International Journal of Applied Engineering Research ISSN 0973-4562 Volume 10, Number 23 (2015) pp 43529-43532

Factors Affecting the Cloud Authorization Model in Cloud Computing Platform

K. Priyadarsini

Research Scholar Department of CSE VELS University Chennai, INDIA

Dr. S. SaravanaKumar

Professor Department of CSE SVEC INDIA

S. Karthik

Research Scholar Department of CSE VELS University Chennai, INDIA

Abstract-
With the developments made in cloud computing on each passing day, Developers are turning their blind side towards to major issues which are actually a threat to its existence. This paper is an eye opener to the entire dilemma which is commonly faced by portable device users. Major issues range from insufficient bandwidth to transmission interferences; it's a commonly known fact that the cloud internet access is slower than the direct cable ones, using technology like GPRS, EDGE and recently 3G, the higher speed wireless LANs maybe economical but have very limited range. To improve network coverage, one can install more wireless cells to service a user population. There are two ways of doing this: overlap cells on different wavelengths, or reduce transmission ranges so that more cells fit in a given area. The second technique is generally preferred. It is arguably simpler, reduces power requirements and may decrease corruption of the signal because it may interact with fewer objects in the environment. With ATM (Asynchronous Transfer Mode) on the time of design gave a staggering speed of 150mb\s, with its proper implementation and with Cloud computing under your belt, the level of data transfer and access will reach its new heights. Battery life is also a major heartbreak for all the portable device users with laptops having 7-8 hours of battery backup and former Smart phones is also limited to just a day. This is not feasible for a daily user. But Noble prize winning material called "graphene" can change it all. Turns out that not only may it replace silicon as the major component of microchips, it's on track to becoming the next mega battery as well. It can provide higher storage energy capacity than our modern day batteries. Last but certainly not the least the major concern which all the users will face is without a doubt the health hazards caused by the devices. We are prone to diseases like cancer etc due to the electromagnetic radiation in the microwave range. Shielding and other methods are discussed in this paper which doesn't allow harmful radiation to go out can be designed by the manufactures to decrease the level of radiation and health hazards. The following approaches and their shortcomings are addressed in this paper.

Keywords: Cloud Computing, ATM, Cloud Security, Graphene, Bandwidth

Introduction

Technology never took a break in delivering us with groundbreaking new inventions. When cloud computing came up no one argued with its limitless applications, Major one being portability. Cloud computing embraces a host of portable technologies that makes internet access on the go not only possible, but integral to everyday life. From notebook computers to personal digital assistants (PDAs) like the Blackberry and iphone, to standard cell phones, cloud computing has become an indispensable way of life. Various features given by cloud computing includes: user mobility, device mobility, network mobility, and host mobility.

Benefits of cloud computing may range from improved customer service. For example, when meeting with customers you could access your customer relationship management system - over the internet - allowing you to update customer details whilst away from the office. Alternatively, you can enable customers to pay for services or goods without having to go to the till.

More powerful solutions can link you directly into the office network while working off site, for instance to access your database or accounting systems. For example, you could set up a new customer's account, check prices and stock availability or place an order online. This leads to great flexibility in working - for example, enabling home working, or working while travelling. Increasingly, networking 'hot spots' are being provided in public areas that allow connection back to the office network or the internet. The growth of cloud computing has also impacted positively on the use of cloud devices, supporting more flexible working practices by providing services over the internet. But behind the beautifully crafted image of cloud computing lies the ugly side of it, which as I mentioned before no developer seems to find a proper remedy for. With limitations like low bandwidth, Transmission interferences, Power consumption, Security standards and Health hazards we cannot say that cloud computing is obsolete. These limitations are herein divided into four sections, Section 1 discusses about the low bandwidth problems and transmission interferences and its possible solutions. Section 2 highlights on power consumption including the Nobel Prize winning material "grapheme" which could nullify all the battery issues. Section 3 discusses about the security issues which cloud computing

faces and Section 4 consists of the health hazards and its possible overcoming. These limitations or issues are brought out into the picture so that these suggested solutions may take effect on the future versions of portable devices of cloud computing.

