1. Main page: https://www.microsoft.com/en-us/server-cloud/cortana-intelligence-suite/Before you begin this module, you should:
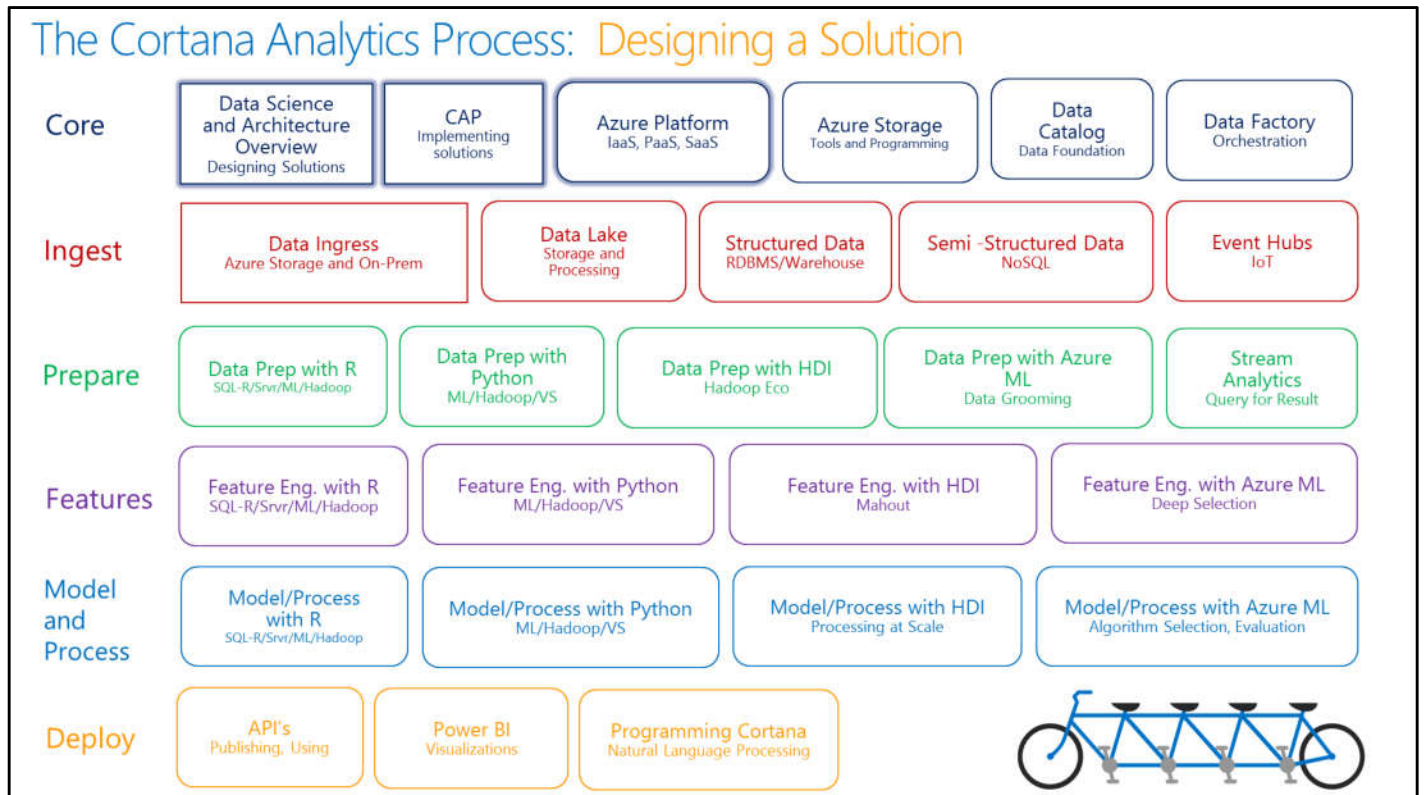   1. Have a general Workshop Process Awareness
   2. Understand and interpret problem Statement for Customer Scenario
   3. Understand the Data Science Process (General level)
   4. Understand Architecture Development Basics
   5. Have an Azure Account

