

Cloud Business Value

Ch Five

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IT becoming less about acquiring right equipment more about acquiring right services.

Topics

Cloud computing business

1. Drivers

- Cost
- Agility

2. Impact

- Value & Models

Identifying Cloud Computing Business Drivers

- Parallels exist between today's IT environment and late twentieth century telephony environment.
 - Many businesses moved away from maintaining their own internal PBX systems
 - Required both equipment and personnel to operate
 - Toward hosted solutions
 - Local phone company or other provider.
 - Today's cloud computing driven by similar dynamics:
 1. Cost
 2. Efficiency,
 3. Organizational agility.

Reducing Costs and Increasing Efficiency

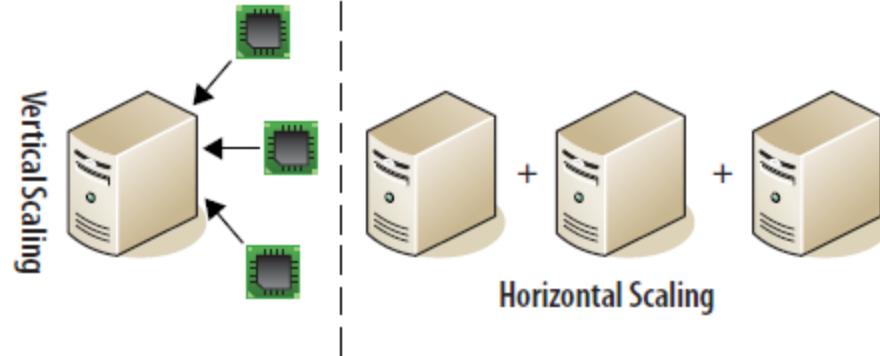
- Generally, cloud computing cost reduction relates to economies of scale.
 - Spreading out fixed costs over more units, decreases per-unit cost.
- Economies of scale achieved through use of shared resources.
 - Cloud provider spreads costs across entire customer base
 - Allows each customer access to a greater degree of IT functionality.
- With cloud computing, up-front costs of purchasing new hardware to start an IT project or expand current capabilities are removed.
 - Organizations only pay only for services they use.

Variable Cost Model

- Allows organizations to scale down or drop services when are no longer needed.
 - Eliminates sunk cost concerns.
- Organizations using public cloud services shift their IT expenses from capital to operational.
- Organizations using in-house private clouds may also be able to reduce their capital expenses due to more efficient infrastructure use.

Reducing Costs and Increasing Efficiency through Scalability

- Scalability, also called flexibility or elasticity, is a key cloud computing characteristic.
- Allows customers to increase or decrease computing resources based on need and cost.
- Scaling can be either vertical (scaling up) or horizontal (scaling out).
 - Vertical scaling involves adding resources to a single node
 - Memory, processing power, or redundant components.
 - Horizontal scaling involves adding more nodes to a distributed system.



Scalability

FIGURE 5.1 A high-level example of vertical (adding processors to a server) versus horizontal scaling (adding servers)

- If both vertical and horizontal scaling are used, it is referred to as diagonal scaling.
- Scalability can greatly reduce costs for organizations with dynamic resource needs.
- For example, online retailers that see increased site traffic before holidays or software development companies that need to provision large-scale testing environments periodically.

Improving Security through Economies of Scale

- Through economies of scale, cloud computing can provide some security benefits.
- By spreading the cost across its customer base, cloud service providers may potentially provide greater security than an organization could on its own.
- Examples :
 - Increased availability
 - Improved disaster recovery through redundancy and multiple locations
 - Security specialists
 - 24/7 staffing and monitoring

Evaluating

- When evaluating cloud services, as well as individual providers, an organization must take into account the security capabilities of the provider versus its own security capabilities.
- It must also be aware of any potential data security, privacy, and compliance risks that result from loss of control over data.

Reducing IT Administrative Overhead

- Cloud computing transfers routine administrative duties from internal IT staff to cloud provider reducing an organization's IT administrative overhead.

Common IT administrative duties:

- Patch management
- Software license management
- Software maintenance and support
- Infrastructure maintenance and support
- Backup and recovery

Reallocating Time

- Time formerly spent on these common duties can be reallocated to other work, such as innovation, systems analysis, and IT process improvement.
- Allows an organization to reduce its IT staffing levels consequently reducing operating expenses.

Increasing Organizational Agility

- Organizational agility is the ability to rapidly adapt to changes in market or industry.
- Cloud computing allows organizations to focus more on their core business activities, less on maintaining an IT environment.
- IT outsourcing, by definition, occurs when an organization enters into a contract with an outside provider to perform IT-related functions instead of performing those functions itself.
 - Functions may include day-to-day operations, technical support, server hosting, service hosting, and security...

Cloud Computing

A Form Of It Outsourcing

- Focuses on services
- Does not follow traditional IT outsourcing model.
- Primary differences: contract length and scalability.
- Traditional outsourcing contracts generally from one to three years.
- Because services are offered on a pay-as-you-go basis, in cloud computing little commitment required
- Changes to traditional outsourcing contracts likely to require a contract addendum or may even need to be postponed until the next renewal cycle.
- In cloud computing, an organization may scale as needed.

