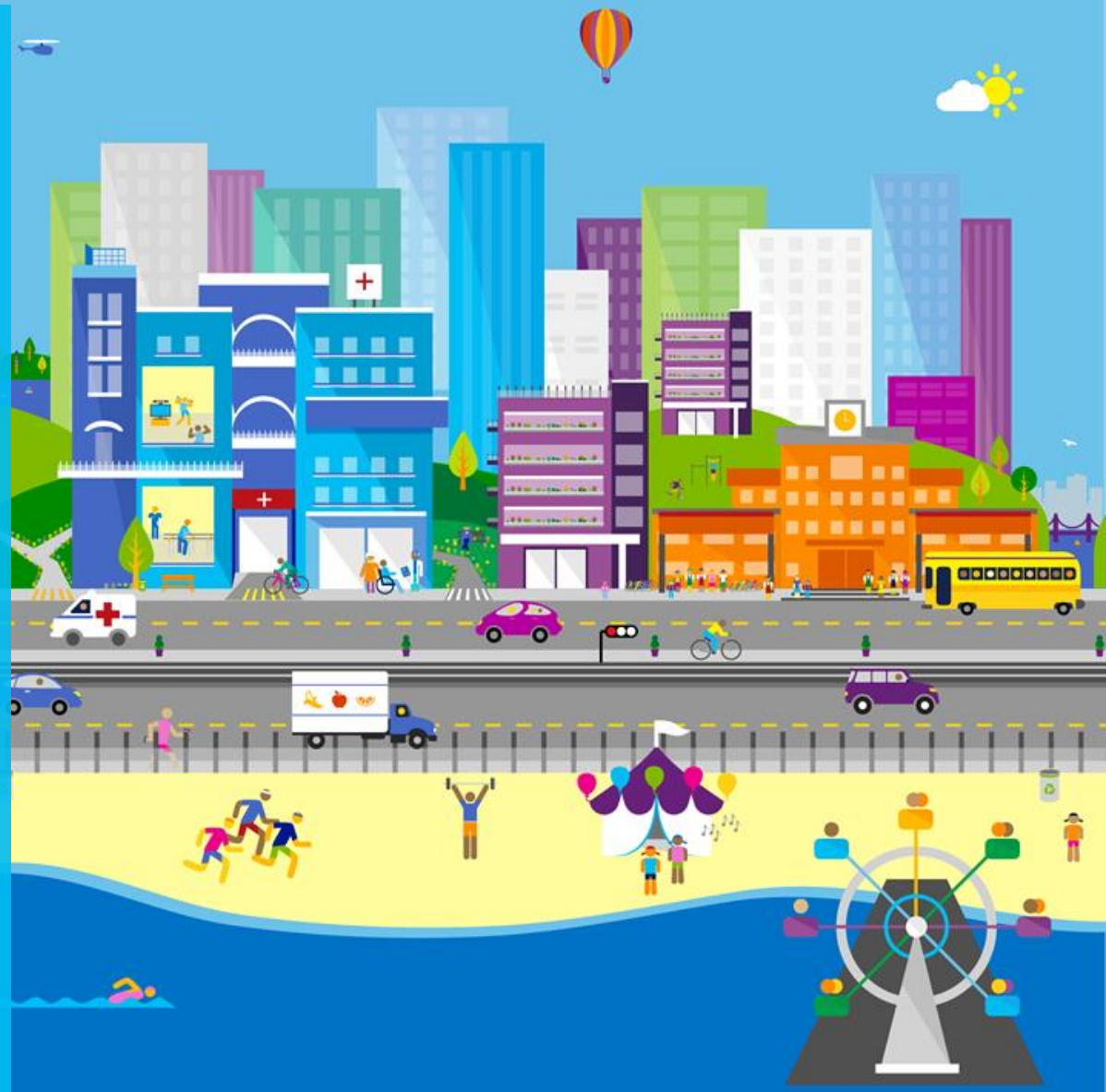
Microsoft

# Il Cloud nella PA
# Microsoft Azure

## Disaster recovery, gestione del file server e RemoteApp

Denis Sacchi
Account Techonolgy Strategist – SOFTJAM
Roma 27 maggio 2015



# Agenda

- Azure
- File Server
- Disaster Recovery
- RemoteApp

Il "Cloud computing" rappresenta un modello flessibile ed economico per la fornitura di servizi ICT. Attraverso tecnologie basate su internet, consente un accesso più agevole a un insieme di risorse configurabili e condivise (risorse fisiche di rete, di storage e di processamento, servizi e applicazioni finali). Questo sistema consente di migliorare l'efficienza operativa e, nel contempo, di raggiungere significative economie di scala per i costi IT.

AgID –Agenzia per l'Italia Digitale

I nuovi servizi digitali previsti dall'Agenda, come il fascicolo sanitario elettronico e l'anagrafe nazionale della popolazione, saranno presenti su datacenter (non solo quelli regionali ma anche quelli di privati) e da qui utilizzati via cloud dalle singole Pa e dai cittadini.

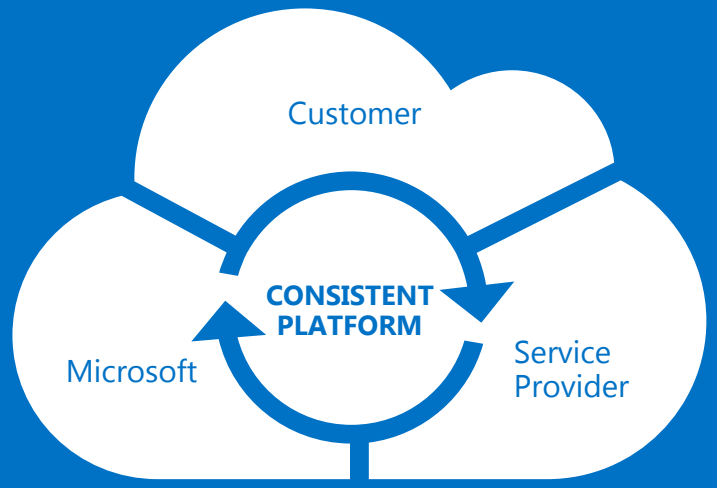
Il Sole 24 Ore

# Azure

# Microsoft Cloud Platform

## Cloud Platform

### Unified platform for modern business




## Enterprise-grade

Global reach, scale, and security for your business demands—all in a flexible and open platform

## Hybrid design

Cloud capacity and services in a way that fits your business needs and roadmap

## People-focused

Extends IT, developer, and employee skillsets to the cloud for new innovation


Last 12 months
Offline Operations
Remote Debug
Tag Expressions
Traffic Manager
Site to Site Virtual Network
Stop without Billing
Xamarin integration
Large Memory SKU
Hyper-V Recovery
SQL, SharePoint, BizTalk Images
HDInsight
Cloud Services SDK 2.0
Mercurial Deployment
Scheduler
Windows Phone Support
Distributed Cache
Partitioned Queues/Topics
AutoScale
Per Minute Billing
Dynamic Remote Desktop
Log Streaming
Android Support
IaaS
HTML 5/CORS
Active Directory
IP and SNI SSL
Custom Mobile API
http Logs to Storage
BizTalk Services
IP/DDOS Protection
Hyper-V Disaster Recovery Support
Multi-Factor Auth
MSDN Dev/Test
http Logs to Storage
Integration
Dynamic Remote Desktop
Storage Analytics
WebSockets
Delete Disks
AMQP Support
iOS Notification Support
VIP ACLs
New VM Gallery
PowerBI
Read-Only Secondary Storage
Queue Geo Replication
Windows Server Backup
Mobile Services
New Relic
Manage Azure in AD
Notification Hubs
Git Source Control
Windows 8 Notification Support
AD Directory Sync
AD Management Portal
CORS/JSON Storage Support
B2B/EDI and EAI Adapters
Point to Site
VOD Streaming + Encoding
Software VPN
Web Sites
Media Services
AutoScale/Monitoring
VS Online
Message Pump Programming Model
Import/Export Hard Drives

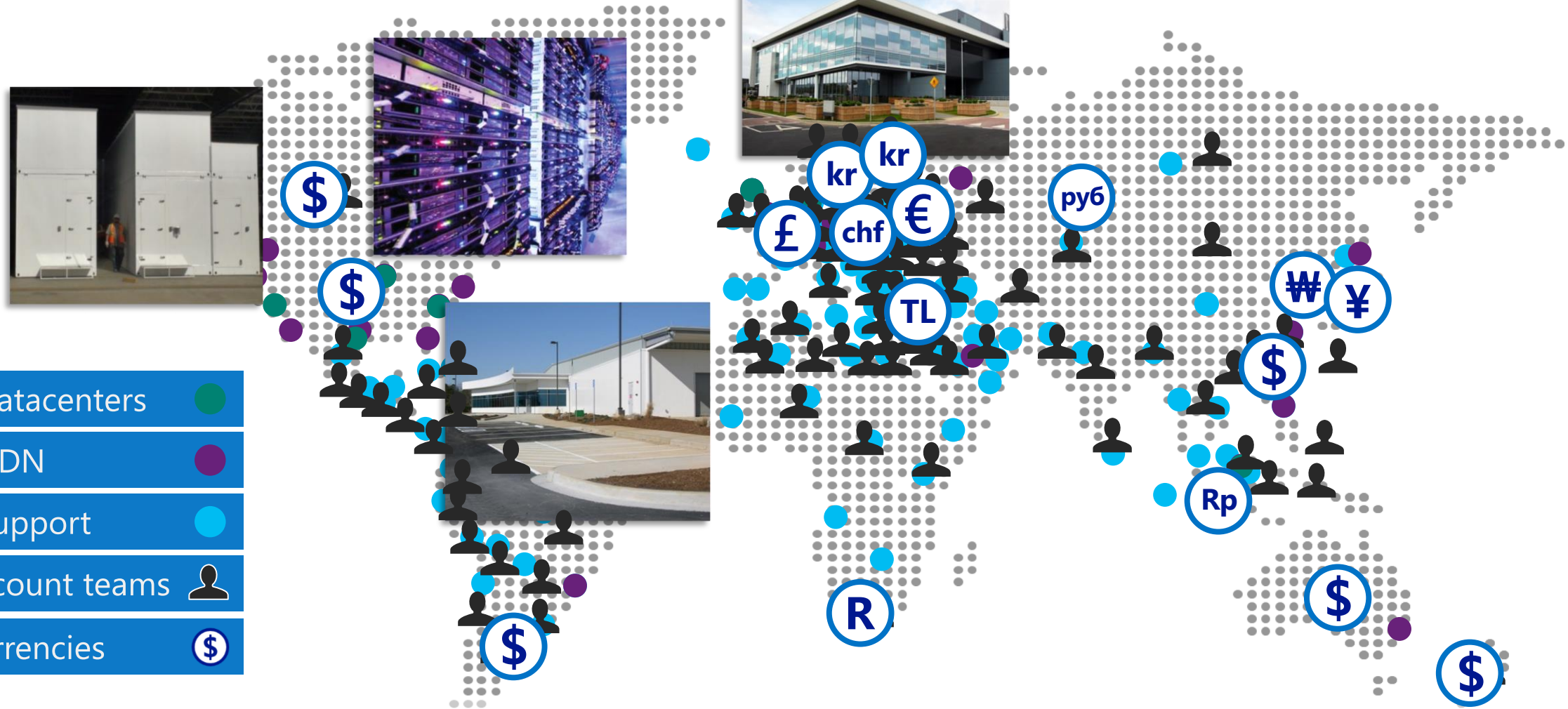
# Windows Azure

Microsoft







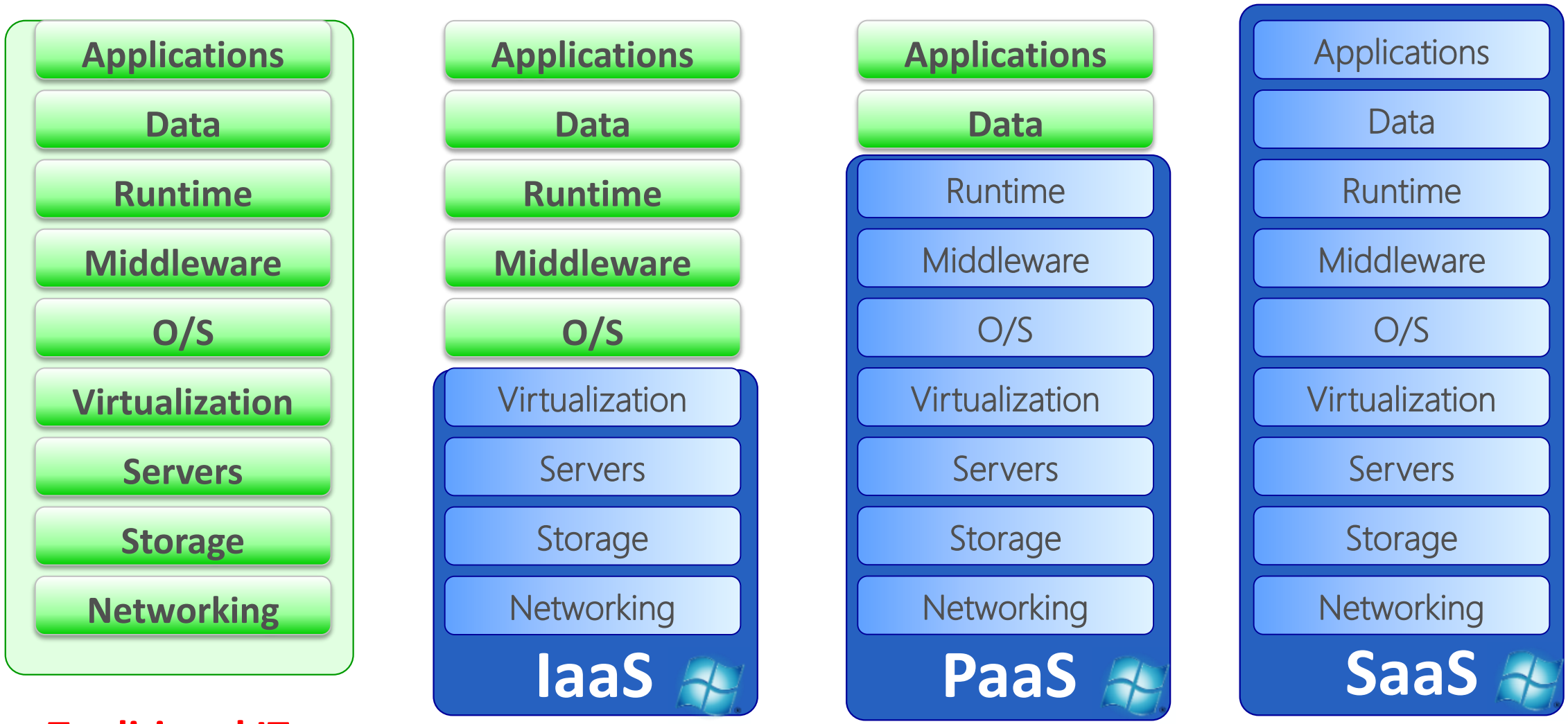



- Global datacenters
- Global CDN
- Global support
- Local account teams
- Local currencies

