

SUNET

Molnet är relevant för alla
– framtiden i Azure är nu –

Magnus Mårtensson
LOFTYSOFT



Point of order

Does anyone in the audience
need me to present this session in *English*?

If not I will do it in *Skånska*!

What are the things the Cloud brings that makes it different?

What new things do we need to take into account when migrating to building for the Cloud?

What is the path when *going Cloudy*?

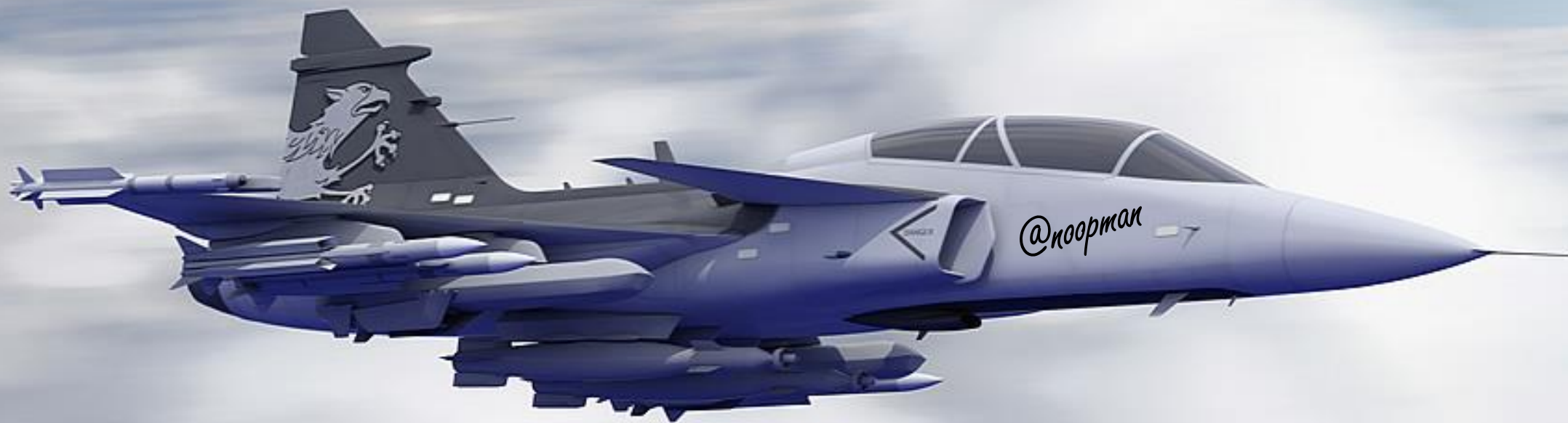
You!





ANNE OCH MAGNUS BEVAKAR STUDENTERNAS INTRESSEN

SUNET-styrelsen har fått tillökning! Numera har även två studeranderepresentanter säte där. De två som SFS utsett att föra studenternas talan är Anne Ehrenholm och Magnus Mårtensson.



magnus@loftysoft.com

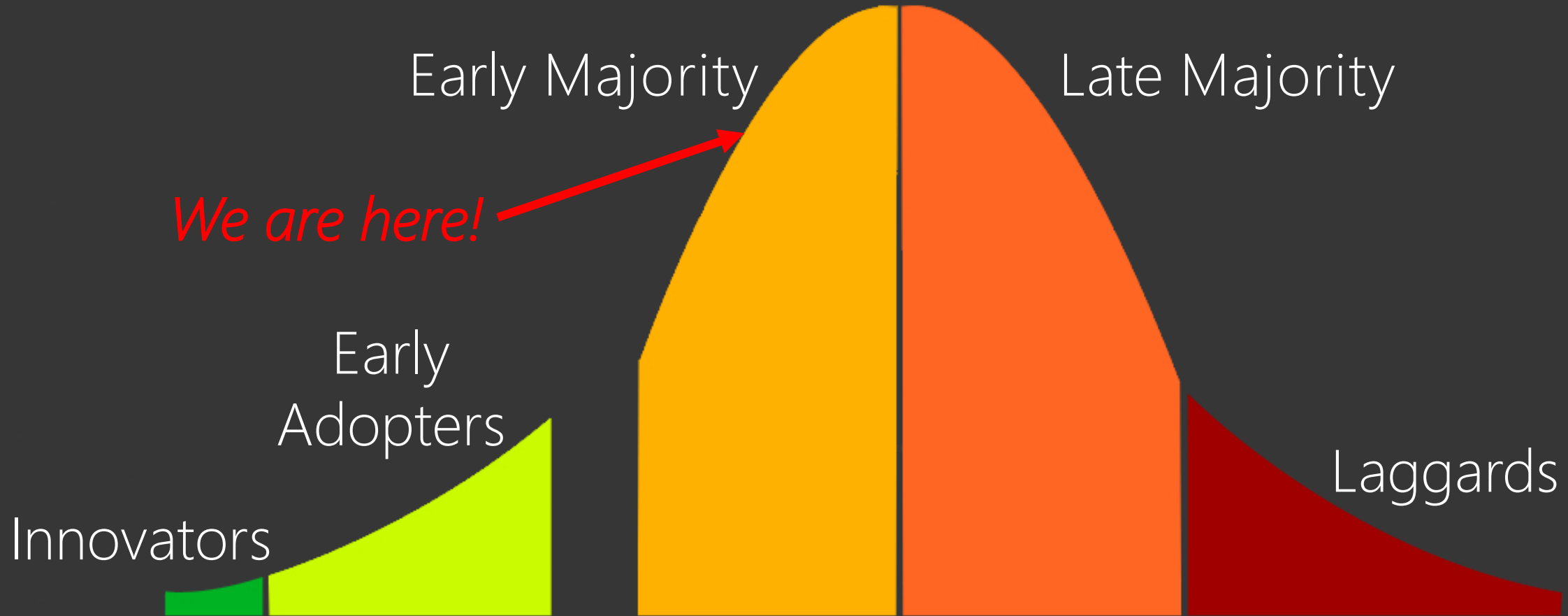


#GlobalAzure Bootcamp April 16, 2016.



global.azurebootcamp.net

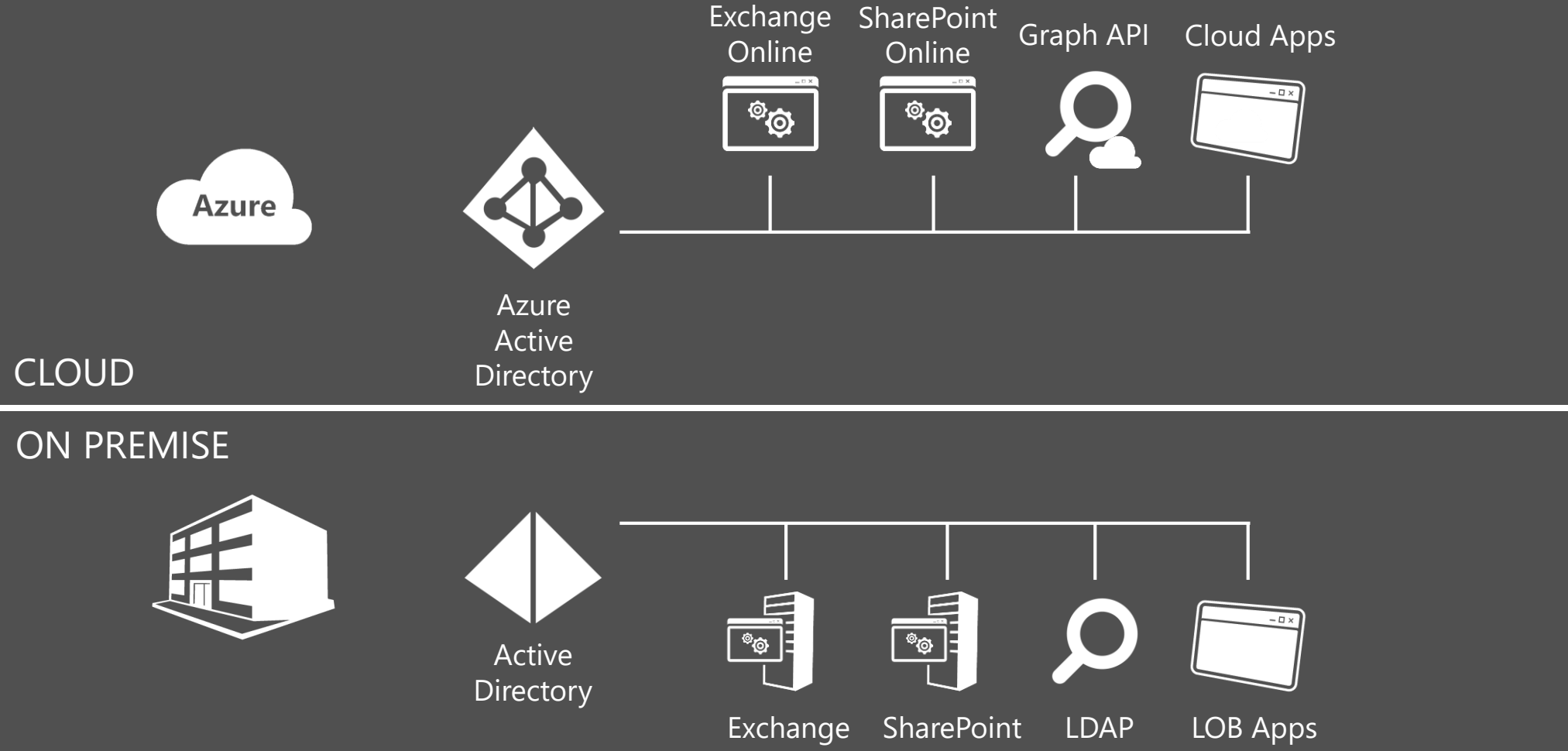
Technology Adoption Lifecycle



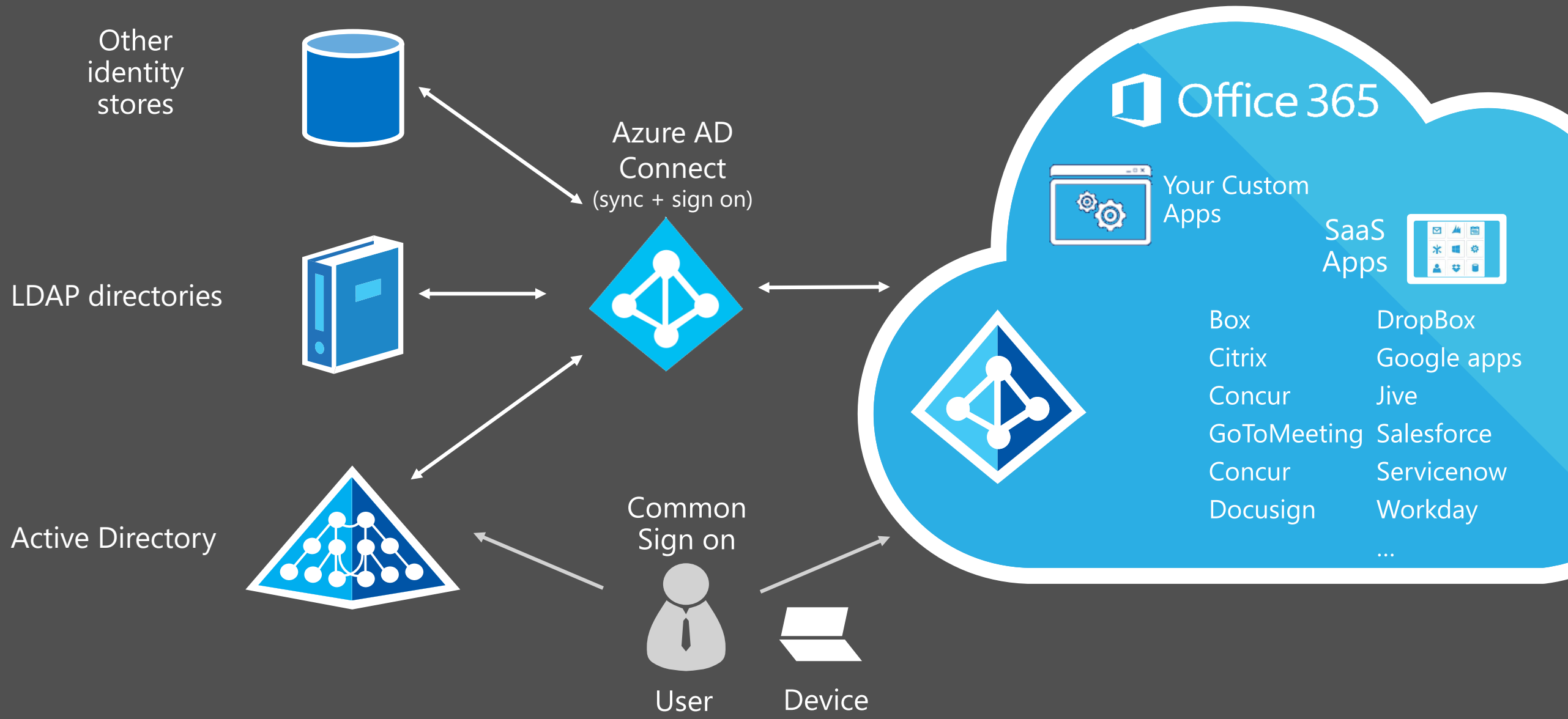
- Översikt IaaS, PaaS, SaaS
- Kort om Azure
- Kort om AAD och AAD Connect
- Kort om IaaS
- Kort om SaaS, Office365, CRM, AX osv
- Mycket om PaaS
- HYBRID kan vara nödvändigt!
- Lite om OMS (om inte Micke Nyström tagit det)
- PaaS, Web Apps, SQL databases, Lagring - olika alternativ, Service Bus/queue,
- Logic Apps och WebJobs.
- Scheduler och Runbooks.
- Security Center
- Övervakning, loggar, monitoring
- Behörigheter, dynamiska behörigheter, Koppling till AAD
- Q & A

No way the Cloud is secure!

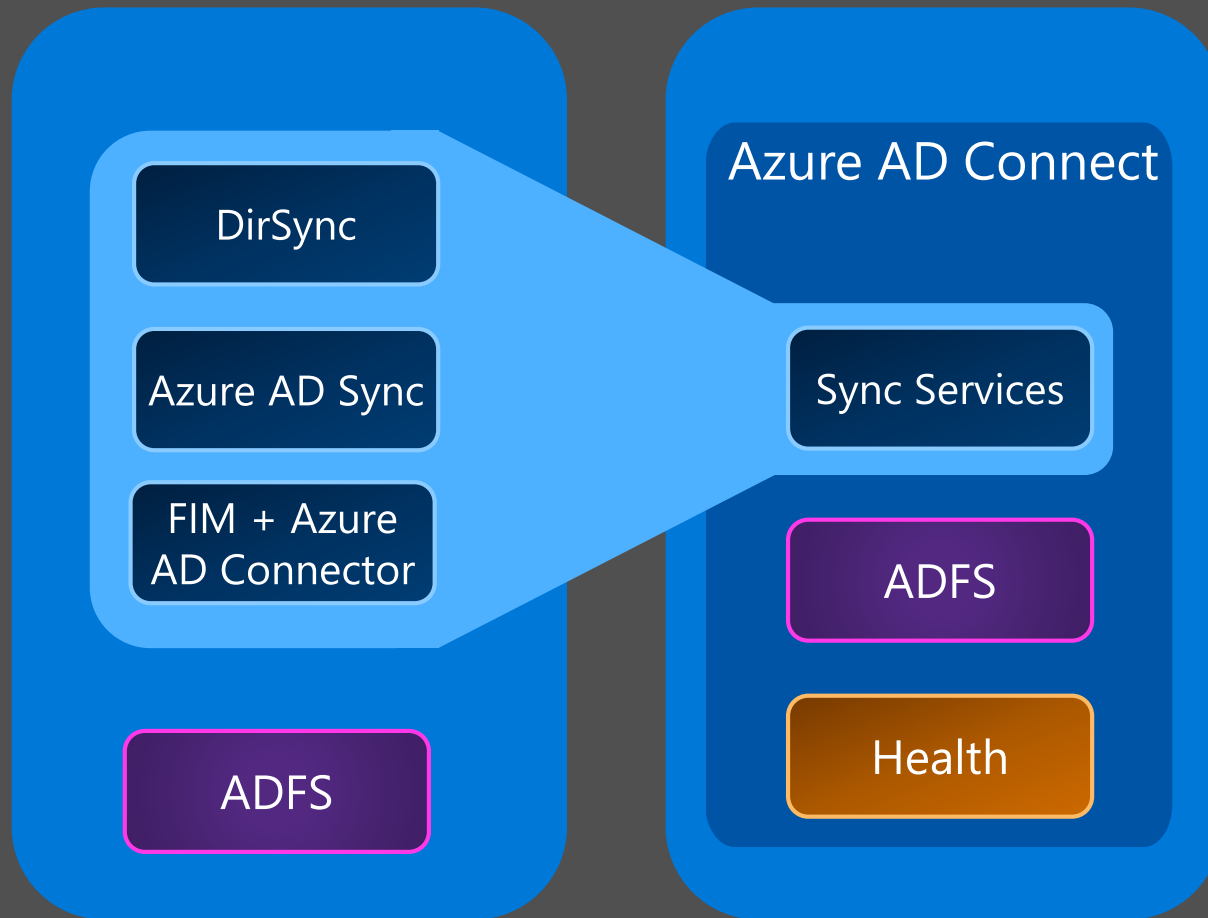
AD On Premise and Azure



Azure AD Connect: Your Identity Bridge



Making hybrid identity simple



Azure Active Directory
Connect

Consolidated
deployment assistant for
your identity bridge
components.