Learning objectives

1. Understand the Azure platform
2. Be able to instantiate IaaS VM's
3. Be able to create Azure Data stores, and understand basic ingress and egress of data
4. Be able to deploy an Azure Web Site
5. Be able to deploy an Azure Web Application
6. Be able to access and use an Azure Service, such as HDInsight or Azure ML
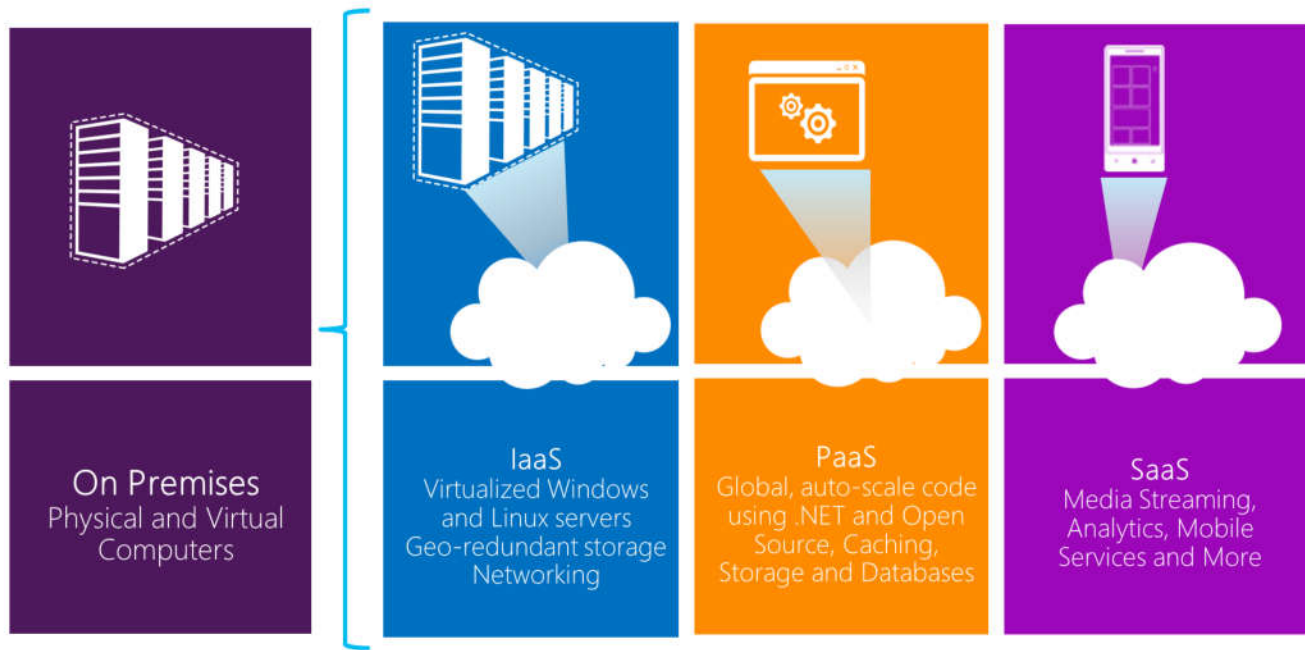
1. Full set of Microsoft Azure Training Resources: https://mva.microsoft.com/search/SearchResults.aspx?q=Azure#!q=Azure&index=2&lang=1033

