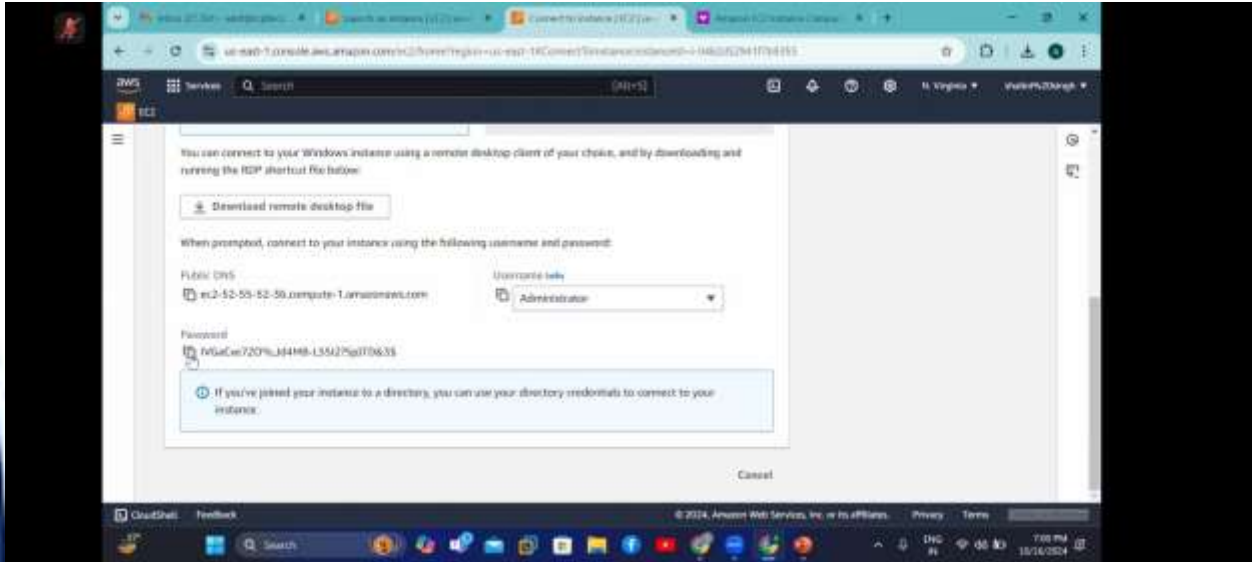
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EICT's screen



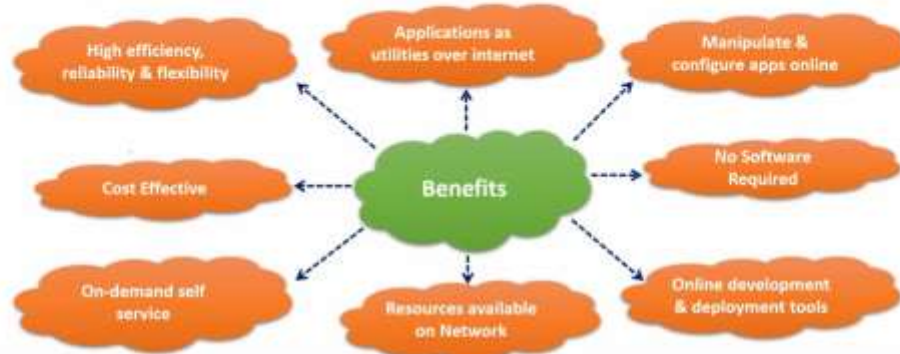
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Why use cloud computing?

- Reduce capex costs and improve the predictability of on-going operating expenses
- Enable your employees to work from anywhere
- Manipulate and configure the application online at any time.



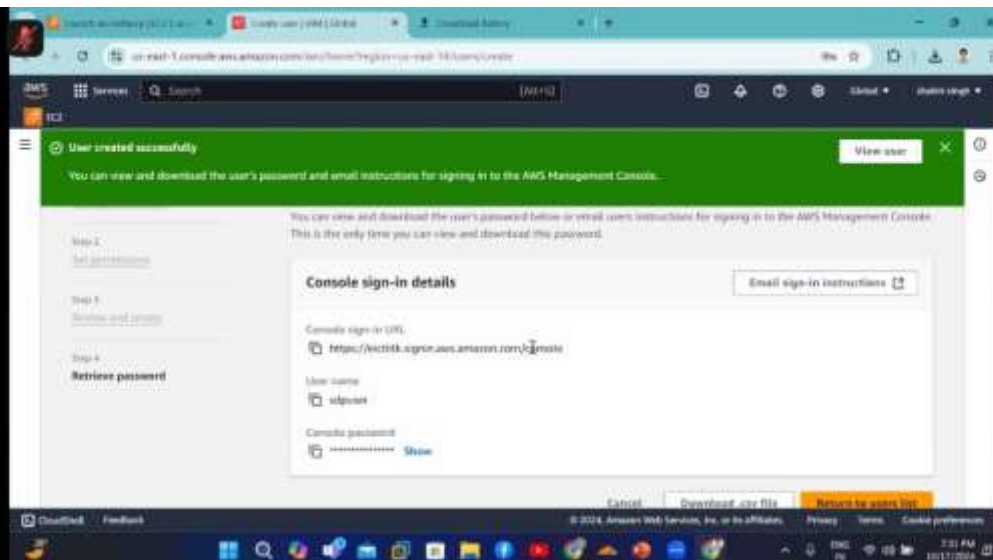
Elastic Load Balancing

Classic Load Balancer:

Routes traffic based on either application or network level information. Classic Load Balancer is ideal for simple load balancing of traffic across multiple EC2 instances.

