

Cloud Computing Management

Definition of cloud management

- Cloud management refers to the **technologies and software** that are designed for operating and monitoring applications, data and services that reside in the cloud .Cloud management tools make sure that a company's cloud resources are working properly and kept under control, thus allowing administrators to instead focus on supporting other **core business** processes.
- Cloud management strategies typically involve numerous tasks including performance monitoring (response times, latency, uptime, etc.), security and compliance auditing and management, and initiating and overseeing disaster recovery and contingency plans
- Some of the most successful cloud management systems automate the decisions and process of provisioning diverse resources against diverse incoming workloads. In so doing, companies can enjoy a faster delivery of IT services to businesses; reduced capital and operating costs; and automated chargeback for resource usage and reporting, Moreover, cloud management solutions can ensure that the constantly growing number of IT services won't fail so IT staff can scale without worry as well as meet service level requirements and address changing conditions.



❖ **The core management features offered by most cloud management service products include the following:**

- Support of different cloud types
- Creation and provisioning of different types of cloud resources, such as machine instances, storage, or staged applications
- Performance reporting including availability and uptime, response time, resource quota usage and other characteristics
- The creation of dashboards that can be customized for a particular client's needs

✓ **Tivoli Service Automation Manager is an example of a framework tool for managing cloud infrastructure. IBM Tivoli® Service Automation Manager enables users to request, deploy, monitor and manage cloud computing services.**

 Search

Home > Request a New Service > Request a New Service > Virtual Server Management

 Backup and Restore Server Image	 Manage Image Library
 Manage Users	 Modify Project
 Modify Server	 Cancel Project Use this task to cancel a project. All of its virtual servers will be returned and made available for other users. Any saved images will also be deleted.
 Cancel WebSphere CloudBurst Project The virtual system created upon WebSphere CloudBurst Pattern deployment and all of its virtual servers are deleted.	 Create Project with KVM Servers Provision one or more KVM virtual servers containing a software image.
 Create Project with VMware Servers Provision one or more VMware virtual machines containing a software image.	 Create Project with a WebSphere CloudBurst Pattern Provisions a WebSphere CloudBurst Pattern to a set of virtual servers in a WebSphere CloudBurst cloud group.

My Requests



New (1) Pending (1) Resolved (5) Total (7)

Recent Activity

Create Project with VMware Servers Invoice Processing 6.3	New
Restart Server BackendTestServer0	Pending
Create Project with VMware Servers Front Office Web App v3.0	Resolved
Modify Team MYCLTEAM	Resolved
Create Team DEPT08	Resolved

[Manage Requests...](#)

My Projects



Operational (3) Total (3)

Recent Activity

Front Office Web App v3.0	Operational
CreditCard 6.3 Test	Operational
Fall Sales Promotion	Operational

Upcoming Projects

No upcoming projects

[Manage Projects...](#) | [Manage Servers...](#)

My Approvals

Recent Activity

Create Project with VMware Servers Invoice Processing 6.3	10/28/2009
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[Manage Approvals...](#)

Management Responsibilities

- What separates a network management package from a cloud computing management package is the —cloudy characteristics that cloud management service must have :
 - Billing is on a pay-as-you-go basis.
 - The management service is extremely scalable.
 - The management service is ubiquitous.
 - Communication between the cloud and other systems uses cloud networking standards.

❖ **To monitor an entire cloud computing deployment stack, it is needed to monitor six different categories:**

1. End-user services such as HTTP, TCP.
2. Browser performance on the client.
3. Application monitoring in the cloud, such as Apache, MySQL, and so on.
4. Cloud infrastructure monitoring of services such as Amazon Web Services.
5. Machine instance monitoring where the service measures processor utilization, memory usage, disk consumption, queue lengths, and other important parameters
6. Network monitoring and discovery using standard protocols like the Simple Network Management Protocol (SNMP), Configuration Management Database (CMDB), and Windows Management Instrumentation (WMI).

❖ **It's important to note that there are really two aspects to cloud management:**

- Managing resources *in the cloud*
 - Using the cloud to manage resources *on-premises*
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- During the move to a cloud computing architecture from a traditional networked model like client/server , many of the old management tasks for processes going on in the cloud become irrelevant or nearly impossible to manage because the tools to effectively manage resources of various kinds fall outside of the own purview. **In the cloud, the particular service model which is used directly affects the type of monitoring responsible for it.**
 - For example if we consider the case of an Infrastructure as a Service vendor such as Amazon Web Services, we can monitor usage of resources either through their native monitoring tools like **Amazon Cloud Watch** or through the numerous third-party tools that work with these sites Application programming interface(APIs).

