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URBAN TRANSPORTATION SYSTEM USING CLOUD COMPUTING

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Abstract:

With the aid of emerging technologies and methodologies, it is possible to handle a very high number of sensing details and to introduce modern interconnected computer systems in order to obtain knowledge intelligence. This paper provides a user-oriented approach to defining the criteria for the efficient management of metropolitan environments. This paper further examines how the restructuring of such an organization has profoundly altered the market situation in the telecommunications sector.

Key Words: Real Time Services; Data Centre; Traffic Management; Core Network.

Introduction:

This paper presents a paradigm of cloud infrastructure services based on the Internet, discusses the properties, implementation and problems of cloud computing that are in use today. In this post, we spoke about cloud connectivity services (including how to reach the cloud such as media control & APIs) and the essential aspects of cloud-based usability & scalability. The cloud computing business model includes supplying a service provider with vast pools of HCRs and storage devices that are exchanged by end users as necessary. The Cloud computing service model requires the provision of vast pools of high-performance computing services and storage devices that are shared by end-users, where necessary [4]. The service provider deal will also apply to the end user's device apps. To succeed, a high-speed network is often required to link the terminal user to the networks of the service provider. There are several descriptions of cloud computing, and there is continued debate within the IT industry regarding prospective offerings in the future [2]. The general scope of cloud computing is briefly summarized in [5]. Including resources usage in switching and transfer and data processing as well as data storage, we accept both public and private clouds. We introduce, in particular, a network-based switching and transmission network model. Smart transport clouds may include resources including support for decision making, a regular traffic management creation framework, and so on. A metropolitan transport management scheme is feasible and powerful with mobile-agent technologies based on agent delivery networks and flexible systems (adapts).

Model:

We centre our efforts on applications for three cloud providers as a service, service processing and storage. We define the roles of each of the three cloud providers in the following pages.

1. Software as a Service:

The typical purchasing of consumer products requires the fixed charge on the copyright and a copy of the software on the related media. Users can only mount the app on a device under a software license. When a significant software upgrade is applied and customers released a new version are forced to make a further charge to access the software U version released, support for existing releases is typically considerably diminished and upgrades are rare. As the broadband Internet is pervasive, tech engineers are pushing more and more to deliver software as a service. The customer payment for access to the newest update of applications [2], [3] is a monthly or annual premium for this program. The program is also hosted in the transmitting cloud and all measurements are done in the cloud. The PC of the client is only used for commands and results. Users are typically free to use any Internet-connected device. However, only a limited number of program instances are allowed to run per user at any time. Google Docs [2] is one example of software as a service. If a user uses computing resources solely based on the Internet, the definition is a similar one to that of a thin client [model, where the client computer of each user acts mainly as a network interface, carrying out input, output and display functions, while data is stored and processed on a central server. Until large use of PCs, small customers were common in office environments.

2. Storage as a Service:

Users can outsource their needs for data storage to the cloud [3]–[6] via storage as a service. Any process is done on the PC of the user and can only be completed with solid state drives (for example flash-based storage with solid-state) and the user mostly saves the data on the server. Data files can contain records, pictures and videos. Cloud-specified files are accessible any time from any internet-connected computer [5]. To change the file, you must first download, edit it using the PC of the user and then upload the changed file to the cloud. The cloud service provider makes sure that the cloud has adequate free space and even handles data backup [5]. Moreover, when a user uploads a file to the user, it will make other users read and change rights. The Amazon Easy Storage [3] is an example of storage as a commodity.

3. Processing as a Service:

The service processing provides users of a powerful server with the tools required for large-scale computing tasks [2]–[6]. Many functions that are not computer-intensive are done on the user's PC. The cloud loads more complicated computing functions, the effects are returned to the user [6]. The processing service can be accessed from any device connected to Internet-connected computers, equivalent to the storage service. The Amazon Elastic Compute Cloud infrastructure [3] is an example of service processing.

