DevSummit DC

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ArcGIS for Server: In the Cloud

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Session Outline

- Cloud Overview
  - Benefits
  - Types of clouds
- ArcGIS in AWS
  - Cloud Builder
  - Maintenance
- ArcGIS in Azure
- Security

Cloud Overview

Utility Computing

ON DEMAND
UNIFORM
PAY AS YOU GO
AVAILABLE

ON DEMAND
UNIFORM
PAY AS YOU GO
AVAILABLE

Benefits

- **Can help you optimize…**
  - **Setup Time**
    - **No hardware acquisition time**
    - **Machine images**
  - **Scalability**
    - **Monitor and auto-scale based on utilization**
  - **Cost**
    - **Cap Ex vs. Op Ex**

- 1 Windows Large Instance
- Reserved Instance Pricing
- Heavy Utilization (always on)
- US East (Northern VA)

$602 +

24 x 365

x $0.106/hr

$1530.56/yr

- Add a server for a week
- On-Demand Pricing (per hour, no upfront)
- US East (Northern VA)

24 x 7

x $0.266/hr

$44.69/wk

Types of Clouds

IaaS
Infrastructure as a Service

- **IT Infrastructure / Operation**

Ex. ArcGIS Server on VMs

PaaS
Platform as a Service

- **Application Development**

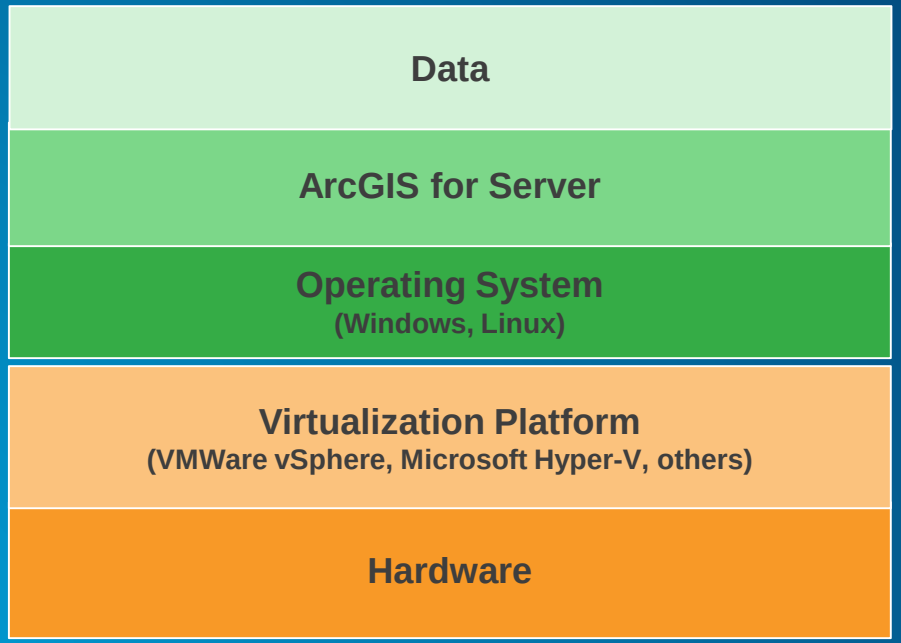
Ex. ArcGIS REST Services

SaaS
Software as a Service

- **Business Processes / Operation**

Ex. ArcGIS Online

Decreasing User Responsibility


Data
ArcGIS for Server
Operating System
(Windows, Linux)
Virtualization Platform
(VMWare vSphere, Microsoft Hyper-V, others)
Hardware


