SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

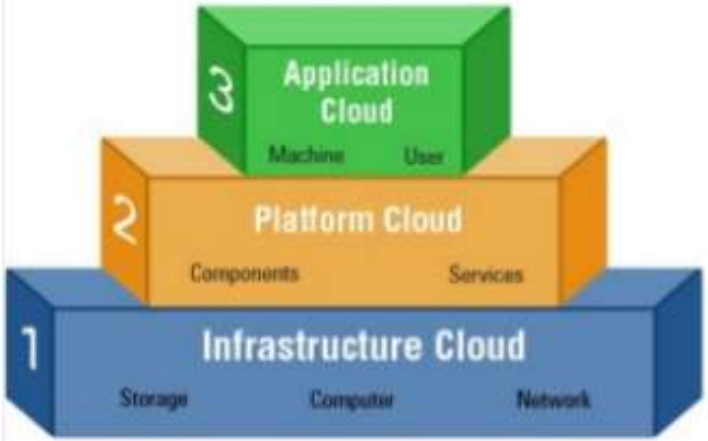
Re-accredited by NAAC with A+ grade, Accredited by NBA(CSE, IT, ECE, EEE & Mechanical)

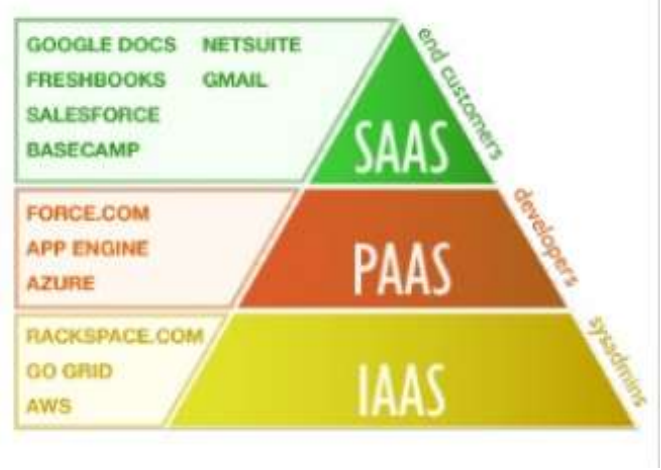
Approvedy by AICTE, New Delhi, Recognized by UGC, Affiliated to Anna University, Chennai

DEPARTMENT OF COMPUTER APPLICATIONS

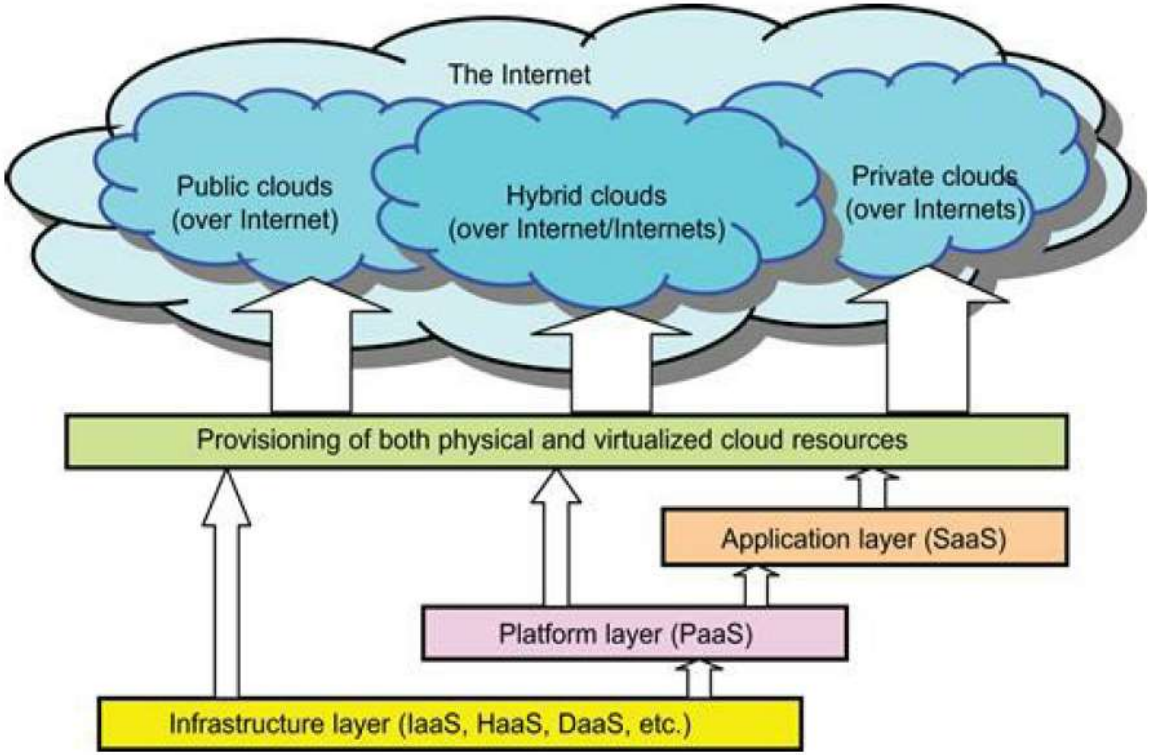
COURSE	UNIT III	TOPIC	Semester
23CAE717 Cloud Computing	Cloud Infrastructure	Layered cloud architectural Development	II Semester / I MCA