Azure AD has lots of high end features like
Privileged Identity Management



Azure AD Privileged
Identity Management

Privileged Identity Management

Privileged Identity Management

PREVIEW

- Manage identities
- Activate my role
- Review administrative access

Azure AD Privileged Identity Management

PREVIEW

Activity Add tiles (+)

Security alerts

ACTIVE ALERTS

0 Alerts

No alerts were found

Users in admin roles

1 Users

[Audit history](#) [Quick start](#)

Role summary Add tiles (+)

Roles

[CLICK HERE TO VIEW ALL USER ROLES](#)

ROLE NAME	MULTI-FACTO...	USERS	ACTIVE	TEMPORARY
Global Administrator	YES	1	1 (100%)	0 (0%)
Security Administrator	YES	1	1 (100%)	1 (100%)

Security reviews Add tiles (+)

Active security reviews

[CLICK HERE TO VIEW ALL REVIEWS](#)

NAME	OWNER	END DATE
No active security reviews were found		

[Add a group \(+\)](#)

AAD – lots of features

SSO for Cloud Apps

Application Proxy for on Premise Apps

Multi Factor Authentication

B2B

B2C

Password Self Service Reset

Group Management Self Service

Advanced Security Reports and Alerts

Company Branding

Enterprise SLA

...

Monitors entire Azure deployments for compliance with security policies you define.

Simple point-and-click remediation.

bit.ly/azureSecurityCenter



Azure Trust Center bit.ly/azuretrustcenter

- ✓ Security: We work to keep your data safe.
- ✓ Privacy: You own and control your customer data.
- ✓ Transparency: You know how your data is stored and accessed, and how we help secure it.
- ✓ Compliance: We conform to global standards.

Security is not the most critical or even interesting issue
in a Cloud adoption strategy!

Basically Microsoft has got this covered!

Any questions?



Microsoft Azure



Google
App Engine

Network Coverage

Express Route Partners



Plus 31 CDN Point of Presence locations



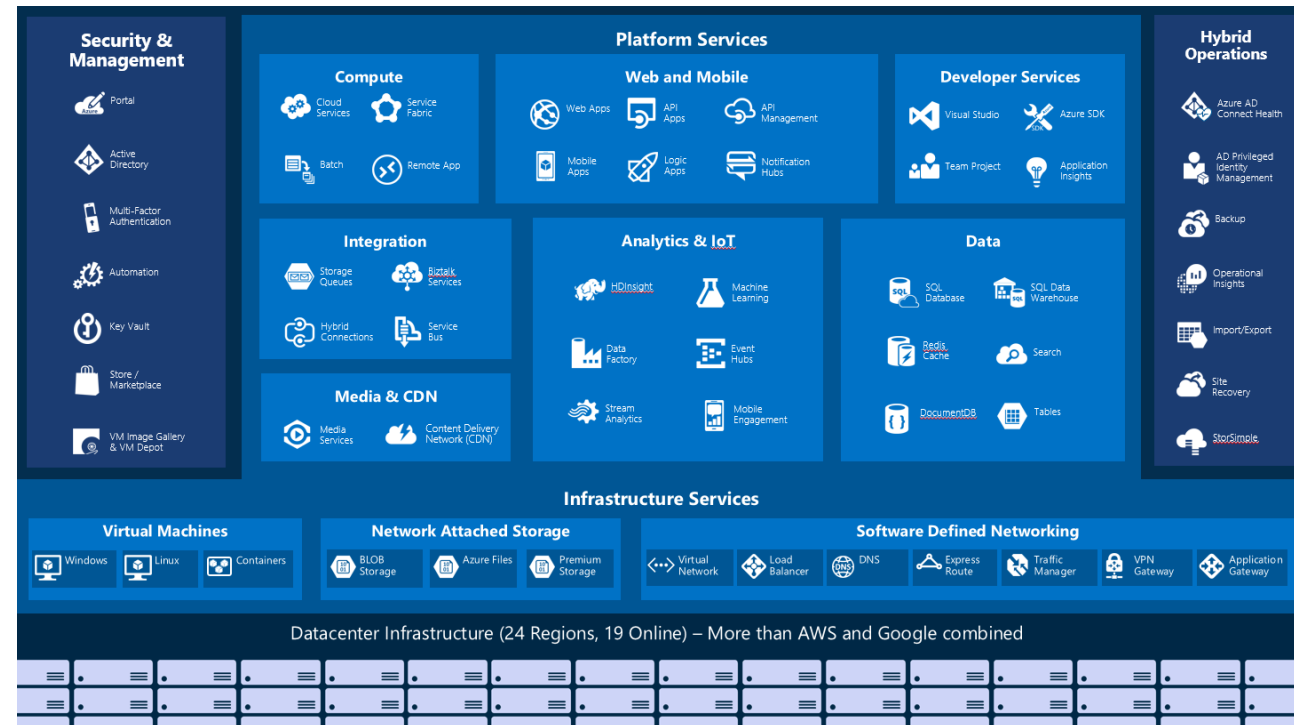
- AZURE REGIONS
- EXPRESSROUTE LOCATIONS
- CDN POINT OF PRESENCE

AWS Building Blocks vs Azure



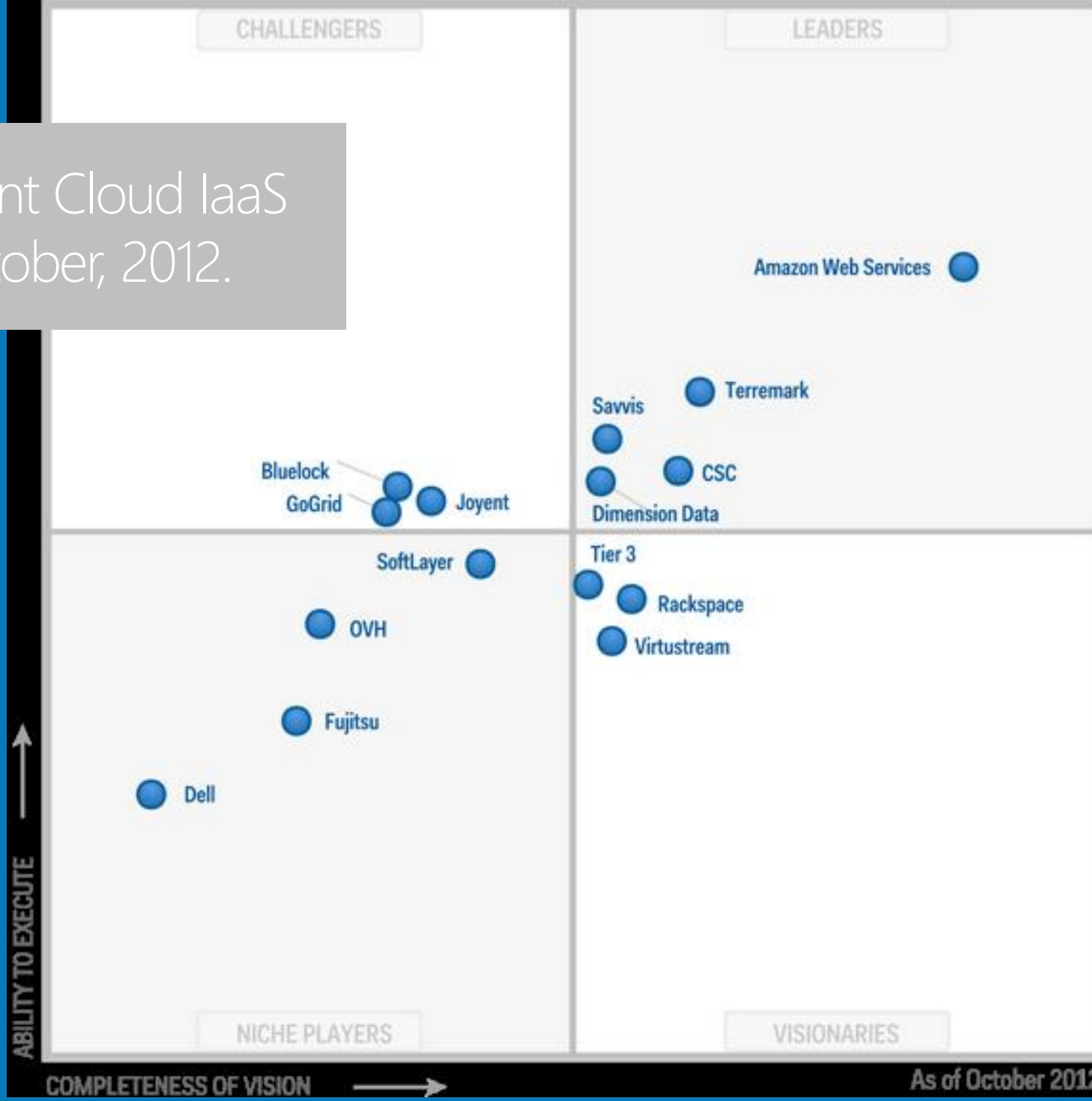
- Azure is broader, deeper and more integrated.
- Azure and Azure Stack help customers in Public Cloud AND in their own Data Centers.

- Microsoft leads in SaaS and Enterprise Apps with O365, CRM, VSTS.
- Hybrid capabilities to connect your Data Center to Public Cloud.



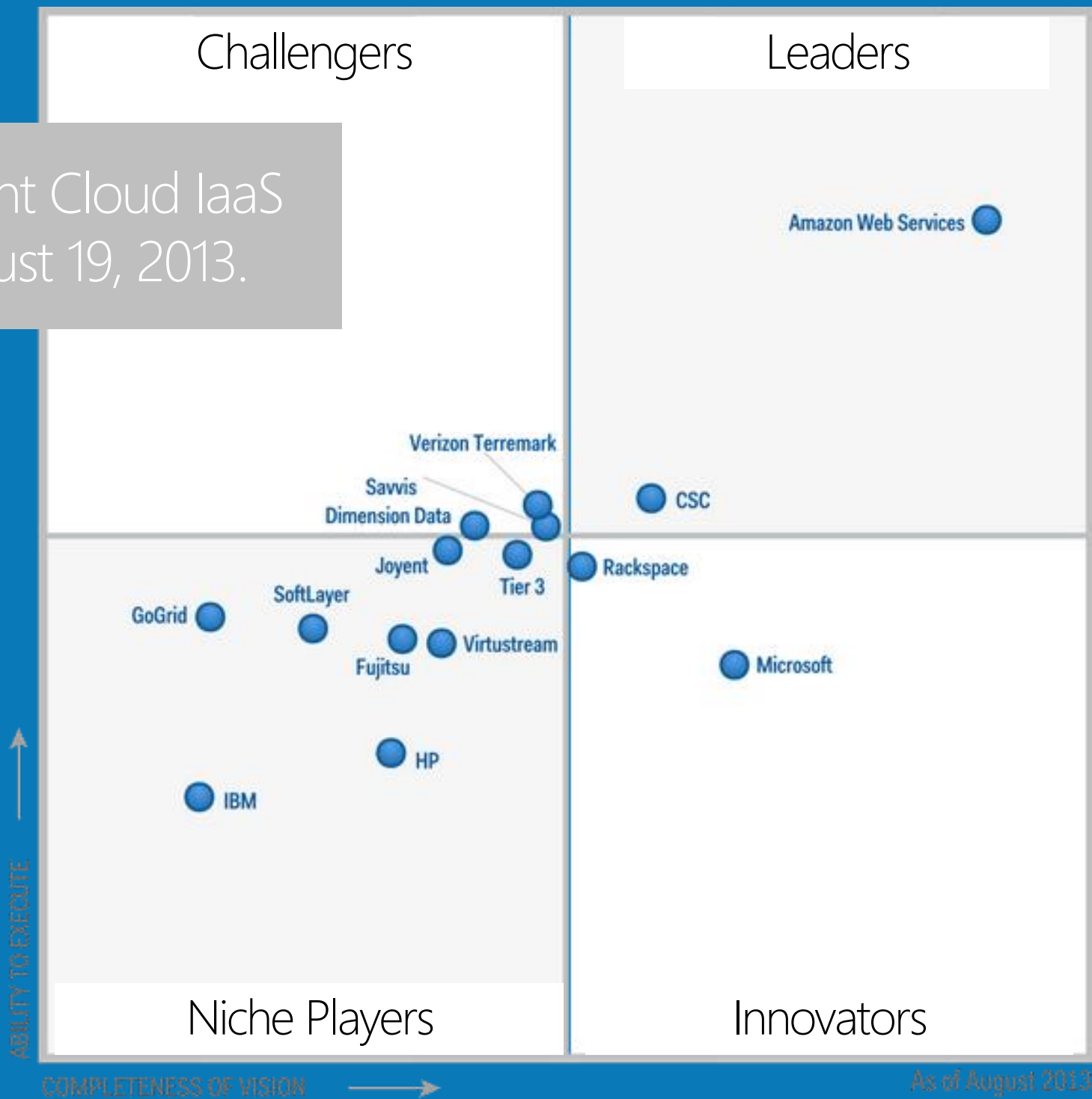
bit.ly/AWSvsMsAzure

Magic Quadrant Cloud IaaS
Gartner, October, 2012.



As of October 2012

Magic Quadrant Cloud IaaS
Gartner, August 19, 2013.



Magic Quadrant Cloud IaaS
Gartner, May 28, 2014.



Magic Quadrant Cloud IaaS
Gartner, May 18, 2015.



Magic Quadrant Cloud PaaS
Gartner, January 8, 2013.



↑ ABILITY TO EXECUTE

→ COMPLETENESS OF VISION

As of January 2014

Magic Quadrant Cloud PaaS
Gartner, March 24, 2015.



Industry validation



Summary of Major Vendor Emphasis

	Build Private Services	Deliver Services	Services Delivered*			Private Offerings	
			IaaS	PaaS	SaaS	Enabling Tech.	Packaged Cloud
Amazon	○	●	●	●	○	None	None
salesforce.com	○	●	○	●	●	None	None
Google	○	●	●	●	●	None	None
Microsoft	●	●	●	●	●	●	●
IBM	●	●	●	●	●	●	●
VMware	●	●	○	●	●	●	●
Oracle	●	●	●	●	●	●	●
SAP	○	●	○	●	●	None	None
HP	●	●	●	●	●	●	●

Note: This is not an evaluation of capabilities, but rather of emphasis.



* The provider may offer public, community or virtual private services

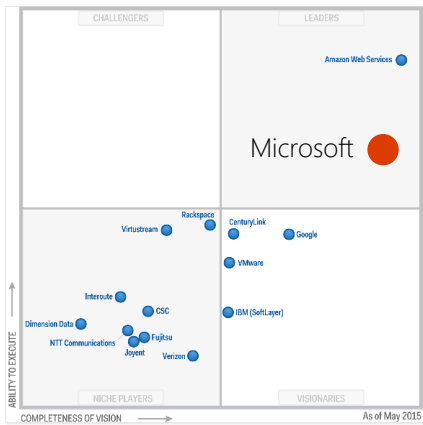
Gartner

"Microsoft's comprehensive hybrid story, which spans applications and platforms as well as infrastructure, is highly attractive to many companies, drawing them towards the cloud in general."

LYDIA LEONG,
GARTNER

Microsoft Leads Everywhere...

Public Cloud IaaS (May 2015)



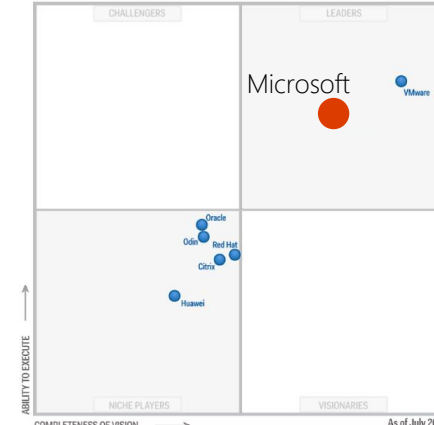
Cloud Storage (June 2015)



Enterprise App PaaS (Jan 2014)



X86 Server Virt (July 2015)



Operational DBMS Systems (Oct 2015)



The three Big Ones are *AWS*, *Azure* & *AppEngine*.