IBMSmartCloud


amazon
web services™


openstack™


Microsoft Azure

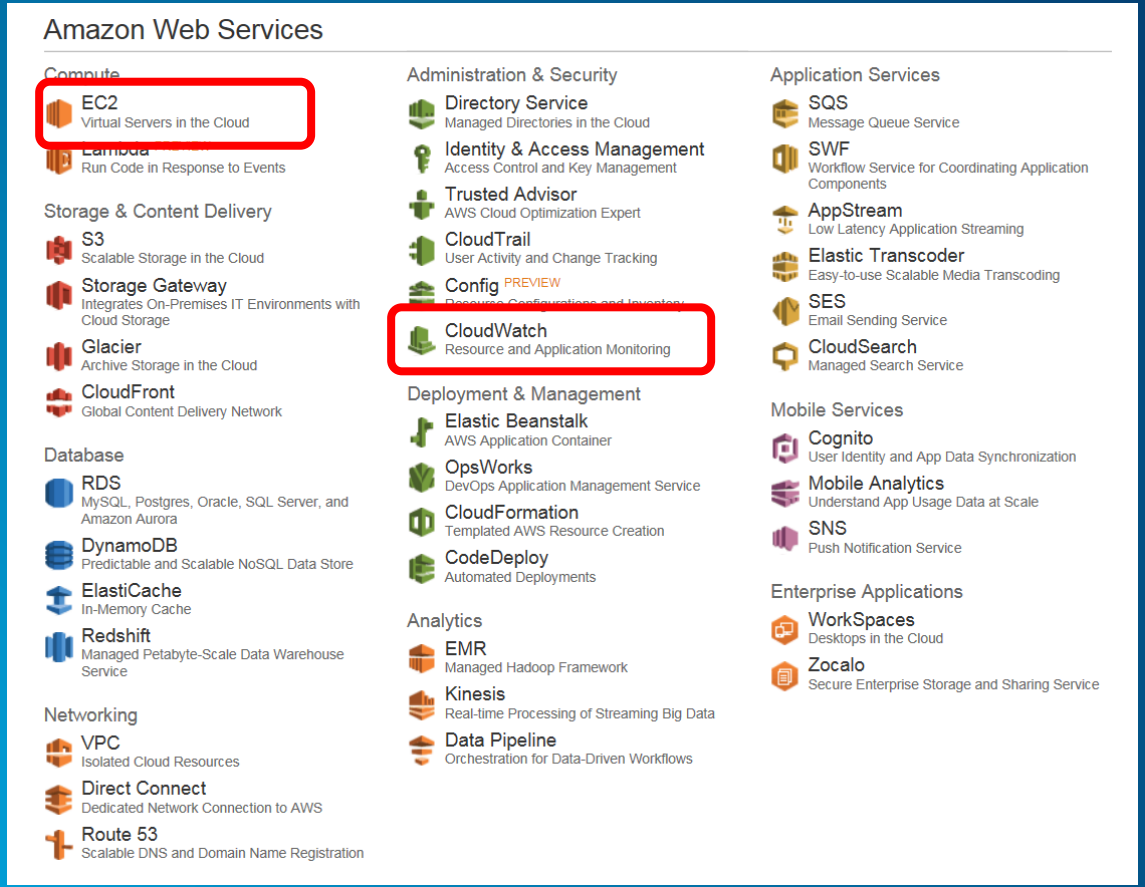

CGI


VCE


verizon
terremark


vmware®

ArcGIS in AWS


Amazon Web Services
Compute
EC2
Virtual Servers in the Cloud
Lambda
Run Code in Response to Events
Storage & Content Delivery
S3
Scalable Storage in the Cloud
Storage Gateway
Integrates On-Premises IT Environments with Cloud Storage
Glacier
Archive Storage in the Cloud
CloudFront
Global Content Delivery Network
Database
RDS
MySQL, Postgres, Oracle, SQL Server, and Amazon Aurora
DynamoDB
Predictable and Scalable NoSQL Data Store
ElastiCache
In-Memory Cache
Redshift
Managed Petabyte-Scale Data Warehouse Service
Networking
VPC
Isolated Cloud Resources
Direct Connect
Dedicated Network Connection to AWS
Route 53
Scalable DNS and Domain Name Registration
Administration & Security
Directory Service
Managed Directories in the Cloud
Identity & Access Management
Access Control and Key Management
Trusted Advisor
AWS Cloud Optimization Expert
CloudTrail
User Activity and Change Tracking
Config PREVIEW
CloudWatch
Resource and Application Monitoring
Deployment & Management
Elastic Beanstalk
AWS Application Container
OpsWorks
DevOps Application Management Service
CloudFormation
Templated AWS Resource Creation
CodeDeploy
Automated Deployments
Analytics
EMR
Managed Hadoop Framework
Kinesis
Real-time Processing of Streaming Big Data
Data Pipeline
Orchestration for Data-Driven Workflows
Application Services
SQS
Message Queue Service
SWF
Workflow Service for Coordinating Application Components
AppStream
Low Latency Application Streaming
Elastic Transcoder
Easy-to-use Scalable Media Transcoding
SES
Email Sending Service
CloudSearch
Managed Search Service
Mobile Services
Cognito
User Identity and App Data Synchronization
Mobile Analytics
Understand App Usage Data at Scale
SNS
Push Notification Service
Enterprise Applications
WorkSpaces
Desktops in the Cloud
Zocalo
Secure Enterprise Storage and Sharing Service

Start Developing with Amazon Web Services

In under 20 minutes, you can be up and running with Amazon Web Services (AWS) using your platform of choice. Each of the following platforms provides sample code to get you started utilizing AWS as fast as possible.

- Accessing the AWS APIs requires valid access keys. Learn more »

Choose Your Platform


Android »


Browser »


iOS »


Java »


.NET »


Node.js »


PHP »


Python »

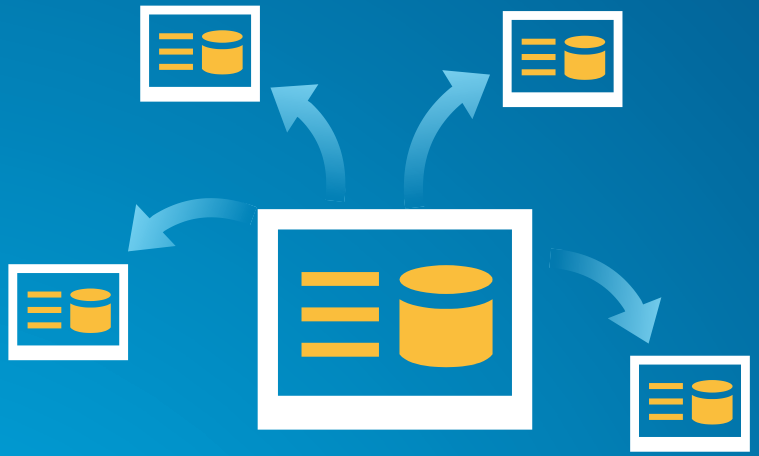

Ruby »

```
$ aws ec2 describe-instances --query 'Reservations[*].Instances[*].[Placement.AvailabilityZone, State.Na
us-west-2a      running i-4b41a37c
us-west-2a      stopped i-a071c394
us-west-2b      stopped i-97a217a0
us-west-2a      running i-3045b007
us-west-2a      running i-6fc67758

$ aws ec2 describe-instances --query 'Reservations[*].Instances[*].[Placement.AvailabilityZone, State.Na
i-4b41a37c
i-3045b007
i-6fc67758
```

Virtual machines (instance types) optimized for:

- General purpose
- Compute
- GPU
- Memory
- Storage



Amazon Machine Image (AMI)

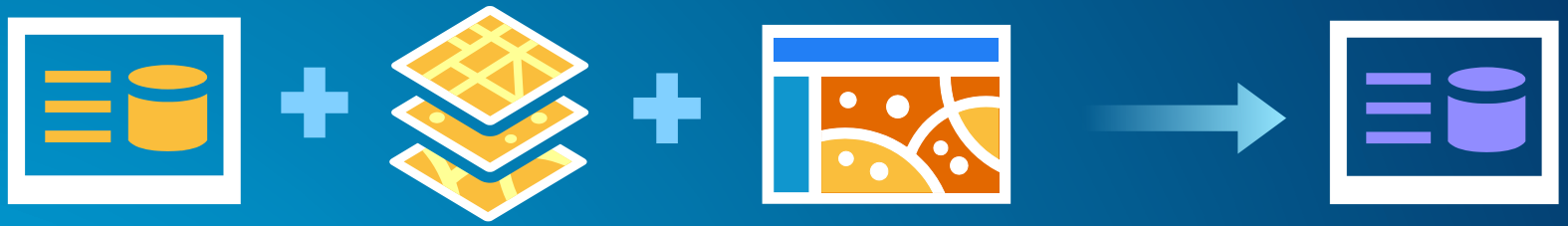
Preconfigured with:

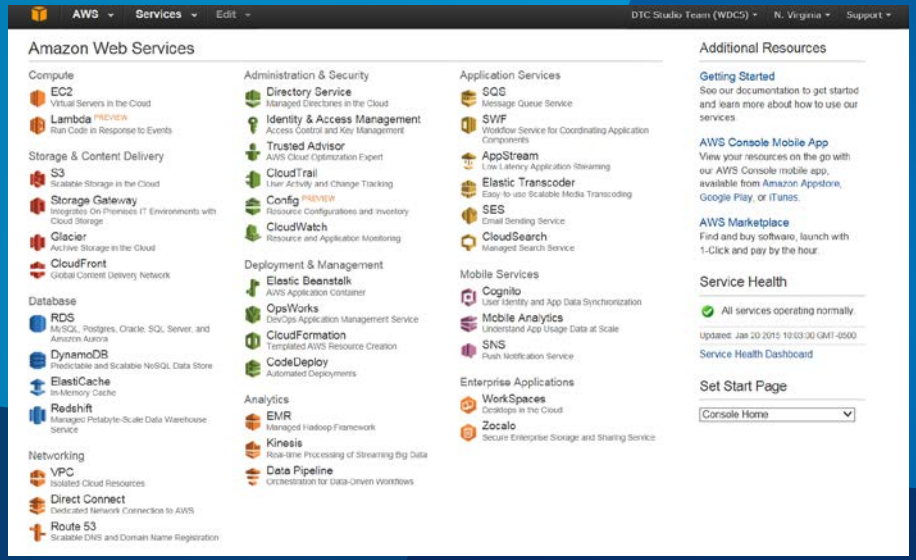
- **Operating system**
- **Architecture (32-bit or 64-bit)**
- **Storage**
- **Applications (i.e. ArcGIS)**

