



A Survey of Cloud Computing and Social Networking Sites

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ABSTRACT

In recent years there has been ascension in cloud computing and social networking technologies. Cloud computing shifts the computing resources to a 3rd party, eliminating the requirement to buy, set up and maintain those resources. With the inducement of down operational prices in code, hardware and human effort, several firms area unit considering the utilization of cloud services. Likewise, social networks have seen huge growth, with innumerable web users actively collaborating across varied social networking websites. Even firms have begun victimization social networks as a method to promote and reach their customers. This paper can survey the present problems in cloud computing and social networks and the way these technologies area unit getting used along.

Keyword: *cloud computing, social networking web sites.*

1. INTRODUCTION

A social network could be a structure of entities interconnected through a range of relations. These entities area unit generally mentioned as “users”. The relationships between these users have variety totally different of various names across different social networks like friends, or followers. Through these relationships users share messages and media amongst themselves. There exist variety of on-line social networking websites like the popular Facebook, LinkedIn and Twitter. These social networking sites have overflow a hundred million active members. With such a good range of user’s victimization these services.

Cloud computing refers to the access of computing resources across a network. These resources embody however don't seem to be restricted to networks, storage, servers and services. This model will give variety of benefits. Chief among them is that the reduction of prices. A corporation will utilize cloud computing services from some third party once such resources area unit needed and proportion and down promotion without having to take a position in pricey infrastructure. Another major profit is that applications and information are often accessible at any time through the web.

Cloud computing and social networking has blended in an exceedingly form of ways that. Most clearly social networks are often hosted on cloud platforms or have climbable applications inside the social networks. Recent analysis has conjointly projected cloud based mostly applications victimization social networks for user management and authentication in an exceedingly system referred to as social clouds (Chard, 2010).

In this paper, we have a tendency to examine the trends and problems in cloud computing and social networking. The paper is organized as followed: Section two in short reviews social networks and cloud computing, Section three describes the present applications and uses of each social networks and cloud computing, Section four examines the cloud design that's being used, Section five reviews current applications, and Section half-dozen concludes the paper.

2. Background

Cloud computing refers to the access of services across a network, typically the web. Clouds generally have variety of common characteristics like being allotted, accessible across varied internet-capable devices, and metered and beaked based mostly upon resource usage. These services have variety of various labels, however basically they'll be divided into 3 classes – code as a Service, Platform as a Service and Infrastructure as a Service. Code as a Service describes a cloud application that's hosted within the cloud, and is provided to its users through the web. This model removes the requirement to put in associate application on the top user's system and lowers the code value through usage evaluation. Platform as a Service encompasses the whole code development lifecycle. This includes the event surroundings, and production surroundings to deploy the applying. Infrastructure as a Service provides the utilization of resources like virtual machines, storage etc. prices area unit once more reduced by removing the requirement to acquire, install and put together infrastructure. These area unit by no means that associate thorough list of cloud services, and should be mentioned as completely different special unique distinct name by different vendors. Cloud services usually follow four forms of preparation models: non-public Cloud, Public Cloud, Community Cloud and Hybrid Cloud. Non-public Clouds area unit utilized by one organization. Public clouds area unit services provided to the general public by a cloud service supplier (CSP). Infrastructure prices rest on the CSP. Community clouds area unit wherever services area unit shared amongst multiple organizations and Hybrid Clouds combine the previous 3 models. One example of a hybrid cloud would be a corporation that depends on each non-public and public clouds (Motta, 2012).

Social networks area unit networks of users connected through relationships like relationship, following or otherwise. Through these relationships, users area unit able to share content amongst themselves. There are a unit varied existing social networking websites like Orkut, Facebook, Linked.in, and Google+. On these sites, one in all the best issues has been the protection and privacy of private information. That's to manage the private info that's being shared to alternative users and social applications, further as however info is being shared with third-parties. (Falahi, 2010).

3. Related Work

As social networks and applications reside on the online, cloud computing as associate infrastructure or

platform could be a potential answer for these technologies. Cloud computing presents constant general benefits to social applications: a major decrease in operational and infrastructure prices, alongside the convenience of quantifiability to fulfil the increasing or decreasing wants of the applications. These benefits would carry over to social network information analysis. With the assorted cloud resources and services on the market, the configuration between these technologies will vary.

