

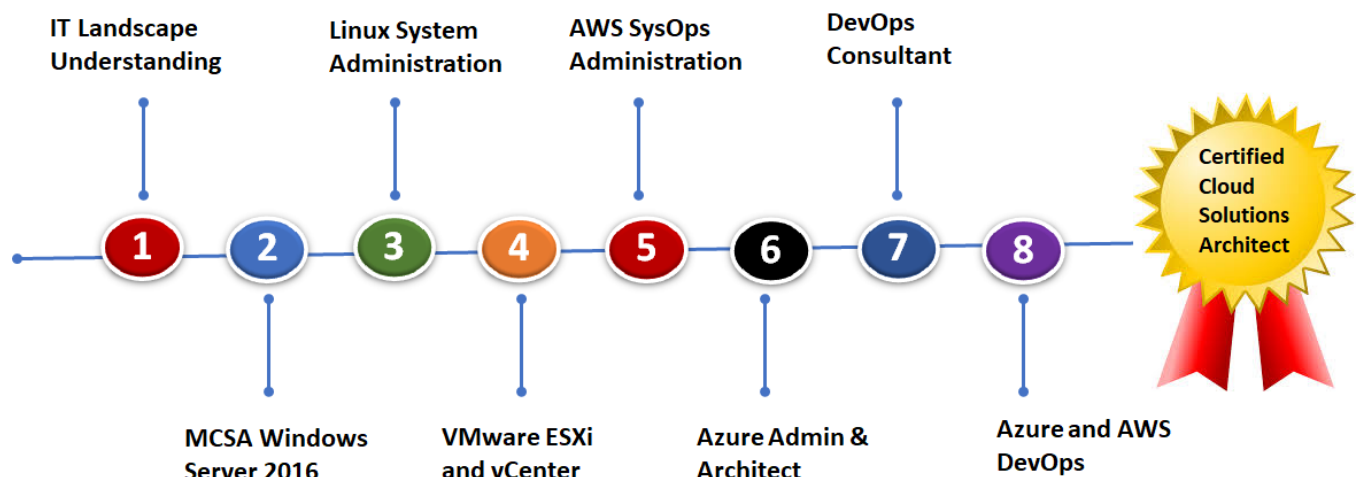
**INTRODUCTION | WINDOWS SERVER 2016 | LINUX ADMIN
| VMWARE VSPHERE | AWS SYSOPS| AZURE ARCHICET |
DEVOPS| SECURITY | MIGRATION | MONITORING | COST**

114 MODULE | 265 LABS | 5 CERTIFICATION | 3 INDS PROJECT

TechPledge Cloud Architect Master's Program will build your Microsoft Core Service Admin, Linux Admin, Azure Cloud Architect , AWS Cloud Admin with DevOps Expertise from ground up to Kickstart Career .

TECHPLEDGE CERTIFIED CLOUD ARCHITECT PROFESSIONAL

EXAM: AZ 103| AZ 300 | AWS SOA-CO1|MCP|VMWARE VCA



Course Materials

TechPledge will provide a customized set of Lecture Notes for each class scheduled along with Recorded video . You will be given a PDF file which you may make copies from, email to your participants, or make available via internal website.

Learning Path for Cloud Solutions Architect

Cloud Architect combine people, process, and technologies to continuously deliver valuable products and services that meet end user needs and business objectives Cloud Architect Professionals must have skills needed to design solutions that run on both Private Cloud like VMware and Public Cloud like AWS Cloud and Azure Cloud. A Cloud Solutions Architect must have expertise in Design and Implement compute, network, storage, security and Application. At the TechPledge we provide the training which is always updated in line with the Architect Skills required by the industry and recommended by OEM like Microsoft and Amazon. Below is the path for training



Evolve your On-Prem Skills

- *Understand the Datacenter Components like Rack, Power, Servers*
- *Implement the Microsoft Core Service Like Active Directory, DNS*
- *Design and Implement VMware Virtualization Technology*
- *Design and Implement Linux based Infrastructure*
- *Brush-up your skills for Administration*



Manage Resources in Azure & AWS

- *Align requirements with cloud types and service models in Azure & AWS*
- *Control Azure & AWS services with the CLI*
- *Automate Azure tasks using scripts*
- *Predict costs and optimize spending for Azure & AWS*
- *Control and organize Resource*



Architect Great Solutions in Cloud with DevOps

- *Pillars of a great architecture with CI/CD*
 - *Design for security in Azure & AWS*
 - *Design for performance and scalability in Azure & AWS*
 - *Design for efficiency and operations in Azure & AWS*
 - *Design for availability and recoverability in Azure & AWS*
-