Azure has a very complete set of offerings.

Only *Microsoft* has the on premise + hybrid story.



Microsoft Azure

Enterprise Grade Enhancements



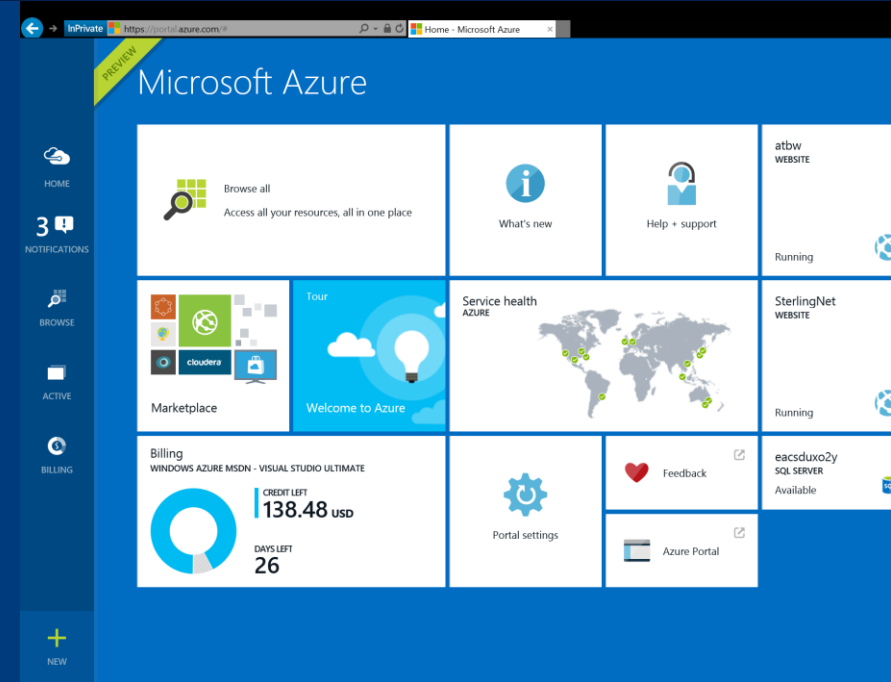
Largest VMs in Public Cloud

Optimized for data workloads
Up to 32 CPU cores, 450 GB RAM,
6.5 TB local SSD
Latest generation Intel processor



Premium Storage

Up to 64 TB of storage per VM
>50,000 IOPS per VM
Less than 1ms read latency

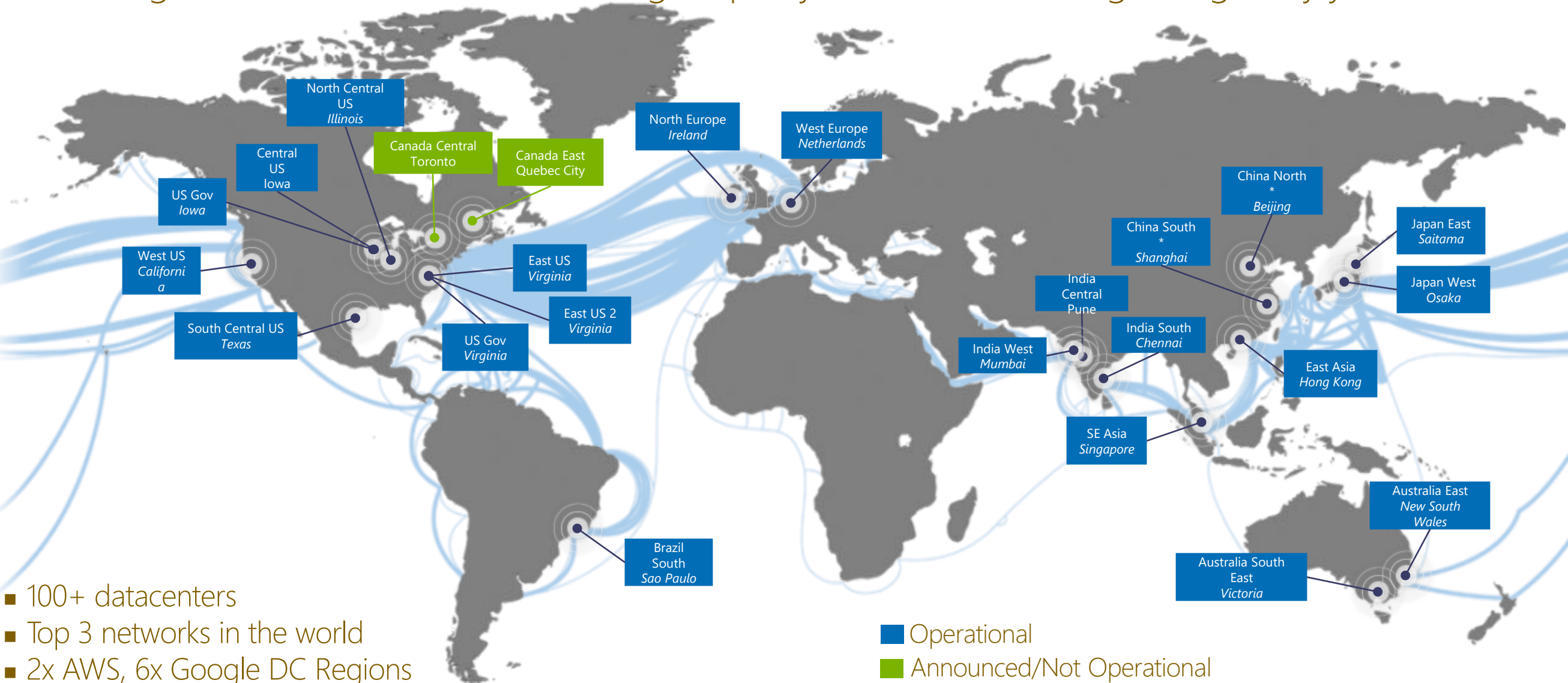


End to End Management

Integrated management portal
Application Templates
Lifecycle Management
Role Based Access Control
Billing API

Huge infrastructure scale is the enabler

24 Regions Worldwide, 22 ONLINE...huge capacity around the world...growing every year



- 100+ datacenters
- Top 3 networks in the world
- 2x AWS, 6x Google DC Regions
- G Series – Largest VM in World, 32 cores, 448GB Ram, SSD...

* Operated by 21Vianet

500+

New releases in
the last 12 months

Azure Site Recovery: Protect VMWare and Physical Servers
in Public Preview

Azure Backup Generally Available

Azure API Management Premium simplifies high availability and
massive scale for APIs

ExpressRoute for Office 365

Azure Active Directory Dynamic Membership For Groups

Automatic Password Change for Social Media Shared Accounts

Compute-Intensive A10 and A11 Virtual Machine Instances

Remote Desktop app for Windows Phone support for Gateway
and Remote Resources

Informatica Cloud Agent availability in Linux and Windows Virtual
Machines

Azure DocumentDB Hadoop Connector

Azure HDInsight support for more VM sizes

Enterprise-Grade Array-Based Replication and Disaster Recovery
with AFB and System Center CA

Platform Services

Security & Management

- Portal
- Active Directory
- Multi-Factor Authentication
- Automation
- Key Vault
- Store / Marketplace
- VM Image Gallery & VM Depot

Compute

- Cloud Services
- Service Fabric
- Batch
- Remote App

Web and Mobile

- Web Apps
- API Apps
- API Management
- Mobile Apps
- Logic Apps
- Notification Hubs

Developer Services

- Visual Studio
- Azure SDK
- Team Project
- Application Insights

Hybrid Operations

- Azure AD Connect Health
- AD Privileged Identity Management
- Backup
- Operational Insights
- Import/Export
- Site Recovery
- StorSimple

Integration

- Storage Queues
- Biztalk Services
- Hybrid Connections
- Service Bus

Analytics & IoT

- HDInsight
- Machine Learning
- Data Factory
- Event Hubs
- Stream Analytics
- Mobile Engagement

Data

- SQL Database
- SQL Data Warehouse
- Redis Cache
- Search
- DocumentDB
- Tables

Media & CDN

- Media Services
- Content Delivery Network (CDN)

Infrastructure Services

Compute

- Virtual Machines
- Containers

Storage

- BLOB Storage
- Azure Files
- Premium Storage

Networking

- Virtual Network
- Load Balancer
- DNS
- Express Route
- Traffic Manager
- VPN Gateway
- Application Gateway

Datacenter Infrastructure (24 Regions, 22 Online)



Building applications today
is becoming less about building applications
and more about using existing services
to bolt applications together!

Chris Auld, Regional Director, InterGen



Virtual Machines



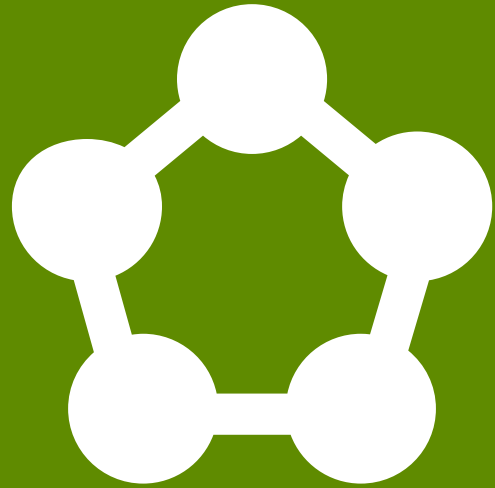
Cloud Services



Web Sites



Virtual
Machines



Service
Fabric



Cloud
Services



Web
Apps

IaaS

vs.

PaaS

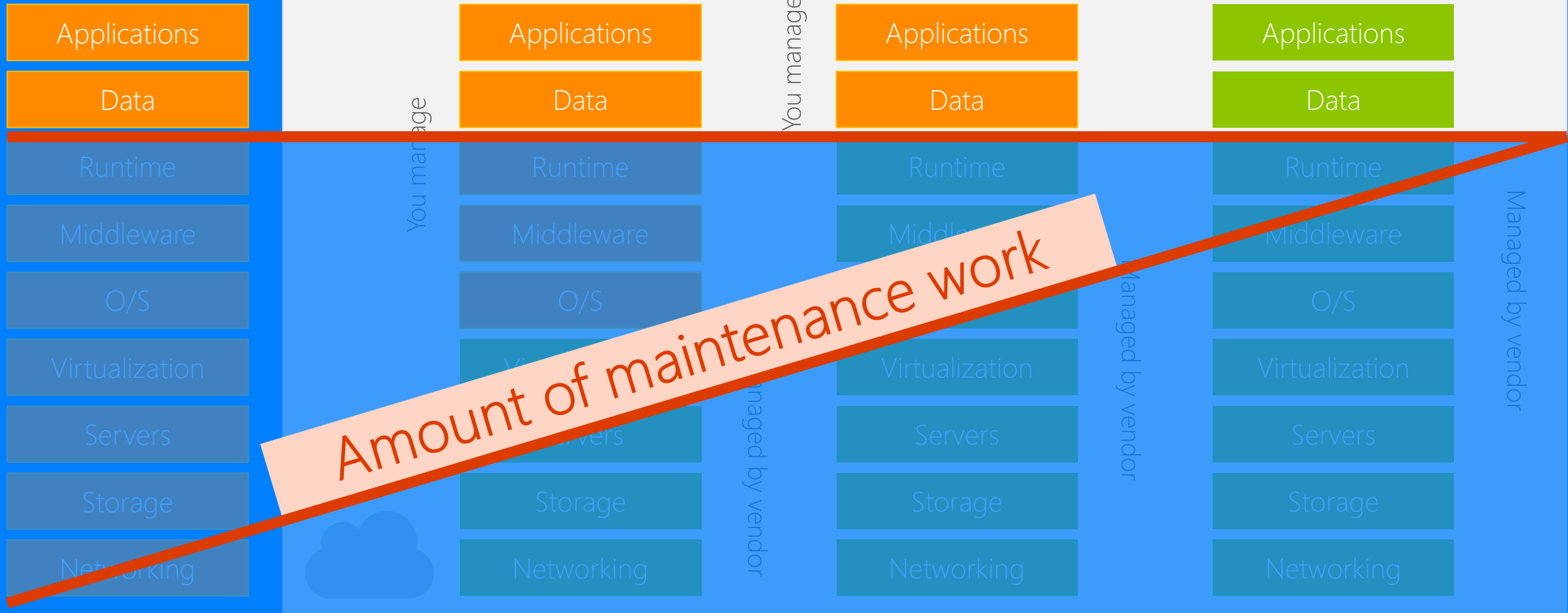
Cloud Computing

On Premise

Infrastructure
(as a Service)

Platform
(as a Service)

Software
(as a Service)



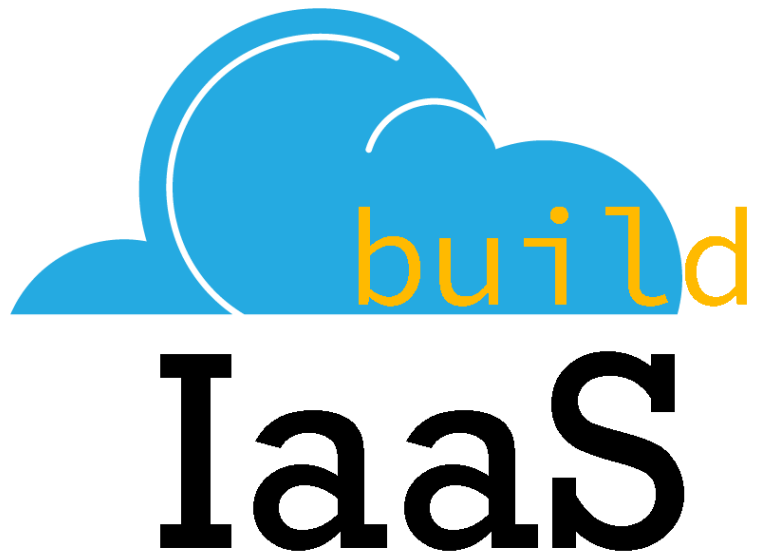
cost considerations

"Lift and Shift"

vs.

TCO

What's the difference? – It's all Cloud!

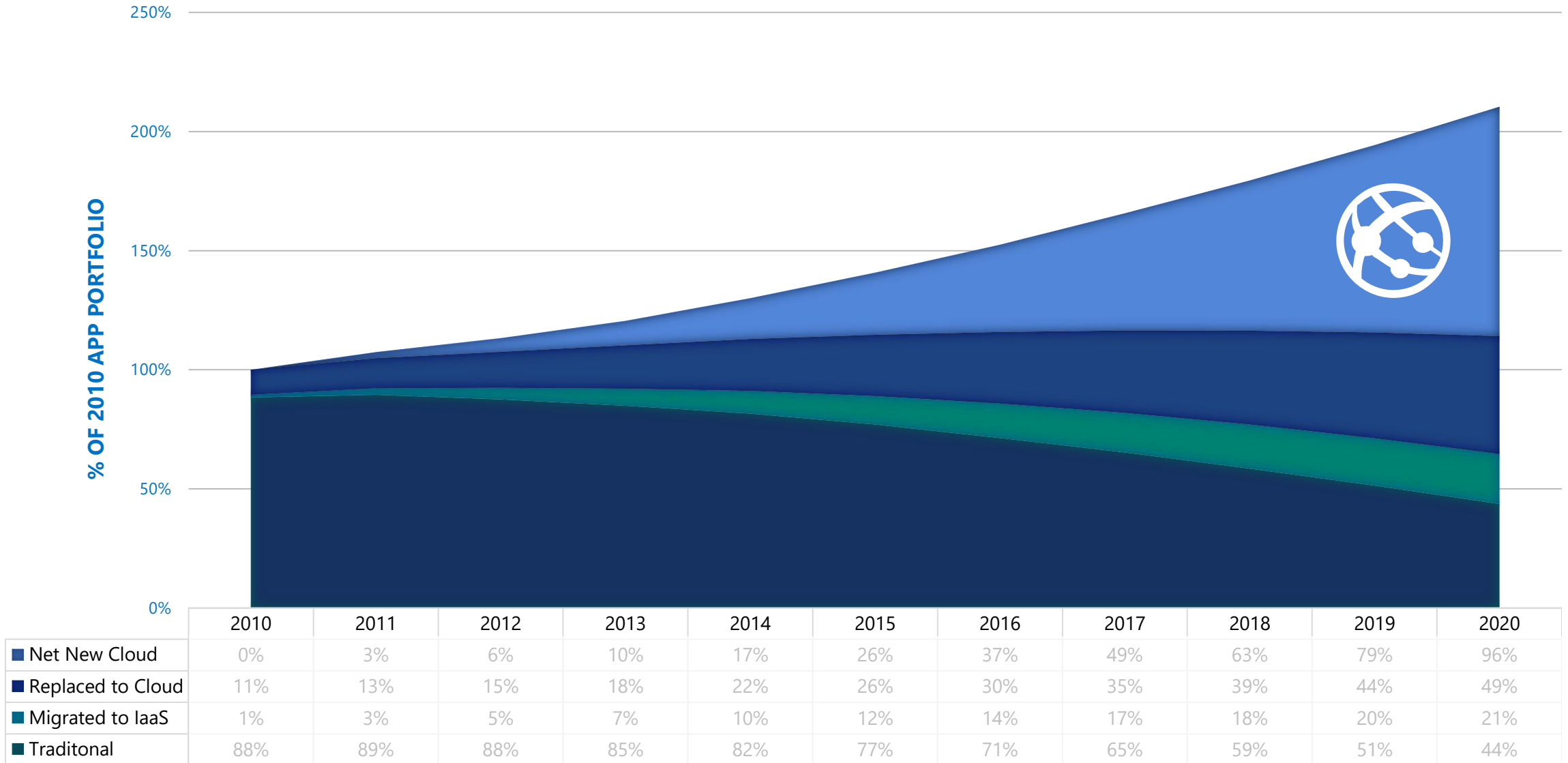


IaaS vs. PaaS

“Bottom Line: IaaS Is Winning”

(That's a limited and skewed view which will be proven wrong in the end! /Magnus)

Why architect for the cloud?



