



Cloud Operations Using Microsoft Azure

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GIS
INSPIRING
WHAT'S
NEXT

Agenda

- Overview
 - ArcGIS Enterprise on Azure strategy
 - Deployment Options
- What's new
 - 10.6
 - 10.6.1
- Automation, Upgrades
- Tips and Tricks
- Planned work
 - 10.7
 - 10.7.1

Quick Survey

- Role within the org – Developer/ IT admin/ GIS Admin/ Manager?
- Directly responsible for the management (install/upgrade) of ArcGIS Enterprise?
- Already using cloud/ Planning to in next 6 months/ Long term Plan?
- Already used Cloud Builder previously – Yes/No?



Overview

ArcGIS Enterprise on Microsoft Azure

“Our mission is make deploying and managing ArcGIS Enterprise on Microsoft Azure as seamless as possible.”

- ArcGIS Enterprise Team

How do we achieve that?

- Ready to use Virtual Machine Images
 - Public Azure (54 Regions)
 - U.S. Government Cloud (Fairfax)
- Easy to deploy and manage
 - Deployment Tools
 - Cloud Builder
 - Automation

The screenshot displays the Microsoft Azure Marketplace page for ArcGIS Enterprise. The page includes a navigation bar with links for 'Why Azure', 'Solutions', 'Products', 'Documentation', 'Pricing', 'Partners', 'Blog', 'Resources', and 'Support'. A 'FREE ACCOUNT' button is visible in the top right. The main content area features the Esri logo and the product name 'ArcGIS Enterprise'. Below this, there is a 'GET IT NOW' button and a 'Sign in to azure' button. A 'U.S. Government Cloud' checkbox is also present. The 'Server Role' section is highlighted, showing a list of roles: ArcGIS Enterprise (selected), GeoEvent Server, GeoAnalytics Server, Image Server, and GIS Server. Each role has a brief description of its purpose. The page also includes a 'My Map' preview and a 'Get Started!' section with a 'Sign in to azure' button.

