



A taxonomy of : The reviews on Cloud Computing Direction (CCD)

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Abstract

The manufacturing industry is undergoing a major transformation enabled by IT and related smart technologies. The main thrust of Cloud computing is to provide on-demand computing services with high reliability, scalability and availability in a distributed environment. This paper summarizes our taxonomy of the CC review direction. The goals of this taxonomy were (i) clarify the needs and the directions of the use of the CC, (ii) define the academic and practical issues involved in CC , (iii) learn the state of the directions on methodologies of the CC , (iv) identify future research directions, which benefit the short and long terms. The taxonomy has concluded that (i) CC is advantageous in dealing with changes and uncertainties in the every-changing environment. (ii)It has been found that few existing CC can achieve the objective of security. (iii) The obstacles of the development of CC include the difficulties to identify and generalize the requirement of CC security, the lake of effective technologies that can be used to support the clouding use, and no international origination that serves for standardizing the modular components for cloud computing processes. In this paper, we use the IVSL(The Iraq Virtual Science Library) to select the free, full-text access to papers from major publishers as well as a large collection of on-line educational materials.

Keywords: Cloud Services; Cloud Computing; Survey.

1. Introduction

Cloud computing is a general term for anything that involves delivering hosted services over the Internet. A cloud service has three distinct characteristics that differentiate it from traditional hosting. It is sold on demand, typically by the minute or the hour; it is elastic -- a user can have as much or as little of a service as they want at any given time; and the service is fully managed by the provider (the consumer needs nothing but a personal computer and Internet access).

Significant innovations in virtualization and distributed computing, as well as improved access to high-speed Internet and a weak economy, have accelerated interest in cloud computing.

2. A taxonomy of CC

This paragraph, clarify the needs and the directions of the use of the CC. Mondale suggests a stochastic hill which has been used for load distribution in Cloud computing environment [1]. The soft computing based approach has been compared with two approaches Round Robin first come first serve.

The rustles are quite encouraging. However, uses of other soft computing techniques are needed to be studied for further improvement [2]. Cheng describes a development of technology often, which will need to consider the possible impact within the legal infrastructure. Sometimes the possible impact will create a whole new legal issue. Sometimes it will make a preexisting legal issue prominent [3].

Lin studies the resource allocation at the application level, instead of studying how to map the physical resources to virtual resources for better resource utilization in cloud computing environment. He also studies the need to manage the applications in cloud computing creates the challenge of on-demand resource provisioning and allocation in response to dynamically changing workloads [4].

In the otherwise “Sun” mention that high security is one of the major obstacles for opening up the new era of the long dreamed vision of computing as a utility. As the sensitive applications and data are moved into the cloud data centers, run on virtual computing resources in the form of virtual machine. These unique attributes, however, poses many novel security challenges such as accessibility vulnerabilities, virtualization vulnerabilities, and web application vulnerabilities. With advancement of cloud computing and increasing number of cloud user, security, and privacy and trust dimensions will continuously increase. He also said that to protect private and sensitive data that are processed in data centers, the cloud user needs to verify (a) the real exists within the cloud computing environment in the world; (c) the security of information in the cloud; and (b) the trustworthiness of the systems in cloud computing environment [5]. Tao describes a generic framework implemented for Cloud users to access the various Cloud infrastructures in a unified fashion. The framework provides a graphical interface where service requests can be described and submitted, and services can be executed or terminated. The framework also enables the interconnection of different Cloud platforms. Currently, we have developed core architecture with basic, Cloud independent interfaces and views. This architecture can be easily extended to connect any Cloud infrastructure [6].

Kuyucu discourse both concepts; cost and energy, are the keywords for sustainable development and a well fair functioning economy. What cloud system offers simply signifies simplifying the machinery and outsourcing all that is possible in accordance with the need of the consumer. Cloud computing cannot be a total transfer of all hardware and software but offers a choice to be made, which hardware and software should be kept and what should not be [7].

Choo describes Cloud computing as a subject to frequent attacks by cyber criminals, who may be able to hijack and use them for criminal purposes, hence, adding to the challenge of growing volumes of digital evidence in each specific case under investigation. In addition, cloud services can be used as a launching pad for new attacks or to store and distribute criminal data by cyber criminals, organized-crime groups and politically-motivated actors to avoid the scrutiny of law enforcement and national-security agencies [8]. Gaofeng mentioned that the use of cloud computing by criminals means that their devices will be virtualized, geographically distributed and ephemeral, presenting technical and jurisdictional challenges for their identification and seizure by law enforcement and national-security agencies. These can impede digital forensic investigators and potentially prevent law enforcement and national-security agencies from acquiring digital evidence and analyzing digital content forensically in a timely fashion [9].

Other researchers such as Mell and Grance also mention that the sourcing and delivery model for enabling convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction infrastructure as a Service is a basic product, which can be offered by a cloud provider. It typically allows a cloud computing user to provision infrastructure on which they can run any software of their choosing [10].

