

# A Survey on Cloud Computing

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**Abstract**—Cloud is popular buzz word now days. It has opened a new way of computing and added new era in technology. A cloud provider provides computing to consumers as per their needs. Provider tries to provide many functions to consumers; file sharing is one of that. When user will store file on cloud, user may want to share that file with someone sometime. Security is big concern because cloud computing involves many layers. This survey paper is focused on basics of cloud computing, security issues in cloud and sharing techniques used. This paper observes sharing of files through various layers of cloud computing keeping security in mind.

**Index Terms**—Cloud computing, Security issues, File sharing.

## 1 INTRODUCTION

Cloud computing has provided variety of computing techniques. As its providing virtual infrastructure to store and develop different functionalities to consumer security is big concern. Consumers will store their important files on cloud and will share that file eventually with others. Being security and privacy a major concern now days, various security and encryption algorithms should be implemented for sharing. There are various encryption and security algorithms are available that can be used for file sharing. Current file sharing techniques includes generating a link and provide that link to friends. User can generate link along with permissions, so as per permission defined user can get access to the file of owner. Major concern should be met is security along with sharing. Technique should allow sharing of file with encryption and also should allow defining permissions.

Cloud computing is a computing paradigm that involves outsourcing of computing resources with the capabilities of expendable resource scalability, on-demand provisioning with little or no up-front the new economic model removes the need for the organisation to invest a substantial sum of money for purchase of limited IT resources that are internally managed, but rather the organisation can outsource its IT resource requirements to a cloud computing service provider and pay per use. That involves the outsourcing of data and/or computing resources with capabilities for expandable resource scalability, on-demand provisioning of computing resources with little or no upfront costs. However, organisational and institutional need for better value for money from their IT investments is the key factor driving cloud computing the survey provided important findings such as, the shift in the key drivers from cost to the need for IT resource scalability and flexibility.

## 2 LITERATURE SURVEY AND RELATED WORK

### 1. Suphian Khan, Dr. Praveen Saraswat

Have done abstraction of cloud computing techniques and storage facilities available. They have discussed various service layers of cloud computing. Key aspects they have discussed in this paper were storage performance. They also concluded some pros and cons of cloud computing. This paper included cloud driver storage architecture, cloud data management interface and open cloud computing interface. They concluded Google drive as best storage provider now days.

### 2. Paridhi singhal

Conducted survey on various security issues in cloud along with policies being used to preserve security, this paper divided security issues in two categories, one is security issues faced by cloud providers and another one is security issues faced by cloud consumers. This paper discussed VM placement attacks, hypervisor holes and various security models. This paper has proposed three layer security model. Among three layers, first layer is authentication; second layer is combination of encryption and private protection and third layer is fast recovery. Bottom line of paper was security policies should be updated time by time to provide maximum security.

### 3. Shahna fathima s, S M Nandhagopal

Proposed a framework to provide privacy manager for secure data sharing. Framework proposed in this paper was named cloud information accountability (CIA), which provides end-to-end accountability in highly distributed manner. Major motive of this framework was maintaining lightweight and powerful accountability that combines aspect of access control, usage control and authentication. This framework includes private and public key generation based on identity based encryption. It involves generating JAR file con-

taining access rules that will imply for authentication.

#### **4. Zekeriya Erkin, Thijs veugen, Tomas toft and Reginald L Lagendijk**

In this paper, authors have presented privacy preserving K-Means clustering algorithm that can be applied to social networking. It has proposed encryption mechanism for private data of users and sensitive intermediate values and final cluster allocation. As this algorithm is applied to secure data communication in social networking it can also be applied to secure sharing of files among various cloud consumers.

#### **5. Keiko Hashizume, David G Rosado, Eduardo Fernandez-medina and Eduardo B Fernandez**

In this paper, authors have give sole focus on security issues being faced by cloud providers and cloud users in cloud computing. They have discussed issues related to resources, vulnerabilities, threats and security policy issues. Paper concludes security issues layer by layer. Various communication mechanism and issues related to them are abstracted in this paper.

