Hybrid Cloud – A Seamless Cloud Journey

Dr. K. Y. Srinivasan
Partner Architect

Microsoft

Who AM I

- Dr. K. Y. Srinivasan
  Partner Architect at Microsoft

- Areas Of Interest: Operating Systems, OS virtualization and Fault-tolerant computing.

- Ph.D in Fault-tolerant computing.

- More than 25 patents filed in the areas of virtualization and workload management.

In what year did the first production use of virtualization occur?

2008　2003　1998　1967

Think it, don't say it if you know!

In what year did the first production use of virtualization occur?

2008

2003

1998

1967

First full virtualization system in IBM's CP-40

In what year did the first production use of virtualization occur?

2008

2003

1998

1967

VMware founded

In what year did the first production use of virtualization occur?

2008   2003   1998   1967

Microsoft acquired Connectix in February 2003

In what year did the first production use of virtualization occur?

2008 2003 1998 1967

VMM was introduced by VMware, Microsoft and Citrix

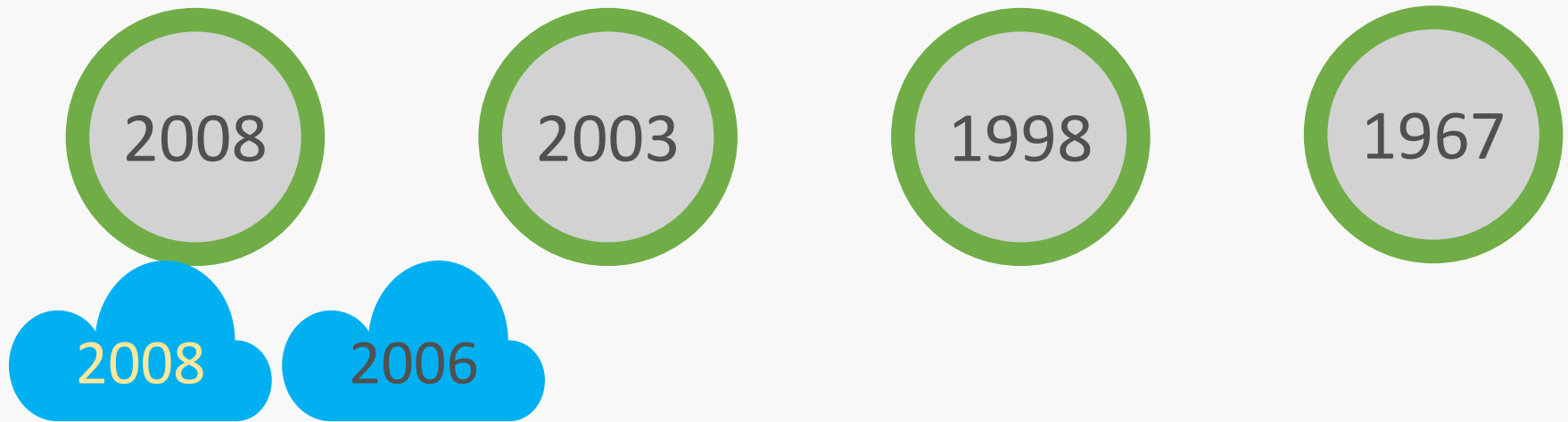# In what year did the first production use of cloud occur?

2008 2003 1998 1967
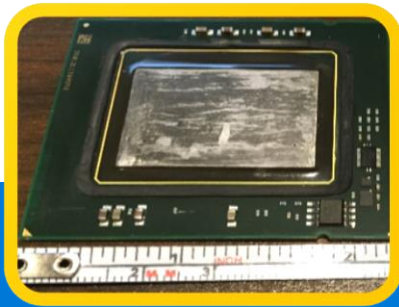
2006

AWS began offering IT infrastructure services

In what year did the first production use of cloud occur?