Abilities Validated by the Certification

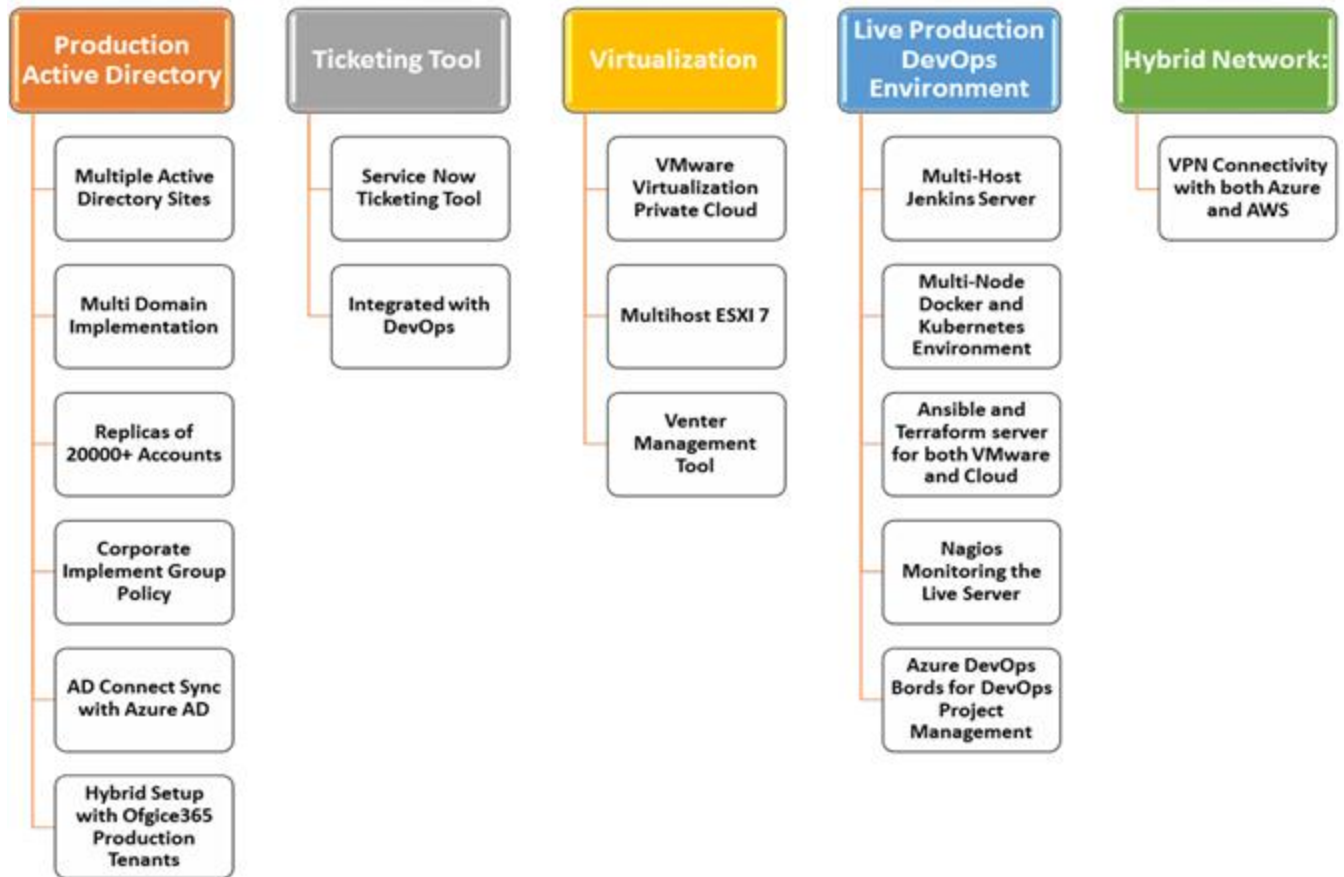
- Deploy and configure infrastructure
- Implement workloads and security
- Create and deploy apps
- Implement authentication and secure data
- Develop for the cloud and for Azure storage
- Determine workload requirements
- Design for identity and security
- Design a data platform solution
- Design a business continuity strategy
- Design for deployment, migration, and integration
- Design an infrastructure strategy
- Design a DevOps strategy
- Implement DevOps development processes
- Implement continuous integration
- Implement continuous delivery

Customer Immersion – Live Production Walkthrough

6 Hours Live walkthrough the complete Infrastructure Integration and Migration Process in production environment with full setup of Infrastructure Like **AD, Microsoft SQL , Microsoft Exchange, File Server , ADFS and** DevOps Tool Like **Jenkins , Ansible , Docker , AWS Code Deploy , AWS Code Pipeline , Azure Pipeline and Azure ARM** and Development Environment with Maven, Visual Studio and Python.

The Complete Setups is using **100 of PowerShell & Linux Script** with **237 CI/CD scripts** (Jason, Yamal).

Below is the High-Level Setup Outline of our Customer Immersion Production Replicas. Student will get the access of this setup at end of the course for 6 hours with AD ID and Organization Email.



Certificate of Achievement



Learn while doing with our Sandbox Environment



Azure Sandbox

- Connect with Azure Portal through the TechPledge Provide sandbox environment and play with it will all labs which you want to try.
- Create, destroy, and build Practical, scenario-based applications with ease. Our pre-configured, auto-provisioned servers allow you to try new skills, risk-free.



AWS Sandbox

- Connect with AWS Console through the TechPledge Provide sandbox environment and play with it will all labs which you want to try.
- Create, destroy, and build Practical, scenario-based applications with ease. Our pre-configured, auto-provisioned servers allow you to try new skills, risk-free.



Linux Sandbox

- Connect with Linux Self Pace Portal through the TechPledge Provide sandbox environment and play with it will all labs which you want to try.
- Create, destroy, and build Practical, scenario-based applications with ease. Our pre-configured, auto-provisioned servers allow you to try new skills, risk-free.

