Cloud Computing

II.M.Sc (CS) Prepared by M.Sathya

Important questions

2 Marks

1. What is Cloud computing?
2. What are the types in cloud services?
3. Define Private cloud.
4. What is Public cloud?
5. What did you meant by community cloud?
6. Note on Hybrid cloud.
7. What is mean by IaaS?
8. Write down note on PaaS?
9. What is mean by migrating in cloud computing?
10. Why we use Migrating?
11. What are the challenges of SaaS Paradigm?
12. What is virtualization?
13. What is Google app engine?
14. Define Cloud Supply chain.
15. What is Transition Challenges?
16. Define VLAN.
17. What is Virtualization Technology?
18. List out types of Virtualization in Cloud Computing
19. Define virtual machine monitor?
20. Define Hypervisor and Xen Server?
21. What is meant by anatomy of cloud computing?
22. Define VM Management.
23. What is Leasing Model?
24. Define Amazon EC2.
25. What is Google App Engine?
26. What is meant by Microsoft Windows Azure?

27. Define RVMS design.

28. Note on SaaS.

29. What is Job Monitoring?

30. Define LAN.

31. Define WAN.

32. What is Multimedia data security?

33. Note on Data privacy protection.

34. Define PDP.

35. Difference between Authentication and Authorization.

36. Define Logical Attacks.

37. Define Customer information Protection.

38. What is Aneka Cloud platform?

39. What are the resources in Aneka cloud?

40. Define Workload Monitoring.

41. What is Resource Pool?

42. Note on CometCloud.

43. What is the goal of Autonomic Cloud bursting?

44. Define Load Dynamic.

45. What is Autonomic Cloudbriding?

46. Define Fault Tolerance.

47. Define Image Registration.

48. What are the behaviors in Autonomic Cloudbursts?

49. Define Basic CometCloud Operations.

50. Define T-System.

51. What is Changing Markets?

52. Note on Dynamic ICT Services.

53. Define Quality.

54. What is Map Reduce Programming Model?

55. List out features of Map Reduce Model.

56. Define Hadoop.

57. What is Hadoop MapReduce?

58. What is Disco?

59. Define MapReduce.NET.

60. What is meant by Skynet?

61. Define GridGain.

62. What is SAP Systems?

63. List out three tier architecture.

64. What are the challenges in infrastructures provider?

65. Define Dynamic Elasticity.

66. What is Elasticity?

67. Role of Service Manager.

68. What are the SECURITY CONSIDERATIONS in cloud?

69. Define External Threats.

70. Define Internal Threats

71. What is Admission Control:

72. List out Application SLA:

73. What are the steps in SLA?

74. Define Negotiation.

75. List out SLA MANAGEMENT IN CLOUD

76. Define Rules Engine.

77. What is GRID AND CLOUD

5 Marks

1. What are the layers and types of clouds?
2. Write note on desired features of a cloud.
3. State essential characteristics of cloud computing.
4. State the benefits of cloud computing.
5. Write short notes on origins of cloud computing.
6. Explain in detail about cloud delivery model.
7. Discuss the operational and economic benefits of SaaS.
8. Explain the concept of cloud supply chain.
9. What are the basic principles of cloud computing?
10. What are the security constrains in cloud computing?
11. List out the types of SLA. Explain.

12. Write note on Grid and Cloud.
13. What are the benefits of cloud computing? Explain
14. Describe about integrating cloud storage providers.
15. List down tools for cloud computing.
16. Describe about the concept of Aneka cloud platform.
17. How do you implement the hybrid cloud?
18. Explain the concept of Aneka hybrid cloud Architecture.
19. Discuss the concept of Map Reduce programming Model.

10 Marks

1. Explain the concept of roots of cloud computing.
2. Explain the concept of seven-step model of migration into a cloud.
3. Explain briefly the security concerns of cloud computing.
4. What are the challenges in SaaS? Explain
5. Discuss the concept of SaaS integration products and platforms.
6. Describe the concept of Transition challenges of cloud computing.
7. Describe the concept of Life cycle of SLA.
8. Discuss the concept of Amazon web service in cloud.
9. Explain the concept of RVWS design.
10. Explain the concept of Map Reduce implementations for the cloud.
11. Enumerate the concept of virtual machines provisioning and manageability.
12. Explain the concept of Aneka resource provisioning service.
13. What are the technologies for data security in cloud computing?
14. Describe the concept of federated of cloud computing.
15. Explain the concept of automated policy based management.