Ubuntu with PostgreSQL

Windows Server with SQL Server

Windows Server with SQL Express

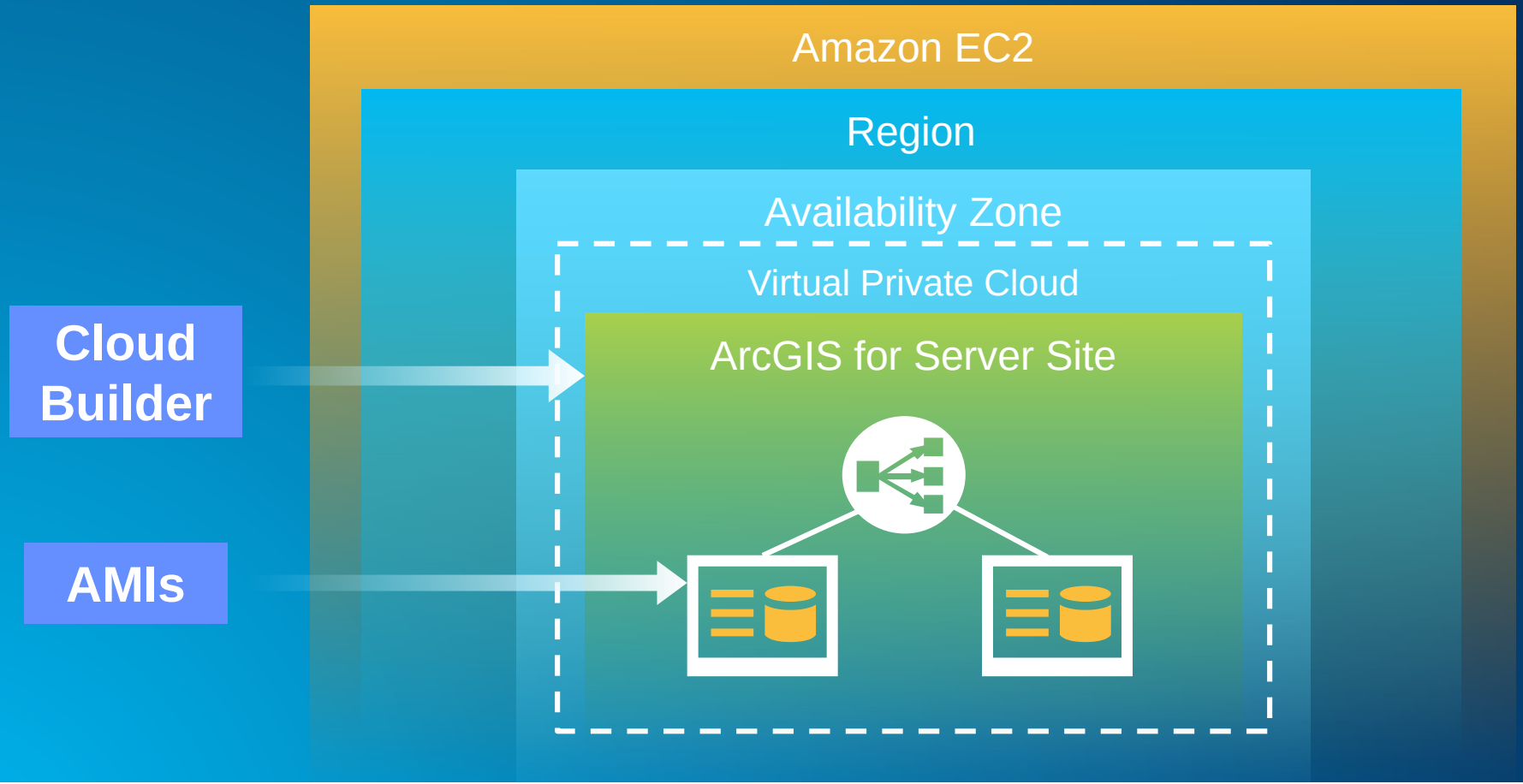

Esri AMI
Services
Web Application
Custom AMI

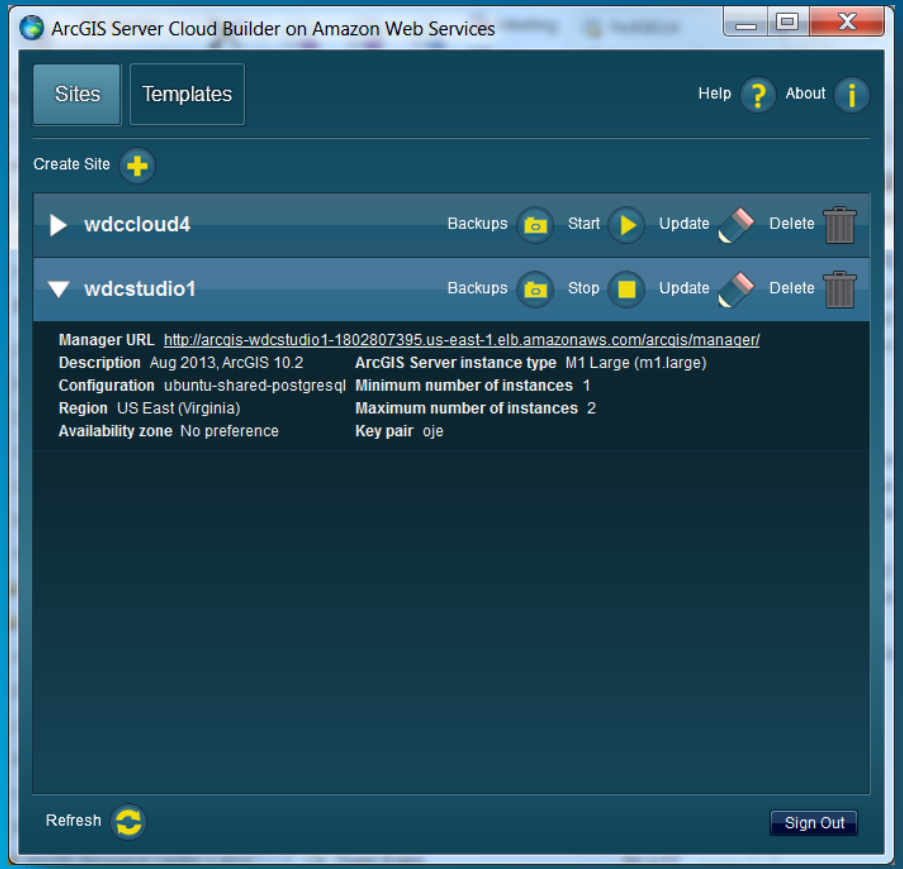


AWS Management Console

Demo

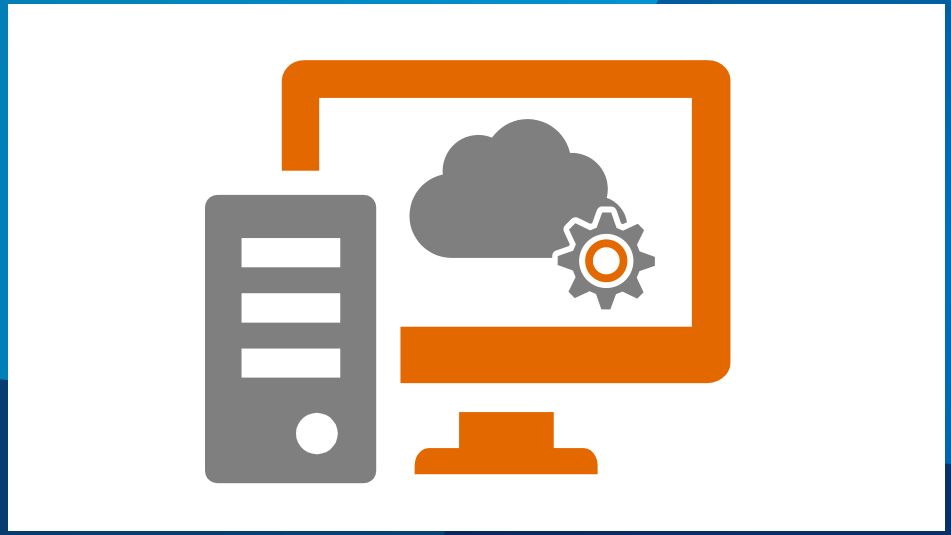
Cloud Builder on AWS


Amazon EC2
Region
Availability Zone
Virtual Private Cloud
ArcGIS for Server Site
Cloud Builder
AMIs



- **Create new sites**
- **Create custom sites**
- **Manage sites**
- **Make backups**

- Applies the Server license file
- Optionally set up a database in a separate instance
- Creates the PSA account
- Creates an elastic load balancer and puts all the server instances under it
- Sets up a common configuration store, server directories, etc. for all instances
- Provides auto-scaling options