24 x 7 x 365 support  Over 1 billion customers, 20 million businesses  76 markets worldwide

280 years of combined industry experience in infrastructure, security, product dev, and global ops

# Cloud models in Windows Azure



# Chief Objections to the Cloud

## Top Objections to the Cloud:

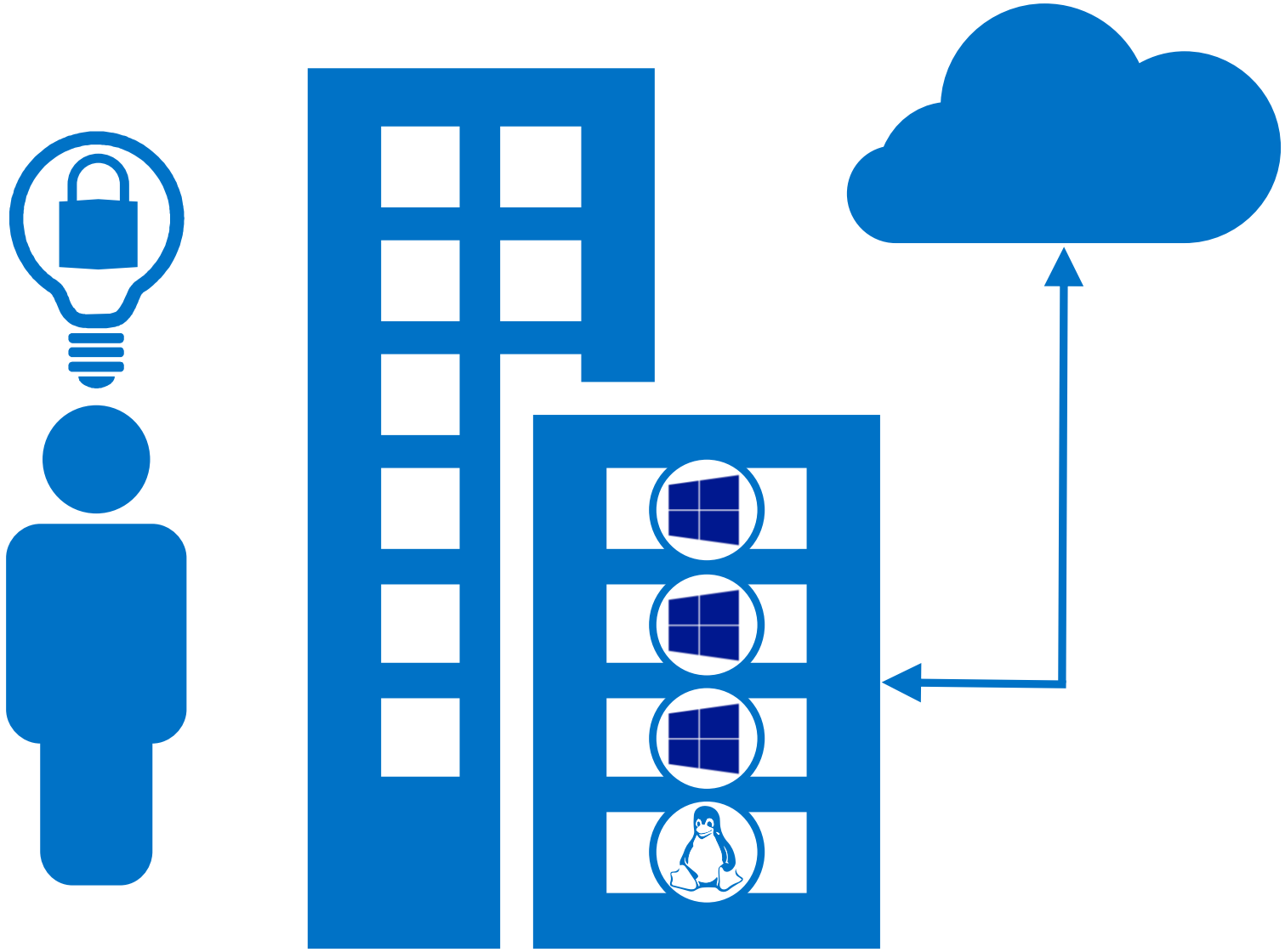
1. Compliance Issues
2. Security
3. Control

# What's the Real Issue?

## Underlying Issues:

1. Fear
2. Need to Own Stuff
3. Control
4. Change
5. Perceived Risk

# Cloud innovation presents challenges for IT

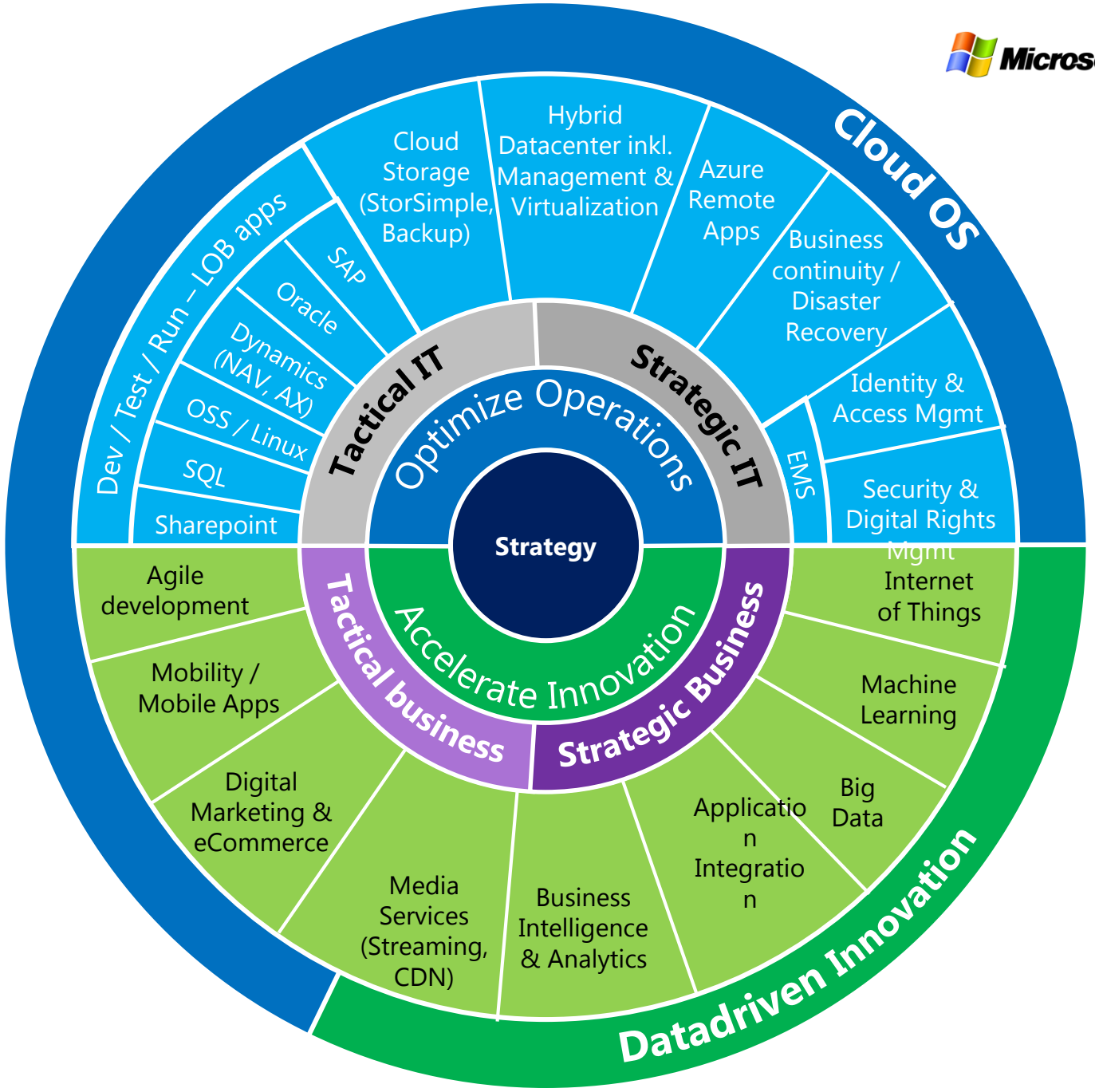


How do I integrate with my existing IT investments?

What about my heterogeneous, complex IT landscape?

What about security and compliance?

# Azure Scenario's

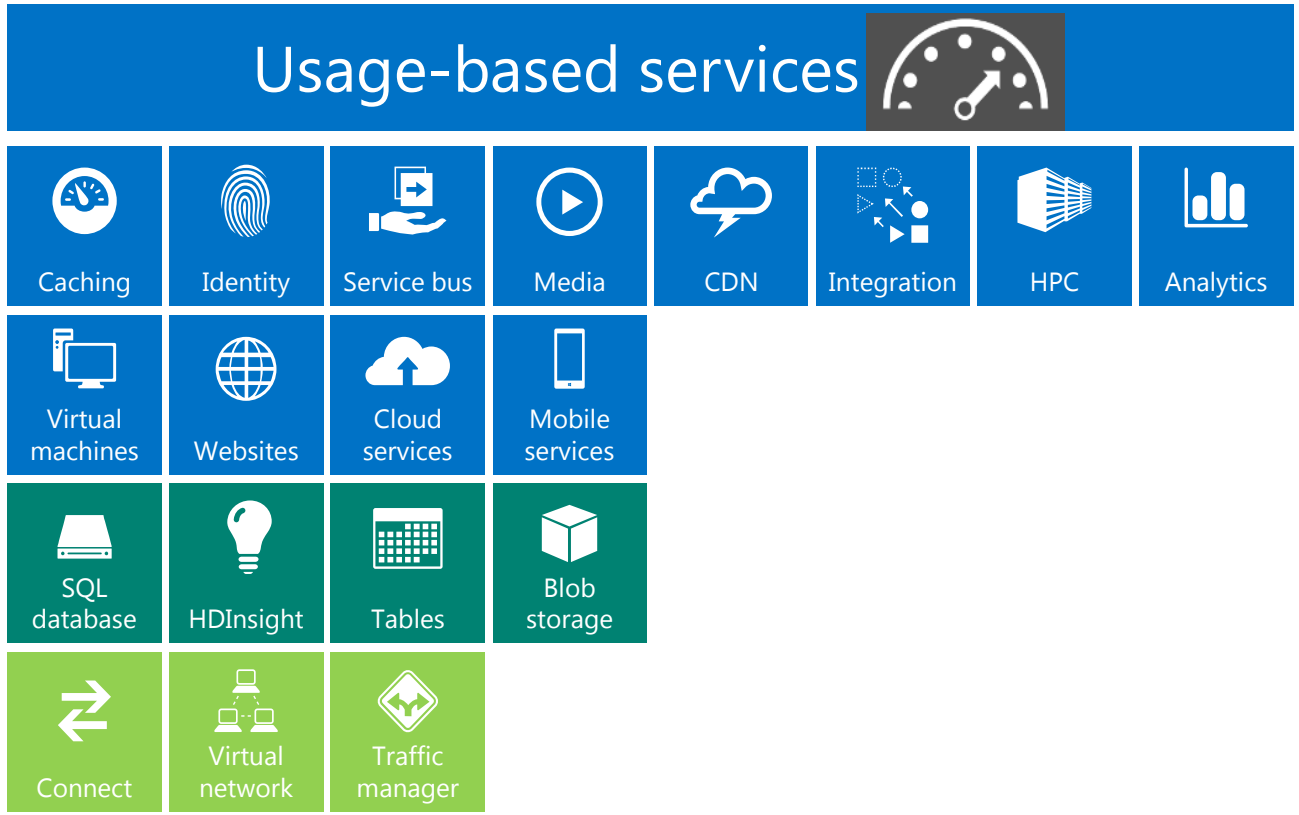



Case history

# Microsoft Azure

An open and flexible cloud platform that enables you to quickly build, deploy, and manage solutions across a global network of Microsoft-managed datacenters.

- Build applications using any language, tool, or framework.
- Integrate public cloud solution with the existing IT environment.
- 99.95% monthly SLA.
- Automatic operating system and service patching.



# Scenari Windows Azure

Microsoft

| | | | | |
|---|---|---|---|---|
| StorSimple | Backup dati (VM, dati, PC) e DR 'Light' | Remote Desktop con XenDesktop | Disaster Recovery (Attivo o Passivo) e Business Continuity | Video Streaming |
| SAP nel Cloud | Offload di Workload | Siti Web di campagne Marketing | Ambiente di sviluppo e test | Oracle nel Cloud |

# Microsoft Azure Data and Storage Services

Azure Data

Site Recovery

Storage Services

# Microsoft Azure Data Management

## RELATIONAL

**SQL Server in a VM**

A full-featured instance of SQL Server running in a Windows Azure Virtual Machine for quickly and easily running-or testing SQL Server applications in the cloud

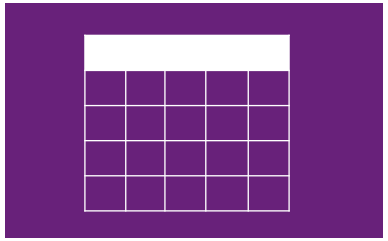
**Best for existing and new applications needing full SQL Server feature set**

**SQL Database**

A feature-rich, fully managed relational database service that offers a highly productive experience with business-ready capabilities built on SQL Server technology

**Best for new cloud applications needing relational capabilities and high availability**

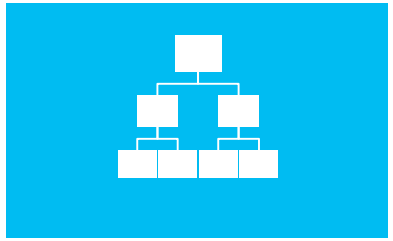
## NON-RELATIONAL



**Tables**

NoSQL key/value store that provides simple access to semi-structured data at a lower cost for applications that do not need robust querying capabilities

**Best for inexpensive, scalable storage of semi-structured data**



**DocumentDB**

NoSQL document store.

Fully managed, scalable, queryable, schemafree JSON document database service for modern applications.