Unit-1

1. What is Cloud Computing?

Cloud computing is the on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. The term is generally used to describe data centers available to many users over the Internet.

2.What are the types of Cloud Computing?

They are the four types of Cloud Computing.

1.Public   2. Private   3. Community   4. Hybird.

3. List out the Advantage of Cloud Computing.

They are the seven types of advantage of Cloud Computing

1. Cost reduction
2. Scalability
3. Levels the playing field
4. Easier Collaboration
5. Affordable
6. Scalable and Flexible
7. Efficiency

4. List out the Disadvantage of Cloud Computing.

They are the six types of Disadvantage of Cloud Computing

1. Securityconcerns
2. Risk of losing internet connection
3. Limited resources for customization
4. Availabilty
5. Data mobility and ownership
6. Privacy.

5. What is the area to process the Cloud Migrations?

They are the three area of process.

1. Plan   2. Execute   3. Monitor

6.List out the types of Cloud Computing for the Business purpose.

They are the six types of Cloud Computing

1. WWW-based Cloud Computing service.
2. Software as a service
3. Platform as a service
4. Utility cloud computing services
5. Managed services
6. Serivce commerce.

7. Define Public Cloud.

A public cloud is based on the standard Cloud computing model, where the service provider makes the resources such as storage and application avilable to the public over the WWW. These service may be free or on a pay-per-usage model.

8.What is Private Cloud?

A private cloud is a proprietary computing model that provides services to user who are behind a firewall.

9. What are Models in Cloud Service?

They are the five types are models

1. SaaS
2. PaaS
3. Iaas
4. Baas
5. Maas

10.What are the other Cloud-related techniques?

They are the three types of other Cloud-related techniques

1. Grid computing
2. Utility computing
3. Automatic computing

11.What is the Step to get Cloud Computing infrastructure for his Business?

The following steps are:

1. Choose on-demand technology which will be the foundation for your infrastructure.
2. Determine how your employees can access information from the infrastructure.

3. Prepare the infrastructure with the necessary software and hardware.
4. Set up each computer to access the infrastructure.
5. Integrate all aspects of the infrastructure so that all employees can participate in resource.

12.Define Paas

It is service, where application/software can be build, tested and deployed at a single unit. Paas is a useful for application builders, developers, deployers and testers.

13. What is called SaaS?

Provider of SaaS has full administrative rights for its application and responsible for activities such as deployment, maintenance and update.

14.What are the pros and cors of Cloud Computing and Cloud basic Device?

1. Centralized Data Storage in Cloud Computing.
2. Cloud Servers Maintenance and Security.
3. Data Access and Network Connectivity.
4. Cost Factor
5. Cloud Servers Data Backup and Availability.

UNIT –II

1. What are the Four types of Cloud Services available in IBM Company?

1. IaaS   2. PaaS   3.SaaS   4.BaaS

2. List out the types on Cloud is based on its infrastructure.

1. Public   2. Private   3. Hybrid.

3. What is CDM?

The CDM provides an open frame work for identifying the necessities and differences of various cloud deployment environment.

4. What are Factors to be considered which designed Cloud based Architecture?

1. Cost   2.Complexity   3. Speed   4. Cloud Portability   5.Security

5. What is called Combined Cloud?

Combining internal and external providers termed as combined cloud. By intergrating multiplecloud services, consumers can ease the transition to public cloud services.

6. List out the three key Principles of Cloud Computing.

    1. Abstraction   2. Automation   3. Elasticity

7. Define Cloud Federation.

Cloud federation is interconnectiong the cloud computing environments with two or more service providers for balancing the traffic load and to surge spikes while there is demand.

8. What is Virtualization?

Virtualization reduces the burden of workloads of users by centralizing the administrative tasks and improving the scalability and workloads.

9. Define Virtual Machine

Virtual machines consolidate the workloads of under-utilized servers. Because of this onc can save on hardware, environmental costs and management.

