KAITS MAGAZINE

DEPARTMENT OF INFORMATION TECHNOLOGY
SRI VENKATESWARA COLLEGE OF ENGINEERING

VOLUME 15 JUL-DEC 2019

INSIDE THIS ISSUE:

INTERNET OF THINGS (IOT)

It's believed by many that in the future, when human population has swelled to unprecedented levels, water will be so scarce that fighting over it will be the cause of most wars. Wouldn't it be better if we just wasted less? Two Californian firms that have come up with well – a smart home initiative that uses sensors to monitor water usage.IOT water Conversation system hopes to reduce waste. The firms realised early on that – unlike with power use – very few people have any idea how much water they use. The core of the design is a network of sensors attached to each water outlet, like kitchen and bathroom sinks, toilet, washing machine and the biggest user of all – the shower. Each component is self-powered and doesn't require professional installation, and when each sensor is connected via WiFi, the information is then sent to the customer's smart phone so they have an accurate tally of all their water usage. Users start by entering household information into the app, like number of residents, location of property, and the app works out how much the household should be using per day. This is then illustrated using a digital tank of water, which depletes as water is used revealing a desert behind the water. The hope is that water usage will no longer feel so abstract and users will start to conserve more. The app also creates daily, weekly, monthly and yearly usage charts. This is then illustrated using a digital tank of water, which depletes as water is used revealing a desert behind the water. The hope is that water usage will no longer feel so abstract and users will start to conserve more.

Submitted by
P.Revanth
17BF1A1240
IT

CHIPK9 - A LOVABLE PET

In the 16 years since Sony introduced AIBO, the first robotic pet, consumer robotics has not exactly flowered. AIBO was a smooth-moving, shockingly intelligent and incredibly expensive product. However, its influence continues even to this day and can be seen in WowWee's charming and mostly effectiveCHiP robot dog .Designed for everyone eight-years-old and above,themostly. white (with silver-blue-accents), $199 CHiP comes complete with a charging base, SmartBall and SmartBand.

CHiP requires no set-up, which is good since the sheaf of instruction papers (a lot of them for different languages) fails to entirely explain how to play with CHiP and use its accessories (the band and ball). There is also a free app (iOS and Google Play) that you will want to install, which actually does a better job of outlining all the voice, touch and motion commands you can use with CHiP. These details are hidden under an unlabeled medal icon, but once you find them they are quite helpful.

Band on the hand

A key component of life with CHiP is the SmartBand. It's a rechargeable, Bluetooth-based wristband that you use to communicate with CHiP. There's a center button with the word "CHiP" on it that you can press to get the device's attention or stop it from whatever it's currently doing . You can use a

place button at the top that lets you make CHiP

follow you around a fetch button that directs him to play with his ball and a thumbs up to signal positive reinforcement. We use the follow button to make CHiP follow us around the office. It was supposed to be able to press the "CHiP" button for two seconds and then use the SmartBand to remotely control CHiP. The Like button is a nice idea, but since pressing it elicits zero response from the robot, I quickly forgot about using it.

Play a Game

CHiP also ships with its own toy, a plastic, Bluetooth-enabled ball that takes four AAA batteries. Once you switch it on, it automatically pairs with the CHiP. When we hit the fetch button on the Smart Band, the lights on both CHiP and the Smart Ball turned yellow and the little robot went after it with all the enthusiasm of a terrier attacking its chew toy. CHiP can find its ball and play fetch. CHiP is very good at finding and corralling the SmartBall

with its front paws. There's a magnet in CHiP's chest and one in the ball which, once they align, keep the together .

Speak and hear

CHiP makes a variety of dog-like sounds when you're playing with it. It barks and cries and chirps happily. When it gets up from its charging base it makes an odd, child-like yawing sound. Almost a year ago, when Wow Wee showed the first CHiP prototype, speech recognition was not only the menu, it was not under consideration. Halfway through development the team relented and now CHiP can respond to a handful of spoken commands.

Submitted by
D.Sahiti
15BF1A1213
IT

Bitcoin and Block Chain

Blockchain serves as an immutable ledger which allows transactions take place in a decentralized manner. Blockchain-based applications are springing up, covering numerous fields including financial services, reputation system and Internet of Things (IoT), and so on. However, there are still many challenges of blockchain technology such as scalability and security problems waiting to be overcome. This paper presents a comprehensiveoverview on blockchain technology. We provide an overview of blockchain architecture firstly and compare some typical consensus algorithms used in different blockchains. Furthermore, technical challenges and recent advances are briefly listed. We also lay out possible future trends for blockchain.