#### **6. Milad Daivandy, Denis Hunich, Rene Jakel, Steffen Metzger, Ralph Muller Pfefferkorn and Bernd Schuller**

In this research paper authors have focused on data generated in scientific and commercial field. They have given attention to the fact that organizations often users incompatible resource manager which in turn leads to poor efficiency. This paper contains base of grid computing, RESTful web services and WebDEV. This paper proposes federation layer that will allow federation of storage which in turn will allow uniform access. Author claims that work in this paper will complement existing grid computing efforts by facilitating access to storage system not via commonly used grid computing standards.

#### **7. Nelson Gonzalez, Charles Miers, Fernando Redigolo, Marcos Simplicio, Tereza Carvalho, Mats Naslund and Maken Pourzandi**

In this paper authors have given taxonomy of security issues in cloud computing. There is various security issues are mentioned like network security issue with scenario then security threats at interface layer and then going to data security, a major issue. There is also listing of threats related to virtualization, governance, compliance and legal issues. They have abstracted whole security measures in different fields as architecture.

#### **8. Sanjiv Kumar Pippal and Dharmendra singh Kushwaha**

In this paper author has given concern to, how cloud providers can provide complex heterogeneous computing environment to cloud users. They have proposed multi tenant database architecture along with hoc cloud architecture. Authors have considered scenario of organization willing to provide education to remote locations. Proposed system could increase insert update delete with efficiency of 20% to 230% improved. Proposed approach is space efficient and function-

ality improver and provides better reliability. This decomposes work load and hence does efficient utilization of resources.

#### **9. Jingwei Huang and David M Nicol**

In proposed paper author has focused on trust mechanism being used in cloud computing. They have covered existing trust mechanism and have provided their comments on those. Then they have proposed framework that could be used to establish efficient and more appropriate trust. They have discussed different types of trust like policy based trust, evidence based trust, reputation based approach and societal trust. There valuable approach opens a new way of establishing trust mechanism in cloud providing more accurate and trust worthy work.

#### **10. Robert Denz and Stephan Taylor**

In this survey paper authors have done analysis of current security measures implemented in cloud computing and hypervisor that supports it. Paper suggests that efficient virtualization has lead to many organization providing cloud services more efficiently. Here author has discussed various security issues that arise like vulnerability amplifier, malware prevention and detection. Authors have also abstracted how to increase work load for attacker. This way doubt full operations will take more time which will lead to denial because of time scale.

#### **11. Abhishek Mohta and Lalit kumar Awasthi**

In this paper authors have focused on third party auditor that is being used to manage data inside data centres. Author has concluded that these auditors will increase reliability but will lead to overhead on data centres at a time of retrieval. Here mechanism is provided which will encrypt content of client ensuring client data is safe at providers. Proposed model goes to step by step from encrypting client data then integration of data check mechanism. There is simulation and results to support algorithm.

#### **12. Mrs. Pooja A. Uplenchwar(Kondawar), Mrs. L.H.Patil**

This paper abstracts that cloud providing software and services virtually; it opens many security challenges to cloud computing. This paper is focused on storage security issues which in fact consider encryption of data before storing it. Authors have proposed a mechanism where once a cloud user will be revoked whole cloud data will be re-encrypted again and new decryption key will be provided to legal users. Author has proposed time based re-encryption system to overcome network related issues and ensuring more security.

#### **13. Preeti Garg, Dr.Vineet Sharma**

In this paper author has taken case of security issues in mobile cloud. Mobile computing is most innovative term of IT and is much popular now days. Paper abstracts comments on security threats on Information disclosure, Tempering, Repudiation, Viruses and worms and identity spoofing. In their proposal authors have combined two existing mechanism one of which provides data confidentiality and access control

while other one provides data integrity. Model involves communication of Data owner with storage service provider and decryption service provider using message authentication code.

**14. R.Balasubramanian and Dr.M.Aramuthan**

This paper is giving attention to providing security mechanism to data while traversing from cloud server to the data owner. Middle security threats are taken in account and security policies are proposed according to that. Various security problems like malware injection attack, flooding attack and accounting check problems are discussed. Along with that solutions to those attacks are also discussed briefly.

