Master Program in Cloud Computing

COURSE BROCHURE & SYLLABUS

AWS

1 : Introduction to AWS

- Navigate the AWS Management Console
- Recognize AWS Global Infrastructure
- Describe the security measures AWS provides
- Create an Amazon EC2 instance
- Remotely connecting to an EC2 instance
- Setting up Amazon Linux and Apache web server
- Browsing Amazon Machine Images (AMI)
- Specifying security groups and key pairs
- Creating new images off of running instances

2: AWS Storage

- Identify key AWS storage options
- Describe Amazon EBS
- Use Amazon EBS with Amazon EC2
- Working with Volumes and snapshots
- Transmitting data in/out of the Amazon cloud

3: Installing Software in your Amazon Instance

- Implementing a Web server in an Amazon Linux/Windows Instance
- Configure the firewall to access a Web server

4: Security in Public Cloud

- Security issues in Public Cloud
- Securing the Access : Creating a RSAPublic/Private Key for VMs
- Creating a software firewall
- Configuring firewall rules

- **Securing the access with an Elastic IPs**
- **Managing users with Identity Access Management (IAM)**

5: Alternate access

- **Using EC2 Command Line APIs [from Windows/Linux machines]**

6: Simple Notification Services [to be seen along with Auto Scaling

- **Using SNS to send Notifications**

7: Amazon S3 Basics

- **Creating Buckets**
- **Creating Folders**
- **Uploading Objects**
- **Making Objects Public**
- **Creating Buckets**
- **Securing Bucket/Object access**
- **Configuring a Bucket as Static Web Page**
- **Controlling Life Cycle of a Bucket**
- **Accessing Amazon Buckets from Windows/Linux desktops/Servers**

8: AWS-RDS

- **Overview of AWS RDS**
- **Launching a MySQL Database in RDS**
- **Creating Backups/Snapshots and Read Only DBs**
- **Connecting to RDS-DB using local DB-Clients**
- **Terminating a DB instance**

9: AWS-IAM

- **Creating Groups and Defining access policy**
- **Creating Users**
- **Login to AWS account using new users**

10: Installing Software in your Amazon Instance

- **Implementing a Web server in an Amazon Linux/Windows Instance**

- **Configure the firewall to access a Web server**

11: Load-balancing with EC2 and Auto Scaling

- **Creating and using Load Balancers**
- **Distributing incoming traffic with elastic load balancing**
- **Dynamicallyadding and removing instances with Auto Scaling**

12: CloudWatch to be seen along with Auto Scaling

- **Overview of Monitoring and Setting Alarms**
- **Visualising utilization metrics with CloudWatch**
- **Setting alarms to send and receive notifications**

13: Virtual Private Cloud

- **Create a VPC [VPC with a Single Public Subnet]**
- **Create and attach an Internet gateway**
- **Create an Amazon VPC subnet**
- **Set up routing in the VPC**
- **Set up a security group to control the inbound and outbound traffic**
- **Launch an instance into the subnet**
- **VPC console to allocate an Elastic IP address and assign it to the instance**
- **Amazon EC2 console to terminate your instance and the Amazon VPCconsole to delete your VPC**

14: AWS-CloudFront

- **Concepts of AWS-CloudFront**
- **Host a Website with CloudFront**

15: AWS-Route53

- **Creating a Failover setup for Load Balancers running in different AWSregions [users need to have a registered Domain]**

- **Health Check a private website**

16: AWS-CloudTrial

- **Using CloudTrial to trail the API Calls**

17: AWS System Manager

- **Run command**
- **Compliance**
- **Patch Manager**

18: AWS Cost Management

- **AWS Cost Explorer**
- **AWS Budgets**
- **AWS Marketplace Subscriptions**

DEVOPS

1: Devops Lab Setup tools for Linux and windows Environment

2: Introduction to Devops and Dev sec ops

3: Introduction to SDLC ,Software testing , Agile : Software testing

Lifecycle

4: Agile Methodologies:

5: LINUX Administration

6: Installation and Initialization:

7: Boot and Package Management:

8: User Administration:

9: Run levels:

Version Control/ SCM(Git)

1: Introduction to Git

Ansible Modules.

1: Introduction to Ansible

2: Ansible Building blocks and Process flow

3: Ansible Playbook Modules and directory structure

4: Variable, Facts and jinja2 templates

5: Play and Playbooks

Docker Modules

1: Getting Started with Docker 2: Docker Installation

3: Docker Images

4: Docker Networking

5: Container Operations

6: Docker Compose

Jenkins Modules

1: Introduction to Continuous Integration and Jenkins-CI/CD

2: Jenkins Installation

3: Configure Jenkins and User Management.

4: Jenkins jobs setup

5: Jenkins Integration

6: Jenkins User administration

Maven Modules

1: Build Tolls overview

2: Customized Project and plugin setup

3: Maven Repositories and GAV snapshots.