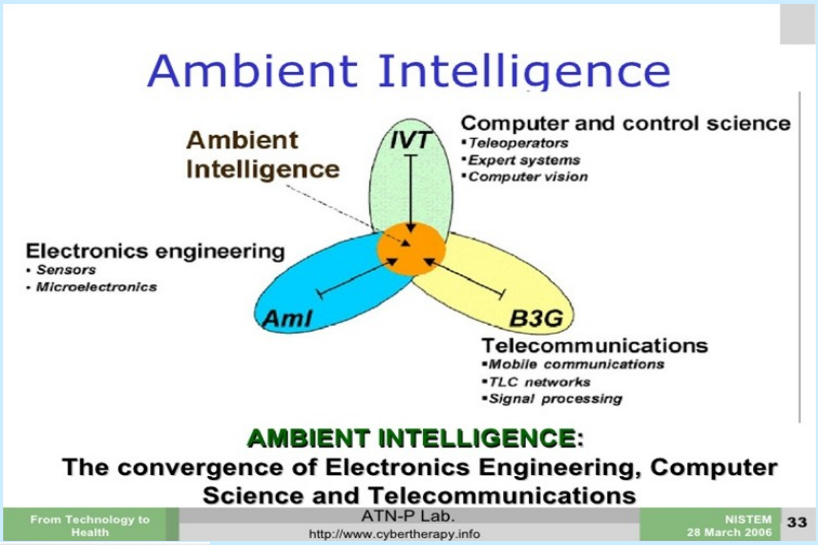
Introduction :

As Blockchain stands, it is the main technological innovation of Bitcoin, and has changed the idea of banking as bankers know it. Blockchain is broken up into individual blocks that hold specific information, which are evidently called “blocks”. “A block is the ‘current’ part of a Blockchain which records some or all of the recent transactions, and once completed goes into the Blockchain as permanent database. Each time a block gets completed, a new block is generated.” (Blockchain Investopedia) This pioneering technology is very revolutionary because it makes it easier to track the transfers of Bitcoin, but many technologists have been realizing that there are more applications for this municipal ledger. Blockchain has many different characteristics that are exceedingly valuable for financial services including insight companies and technology manufacturers. These features incorporate the idea of security, absolute digital transactions, settlement times, health records, retail, and energy billing Philip Ryan). For security, “Block chain has the ability to improve edge security and encrypt data during transactions, rather than when the data is moving or at rest”. This makes the ledger sound and safe from hackers who try to gain free bitcoins through the transfer of bitcoins in data hacking. For true digital transactions, Blockchain enables secure connections, which is one of the most important features pertaining to Blockchain. . Health records are very important and Blockchain can be of help for securely storing all health archives and sharing them when needed. All of these factors are extremely vital to Blockchain and are some of the key reasons that it is so innovative to the field of finance and banking. There is one more reason that seems to be prevalent over the others and can influence the way people understand banking. Nowadays crypto currency has become a buzzword in both industry and academia. As one of the most successful crypto currency, Bitcoin has enjoyed a huge success with its capital market reaching 10 billion dollars in 2016 [1]. With a specially designed data storage structure, transactions in Bitcoin network could happen without any third party and the core technology to build Bitcoin is blockchain, which was first proposed in 2008 and implemented in 2009 [2]. Blockchain could be regarded as a public ledger and all committed transactions are stored in a list of blocks. This chain grows as new blocks are appended to it continuously. There are two reasons why you need to know about Blockchain: technology doesn't have to exist publicly. It can also exist privately - where nodes are simply points in a private network and the Blockchain acts similarly to a distributed ledger.Block-chain technology is broader than finance. It can be applied to any multi-step transaction where traceability and visibility is required. Supply chain is a notable use case where Blockchain can be leveraged to manage and sign contracts and audit product provenance .

