

M.Com (E-Comm.) Sem-III

304 : Data Centre Technology

Objectives :-

1. To know the basics of data center technology
2. To learn data center clusters.

Unit No.	Topic	Periods	No. of Lect.
1	1. Data Center Basics 1.1 What is Data Center? 1.2 No Time for Downtime 1.2.1 Causes of Downtime 1.2.2 Cost of Downtime 1.3 The High-Availability Continuum 1.3.1 High-Availability Metrics 1.3.2 Availability Choices: How Much Availability is Enough? 1.3.3 Commercial Cluster Management Software	5	1,2
2	2. Data Center Requirements 2.1 Data Center Prerequisites 2.2 Budget Constraints 2.3 Selecting a Geographic Location 2.3.1 Safe from Natural Hazards and Man-Made Disasters 2.3.2 Availability of Local Technical Talent 2.3.3 Abundant and Inexpensive Utilities Such as Power and Water	4	1,2
3	3. Data Center Design 3.1 Characteristics of an Outstanding Design 3.2 Guidelines for Planning a Data Center 3.3 Data Center Structures 3.4 Best Practices 3.5 Data-Center Design Case Studies 3.5.1 Celebrity Travels 3.5.2 Designer Dresses 3.6 Network Infrastructure in a Data Center 3.6.1 Modular Cabling Design 3.6.2 Points of Distribution (PODs) 3.6.3 Internet Access 3.6.3.1 ISP Network Infrastructure 3.6.3.2 ISPWAN Links 3.6.4 Best Practices	6	1,2
4	4. Data Center – other considerations 4.1 Data Center Maintenance 4.1.1 Network Operations Center (NOC) 4.1.2 Network Monitoring	8	1,2

	<ul style="list-style-type: none"> 4.1.3 Monitoring Requirements 4.1.4 In-Band and Out-of-Band Monitoring 4.1.5 Data-Center Physical Security 4.1.6 Data-Center Logical Security 4.2 Power Distribution in a Data Center <ul style="list-style-type: none"> 4.2.1 Estimating Your Power Needs 4.2.2 Uninterruptible Power Supply (UPS) 4.2.3 Generators 4.2.4 Power Conditioning 4.2.5 Single-Phase and Three-Phase Power 4.2.6 Power Distribution Units (PDUs) 4.2.7 Electrostatic Discharge (ESD) 4.3 Data Center HVAC <ul style="list-style-type: none"> 4.3.1 Reasons for Strict Environmental Requirements 4.3.2 Need for Energy-Efficient HVAC Systems 4.3.3 Air-Conditioning Systems 4.3.4 Placement of Hardware Racks 4.3.5 Best Practices 		
5	<p>5. Server Performance Metrics</p> <ul style="list-style-type: none"> 5.1 What Is a Benchmark? 5.2 Benchmark Organizations 5.3 Aspects of System Performance <ul style="list-style-type: none"> 5.3.1 Utilization 5.3.2 Latency 5.3.3 Throughput 5.3.4 Efficiency 5.4 SPEC Benchmarks 5.5 Linpack Benchmarks 5.6 TPC Benchmarks 	5	1,2
6	<p>6. Server Capacity Planning</p> <ul style="list-style-type: none"> 6.1 Server Sizing and Capacity Planning 6.2 Identifying the Slowest Link 6.3 Capacity Planning for Servers <ul style="list-style-type: none"> 6.3.1 Phase 1: Define the Customer's Requirements 6.3.2 Phase 2: Measure or Estimate Current Resource Utilization 6.3.3 Phase 3: Size the New Server 	3	1,2
7	<p>7. Server Administration</p> <ul style="list-style-type: none"> 7.1 Best Practices for System Administration 7.2 System Administration Work Automation <ul style="list-style-type: none"> 7.2.1 What Should Be Automated? 7.2.2 Types of Automation 7.2.3 Automation Guidelines 7.2.4 Common Automation Tools 7.2.5 Examples of Automation 	3	1,2
8	<p>8. Load Balancing</p> <ul style="list-style-type: none"> 8.1 Load-Balancing Terminology 8.2 Advantages 	4	1,2

	8.2.1 Fault Tolerance 8.2.2 Service Availability 8.2.3 Performance 8.2.4 Scalability 8.2.5 Flexibility 8.2.6 Cost Savings 8.2.7 Security 8.3 Types of Load Balancing 8.3.1 Software-Based Methods 8.3.1 Hardware-Based Methods		
9	9. Data Center Clusters 9.1 Cluster Architecture 9.1.1 Asymmetric Two-Node Clusters 9.1.2 Symmetric Two-Node Clusters 9.1.3 Complex Cluster Configurations 9.1.4 Many-to-One Failover Model 9.1.5 One-to-Many Failover Model 9.1.6 Any-to-Any Failover Model 9.2 Cluster Requirements 9.2.1 Required Hardware Cluster Components Servers 9.2.2 Private (Heartbeat) Networks 9.2.3 Administrative (Maintenance) Network 9.2.3 Public or Service Network 9.2.4 Shared Disks 9.2.5 Adapter SCSI ID Requirements 9.2.6 Local Disks	10	1,2
	Total	48	

Recommended Books

1. Foundation of Green IT: Consolidation, Virtualization, Efficiency, and ROI in the Data Center - by Marty Poniatowski (Author)
2. Administering Data Centers: Servers, Storage And Voice over IP - Kailash Jayaswal
3. <http://www.datacenter.tv/>
4. <http://datacenterjournal.com/index.php>
5. <http://www.flipkart.com/administering-data-centers-kailash-jayaswal/8126506881-ou23fy0q5d>