Application Load Balancer:

Routes traffic based on advanced application level information that includes the content of the request. Application Load Balancer is ideal for applications needing advanced routing capabilities, microservices, and container-based architectures. Application Load Balancer offers ability to route traffic to multiple services or load balance across multiple ports on the same EC2 instance.



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Virtual MFA Applications

Applications for your smartphone can be installed from the application store that is specific to your phone type. The following table lists some applications for different smartphone types.

Android	Google Authenticator; Authy 2-Factor Authentication
iPhone	Google Authenticator; Authy 2-Factor Authentication
Windows Phone	Authenticator
Blackberry	Google Authenticator

MFA Form Factors

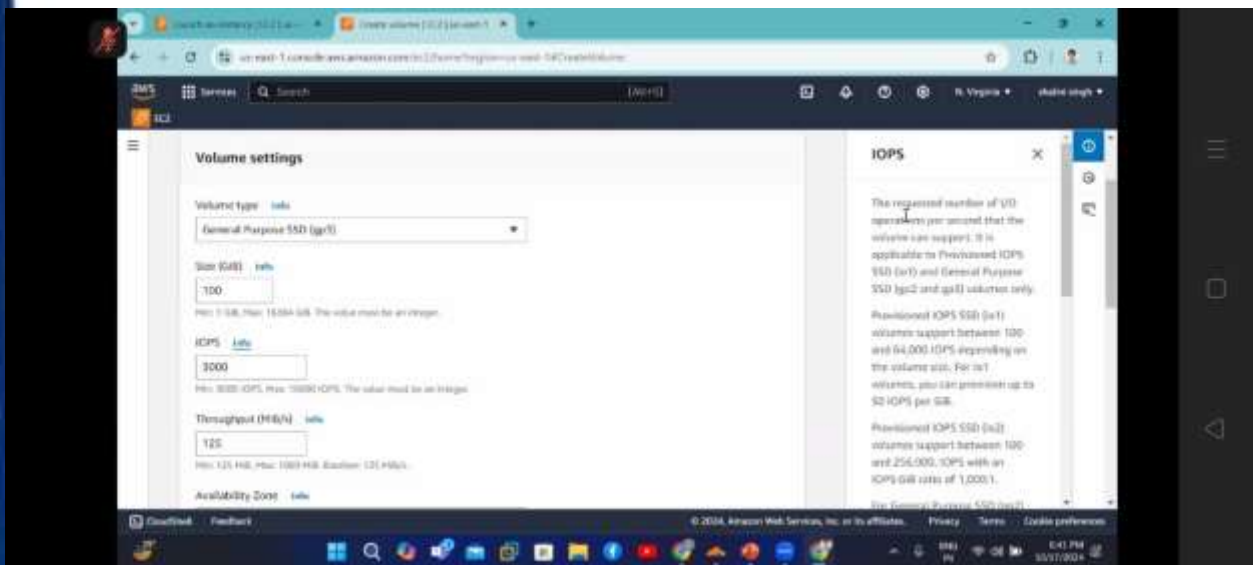
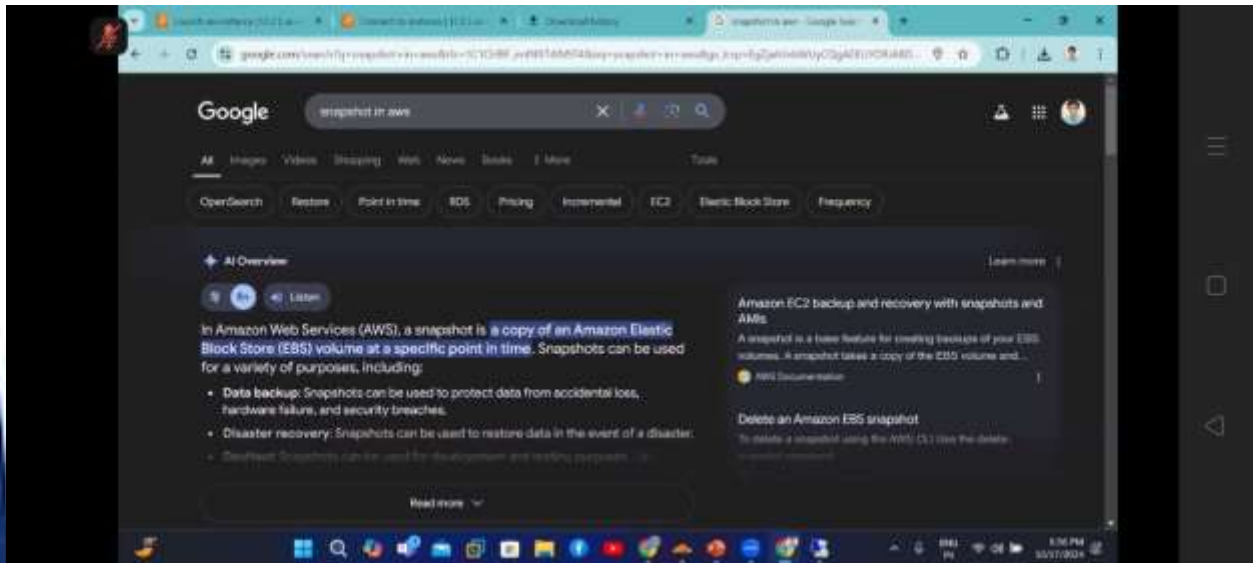
	Virtual MFA Device	Hardware Key Fob MFA Device	Hardware Display Card MFA Device	SMS MFA Device	Hardware Key Fob MFA Device for AWS GovCloud (US)
Device	See table in next slide	Purchase.	Purchase.	Use your mobile device.	Purchase.
Physical Form Factor	Use your existing smartphone or tablet running any application that supports the open TOTP standard.	Tamper-evident hardware key fob device provided by Gemalto, a third-party provider.	Tamper-evident hardware display card device provided by Gemalto, a third-party provider.	Any mobile device that can receive Short Message Service (SMS) messages.	Tamper-evident hardware key fob device provided by SurePassID, a third-party provider.
Price	Free	\$12.99	\$19.99	SMS or data charges may apply.	\$15.95
Features	Support for multiple tokens on a single device.	The same type of device used by many financial services and enterprise IT organizations.	Similar to key fob devices, but in a convenient form factor that fits in your wallet like a credit card.	Familiar option with low setup costs.	A key fob device exclusively for use with AWS GovCloud (US) accounts.
Compatibility with AWS GovCloud (US)	✓				✓
Compatibility with Root Account	✓	✓	✓		
Compatibility with IAM User	✓	✓	✓	✓	✓

