

# Module 1

Introduction to Microsoft Azure

# Module Overview

- Cloud technology overview
- Overview of Azure
- Managing Azure with the Azure portal
- Overview of Azure deployment models
- Managing and monitoring Azure resources

# Lesson 1: Cloud technology overview

- Introduction to cloud computing
- Types of cloud services

# Introduction to cloud computing

Characteristics of cloud computing solutions:

- On-demand self-service
- Broad network access
- Resource pooling
- Rapid elasticity
- Measured service



# Introduction to cloud computing

## Public, private, and hybrid clouds

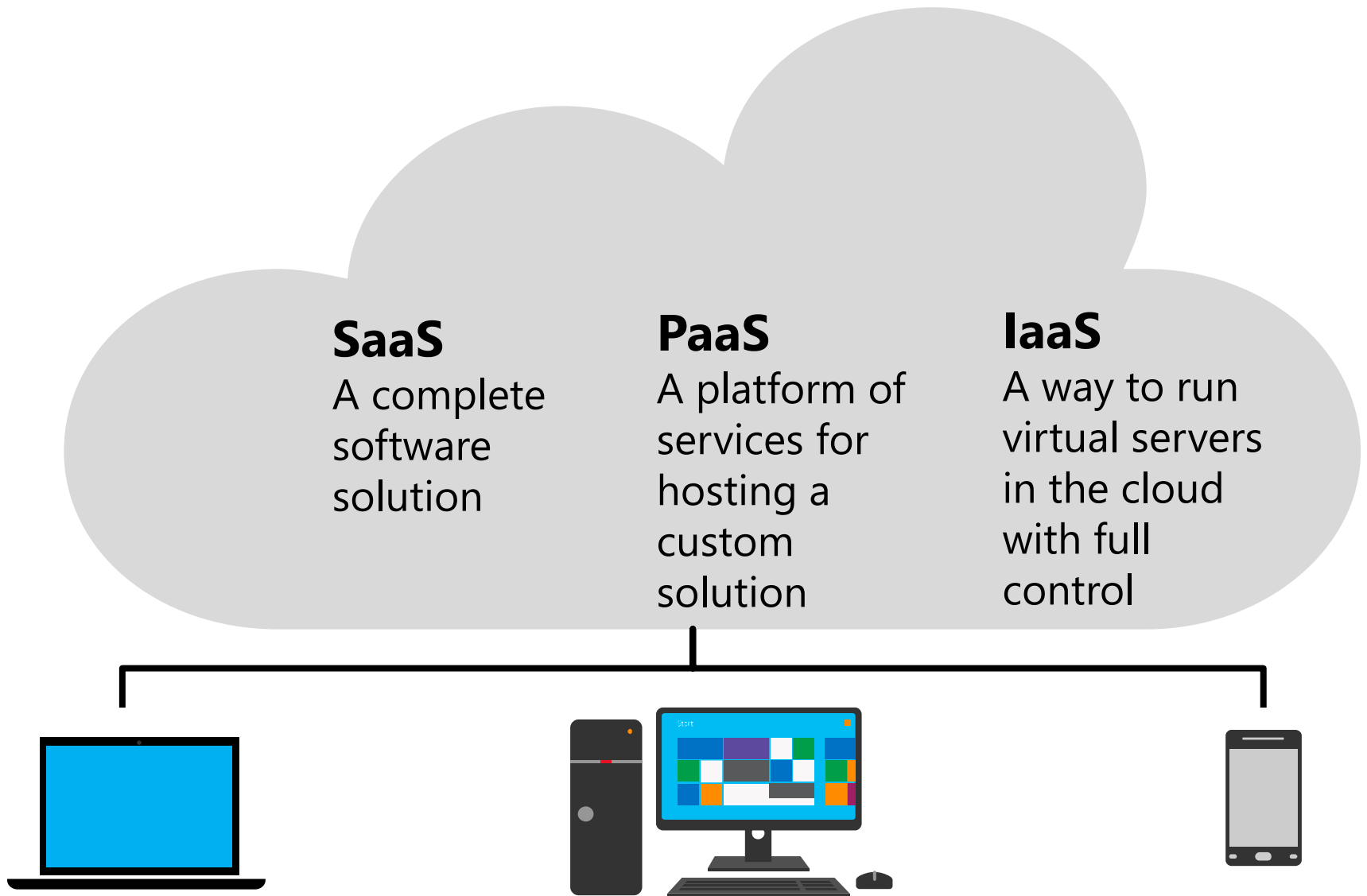
A public cloud is an infrastructure, platform, or application service that a cloud service provider delivers for access and consumption by the public

