Microsoft Azure Stack

Naran Thangpoonshap
Technology Consultant

Microsoft

Team

- Rungson Suwanvichit
- Naran Thangpoonshap
- Waris Chanei
- Wisanu Lotanalungrose

Microsoft

Azure Stack Release

Azure Stack TP1	February 2016
Azure Stack TP2	October 2016
Azure Stack TP3	March 2017
Azure Stack GA (General Availability)	September 2017
Azure Stack Post-GA	Early 2018

Azure Stack

- Cloud as new IT infrastructure

Microsoft Azure Stack Pricing Model

- Azure Stack with Azure CSP/EA
  - Azure Active Directory

- Azure Stack with disconnected model
  - ADFS

Pay-as-you-use model

Fee only for consumption

Same Azure invoice, monetary commitment, subscriptions

Prices typically lower than Azure

EA and CSP

Use existing Windows Server and SQL Server licenses

Service	Monthly Price*
VM	$6/vCPU
VM w/ Windows Server	$34/vCPU
Azure Blob Storage	$0.006/GB
Azure Tables & Queues Storage	$0.018/GB
Azure App Service (including Functions)	$42/vCPU

** Billed by the minute*

Capacity model

Why?

- Disconnected
- Predictable cost
- No telemetry

Fixed fee, annual subscription

Sold as Plan SKU: separate transaction from Azure

EA only

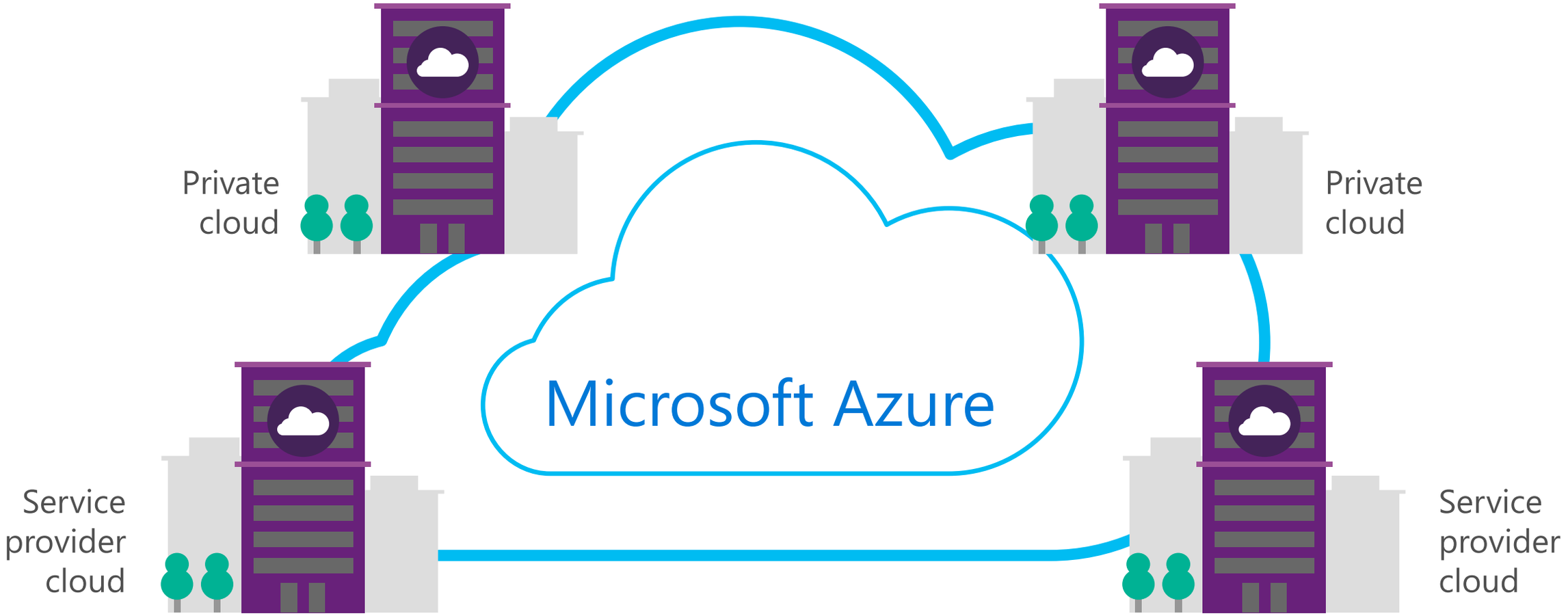
Service	Yearly Price*
App Service Package	$400/core
IaaS Package	$144/core

** Does not include Windows Server and SQL Server (which are BYOL)*

Azure Stack for

- Large company (1,000 users ++)
- Company with subsidiary
- Provider (Service provide , cloud provider)