**Best for inexpensive, scalable storage of semi-structured data**


**Blob Storage**

A cloud storage service offering the simplest way to store large amounts of unstructured text or binary data, such as video, audio and images, and for creating virtual hard drives in the cloud.

**Best for inexpensive, scalable storage of data**

**HDInsight**

A Big Data implementation 100% compatible with Apache Hadoop.

**Best for Big Data Analytics across semi-structured and unstructured data**

# Storage

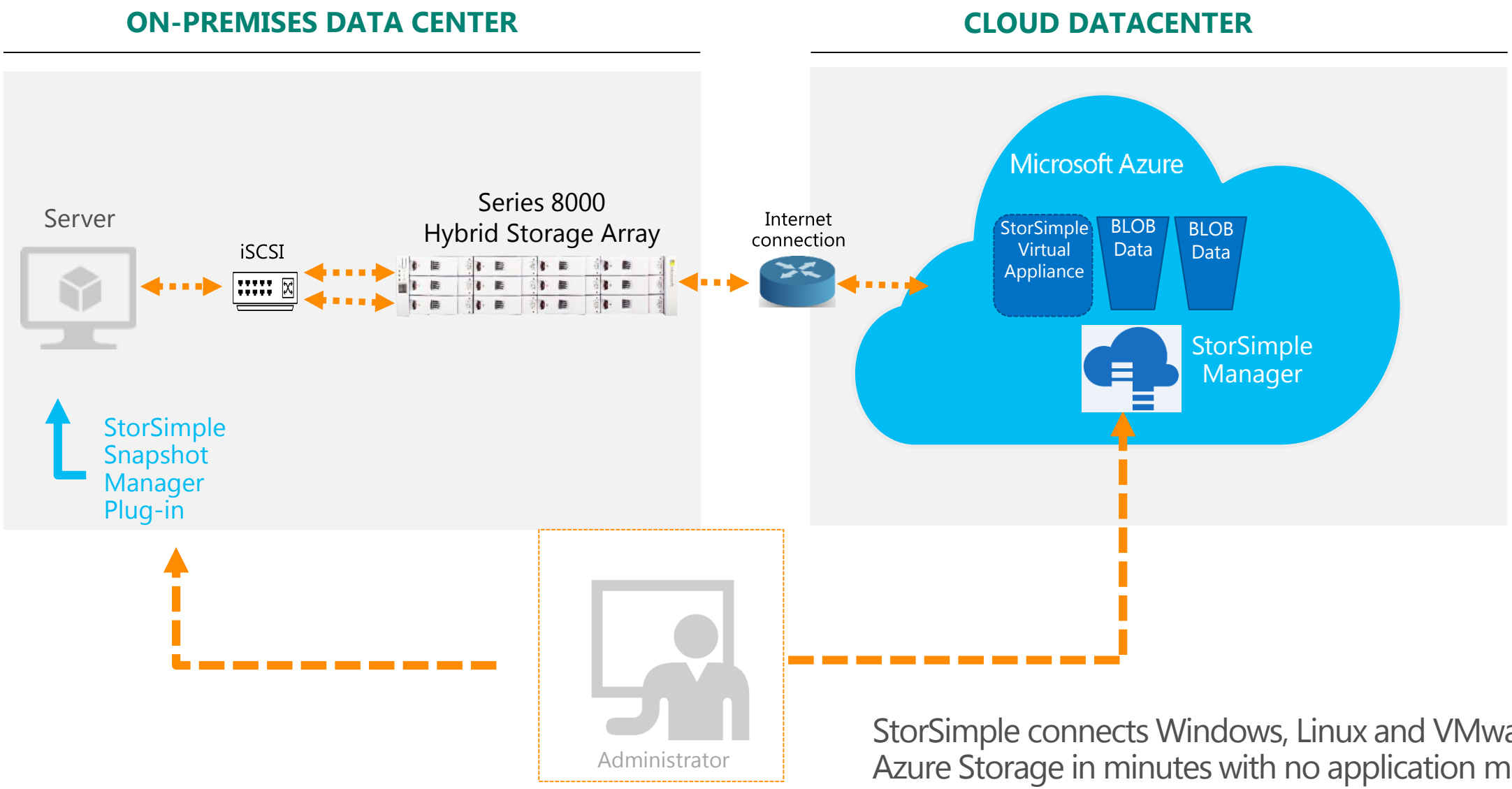
# Premium storage

Up to 32 TB of storage per VM

>50,000 IOPS per VM

Less than 1ms read latency

# Microsoft Azure StorSimple Big Picture




StorSimple connects Windows, Linux and VMware servers to Azure Storage in minutes with no application modification

# Series 8000 models

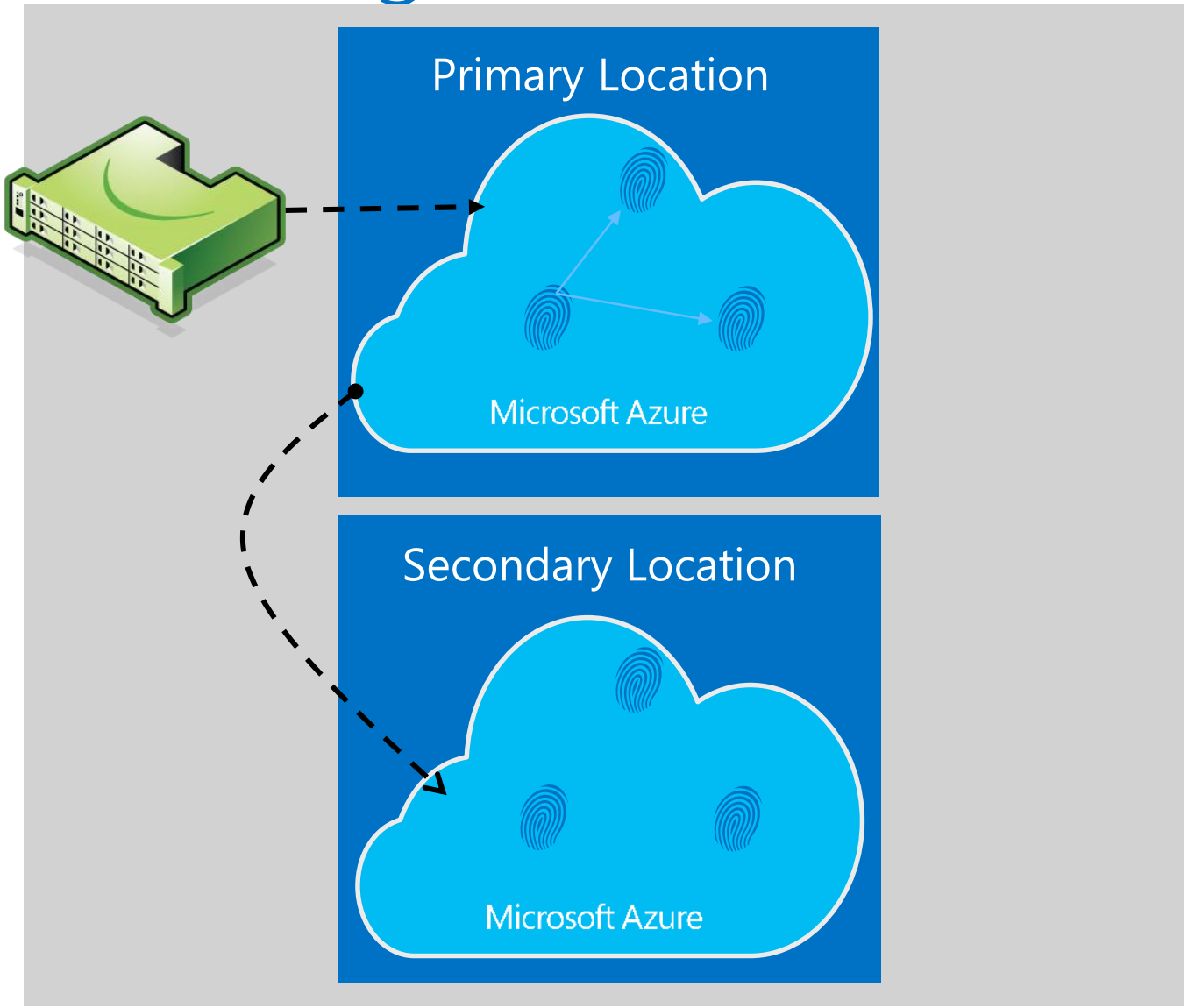
| Models | | |
|---|---|---|
| Model Number | 8100 | 8600 |
| Total usable capacity | 15TB | 40TB |
| Usable SSD Capacity | 800GB | 2TB |
| Effective Local Capacity | 15-45TB | 40-120TB |
| Max Volume Capacity | 64TB | 64TB |
| Max Capacity (including cloud) | 200TB | 500TB |
| Network Interface Cards | 4 x 1Gbps and 2 x 10Gbps | |
| Enclosure Form Factor | 1 X 2U | 2 X 2U |

# Local redundant and geo redundant storage

Data protection for data in the cloud

Makes 3 copies of data across separate fault domains

Replicated data does not count against data limit for the account




Prevents against a partial or complete data center failure

Asynchronous replication between Azure data centers

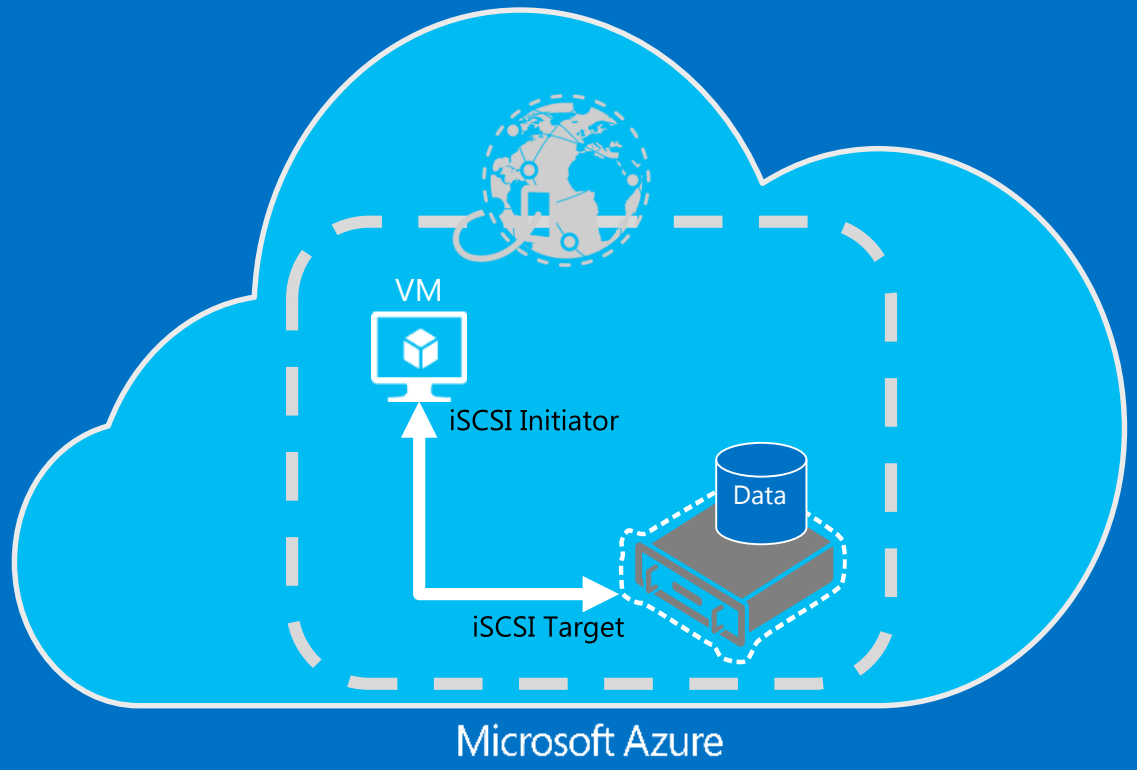
Failover to alternate location determined by Azure operations

# StorSimple Virtual Appliance

The Virtual Appliance is a software version of the physical array that runs on a VM in Azure and can be provisioned and turned-on as needed.

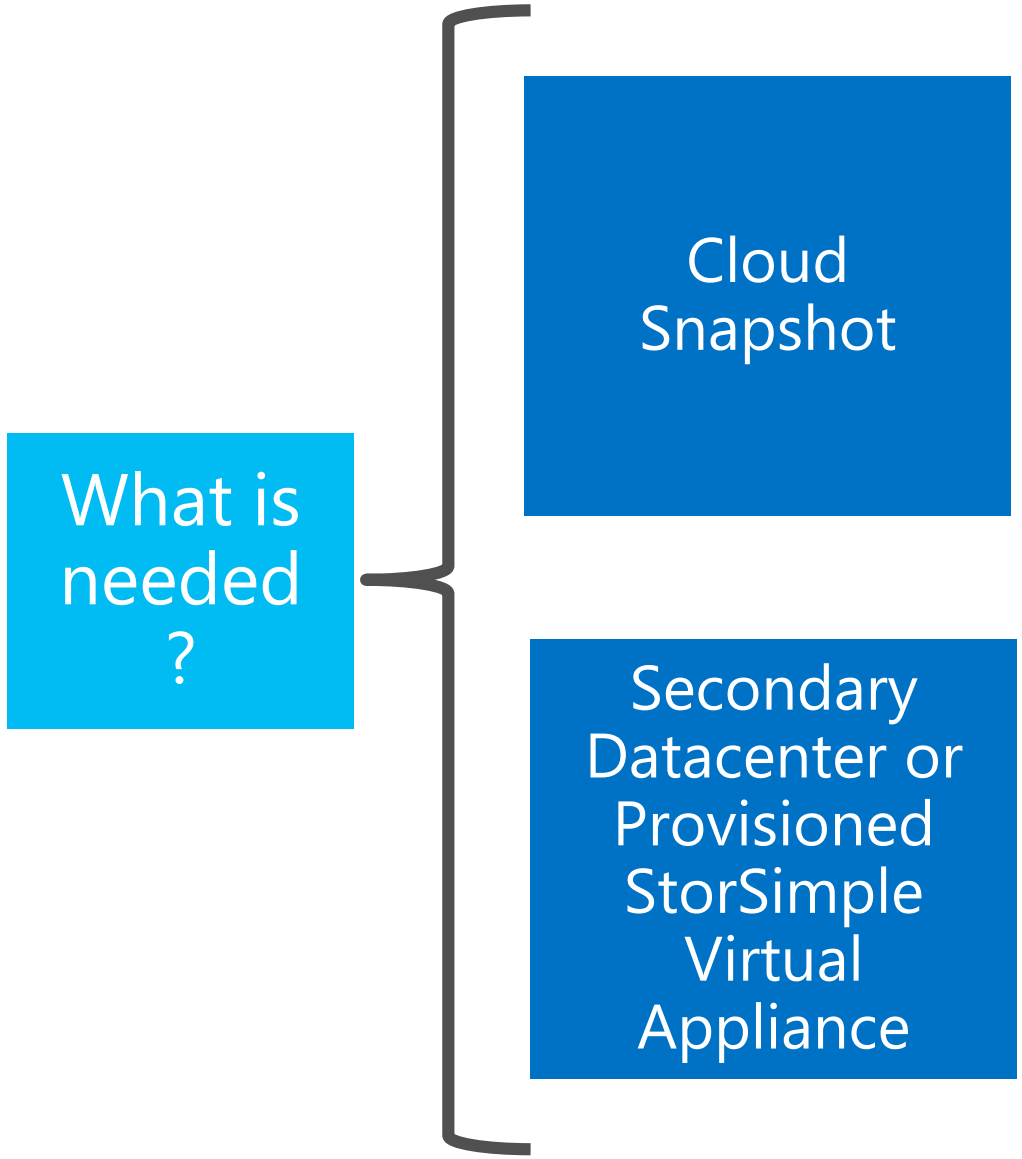
The StorSimple Virtual Appliance is an iSCSI target for the VMs in Azure.