“Microsoft believes that PaaS provides *the best* foundation for creating, running and managing custom applications.”

bit.ly/ITasaService – Microsoft 2010

“Infrastructure services (IaaS) like compute, storage and networking defined the “first generation” of cloud computing adoption...

...many organizations are increasingly turning to platform services (PaaS) to create and deploy applications more quickly.

I call this the shift *from infrastructure to innovation*, and it's underway today.”

bit.ly/InfrastructureToInnovation Azure CTO Mark Russinovich, 2016

Horseless Carriage



In the inevitable PaaS future

We won't think about CPUs, RAMs,
Hard Drives and Network Capacity!

In the inevitable PaaS future

The expectation will be that your
App/Service has the right amount
of throughput/transactions/capacity
per time unit, always,
no matter if it's a huge peak
or a slow weekend!

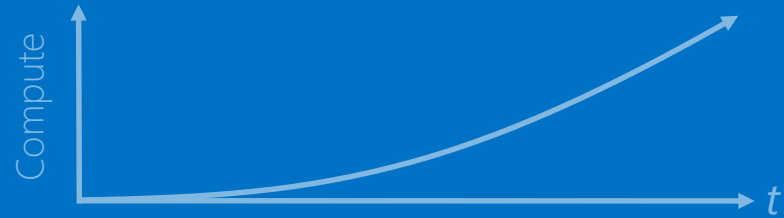
In the inevitable PaaS future

And you will pay
only for what you use!

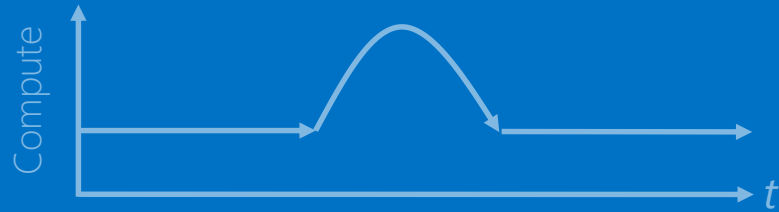
Cloud Computing Patterns



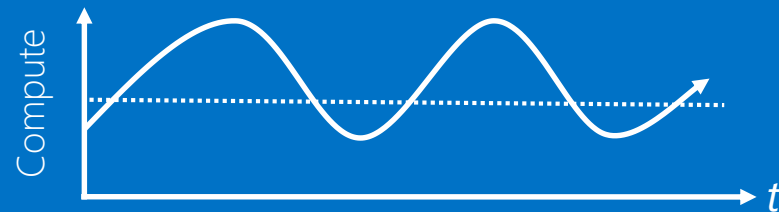
On and Off



Growing Fast



Unpredictable Bursting



Predictable Bursting

We are moving *from infrastructure to innovation*.

No cost calculations on premise or on VMs can measure up to elastic pay-per-use in the Cloud.

PaaS and Serverless Compute is the focus & the goal.

Hybrid



EVOLUTION OF THE CYLON

Battlestar Galactica

Power of Azure in your datacenter

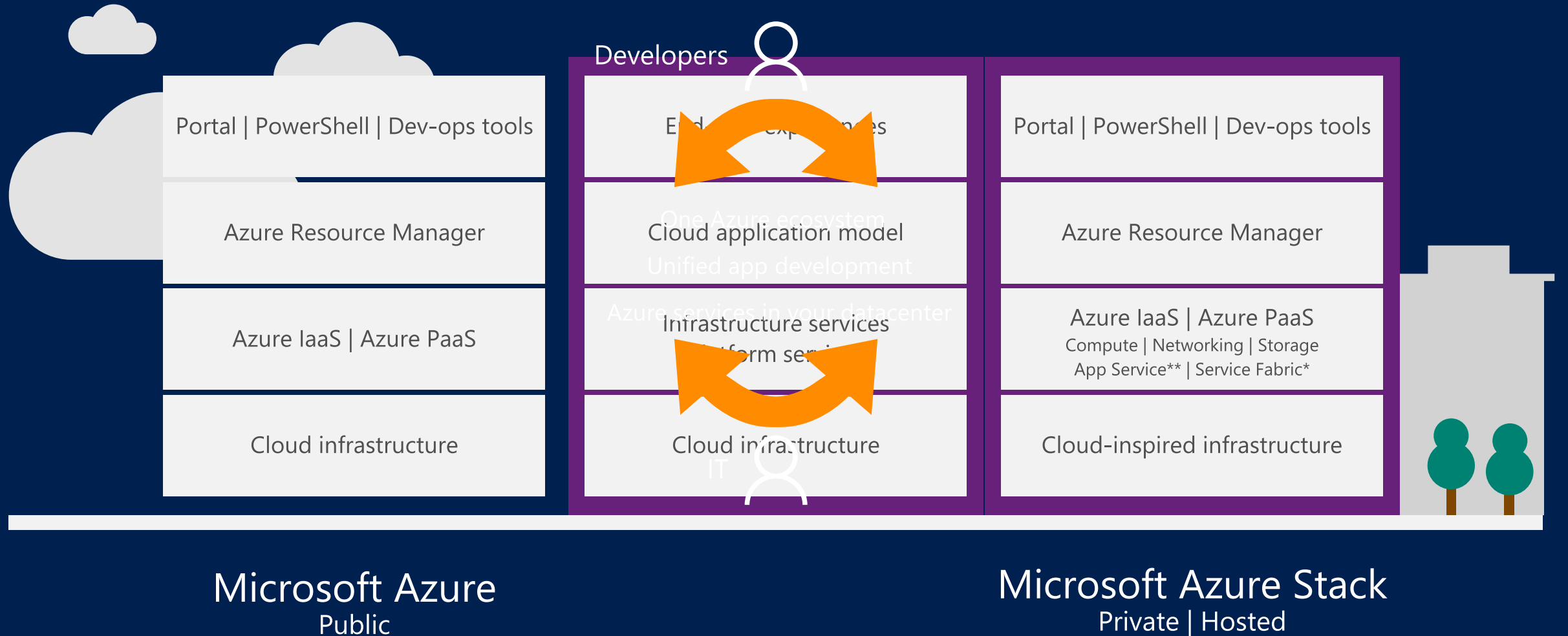
The logo for Azure Stack, featuring a white cloud shape with the text "Azure Stack" inside in a blue font.

Azure Stack

Microsoft Azure Stack is a new hybrid cloud platform product that enables organizations to deliver Azure services from their own datacenter thereby helping them achieve more.

bit.ly/azure-stack

Microsoft's hybrid cloud platform



TP1 = Technical Preview 1

** - Only Web Apps is in TP1, * - not in TP1

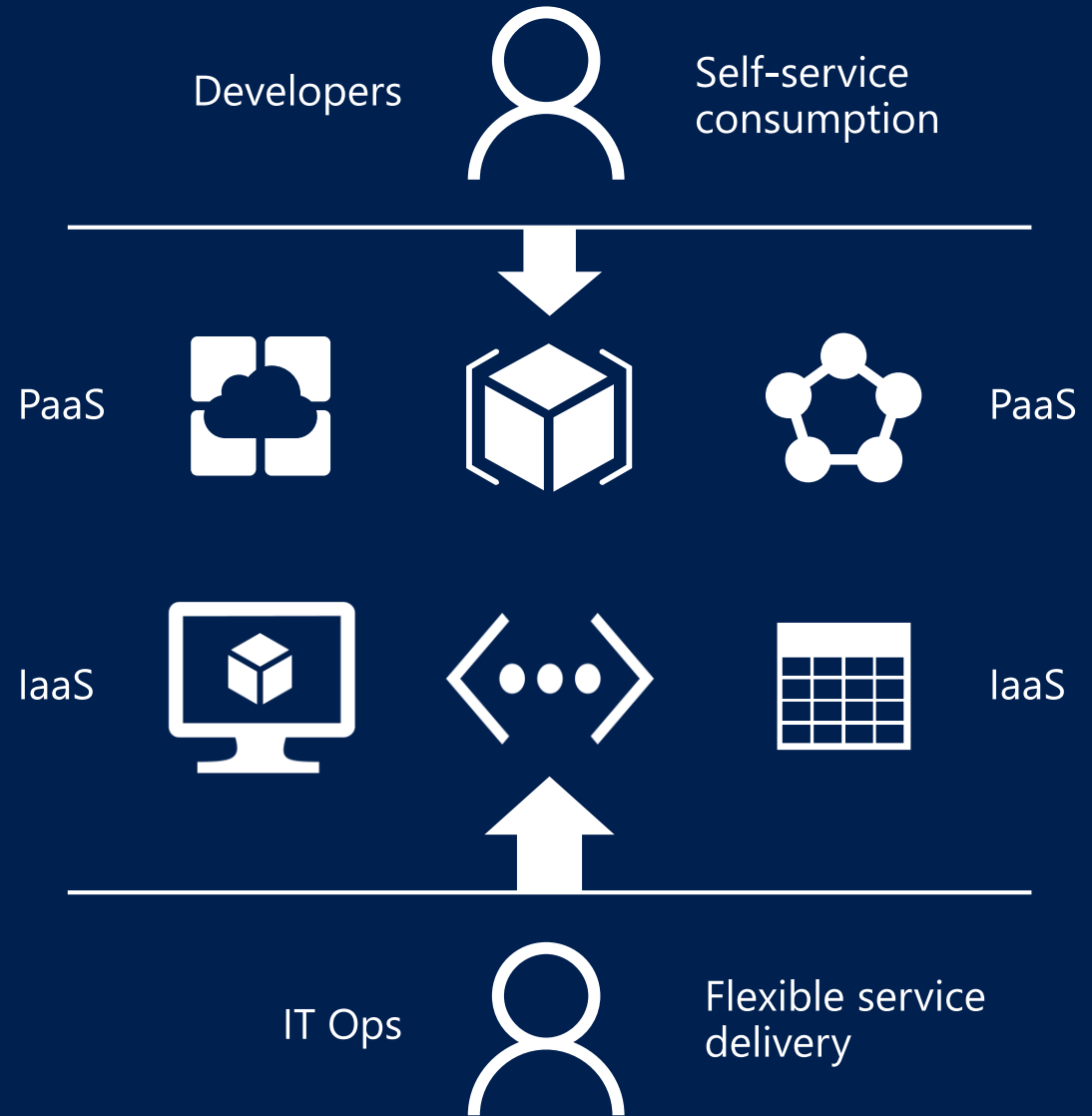
Azure services in your datacenter

Transform datacenter resources into cloud services

Self-service IaaS—Virtual Machines, Virtual Network, Storage, Docker-enabled containers

Self-service PaaS— App Service**, Service Fabric*

Flexible service delivery with Azure-based management and automation tools



Unified app development

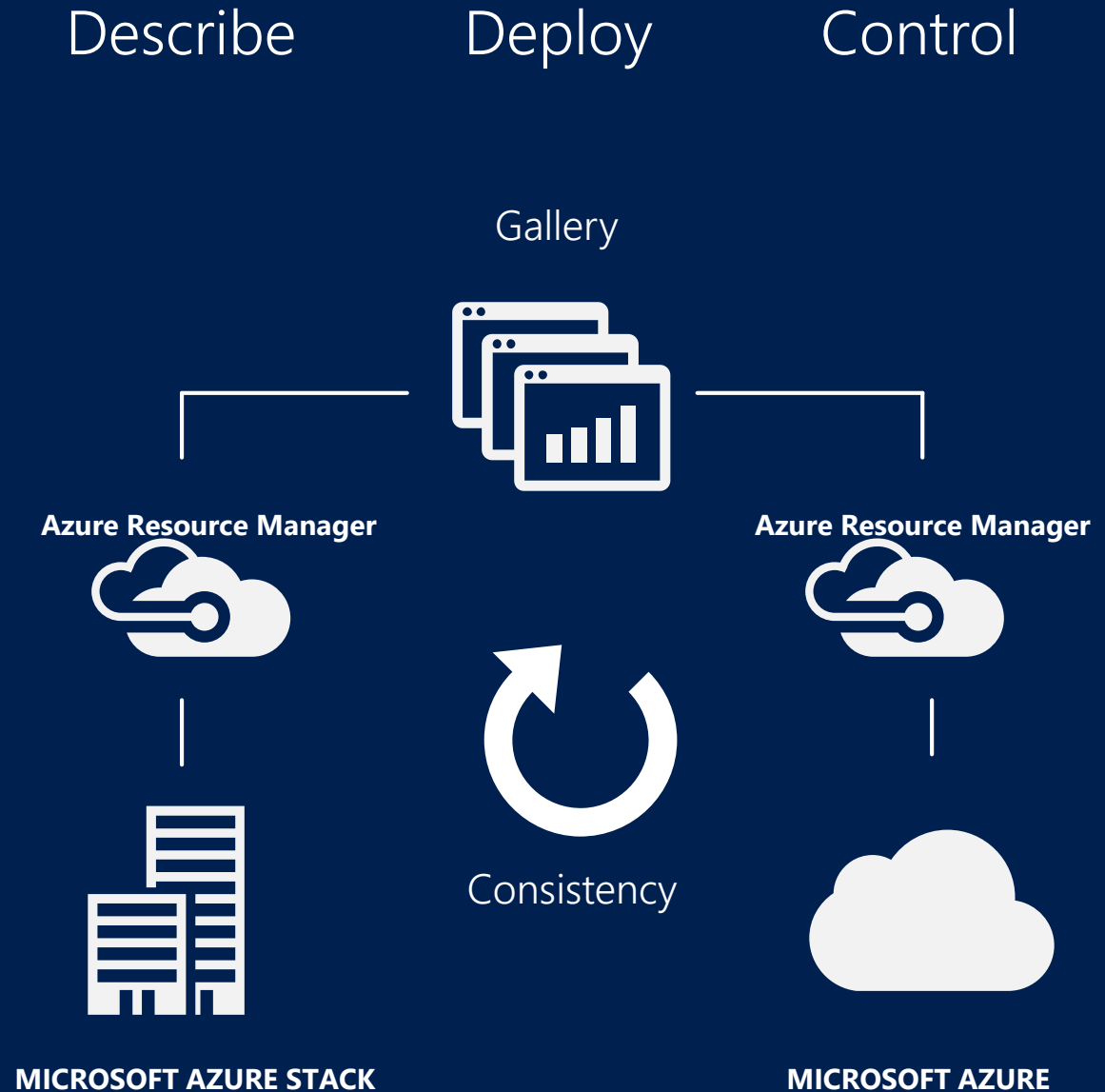
Write once, deploy to Azure or Azure Stack

Identical application model with same APIs

Role-based Access Control (RBAC)

Same deployment experience—PowerShell, Azure portal, or Visual Studio

Choice of open source application platforms, languages, and frameworks



On Premise Azure is (finally) looking good!

Azure vNet is a fully capable solution to support Hybrid security.

Express Route for the high end demands.

Have it *your way* in the Cloud!