**15. Mrs. O.Rajitha, Dr.S.Murali Krishna**

This research paper has focused on trusted third party auditor for secure and dynamic data support. Efficient computing opens risk related to security which is discussed in this paper. Provable data processing scheme is analysed to propose new system. Proposed architecture involves communication of cloud providers and cloud consumers through third party trust auditor system. Auditor system will contain security policy and identity mechanism for cloud consumers. Concept is providing generated token to authenticated consumers to access their data. This will ensure identity and integrity of system and hence will increase security.

**3 SUMMERY**

Table.1 summarises work done by different authors in different years in field of cloud computing. Proposed work and future expansions are listed to better summarise.

Year	Authors	Techniques/Algorithms	Tools used	Future work
Oct - 2013	Suphian khan, Dr.Praveen Saraswat	Architecture of cloud drive storage with different models	Not mentioned	Efficiency can be poor as per network or internet
June - 2013	Paridhi singhal	Storage and three layer security model	Not mentioned	Security policies need to be updated
April - 2013	Shahna Fathima S, S.M.Nandhagopal	Cloud information accountability framework for privacy management	Java for JAR file	Indexing for text files, usage control for executable and generic accountability
April -	Zekeriya Erkin, Thijs	Privacy preserving cluster-	Not men-	Deployment of privacy

2013	veugen, Tomas toft and Reginald L Lagendijk	ing technique using encryption	tioned	preserving K-Means clustering based on homomorphic encryption
May - 2013	Keiko Hashizume, David G Rosado, Eduardo Fernandez-medina and Eduardo B Fernandez	Analysis of cloud security issues like SPI model, vulnerabilities, Threats and counter-measures	Not mentioned	All patterns listed for misuse can be further investigated
October-2013	Milad Davandy, Denis Hunich, Rene Jakel, Steffen Metzger, Ralph Muller Pfferkorn and Bernd Schuller	Federation model to federate information extraction	Not mentioned	Most of channels binding are proposed in RFC 5929
Jan-2011	Nelson Gonzalez, Charles Miers, Fernando Redigolo, Marcos Simplicio, Tereza Carvalho, Mats Naslund and Maken Pourzandi	Analysis of security issues at different layers like legal issues, virtualization, governance and compliance	None	Concluded current security solutions to manage cloud computing
May - 2013	Sanjiv Kumar Pippal and Dharmendra Singh Kushwaha	Considered ad hoc cloud with heterogeneity and multi tenant database system for efficient database operations	DBMS	Limitation imposed by database attribute field can be removed using further implementations
Sep-	Jingwei Huang and	Various type of trust mecha-	None	Mathematical formal

2013	David M Nicol	nism like transparency based, policy based, evidence based and attribute based trust discussed		framework for reasoning about trust
July – 2013	Robert Denz and Stephan Taylor	Security threats of virtual cloud like vulnerability amplifier, malware prevention, secure virtual machine manager	None	Secure migration and whole virtual machine can be added
June – 2012	Abhishek Mohta and Lalit kumar Awasthi	Cloud data security using third party auditor containing security policies	Java	Public security issues should be considered
Dec – 2013	Mrs. Pooja A. Up- lenchwar(Ko ndawar), Mrs. L.H.Patil	Time based cloud security and access algorithm	None	New addition of DES could be done to increase efficiency
April – 2013	Preeti Garg, Dr.Vineet Sharma	Security issues and policies for mobile cloud computing	None	Policy can be more efficient for mobile cloud
June - 2012	R.Balasubramanian and Dr.M.Aramuthan	Malware injection, flooding attack and security against them	None	Technical implementation may lead to new requirements
Octo-ber-2013	Mrs. O.Rajitha, Dr.S.Murali Krishna	Trusted third party data auditor to provide dynamic data support with security	None	Check done with different types of attacks

#### 4 CONCLUSION

Cloud computing is evolution in field of computing. It has relieved cloud consumers from being bothered about infrastructure. Any organization seeking growth need to use computing for different jobs, for that running machine efficiently and maintenance of that machinery is big concern. Organiza-

tion spends huge amount for maintenance but cloud computing allows them concentrate on development only. Many authors have proposed algorithms and architectures to make cloud computing more efficiently. Main key issues of cloud computing are security threats, resource allocation and sharing issues. Virtualization to provide maximum resource pool and grid computing is also proposed. Combination of different architectures is also proposed to increase efficiency.

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