Module Title	:	AZ-400T05-A- Implementing Application Infrastructure
Duration	:	1 day

About this course

This course provides knowledge and skills to deploy an application infrastructure in DevOps pipelines. Students will learn how to implement infrastructure as code and configuration management, how to provision Azure infrastructure using common automation tools, and how to deploy an application infrastructure using various Azure services and deployment methodologies. Students will also learn how to integrate 3rd party deployment tools with Azure, such as Chef and Puppet to incorporate compliance and security into the release pipeline.

Audience profile

Students in this course are interested in implementing application infrastructure and the management and configuration of that infrastructure, or in passing the Microsoft Azure DevOps Solutions certification exam.

At course completion

After completing this course, students will be able to:

- Apply infrastructure and configuration as code principles
- Deploy and manage infrastructure using Microsoft automation technologies such as ARM templates, PowerShell, and Azure CLI
- Describe deployment models and services that are available with Azure
- Deploy and configure a Managed Kubernetes cluster
- Deploy and configure infrastructure using 3rd party tools and services with Azure, such as Chef, Puppet, Ansible, SaltStack, and Terraform
- Define an infrastructure and configuration strategy and appropriate toolset for a release pipeline and application infrastructure
- Implement compliance and security in your application infrastructure

Course Outline

Module 1: Infrastructure and Configuration Azure Tools

Lessons

- Learning Objectives
- Infrastructure as Code and Configuration Management
- Create Azure REsources using ARM Templates

- Create Azure Resources using Azure CLI
- Create Azure Resources by using Azure PowerShell
- Additional Automation Tools
- Version Control
- Lab Deploy to Azure using ARM templates
- Module Review Questions

After completing this module, students will be able to:

- Apply infrastructure and configuration as code principles
- Deploy and manage infrastructure using Microsoft automation technologies such as ARM templates, PowerShell, and Azure CLI

Module 2: Azure Deployment Models and Services

Lessons

- Learning Objectives
- Deployment Models and Options
- Azure Infrastructure-as-a-Service (IaaS) Services
- Azure Automation with DevOps
- Desired State Configuration (DSC)
- Azure Platform-as-a-Service (PaaS) services
- Azure Service Fabric
- Lab Azure Automation - IaaS or PaaS deployment
- Moduel Review Questions

After completing this module, students will be able to:

- Describe deployment models and services that are available with Azure

Module 3: Create and Manage Kubernetes Service Infrastructure

Lessons

- Learning Objectives
- Azure Kubernetes Service
- Lab Deploy and Scale AKS Cluster
- Module Review Questions

After completing this module, students will be able to:

- Deploy and configure a Managed Kubernetes cluster

Module 4: Third Party and Open Source Tools available with Azure

Lessons

- Learning Objectives
- Chef
- Puppet
- Ansible
- Cloud-Init
- Terraform
- Lab Provision and configure an App in Azure Using X
- Module Review Questions

After completing this module, students will be able to:

- Deploy and configure infrastructure using 3rd party tools and services with Azure, such as Chef, Puppet, Ansible, SaltStack, and Terraform

Module 5: Implement Compliance and Security in your Infrastructure

Lessons

- Security and Compliance Principles with DevOps
- Azure Security Center
- Lab Integrate a scanning extension or tool in an AZ DevOps pipeline/security center
- Module Review Questions

After completing this module, students will be able to:

- Define an infrastructure and configuration strategy and appropriate toolset for a release pipeline and application infrastructure
- Implement compliance and security in your application infrastructure

Module 6: Course Completion

Lessons

Final Exam

Prerequisites

Students should have fundamental knowledge about Azure, experience with virtual machines and containers, and some exposure to automation and scripting.

Experience working in a software development or operations environment with either Windows or Linux would be helpful but is not essential.

Students should also have knowledge of general application development and deployment processes.