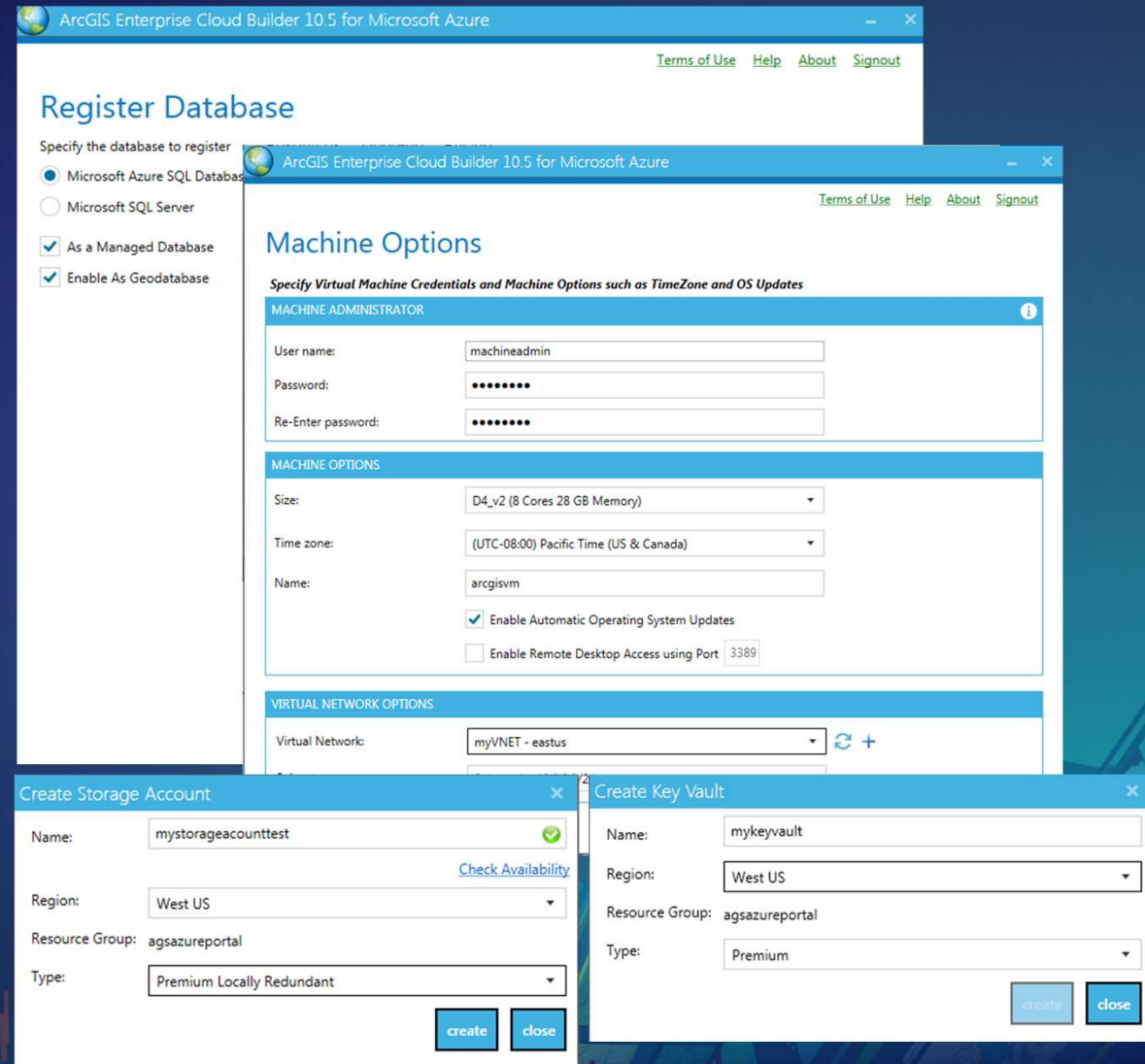
Why it is a big deal | Azure IaaS Concepts

- Resource Groups
- Load Balancers
 - Layer 7 vs Layer 4
- Traffic Rules
 - NAT (Network Address Translation) Rules
 - Load Balancer Rules, Health Probes
- Virtual Networks
 - Subnets, CIDR, Network Interfaces (NICs)
 - Network Security Groups
- Windows Firewall Configuration
- Web Server SSL Certificates
- Availability Sets/ VM Scale Sets
- Azure Key Vault
- Azure Active Directory



Cloud Builder

- Desktop application for Windows
- Wizard Driven Experience
 - Deployment
 - Post Deployment
- Configure Azure native features
 - Azure Managed Databases
 - Azure Key Vault
 - Azure Blob Storage
 - Azure Data Lake Store *
 - Azure Active Directory *





Concepts

Site Deployments

ArcGIS Enterprise Sites

Portal for ArcGIS



Hosting Server
Site

Server Sites



ArcGIS
GIS
Server Site



ArcGIS
Image
Server Site



ArcGIS
GeoEvent
Server Site



ArcGIS
GeoAnalytics
Server Site



Generic
Server Site

Data Stores



ArcGIS
Relational
Data Store



ArcGIS
Tile Cache
Data Store



ArcGIS
Spatiotemporal
Big Data Store



Big Data
File Share



Generic Data Store
(Non-Esri)

Deployment Options



Single Machine



Multiple Machines



Single Tier
(All in One)



Portal for
ArcGIS



Hosting
Server



Reverse
Proxy



ArcGIS
Data Store

Multiple Tiers

Storage
Options



File Share



Azure Blobs + Tables



Azure Files (SMB)

Getting Started

How

Getting Started

- Get Azure subscription
 - <https://azure.com>
- Get ArcGIS Enterprise software license
 - <https://accounts.esri.com>
- Get ArcGIS Enterprise Cloud Builder