Learn while doing with our VMware Sandbox Environment

VIRTUAL SANDBOX ENVIRONMENT

- Learn about new solutions which might benefit your business or career in just an hour or less
- Take a challenge lab to validate your skills
- They run the latest versions of the technology you want to learn
- An easy way to study for exams such as VCP or VCAP Deployment exams
- No software needed to run, just a web browser
- No downloads or installations required
- No hardware / compatibility / workarounds or licensing issues



Course Outline

Module 1: Introduction to cloud service and role

Introduction to Cloud Computing

- Overview of Cloud Computing
- When can cloud Computing be used?
- Benefits and limitations
- Security concerns
- Regulatory issues
- Business and IT perspective
- Cloud and virtualization
- Cloud services requirements
- Cloud and dynamic infrastructure
- Cloud computing characteristics

Cloud Model

- Gamut of cloud solution
- principal technologies
- Cloud characteristics
- Measured Service
- Cloud models
- Security in a public cloud
- Public verses private clouds
- Cloud infrastructure self-service.

Cloud Services

- Cloud computing services
- Microsoft Azure Cloud
- Amazon EC2 Cloud
- Open stack
- Google Cloud
- VMware Cloud
- Ruby Cloud

Module 2: Windows server 2016

Deploying and Managing Windows Server 2016

- Windows Server 2016 Overview
- Overview of Windows Server 2016 Management
- Installing Windows Server 2016
- Post-Installation Configuration of Windows Server 2016
- Introduction to Windows PowerShell

Active Directory Domain Services

- Overview of AD DS
- Overview of RODC
- Overview of Domain Controllers
- Installing a Domain Controller
- Administering AD DS
- Managing the AD DS Database
- Overview of Distributed AD DS Deployments
- Deploying a Distributed AD DS Environment
- Configuring AD DS Trusts
- Overview of AD DS Replication
- Configuring AD DS Sites
- Configuring and Monitoring AD DS Replication

Managing Active Directory Domain Services Objects

- Managing User Accounts
- Managing Group Accounts
- Managing Computer Accounts
- Delegating Administration

Implementing Group Policy

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- Overview of Group Policy
- Implementing and Administering Group Policy Objects (GPOs)
- Group Policy Scope and Group Policy Processing
- Troubleshooting the Application of GPOs
- Group Policy Processing
- Implementing a Central Store for Administrative Templates

Securing Windows Servers Using Group Policy Objects

- Windows Security Overview
- Configuring Security Settings
- Restricting Software
- Configuring Windows Firewall with Advanced Security

Implementing Access Control

- Overview of Access Control
- Planning for Access Control
- Deploying Access Control

Implementing IPv4

- Overview of TCP/IP
- Understanding IPv4 Addressing
- Subnetting and Supernetting
- Configuring and Troubleshooting IPv4

Implementing DHCP

- Installing a DHCP Server Role
- Configuring DHCP Scopes
- Managing a DHCP Database
- Securing and Monitoring DHCP

Implementing DNS

- Name Resolution for Windows Client and Servers
- Installing and Managing a DNS Server
- Managing DNS Zones

- Installing the DNS Server Role
- Configuring the DNS Server Role
- Configuring DNS Zones
- Configuring DNS Zone Transfers
- Managing and Troubleshooting DNS

Implementing Web Service

- Overview of IIS
- Install and Configure Web Server
- How to Configure Virtual Directory
- IIS permission
- Windows Integrated and Anonymous Access
- Create Sites in IIS
- Enable Logging on IIS web Server
- How to Configure web site SSL Certificate

Implementing File and Print Services

- Install the File and Print Services Role on windows server 2016
- Create the File Hierarchy and Implement NTFS Security
- Publish the Folder using Share Option in File Server
- Enable Share Level Permission
- Securing Files and Folders
- Configure File Server Quota
- Install Network Printer Driver
- Configuring Network Printing
- Share the Printer and Implement Printer permission

Implementing Server Virtualization with Hyper-V

- Overview of Virtualization Technologies
- Implementing Hyper-V
- Create Virtual Machine

- Managing Virtual Machine Storage
- Managing Virtual Networks
- Overview of Failover Clustering
- Overview a Multi-Site Failover Cluster

Implementing Update Management

- Overview of WSUS
- Create the Inventory of Computer System
- Down the Updated from Windows Update
- Deploying Updates with WSUS
- Review the compliance Reports

Monitoring Windows Server 2012

- Monitoring Tools
- Using Performance Monitor
- Configure Performance Counter for CPU, Memory and Disk Utilization
- Monitoring Event Logs
- Filter Logs on the basis of Event ID
- Save the logs
- Configure the Performance Logs Size

Implementing Active Directory Certificate Services

- PKI Overview
- Deploying Standalone or Hierarchical CAs
- Deploying and Configuring CA Hierarchy
- Deploying and Managing Certificate Templates
- Implementing Certificate Distribution and Revocation
- Managing Certificate Recovery

Implementing Disaster Recovery

- Overview of Disaster Recovery
- Implementing Windows Server Backup

- Implementing Server and Data Recovery

Module 3: Linux Server Administration

Introduction to Open Source

- Introduction to the UNIX Operating System
- Features of Linux
- Linux vs Windows Operating System
- GNU Tools and Utilities
- Different flavors of Unix/Linux
- File System Layout in Unix/Linux
- SSH Protocol
- Linux Kernel
- Linux Shell
- How to use Shell
- Common Linux Command Introduction
- Control Terminal Color and Cursor

Introduction to Red Hat Enterprise Linux

- RedHat As a Company
- RedHat Products
- RedHat Certification
- RedHat Licensing
- RedHat Support Plan