A virtual network joins VMs and the StorSimple Virtual Appliance.

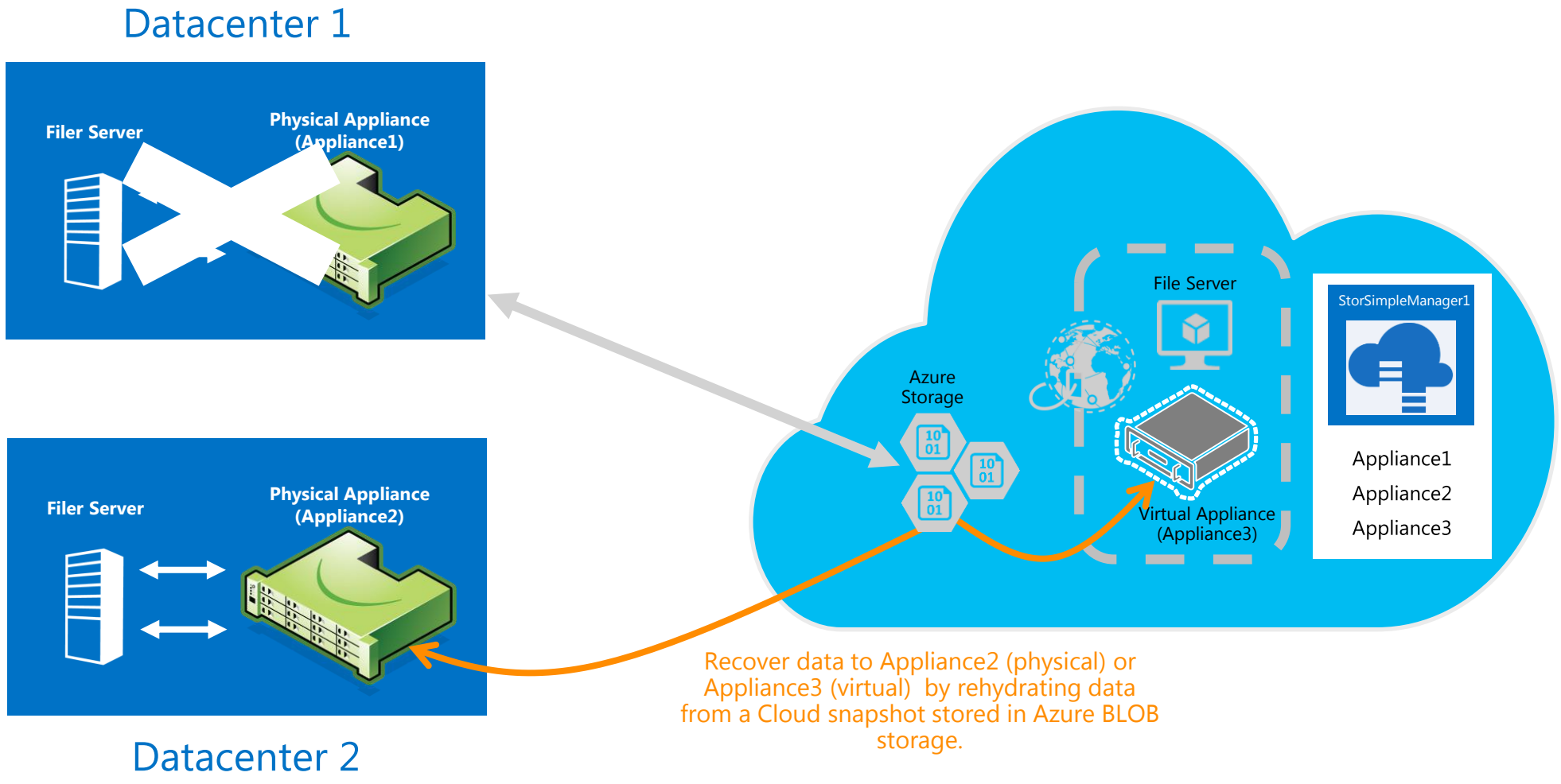


# Disaster recovery

- Thin restores provides fast recovery of data, downloading a small subset of data necessary data bring applications online. Not dependent on volume size.
- Recover data anyway: a secondary datacenter or a StorSimple Virtual Appliance in Azure
- A volume container is failed over to the destination appliance. Time to recover is the same for physical and virtual appliance



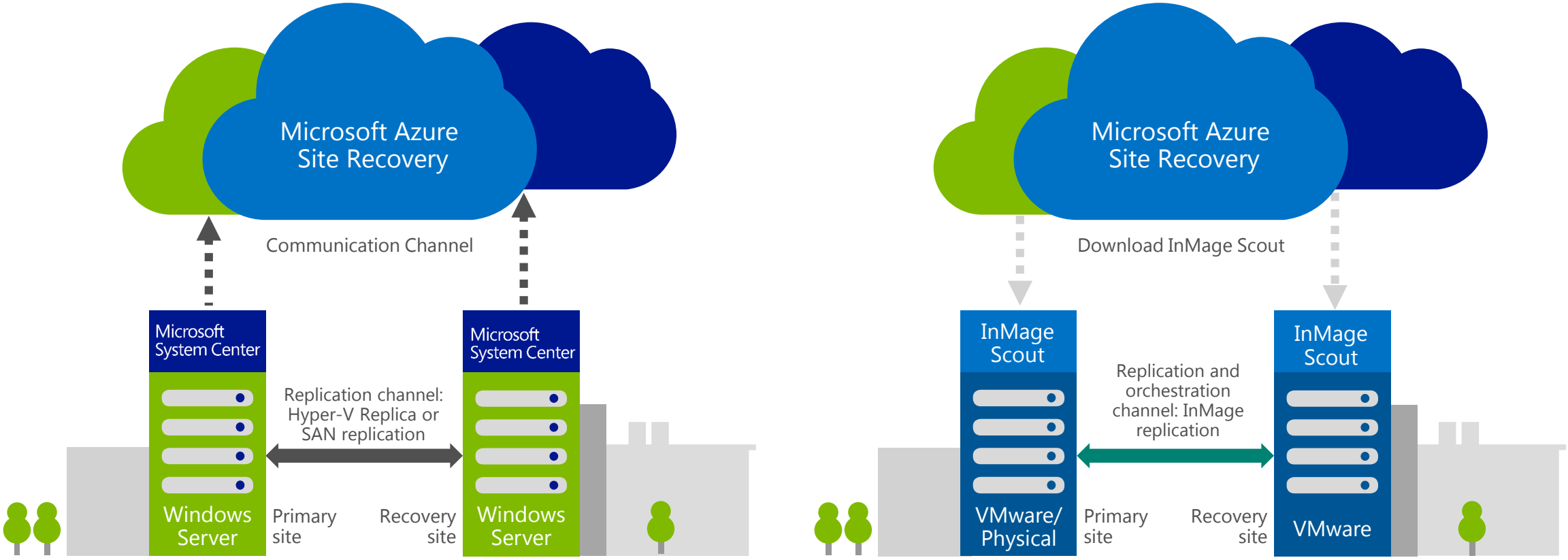
# DR to secondary datacenter or Virtual Appliance



# Site Recovery

# Business continuity

## On-premises to on-premises protection with Azure Site Recovery

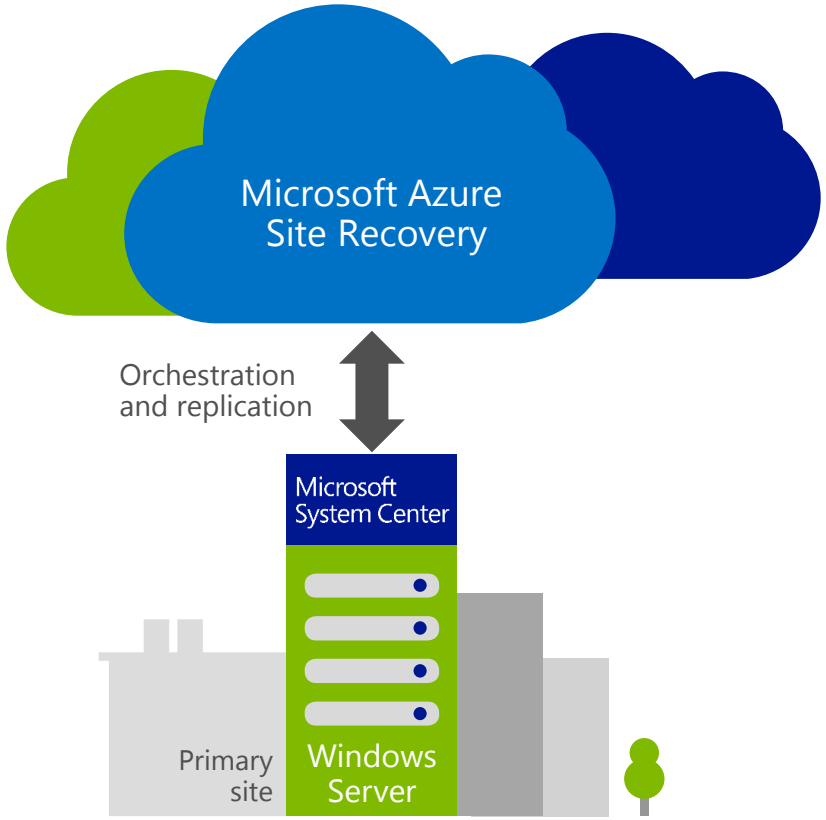


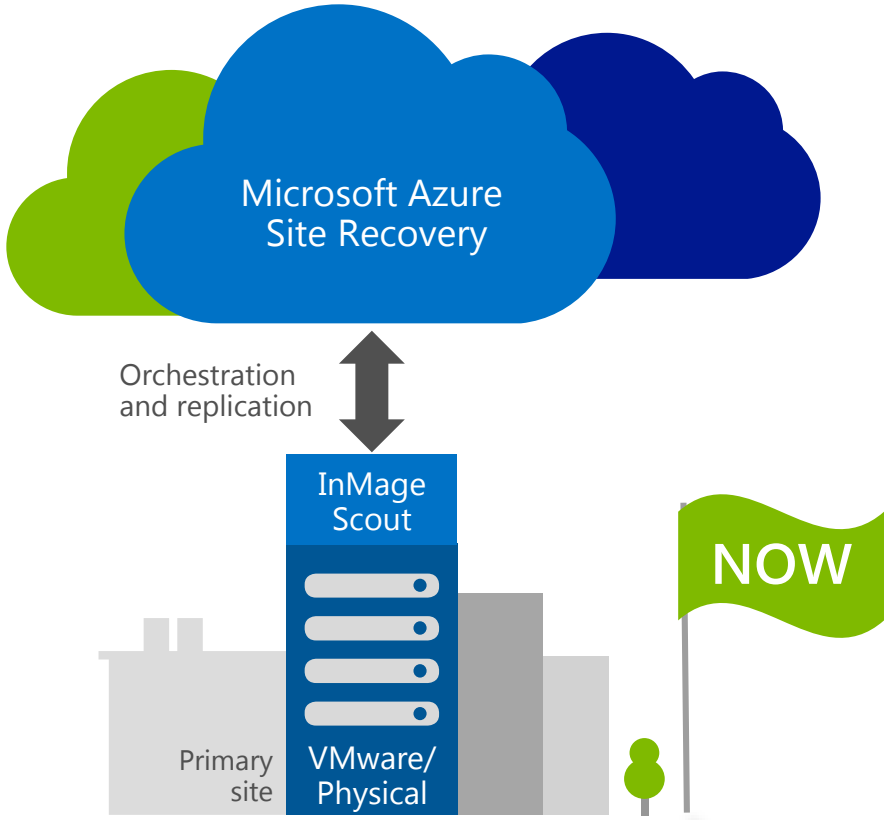

Key features include:

- Automated VM protection and replication
- Remote health monitoring
- Customizable recovery plans
- Integration with existing investments
- No-impact recovery plan testing
- Orchestrated recovery of tiered applications
- Support for heterogeneous environments

# Business continuity

## On-premises to Microsoft Azure protection with Azure Site Recovery




Key features include:

- Use Azure as your DR site
- Automated VM protection and replication
- Remote health monitoring
- Customizable recovery plans
- No-impact recovery plan testing
- Orchestrated recovery of tiered applications
- Support for heterogeneous environments

