Microsoft

Microsoft Azure – infrastructure and scenarios to start

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Hyper scale Infrastructure is the enabler

34 Regions Worldwide, huge capacity around the world… growing every year

- 100+ datacenters
- Top 3 networks in the world
- 2.5x AWS, 7x Google DC Regions
- G Series – Largest VM in World, 32 cores, 448GB Ram, SSD…

Operational

Operational in last 6 months

* Operated by 21Vianet ** Operated by Deutsche Telekom

> 57%

Fortune 500 Using Azure

> 300k

Active Websites

More than 1,000,000

SQL Databases In Azure

> 30 TRILLION

Storage Objects

> 300 MILLION

AD Users

> 1.65 MILLION

Developers Registered With Visual Studio Online

> 3 MILLION

Requests/Sec

> 13 BILLION

Authentication/Wk

> 80%

Fortune 500 Using Azure

> 664k

Active Websites

More than 1,500,000

SQL Databases In Azure

> 70 TRILLION Storage Objects

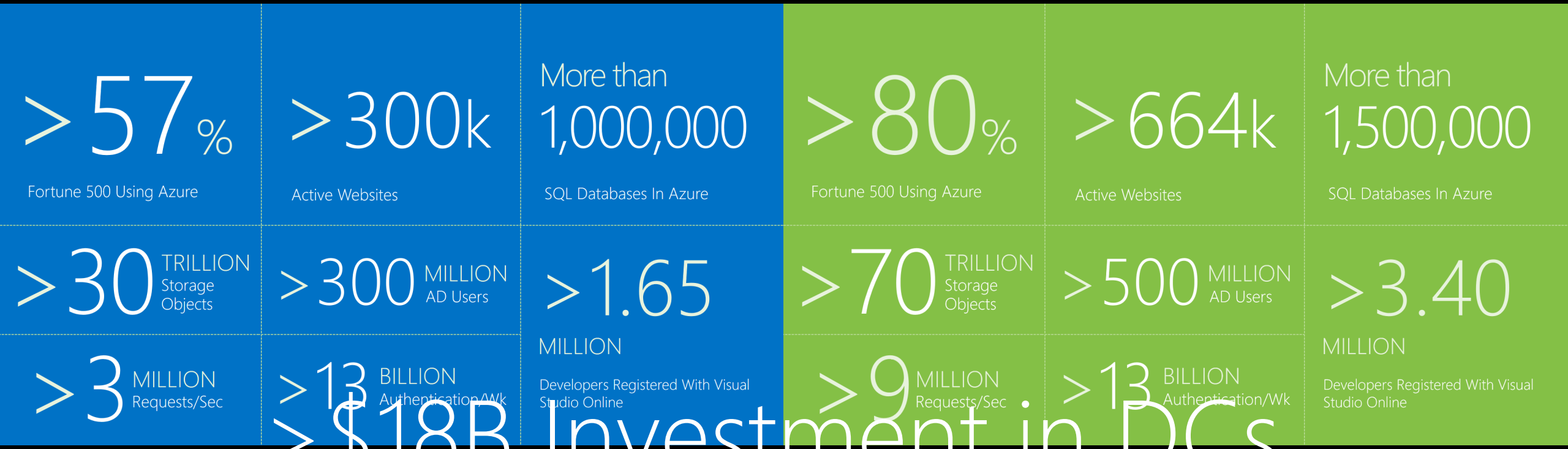
> 500 MILLION AD Users

> 3.40 MILLION

Developers Registered With Visual Studio Online

> 9 MILLION Requests/Sec

> 13 BILLION Authentication/Wk



>$18B Investment in DCs and R&D per Year

Platform Services

Security & Management

- Portal
- Azure Active Directory
- Azure AD B2C
- Multi-Factor Authentication
- Automation
- Scheduler
- Key Vault
- Store/ Marketplace
- VM Image Gallery & VM Depot

Services Compute

- Cloud Services
- Service Fabric
- Batch
- RemoteApp

Integration

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

Media & CDN

- Media Services
- Content Delivery Network (CDN)

Web and Mobile

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

Developer Services

- Visual Studio
- Azure SDK
- VS Online
- App Insights

Data

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

Analytics & IoT

- HDInsight
- Machine Learning
- Stream Analytics
- Data Lake
- Data Factory
- Event Hubs
- Data Catalog
- IoT Hub
- Mobile Engagement

Hybrid Operations

- Azure AD Health Monitoring
- AD Privileged Identity Management
- Domain Services
- Backup
- Operational Analytics
- Import/Export
- Azure Site Recovery
- StorSimple