- Cloud is developed at three layers: infrastructure, platform, and application
- layers are implemented with virtualization and standardization of hardware and software resources provisioned

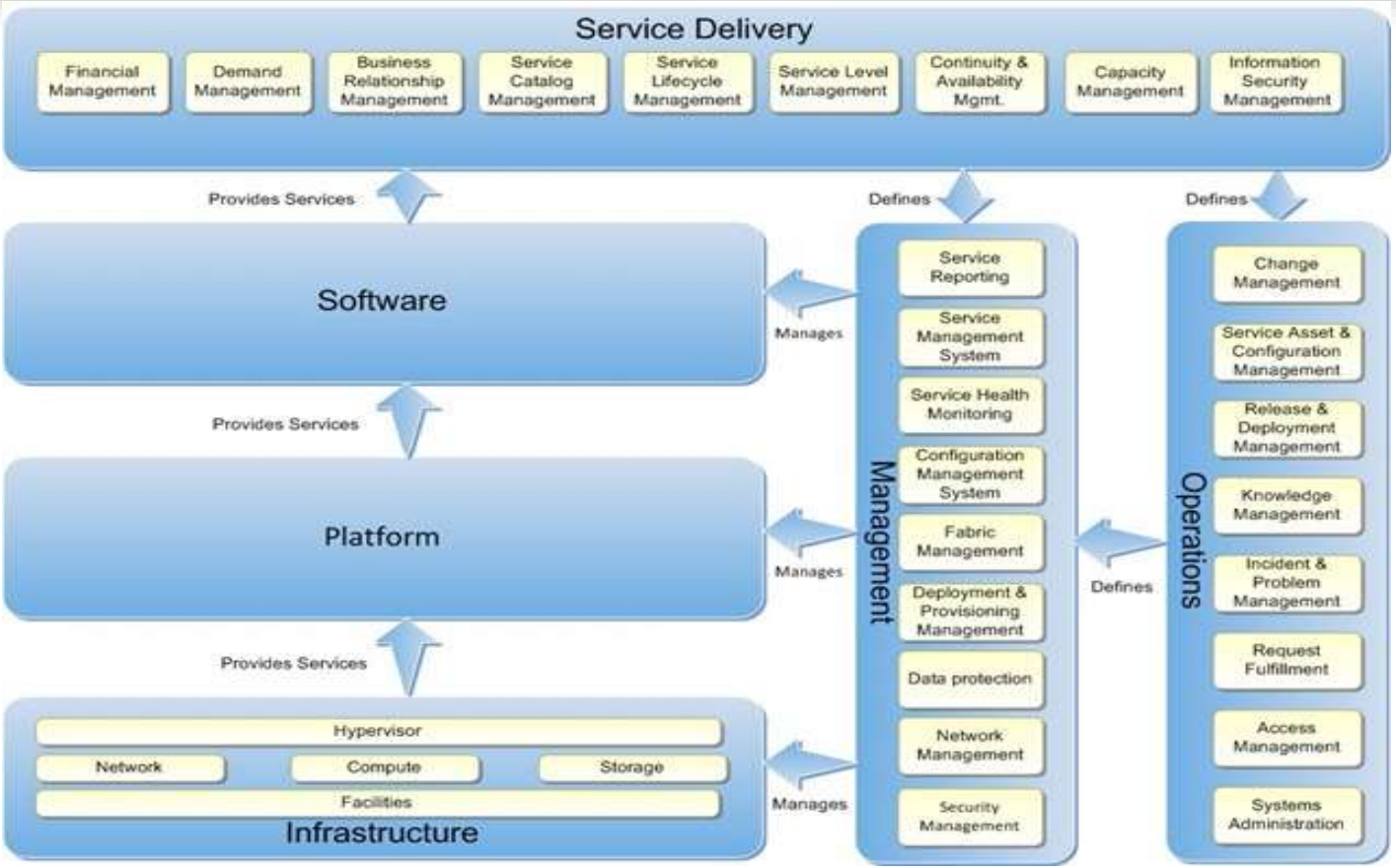




Layered Cloud Architectural Development



Layered Cloud Architectural Development



Infrastructure Layer

- It is deployed first to support IaaS services
- built with virtualized compute, storage, and network resources
- serves as the foundation for building platform layer to support PaaS services
- virtualization realizes automated provisioning of resources and optimizes the infrastructure management process

