Unit

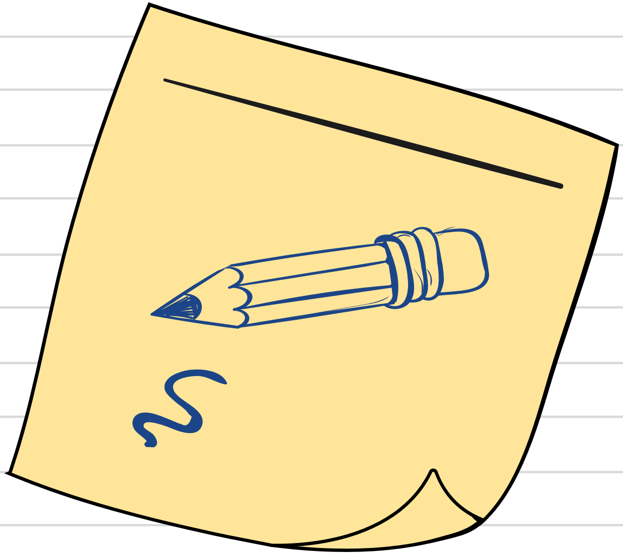
4

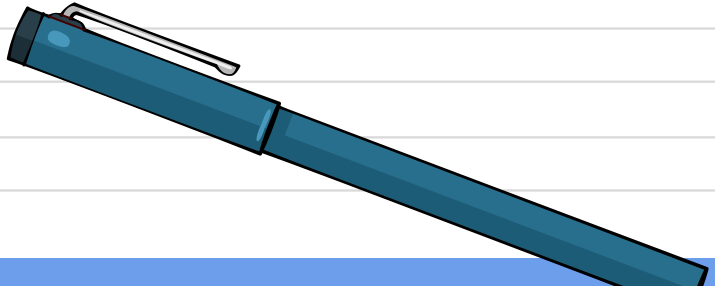
Economics in Cloud

Contents

Cloud economics!

Cloud economics is the study of cloud computing costs and benefits and the economic principles that underpin them.





Developing an Economic Strategy

- Reducing operating costs and optimizing IT environments are pivotal to understanding and being able to compare the cost models behind provisioning on-premise and cloud-based environments.
- The pricing structures used by public clouds are typically based on utility-centric pay-per-usage models, enabling organizations to avoid up-front infrastructure investments.
- These models need to be assessed against the financial implications of on-premise infrastructure investments and associated total cost-of-ownership commitments


CONSUMPTION ALERTING
ROLE BASED ACCESS
PRICING CALCULATOR
COST ANALYSIS REPORTING
BUDGETING & AUDITING
COST MANAGEMENT FRAMEWORK
COST INSPECTION
GOVERNANCE

In detail...

1. Visibility on Cloud Inventory

According to a recent survey of IT professionals, 75% report, they lack visibility of their cloud resources. This lack of visibility into resources in the cloud can lead to poor management of those resources. Effective cloud cost management begins with an in-depth analysis of your entire infrastructure. And if some resources in the cloud are going unused due to lack of awareness, but the organization is still paying for them, cloud costs will climb unnecessarily – and cut into the infrastructure savings and other financial benefits the cloud can bring. Admins who have access to a single pane of glass and detailed Resource Dashboards are equipped to better organize, manage, and optimize that ecosystem across all accounts, clouds, departments, and teams.

2. Cost Analytics

Complete visibility on the cloud services used, the actual usage patterns and trends is the first step. No matter your cloud environment, in addition to tracking what you have spent, it is important to project what you will be spending. You need consolidated as well granular details in the form of interactive graphical and tabular reports across multiple dimensions, time frames in a multi-cloud environment to correlate data for analysis and reporting against business objectives.

In detail...

3. Role Based Access

Permit users to actively manage the infrastructure after setting an Enterprise-wide mechanism that clearly defines permissions and accessibility within the platform. Limit the data and actions visible to users by organizations and roles and identify who launched, terminated, or changed infrastructure, and what they did to take corrective action and control costs.

4. Controlled Stack Templates

A crucial characteristic of any DevOps team is to enable teams more autonomy over-provisioning resources without the red tape and extensive time delay of traditional IT environments. If it is implemented without the accompanying automation and process best practices, decentralized teams have the potential to produce convoluted and non-standard security rules, configurations, storage volumes, etc. and therefore drive up costs. Using predefined stack templates, Administrators can bake in security, network, and instance family/size configurations, so that the process of deploying instances is not only faster but aligned with the Departmental user's roles and privileges and ensures only specific Resources are provisioned.