The Cortana Analytics Process: Designing a Solution

Core	Data Science and Architecture Overview — Designing Solutions	CAP — Implementing solutions	Azure Platform — IaaS, PaaS, SaaS	Azure Storage — Tools and Programming	Data Catalog — Data Foundation	Data Factory — Orchestration
Ingest	Data Ingress — Azure Storage and On-Prem	Data Lake — Storage and Processing	Structured Data — RDBMS/Warehouse	Semi-Structured Data — NoSQL		Event Hubs — IoT
Prepare	Data Prep with R — SQL-R/Srvr/ML/Hadoop	Data Prep with Python — ML/Hadoop/VS	Data Prep with HDI — Hadoop Eco	Data Prep with Azure ML — Data Grooming		Stream Analytics — Query for Result
Features	Feature Eng. with R — SQL-R/Srvr/ML/Hadoop	Feature Eng. with Python — ML/Hadoop/VS	Feature Eng. with HDI — Mahout	Feature Eng. with Azure ML — Deep Selection		
Model and Process	Model/Process with R — SQL-R/Srvr/ML/Hadoop	Model/Process with Python — ML/Hadoop/VS	Model/Process with HDI — Processing at Scale	Model/Process with Azure ML — Algorithm Selection, Evaluation		
Deploy	API's — Publishing, Using	Power BI — Visualizations	Programming Cortana — Natural Language Processing			

1. The Cortana Analytics Process: https://azure.microsoft.com/en-us/documentation/learning-paths/cortana-analytics-process/
2. Microsoft Azure main page: http://microsoftazure.com

1. Overview Videos: https://azure.microsoft.com/en-us/get-started/

Accounts and Subscriptions

- Payment: Pay as you go or commitment
- Vehicles: Free, MSDN, Credit Card, Corporate Account

1. Account Options and Billing:
   https://azure.microsoft.com/en-us/pricing/

Microsoft Data Science

Software Development Kits and Tools

- Installing the SDK
- Tools and Utilities

http://azure.microsoft.com/en-us/downloads/

1. SDK Locations: https://azure.microsoft.com/en-us/downloads/

1. Trust Center: https://azure.microsoft.com/en-us/support/trust-center/

Video resource for available Azure services: https://azure.microsoft.com/en-us/documentation/videos/index/

Compute

Virtual Machines deliver on-demand, scalable compute infrastructure when you need to quickly provision resources. With Virtual Machines, you get a choice of Windows Server and Linux operating systems in multiple configurations on top of the trustworthy Azure foundation.

Websites offers secure and flexible development, deployment and scaling options for any sized web application. Leverage your existing tools to create and deploy applications without the hassle of managing infrastructure.

Mobile Services allows for the creation of a scalable and secure backend for your Windows, Android, and iOS apps. Mobile Services allows you to accelerate your mobile app development by providing a turnkey way to structure storage, authenticate users, and send push notifications. With SDKs for Windows, Android, iOS, and HTML as well as a powerful and flexible REST API, Mobile Services lets you to build connected applications for any platform and deliver a consistent experience across devices.

Cloud Services offers highly-available, infinitely scalable applications and API's. Quickly deploy and manage powerful applications and services with Azure Cloud Services. Simply upload your application and Azure handles the deployment details - from provisioning and load balancing to health monitoring for continuous availability. Your application is backed by an industry leading 99.95% monthly SLA. You just focus on the application and not the infrastructure. It's that good.

1. Virtual Machines: https://azure.microsoft.com/en-us/documentation/services/virtual-machines/
2. Cloud Services: https://azure.microsoft.com/en-us/documentation/services/cloud-services/
3. Web Apps: https://azure.microsoft.com/en-us/documentation/services/app-service/web/
4. Mobile apps: https://azure.microsoft.com/en-us/documentation/services/app-service/mobile/

Network Services

ExpressRoute enables private connections to be created between Azure datacenters and infrastructure that's on-premises or in a co-location environment. ExpressRoute connections do not go over the public Internet, and offer more reliability, faster speeds, lower latencies and higher security than typical connections over the Internet.

Virtual Network (VNET) enables Virtual Private Networks (VPN) to be created within Azure and securely link with on-premises IT infrastructure.

Traffic Manager allows for the ability to load balance incoming traffic across multiple hosted Azure services whether they're running in the same datacenter or across different datacenters around the world.