Platform Layer

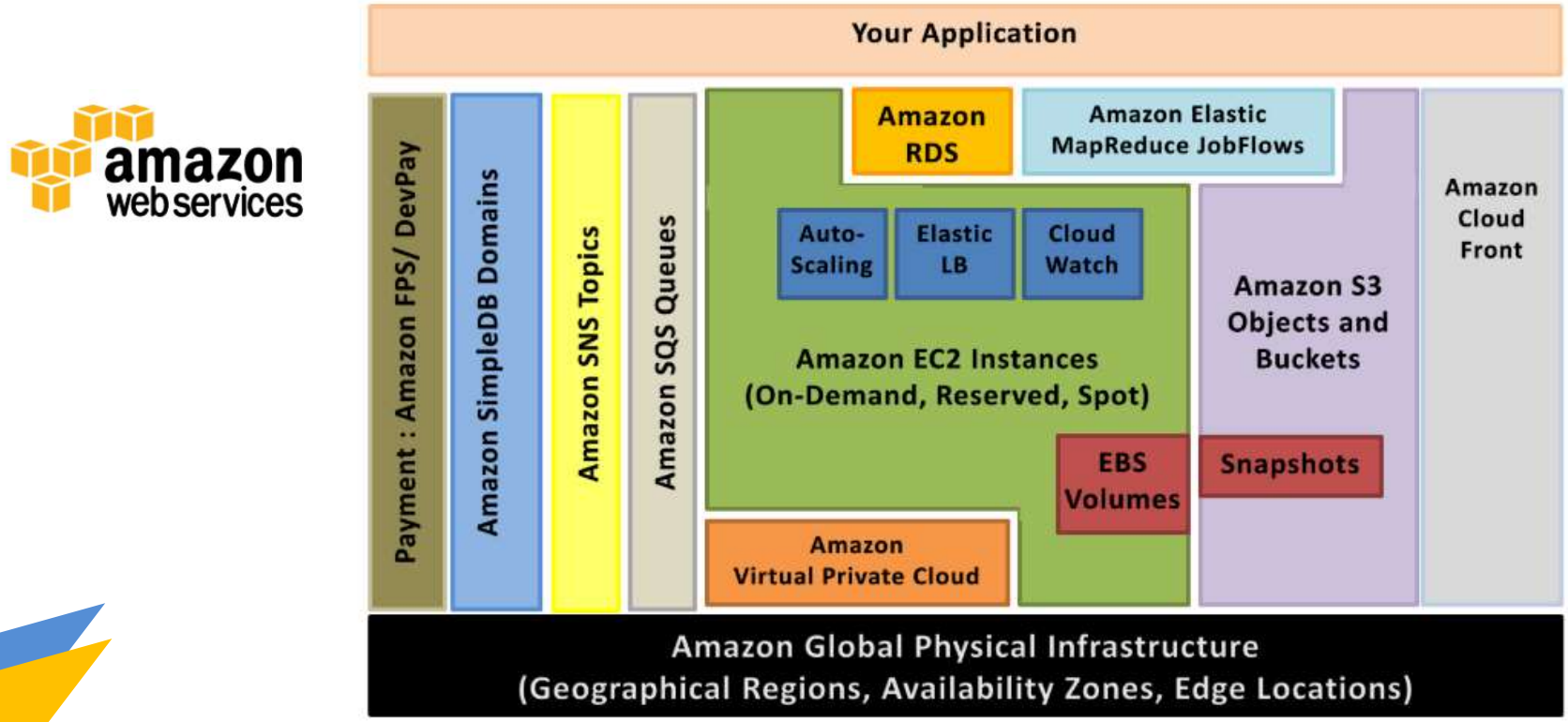
- Acted as middleware between infrastructure and application layer
- It is for general-purpose and repeated usage of the collection of software resources
- Provides users with an environment to develop their applications, test operation flows, and to monitor execution results & performance
- platform layer is a foundation for implementing application layer for SaaS applications