In detail...

5. Automated Alerts and Notifications

Stay on top of day-to-day changes in your environment, and participate in the critical decision by sharing standard and custom built reports with details on cost, usage, performance with stakeholders. Automated alerts and notifications about authorization failures, budget overruns, cost spikes, untagged infrastructure result in increased visibility and accountability.

6. Policy Based Governance

Use cloud-based governance tools to track cloud usage and costs and alert administrators when the total usage for the account is greater than a certain value or when the total usage for a vendor specific product is greater than a certain value helps control cost. Schedule operational hours to automatically shut down & start virtual machines, and automated events that alert administrators on volumes that have been disassociated from Virtual machines (standalone VMs) for more than a set number of days. In short, use integrated data sources, metadata, or custom tags to define a set of rules that lead to improved cost management, reporting and optimization.

In detail...

7. Budgets

Define and allocate budgets for Departments, cost centers, projects and ensure approval mechanisms to avoid cloud cost overrun by sending out alerts when thresholds are breached. Use the Showback report to chargeback Departments for their cloud usage and limit the cloud cost and use of resources. This alignment of cost with value ensures the anticipated business benefit once the cloud resources are in production

Exploring The costs

Up-Front Costs

Up-front costs are associated with the initial investments that organizations need to make in order to fund the IT resources they intend to use. This includes both the costs associated with obtaining the IT resources, as well as expenses required to deploy and administer them.

- Up-front costs for the purchase and deployment of on-premise IT resources tend to be high. Examples of up-front costs
for on-premise environments can include hardware, software, and the labor required for deployment.
- Up-front costs for the leasing of cloud-based IT resources tend to be low. Examples of up-front costs for cloud-based
environments can include the labor costs required to assess and set up a cloud environment.

On-going Costs

On-going costs represent the expenses required by an organization to run and maintain IT resources it uses.

- On-going costs for the operation of on-premise IT resources can vary. Examples include licensing fees, electricity, insurance, and labor.

- On-going costs for the operation of cloud-based IT resources can also vary, but often exceed the on-going costs of on-premise IT resources (especially over a longer period of time). Examples include virtual hardware leasing fees, bandwidth usage fees, licensing fees, and labor.