Microsoft is committed to bringing Azure innovation to you

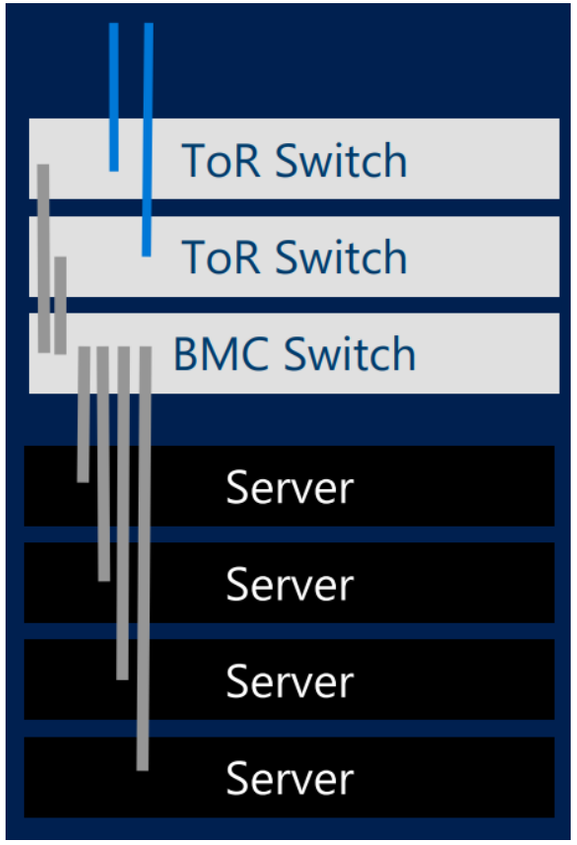


Microsoft Azure Stack Model

- Azure Stack integrated systems
  - Commercial

- Azure Stack Development kit (ASDK)
  - 1 node for testing , POC

Azure Stack integrated systems

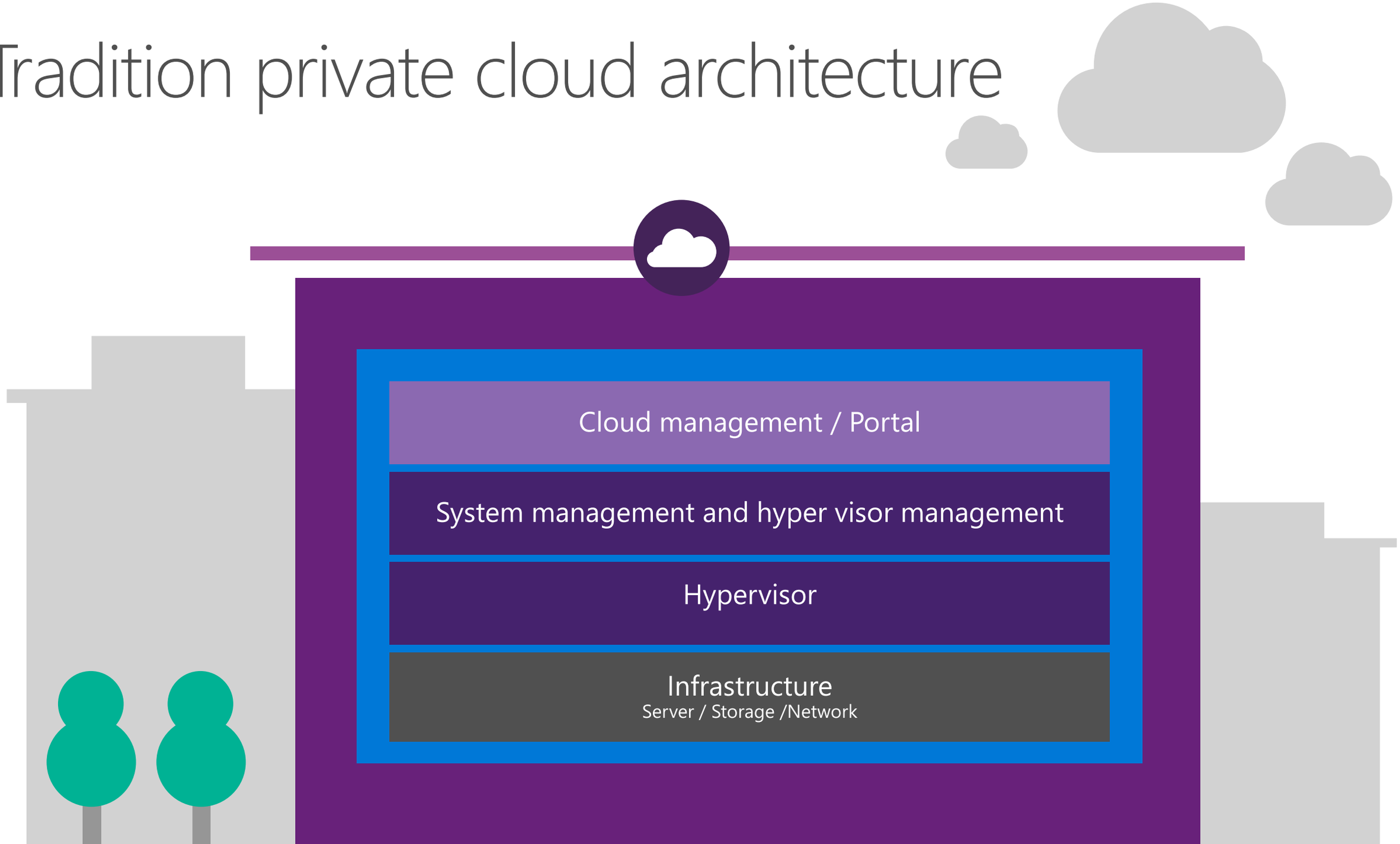


1 Scale Unit

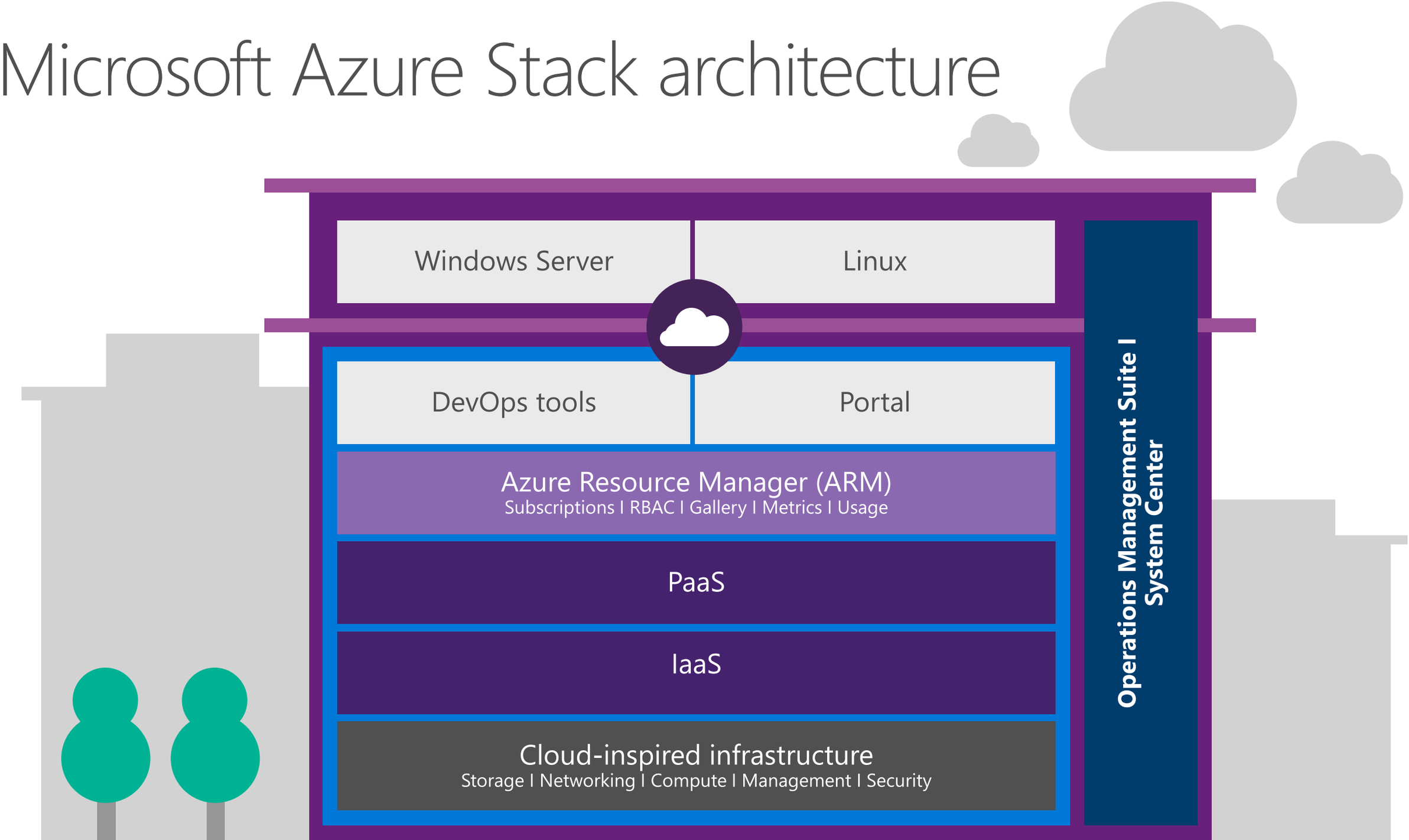
Min of 4 nodes

Max of 12 nodes

Tradition private cloud architecture



Microsoft Azure Stack architecture



Platform Services

Security & Management

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

Compute services

- 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
- SQL 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
- Containers
- Dev test labs ★

Storage

- BLOB Storage
- Azure Files
- Premium Storage ★

Networking

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

★ In Preview at GA

Datacenter Infrastructure

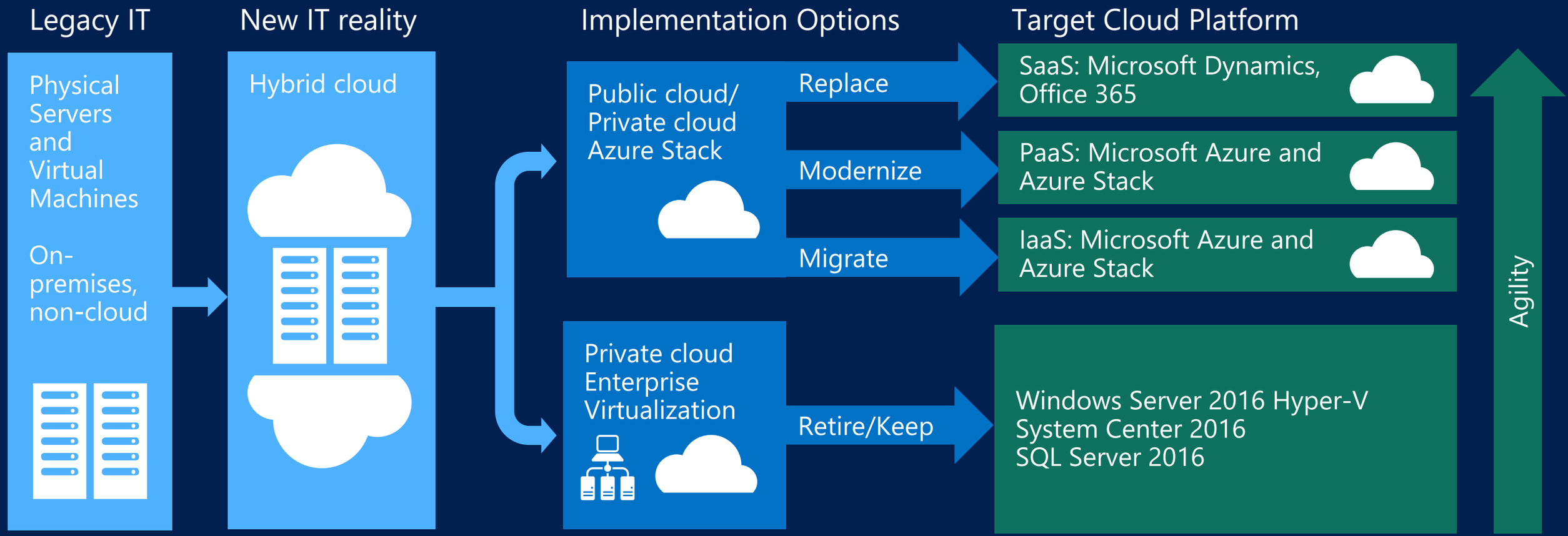
AZURE STACK CAPABILITIES

The following table summarizes Azure Stack functionality at initial availability:

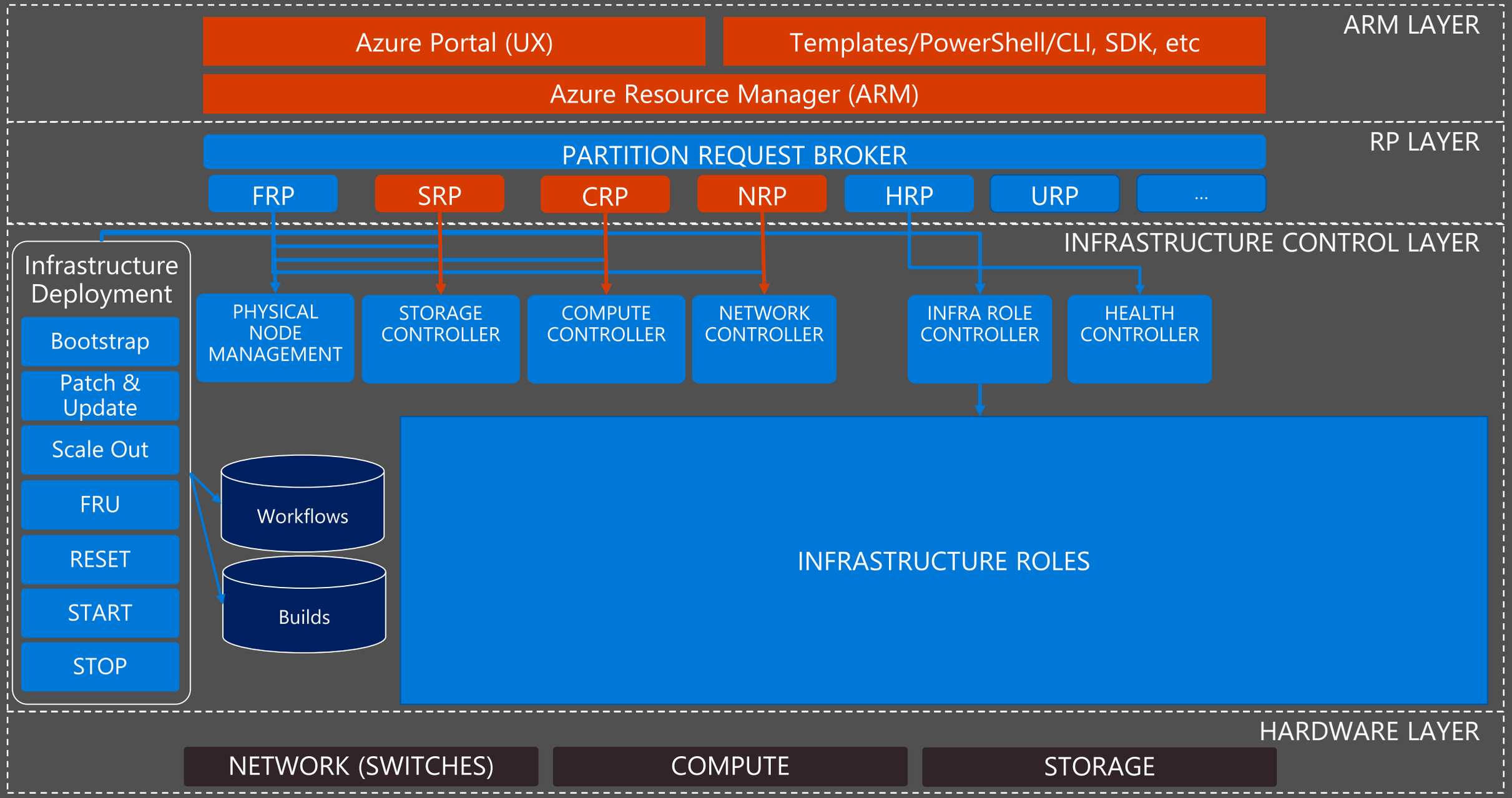
Azure capabilities on Azure Stack	<u>Azure IaaS services</u> • Azure Virtual Machines (A, D, and Dv2 sizes), Azure Virtual Machine Scale Sets • Azure Storage (blobs, tables, queues) • Azure Networking – Virtual Networks, Load Balancer, VPN Gateway • Azure Key Vault <u>Azure PaaS services</u> • Azure App Service^: Web Apps, Mobile Apps, API Apps • Azure Functions^ • Standalone Azure Service Fabric clusters on IaaS VMs*, deployable to Azure Stack or Azure • Azure Container Service (ACS) Engine support (includes Docker Swarm, Mesosphere DC/OS, and Kubernetes container management templates)** • MySQL RP^ • SQL Server RP^ <u>Azure Identity</u> • Azure Active Directory (AAD) multi-tenant support • Active Directory Federation Services (ADFS) support <u>Azure Marketplace Content - Key IaaS/PaaS workloads</u> • Microsoft SQL Server • Cloud Foundry template • Pivotal Cloud Foundry template