Complete guide to Kubernetes 1: Introduction to Kubernetes

- **The need for a Container Orchestration Engine**
- **Battles of COEs, which one to choose**
- **Key Features of a COE.**
- **What makes Kubernetes the defacto COE choice.**
- **Negatives of using Kubernetes**

2: Key Concepts of Kubernetes

- **Namespaces**
- **Pods**
- **Replica Sets and Deployments**
- **Service Discovery and Load Balancing**
- **Configmaps, Storage, Network, RBAC**
- **Statefulsets, Crons and Jobs**
- **Kubernetes**

Architecture3: Setting up Environment

- **Provisioning and configuring on AWS**
- **Initialize Cluster with kubeadm**
- **Setting up Weave CNI**
- **Launching Kubernetes Dashboard**
- **Setting up a Kubernetes Visualizer**

RH124 - Red Hat System Administration – I

1. Getting started with Red Hat Enterprise Linux

- **Differences between centos, red hat enterprise linux & fedora**
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- **Difference between UNIX & LINUX**
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- **Describe and define open source, Linux distributions, and Red HatEnterprise Linux**

2. Downloading, Installing and Understanding Booting Process of OS -Redhat Linux

- **download the virtual box and installing in your systems**
- **downloading and installing Redhat linux**
- **understanding and deep dive into**

- **post,bios(uefi),mbr,grub(grub2),systemd(initd),r unlevels(target)**
- **understanding and deep dive into linux architecture, kernel, interpreter, shells,memory**

3. Linux FSH (File System Hirearchy)

- **Understanding and deep dive into fsh**

4. Access the command line

- **Log Into A Linux System And Run Simple Commands Using Shells**
- **Understanding The Terminals (TTY's) Using The Shell**
- **Identifying The Shells And Usage Of Shells**

5. Manage files from the command line

- **Copy, move, create, delete, and organize files while working fromthe bashshell**
- **understanding the commands to create, move, create, delete, sorting with commands by recursively and forcefully head, more, less, tail, cat commands**
- **Use input-output redirection**

6. Get help in Red Hat Enterprise Linux

- **Resolve problems by using local help systems**
- **help , man commands understanding**
- **technical os support from enterprises linux**

7. Create, view, and edit text files

- **Manage text files from command output or in a text editor.**
- **understanding the vi, vim, gedit, nano editors and their modes**
- **understanding the inode**

8. Symbolic links or Backup Methods

- **understanding the hard link and soft links**

9. understanding the hard link and soft links

- **Create, manage, and delete local users and groups, as well as administer localpassword policies**
- **understanding the commands useradd, userdel, usermod, groupadd, groupdell,groupmod, Passwd, gshadow commands and their policies implementation**
- **switching users and accessing the shells**

10. Control access to files

- **Set Linux file system permissions on files and interpret the security effects ofdifferent permission settings**
- **understanding the commands chmod, chown, setfacl, getfacl, sticky bits**

11. Monitor and manage Linux processes

- **Evaluate and control processes running on a Red Hat Enterprise Linux system.**
- **understanding the top, ps, lscpu commands**

12. Control services and daemons

- **Control and monitor network services and system daemons using systemd.**
- **Understanding the systemctl,service commands (status,start,stop,restart,enablemodes)**

13. Configure and secure SSH

- **Configure secure command line service on remote systems, using OpenSSH.**
- **SSH authentication by using asymmetric method by generating the public key andprivate key password less authentication modes**
- **SSH password authentication mode**

14. File and Folder Transfer and downloading from linux

- **linux, linux-windows, linux-mac (viceversa)**
- **understanding SFTP, SCP, Rsync commands**
- **understanding the winscp and filezilla**
- **understanding the wget and curl commands**

15. Analyze and store logss

- **Locate and accurately interpret logs of system events for troubleshooting purposes.**
- **understanding the system logs, user logs etc**

16. Manage networking

- **Configure network interfaces and settings on Red Hat Enterprise Linux servers.**
- **understanding iptables, netstat, telnet, ss, ficonfig, nslookup, dig commands**

17. Archive and transfer files

- **Archive and copy files from one system to another.**
- **understanding the zip, gunzip, buzip, archive(tar) commands**

18. Searching the Contents in linux

- **understanding the grep, locate, find commands**

19. Install and update software packages

- **Download, install, update, and manage software packages from Red Hat and DNFpackage repositories.**
- **understanding the rpm, yum, wget commands**

20. Access Linux files systems

- **Access, inspect, and use existing file systems on storage attached to a Linux server.**
- **Understanding the fstab, mtab, blkid commands**

21. Analyse servers and get support

- **Investigateand resolve issues in the web-based**

22. Comprehensive review

- **Review the content covered in this course by completing hands-on exercises.**

RH134 - Red Hat System Administration - II

1. Schedule future tasks

- **Understanding the cron jobs, crons, anacron, crontab**

2. Tune system performance

- **Understating the system, memory, IOstat, Network**
- **Understanding the /proc and top and ps**
- **Understanding the virtual memory, system activity reported , iostat,**

3. Manage SELinux security

- **Understating the selinux importance in linux**
- **Implementing the selinux modes target, permissive, enabled,disabled,enforcing**

4. Maintain and manage basic storage

- **Understanding the File system and file system types ext2,ext3,ext4andxfs,btrfs,etc**

- **Harddisk storage partition and formatting**
- **Understanding the LVM, creating, resizing, extedning, LVM**

5. network-attached storage or File server

- **NFS creating ,accessing , deleting**

6. **Control the boot process**

- **Understanding the run levels to limit the boot process**

7. **Manage network security**

- **Ip tables, ethernet cards attaching**