

# Introduction to the Cloud

## System Center 2012 SP1 & Windows Azure

➞ Ayman Afanah – Microsoft Jordan

# Agenda

Introduction to Cloud

Introduction to Public Cloud

Introduction to Private Cloud

Introduction to the Hybrid Cloud

Hybrid Cloud Integration Points

# What is Cloud?

# National Institute of Standards and Technology (NIST)

On-demand self-service

Broad network access

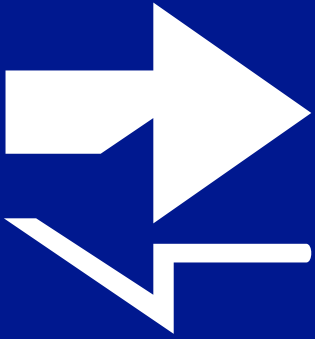
Resource pooling

Rapid elasticity

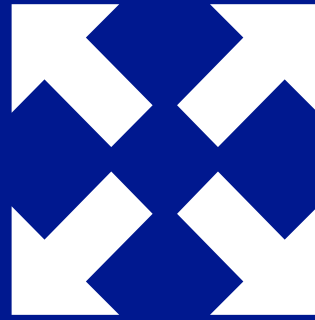
Measured service

# Why consider the cloud?

Speed



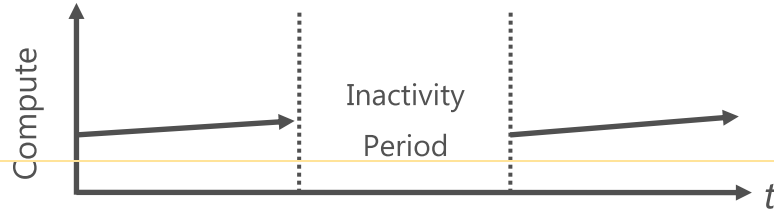
Scale



Economics

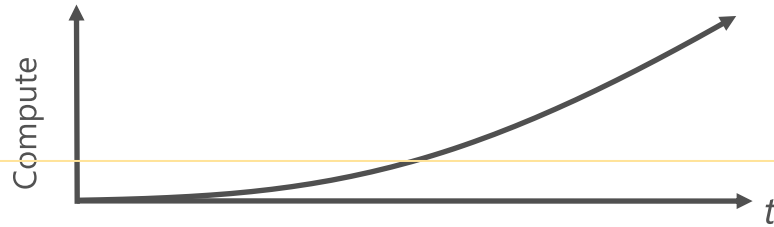


# Cloud Computing Patterns



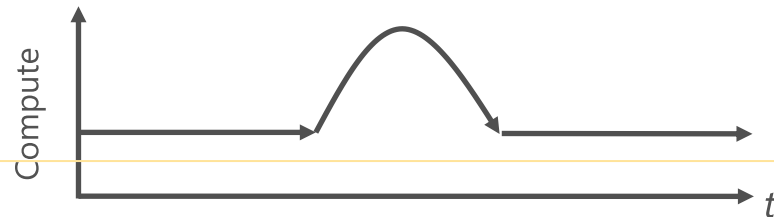
## On and Off

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



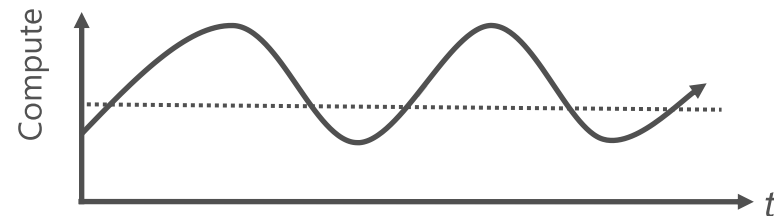
## Growing Fast

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

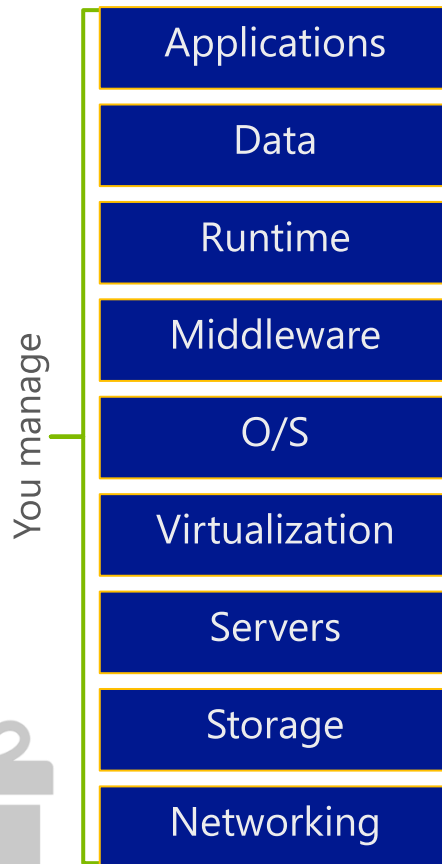


## Predictable Bursting

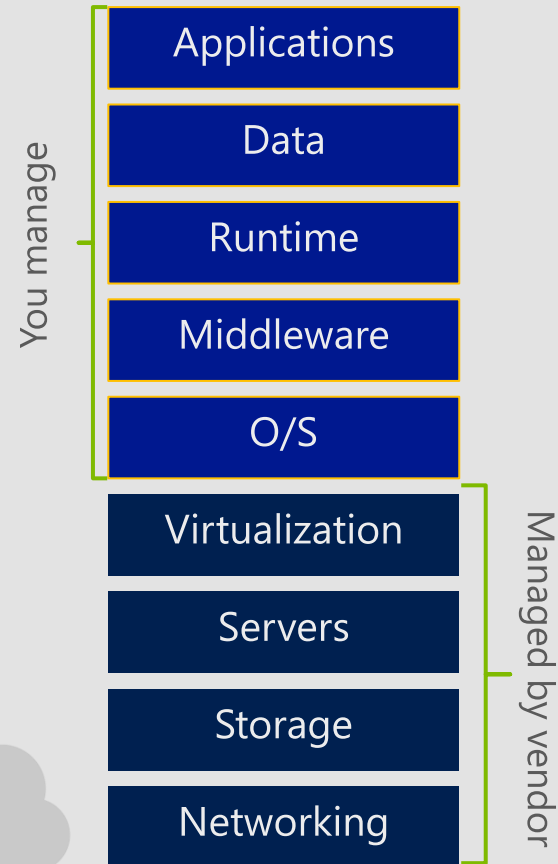
Services with micro seasonality trends  
Peaks due to periodic increased demand  
IT complexity and wasted capacity

# Cloud Computing

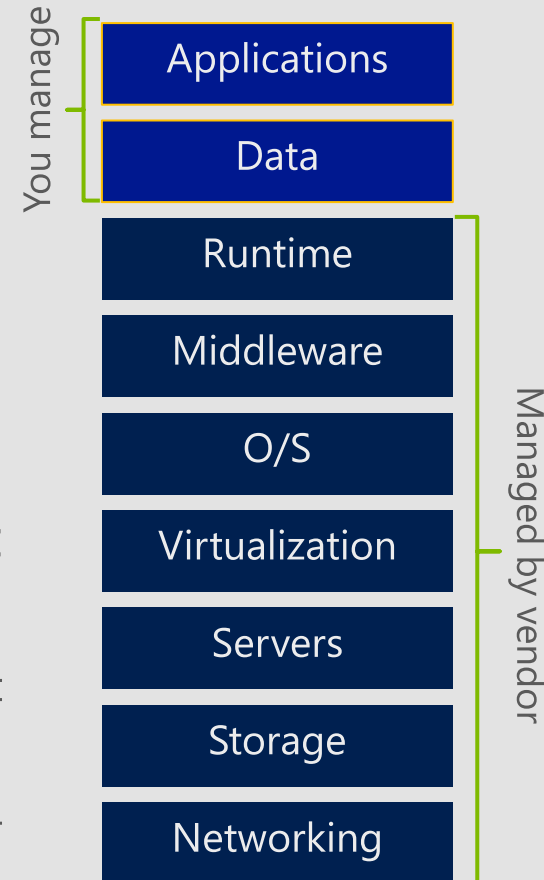
## Packaged Software



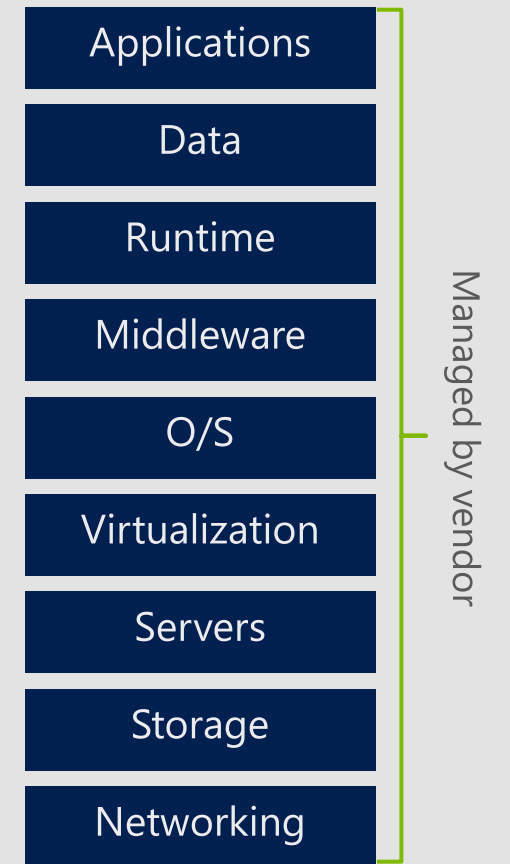
## Infrastructure (as a Service)



## Platform (as a Service)



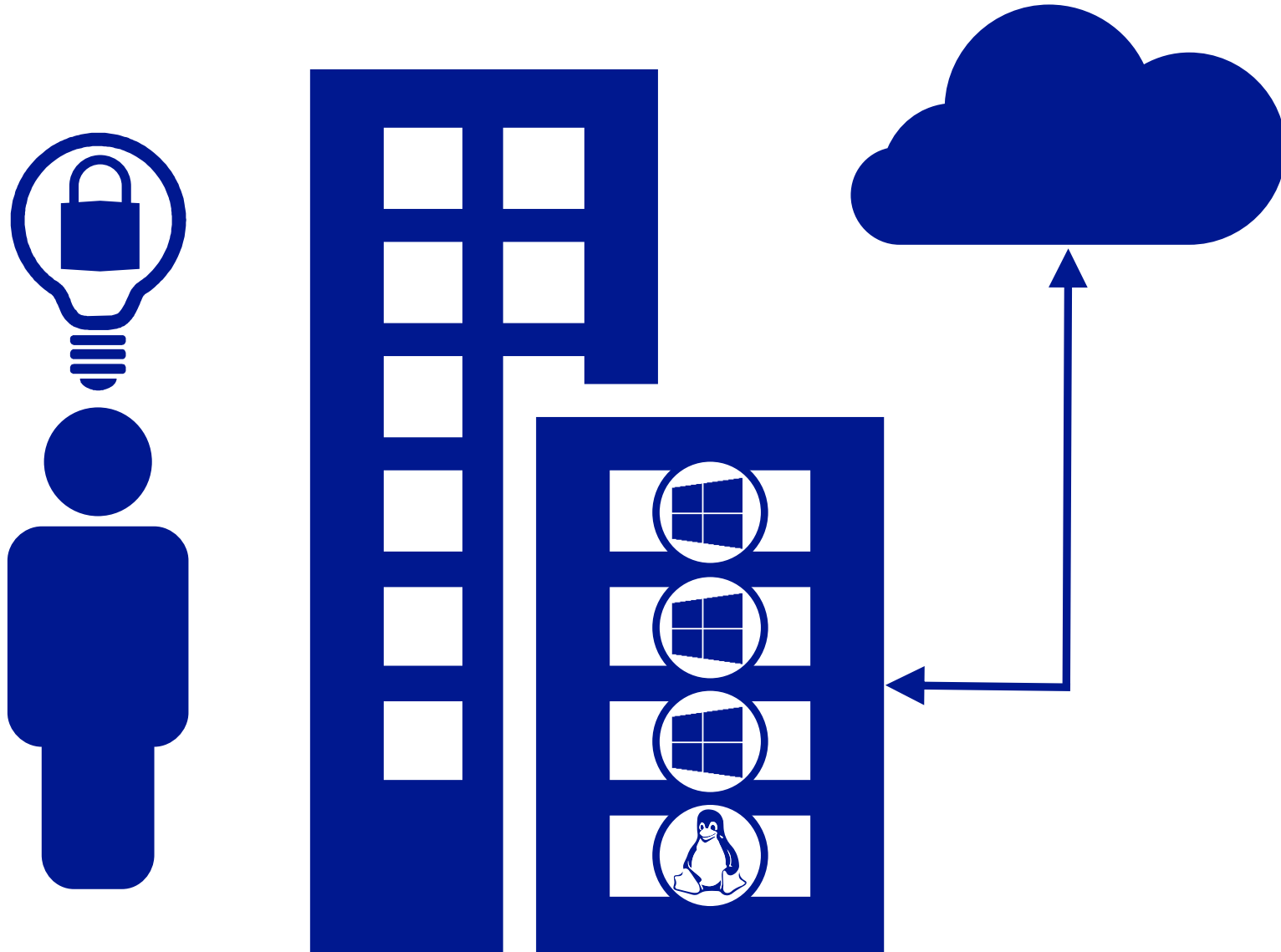
## Software (as a Service)



# Public Cloud



# Cloud innovation presents challenges for IT



How do I integrate with my existing IT investments?



What about my heterogeneous, complex IT landscape?