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



## Lesson 2: Overview of Azure

- Understanding Azure datacenters
- Understanding the Azure service model
- Locating Azure-related information and resources
- Demonstration: Locating Azure-related resources
- Understanding Azure services
- Understanding Azure compute-hosting options
- Azure deployment models
- Azure management tools

# Understanding Azure datacenters

Azure datacenters are located in the following geographic areas

Americas	Europe	Asia Pacific
<ul style="list-style-type: none"><li>• Central US</li><li>• East US</li><li>• East US 2</li><li>• North Central US</li><li>• South Central US</li><li>• West Central US</li><li>• West US</li><li>• West US2</li><li>• US Gov Arizona</li><li>• US Gov Iowa</li><li>• US Gov Texas</li><li>• US Gov Virginia</li><li>• Canada Central</li><li>• Canada East</li><li>• Brazil South</li></ul>	<ul style="list-style-type: none"><li>• France Central</li><li>• France South</li><li>• Germany Central</li><li>• Germany Northeast</li><li>• North Europe</li><li>• West Europe</li><li>• UK South</li><li>• UK West</li></ul>	<ul style="list-style-type: none"><li>• Australia East</li><li>• Australia Southeast</li><li>• China East</li><li>• China North</li><li>• Central India</li><li>• South India</li><li>• West India</li><li>• Japan East</li><li>• Japan West</li><li>• Korea Central</li><li>• Korea South</li><li>• East Asia</li><li>• Southeast Asia</li></ul>





# Understanding Azure datacenters

- Global presence
- Managed by Microsoft
- Modular architecture:
  - Clusters of thousands of servers in pluggable units
  - Full power redundancy and contingency
  - High-speed, redundant intra-datacenter networks
  - High-speed inter-datacenter and Internet connectivity
  - Triple-redundant data storage and geo-replication
- Highly efficient power and water usage
- Distributed management service
- Paired with another Azure region in the same geographical area



# Understanding the Azure service model

- Azure is a pay-per-use, multitenant service
- Organized into accounts and subscriptions:
  - Accounts:
    - Billing and reporting functionality
    - Container of subscriptions
    - Managed by the Account Administrator
    - Accessible via the Account portal
  - Subscriptions:
    - Billing and administrative boundary
    - Container of resources (subject to quotas)
    - Managed by the Service Administrator and Co-Administrators, and via delegation through RBAC
    - Accessible via the Azure portal

# Azure billing and pricing

- The purchase options are:
  - Pay-As-You-Go
  - Microsoft reseller
  - Enterprise Agreement
- The support options are:
  - Developer
  - Standard
  - Professional Direct
  - Premier
- Azure pricing:
  - Per-minute compute charges
  - Estimate available via Azure pricing calculator

# Locating Azure-related information and resources

- Azure Marketplace: certified, open source, and community images, apps, and services
- GitHub: APIs, SDKs, and open source projects
- Azure Trust Center: information and guidance around security, privacy, and compliance
- Microsoft Docs: the most comprehensive online library providing information about Azure

