Final paper: -Cloud Computing

Student Name: kashif ul wahab__Student ID#:_12946__

Dated: 25 June 2020

Class and Section:__BSSE Section (A)

Question No. 1:

Explain in detail network and cloud-based storage

- **ANS)**

  Network

- A network comprise of two or more than two computers that are connected in order to share resources (such as printers and CD’s) exchange files or allow electronic communications. The computer on a network that may be connected through cables, telephone lines , radios waves ,satellites or infrared light beam and wireless connections.

- A network, in computing, may be a cluster of two or additional devices that may communicate.
- In observe, a network is comprised of variety of various pc systems connected by physical and/or wireless connections.
- 11 types networks use now a days:
- 1 Personal area Network (PAN)
- The smallest and most elementary style of network, a PAN is formed from a wireless modem, a laptopcor pc or two, phones, printers, tablets, etc., and revolves around one person in one building. These sorts of networks are usually found in small offices or residences, and are managed by one person or organization from one device.

- 2 local area Network (LAN)
- We're assured that you've detected of those sorts of networks before – LANs ar the foremost oftentimes mentioned networks,
- one of the common, one in every of the foremost original and one in every of the best sorts of networks.
- LANs connect teams of computers and low-voltage devices along across short distances (within a building or between a bunch of 2 or 3 buildings in close proximity to every other)
- to share info and resources. Enterprises usually manage and maintain LANs.

- Using routers, LANs will connect with wide area networks (WANs, explained below) to quickly and safely transfer information.

- 3. Wireless area Network (WLAN)
- Functioning sort of a computer network, WLANs build use of wireless network technology, like Wi-Fi.
- usually seen within the same sorts of applications as LANs, these sorts of networks don't need that devices admit physical cables to attach to the network.

- 4.campus area Network (CAN)
- Larger than LANs, however smaller than metropolitan area networks (MANs, explained below),
- these sorts of networks ar usually seen in universities, large K-12 school districts or small businesses.
- they spread across many buildings that are fairly near to one another therefore users can share resources.

- 5. Metropolitan area Network (MAN)
- These sorts of networks are larger than Local Area Networks however smaller than WANs – and incorporate components from each sorts of networks.
- MANs span a complete geographical area (typically a city or town, however typically a campus).
- possession and maintenance is handled by either one person or company (a local council, an oversized company, etc.).

- 6. Wide area Network (WAN)
- Slightly additional complicated than a local area network, a WAN connects computers along across longer physical distances.
- this enables computers and low-voltage devices to be remotely connected to every different over one giant network to speak even once they’re miles apart.

- The Internet is that the most elementary example of a WAN, connecting all computers along round the world.
- due to a WAN’s vast reach, it's usually closely-held and maintained by multiple administrators or the general public.

- 7. Storage-Area Network (SAN)
- As a fervent high-speed network that connects shared pools of storage devices to many servers, these sorts of networks don’t admit a local area network or WAN.
- Instead, they move storage resources faraway from the network and place them into their own superior network.
- SANs will be accessed within the same fashion as a drive connected to a server. sorts of storage-area networks embrace converged, virtual and unified SANs.

- 8. System-Area Network (also called SAN)
- This term is fairly new inside the past 20 years.
- it's wont to justify a comparatively local network that's designed to supply high-speed association in server-to-server applications (cluster environments),
- cargo deck storage area networks (called “SANs” as well) and processor-to-processor applications.
- The computers connected on a SAN operate as one system at terribly high speeds.

- 9. Passive Optical local area Network (POLAN)
- As another to ancient switch-based ethernet LANs,
- POLAN technology will be integrated into structured cabling to beat considerations concerning supporting ancient Enthernet protocols
- and network applications like PoE (Power over Ethernet).
- A point-to-multipoint LAN design, POLAN uses optical splitters to separate optical signal from one strand of single mode optical fibre
- into many signals to obey users and devices.

- 10. Enterprise private Network (EPN)
- These sorts of networks ar designed and closely-held by businesses that wish to firmly connect its varied locations to share pc resources.

- 11. Virtual private Network (VPN)
- By extending a private network across the net,
- a VPN lets its users send and receive information as if their devices were connected to the private network – notwithstanding they’re not.
- Through a virtual point-to-point connection, users will access a private network remotely.

- What is Cloud Storage?
- Cloud storage could be a cloud computing model that stores data on the net through a cloud computing supplier who manages and operates data storage as a service.
- It’s delivered on demand with just-in-time capability and prices, and eliminates buying and managing your own data storage infrastructure.
- this offers you lightness, world scale and sturdiness, with “anytime, anywhere” data access.

