

Azure Fundamentals

Compute

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Cloud Computing

Cloud Computing is the delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the Internet



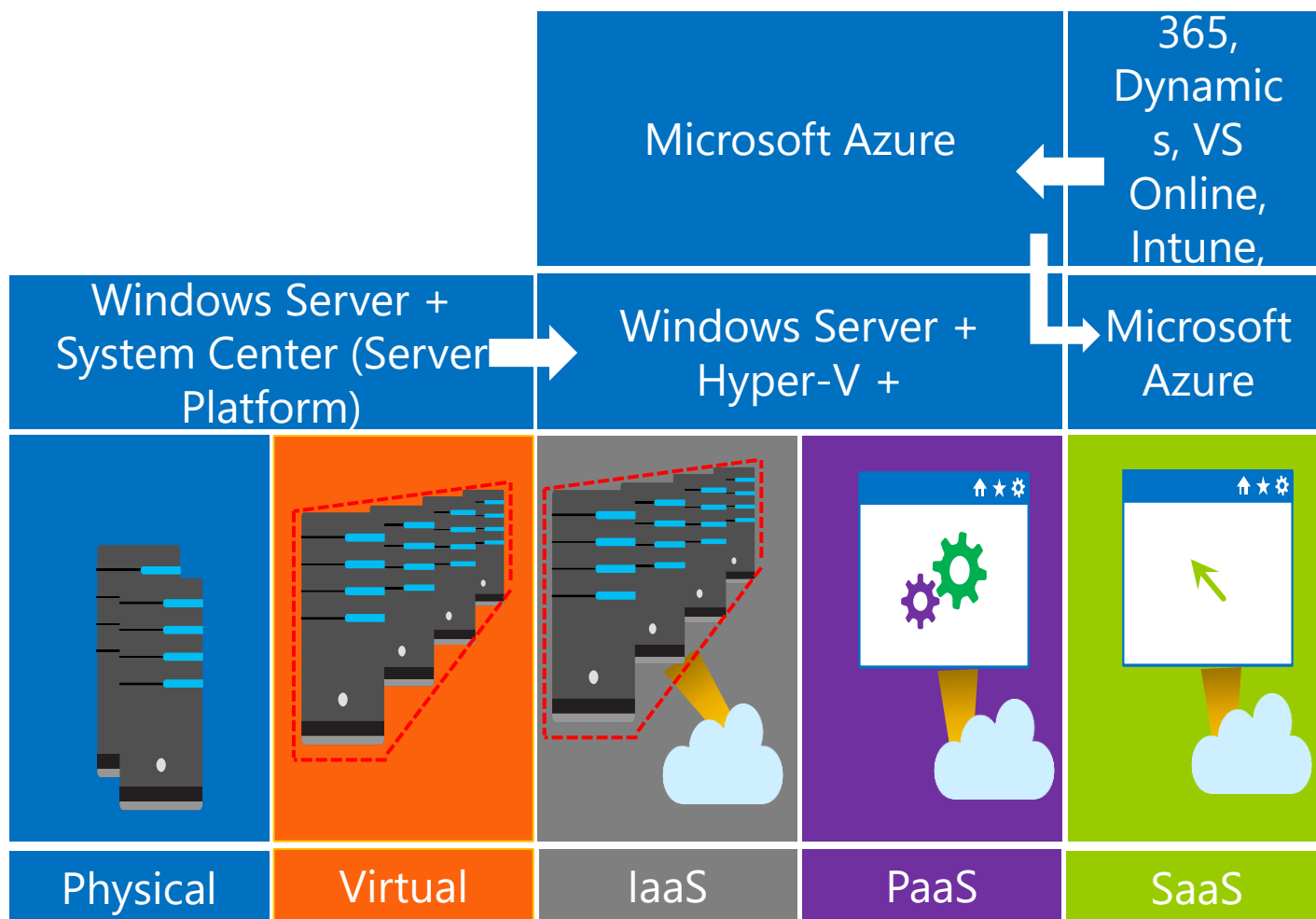
- Characteristics of cloud-computing solutions:
 - On-demand self-service
 - Broad network access
 - Rapid elasticity
 - Measured service
- Advantages of cloud computing:
 - Access to a broad range of managed services
 - Minimized or eliminated capital expenses
 - Lowered operational expenses
 - Usage-based billing model
 - Improved agility

