

Chapter 64

Fog / Cloud Service Scalability, Composition, Security, Privacy, and SLA Management

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ABSTRACT

Cloud computing has started a new era in the field of computing, which allows the access of remote data or services at anytime and anywhere. In today's competitive environment, the service dynamism, elasticity, and choices offered by this highly scalable technology are too attractive for enterprises to ignore. The scalability feature of cloud computing allows one to expand and contract the resources. The owner's data stored at the remote location, but he is usually afraid of sharing confidential data with cloud service provider. If the service provider is not the trusted one, there may be a chance of leakage of confidential data to external third party. Security and privacy of data require high consideration, which is resolved by storing the data in encrypted form. Data owner requires that the service provider should be trustworthy to store its confidential data without any exposure. One of the outstanding solutions for maintaining trust between different communicating parties could be the service level agreement between them.

INTRODUCTION

Cloud Computing

Cloud computing can be defined as on-demand delivery of computer resources such as database storage, computer power, applications and other IT services over the internet by cloud service provider with pay-as-you-go pricing technique. A user can acquire the resources as per the needs at anytime and anywhere (24x7) by just connecting with the internet. It enables the various companies to consume the

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required resources such as storage, application and virtual machines as utility, like electricity, without its computing infrastructure construction and maintenance in house.

Need of Cloud Computing

1. **Flexibility:** Cloud-based services are perfect for organizations with developing or fluctuating data transfer capacity requests. In the event that your needs increment it's easy to scale up your cloud limit. In like manner, on the off chance that you have to downsize once more, the adaptability is prepared into the administration. This level of agility can give organizations utilizing cloud computing a genuine advantage over competitors.
2. **Disaster Recovery:** Organizations of all sizes choose to put resources into strong disaster recovery, however for littler organizations that do not have the required money and ability, this is regularly more a perfect than the truth. Cloud is presently helping more associations resist that pattern. As indicated by Aberdeen Group, private companies are twice as likely as bigger organizations to have actualized cloud-based reinforcement and recovery arrangements that spare time, keep away from huge in advance venture and move up outsider skill as a feature of the arrangement.
3. **Automatic Software Updates:** The beauty of cloud computing is that the servers are off-premise from end user. Service provider take care of them for you and roll out regular software updates – including security updates – so you don't have to worry about wasting time maintaining the system yourself. It will leave the end user free to focus on the things related to the software updates.
4. **Capital-Expenditure Free:** Cloud computing cuts out the high cost of hardware purchase and management for any service user. You simply pay as you go and enjoy a subscription-based model that's kind to your cash flow.
5. **Increased Collaboration:** At the point when your groups can get to, alter and share reports whenever, from anyplace, they're ready to accomplish all the more together, and improve. Cloud-based work process and document sharing applications enable them to make refreshes continuously and gives them full visibility of their joint efforts.
6. **Work From Anywhere:** With cloud computing, in the event that you have a web association you can be grinding away. What's more, with most genuine cloud administrations offering portable applications, you're not limited by which gadget you must hand. Organizations can offer more adaptable working advantages to employees so they can appreciate the work-life adjust that suits them – without profitability enduring a shot.
7. **Security:** Lost workstations/laptop are a billion dollar business issue. Also, possibly more significant than the loss of a costly bit of pack is the loss of the subtle information inside it. Cloud computing gives you more significant security when this happens. Since your information is put away in the cloud, you can get to it regardless of the end result for your machine. What's more, you can even remotely wipe information from lost PCs so it doesn't get into the wrong hands
8. **Competitiveness:** Moving to the cloud offers access to big business class innovation, for everybody. It likewise enables littler organizations to act speedier than enormous, built up contenders. Pay-as-you-go administration and cloud business applications mean little outfits can keep running with the enormous young men, and upset the market, while staying lean and deft.

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