10. What are the types of Virtualization?

They are the six types of Virtualization

1. Sever Virtualization
2. Network Virtualization
3. Storage Virtualization
4. Desktop Virtualization
5. Application Virtualization
6. Management Virtualization

11. List out the Need for Server Virtualization

    1. Consolidation   2. Redundancy   3. Legacy System   4. Migration

12. What are the Advantages of OS Virtualization?

They are the four types of advantages

1. Flexible provisioning
2. Rapid software deployment
3. Easy and efficient implaning updates
4. Easy rollback scenarios

13. List out the Disadvantage of OS Virtualization.

They are the four types of disadvantages

1. No work off-line capability
2. High-speed LAN recommended.
3. Limited number of OS are supported
4. Imaging disadvantages apply to this technique.

14. What is Clustering?

Cluster is defined as a type of parallel or distributed system that consists of a collection of interconnected computers and is used as a single, unified computing resource. Forming a cluster refers to a collection of computers boubnded together to form a common resource pool.

15. List out the primary types of Storage Virtualization.

They are the two primary types of storage Virtualization

1. Block Virtualization
2. File Virtualization

16. What are the Components of a Virtual Network?

They are the five components

1. Network switch adapters
2. Netowork elements
3. VLAN and VMs
4. Network mobile elements
5. Network media.

17. Define Cloud Stack.

CloudStack includes a computer function that assigns virtual machines (VMs) to individual servers, a network function that manages switches to create and manage logical networks, object and block storage systems, an image management function and an administration interface. Cloud computing that supports all components of the software stack.

18. Define Server Virtualization.

Server virtualization is a virtualization technique that involves partitioning a physical server into a number of small, virtual servers with the help of virtualization software. In server virtualization, each virtual server runs multiple operating system instances at the same time.

19. What is known as Network Virtualization?

In computing, network virtualization or network virtualisation is the process of combining hardware and software network resources and network functionality into a single, software-based administrative entity, a virtual network.

20. Define CDLC.

A cloud engineering discipline has its own lifecycle model like other engineering disciplines, for a systematic and scientific development of the cloud known as cloud development lifecycle model.

21. List out the Phases of CDLC.

They are the six phases of CDLC.

1. Reuirement and Analysis
2. Architect
3. Implementation and Integration
4. Quality Assurance and Verification
5. Deploy, Testing and Improvement.
6. Monitor, Migrate and Audit.

Cloud Computing

UNIT I

1. What is Cloud computing?

   Cloud Computing can be defined as delivering computing power(CPU, RAM, Network Speeds, Storage OS software) a service over a network (usually on the internet) rather than physically having the computing resources at the customer location.

   Example: AWS, Azure, Google Cloud

2. What are the types in cloud services?

   - Email
   - Storage, backup, and data retrieval
   - Creating and testing apps
   - Analyzing data
   - Audio and video streaming
   - Delivering software on demand

3. Define Private cloud.

   The cloud infrastructure is provisioned for exclusive use by a single organization comprising multiple consumers (e.g., business units). It may be owned, managed, and operated by the organization, a third party, or some combination of them, and it may exist on or off premises.

4. What is Public cloud?

   The cloud infrastructure is provisioned for open use by the general public. It may be owned, managed, and operated by a business, academic, or government organization, or some combination of them. It exists on the premises of the cloud provider.

5. What did you meant by community cloud?

   The cloud infrastructure is provisioned for exclusive use by a specific community of consumers from organizations that have shared concerns (e.g., mission, security requirements, policy, and compliance considerations). It may be owned, managed, and operated by one or more of the organizations in the community, a third party, or some combination of them, and it may exist on or off premises.

6. Note on Hybrid cloud.

   The cloud infrastructure is a composition of two or more distinct cloud infrastructures (private, community, or public) that remain unique entities, but are bound together by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load balancing between clouds).

7. What is mean by SaaS?

SaaS or software as a service is a software distribution model in which applications are hosted by a vendor or service provider and made available to customers over a network (internet). SaaS is becoming an increasingly prevalent delivery model as underlying technologies that supports Service Oriented Architecture (SOA) or Web Services. Through internet this service is available to users anywhere in the world.