EICTS

IAM (Identity Access Management)

- Centralized control of your AWS account
- Shared Access to your AWS account
- Granular Permission
- Multifactor Authentication
- Provide Temporary Access for users/devices and services where necessary
- Users: End Users(think people)
- Groups: A collection of users under one set of permissions.
- Roles: you create roles and can then assign them to AWS resources

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Instance Purchasing Options

On-Demand instances

Pay, by the hour, for the instances that you launch.

Reserved Instances

Purchase, at a significant discount, instances that are always available, for a term from one to three years.

Spot instances

Bid on unused instances, which can run as long as they are available and your bid is above the Spot price, at a significant discount.

Dedicated hosts

Pay for a physical host that is fully dedicated to running your instances, and bring your existing per-socket, per-core, or per-VM software licenses to reduce costs.

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Elastic IP Addresses

- An Elastic IP address is a static IPv4 address designed for dynamic cloud computing
- An Elastic IP address is associated with your AWS account
- With an Elastic IP address, you can mask the failure of an instance or software by rapidly remapping the address to another instance in your account.

EICT's screen

Choose an Amazon Machine Image (AMI)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instances. You can select an AMI provided by AWS, our user community, or the AWS Marketplace, or you can select one of your own AMIs.

Selected AMI: ami-06b271caeffb0d066 (Quick Start AMI)

Quick Start AMIs (6) | My AMIs (0) | AWS Marketplace AMIs (22) | Community AMIs (500)