Application Layer

- A collection of all needed software modules for SaaS applications
- Service applications in this layer include daily office management work, such as information retrieval, document processing, and calendar and authentication services
- Application: marketing and sales, consumer relationship management (CRM), financial transactions, and supply chain management

- Well architected Framework is based on five pillars
  - Security
  - Reliability
  - Performance efficiency
  - Cost optimization
  - Operational excellence

Example


Your Application
Payment : Amazon FPS/ DevPay
Amazon SimpleDB Domains
Amazon SNS Topics
Amazon SQS Queues
Amazon RDS
Amazon Elastic MapReduce JobFlows
Auto-Scaling
Elastic LB
Cloud Watch
Amazon EC2 Instances (On-Demand, Reserved, Spot)
Amazon S3 Objects and Buckets
Amazon Cloud Front
EBS Volumes
Snapshots
Amazon Virtual Private Cloud
Amazon Global Physical Infrastructure
(Geographical Regions, Availability Zones, Edge Locations)

Secure, durable, and scalable object storage infrastructure

Managed Relational Database Service for MySQL, PostgreSQL, MariaDB, Oracle BYOL, or SQL Server

SQS

fully-managed message queuing service for reliably communicating among distributed software components and microservices - at any scale

Elastic Block Store provides persistent block storage volumes for use with **Amazon** EC2 instances