8. What is mean by IaaS?

IaaS (Infrastructure As A Service) is one of the fundamental service model of cloud computing alongside PaaS(Platform as a Service). It provides access to computing resources in a virtualized environment "the cloud" on internet. It provides computing infrastructure like virtual server space, network connections, bandwidth, load balancers and IP addresses. The pool of hardware resource is extracted from multiple servers and networks usually distributed across numerous data centers. This provides redundancy and reliability to IaaS.

9. Write down note on PaaS?

Platform as a service, is referred as PaaS, it provides a platform and environment to allow developers to build applications and services. This service is hosted in the cloud and accessed by the users via internet.

10. What is mean by migrating in cloud computing?

Cloud migration is the process of moving digital business operations into the cloud. Cloud migration is sort of like a physical move, except it involves moving data, applications, and IT processes from some data centers to other data centers, instead of packing up and moving physical goods. Much like a move from a smaller office to a larger one, cloud migration requires quite a lot of preparation and advance work, but usually it ends up being worth the effort, resulting in cost savings and greater flexibility.

11. Why we use Migrating?

  The general goal or benefit of any cloud migration is to host applications and data in the most effective IT environment possible, based on factors such as cost, performance and security.

For example, many organizations perform the migration of on-premises applications and data from their local data center to public cloud infrastructure to take advantage of benefits, such as greater elasticity, self-service provisioning, redundancy and a flexible, pay-per-use model.

12. What are the challenges of SaaS Paradigm?

- Controlling
- Visibility & flexibility
- Security and privacy

- High performance and Availability
- Integration and composition
- Standards

13. What is virtualization?

Virtualization is the key component of cloud computing for providing computing and storage services. Virtualization is the ability to run multiple operating systems on a single physical system and share the underlying hardware resources. It is the process by which one computer hosts the appearance of many computers.

14. What is Google app engine?

Google app engine is a SaaS provider which was introduced in 2008. It was quite unique cloud system compared to other systems. It provides platform to create applications. It provides infrastructure for hosting. Many high level services which need to be build are available when using an App Engine.

15. Define Cloud Supply chain.

Business-to-business exchanges have become a common form of procurement due to their advantages regarding flexibility (such as the ability of being able to quickly change business partners), although the mean procurement prices are generally higher compared to long-term contracts. On the other side, a lot of procurement managers still believe that long-term relationships are the key in the procurement process partly due to cost savings. Two main conflicting opinions on the optimal type of relationship – as it seems.

16. What is Transition Challenges?

The very concept of cloud represents a leap from traditional approach for IT to deliver mission critical services. With any leap comes the gap of risk and challenges to overcome. These challenges can be classified in five different categories, which are the five aspects of the enterprise cloud stages: build, develop, migrate, run, and consume

17. Define VLAN.

A virtual local area network (VLAN) is a logical group of workstations, servers and network devices that appear to be on the same LAN despite their geographical distribution. A VLAN allows a network of computers and users to communicate in a simulated environment as if they exist in a single LAN and are sharing a single broadcast and multicast domain. VLANs are implemented to achieve scalability, security and ease of network management and can quickly adapt to changes in network requirements and relocation of workstations and server nodes.

Unit II

1. What is Virtualization Technology?

Virtualization in Cloud Computing is making a virtual platform of server operating system and storage devices. This will help the user by providing multiple machines at the same time it also allows sharing a single physical instance of resource or an application to multiple users. Cloud Virtualizations also manage the workload by transforming traditional computing and make it more scalable, economical and efficient.

2. List out types of Virtualization in Cloud Computing

Types of Virtualization in Cloud Computing

- Operating System Virtualization
- Hardware Virtualization
- Server Virtualization
- Storage Virtualization

3. Define virtual machine monitor?

A Virtual Machine Monitor (VMM) is a software program that enables the creation, management and governance of virtual machines (VM) and manages the operation of a virtualized environment on top of a physical host machine.

4. Define Hypervisor and Xen Server?

The hypervisor isolates the operating systems from the primary host machine. The job of hypervisor is to cater to the needs of a guest operating system and to manage it efficiently Xen is a hypervisor that enables the simultaneous creation, execution and management of multiple virtual machines on one physical computer.