Infrastructure Services

OS/Server Compute

- Virtual Machines
- Container Service

Storage

- BLOB Storage
- Azure Files
- Premium Storage

Networking

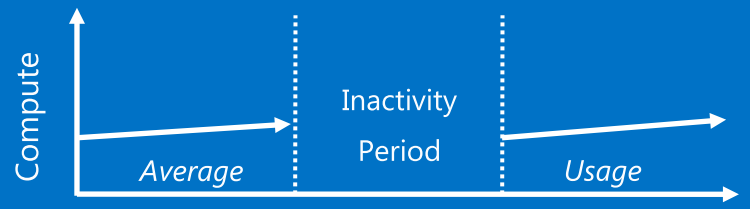
- Virtual Network
- Load Balancer
- DNS
- Express Route
- Traffic Manager
- VPN Gateway
- App Gateway

Datacenter Infrastructure (34 Regions, 34 Online)

Cloud Computing Scenarios

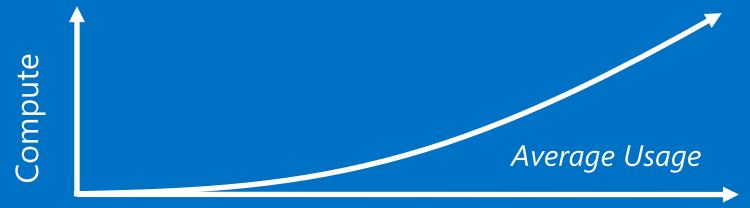
On and Off

On & off workloads (e.g. batch job)
Over provisioned capacity is wasted
Time to market can be cumbersome



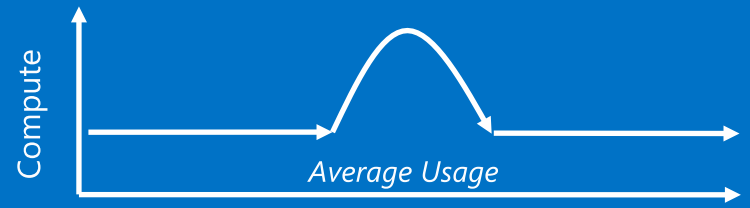
Growing Fast

Successful services needs to grow/scale
Keeping up w/ growth is big IT challenge
Cannot provision hardware fast enough



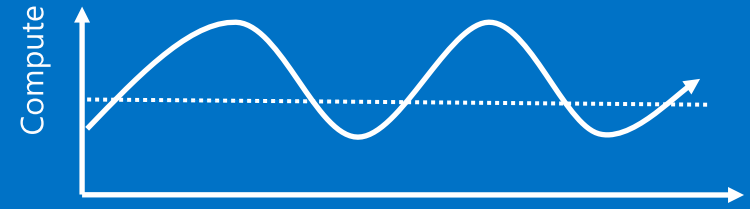
Unpredictable Bursting

Unexpected/unplanned peak in demand
Sudden spike impacts performance
Can't over provision for extreme cases

