Cloud Computing-18IS6DECCM

Module-II

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Cloud as a Service

- Introduction
- In todays economy business face challenge of ‘taking cost out’ of their infrastructure, while delivering new innovation business services. Cloud computing defines a new way to manage IT resource enabling self-service previsioning of IT resources, metering style accounting based on use/time, automation of IT management in a standard process environment.
- Common attributes of a cloud infrastructure are defined as
- * Flexible pricing
- * Elastic scaling
- * Rapid provisioning
- * Standardized offerings
- There are two primary levels to achieves cost optimization – operational expenses (Op-ex) and capital expenses (Cap-ex). In order to lower the cost, it is important to strike a right balance between Op-ex and Cap-ex.

Cloud as a Service

Cloud computing introduces the concept of IT-as-a-Service. To support this services, the cloud infrastructure must deliver.

* Abstraction
* Virtualization
* Dynamic allocation
* Data managements

Gamut of Cloud Solutions

Cloud computing space offers a spectrum of offering type. There are five commonly used categories.

* Software-as-a-Service (SaaS)
* Platform-as-a-Service (PaaS)
* Infrastructure-as-a-Service (IaaS)
* Storage-as-a-Service (SaaS)
* Desktop-as-a-Service (DaaS)

Gamut of Cloud Solutions

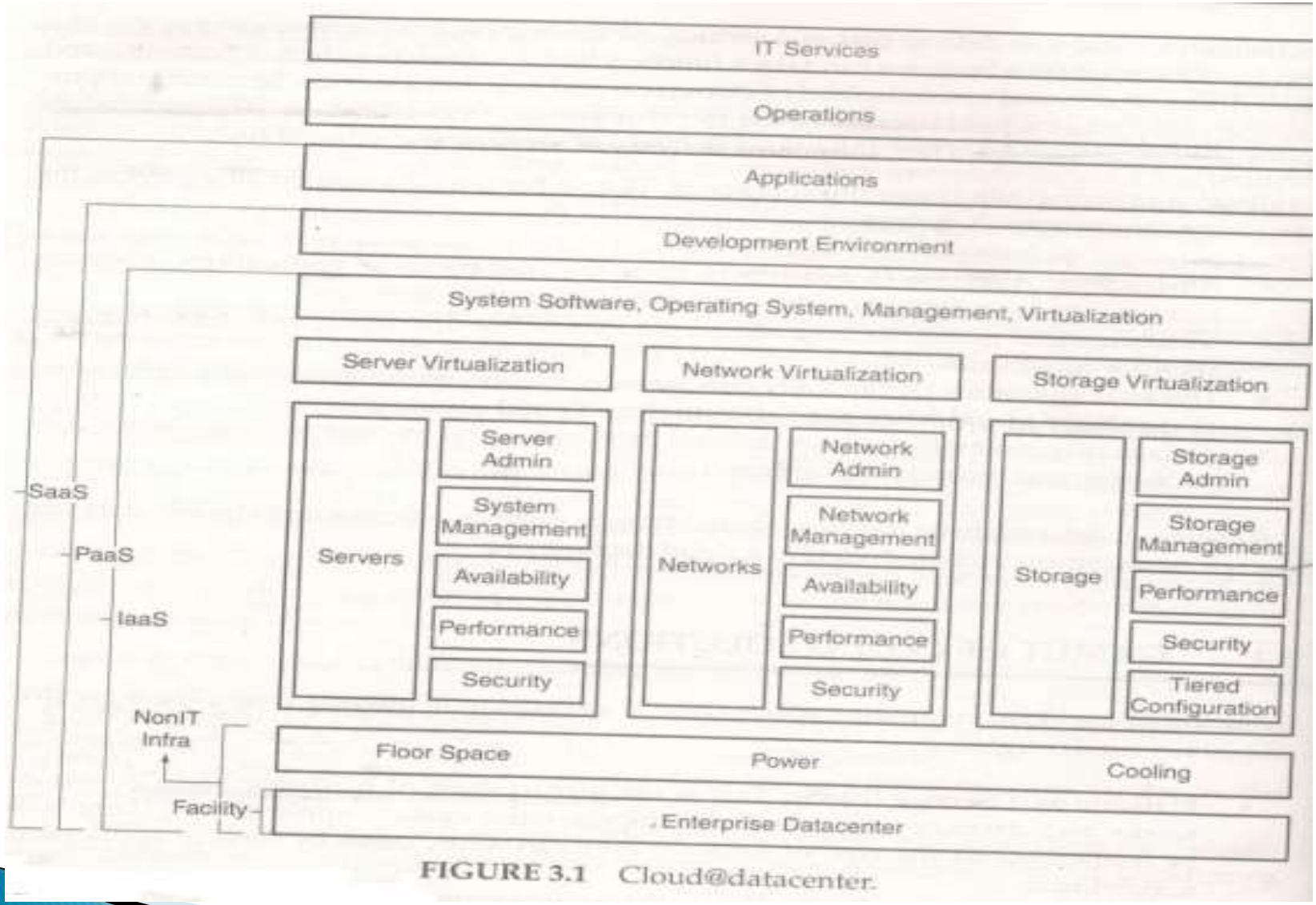

FIGURE 3.1 Cloud@datacenter.

Gamut of Cloud Solutions

Platform-as-a-Service (PaaS)

*PaaS saves costs by reducing upfront software licensing, infrastructure costs and reducing ongoing operational costs for development, testing and hosting environment,

* PaaS significantly improves development productivity by removing the challenges of integration with services such as database, middleware, web frameworks, security and virtualization.