5. What is meant by anatomy of cloud computing?

Cloud computing is changing the way how hardware and software are provided for on-demand capacity fulfillment. Lately there are ways for on-demand servers, storage and CDNs. These are changing the way in developing web applications and make business decisions.

6. Define VM Management.

Virtualization management is software that interfaces with virtual environments and the underlying physical hardware to simplify resource administration, enhance data analyses, and streamline operations. Each virtualization management system is unique, but most feature an uncomplicated user interface, streamline the virtual machine (VM) creation process, monitor virtual environments, allocate resources, compile reports, and automatically enforce rules.

7. What is Leasing Model?

A new trend in the computer software industry that seems to be sticking around for good is the idea of cloud software, also occasionally known as open-source software. This model of software allows you and your team to run computer applications over the internet from anywhere so long as you have a subscription, rather than having one copy to install locally on a piece of hardware.

Fidelity Capital is pleased to provide leasing services for cloud software for clients in a wide variety of industries. We are also capable of working with you to finance the training, installation and programming processes necessary to set up and master your new software.

8. Define Amazon EC2.

Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the Amazon Web Services (AWS) cloud. Using Amazon EC2 eliminates your need to invest in hardware up front, so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage. Amazon EC2 enables you to scale up or down to handle changes in requirements or spikes in popularity, reducing your need to forecast traffic.

9. What is Google App Engine?

Google App Engine (GAE) is a service for developing and hosting Web applications in Google's data centers, belonging to the platform as a service (PaaS) category of cloud computing. Web applications hosted on GAE are sandboxed and run across multiple servers for redundancy and allowing for scaling of resources according to the traffic requirements of the moment. App Engine automatically allocates additional resources to the servers to accommodate increased load.

10. What is meant by Microsoft Windows Azure?

Microsoft Azure is a platform as a service (PaaS) solution for building and hosting solutions using Microsoft's products and in their data centers. It is a comprehensive suite of cloud products that allow users to create enterprise-class applications without having to build out their own infrastructure.

11. Define RVMS design.

Clients need to exchange numerous messages with required Web services to learn the current activity of resources and thus face significant overhead loss if most of the Web services prove ineffective. The novelty of

RVWS is that it combines dynamic attributes, stateful Web services (aware

of their past activity), stateful and dynamic WSDL documents, and brokering into a single, effective,   service-based framework. Regardless of clients accessing services directly or

discovering them via a broker, clients of RVWS-based distributed systems spend less time learning of services.

12. Note on CaaS.

the service-based Cluster as a Service (CaaS) Technology the exposure of a cluster via a Web service is intricate and comprises several services running on top of a physical cluster.

13. What is Job Monitoring?

Clients should be able to view the execution progress of their jobs. Even though the cluster is not the owned by

the client, the job is. Thus, it is the right of the client to see how the job is progressing and (if the client decides) terminate the job and remove it from the cluster.

14. Define LAN.

A local-area network (LAN) is a computer network that spans a relatively small area. Most often, a LAN is confined to a single room, building or group of buildings, however, one LAN can be connected to other LANs over any distance via telephone lines and radio waves.

15. Define WAN.

A system of LANs connected in this way is called a wide-area network (WAN). The difference between a LAN and WAN is that the wide-area network spans a relatively large geographical area. Typically, a WAN consists of two or more local-area networks (LANs) and are often connected through public networks.

16. What is Multimedia data security?

With the development of high-speed network technologies and large bandwidth connections, more and more multimedia data are being stored and shared in cyber space. The security requirements for video, audio, pictures, or images are different from other applications.

17. Note on Data privacy protection.

Existing methods enable direct execution of encrypted queries on encrypted datasets and allow users to ask identity queries over data of different encryptions. The ultimate goal of this research direction is to make queries in encrypted databases as efficient as possible while preventing adversaries from learning any useful knowledge about the data.

18. Define PDP.

Protocol based on the provable data procession (PDP) technology, which allows users to obtain a probabilistic proof from the storage service providers. Such a proof will be used as evidence that their data have been stored there.

19. Difference between Authentication and Authorization.

Authentication is the process of verifying a claim that a subject made to act on behalf of a given principal. Authentication attacks target a Web site's method of validating the identity of a user, service, or application,

including Brute Force, Insufficient Authentication, and Weak Password Recovery Validation.

