

Azure Fundamentals

Ahmed Abdelwahed



Cloud Concepts



Job Eliminator or Job Creator?

Please Vote ...

Can You Trust the Cloud?



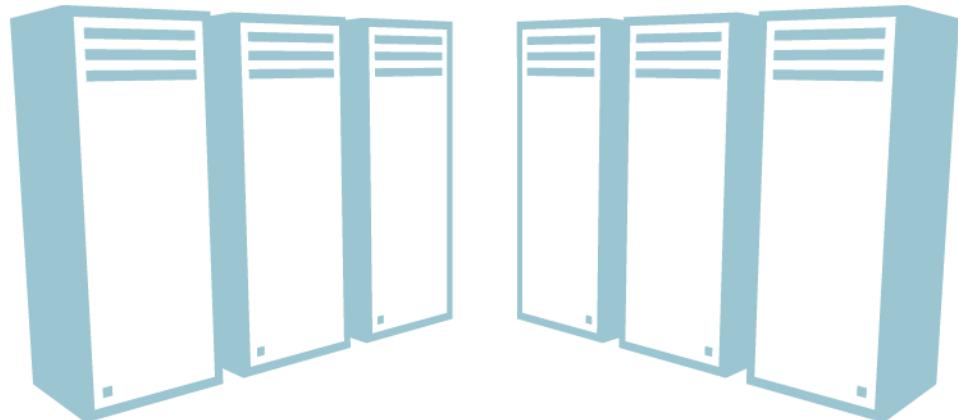
- **1B+** USD investment in security Research and Development
- **3,500** cyber security experts **compliance offerings**
- **6.5 trillion** threat signals analyzed daily



Main Factors

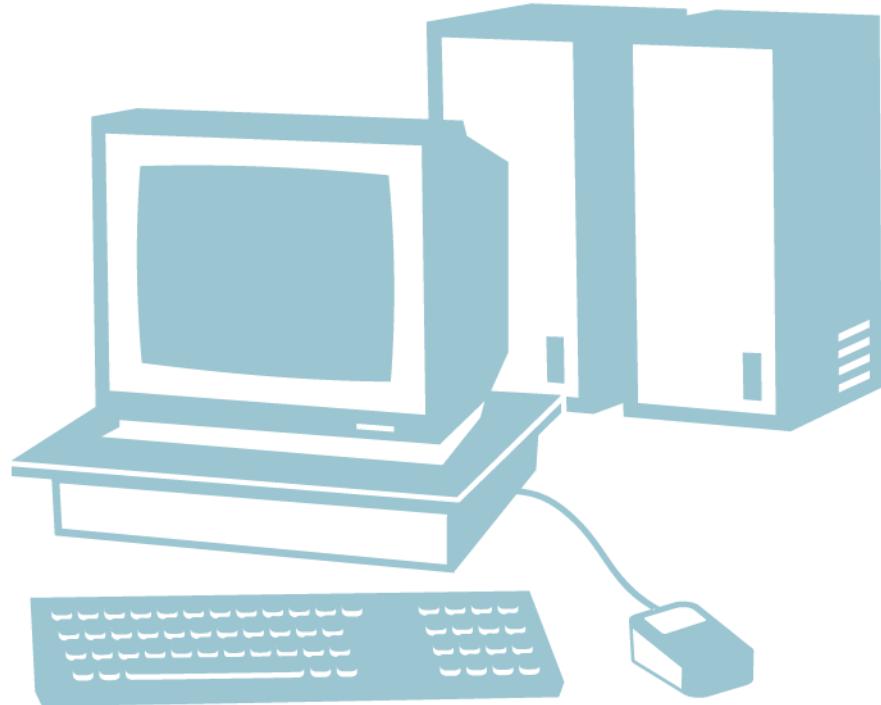
Computing, Internet, Web App and Virtualization

Industry Transformations



1970s -1980s

Industry Transformations



Client / Server



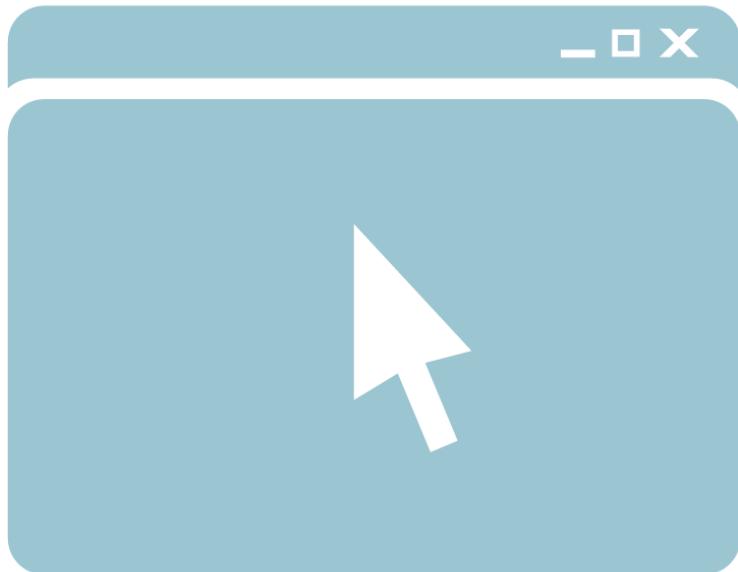
1990s



Industry Transformations



Web



2000s



Industry Transformations



Industry Transformations



**What will that next
transformation be?**



What is IT? From Business Perspective...



Applications

- “**They provide applications...**”
(email, portals, collaboration, etc.)



Modern Applications

YOUR TEAM MANAGES

- Applications
- Runtime
- Middleware
- Database
- O/S
- Virtualization
- Servers
- Storage
- Networking

You thought you needed this...



Web Server



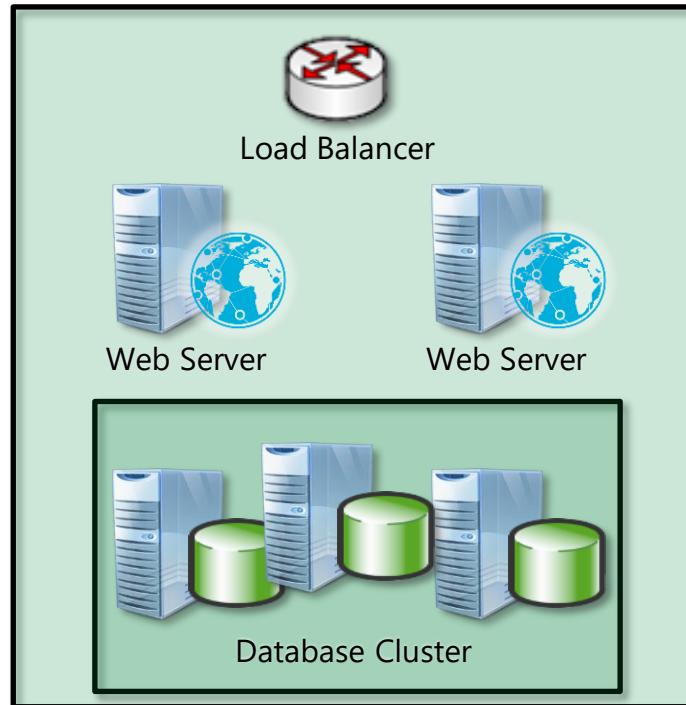
Database Server

Modern Applications

YOUR TEAM MANAGES

- Applications
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- Storage
- Networking

But were quickly told you needed this...