Managing Desktops and Devices in the Cloud

- The second aspect of cloud management is the role that cloud-based services can play in managing on-premises resources. From the standpoint of the client, a cloud service provider is no different than any other networked service. The full range of network management capabilities may be brought to bear to solve mobile, desktop, and local server issues, and the same sets of tools can be used for measurement.
- Microsoft System Center is **an example** of how management products are being adapted for the cloud. System Center provides tools for managing Windows servers and desktops. The management services include an Operations Manager, the Windows Service Update Service (WSUS), a Configuration Manager for asset management, a Data Protection Manager and a Virtual Machine Manager, among other components

Lifecycle Management

Cloud services have a defined lifecycle, just like any other system deployment. A management program has to touch on each of the six different stages in that lifecycle:

1. The definition of the service as a template for creating instances

Tasks performed in Phase 1 include the creation, updating, and deletion of service templates.

2. Client interactions with the service, usually through an SLA (Service Level Agreement) contract

This phase manages client relationships and creates and manages service contracts.

3. The deployment of an instance to the cloud and the runtime management of instances

Tasks performed in Phase 3 include the creation, updating, and deletion of service offerings.

4. The definition of the attributes of the service while in operation and performance of modifications of its properties

The chief task during this management phase is to perform service optimization and customization.

5. Management of the operation of instances and routine maintenance

During Phase 5, you must monitor resources, track and respond to events, and perform reporting and billing functions.

6. Retirement of the service

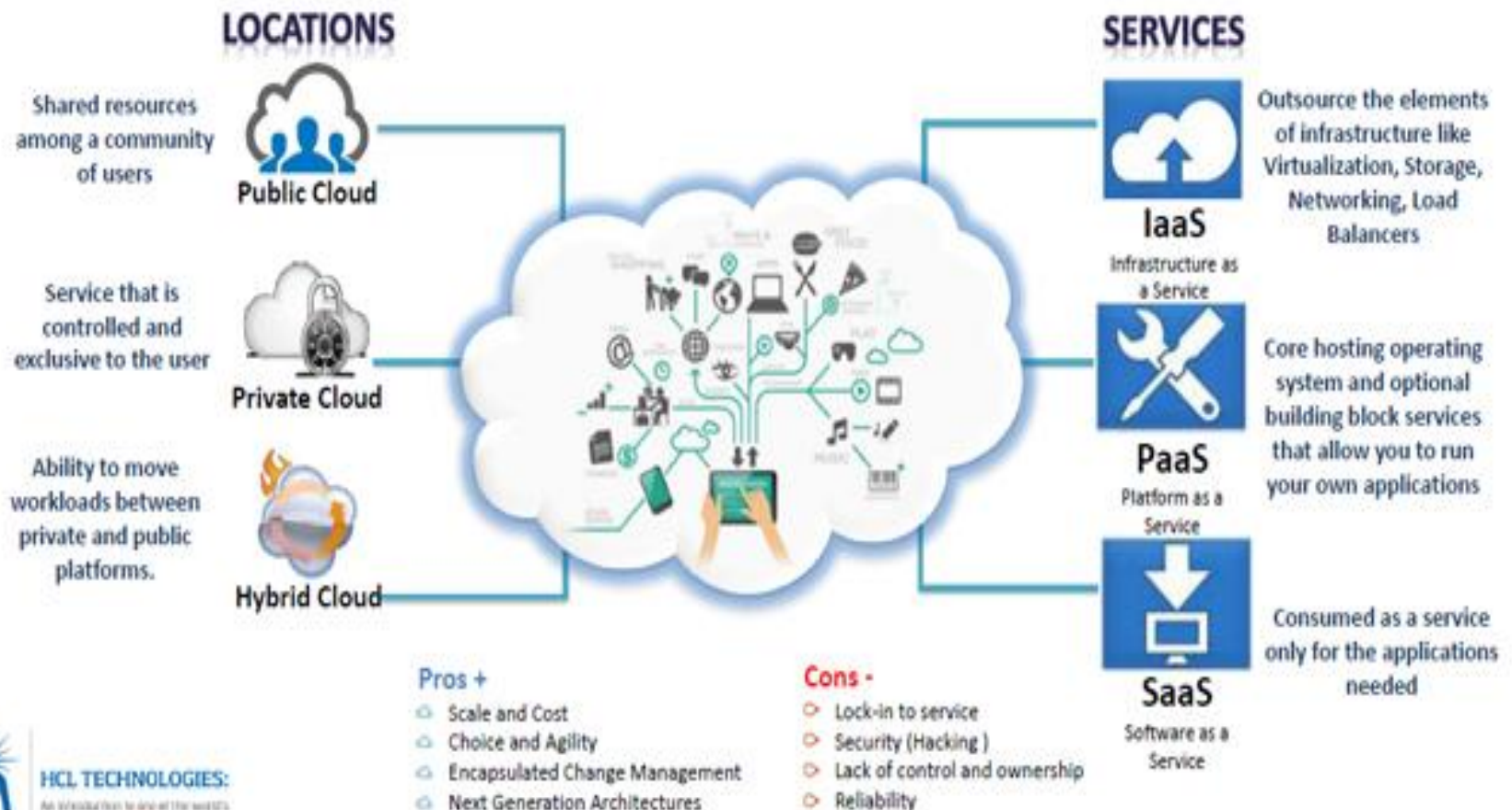
End of life tasks include data protection and system migration, archiving, and service contract termination.