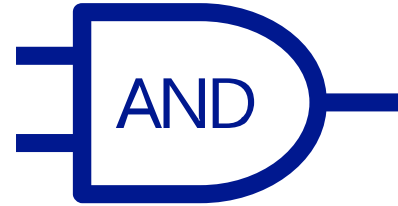


What about security and compliance?

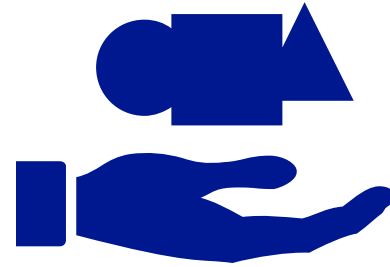
Enterprise  
needs



Integration



Heterogeneity



Security



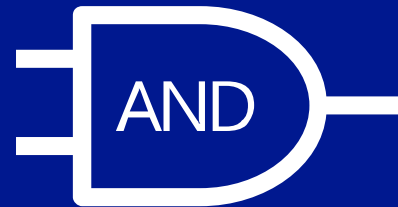
Enterprise  
needs



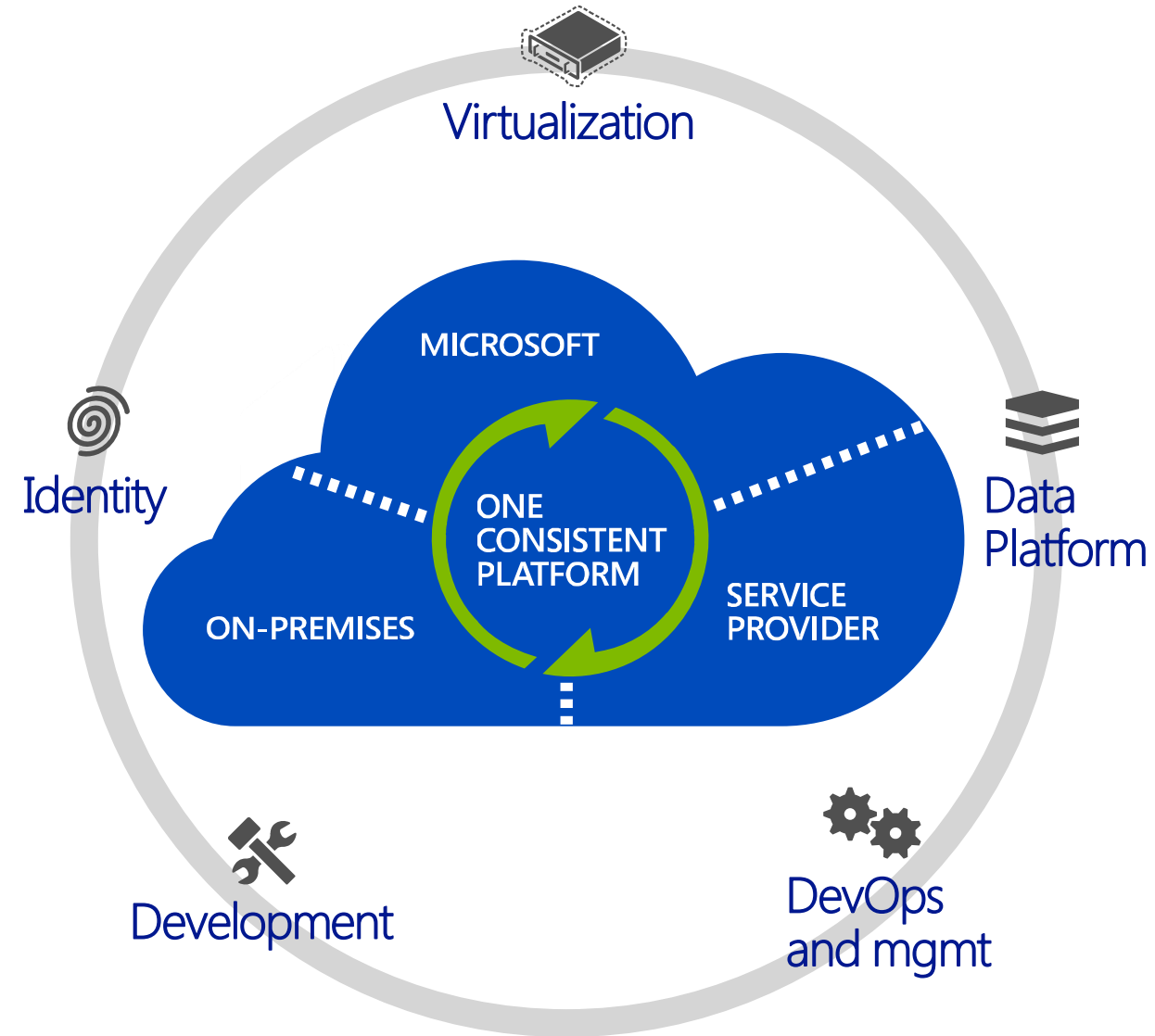
Windows Azure  
fundamentals



Integration



On-premises  
AND Cloud



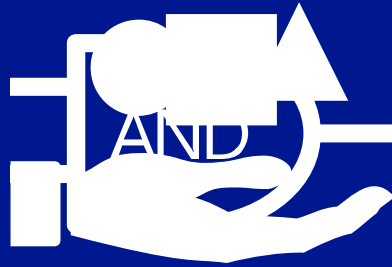
Enterprise  
needs



Windows Azure  
fundamentals

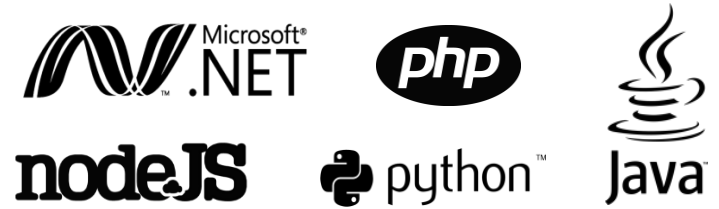


Heterogeneity



Open, Bridged  
AND Flexible

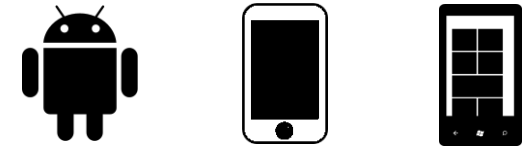
Languages



CMS



Devices



Databases



Operating  
Systems



Enterprise  
needs



Windows Azure  
fundamentals



Heterogeneity



Open, Broad  
Trustworthy  
and Flexible

Languages



CMS



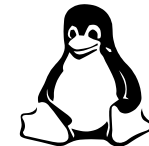
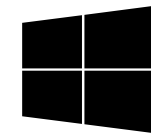
Devices



Databases



Operating  
Systems



Enterprise  
needs



Windows Azure  
fundamentals



Security



Trustworthy

TRANSPARENCY

EXPERIENCE

ISO 27001  
Cloud Security  
Alliance (STAR)  
Industry standards



Yearly audits  
Independently verified



\$  
Monthly SLAs



Regulatory  
compliance  
Trust center



Real-time status  
Service dashboard



Enterprise  
needs



Windows Azure  
fundamentals



Security



Trustworthy

TRANSPARENCY

RELATIONSHIP

EXPERIENCE

Count on your existing relationship

Attach to  
your EA  
Enterprise ready  
procurement



24x7x365  
Enterprise-ready  
support



MCS, CSS,  
Partners  
Trusted advisors



Enterprise  
needs



Windows Azure  
fundamentals



Security



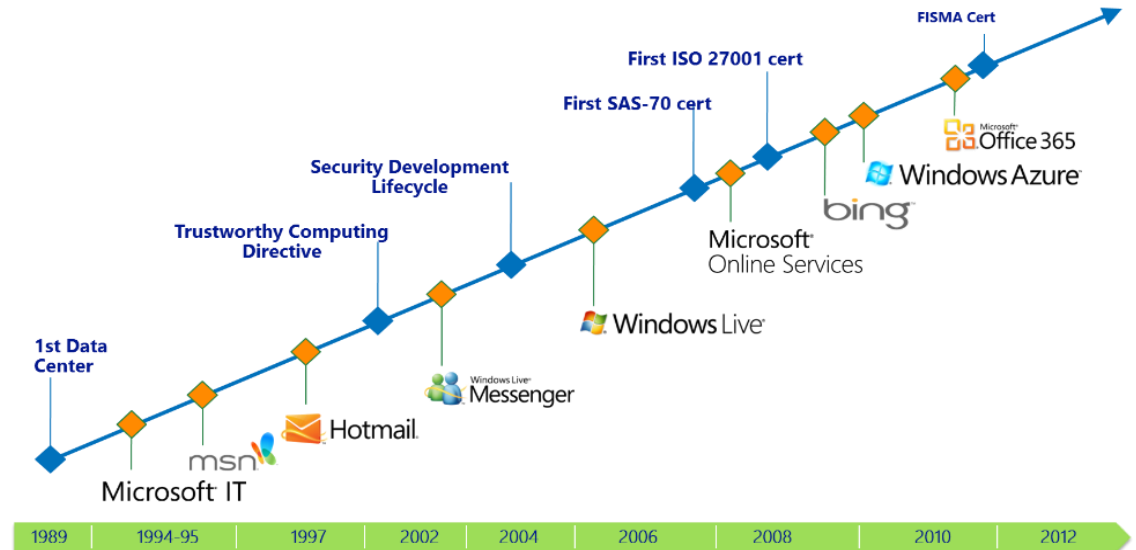
Trustworthy

TRANSPARENCY

RELATIONSHIP

EXPERIENCE

Unparalleled experience in online security



Today, we manage 200+ global services, running 24x7

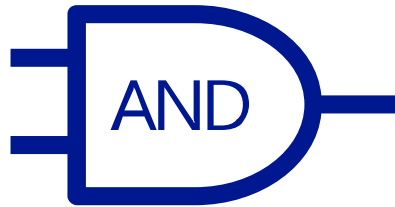
- 9.9 billion messages a day via Windows Live Messenger
- 600 million unique users monthly on Windows Live and MSN
- 1 Petabyte+ of updates served monthly Windows Update
- 5M LiveMeeting conference minutes per year
- 200 billion+ authentications through Windows Azure AD





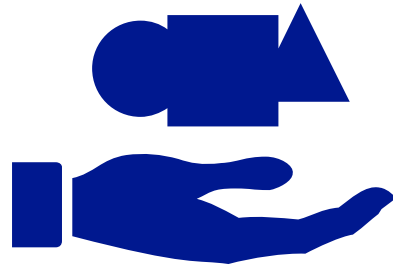
# Windows Azure delivers.