Authorization is used to verify if an authenticated subject can perform a certain operation. Authentication must precede authorization. For example, only certain users are allowed to access specific content or functionality.

20. Define Logical Attacks.

Logical Attacks involve the exploitation of a Web application's logic flow. Usually, a user's action is completed in a multi-step process. The procedural workflow of the process is called application logic. A common Logical Attack is Denial of Service (DoS).

UNIT III

1. Define Customer information Protection.

Despite assurances by the public cloud leaders about security, few provide satisfactory disclosure or have long enough histories with their cloud offerings to provide warranties about the specific level of security put in place in their system. Security in-house is easier to maintain and to rely on.

2. What is Aneka Cloud platform?

Aneka [3] is a software platform and a framework for developing distributed applications on the cloud. It harnesses the computing resources of a heterogeneous network of workstations and servers or data centers on demand. Aneka provides developers with a rich set of APIs for transparently exploiting these resources by expressing the application logic with a variety of programming abstractions.

3. What are the resources in Aneka cloud?

Aneka identifies two types of private resources: static and dynamic resources. Static resources are constituted by existing physical workstations and servers that may be idle for a certain period of time. Their membership to the Aneka cloud is manually configured by administrators and does not change over time. Dynamic resources are mostly represented by virtual instances that join and leave the Aneka cloud and are controlled by resource pool managers that provision and release them when needed.

4. Define Workload Monitoring.

Workload monitoring becomes even more important in the case of hybrid clouds where a subset of resources is leased and resources can be dismissed if they are no longer necessary. Workload monitoring is an important feature for any distributed middleware, in the case of hybrid clouds, it is necessary to integrate this feature with scheduling policies that either directly or indirectly govern the management of virtual instances and their leases..

5. What is Resource Pool?

This is a container of virtual resources that mostly come from the same resource provider. A resource pool is in charge of managing the virtual resources it contains and eventually releasing them when they are no longer in use.

6. Note on CometCloud.

CometCloud is based on a decentralized coordination substrate, and it supports highly heterogeneous and dynamic cloud/grid infrastructures, integration of public/private clouds, and cloudbursts.

7. What is the goal of Autonomic Cloud bursting?

The goal of autonomic cloudbursts is to seamlessly and securely integrate private enterprise clouds and data centers with public utility clouds on-demand, to provide the abstraction of resizable computing capacity.

8. Define Load Dynamic.

Application workloads can vary significantly. This includes the number of application tasks as well the computational requirements of a task. The computational environment must dynamically grow (or shrink) in response to these dynamics while still maintaining strict deadlines.

9. What is Autonomic Cloudbriding?

Autonomic cloudbridging is meant to connect CometCloud and a virtual cloud which consists of public cloud, data center, and grid by the dynamic needs of the application. The clouds in the virtual cloud are heterogeneous and have

different types of resources and cost policies, besides, the performance of each cloud can change over time by the number of current users.

10. List out types of policies in cloudbridging.

Deadline-Based. When an application needs to be completed as soon as possible, assuming an adequate budget, the maximum required workers are allocated for the job.

Budget-Based. When a budget is enforced on the application, the number of workers allocated must ensure that the budget is not violated.

Workload-Based. When the application workload changes, the number of workers explicitly defined by the application is allocated or released.

11. Define Fault Tolerance.

Supporting fault-tolerance during runtime is critical to keep the application's deadline. We support fault-tolerance in two ways which are in the infrastructure layer and in the programming layer.

12. Define Image Registration.

Nonlinear image registration [12] is the computationally expensive process to determine the mapping T between two images of the same object or similar objects acquired at different time, in different position or with different acquisition parameters or modalities.

13. What are the behaviors in Autonomic Cloudbursts?

VaR Using Workload-Based Policy: autonomic cloudburst is represented by the number of changing workers. When the application workload increases (or decreases), a predefined number of workers are added (or released), based on the application workload.

Image Registration Using Budget-Based Policy: The virtual cloud environment used for the experiments consisted of two research sites one public cloud (i.e.,AmazonWeb Service (AWS) EC2 [10]) and one private data center at Rutgers (i.e.,TW). The two research sites hosted their own image servers and job queues, and workers running on EC2 orTWaccess these image servers to get the image.