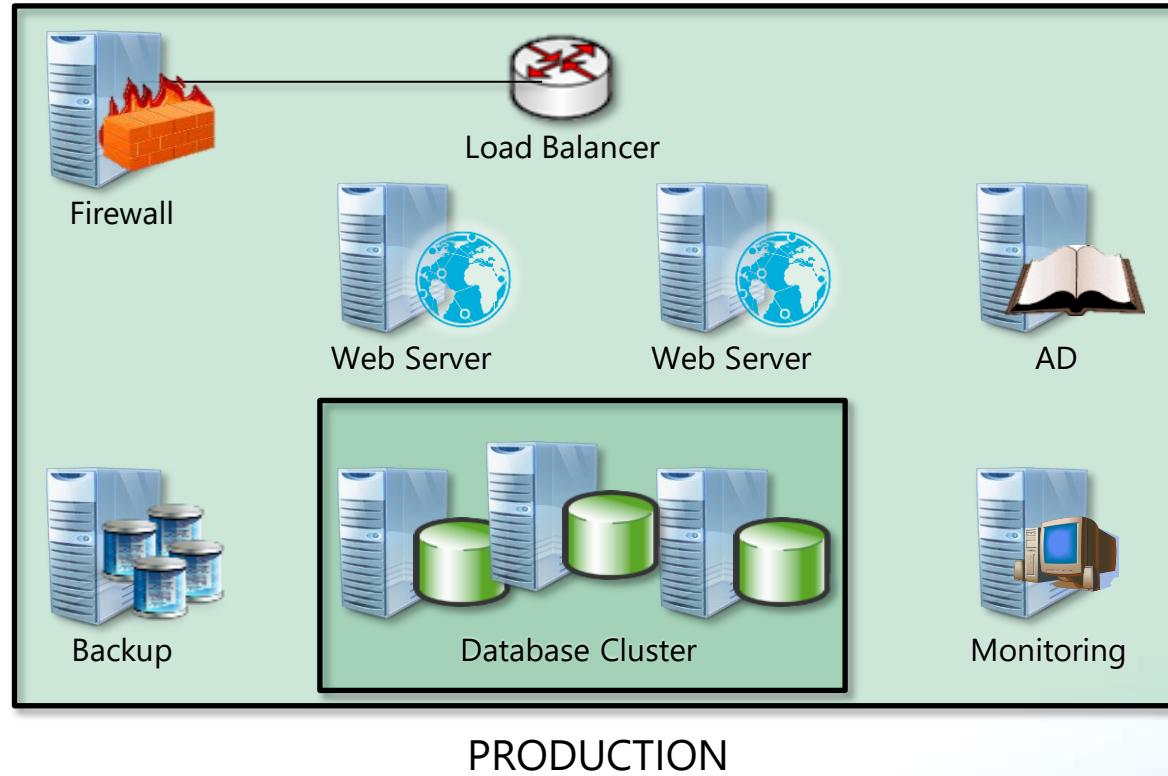
PRODUCTION

Modern Applications

YOUR TEAM MANAGES

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Wait a minute... it turns out you really need this ...

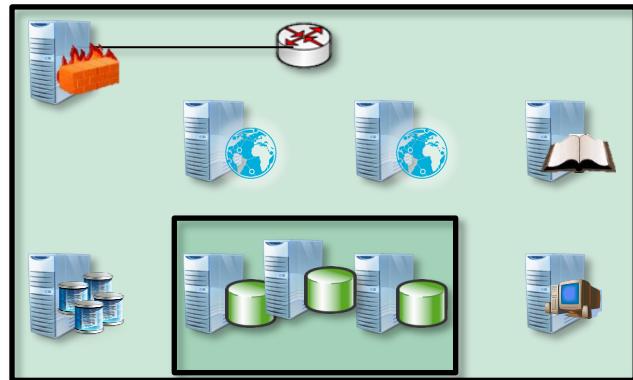


Modern Applications

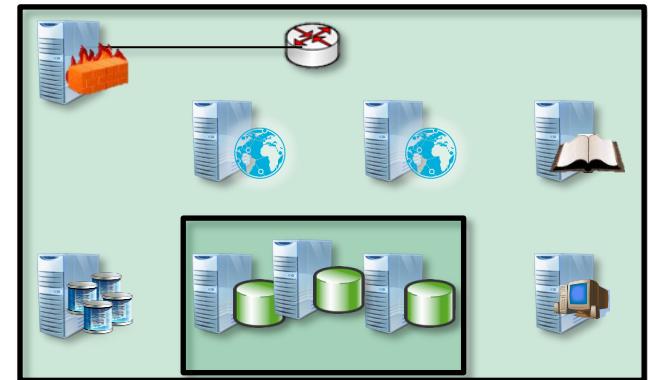
YOUR TEAM MANAGES

- Applications
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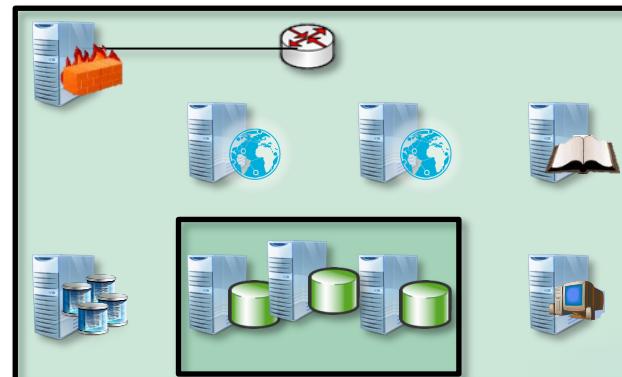
Now, it's turned into this...