Cloud Computing and social networks have varied samples of getting used along. Generally these involve the social network being hosted on a cloud platform or social applications being hosted on the cloud. Recent analysis has explored the thought of building cloud infrastructure leaning on the social network for the established relationships and user management it provides. During this variety of system, users would provision their own resources or third party resources to alternative users based mostly upon their antecedent established relationships within the social network.

This kind of cloud system would be designed on prime of existing social network as a social application. The main advantage during this variety of configuration would be eschewing the management capabilities off the applying and victimization the prevailing social networks capabilities (Chard, 2010).

With social networks having innumerable users and even a lot of user relationships they gift giant datasets for analysis. Like alternative information analytic applications, social network analysis will give helpful info regarding users. This might embody things like sediment analysis, locating key opinion users further as a lot of targeted applications like mapping malady outbreaks, and natural disasters. So as to perform these forms of analysis, goodly computing power could also be needed. Once again, cloud computing could be a potential answer. Ting et al investigated techniques for cloud based mostly analysis and information deposition of social networks. 2 algorithms were examined: MapReduce and Bulk Synchronous Parallel (BSP). MapReduce could be a technique for process giant datasets developed by Google. MapReduce consists primarily of 2 functions: map and cut back. The map perform divides the input and distributes to the nodes that method the info they receive. The cut back perform combines and merges those results to come up with the output. BSP could be a modification of MapReduce employing a multiprocessing technique. They

terminated that the BSP technique performed significantly higher than the MapReduce. Though BSP displayed higher performance during this case, the convenience of use and maturity of existing applications and systems for MapReduce simplifies parallel programming quality for process datasets (Ting, 2011). Vokali et al developed a cloud based mostly framework for the analysis of social networking trends. Their framework, Cloud4Trends, custom-made and ported trend detection into a cloud application. To boot their system incorporated status-detection wherever resources would be exaggerated based mostly upon job completion times. They terminated that the cloud-based social trend detection was an acceptable answer provided that trend detection is often a process intensive method attributable to the scale of the datasets being analysed. During this means, the number of resources might be scaled up and down supported their system's wants (Vakali, 2012).

As with most alternative technologies, security is of nice importance in cloud computing and social networking. Cloud computing security refers to the technology that's wont to defend the info and applications of the cloud from threats like unauthorized access, disruption of services, modification et al. In cloud security, the common goals or objectives of data security still apply: confidentiality, integrity, and handiness. With social networks attention ought to incline to the sharing of information between approved users. Tran et al projected such a framework for firmly sharing information. This was based mostly upon a proxy re-encryption method wherever a key's shared between each the user and proxy. If a user is deleted from a group by the administrator they'd be unable to re-join that group. This model had 2 weaknesses: security might become vulnerable ought to the proxy and a user participate in collusion, and therefore the potential load on the proxy for encoding and coding of information (Tran, 2010). Wooten et al. developed a social cloud system for aid. Another time security is of nice concern particularly attributable to the sensitivity of private health information. They used a trust-aware role based mostly access system. Trust ratings area unit calculated based mostly upon the user's activities compared to their peers. Access is allowed based mostly upon these trust ratings and therefore the user's role (Wooten, 2012).

4. Architecture

The cloud design that's normally used through social applications doesn't dissent from the standard cloud

architectures. PaaS is often used for social applications as a complete answer for social app development. Social applications are often designed as applications on prime of existing social networks or as separate applications. Within the Social Cloud, the system consists of a Facebook application that's wont to share the resources provided by the users. During this system, Facebook's integral capabilities were leveraged with user management and authentication. The established relationships inside the social network area unit won't to map sure resources and services to explicit users. As an example, resource sharing are often done solely with friends, or members of constant cluster. The applying itself is the sort of marketplace wherever the particular services or resources are often obtained. In their implementation, the resources were provided as storage as a service (Chard, 2010). In social cloud for aid, associate existing social network wasn't used. Instead the whole social cloud application was hosted on the CSP Amazon's EC2. The main elements here were the social cloud, the access management and therefore the information. Users access the social cloud through the access management, and information is persisted within the backend information (Wooten, 2012).

