Exam AZ-301: Microsoft Azure Architect Design Crash Course

Tim Warner

Pearson

Tim Warner

- Based in Nashville, TN, US
  - Central time zone
- MCT, MVP
- Twitter: **@TechTrainerTim**
- Badge: **TechTrainerTim.com**

Pearson

Course Materials

timw.info/az301

Pearson

Session 1 of 2 Learning Goals

- Introduction
- Identity and security design
- Infrastructure/workload design
- Data platform design (as much as we can)

Pearson

Session 2 of 2 Learning Goals

- Data platform design (concluded)
- Business Continuity / High Availability Design
- Deployment, Migration, Integration Design
- Exam AZ-301 certification strategy

Pearson

Setting Expectations

- Azure Architect is an expert-level certification
  - You should already know how to deploy and configure Azure resources
- This is a "crash course"
  - Please plan to review these materials more than once
  - Five-minute break at midpoint
- Please ask/answer questions and provide feedback in the Q/A panel, not the group chat

Pearson

2020 Exam Update Information

- Microsoft Worldwide Learning (WWL) revisits the Azure role-based certs yearly
- Relevant blog post: **timw.info/az2020**
- Changes:
  - AZ-300 replaced with AZ-303
  - AZ-301 replaced with AZ-304
- AZ-304 beta will be available around June 29, 2020
- AZ-301 retires around September 30, 2020

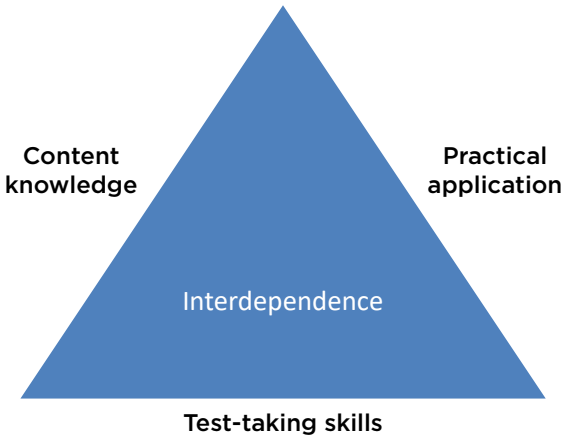
Pearson

2020 Exam Update Strategy

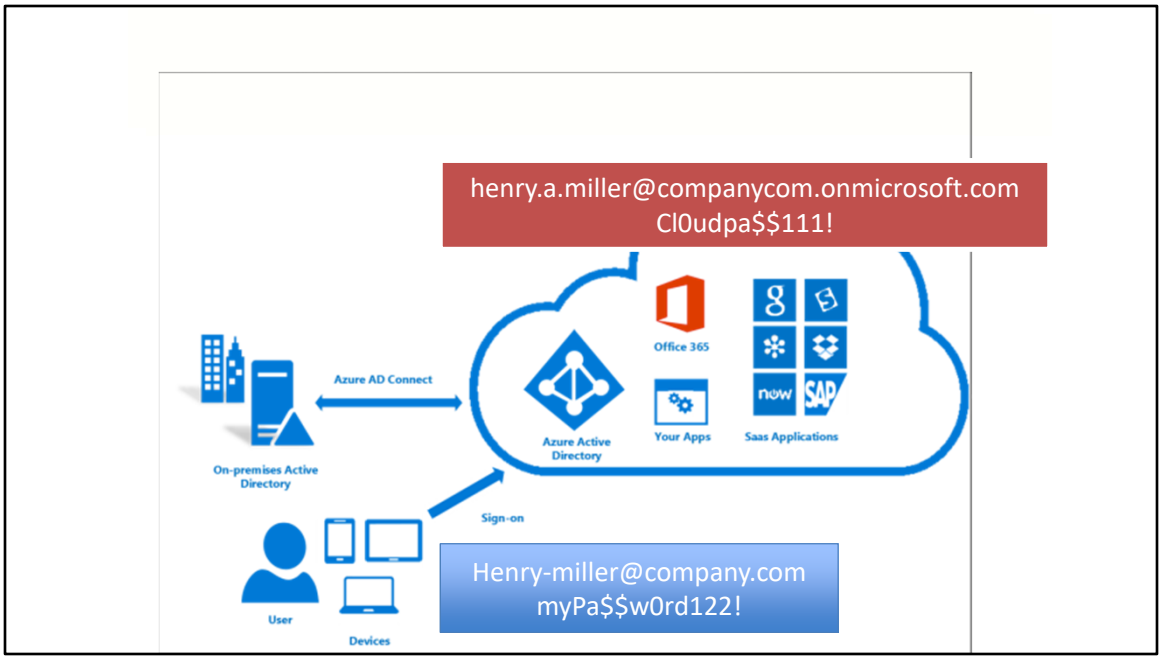
- You can earn your badge by combining the old and new exam versions:
  - AZ-300 and AZ-304
  - AZ-301 and AZ-303
- The certification is the same, and has a 2-year expiry
- If you're already prepping for AZ-300, stay the course!
  - Beta exams sometimes takes a long time
  - Cert prep vendors need time to develop new materials