	• Blockchain template • Mesosphere DC/OS template (generated by the Azure Container Service engine) • Kubernetes template (generated by the Azure Container Service engine) • Docker Swarm template (generated by the Azure Container Service engine) • Bitnami (validated open source stacks such as Wordpress, LAMP) • Kemp Technologies – Load Balancer and Web Application firewall • More solutions from the Azure Marketplace*** <u>Azure Marketplace Content – Images and extensions</u> • LINUX: RedHat, SuSE, CentOS, Debian, Canonical Ubuntu, CoreOS • Windows Server • Azure Docker Extension • DSC Extension • Chef <u>DevOps Tooling</u> • Visual Studio • Jenkins (open source) • PowerShell • Azure CLI 2.0 <u>Protection and recovery of business applications and services (e.g., IaaS VMs)</u> • Integration with multiple solutions (e.g., Azure Backup and System Center Data Protection Manager) for backup and restore • Integration with Azure Site Recovery (ASR) for replication and failover – this includes continuous replication with test failover and actual failover capabilities

Developing a hybrid cloud strategy



Azure Stack Architecture Overview



Network Resource Provider

Network resources in Azure

Stack

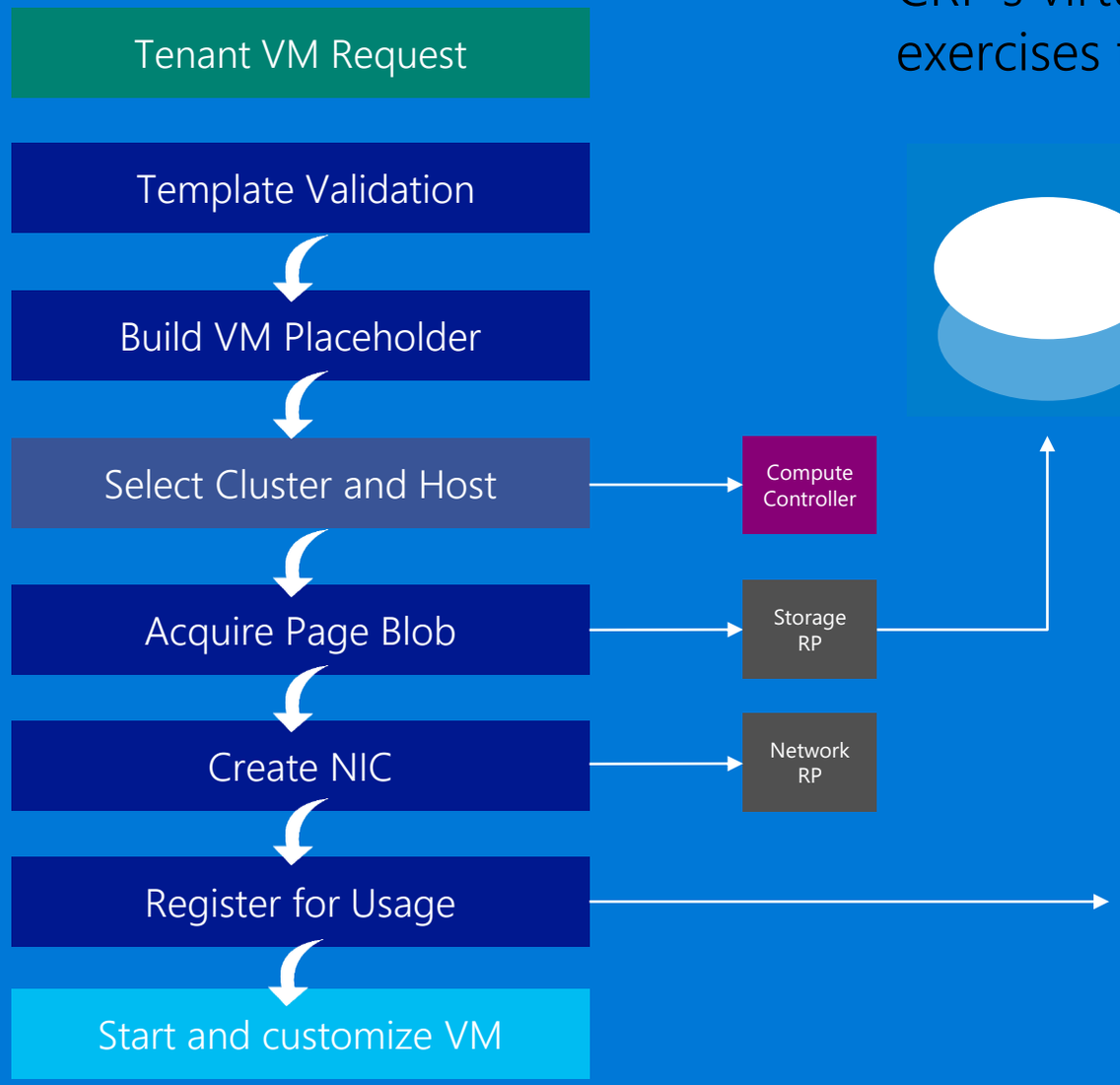
- Virtual Networks
- Subnets
- Public IP Addresses
- Load Balancers
- Network Security Groups
- Network Security Rules
- Network Interfaces
- User Defined Routes
- VPN Gateways

- ✓
- ✓ Creation via PowerShell
- ✓ Creation via Marketplace

Compute Resource Provider

Creating a virtual machine

Creation Pipeline



CRP's virtual machine pipeline is a **goal seeking engine** that exercises the full breadth of core services in Azure Stack

CRP tenants can bring their own images or leverage images added to the CRP's VM Image repository

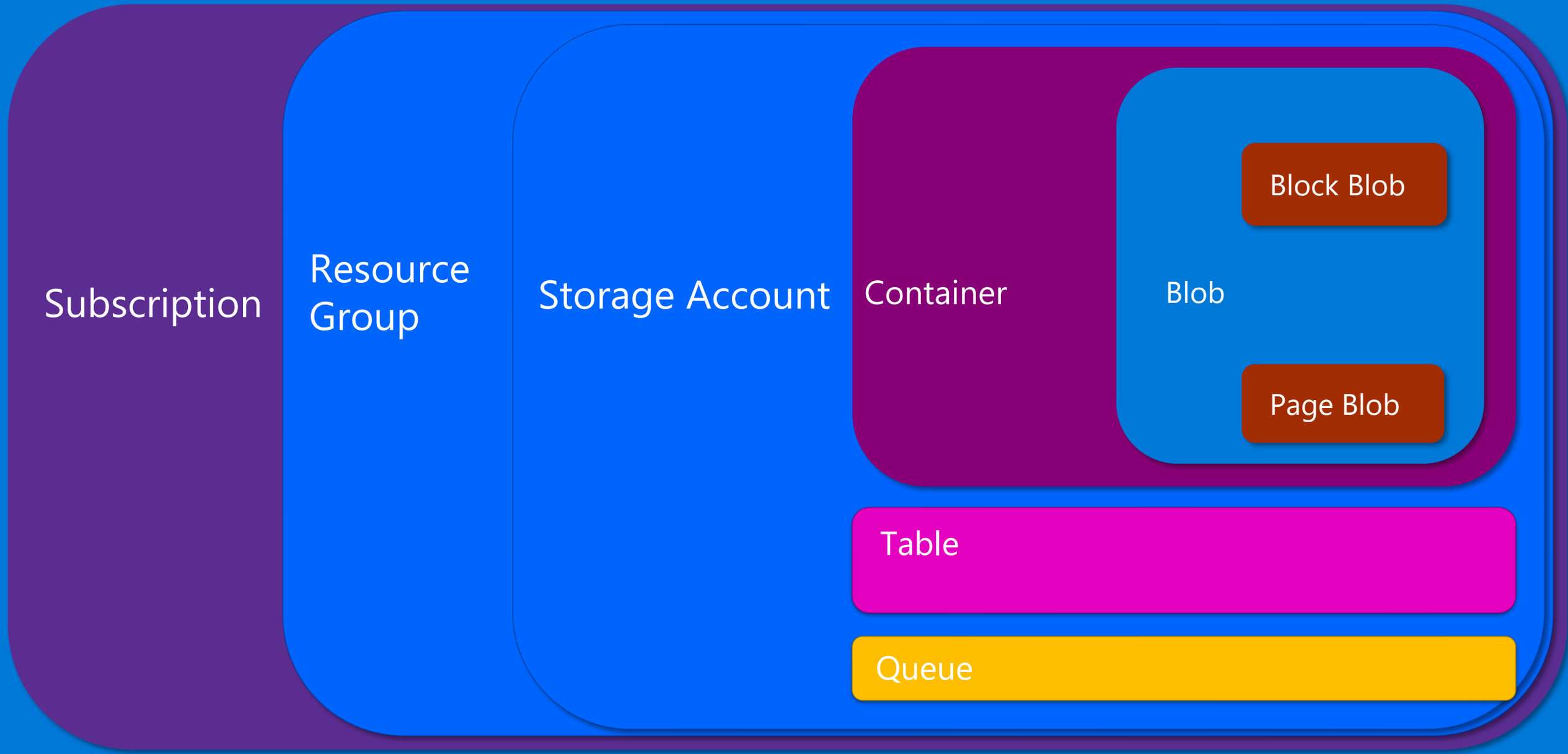
Allows an Azure Stack administrator to track consumption of the CRP's services and gain insights into tenant usage patterns