Submitted by
C.Reddy Lahari
15BF1A1211
IT

AMBIENT INTELLIGENCE

Ambient intelligence is an emerging discipline that brings intelligence to our everyday environments and makes those environments sensitive to us. Ambient intelligence (AmI) research builds upon advances in sensors and sensor networks, pervasive computing, and artificial intelligence. contributing fields have experienced tremendous growth in the last few years, AmI research has strengthened and expanded.AmI research is maturing. AmI is able to deliver services automatically in anticipation of the needs of the inhabitants and visitors.



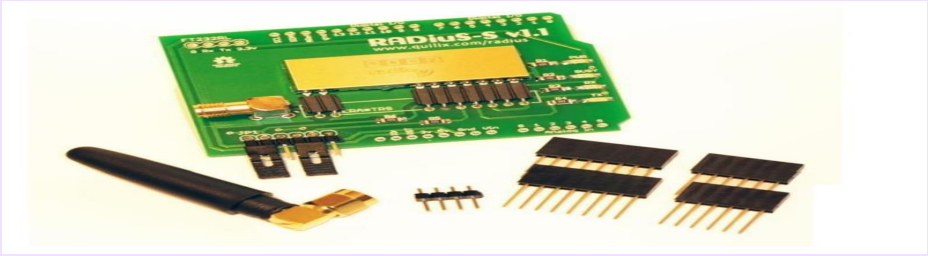
Submitted by
17BF1A1230
K.Manoja
IT

Bringing Home Automation to Life with Open Source Technology

A home automation system is fundamentally based on sensing human activity or environmental conditions in various areas of the house, and turning appliances on or off, or dimming lights - either in direct response to user input or according to a predetermined program. Accordingly, the system typically comprises large numbers of small, low-cost sensor devices, such as sensors for ambient-light, occupancy, or temperature. It is designed extremely easy to use, the module can work without an RF protocol stack, while point-to-point, peer-to-peer or mesh network connectivity options are handled by the application software. The module also contains a built-in temperature sensor.

The information from sensors can be used directly to control an appliance or a lamp, or may feed information back to a central controller responsible for overall smart home management. Based on advanced architectures boards have very low power consumption and so - in the hands of a skilled designer - can operate from a small battery for long periods without replacement. Some of the smallest and least expensive of these boards are easily capable of controlling a sensor and transmitting the sensed data to a central

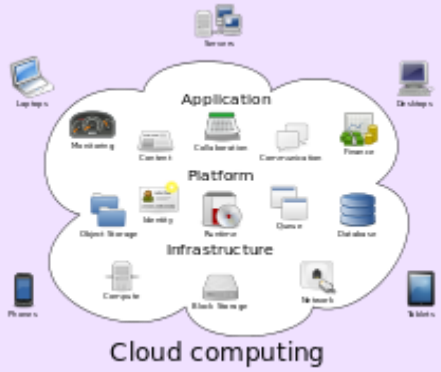
Such a system could monitor various conditions around the home - including room occupancy, ambient light intensity, ambient temperature, and time of day - to implement these controls.

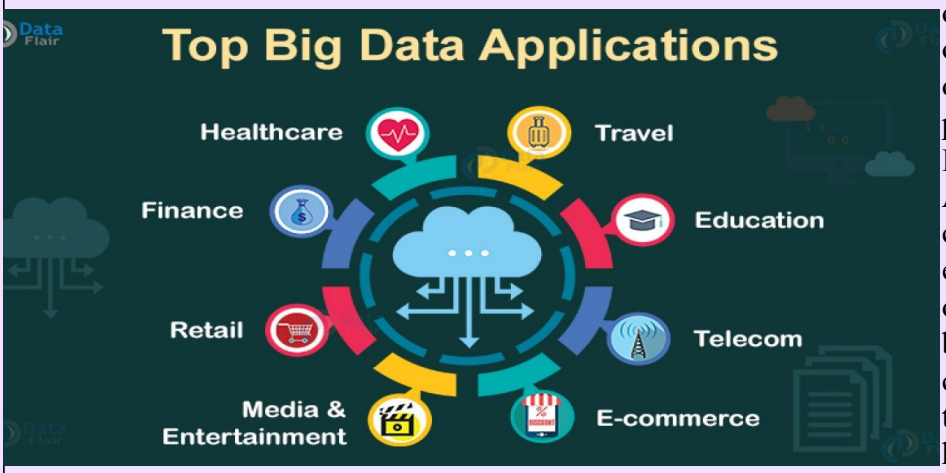


Submitted by
G.Jeevana Sai
16BF1A1214
IT

Big Data & CLOUD COMPUTING

Cloud computing is the delivery of hosting services that are provided to a client over the Internet.





