

III Year I Semester

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Code: 20CS5657

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VIRTUALIZATION (Honors)

Course Objectives:

The course should enable the students to :

1. Understand tools and techniques for creating virtual machines and environment.
2. apply both types of Hypervisors type 1 and type2.
3. Understand virtualization solutions
4. Learn the network and application virtualization.
5. Understand Real time application of Virtualization

Course Outcomes:

The students should be able to:

1. Have gained introductory knowledge of Virtualization concepts
2. Learn about the Server Virtualization and Storage Virtualization.
3. Learns about the Benefits and understands the Virtualization solutions
4. Learn the network and application virtualization
5. Relate the Case Study

UNIT-I Introduction to Virtualization:

Overview, Traditional IT Infrastructures, Benefits of virtualization, comparison of traditional IT Infrastructure vs Virtualized Infrastructures, Implementing Virtualization, typical hardware / software server stack and its logical equivalence, pre/post virtualization server stack ,types of virtualization, area and technology based classification, history of virtualization, time sharing system, IBM mainframe and PowerVM virtualization, Extending Virtualization to x86 and its hardware support, impact of Virtualization: cost and manageability impact.

UNIT-II Server and Storage Virtualization

Server Virtualization :Types of Server Virtualization, simulation, Hardware Assisted Virtualization, Hypervisors, Ring levels on x86 processors, types of Hypervisors, IBM PowerVM Hypervisors, common consideration in server Virtualization, Desktop Virtualization: Benefits Constraints and Types. Anatomy of server Virtualization, three major layers in Xen server,

Storage Virtualization :Overview, benefit and types, features of logical layers, Host level storage Virtualization, host based mirroring, storage level Virtualization, network based storage Virtualization.

UNIT-III Virtualization Solutions: Understanding Microsoft's Virtualization solutions: Microsoft's Infrastructure Optimization Model, Virtualization and the Infrastructure Optimization Model, Benefits of Virtualization, Achieving the Benefits of Datacenter Virtualization, Achieving the Benefits of Client Virtualization, Achieving the Benefits of Cloud Virtualization

UNIT-IV Network and Application Virtualization

Network Virtualization overview: VPN, VLAN, challenges in using application in traditional install, use and update model, solution for challenges, Architecture, benefits of Application Virtualization.

UNIT-V CASE STUDY

Customer IT Landscape, Functions of Data Centers, Triggers of Virtualization, Preparation for Virtualization, Server Selection, Sizing, Criticality, Transition Tools for Virtualization, Cost savings.

Text Books:

1. Introduction to Virtualization and Cloud Computing by IBM ICE Publications.
2. David Marshall, Wade A. Reynolds, Advanced Server Virtualization: VMware and Microsoft Platform in the Virtual Data Center, Auerbach