Cloud Builder

Demo



What's New

10.6 and 10.6.1

What's New | 10.6

- Automation Options
 - Visual Studio
 - PowerShell
 - Azure CLI
- Deploy VMs for ArcGIS Desktop
- Support for Domain Joining Virtual Machines
- Support for Azure Files (Managed SMB service)
- Non default context (server/portal)



Visual Studio



PowerShell



Command Line



Active Directory Domain



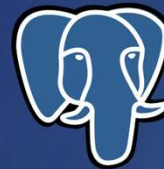
Azure Files

What's New | 10.6.1

- Upgrades
 - Standalone GIS Servers
 - Base Deployment + Federated Servers



- Azure Database for PostgreSQL



PostgreSQL

- Enterprise Logins using Azure Active Directory
 - Documentation



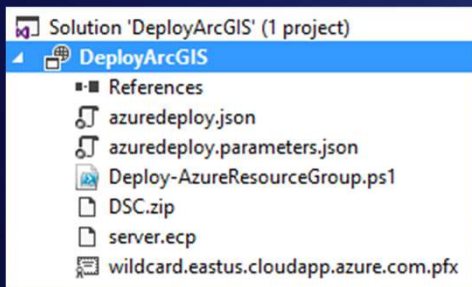
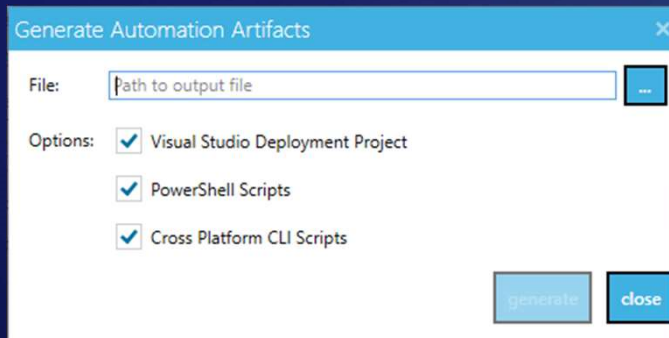