A. Low Bandwidth

"A world without wires" is famous lines from Don Listwin. But wireless networks deliver lower bandwidth than wired networks. As a result, cloud applications have to be carefully designed to control the bandwidth consumption. Bandwidth can shift one to four orders of magnitude, depending on whether the system is plugged in or using wireless access or switching interfaces, e. g. from infrared to radio when the user moves from indoors to outdoors.

Network bandwidth is divided among the users sharing the cell. The deliverable bandwidth per user therefore is a more useful measure of network capacity than raw transmission bandwidth. But this measure depends on the size and distribution of a user population.

To improve network capacity, one can install more wireless cells to service a user population. There are two ways of doing this: overlap cells on different wavelengths, or reduce transmission ranges so that more cells fit in a given area. The scalability of the first technique is limited because the electromagnetic spectrum available for the public consumption is scarce. The second technique is generally preferred. It is arguably simpler, reduces power requirements, and may decrease corruption of the signal because it may interact with fewer objects in the environment. Moreover, transceivers covering less area can achieve higher bandwidths.

Wireless or cloud communication has proven immensely successful in recent years. The commercial success of the second generation cloud systems, and in particular of the GSM (Global System for Cloud Communication) system, has brought widespread attention to the benefits of wireless access and

Cloud services. As a consequence, confidence in wireless communication has been strengthened.

This confidence in a wireless future is one of the key factors behind the emergence of the concept of wireless ATM. Even though it already has a name, the concept of wireless ATM itself is still rather vague.

i. Asynchronous Transfer Mode

Asynchronous Transfer Mode (ATM) represents a relatively recently developed communications technology designed to overcome the constraints associated with traditional, and for the most part separate, voice and data networks. ATM has its roots in the work of a CCITT (now known as ITU-T) study group formed to develop broadband ISDN standards during the mid-1980s. In 1988, a cell switching technology was chosen as the foundation for broadband ISDN, and in 1991, the ATM Forum was founded. The ATM Forum represents an international consortium of public and private equipment vendors, data communications and telecommunications service providers, consultants, and end users established to promote the implementation of ATM. To accomplish this goal, the ATM Forum develops standards with the ITU and other standards organizations.

ii. Why wireless ATM?

When discussing the reasons why wireless ATM is emerging with such strength and speed, a number of technology push as well as user or market pull issues can be identified. When these issues are added together, they invariably point in one direction: towards the emergence of a wireless multimedia technology based on ATM. A key aspect, driving the need for more advanced wireless solutions, is the rapid sophistication of end- user telecommunications services and applications.

iii. ATM Specifications Include:

1. ATM supports all kinds of communication
2. ATM supports a large range of transmission speeds-

ATM is perceived as a high speed networking technology, but this is only half the truth. A key characteristic of ATM is its ability to support any (user) transmission speed from the maximum permitted by any given access solution down to essentially 0. This is yet another feature of ATM that lowers the boundaries between segments of the wireless market.

ATM can span a much wider range of user transmission speed, in a cost effective way, using a single network technology. If wireless networks were based on ATM, its multi-rate capability would avoid having separate infrastructures to support different radio access solutions.

B. Power Consumption

Cloud computers are concerned with the limited power supply, an issue that does not appear in distributed wired environment. Hardware improvements on batteries can help to lengthen the life of a charge and reduce battery weight. In addition, efficient software operations can help to lower the power consumption. Examples include: Shifting the processing to a fixed host, aggressively caching and perfecting data to reduce disk traffic, and transmitting less data while receiving more.

In the coming decades laptops and maybe even all cloud computing devices, may cruise without batteries. Instead, the energy in these devices of future will be stored in a super capacitor which could be recharged in minutes, possibly seconds. By the recent researches conducted, a nano graphene-based, ionic liquid-enabled super capacitor has achieved a specific energy density of 85. 6 Wh/Kg at room temperature. Researchers have now learned that by using curved graphene sheets instead of the original flat sheets, capacitance could be greatly improved.

i. What is Graphene?