Installing Linux

- Installation Options
- Server Install
- Workstation Install
- CD Install
- Kickstart Install
- Network Install
- Customizing the Install
- **Lab1:** Install Linux on Local Virtual Environment
- **Lab 2:** Provision Linux using Cloud Image

Booting Linux

- Firmware Phase
- Boot Loader Phase
- Kernel Phase

- Kernel Boot Parameters
- init Phase
- **Lab3:** Review the Linux Boot process

Key Filesystem Locations

- Boot Files
- User Files
- Administrator Files
- Configuration Files
- Log Files
- **Lab4:** Review the Critical System File location in Linux

Basic Linux Shell Command

- Basic Linux Command
- Types of Editor in Linux
- Different modes of the vi editor
- Commands for saving and exit,
- Help command on Linux
- **Lab5:** Run Basic command on Linux terminal
- **Lab 6:** Explore Help manual for Linux command

Linux Partition & Filesystem

- Partition Types
- View the Partition in Linux
- Create new partition in Linux
- Format the new Filesystem
- Filesystem Types
- Mounting
- Automount
- **Lab7:** Add an additional HDD and Partition the HDD with Mount on directory
- **Lab8:** Add an additional HDD and Partition the HDD as swap space
-

File System and Linux File Security

- What is Files
- Directories and Sub-directories
- Naming convention of Files
- Piping, Input/output Redirection
- File Types
- File Security
- Assign the file permission
- Change the file ownership
- What is Superuser
- **Lab 9:** Create a Directory Structure for an Academic Organization and Implement Security

- **Lab 10:** Perform Basic File Operations like Create, View Contents, Copy, Rename and Delete

Identity Management in Linux

- Introduction to Users and Groups
- Decode the user information file
- Decode the group information file
- Decode the user password file
- Create Local users in Linux
- Change password for user
- Analyze the /etc/passwd file
- Change the default password policy for users
- Create Users with custom UID
- Create Service user account
- Create Group and add users as members
- Create user with Home Directories
- Configure Password Policy for all user
- Configure Password Policy for single user
- Configure Password Policy for all user
- Configure Finger information for user
- **Lab 11:** Create Basic Identities (User & Group) for an Academic Organization and Assign Permission on a Directory Structure create in Lab 1
- **Lab 12 :** Perform Basic Operation on File & Directory like assign permission, change ownership

Automating Programs

- Run Levels
- /etc/rc.d Files
- Customization of Run Levels
- cron and anacron
- at
- **Lab 13:** Change the run level and review the impact
- **Lab 14:** Create the Schedule jobs using Cron to create a file
- **Lab 15:** Create the Schedule jobs using Anacron to create a file
- **Lab 16:** Create the Schedule jobs using at to create a file
-

Backup and Restore

- What is the Backup in Linux ?
- Backup directory and file in Linux
- Restore the file zip through using tar
- Zip the File
- Unzip the File
- **Lab 17:** Create backup of the directory containing critical file using tar and then recover it after accidental deletion of source directory
- **Lab 18:** Create backup of the directory containing critical file using tar and Zip it using zip command to compress the backup file.

Linux Firewall

- Understand the security tire (Edge, DMZ and Host level)
- Introduction to FirewallD
- Enable FirewallD
- Configure FirewallD
- Configure Firewall Zone
- Working with FirewallD CMDlets
- Construct a Rule set with FirewallD
- Open and Block Ports & Services
- **Lab 19:** Implement Zone level security with opening of traffic for HTTP and MySQL services
- **Lab 20:** Configure the rule to block and allow the traffic on the basic of IP network

Network Management

- Introduction to networking components
- Types of Network Devices
- Overview of Network Related command (Ifconfig, Ping, Trace, telnet)
- Attach New NIC
- Assign the IP address
- Controlling Network Services
- Install Network Management tool
- **Lab 21:** Add the new NIC in Linux and Initialize the NIC, Assign the IP , Subnet and Gateway
- **Lab 22:** Control the NIC (Up, down, inspect) using network management tool

Installing the Commonly Use Server

- Install and Configure Apache Web server
- Host Website with Apache
- Start and Stop Apache Server
- Introduction to My SQL Database
- Install MySQL Database server in Linux
- Configure secure access with user and password
- Create Database and Object
- Access the MySQL
- Introduction to Java
- Install and Configure Java Virtual Machine in Linux
- Create and run sample Java Application
- **Lab 23:** Install Apache webserver in Linux, Add the custom code in Virtual Directory and access it from outside using IP address
- **Lab 24:** Install MySQL server in Linux, Configure secure installation , Access the Mysql Console and create sample database and table
- **Lab 25 :** Install Open JDK Java in Linux, Create a sample HelloWorld Java Application , compile and Execute the code

Linux Monitoring and Management

- VMStat
- Uptime
- Top
- PS
- Sysstat-iostat
- free
- Tcpdump
- Netstat
- swapon
- The /proc Pseudo Filesystem
- **Lab 26:** Execute the Various command to monitor the system performance and capture performance related logs.
- **Lab 27:** Execute the Various command to monitor the Network performance and Traffic and capture Network Packet related logs.