- How will Cloud Storage Work?
- Cloud storage is purchased from a 3rd party cloud merchant WHO owns and operates information storage capability and delivers it over the net in an exceedingly
- pay-as-you-go model. These cloud storage vendors manage capability, security and sturdiness to form information accessible to your applications all round the world.
- Applications access cloud storage through ancient storage protocols or directly via API.
- several vendors provide complementary services designed to assist collect, manage, secure and analyze information at large scale.

- Benefits of Cloud Storage

- Storing Data within the cloud lets IT departments remodel 3 areas:

- Total value of ownership:
- With cloud storage, there's no hardware to get, storage to provision, or capital being used for "someday" situations.
- you'll be able to add or take away capability on demand, quickly modification performance and retention characteristics,
- and solely pay money for storage that you simply truly use.
- Less frequently accessed data will even be mechanically enraptured to lower value tiers in accordance with auditable rules, driving economies of scale.
- Time to preparation:
- once development groups area unit able to execute, infrastructure should not slow them down.
- Cloud storage permits IT to quickly deliver the precise quantity of storage required, right once it's required.
- this permits IT to concentrate on resolution complicated application issues rather than having to manage storage systems.
- Information Management:
- centrilizing storage within the cloud creates an amazing leverage purpose for brand spanking new use cases.
- By victimization cloud storage lifecycle management policies,
- you'll be able to perform powerful info management tasks together with machine-controlled tiering or lockup down data in support of compliance necessities.

- Cloud Storage Requirements
- Ensuring your company's critical data is safe, secure, and available when needed is essential.
- There are several fundamental requirements when considering storing data in the cloud.
- Durability:
- Data should be redundantly stored, ideally across multiple facilities and multiple devices in each facility.
- Natural disasters, human error, or mechanical faults should not result in data loss.
- Availability:
- All data should be available when needed, but there is a difference between production data and archives.
- The ideal cloud storage will deliver the right balance of retrieval times and cost.
- Security:
- All data is ideally encrypted, both at rest and in transit.
- Permissions and access controls should work just as well in the cloud as they do for on premises storage.

- Types of Cloud Storage
- There square measure 3 kinds of cloud data storage: object storage, file storage, and block storage. every offers their own benefits and have their own use cases:
- Object Storage :
- Applications developed within the cloud usually profit of object storage's huge scalablity and information characteristics.
- Object storage solutions like Amazon straightforward Storage Service (S3) ideal for building trendy applications from scratch that need scale and adaptability,
- and might even be t
- used for import ;present data stores for analytics, backup, or archive.
- File Storage :
- Some applications got to access shared files and need a file system.
- this sort of storage is commonly supported with a Network attached Storage (NAS) server.
- File storage solutions like Amazon Elastic file system (EFS) are ideal to be used cases like massive content repositories, development environments,
- media stores, or user home directories.
- Block Storage :
- different enterprise applications like databases or ERP systems usually need dedicated, low latency storage for every host.
- this is often analagous to direct-attached storage (DAS) or a storage area Network (SAN).
- Block-based cloud storage solutions like Amazon Elastic Block Store (EBS) with every virtual server and provide the radical low latency needed for prime performance
- workloads.

Question No. 2:

(a)Explain in detail web application and multitenant technology.

(b)Explain in detail cloud security threats.

a)Explain in detail web application and multitenant technology:

ANS) Web application:

It is a computer program which use web technology and web browsers to achieve tasks by the internet.

How a web application works:

It is normally code in browser-supported language such as HTML and JavaScript as the particular language depend on the browser to show the program workable . Most of the applications at the server are requiring server-side , dynamic processing , while another are totally static.

A client request can be take over from web server which is required by web application , an application server to achieve the test requested , and sometimes an information to store the data . Application server hi-tech line up from coldFusion , ASP and ASP.NET , to JSP and PHP.

- Here is what a regular net application flow appearance like:
- 1) User triggers asking to the net server by the net , one of the two through an internet browser or application’s interface .
- 2) Web server processing this request to the suitable net application server .
- 3) Web application server achieve the demanded task like querying processing the information or database then create the conclusion of the demanded data.
- 4) Web application server assign decision to the net server with requested data or processed data .
- 5)Web server acknowledge to the consumer with the requested data that then seems on the user’s show.
- **Benefits**
- 1) Web applications bound on different platforms notwithstanding device or OS as long because the browser is compatible .
- 2) All users key the identical version , exclude any compatibility problems.