Data Transfers refer to data moving in and out of Azure data centers other than those explicitly covered by the Content Delivery Network or ExpressRoute pricing. (Disk-Shipping)

1. Virtual Network: https://azure.microsoft.com/en-us/documentation/services/virtual-network/
2. ExpressRoute: https://azure.microsoft.com/en-us/documentation/services/expressroute/
3. Traffic Manager: https://azure.microsoft.com/en-us/documentation/services/traffic-manager/
4. Disk-Shipping: https://azure.microsoft.com/en-us/documentation/articles/storage-import-export-service/

1. Note this page: https://azure.microsoft.com/en-us/documentation/articles/virtual-machines-windows-tutorial/
2. Deploy one A1 VM using the Portal. Start that VM using the Portal.
3. Optional: Deploy another A1 VM using PowerShell. Do not start the VM
4. Connect to the first VM using a Remote Desktop Connection.
5. Shutdown the VM in Windows.
6. Stop the VM using the Portal.
7. Delete all VM's, Disks, and Storage Accounts you created.
8. Note the description of Resource Groups here: https://azure.microsoft.com/en-us/documentation/articles/resource-group-overview/

Data Services

Storage provides anywhere and anytime access via a cloud storage system. It is highly durable, available and massively scalable.

SQL Database and **Data Warehouse** makes tier-1 capabilities easily accessible for cloud architects and developers by delivering predictable performance, scalability, business continuity, data protection, and near-zero administration—all backed by the Microsoft Azure platform.

HDInsight and **Data Lake** bring an Apache Hadoop-based solution to the cloud. They provides the ability to gain the full value of Big Data with a modern, cloud-based data platform that manages data of any type, whether structured or unstructured, and of any size.

Cache creates the ability to build highly scalable and responsive applications by providing super-fast access to data through a family of distributed, in-memory, scalable solutions.

Backup Recovery offers familiar tools in Windows Server, Windows Server Essentials, or System Center Data Protection Manager to provide a cloud backup service.

Azure Site Recovery helps protect important services by coordinating the automated replication and recovery of System Center 2012 private clouds at a secondary location.

1. Storage: https://azure.microsoft.com/en-us/documentation/services/storage/
2. SQL Database: https://azure.microsoft.com/en-us/documentation/services/sql-database/
3. Site Recovery: https://azure.microsoft.com/en-us/documentation/services/site-recovery/
4. HDInsight: https://azure.microsoft.com/en-us/documentation/services/hdinsight/

1. Open this page: https://azure.microsoft.com/en-us/documentation/articles/storage-create-storage-account/
2. Look for the section marked "Create a Storage Account" – read that tutorial
3. Create a Storage Account
4. Create a Blob Container
5. Find your Storage Account Name and Your Keys – copy these to a Notepad or other note-taking software.

App Services

Media Services offer cloud-based media solutions from many existing technologies from the Microsoft Media Platform and our media partners, including ingest, encoding, format conversion, content protection and both on-demand and live streaming capabilities.

Service Bus serves as a messaging infrastructure that sits between applications allowing them to exchange messages for improved scale and resiliency.

Notification Hubs provide a highly scalable, cross-platform push notification infrastructure that enables either broadcast push notifications to millions of users at once or tailor notifications to individual users.

Scheduler allows actions - such as calling HTTP/S endpoints or posting a message to a storage queue - on any schedule. With Scheduler, create jobs in the cloud that reliably call services both inside and outside of Azure and run those jobs on demand, on a regularly recurring schedule.

Automation allows for the automation, creation, deployment, monitoring, and maintenance of resources in the Azure environment using a highly scalable and reliable workflow execution engine, allowing for a decrease in operational expense for cloud operations.

BizTalk Services provides Business-to-Business (B2B) and Enterprise Application Integration (EAI) capabilities for delivering cloud and hybrid integration solutions through a simple, powerful, and extensible cloud-based integration service.