Integration



On-premises  
AND cloud

Heterogeneity



Open, Broad,  
Flexible

Security



Trustworthy

## Enterprise ready by design.



# Windows Azure



Global datacenters



Global CDN



Global support



Local account teams



Local currencies



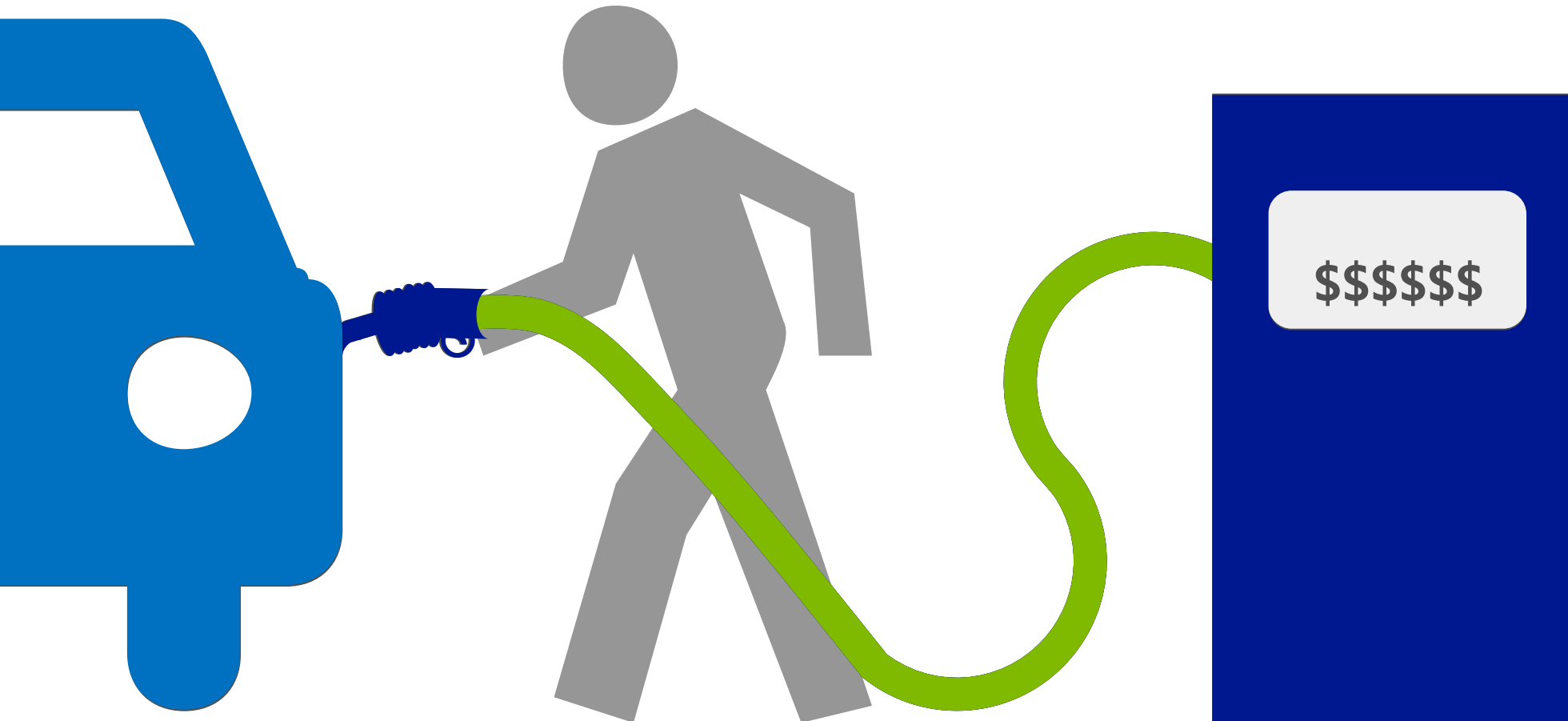
24 x 7 x 365 support

Over 1 billion customers, 20 million businesses

76 markets worldwide

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

# True cloud economics. Billing stops when you stop!

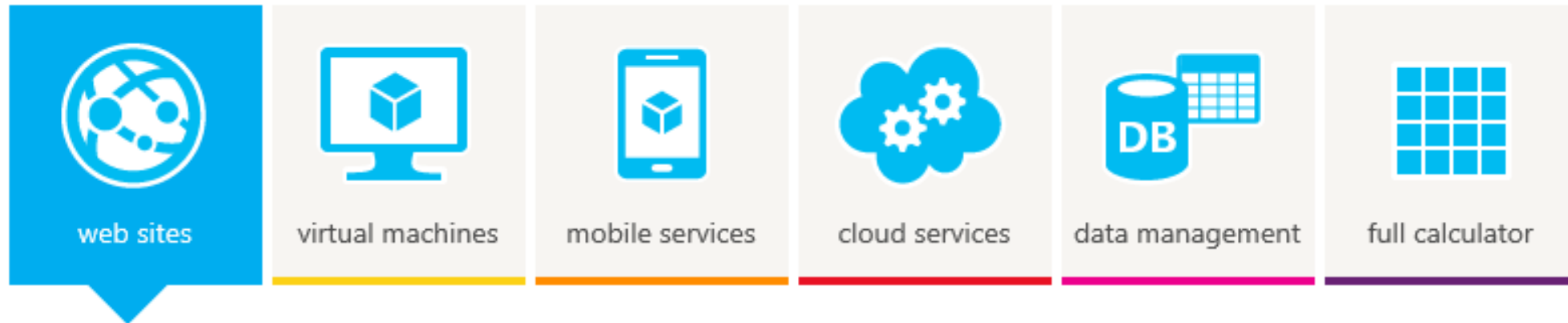


- ✓ Stopping instance, stops billing
- ✓ Per-minute billing
- ✓ No need to delete your virtual machine
- ✓ Start back with same disks attached & same end-points configured

# Estimating Cloud Costs



No upfront costs. Pay only for what you use.



<http://www.windowsazure.com/en-us/pricing/calculator/>

# Windows Azure

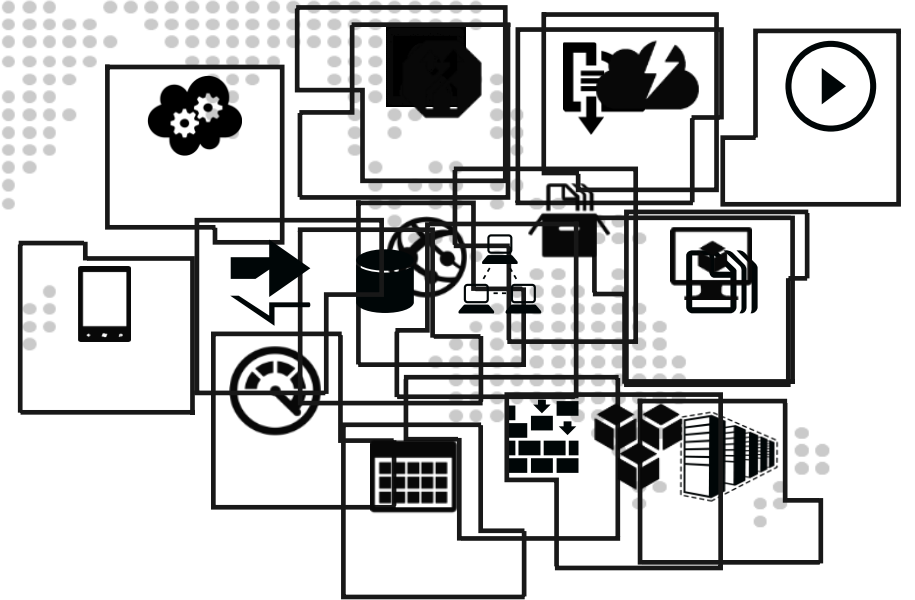
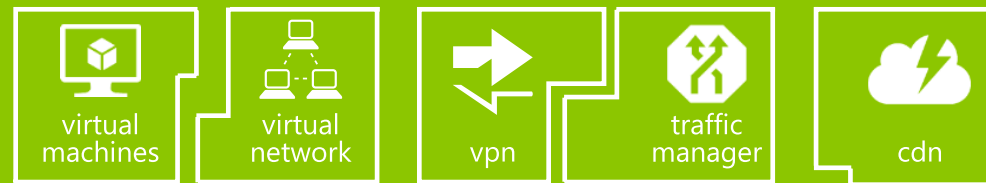
## app services



## data services

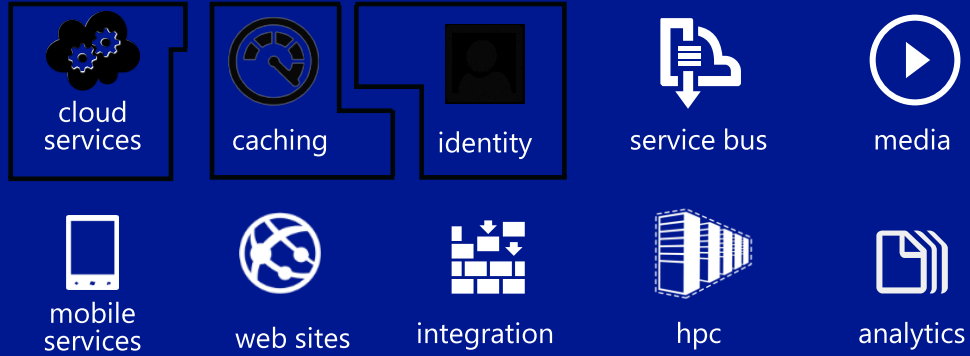


## infrastructure services



# Windows Azure

## app services



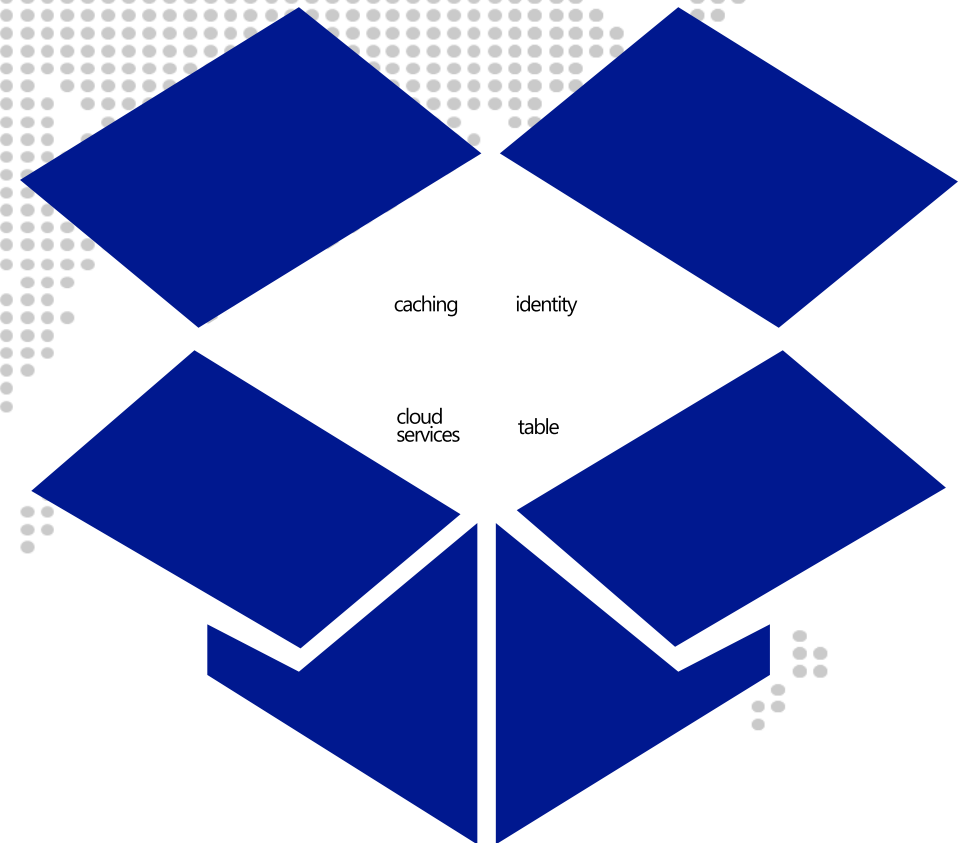
## data services



## infrastructure services



## Apps



# Windows Azure

## app services



cloud services



caching



identity



service bus



media



mobile services



web sites



integration



hpc



analytics

## data services



SQL database



HDInsight



table



blob storage

## infrastructure services



virtual machines



virtual network



vpn

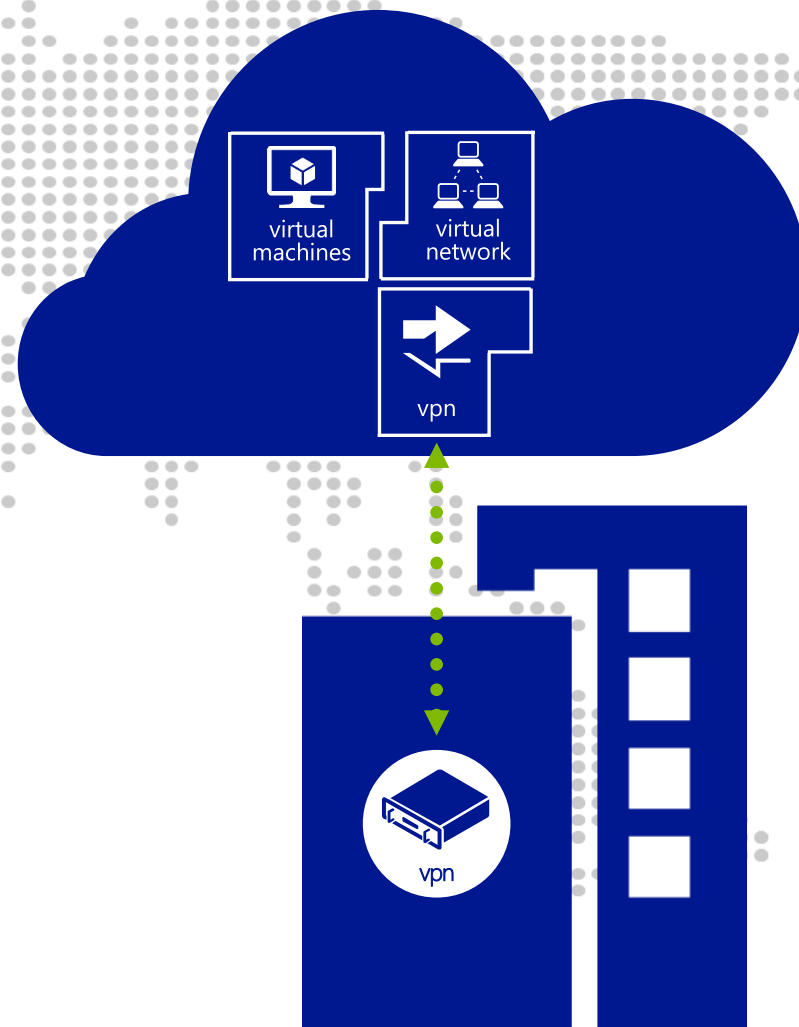


traffic manager



cdn

Azure datacenters,  
your datacenters.





