| **COURSE CODE** | **INFRASTRUCTURE SOLUTIONS OF CLOUD** | **Total Lecture:60**  **Theory:45**  **Practical:15** |
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| **CA21M304** | **( LTP =3 – 0 – 2 = 4)** | |
| **Course Objectives :**  1. To understand the  azure virtual machines  2. Recognize the services offered by Azure  3. Understand the azure storage  4. Configure the Azure active directory services | | |
| **UNIT** | **CONTENTS** | **HOURS** |
| **I** | **Introduction to Microsoft Azure Virtual machines**  Introduction to Azure VM -  Resource planning with Basic and standard vm -  VM pricing  -  Difference between basic and standard vm -  Creating virtual machines -  Choosing the type of vm -  Configuring DNS address -  Configuring endpoints -  Connecting to virtual machine -  Implementing the lifecycle of a virtual machine -  Uploading and downloading virtual hard disks -  Attaching an empty hard disk to vm -  Creating VM from a custom image  -  Deleting images and disks | 9 |
| **II** | **Azure Networking**  Creating and configuring a virtual network -  Deploying a virtual machine in a virtual network -  Deploying a web service in a virtual network -  Modifying a network configuration  -  Configuring access control list -  Configuring reserved IP addresses -  Configuring public IP addresses  -  Implementing a point-to-site VPN -  Implementing a site-to-site VPN -  Implementing a virtual network to virtual network vpn -  Configuring internal load balancing. | 9 |
| **III** | **Azure Storage**  Storage account in azure -  Implement blobs and azure files -  Types of storage in azure -  Blob -  Table -  Queue -  Drives -  Managing storage account keys -  Implementing SQL databases -  Choosing a service tier  -  Implementing point-in-time recovery -  Implementing geo-replication -  Scalability strategies -  Importing and exporting data | 9 |
| **IV** | **Azure Active Directory and Azure Services**  Implementing  directory synchronization -  Configuring a custom domain -  Monitoring azure active directory  -  Adding a web application with azure AD -  Adding a native application with azure AD -  Configuring a graph API permission for an application  -  Configuring role instance count -  Configuring role operating system settings -  Configuring ssl -  Configuring network traffic rules -  Configuring remote desktop  -  Monitoring a cloud service -  Configuring endpoint monitoring. | 9 |
| **V** | **Implementing Websites In Azure**  Creating an azure websites - Configuring site settings - Configuring custom domain for a website - Configuring SSL certificates for an azure website - Configuring azure traffic manager - Creating a new web hosting plan - Creating a website within existing web hosting plan - Migrating websites between hosting plans | 9 |
| **List of Programs**  1. Create and document the process of creating a windows azure account  2. Create a virtual machine from available releases of windows server images  3. Create a virtual machine using the option “quick Create”  4. Create a custom VM and Capture the image  5. Create a vm from a captured image  6. Add a VMs to a cluster and deploy load balancer on the same  7. Create and publish / host a webpage in windows azure  8. Create a website using Visual studio  9. Create a SQL server DB , Create tables and add data to the table  10. Test basic sql commands on the table created in the previous step.  11. Migrate an on premise DB to Azure  12. Create a storage account in Azure | | |
| **Course Outcomes as per Bloom's Taxonomy** | | |
| At the end of the course the students should be able to: | | |
| **CO1** | **Creation3** of Windows Azure Account | |
| **CO2** | **Plan6** of Virtual Machine on Server Application | |
| **CO3** | **Understand2** of Virtual Machine to cluster and deployment of load balances | |
| **CO4** | **Define5** of webpages in Azure | |
| **CO5** | **Apply3** Monitoring Azure Services | |
| **Text Books** | **Text Book**        Washam Michael(2018): **Implementing Microsoft Azure Infrastructure Solutions         Paperback:** Microsoft Press  **Reference Book**       Michael S. Collier and Robin E. Shahan(2015): **Microsoft Azure Essentials: Fundamentals of   Azure:** Pearson Education | |

| **COURSE CODE** | **CLOUD MIGRATION** | **Total Lecture:45**  **Theory:45**  **Practical:0** |
| --- | --- | --- |
| **CA21M307** | **( LTP =3 – 0 – 0 = 3)** | |
| **Course Objectives:**   * To get introduced to cloud migration and its strategies and To Analyze enterprise cloud adaption techniques. * To explain migration of large scale services to the cloud with benefits of cloud adoption. * To learn migrating services to AWS cloud using cloud adoption framework. * Determine and Analyze cloud adaption framework and risk migration methodology for cloud migration * To Apply the concepts of migrating web application to cloud | | |
| **UNIT** | **CONTENTS** | **HOURS** |
| **I** | **Getting started with moving to cloud**  Introduction to Cloud Migration – Migrating Business Applications to Public Cloud Services, Benefits of Migrating data and workloads to the Cloud, Types of Cloud Migration Strategies, Migration Tools, Cloud Transformation Maturity Model, Ensuring Successful Cloud Adoption– Cloud Storage, Application performance, Data Integration, Security, Interoperability, Moving Organization to Cloud – Delivering Business Processes from the Cloud, Cloud Migration Strategy and Plan, Efficient Steps for cloud migration. | 9 |
| **II** | **Cloud Migration Plan**  Introduction to Migration Plan – Key elements of a Cloud Migration Plan, Migration plan considerations – Time Management, Workloads being migrated, Migration priorities, Definition of process and roles, Security, Vendor Selection, Selecting the deployment model, Validating the services to be moved to cloud, Performance metrics,  Effectiveness of cloud migration, Migration and deployment options, Optimization and Cost Management in an effective cloud migration, Business continuity after Migration, Case Study on Cloud Migration. | 9 |
| **III** | **Migrating Services to Cloud: Challenges**  Migrating Services to AWS, Cloud Adoption Framework, Successful Migration, Understanding On-premises cost, Migration cost considerations, Broad Aspects of Migration into Cloud, Migration of virtual Machines and techniques, Fault Tolerance Mechanisms, Migration Risks – Architectural complexity, Poor Application selection, Application dependencies, Unwanted Latency, Privacy and Security Considerations, Fault tolerance and Availability, Organizational concerns – Measuring and assessment of risks, Risk Mitigation methodology for Cloud Migration. | 9 |
| **IV** | **Migrating Large scale services to the cloud**   Steps for ensuring successful large scale cloud migration, Handling Failures, Risks involved in working at a big scale migration, Pre-release and deployment considerations, Monitoring and Alerting, Mitigation. | 9 |
| **V** | **Migration Case Studies**  Migrating an on-premise application to cloud, migrating web applications to AWS cloud and Google cloud, Migrating Batch Processes to the cloud, Migrating Backend Processing pipeline to the cloud, migrating from an End-of-Life Data Center to AWS. | 9 |
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| **Course Outcomes as per Bloom's Taxonomy** | | |
| At the end of the course the students should be able to: | | |
| **CO1** | **Understand2** the Cloud Migration Strategy  for Different cloud providers | |
| **CO2** | **Plan6** a cloud migration based on a client requirement and ensuring business continuity even after migration. | |
| **CO3** | **Define5** and identify various migrating strategies that can be used for a given scenario. | |
| **CO4** | **Define5** various risks involved in a big scale migration. | |
| **CO5** | **Apply3** Migrating an on-premise application to Cloud | |
| **Text Books** | Text Book  1. Eric Passmore(2016): **“Migrating Large-Scale Services to the Cloud",1st Edition,** Apress.  Reference Books  1. AWS Team (2015) :**A Practical Guide to Cloud Migration - Migrating Services to AWS (AWS Whitepaper):** AWS White Paper, Kindle Edition. | |