Automation

New at 10.6

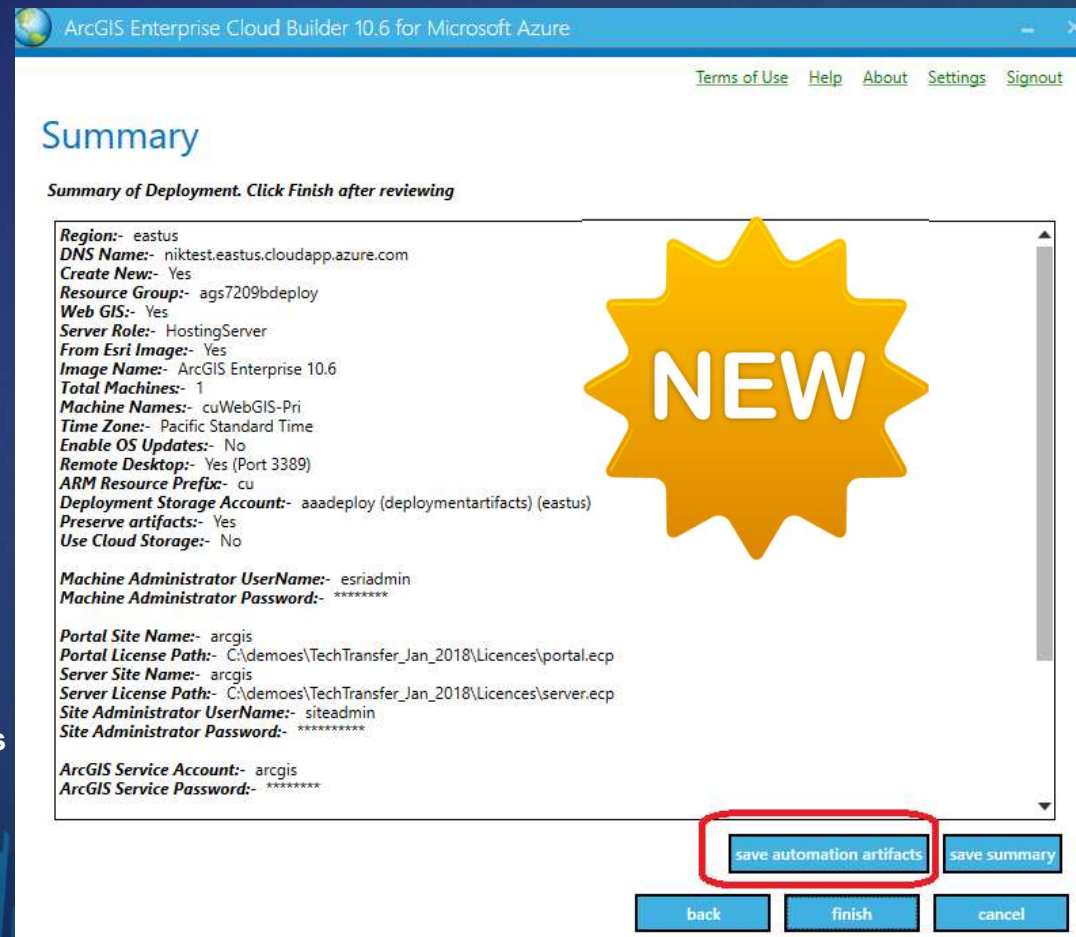
Cloud Builder Overview

- Wizard driven deployment experience
- New at 10.6
 - Designer to generate automation artifacts



Deployment Artifacts

- ARM Template
- Template Parameters
- Automation
- Licenses
- SSL Certificate



Cloud Builder VS. Automation



Visual Studio



BASH
THE BOURNE-AGAIN SHELL



PowerShell

Customize or Extend



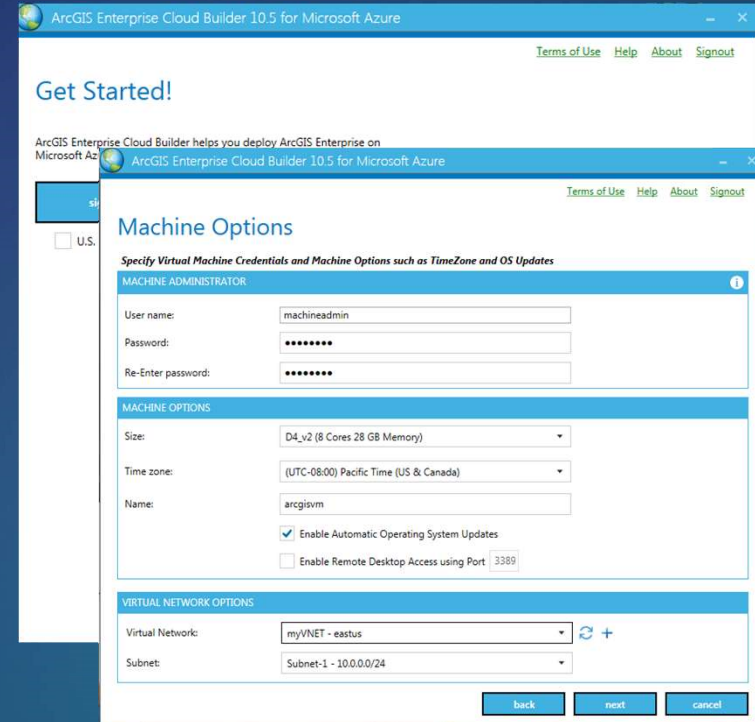
Wizard Driven



Power



Simplicity



Typical Customizations and Extensibility

- Resource Naming Convention
 - Change the default names assigned by Cloud Builder (Load Balancers, Disks, NICs etc.)
- Place machines in separate subnets
 - Cloud Builder UI limits mapping NICs to single subnet
- Configure Network Security Groups (NSGs) as part of deployment
- Integrate with Azure Monitoring
 - OMS Monitoring Extension
 - Azure Alerts
- Configure VM backup Policy
- Scheduled Maintenance
- ...