Linux in Azure



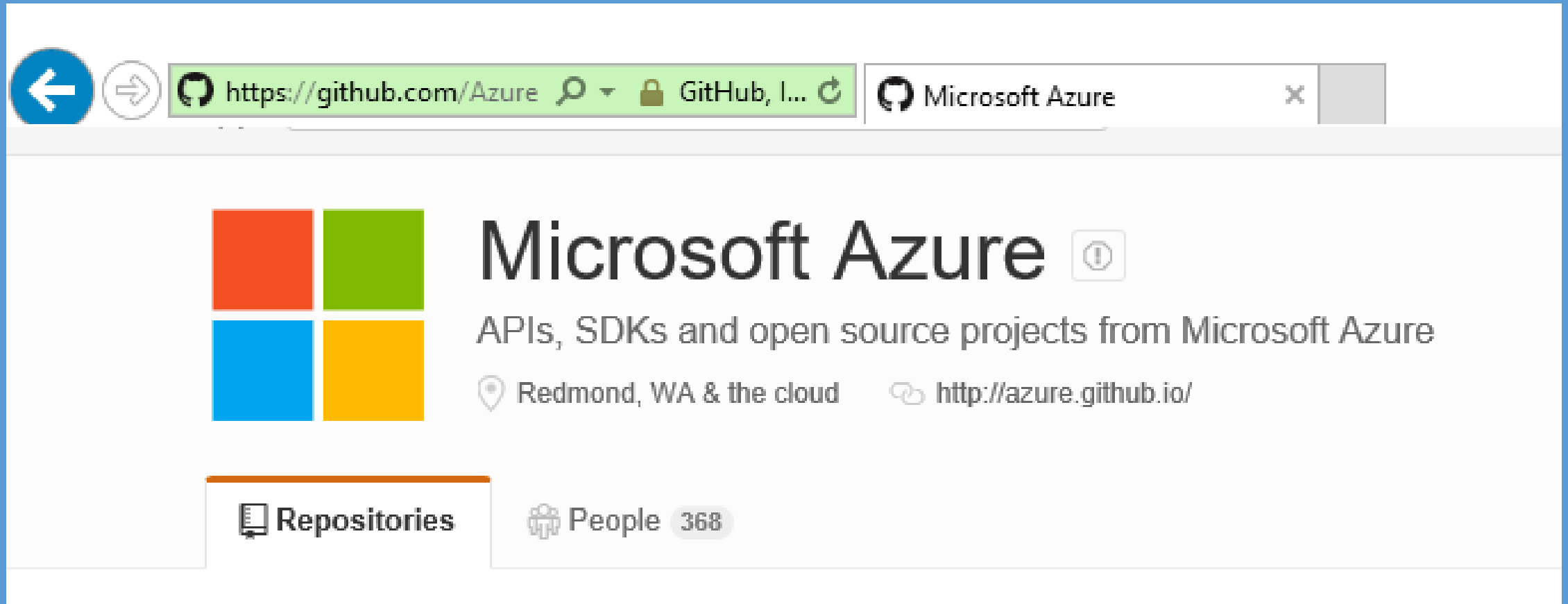


bit.ly/microsoftredhat

SQL Server  Linux

bit.ly/SQLServerLinux

What about languages on Azure?



The screenshot shows a web browser window with the address bar displaying `https://github.com/Azure`. The page content includes the Microsoft Azure logo (four colored squares: red, green, blue, yellow), the text "Microsoft Azure" with an information icon, and the subtitle "APIs, SDKs and open source projects from Microsoft Azure". Below this, it lists the location "Redmond, WA & the cloud" and the URL "http://azure.github.io/". At the bottom, there are two tabs: "Repositories" and "People 368".

github.com/azure

Platform Services

Security and Management

- Portal
- Active Directory
- Multi-factor Authentication
- Automation
- Key Vault
- Store/Marketplace
- VM Image Gallery and VM Depot

Compute

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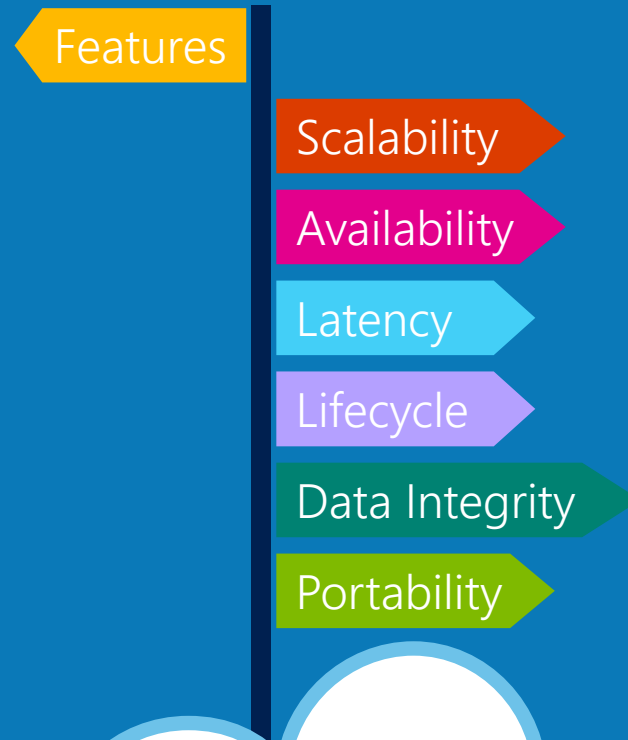
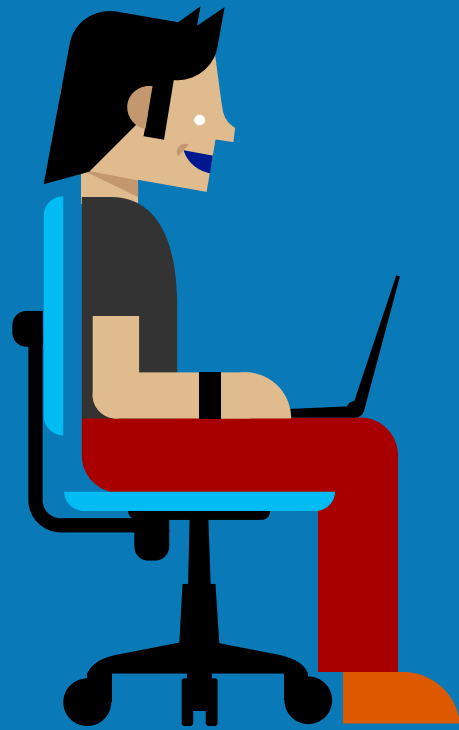
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- Azure Files
- Premium Storage

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- Traffic Manager
- VPN Gateway
- Application Gateway



Application development in the age of the Cloud



Manage Services
Deliver Features Faster
Create Business Value

Are you ready to deploy to Production?

Security and Compliance

- Role based access control
- logs, traces retained per custom retention policies

Scale up and Scale out

- Application Partitioning
- Cluster Auto Scaling

Reliability and geo failover

- #of partitions, # of replicas, isolation needs
- Cluster Spanning regions

Testability Service

- Simulates real world failures

Health Monitoring and Diagnostics

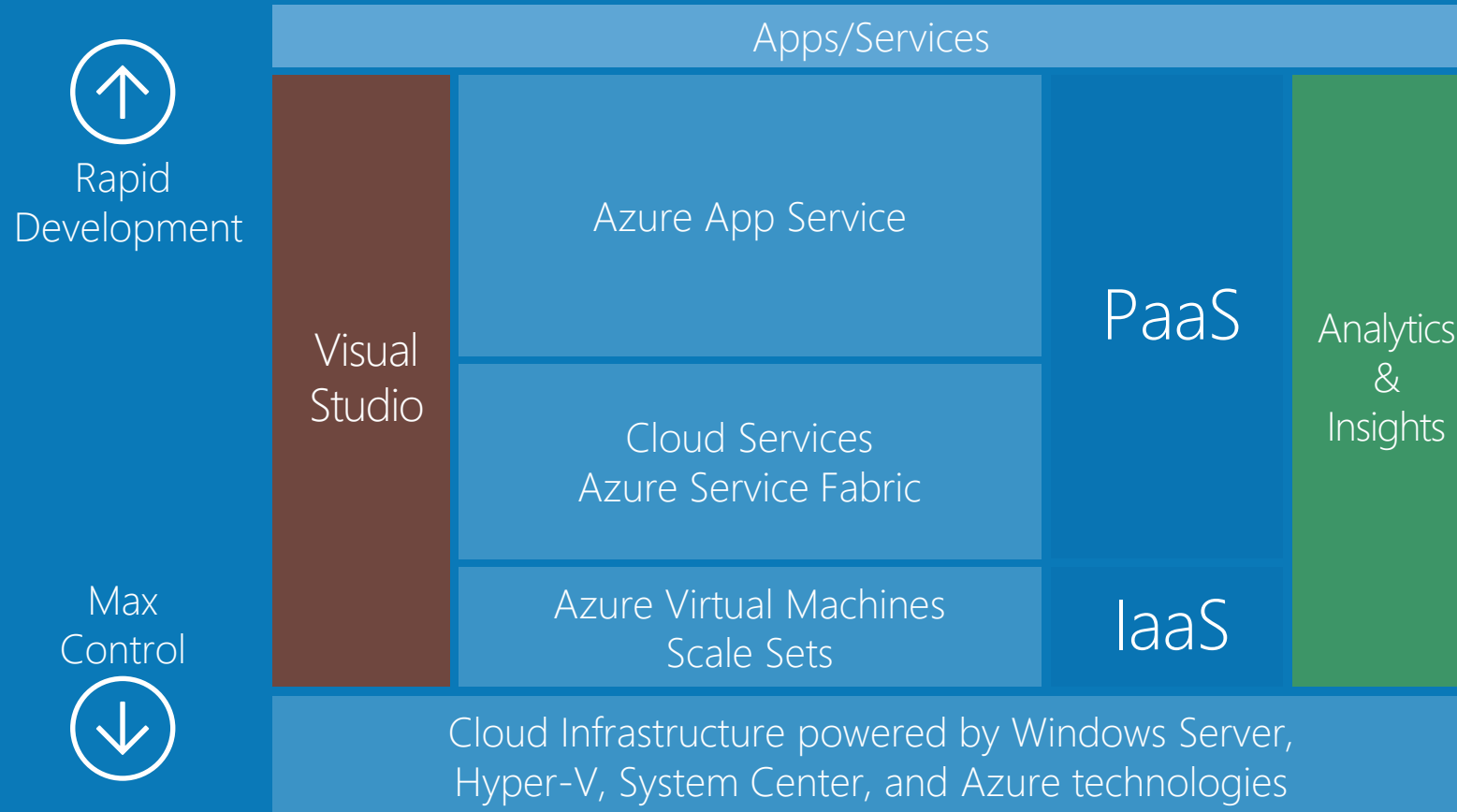
[...]



Service Fabric is a distributed systems platform that makes it easy to build scalable, reliable, low-latency, and easily managed applications for the Cloud.

This means that you can focus on your business needs and let Service Fabric take care of ensuring your application is always available and scales.

The Microsoft App Platform



Service Fabric is battle-hardened for over 5 years

Azure Core Infrastructure
thousands of machines

Azure Document DB
billions transactions /week

Intune
800k devices

Azure ServiceBus

Skype for Business
Hybrid Ops

Power BI

Azure SQL Database
1.4 million databases

Bing Cortana
500m evals/sec

Event Hubs
20bn events/day

What is a Microservice?

"Don't distribute your objects."

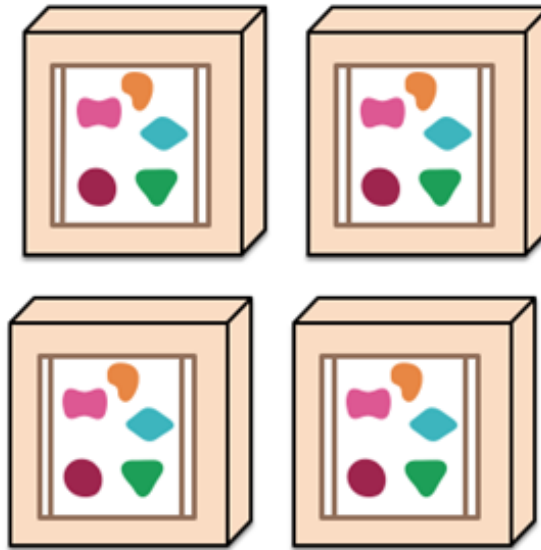
Martin Fowler

A Monolithic Application

A monolithic application puts all its functionality into a single process...



... and scales by replicating the monolith on multiple servers

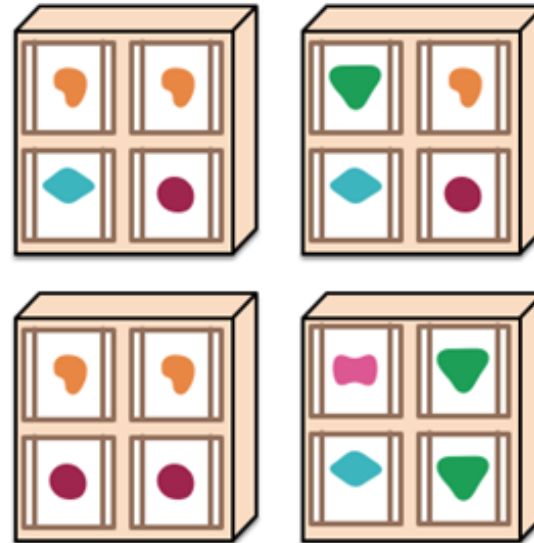


A Microservices Architecture

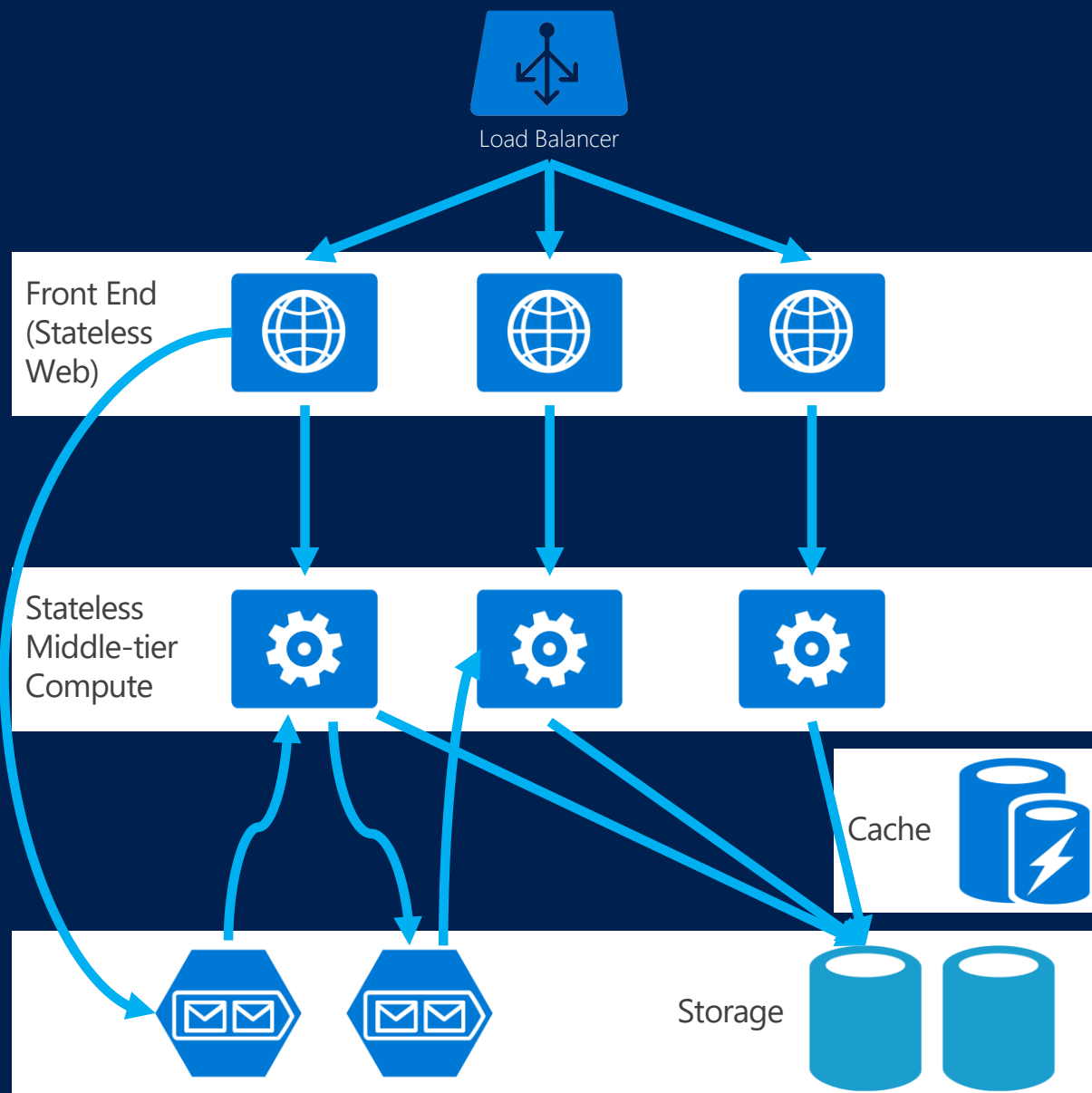
A microservices architecture puts each element of functionality into a separate service...



... and scales by distributing these services across servers, replicating as needed.



3-Tier service pattern



Scale with partitioned storage.

Increase reliability with queues.

Reduce read latency with caches.