2008

2003

1998

1967

2008

2006

Azure was announced with PaaS

X86 & virt

Miniaturization

Cloud

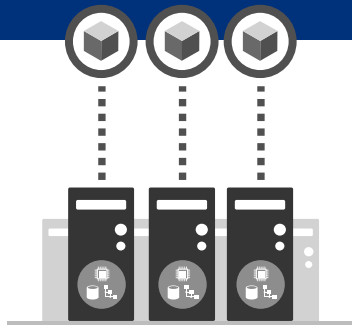AWS, Microsoft Azure, Aliyun

1960's → NOW

Cloud is a new way to think about a datacenter

Traditional model

Dedicated infrastructure for each application

Purpose-built hardware

Distinct infrastructure and operations teams

Customized processes and configurations

Cloud model

Loosely coupled apps and micro-services

Industry-standard hardware

Service-focused DevOps teams

Standardized processes and configurations

Servers

Services

Cloud OS – The New Operating System

- Distributed
- Software Defined "Everything"
- Services centric
- Multi-tenancy and QOS
- VM based Container support
- Orchestration
- Fault-Tolerant
- Elastic
- Efficiently run heterogeneous workloads
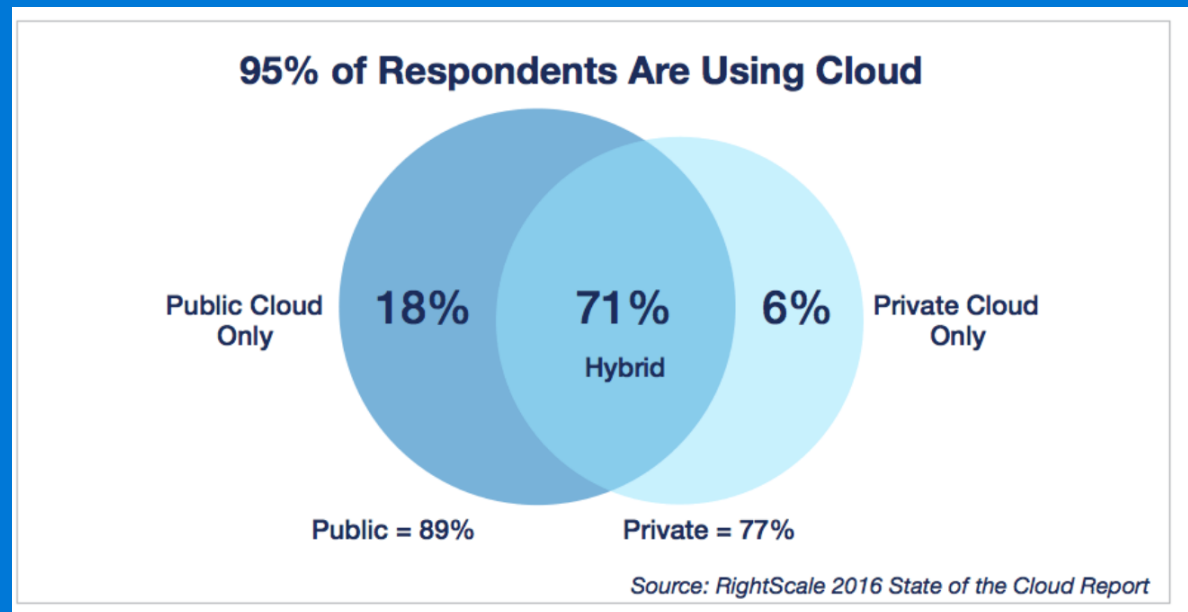   - Window, Linux, Others

Hybrid Cloud, a reality today

- Workload requirements

Regulation

Sensitive data

Customization

Latency

Legacy support

95% of Respondents Are Using Cloud

Public Cloud Only — 18%

71% **Hybrid**

6% — **Private Cloud Only**

Public = 89%   Private = 77%

Source: RightScale 2016 State of the Cloud Report

What does Hybrid Mean?