Chow describes Cloud data security, the trade-off, here is the additional performance hit that is incurred during data access and so this is by no means universally employed by cloud providers. A secondary issue is in attackers gaining it is always a sound strategy to ensure that copies of critical data are securely replicated and stored in alternative physical locations to ensure that attacks/losses are mitigated but, in this case, special care must be taken to address legal and security concerns[11], [12], [13].



Fig. 1: The Main Cloud Computing Direction

A survey on security issues in service delivery models of cloud computing has been done from many researchers. Security issues in service models was a direction on cloud computing utilizes and have three delivery models by which different types of services are delivered to the end user. The three delivery models are the SaaS, PaaS and IaaS which provide infrastructure resources, application platform and software as services to the consumer[14], [15].

Many other directions were found like data, Network security, data locality, integrity, segregation, access, authentication, confidentiality, web application security, breaches, Virtualization vulnerability, availability, identity management and sign-on process, autonomic computing systems in [16], [17], [18], [19].

While artificial intelligent in [20], [21], [22], [38], and [43]. Cloud computing is a disruptive technology with profound implications not only for Internet services but also for the IT sector as a whole. Still, several outstanding issues exist, particularly related to service-level agreements (SLA), security and privacy, and power efficiency [22], [23], and [24]. As described in the paper, currently security has a lot of loose ends, which scares away a lot of potential users. Until a proper security module is not in place, potential users will not be able to leverage the advantages of this technology. This security module should cater to all the issues arising from all directions of the cloud. Until then, cloud environment will remain cloudy. Nabil Sultan, Cloud computing for education [25], [37]. Security-oriented cloud computing platform for critical infrastructures, and hacking attacks with data loss or corruption has been mentioned in [25]. Mobile cloud computing a survey on motivation for a mobile cloud, Image processing, natural language processing, sharing GPS/Internet data, Sensor data applications, multimedia search, Social networking. A taxonomy of mobile cloud computing: Operational level issues, End user level issues, Service and application level issues, Privacy, security and trust, Context-awareness, Data's management, Cost-benefit analysis: It is important to analyze the costs of offloading on to the cloud such as time, energy and monetary, versus monolithic execution / storage beforehand [26,27,28]. The cloud user puts the cloud provider in charge of maintaining the leased virtual computers and software as well as of configuring the server farm, thus freeing their IT staff from these jobs and enabling them to focus on the development of IT innovations and business applications support [29-36]. Smart manufacturing with cloud computing cloud computing can be effective in offering Business-to-business (B2B) solutions for commerce transactions between businesses, such as between a manufacturer and a wholesaler, or between a wholesaler and a retailer. Cloud-based solutions enable bettering - graded and more efficient processes. Internet-based manufacturing or distributed manufacturing virtual enterprise and distributed manufacturing A comprehensive data warehouse is utilized to store CNC manufacturing information with STEP-NC data model utilized as the basis for representing manufacturing knowledge that is augmented with XML schema [38-42]. Cost effectiveness of commercial computing clouds. A cost-effective cloud computing framework for accelerating multimedia communication simulations the performance of the proposed systems has to be evaluated in many different network scenarios and for several values of all the key parameters [43-46]. This work focused on investigating the cost-performance tradeoff of a cloud computing approach to run simulations frequently encountered during the research and development phase of multimedia communication techniques, characterized by several develop-simulate-reconfigure cycles [47-56]. A framework for ranking of cloud computing services Cloud computing has emerged as a paradigm to deliver on demand resources, platform, software to customers similar to other utilities [57-60]. The growths of public Cloud offerings, for Cloud customers it has become increasingly difficult to decide, which provider can fulfill their requirements [60-72]. Currently most of these existing methods focused on the optimization of allocating physical resources to their associated virtual resources and migrating virtual machines to achieve load balance and increase resource utilization. These methods require the suspension of the cloud computing applications due to the mandatory shutdown of the associated virtual machines [73-81]. The protection of information privacy under the development of cloud computing technology is the latter situation [82-89]. Every element in the cloud should be analyzed at the macro and micro level, and an integrated solution must be designed and deployed in the cloud to attract and enthrall the potential consumers [90-100]. Access to the data through compromising shared resources, authorization, accounting and user control: virtual machines or services operated in the cloud should still be subject to the same hardening as with traditional systems [101-107].

3. Statistical Methodology

Our sample articles were (107) randomly selected from the period 1998-2013; the only determination was the key search which was "cloud computing." Table (1) shows the statistical distribution for the directions.

Table 1: The Statistical Distribution for the Directions

Direction	No.	Per.
Market Mechanism	3	3%
Information Sheering	3	3%
Performance	12	11%
Salesforce	6	6%
Capacity	6	6%
Open Source	9	8%
Data Center	6	6%
Security	23	21%
Accessing Grid	8	7%
Network	7	7%
Architecture	9	8%
Modeling , Simulation	4	4%
Database	5	5%
Application	6	6%
	107	

Depend on the table (1), we have been reviewed the rank of the directions; "security" has the first rank with 23 % of the total random sample as shows in chart (1).