A **public cloud** is an infrastructure, platform, or application service that a cloud service provider delivers for access and consumption by the public

A **private cloud** is a privately owned and managed cloud that offers benefits similar to those of a public cloud, but is designed and secured for use by a single organization

A **hybrid cloud** is a technology that binds two separate clouds—public and private—together for the specific purpose of obtaining resources from both

Types of cloud services



On-premises (Private Cloud)	You Manage	Cloud Provider Manages	
	Infrastructure (as a Service)	Platform (as a Service)	Software (as a Service)
Data & Access	Data & Access	Data & Access	Data & Access
Applications	Applications	Applications	Applications
Runtime	Runtime	Runtime	Runtime
Operating System	Operating System	Operating System	Operating System
Virtual Machine	Virtual Machine	Virtual Machine	Virtual Machine
Compute	Compute	Compute	Compute
Networking	Networking	Networking	Networking
Storage	Storage	Storage	Storage

<http://azureplatform.azurewebsites.net/>

Compute

 Virtual Machines	 Virtual Machine Scale Sets
 Azure Container Service	 Azure Container Registry
 Functions	 Batch
 Service Fabric	 Cloud Services

Networking

 Virtual Network	 Load Balancer
 Application Gateway	 VPN Gateway
 Azure DNS	 Traffic Manager
 ExpressRoute	 Network Watcher

Storage

 Storage: Blobs, Tables, Queues, Files, Disks	 Data Lake Store
 StorSimple	 Azure Backup
 Site Recovery	

Monitoring & Management

 Azure Portal	 Azure Resource Manager	 Azure Advisor	 Azure Monitor	 Log Analytics	 Automation	 Scheduler
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Web & Mobile

 Web Apps	 Mobile Apps
 Logic Apps	 API Apps
 Content Delivery Network	 Media Services
 Search	

Databases

 SQL Database	 SQL Data Warehouse
 SQL Server Stretch Database	 DocumentDB
 Redis Cache	 Data Factory

Intelligence & Analytics

 HDInsight	 Machine Learning
 Cognitive Services	 Azure Bot Service*
 Data Lake Analytics	 Power BI Embedded
 Azure Analysis Services	

Internet of Things & Enterprise Integration

 Azure IoT Hub	 Event Hubs
 Stream Analytics	 Notification Hubs
 BizTalk Services	 Service Bus
 Data Catalog	

Security + Identity

 Security Center	 Key Vault
 Azure Active Directory	 B2C
 Domain Services	 Multi-Factor Authentication