Storage Resource Provider

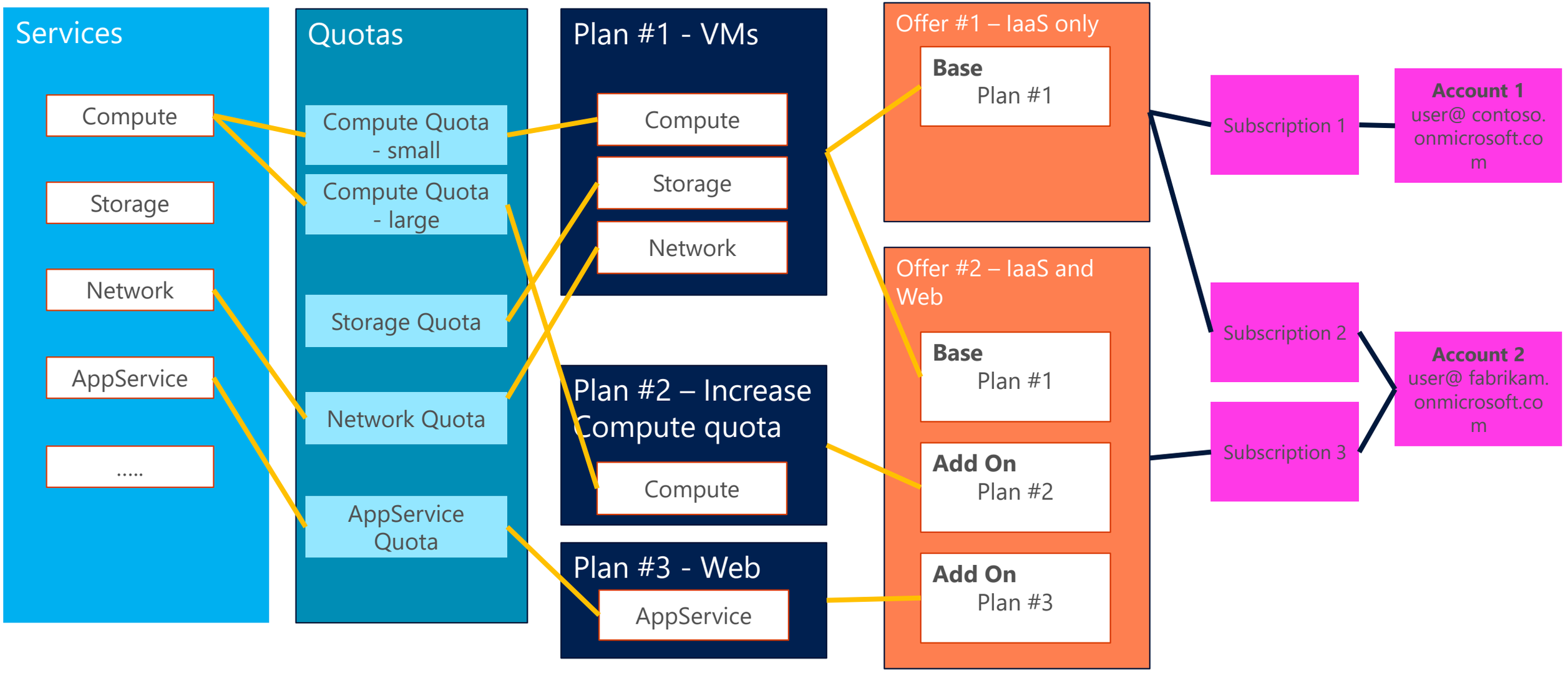
Scenarios enabled -

1. Enable IaaS – Page Blobs
   - OS, Data and Temp Disks
2. Enable PaaS – Block Blobs, Table & Queues
   - Azure Storage Explorer, Azure Management Studio, Azure PowerShell cmdlets
   - Develop, Validate and Run apps written to Azure APIs
3. Create “offers” for tenants to consume storage
   - Create Quotas
   - Create Corresponding Plans and Offers
4. Manage storage resources & services
   - Resource group is a collection of resources, and storage account resource is the URL home for all related objects
   - Set retention Period
   - Recover deleted storage account

Relating Azure storage concepts

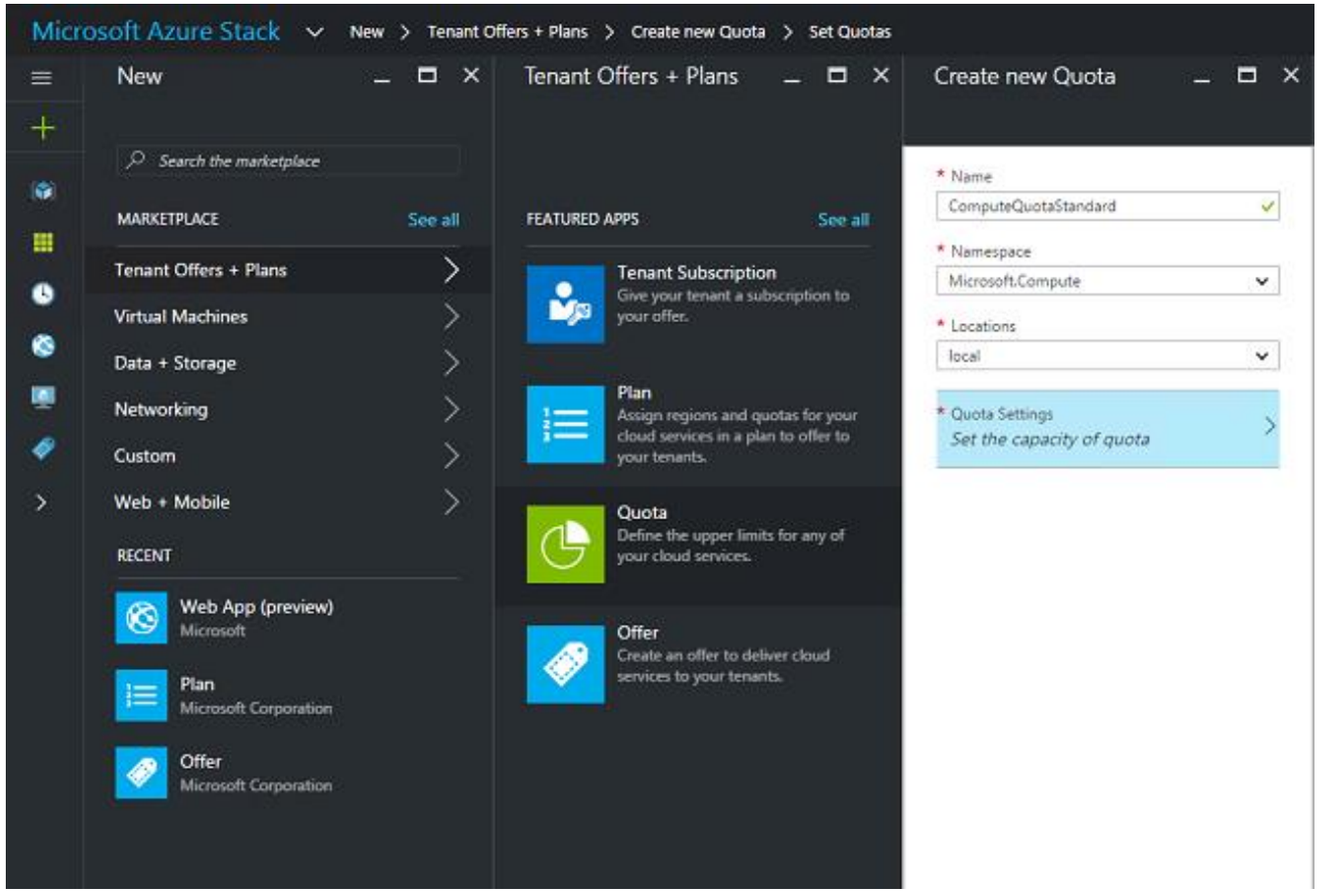


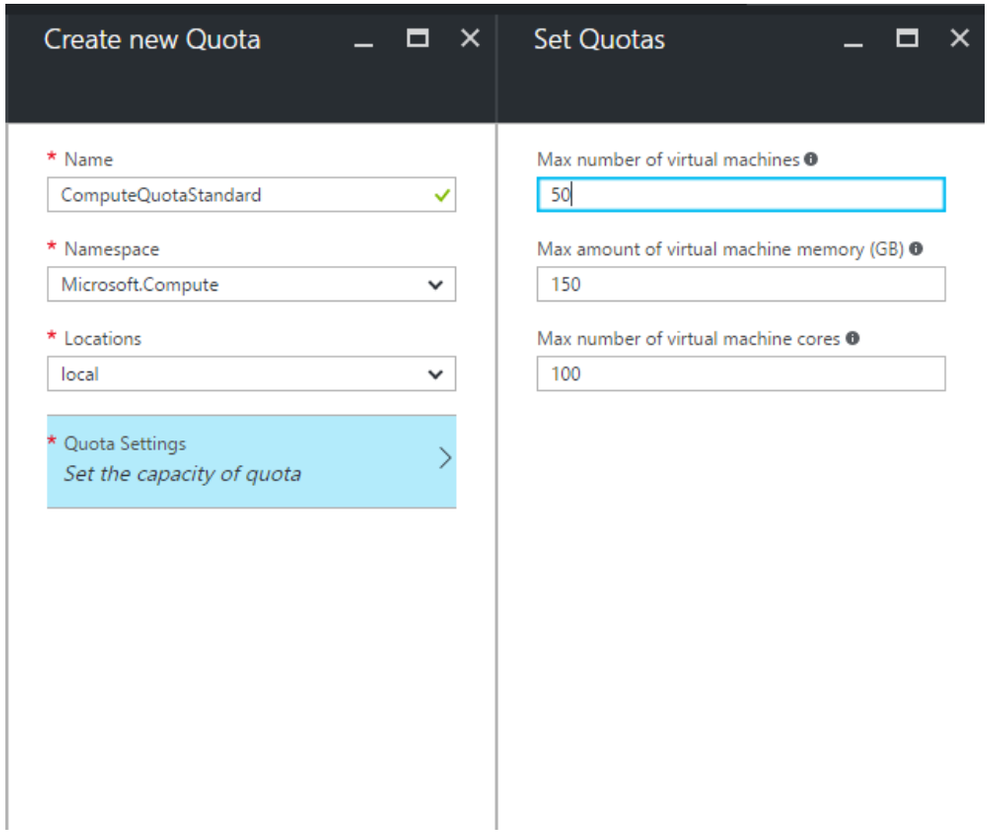
Plans, Offers, and Subscriptions in Azure Stack