Linux Basic Shell Script

- Introduction tom Bash Shell script
- Create a sample shell script
- Shell script Input and output
- Shell script variable
- Shell Script Basic Operator
- Shell script If-else statement
- Develop sample shell script to Monitor the Linux system resources
- **Lab 28:** Create a sample Linux Bash shell script to Create a File and User with fix Value
- **Lab 29:** Create a sample Linux Bash shell script to Create a File and User with user input Value
- **Lab 30:** Run a sample performance monitoring script.

Module 4: VMware vSphere Private Cloud

Introduction To Virtualization

- How to Build A Virtual Environment?
- Hardware Virtualization
- VMware vSphere Components and Features

Build Your Very Own VMware Hands-On-Labs

- Build Your VMware vSphere 7 Home Lab
- VMware Lab by TechPledge
- My VMware vSphere 7 Lab Setup
- Downloading VMware Workstation And Hypervisor ESXi 7 For Free
- Create A Virtual Host with The ESXi 7 Hardware Requirements

Install and Configure ESXi 7 Hypervisor

- ESXi 7 Installation Step By Step
- ESXi 7 System Customization: Network management
- ESXi 7 System Customization: Troubleshooting and System Logs
- Login To ESXi 7 With vSphere Web Client
- Overview of ESXi 7 User Interface: Assign a License Key

Creating & Managing Virtual Machines

- Creating a New Virtual Machine: Choose The Name and The OS
- Creating a New VM: Thick And Thin-Provisioned Disks, CPU, RAM
- Overview Of A Virtual Machine Options
- VMware Remote Console
- Power On/Off A Virtual Machine
- Install VMware Tools In A Windows Virtual Machine
Files That Make Up A Virtual Machine
- OVF and OVA File Formats and Templates
- Creating New Virtual Machines

vCenter Server 7: Installation & Management

- Introduction to vCenter Server 7: Windows Hardware Requirements
- Setting Up Domain Controller Functionality
- Joining The Vcenter Machine to an Active Directory Domain
- Downloading VMware vCenter Server 7 For windows
- Install vCenter Server 7 for Windows
- Configuring vCenter 7 Single Sign On
- vCenter 7 Single Sign-On Web client
- Overview of vCenter Server 7 User Interface
- Add an ESXi Host to the vCenter Server Inventory (Datacenter)
- Difference Between ESXi And vCenter Server User Interface
- Managing ESXi Hosts in vCenter Server
- Creating A Virtual Machine In vCenter Server
- Work in Progress Panel

Cloning A Virtual Machine

- Understanding Clones - VMware
- Cloning a Windows Virtual Machine: Destination Host
- Preview
- Cloning a Windows Virtual machine
- New VM Guest Customization Specification: Network Configuration
- Run and Complete The Process of Cloning a VM
- Cloning a Linux Virtual machine

Virtual Machine Template

- Introduction To VMware Template
- Clone A Virtual Machine To A Template
- Deploy a Virtual Machine from a Template
- Clone to Template in Content Library

User Permissions And Privilege

- Introduction to User Permissions
- Create User, Manage Permission
- Create and Customize User Roles
- Log in With a Custom User Roles
- Create User, Manage Permission at vCenter Server 7 Level
- Create a New User and Roles at vCenter Server 7 Level

vNetwork Standard Switches

- Introduction To Virtual Network Standard Switches
- Types of Virtual Switch Available in VMware ESXi 7
- ESXi 7 Host Networking Concepts Overview
- The VMkernel, The Port Group and The Physical Adapters
- Adding More Physical Network Adapter
- Add a Physical Adapter to A Standard Switch for Redundancy
- Types of Virtual Standard Switch Connections
- Create and Manage A New Standard switch From ESXi 7 UI
- Add a Virtual Machine Port Group to a Standard Switch
- Add a VMkernel Port Group to a Standard Switch
- Creating a Private Network Port Group
- Create and Manage a Standard switch from vCenter Server 7 UI

vNetwork Distributed Switch

- Overview of vNetwork Distributed Switch concepts
- Add a New vSphere Distributed Switch
- Create A New Distributed Port Group
- Uplink Port Group: Add Hosts to a vSphere Distributed Switch
- Migrate VMs to Another Network
- Migrate VMkernel Adapters to Another Network
- Export and Restore Distributed Switch Configuration

vSphere Storage: External and Shared Storage

- Introduction to External and Shared Storage
- VMware Storage Technologies Overview
- vSphere iSCSI SAN components
- vSphere NFS storage components

- Fiber Channel (FC) SAN Components
- Create A New VMFS Local Datastore
- Deploying a Virtual Machine on Virtual SAN (vSAN)

vSphere Disaster Recovery

- Disaster recovery Overview
- VMware High Availability
- Cloning and Snapshots
- Backups
- Overview VMware Failover Cluster

Module 6: Azure Architect

Application Architecture Patterns in Azure

- Pattern Resources
- Performance Patterns
- Resiliency Patterns
- Scalability Patterns
- Data Patterns

Designing Highly Available, Cost-efficient, Fault-tolerant, and Scalable Systems

- Planning and Designing Cloud Services
- How to design Cloud Services
- Monitoring and Logging
- Hybrid IT architectures
- **Lab 1:** Create a sample solution design for customer with draw.io
- **Lab 2:** Create a sample cost estimate for the customer requirement with proposed components

Deploying Resources with Azure Resource Manager

- ARM Templates
- Role-Based Access Control (RBAC)
- Resource Policies
- Security
- Building Blocks
- **Lab3:** Create Resource Groups
- **Lab4:** Deploy an Virtual Machine Using ARM template
- **Lab 5:** Deploy an Webapp with ARM template from github