- 3) They are not put in on the disk drive , so exclude space limitations.
- 4) They lower software piracy in subscription-based internet applications that is SaaS.
- **Multitenant Technology**
- The multitenant style was developed to alter various user (tenants) to access an equivalent applications logic at the same time . Every tenant have its own read of the appliance that it customizes , use and administers , as a frenzied instance of the software package whereas resting unaware of alternative tenants that are accepting the similar applications.
- **Characteristics of Multitenant Technology**
- 1)Usage Isolation-The usage behave tenant doesn’t have an effect on the appliance convenience and performance of different tenants.
- 2)Data Security-Tenants may not access information which belongs to different tenants.

- 3) Recovery-Restore and backup procedures are an individual basis accomplished for the info of every tenant.
- 4)Application Upgrade- Tenants don’t seem to be negatively stricken by the synchronous increasing of shared software system artifacts.
- 5) Scalability- The appliance will scale to accommodate will increase in control by presenting tenants and /or will increase within the range of tenants
- 6)Metered Usage-Tenants are owning just for the appliance process and options that are literally consumed.
- **B) Explain in detail Cloud security threats.**
- 1)**Malicious Attacks &Abuse**
- Official user or hackers are possibly Abuse and Attack Cloud storage for forbidden activities. This is include sweep of copyrighted materials , malware, pirated software and viruses. This type of threats occur when somebody straightly attack beyond the cloud service’s resources.

- Cloud resources are also attacked by malware junction which is a big threat now a days . In this type of threats the hacker gain the hidden venomous code.
- **2)Insider Threats**
- The company employees misuse or attack the data may look low-risk instead of insider threat which is actual real . This type of threat affect meaningful data such as financial information or customer.
- **3)Data loss**
- Unaware of the data storage , the loss of data forever is a big problem , the loss of data effect operationally , financially and also to loss the data legally effect to gain compliance policies.
- Malicious attacks threat , technical failure natural disaster and accidental erasure of the data are all induce cloud-based services in the similarly way of an internal infrastructure.
- Cloud provider is not responsible for avoiding over data loss .If your organization lost relevant key the data is useless.

- **4)Data Breaches**
- Threats of data breaches have no interest in data storage either it is store on cloud or internally . Cloud services which is more important to hijacking and the potential attacks of data because of newly process of attack like “Man-in the-cloud” . For security system we should execute cloud provider to overcome the risk factor of data breaches we must remember that we are eventually liable of organization’s data for security and a breaches may have a huge impact on rightful and financial results.

Question No. 3:

Briefly describe following.

a)Advantages and disadvantages of cloud computing.

b)Collaborative meeting in cloud.

- **Ans)a) Advantages and disadvantages of cloud computing**
- **Advantages:**
- As we have a tendency to all understand that cloud computing is trending hi-tech . For the corporate growth every company convert their services on the cloud.
- Here are the advantages of cloud computing
- **1) Backup and restore date**:
- Once the information is keep within the cloud , it's easier to induce backup and replace that information victimization the cloud .
- **2)Improved Collaboration:**
- Cloud applications develop collaboration by permitting teams of individual to quickly and simply share info within the cloud via shared storage.

- **3)Excellent accessibility:**
- Cloud permits us to easily and quickly access store data anytime , anywhere in the entire world , applying a net connection. A net cloud infrastructure will increase organization efficiency and productivity by guaranteeing that our Information is often accessible.
- **4)Low maintenance cost:**
- Cloud computing lower both software and hardware maintenance prices for organizations.
- **Disadvantages of cloud computing**
- Here are the disadvantages of cloud computing:
- **1)Internet Connectivity:**
- As you recognize in cloud computing each information (audio, image, video, etc) Is hold on the cloud , and that we access these information over the cloud by exploitation the net association . If you have not a sensible net property, you can not access these information.

- **2)Vendor lock-in**
- It is tremendous disadvantages of cloud computing . Organization can face issues when they are assigning services from one vendor to other. A distinct platforms are provided by distinct vendors, so it create problems from one cloud to another.
- **3)Limited control**
- Cloud infrastructure is totally monitored , managed and owned through the service provider, so the user of cloud have limited control by execution and function of services in a cloud infrastructure.

- **b)Collaborative meeting in cloud computing**
- **Deffinition:**
- Cloud collaboration may be a means of co-authoring and sharing data over the cloud computing user's , how documents uploaded to a central "cloud" as long as stored , wherever they will then be accessed by anothers. … Businesses within the previous few years have progressively been shift to use of cloud collaboration.
- **Use of cloud collaborative:**
- It allows individual to figure at the same time on documents which live "in the cloud" –thus you will access information from anyplace with a web association. ….. Everyone who has access will create different to the documents at all time , together with once people are viewing and editing it .