Deployment Models:

Deploying cloud infrastructure can vary in role of specifications, and the following four implementation models with unique characteristics have been defined, each serving in particular the needs of services and cloud users [9-12].

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- Private Cloud - A particular company has a cloud service that is managed and controlled. The process may be in-house or on the premises with a third party.
- Community Cloud - A range of organizations with common goals and criteria share the cloud technology. This will help reduce the expense of the establishment's capital spending when the expenses are split between the organizations. The process may be in-house or on the premises with a third party.
- Digital Cloud - A cloud service vendor delivers the cloud technology to the public commercially. In contrast to the capital spending requirement typically associated with other deployment solutions, a customer is thus able to create and install a cloud infrastructure with little financial intervention.
- Cloud hybrid - Cloud computing involves a variety of clouds of all sorts but clouds can transfer data or software from one cloud to another through their interfaces. It can be a private mix. For e.g., an urban area consumer viewpoint.

Urban management seeks to successfully respond to Europe's main political challenges, including climate-change socio-economic and environmental effects, worsening public health, lack of biodiversity and so forth. All these urban consequences are related to an inefficient urban model in which urban transit networks produce excess greenhouse gases (GHG) that facilitate climate change in an urban sprawl setting. Furthermore, as the major generator of GHG pollution, motorized transport often degrades the atmosphere with regard to air quality and noise, which impacts human health. Local administration is thus encouraged by integrated approaches to the evaluation, development of policies and execution of territorial impacts. Despises is the fact that spatial intelligence on the local level has traditionally struggled to grow within crucial fields of geographical impact evaluations and urban planning, amid these aspirations for creating comprehensive approaches to realism [13-16, 19]. Moreover the difficulty of data integration to secure accurate intelligence is increased further as intercity or intra-regional comparisons and analyses are required for the usual system requirements for interagency coordination on territorial planning matters. A variety of reasons, including in particular, bureaucratic and institutional obstacles to sectoral responsibility for property, transport and environment, can be due to the inability to secure policy integration, mainly from the horizontal perspective at the state level and vertically between the government entities responsible for policy implementation from local to regional, federal, and EU level.

Benefits and Challenges:

Benefits:

- Many of the future advantages of the software and technologies provided by the cloud are:
- Cost Savings - Businesses will minimise capital spending and improve their computer capacities by making use of operating expenses. This is a lower entry barrier that needs less internal IT capital to sustain programmes [17, 18].
- Scalability/flexibility - Organizations can begin with limited deployment and expand reasonably quickly into large deployments and then reverse if necessary. Cloud storage versatility also encourages businesses to leverage more services at peak hours in order to meet customer requirements.
- Reliability - Utilities that use many redundant locations may facilitate the continuation of operation and the rehabilitation of disasters.
- Maintenance - System maintenance is done by cloud service providers and connectivity is provided by APIs that require no installation on PCs, thereby reducing further maintenance demands.
- Mobile Accessible - Mobile staff are growing efficiency through applications that are accessible from anywhere in an infrastructure

Challenges:

- The below are some prominent cloud computing problems, and while some of them may slow down as more services are being provided in the cloud, many may still offer benefits when adequately accounted for and carefully resolved during the planning stages.
- Security and Privacy - Maybe two of the most 'hot button' cloud-related concerns apply to data management and data security and control of cloud utilisation by service providers. These concerns are normally triggered by the slowdown of cloud services rollout. For example, the information should be processed internally in the enterprise and used in the cloud to overcome those problems. For this to happen, though the authentication protocols between the enterprise and the cloud need to be strong [20-23].
- Lack of Standards - Clouds have reported interfaces, but they do not have standards, so most clouds are unlikely to be interoperative. Open Grid Forum develops an Open Cloud Computing Platform for this problem and the Open Cloud Consortium is collaborating on guidelines and practises for cloud computing. The results of such organisations must mature, but it is not clear if they can meet the needs of the people who deploy the services and their unique interfaces. However it will be possible to keep up to date with the latest standards as they evolve [24-26].
- Continually changing - the demands of users and the need for interfaces, networking and infrastructure are continually evolving. This means that a "cloud," especially a public one, is not stagnant and is continually changing.
- Compliance Considerations - The US Sarbanes-Oxley Act (SOX) and EU Privacy Security Directives are two of many cloud computing compliance challenges depending on the kind of data and application used in the cloud. The EU has institutional backing in all Member States for data security, but in the US data protection is different and can vary between states. This usually contribute to hybrid-cloud deployment with one cloud that stores data within the enterprise as with the previously stated safety and privacy.

