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## CLOUD COMPUTING AND ITS RELEVANCE

Cloud computing is a type of computing that relies on sharing computing resources rather than having local servers or personal devices to handle applications.In cloud computing, the word cloud (also phrased as "the cloud") is used as a metaphor for "the Internet," so the phrase cloud computing means "a type of Internet-based computing," where different services -- such as servers, storage and applications -- are delivered to an organization's computers and devices through the Internet.

Cloud computing is comparable to grid computing, a type of computing where unused processing cycles of all computers in a network are harnesses to solve problems too intensive for any stand-alone machine.
The goal of cloud computing is to apply traditional supercomputing, or high-performance computing power, normally used by military and research facilities, to perform tens of trillions of computations per second, in consumer-oriented applications such as financial portfolios, to deliver personalized information, to provide data storage or to power large, immersive computer games. To do this, cloud computing uses networks of large groups of servers typically running low-cost consumer PC technology with specialized connections to spread data-processing chores across them. This shared IT infrastructure contains large pools of systems that are linked together. Often, virtualization techniques are used to maximize the power of cloud computing.

The standards for connecting the computer systems and the software needed to make cloud computing work are not fully defined at present time, leaving many companies to define their own cloud computing technologies. Cloud computing systems offered by companies, like IBM's "Blue Cloud" technologies for example, are based on open standards and open source software which link together computers that are used to to deliver Web 2.0 capabilities like mash-ups or mobile commerce.

Cloud computing has started to obtain mass appeal in corporate data centers as it enables the data center to operate like the Internet through the process of enabling computing resources to be accessed and shared as virtual resources in a secure and scalable manner.
For a small and medium size business (SMB), the benefits of cloud computing is currently driving adoption. In the SMB sector there is often a lack of time and financial resources to purchase, deploy and maintain an infrastructure (e.g. the software, server and storage). In cloud computing, small businesses can access these resources and expand or shrink services as business needs change. The common pay-as-you-go subscription model is designed to let SMBs easily add or remove services and you typically will only pay for what you do use.

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# Understanding Cloud Computing in a Grid Computing perspective

Grid and Cloud are two terms used in computing to refer to resource sharing techniques where multiple computing devices and Internet are involved. Let us see the fundamental architectural difference between these two massively used terminologies in the computer science world. Cloud computing eliminates the costs and complexity of buying, configuring, and managing the hardware and software needed to build and deploy applications. The applications are delivered as a service over the Internet, while Grid computing is a form of distributed computing whereby resources of two or many computers in a network is used at the same time, to solve a single problem.

Grid computing is the collection of computer resources from multiple locations that solves a common goal. Grid systems are basically designed for the collaboration of sharing resources. Grid computing combines computers from multiple administrative domains to reach a common goal, to solve a single task, and then may disappear quickly. The grid is a distributed system with non-interactive workloads that involve a large number of files. A grid computing set up is different from conventional high performance computing systems such as cluster computing. Grid size varies significantly. Grids are a "super virtual computer" composed of many networked loosely coupled computers acting together to perform large tasks.

A grid is more loosely coupled, heterogeneous, and geographically dispersed. Grids are often constructed with general-purpose grid middleware software libraries. One of the main strategies of grid computing is to use middleware to divide and allocate pieces of a program among several computers. Grid computing involves computation in a distributed fashion, which may also involve the aggregation of large-scale clusters. Distributed grids can be formed from computing resources belonging to multiple individuals or organizations. This can facilitate commercial transactions, as in utility computing, or make it easier to assemble volunteer computing networks. Due to the lack of central control over the hardware, there is no way to guarantee that nodes will not drop out of the network at random times.

Cloud computing is where an application doesn't access resources it requires directly, rather it accesses them through something like a service. So instead of talking to a specific hard drive for storage, and a specific CPU for computation, it talks to some service that provides these resources. The service then maps any requests for resources to its physical resources, in order to provide for the application. Usually the service has access to a large amount of physical resources, and can dynamically allocate them as they are needed

In this way, if an application requires only a small amount of some resource, say computation, then the service only allocates a small amount, say a couple of physical CPUs. If the application requires a large amount of some resource, then the service allocates that large amount, say a grid of CPUs. The application is relatively oblivious to this, and all the complex handling and coordination is performed by the service, not the application. In this way the application can scale well.

By moving to the cloud, many of the issues surrounding grid computing become a thing of the past. There is no longer a need to purchase enough servers to meet peak demand; resources are available on demand and can be turned off when no longer needed. With unlimited resources, scheduling conflicts go away because each job has access to a virtually infinite resource pool. Jobs can be completed faster for the same cost by using more servers. And you pay only for the resources you actually use.

One of the most important benefits provided by cloud technologies is agility. Users are able to connect to services more quickly, with fewer mistakes and greater consumption. Cloud solutions provide the ability to support users from anywhere at any time, adapt to business and market demands, and manage projects with greater efficiency. Business owners can create and manage services they deem necessary. Business users can consume these services much more quickly. The speed of delivery and ease of use improves the business and enables self-sufficiency. Accessibility to knowledge is increased, and the process now adds value rather than a burden. Cloud solutions provide a more agile way to empower the IT business. The right cloud-based solution can help organizations to cut costs and provide faster, better, and more flexible service to business users at minimal risk.

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# Technical Talks


CSI Cochin Chapter jointly with IEEE Kochi Subsection, organised a Technical Talk on "REST architecture style in era of Mobile Devices" on 17th October, 2013 at Cochin. The talk was led by Mr. Antony Alappatt, founder of MasterKube Software Solutions and Services (Pvt) Limited. He explained the concept of REST (REpresentational State Transfer) as a simple stateless architecture that generally runs over HTTP and its application in mobile technology, social networking websites and automated business processes.

REST is often used in mobile applications, social networking Web sites, mashup tools and automated business processes. The REST style emphasizes that interactions between clients and services is enhanced by having a limited number of operations. Flexibility is provided by assigning resources with their own unique universal resource indicators (URIs).

REST is an "architectural style" that basically exploits the existing technology and protocols of the Web, including HTTP (Hypertext Transfer Protocol) and XML. REST is simpler to use than the well-known SOAP (Simple Object Access Protocol) approach. This talk addressed very conceptual level REST architecture and its salient points.



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