Hybrid Cloud - Portability & Consistency

Experiences

Operations

Tools

Deployments

Application Patterns

Automations
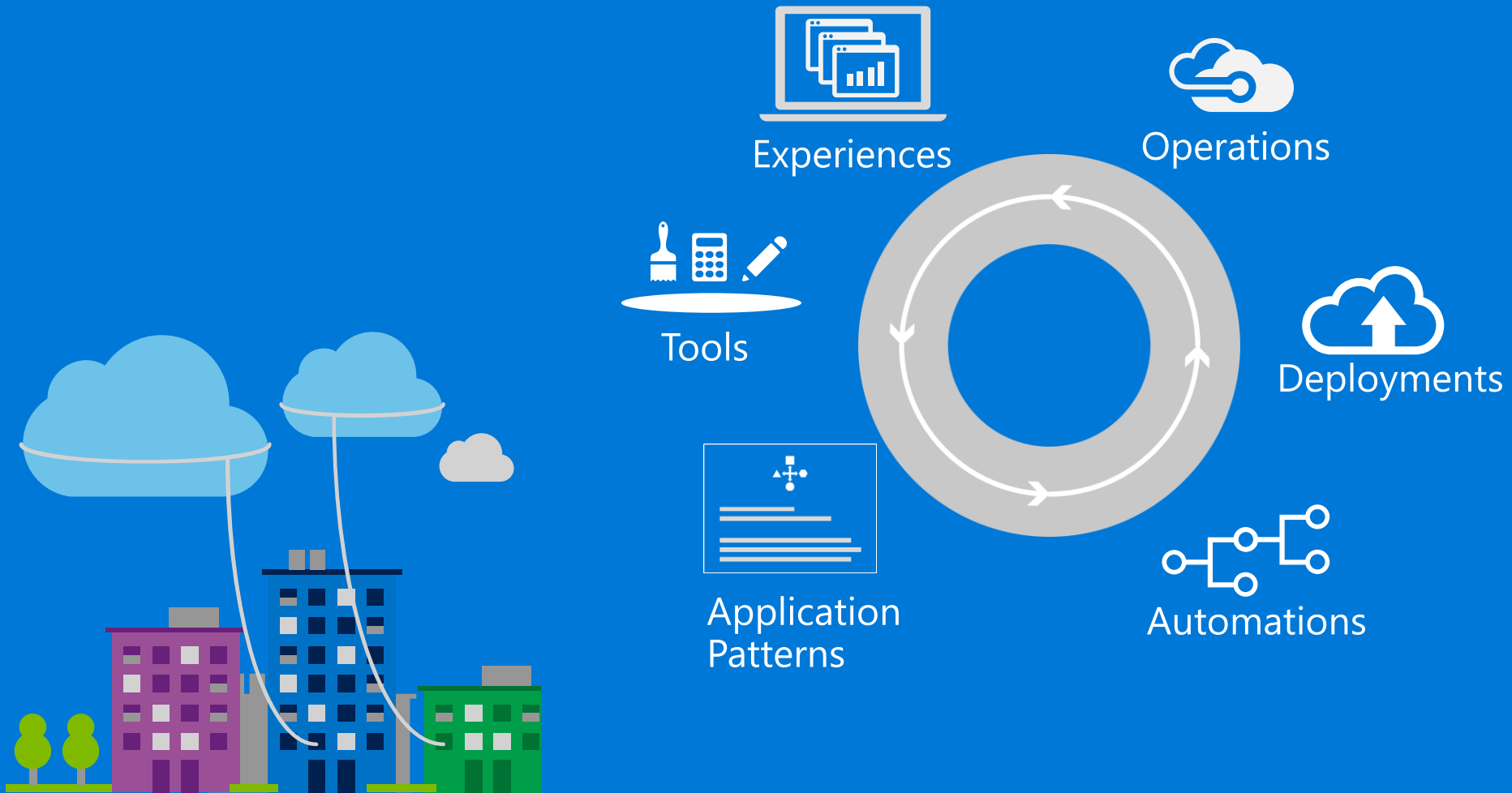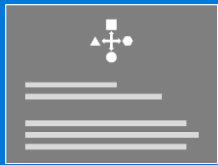
Microsoft's Hybrid Cloud Platform