1. Media Services: https://azure.microsoft.com/en-us/documentation/services/traffic-manager/
2. Service Bus: https://azure.microsoft.com/en-us/documentation/services/service-bus/
3. Notification Hubs: https://azure.microsoft.com/en-us/documentation/services/notification-hubs/
4. Scheduler: https://azure.microsoft.com/en-us/documentation/services/scheduler/
5. Automation: https://azure.microsoft.com/en-us/documentation/services/automation/
6. https://azure.microsoft.com/en-us/documentation/services/biztalk-services/

App Services (continued)

Visual Studio Online allows the ability to host code, plan and track projects, and collaborate with team members to ship better software. Visual Studio Online provides an end-to-end, cloud-based ALM solution that handles everything from hosted code repos and issue tracking to load testing and automated builds.

Active Directory is a comprehensive and highly available identity and access management cloud solution. It combines core directory services, advanced identity governance and application access management.

Multi-Factor Authentication helps secure access to on-premises and cloud applications by providing an additional layer of authentication It supports authentication through mobile app, phone call or text message.
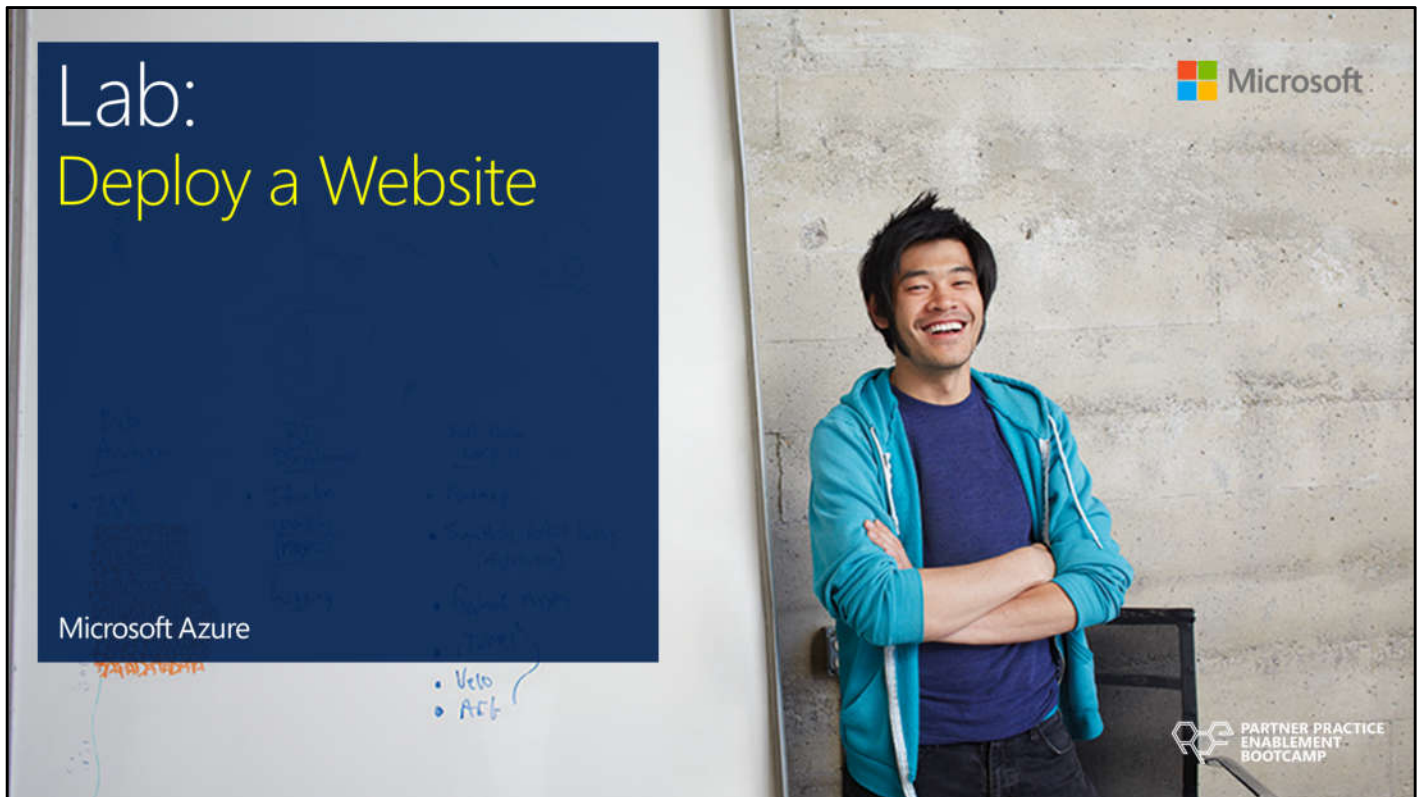
CDN improves performance of applications by caching content at locations closest to your customers.