Managing Migration To Cloud

- ❖ Migration management represents the process of migrating services of a company from its current architecture to the cloud computing. Based on that there are many providers and also every with different process flows how the migration is done.
 - The migration process flow is composed from some stages. Those stages are:
 - ❑ **Understand the cloud**
 - ❑ **Understand the value proposition**
 - ❑ **Business analyzes**
 - ❑ **Define adoption approach**
 - ❑ **Select cloud provider**
 - ❑ **Upgrade the organization**
 - ❑ **Revamp tools and processes**
 - ❑ **Design solution for cloud**
 - ❑ **Implement and integrate the solution**
 - ❑ **Operate in the cloud**

❑ Understand the cloud

What is Cloud Computing?



HCL TECHNOLOGIES:

As a global leader in digital transformation, HCL Technologies is the largest provider of IT services in India.

❑ Understand the value proposition

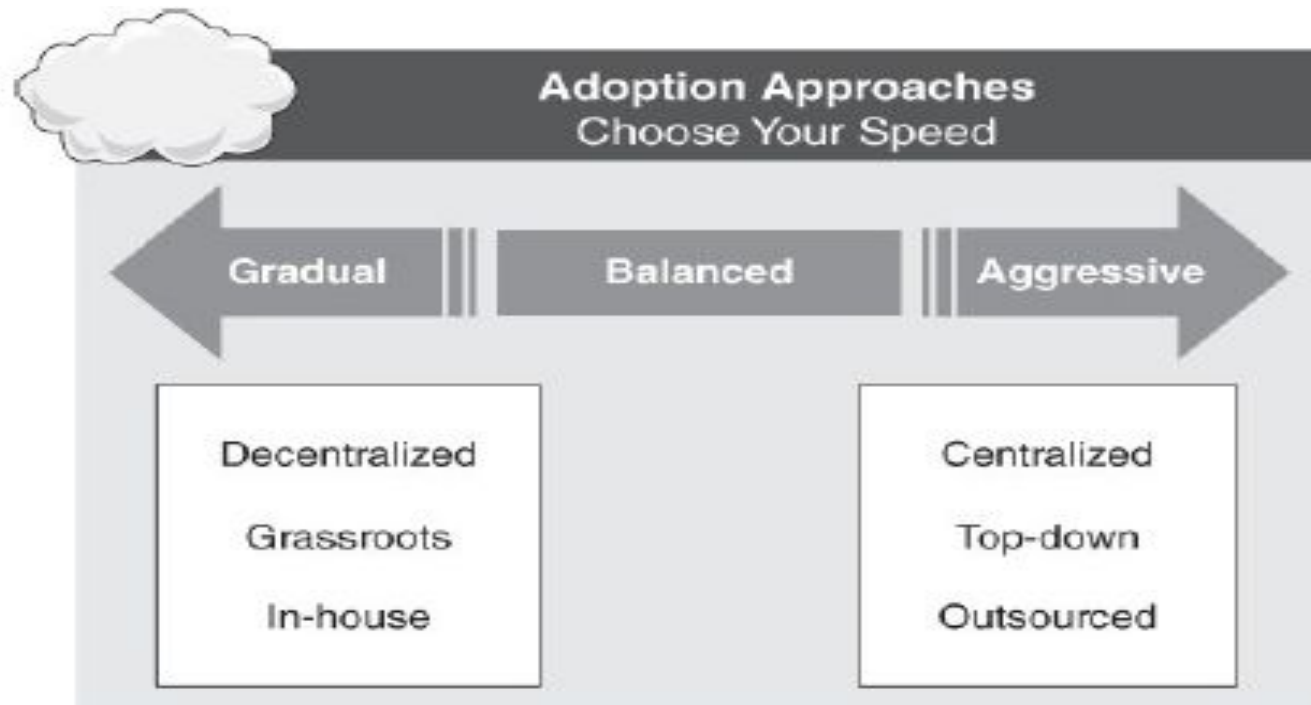
- Cloud computing value proposition is reduction of Total cost of Ownership, translation the fixed to variable cost, improvement of business agility and ability to built systems of a global class. The cost model allows the business to free up budgets on infrastructure and the platform allows using them for delivering innovation services quickly