# Understanding Azure services

## Compute

Virtual Machines

Virtual Machine  
Scale Sets

Cloud Services

Containers

Container  
Registry

Container  
Service

## Networking

Virtual Network

Azure DNS

Application  
Gateway

Traffic Manager

ExpressRoute

Load Balancer

## Data & Storage

Disk Storage

Blob Storage

File Storage

Queue Storage

Table Storage

StorSimple

## Web & Mobile

Web Apps

Mobile Apps

Logic Apps

Content Delivery  
Network

## Other services

Azure AD

Azure AD DS

Azure B2C

MFA

Automation

Backup

Site Recovery

Log Analytics

Azure Monitor

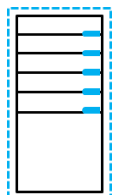
Azure Advisor

Key Vault

Network Watcher

Azure Security  
Center

# Understanding Azure compute-hosting options



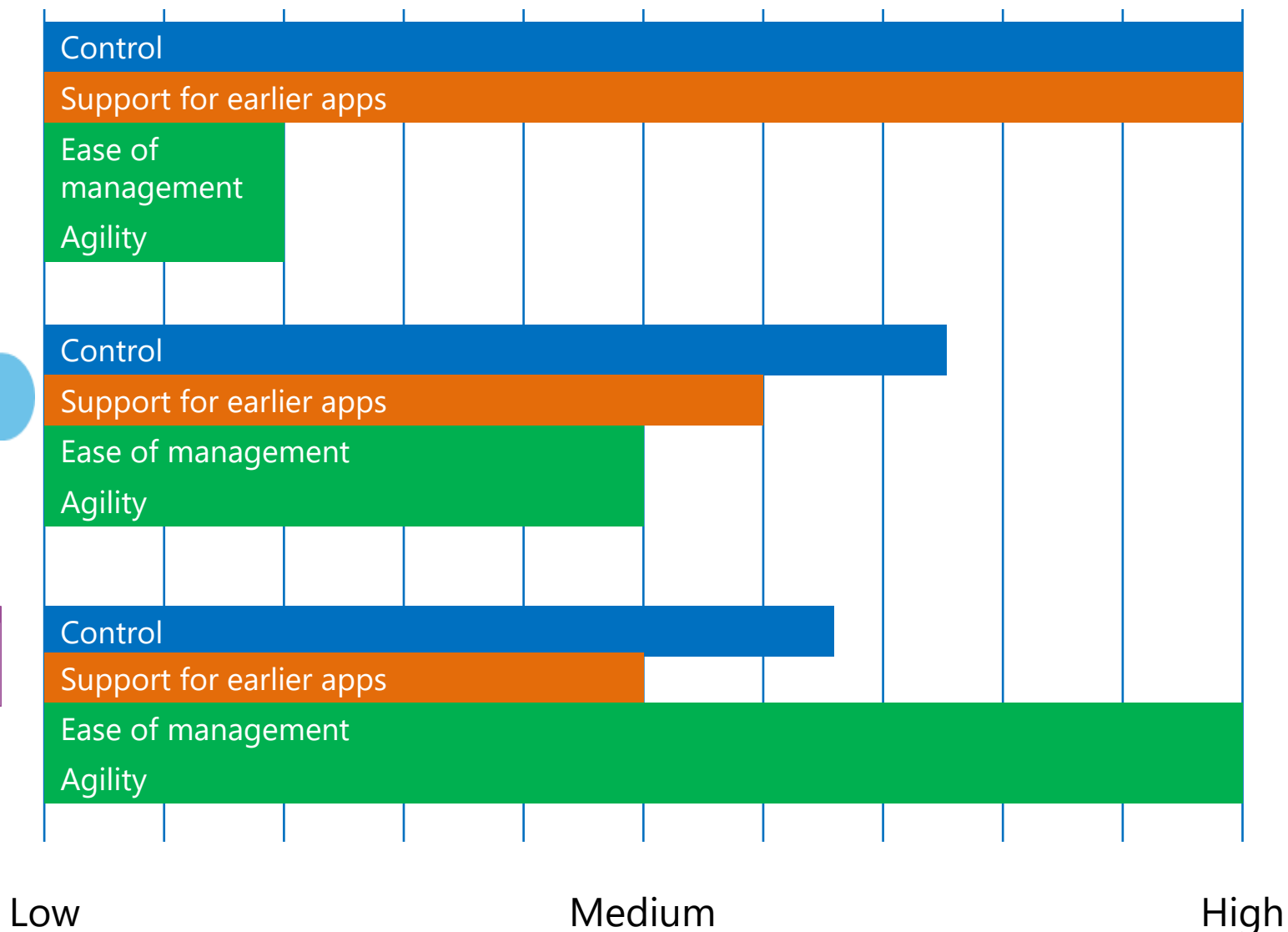
Azure Virtual  
Machines



Azure Cloud  
Services



App Service



# Azure deployment models

- Deployment models determine underlying API for provisioning and managing Azure services:
  - Classic (Azure Service Management):
    - Available via the Azure classic portal and the Azure portal
  - Azure Resource Manager:
    - Available via the Azure portal
    - Based on the concept of resources and resource groups
    - Strongly recommended for any current and future deployments