Applications

- Windows | Linux
- Java, PHP, .NET, ...
- IaaS
- PaaS
- Containers

Operations

- Templates
- PowerShell, CLI
- Puppet, Chef, DSC
- Metrics
- Diagnostics

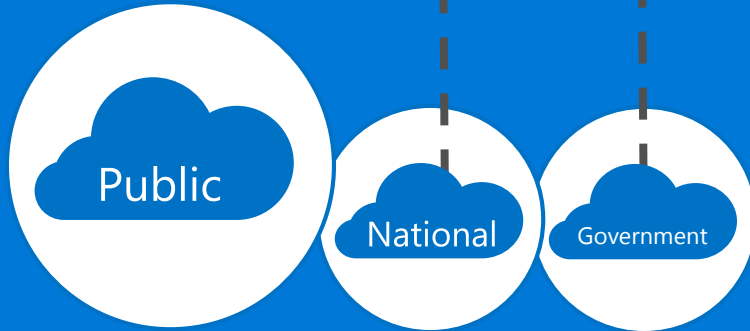## Tools

- Visual Studio
- Eclipse
- Others

Experiences

- Portal
- Gallery
- RBAC
- GitHub

Azure Ecosystem

Public

National

Government

Service Providers
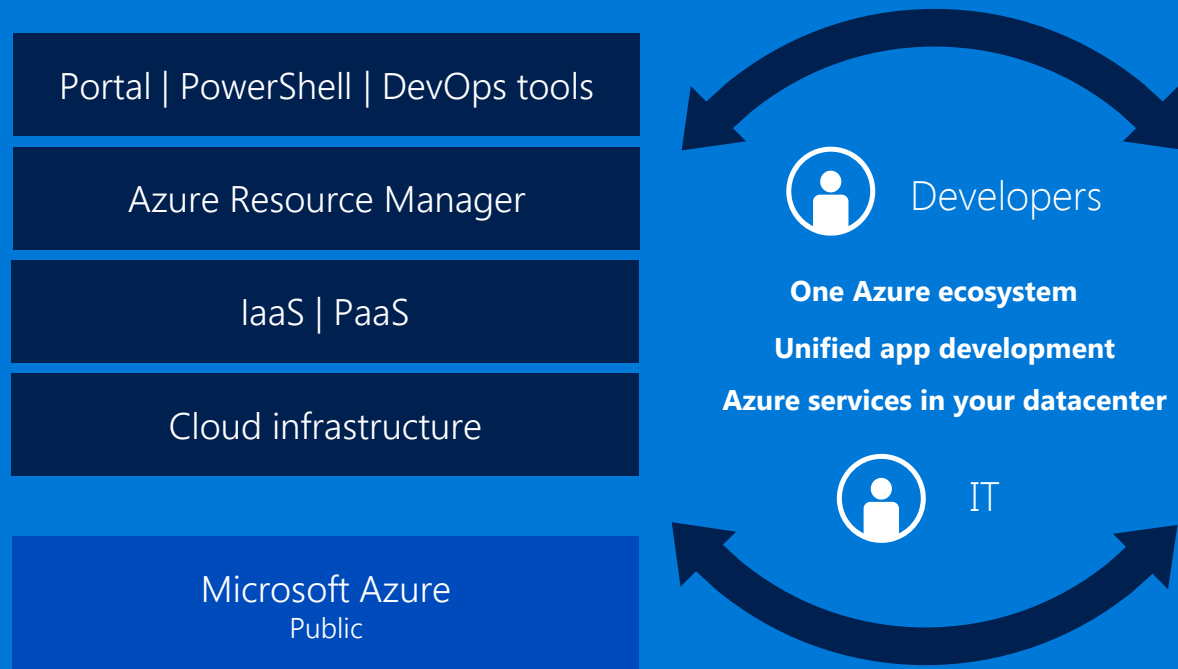
Customer Datacenter

Microsoft Azure

Microsoft Azure Stack

Microsoft's Hybrid Cloud Platform
– Power of Azure in your Datacenter

Portal | PowerShell | DevOps tools

Azure Resource Manager

IaaS | PaaS

Cloud infrastructure

Microsoft Azure
Public

Developers

One Azure ecosystem

Unified app development

Azure services in your datacenter

IT

Azure Stack Architecture Overview

ARM LAYER

Azure Portal (UX) | Templates/PowerShell/CLI, SDK, etc

Azure Resource Manager (ARM)

RP LAYER

PARTITION REQUEST BROKER

FRP | SRP | CRP | NRP | HRP | URP | ...