* PaaS fosters collaboration among developers and also simplifies software project management.

* PaaS provides a software development environment that enables rapid deployment of new application.

Gamut of Cloud Solutions

Software-as-a-Service

*SaaS saves cost by removing the effort of development, maintenance, and delivery of software.

* SaaS eliminates up-front software licensing cost, infrastructure cost and ongoing operation cost for support, maintenance and administration.

* The time to build and deploy a new service is much shorter than traditional software development.

* Application that require extensive customization are not suitable for SaaS.

* Application moving to internet cloud might require upgradation to meet increase in network bandwidth usage.

Gamut of Cloud Solutions

Infrastructure-as-a-Service

- *IaaS saves costs by eliminating the need to over-provision computing resources to be able to handle peaks in demand.
- *IaaS dynamically scales up and down the resources as required.
- *IaaS reduces capital expenditure on infrastructure, ongoing operational costs for support, maintenance and administration.
- *IaaS supports open platforms which has a wide range of operating system and framework. This minimizes the risk of vendor lock-in.

Cloud Taxonomy

Organization can massively increase their datacenter resource without significantly increasing the number of people needed to support it.

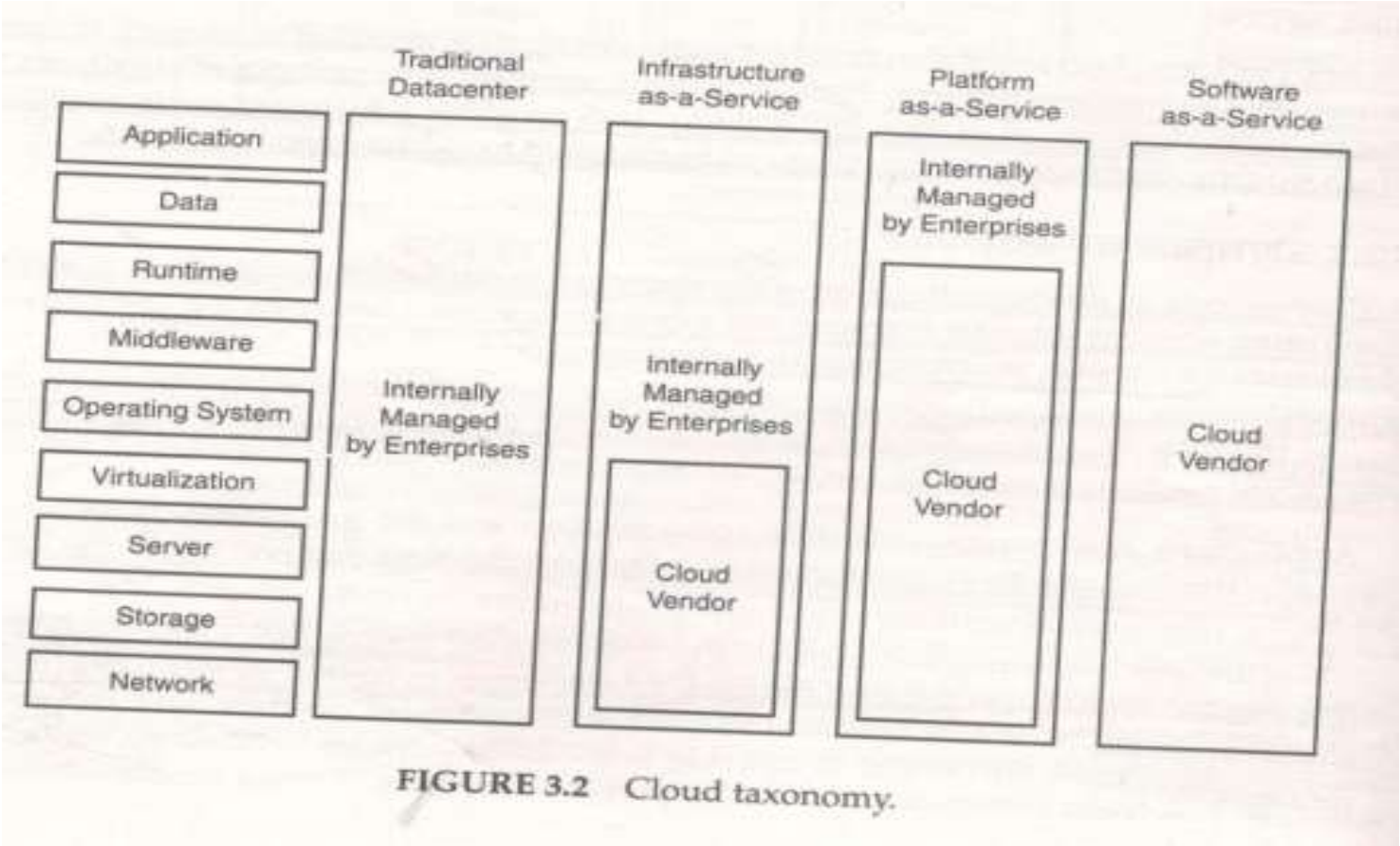

FIGURE 3.2 Cloud taxonomy.

Principal Technologies

Key to dynamic cloud infrastructure is the virtualization layer that sits between cloud instance and the physical hardware it run on. **Hypervisor** – allows to run multiple OS instances to run as guest on the same server.

The main drivers for cloud computing are cost, agility and time to market.