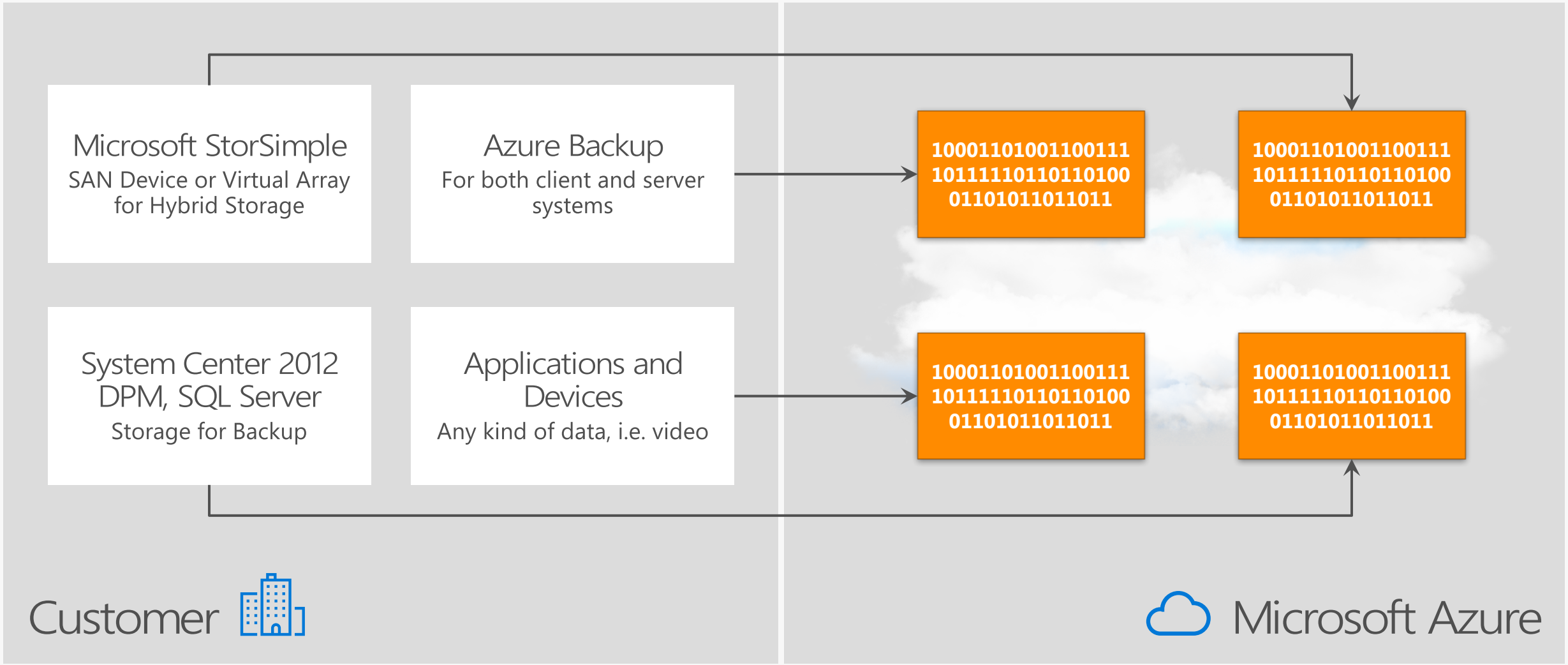


Predictable Bursting

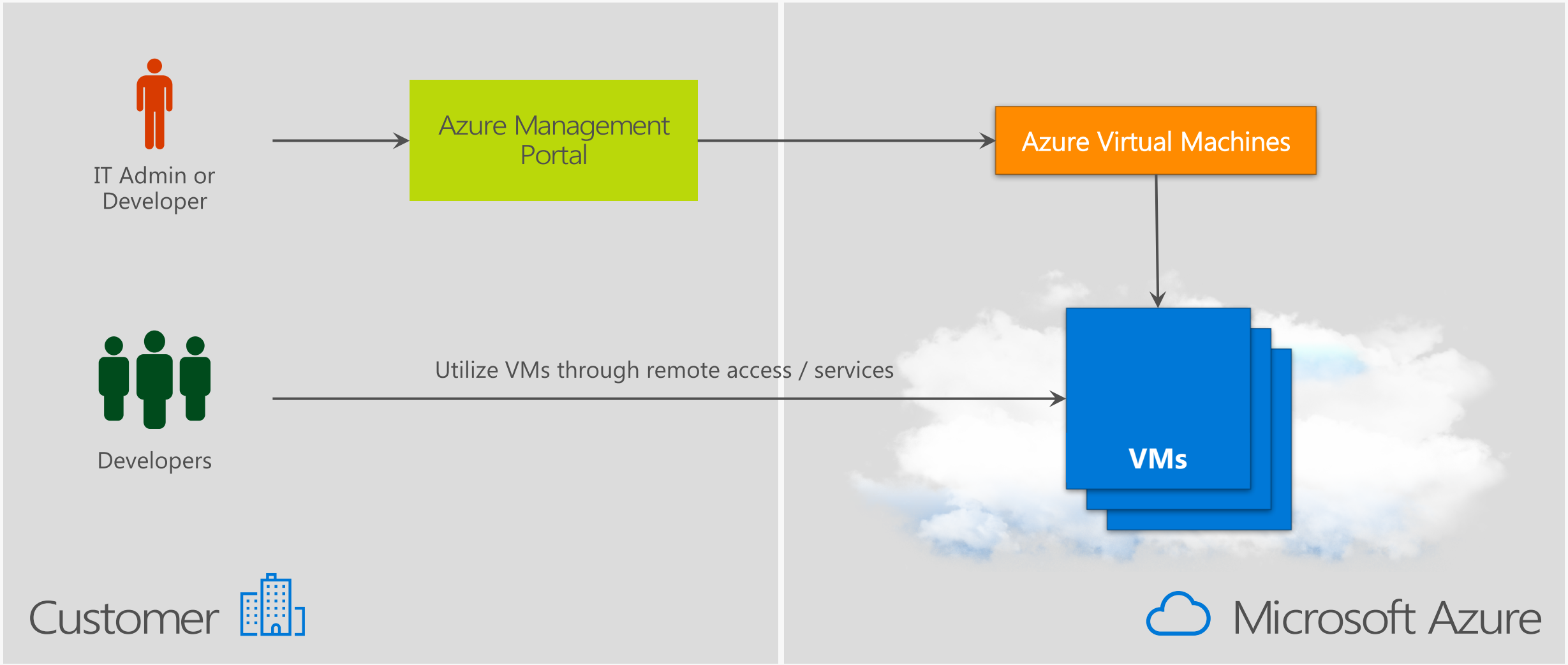
Services with micro seasonality trends
Peaks due to periodic increased demand
IT complexity and wasted capacity