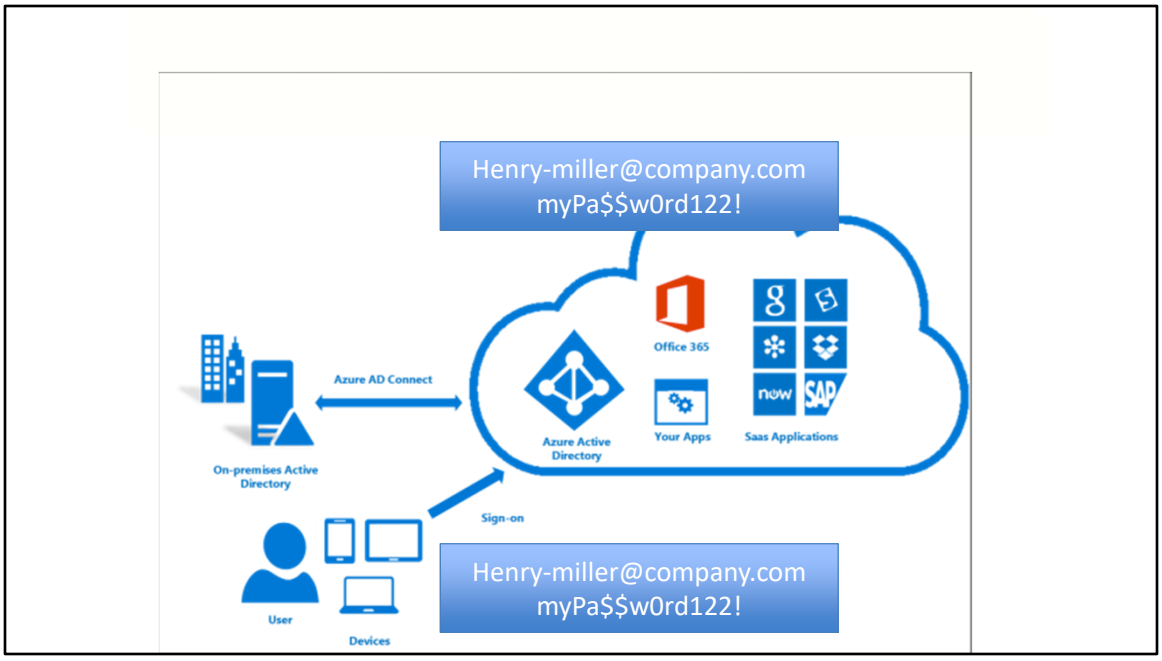
Pearson

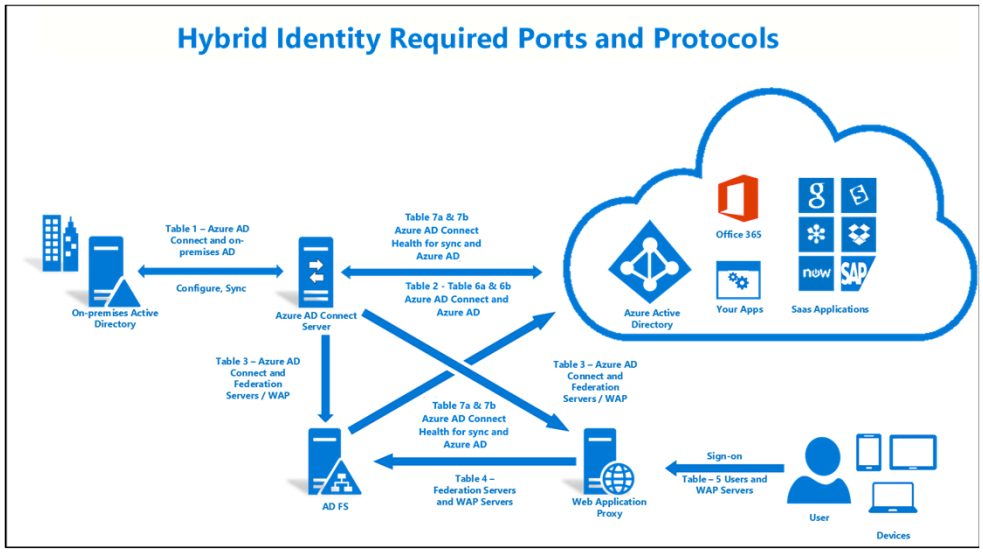
Tim's Certification Study Pyramid

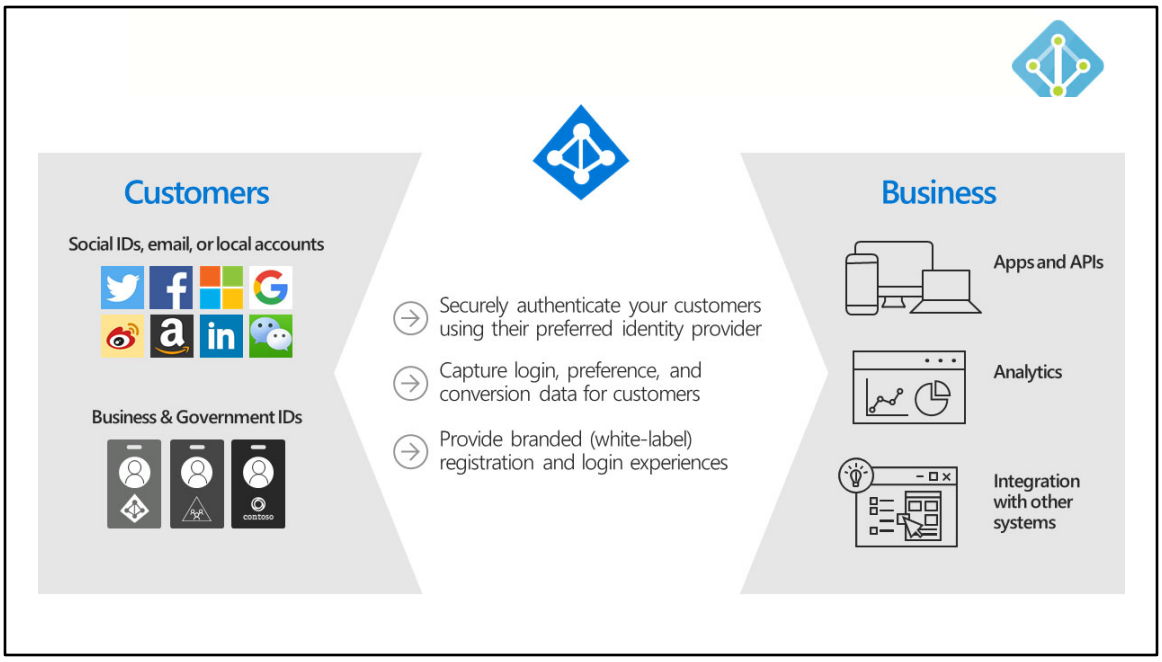


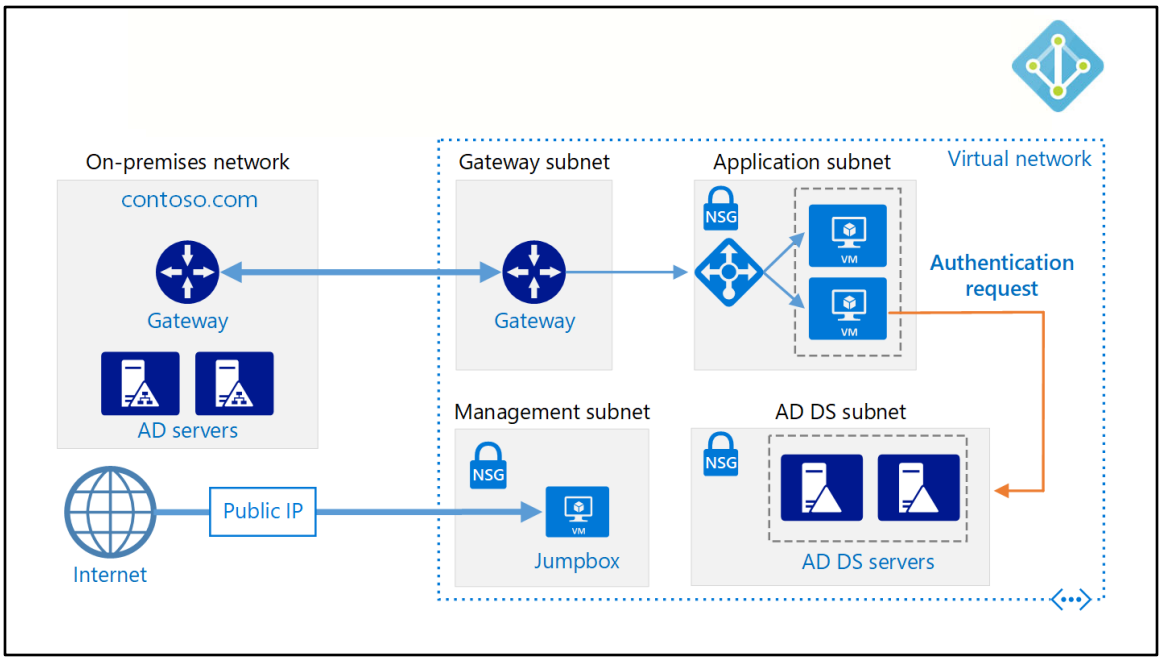
Identity Design
Pearson


henry.a.miller@companycom.onmicrosoft.com
Cl0udpa$$111!
Office 365
Azure AD Connect
Azure Active Directory
Your Apps
Saas Applications
On-premises Active Directory
Sign-on
Henry-miller@company.com
myPa$$w0rd122!
User
Devices

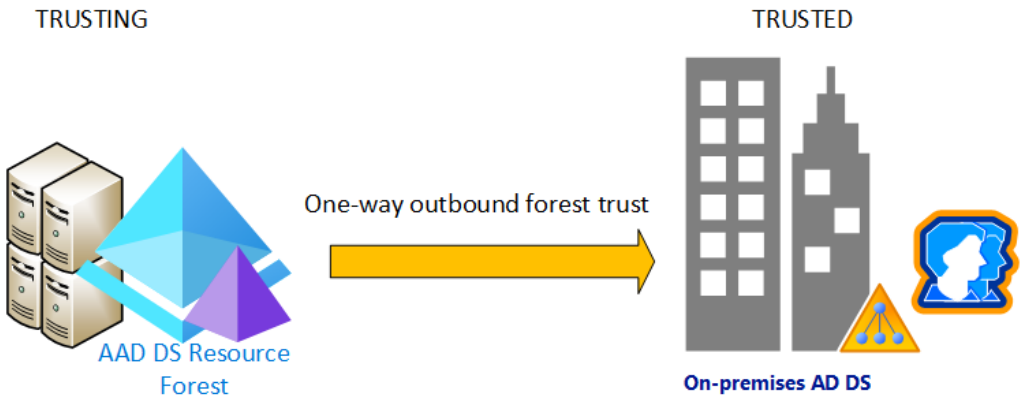

Henry-miller@company.com
myPa$$w0rd122!
Office 365
Azure AD Connect
Azure Active Directory
Your Apps
Saas Applications
On-premises Active Directory
Sign-on
User
Devices
Henry-miller@company.com
myPa$$w0rd122!

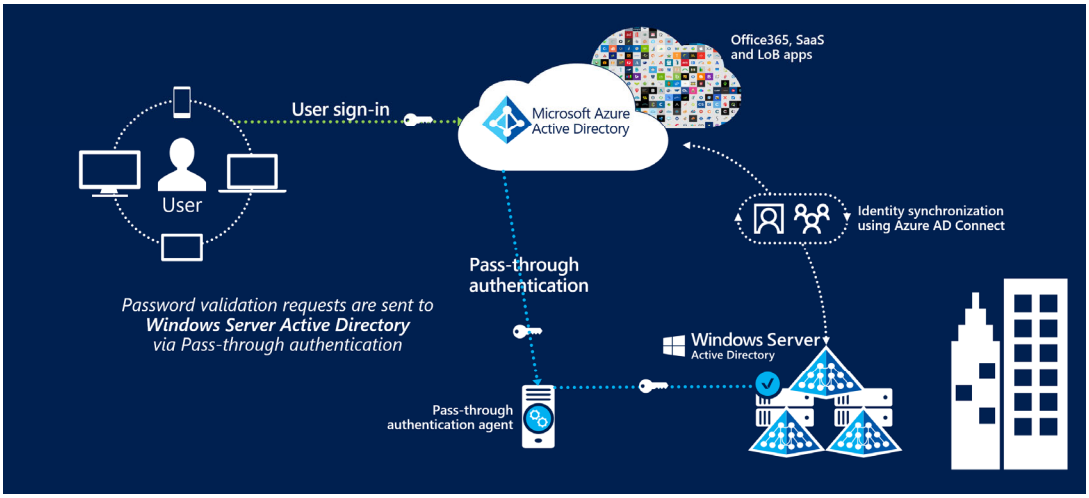

Hybrid Identity Required Ports and Protocols
Table 1 – Azure AD Connect and on-premises AD
Configure, Sync
On-premises Active Directory
Azure AD Connect Server
Table 7a & 7b Azure AD Connect Health for sync and Azure AD
Table 2 - Table 6a & 6b Azure AD Connect and Azure AD
Azure Active Directory
Office 365
Your Apps
Saas Applications
Table 3 – Azure AD Connect and Federation Servers / WAP
Table 3 – Azure AD Connect and Federation Servers / WAP
Table 7a & 7b Azure AD Connect Health for sync and Azure AD
Table 4 – Federation Servers and WAP Servers
AD FS
Web Application Proxy
Sign-on
Table – 5 Users and WAP Servers
User
Devices

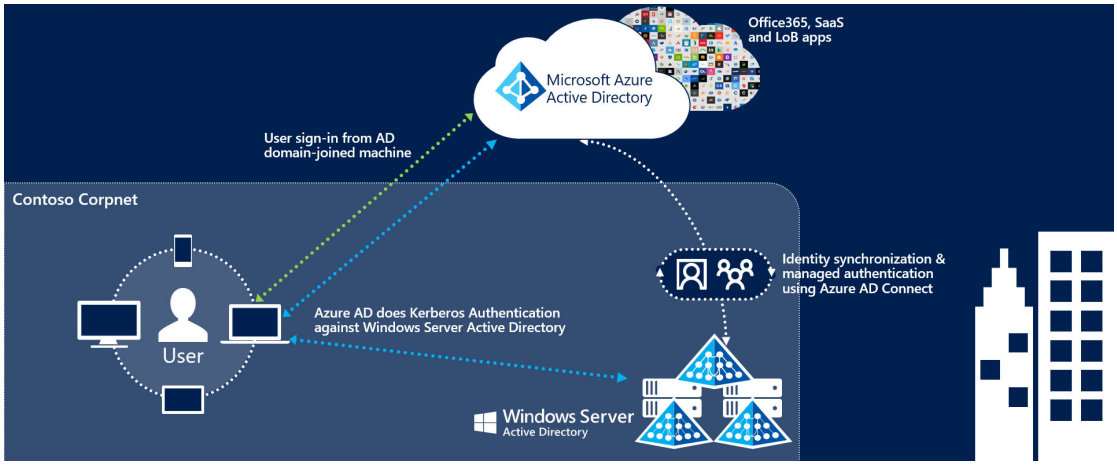

Customers
Social IDs, email, or local accounts
Business & Government IDs
Securely authenticate your customers using their preferred identity provider
Capture login, preference, and conversion data for customers
Provide branded (white-label) registration and login experiences
Business
Apps and APIs
Analytics
Integration with other systems