Store, Backup, Recover Data



Enable innovation with dev  
and test



Scale your infrastructure  
and extend the reach



SharePoint Server  
on Windows Azure



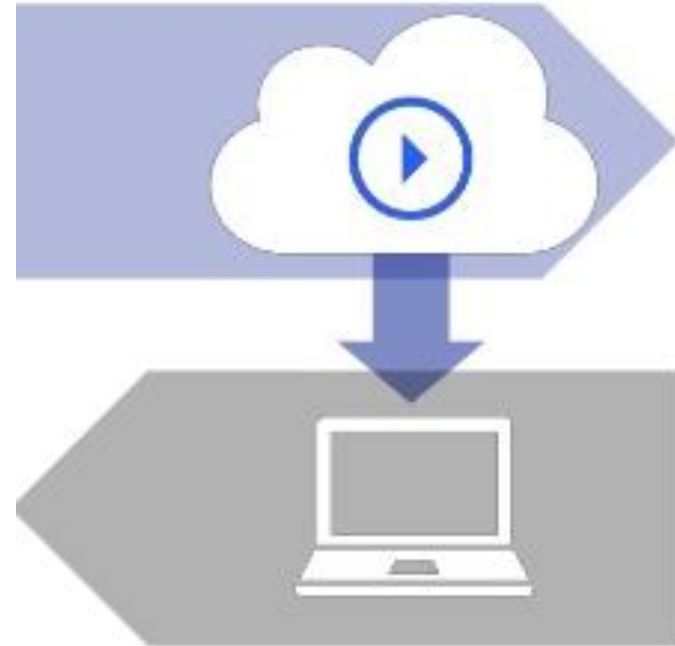
Connect hybrid infrastructure  
services with a single identity

top scenarios



# Stream Videos/Lectures On Demand

- Protect content
- Deliver content securely
- Cost effective
- Internet Agnostic



# On-Demand Workflow



Ingest



Encode



Package



Encrypt



Deliver

# Windows Azure Media Services

- For more information on services
- <http://www.windowsazure.com/en-us/services/media-services/>
- <http://www.slideshare.net/mingfeiy/windows-azure-media-services-june-2013-update>

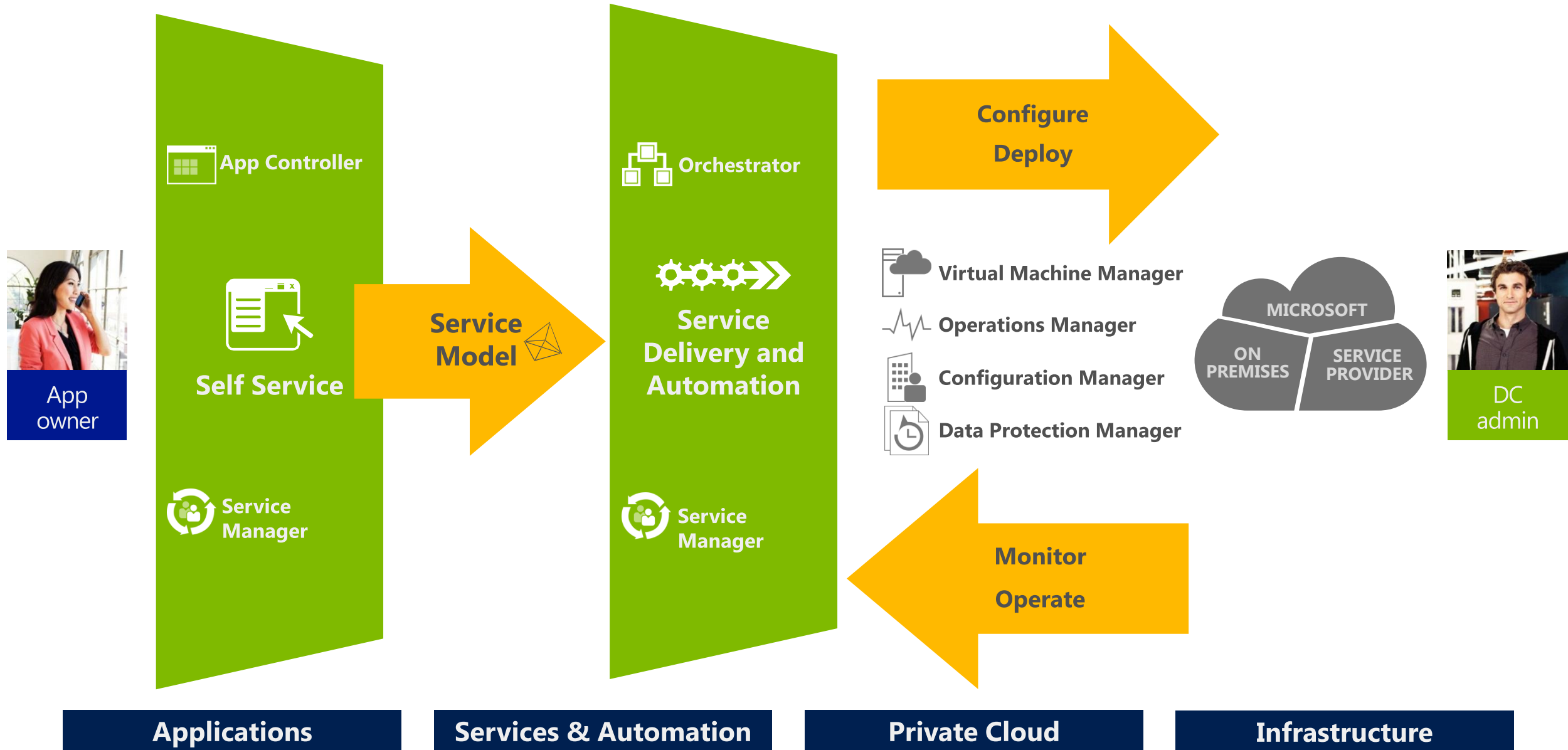
# Private Cloud

# Private Cloud Part of a "Larger" Cloud

"Private cloud. The cloud infrastructure is provisioned for exclusive use by a single organization composed of multiple consumers (e.g., business units). It may be owned, managed, and operated by the organization, a third party, or some combination of them, and it may exist on or off premises."

# Introduction to the Hybrid Cloud

# Unified Management for the Cloud OS



# Cloud Optimize Every Business

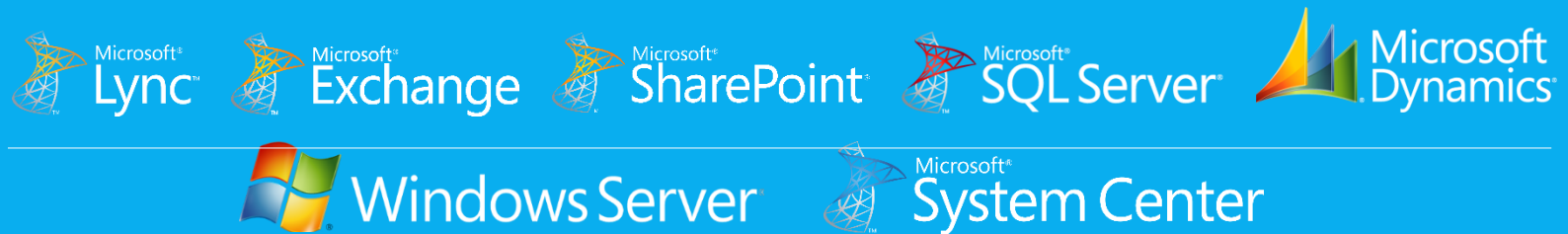
## Public



## Common Technologies

Identity ▪ Virtualization ▪ Management ▪ Development

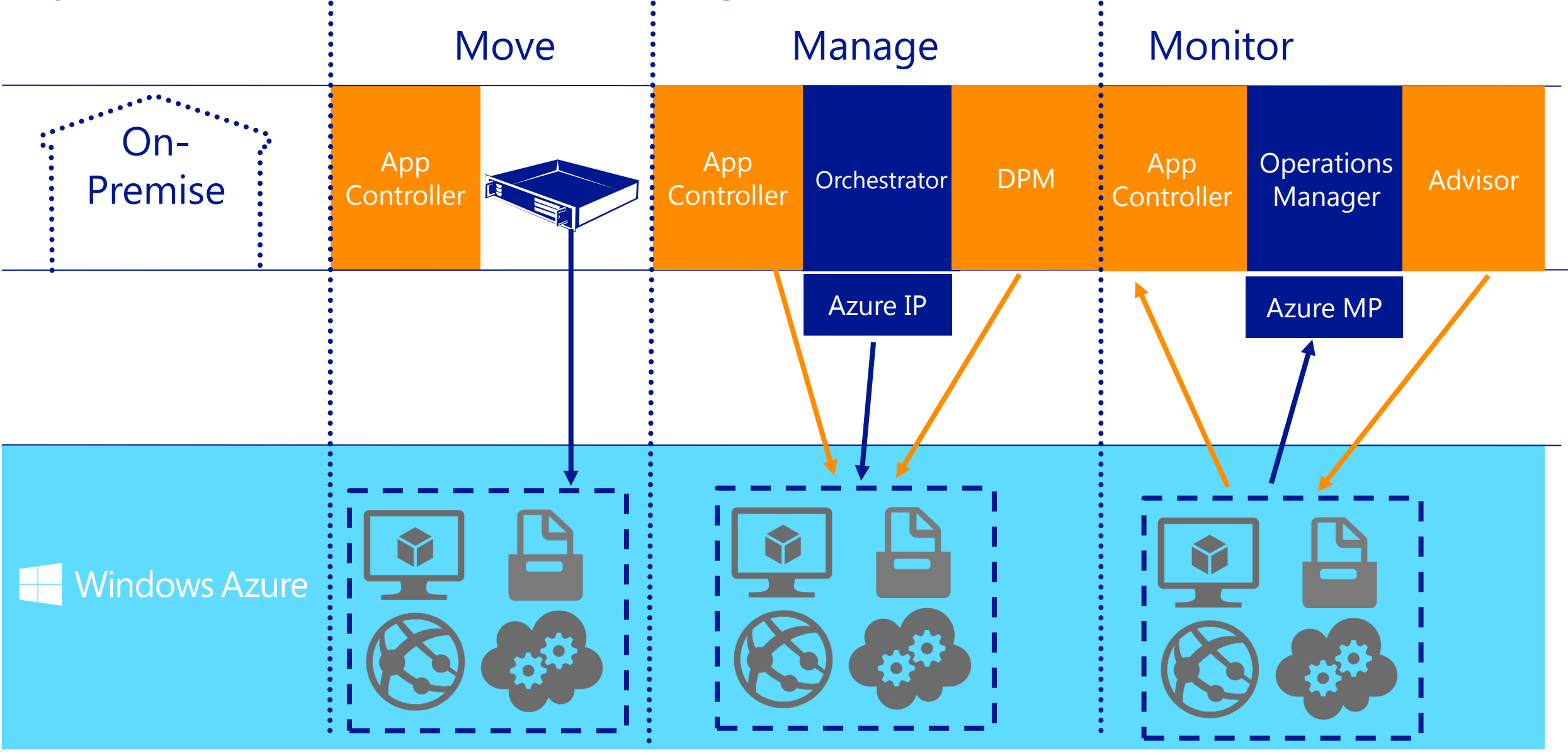
## Private





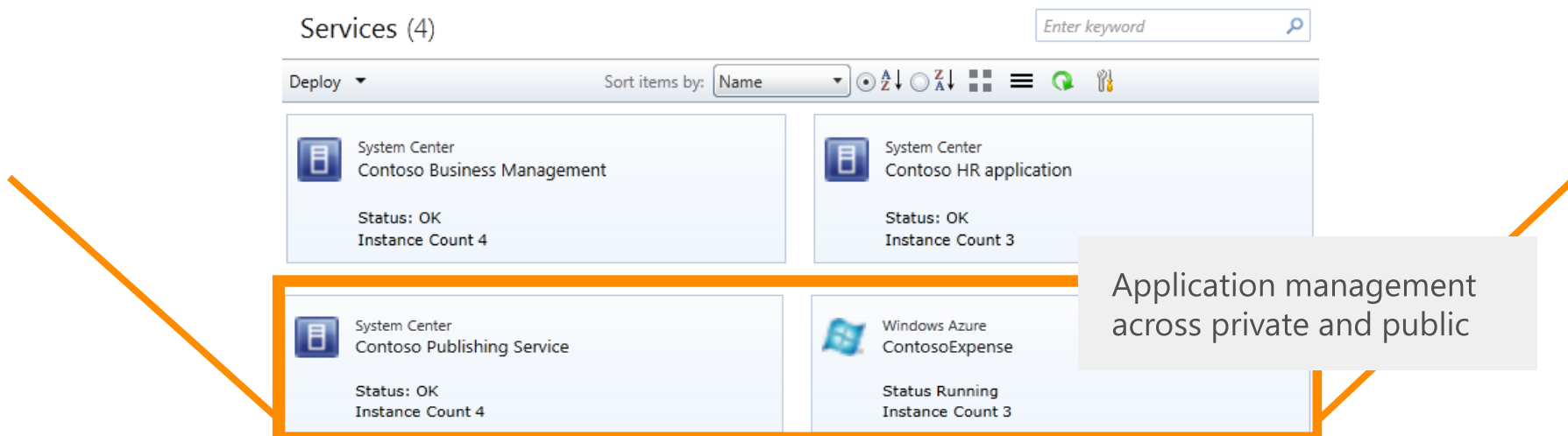
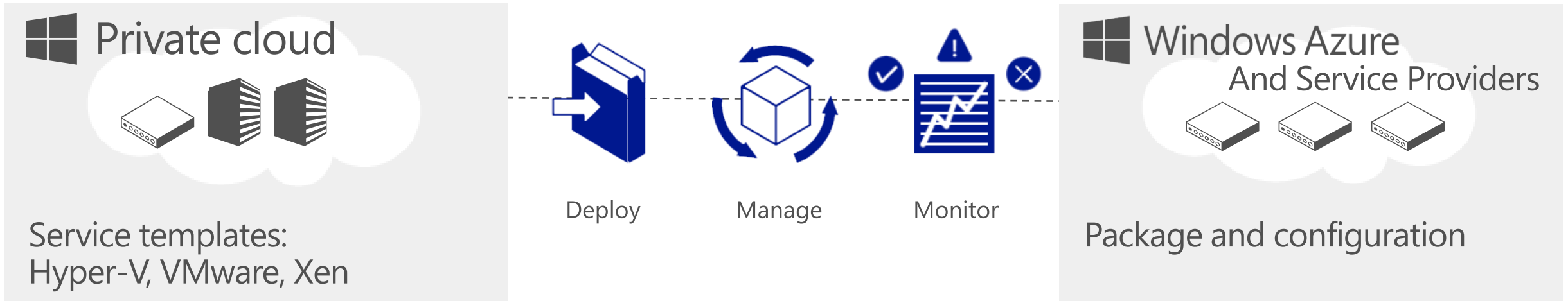
# Hybrid Cloud Integration Points SC2012 SP1 & Windows Azure