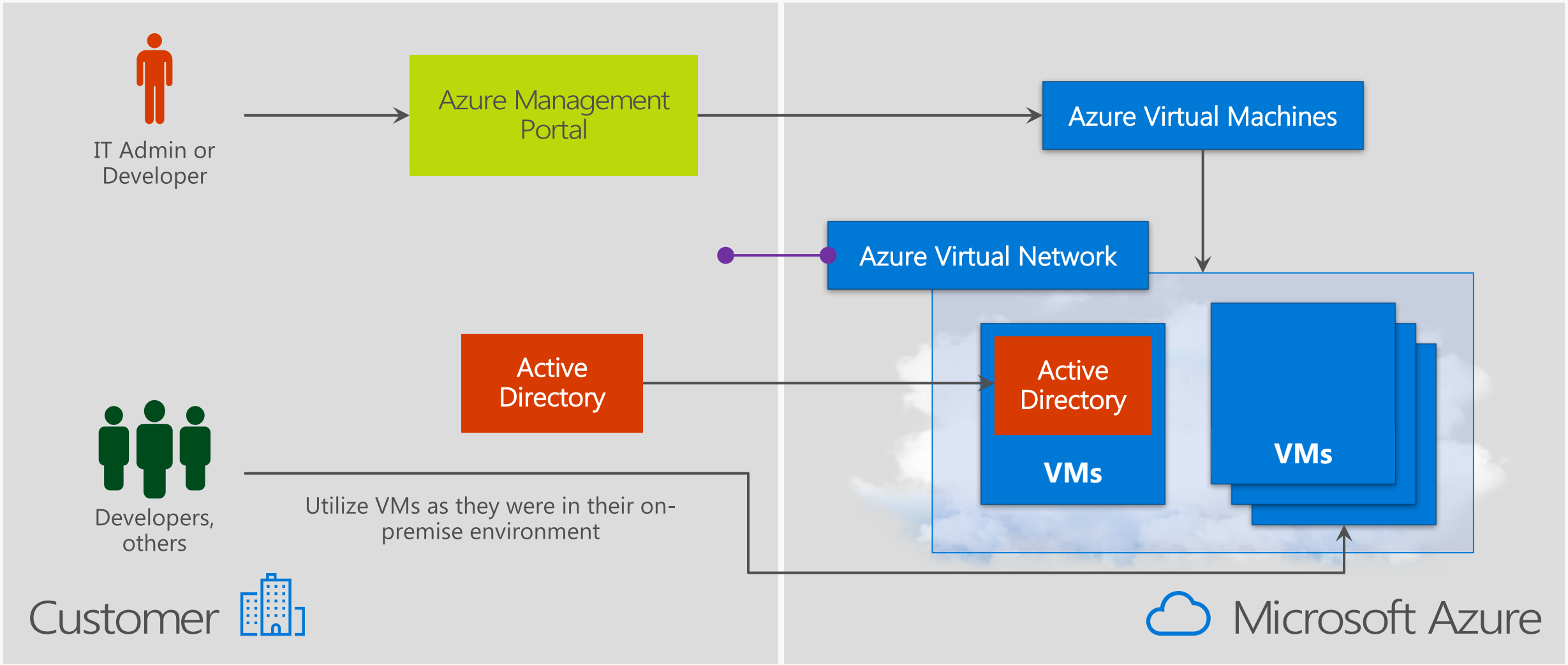
Data Storage



VMs on Demand (dev/test)



VMs for Standard Purposes



Network Infrastructure and Connectivity

Azure Virtual Networks

A protected private virtual network in cloud

Extend enterprise networks into Azure

Cross-premises connectivity

Cross-premises Connectivity (VPN)

Site-to-site

Create a secure connection between your on-premises site and your virtual network

Point-to-site

Create a secure connection via VPN to your virtual network

VNet peering

Connect two VNets in the same region through the Azure backbone network

ExpressRoute™

Create a private connection between Azure data centers and infrastructures on your premises or in a co-location environment.

VMs on Demand – why?

Fast and simple way to get inexpensive VMs

- Can use Microsoft Azure provided VHDs or your own, Windows or Linux
- Users can potentially access cloud VMs as if they were local