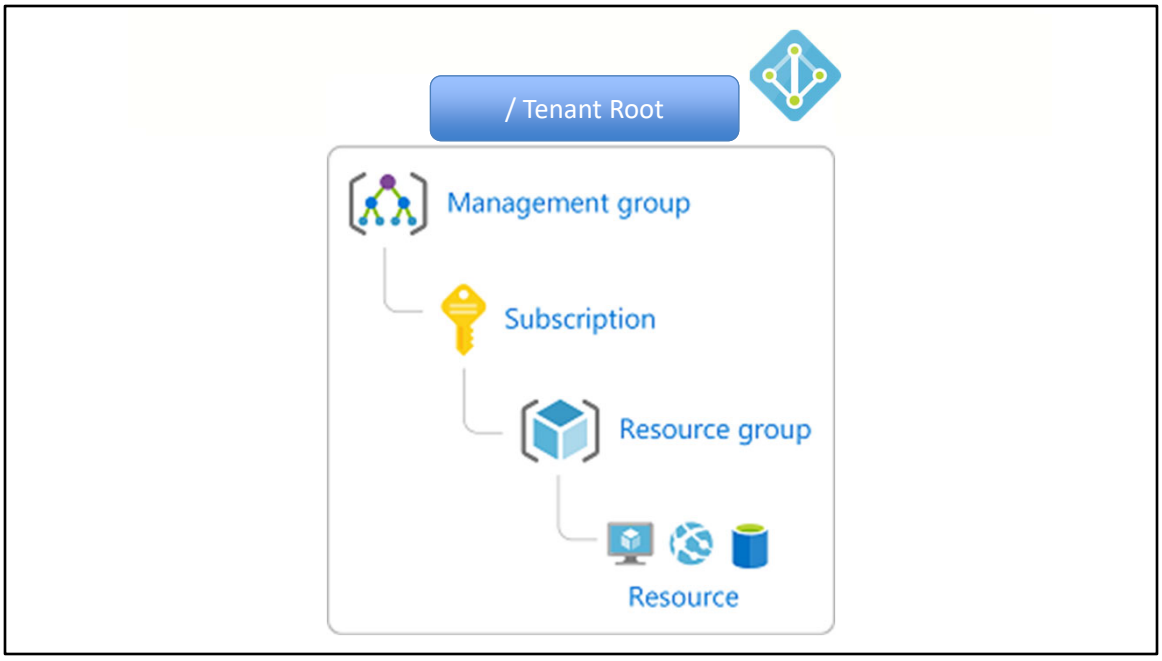

On-premises network
contoso.com
Gateway
AD servers
Internet
Public IP
Gateway subnet
Gateway
Application subnet
NSG
VM
VM
Virtual network
Authentication request
Management subnet
NSG
VM
Jumpbox
AD DS subnet
NSG
AD DS servers

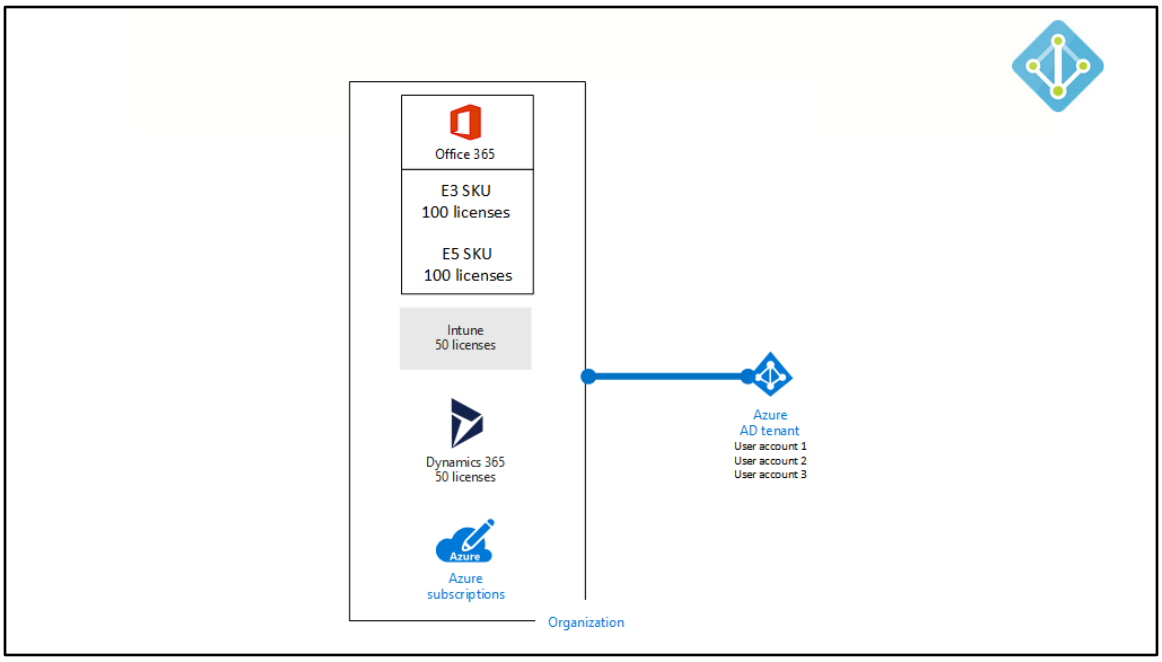
Azure AD Domain Services

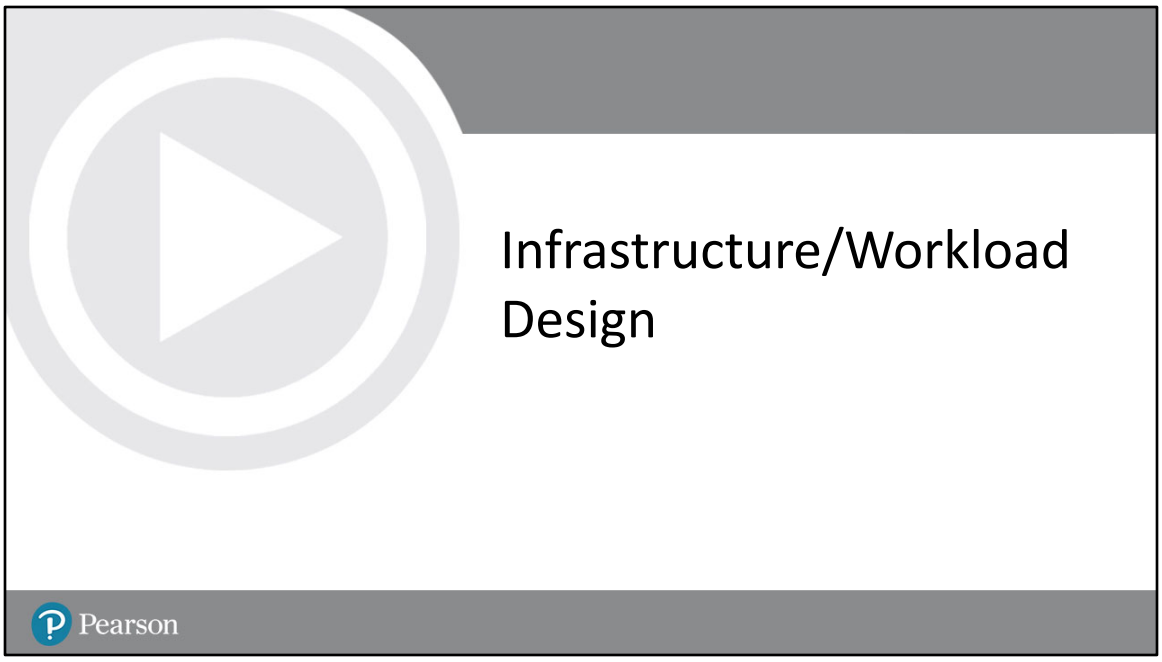


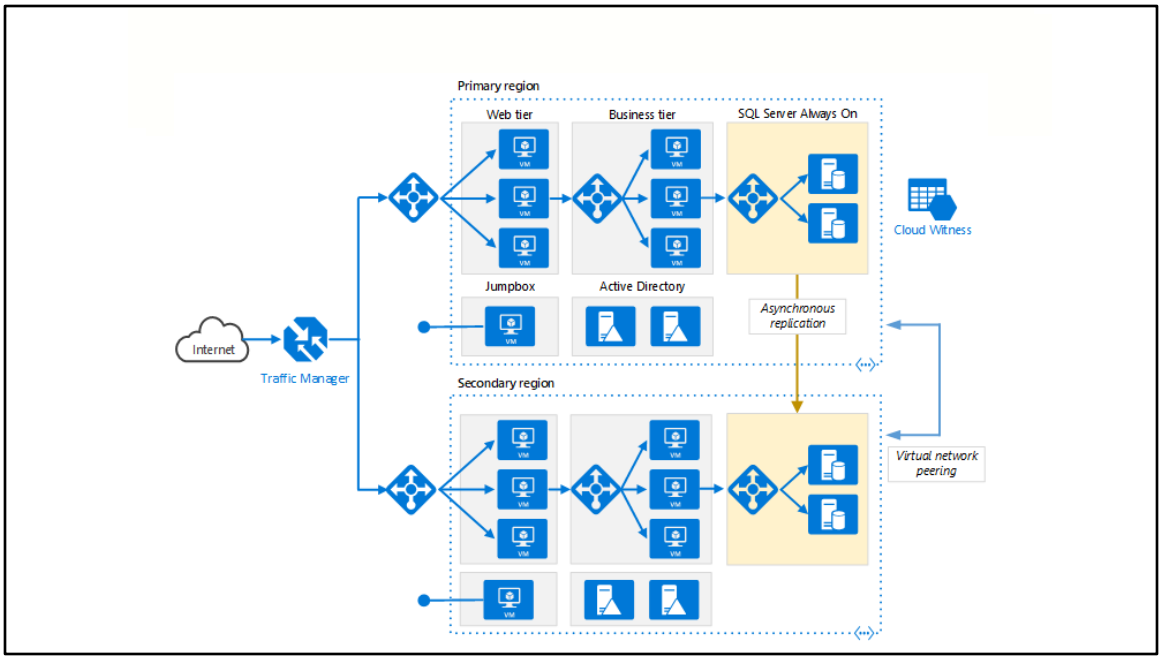

Office365, SaaS
and LoB apps
User sign-in
Microsoft Azure
Active Directory
User
Identity synchronization
using Azure AD Connect
Pass-through
authentication
Password validation requests are sent to
Windows Server Active Directory
via Pass-through authentication
Windows Server
Active Directory
Pass-through
authentication agent