14. Define Basic CometCloud Operations.

Basic CometCloud Operations. In this experiment we evaluated the costs of basic tuple insertion and exact retrieval operations on the Rutgers cloud. Each machine was a peer node in the CometCloud overlay and the machines formed a single CometCloud peer group.

UNIT IV

1. Define T-System.

T-Systems is one of Europe's largest ICT service providers. Cloud computing is an opportunity for T-Systems to leverage its established concept for services delivered from data centers. Cloud computing entails the industrialization of IT production, enabling customers to use services and resources on demand. Business, however, cannot adopt wholesale the principles of cloud computing from the consumer world.

2. What is Changing Markets?

Markets are increasingly dynamic. Products and skills rapidly become obsolete, eroding competitiveness. So incumbents need to find and implement new ideas at an ever faster pace.

Also, new businesses are entering the market more rapidly, and they are extending their portfolios by forging alliances with other players.

3. Note on Dynamic ICT Services.

Standardized production also enables ICT providers to achieve greater economies of scale. However, this calls for highly effective ICT management— on the part of both the service provider and the customer. Proven concepts and methodologies from the manufacturing industry can be applied to ICT. The following are particularly worth mentioning:

- ✓ Standardization
- ✓ Automation
- ✓ Modularization
- ✓ Integrated creation of ICT services

4. Define Quality.

If consumers' Internet or ICT services are unavailable, or data access is slow, the consequences are rarely serious. But in business, the nonavailability of a service can have a grave knock-on effect on entire mission-critical processes—bringing production to a standstill, or preventing orders from being processed.

5. What is Map Reduce Programming Model?

Map Reduce is a software framework for solving many large-scale computing problems. The Map Reduce abstraction is inspired by the Map and Reduce functions, which are commonly used in functional languages such as Lisp

6. List out features of Map Reduce Model.

Data-Aware. When the Map Reduce-Master node is scheduling the Map tasks for a newly submitted job, it takes in consideration the data location information retrieved from the GFS-Master node.

Simplicity. As the Map Reduce runtime is responsible for parallelization and concurrency control, this allows programmers to easily design parallel and distributed applications.

7. Define Hadoop.

Hadoop is a top-level Apache project, being built and used by a community of contributors from all over the world. It was advocated by industry's premier Web players—Google, Yahoo!, Microsoft, and Facebook—as the engine to power the cloud

8. What is Hadoop MapReduce?

The Map/Reduce framework has master/slave architecture. The master, called JobTracker, is responsible for (a) querying the NameNode for the block locations, (b) scheduling the tasks on the slave which is hosting the task's

blocks, and (c) monitoring the successes and failures of the tasks. The slaves, called TaskTracker, execute the tasks as directed by the master.

9. What is Disco?

Disco is an open-source MapReduce implementation developed by Nokia. The Disco core is written in Erlang, while users of Disco typically write jobs in Python. Disco was started at Nokia Research Center as a lightweight framework for rapid scripting of distributed data processing tasks.

10. Define MapReduce.NET.

MapReduce.NET is designed for the Windows platform, with emphasis on reusing as many existing Windows components as possible. The MapReduce.Net runtime library is assisted by several components services from Aneka and runs on WinDFS.

11.What is meant by Skynet?

Skynet is a Ruby implementation of MapReduce, created by Geni. Skynet is"anadaptive, self-upgrading, fault-tolerant,andfully distributed system with no single point of failure" . At the heart of Skynet is plug-in based

message queue architecture, with the message queuing allowing workers to watch out for each other.

12. Define GridGain.

GridGain [29] is an open cloud platform, developed in Java, for Java. GridGain enables users to develop and run applications on private or public clouds. The MapReduce paradigm is at core of what GridGain does. It defines the process of splitting an initial task into multiple subtasks, executing these subtasks in parallel and aggregating (reducing) results back to one final result.

UNIT V

1. What is SAP Systems?

SAP systems are used for a variety of business applications that differ by version and functionality [such as customer relationship management (CRM) and enterprise resource planning. Certain SAP applications are

composed of several loosely coupled systems. Such systems have independent databases and communicate asynchronously by message with each other.