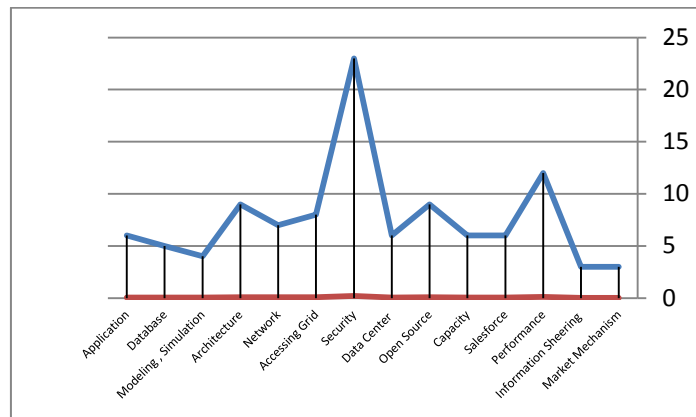


Chart 1: Distribution for the Directions

Table(2) illustrates the sort of the direction percentages from the smallest to the largest values.

Table 2: The sort from the lowest values for the directions percentage.

Direction	No.	Per.
Market Mechanism	3	3%
Information Sheering	3	3%
Modeling , Simulation	4	4%
Database	5	5%
Salesforce	6	6%
Capacity	6	6%
Data Center	6	6%
Application	6	6%
Network	7	7%
Accessing Grid	8	7%
Open Source	9	8%
Architecture	9	8%
Performance	12	11%
Security	23	21%
	107	

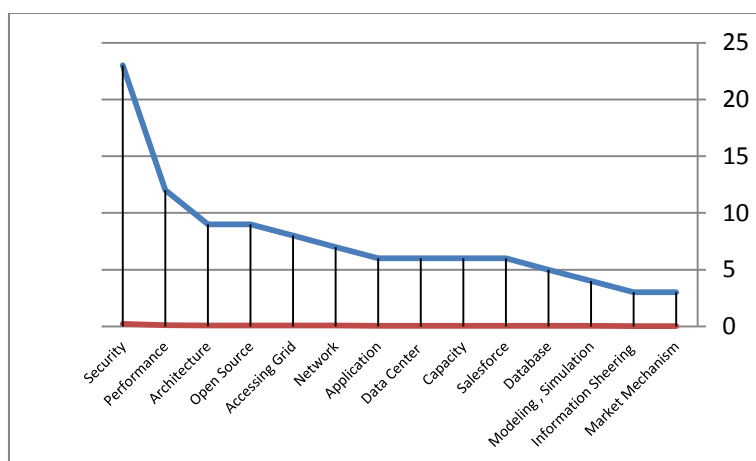


Chart 2: The Increasing Values for the Directions Percentage.

4. Reviews on Cloud Computing Direction

In order to illustrate the frequency of the selected random articles for the cloud computing reviews, table (3) shows the distribution for (102) articles those who are published for decade period of time (2003-2013).

Table 3:Articles Distribution form (2003-2013)

No	Year	Fre.
1	2003	3
2	2004	2
3	2006	2
4	2007	2
5	2008	10
6	2009	23
7	2010	18
8	2011	10
9	2012	8
10	2013	24
		102

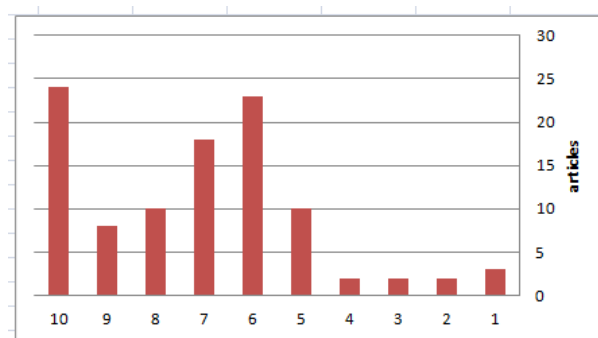
**Chart 3:** Articles for Decade of Time (2003-2013)

Chart (3) shows the most citation for the "cloud computing" key word, for the random sample. In the 2013 were about 24 articles. The second rank was in 2009 about 23.

5. Conclusion

Cloud services are increasing day to day, which means its future is very bright. Cloud services will eliminate the need to install and manage client rich applications and further its scope in all the private sector would increase thus it would help the company to reduce high-cost infrastructure and maintenance cost.

In this paper by analysis the direction papers on cloud computing, we build a model of review on the reviews direction by using a system dynamics methodology analysis. Looking back further to the papers direction will argue the papers' directions for the researcher. On the other hand, we argue that some new fundamentals on cloud computing need for issues in the future.

In this paper by analyzing of distribution frequency of the articles, it has been founded that the citation for the "cloud computing" increasing day after day.

In this paper it has been founded that publishing in the reliable journals make the citation easier, faster and dependable.

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