In terms of design, another time shut attention should be taken with reference to security of the cloud whether or not victimization either variety of social application. Each between the user and therefore the cloud service supplier. Each entities ought to bear in mind of the potential threats to security. These embody each outside and within threats. Since public clouds tend to possess multiple users on constant system, it's vital to confirm that there's correct authorization, authentication and access management to keep up every user's security on their cloud information and resources. this might need the cloud system to be secure from finish to finish, on the virtual environments, API calls, network communications and otherwise. These needs area unit similar however totally different from ancient info security attributable to the extra quality and suppleness of the cloud. To confirm correct security, suppliers and users ought to conjointly outline policies and needs before moving to a cloud answer particularly attributable to the sensitive nature of private information on the social network. this implies that if a social application is sitting on prime of associate existing social network, special scrutiny ought to incline to the communication between the 2 (Behl, 2011).

In one framework for a secure social network on the cloud, the CSP is clear to the users. A proxy sits

between the cloud supplier and therefore the user. information is encrypted with a key from the key manager before being sent to the proxy so decrypted once it reaches the user with a corresponding key (Tran, 2011).

5. Existing Applications

There exist variety of social applications that area unit creating use of cloud computing technologies. As antecedent mentioned, these applications generally involve victimization the prevailing user management capabilities of the social network to use cloud resources very similar to the content that's already being shared by social networking users. Box.net is one such cloud storage supplier. They need created a range of apps geared toward sharing their hold on information across varied social networks. These embody Twitter, Linked.in and Facebook. The applying interfaces with social networks and posts links that enable user's access to the hold on information (Cassavoy, 2011). The pliability of cloud services to proportion and all the way down to meet the resource would like fits well with the dynamic nature of the social network.

5.1 Facebook

Facebook could be a social networking web site that has users a private profile page wherever they'll post messages, photos and alternative media. These materials are often shared with alternative users United Nations agency they need 'friended.' alternative options include: teams and friend lists. As of Gregorian calendar month 2017, Facebook has surpassed two billion monthly active users. A cloud storage supplier, Dropbox has introduced Facebook integration. Facebook permits storing and sharing files inside teams. Currently Dropbox has been integrated such files from the CSP are often uploaded directly from Dropbox to Facebook (Taylor, 2012). Facebook has conjointly partnered with Hurok, a PaaS supplier, for hosting Facebook applications employing a form of languages like PHP, Ruby and Python. Their system is integrated inside Facebook to produce a user friendly expertise for novices to be introduced to application development on Facebook (Lee, 2012). Internally, Facebook hosts the most important in volume Hadoop cluster that consists of four, 400 nodes and over a hundred lead of information (Menon, 2012).

5.2 Twitter

Twitter could be a social networking service that has users a private page wherever they'll post messages that

aren't any longer than one hundred forty characters referred to as "tweets". Users area unit able to communicate with each other one associate other through adding a username prefixed with the "@" image. As of Gregorian calendar month 2017, Twitter declared that they had over two hundred million active monthly users. Twitter uses Hardtop clusters to try to off-line execution of user relationship information to power their folks you'll apprehend feature (Ryaboy, 2012).

5.3 LinkedIn

LinkedIn could be a social network double-g geared towards skilled networking. User's area unit given a profile page wherever they'll maintain an inventory of connections with alternative users on the service. Alternative options include: resume posting and job postings. As of Gregorian calendar month 2017, LinkedIn had over five hundred million users on their network. LinkedIn's design is formed of many elements. For options like folks you'll apprehend, Hardtop, Hive and Pig area unit wont to batch method off-line information. Alternative options like recommendation merchandise and rate limiting area unit supercharged by the distributed information store Voldemort. LinkedIn has regarding ten Voldemort clusters, across over a hundred nodes (Auradkar, 2012).

5.4 YouTube

YouTube could be a video sharing web site wherever users will transfer, view, share and inquire into videos. User's area unit given a profile page that lists their videos and messages. User's area unit able to subscribe alternative users to receive updates on their videos and comments. As several as one billion distinctive users visit YouTube in an exceedingly month. YouTube makes use of a delivery cloud that's to blame for serving video content. YouTube uses 2 ways of load distribution across this cloud. Based mostly upon the user's location, users area unit directed to video cache servers in shut proximity. Throughout peak hours, they'll be directed to a farther cache if situated in an exceedingly serious usage space. The second methodology is simply a redirection to a different user if the present server getting used is busy. This delivery cloud has 3 components: video id house, video servers, and a physical server cache. The video id could be a fastened length distinctive symbol for every video. The video server organization consists of many DNS namespaces representing a group of logical video servers. The physical server cache could be a hierarchy

of physical servers classified into primary, secondary and tertiary locations (Adhikari, 2011).

