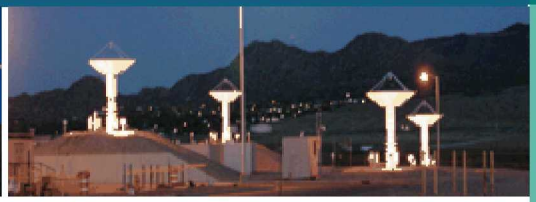
SAND2019-4338C

The Evolution of Public Cloud



SAND TBD

PRESENTED BY

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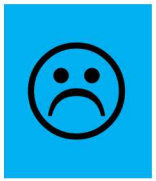
Agenda

- Introduction
- Overview of Public Cloud Technology
- Demand for Innovation
- Public Cloud Projects vs Public Cloud Programs
- Workforce Transformation

Introduction

My NLIT abstract justification:

When I first began my journey from 'Traditional' IT SME to 'Modern/Cloud' IT SME, I was lost in the terminology, capabilities, and approaches; and I felt like an outsider at the Cloud technical conferences.



As demand for Public Cloud capabilities increases, I would like to help IT Management and technical SMEs better understand Public Cloud capabilities and identify new roles and opportunities in the Cloud.

Agenda

- Overview of Public Cloud Technology
  - Where did Cloud Computing and Public Cloud begin?
  - Cloud Service Models Evolve
    - Infrastructure as a Service (IaaS)
    - Platform as a Service (PaaS)
    - Software as a Service (SaaS)
  - Public Cloud Evolves Services for Modern IT
    - Other as a Service (OaaS)

Where did Cloud Computing and Public Cloud begin?

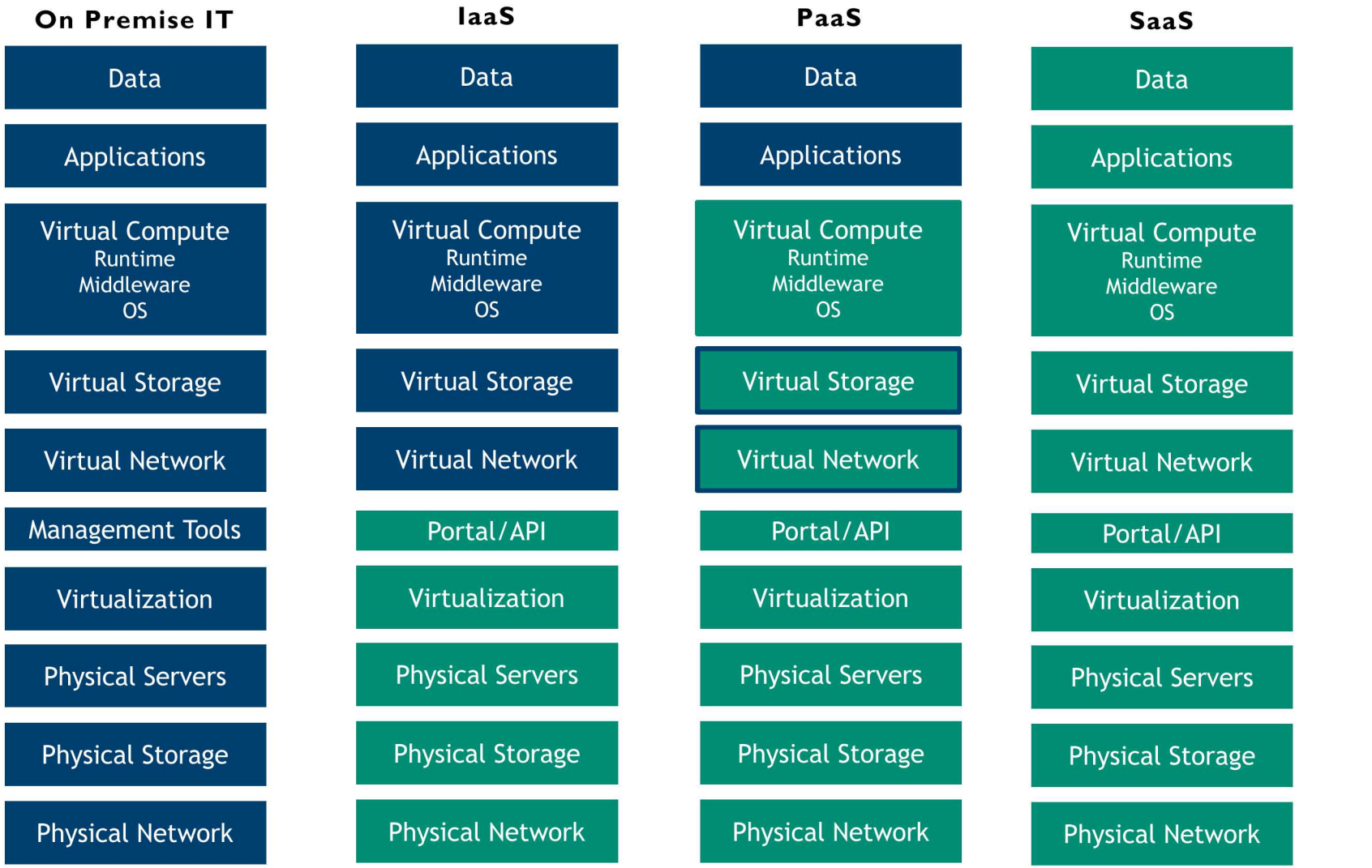
Search the Internet for "**cloud computing**" and you will find there are several theories regarding the origin of the term. However, most agree in principle that cloud computing is the access of shared IT resources over a network or networks.