Refine results | k8s Linux (22 results) | Sort By: Relevance

EICT's screen

Requirements

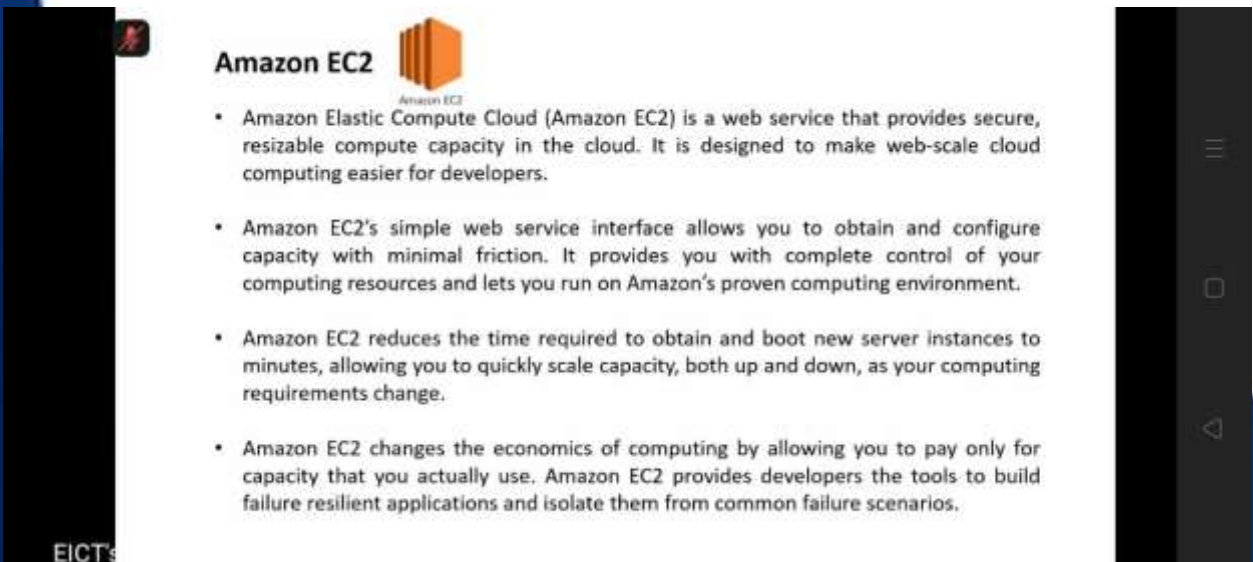
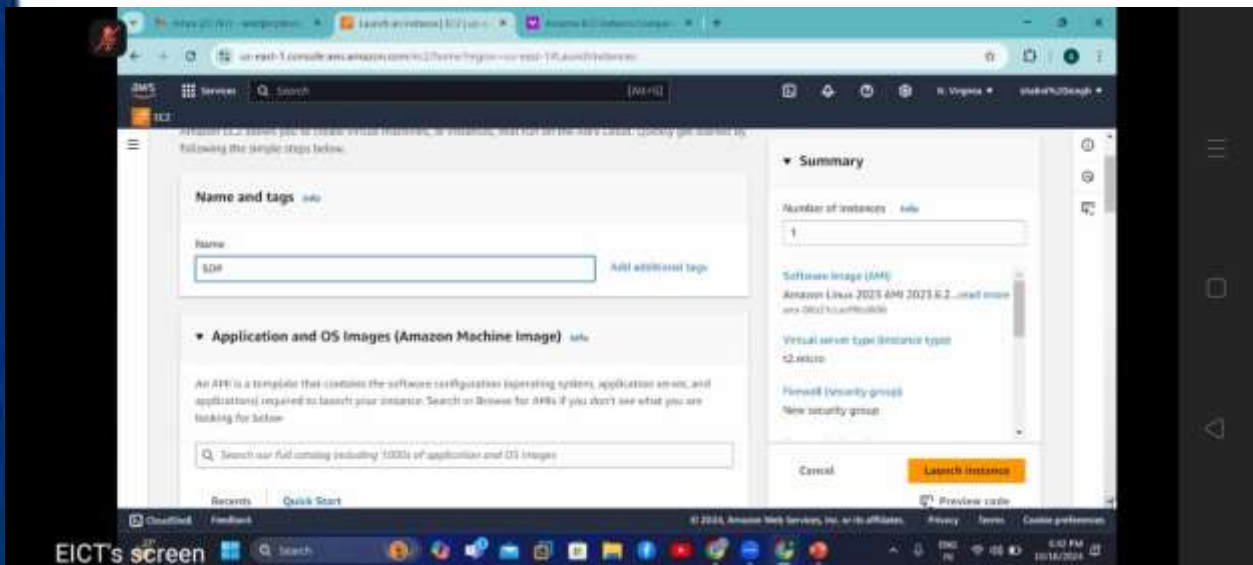
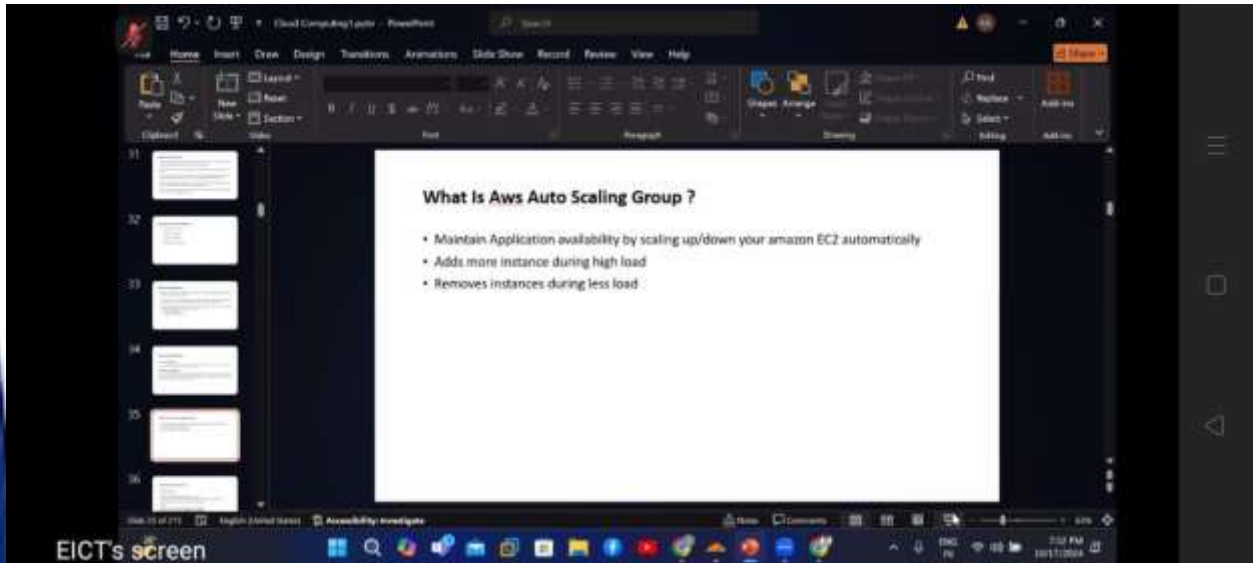
- You have to register yourself on console.aws.amazon.com
- You must have master/visa debit card or credit card in order to register yourself. This will verify your account existence.
- Verify as you are human by calling method
- Select your plan
- Now you are ready to use amazon web services