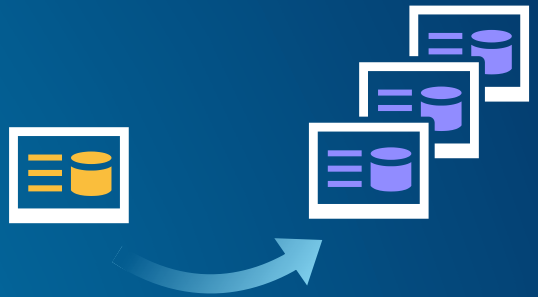


Cloud Builder

Demo

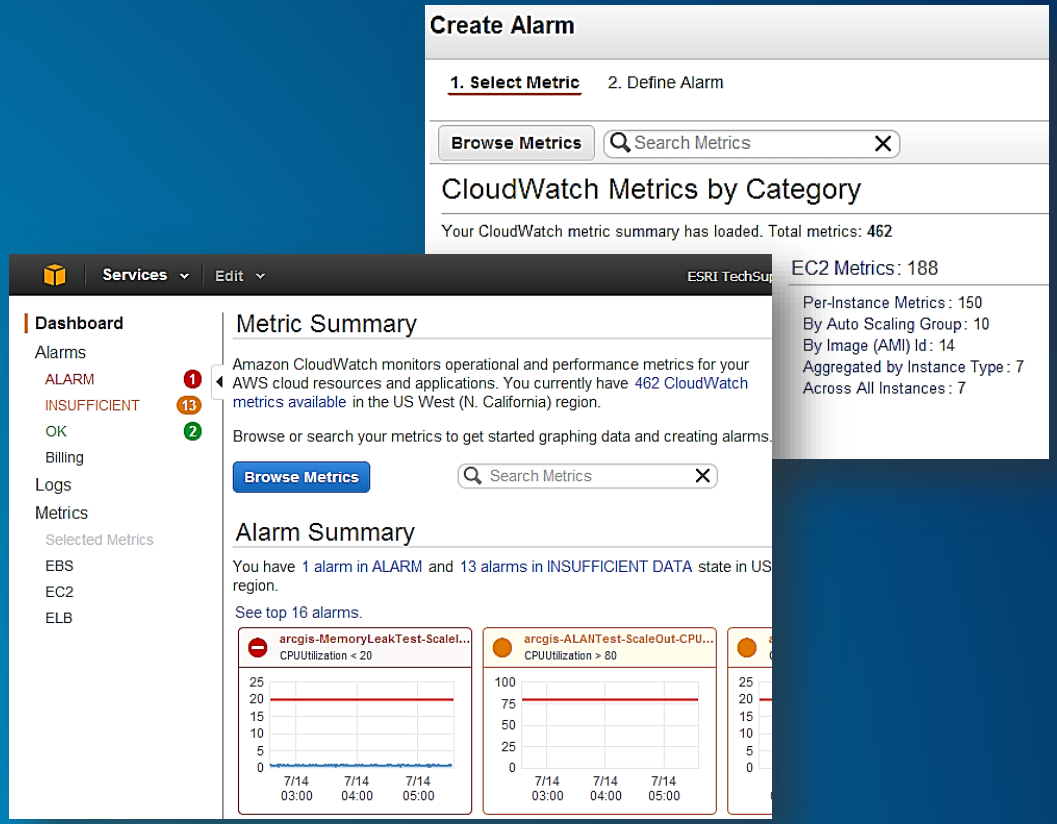
Maintenance

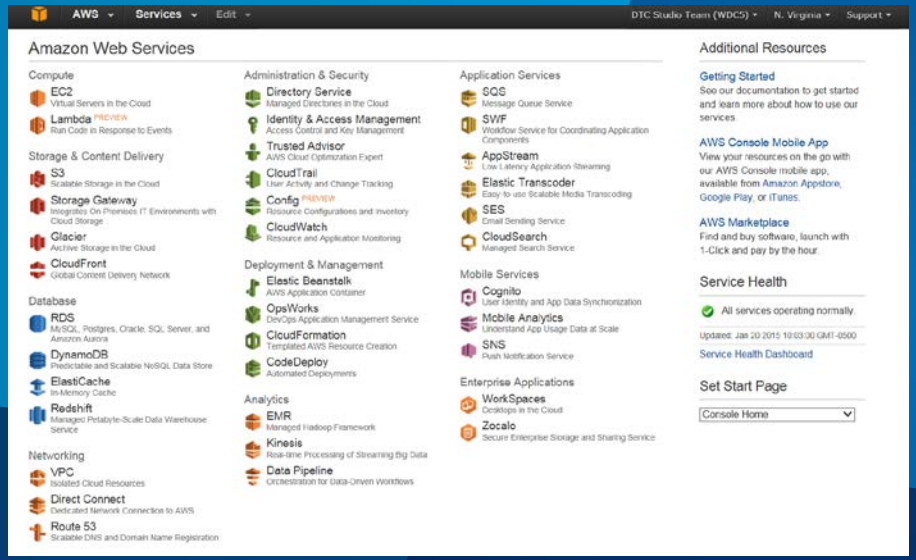
- **Templates**
  - Customized ArcGIS Server site
  - Store, share, and import
- **Backup**
  - ArcGIS Server Backup and Restore Utility
  - Cloud Builder Backup
  - Cloud Builder Template
    - Launch multiple sites with the same architecture



[Deciding how to back up your AWS-based ArcGIS Server site]

- **CloudWatch**
  - Monitor EC2 & other AWS resources
  - Store logs
  - Set alarms
  - Graphs and stats
  - Automatic recovery





CloudWatch

Demo

GovCloud

- Available to U.S. federal, state, and local government clients, contractors, and educational institutions
- ITAR-compliant
- Supports CUI workloads
- More expensive
- Esri AMIs

ArcGIS in Azure

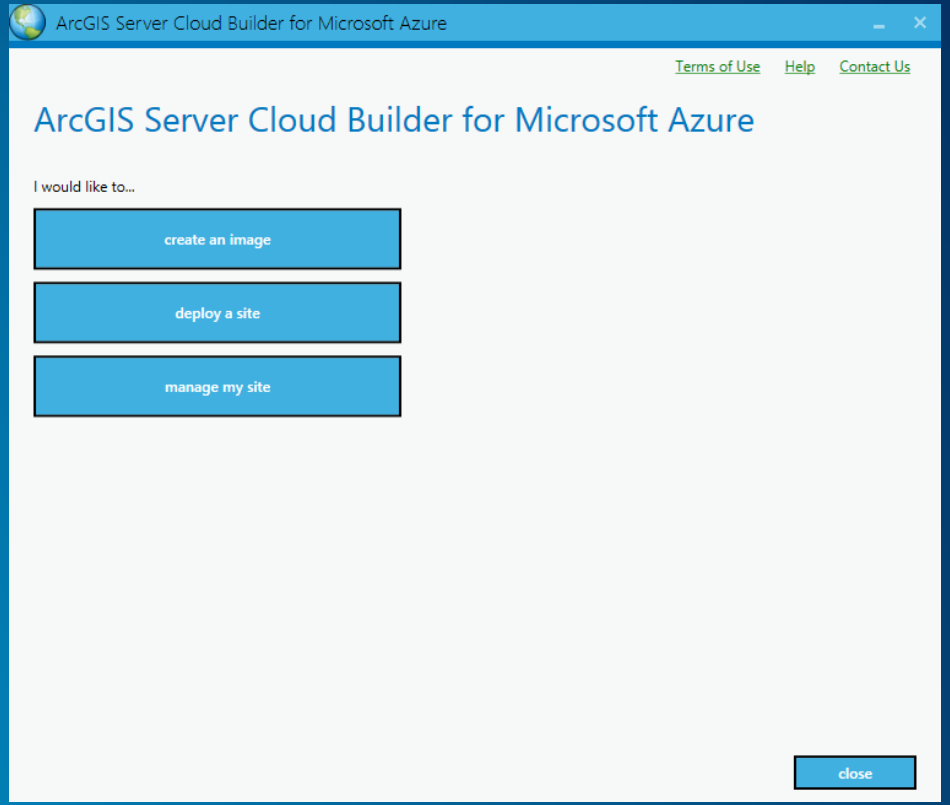
- Esri technology is fully supported in Azure
- We want to make it easier to deploy

- Full stack ArcGIS for Server:
  - The GIS server (ArcGIS Server)
  - Portal for ArcGIS
  - ArcGIS Data Store
  - Redundant and highly-available file shares