Uses of cloud computing

- Create new apps and services
  Store, back up and recover data
- Host websites and blogs
- Stream audio and video
- Deliver software on demand

Top benefits of cloud computing

1. Cost

Cloud computing eliminates the capital expense of buying hardware and software and setting up and running on-site datacenters—the racks of servers, the roundcooling, the IT experts for managing the infrastructure. It adds up fast.

2. Speed

Most cloud computing services are provided self service and on demand, so even vast amounts of computing resources can be provisioned in minutes, businesses a lot of flexibility and taking the pressure off capacity planning.

3. Global scale

The benefits of cloud computing services include the ability to scale elastically. In cloud speak, that means delivering the right amount of IT resources storage, bandwidth—right when its needed and from the right geographic location.

Types of cloud services:
IaaS, PaaS, SaaS

Infrastructure-as-a-service (IaaS) : The most basic category of cloud computing services. With IaaS, you rent IT infrastructure and virtual machines (VMs), storage, networks, operating systems from a cloud provider on a pay as-you-go basis.

Platform as a service (PaaS)

Platform-as-a-service (PaaS) refers to cloud computing services that supply an on environment for developing, testing, delivering and managing software applications. PaaS is designed to make it easier for developers to quickly create web or mobile apps, without setting up or managing the underlying infrastructure of servers, storage, network and databases needed for development.

Software as a service (SaaS)

Software-as-a-service (SaaS) is a method for delivering software applications over the Interdemand and typically on a subscription basis. With SaaS, cloud providers host and manage the software application and underlying infrastructure and handle any maintenance, like software upgrades and security patching.

Types of cloud deployments: public, private, hybrid

Public cloud

Public clouds are owned and operated by a third computing resources like servers and storage over the Internet software and other supporting infrastructure is owned and managed by the cloud provider.

Private cloud

A private cloud refers to cloud computing resources used exclusively by a single business or organisation. A private cloud can be physically located on the company's oncompanies also pay third-party service providers to host their private cloud.

Hybrid cloud

Hybrid clouds combine public and private clouds, bound together by technology that allows data and applications to be shared between them. By allowing data and applications hybrid cloud gives businesses greater flexibility and more deployment options.

Submitted by
L.Sowmya
15BF1A1225
IT

Virtualization in Cloud Computing

A number of characteristics define cloud data, applications services and infrastructure:

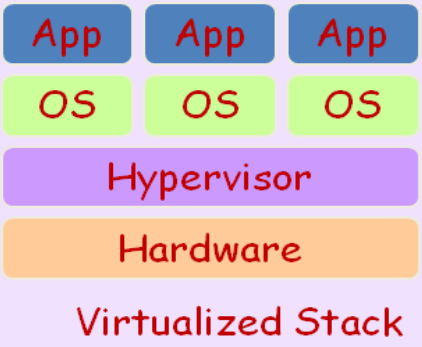
Remotely hosted: Services or data are hosted on remote infrastructure.

Ubiquitous: Services or data are available from anywhere.

Commodified: The result is a utility computing model similar to traditional that of traditional utilities, like gas and electricity - you pay for what you would want!

Virtual workspaces:

An abstraction of an execution environment that can be made dynamically available to authorized clients by using well-defined protocols, Resource quota (e.g. CPU, memory share), Software configuration (e.g. O/S, provided services).



Virtualized Stack

Implement on Virtual Machines (VMs):

Abstraction of a physical host machine,

Hypervisor intercepts and emulates instructions from VMs, and allows management of VMs, VMWare, Xen, etc.