Building Azure IaaS-Based Server Applications

- High Availability
- Templated Infrastructure
- Domain-Connected Machines
- **Lab6:** Deploy a Resource Group using Azure Cli
- **Lab7:** Deploy a Virtual Machine using Azure Cli
- **Lab8:** Deploy a Resource Group using PowerShell

- **Lab9:** Deploy a Virtual Machine using PowerShell

Creating Managed Server Applications in Azure

- Infrastructure-Backed Platform-as-a-Service (PaaS)
- High-Performance Compute (HPC)
- Introduction to Containerization
- Introduction to Azure Container Service
- **Lab10:** Deploy Docker Image in Azure Container Service

Authoring Serverless Applications in Azure

- Understanding Web App tiers
- Resource Group and Web Hosting Plans
- Supported language
- Scaling of Websites
- Deployment source
- Horizontal and Vertical Scaling
- Production and Test Deployment Slots
- Integrated web app with Code Repository like git hub
- Using Deployment center
- Use the Visual Studio and Dot net code to Create web app
- Publish Java Application in Web app
- **Lab11:** Create Web App with sample code, Do Horizontal Scaling and Vertical Scaling
- **Lab12:** Create Web App with code from Visual Studio
- **Lab13:** Create Web App with code from GitHub, Implement Deployment slots for Staging, UAT and Production and Implement Ci/CD

Backing Azure Solutions with Azure Storage

- Azure Storage Pricing
- Azure Storage High Availability
- Azure Manage and Unmanage Disk
- Blob Storage
- Access Security in Block Storage
- Key Based Authentication for Blob Storage
- Connect and use blob storage using Java, Dot Net code
- Files Storage
- Queue Storage
- Overview of StorSimple
- **Lab14:** Create a Design decision Flowchart for storage selection
- **Lab15:** Create a Storage Account and Configure Blob Container.
- **Lab16:** Install Azure Storage Explorer, connect with secure string and connect the Storage
- **Lab17:** Create and Attached the additional Disk storage to Azure VM and Format it using NTFS

Comparing Database Options in Azure

- Relational Database

- Understanding Database as a service
- SQL Database is not SQL Server
- Advance Capabilities
- Benefits of SQL database
- Scaling SQL database
- Connect SQL Database with Visual Studio or Java
- SQL database Unit Test
- Backup Options
- Hands-on Lab: Deploy SQL database on Azure
- NoSQL Services
- Azure Cosmos DB
- Azure Cosmos DB Provisioning and scalability
- Azure Cosmos DB Pricing Model
- **Lab18:** Deploy a CosmosDB Database Instance and Create a sample customer records
- **Lab19:** Deploy a SQL Server Database Instance and Connect SSMS Installed on-prem
- **Lab20:** Deploy a SQL Server Database Instance and Connect with Visual Studio form

Networking Azure Application Components

- Design VNets On Azure
- Design Load Balancing Options
- Design External Connectivity
- **Lab21:** Design a VNet for a TPCS Cloud Network
-
- **Lab22:** Creating 4 VNets with CIDR and Create Multiple Subnets and Connect Using VNet Peering

Managing Security and Identity for Azure Solutions

- Security Monitoring
- Data Security
- Azure IAM
- Azure Security Center
- Use Azure Secure score
- Use Azure Advisor
- Azure Active Directory (Azure AD)
- Hybrid Identity
- Azure AD Application Integration
- **Lab23:** Create Users, Roles and Assign permission on Azure
- **Lab24:** Create a Recommendation chart for customer with Issues, Impact and Solution Steps for Performance, Security and Cost using Advisor and Secure Score
- **Lab25:** Review the customer immersion infra for Hybrid and Sync Identity
- **Lab26:** Create a Recommendation chart for customer with Issues

Disaster Recovery Planning

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- Disaster Recovery Terminology
- Introduction to Azure Disaster Recovery
- Azure High Availability Options
- Overview of Azure ASR
- Overview of Azure Migration
- Understand the Backup option in Azure
- **Lab27:** Create Backup for On-Prem File Data using Azure Backup
- **Lab28:** Create Replicas of VM to other regions using site recovery

Monitoring and Automating Azure Solutions

- Application Monitoring
- Platform Monitoring
- Network Monitoring
- Alerting
- Azure Automation
- Auto-Scale
- **Lab29:** Create Backup for On-Prem File Data using Azure Backup
- **Lab30:** Use App Insight Application Dashboard to Monitor the Application

Microsoft Tool

- MAP Tool
- Azure Pricing Calculator
- Azure Bandwidth Calculator
- Microsoft Solutions Architect
- **Lab31:** Review the Customer Immersion Environment with MAP result
- **Lab32:** Create a price Estimate with proposed solutions in Azure
- **Lab33:** Review the Customer Immersion Environment with Azure Bandwidth

Migrating Workloads on Azure

- Azure Migration Tool
- Azure Site Recovery
- Planning for Migration
- How to Migrate SQL Database to Azure (Planning)
- Migrate IIS hosted Application along with Code to Azure App Service (Planning)
- Sync the On-Prem Directory with Azure AD
- **Lab34:** Review the Sync Identity (On-Prem AD with Azure AD) at Customer Immersion
- **Lab35:** Review the Sync Identity (On-Prem AD with Azure AD) at Customer Immersion
- **Lab36:** Perform the Live Migration of SQL database to Azure with Customer Immersion
- **Lab37:** Migrate the on-prem Hosted website to Azure App at Customer Immersion

Project:

Project Title: Design the complete solutions for TPCS to transition from on-prem to Azure Cloud

Project Description:

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- TPCS an Renowned Company based out of USA approached TechPledge Consulting regarding Migration of their on-prem infra to Azure cloud. They want the transition should be smooth and must be within the budget.