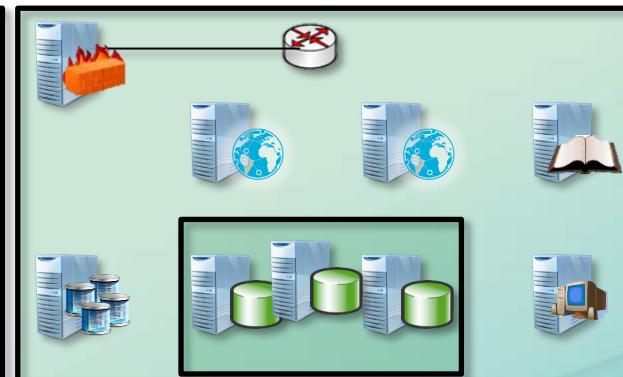
PRODUCTION



STAGING

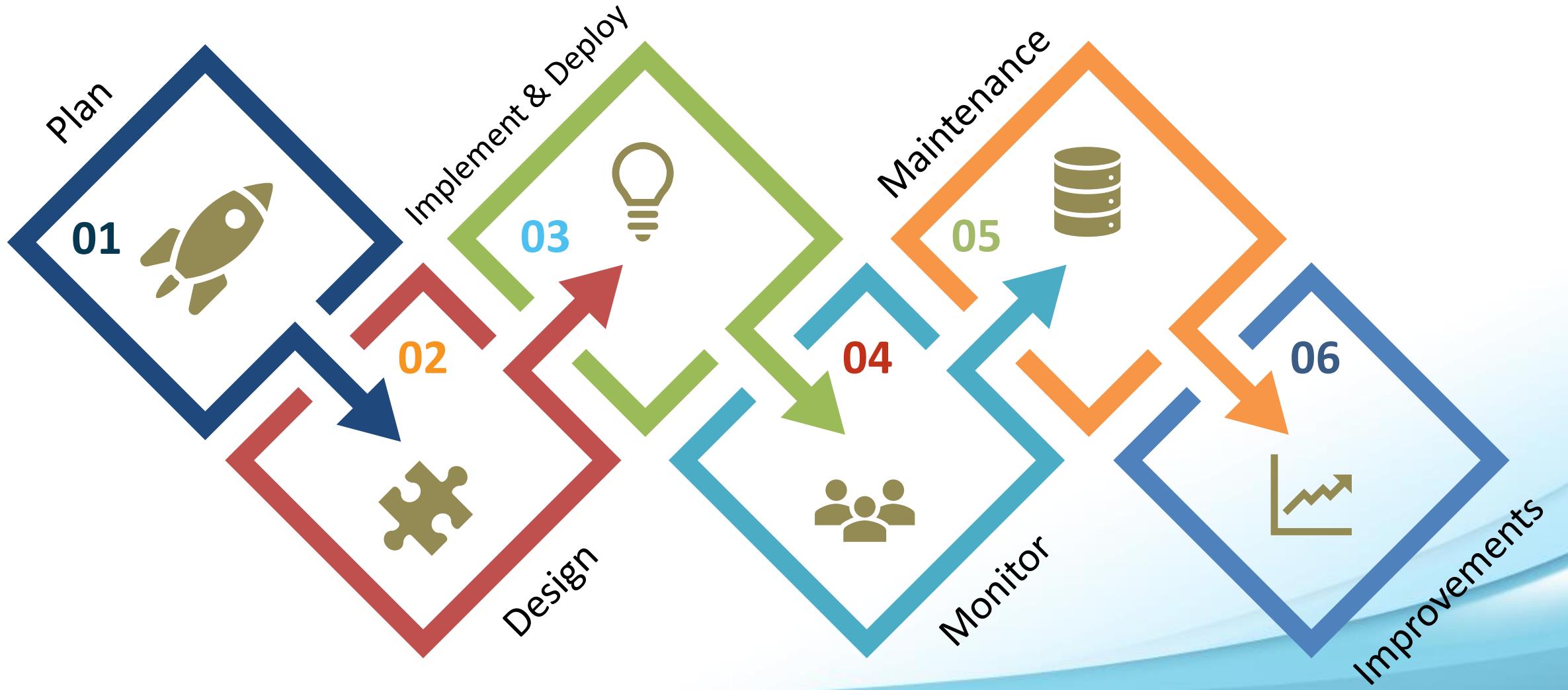


QA



INTEGRATION

Modern Applications



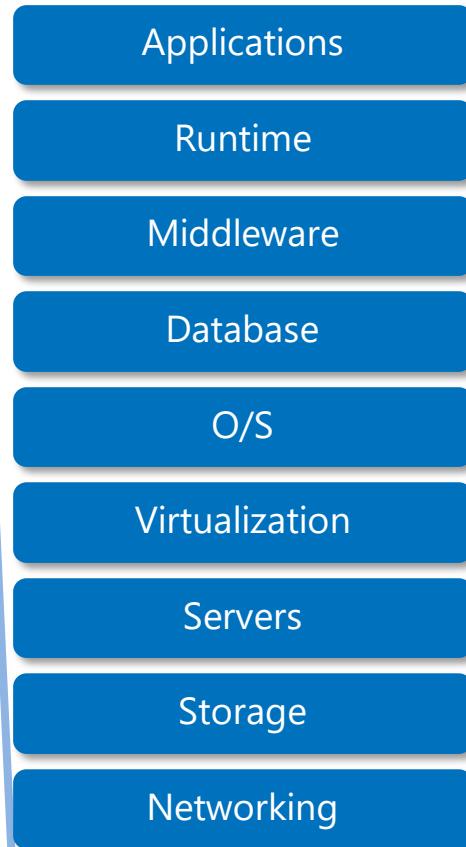
IT as a Firefighter



Modern Applications—What's the Problem?



YOUR TEAM MANAGES



- **Expensive: Requires many components**
 - Dedicated hardware & software
 - Multiple environments\$
(Prod, Staging, Test, Dev, etc.)
- **Inflexible: Everything is ALWAYS ON**
- **Under-utilized**
 - Must scale to worst-case scenarios
- **Shatter easily**
- **Takes too long**

Industry Transformations



**What will that next
transformation be?**

Cloud Computing

Break



Where is all this hardware and software?



YOUR TEAM MANAGES

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The Cloud: Cloud Vendor's Datacenters



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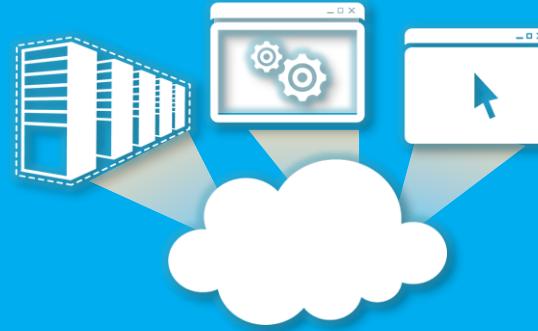
What is the Cloud?

- An approach to computing that's about Internet scale and connecting a variety of devices and endpoints (servers, PCs, mobile devices) so that they can work together.



The icon shows a white cloud shape at the bottom, from which several icons representing consumer devices and media (a CD/DVD, a smartphone, a laptop, a tablet, a magnifying glass over a document, a keyboard, a camera, and a stack of books) are emerging.

For consumers:
The cloud provides access to “your stuff” from any device whenever you want.



The icon shows a white cloud shape at the bottom, from which three icons representing business IT components are emerging: a server rack, a computer monitor displaying a gear icon, and a computer monitor displaying a cursor icon.

For business:
The cloud provides IT to users delivered as a standardized service.