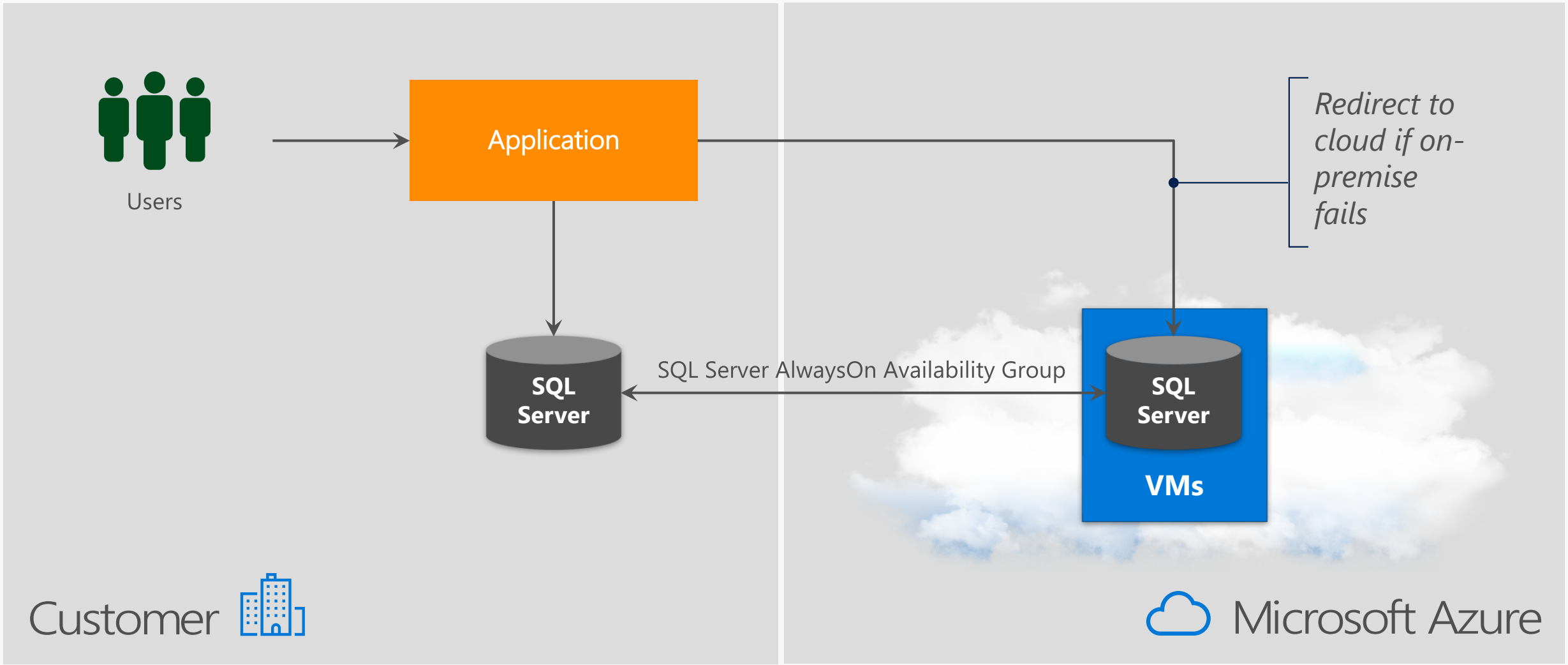
Useful in many situations

- Dev/test environment for cloud or on-premises apps
- Innovation/proof of concept projects
- „I really need that VM for a week" kind of situations

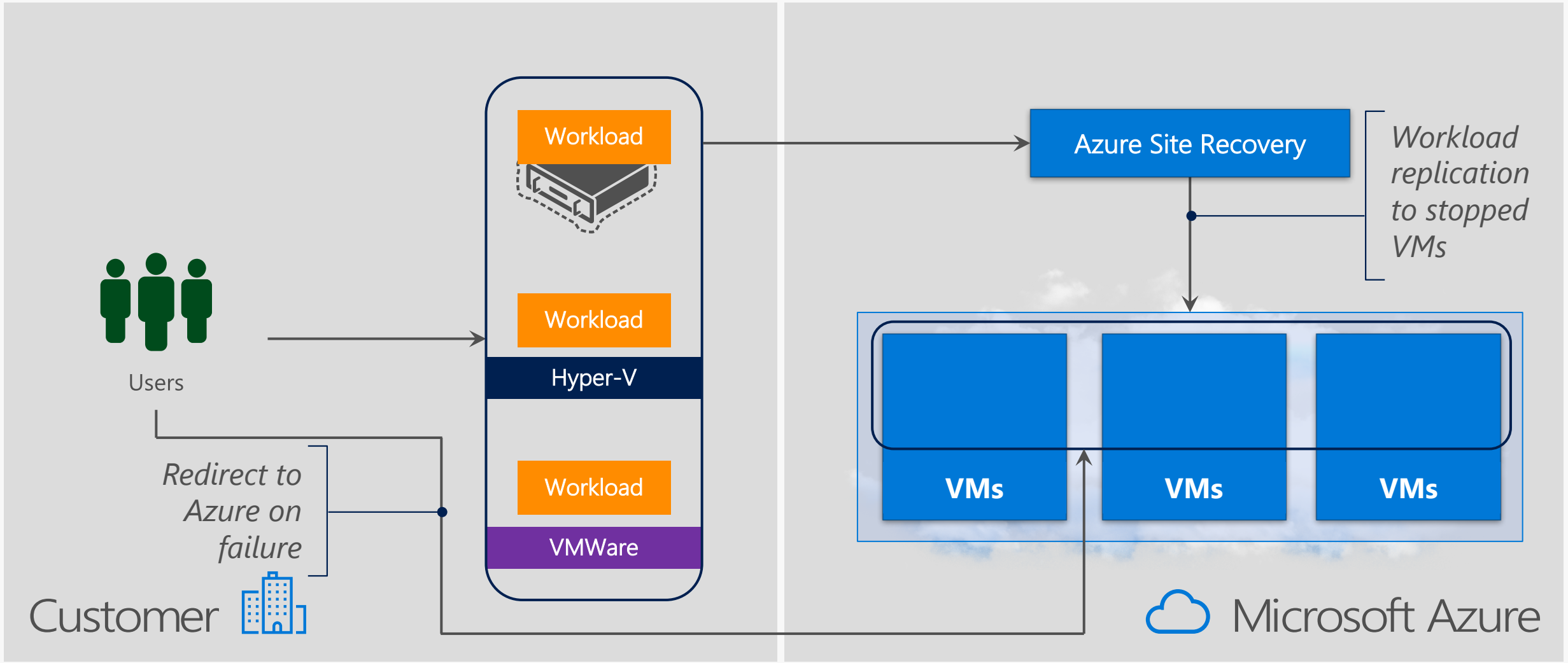
Having the capability available is cheap