Module 7: AWS SysOps Administrator

Introduction to AWS and Solution Architect

- Solution Architect Organization
- Overview of Administration Tool – Console, CLI, Script
- AWS Overview
- History and Evolution of AWS
- AWS Regions
- Overview of AWS Services

Elastic Compute Cloud (EC2)

- Introduction to Elastic Compute Cloud (EC2)
- Launching EC2 server
- Elastic Block Store (EBS)
- Elastic IP creation
- Amazon Machine Image (AMI)
- Snapshots creation from Volume
- Elastic Load Balancing (ELB)
- EC2 Best Practices and Costs
- **Lab:** Launch a Windows and Linux VM
- **Lab:** Create Snapshot image and Launch VM using that Image

AWS Storage

- Introduction to Cloud Storage
- Create and Manage S3 Storage
- Use S3 Explorer to manage S3
- S3 Life cycle
- Create and Manage S3 Glacier
- Use Fast Glacier to manage Glacier Storage
- Introduction to AWS Snowball
- **Lab:** Create an S3 Bucket and access using S3 Explorer
- **Lab:** Create an S3 Glacier and access using Fast Glacier

Identity and Access Management (IAM)

- Introduction to Identity and Access Management (IAM)
- Creating users and Groups
- Creating Custom policies
- Giving access to users to services using custom policies
- IAM Emulator
- IAM Best Practices
- **Lab:** Create a User & Group and assign Roles to Access S3 Storage

Amazon Virtual Private Cloud (VPC)

- IP Schemas and CIDR
- Amazon Virtual Private Cloud (VPC)
- Amazon VPC and Subnets
- Amazon Routing
- Internet Gateway
- Using Security Groups and Network ACLs
- Amazon VPC Best Practices and Costs
- **Lab:** Create a VPC and Subnets and Place a server

AWS CLI

- Install AWS CLI
- Login to AWS using CLI
- Understand the CLI output format
- CLI command Module
- **Lab:** Create Storage and VM using AWS CLI

AWS Cloud Front

- Introduction to CDN
- Configure S3 to host static web site
- Create Cloud Front to publish web site over CDN
- Customer domain overview
- **Lab:** Host an Image in S3, Create CDN to access it using cache copy

Auto Scaling

- Elastic Load Balancer (ELB)
- Introduction to Auto Scaling
- Creating Launch Configuration with AMI
- Creating Auto Scaling group
- Testing the auto scaling with online load testing tool
- **Lab:** Create an Autoscaling Group and Launch VM using Autoscaling

Database Solutions on AWS

- Introduction to Relational Database Service (RDS)
- Creating RDS MySQL instance
- Connect MySQL Instance with Workbench
- Introduction NoSQL
- Creating Amazon DynamoDB
- Database Best Practices and Costs
- **Lab:** Create a MySQL Instance and Access using MySQL workbench
- **Lab:** Create a DynamoDB Instance and Access using MySQL workbench

AWS Monitoring & Security Services

- Security Practices for Optimum Cloud Deployment
- AWS Responsibilities Matrix

- Introduction to Cloud Watch
- Creating alarm using Cloud Watch
- Simple Notification Service (SNS)
- Lambda Function
- **Lab:** Create SNS and Lambda Function for Implement the notification
- **Lab:** Configure an alert in cloud watch
-

AWS Disaster Recovery and Migration

- Disaster recovery Scenario with AWS
- How to design HA with services
- AWS Backup
- **Lab:** Create a Backup for EC2 Volume Disk

AWS Cost Management

- AWS Agreement overview
- Review the Billing and Analyze the Spend
- Create Estimate of annual commitment
- **Lab:** Create a Budget for Spending

Project:

Project Title: Migration of On-Prem server to AWS

Project Description:

- TPCS a Renowned Company based out of USA approached TechPledge Consulting regarding migrating one of their datacenter facilities to Amazon AWS.
- In this transformation. However, the TPCS had limited experience in migrating services from on-premise facilities into Amazon AWS, particularly at this scale. The TPCS engaged with TechPledge Consulting for both technical guidance and business support for the migration.

Module 8: DevOps Associate

INTRODUCTION TO DEVOPS

- DevOps Principles in detail
- DevOps Engineer Skills in the market
- Knowing DevOps Delivery Pipeline
- Market trend of DevOps
- DevOps Technical Challenges
- Tools we use in DevOps
- What is Software Development
- Software Development Life Cycle
- Traditional Models for SDLC
- DevOps Lifecycle
- DevOps Tools
- **Lab1:** Create a DevOps Flow for SDLC process on draw.io
- **Lab2:** Create a Agile DevOps Flow for SDLC process on draw.io