Cloud Service Models



Cloud Service Models



YOUR TEAM MANAGES

Traditional On-Premises

Applications

Runtime

Middleware

Database

O/S

Virtualization

Servers

Storage

Networking

EXAMPLES



Third-Party Applications
Custom Applications



Third-Party Applications
Custom Applications

Software as a Service

Applications

Runtime

Middleware

Database

O/S

Virtualization

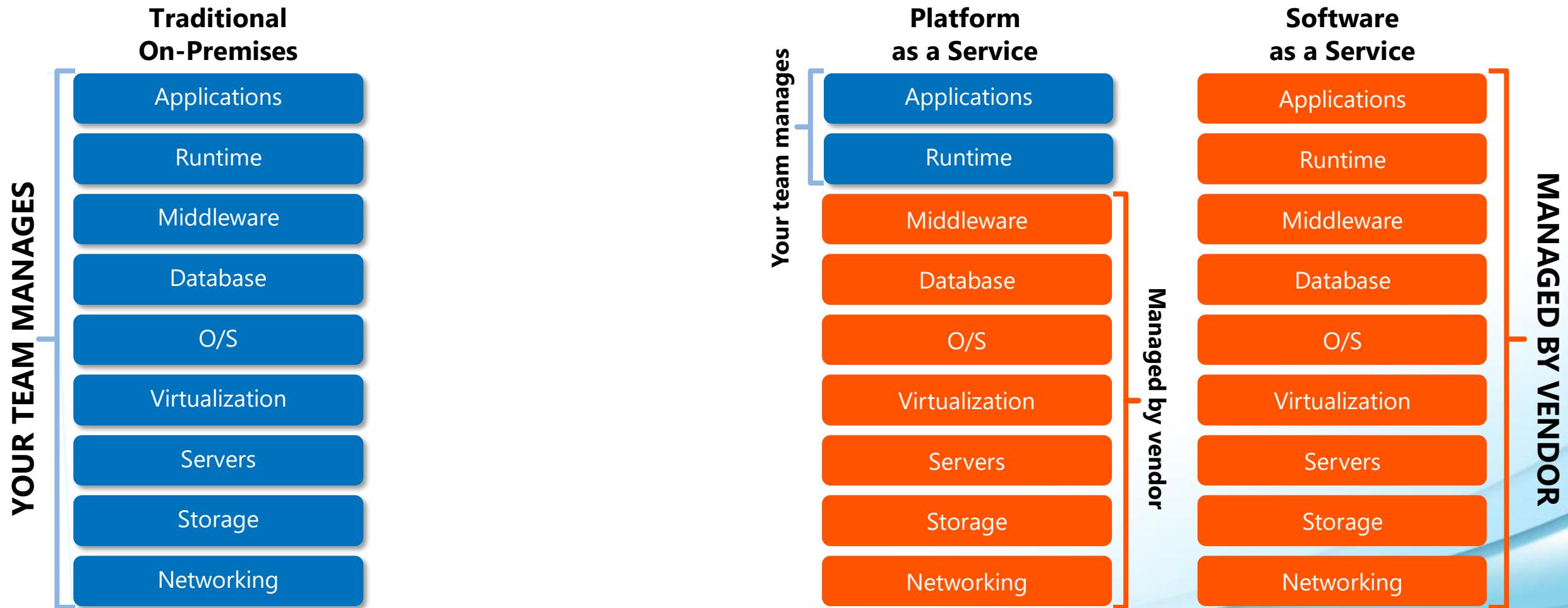
Servers

Storage

Networking

MANAGED BY VENDOR

Cloud Service Models



Cloud Service Models



YOUR TEAM MANAGES

Traditional On-Premises

Applications

Runtime

Middleware

Database

O/S

Virtualization

Servers

Storage

Networking

EXAMPLES



Platform as a Service