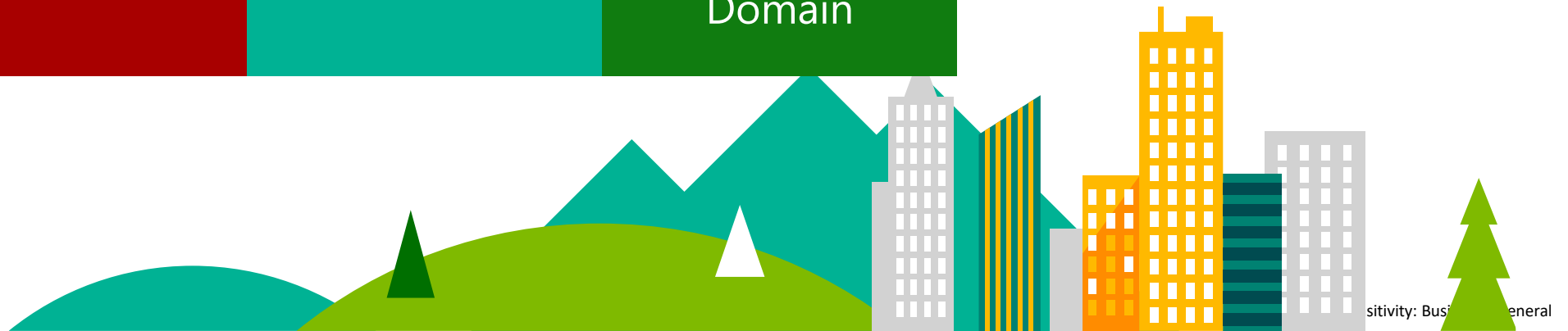
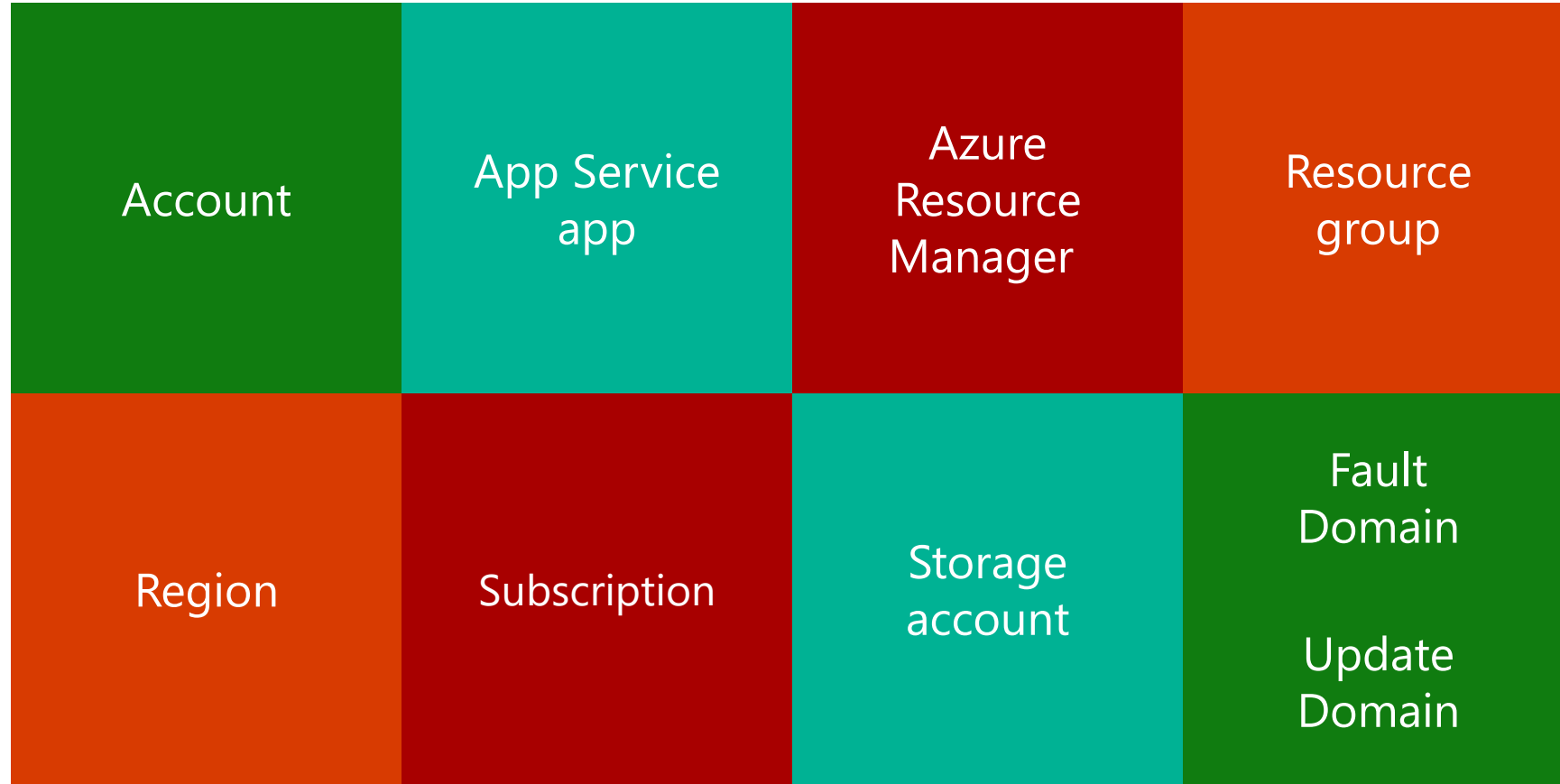
Developer Services

 Visual Studio Team Services	 Azure DevTest Labs
 VS Application Insights	 API Management
 HockeyApp	 Developer Tools
 Service Profiler*	

- Azure services allow you to:
 - Deploy and operate cloud-based applications
 - Host workloads in the cloud
 - Integrate cloud services with an on-premises infrastructure
- Datacenter placement follows the principle of pairing



Azure Vocabulary



☰

Create a resource

Home

Dashboard

All services

★ FAVORITES

All resources

Resource groups

App Services

Function App

SQL databases

Azure Cosmos DB

Virtual machines

Load balancers

Storage accounts

Virtual networks

Azure Active Directory

Monitor

Advisor

Microsoft Defender for Cloud

Cost Management + Billing

Help + support

Search resources, services, and docs (G+)

🖨

🔒

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⚙️

❓

👤

Azure services


Create a resource


Microsoft Sentinel


Subscriptions


Microsoft Defender for...