2. List out three tier architecture.

- ✓ Requests are handled by the SAP Web dispatcher.
- ✓ In the middle tier, there are two types of components: multiple stateful dialog instances (DIs) and a single central instance (CI) that performs central services such as application-level locking, messaging, and registration of DIs. The number of DIs can be changed while the system is running to adapt to load.
- ✓ A single database management system (DBMS) serves the SAP system.

3. What are the challenges in infrastructures provider?

- ✓ Managing thousands of different service components that comprise a variety of service applications executed by thousands of virtual execution environments, on top of a complex infrastructure that also includes network and storage systems.
- ✓ Consolidating many applications on the same infrastructure, thereby increasing HW utilization and optimizing power consumption, while keeping the operational cost at minimum.
- ✓ Guaranteeing the individual SLAs of the many customers of the data center who face different and fluctuating workloads.

4. Define Dynamic Elasticity.

The cloud should dynamically adjust resource allocation parameters (memory, CPU, network bandwidth, storage) of individual virtual execution environments seamlessly. Moreover, the number of virtual execution environments must be dynamically and seamlessly adjusted to adapt to the changing load.

5. What is Elasticity?

One of the main advantages of cloud computing is the capability to provide, or release, resources on-demand. These "elasticity" capabilities should be enacted automatically by cloud computing providers to meet demand variations, just as electrical companies are able (under normal operational circumstances) to automatically deal with variances in electricity consumption levels.

6. Role of Service Manager.

The baseline federation is the most basic federation scenario, but even here the SM must be allowed to specify placement restrictions when a service is deployed.

7. What are the SECURITY CONSIDERATIONS in cloud?

virtualized service-oriented infrastructures provide computing as a commodity for today's competitive businesses. Besides costeffectiveness, they also ensure optimized use of system and network resources, reduced carbon footprints, and simplify management of their underlying resources.

8. Define External Threats.

The Internet represents the same origin of threats for the communication across the RESERVOIR sites (VMI interfaces) and outside the RESERVOIR sites both for the SMI interface and service interface

9. Define Internal Threats

Each RESERVOIR site has a logical representation with three different layers, but these layers can be compounded by one or more hardware components.

10. What is Admission Control:

Admission control algorithms play an important role in deciding the set of requests that should be admitted into the application server when the server experiences "very" heavy load

11. List out Application SLA:

In the application co-location hosting model, the server capacity is available to the applications based solely on their resource demands. Hence, the service providers are flexible in allocating and de-allocating computing resources among the co-located applications.

12. What are the steps in SLA?

SLA life cycle and consists of the following five phases:

- ✓ Contract definition
- ✓ Publishing and discovery
- ✓ Negotiation
- ✓ Operationalization
- ✓ De-commissioning

13. Define Negotiation.

Once the customer has discovered a service provider who can meet their application hosting need, the SLA terms and conditions needs to be mutually agreed upon before signing the agreement for hosting the application.

14. List out SLA MANAGEMENT IN CLOUD

SLA management of applications hosted on cloud platforms involves five phases.

- ✓ Feasibility
- ✓ On-boarding
- ✓ Pre-production
- ✓ Production
- ✓ Termination

15. Define Rules Engine.

The operation policy defines a sequence of actions to be enacted under different conditions/trigger points. The rules engine evaluates the data captured by the monitoring system, evaluates against the predefined operation rules, and triggers the associated action if required.

16. Define Virtual Engine and Cloud Environment.

Virtual Engine (VE). These are related to the performance loss introduced by the virtualization mechanism. They are strictly related to the VE technology adopted.

Cloud Environment (CE). These are the losses introduced at a higher level by the cloud environment, and they are mainly due to overheads and to the sharing of computing and communication resources.

17. What is GRID AND CLOUD?

"Grid vs Cloud" is the title of an incredible number of recent Web blogs and articles in on-line forums and magazines, where many HPC users express their own opinion on the relationship between the two paradigms [Cloud is simply presented, by its supporters, as an evolution of the grid. Some consider grids and clouds as alternative options to do the same thing in a different way. However, there are very few clouds on which one can build, test, or run compute-intensive applications.