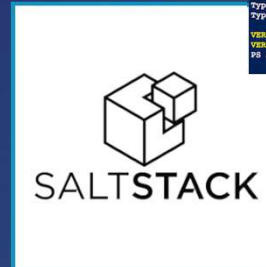
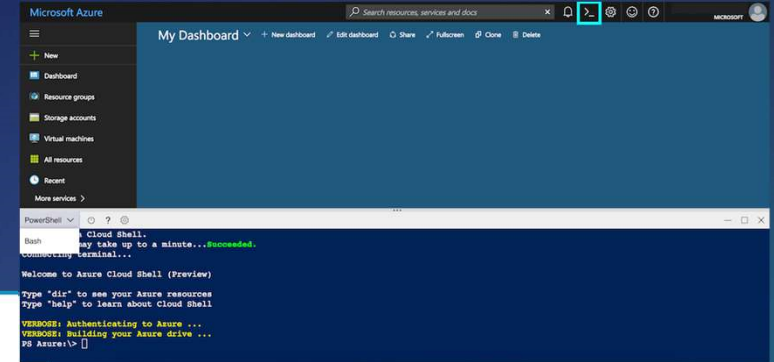


Edits Outside Cloud Builder? ... Training wheels are off!

Integrate with ...



Azure Cloud Shell



ANSIBLE



PowerShell DSC



Travis CI



Automation

Demo



Upgrades

Demo



Under the hood

How Cloud Builder works

Two Responsibilities

- Provision Infrastructure Resources
 - Azure Resource Manager (ARM)

NAME	TYPE	LOCATION
citydot	Public IP address	West US
citydot	Storage account	West US
citydot-OSDisk	Disk	West US
citydotvm	Virtual machine	West US
citydotvm-nic	Network interface	West US
dpLoadBalancer	Load balancer	West US
portaltportal	Virtual network	West US
















- Trigger In-VM Configuration of ArcGIS Components
 - Automation using PowerShell Desired State Configuration (DSC)
 - Azure DSC Extension (10.6)



1 Provision Azure Infrastructure Resources

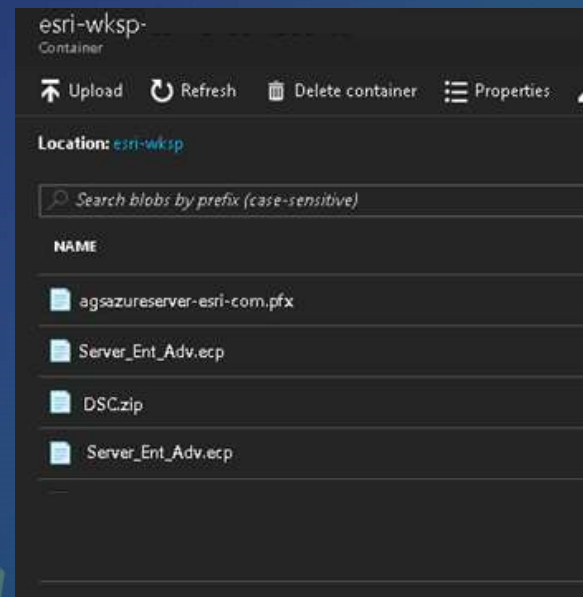
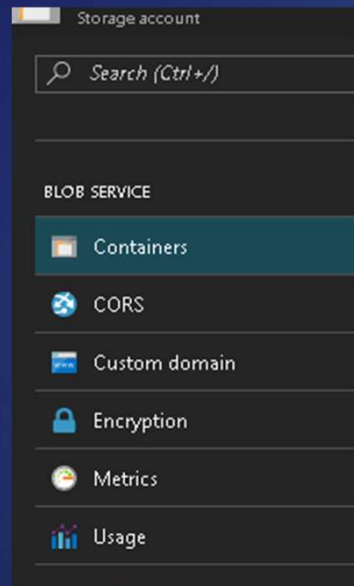
- Virtual Machines
 - Network Interfaces
 - Disks
- Availability Sets
- Load Balancers
- Virtual Networks