Azure Active Directory


Azure Arc


Azure Information...


Security


Azure AD Privileged...


More services

Resources

Recent

Favorite

Name	Type	Last Viewed
 Azure for Students	Subscription	6 days ago
 kevVM1	Server - Azure Arc	a week ago
 mkuu	Log Analytics workspace	3 weeks ago
 PostMessageTeams-OnAlert	Logic app	4 weeks ago
 Block-AADUser-Incident	Logic app	4 weeks ago
 Play2	Logic app	4 weeks ago
 Site	Resource group	4 weeks ago

[See all](#)

Navigate

 Subscriptions

 Resource groups

 All resources

 Dashboard

Tools

 Microsoft Learn 
Learn Azure with free online training from Microsoft

 Azure Monitor
Monitor your apps and infrastructure

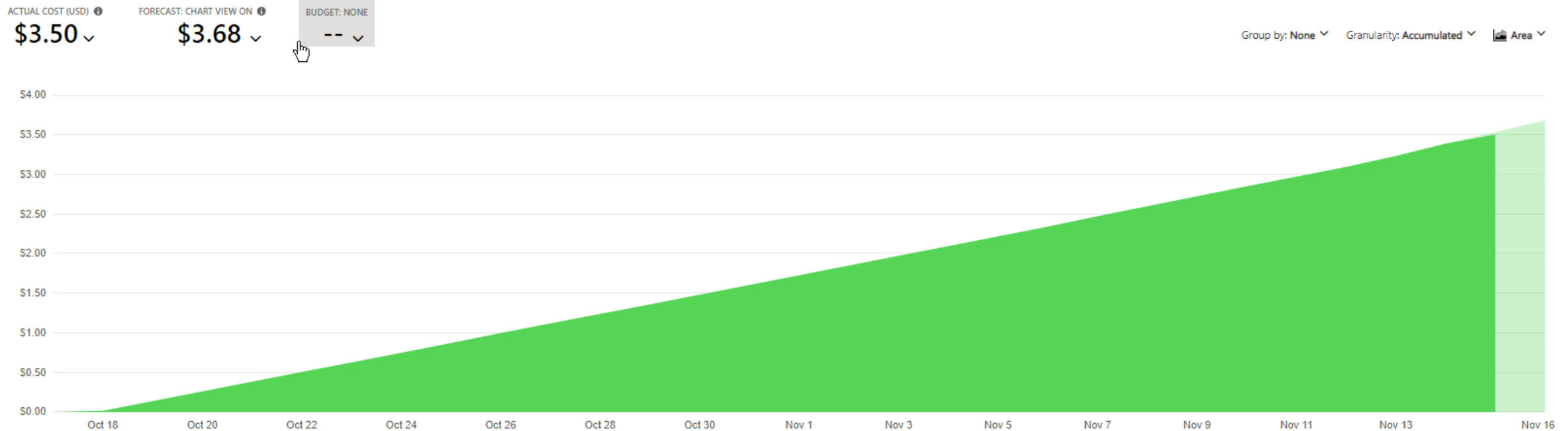
 Microsoft Defender for Cloud
Secure your apps and infrastructure

 Cost Management
Analyze and optimize your cloud spend for free

- Windows PowerShell with Azure PowerShell modules:
 - Run commands and scripts to manage Azure from Windows, Linux, OS X
- Visual Studio with Azure SDK for .NET:
 - Build solutions targeting Azure
- Azure Cloud Shell:
 - Use command line interactively directly from within the Azure portal