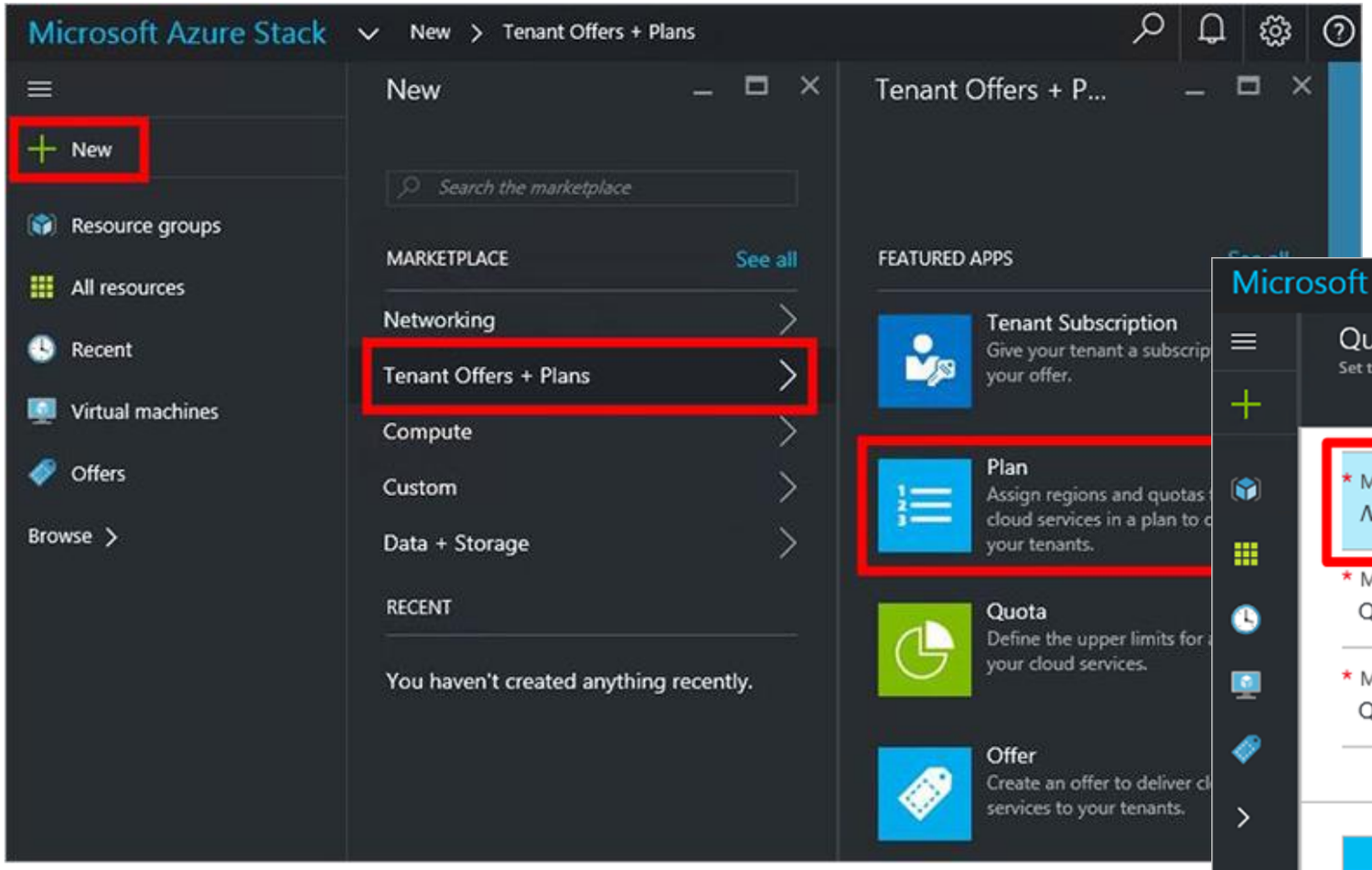
Creating All Of This…

1- Create a *Quota*

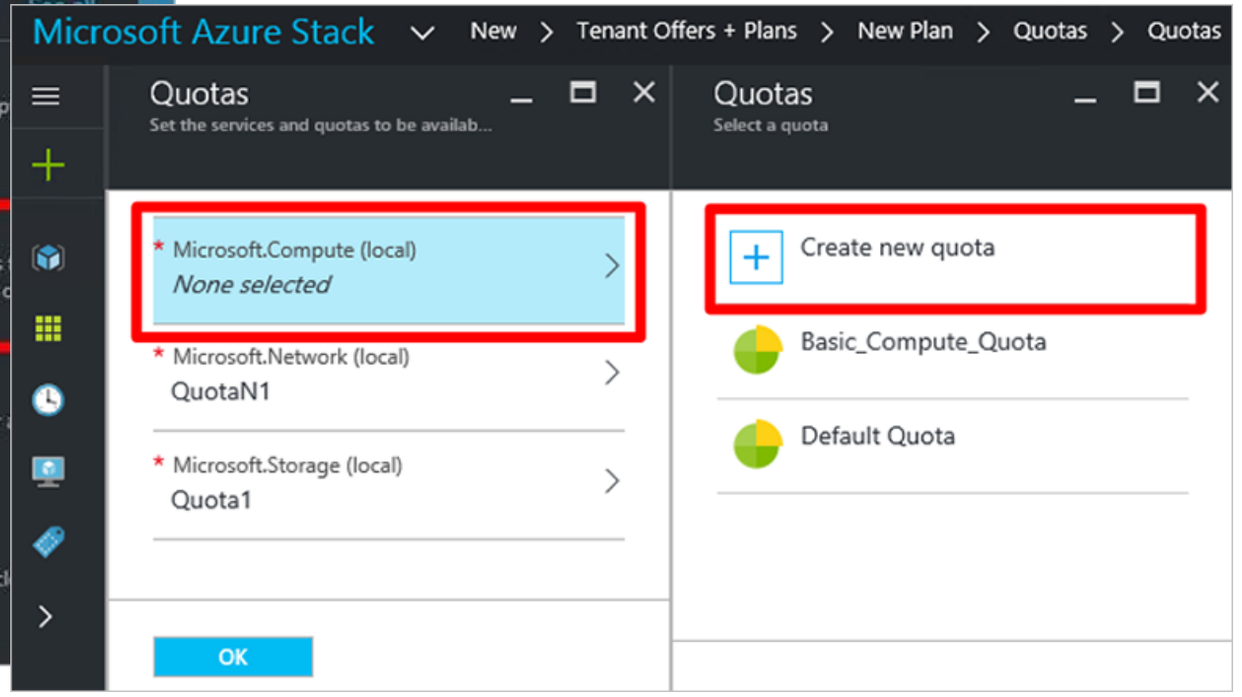




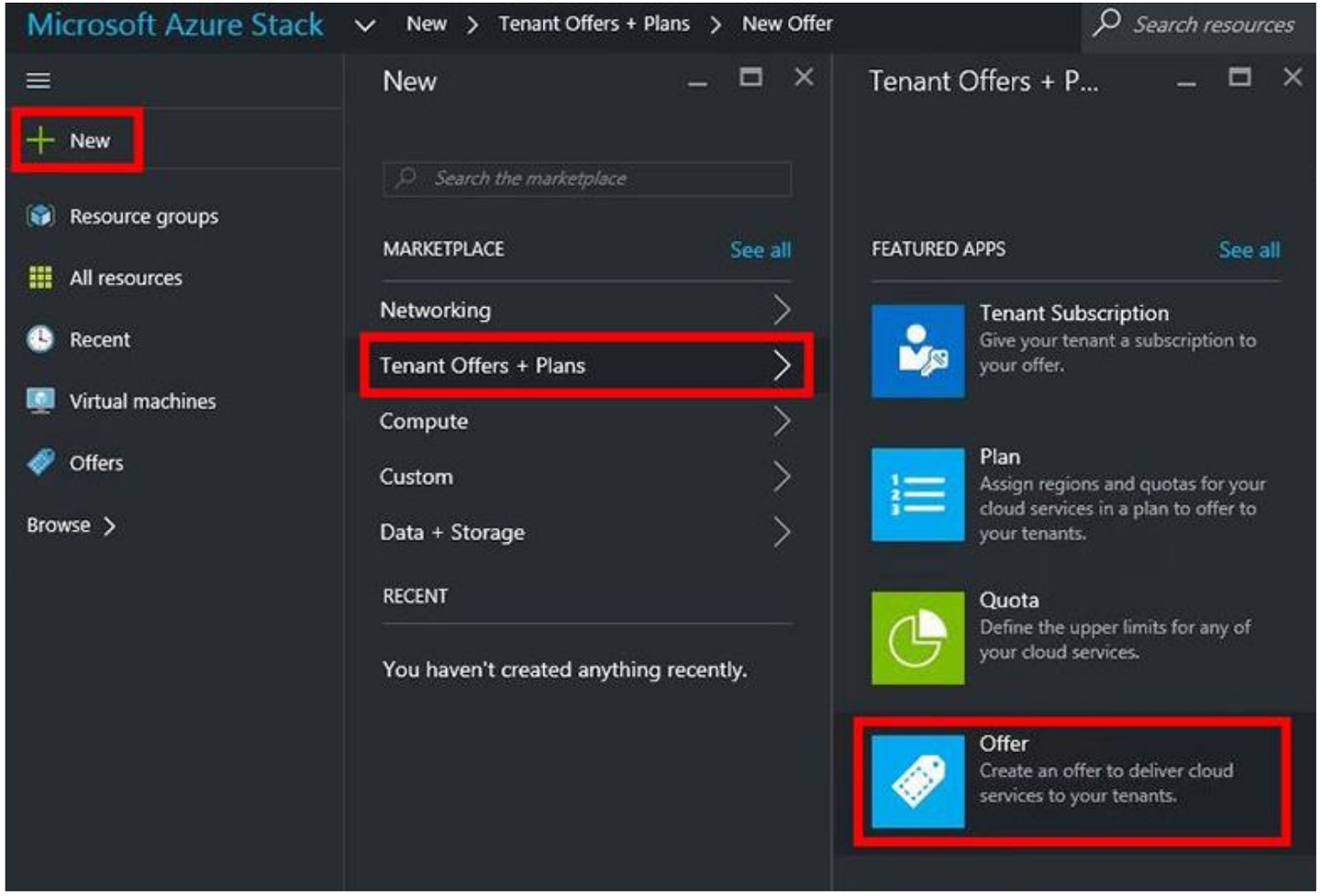
2- Create a *Plan*



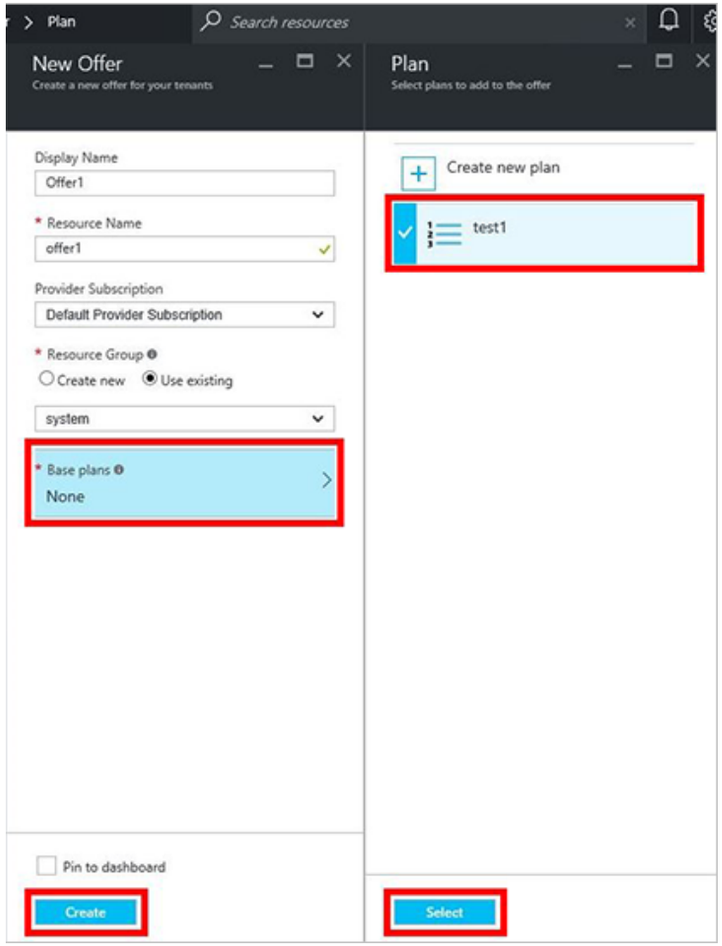
Assign some **services** to the **plan** based on **quotas…**