Provide infrastructure API:

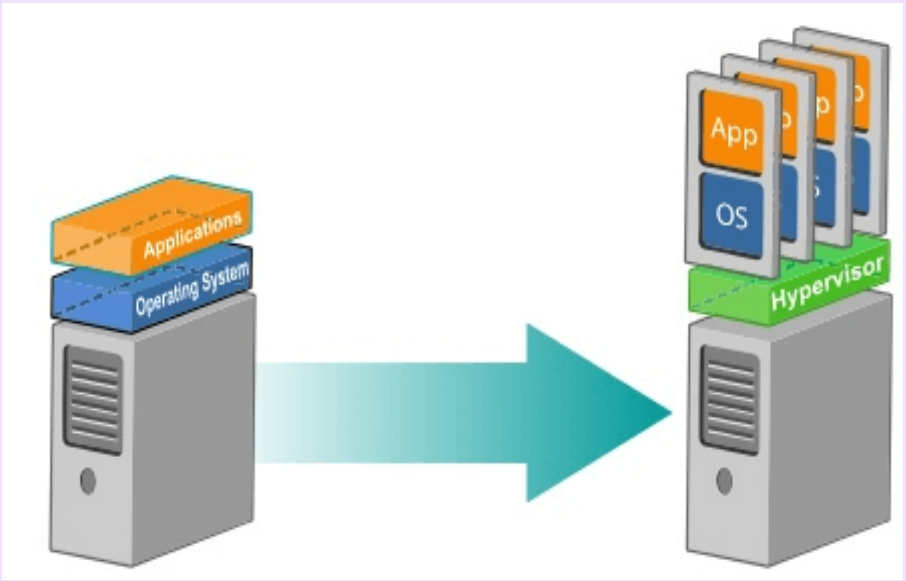
Plug-ins to hardware/support structures.

•VM technology allows multiple virtual machines to run on a single physical machine.

Advantages of virtual machines:

- Run operating systems where the physical hardware is unavailable,
- Easier to create new machines, backup machines, etc.,
- Software testing using "clean" installs of operating systems and software,
- Emulate more machines than are physically available,
- Timeshare lightly loaded systems on one host,
- Debug problems (suspend and resume the problem machine),
- Easy migration of virtual machines (shutdown needed or not).

While the benefits of virtualisation and cloud computing are now obvious, that wasn't always the case, and it's hypervisor technology that has helped drive innovation in the world of cloud computing. The hypervisor makes it possible to manage the concept of virtualisation, often via a comprehensive OnApp platform. By allowing the physical host machine to operate multiple virtual machines as guests, enterprises are able to maximise the use of computing resourcesand improve the utilisation of underlying hardware.