# Microsoft Azure Compute Services

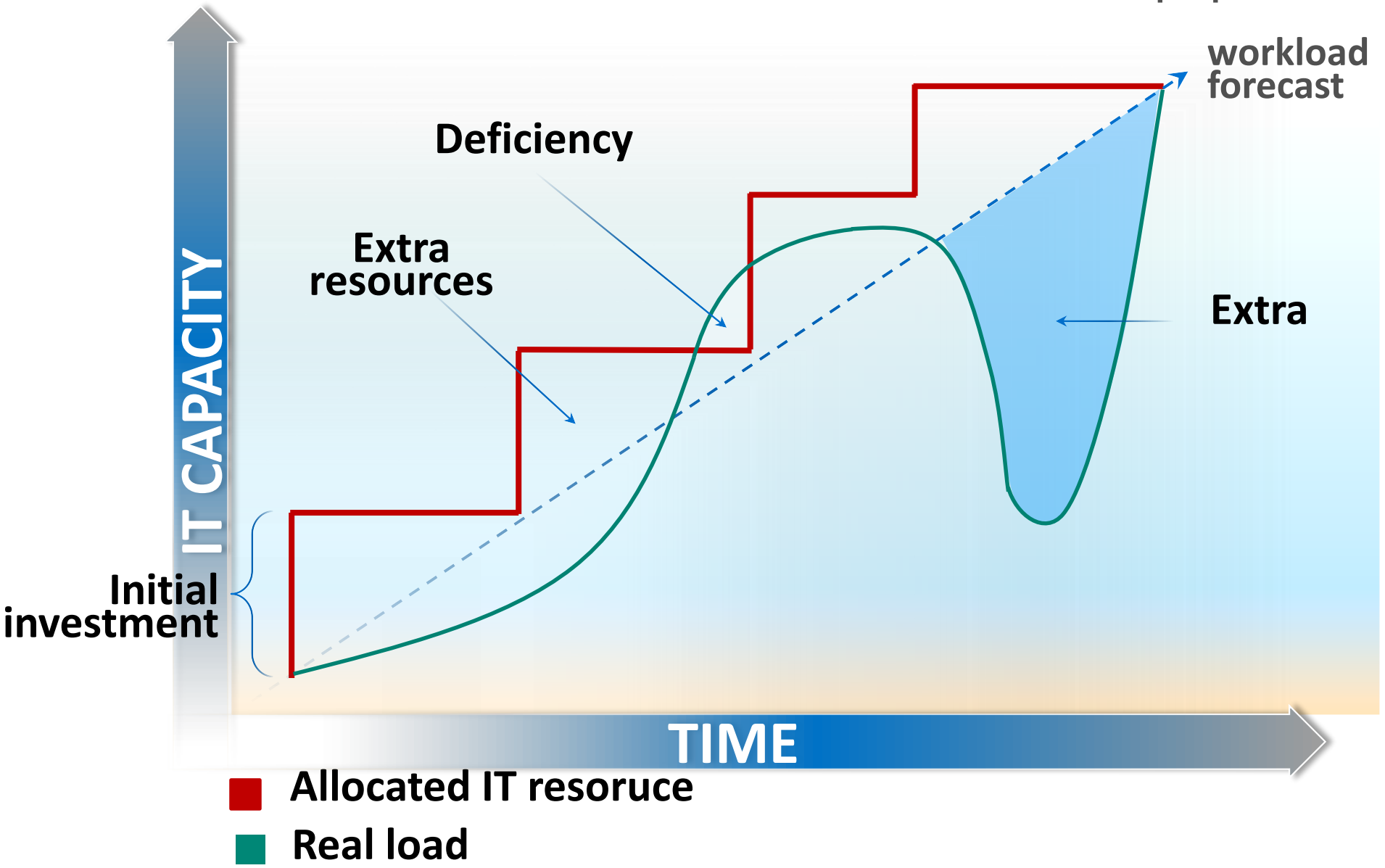
Approach

Virtual Machines

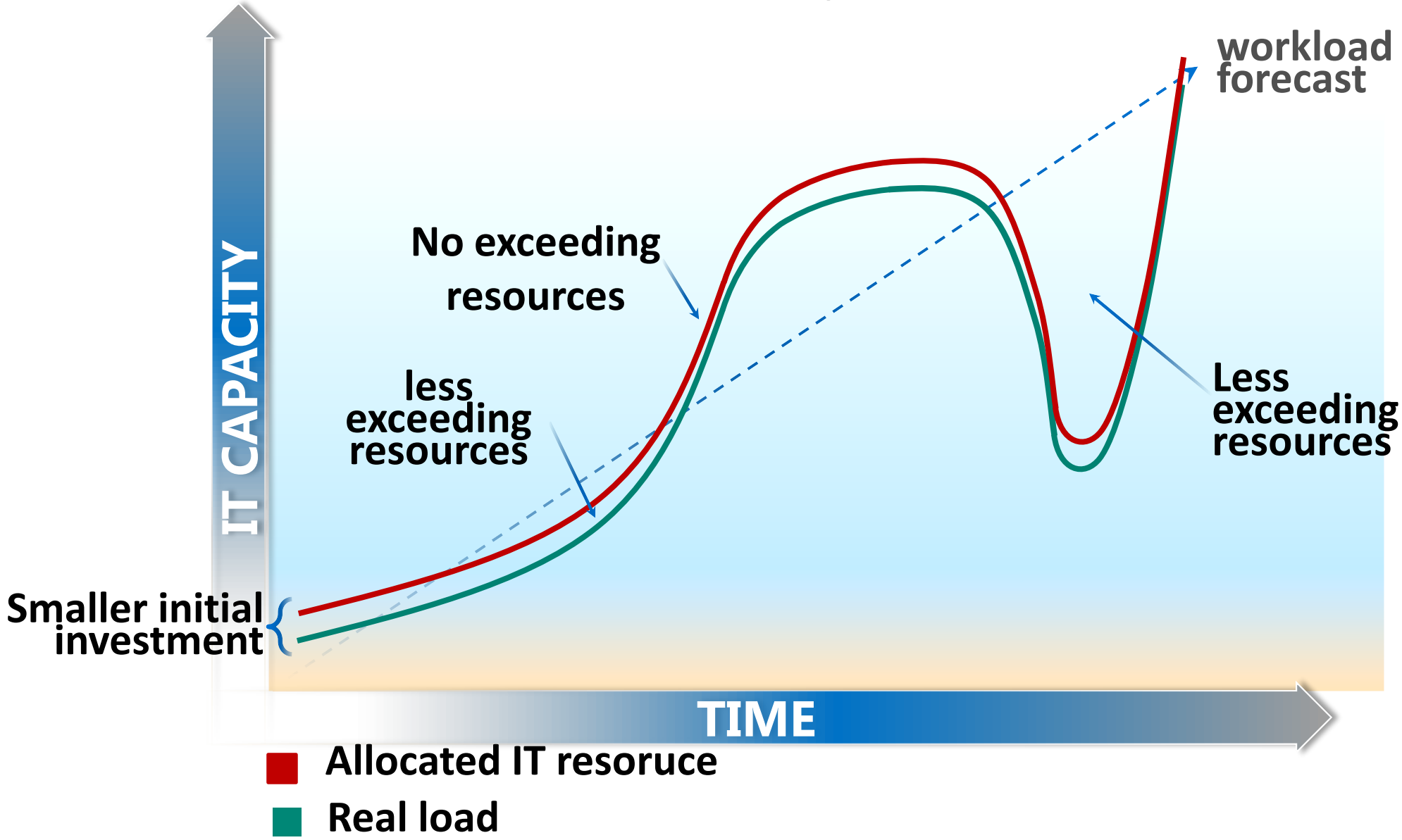
Web Sites

Cloud Services

# Resource allocation: traditional approach

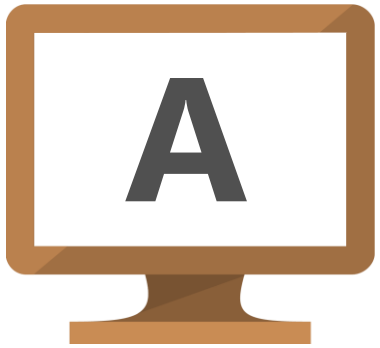


# Resource allocation: by cloud



# Virtual Machines

# A family




Highest value VM Size

Basic and Standard Sizes

General Purpose and High Memory

High Performance A8/A9 (RDMA)

# D family


60% faster CPU

Up to 112 GB Memory

Local SSD storage

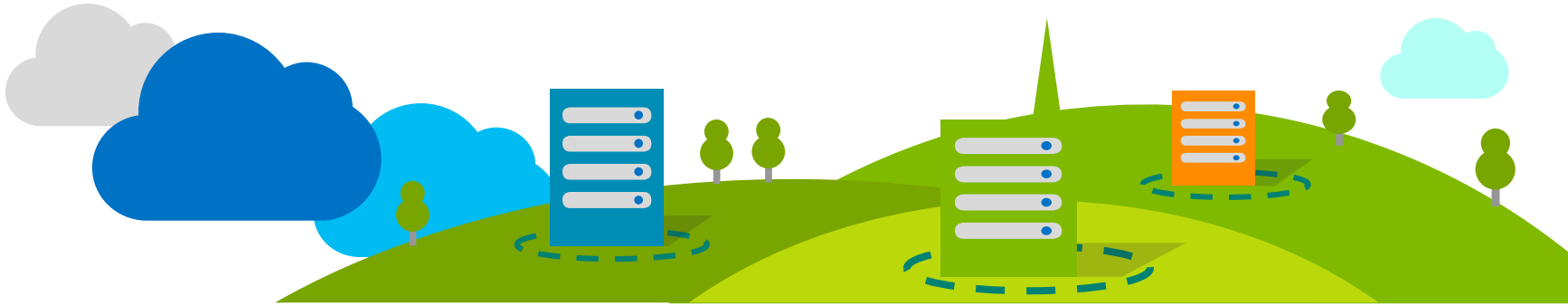
# G family

Microsoft


Optimized for data workloads

Up to 32 CPU cores, 448 GB RAM, 6.5 TB local SSD

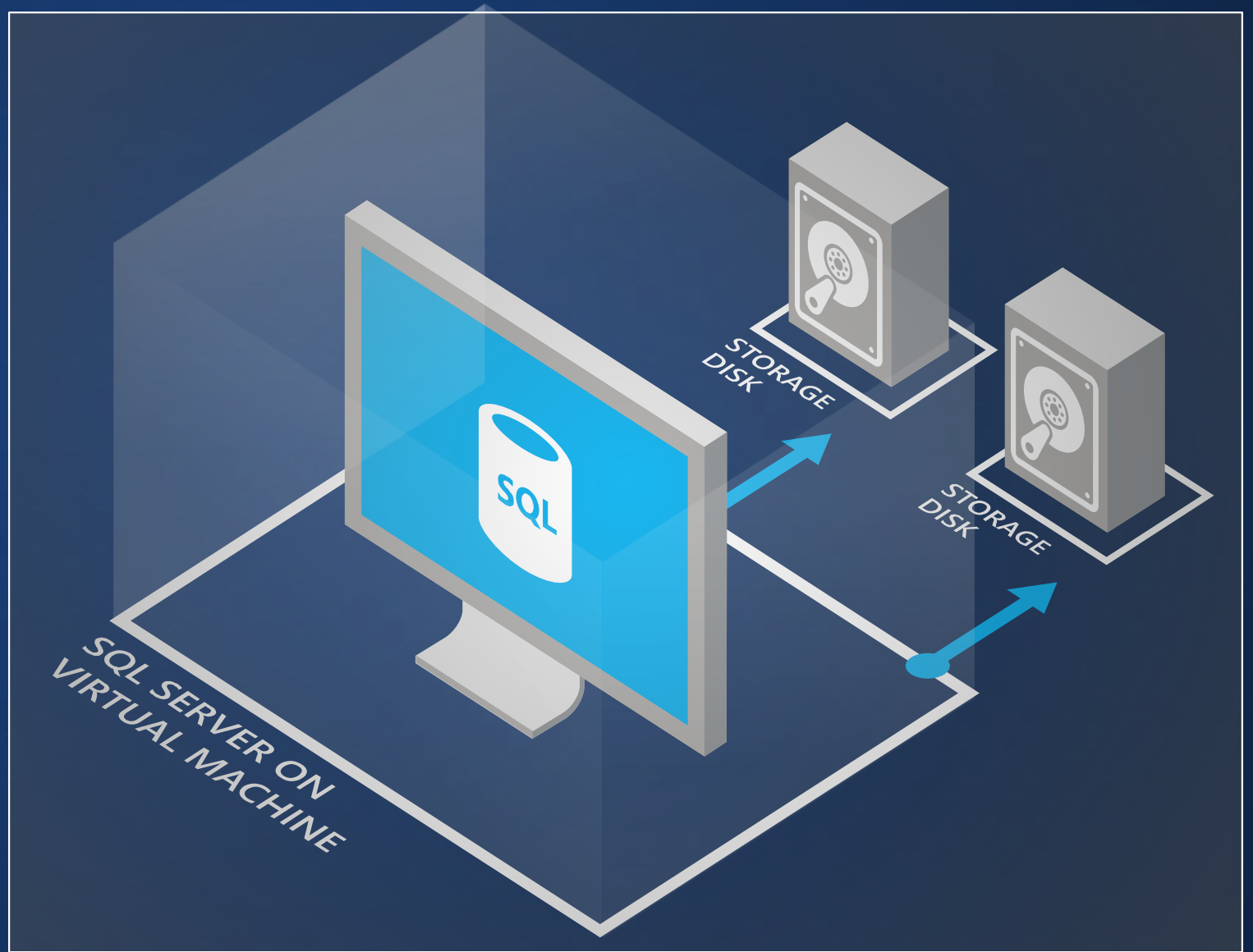
Latest generation Intel processor



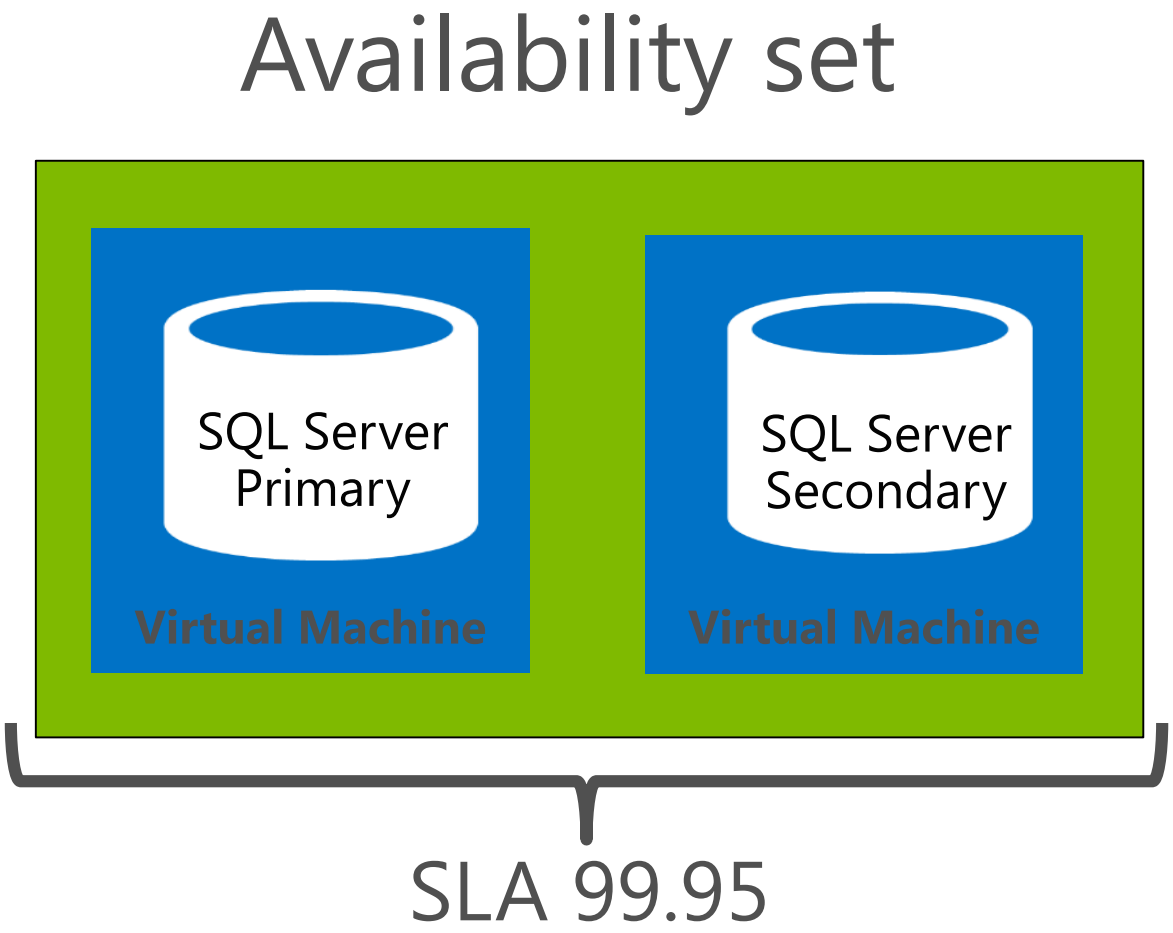
# Capture VM images

Captures all disks attached
Best effort disk consistency
Re-deploy as a new VM
Sysprep and non-Sysprep