Cloud orchestrator and provisioning engine– helps in building cloud infrastructure in cost saving way and improves time to market. This sits on top of virtualization layer working on network, server, and storage. It is a layer of software that

* Interact with multiple server
* Enables IT department to pool resource together across servers
* Defines standardized tiers of services called *Virtual compute centres.*

Cloud Strategy

The implementation and planning phase of cloud enables an application lying between the business strategy definition for the adoption of cloud and the design, development and implementation phases of the application that is to be offered on the cloud platform,

The primary input for the cloud implementation planning phase comes from the cloud strategy for the business that is driving the cloud-based implementation of one or more application on the cloud.

The key steps in cloud implementation planning are as fellows.

* Understand cloud strategy.
* Define cloud application requirement.
* Assess cloud readiness.
* Define high-level cloud architecture.
* Identifying changes management requirement.
* Develop roadmap and implementation plan.

Cloud Strategy

Infrastructure strategy and planning for cloud computing helps in developing a cloud strategy plan and roadmap.

* Business and IT executives workshop to identify where and how cloud computing can drive business values.
* Develop the value proposition for cloud computing in the enterprise.
* Identify priority of workload to migrate to cloud.
* Assess the current environment to determine strength, gaps and readiness.
* Strategy, plan and roadmap to successfully implement the selected cloud.
* Analyze cloud computing opportunities.
* Analyze IT environment and capability gap.
* Assess cloud readiness.
* Develop high-level cloud roadmap and value proposition.

This helps to deploy the cloud deployment with following benefits.

* Reduce risk and faster deployment
* Improve service
* Lower cost

Cloud Design and Implementation Using SOA

* Service Oriented Architecture (SOA) – Is very useful in implementing application in an cloud.

* SOA would provide the best way to leverage and consume the application service provided by the cloud from different environment.

* Platform and Language independent services can be provided using SOA architecture.

* Service-Oriented Modeling and Architecture (SOMA) technology is applied with a meet-in-the-middle approach, to process, business strategy and modular business alignment model.

Architectural Overview

* The purpose of architectural overview is to communicate the cloud implementation architecture to sponsors and external stakeholders a conceptual understanding.

* It provides a layered conceptual model of application and high-level vision, scope of the cloud architecture to the developers.

* It is easy to explore and evaluate alternative architectural options for cloud implementation.

* This enable early recognition and validation of the implication of cloud based architecture.

Conceptual Cloud Model

The conceptual cloud model describes the structure of the cloud based services as a system in terms of its software components with their responsibilities, interfaces, relationship and the way they collaborate to delivery the required functionality.

The conceptual cloud can be further broken down and depicted in layered composition.

* High-level service components that forms the services provided by the offerings.
* The resources that supports the cloud services.
* The technical components that provides the technical underpinnings of the cloud service and support the non-functional needs of the cloud application.
* External and internal services that are leveraged by the cloud application services.

The cloud conceptual component model should contain the following elements.

* The conceptual structure of the cloud applications.
* The dynamic infrastructure and dependencies between various conceptual components.
* The components that comprise the cloud service provided by the application each of which may be made up of sub-components.