- Azure VMs start at €11.29/month for shared core
- A Microsoft Azure VPN Gateway connection costs €0.03/hour

Disaster Recovery (app level, i.e. SQL Server)



Disaster Recovery (any workload)



Disaster Recovery – why?

Can cover a range of scenarios

From database DR to full workload DR

With Azure Site Recovery, VMs can be grouped together, then started in a specific order

Lower cost

No need to maintain a dedicated facility just for DR

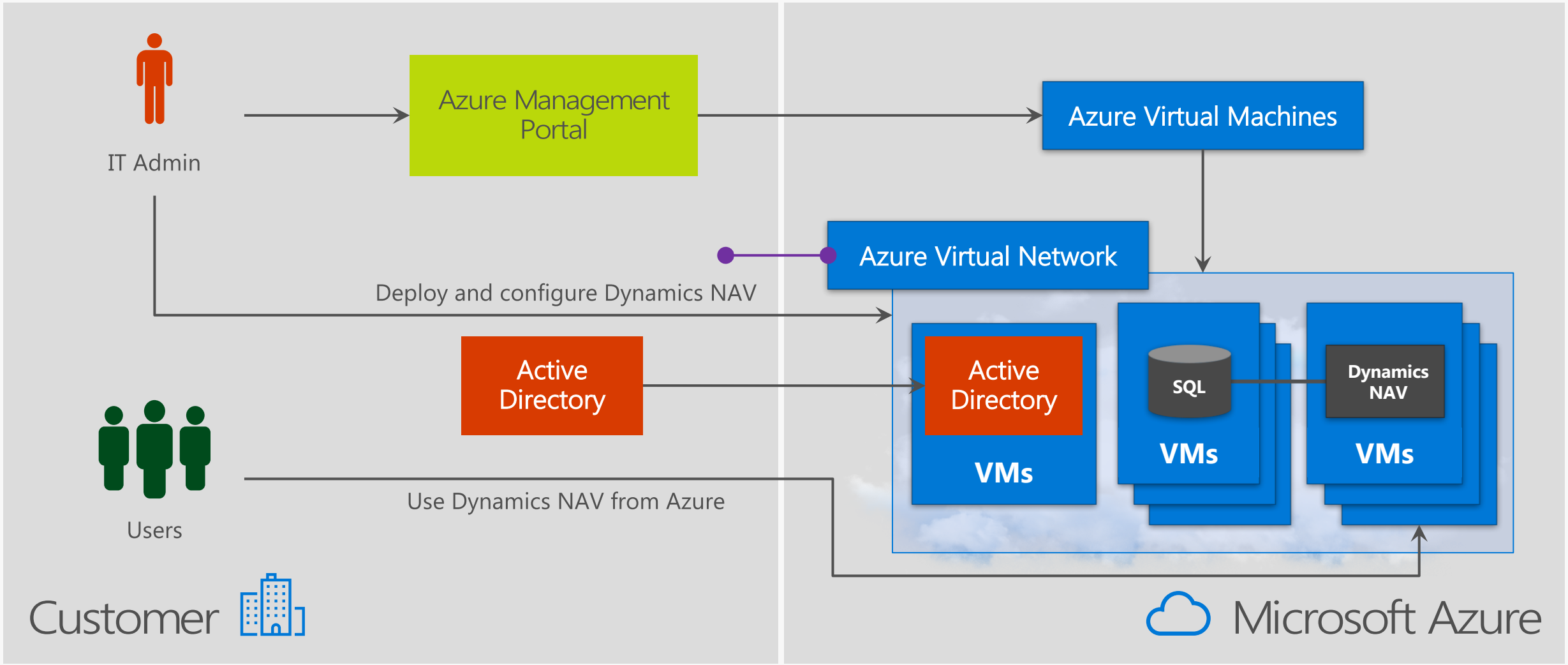
Organizations can provide DR for more applications, because it's cheaper

Provides diverse DR options

Microsoft Azure has datacenters around the world

Azure Site Recovery supports DR to Azure, to a hoster, and to another enterprise datacenter

Deploying Packaged Applications



Deploying Packaged Applications – why?