- etc

AVAILABILITY SET		
<input type="checkbox"/>	 ouAvailabilitySet-BaseDeployment	Availability set
<input type="checkbox"/>	 ouAvailabilitySet-SpatiotemporalDataStore	Availability set
DISK		
<input type="checkbox"/>	 devsummitsm-OSDisk	Disk
<input type="checkbox"/>	 ouSpatioT-0-DataDisk	Disk
<input type="checkbox"/>	 ouSpatioT-0-OSDisk	Disk
<input type="checkbox"/>	 ouSpatioT-1-DataDisk	Disk
<input type="checkbox"/>	 ouSpatioT-1-OSDisk	Disk
<input type="checkbox"/>	 ouSpatioT-2-DataDisk	Disk
<input type="checkbox"/>	 ouSpatioT-2-OSDisk	Disk
LOAD BALANCER		
<input type="checkbox"/>	 ouLoadBalancer	Load balancer
NETWORK INTERFACE		
<input type="checkbox"/>	 devsummitsm-nic	Network interface
<input type="checkbox"/>	 ouSpatioT-0-nic	Network interface
<input type="checkbox"/>	 ouSpatioT-1-nic	Network interface
<input type="checkbox"/>	 ouSpatioT-2-nic	Network interface
VIRTUAL MACHINE		
<input type="checkbox"/>	 devsummitsm	Virtual machine

2 Stage Deployment Artifacts

- SSL Certificate
 - Certificate.pfx
- Automation Code
 - DSC.zip
- License
 - License.prvc



3 Trigger Deployment using ARM Template



az group deployment create --name \$deploymentName --resource-group \$resourceGroupName --template-file 'azuredeploy.json' --parameters \$paramsFile



New-AzureRmResourceGroupDeployment -Name \$deploymentName -ResourceGroupName \$ResourceGroupName -TemplateFile \$TemplateFile -TemplateParameterFile \$TemplateParametersFile

The screenshot shows the Azure portal interface for the 'DevsummitSM - Deployments' resource group. The left sidebar contains navigation options: Overview, Activity log, Access control (IAM), and Tags. The main area displays a table of deployment records with columns for Deployment Name, Status, Timestamp, and Duration. Two deployments are listed, both with a 'Succeeded' status.

DEPLOYMENT NAME	STATUS	TIMESTAMP	DURATION
azuredeploy-0302-1940	✓ Succeeded	3/2/2018, 12:09:48 PM	28 minutes 54 seconds
azuredeploy-0302-0227	✓ Succeeded	3/1/2018, 7:28:31 PM	1 hour 37 seconds