Conceptual Cloud Model

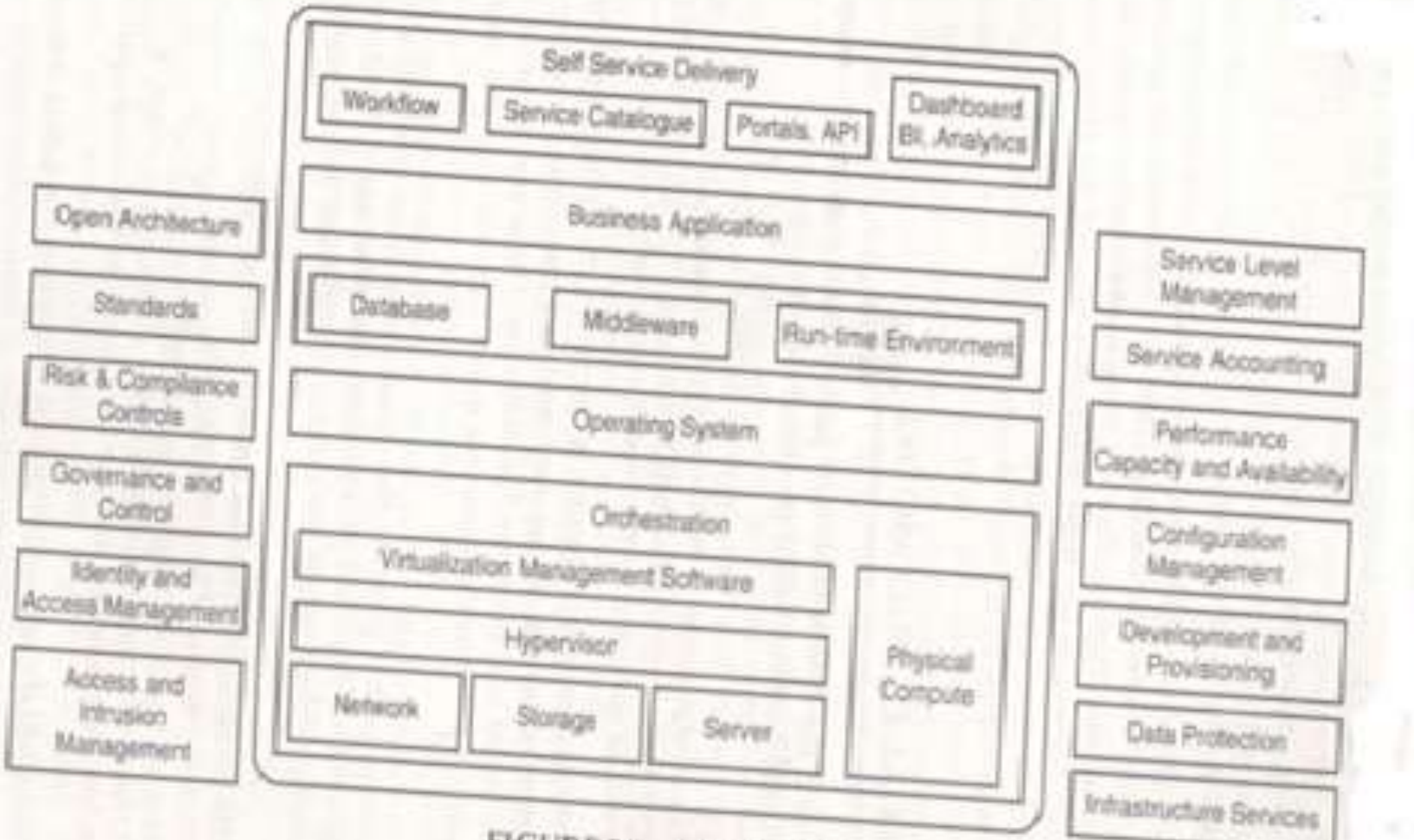

FIGURE 3.3 Cloud model

Conceptual Cloud Model

* Cloud Application Security and Privacy Principles
* Governance
* Authentication and Access Control
* Data Protection
* Logging and Alerting

Cloud Solutions

Cloud environment presents an opportunity to enhance the user experience by providing a broader communication path for reaching out to the user or for providing a series of business services.

Cloud Application Planning

The design and development of cloud application requires many unique considerations.

* Business functions
* Application architecture
* Security for cloud computing
* Cloud delivery model
* User experiences
* Development, testing, and run-time environment

Cloud Business Support Services and Cloud Operational Support Services

Business Support Services- Customer orders, managing customer data, managing order data, billing, rating, and offering services.

Operational Support Services – Network, process such as maintaining network inventory, provisioning services, configuration network components, and managing faults.

Cloud Ecosystem

It is very important to understand the relationship between a cloud service and artefacts that can be developed based on and within the boundaries of an ecosystem focused IaaS or PaaS cloud services. Bringing any cloud service to market requires corresponding pre-investment along with respective metering and charging models in support of the corresponding business model.