❑ Business analyzes

- With a strategic approach to cloud computing, including managing the integration, business process and security obstacles mentioned, cloud opens up fundamentally new ways of doing business. **Ways that are not just more efficient and lower cost, but would be impossible without cloud. Ways that enable companies to keep pace with ever increasing consumer expectations, competitive pressures and capture business value in new ways.** The true promise of cloud isn't just about rethinking IT; it's about reinventing business.

❑ Define adoption approach

- If an organization wants to move forward to cloud computing effectively, it will need a defined approach to cloud migration which clarifies who will make key decisions, how aggressive the migration timeline will be how this timeline will affect staffing and whether the leadership will adopt tight controls or support experimentation at the base level. Based on the size and complexity of the organization there are three types of adoption approach: gradual, balanced and aggressive.



❑ **Select Cloud Providers**

- Selecting cloud providers is an important part of the migration process. Before continuing with this step first of all the company has to decide what mix of cloud computing deployments will use. The most important cloud deployments are Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS).
- Some of the reasons for choosing the cloud provider are the services the provider offers, how long it has been in business, the maturity of its business processes, the thoroughness of contracts and SLAs, and how clearly and completely its representatives answer your questions all matter when selecting cloud companies.

Company type	Offerings	Example
Cloud Technology Provider	Creates cloud technology, including cloud software stacks. In many cases these firms are also cloud service providers.	IBM, Microsoft, Amazon, Google, Salesforce
Cloud Service Provider	Provides cloud products, hosts cloud services, or both; may or may not build all the underlying technology themselves	Fujitsu, Dell, HP
Cloud Independent Software Vendor (ISV)	Offers value-add services for clouds, including managing or monitoring. Could also include building value-add services or applications on top of clouds	RightScale, CIRBA, enStratus, ScaleXtreme, Canonical
Cloud Systems Integrator (SI)	Assists companies in implementing application on clouds	Accenture, Infosys, TCS, Wipro

❑ **Upgrade the Organization**

- When the cloud adoption process is done well, it refocuses the IT from buying and supporting infrastructure to managing the company's portfolio of technology investments and partnering more closely in business innovation.

❑ **Revamp Tools and Processes**

- After the steering committee and working groups were created, now it is time to analyze existing policies and processes

❑ **Design solution for cloud**

This is the stage when the cloud migration plan starts to go in practice. After all other necessary stages where finished, it comes time when the solution for the cloud has to be designed. Some of the steps which need to be done during this stage are: security practices, code reviews, monitoring, architectural principles, statelessness, parallelization, latency and automated scaling.

❑ **Implement and integrate the solution**

The cloud implementation stage includes the actual creation, enablement of the private, public, hybrid or other type of cloud service of a computing system. It performs three tasks:

- Firstly it addresses the implementation issues such as Cloud Security, Cloud Standard, Cloud legality, Cloud Privacy, Cloud Mentality, Cloud Inter-machine communication

- Secondly it deals with the Details and implementation of file system in a cloud and
- Thirdly it implements the Map-Reduce system in a cloud. Map-Reduce is a software framework for easily writing applications which process vast amounts of data in-parallel on large clusters of commodity hardware in a reliable, fault-tolerant manner.

❑ Operate in the cloud

After the successful migration is achieved, it does not mean that the migration ends. The last and also important stage is the process of operating in the cloud. This stage includes some important steps which need to be done if we want the migration to the cloud to produce the results which were required. These steps are: support, management, monitoring, business continuity, disaster recovery and measure success.