Tips and Tricks

Recommendations and Troubleshooting

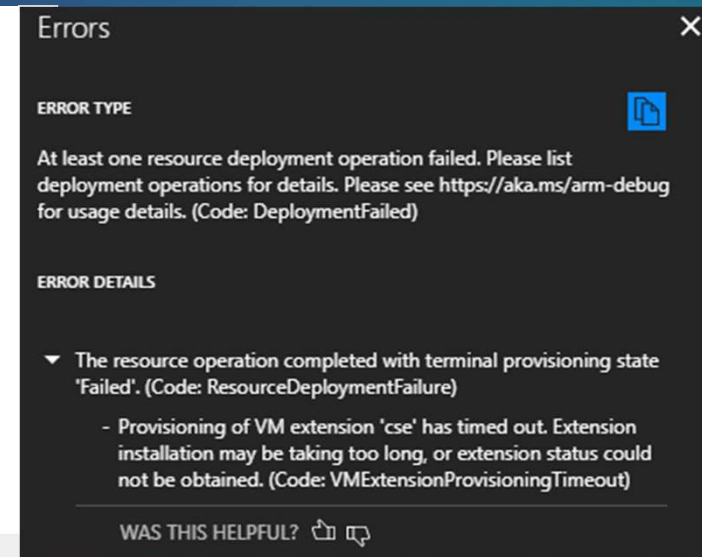
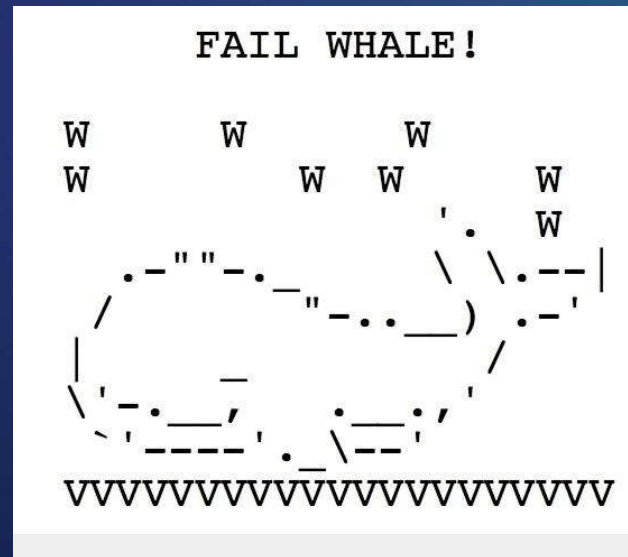
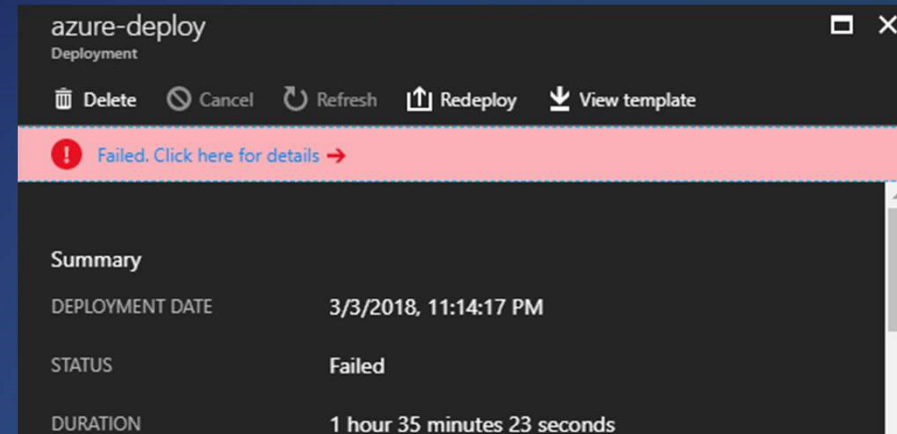
Storage Options | Help choosing

	File Share VM	Azure Blob + Table	Azure Files (SMB)
Latency	Best	Variable	Variable
Performance	Good	Good	OK
Scalability	Managed Disk IOPS	Good	Max 1000 IOPS (*)
Config-Store Content-Store	Yes	Yes	Yes
Server Directories	Yes	No	No
High Availability	No	Yes	Yes

Single Machine VMs have 99.9 SLA + Scheduled Maintenance

Troubleshooting deployment failures

- Examine Deployment in Azure Portal
- Examine log files for errors
 - Local Log, Remote Log
- Provide strong password for Windows Credentials
- Try the defaults
 - Start with small deployments
- Submit a support incident
 - Log Files
 - Deployment Summary