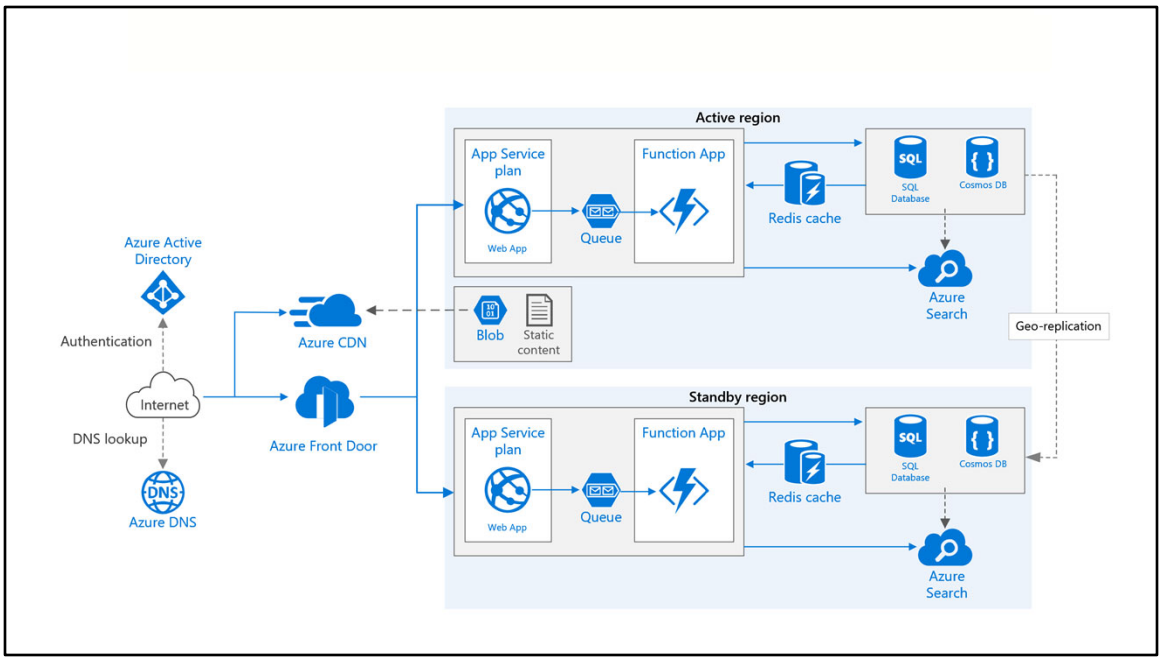

Office365, SaaS
and LoB apps
Microsoft Azure
Active Directory
User sign-in from AD
domain-joined machine
Contoso Corpnet
Identity synchronization &
managed authentication
using Azure AD Connect
Azure AD does Kerberos Authentication
against Windows Server Active Directory
User
Windows Server
Active Directory

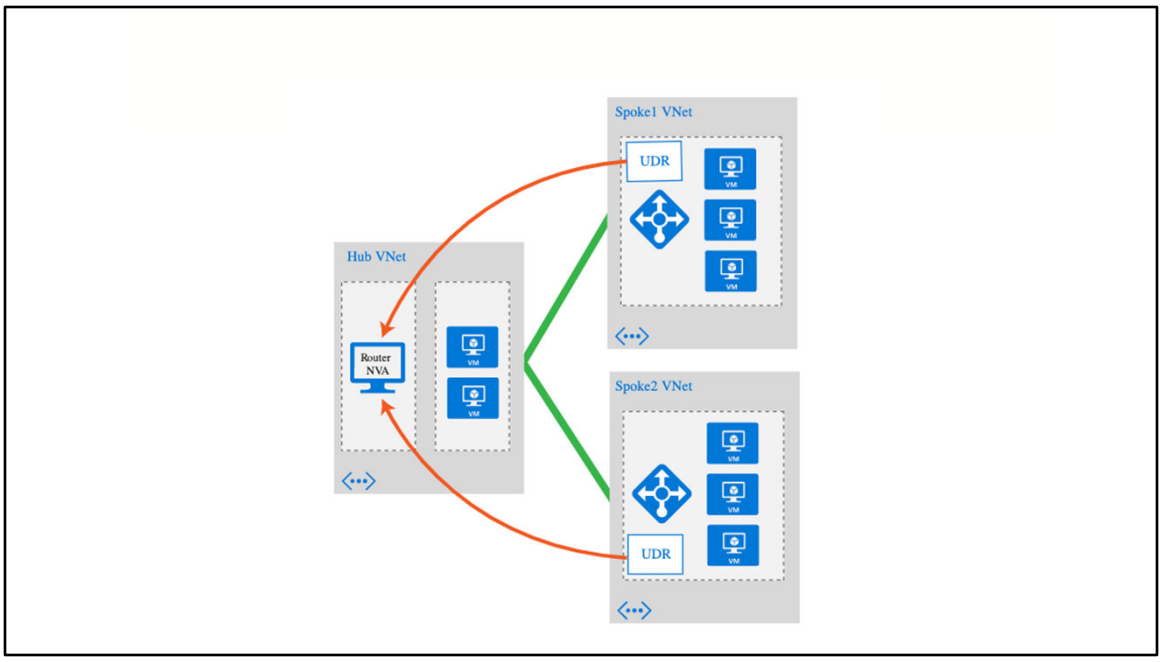

/ Tenant Root
Management group
Subscription
Resource group
Resource

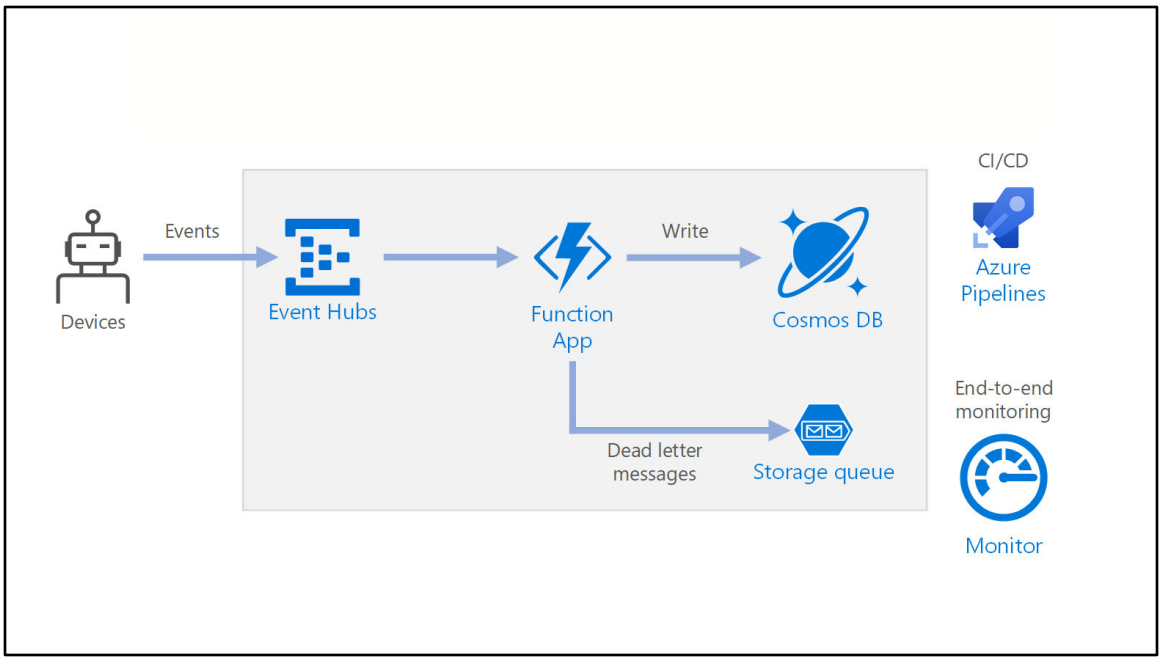

Office 365
E3 SKU
100 licenses
E5 SKU
100 licenses
Intune
50 licenses
Dynamics 365
50 licenses
Azure
Azure
subscriptions
Organization
Azure
AD tenant
User account 1
User account 2
User account 3


Infrastructure/Workload Design
Pearson


Primary region
Web tier
Business tier
SQL Server Always On
Cloud Witness
Jumpbox
Active Directory
Asynchronous replication
Internet
Traffic Manager
Secondary region
Virtual network peering

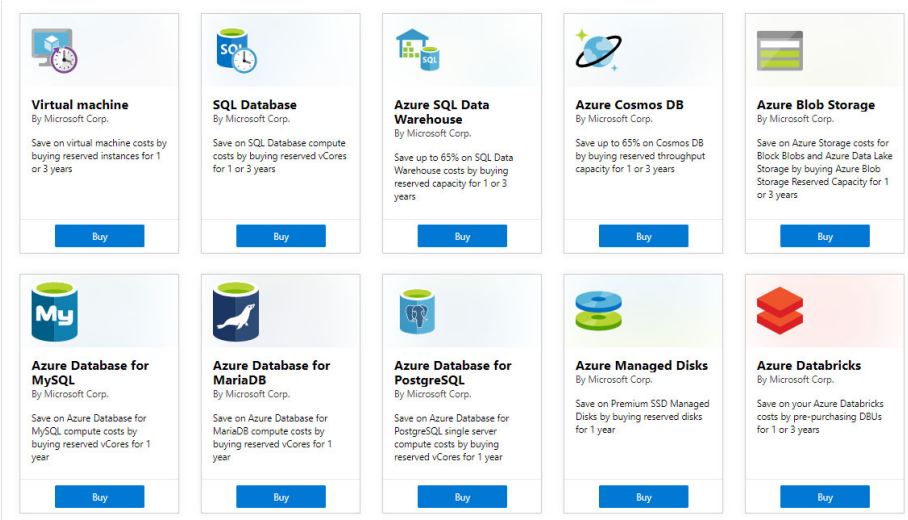

Active region
App Service plan
Web App
Function App
Queue
Redis cache
SQL Database
Cosmos DB
Azure Search
Blob
Static content
Azure CDN
Azure Active Directory
Authentication
Internet
DNS lookup
Azure DNS
Azure Front Door
Geo-replication
Standby region
App Service plan
Web App
Function App
Queue
Redis cache
SQL Database
Cosmos DB
Azure Search


Spoke1 VNet
UDR
VM
VM
VM
Hub VNet
Router
NVA
VM
VM
Spoke2 VNet
VM
VM
UDR
VM


Devices
Events
Event Hubs
Function App
Write
Cosmos DB
Dead letter messages
Storage queue
CI/CD
Azure Pipelines
End-to-end monitoring
Monitor