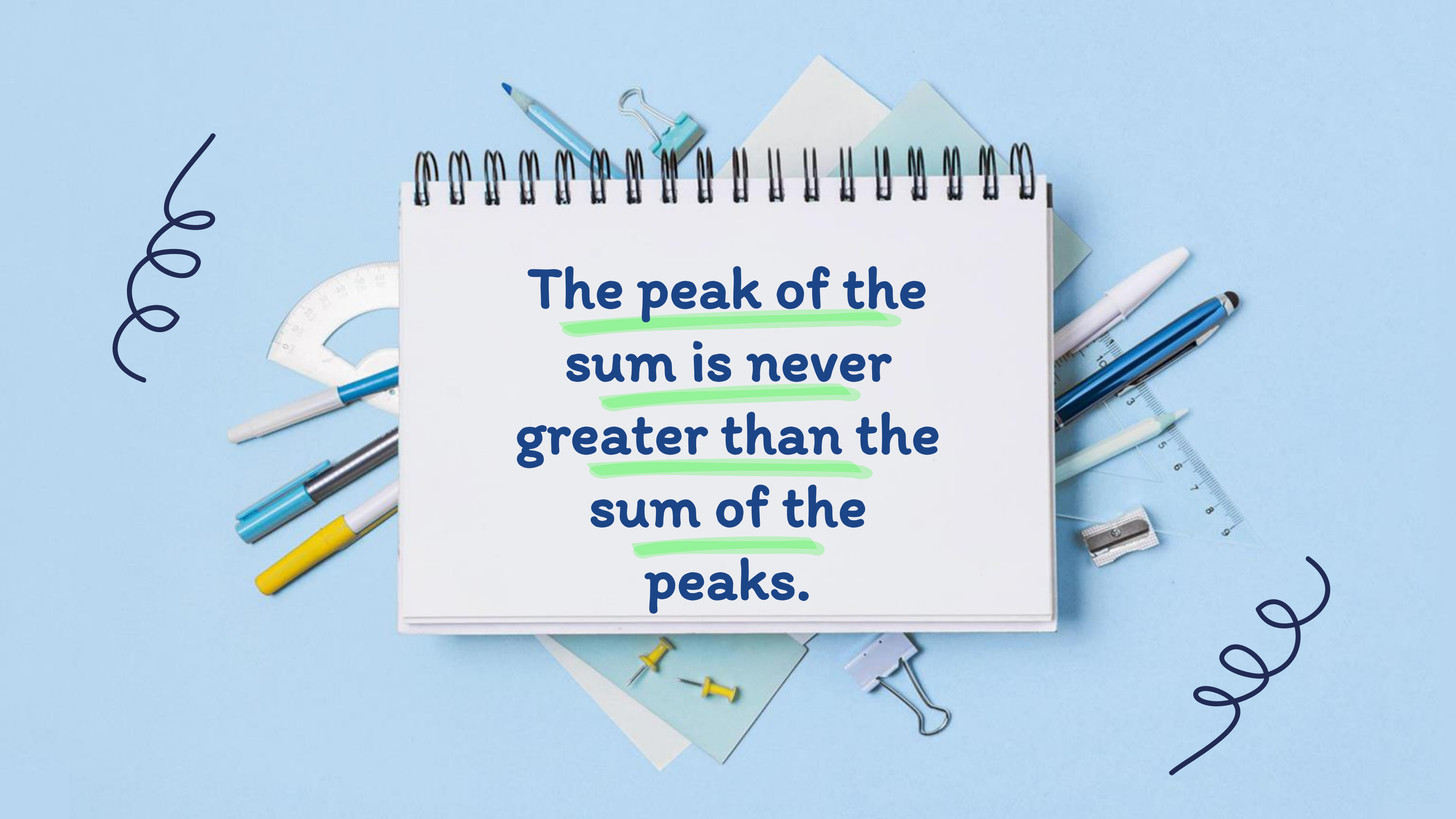
Laws of cloudonomics


Utility services cost less even though they cost more.

Although utilities cost more when they are used, they cost nothing when they are not. Consequently, customers save money by replacing fixed infrastructure with Clouds when workloads are spiky, specifically when the peak-to-average ratio is greater than the utility premium.

On-demand trumps forecasting.

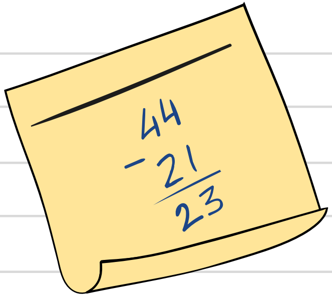
Forecasting is often wrong, the ability to up and down scale to meet unpredictable demand spikes allows for revenue and cost optimalities.


The peak of the sum is never greater than the sum of the peaks.

Enterprises deploy capacity to handle their peak demands. Under this strategy, the total capacity deployed is the sum of these individual peaks. However, since clouds can reallocate resources across many enterprises with different peak periods, a cloud needs to deploy less capacity.

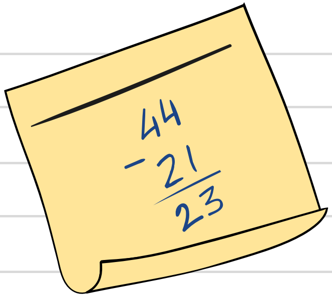
Aggregate demand is smoother than individual.

Aggregating demand from multiple customers tends to smooth out variation. Therefore, Clouds get higher utilization, enabling better economics.



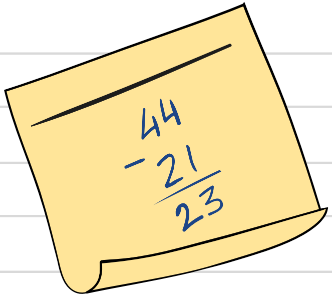
Average unit costs are reduced.

They are reduced by distributing fixed costs over more units of output. Larger cloud providers can therefore achieve economies of scale.



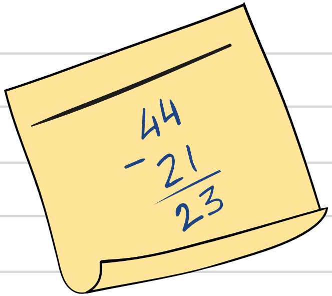
Superiority in numbers.

Superiority in numbers is the most important factor in the result of a combat. Service providers have the scale to fight rogue attacks.



Space-time is a continuum.

Organizations derive competitive advantage from responding to changing business conditions faster than the competition. With Cloud scalability, for the same cost, a business can accelerate its information processing and decision-making.