WORKING WITH GITHUB

- GitHub Introduction
- Working with Git Hub Features
- Create Public and Private Repository
- Create Teams in GitHub
- Git Desktop Tool install and Configure
- Git GUI Tool install and Configure
- GIT CMD Tool install and Configure
- Git Life cycle Commands
- Pushing Code to GitHub
- Staging Code in git
- Creating, Deleting Git Branches
- Pulling from GitHub
- Merging branches using git merge
- **Lab3:** Emulate a complete workflow for Git in production which include: Repository, Branch, Issues, Team, Forge and Tracking using Git Hub
- **Lab4:** Use Git Hub and Git Desktop to Emulate a complete workflow for SCM Create Local repo, Publish as Remote repo, Clone, Branching, Merge Branching, History
- **Lab5:** Use Git Hub and Git GUI to Emulate a complete workflow for SCM use Local repo, Scan, Stage Commit, Push and Pull the code update
- **Lab6:** Use Git Hub and Git CMD to Emulate a complete workflow for SCM use Local repo, Add , Commit, Push and Pull the code update

CONTAINERIZATION

- Introduction to microservices
- Introduction to docker
- Docker demo
- Docker Architecture
- Docker Images
- Docker Networking
- Docker Volumes.
- AKS and ECS

CONTAINERIZATION WITH DOCKER

- Introduction to Docker
- Understanding Docker Lifecycle
- Components of Docker Ecosystem
- Common Docker Operations
- Creating a Docker Hub Account
- Perform Basic Docker Operations
- Committing changes in a Container
- Maintain the Container Lifecycle (Create, Start, Stop, Kill, Remove)
- Pushing a Container Image to Docker Hub
- Docker High Availability with Docker swarm
- Running a Docker image with cloud container service

- Docker Management – Monitoring, Inspecting and troubleshooting
- **Lab7:** Create a custom Docker image with Apache on CentOS, Deploy Custom website and publish it for external access
- **Lab8:** Create a custom Docker image with Apache on Ubuntu, Deploy Custom website and publish it for external access
- **Lab9:** Create a custom image with Java on CentOS and develop a sample Java app
- **Lab10:** Publish the Image on Azure/AWS cloud container service
- **Lab11:** Create a 3 Node Swarm Cluster and Publish the Webapp with port and Scale it
- **Lab12:** Use the Docker Compose to Create the Dockerfile with Webserver and Database and Scale it
- **Lab13:** Create a Custom Image with Figlet App and Publish its on Docker hub Repository

Configuration Management Using Ansible

- What is Ansible?
- Ansible Architecture
- Setting up Ansible on Cloud Instance
- Ansible Inventory
- Use Ansible Modules
- Create Ansible Playbook using YAML
- Ansible Roles
- Create custom Ansible role using Ansible galaxy
- Overview of Ansible Tower
- **Lab14:** Launch an EC2 Instance using Ansible Playbook on AWS
- **Lab15:** Install an Apache web server on Ansible Managed Node using Ansible Playbook
- **Lab16:** Copy the Files on Ansible Managed Node using Ansible Playbook
- **Lab17:** Create a simple ansible roles with reusable Ansible-Playbook
- **Lab18:** Review the Ansible Deployment in production with Both Linux, Windows and Cloud at Customer immersion environment

Configuration Integration with Jenkins

- Introduction to Continuous Integration
- Jenkins Master Slave Architecture
- Understanding CI/CD Pipelines
- Create upstream and downstream projects
- Installing Plug-ins in Jenkins
- Using the Pipeline Plugin In Jenkins
- Creating an end to end automated CI/CD Pipeline
- Working with scripted pipeline
- Introduction to Maven
- Creating Maven Project in Jenkins
- **Lab19:** Launch an EC2 Instance using Jenkins Freestyle Project on AWS
- **Lab20:** Deploy Directory and Collect Inventory File copy using mapped network using Jenkins Pipeline

- **Lab21:** Create a Parameterized Pipeline with Jenkins scripted pipeline
- **Lab22:** Build a Docker Image using Jenkins, Git and Docker
- **Lab23:** Review the Jenkins Deployment in production, AD Integration and Integration with Azure, AWS Cloud at Customer immersion environment

Introduction to Terraform

- Introduction to terraform
- Infrastructure Automation
- Install Terraform
- Providers
- Resources
- Basic Syntax
- Exercise: Your First Script main.tf
- Terraform Plan, show, Apply, Destroy
- Setting up the system for AWS
- **Lab24:** Launch an EC2 Instance with custom parameter using Terraform Script on AWS
- **Lab25:** Update the EC2 Instance with adding custom disk

Kubernetes Essential

- What is Kubernetes?
- Why Kubernetes is important?
- Understanding of Pods and Cube
- Introduction to Kubernetes Cluster
- Introduction to Kubernetes's Cluster Service
- Working on Pods
- Setup Kubernetes on AWS VM
- Create and Run Services
- **Lab26:** Initialize and Create a Kubernetes Cluster at Sandbox Environment
- **Lab27:** Create a service for Nginx and expose over the port for external access
- **Lab28:** Scale the services created as deployment

DevOps on Cloud

- Essentials of Cloud computing?
- Cloud and virtualization architecture
- Cloud deployment architecture
- Cloud providers – An overview
- Why we need DevOps on Cloud?
- Introducing to Amazon & Azure web services
- Various AWS & Azure services for Devops – An overview
- **Lab29:** Deploy a Docker Web Image with Azure Container Service
- **Lab30:** Deploy a Docker Web Image with AWS Container Service

Project

Project 1: Provision EC2 with Custom Image on AWS

Project 2: DevOps Project - Build -Test-Report using Real time Java selenium code

Course Fee

Call for Price