Manage your own transactions for state consistency.

Many moving parts each managed differently.

Stateful services: Simplify design, reduce latency

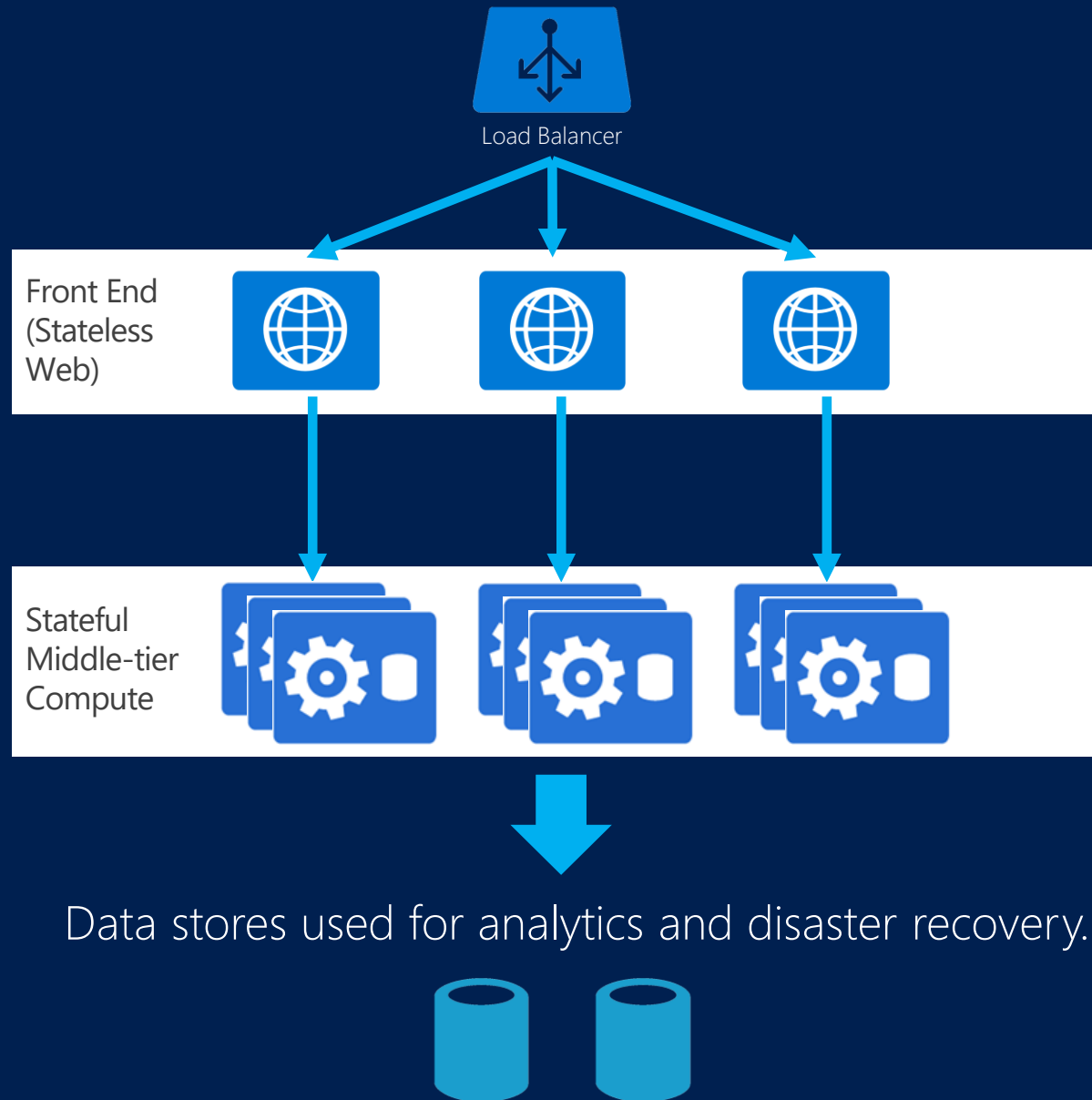
Application state lives in the compute tier.

Low Latency reads and writes.

Partitions are first class for scale-out.

Built in transactions.

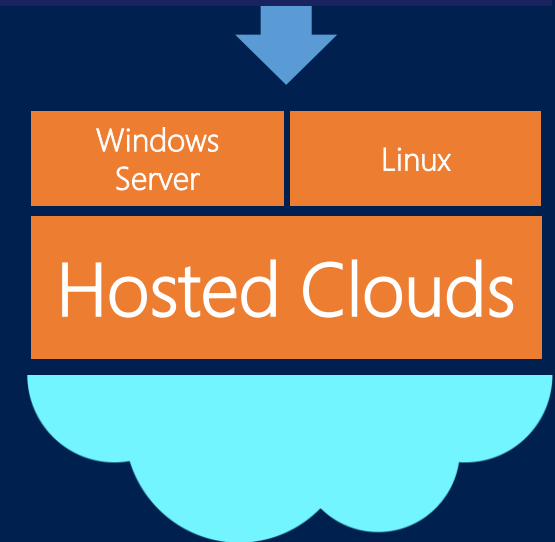
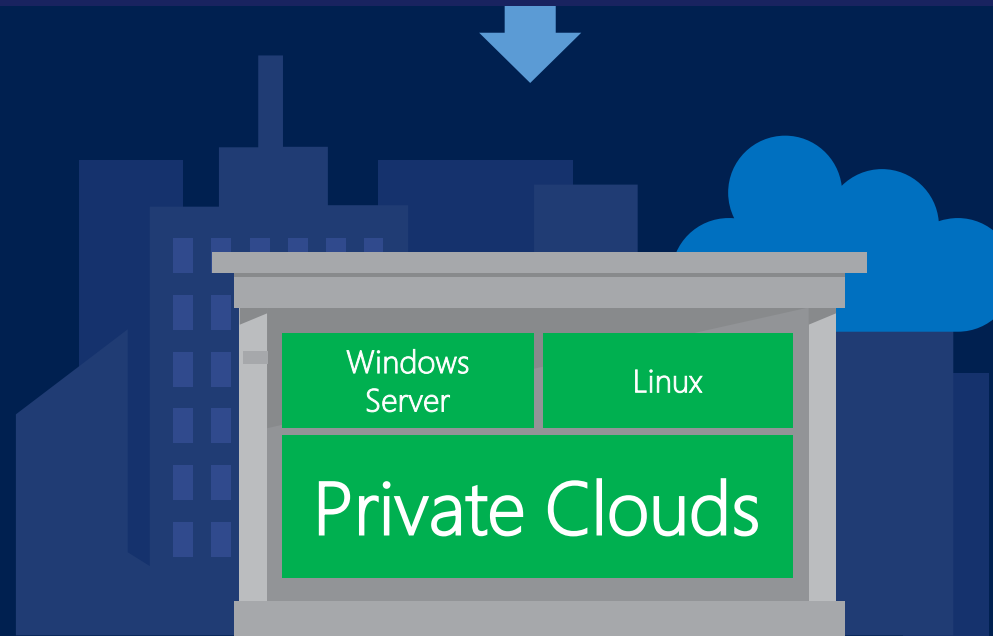
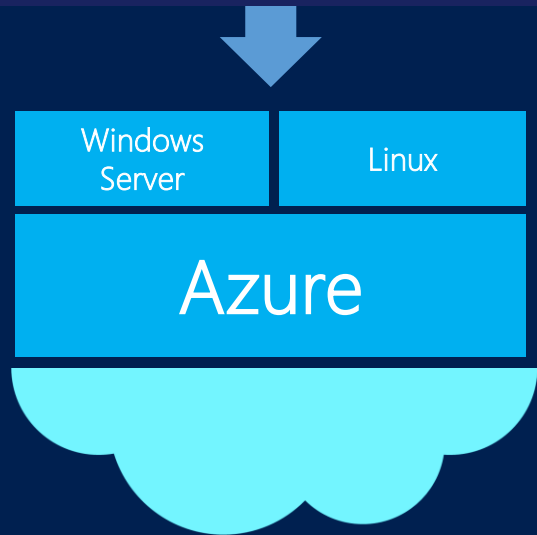
Fewer moving parts.



Data stores used for analytics and disaster recovery.

Microsoft Azure Service Fabric

Microservices



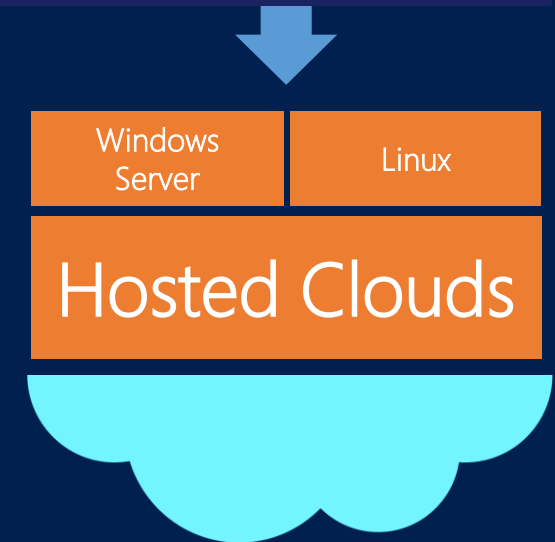
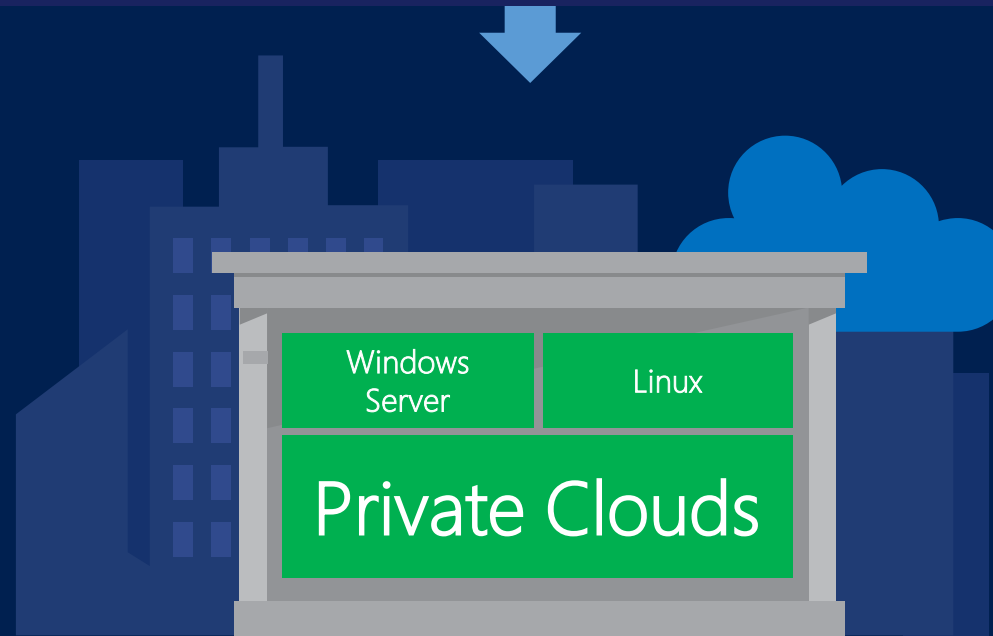
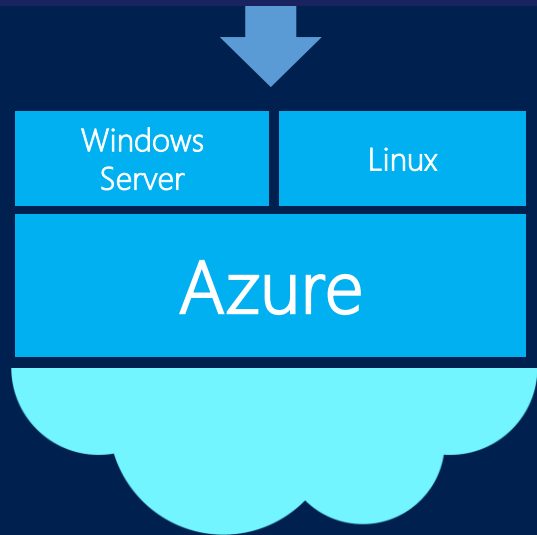
Service Fabric .NET

Namespaces

Namespace	Description
System.Fabric	The System.Fabric namespace contains a set of types used to develop, deploy, and manage Service Fabric services and applications.
System.Fabric.Description	Namespace that contains APIs to manage Service Fabric Description data structures.
System.Fabric.Health	The System.Fabric.Health namespace contains Health related interfaces and classes.
System.Fabric.Query	Namespace that contains Query interfaces and classes.
System.Fabric.Repair	The System.Fabric.Repair namespace contains types related to managing the lifecycle of repair tasks.
System.Fabric.Security	The System.Fabric.Security namespace contains Service Fabric security APIs.