# System Center Integration with Azure



# App Controller and Windows Azure

# Managing applications across multiple clouds



# Consistent experiences across the Cloud OS



Bringing Windows Azure Services to

## Windows Server

for Hosting Service Providers

## Web Sites

High density  
and scalable

Easy deployment  
and administration

Fully self-service



## Virtual Machines

Offer preconfigured  
workloads

Windows and Linux

Fully self-service



## Service Mgmt Portal & API

High density  
and scalable

Easy deployment  
and administration

Fully self-service



## Third Party Services

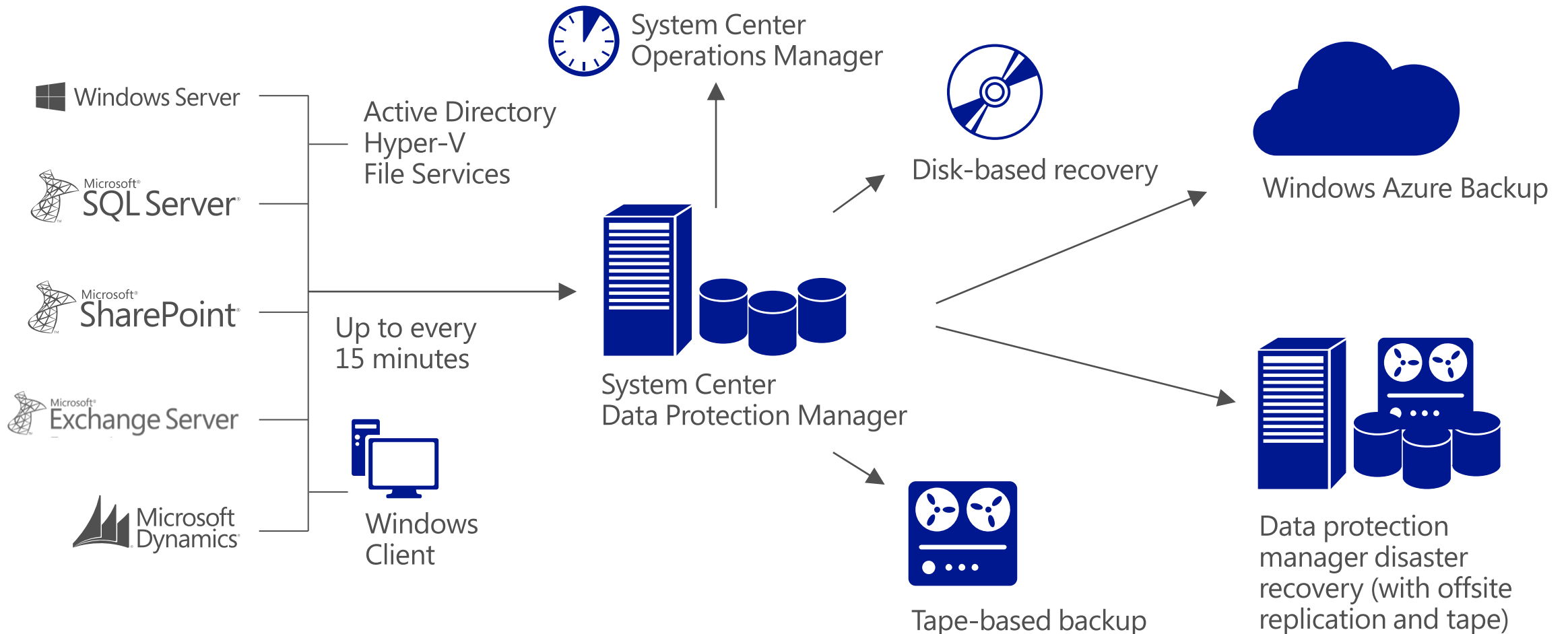
Zuora

Parallels

Apprenda  
and more

# Data Protection Manager and Windows Azure

# Backup to Windows Azure



# Operations Manager and Windows Azure



# Monitor Windows Azure with SCOM

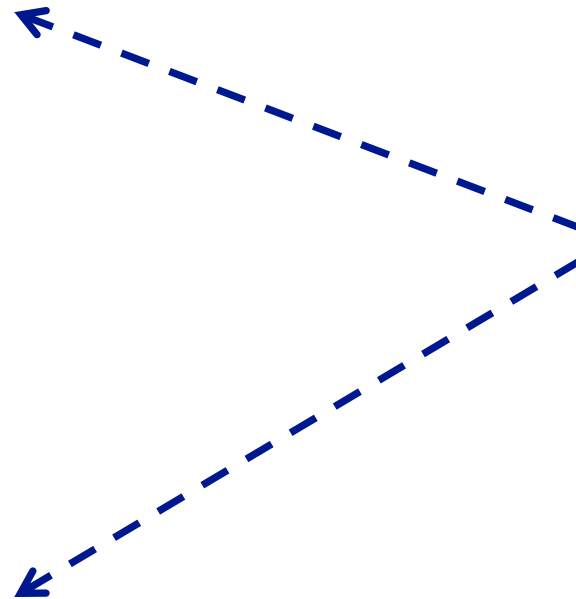
**IaaS**  
Treat as normal server,  
including using a SCOM  
agent



**PaaS**  
Monitoring is  
agentless,  
use normal API and  
diagnostics for  
monitoring  
(and uses certificate  
for authentication)

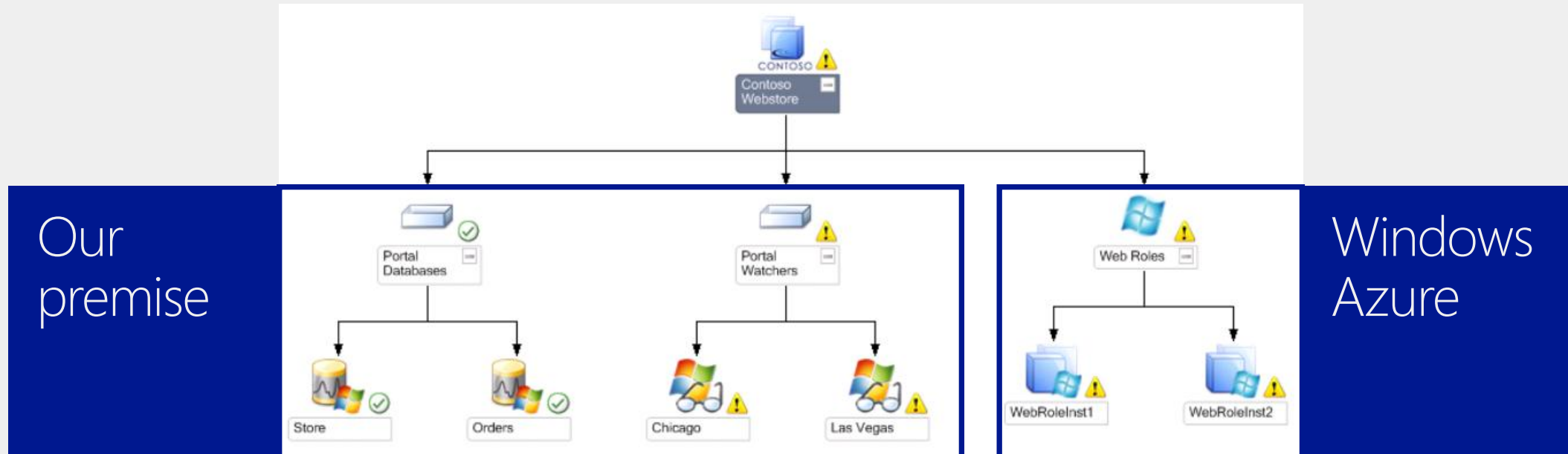


**System  
Center  
Operations  
Manager**  
+ Management  
Pack for  
Windows Azure



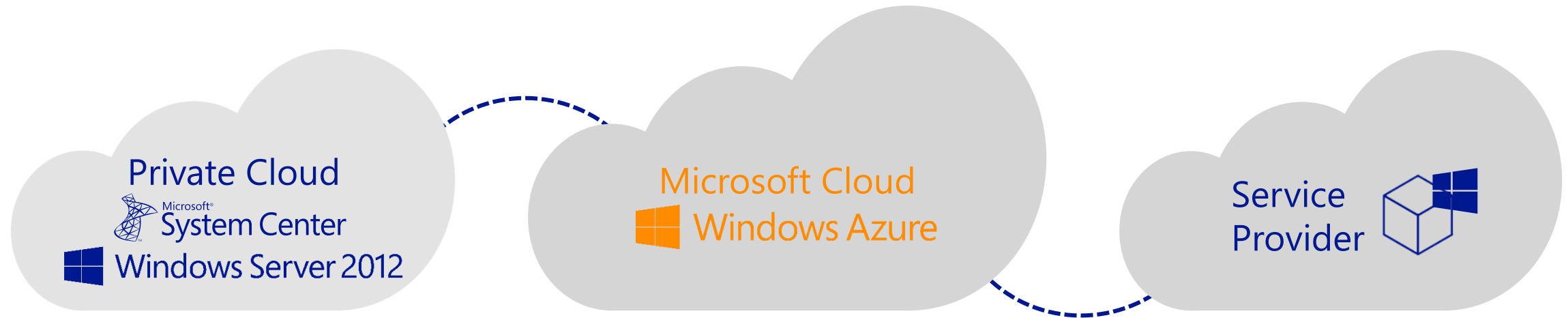
# Monitoring Windows Azure applications

Operations Manager console diagram view



# Orchestrator and Windows Azure

# Integration Packs for automation across clouds



## Partner enabled IP's

BMC

Dell - AIM

NetApp - OCPM

Cisco

- UCS

- NCM JaxMP/Frysoft

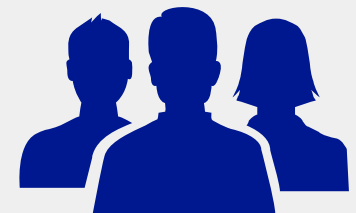
Vision Solutions - DoubleTake

Kelverion

- ServiceNow

- Data Manipulation

- HTTP Applications

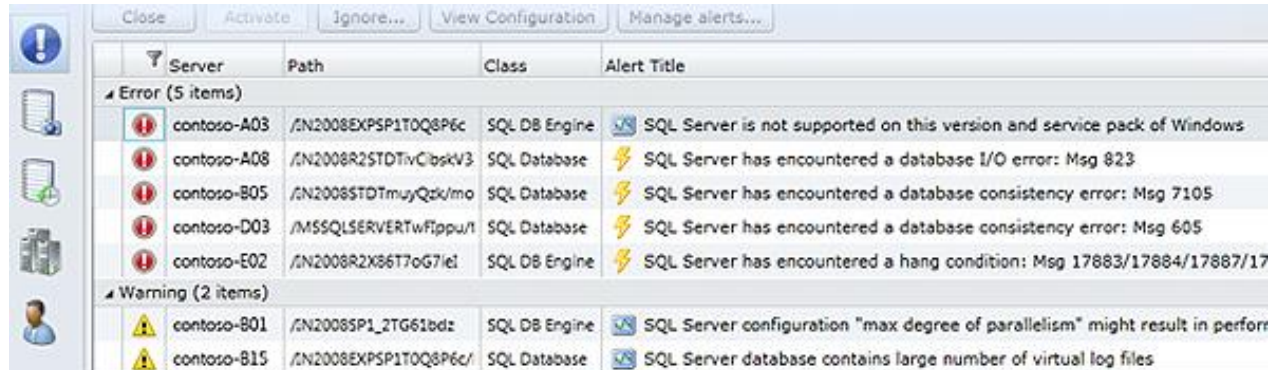


# System Center Advisor and Windows Azure

# System Center Advisor

- [www.SystemCenterAdvisor.com](http://www.SystemCenterAdvisor.com)
- Proactively avoid problems
  - Alerts for unpatched, misconfigured, or unsupported configurations
  - Regular assessment of server configuration
  - Remote access to portal
- Resolve issues faster
  - Access current and historical configuration data
  - Share configuration data with internal or Microsoft support staff
  - Get instant access to guidance

- Reduce downtime
  - SQL Server and Windows Server knowledge
  - Compare with best practices
  - Access centralized configuration data



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# Appendix

➔ IT Camps





# Connect To Clouds

- Virtual Machine Manager
- Administrator for App Controller and VMM
  - **Two way trust between App Controller Server and VMM Server**
- Hosting provider (SP1)
- Management certificate
- Service endpoint URL
- Windows Azure
- Management certificate
- Subscription ID



# Control Access to Clouds

- VMM
  - Manage access with VMM Console
- Hosting Provider
  - Manage in App Controller
  - Use Active Directory users/groups
- Windows Azure
  - Manage in App Controller
  - Use Active Directory users/groups



# Deploy and Operate

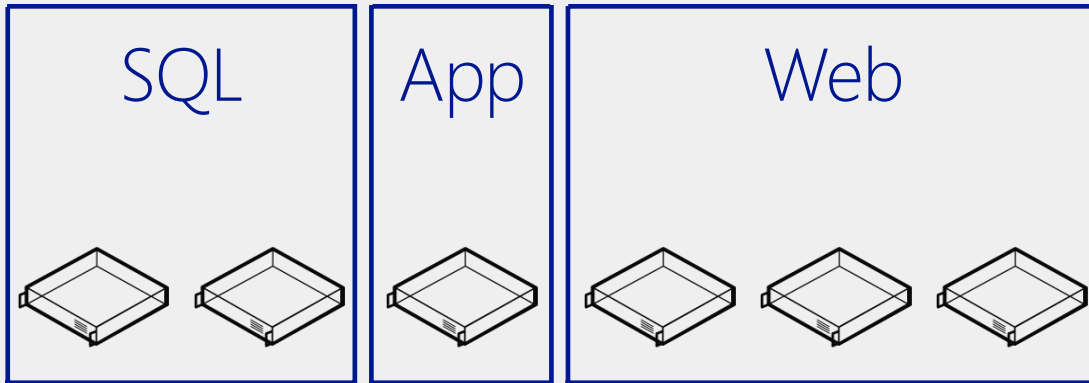
- Deployment
  - Common experience across public and private clouds
  - Windows Azure virtual machine (SP1)
- Operations
  - Start, stop, scale, remote desktop
  - Save, resume, shutdown, checkpoint, console, store
  - Upgrade
- Migration (SP1)
  - VMM to Windows Azure