Azure pricing

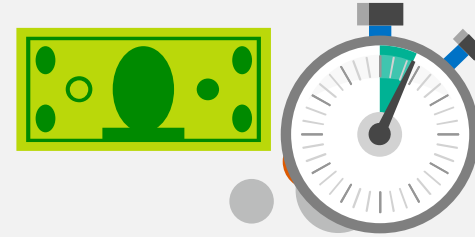
- No upfront costs
- No termination fees
- Pay only for what you use
- Per minute billing



Azure billing and support options

The most common Azure billing options include:

Pay-As-You-Go



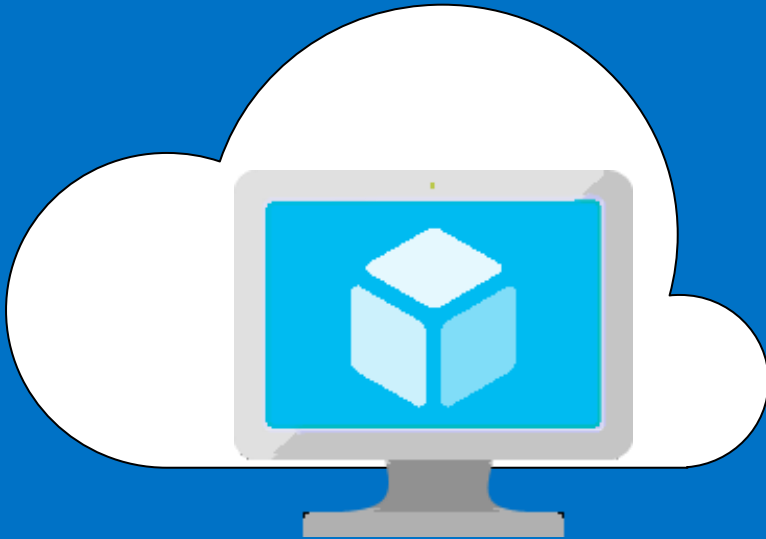
Buy from a Microsoft Reseller



Enterprise agreements



Compute Instances



What are Azure VMs?

- Azure virtual machines are one of several types of scalable computing resources that Azure offers
- Use Azure VMs to:
 - Extend your datacenter to increase agility
 - Migrate your workloads from on-premises datacenters or from other cloud providers
 - Implement production, test, or development
- Cost calculated on per-minute basis:
 - Does not apply when VM is stopped (deallocated)
 - Does not include VM disks in Azure Storage

Azure VM sizes

- General purpose:
 - balanced CPU-to-memory ratio
 - A0-A7, Av2 series, D series, Dv2 series, DS series, DSv2 series
- Compute optimized:
 - high CPU-to-memory ratio
 - Fs and F series
- Memory optimized:
 - high memory-to-CPU ratio
 - D, Dv2, DS, DSv2, M, G, and GS series
- Storage optimized:
 - high-performance disk I/O
 - Ls series
- GPU:
 - Graphic Processing Unit support
 - NV and NC series
- High performance compute:
 - fastest CPUs and optional high-throughput RDMA
 - H series and A8-A11



How Can I Create A Virtual Machine??



Windows Server

Microsoft

Virtual Machine

Windows Server Virtual Machine Images

Create ▾



Ubuntu Pro 18.04 LTS

Canonical

Virtual Machine

Ubuntu Pro is providing additional coverage for production environments running in the cloud.

Create ▾

Application Infrastructure [See more](#)



LAMP packaged by Bitnami

Bitnami

Virtual Machine

Up-to-date, secure, and ready to run virtual machine.