Supported applications

Microsoft

SQL Server, Dynamics AX, Dynamics NAV, Dynamics CRM, SharePoint, Exchange, System Center, BizTalk Server, Project...

Non-Microsoft

Oracle: Database, Web Logic Server; IBM: DB2, WebSphere; SAP: HANA, Business Suite, ECC, CRM...

Various open source software

Faster deployment

No need to wait...

Existing image templates provide VMs that are ready to use in 10 minutes

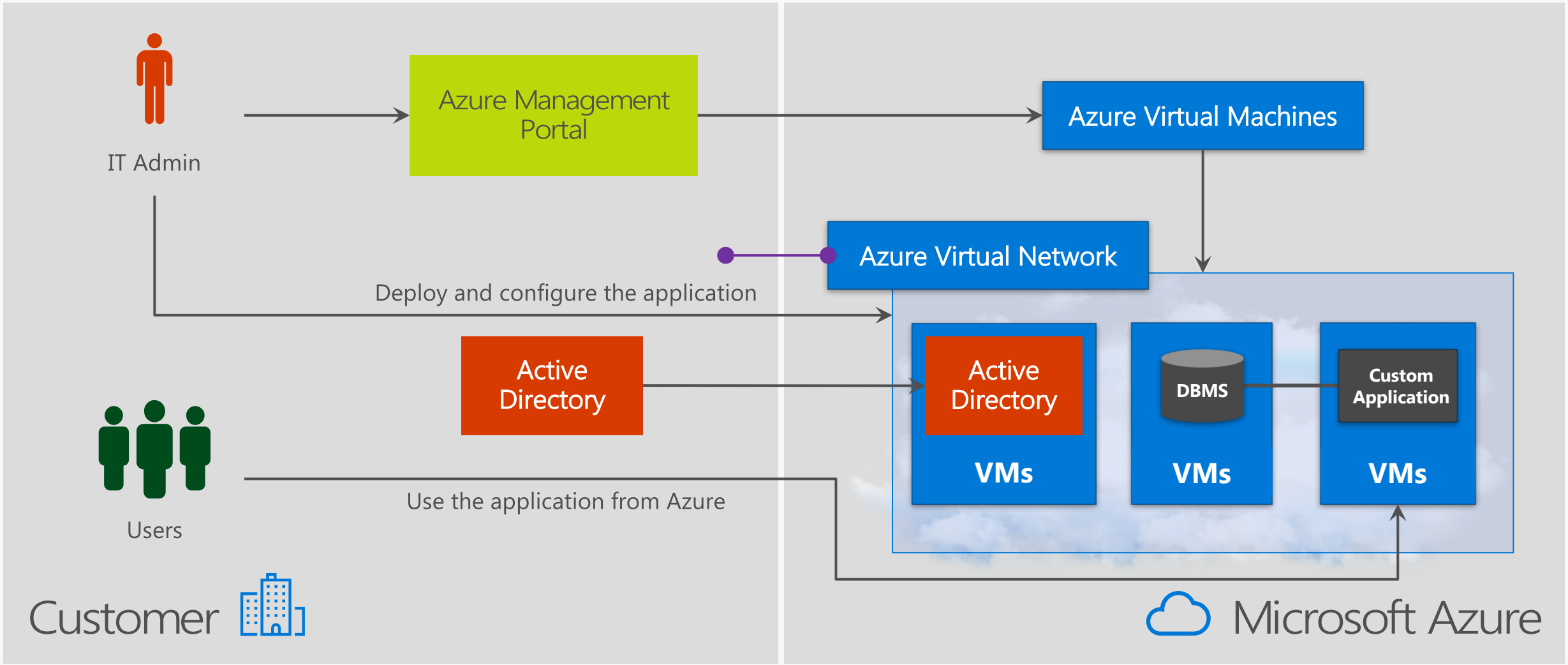
Cost structure

IT resources become an operating expense, rather than a capital expense

Lower Costs

Microsoft Azure is probably cheaper today and certainly cheaper tomorrow; prices keep going down

Migrating existing apps to Public Cloud



Microsoft Azure SQL Database

Relational Data Store

- Relational database as a service
- Fully managed
- High availability, scalability & global reach
- Familiar language and framework support
- Azure Analysis Services (in preview)