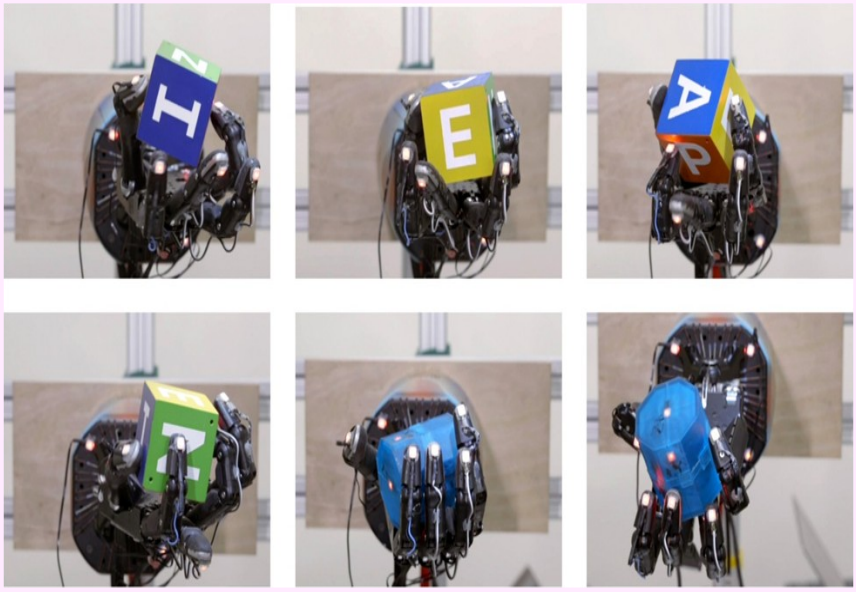


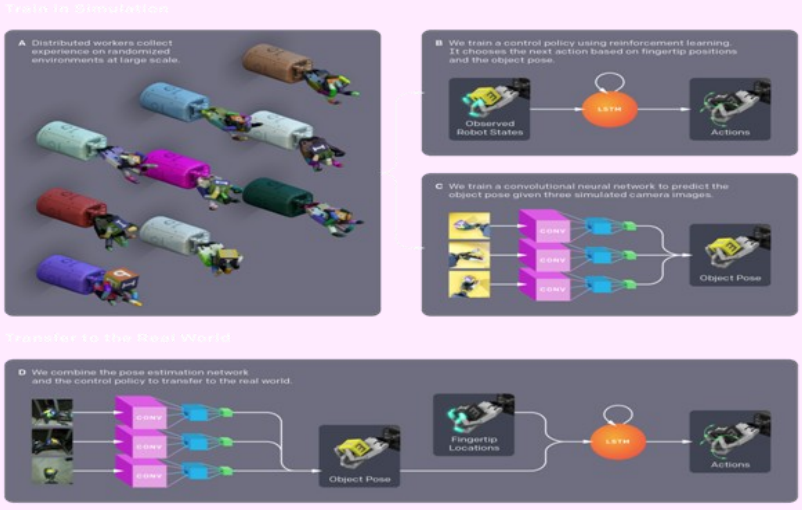
Submitted by
P.Usha Sree
15BF1A1240
IT

Dactyl – OpenAI's Robot Hand trained itself without any Human

Picking up an object and analyzing it may be an arbitrary task for humans, but don't tell a machine that! Teaching a computer to detect objects, pick them up and analyze them has turned out to be way harder than anybody had initially imagined. What a few months old toddler can do is something that takes years of training for a machine to learn (that's just one simple example of why we are nowhere near general artificial intelligence).

Robot hands have become the primary application machine learning researchers use to showcase their projects. And OpenAI, always at the cutting edge of AI research, have trained a robot hand that can manipulate objects with mind boggling dexterity. The system, which OpenAI is calling Dactyl, has been trained entirely using round after round of simulations. Dactyl learns to do tasks from scratch using the same reinforcement learning techniques that power the popular OpenAI Five System.The task OpenAI researchers gave Dactyl was to reposition a given object (like a letter block) such that a new position is visible every time. Three cameras monitor how the hand works while the position and movement of fingertips is tracked in real-time. As more and more simulations were performed, Dactyl used human-level strategies to achieve the desired results. Again, this wasn't labeled or taught, it came as a result of the simulations.The below image, posted by OpenAI, shows how they built this system .This may seem like arbitrary research at first glance but it might be the first step towards general AI. Sure we have seen tons of robot hands before (), but what makes Dactyl different is that it isn't programmed to perform any one single task. Place any object in that hand, and it will learn by itself how to change it's orientation. This goes to show that robots can adapt to human-like behavior. It will take a lot more experiments and research to perfect this and make it useful in a practical scenario, but at least the stepping stone has been laid down.