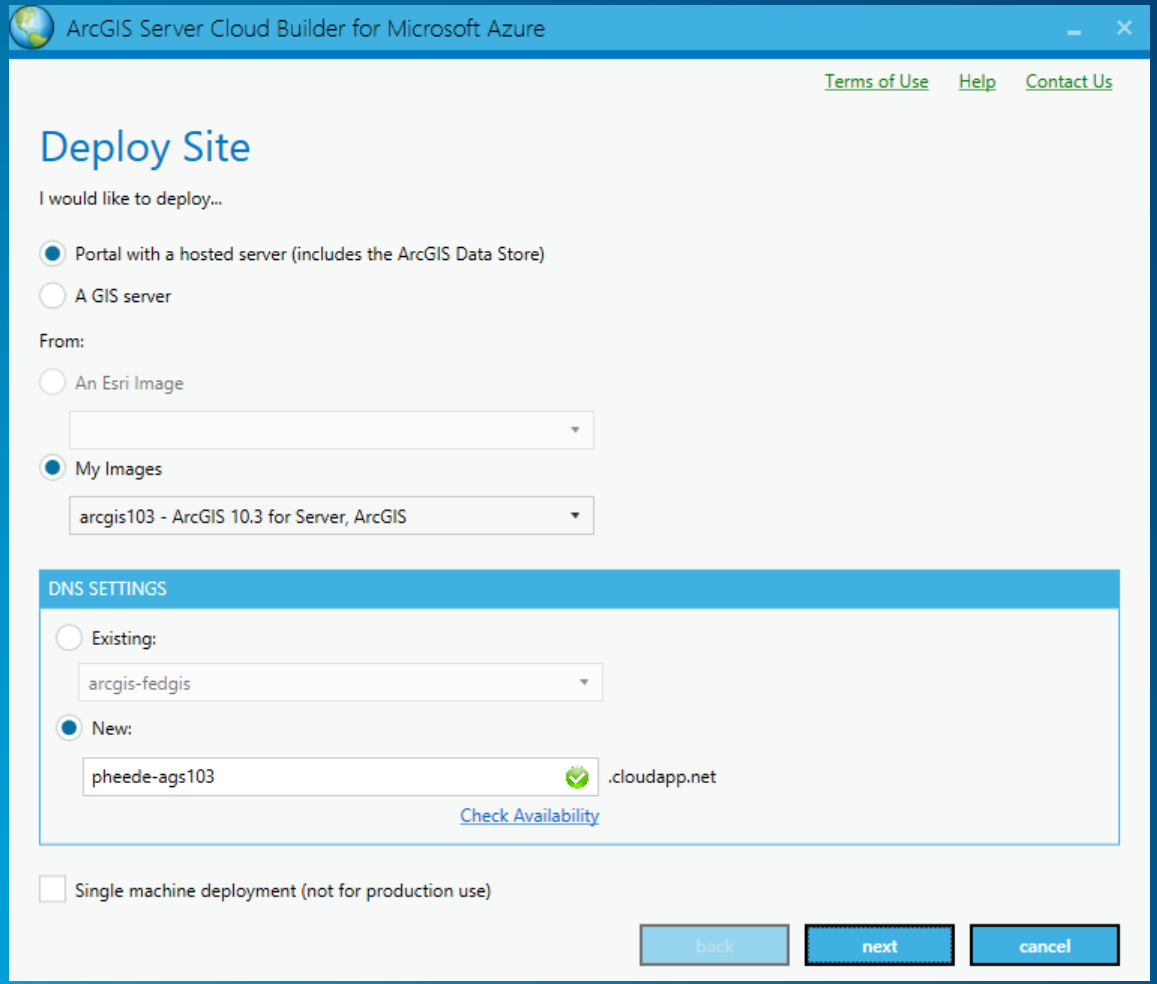
- **July 2014: Tech Preview of ArcGIS Server on Microsoft Azure**
  - **Windows Azure PowerShell scripts to:**
    - **Create images**
    - **Deploy single machine ArcGIS Server sites**

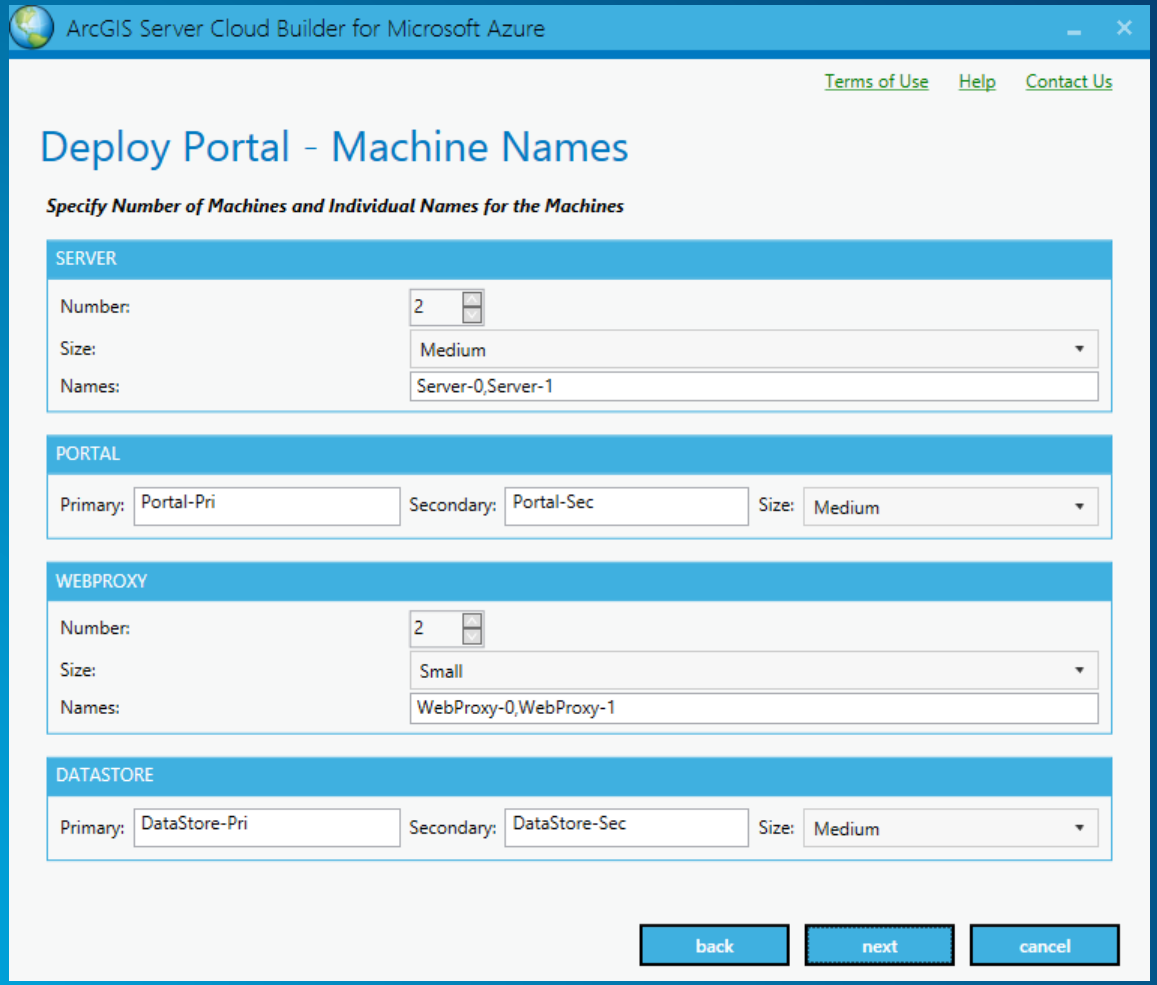
- **October 2014: Tech Preview 2 of ArcGIS Server on Microsoft Azure**
  - **Deploy single node Portal for ArcGIS script added**