Consumption, Auditing,
Monitoring Design
Pearson

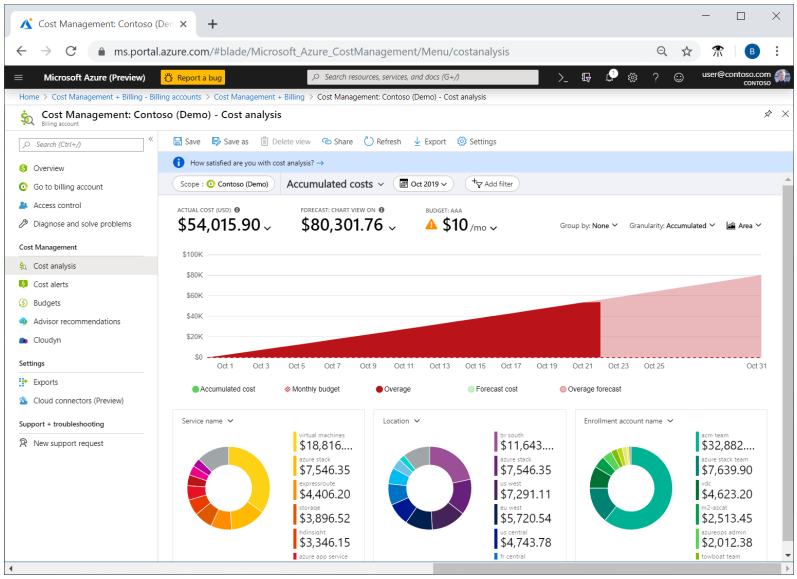
Azure Reservations

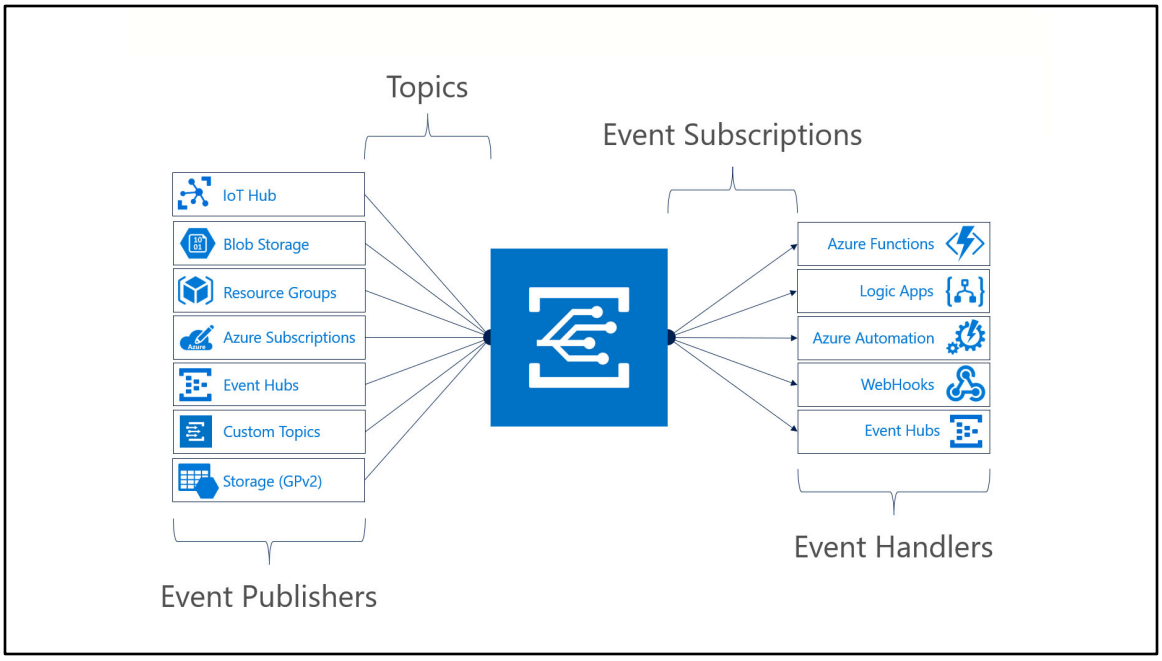


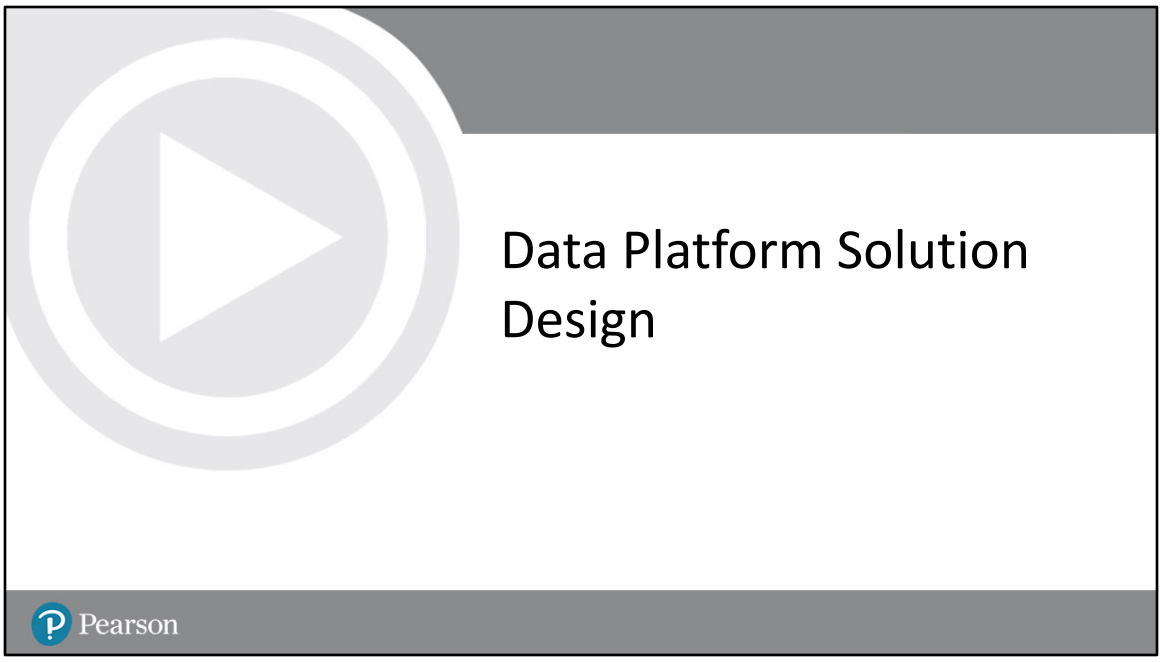
Pearson

Azure Dedicated Host

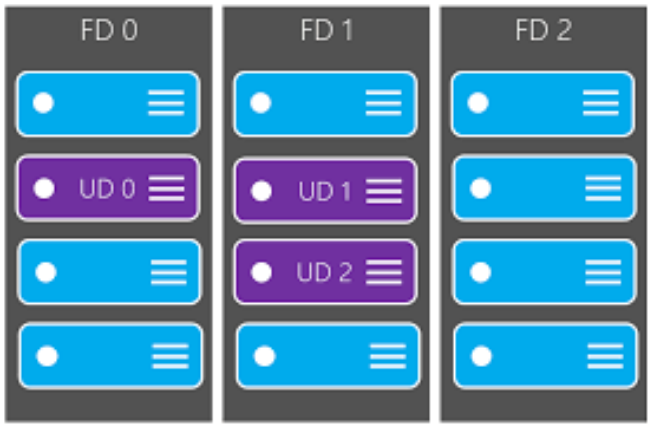
Pearson


Cost Management: Contoso (De
ms.portal.azure.com/#blade/Microsoft_Azure_CostManagement/Menu/costanalysis
Microsoft Azure (Preview)
Report a bug
Search resources, services, and docs (G+/)
user@contoso.com
CONTOSO
Home > Cost Management + Billing - Billing accounts > Cost Management + Billing > Cost Management: Contoso (Demo) - Cost analysis
Cost Management: Contoso (Demo) - Cost analysis
Billing account
Search (Ctrl+/)
Overview
Go to billing account
Access control
Diagnose and solve problems
Cost Management
Cost analysis
Cost alerts
Budgets
Advisor recommendations
Cloudyn
Settings
Exports
Cloud connectors (Preview)
Support + troubleshooting
New support request
Save
Save as
Delete view
Share
Refresh
Export
Settings
How satisfied are you with cost analysis?
Scope : Contoso (Demo)
Accumulated costs
Oct 2019
Add filter
ACTUAL COST (USD)
$54,015.90
FORECAST: CHART VIEW ON
$80,301.76
BUDGET: AAA
$10 /mo
Group by: None
Granularity: Accumulated
Area
$100K
$80K
$60K
$40K
$20K
$0
Oct 1
Oct 3
Oct 5
Oct 7
Oct 9
Oct 11
Oct 13
Oct 15
Oct 17
Oct 19
Oct 21
Oct 23
Oct 25
Oct 31
Accumulated cost
Monthly budget
Overage
Forecast cost
Overage forecast
Service name
virtual machines
$18,816....
azure stack
$7,546.35
expressroute
$4,406.20
storage
$3,896.52
hdinsight
$3,346.15
azure app service
Location
$11,643....
azure stack
$7,546.35
$7,291.11
$5,720.54
$4,743.78
Enrollment account name
$32,882....
azure stack team
$7,639.90
$4,623.20
$2,513.45
$2,012.38
towboat team


Topics
Event Subscriptions
IoT Hub
Blob Storage
Resource Groups
Azure Subscriptions
Event Hubs
Custom Topics
Storage (GPv2)
Azure Functions
Logic Apps
Azure Automation
WebHooks
Event Hubs
Event Handlers
Event Publishers