Another aspect that is generally agreed upon is that improvements in Internet bandwidth helped pave the way for **Public Cloud** services, where multiple customers connect to shared physical IT resources over the Internet.

The market for Public Cloud services has been growing rapidly for years, and Public Cloud vendors, also known as **Cloud Service Providers (CSPs)**, have focused on growing their businesses by providing services that meet the requirements of existing and potential customers.

Cloud Service Models Evolve

SaaS evolution has been influenced by IaaS and PaaS.



1. Store data **in the Cloud**
2. Use VMs to Process data **in the Cloud**

IaaS, PaaS, and SaaS all require a **Trust Relationship** between vendor and customer.

Vendor Manages

Customer Manages

Public Cloud Evolves Services for Modern IT

IaaS	PaaS	OaaS	
Data	Data	Serverless	Internet of Things (IoT)
Applications	Applications	Monitoring/Logs	Cost Management
Virtual Compute Runtime Middleware OS	Virtual Compute Runtime Middleware OS	Identity and Access Management (IAM)	And More ...
Virtual Storage	Virtual Storage	Data Analytics	Services often have their own APIs
Virtual Network	Virtual Network	Security Tools Encryption Threat Analytics Alerts Key Vaults Data Protection	DevOps DevSecOps (DSO)
Portal/API	Portal/API	Portal/API	
Virtualization	Virtualization	Containers and Orchestration	
Physical Servers	Physical Servers	Machine Learning (ML)	
Physical Storage	Physical Storage	Artificial Intelligence (AI)	
Physical Network	Physical Network		

Scalable
Resilient
Available
(regions/datacenters)
(US regions/datacenters)

Immutable (replaceable)
Ephemeral (temporary)

Everything as Code

Infrastructure
Applications

Code Repositories
CI/CD Pipelines

Customers need IT to help meet Business Requirements!

CSPs need to be in sync with **Modern IT** approaches, innovations, technologies and tools. Some services are **Cloud Native** or **Born in the Cloud.**

Build apps and combine services to meet business needs

CSP

Customer

Agenda

- Demand for Innovation

  Why are we moving quickly or slowly to adopt innovation (such as Public Cloud and Modern IT technologies)?

Demand for Innovation

Innovation
High
Medium
Low

Demand	Weight
☆ Customers ☆ Business Requirements	5
☆ Executive Leadership	4
☆ Senior Management	3
☆ Management	2
Technical Staff R&D O&M	1
End Users	1

Influence occurs and does not always follow chain of command

Know your audience – differing perspectives

Challenges	Responses ☆	Resources ☆
Where to start	Structure Program	Staff Tools
Risk	Cyber/Info Assurance	Staff Tools
Cost	Budget	Staff Tools
Deployment	Design Test Build	Staff Partners Tools
Transition	Plan Roles Training	Staff Partners Tools
Function & Performance	Adjustments RFCs	Staff Partners Tools
Breakage	Fix	Staff Tools
		☆ Funding Strategic Tactical

Adoption
High
Medium
Low

☆ Critical Adoption Factors

☆ Critical Success (Customer Satisfaction) Factors

Agenda

- Public Cloud Projects vs Public Cloud Programs
  - Understand scope and manage expectations

Public Cloud Projects vs Public Cloud Programs

	Project	Program
Scope	Customer Defined - Project requirements - Project deliverables	Broad scope Variety of workloads

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Data Owner	Customer	Enterprise (Corporation)
ATO (Risk) Owner	Customer	Cyber Assurance (Oversight)

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Staffing	Enterprise (Corporation)	Enterprise (Corporation)

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Staffing	Enterprise (Corporation)	Enterprise (Corporation)
Demand	Customer	Leadership is key Influenced by customers, SMEs

Agenda

- Workforce Transformation
  - Why does Public Cloud matter to me?
  - Where can I fit in?
  - How do I evolve my role?

Workforce Transformation

Example: transform from 21 traditional teams to 5 cloud teams (just one potential option!)

Network	Storage	Servers	Desktops	Backups / DR	Net Firewalls

Cloud Admin Team
IaaS Concepts
CSP Interface
Cloud/IaC Tools/Process/Policy

Proxy	WAF/NGFW	Cyber Scan	Cyber IR	Logs

Cloud Admin Team
Perimeter Concepts
CSP Interface
Cloud/Proxy/FW Tools/Process/Policy

Cloud Cyber Team
Cyber Concepts
CSP Interface
Cloud/Cyber Tools/Process/Policy

Cloud Logs Team
Cyber Concepts
CSP Interface
Cloud/SIEM Tools

Manage the work

Cloud Admin Team
Cloud Adoption/
Program
Management

Server admin	Server CM	Desktop Admin	Desktop CM	Antivirus	Datacenter

Cloud OS Team
OS Admin/CM Concepts
CSP Interface
Cloud/Sysadmin Tools/Process/Policy

CSP

AD	ADFS	LDAP	Other IdP	IT Customers (App Owners/Developers)

Cloud Identity Team
Concepts
Cloud/Traditional Tools/Process/Policy

Concepts

Applications provide business value

Cloud Admin Team
PaaS Concepts/Work Closely with Developers
CSP Interface
Cloud/Developer Tools/Process/Policy

Thank you!

Q & A