Zoom

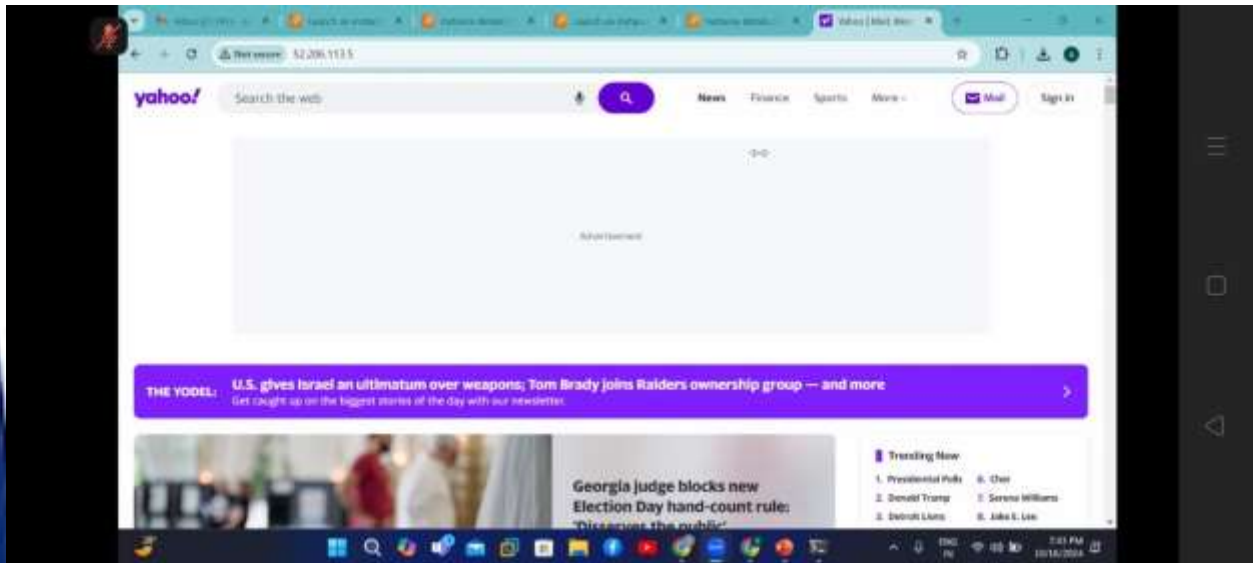
Unmute | Start video | Participants (54) | Chat | Reactions | Share | Captions | Whiteboards

Leave

GLIMPSES



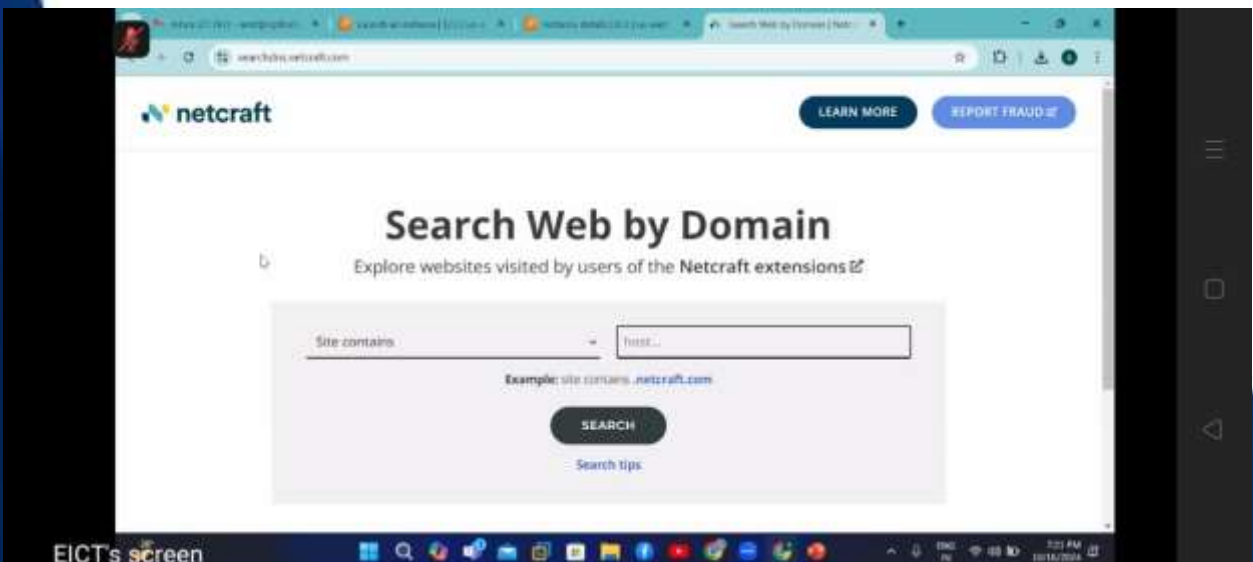
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Amazon Elastic Block Store (Amazon EBS)

- Amazon EBS provides persistent block storage volumes for use with Amazon EC2 instances in the AWS Cloud
- Each Amazon EBS volume is automatically replicated within its Availability Zone to protect you from component failure, offering high availability and durability
- Amazon EBS is designed for application workloads that benefit from fine tuning for performance, cost and capacity
- Typical use cases include Big Data analytics engines (like the Hadoop/HDFS ecosystem and Amazon EMR clusters), relational and NoSQL databases (like Microsoft SQL Server and MySQL or Cassandra and MongoDB), stream and log processing applications (like Kafka and Splunk), and data warehousing applications (like Vertica and Teradata).