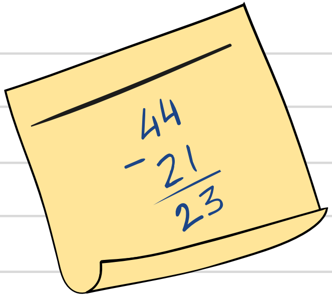


Dispersion is the inverse square of latency.

Reduced latency is increasingly essential to modern applications. A Cloud Computing provider is able to provide more nodes, and hence reduced latency, than an enterprise would want to deploy.

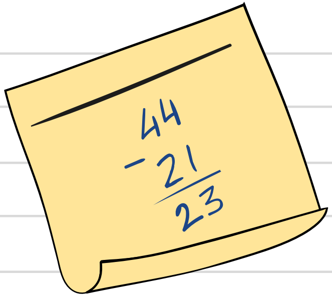
Don’t put all your eggs in one basket.

A data center is a very large object. Private data centers tend to remain in locations for reasons such as being where the company was founded, or where they got a good deal on property or a lease. A Cloud service provider can locate greenfield sites optimally and without such limits of legacy logic.



An object at rest tends to stay at rest.

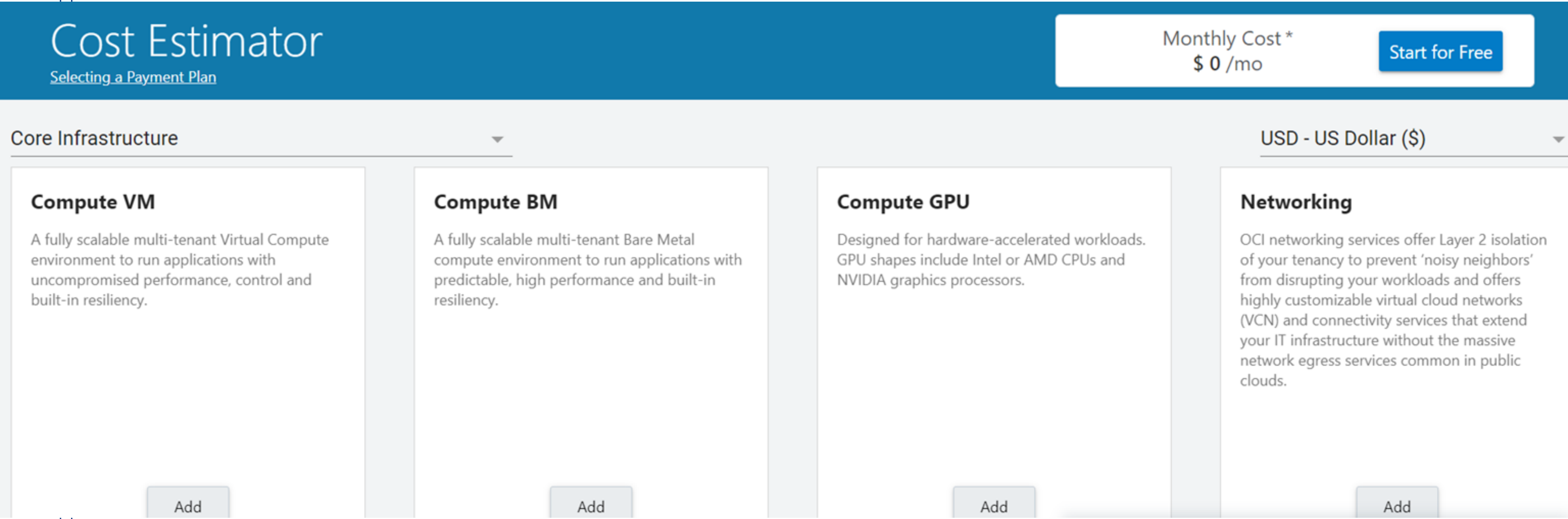
Reduced latency is increasingly essential to modern applications. A Cloud Computing provider is able to provide more nodes, and hence reduced latency, than an enterprise would want to deploy.