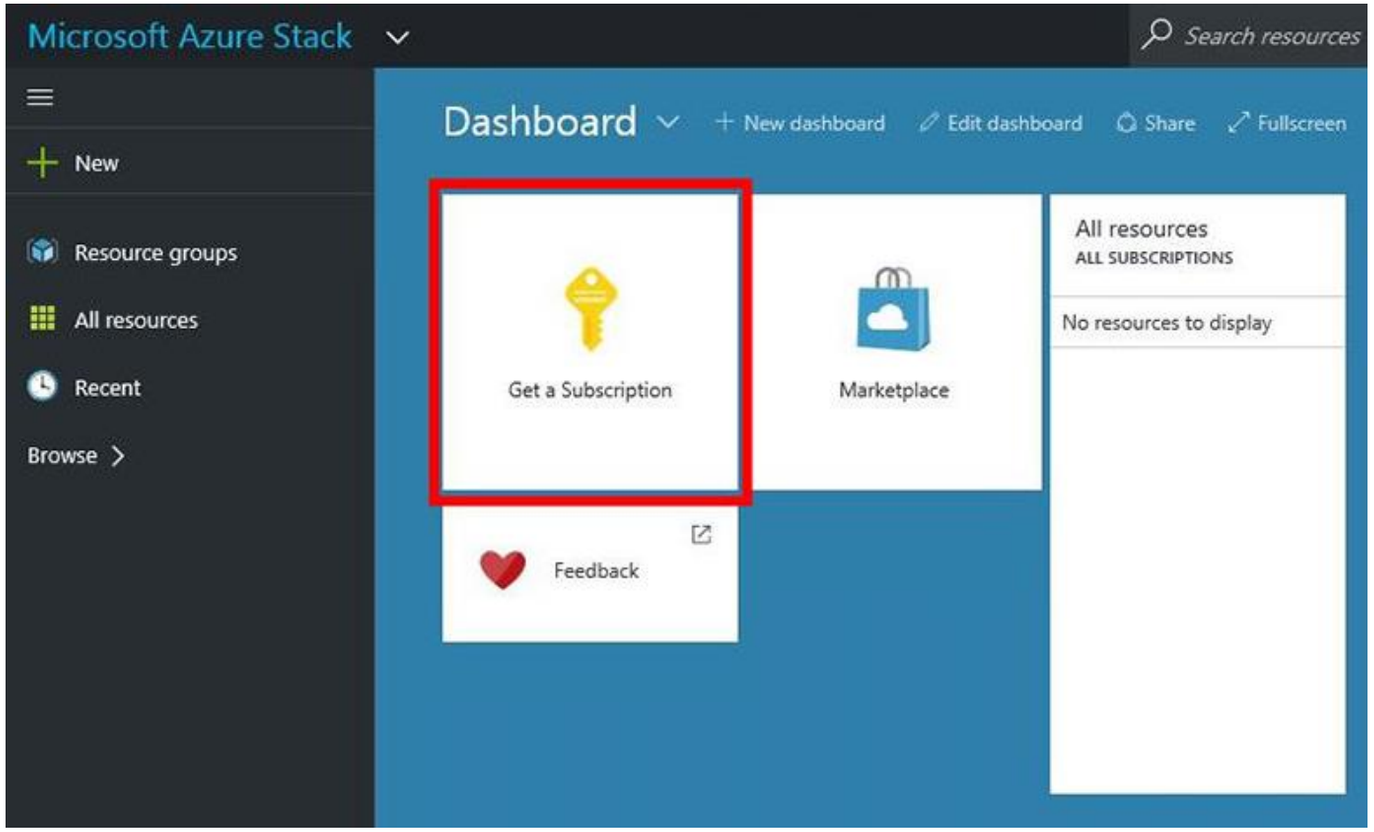
3- Create an *Offer*



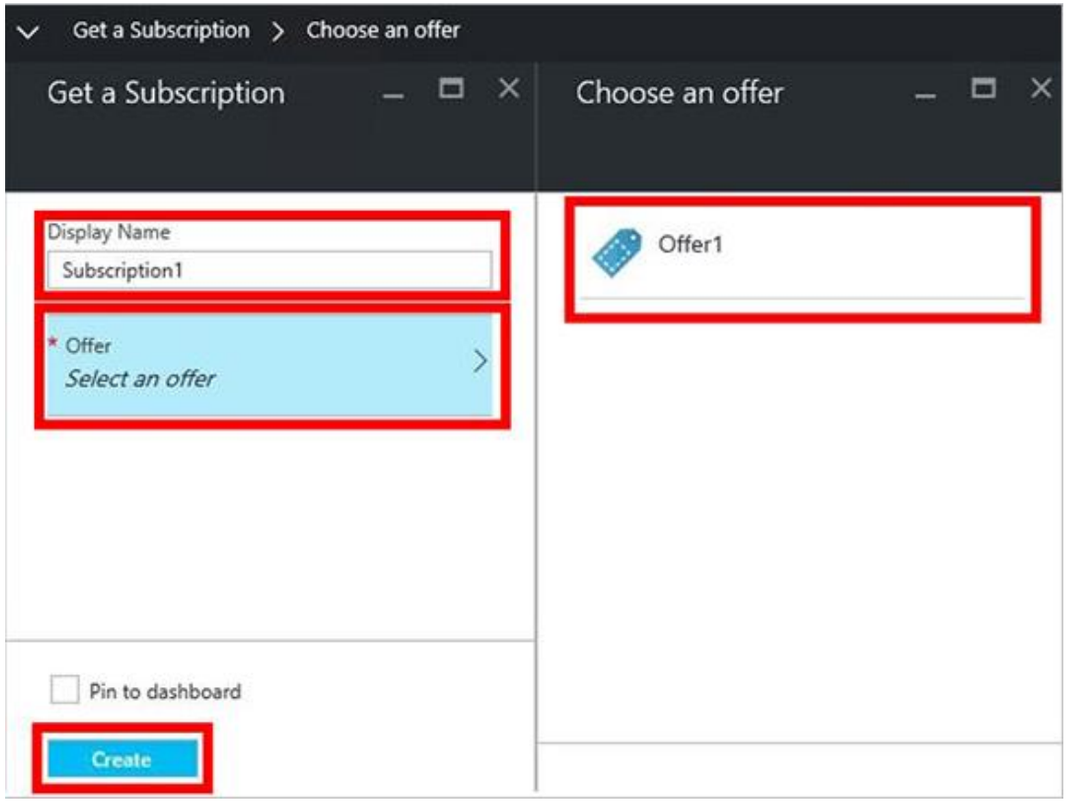
Add one or more **plans** to the **offer**



4- Tenants can add a *Subscription*



The tenant can create their own name for the **subscription** and pick their **offer**…