My DB Image
@ today



# Availability Sets



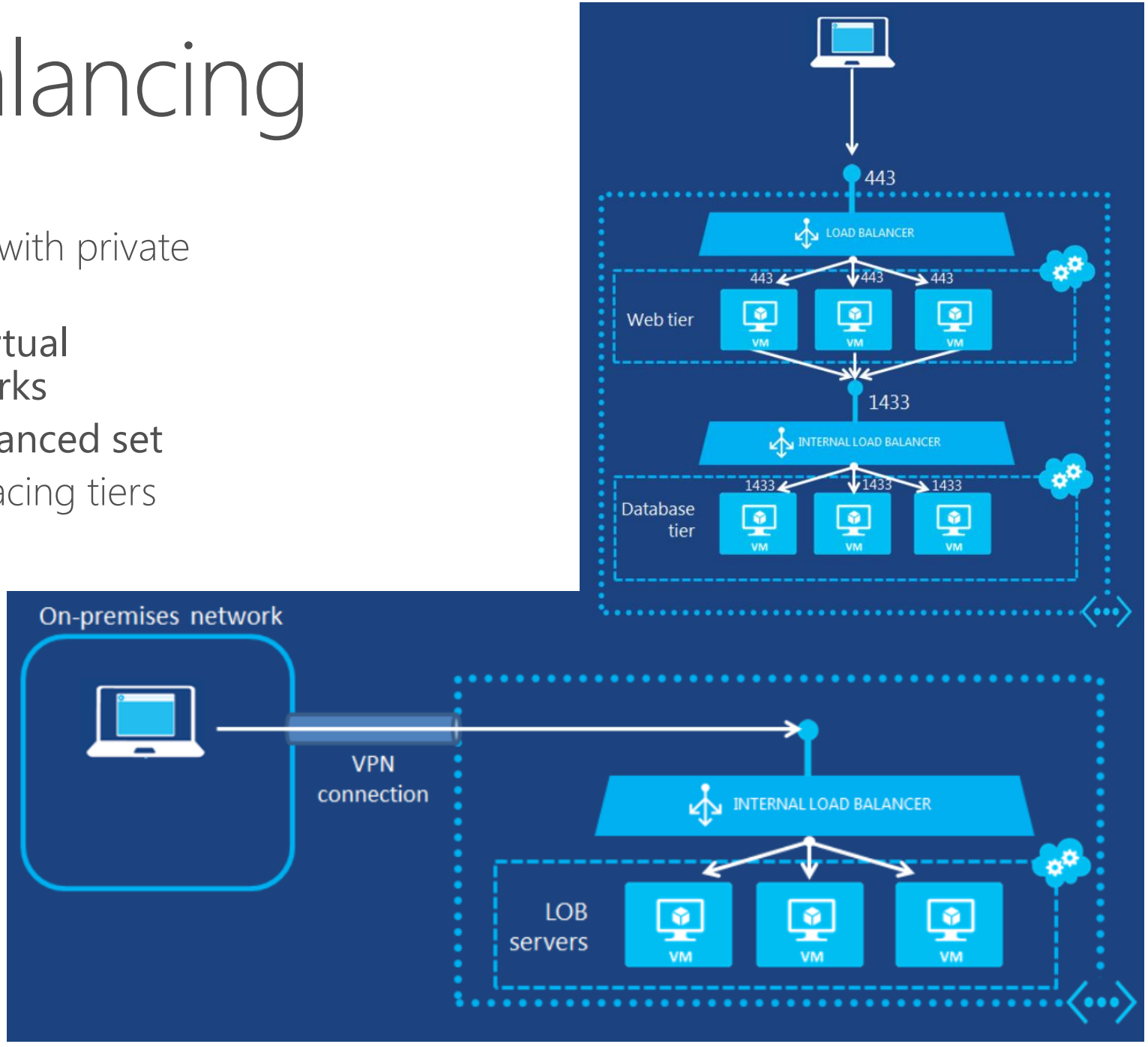

- Virtual Machines (IaaS)
  - Multiple instances doing the same work
  - Place instances in same availability set
  - Use load-balanced endpoints
- Cloud Services (PaaS)
  - Multiple instances
  - Instances are automatically in different update domains
  - Instances in same role are automatically load-balanced

What happens when there is only 1 VM in an Availability Set?

Updates notifications only sent to VM(s) that are **not** in an Availability Set.

# Internal Load Balancing

- Enables load balancing among VMs with private IP addresses
  - Accessible only by customer's virtual network and on-premises networks
  - Up to 50 VM in a single load-balanced set
- Multi-tier applications with internal facing tiers require load balancing
  - HA LOB apps
  - SQL Always On
  - RDP to internal endpoints for added default security

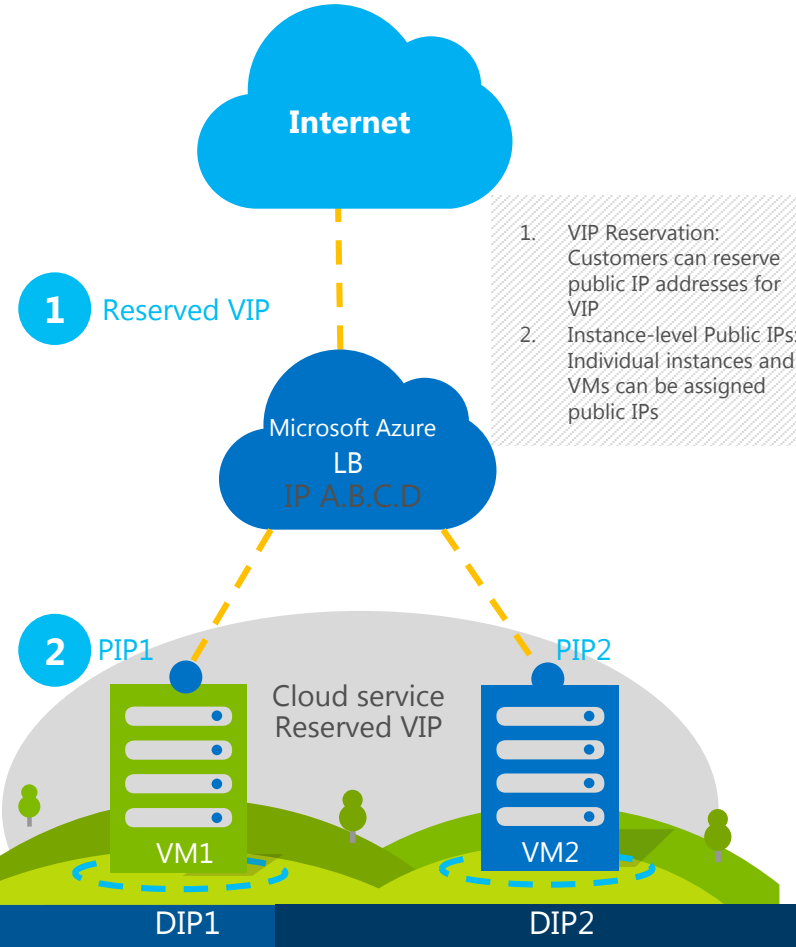


# IP Reservation, Instance Level Public IPs, Static IP

**IP reservation** customers can reserve public IP addresses and use them as VIPs. In a Virtual Machine scenario, the Reserved IP address will remain associated with your cloud service even when all the VMs in the cloud service are stop/deallocated.

**Instance-level Public IPs** customers can assign publically addressable IPs directly to VMs. These will allow scenarios like running FTP services, monitoring VMs using their IPs etc.

**Static IP** customers can deploy Virtual Machines in Azure with static IP address in Azure Virtual Network.

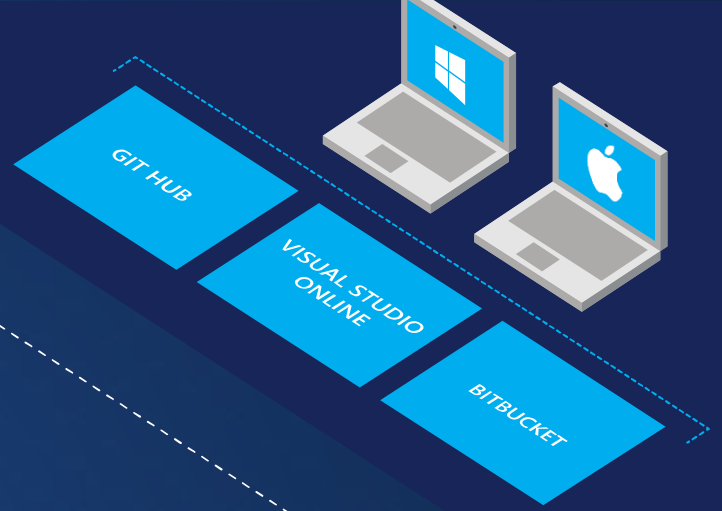


# Web Sites

# Develop apps with...

.NET | Node.js | PHP
Python | Java

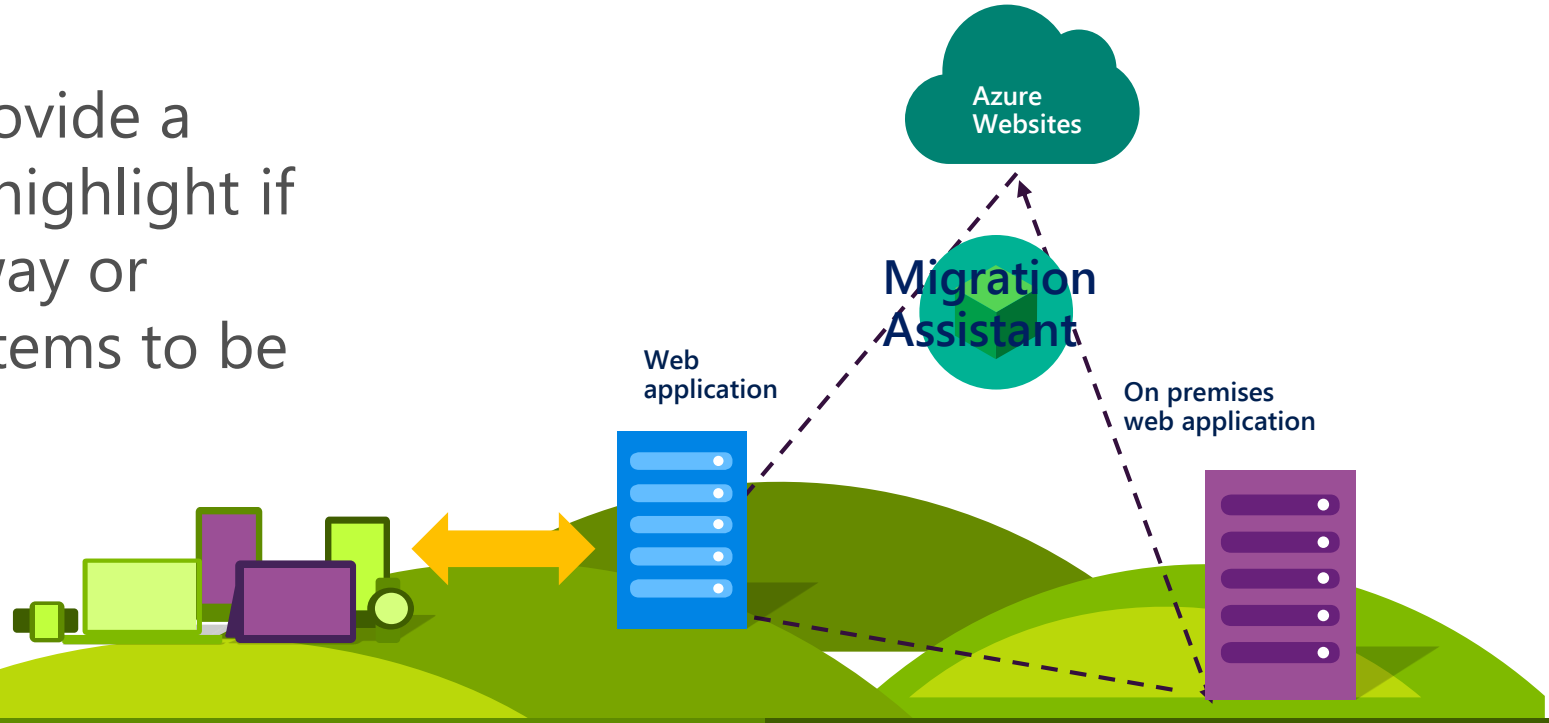


# Azure Websites Migration Assistant

The Azure Websites Migration Assistant makes it easy to migrate existing websites, including those running on **Windows Server 2003** to Azure.