Organizational Agility

- Examples of how organizational agility is facilitated by cloud computing:
- Shortened time to market
- Combination of self-service provisioning of resources and a pay-as-you-go billing model allows organizations to rapidly develop new products (particularly applications or web-based services) without being limited by cost of computing hardware or a long procurement time.

Rapid Internal Development And Testing

- Ability to provision and deprovision development and testing environments on demand provides organizations with greater opportunities to improve their business processes by developing applications internally or testing off-the-shelf software in their environment.

Mobility

- Global access to organizational enterprise resources is required for organizations with a distributed workforce.
- Cloud-based applications are distributed over the Internet, accessed via a web browser.
- Easy mobile device access.

Vendor Lock In/Proprietary Tech

- Vendor lock-in may hinder agility.
 - Vendor lock-in occurs when an organization finds itself relying on a proprietary technology base
 - Facilitated by the lack of cloud computing standards.

Lack of standards being addressed by groups including :

- Cloud Security Alliance
- Distributed Management Task Force
- Cloud Standards Customer Council.

Examining Business Impact

- Not every business benefits from rapid cloud services adoption.
- Decision to move to the cloud, including what to move to what type of cloud, is important.
- Strategic flexibility is somewhat related to organizational agility but differs in that:
 - Organizational agility focuses on reacting and adapting to change.
 - In contrast, strategic flexibility focuses on anticipating and preparing for uncertainty.

Risk in Moving to Cloud

Can be mitigated by:

1. Evaluation of cloud computing costs.
2. Identification of organizational value both now and in future.
3. Choice of appropriate cloud model.

Evaluating Cloud Computing Costs

- Varies by business.
- Prior to adopting cloud services, it is prudent to calculate the estimated total cost of ownership (TCO) of the cloud services and compare it with the TCO of same services in house.
- TCO is the complete cost of an object or service throughout its lifetime
 - From purchase to disposal, including both direct and indirect costs.
- Cloud computing TCO highly dependent on deployment model.
- On-premises private cloud service will have higher capital expenses and other factors affecting direct costs than an external private cloud service managed entirely by the hosting service provider.

Factors Affecting Direct Cloud Computing Service Costs:

- Costs directly billed from provider
 - Storage and data transfer
- Hardware and software licensing procurement (private cloud)
- Utility costs -- bandwidth
- Costs associated with service agreements for guaranteed resource pool availability, virtualized machine count, or other contractual elements
- Costs derived from legal or regulatory mandates imposing additional governance criteria
- Personnel costs for coordinating cloud and local application development elements
- Costs related to negotiation and management of cloud contractual agreements

Identifying Unexpected Costs

How much is it going to cost:

- to transfer data into cloud?
- for customization?
- to integrate cloud-based applications with locally hosted services?
- to test software to make sure it works in a cloud environment?

Determining Return on Investment

- Return on investment (ROI): a performance measure used to evaluate investment efficiency or compare multiple investments.
- Calculated by dividing the benefit of the investment (net gain or loss) by the cost of the investment.
- $\text{ROI} = (\text{benefit} - \text{investment cost}) / (\text{investment cost})$

ROI example

- Company XYZ is trying to decide whether it should invest in a new SAN or utilize cloud storage.
- Factors going into the benefit of cloud storage might include:
 - the reduced capital investment
 - reduction in administrative overhead
 - reduced power costs in the in-house data center.
- Investment cost would include both the up-front costs and the subscription cost for a set period of time.
- Using this formula, you can determine how long it will take to break even (0 ROI) and to see value (positive ROI).
 - Negative ROI indicates that it will cost the organization money.

Identifying Now and Future Value

- Three levels of maturity

Utility

- Business likely to see some immediate a reduction in operating costs and increased efficiency.
- Increased availability as well as resilience and redundant infrastructure.

Process transformation

- IT exists to support business processes, but often business processes are instead determined by the technology.
- IT staff and business staff can work together to identify opportunities for improvement and implement cloud solutions .

Business model innovation

- New products and services or the business model itself..

Choosing Appropriate Cloud Model

Four cloud models

1. Public
 2. Private
 3. Hybrid
 4. Community
- Decision impacts, at a minimum, planning, cost, and business processes.

Public Clouds

- Businesses with the need for variable levels of resources benefit most from public cloud services
 - So may small or startup businesses lacking ability to invest in infrastructure.

Private clouds

- May be more suitable for businesses that have already invested heavily in computing infrastructure and simply want to use it more efficiently.
- May also allow businesses to keep control of their data, (may be required for compliance).

Hybrid Clouds

- Suitable for businesses that generally would benefit from private cloud services but occasionally have periods of high demand.
- During high-demand times, public cloud resources can be used.

Making the Right Decision

- Cloud computing is not a one-size-fits-all solution.

Who Benefits?

- Startup businesses, particularly those with limited staff and financial resources.
 - Low entry costs.
- Organizations with a workforce that is:
 - Distributed geographically
 - Highly mobile
 - Telecommutes.
- Any organization needing offsite backup.
- Organizations with internal data centers wanting to reduce power costs.
- Organizations with e-commerce sites.
- Organizations with IT needs but not enough IT staff.

Who Might Not Benefit?

- Large organizations with significant investment in infrastructure.
- Organizations with legal or regulatory constraints.
- Organizations in geographic areas with poor Internet connectivity.

Questions???