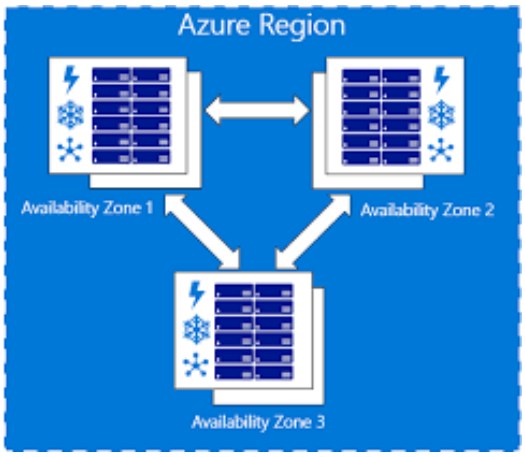

Data Platform Solution Design
Pearson

Availability Set



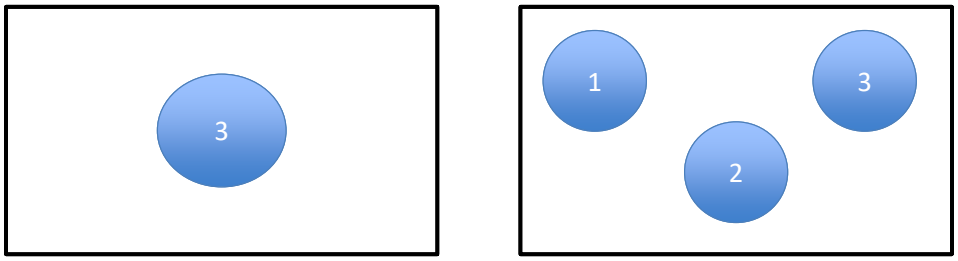
Pearson

Availability Zone



Pearson

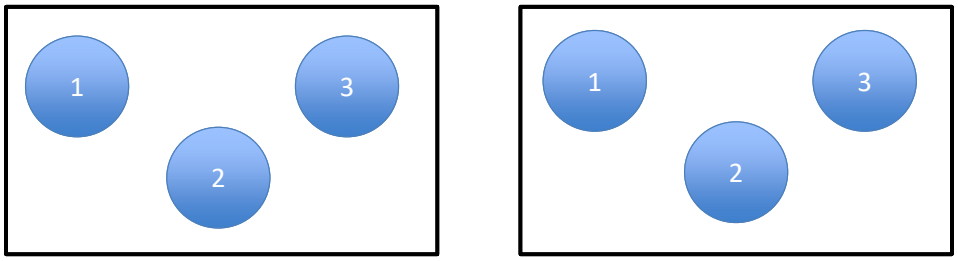
Storage Account Replication



LRS ZRS

Pearson

Storage Account Replication

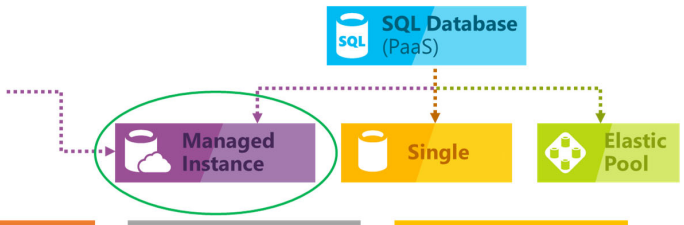


GRS – RA/GRS

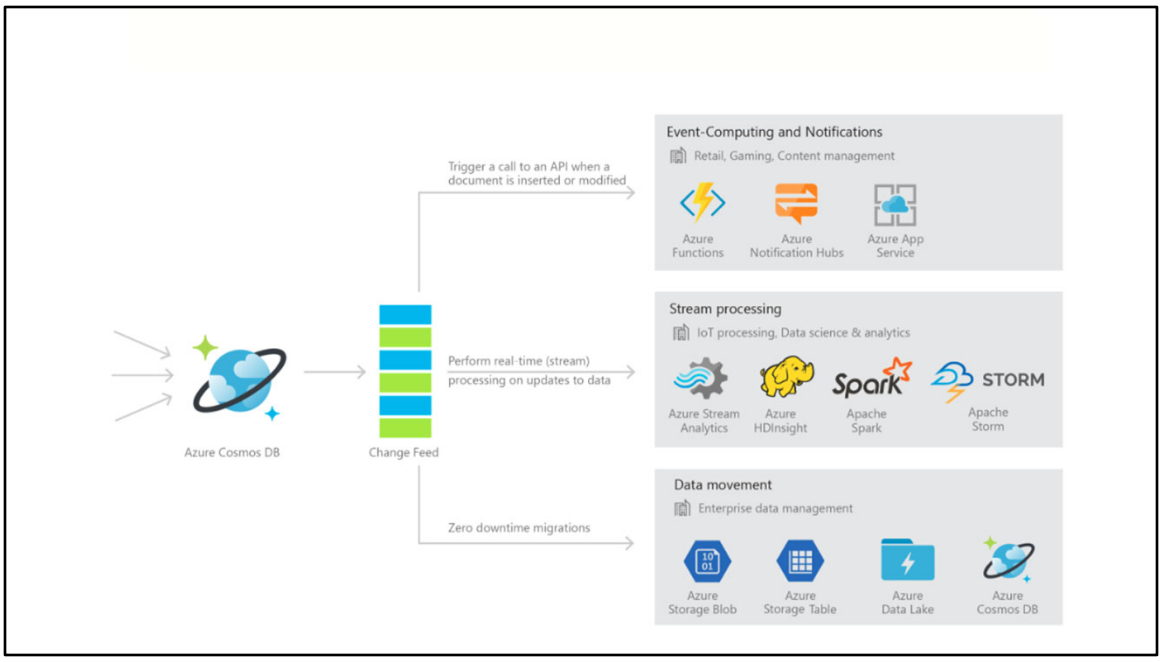
Pearson

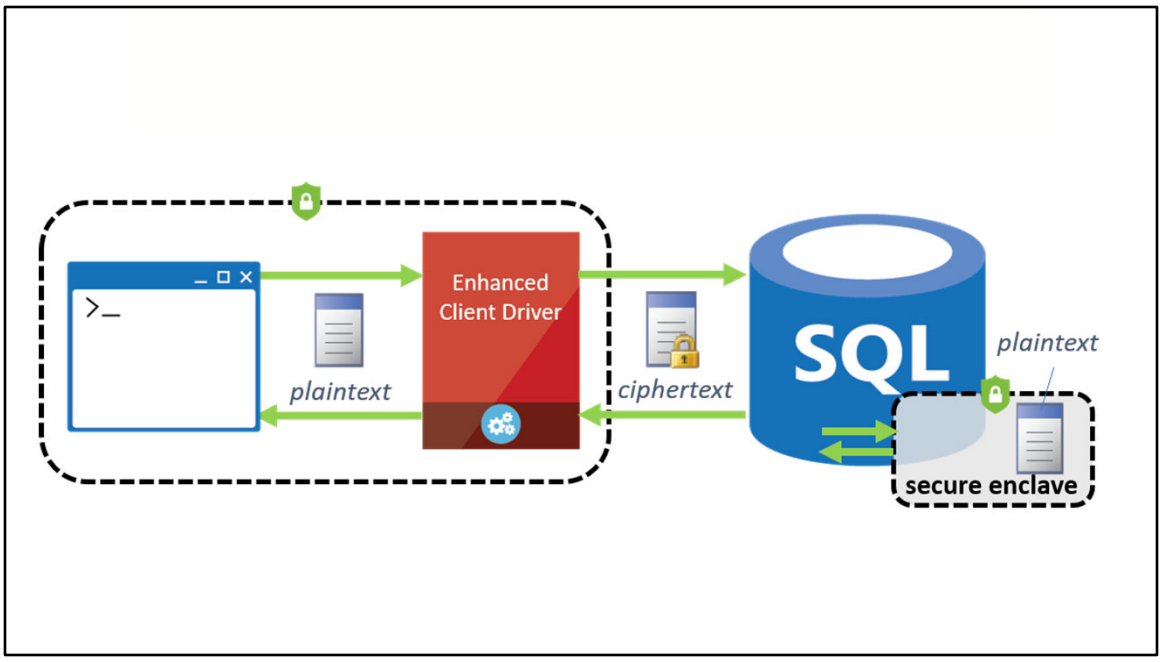
What is SQL Database Managed Instance?

New deployment option that enables frictionless migration for SQL apps and modernization in a fully managed service

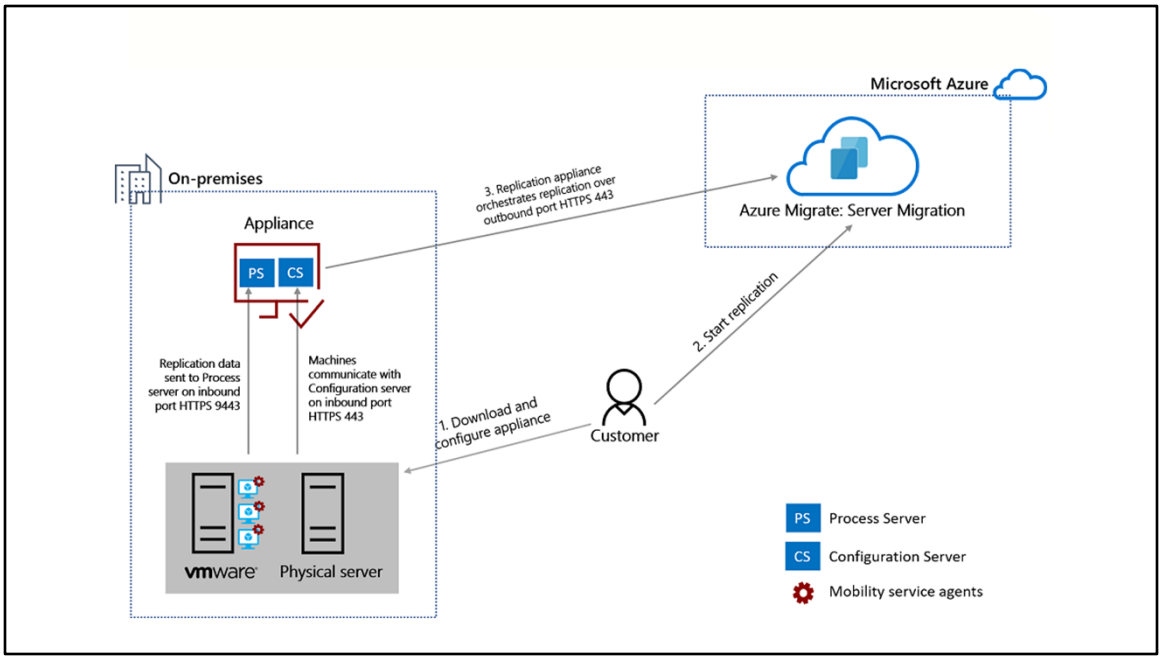


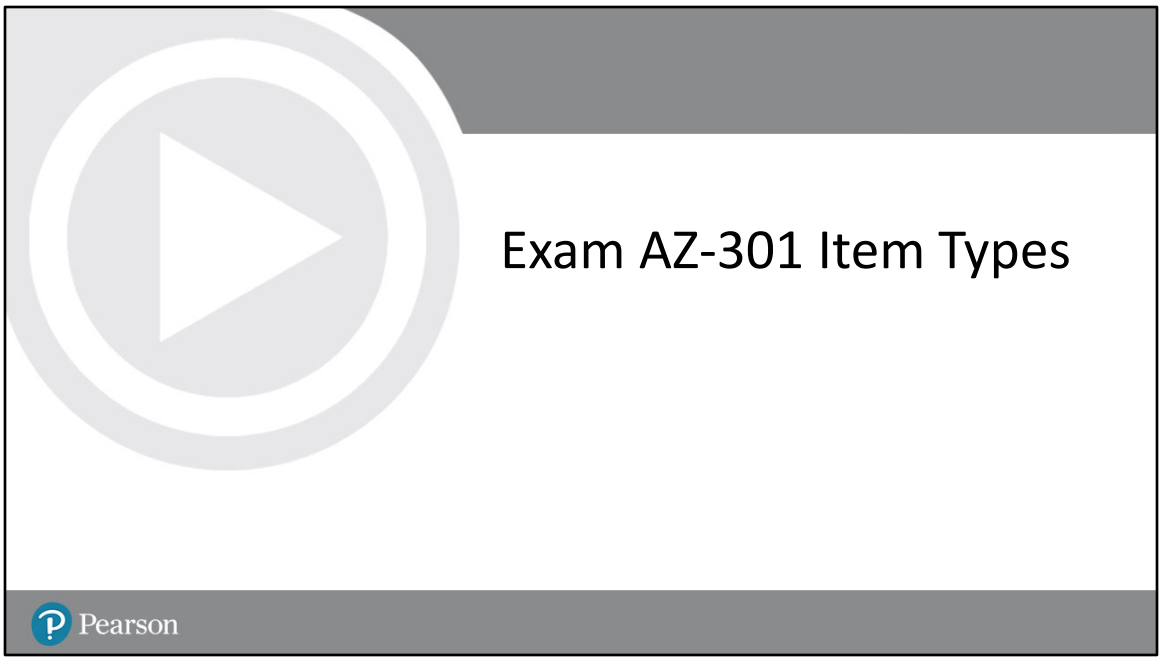
Easy lift and shift	Fully managed PaaS	Full isolation and security	New business model
• Fully-fledged SQL instance with nearly 100% compat with on-prem	• Built on the same PaaS service infrastructure • All PaaS features	• Native VNET implementation • Private IP addresses	• Competitive • Transparent • Frictionless