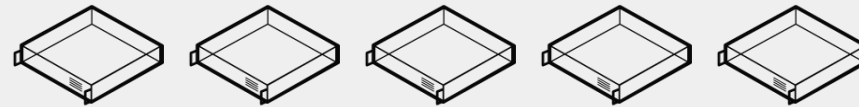
# Hybrid application example

Contoso Corp's finance application

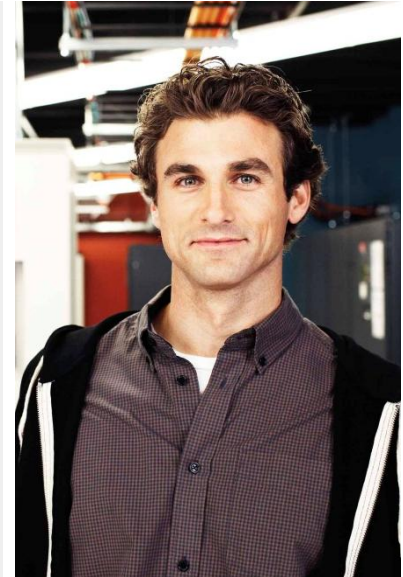
Finance app



Other services



Contoso Production Cloud

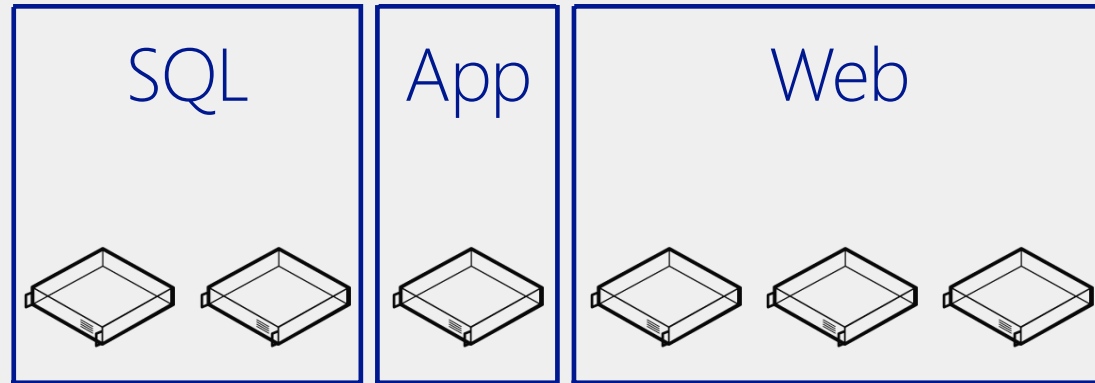


DC  
admin

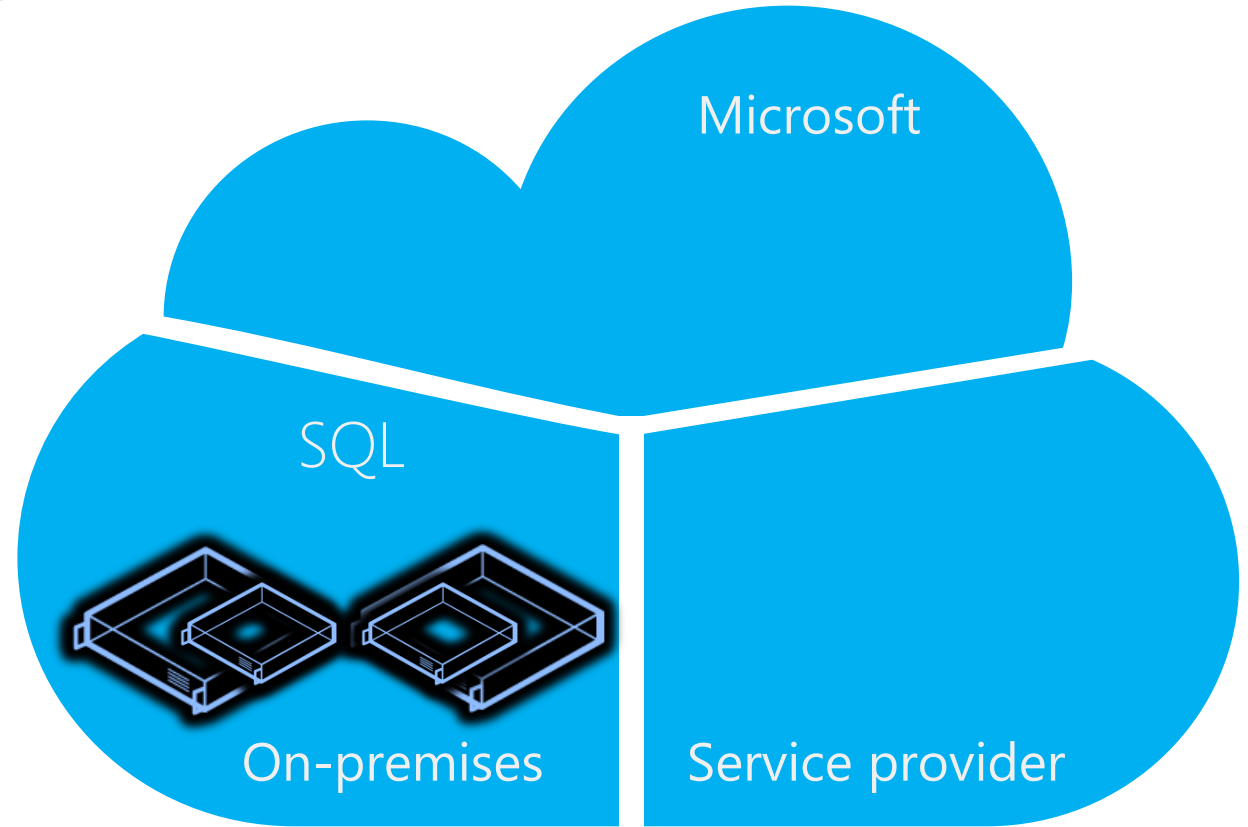
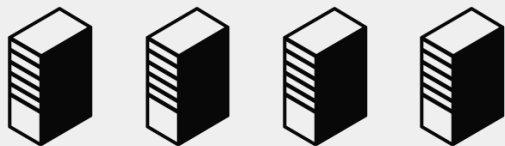
# Hybrid application example

Contoso Corp's finance application

Finance app



Contoso Production Cloud

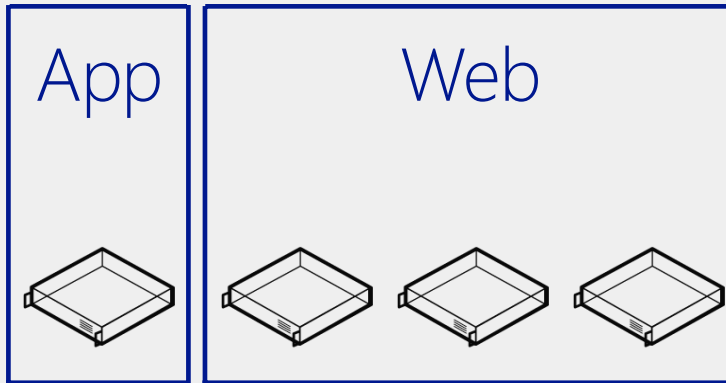


1) Expand SQL Capacity

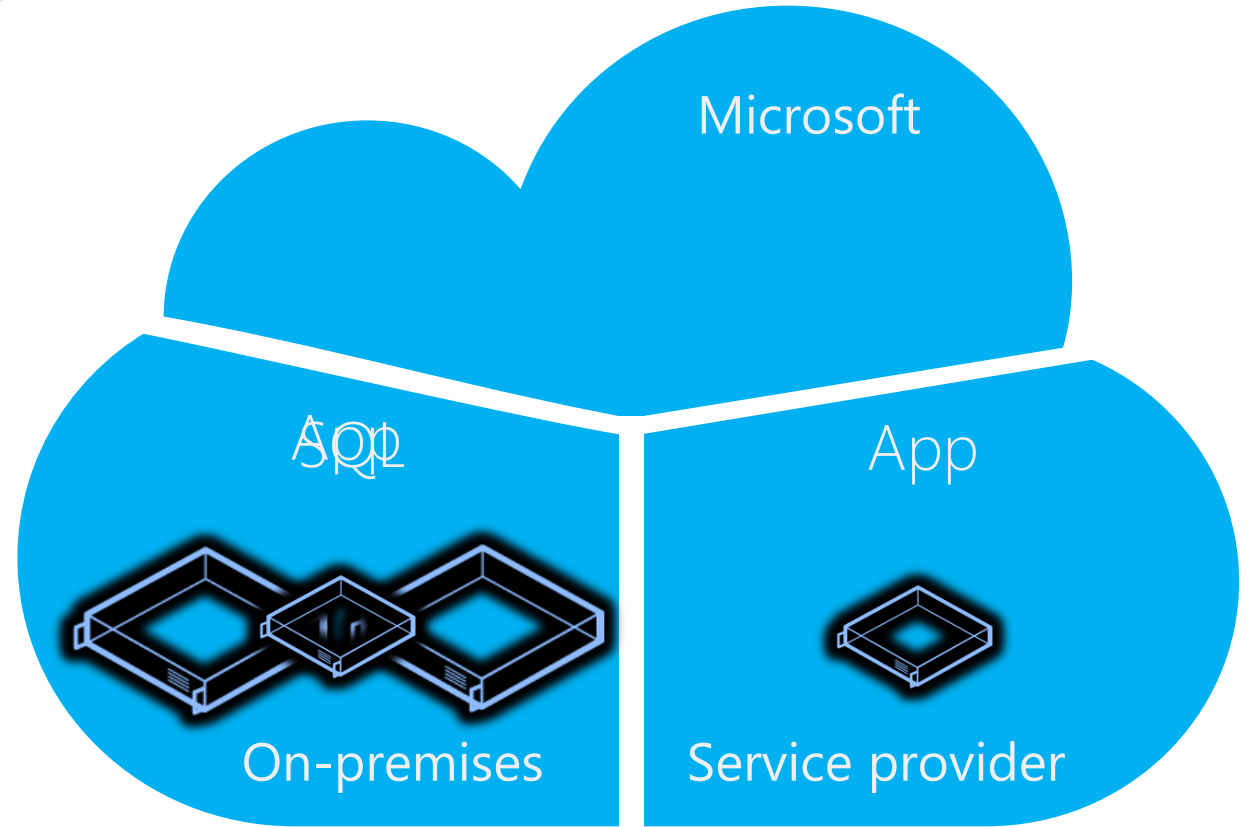
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Contoso Corp's finance application

Finance app



Contoso Production Cloud

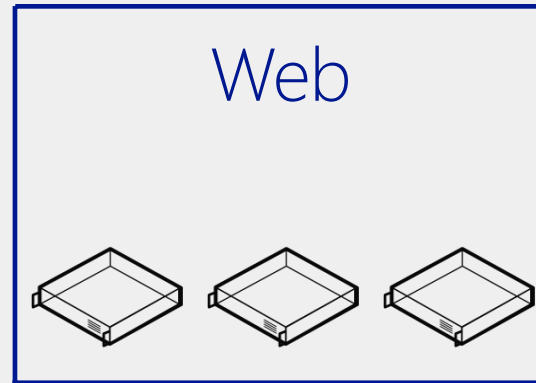


- 1) Expand SQL Capacity
- 2) Move App Tier to Service Provider

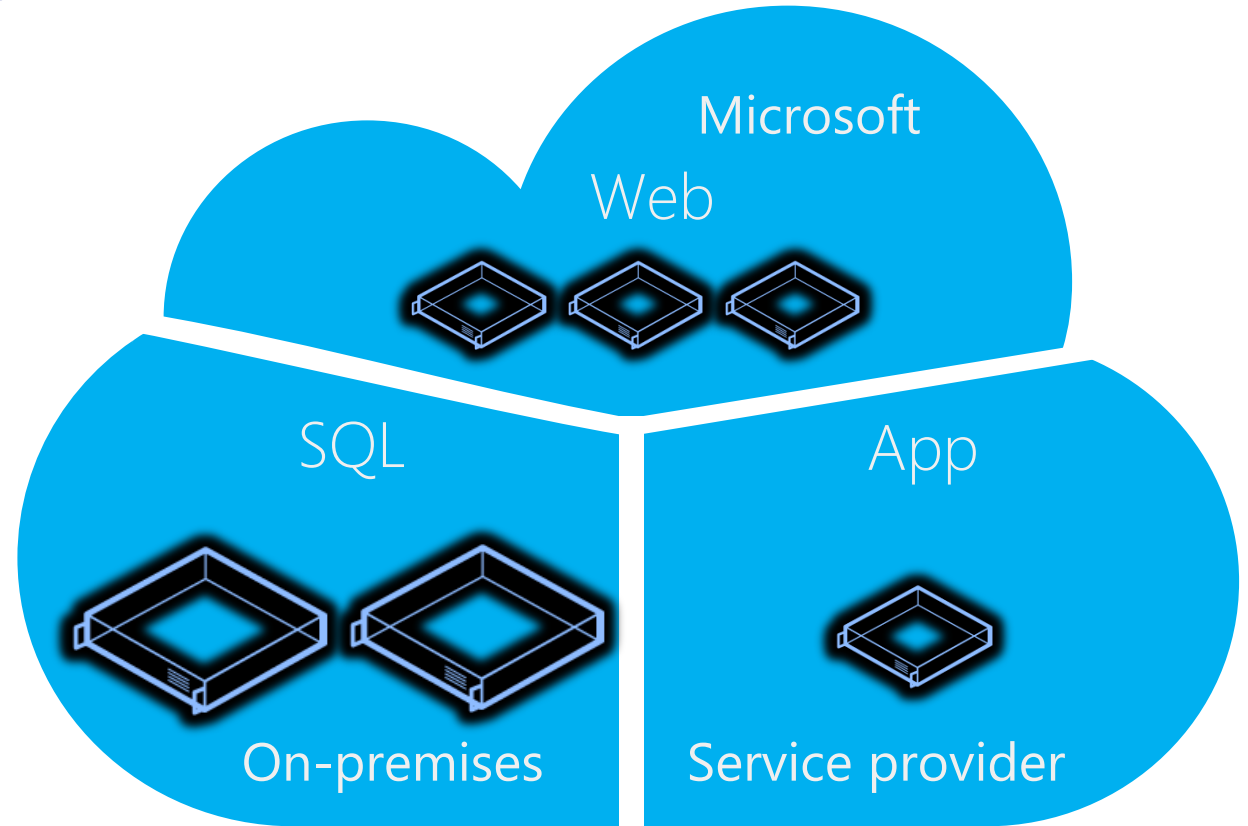
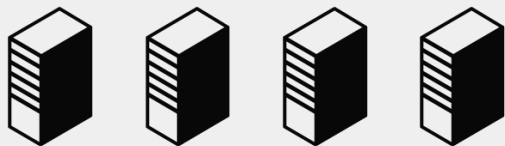
# Hybrid application example