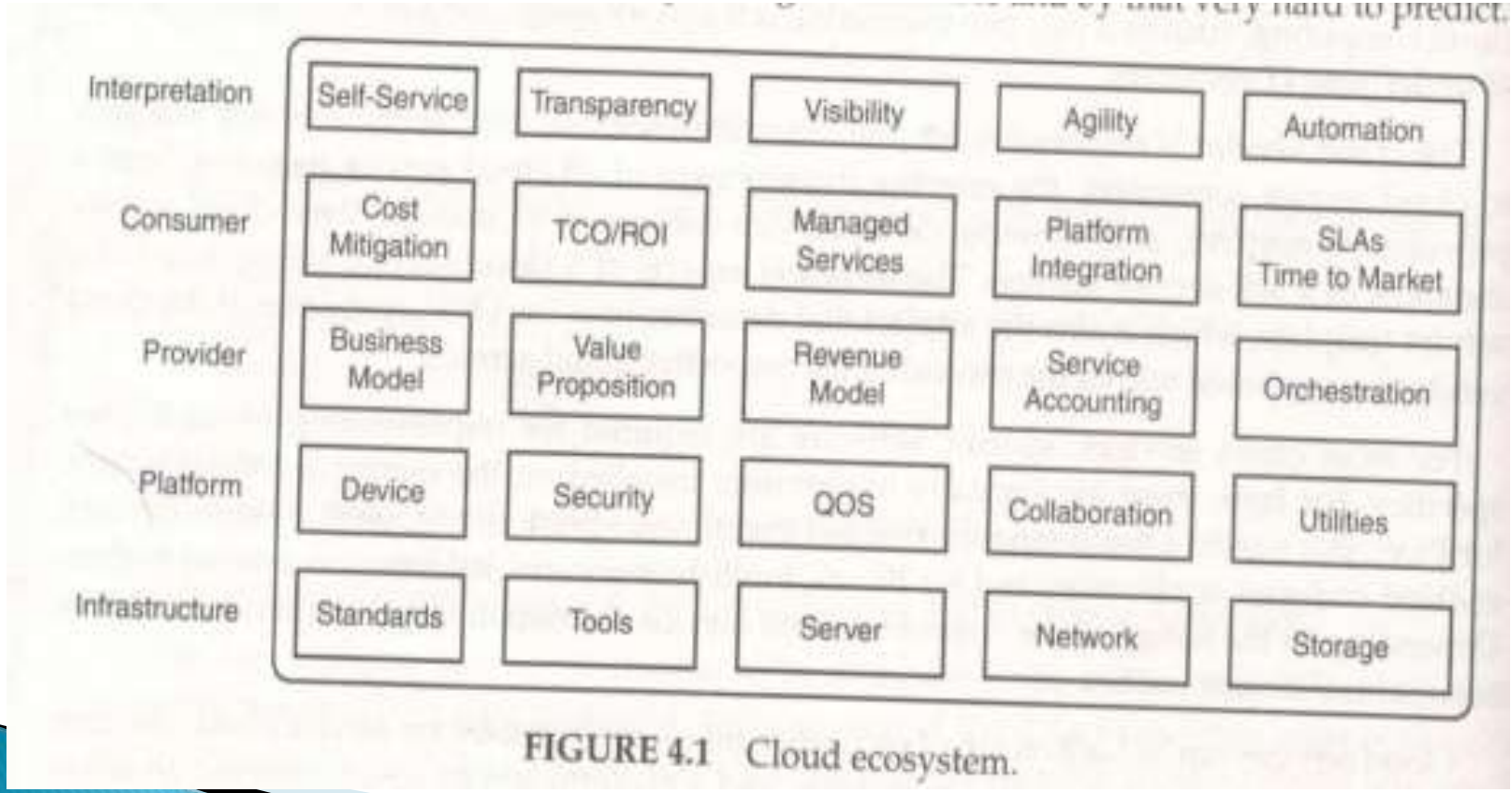

FIGURE 4.1 Cloud ecosystem.

Cloud Ecosystem

Cloud based environment come handy especially when used to develop, test, and run application for the following reasons.

* Available in private cloud environment or on the public cloud.
* Rapid access as a configurable development and test environment to speed time to market.
* Self-service web portal for enterprise account management and provisioning in minutes.
* Pay-as-you-go pricing, with the choice of preferred pricing through reserved capacity packages.
* Security-rich environment designed to protect your system and data.
* Access to a rich catalogue of software images for improved flexibility and rapid provisioning.
* Rapid provisioning and faster time to value.

Cloud Business Process Management

Business Process Management (BPM) governs an organization's cross-functional, customer-focussed, end-to-end core business processes. It achieves strategic business objectives by directing the deployment of resources from across the organization into efficient processes that create customer value.

The principle to BPM is the 'continuous improvement', perpetually increasing value-generation and sustaining market competitiveness or dominance of the organization. It clearly defines, and aligns operation organization, and information technology. The cloud environment can help in the following ways.

* Integration of core business :
  - Holistic
  - Crosses organizational functional and boundaries (height and breadth)
  _ Includes business and technologies.
* Value-focused efficiency :
  - Customer-centric perspective
  - Bottom-line success
  - speed at which ROI is delivered
  - Performance measurement
* Continuous :
  - This is based on longer period of intervals pertaining to cloud business
  - Continual improvement
* Cultural :
  - Cultural consideration of the organization and geographical area kept in mind at time of due diligence of the requirement.

Identifying BMP Opportunities

The opportunities required for successful cloud business process management and characteristics of cloud deployment offerings. The answer to the following questions can help you identify cloud opportunities better.

* Are the strategic value proposition and capabilities defined for organization?
* How the overall strategy drive the design and execution of business process? Is there a traceability of execution to goal?
* How to manage core business processes?
* What are current process initiative?
* What are current process governance facilities?
* Are existing organization structure aligned to enable efficient process operation?
* How customers measure and assess the performance of processes?
* How process performances compare to your competitors?
* How effectively does current technology (Information, system, tools, machines etc) enable the enterprise core business processes?
* What risk and challenges does current technology present for current and future process capabilities?
* What product does organization have? What type of product?
* What are the notable pieces of IT portfolio?
* Has organization adopted SOA?
* How are process currently modeled in organization? What is included in the model?
* What design / development tools are currently used in the organization?
* What testing tools are currently used by the organization? What are the strengths/ Weakness of the tools?
* Describe the different business process that are automated in the organization?

Identifying BMP Opportunities

Cloud application development offerings provides.

* Cloud application references architecture.

*Unmatched experience developing high performance secure application across a wide range of technologies of the cloud vendors.

* Unmatched application security expertise.

* Leadership in cloud related technologies – multi-tenancy, virtualization, pervasive computing.

* Significant expertise with cloud business models.

* Ability to integrate a portfolio of related cloud service.

Cloud Technical Strategy

How technical strategy can enable cloud deployment for cloud customers.

Cloud service enable, cloud users to build middleware clouds in their datacenter and utilize public clouds it makes sense by providing the following cloud enabled middleware services.

* Infrastructure Services
* Platform Services
* Application Services

Cloud Technical Strategy

Cloud strategy enable organization to do the following.

* Build middleware clouds in their datacenter
* Utilize public clouds where it makes sense

It does so by supporting in the following areas

*** Cloud-enable middleware services**

- Infrastructure Services
- Platform Services
- Application Services
- Serving the on premise and public clouds

What does it mean to develop an application service for the cloud? It means product features development similar to on-premise software.

*** Enabling the software for cloud essentially implies :**

- support for collaboration multi-tenancy
- Self-service registration
- Managing customers and their entitlements
- Single sign on
- Additional security concerns.

*** Integration with the datacenter :**

- Firewall, reverse proxy configurations.
- Fully qualified domain name, certificates.
- Management of services, patch procedures.
- Isolation, recovery, backup issues.
-

Cloud Use Cases

Infrastructure as a Services (IaaS) or Test/ Development

Problem : Development teams requires unpredictable amounts of infrastructure to get their jobs done. To get all resources in a development cycled is quite a challenge. Procurement of hardware is a slow process. Static development and testing resources requires manual re-provisioning in order to re-purpose resource for use, or new resources need to be purchased to meet demand. Incase where project timelines are short, this will jeopardize the project delivery schedule. Different type of projects needs different kinds of development components(Like SQL, Server, SharePoint, Biz Talk etc)

Solution : Companies can create standardized service catalogue items for common infrastructure requirements and enable development and test teams to access infrastructures in a self service model (IaaS)

Cloud Use Cases

Standardized Development Platform/ Middleware (PaaS Enable)

Problem : Developer are often not concerned about the impact of their code on operation. They deliver their code without involving operation into architecture decision or code reviews.