Applications

Runtime

Middleware

Database

O/S

Virtualization

Servers

Storage

Networking

Software as a Service

Applications

Runtime

Middleware

Database

O/S

Virtualization

Servers

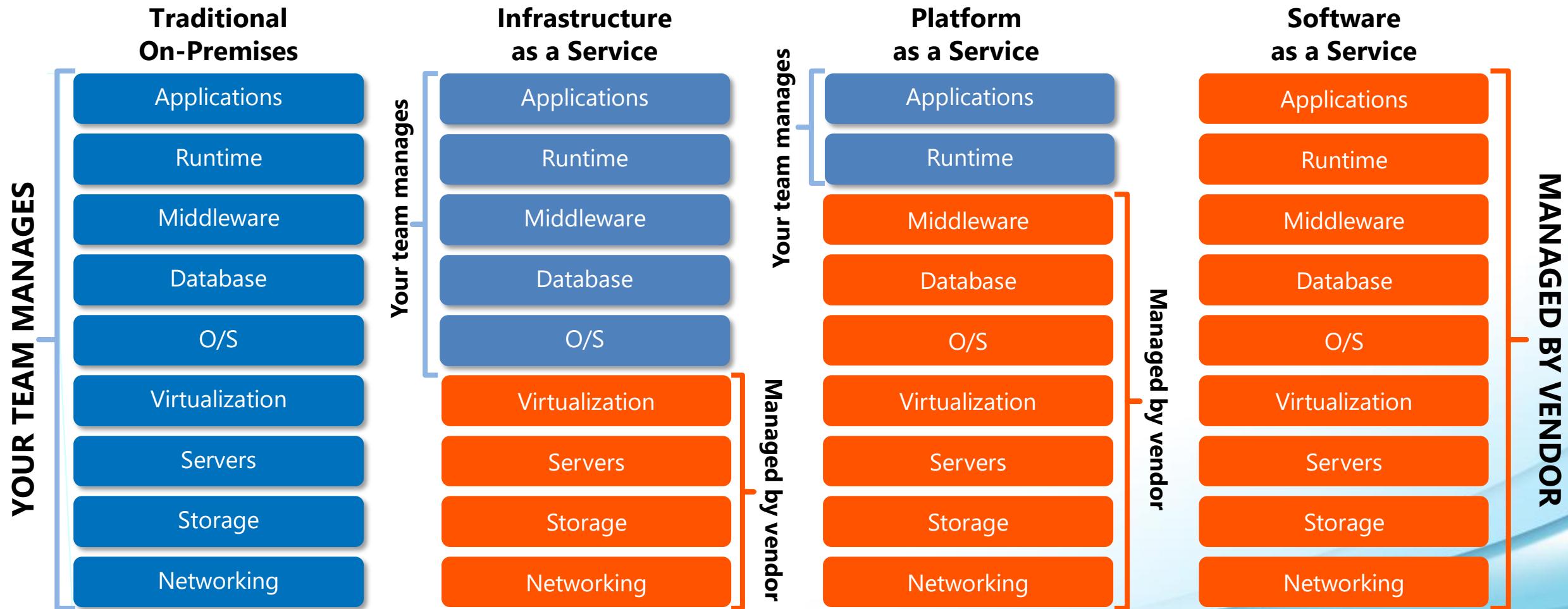
Storage

Networking

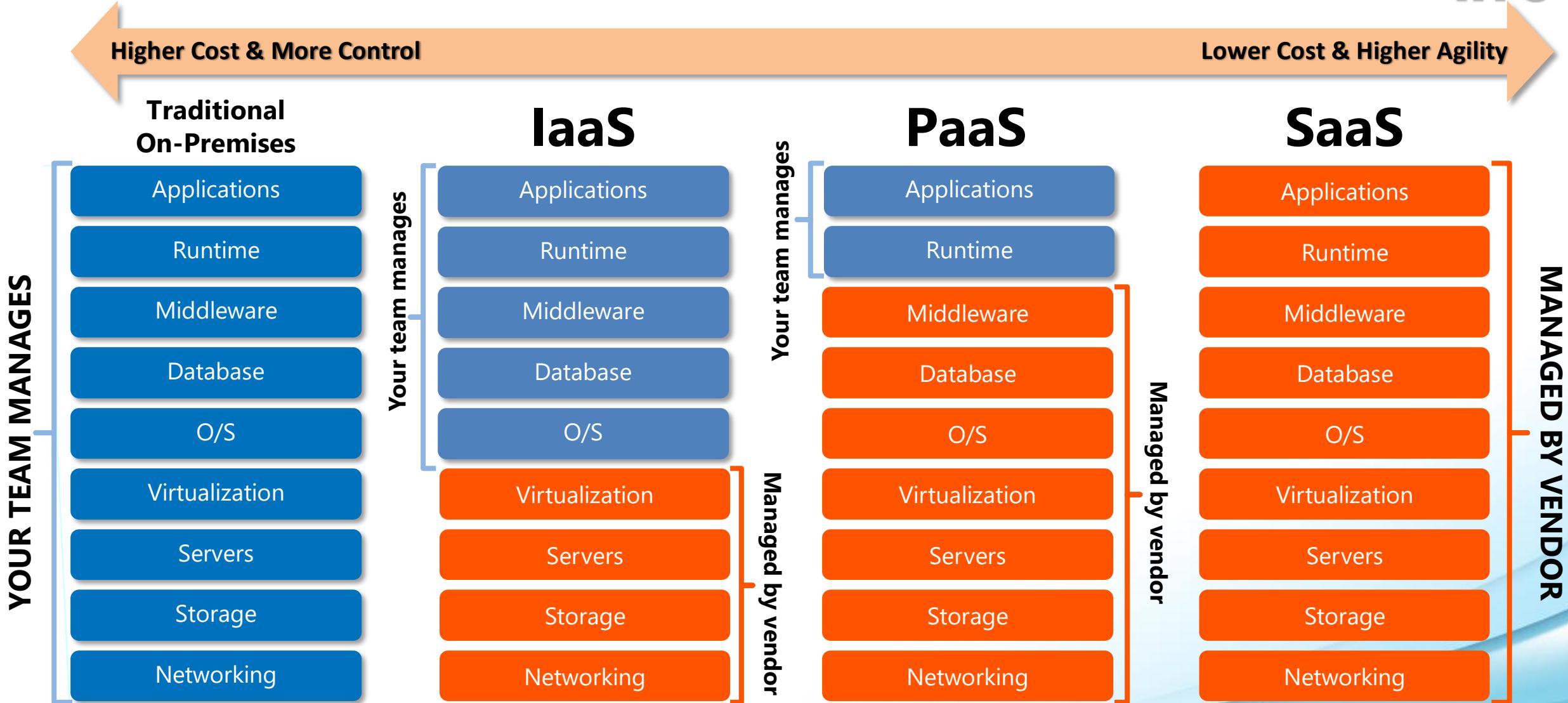
Managed by vendor

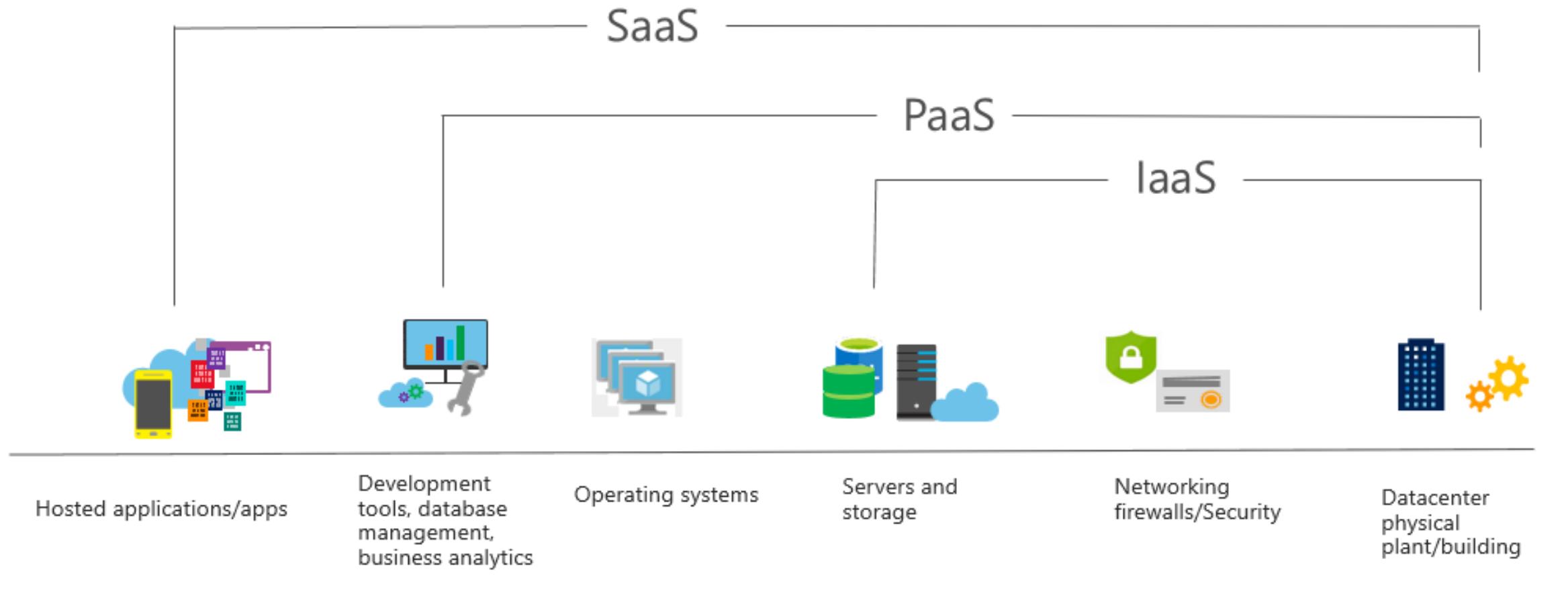
MANAGED BY VENDOR

Cloud Service Models



Cloud Service Models





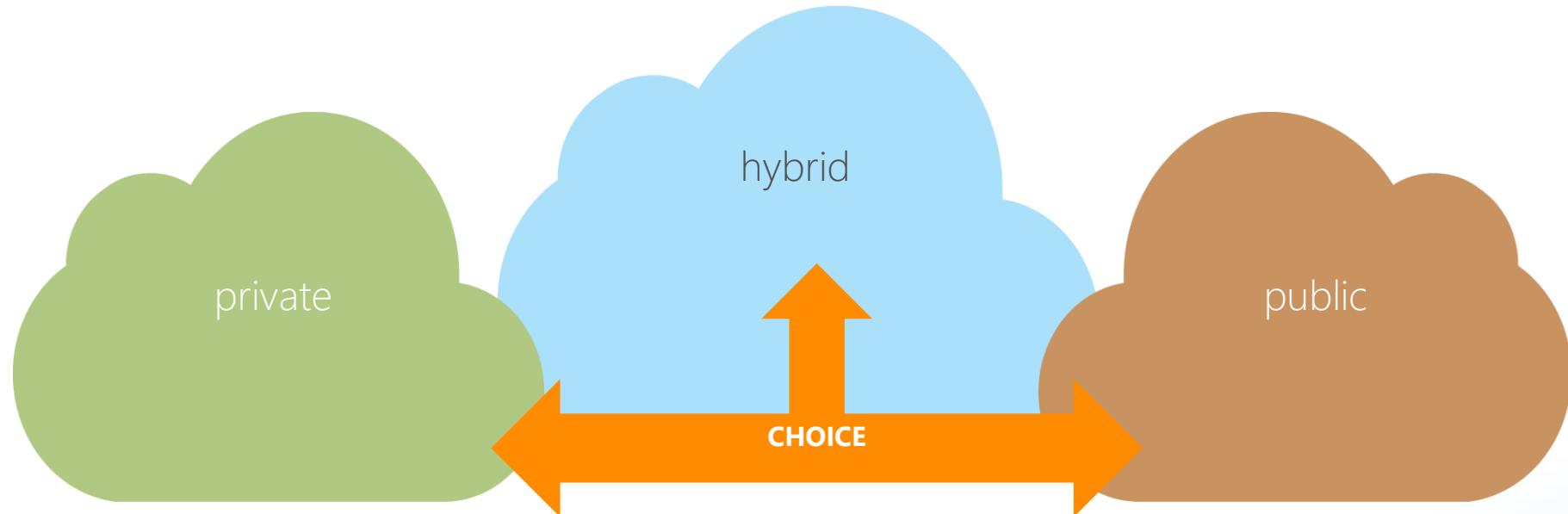
Advantage of cloud services



- Availability & Accessibility
 - Flexibility & Scalability
 - Easily upgraded
 - Lower cost
 - No maintenance needed
 - Security

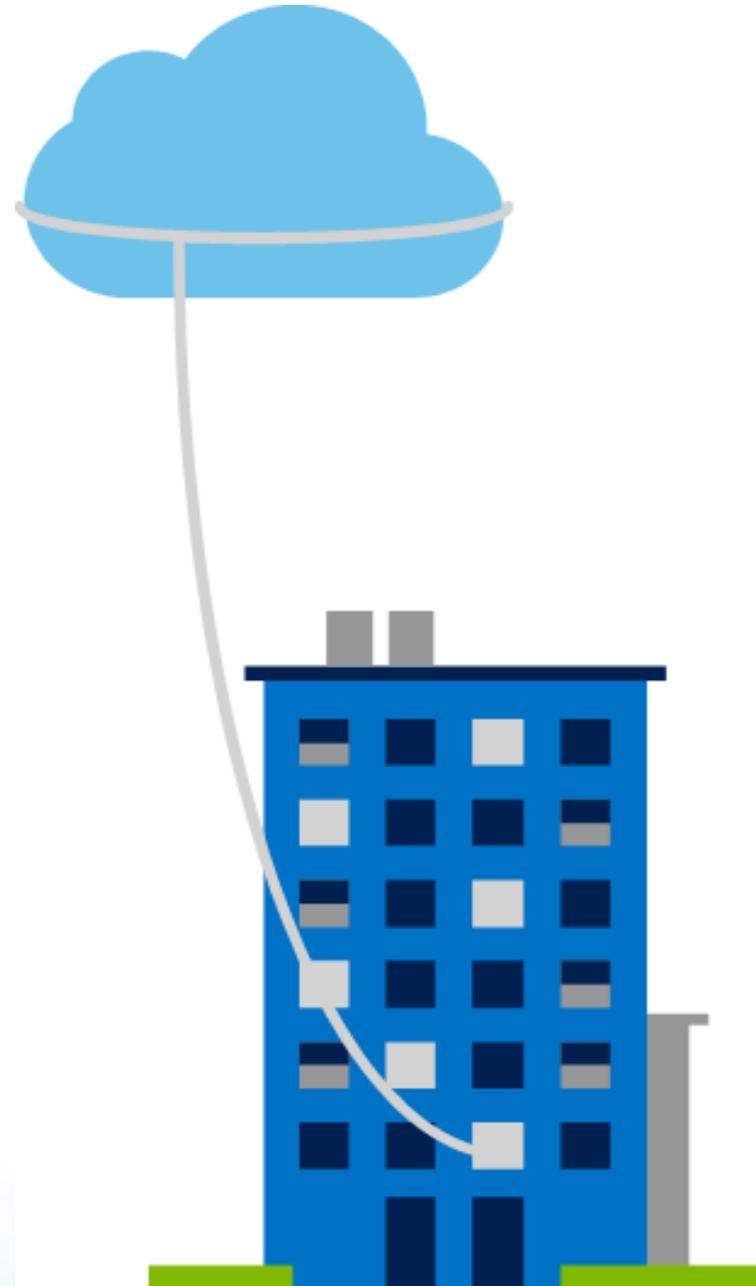


Cloud deployment models:

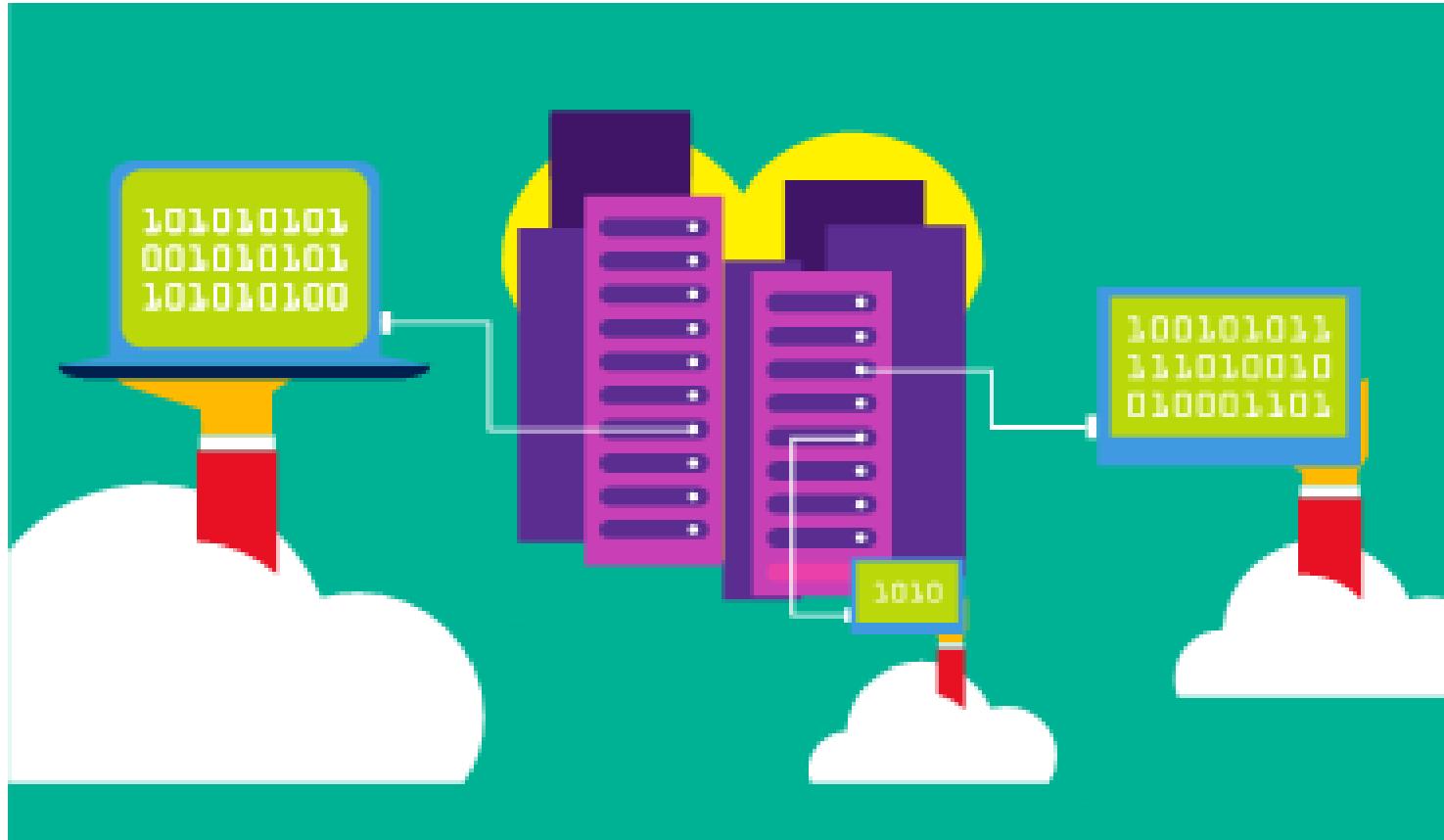


Private cloud

- Owned and operated by the organization that uses cloud resources.
- Organizations create a cloud environment in their datacenter.
- Self-service access to compute resources provided to users within the organization.
- Organizations responsible for operating the services they provide.

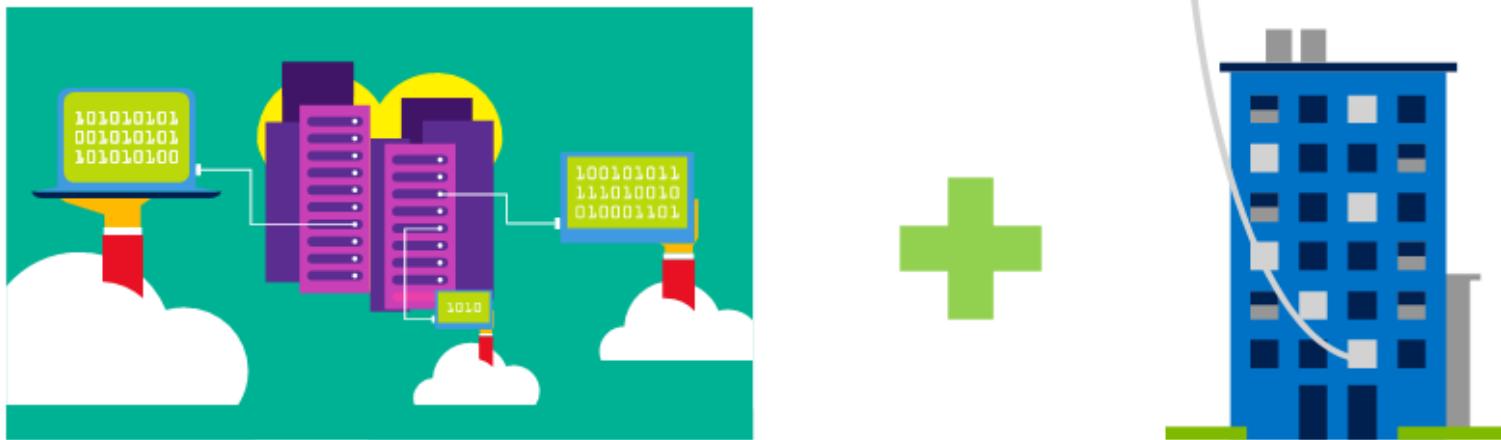


Public cloud



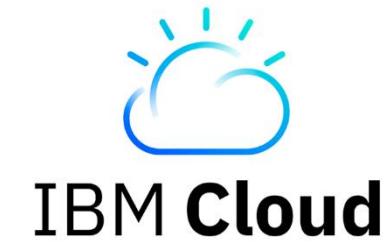
- Owned by cloud services or *hosting* provider.
- Provides resources and services to multiple organizations and users.
- Accessed via secure network connection (typically over the internet).

Hybrid cloud



Combines *Public* and *Private* clouds to allow applications to run in the most appropriate location.

Top Cloud Service Providers





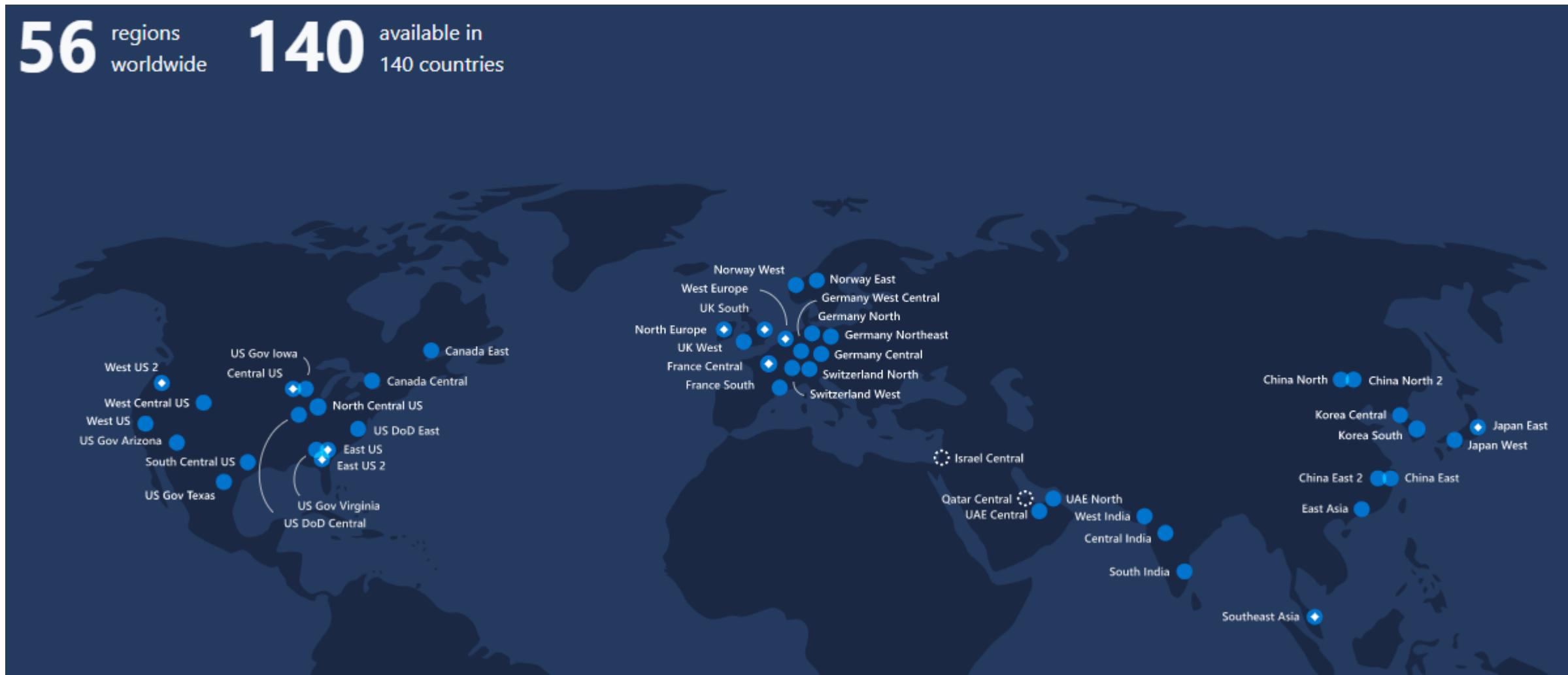
Microsoft Azure Overview and First Impressions



Azure Datacenters and Regions

56 regions
worldwide

140 available in
140 countries



Datacenters

Data centers are the heart of the cloud:
miles of wiring for networking and power



Built and operated for maximum power and temperature efficiency



Azure Datacenters and Regions

- <https://azure.microsoft.com/en-us/global-infrastructure/locations/>
- <https://azurespeedtest.azurewebsites.net>
- <https://status.azure.com/en-us/status/>

Azure management tools



- Azure portal



- Azure PowerShell and Azure Command-Line Interface (CLI)



- Azure Cloud Shell



- Azure mobile app



How Start Your Azure Cloud Journey

Azure subscriptions



<https://azure.microsoft.com/en-us/support/legal/offer-details>



Azure free account

What do I get?

With your Azure free account, you get all of this—and you won't be charged until you choose to upgrade.