Azure Cosmos DB
Change Feed
Trigger a call to an API when a document is inserted or modified
Perform real-time (stream) processing on updates to data
Zero downtime migrations
Event-Computing and Notifications
Retail, Gaming, Content management
Azure Functions
Azure Notification Hubs
Azure App Service
Stream processing
IoT processing, Data science & analytics
Azure Stream Analytics
Azure HDInsight
Apache Spark
Apache Storm
Data movement
Enterprise data management
Azure Storage Blob
Azure Storage Table
Azure Data Lake
Azure Cosmos DB

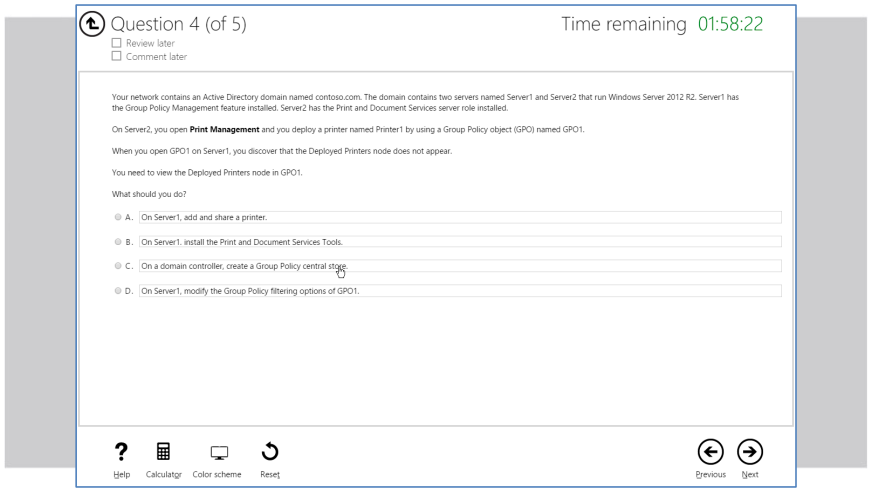

Enhanced
Client Driver
plaintext
ciphertext
SQL
plaintext
secure enclave

Business Continuity/High Availability Design
Pearson


Microsoft Azure
On-premises
Azure Migrate: Server Migration
3. Replication appliance orchestrates replication over outbound port HTTPS 443
Appliance
PS
CS
2. Start replication
Replication data sent to Process server on inbound port HTTPS 9443
Machines communicate with Configuration server on inbound port HTTPS 443
1. Download and configure appliance
Customer
vmware
Physical server
PS Process Server
CS Configuration Server
Mobility service agents

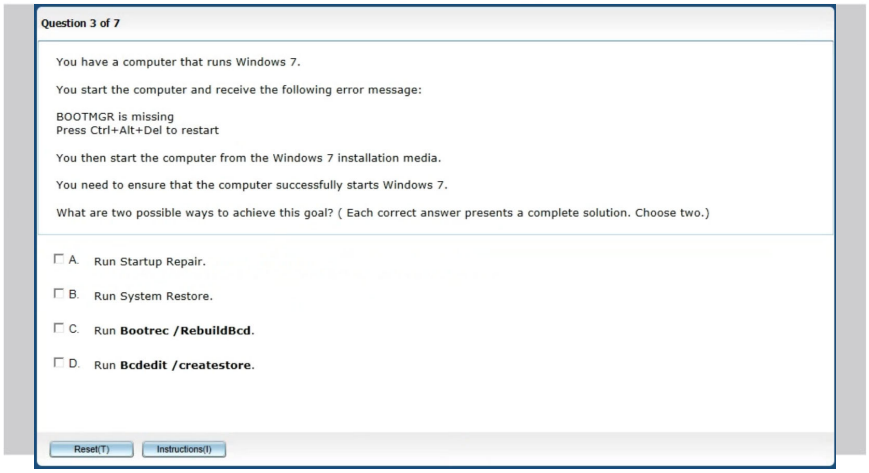

Exam AZ-301 Item Types
Pearson

Single-Answer Multiple Choice



Pearson

Multiple-Answer Multiple Choice



Pearson

Repeated Scenario

You need to move an Azure VM to another hardware host.

Solution: You redeploy the VM.

Does this solution meet the goal?

a. Yes
b. No

Repeated Scenario

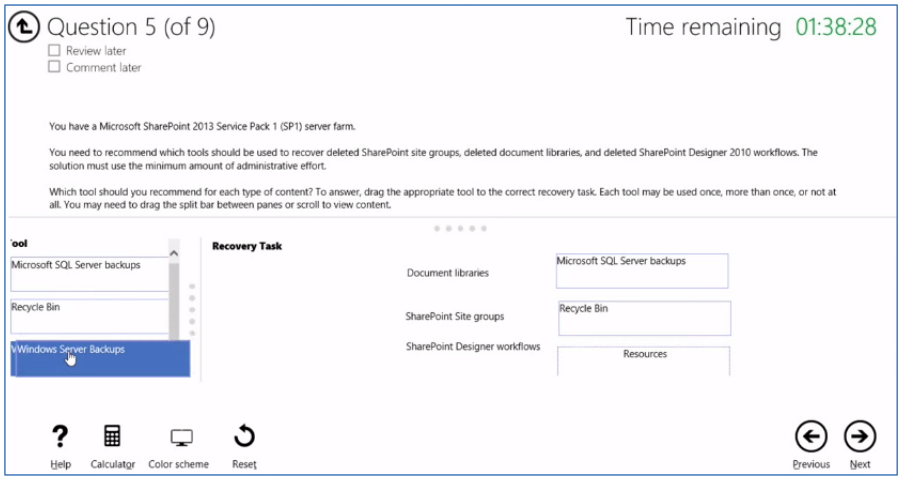
You need to move an Azure VM to another hardware host.

Solution: You restart the VM.

Does this solution meet the goal?