EICT's



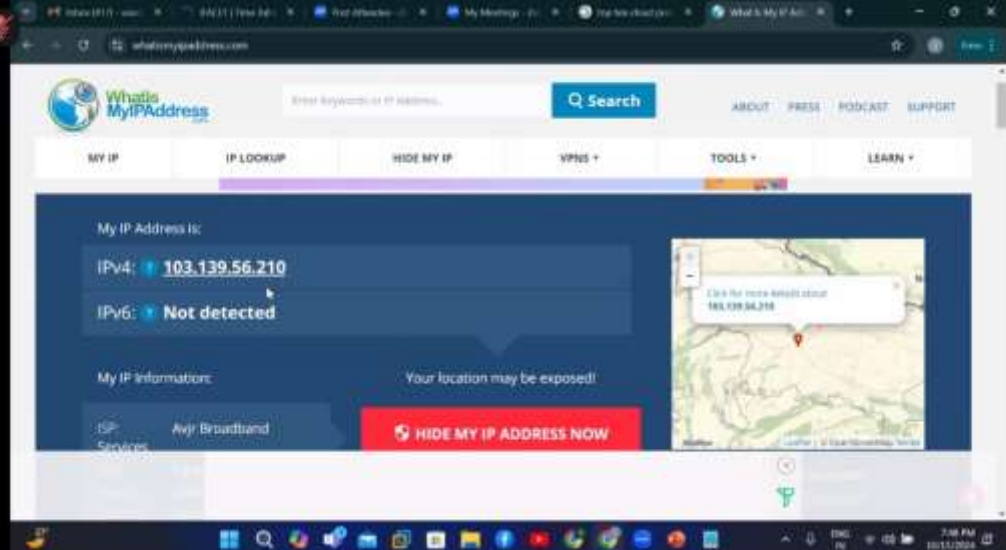
EICT's screen

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Cloud computing services delivered over the internet

Did you know?
There are many ways that you may come across cloud computing in everyday life, without realizing it.

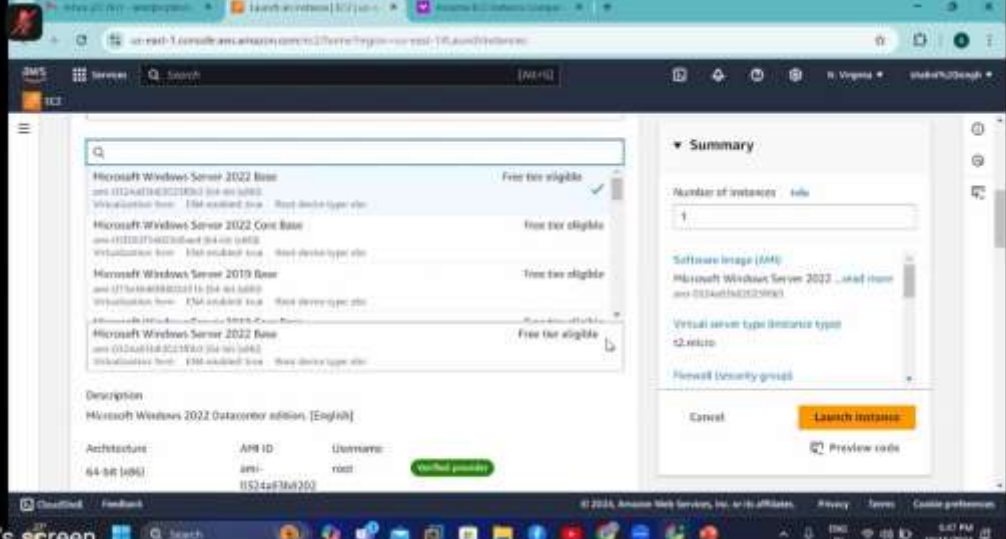
-  560,000,000 user accounts
-  360,000,000 Hotmail accounts
-  2,000,000,000 videos Viewed daily
-  150,000,000 Gmail addresses



The screenshot shows the homepage of WhatIsMyIPAddress.com. The main content area displays the user's IP address information:

- My IP Address is:
- IPv4: 103.139.56.210
- IPv6: Not detected

Below this, it shows "My IP information:" and a warning: "Your location may be exposed!". A map on the right shows the location corresponding to the IP address. A prominent red button says "HIDE MY IP ADDRESS NOW".

