"Survey of Fog Computing: Fundamental, Network Applications, and Research Challenges"

"Contributions/Findings/Conclusions"

- Explained and summarized the fog computing three tier architecture and its key research challenges.
- Explained how fog computing can address some important complications such as latency, energy consumption and bandwidth.
- Described the important characteristics to be kept in mind while developing "fog computing network".
- Explained "Combined Fog-Cloud (CFC)" architecture which helps in managing dissimilar quantities of service requests from terminal nodes having numerous time delay constraints.

"Technology Insights"

- "Fog Nodes" present at the network edge provides computing and storage power to the end devices such as smartphones, smartwatch, smart vehicles etc.
- If multiple fog nodes have common data then there is no requirement to upload data of each node to the cloud. This helps in reducing traffic overhead.
- Although fog computing reduces latency to a great extent, cloud computing provides more reliable services.
- With the virtual networks (VNs) created by Data Centre Visualization, performance isolation is easily performed. Also, the deployment of applications to the virtual networks is easily carried out in Data Centre Visualization.

"Key Insights"

- Fog computing plays a major role in reducing computing, storage and traffic load on the cloud.
- The "fog nodes" placed at the network edge obtains large amount of data from other end users by direct link using "Device-to-Device communication".
- Integration of big data technologies with growing Internet of Things (IOT) devices is creating a lot of pressure on Cloud. With Fog computing this burden is offloaded to a great extent.
- Real time analytics plays a major role in determining which data goes to either cloud or fog network layer for processing and storage.

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"A Survey on Resiliency Techniques in Cloud Computing Infrastructures and Applications"

"Contributions/Conclusions"

- Explained and summarized the key concepts in cloud computing architecture and service model.
- Presented detailed analysis of the failures that can arise in different levels of cloud architecture with their consequences.
- Presented various cloud computing infrastructure resiliency techniques such as designing servers, network, use of infrastructure virtualization etc.
- Cloud networks takes advantage of 'integrated infrastructure virtualization' to give high resiliency and flexibility.

"Technology Insights"

- Cloud provides three main services: "Infrastructure as a Service (IAAS), Platform as a Service (PAAS), Software as a Service (SAAS)".
- The topmost causes of "cloud service failures" contain human error, software failures, physical failures and disasters.
- One of the common resilient strategy is "Failure forecasting and removal" where cloud infrastructure providers reorganize the software components or their infrastructure to reduce the failures before they occur.
- "Traffic re-routing and network capacity re-provisioning" is a well advance strategy to recuperate from physical network disruptions.

"Key Insights"

- One of the most common network communication failure is "Unreachable services". Here the data is available in the servers but still it cannot be utilized or exploited by terminal nodes or end users.
- After the failure in cloud services one of the best ways to protect data in distributed systems is through "replication- and checkpoint-based methodologies".
- Physical threats such as disaster, human errors, energy blackouts and logical threats such as hackers, cyber-attacks in the data centres concern cloud infrastructure providers the most.
- The most used resiliency practices used in cloud structure depends on "data replication and checkpointing from the storage side, virtualization and migration from the computing side, and multi-layer protection and anycast routing from the networking side."