# Azure management tools

- Azure portals
- Windows PowerShell
- Azure CLI
- Azure Shell
- Visual Studio



## Lesson 3: Managing Azure with the Azure portal

- Using the Azure portal
- Using the Azure classic portal
- Managing account subscriptions with the Azure portals
- Demonstration: Using the Azure portals

# Using the Azure portal

Microsoft Azure

New

All resources

Virtual machines

Storage accounts

Virtual networks

Monitor

Azure Advisor

Security Center

Help + support

Subscriptions

Alerts

Resource groups

More services >

Dashboard

+ New dashboard

Edit dashboard

Share

Fullscreen

Clone

Delete

All resources


ALL SUBSCRIPTIONS

572206eastus	Storage account
WebApp1	Virtual machine
WebApp1-nsg	Network security group
webapp1829	Network interface
demotm125	Traffic Manager profile
WebApp2	Virtual machine
lablinuxvm861	Network interface
LABLinuxVM	Virtual machine
lablinuxdata0107	Storage account

See More

Service health

MY RESOURCES



Get started

Virtual Machines

Provision Windows and Linux virtual machines in minutes

App Service

Create web and mobile apps for any platform and device

SQL Database

Managed relational database-as-a-service

Storage

Durable, highly available and massively scalable storage

Azure Portal

Learn about how to use the Azure Portal

Marketplace

# Using the Azure classic portal

The screenshot displays the Microsoft Azure classic portal. The top navigation bar includes the 'Microsoft Azure' logo, a 'Check out the new portal' button, a globe icon, and a user profile icon. The left sidebar contains a grid icon for 'ALL ITEMS' and a list of service categories, each with a count of zero: WEB APPS, VIRTUAL MACHINES, MOBILE SERVICES, CLOUD SERVICES, BATCH SERVICES, SQL DATABASES, STORAGE, HDINSIGHT, MEDIA SERVICES, and SERVICE BUS. The main content area is titled 'all items' and features a table with the following data:

NAME	TYPE	STATUS	SUBSCRIPTION	LOCATION	
Default Directory	→ Directory	✓ Active	Shared by all Default Dir...	United States	

The bottom of the interface includes a '+ NEW' button, a 'DELETE' button with a trash icon, and a status bar showing '1' warning icon and a help icon.

# Managing account subscriptions with the Azure portals

- The **Subscription** and **Billing** blades at <https://portal.azure.com>
  - View cost by resource and burn rate charts
  - Perform cost analysis
  - View billing information
- The **subscriptions** page at <http://account.azure.com/subscriptions>
  - Manage payment methods
  - Download usage details
  - Edit subscription details
  - Edit partner information
  - Change subscription address
  - Cancel subscription

# Lesson 4: Overview of Azure deployment models

- Core concepts of Azure Resource Manager deployment model
- Managing resources and resource groups
- Azure Resource Manager deployment methodologies

# Core concepts of Azure Resource Manager deployment model

## Azure Resource Manager core concepts:

- Resources:
  - Individual building blocks of Azure-based solutions
  - Managed by resource providers
- Resource group:
  - Custom collection of resources
  - Typically represents common lifecycle of its resources
  - Commonly used to delegate permissions to its resources
  - Aggregate billing data and auditing events of its resources
  - Each resource belongs to only one resource group
- RBAC
- Tagging
- Templates
- Policies and locks

# Managing resources and resource groups

- Resource groups:
  - Serve as logical groupings of resources
  - Support moving resources
- Considerations when moving resources:
  - Azure region must remain the same
  - Source and target resource groups are locked during move
  - For cross-subscription moves:
    - Subscriptions must be associated with the same Azure AD tenant
    - All dependent resources must be moved together
    - The target subscription must be registered for resource providers
  - Not all resources support the move operation