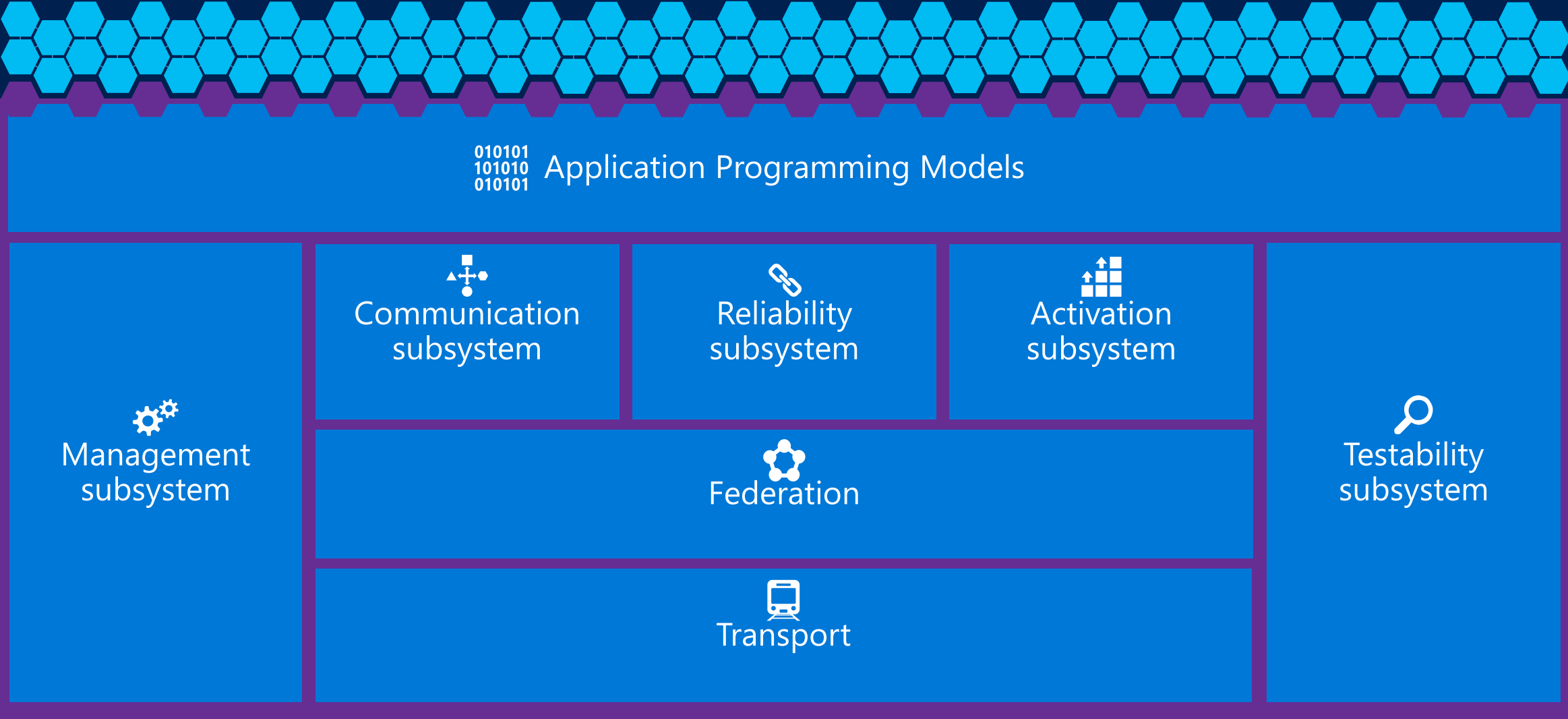
Microsoft Azure Service Fabric

Microservices



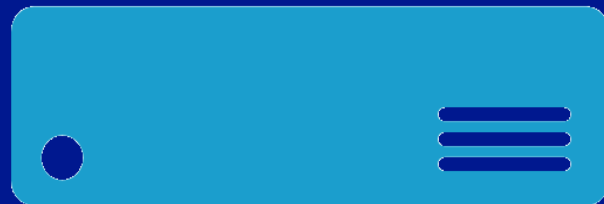
Microsoft Azure Service Fabric

Microservices



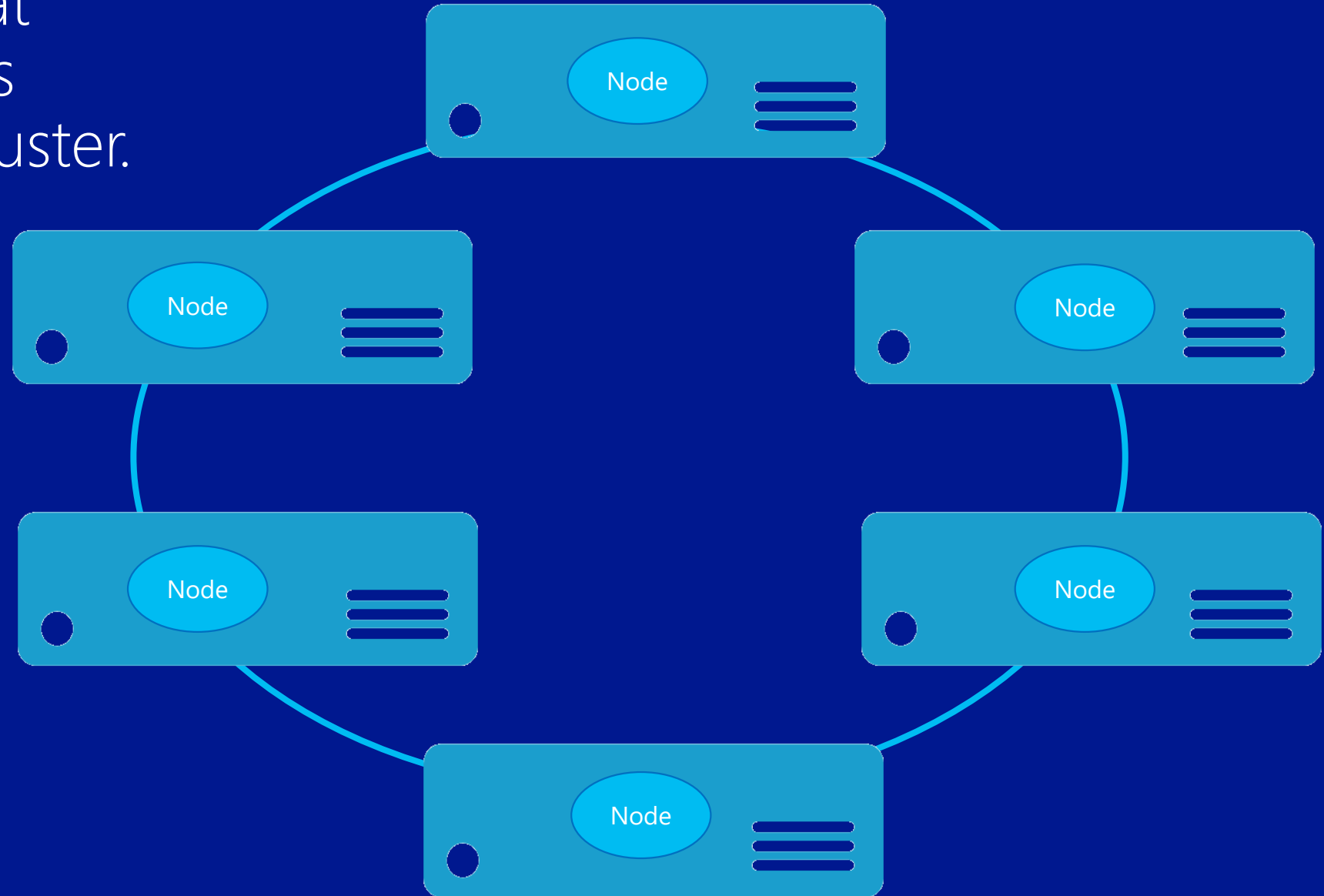
Typical datacenter

A set of independent machines; physical or virtual.



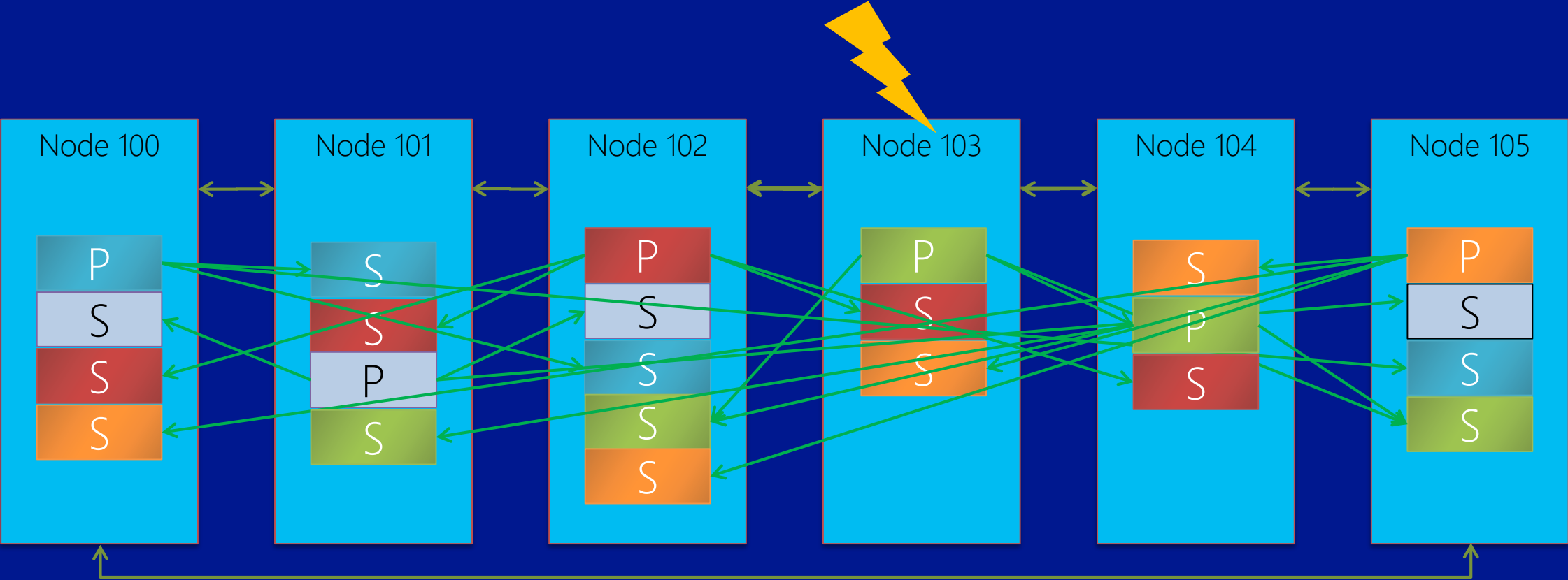
Cluster: A federation of machines

A set of machines that Service Fabric stitches together to form a cluster.

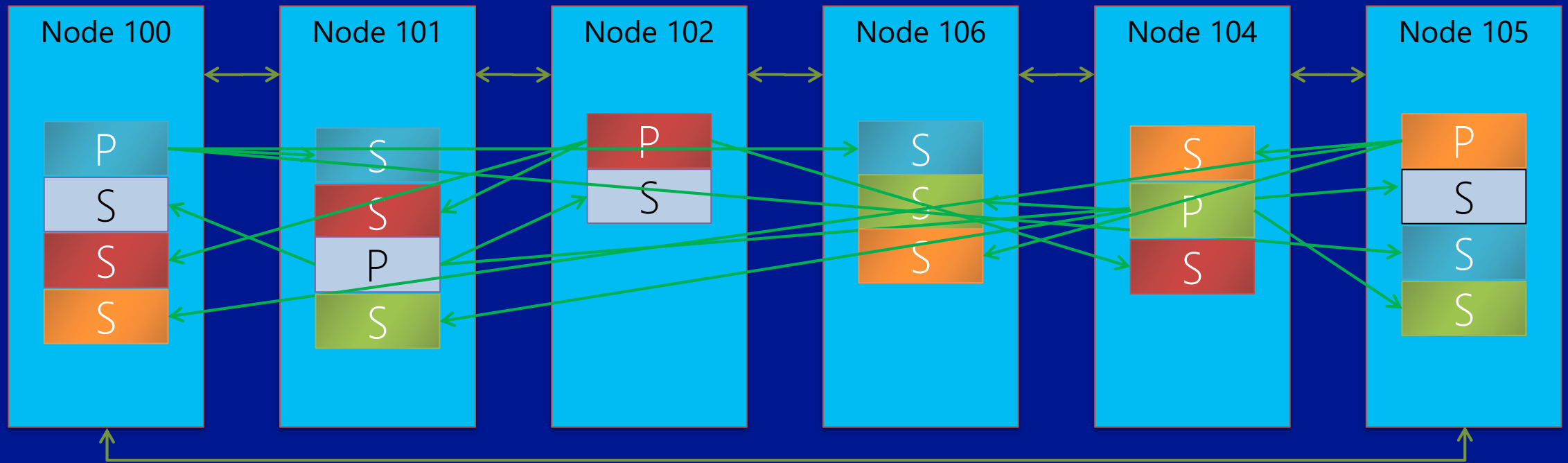


Clusters can scale to 1000s of machines.

Microservices placement and failover



Microservices in a Cluster - placement and failover



Best Practice: Servers



Don't treat them
like *pets*!



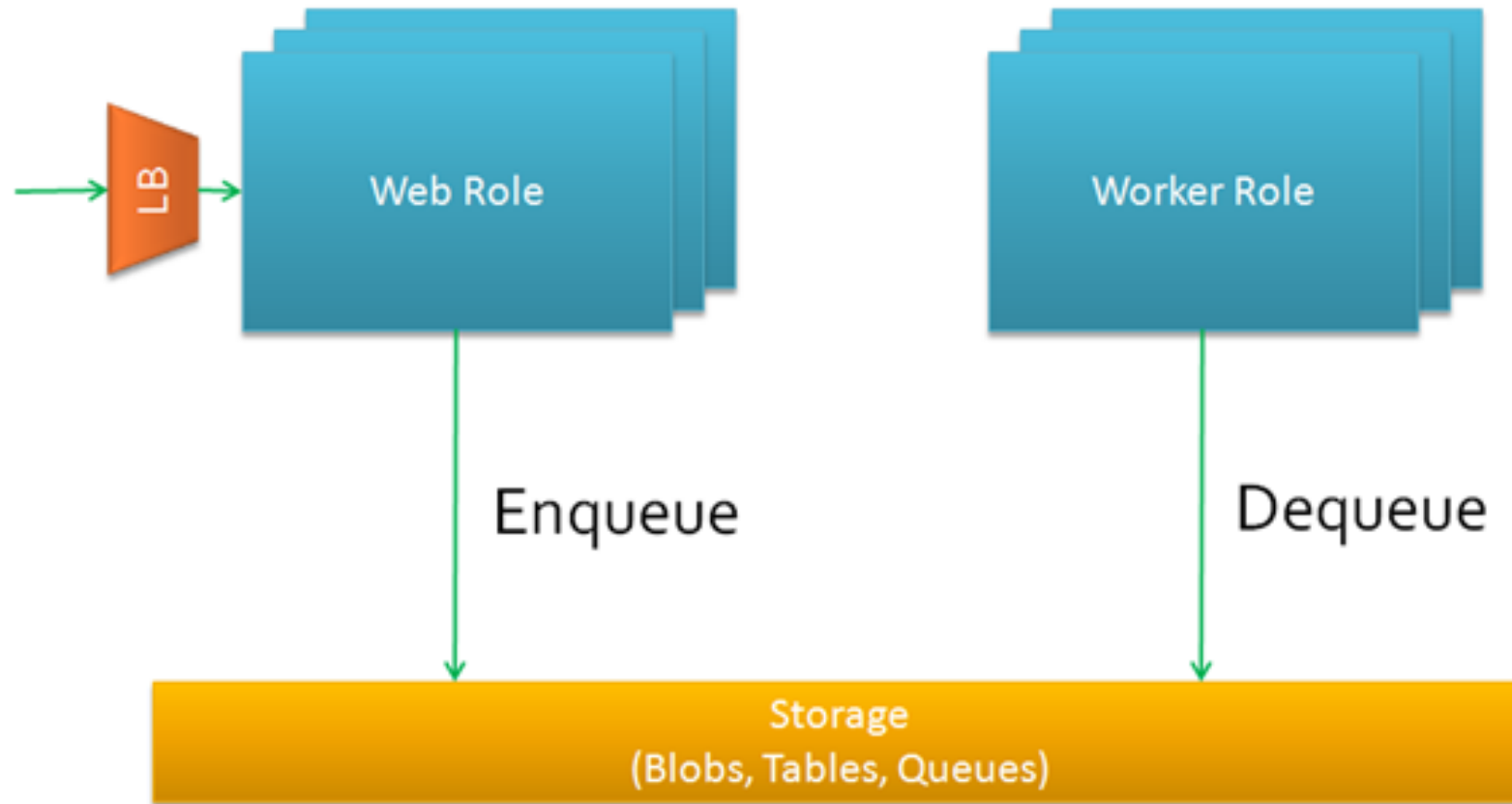
Treat them like
packs!

Application hosting
will become a *utility*
just like water and electricity!

Architect Green Field solutions as Microservices

Consider migrating Brown Field solutions to Microservices

Microsoft Azure CloudService Architecture



All I ever wanted to do
was run a few lines of code!

Enter "SimpleBatch"!
Or as the product was named:

WebJobs

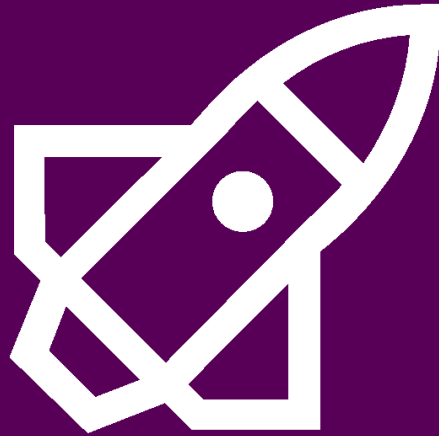
WebJobs is a simple,
low maintenance, highly agile,
low ceremony and highly efficient way
to run your business functions
in the Azure Platform.

Next Step:

Serverless Compute

[AWS Lambda | Google Cloud Functions | IBM Bluemix OpenWhisk]

Azure App Service Logic Apps



bit.ly/AppServiceLogicApps

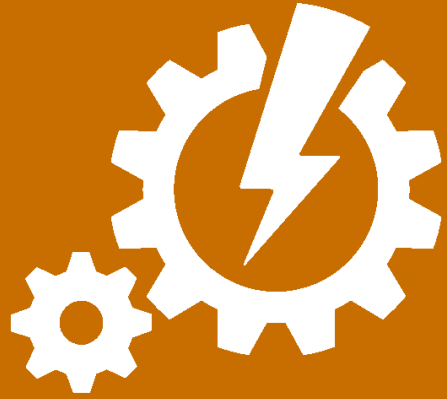
Three little words...

automate, Automate, **AUTOMATE!**

“Everything that *can* be automated
must be automated!”