Graphene is an allotrope of carbon, whose structure is one-atom- thick planar sheets of sp2-bonded carbon atoms that are densely packed in a honeycomb crystal lattice, The term graphene was coined as a combination of graphite and the suffixene by Hanns- Peter Boehm, who described single-layer carbon foils in 1962. Graphene is most easily visualized as an atomic-scale chicken wire made of carbon atoms and their bonds. The crystalline or "flake" form of graphite consists of many graphene sheets stacked together.

ii. Is graphene the future?

Not only graphene turned out be a possible replacement for silicon as the de rigueur component of microchips, it's on track

to becoming the next mega battery as well. Engineers at the University of Texas in Austin have found a way to store electrical charge in graphene-based ultra capacitor devices, and their discovery could revolutionize the renewable energy industry. There are two ways to store electrical energy today— through traditional rechargeable batteries or in ultra capacitors, a newer tech that runs safer, cooler, and longer. The UofT researchers think their breakthrough could end up doubling the capacity of current ultra capacitors, which are made with a different, less awesome form of carbon. If everything works out, it could give a much needed boost to solar and wind energy industries, whose main challenge right now is energy storage for when the sun isn't shining and the wind isn't blowing. Beyond that, graphene ultra capacitors could end up improving the efficiency of all electrical appliances—cars, buses, and trains you name it.

C. Health Hazards

i. What are the Health Hazards?

In the late 1970s, concerns were raised that magnetic fields from power lines were causing leukemia in children. Subsequent epidemiological studies found no connection between cancer and power lines. A more recent health scare related to everyday technology is the potential for radiation damage caused by cell phones. Studies on the issue continue to contradict one another.

All cell phones emit some amount of electromagnetic radiation. Given the close proximity of the phone to the head, it is possible for the radiation to cause some sort of harm to the 118 million cell-phone users in the United States. What is being debated in the scientific and political arenas is just how much radiation is considered unsafe, and if there are any potential long-term effects of cell-phone radiation exposure.

There are two types of electromagnetic radiation:

1. Ionizing radiation - This type of radiation contains enough electromagnetic energy to strip atoms and molecules from the tissue and alter chemical reactions in the body. Gamma rays and X-rays are two forms of ionizing radiation. We know they cause damage, which is why we wear a lead vest when X-rays are taken of our bodies.
2. Non-ionizing radiation - Non-ionizing radiation is typically safe. It causes some heating effect, but usually not enough to cause any type of long-term damage to tissue. Radio-frequency energy, visible light and microwave radiation are considered non-ionizing.

The added concern with non-ionizing radiation, the type of radiation associated with cell phones, is that it could have long- term effects. Although it may not immediately cause damage to tissue, scientists are still unsure about whether prolonged exposure could create problems. This is an especially sensitive issue today, because more people are using cell phones than ever before. In 1994, there were 16 million cell-phone users in the United States alone. As of July 17, 2001, there were more than 118 million.

Here are a few illnesses and ailments that have potential links to cell-phone radiation:

1. Cancer
2. Brain tumors
3. Alzheimer's
4. Parkinson's
5. Fatigue
6. Headaches

Studies have only muddled the issue. As with most controversial topics, different studies have different results. Some say that cell phones are linked to higher occurrences of cancer and other ailments, while other studies report that cell-phone users have no higher rate of cancer than the population as a whole. No study to date has provided conclusive evidence that cell phones can cause any of these illnesses. However, there are ongoing studies that are examining the issue more closely. At high levels, radio- frequency energy can rapidly heat biological tissue and cause damage such as burns, according to a recent report from the U. S. General Accounting Office (GAO), a nonpartisan congressional agency that audits federal programs. The report went on to state that cloud phones operate at power levels well below the point at which such heating effects would take place. The amount of radiation emitted from the devices is actually minute, and the U. S. federal government places limits on how much radiation a cell phone can emit.

ii. Radiation Protection: A way out?