12 months + **\$200 credit** + **Always free**

of popular free services to explore any Azure service for 30 days 25+ services

- **Provides 12 months of our most popular services, a \$200 credit to explore any Azure service for 30 days, and over 25 services are free.**
- **At the end of the trial you can upgrade to pay-as-you-go pricing.**

<https://azure.microsoft.com/en-us/free/free-account-faq/>

Pricing calculator

- Provides a detailed *estimate* of the costs associated with your infrastructure configuration.

Your Estimate

Virtual Machines   1 D2 v3 (2 vCPU(s), 8 GB RAM) x 730 Hours;    \$188.57

 Virtual Machines

REGION: West US OPERATING SYSTEM: Windows TYPE: (OS Only)

TIER: Standard

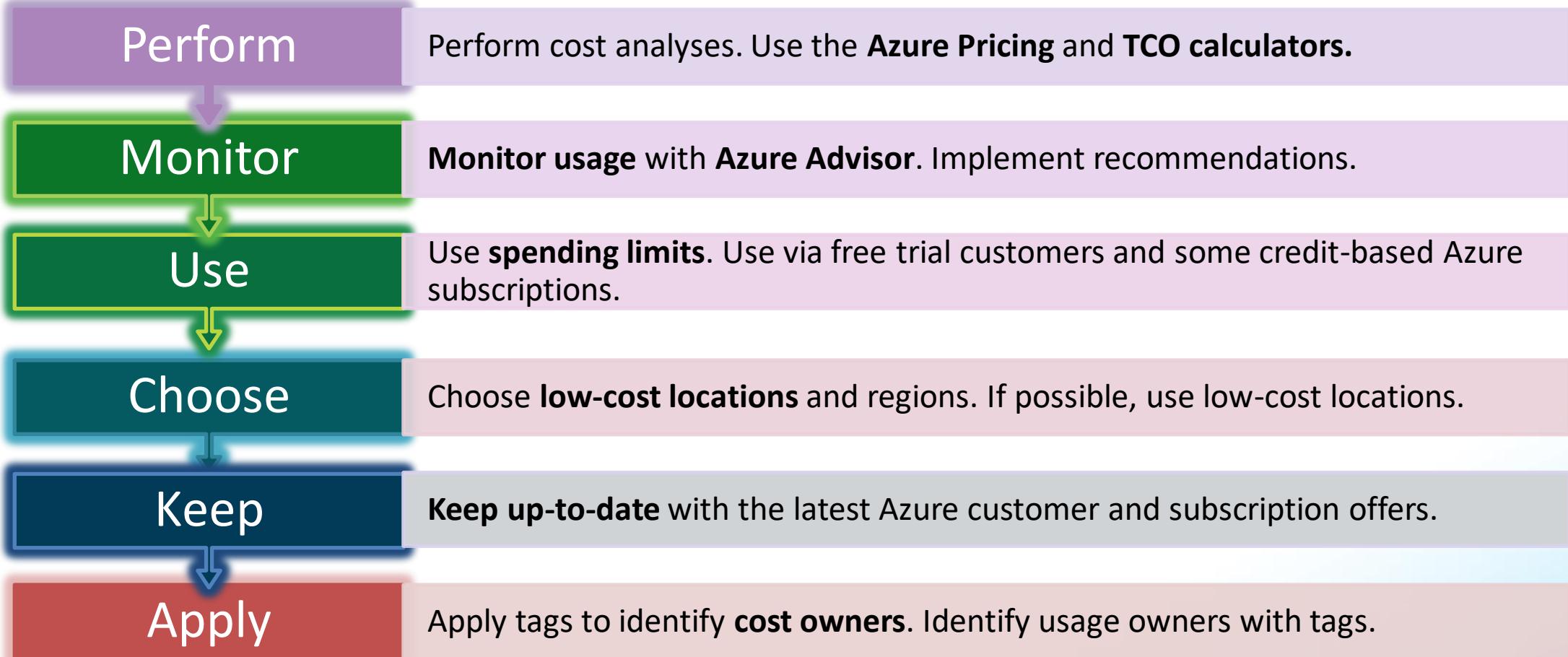
INSTANCE: D2 v3: 2 vCPU(s), 8 GB RAM, 50 GB Temporary storage, \$0.209/hour

 Clone
 Delete

More info

 Pricing details
 Product details
 Documentation

How to Minimizing costs





Support plan options

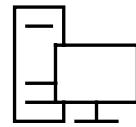
Every Azure subscription includes free access to billing and subscription support, Azure products and services documentation, online self-help documentation, white papers, and community support forums.

	Basic	Developer	Standard	Professional Direct
Scope	Available to all Microsoft Azure accounts	Trial and non-production environments	Production workload environments	Business-critical dependence
Technical Support		Business hours access to Support Engineers via email	24x7 access to Support Engineers via email and phone	24x7 access to Support Engineers via email and phone

Availability Options

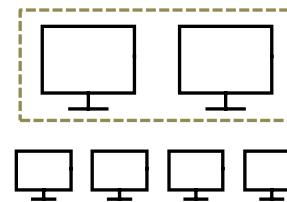
VM SLA

99.9% with Premium Storage



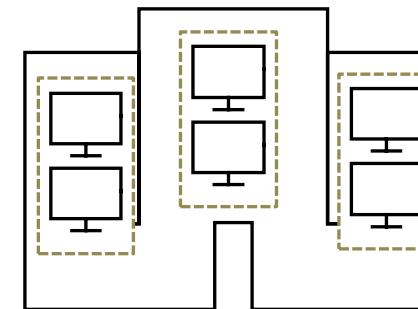
VM SLA

99.95%

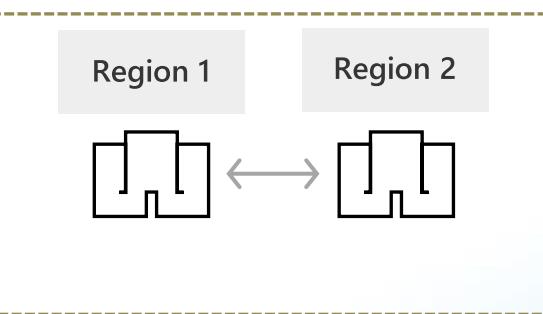


VM SLA

99.99%



MULTI-REGION DISASTER RECOVERY



SINGLE VM

Easier lift and shift

AVAILABILITY SETS

Protecting against failures within datacenters

AVAILABILITY ZONES

Protection from entire datacenter failures

REGION PAIRS

Regional protection within Data Residency Boundaries

SLAs for Azure products and services

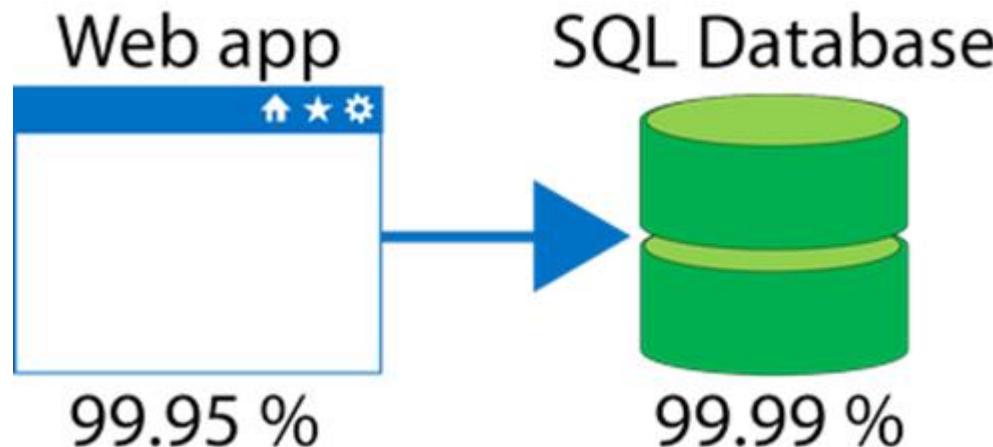


- Performance targets are expressed as uptime and connectivity guarantees.
- Performance-targets range from 99.9% (three nines) to 99.99% (four nines).
- If a service fails to meet the guarantees, a percentage of the monthly service fees can be credited to you.

SLA	Downtime per month	Downtime per year
99.9%	43.2 minutes	8.76 hours
99.95	21.6 minutes	4.38 hours
99.99	4.32 minutes	52.56 minutes

Composite SLAs

- If the App Service has a 99.95% SLA, and the Azure SQL Database has a 99.99% SLA, what is the composite SLA for your application?



Composite SLA

$$\begin{aligned} & .9995 * .9999 \\ & = 99.94\% \end{aligned}$$

- Notice the composite SLA is lower than the individual SLAs.
- Improve the SLA by creating independent fallback paths.