6. Open problems and Challenges

6.1 Privacy and Trust

Privacy has been a theme of nice concern with social networks. The protection of a user's identity varies across the assorted social network services on the market across the web. Some websites, like Facebook, encourage the utilization of real names and therefore create a affiliation between their social network and public identities. Others sites, like chemical analysis services give some weak obscurity by victimization solely 1st names or a user-created name instead. Although Facebook doesn't give obscurity, it will give choices to limit access solely to those you permit access. Apart from access by alternative users, there are a unit queries on however these social networking services could also be victimization the large amounts of information that users area unit providing. Facebook's policy states that info could also be shared with third parties that doesn't establish or expose the user's identity. During this case, it's going to be market research firms United Nations agency use the data to focus on advertisement to sure users. In terms of privacy, there are a unit queries on what's being far from the info being shared that produces the users "unidentifiable". There are a unit means that to deduce identities based mostly upon the social network graph topology, and distorted and removing information might have an effect on the standard of information analysis and mining of the data that's being shared. These problems raise queries on however these social network services handle their information to balance the requirements of third party information shoppers and therefore the expectations of their users (Bianco, 2009).

6.2 Ownership of Content

The massive amounts of information that exist on social networking services area unit largely user-generated. Different totally different completely different social media sites have different policies. As an example, Facebook's policies state that it'll use user's info in promotion or reference to its service. Once managing things like pictures, the content remains non-public if set as non-public by user preferences. However, Facebook doesn't have intensive copyright choices or preferences very similar to the image sharing web site Flickr. With Flickr, a user will set totally different policies through licenses: artistic commons, no by-

product works, etc. whereas users could also be the house owners of this information, license agreements based mostly upon the utilization of the services' network might enable these sites to retain information even when users initiate removal or deletion (McCarthy, 2009).

6.3 Data Retention and Failures within the Cloud

Although cloud technologies gift abundant worth, there are a unit many issues regarding centripetal information and information management within the cloud. Ought to valuable information be placed within the cloud and lost, there's very little which will be done to recover that information. This is often not totally different from the normal model wherever information is managed by the organization itself. But once that information is shipped into the cloud, organizations relinquish some live of management which needs trust that the cloud service supplier can manage the info properly. One example of such a failure occurred once social bookmarking service Ma.gnolia had system failures across primary and backup servers, effectively losing all user information in 2009 (Bianco, 2009).

6. Conclusion

We area unit presently living within the age of communication wherever innumerable folks area unit connected through the web. Many of those folks maintain relationships on-line through social networking sites like Facebook, LinkedIn, and Twitter. The ascension of those social networks has given rise to selling and client relationship opportunities for businesses, and huge datasets for analytics. For the long run of social networking there'll be a continued specialise in user privacy and information management. To fulfil these demands, social networking services are inclined to adopt policies and information protection settings in order that users are able to manage their information, and access to that. Policies regarding lifetime of information ought to be examined to clarify what happens ought to users terminate their account or die. This might conjointly embody transparency of however these services area unit victimization their information internally further as providing to 3rd parties and alternative organizations. As so much as cloud computing for hosting social applications, it'll stay as a lovely choice particularly with integration with social networks and their apis. It provides a cheap answer that reduces the hassle to form associate application. Social media has conjointly given rise to many applications of information analytics. This trend is predicted to continue with the thought that

organizations will derive helpful info like trends and user identification. Social media encompasses a sturdy tie with huge information as these services manufacture and consume huge information. Many of those services area unit driving current development of subtle huge information architectures and technologies to power the options that they supply to their users. This could be associated with cloud computing since these technologies generally create use of distributed computing resources area unit generally the cloud. because the social networks grow, there'll be a growing would like for increasing amounts of computing resources and cloud computing remains as a viable answer to fulfil those wants.

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