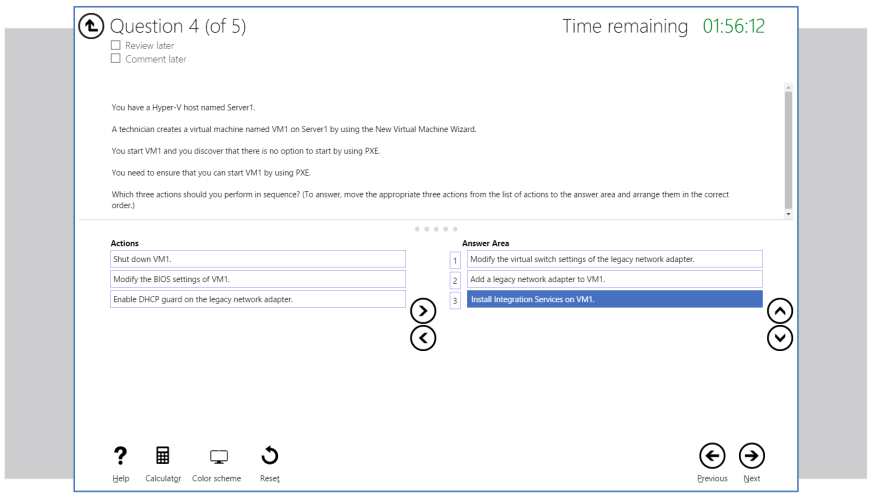
a. Yes
b. No

Select and Place



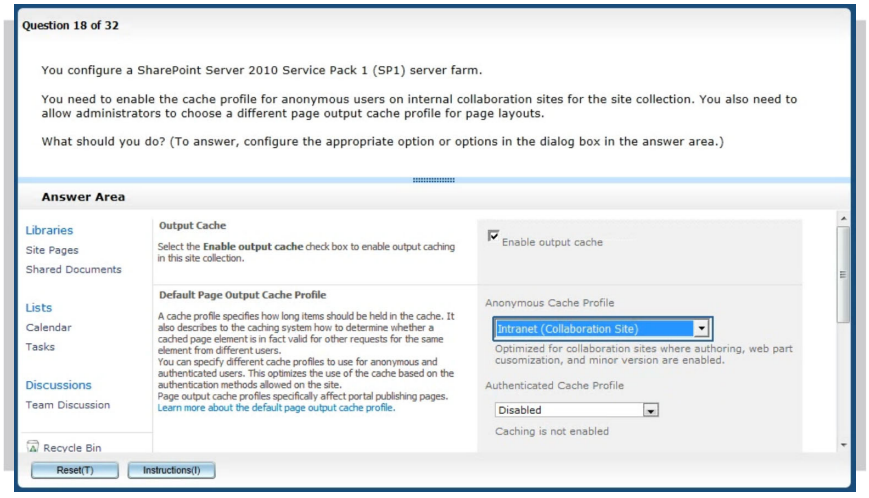
Pearson

Build List and Reorder



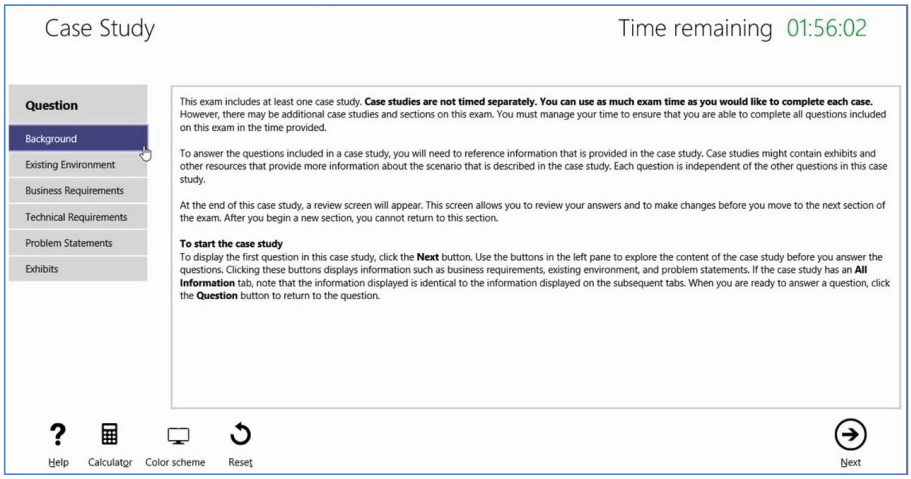
Pearson

Active Screen



Pearson

Case Study



Pearson

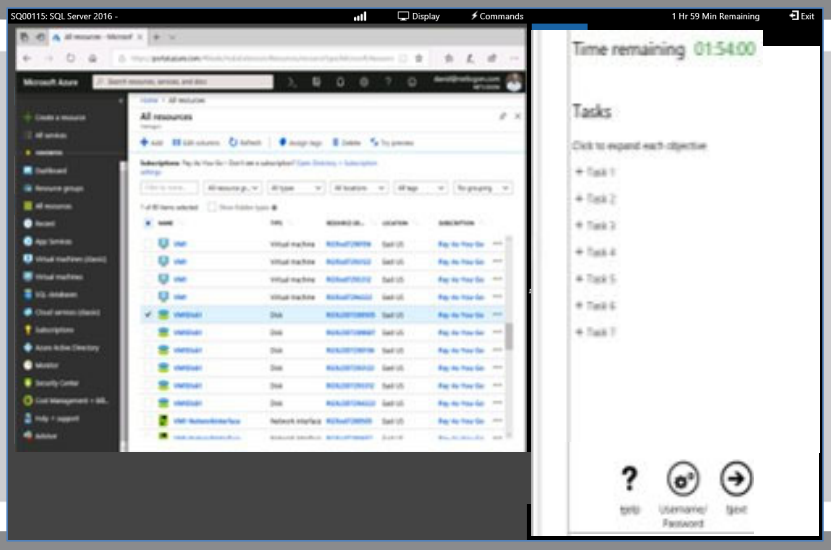
Statement / Code Analysis

```
private void btnEquals_Click(object sender, EventArgs e)
{

    if (plusButtonClicked == true)
    {
        total2 = totall + double.Parse(txtDisplay.Text);
    }
    else if (minusButtonClicked == true)
    {
        total2 = totall - double.Parse(txtDisplay.Text);
    }

        txtDisplay.Text = total2.ToString();
        totall = 0;
}
```

Blah blah blah.	○ Yes	○ No
Another statement.	○ Yes	○ No

Pearson

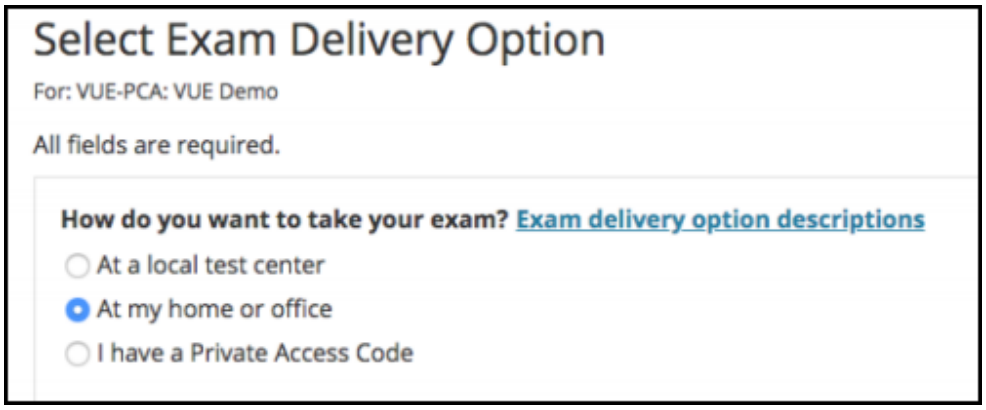
Performance-Based Lab



Pearson

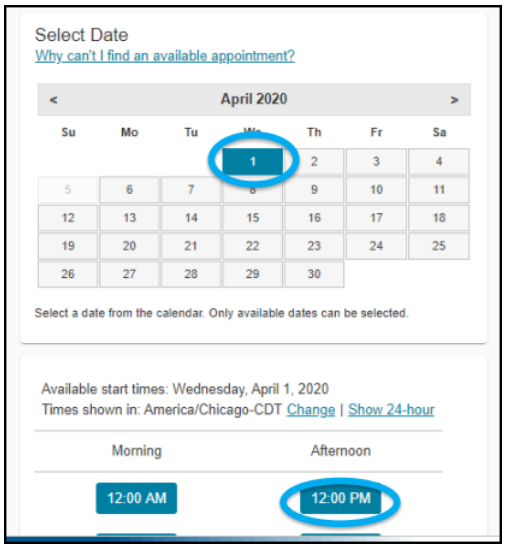
Microsoft Online Testing
Pearson

Microsoft Online Testing Process



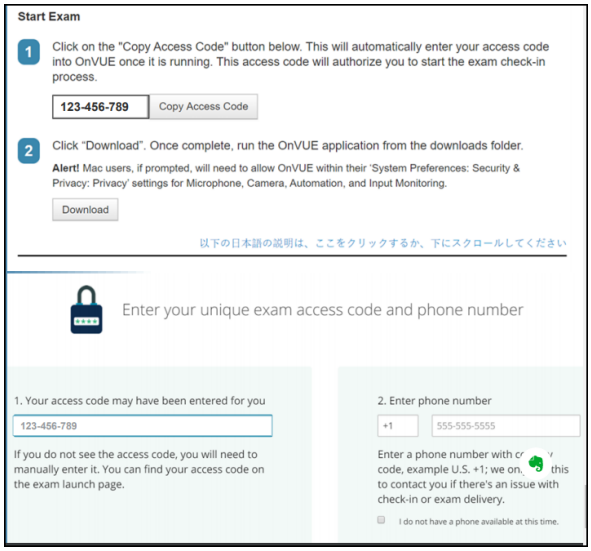
Pearson

Microsoft Online Testing Process



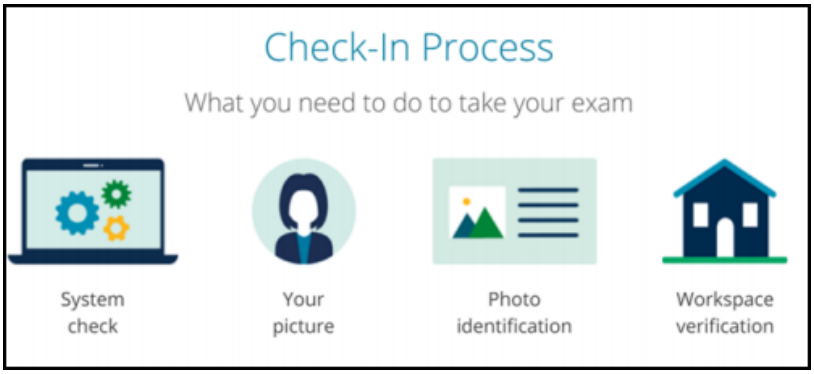
Pearson

Microsoft Online Testing Process



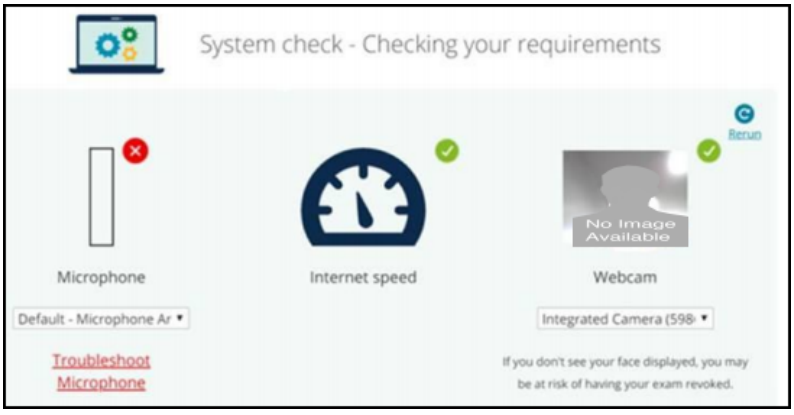
Pearson

Microsoft Online Testing Process



Pearson

Microsoft Online Testing Process

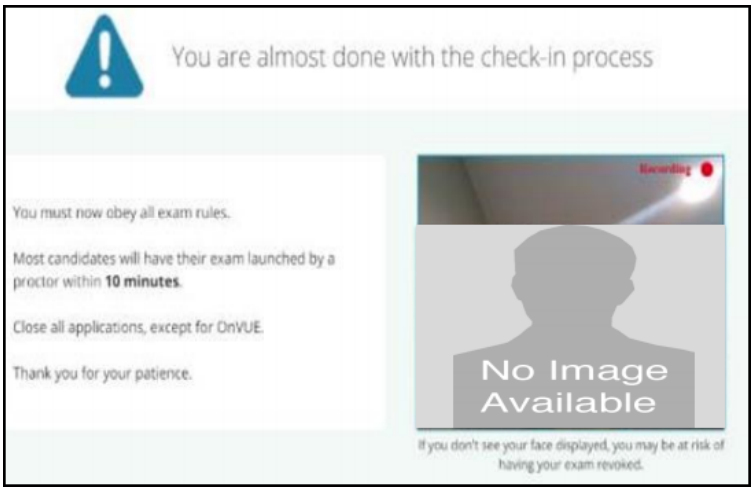


Pearson

Microsoft Online Testing Process

Pearson

Microsoft Online Testing Process



Pearson

AZ-301 Exam Strategy/Tips

- Focus your skills accordingly:
  - 60 percent Azure portal
  - 20 percent Azure PowerShell
  - 10 percent Azure CLI
  - 10 percent KQL
- Expect performance-based labs, and be surprised if you don't see 'em

Pearson

Thank You!

- Course materials: **timw.info/az301**
- Twitter: **@TechTrainerTim**
- Website: **TechTrainerTim.com**

Pearson