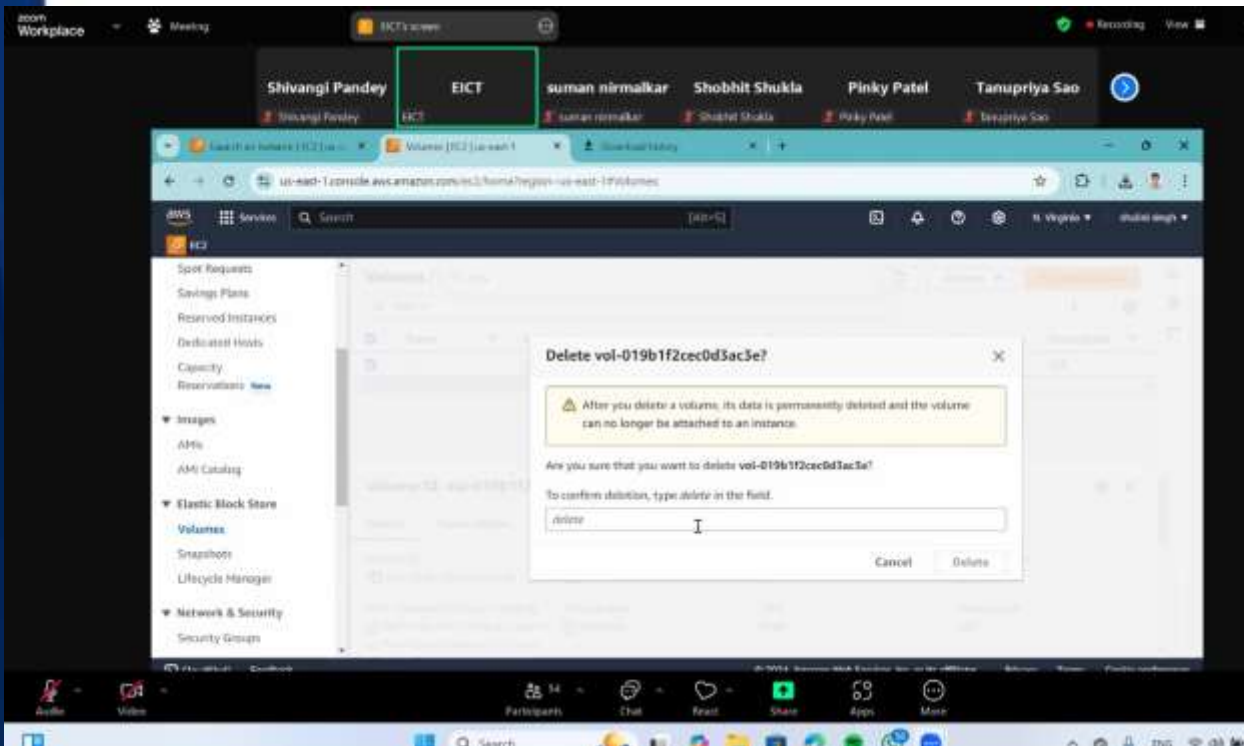
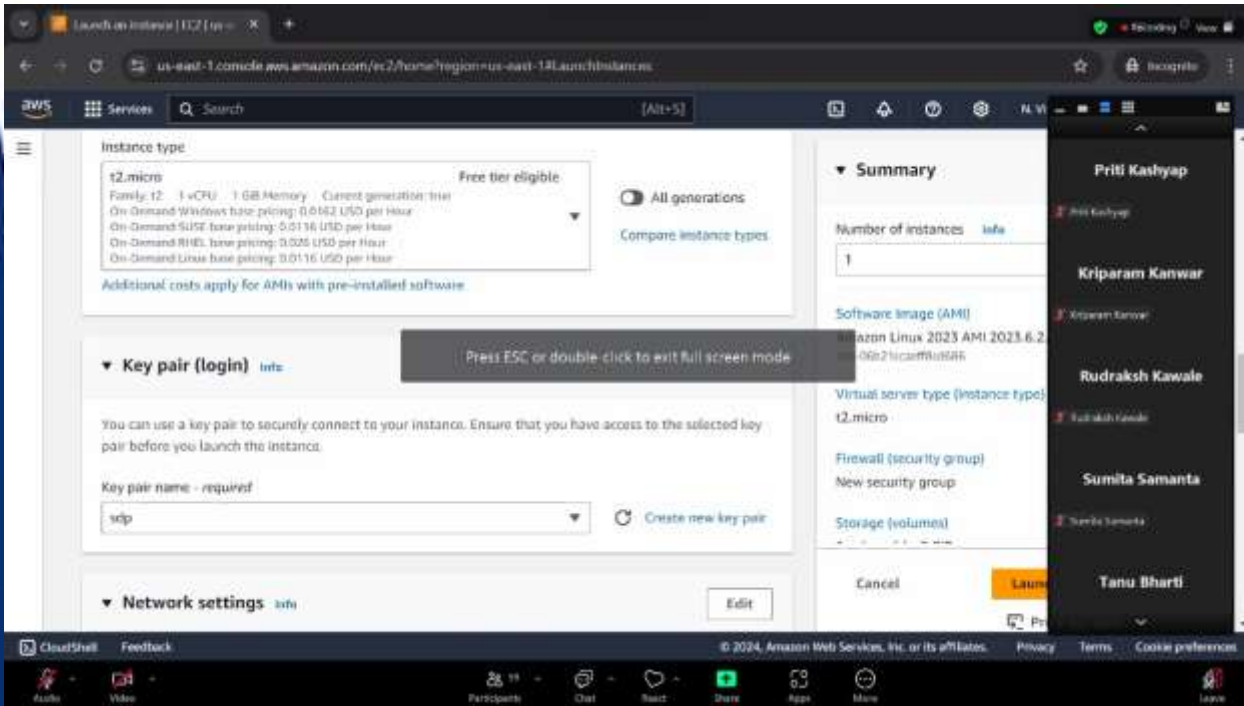


The screenshot shows the AWS IAM console. It displays a list of Microsoft Windows Server instances. The selected instance is:

- Microsoft Windows Server 2022 Base (Free tier eligible)
- Architecture: 64-bit (ARM)
- AMI ID: ami-01524e73baf202
- Username: root

The right-hand pane shows the "Summary" for the instance, including the number of instances (1), software image (Microsoft Windows Server 2022), and virtual server type (t3.micro). A "Launch instances" button is visible at the bottom right.