Create ▾



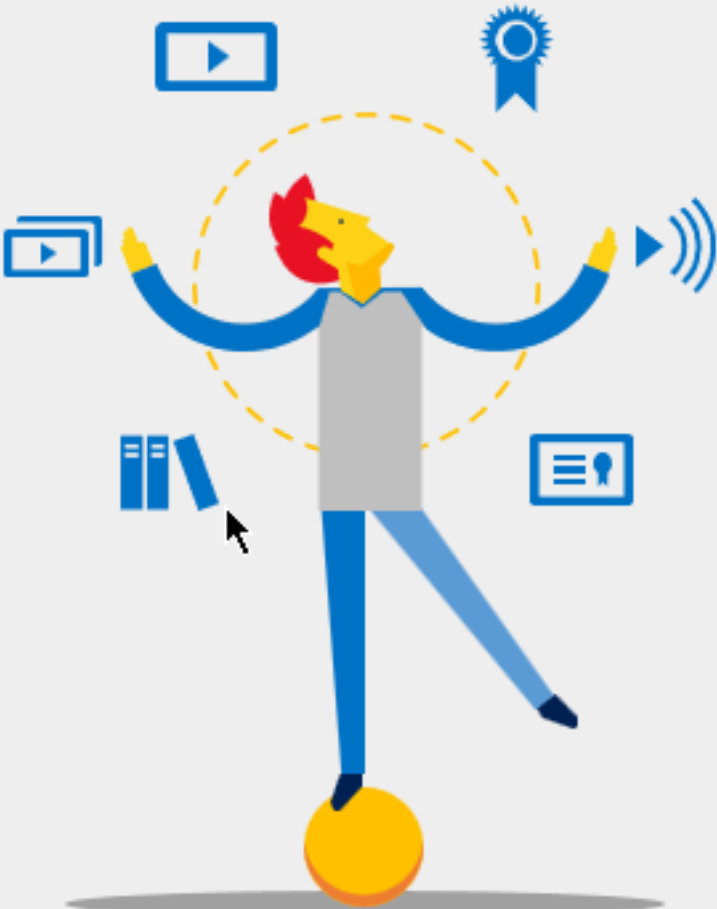
Citrix Virtual Apps Essential

Citrix

The easiest and fastest way to securely deliver Windows apps from Microsoft Azure to any device.

Create ▾

Operating Systems [See more](#)





Elasticsearch (Self-Managed)

Elastic

Azure Application

The Elastic Stack (ELK Stack) on Azure with a Few Clicks

Price varies

Create ▾



AlmaLinux

AlmaLinux OS Foundation

Virtual Machine

The Community Owned and Governed Enterprise Grade Linux OS. 1:1 RHEL and CentOS compatible.

Create ▾



xPartners Managed Azure Service

xPartners IT Ltd

Managed Services

xPartners Managed Service for your Azure subscriptions and resources.

Create ▾



.NET 6 with NGINX on Ubuntu 22.04 LTS

Ntegral Inc.

Virtual Machine

.NET 6 with NGINX on Ubuntu 22.04 LTS, .NET Runtime on Ubuntu

Create ▾

Sensitivity: Business - General

Here!



portal.azure.com

Microsoft Azure

Search resources, services, and docs (G+)

Home > Create a resource >

Marketplace

Management

- Private Marketplace
- Private Offer Management

My Marketplace

- Favorites
- Recently created
- Private products

Categories

- Compute (2722)
 - IT & Management Tools (2064)
 - Security (1935)
 - Analytics (1634)
 - Web (1452)
 - Developer Tools (1418)
 - Networking (974)

