Google Cloud Computing Foundation Course
Sowmya Kannan
Department of Computer Science
Indian Institute Technology Kharagpur

Lecture-3
Cloud Versus Traditional Architecture

So, how do traditional architecture is compared to the cloud. This topic aims to answer that question.

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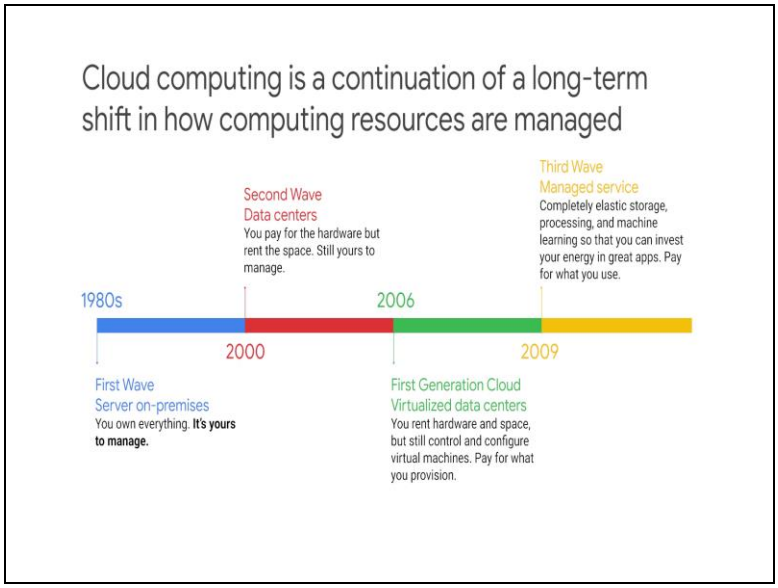

Cloud computing is essentially the continuation of a model where you can rent out computing infrastructure and have it managed by dedicated professionals. Equinix and CenturyLink are two of the largest data center providers in the US. They are exactly household names though, so why are the likes of Amazon, Microsoft and Google even in this business in particular why is Google doing cloud. The concept of cloud computing began with collocation.

Instead of operating your own data center you rented space in a colocation facility. This was the first wave of outsourcing IT with colocation the transfer of ownership was minimal. You still own the machines and you maintain them. Traditionally colocation is not thought of as cloud computing but it did begin the process of transferring IT infrastructure out of your organization. Organizations saved money with colocation by not having to build the data center and all of the associated services.

The colocation provider would simply rent out all of this to your organization. Next cloud computing involved virtualized data centers, virtual machines and API's. Virtualization provides elasticity you automate infrastructure procurement instead of purchasing hardware with virtualization you still maintain the infrastructure it is still a user controlled user configured environment. This is the same as an on-premises data center.

But now the hardware is in a different location. The next wave of cloud computing was to a fully automated elastic cloud. This involved a move from a user maintained infrastructure to automated services. In a fully automated environment developers do not think of individual machines. The service automatically provisions and configures the infrastructure used to run your applications. Google was uniquely positioned to propel organizations into this next wave of cloud computing. But what does Google have to do with the cloud?

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We believe that in the future every company regardless of size or industry will differentiate itself from its competitors through technology largely that technology will be in the form of software. Create software is centered on data. Therefore every company is or will become a data company. Google cloud provides a wide variety of services for managing and getting value from data at scale.

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This image shows our data center in Homina Finland. The facility is one of the most advanced and efficient data centers in the Google fleet, its cooling system which uses seawater from the bay of Finland reduces energy use and is the first of its kind anywhere in the world. We are one of the world's largest corporate purchasers of wind and solar energy. We have been 100% carbon neutral since 2007. The virtual world is built on physical infrastructure and all those racks of humming servers use vast amounts of energy.

Together all existing data centers use roughly 2% of the world's electricity. So, we work to make data centers run as efficiently as possible. Our data centers were the first to achieve ISO 14001 certification a standard that maps out a framework for improving resource efficiency and reducing waste.