Radiation protection, sometimes known as radiological protection, is the science of protecting people and the environment from the harmful effects of ionizing radiation, which includes both particle radiation and high energy electromagnetic radiation. Radiation causes microscopic damage to living tissue, resulting in skin burns and radiation sickness at high exposures and statistically elevated risks of cancer, tumors and genetic damage at low exposures.

a. Shielding

The term 'biological shield' refers to a mass of absorbing material placed around a reactor, or other radioactive source, to reduce the radiation to a level safe for humans. The effectiveness of a material as a biological shield is related to its cross-section for scattering and absorption, and to a first approximation is proportional to the total mass of material per unit area interposed along the line of sight between the radiation source and the region to be protected. Hence, shielding strength or "thickness" is conventionally measured in units of g/cm2. The radiation that manages to get through falls exponentially with the thickness of the shield. In x-ray facilities, the plaster on the rooms with the x- ray generator contains barium sulfate and the operators stay behind a leaded glass screen and wear lead aprons. Almost any material can act as a shield from gamma or x-rays if used in sufficient amounts.

b. Shielding Design

Shielding reduces the intensity of radiation exponentially depending on the thickness. Column Having Mass in the chart above indicates mass of material, required to cut radiation by 50%, in grams per square centimeter of protected area. The effectiveness of a shielding material in general increases with its density.

c. Graded-Z shielding

Graded-Z shielding is a laminate of several materials with different Z values (atomic numbers) designed to protect against ionizing radiation. Compared to single-material shielding, the same mass of graded-Z shielding has been shown to reduce electron penetration over 60%. It offers several benefits:

1. Protection from radiation damage
2. Reduction of background noise for detectors
3. Lower mass compared to single-material shielding

Designs vary, but typically involve a gradient from high-Z (usually tantalum) through successively lower-Z elements such as tin, steel, and copper, usually ending with aluminum. Sometimes even lighter materials such as polypropylene or boron carbide are used.

In a typical graded-Z shield, the high-Z layer effectively scatters protons and electrons. It also absorbs gamma rays, which produces X-ray fluorescence. Each subsequent layer absorbs the X-ray fluorescence of the previous material, eventually reducing the energy to a suitable level. Each decrease in energy produces bremsstrahlung and Auger electrons, which are below the detector's energy threshold. Some designs also include an outer layer of aluminum, which may simply be the body coating of any gadgets. These are some of the ways which we could think of to nullify the radiation caused by portable devices.

Conclusion

In this research paper we examined the four major issues related to cloud computing that are: low bandwidth, power consumption, Security issues and health hazards. Low bandwidth occurs due to challenging network conditions, making access to remote resources often slow or sometimes temporary unavailable. Power consumption is due to the high configuration in which the device runs on, which demands a huge battery life. Security issues are one of the areas in which the developers were never concerned about and it had showed in the later versions. If the certain holes are not patched up we could see a decline in devices users. And last, health concerns which could take away our life with scientists predicting cancer and other life threatening diseases is upon us but the developers and user are giving a deaf ear to all that. Hopefully this paper might help the cloud developers to modify their system design in such a way to could really enhance the potential of cloud computing.

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Biography

K. Priyadarsini was born in Chennai in 1984. She received her B. E. degree in Computer Science from Anna University, Chennai in 2006 and she is pursuing her M. Tech in Computer Science at VIT University, Vellore. Her area of interest is Cloud computing. She is having more than 3 years of experience in teaching and she has published more than 5 international journals.

Dr. S. SaravanaKumar has more than 14 years of teaching and research experience. He did his Postgraduate in ME in Computer Science and Engineering at Bharath engineering college, chennai, and Ph. D in Computer Science and Engineering at Bharath University, Chennai. He occupied various positions as Lecturer, Senior Lecturer, Assistant Professor, Associate Professor and Professor & HOD. He has published more than 150 research papers in High Impact factor International Journal, National and International conferences and visited many countries like Taiwan, Bangok and Singapore. He has guiding a number of research scholars in the area Adhoc Network, ANN, Security in Sensor Networks, Mobile Database, Cloud Computing and Data Mining under Bharath University Chennai, Sathayabama University, Vels University.

Karthik Sekhar was born in Chennai, in 1981. He received the B. E degree from University of Madras, Chennai, in 2003 and M. Tech degree from Sathyabama University, Chennai in 2005 and also working towards the PhD. Degree in the area of parallel stimulation algorithm. He is having more than 9 years of teaching experience and published more than 10 international journals