Solution : Companies can create standardized development platform definition for use by development team to standardize and streamline their efforts.

Application Cloud

Problem : Companies wants to move beyond self-service for infrastructure and provide application owners the ability to define, instantiate and manage complex multi-tier application.

Solution : End user can access complete application definition and manage them according to their quotas and preferences defined by cloud administration. Application in production can be monitored across multiple factors and automatically scaled up and down according to business policies.

Cloud Use Cases

Software-as-a-Service (SaaS) to End Customers

Problems : Many companies want to deliver their applications to end users as a service. Creating a multi-tenant SaaS offering requires substantial development to support security, performances, and scalability needs. Due to those high costs, companies cannot offer new services based upon existing applications.

Solutions : Companies can provision a unique application instances per customer with private cloud automation capabilities. Environment are provisioned according SLA . Automation to on-demand complex application and configuration environment along with dynamic application scaling, and high availability across multiple datacenter.

Cloud Service management

A service management system provides the visibility, control, and automation needed for efficient cloud delivery in both public and private implementation.

*** Simplify user interaction with IT:**

- User-friendly self-services interface accelerates time to value.

-Service catalogue enable standards which drives consistent services delivery.

*** Enable policies to lower cost with provisioning :**

- Automated provisioning and de-provisioning speeds services delivery.

-Provisioning policies allows release and reuse of assets.

*** Increase system administrate productivity :**

- Move from management silos to a services management system.

Cloud Service management

The emergence of cloud deployment is prompting enterprises to either assemble in-house team to manage specialize cloud services provider or look to third party cloud brokers chiefly due to following reason.

* Every service-oriented approach a mechanism to enable discovery and end -point resolution.

* Registry/ repository technology provides this where services delivery is inside the firewall.

* Cloud services delivered across firewall need something similar- a third party that serves as a service broker.

Broker is the critical success factor in cloud computing as cloud services multiply and expand faster. The growth of services brokerage business will increase the ability of cloud consumer to use services in a trustworthy manner. Cloud service providers are expected to begin to partner with cloud brokerages to deliver the services they promote. Brokers help companies choose the right platform, deploy apps across multiple clouds, cloud arbitrage services and capture best pricing.

Three categories of opportunities for cloud brokers.

* **Cloud service intermediations** : Building services atop an existing cloud platform, such as additional security or management capabilities.

* **Cloud aggregation** : Deploying customer services over multiple cloud platforms.

* **Cloud services arbitrage** : Supplying flexibility and 'opportunistic choices' and fostering competition between clouds.

Key Cloud Solution Characteristics

The essential cloud orchestrator and engine key characteristic capabilities are:

* **Scalability** : Cloud orchestrator should maintain an index of resources that are acquired by hypervisor and enable to scale across tens of thousands of machines across multiple geographic.

* **High Availability** : Cloud orchestrator keeps availability of 'Active-Passive' , 'Active-Active' and disaster recovery (DR). Cloud orchestrator monitor individual physical server availability, failure and restart the VM.

* **Application Lifecycle** : Cloud orchestrator should offer complete application lifecycle support like, creation of infrastructure, installation, configuration, launching of application to deletion or expiration, in real-time demand.

* **Multi-tenancy / Role-based Administration** : Cloud orchestrator should support multi-tenant capability with specific user permission. The application owners or administrator logs in with credentials and view the application.

* **Policies** : Cloud orchestrator should provide rich set of policies that can be enabled, modified or new one can be created to take effect at the global level on application. Policies define an application to flex up to 10 VM during high load and reduce to only 2 VM during low load.

* **Alarms** : Cloud orchestrator should provide pre-defined alarms that can be set at the global level for applications, VM's, host, etc. Alarms are used to notify application owners or users regarding the threshold being reached.

Key Cloud Solution Characteristics

* **Application Awareness and Policy-based Allocation** : Cloud orchestrator should be aware of application requirements and optimizes the placement of application. Example- placing the VMs close to each other running the same application to reduce the latency.

* **Resources Awareness and Policy-based Allocation** : Cloud orchestrator should optimize the usage of the infrastructure, by intelligent resource allocation policies and load balancing of VMs.

* **Elasticity Based on Performance (Flex-up/ Flex-down)** : Cloud orchestrator should provide out-of-the-box functionality to flex-up or flex-down an application instances or resources based on performance metrics.

* **Reporting and Accounting** : Cloud orchestrator should provide metering and billing reports on resource allocation and actual usage. This information can be used in creating inventory capacity and consumption of resources by each applications.

* **Self-Service Portal** : Cloud orchestrator should provide a self-service portal for application owners. Application owners can request resources (machines), monitor and control them through portal. It should drive the workflow and provide a run-time environment management in order to support application elasticity.

ON-PREMISE CLOUD ORCHESTRATION AND PROVISIONING ENGINE

On-premise cloud orchestration and provisioning engine can be a bundled offering that includes hardware, software and the services needed to start the cloud computing. It should include service ecosystem, self-service portal, automation and control all of resources.

The objective is to provide a pre-package private cloud pre-installation and configuring of software, hardware, which includes all services and on top of that user can add additional services. A private cloud will accelerate selling efforts and effectiveness, along with leveraging the benefits of cloud computing such as virtualization, flexibility, scalability and self-service portal.