INFRASTRUCTURE CONTROL LAYER

Infrastructure Deployment
- Bootstrap
- Patch & Update
- Scale Out
- FRU
- RESET
- START
- STOP

PHYSICAL NODE MANAGEMENT | STORAGE CONTROLLER | COMPUTE CONTROLLER | NETWORK CONTROLLER | INFRA ROLE CONTROLLER | HEALTH CONTROLLER

Workflows

Builds

INFRASTRUCTURE ROLES

HARDWARE LAYER

NETWORK (SWITCHES) | COMPUTE | STORAGE

Azure Stack Architecture Overview

What is an
Installation or Instance of Azure Stack?

- Single instance of Azure Resource Manager (ARM)

- 1 or more Regions under management of ARM

- 1 or more Scale Units within a Region

- 4 or more servers within a Scale Unit

Azure Stack Compute Requirements

- Start at 4 Servers for Scale Unit

- Hyper-Converged Scale Units

- CPU: Dual Socket – Minimum 8 Cores Per Socket

- Memory: 256 GB Minimum

- All servers within a Scale Unit must have same configuration

Hybrid Cloud Capabilities built-in across Microsoft portfolio

Hybrid **Productivity**	→	Office 365 + Office, Exchange, SharePoint
Hybrid **Business Apps**	→	Dynamics 365 + Dynamics
Hybrid **App Integration**	→	Azure Service Bus + BizTalk Server
Hybrid **Identity**	→	Azure Active Directory + Active Directory
Hybrid **Database**	→	Azure SQL Database + SQL Server
Hybrid **Management**	→	Operations Management Suite + System Center
Hybrid **Backup & DR**	→	Azure Backup + Azure Site Recovery
Hybrid **Storage**	→	Azure Storage + StorSimple
Hybrid **Networking**	→	Azure ExpressRoute + VPN
Hybrid **Platform**	→	Azure + Azure Stack

INFRASTRUCTURE   **APPLICATIONS**   **DATA**   **USERS**

One Azure Ecosystem

34
Azure regions today
More than AWS & Google combined

100s of service providers

1,000s of enterprises

Linux/Open Momentum

- >30% external VMs are Linux

- >50% of new VMs are Linux

- 60% of 3rd-party IaaS are Linux

- 55% of GitHub templates are Linux

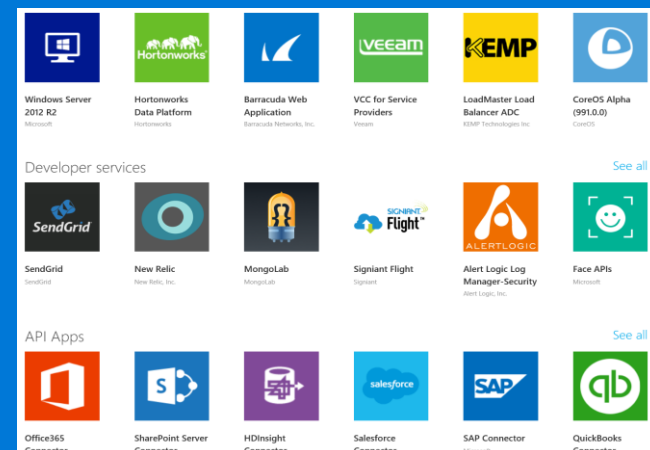 (Ansible, Apache, Bitcore, Dokku, Kafka, Jenkins, Postgres, Redis, Scrapy, Spark, HAProxy...)

Azure 全球镜像市场