Magnus just now

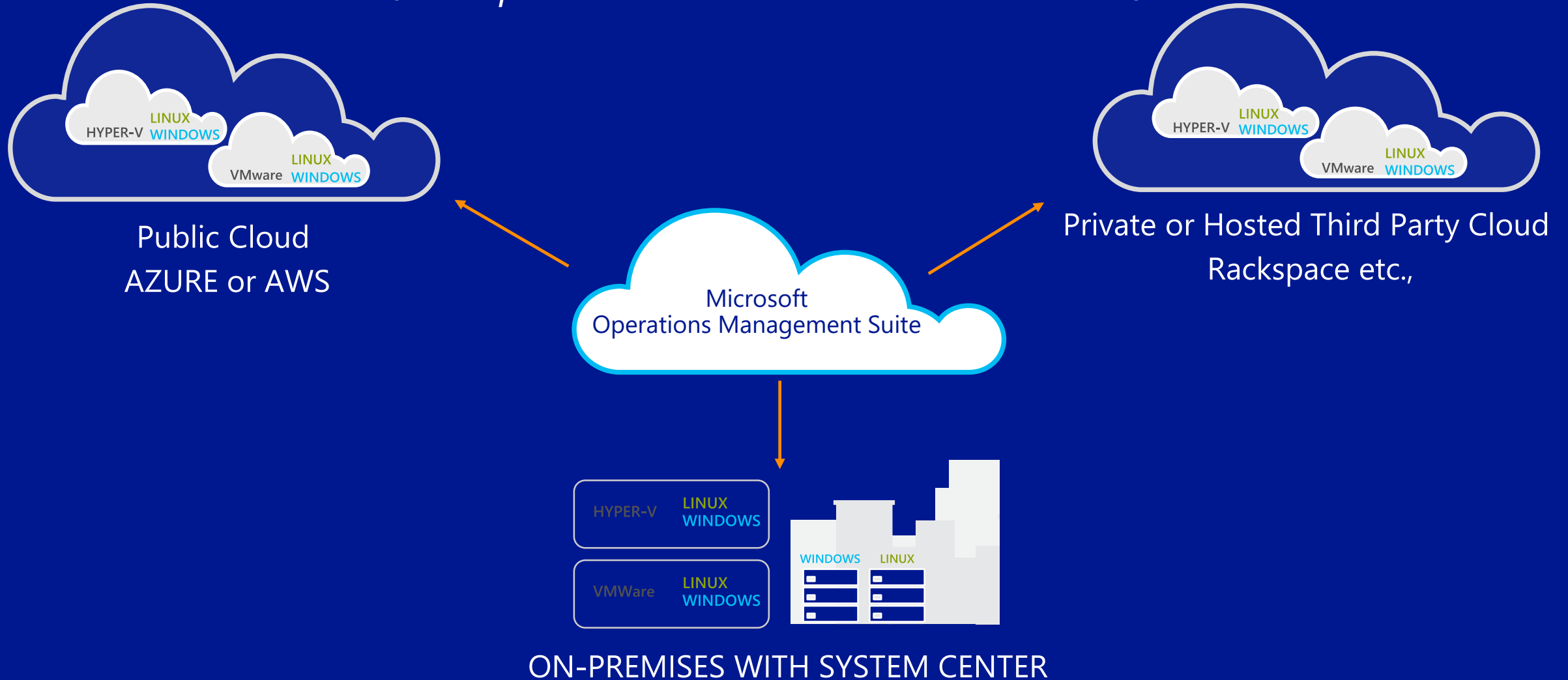
Azure Automation & Azure Scheduler



DSC, PowerShell & Runbooks

Operations Management Suite (OMS)

Simplified guest and workload management anywhere
(on-premises or in the cloud)



Operations Management Suite Capabilities



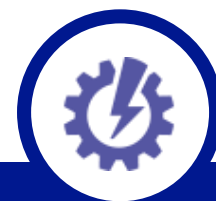
Log analytics

- Effortless log collection
- Integrated fast search and queries with custom dashboard



Backup & Recovery

- Integrated cloud backup
- Seamless disaster recovery and workload migration



IT Automation

- Hybrid runbook worker
- Graphical workbook authoring and automation DSC



Security & Compliance

- Malware assessment
- Security posture and system update assessment

With OMS capabilities customers can...

Spot problems fast

Protect data easily

Automate tasks quick

Recognize threats early

extending System Center capabilities, as an all-in-one management solution!

Some final advice...

Almost Flying in the Clouds (anti-pattern)



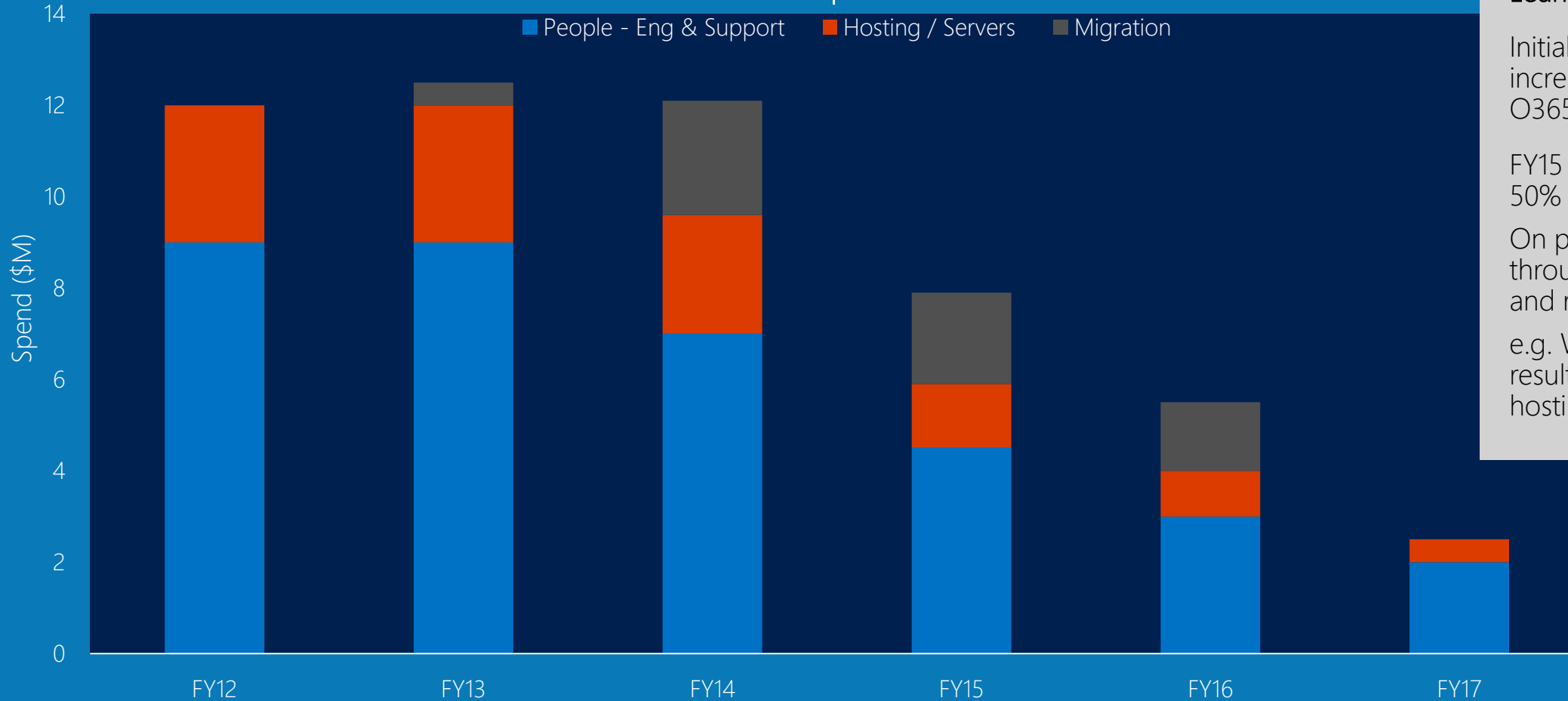
"We can't use the Cloud"

What do you do now?

Be creative!

Driving On Prem Cost Reduction

Microsoft IT SharePoint On Prem Spend



Learnings:

Initial on prem spend increased in FY13/14 with O365 migration execution

FY15 people costs down by 50% from FY12

On prem savings achieved through farm retirement and role re-alignment

e.g. WW MySite retirement resulted in ~\$400k annual hosting savings

*Does not include costs for on premises software licensing or O365

O365 Kickoff, Build Foundation

Drive Cloud Adoption, MySites->O365

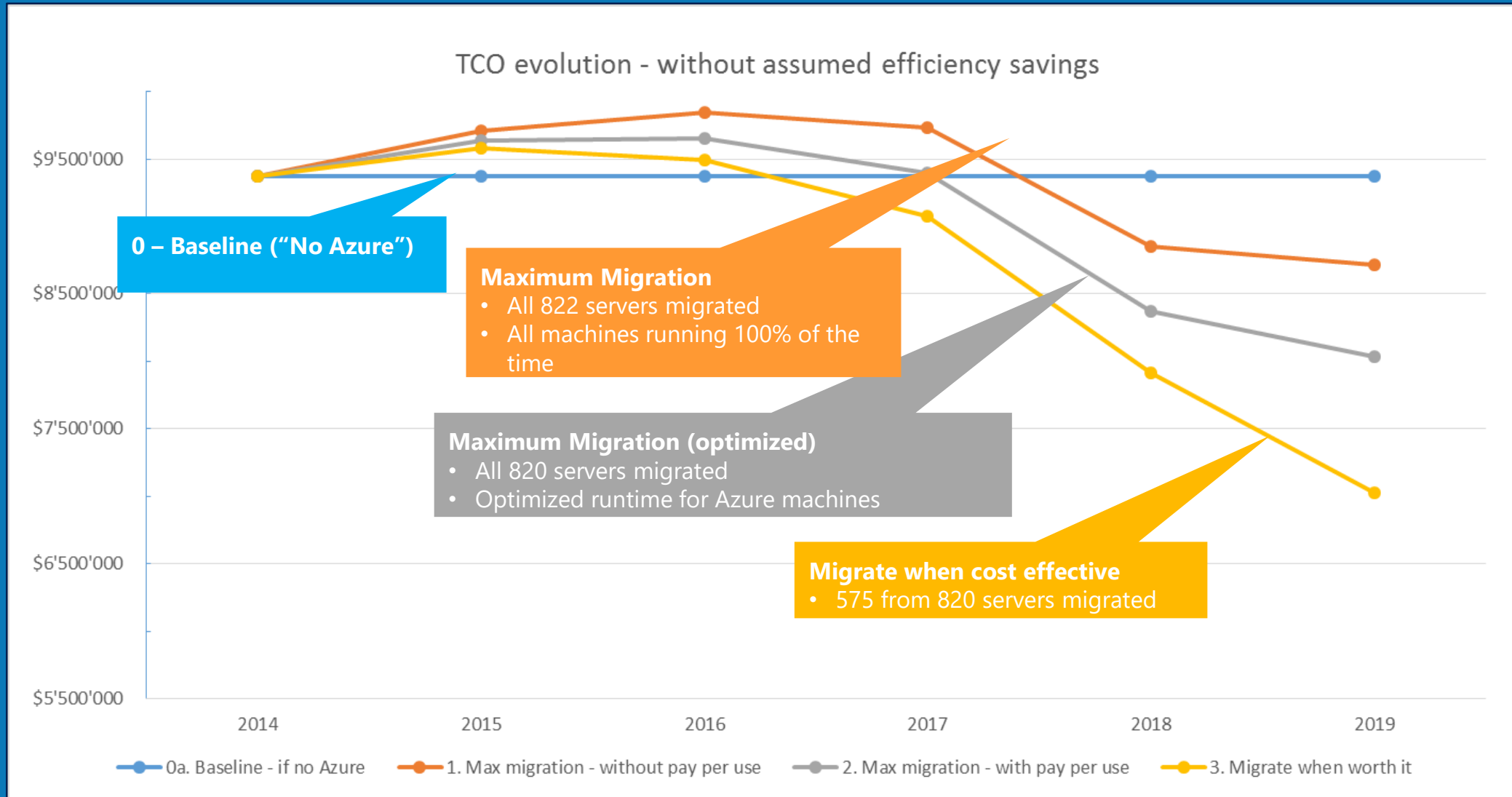
Utility Migration, Portal Start

Major portals; Corp portal, IT, Finance, Prem consolidation

HR, Legal, Sales migration

Regional retirement

Potential Savings with different scenarios





Get the right experts in the room early!

POC with Cloud amateurs is pointless!

Services are bolted together – applications are not built!

Automate deployments, environments, scaling – life!

We are moving *from infrastructure to innovation!*

Cloud Computing

Because it's
inevitable
and really
#awesome!



(Yes, it's Scott Guthrie!)

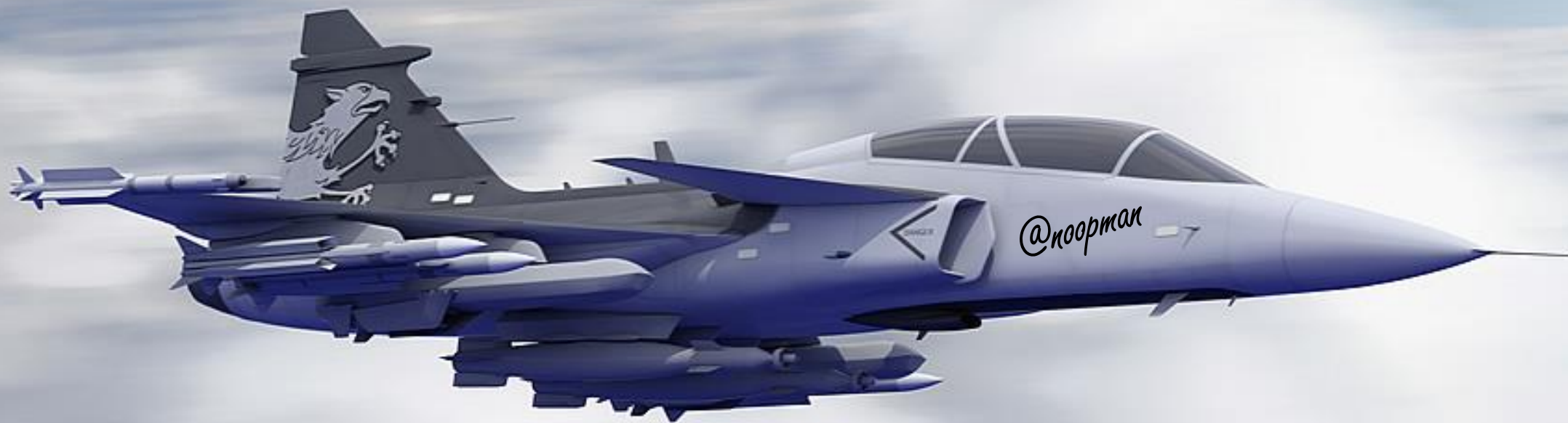
Don't miss the opportunity!



Start your journey...



...small!



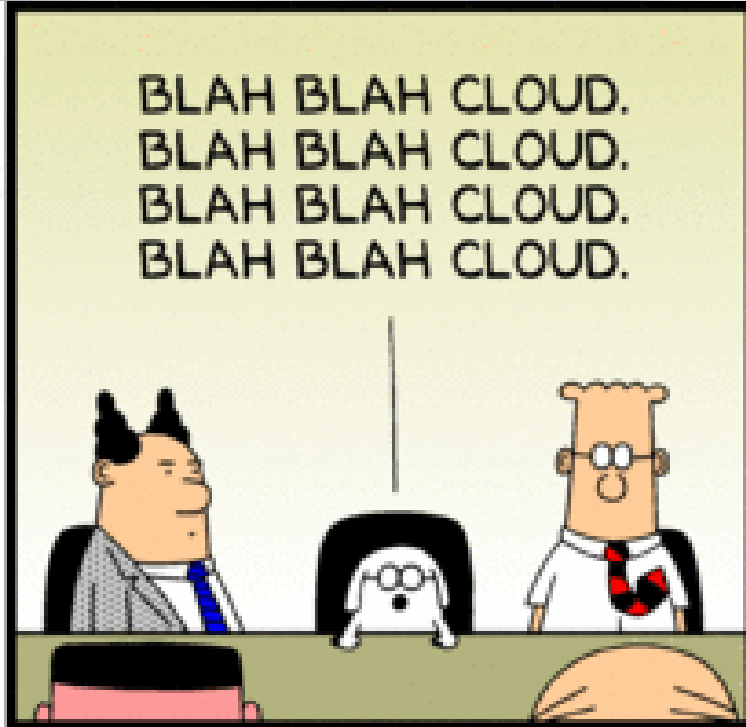
Microsoft
Regional Director

magnus@loftysoft.com

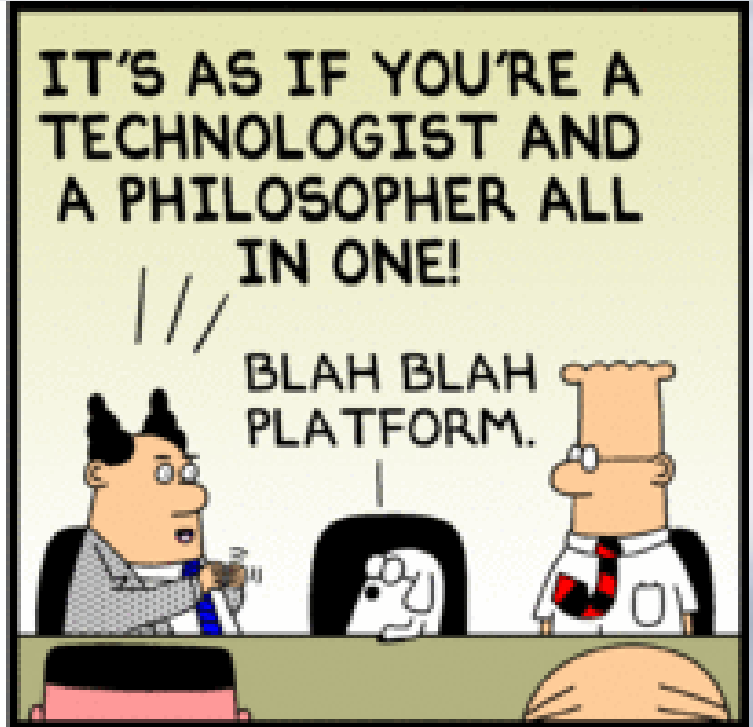




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