Cloud Operations Using Microsoft Azure

Nikhil Shampur
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
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
Deployment Options

Single Machine

Multiple Machines

Single Tier (All in One)

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)
What’s New | 10.6.1

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

- Azure Database for 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

Summary

Summary of Deployment. Click Finish after reviewing.

Region: eastus
DNS Name: nritktest2473425.cloudapp.azure.com
Create New: Yes
Resource Group: ags720lbdeploy
Web GIS: Yes
Server Role: HostingServer
From ArcGIS: Yes
Image Name: ArcGIS Enterprise 10.6
Total Machines: 1
Machine Names: cawebGIS-P1
Time Zone: Pacific Standard Time
Enable OS Updates: No
Remote Desktop: Yes (Port 3308)
ARM Resource Prefix: -cs
Deployment Storage Account: saadeploy (deploymentartifacts) (eastus)
Preserve Artifacts: Yes
Use Cloud Storage: No
Machine Administrator Username: esadin
Machine Administrator Password: ********
Portal Site Name: arcgis
Portal License Path: C:\demoes\TechTransfer_Jan_2018\Licences\portal.exe
Server Site Name: arcgis
Server License Path: C:\demoes\TechTransfer_Jan_2018\Licences\server.exe
Site Administrator Username: esadin
Site Administrator Password: ********
ArcGIS Service Account: arcgis
ArcGIS Service Password: ********

NEW
Cloud Builder VS. Automation

Visual Studio

Customize or Extend

Wizard Driven

PowerShell

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 Maintainence**

...
Integrate with ...

- Azure Cloud Shell
- PowerShell DSC
- Ansible
- Octopus Deploy
- Vagrant
- TeamCity
- Travis CI
Upgrades
Demo
Under the hood
How Cloud Builder works
Two Responsibilities

- Provision Infrastructure Resources
  - Azure Resource Manager (ARM)

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

- Virtual Machines
  - Network Interfaces
  - Disks
- Availability Sets
- Load Balancers
- Virtual Networks
- etc
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
## Storage Options | **Help choosing**

<table>
<thead>
<tr>
<th></th>
<th>File Share VM</th>
<th>Azure Blob + Table</th>
<th>Azure Files (SMB)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Latency</strong></td>
<td>Best</td>
<td>Variable</td>
<td>Variable</td>
</tr>
<tr>
<td><strong>Performance</strong></td>
<td>Good</td>
<td>Good</td>
<td>OK</td>
</tr>
<tr>
<td><strong>Scalability</strong></td>
<td>Managed Disk IOPS</td>
<td>Good</td>
<td>Max 1000 IOPS (*)</td>
</tr>
<tr>
<td><strong>Config-Store</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Content-Store</strong></td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td><strong>Server Directories</strong></td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>High Availability</strong></td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*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”