Azure Services



Azure Core Services

- Azure compute (Azure VMs, App Services)
- Container services
- Azure network services (Vnet, Azure Load Balancer, CDN)
- Azure storage services (Azure Disk)
- Azure database services (Azure SQL Database)



Azure solutions

- Azure IoT
- Big data and analytics
- Artificial Intelligence
- Serverless computing



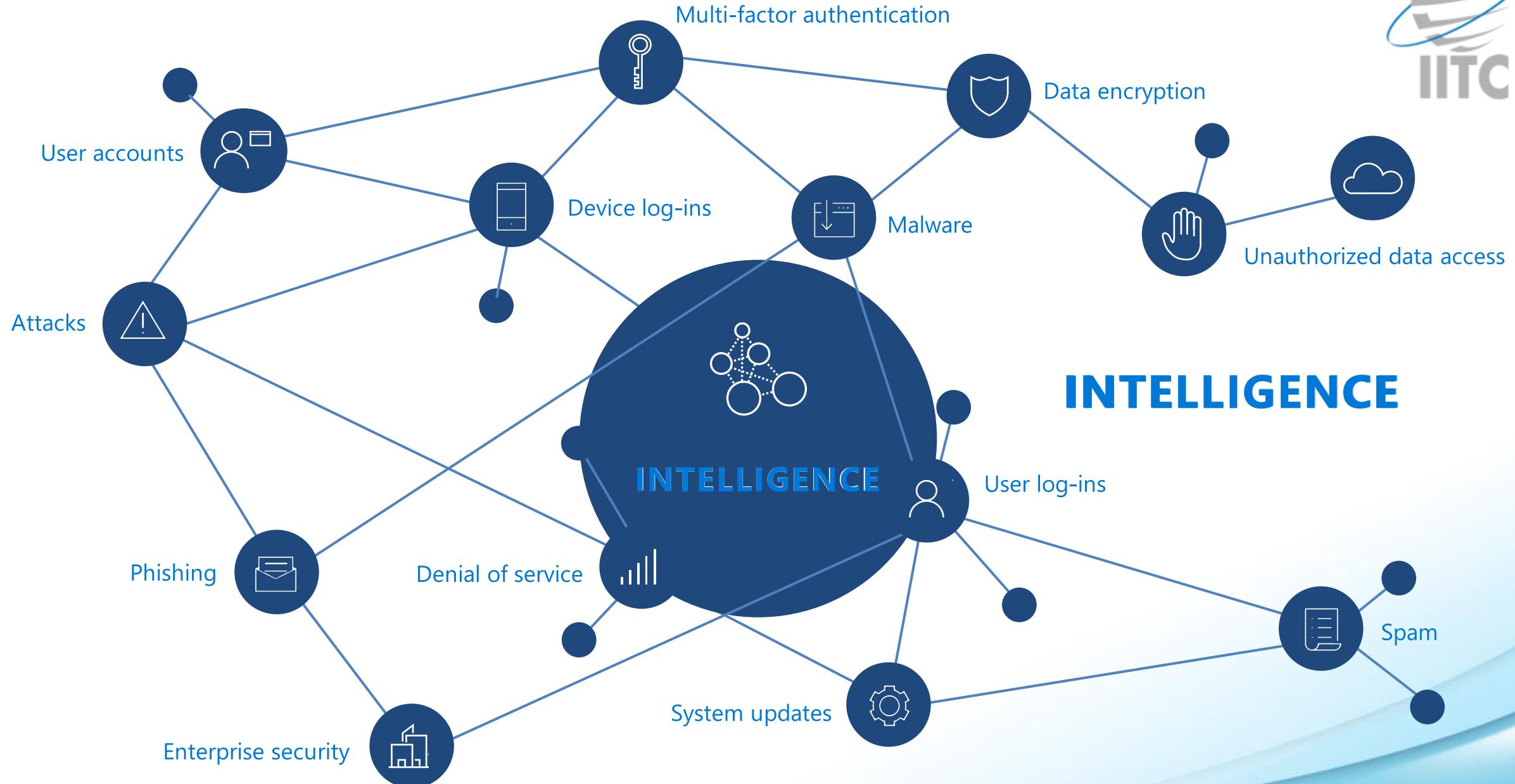
Demos



**BUILT FOR THE
FUTURE. READY
NOW.**

Azure Security and Trust ...





...Because more connectivity means more risk



71%

of companies admit
they fell victim to a
successful cyber attack
the prior year

\$400B

cost of cyber attacks to
companies each year

\$3Tr

estimated cost in
economic value from
cybercrime
by 2020

556M

victims of cybercrime
per year

1.4B

Data records
compromised in 2016

200+

Median # of days
between infiltration
and detection



UNIQUE INTELLIGENCE

INTELLIGENCE

630B user authentications each month

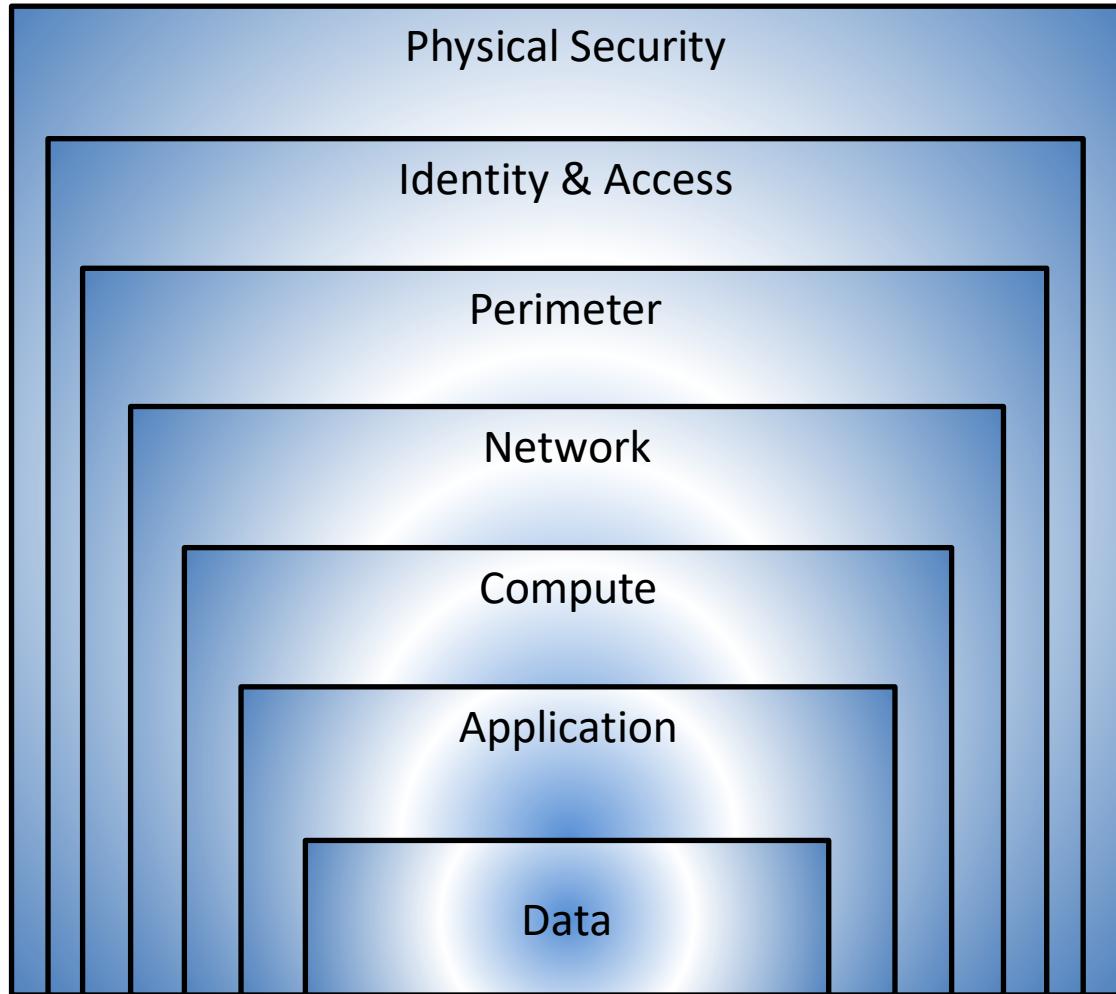
1.2B Windows devices updated

470B emails analyzed for spam and malware

5B threats blocked per month

18B+ Bing page scans per month

Levels of Protection





Microsoft Azure Certification Path



~~Microsoft
CERTIFIED
Retired~~

Recommended Path to Microsoft Role-based Certification Options