SQL Database vs SQL IaaS Comparison

SQL Database

Fully managed SQL Server environment

HA/DR features automatically included

Automatic backup enabled by default

Can use SQL and Azure AD authentication

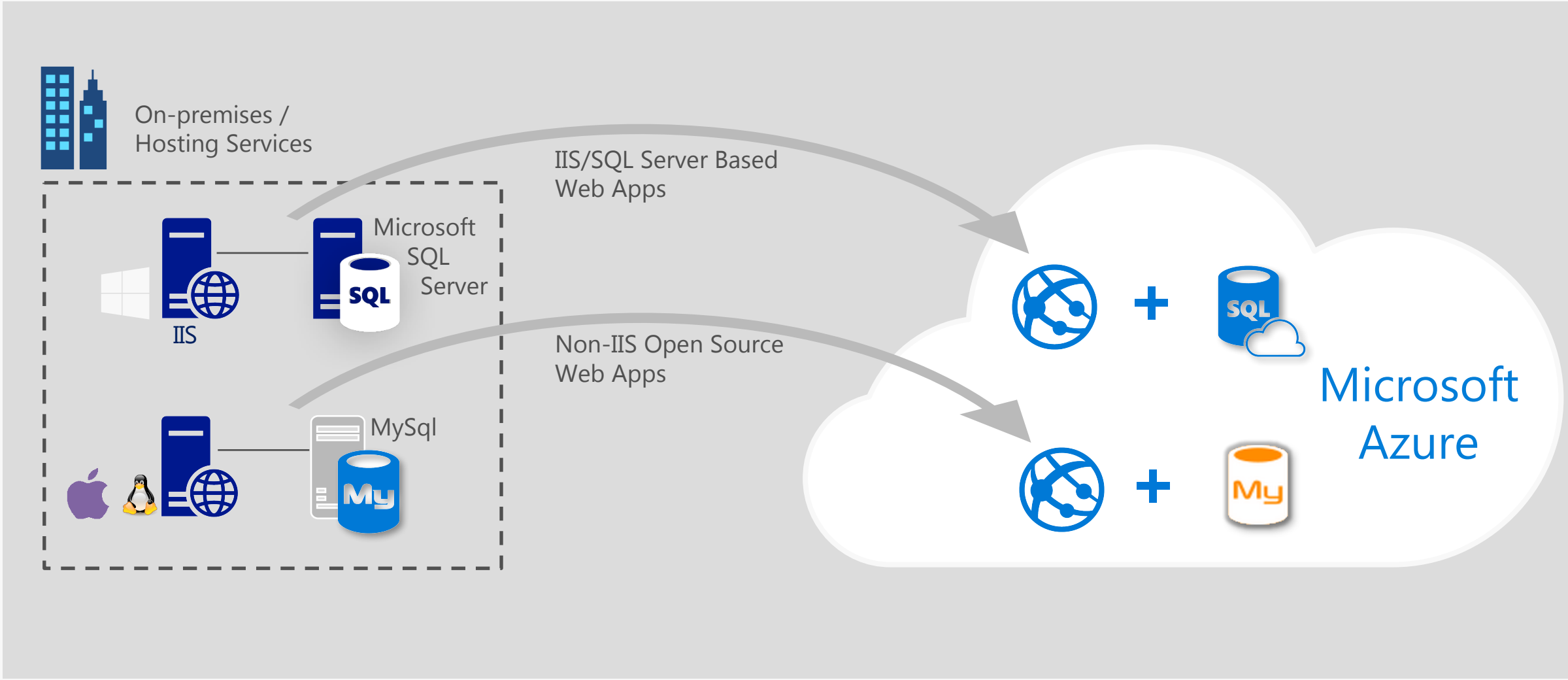
SQL IaaS

Choice of a variety of DB engines (SQL Server, Oracle, MySql, PostgreSQL)

Larger database sizes possible (16TB)

All features of native DB available (i.e. SQL Server Reporting Services, Integration Services...)

Migrating Web Apps to Public Cloud



Moving Web Apps to Public Cloud – why?

Low Cost

Azure Web Apps allows ten free websites

Paid sites range from €0.01 to €0.33 per hour (€2.02 for Premium)

Scalability & Security

Auto-scalable depending on traffic, number of requests, CPU/RAM usage

A website can run in its own VM if desired

Protection against DDoS (and other attacks)

Web App Security Checks

Availability of other services

A website can use other Azure services, e.g., blob storage

Barriers to Public Cloud Adoption

Security

Can public cloud platform keep my data and applications safe?

You must learn to trust your cloud provider.

Regulations

Can I still meet the regulatory requirements in the public cloud?

You must understand the rules and procedures that apply to you depending on:

- **Industry vertical** (Financial services, Healthcare, National Government, Local Govenment, Retail...)
- **Country**

Availability

Will public cloud datacenters be up when they are needed?

They'll be at least as good as your own datacenter, and there are SLAs

Why should you trust?

TRANSPARENCY

Trust Through Transparency

ISO 27001 (STAR), ISO 27018

Industry standards

Yearly Audits

Independently Verified

$

Monthly SLAs

PCI DSS Compliant

Regulatory Compliance

EU Model Clauses

Trust Center

Real-time Status

Service Dashboard

RELATIONSHIP

Count On Your Existing Relationship

Pay-as-you-Go

Meet Cloud Economics

Microsoft Partner Network

Architectural Guidance And Training Support

Customer Support Services PSfD