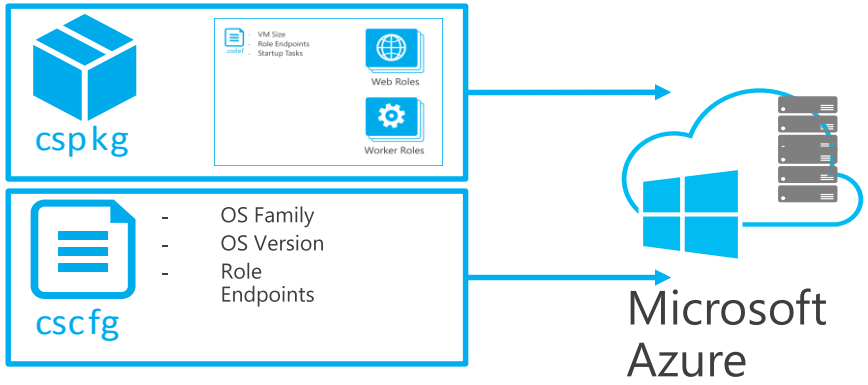
The Migration Assistant will provide a readiness assessment and will highlight if a site can be migrated right away or provide a list of compatibility items to be addressed



# Cloud Services

# What can you run in a Cloud Service?

| | |
|---|---|
| General Rule | If it runs in Windows it runs in Microsoft Azure Cloud Services |
| Choice of Language | C#, VB, C++, Java, PHP, Node.js, Python |
| Choice of Frameworks | .NET, ExpressJS, Rails, Zend, etc. |



# Azure Cloud Services

## A container of related service roles

### Web Role

Provides a dedicated Internet Information Services (IIS) web-server used for hosting front-end web applications.

All features of a worker role + IIS 7, 7.5 or IIS 8.0*

ASP.NET 3.5 SP1, 4.0 or 4.5* – 64bit

Hosts

Webforms or MVC, FastCGI applications (e.g. PHP), Multiple Websites

Http(s)

Web/Worker Hybrid

Can optionally implement RoleEntryPoint

### Worker Role

Applications hosted within worker roles can run asynchronous, long-running or perpetual tasks independent of user interaction or input.

Queue Polling Worker

Poll and Pop Messages within while(true) loop

E.g. Map/Reduce pattern, background image processing

Listening Worker Role

Create TcpListener or WCF Service Host

E.g. Run a .NET SMTP server or WCF Service

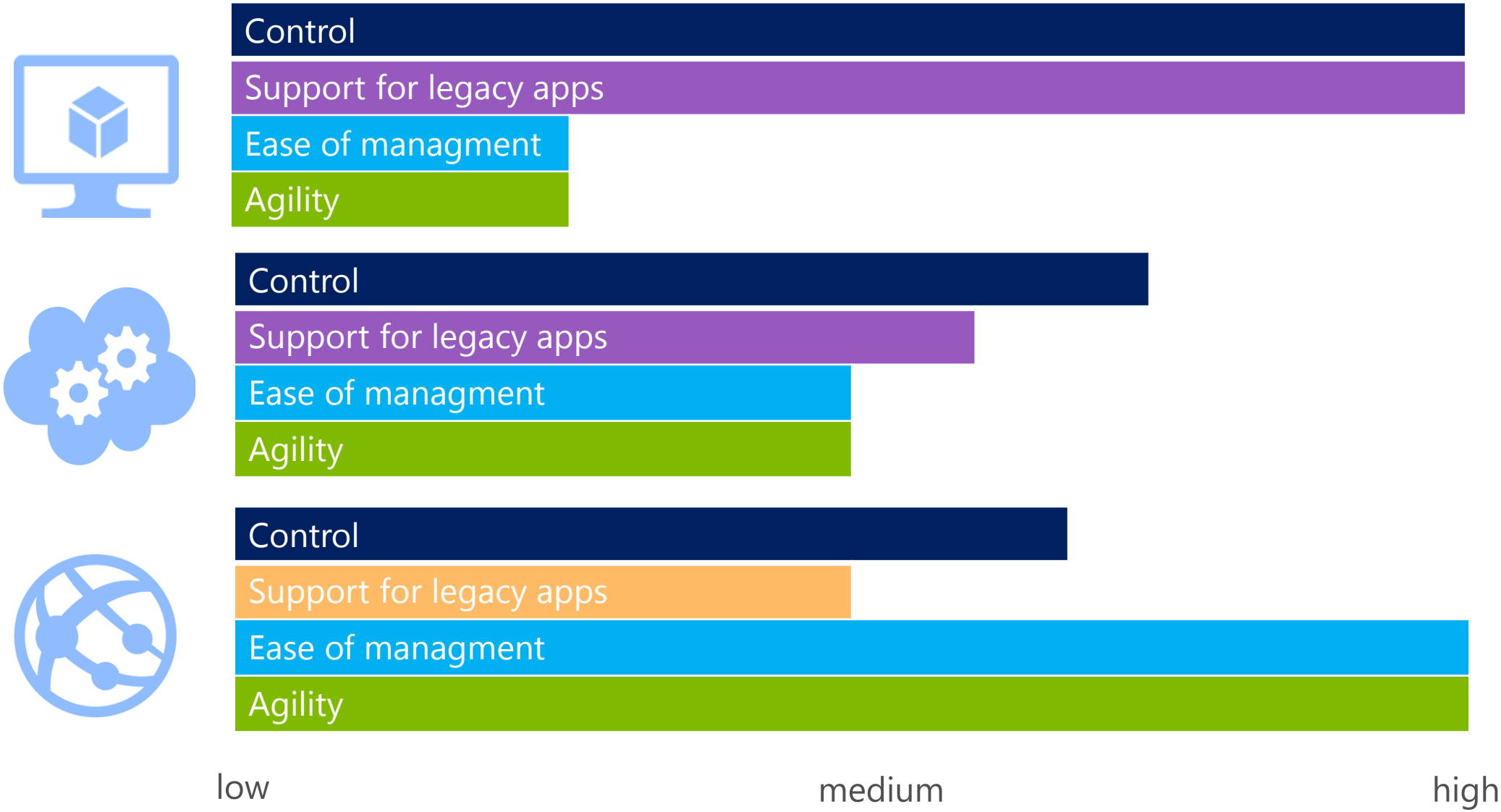
External Process Worker Role

OnStart or Run method executes Process.Start()

Startup Task installs or executes background/foreground process

E.g. Run a database server, web server, distributed cache

# VM vs Web Sites vs Cloud Services



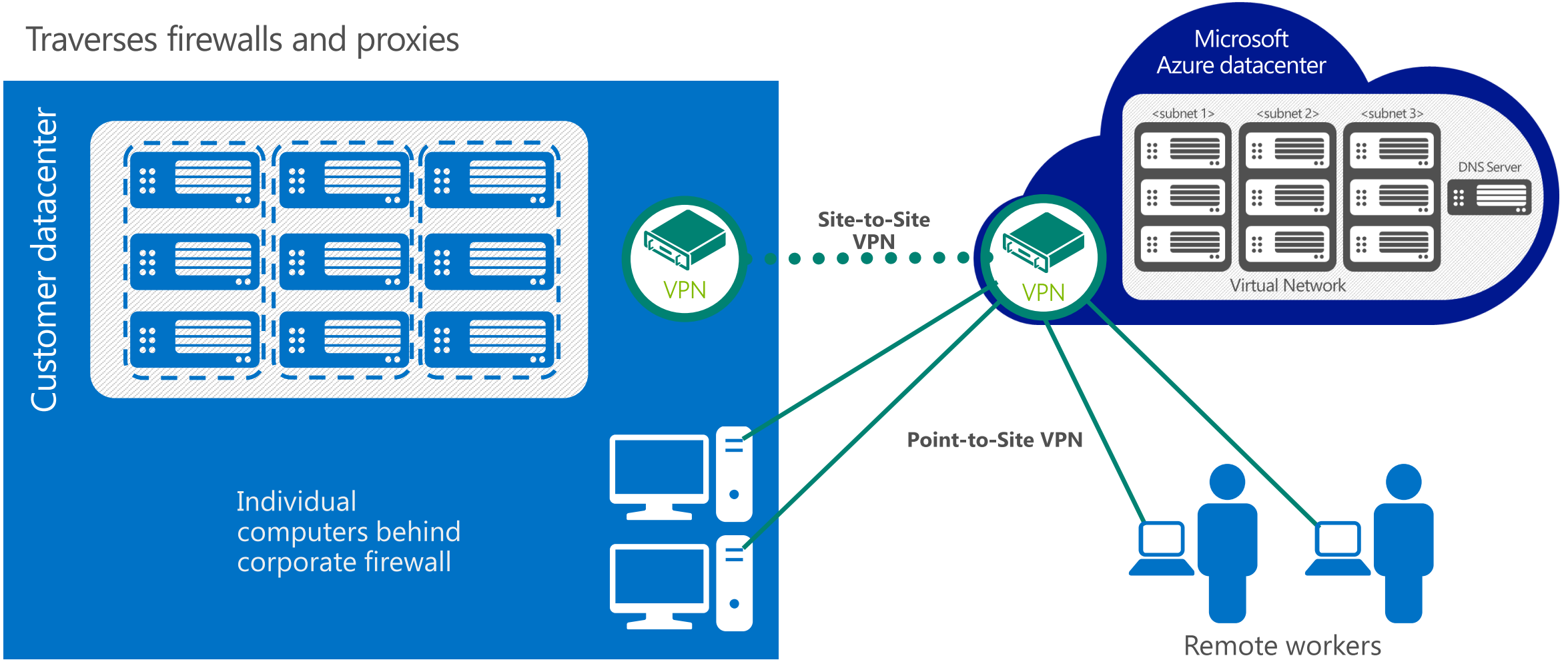
# Microsoft Azure Networking Services

# Extend your infrastructure

Securely connect to Virtual Network from anywhere

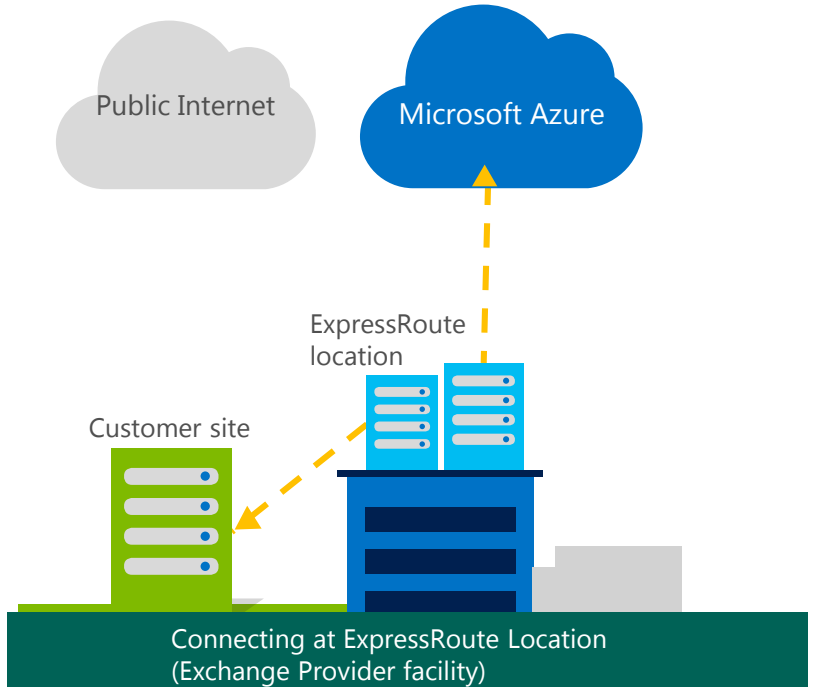
Uses VPN client in Windows OS

Traverses firewalls and proxies



# ExpressRoute flavors & partners

## Exchange provider

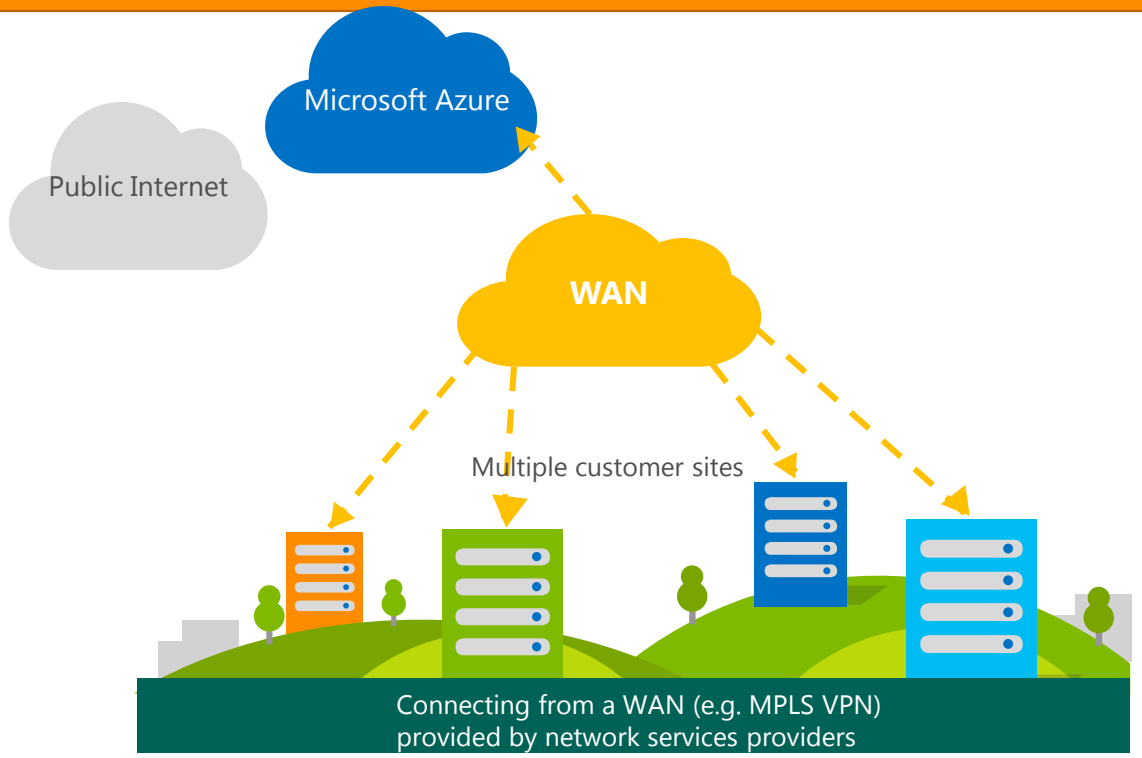



EQUINIX

TelecityGroup
where content meets connectivity

Level(3)