Windows Server 2022 Datacenter: Azure Edition Core

[smalldisk] Windows Server 2022 Datacenter: Azure Edition Core

Windows Server 2022 Datacenter: Azure Edition

[smalldisk] Windows Server 2022 Datacenter: Azure Edition

Windows Server 2022 Datacenter

[smalldisk] Windows Server 2022 Datacenter

Windows Server 2022 Datacenter Server Core

[smalldisk] Windows Server 2022 Datacenter Server Core

Windows Server 2019 Datacenter

[smalldisk] Windows Server 2019 Datacenter

Windows Server 2019 Datacenter with Containers

[smalldisk] Windows Server 2019 Datacenter with Containers

Windows Server 2019 Datacenter Server Core

Windows Server 2019 Datacenter Server Core with Containers

[smalldisk] Windows Server 2019 Datacenter Server Core with Containers

[smalldisk] Windows Server 2019 Datacenter Server Core

Pricing : All

Operating System : All

Publisher Type : All

Free trial

04 LTS

Canonical

Virtual Machine

Linux For The Cloud

Windows Server 2019 Datacenter with Containers

Ubuntu Server 20.04 LTS

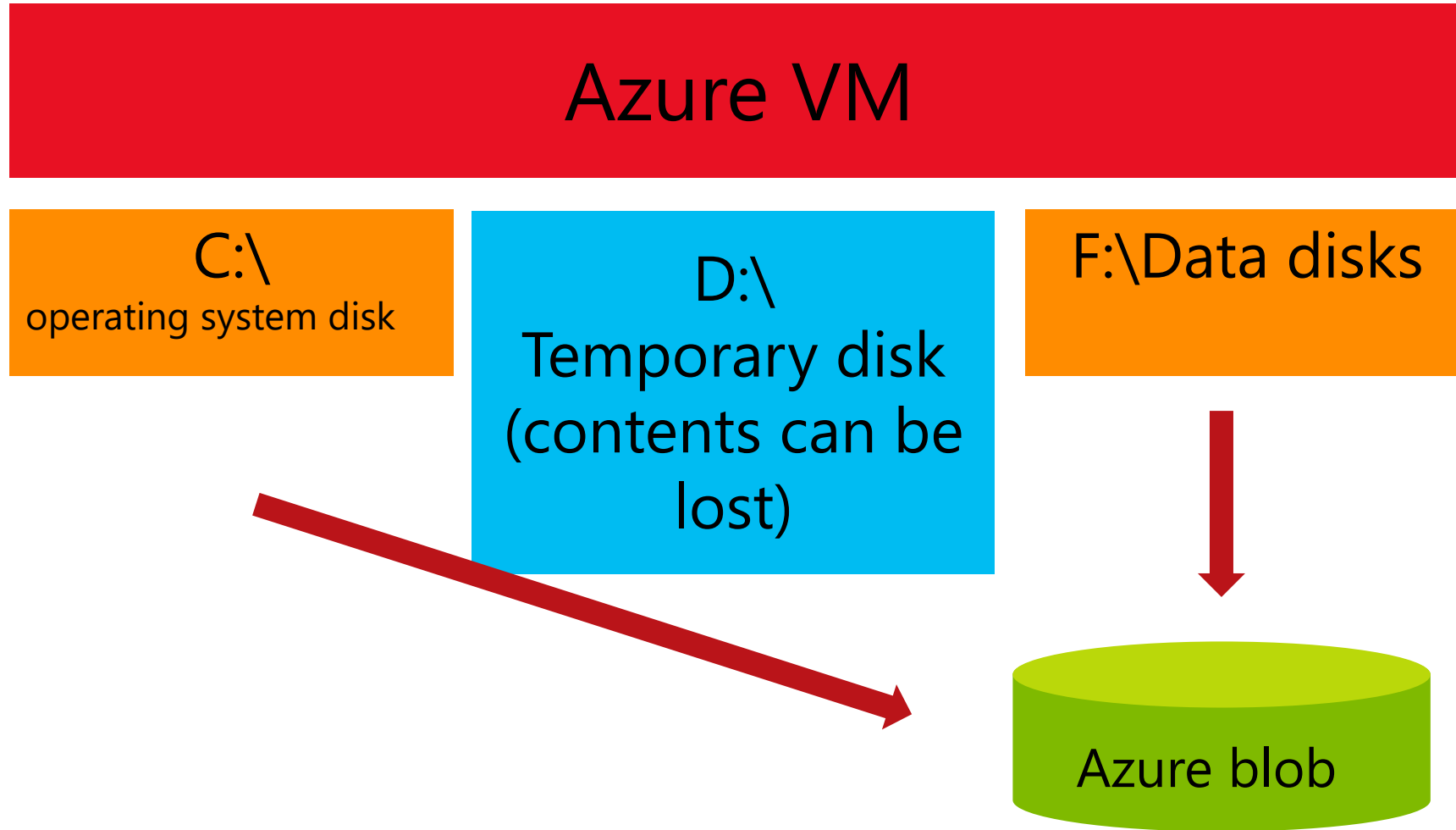
Red Hat Enterprise Linux