The Future of Cloud Computing:

The study was based on cutting edge technology in 2010 in previous pages. During the past few years the energy efficiency of appliances has steadily increased, as new technical generations come online. Over time, this has led to exponential increases in server and computing systems as well as routers and switches' energy efficiency. In this segment, we use forecasts of technical performance gains over time to model potential cloud energy usage. We also explore possible directions for cloud computing and include advice on the energy efficiency of cloud computing.

Forecasts of Equipment Energy Consumption:

Many factors determine the technologies in use in a commercial setting, particularly a data centre. Maximizing service delivery and therefore sales is primary aims at simultaneously minimising support and repair costs, rack space, head load and energy usage. Lower performance or high repairs are routinely replaced by state-of-the-art appliances. It is standard practise. By comparison, user equipment appears to be maintained over longer durations and its production is difficult to foresee in the medium term. Our predictions depend on network, computer and storage energy usage and take little account of potential consumer equipment generations.

Storage as a Service:

The energy consumption of a storage as a service per user is now predicted. Average of 20 active files per user with an unequalled average file size of 1.25 MB are stored in the cloud storage service. The download rate per user per file is an hour download. Over the years, total energy consumption trend per user for this public or private cloud storage service. The power consumption for a modern laptop HDD (2:500 HDD) in 2009 was included as a reference. For both the public cloud service and the private cloud service, one download per hour 2 indicates that transport energy consumption dominates overall power consumption. Improvements in technology for both types of services should lead over time to a factor of ten improvements. However as noted earlier, the absolute energy savings of the service are limited and other areas of energy savings have better opportunities.

Software as a Service:

Our software power consumption projection considers public and private cloud services with 20 and 200 users per server. The software services' energy consumption includes electricity consumed by servers, storage, carriage and user endpoints. The user terminal is constructed using the 2009 technology and is also included in its estimated energy consumption. While it is reasonable to expect a future energy efficient use of terminals, we are focusing on net gains that are achieved through server and transport equipment improvements in this analysis.

Processing as a Service:

To serve, we are again examining a computer-intensive processing service; in this case, 2.5 hour of video material will be encoded 0,60 times a week. Total energy consumption trends per user per week in the years 2009 to 2020 for these public and private cloud services. The total energy consumption includes the power necessary on a low-end laptop from 2009 for common office work. We also maintain the electricity consumption of user equipment as with software as a service, because in this analysis we are concentrating on net gains achieved by improving the cloud computing (server and transmission) devices. Modern low-end laptops use 40 hours per week and demand periods. The power consumption is high. Cloud CT data centres should also be connected via dedicated point-to-point links that include optical bypass, to minimise energy consumption in transportation. Reducing hops and transmission connections would in fact benefit all services.

Conclusions:

In this paper, we argued that the integration of fragmented information on the environment may lead to better environmental monitoring to mitigate different environmental problems such as climate change issues. In addition, we argued that cloud computing can play an important role in the integration of environmental information by providing on-demand storage and processing. Our urban management example helps identify a generic set of information intelligence technical capabilities and offers a layered IEMS architecture that uses different cloud-based implementing scenarios. But based on our preliminary assessment, our argument is that as a result of certain technological challenges, it is not easy to develop integrated intelligence to its full potential.

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