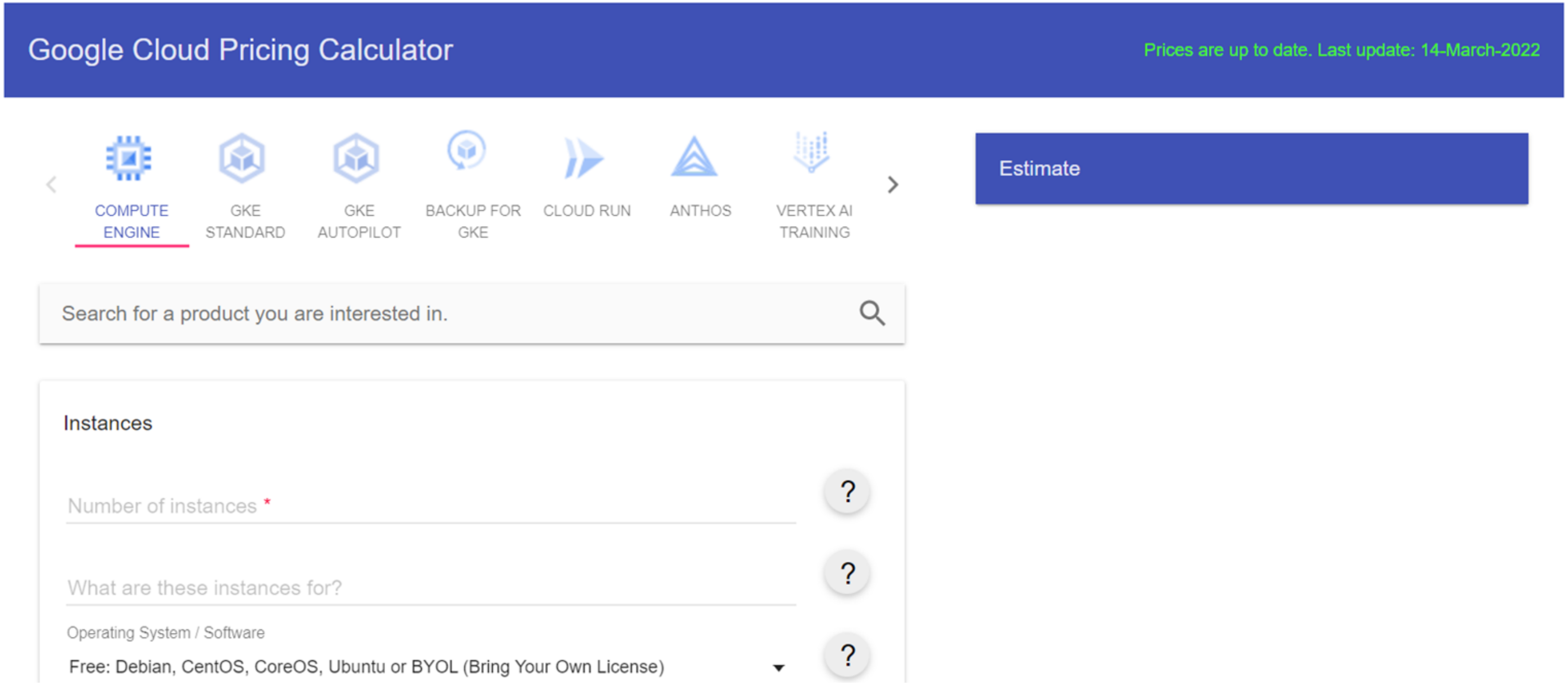
Cloud Cost Estimator

It helps to determine how much will it cost you, if you happen to purchase...

An example Oracle cloud Cost Estimation Tool…



There's one for google too...



Economics

of

Cloud

Economics of Cloud Computing is based on the PAY AS YOU GO method. Users/Customers must have to pay only for their way of the usage of the cloud services. It is definitely beneficial for the users. So the Cloud is economically very convenient for all.

Economical background of the cloud is more useful for developers in the following ways:

- Pay as you go model offered by cloud providers.
- Scalable and Simple.

Cloud Computing Allows:

1) Reduces the capital costs of infrastructure.
2)Removes the maintenance cost.
3) Removes the administrative cost.

There are three different **Pricing Strategies** that are introduced by Cloud Computing:

1) Tiered Pricing,
2) Per-unit Pricing,
3) Subscription-based Pricing.

1) Tiered Pricing: Cloud Services are offered in the various tiers. Each tier offers to fix service agreements at a specific cost. Amazon EC2 uses this kind of pricing.

2) **Per-unit Pricing:** The model is based upon the unit-specific service concept. Data transfer and memory allocation include in this model for specific units. GoGrid uses this kind of pricing in terms of RAM/hour.

3)**Subscription-based Pricing:** In this model, users are paying periodic subscription fees for the usage of the software.