API Management allows organizations to publish APIs more securely, reliably, and at scale. Use API Management to drive API consumption among internal teams, partners and developers while benefiting from business and operational insights available in the admin portal.
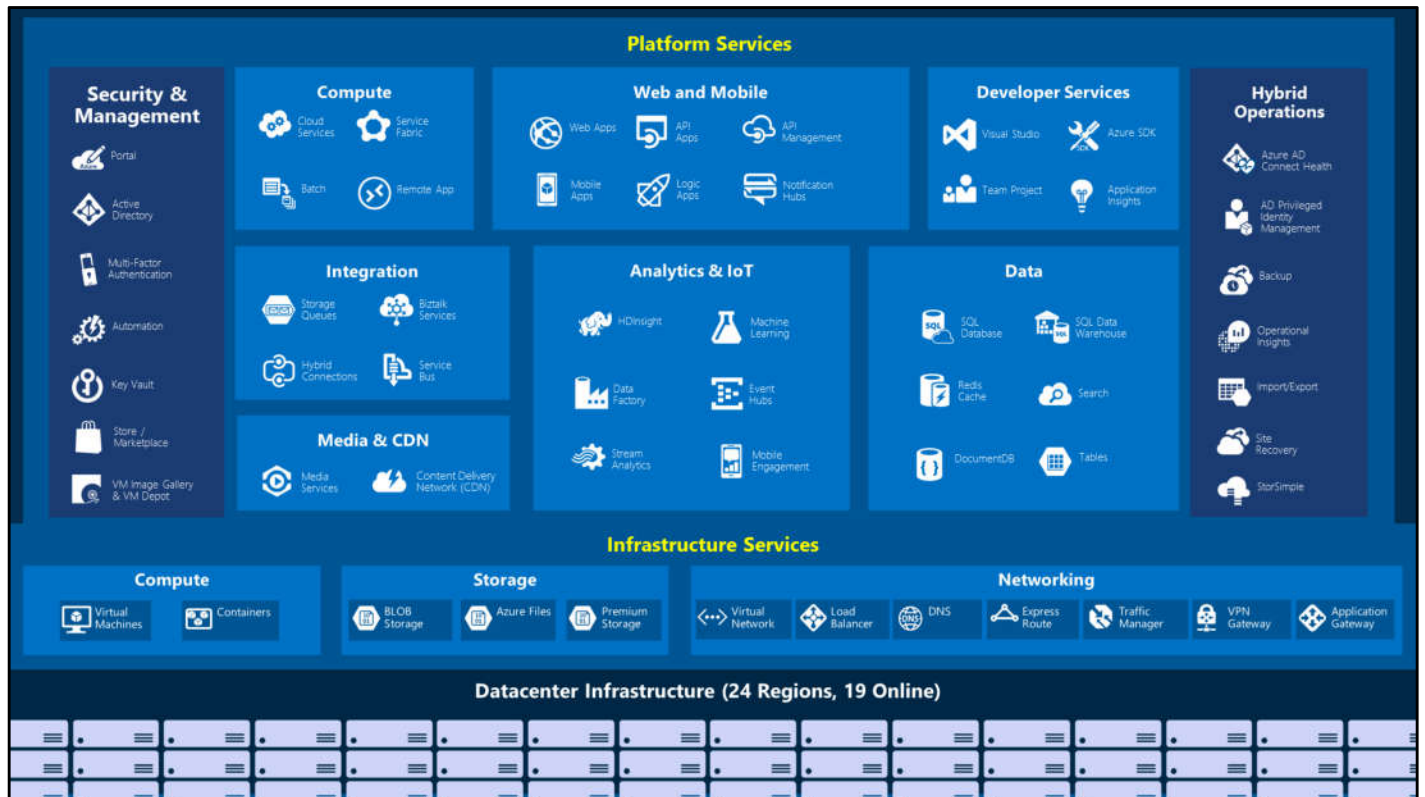
RemoteApp delivers Windows Server-based applications from Azure. Users can access their applications remotely from virtually anywhere, at any time, and on a variety of devices. Applications are centralized on Azure but they appear as if they are running on end users' devices.