Submitted by
P.chaitanya
16BF1A1242
IT

Cloud Computing

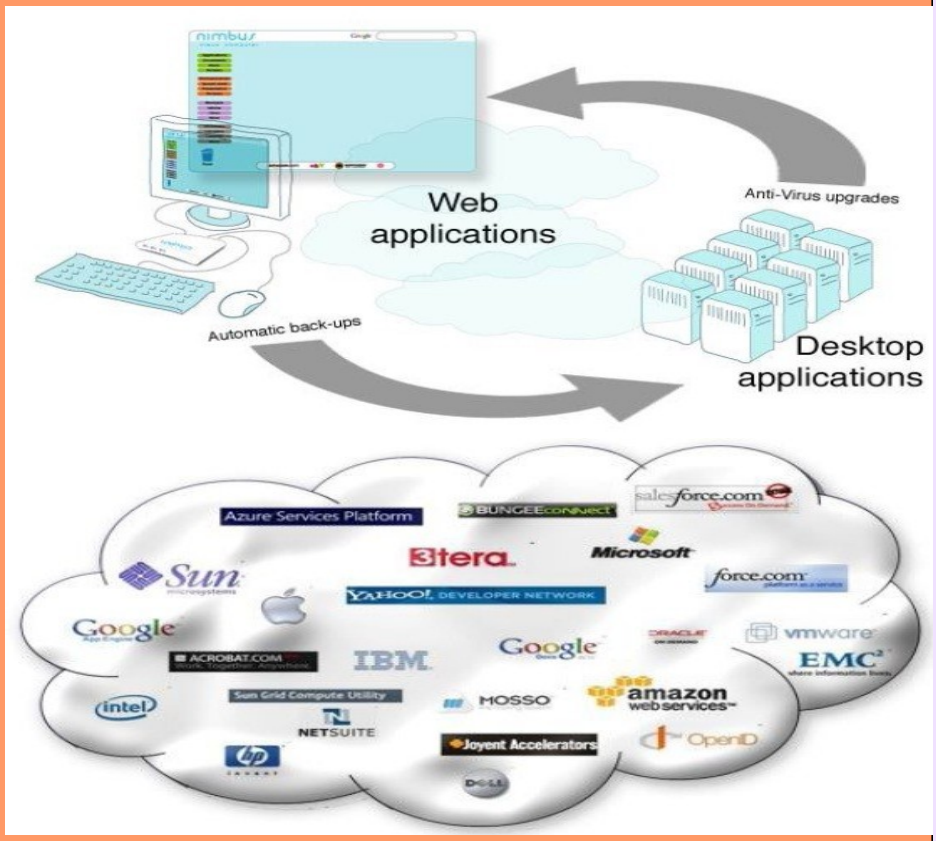
Cloud computing is the latest of computing paradigms. It promises to change the way people use computing resources. Using Internet as the backbone, cloud computing asserts that it is possible to provide computing as a "utility" to end users "as and when needed" basis. Cloud computing has a potential to serve users of all kinds: individual users, institutions, industry at large. Cloud computing is a business model that harnesses the web as the ultimate business platform. Cloud computing is impregnated with immense potential for array of practical applications. The model is expected make computing needs available via web on retail basis and is called cloud computing. Cloud computing intends to make the Internet the ultimate home of all computing resources- storage, computations, applications and allow end user toavailable them in quantities of her choice, location of their preferences, for duration of their liking. In other world web become the provision store for all your computing needs.

Introduction of Cloud Computing

Why do I buy a computer when I use it for only few hours a week? Why do I buy a printer when I need printing occasionally? Is it possible to avail computing on "need basis" as it is possible in case of "electricity" or "water? In other words, can I avail computing resources such as storage, application, and infrastructure as a "utility"? The answer is yes.

And the name of model which is expected make computing available on retail basis is called cloud computing. Cloud computing intends to make the Internet the ultimate home of all computing resources- storage, computations, applications and allow end user (to avail these resources in quantities of her choice, location of their preferences, for duration of their liking. In other world web become the provision store for all your computing needs. A business model built on this paradigm offers these resources as services either on pay per use basis or rental basis.

Cloud computing infrastructure allows enterprises to achieve more efficient use of their IT hardware and software investments. Cloud computing can increase profitability by improving resource utilization. Pooling resources into large clouds drives down costs and increases utilization by delivering resources only for as long as those resources are needed. Cloud computing allows individuals, teams, and organizations to streamline procurement processes and eliminate the need to duplicate certain computer administrative skills related to setup, configuration, and support.



Why cloud computing?

Cloud computing infrastructure accelerates and fosters the adoption of innovations. Cloud computing can enable innovations. It alleviates the need of innovators to find resources to develop, test, and make their innovations available to the user community. Innovators are free to focus on the innovation rather than the logistics of finding and managing resources that enable the innovation. Cloud computing helps leverage innovation as early as possible to deliver business value to a company and its customers.

Cloud computing infrastructure allows enterprises to achieve more efficient use of their IT hardware and software investments. Cloud computing can increase profitability by improving resource utilization. Pooling resources into large clouds drives down costs and increases utilization by delivering resources only for as long as those resources are needed.

Infrastructure as a Service, or IaaS, gives business access to vital web architecture, such as storage space, servers, and connections, without the business need of purchasing and managing this internet infrastructure themselves.

Platform as a Service (PaaS) clouds are created, many times inside IaaS Clouds by specialists to render the scalability and deployment of any application trivial and to help make your expenses scalable and predictable

Software as a Service (SaaS) is relatively mature, and the phrase's use predates that of cloud computing. Cloud applications allow the cloud to be leveraged for software architecture, reducing the burdens of maintenance, support ,etc.

Submitted by
B.Bhavana
18BF1A1209
IT