FPS

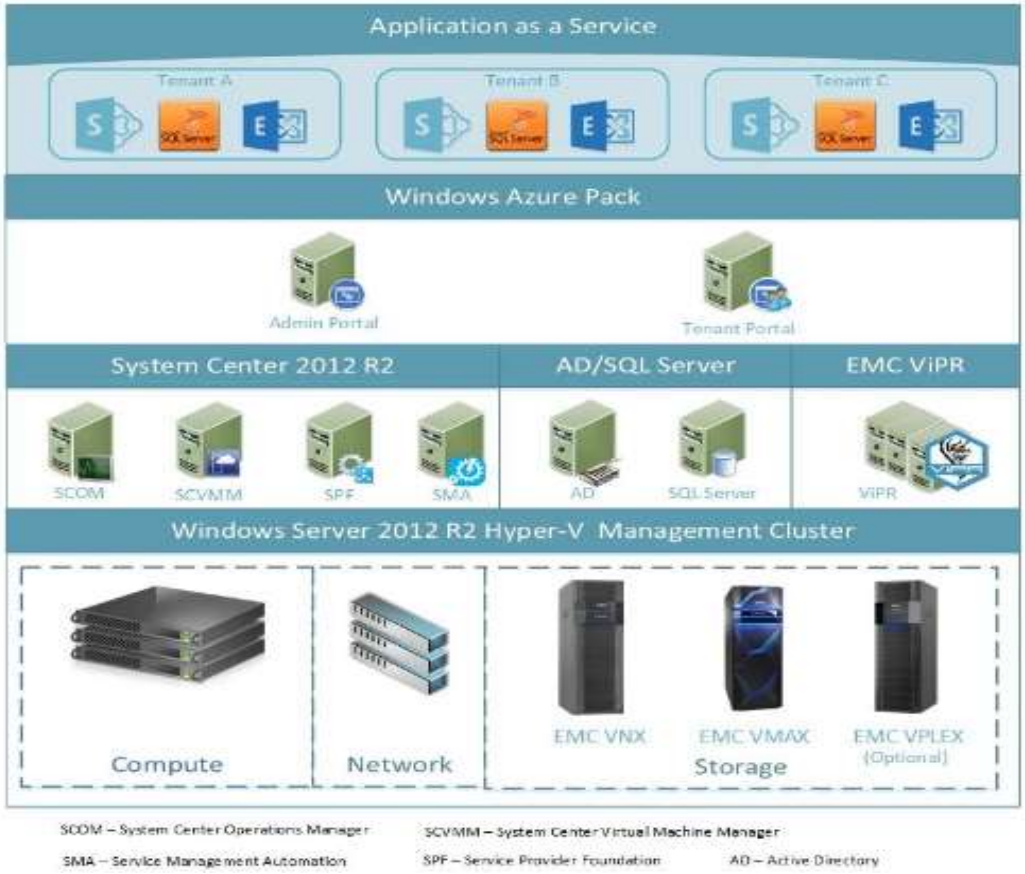
Flexible Payments Service

SNS

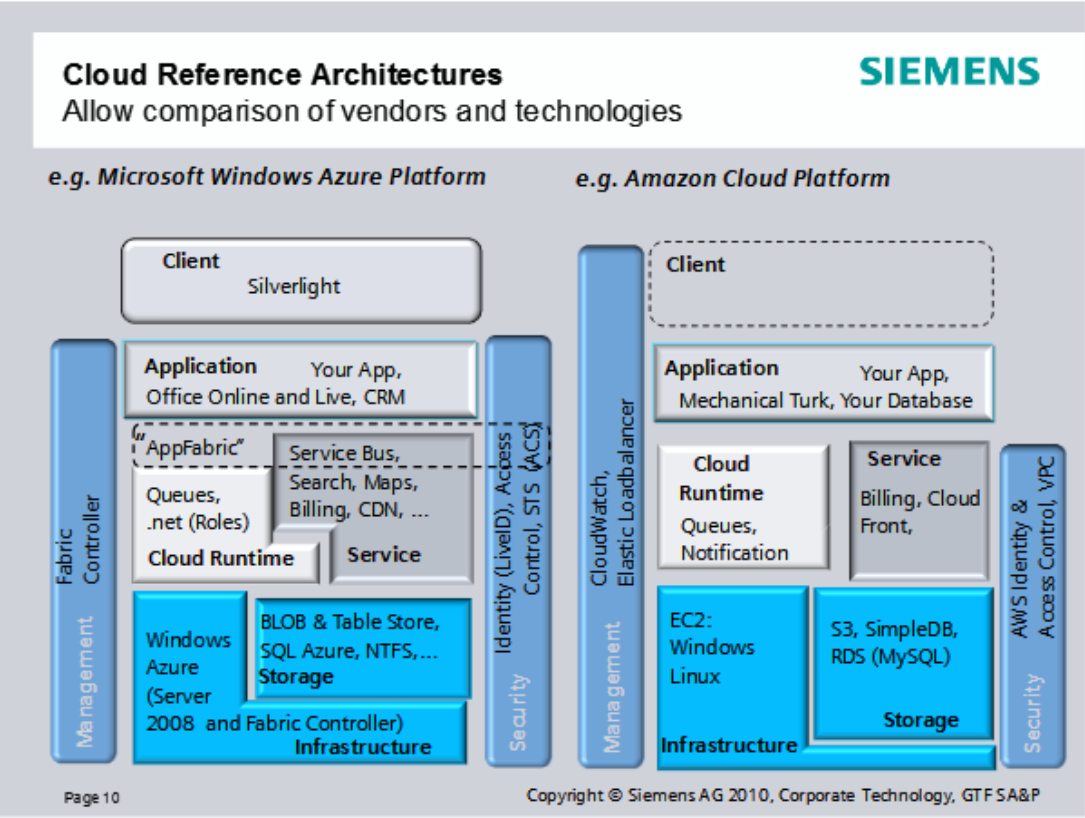
fast, flexible, fully managed push notification service that lets you send individual messages or to fan-out messages to large numbers of recipients

Example

Microsoft
Cloud


Application as a Service
Tenant A
Tenant B
Tenant C
Windows Azure Pack
Admin Portal
Tenant Portal
System Center 2012 R2
AD/SQL Server
EMC ViPR
SCOM
SCVMM
SPF
SMA
AD
SQL Server
ViPR
Windows Server 2012 R2 Hyper-V Management Cluster
Compute
Network
EMC VNX
EMC VMAX
EMC VPLEX
(Optional)
Storage
SCOM – System Center Operations Manager
SCVMM – System Center Virtual Machine Manager
SMA – Service Management Automation
SPF – Service Provider Foundation
AD – Active Directory

Example


Cloud Reference Architectures
Allow comparison of vendors and technologies
SIEMENS
e.g. Microsoft Windows Azure Platform
e.g. Amazon Cloud Platform
Client
Silverlight
Application
Your App,
Office Online and Live, CRM
"AppFabric"
Service Bus,
Search, Maps,
Billing, CDN, ...
Queues,
.net (Roles)
Cloud Runtime
Service
Windows
Azure
(Server
2008 and Fabric Controller)
Infrastructure
BLOB & Table Store,
SQL Azure, NTFS,...
Storage
Fabric Controller
Management
Identity (LiveID), Access
Control, STS (ACS)
Security
Client
Application
Your App,
Mechanical Turk, Your Database
Cloud
Runtime
Queues,
Notification
Service
Billing, Cloud
Front,
EC2:
Windows
Linux
Infrastructure
S3, SimpleDB,
RDS (MySQL)
Storage
CloudWatch,
Elastic Loadbalancer
Management
AWS Identity &
Access Control, VPC
Security
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THANKS