Ubuntu 16.04 LTS Hardened

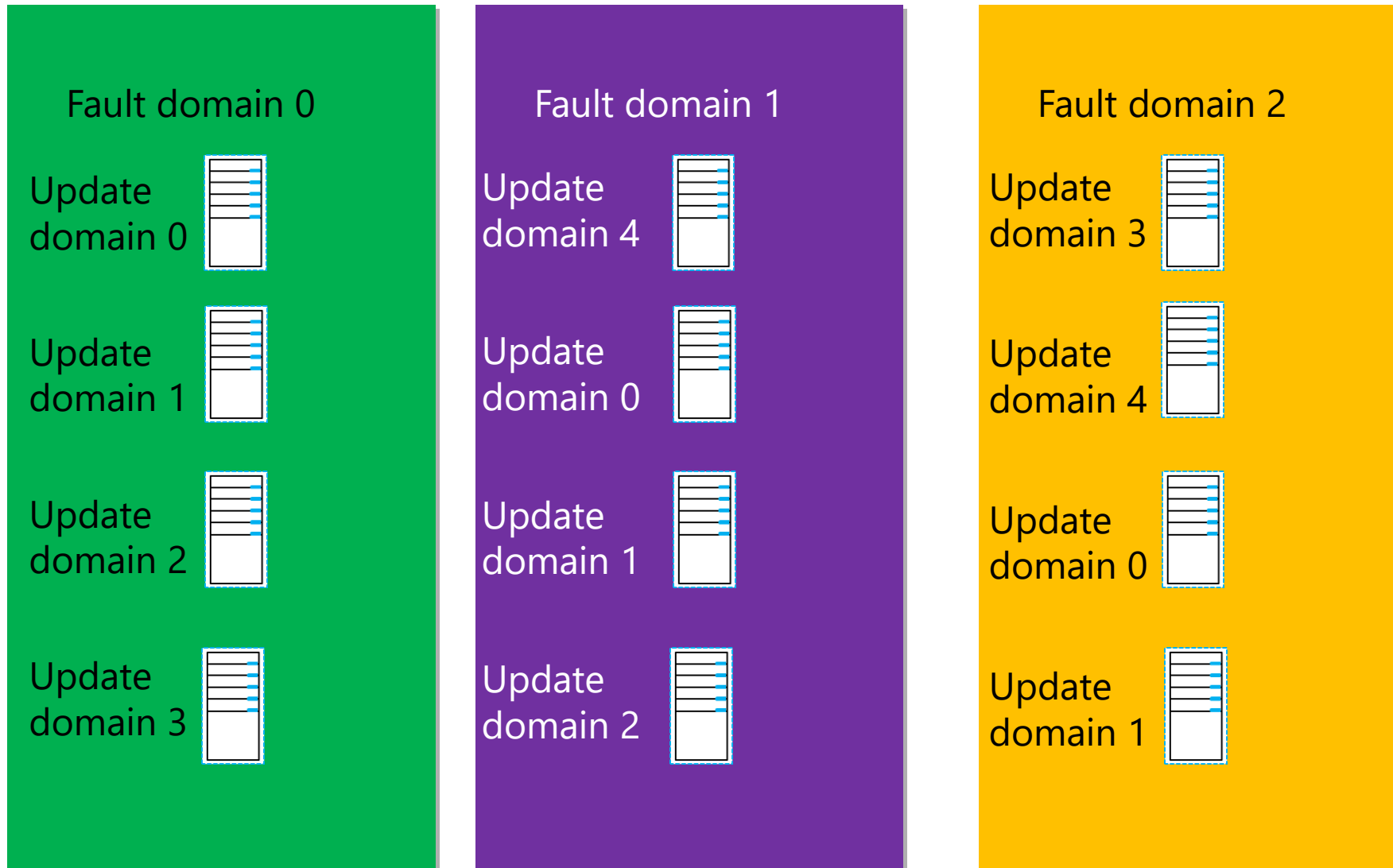
Ubuntu 20.04 LTS Cloud Ready

Sensitivity: Business - General

Overview of virtual hard disks



Configuring VM availability



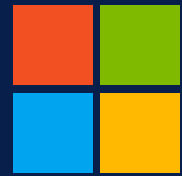
VM scaling

- Vertical scaling:
 - Change individual VM size
- Horizontal scaling:
 - Change number of VMs in the same availability set
 - On demand or scheduled
 - Azure Resource Manager model:
 - VM scale sets: automatically provisioned VMs
 - Classic model:
 - Preprovisioned VMs

Connecting to a VM

- Windows VMs:
 - RDP (Remote Desktop Protocol) :
 - User based authentication
 - Generate **.rdp** file from the portal or via Windows PowerShell
 - Incoming connections:
 - Allowed by default (when using the Azure Portal)
 - Windows Firewall rule
 - Network Security Group rule
- Linux VMs:
 - SSH (Secure SHell) :
 - User based or certificate based authentication
 - Use an SSH client
 - Incoming connections:
 - Allowed by default (when using the Azure Portal)
 - Network security group rule

THANK YOU!!



Microsoft