Contoso Corp's finance application

Finance app



Contoso Production Cloud

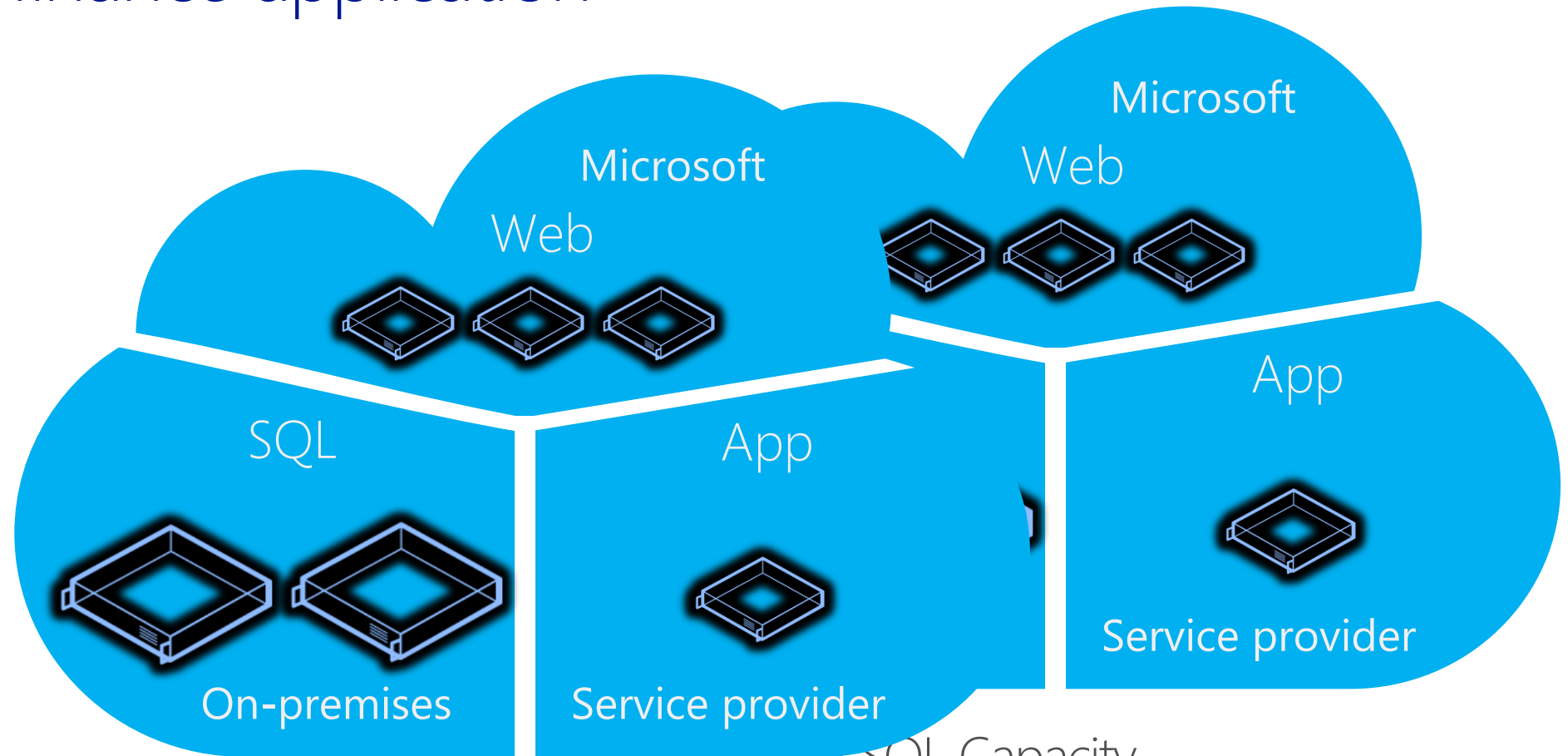


- 1) Expand SQL Capacity
- 2) Move App Tier to Service Provider
- 3) Deploy Web Tier in Windows Azure



# Hybrid application example

Contoso Corp's finance application

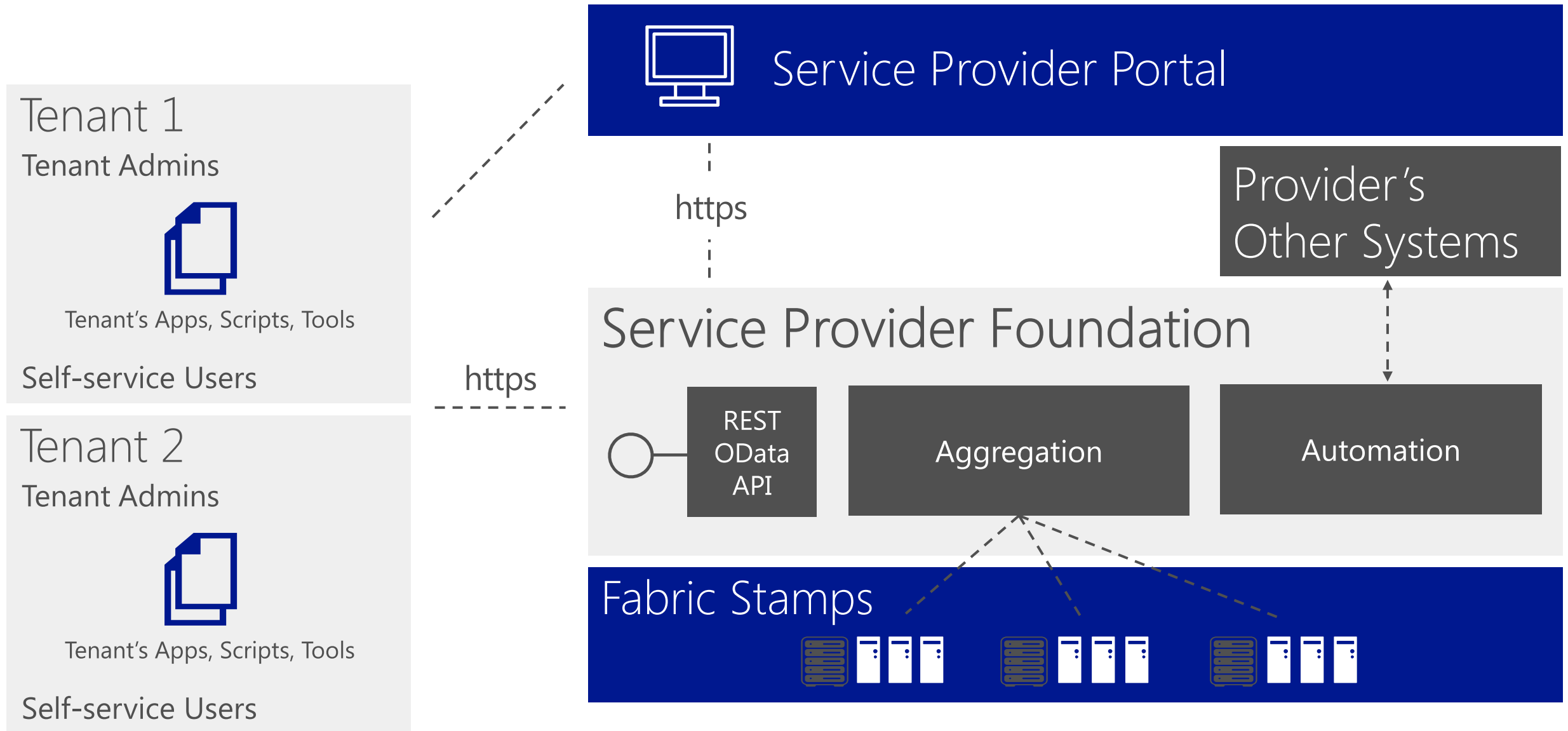


- 1) Expand SQL Capacity
- 2) Move App Tier to Service Provider
- 3) Deploy Web Tier in Windows Azure

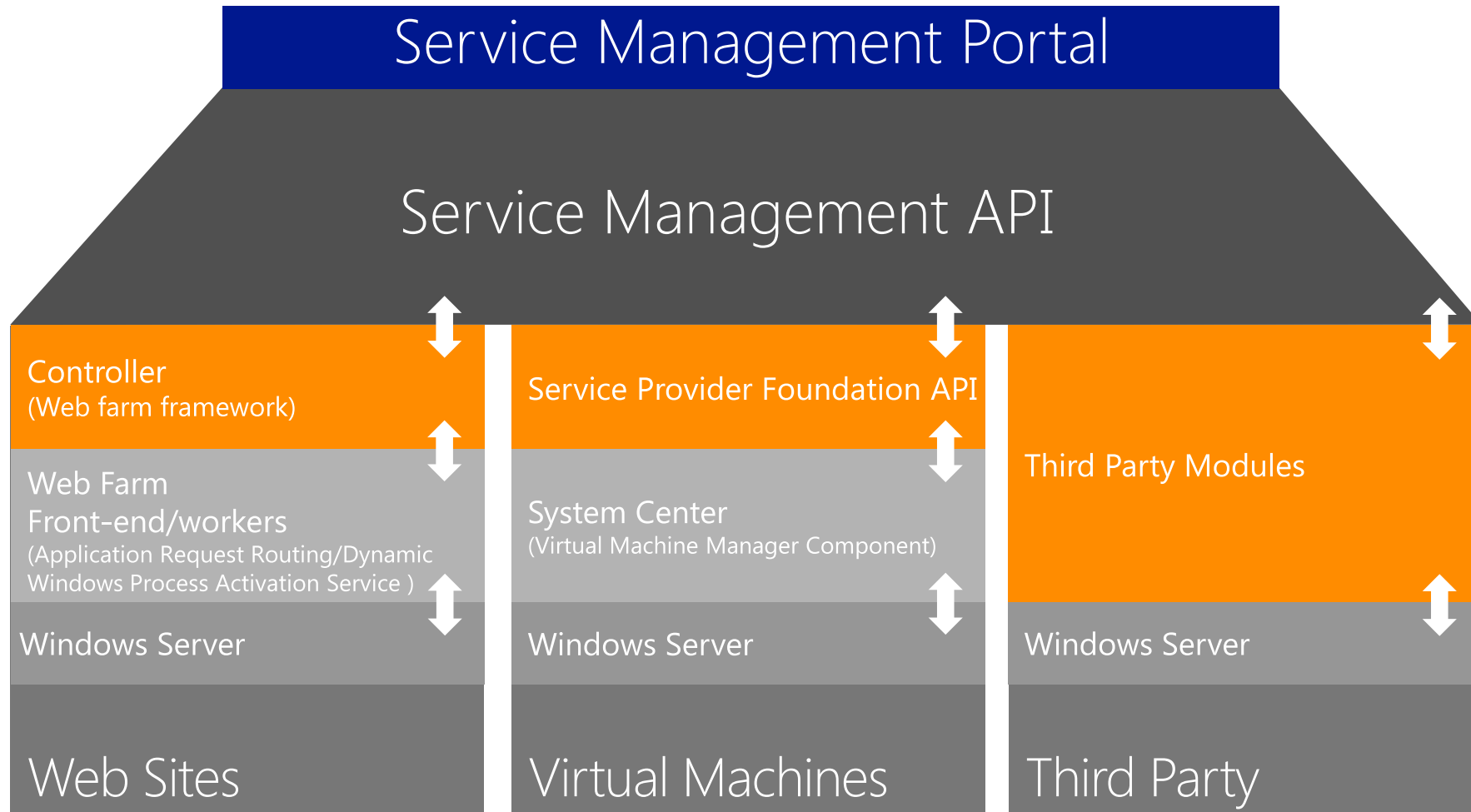
# Service Provider Foundation Features

Feature	Description
VM Management	<ul style="list-style-type: none"><li>• Create, update, &amp; operate VM's</li></ul>
Service management	<ul style="list-style-type: none"><li>• Deploy, update, and operate VMM services; scale-out within service tiers</li></ul>
Self-service VM networks	<ul style="list-style-type: none"><li>• Create, update, and use self-service VM networks</li></ul>
Multi-tenancy/Multi-stamp	<ul style="list-style-type: none"><li>• Isolated, role-based access for tenants</li><li>• Manage tenants at large scale across multiple VMM stamps</li></ul>
Self-service Tenant Administration	<ul style="list-style-type: none"><li>• Tenant admin manages access to hosted IaaS cloud</li><li>• Tenant admin configures and manages self-service user roles</li></ul>
Enterprise identity for SPF	<ul style="list-style-type: none"><li>• Tenants can authenticate and authorize using corporate identity</li></ul>
Extensibility for hosted cloud API	<ul style="list-style-type: none"><li>• Extensible REST OData API surface</li><li>• Use runbooks to customize processes driven through SPF API</li></ul>
Expose VM usage data	<ul style="list-style-type: none"><li>• IaaS monitoring based on Operations Manager</li></ul>