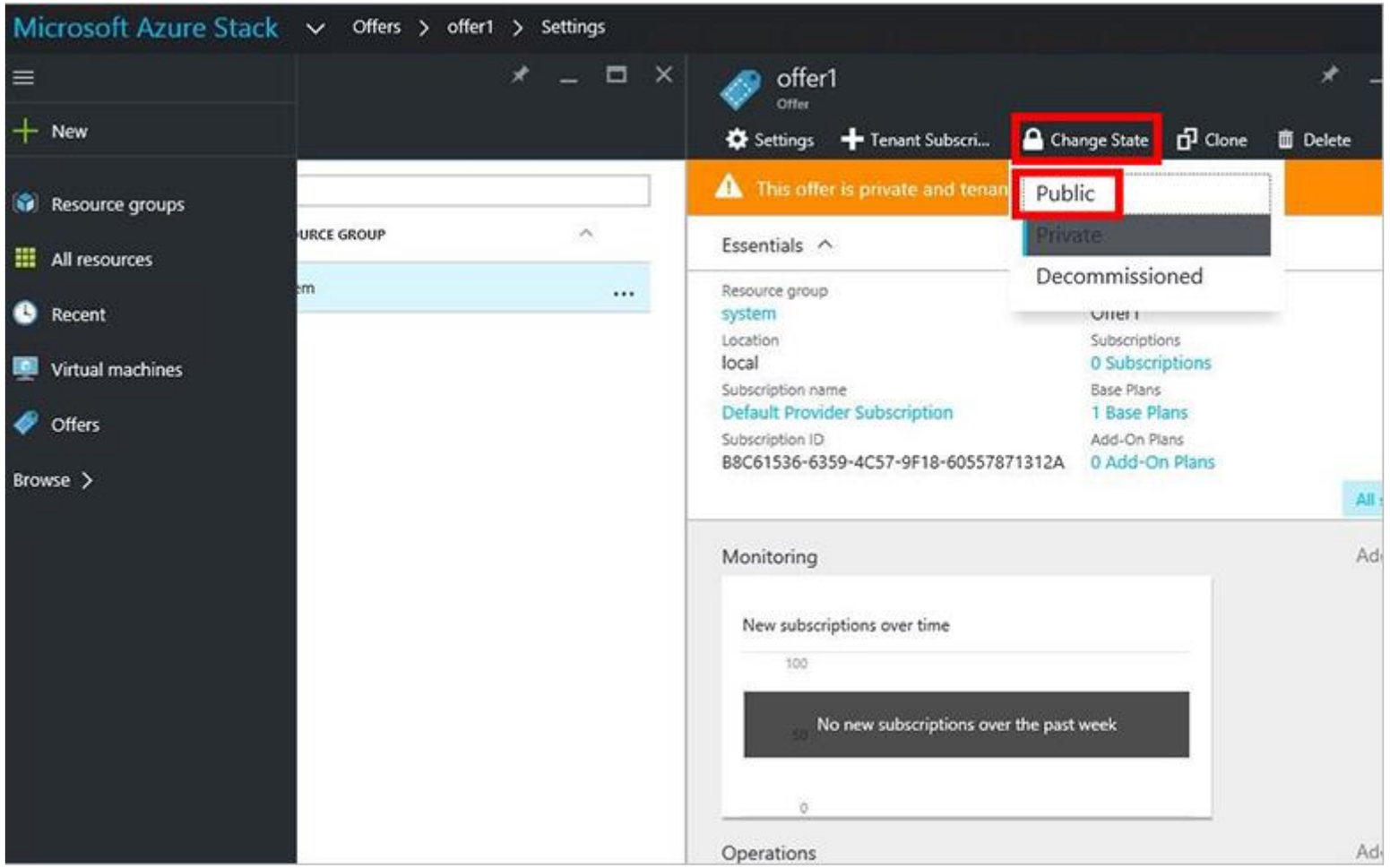
(Or do it all in PowerShell)

New-AzureRMPlan -Name IT-Del-Plan -DisplayName "Delegation-Plan" -ArmLocation "local" -ResourceGroup CASDelegatedOffers -QuotaIds "/subscriptions/<SubscriptionID>/providers/Microsoft.Subscriptions.Admin/locations/local/quotas/delegatedProviderQuota"

New-AzureRMOffer -name cas-delegation-offer -DisplayName CAS-Delegation-Offer -ARMLocation "local" -ResourceGroup "OffersandPlans" -BasePlanIds "/subscriptions/<SubscriptionID>/resourceGroups/CASDelegatedOffers/providers/Microsoft.Subscriptions.Admin/plans/Delegation-Plan“

Etc…

Public and Private Offers



Public offer: any user can sign up (create subscription)

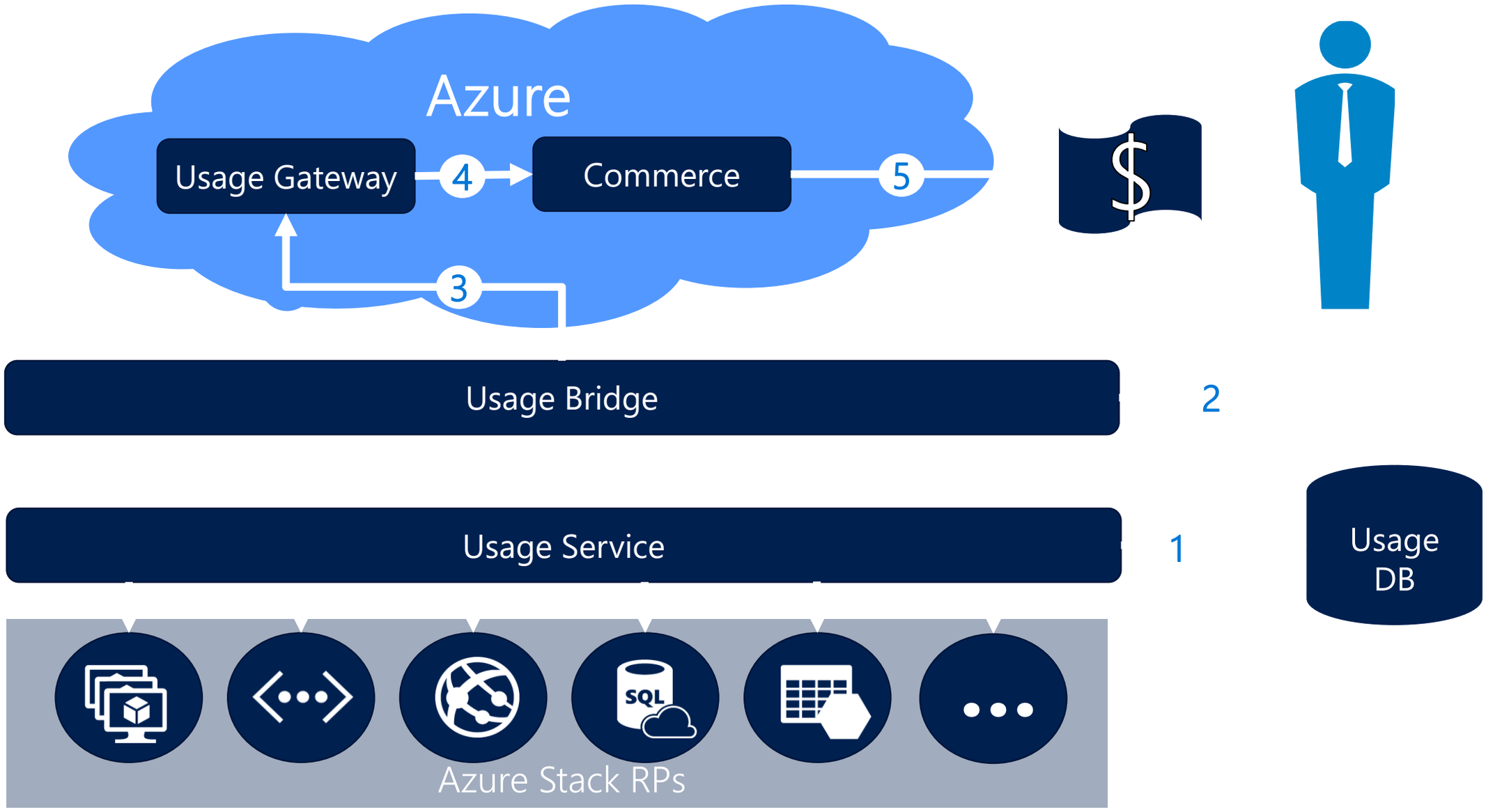
Benefit: Self-service

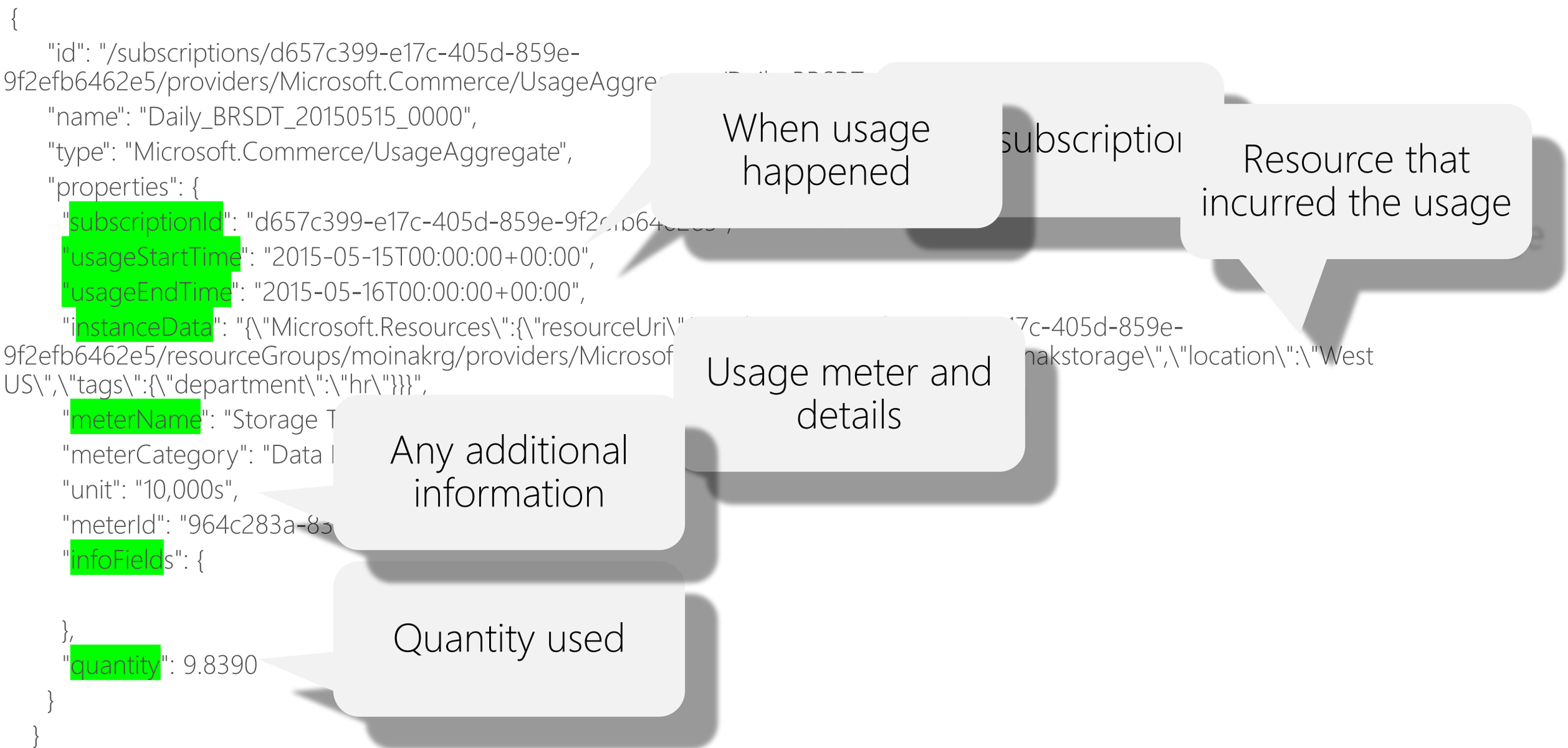
Private offer: service admin creates subscription