Benefits / Value Proposition

Powers faster time to innovation, lower cost per unit of innovation.

* **Innovation** : It should dramatically improve business value and IT's effect on time-to-market by enabling the business workloads to rapidly and accurately be deployed when and where they are needed.

* **Decrease Operational Expenses** : It must gain productivity increase in IT labour costs through automation. Maximize capita usage and reduce added capital expense.

* **Reduce Complexity and Risk** : With automation and standardization, the human errors-factor should be minimized.

ON-PREMISE CLOUD ORCHESTRATION AND PROVISIONING ENGINE

Cloud orchestration and provisioning requirement analysis :

To understand the cloud orchestration and provisioning requirement we need to first understand

* Test and development requirement of the cloud deployment.

* Be sure of the about the automation of the testing and development cycle to reduce the deployment time.

* Discussion with cloud customer about deployment of cloud orchestration and provisioning engine.

* set the boundaries of the environment, about 30-50 % of IT environment is devoted to test/ development purpose.

* With cloud orchestration and provisioning engine, a developer can log into a self-service portal select required resources and timeframe.

* Customer datacenter support thousands of application representing business workload, multiple type of servers, storage, networks, middleware, and operating system.

* Cloud orchestration and provisioning engine turns the existing environment into a cloud. That is in a quickly getup and running model, as a seed and grow model.

Entry point :

*** Turn existing environment into a cloud**

- Install cloud management platform and assign existing resources to the cloud.

- Scenario- Already enough equipment are their or cloud orchestration and provisioning engine offering is not the right platform.

*** Jump start the cloud**

- Hardware+Software+Service required for quick start up.

- Can use a seed and grow model- start with a cloud orchestration and provisioning engine and then addmore.

ON-PREMISE CLOUD ORCHESTRATION AND PROVISIONING ENGINE

Cloud Infrastructure Security

The security aspect of the cloud infrastructure goes side by side with Service Oriented Architecture (SOA) security. Is a layered approach.

Cloud Orchestration and Provisioning Engine : Integrate service management is offered with servers, storage, network, services, and financing as an integrated offerings for client test problems.

* **Improved time to value** – Quickly deliver a cloud using a preloaded and integrated system.
* **Improved innovation –** Dramatically improve business value and IT's effect on time-to-market by delivering services faster.
* **Decrease capital expenses –** Maximize capital usage and reduce added capital expenses.
* **Reduce complexity and risk –** With automation and standardization the human error factor is minimized.
* **Fit for purpose –** Based on architecture required by specific workload.
* **Self-contained –** Service management software, hardware, storage and networking.
* **Modular –** Automatically expandable and scalable.
* **Virtualized –** End-to-end across servers, storage and network.
* **Self-service –** Ease of consumption.
* **Light-out –** Zero touch automated operation.

Cloud Orchestration and Provisioning Engine : Is offered as a services engagement which can build a solution to a client's needs, including creation of custom virtual images for dispensing. Summary points are.

* **Drastically reduce set-up and configuration time**
  - New environments in minutes!
* **Reduce risk by codifying infrastructure :**
  - Freeze-dry best practices for repeated, consistent, deployments.
* **Security throughout the entire lifecycle.**
* **Simplify maintenance and management :**
  - Flexibly manage and update the components of yours patterns.
  - Ensure consistency in versions across development, test, production.
* **Spend less time administering , more time developing new solutions.**

COMPUTING ON DEMAND (CoD)

On-demand computing is the need of the hours, it is essential in a supercomputing environment. On-demand can be implemented using various virtualization technique. Cloud gives option to leverage the computing infrastructure without actually buying the hardware. This help in using the resource in a most efficient way by utilizing the same recourse to other workloads when the resources are idle.

The unique rich set of features that on-demand computing can offer enable services seeker to deploy a true utility. The platform allows users to.

* **Align cost with utilization** : so that users can scale costs down as well as up. This allows a workload to start with minimal upfront costs scale as the demand grows without paying a penalty to increase capacity.

* **Increase end-users availability significantly** : As workload can be moved dynamically it is possible to move workload from one server to another without interruption so remedial work can be carried out if server down time is required.

* **Balance workload dynamically across multiple servers :** Without taking applications offline. Using the workload mobility featured customer can align their costs by ensuring that workload is deployed in such a way as to optimize system resources.

COMPUTING ON DEMAND (CoD)

* **React to short-term resource requirement** : almost instantly. If a workload has to be deployed at short notice, a virtual machine (VM) can be created on the server and resources allocated instantaneously using the dynamic capacity model.

* **Reduce the physical foot print :** in the datacenter. Consolidation of workload on to a smaller number of servers will improve spaces, power, and cooling metrics.

* **Confidently increase system utilization :** to over 75% without fear of degrading performance for end-users.

* **Develop a simple charging model that reflects usage :** for end users as the services delivery culture continues to mature.

* **Double the workload delivered :** in the power and cooling envelope.

Pre-Provisioning

For the on-demand computing requirement pre-provisioning is the viable option as it helps organization meet the requirement of the dynamic datacenter requirements. Organization takes less time in commission of servers, when new workload is to be deployed.

This approach is ideal when :

* The sizing and capacity planning is fully understood.
* The workload is fairly constant, ensuring good utilization levels are achieved.
* There are business reasons that requires the physical separation of workload.
* Workload can be scaled horizontally.