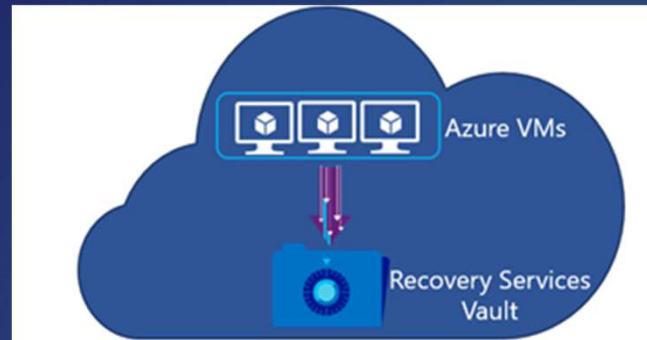


What's Next

Planned Features for 10.7 and 10.7.1

Planned Features | 10.7

- VM Level Backup/Restore
 - Azure Recovery Services Vault
 - In place backup/restore
- Monitoring
 - Azure Monitor
 - OMS Log Analytics
- Solution Templates
- ARM Templates on github



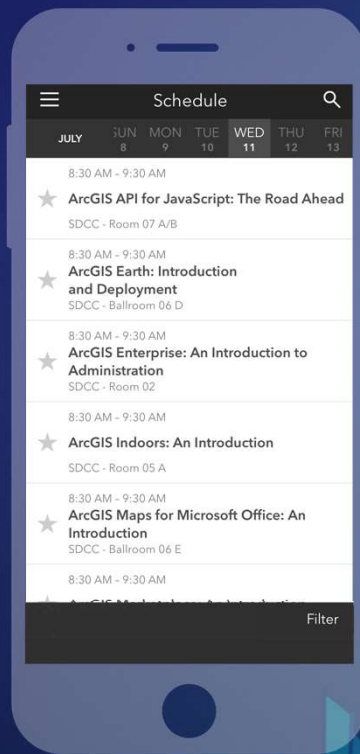
Disclaimer Subject to Change!

Please Take Our Survey on the App

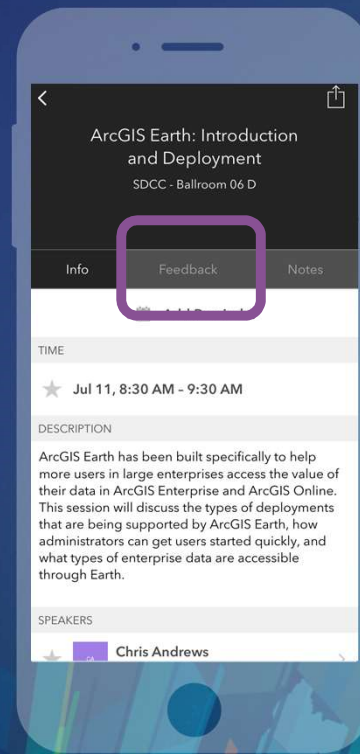
Download the Esri Events app and find your event



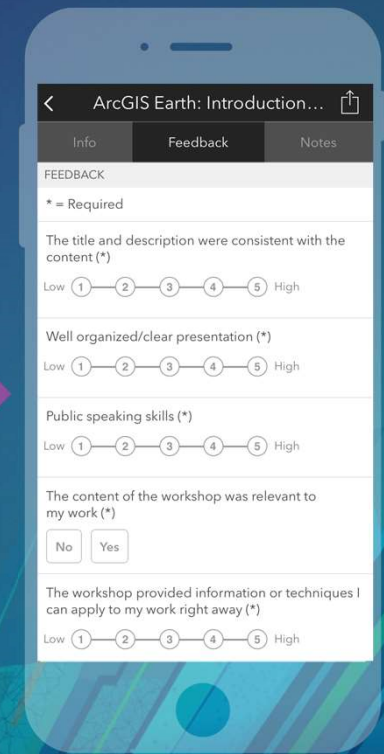
Select the session you attended



Scroll down to find the feedback section



Complete answers and select "Submit"





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WHERE