Benefit: control

Metering and Cost:
How does it work for Microsoft Azure Stack in your Datacenter?

Consumption reporting – data pipeline



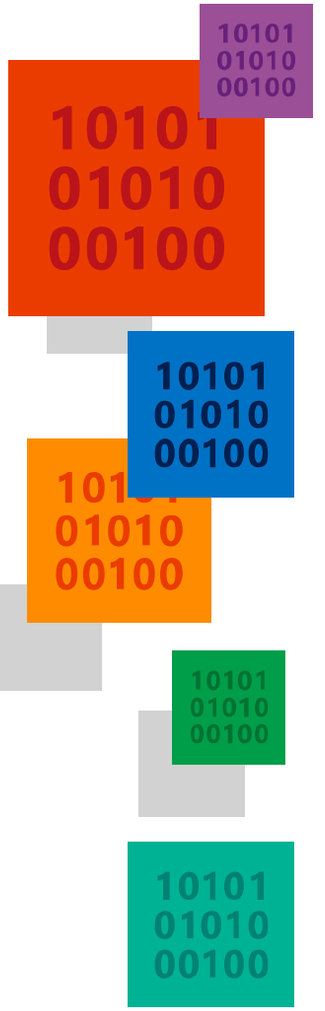

{
"id": "/subscriptions/d657c399-e17c-405d-859e-
9f2efb6462e5/providers/Microsoft.Commerce/UsageAggre
"name": "Daily_BRSDT_20150515_0000",
"type": "Microsoft.Commerce/UsageAggregate",
"properties": {
"subscriptionId": "d657c399-e17c-405d-859e-9f2
"usageStartTime": "2015-05-15T00:00:00+00:00",
"usageEndTime": "2015-05-16T00:00:00+00:00",
"instanceData": "{\"Microsoft.Resources\":{\"resourceUri\"
9f2efb6462e5/resourceGroups/moinakrg/providers/Microsof
US\",\"tags\":{\"department\":\"hr\"}}}",
"meterName": "Storage T
"meterCategory": "Data
"unit": "10,000s",
"meterId": "964c283a-83
"infoFields": {
},
"quantity": 9.8390
}
}
When usage happened
subscriptio
Resource that incurred the usage
Usage meter and details
Any additional information
Quantity used

Azure Stack meters

- Highlighted meters are used for billing
- Other meters are for customer's own analytics
- Azure meters
  - Region = Azure Stack
  - Two sets: full price and zero dollar

See docs for meter GUIDs, etc.: Usage API FAQ page

Resource provider	Local meter name
Compute	VM Size Hours - Base
	VM Size Hours - Windows
	VM Hours
Network	Public IP Addresses - Static
	Public IP Addresses - Dynamic
Storage	TableCapacity
	PageBlobCapacity
	QueueCapacity
	BlockBlobCapacity
	TableTransactions
	TableDataTransIn
	TableDataTransOut
	BlobTransactions
	BlobDataTransIn
	BlobDataTransOut
	QueueTransactions
	QueueDataTransIn
	QueueDataTransOut



Azure meters

- Usage Gateway maps local meters to Azure meters
- "Zero dollars" used for PoC, infrastructure resources

Resource GUID	Service Name	Service Type	Resource Name	Region Name	Direct Unit of Measure	Meter Status
0c1fecb6-52d8-4130-bbfa-f79e6a5b056d	Storage	Standard Disks	Storage	Azure Stack	1 GB	Active
190c935e-9ada-48ff-9ab8-56ea1cf9adaa	App Service		App	Azure Stack	1 Core Hour	Active
3e59e16d-a651-4979-a727-423969613c6b	Virtual Machines		VM Admin	Azure Stack	1 Core Hour	Active
44ca5145-137d-4740-9845-b08784206c45	Storage	Standard Disks	Storage Admin	Azure Stack	1 GB	Active
5849dc2e-ac2e-489f-a53c-b2dfb0f5bdff	Storage	Tables	Storage	Azure Stack	1 GB	Active
5bfe1d6a-bdf3-4cfe-8d36-a1c8e4734921	Storage	Queues	Storage	Azure Stack	1 GB	Active
7bc19779-56bc-474d-8c88-36fbd79ae004	Virtual Machines		VM	Azure Stack	1 Core Hour	Active
8767aeb3-6909-4db2-9927-3f51e9a9085e	Storage	Block Blob	Storage Admin	Azure Stack	1 GB	Active
8a913f38-33b4-4772-9488-e89522fc09e5	Storage	Block Blob	Storage	Azure Stack	1 GB	Active
8e9d8811-9f3d-4567-8258-0ba581c143b8	Storage	Queues	Storage Admin	Azure Stack	1 GB	Active
d30b4825-579c-4463-a83e-cbd0e04dff81	Virtual Machines		Windows VM Admin	Azure Stack	1 Core Hour	Active
daa83056-2903-4286-826b-564f3037bf61	Storage	Tables	Storage Admin	Azure Stack	1 GB	Active
dba5e57a-99ce-4843-b7a6-1d70f36fa1a1	App Service		App Admin	Azure Stack	1 Core Hour	Active
fb8c0713-ea20-40bf-901f-5560fd3f6330	Virtual Machines		Windows VM	Azure Stack	1 Core Hour	Active

Platform Services

Security & Management

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

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- IoT Hub ★
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Infrastructure Services

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- Containers
- Dev test labs ★

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- Azure Files
- Premium Storage ★

Networking

- Virtual Network
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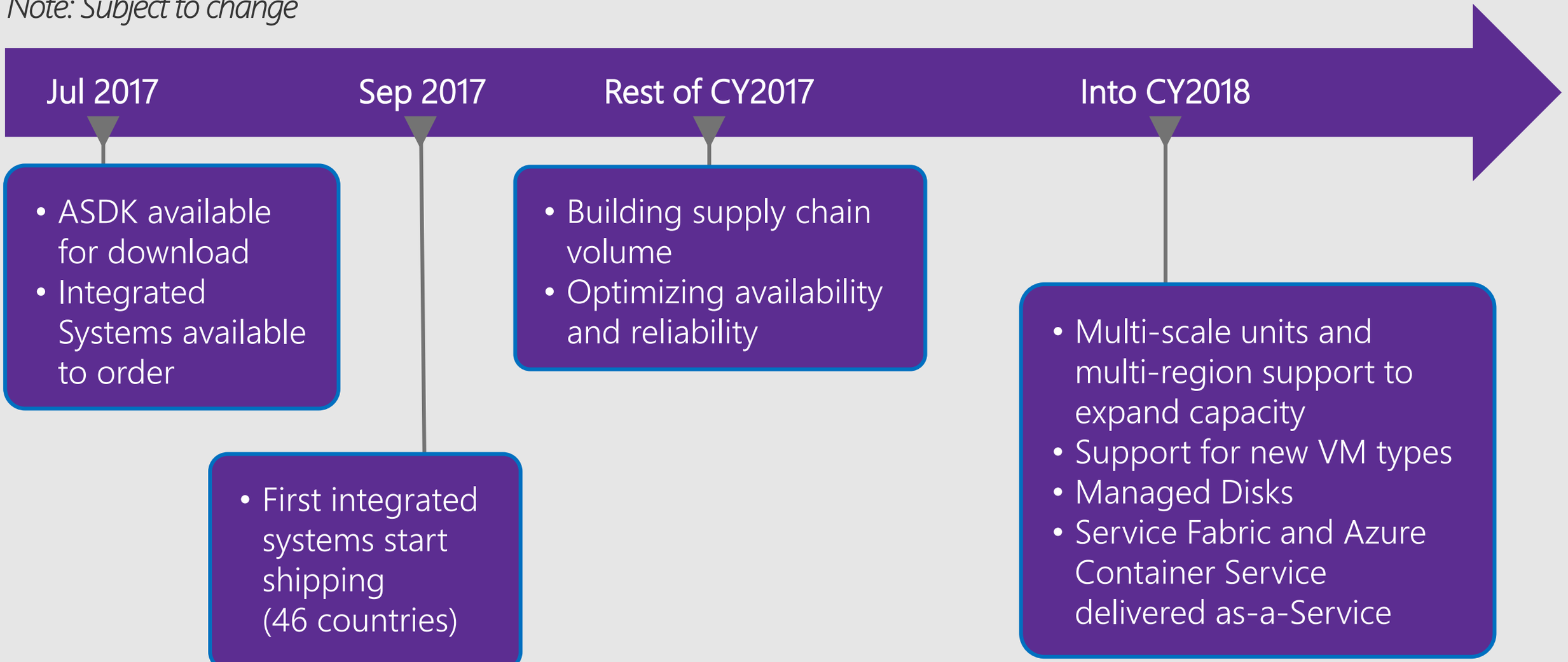
★ In Preview at GA

Datacenter Infrastructure

Azure Stack Roadmap

Note: Subject to change



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