On-Demand CPU/ Memory/ VM Resources

In the dynamic environment it is important to track the requirement of CPU, Memory, and VMs. It is based on the common pool concept where resources are allocated and de-allocated as the requirement is over.

This approach is ideal when

* Workload are trending upwards so investment can be aligned with utilization.
* Peek in workload are longer term.
* Workload scales vertically.
* It is more economically advantageous to 'buy out' dynamic capacity.

Dynamic Capacity

Utility CoD is used to automatically provide additional processor capacity on a temporary basis within the shared processor pool. Usage is measured in processor-minute increments, and is reported via a web interface or collection of report by cloud vendor engineer. Billing is based on the reported usage.

This approach is ideal where:

* The workload is very variable and multiple workload can be hosted on a single machine so that the utilization can be leveled out.

* The workload has short periods where system utilization increase massively but for the majority of the time it is not resource intensive.

* Workload can share a physical platform.

* The workload is designed to scale vertically only.

* Users want to dynamically balance workload across servers.

* Users want to continue to run very small workloads without incurring the overheads associated with running a physical server to support it.

Benefits :

* partition mobility, significantly reduced power/ cooling footprint, donation of unused processor cycles of VMs with dedicated processor to uncapped partitions and at the same time guaranteed performances of those VMs.

* Very short deployment time (time-to-market optimized)

* Lowest possible cost for deployment of small workloads.

* Less management effort, for example, when using VMs.

* Most granular charging scheme, pay for the CPU and memory cycles actually used.

* Complete decommissioning of partition, resources are available for other purpose.

* Flexible workload management workload can compensate for each other, thus reducing overall utilization.

* Ideal for environment with identical system management, utilities for development and testing.

Limitations :

* Short peaks must not exceed certain limits and needs to be monitored(Via web interfaces) to ensure best value is obtained.

* Utility CoD provides processor resources only to the uncapped partition.

Cloud Platform Characteristics Based on CoD

Cloud platform characteristics are discussed on the basis of low-end, on-demand, and dynamic-capacity-based servers.

Low-End Servers

* Physical segregation of servers.
* High administration cost due to management of more physical servers.
* Limited and complex scalability, process- maximum 8 processors per server- slower turn around time for server deployment.
* Longer lead time for server deployment from ordering of servers to setting up of infrastructure.
* Not ideal for short product lifecycle application due to fixed expenditure for hardware.
* Wastage of hardware resources for application that reacts to volatile markets.
* Unable to share resources between application.
* Wastage of un-used processing cycles if the application does not fully utilized the resources.
* No hardware/ application interdependency forcing down time on application owners.
* No capacity on demand capability. Downtime is required for adding new hardware.
* Low price per CPU cycle purchased but higher cost per CPU cycle actually used.

Cloud Platform Characteristics Based on CoD

On-Demand Platform

* Physical or logical segregation of servers or partition implementation.
* Lower administration cost due to less physical servers management.
* Can cater for quick turn-around time for new application deployment or increase capacity due to business requirements.
* Enhance time to market for new product launch with immediate availability of CPU/ memory capacity.
* Not ideal for short product life cycle application due to fixed cost expenditure for hardware.
* Wastage of hardware resource for application which reacts to volatile market.
* Able to share I/O, CPU and memory resource between applications.
* Able to take advantage of un-used CPU/ memory if dynamic VM reallocation or share pool methodology is implemented.
* To provide an environment in which there are no hardware/ application interdependencies forcing down time on application owners care full capacity planning and management is required.
* Capacity on demand capability –no downtime is required if CoD CPU/memory is sufficient.
* Higher price per CPU cycle, lower cost per CPU cycle actually used.

Cloud Platform Characteristics Based on CoD

Dynamic Capacity Platform :

* Choose virtual machine (VM) or workload virtual machine implementation for application consolidation.

* Lower administration cost due to less physical and logical servers management.

* Can cater for quick turn-around time for new application deployment.

* Enhance time to market for new product launch with immediate availability of infrastructure and setup.

* Ability to scale up and down which will be ideal for application with short product life cycle.

* Able to cater for application which react to volatile market, i.e scaling up and down capacity.

* Able to share I/O, CPU, and memory resources between application.

* Able to take advantage of un-used processing cycles of other application.

* No hardware/ application interdependency forcing down time on application owners as workload can be dynamically moved to facilitate maintenance etc.

* Capacity on-demand capability. No downtime is required as the machine is fully configured.

* Higher price per CPU cycle, lower cost per CPU cycle actually used. Average price due to the ability to optimize utilization and rapidly deploy workload.

CloudSourcing

In todays era optimizing hardware resources and moving towards the large enterprise day by day so cloud computing has become the ingredient part of infrastructure deployment.

Cloudsourcing helps in end to end solution using cloud methodology using public cloud, infrastructure and platforms.

This include the whole cloud implementation, IT business consulting, integration, and configuration of the business. This gives an option to enjoy the benefit service industry with the benefits of the cloud that gives the innovative approach of paying the resources over subscription.

Real deployment of the cloudsourcing will require the business model with the impact of cloud customer and cloud vendor requirements.

Cloud customer have no control over infrastructure layout of the cloud deployment. Even there is no control over place from where the data services are offered from the cloud vendor. Cloud customer don't have to think about the operational staff for the deployments.

Thus, cloudsourcing will be playing the vital role in the next generation of cloud implementation . With the availability of new open source tools integrated with partner cloud solution, platform and infrastructure, and the new charging models.

This will help to customize application on cloud infrastructure. This is primarily being offered as a public cloud and all offering will be available as managed service.