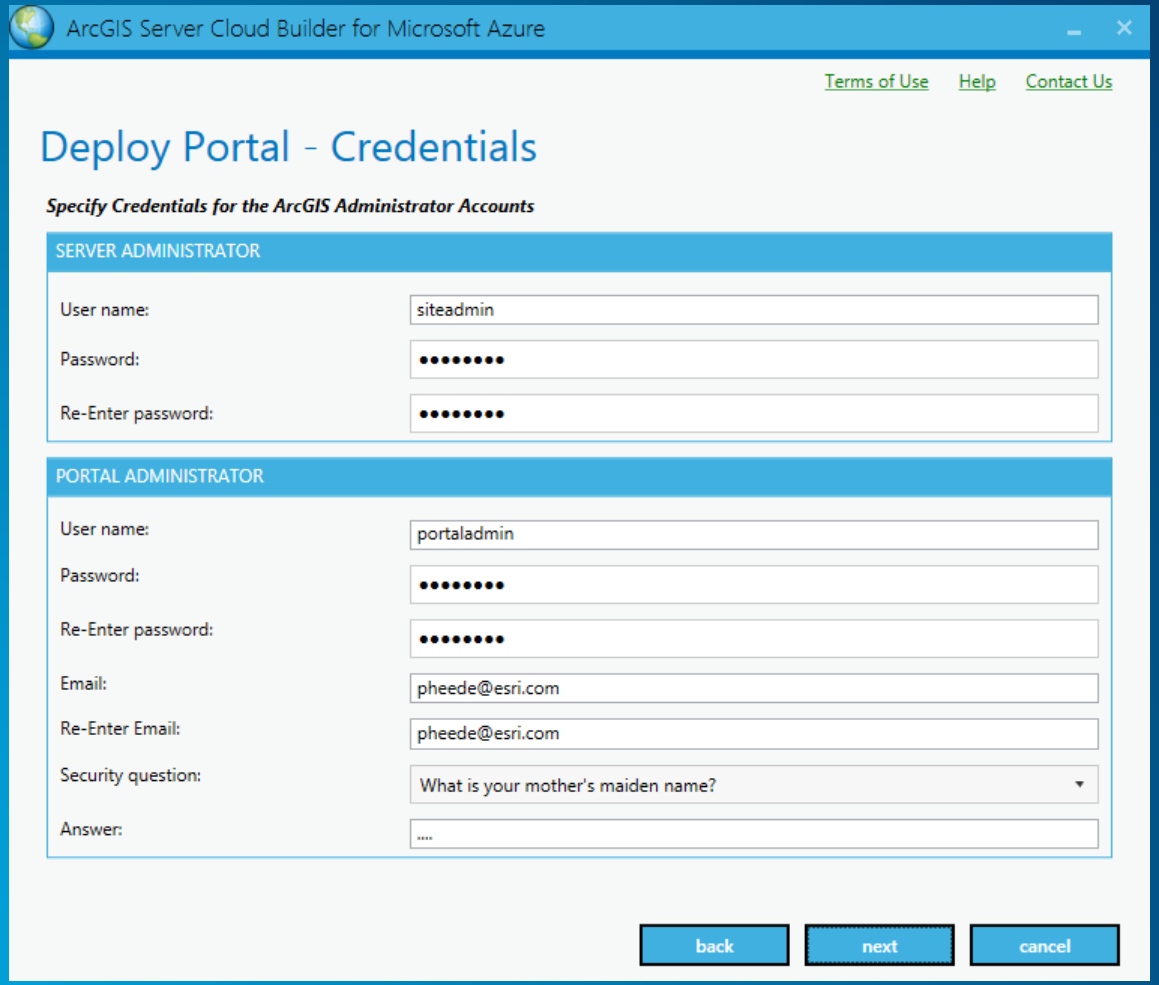
- **Now working on “Cloud Builder on Microsoft Azure”**
- **Interactive application that guides you through choosing your deployment options**