## Network service provider




BT

Level(3)

orange

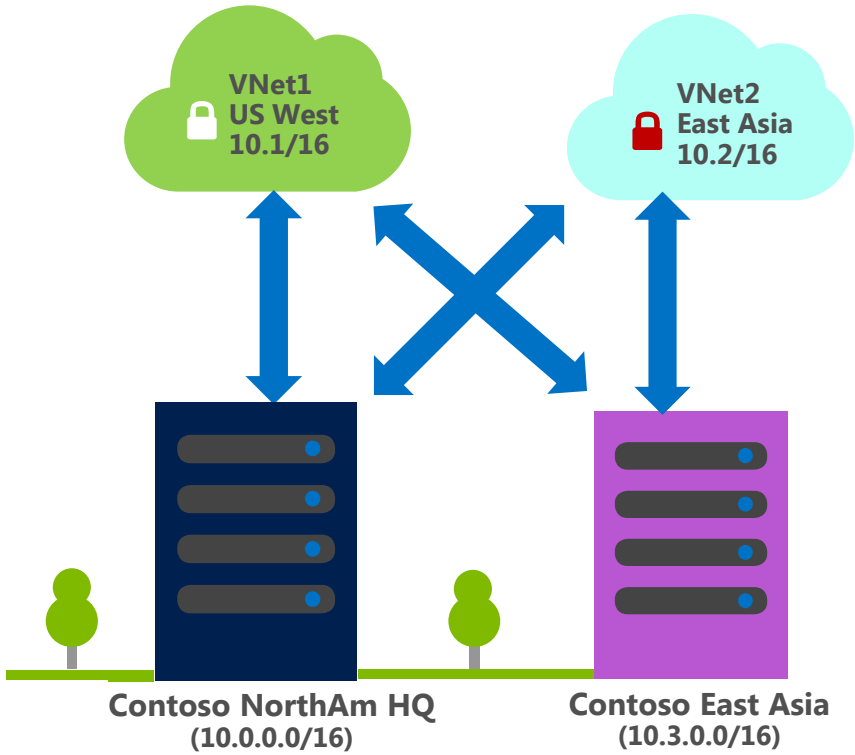
verizon

SingTel

# Multi-site & VNet-to-VNet connectivity

- Multiple Site-to-Site connections
  - Multiple on-premises sites connect to same virtual network
- VNet-to-VNet connectivity to any Azure datacenter
  - Same region or cross regions
  - For HA and DR, customers create virtual networks in different Azure regions
- Cross-subscription connectivity
  - Virtual networks in different subscriptions can securely communicate using private IP addresses

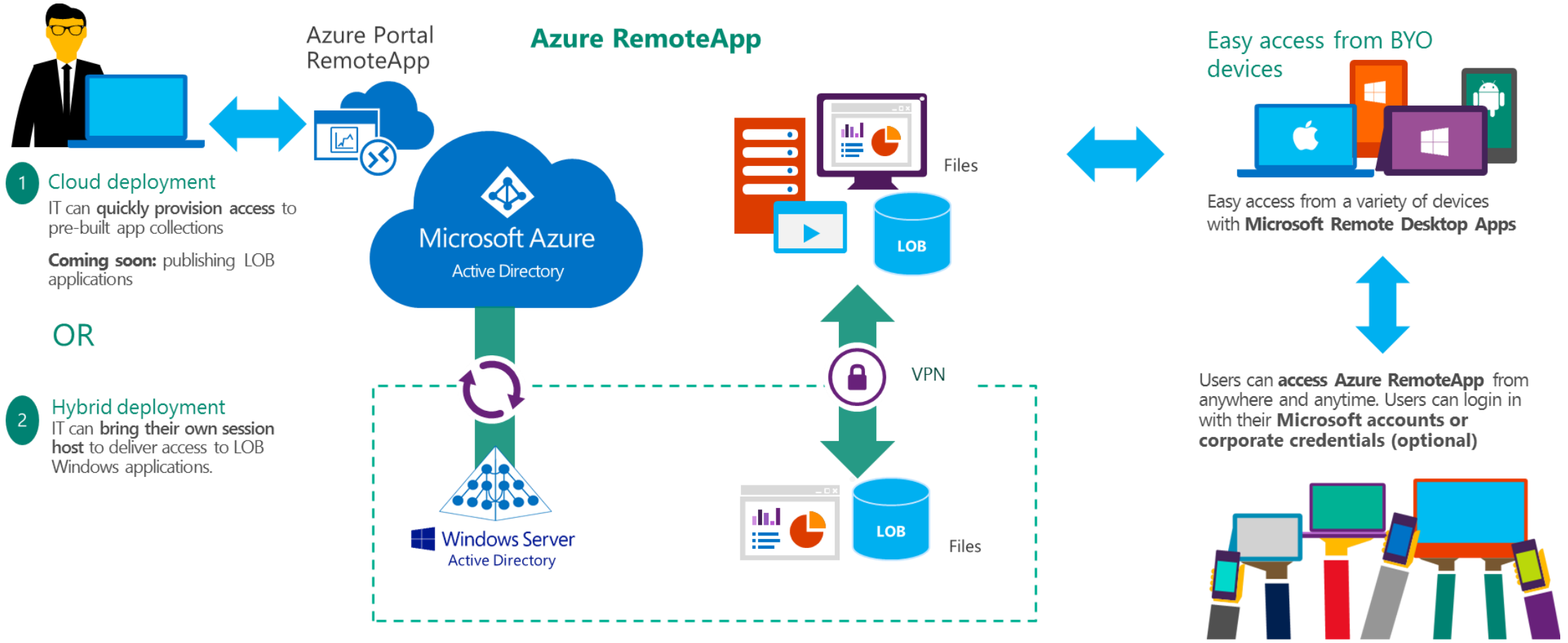
Multi-site & VNet-to-VNet



# Microsoft Azure App Services

# Azure Remote App

Azure RemoteApp combines **Windows application** experience and **powerful RDS capabilities** on **Azure's reliable platform** and helps IT to bring, scale, agility and global access to corporate applications



# Azure RemoteApp

Microsoft

Remote applications delivered from the reliable Azure platform

Access from Windows, iOS, Mac OS X, and Android devices

Delivered via Microsoft Remote Desktop Protocol and RemoteFX


Scale without large capital expense

Flexible hybrid or cloud deployment options

# Two deployment options

## RemoteApp cloud deployment

- Image available with Microsoft Office Professional Plus 2013 preinstalled
- Rapid provisioning: apps quickly available
- Automatic maintenance of platform image: OS and apps always up-to-date, Microsoft antimalware
- User logon with Microsoft account or corporate credentials federated with Azure Active Directory

## RemoteApp hybrid deployment

- Fully customizable apps, OS, and settings
- IT can manage template images and apply updates via Azure Portal
- Full access to on-premises network
- User logon with corporate credentials federated with Azure Active Directory

Windows Server 2012 R2 session virtualization

Dynamic scalability

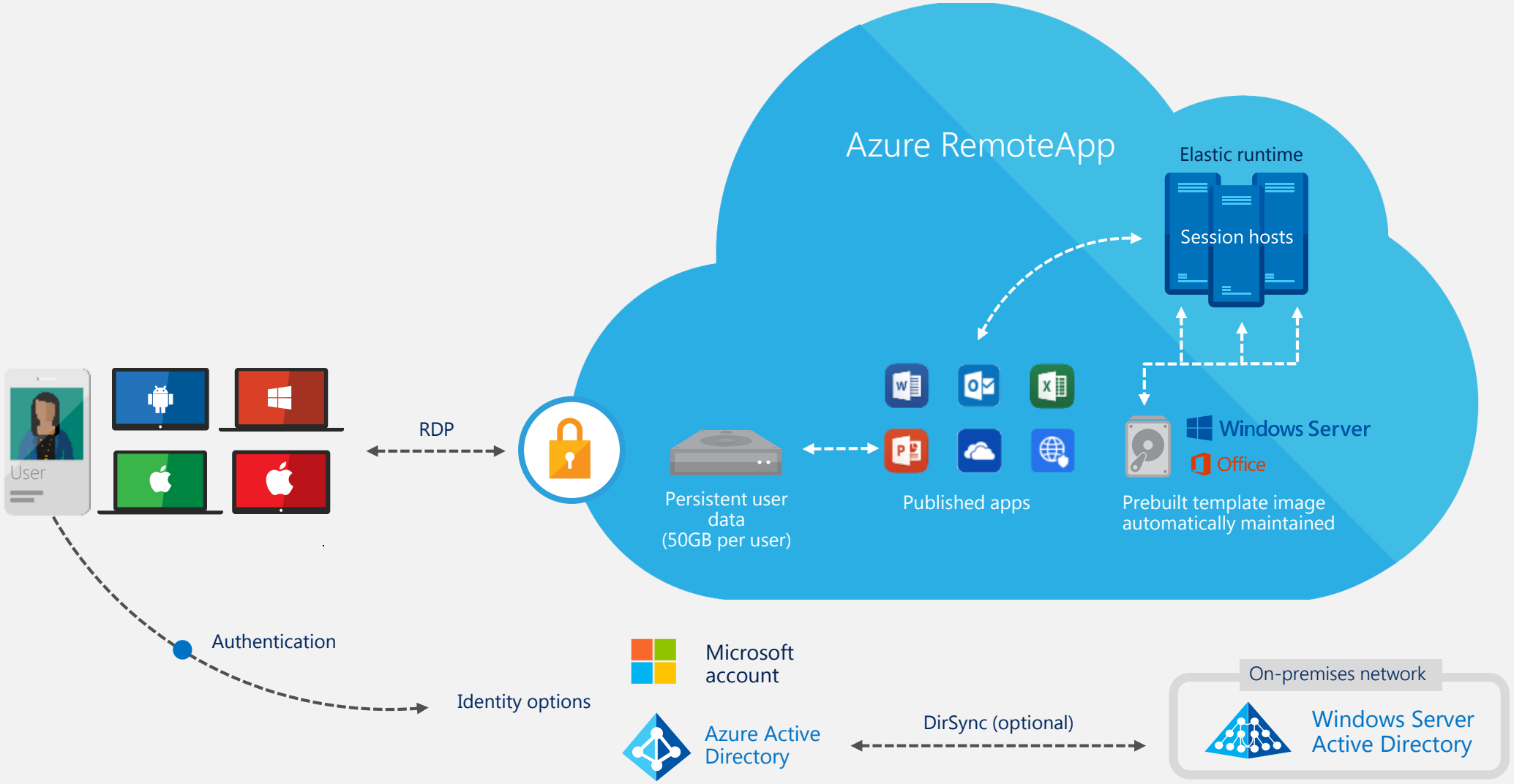
Global presence

High fidelity with RDP

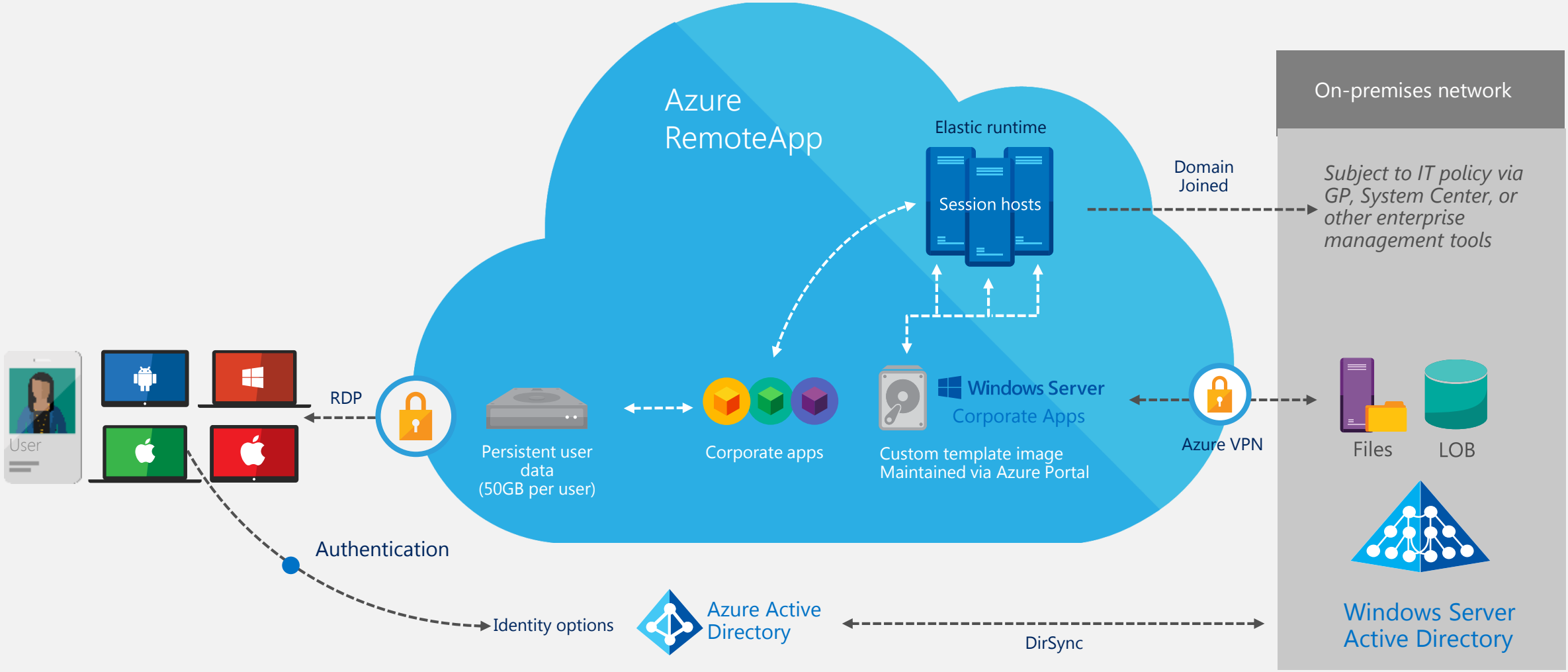
Secure, WAN-ready connectivity

Clients for Windows, Mac, iOS, Android

# Cloud deployment in detail



# Hybrid deployment in detail



# Two deployment choices compared

## RemoteApp cloud deployment

- Image with Office 2013 ProPlus pre-installed available
- Access to cloud-connected data and services
- Users sign on with Microsoft Account or with federated identity with Azure AD
- Rapid provisioning, automatic maintenance, turn-key

## RemoteApp hybrid deployment

- Ideal for corporate LOB apps
- Hybrid Networking provides secure access to on-premises resources
- Federated identity with Azure AD
- Domain-joined and conforms to on-premises IT policy
- Image-based software update via Azure Portal

Windows Server 2012 R2 session virtualization

Dynamic scalability

Global presence

High fidelity with RDP

Secure, WAN-ready connectivity

Clients for Windows, Mac, iOS, Android

# Q&A