1. Visual Studio Online: https://www.visualstudio.com/get-started/overview-of-get-started-tasks-vs
2. Active Directory: https://azure.microsoft.com/en-us/documentation/services/active-directory/
3. Multi-factor authentication: https://azure.microsoft.com/en-us/documentation/services/multi-factor-authentication/
4. CDN: https://azure.microsoft.com/en-us/documentation/services/cdn/
5. RemoteApp: https://azure.microsoft.com/en-us/documentation/services/remoteapp/

1. Open this Site: https://azure.microsoft.com/en-us/marketplace/partners/wordpress/scalablewordpress/
2. Click "Create Web App"
3. Connect to your Web Application.
4. Stop your Web Application.
5. Delete the Web Application.
6. Note training Video – https://mva.microsoft.com/en-US/training-courses/microsoft-azure-fundamentals-websites-8460

1. Follow this tutorial: https://azure.microsoft.com/en-us/documentation/articles/web-sites-dotnet-get-started/
2. Note video Tutorial – https://mva.microsoft.com/en-US/training-courses/get-started-with-windows-azure-today-jump-start-8271
3. Note Overview site: https://azure.microsoft.com/en-us/documentation/articles/app-service-web-overview/
4. Cloud Application Patterns: https://msdn.microsoft.com/en-us/library/dn600223.aspx

- Full Azure Developer Training: https://github.com/Azure-Readiness/DevCamp

External Resources

1 Microsoft Azure Trust Center
http://azure.microsoft.com/en-us/support/trust-center/

2 Microsoft Azure Agreement and Terms
http://azure.microsoft.com/en-us/support/legal/services-terms/
Microsoft Online Service Terms
http://www.microsoftvolumelicensing.com/DocumentSearch.aspx?Mode=3&DocumentTypeId=31

3 Microsoft Azure Service Level Agreements
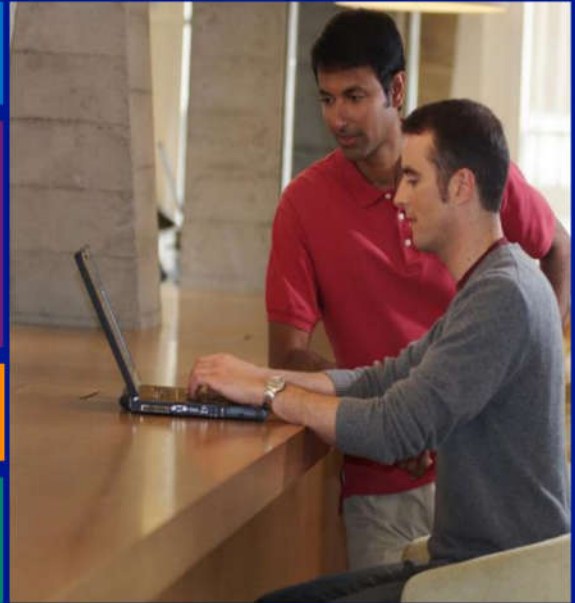http://azure.microsoft.com/en-us/support/legal/sla/

4 Microsoft Azure Support Requests
http://azure.microsoft.com/en-us/support/options/

Microsoft

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