# Enabling Service Providers to Offer IaaS



# Consistent experiences across the Cloud OS



# REST OData API for VMM

`http://<spfserver>:8090/SC2012/VMM/Microsoft.Management.oData.svc/Clouds`

Hoster

Web Browser

http requests

REST API - OData

Powershell Web Service

SPF

Resources (MOF)

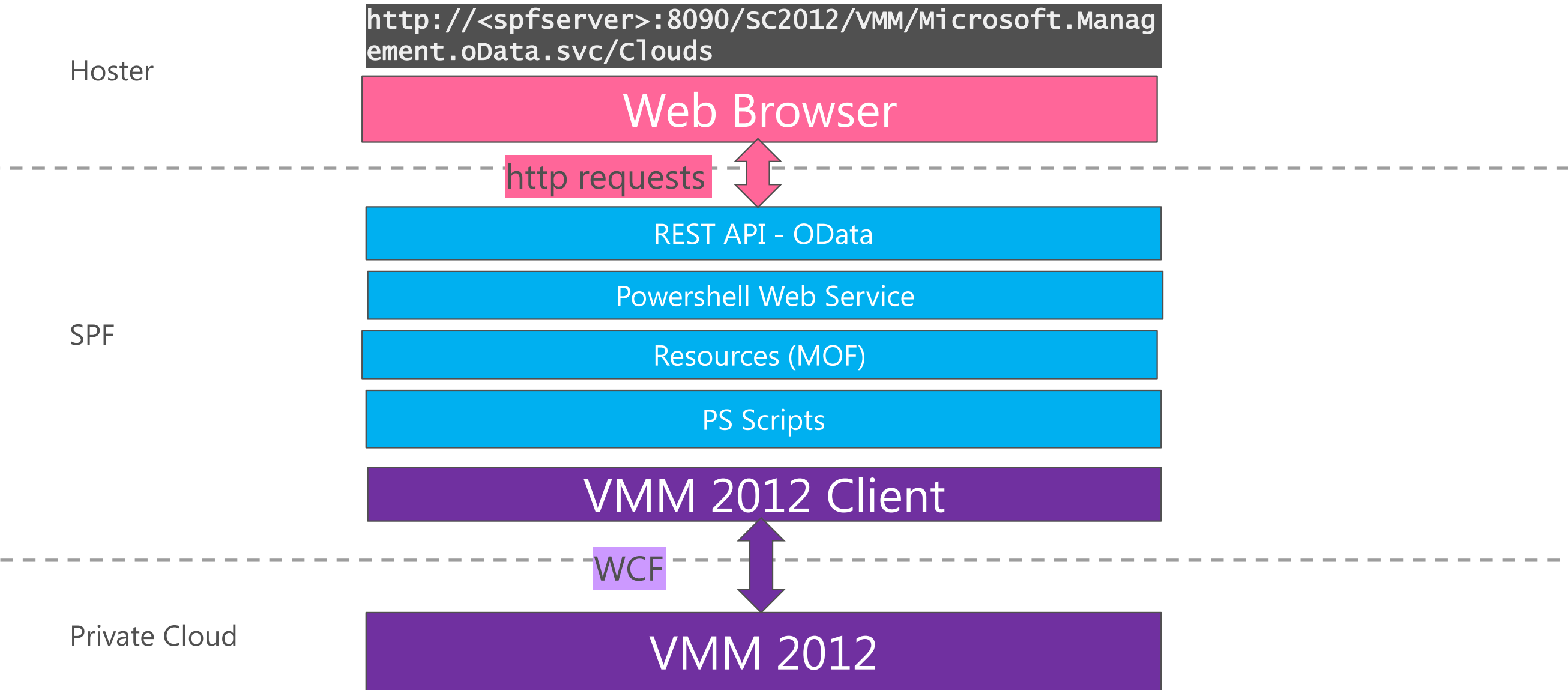
PS Scripts

VMM 2012 Client

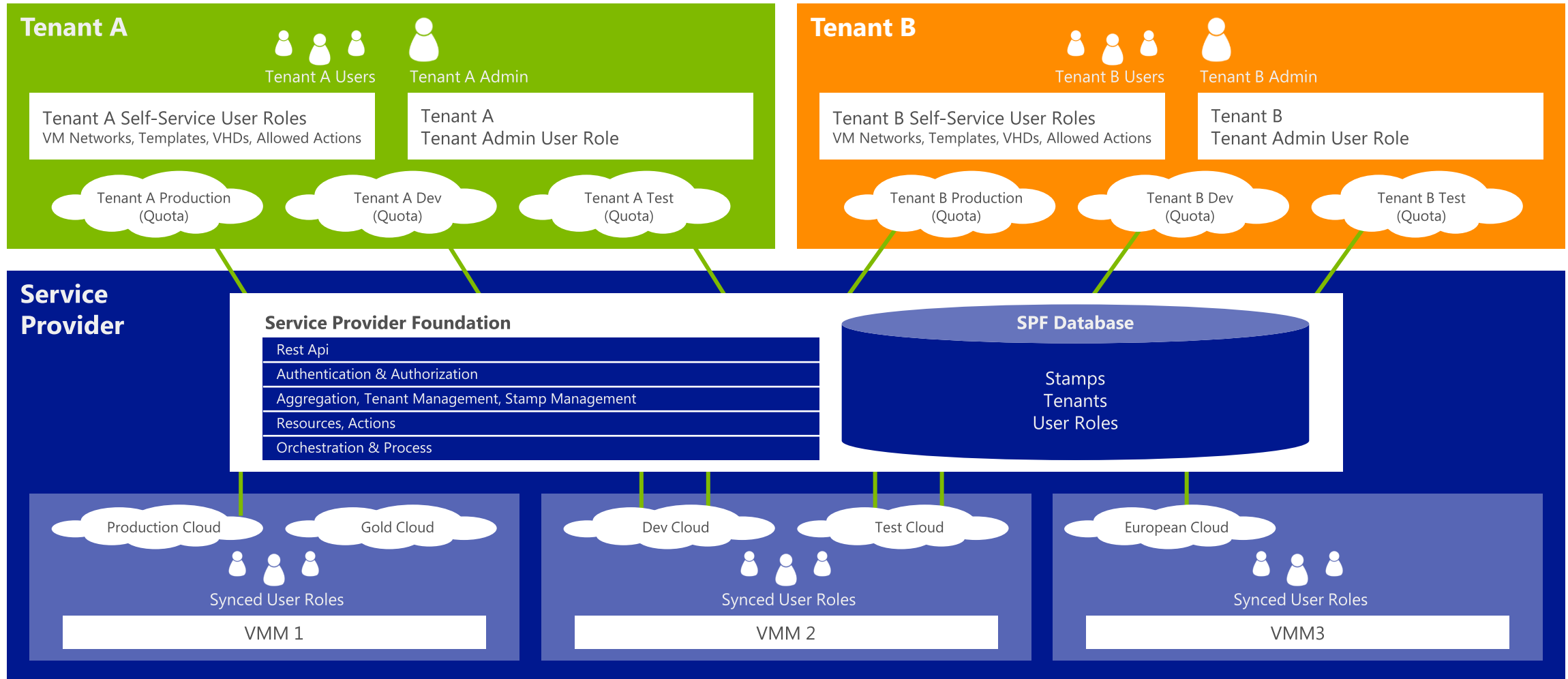
WCF

Private Cloud

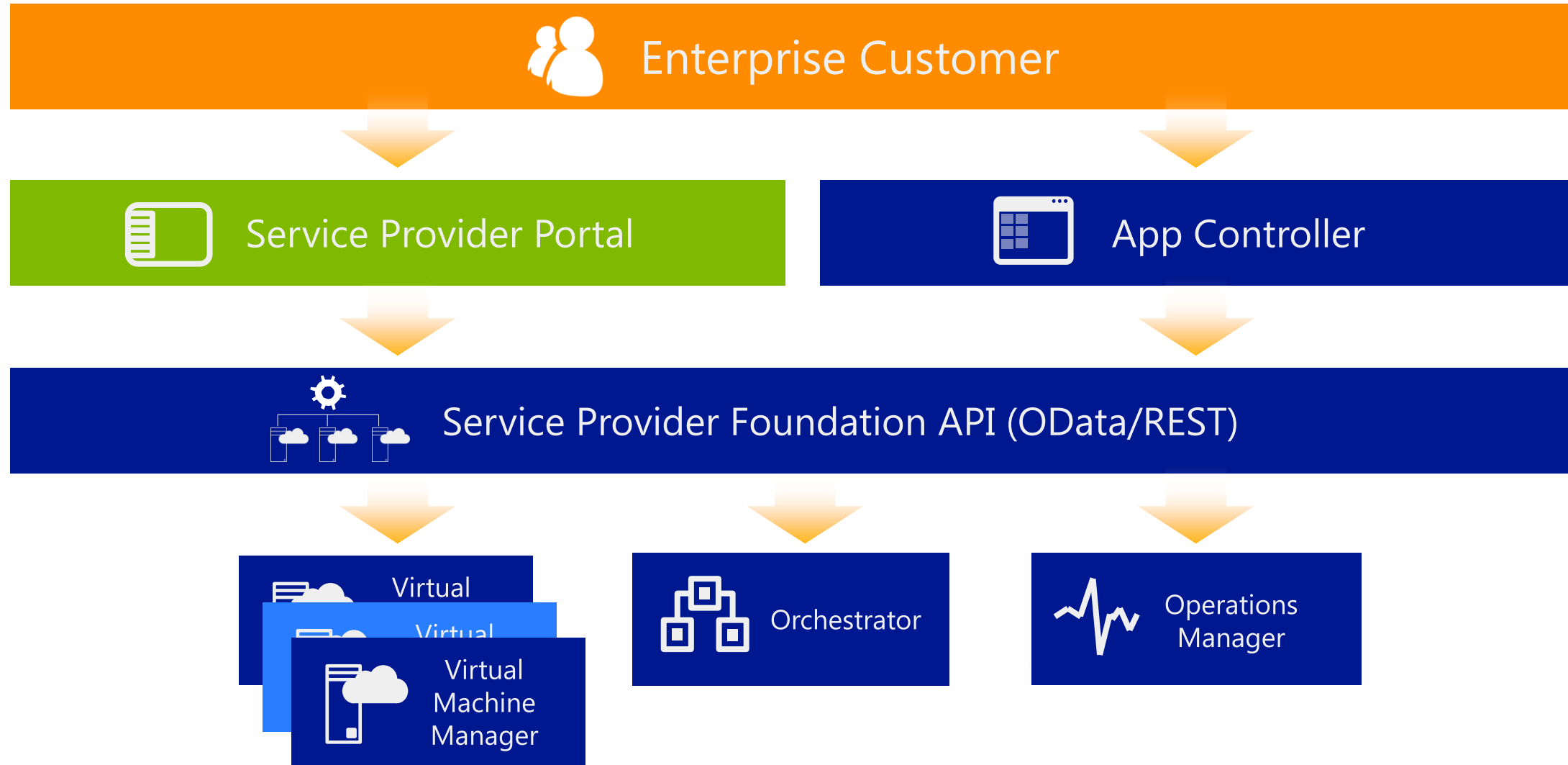
VMM 2012



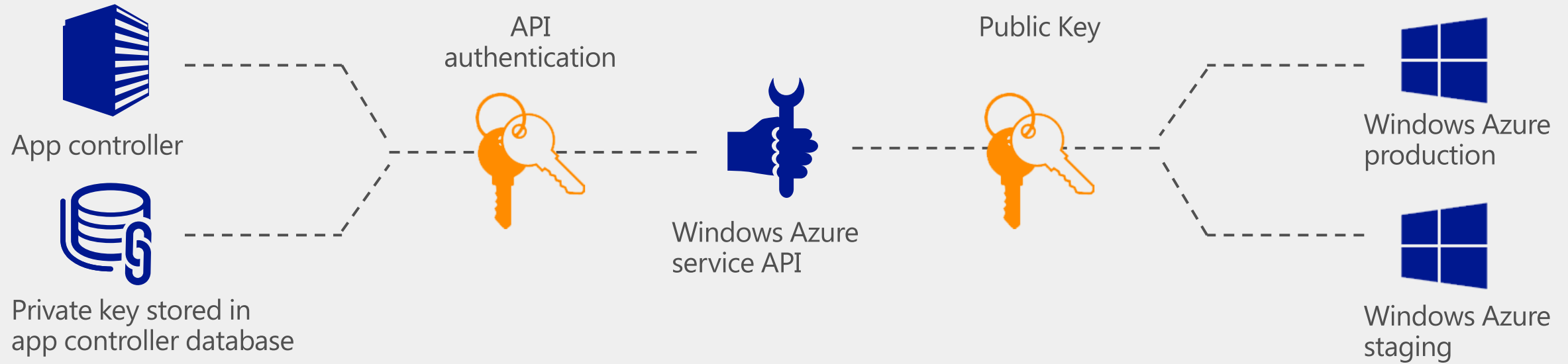
# Multi-tenant isolation






# Service provider foundation API



# Managing Windows Azure subscriptions



Subscriptions (3)		
Add	Remove	Properties
Name	Description	
 Azure Development and Testing	Applications under development and ea	
 Azure Production	Production Applications	
 Azure Staging	Staged applications in final testing	

Single view of multiple Windows Azure subscriptions

Granular delegation of access to subscriptions

Scope:

Allow members of this user role access to the following Windows Azure subscriptions.

☒ Azure Production

☐ Azure Staging

☐ Azure Development and Testing



## Resources

### TechNet Evaluation Center

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