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PARTICIPANT LIST

S.No.	Name	Class
1	Aarti Rathore	M.Sc.(CS) - I Semester
2	Abhishek B Yadav	MCA-I Semester
3	Abhishek Kesharwani	MCA-III Semester
4	Aditya Gupta	B.Sc.(CS) - III Semester
5	Akhil Mishra	B.Sc.(CS) - V Semester
6	Akhilesh Pratap	MCA-III Semester
7	Aman Kaiwart	B.Sc.(CS) - V Semester
8	Amita Kashyap	M.Sc.(CS) - I Semester
9	Aniket Shrivias	MCA-I Semester
10	Anisha Patel	MCA-I Semester
11	Ankit Barai	MCA-III Semester
12	Ankit Dubey	MCA-I Semester
13	Anshika Dubey	MCA-I Semester
14	Anshika Dubey	MCA-I Semester
15	Anshul Kushwaha	MCA-I Semester
16	Anurag Kanwar	MCA-I Semester
17	Aseem Kujur	MCA-I Semester
18	Asha Kumari	MCA-I Semester
19	Ashish Singh Thakur	M.Sc.(CS) - I Semester
20	Avinash Aind	M.Sc.(CS) - I Semester
21	Ayush Jaiswal	B.Sc.(CS) - V Semester
22	Baldev Kaushik	MCA-I Semester
23	Bhagyavati Gupta	MCA-I Semester
24	Bhavesh Patel	B.Sc.(CS) - III Semester
25	Bhuwan Singh Karsh	MCA-III Semester
26	Chanchal	MCA-III Semester
27	Chandrashekhar Patel	MCA-I Semester
28	Chandrashekhar Sahu	B.Sc.(CS) - V Semester
29	Daleshwar Prasad	MCA-I Semester
30	Dharmendra Kumar	MCA-I Semester
31	Dimpal Patel	B.Sc.(CS) - V Semester
32	Disha Chandel	B.Sc.(CS) - V Semester
33	Fareeda Pathan	MCA-I Semester
34	Gaurav Chicham	B.Sc.(CS) - III Semester
35	Gitesh Kumar	MCA-I Semester
36	Harish Kumar Patel	MCA-I Semester
37	Harshikha Dewangan	MCA-I Semester
38	Himani Shrivias	MCA-I Semester
39	Himanshu Sao	M.Sc.(CS) - I Semester

40	Jitendra Dewangan	MCA-I Semester
41	Jitesh Kumar Dewangan	MCA-I Semester
42	Kanhaiya Das Manikpuri	MCA-I Semester
43	Khushboo Kaiwartya	MCA-I Semester
44	Khushi Dansena	MCA-I Semester
45	Kirti Bareth	MCA-I Semester
46	Kishan Kaushik	MCA-I Semester
47	Lakshman	MCA-I Semester
48	Lara Sahu	MCA-I Semester
49	Lema Dewangan	M.Sc.(CS) - III Semester
50	Lilima Rathore	MCA-I Semester
51	Manju Yadav	B.Sc.(CS) - V Semester
52	Mayank Sinha	MCA-I Semester
53	Muskan Sao	M.Sc.(CS) - I Semester
54	Nikhil Singh	B.Sc.(CS) - III Semester
55	Nilesh Lakra	M.Sc.(CS) - I Semester
56	Nitesh Garhewal	B.Sc.(CS) - V Semester
57	Nupur Shukla	B.Sc.(CS) - V Semester
58	Nutan Sahu	M.Sc.(CS) - I Semester
59	Nyasa Sharma	M.Sc.(CS) - I Semester
60	Om Kumar Rathore	MCA-I Semester
61	Omnarayan Chandra	M.Sc.(CS) - I Semester
62	Parul Kaushik	MCA-I Semester
63	Pratibha Pathak	MCA-I Semester
64	Praveen Bhargaw	MCA-I Semester
65	Priyanka Sahu	MCA-I Semester
66	Priyanshu Lakra	M.Sc.(CS) - I Semester
67	Purnmesh Tiwari	B.Sc.(CS) - V Semester
68	Rajkumar Sahu	MCA-I Semester
69	Rajvir Singh	MCA-I Semester
70	Ramesh Kanwar	M.Sc.(CS) - I Semester
71	Ranu Kaushik	MCA-I Semester
72	Sahil Khutey	B.Sc.(CS) - III Semester
73	Sakshi Yadav	MCA-I Semester
74	Sanskar	MCA-I Semester
75	Sanskar Sharma	MCA-I Semester
76	Saransh Singh	B.Sc.(CS) - V Semester
77	Saurabh Shriwastav	M.Sc.(CS) - I Semester
78	Shahista Nigar	MCA-I Semester
79	Shivam Sarthi	B.Sc.(CS) - III Semester

80	Shravi Gupta	M.Sc.(CS) - I Semester
81	Shruti Bargah	MCA-I Semester
82	Shruti Soni	MCA-I Semester
83	Shruti Yadav	MCA-I Semester
84	Shubhangi Dewangan	MCA-I Semester
85	Sundaram Pattanaik	B.Sc.(CS) - III Semester
86	Suprit Banerjee	MCA-III Semester
87	Surendra Kumar	B.Sc.(CS) - V Semester
88	Tanya Gupta	M.Sc.(CS) - III Semester
89	Tikeshwar Sahu	MCA-I Semester
90	Tikeshwar Singh	MCA-I Semester
91	Tiya Kesharwani	M.Sc.(CS) - I Semester
92	Tushar Sahu	B.Sc.(CS) - III Semester
93	Umakant	MCA-I Semester
94	Vasudev	M.Sc.(CS) - III Semester
95	Vikas Dewangan	MCA-I Semester
96	Vikas Kumar Sahu	MCA-I Semester
97	Yaman Kumar	MCA-I Semester