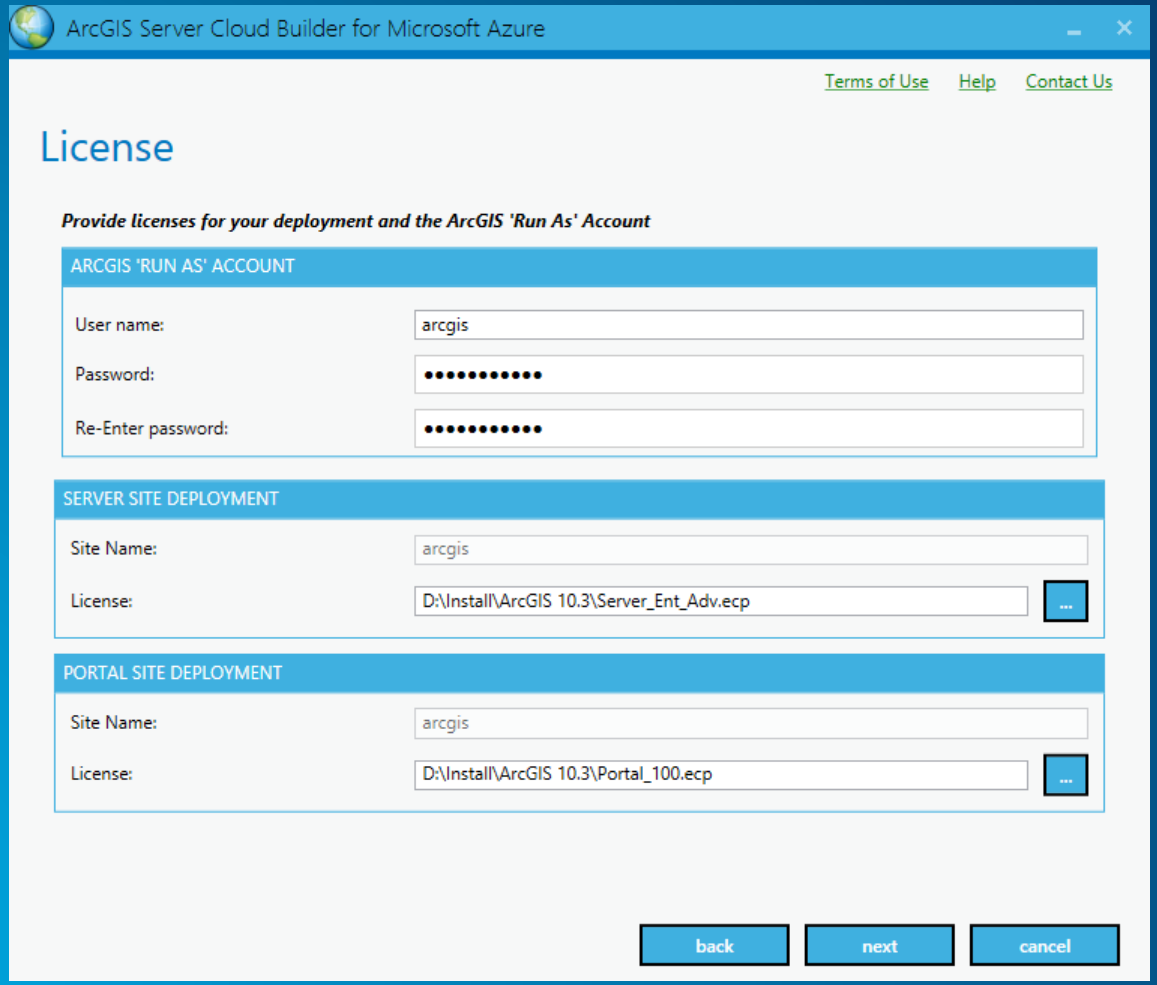


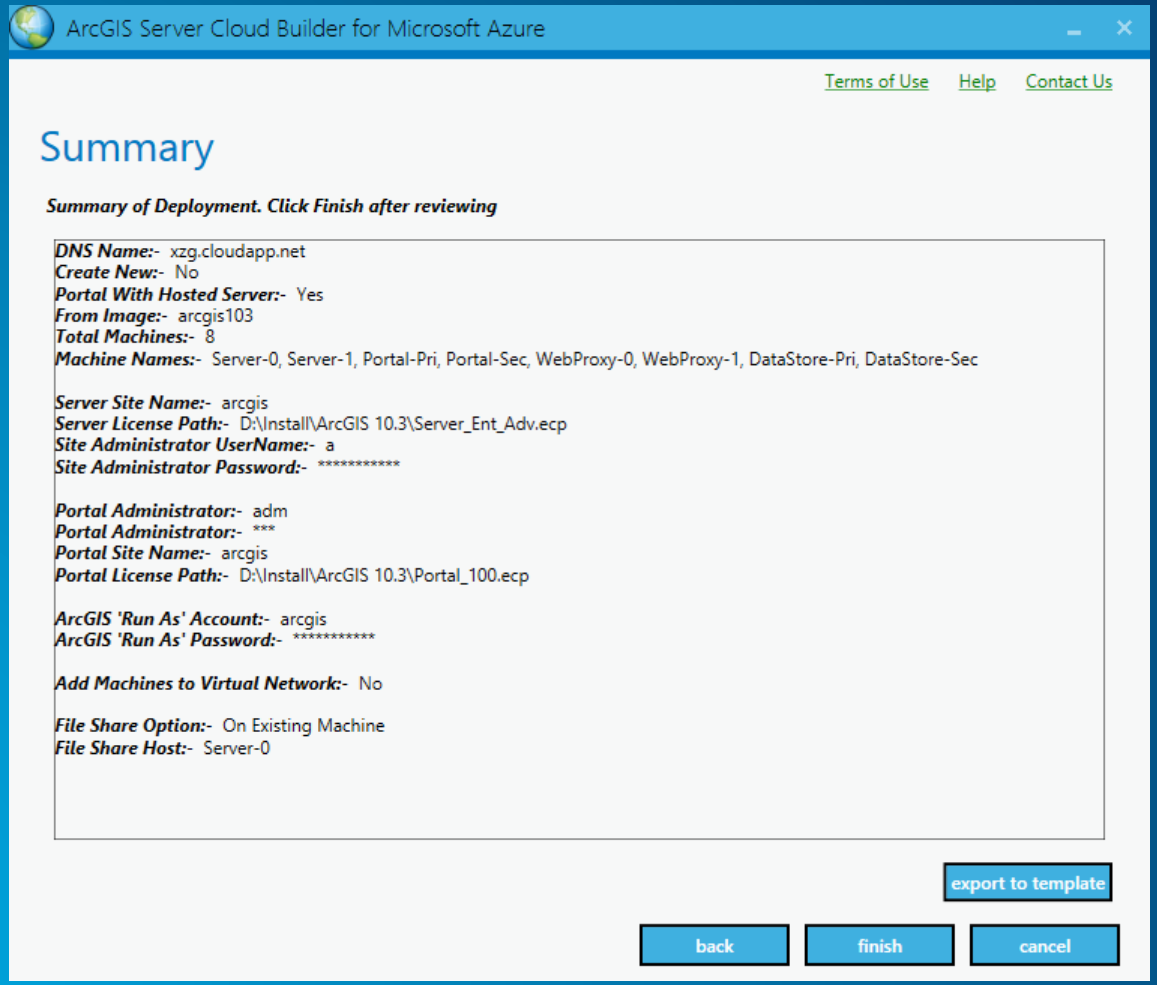
- **Late April**
  - **Availability of virtual machine images in the Microsoft Azure Marketplace**
    - **Bring Your Own License (BYOL)**
  - **ArcGIS Server Cloud Builder on Microsoft Azure preview**
    - **Interactively define and deploy**
- **Mid-July (UC timeframe)**
  - **ArcGIS Server Cloud Builder on Microsoft Azure**


ArcGIS Server Cloud Builder for Microsoft Azure
Terms of Use
Help
Contact Us
Deploy Site
I would like to deploy...
Portal with a hosted server (includes the ArcGIS Data Store)
A GIS server
From:
An Esri Image
My Images
arcgis103 - ArcGIS 10.3 for Server, ArcGIS
DNS SETTINGS
Existing:
arcgis-fedgis
New:
pheede-ags103
.cloudapp.net
Check Availability
Single machine deployment (not for production use)
back
next
cancel

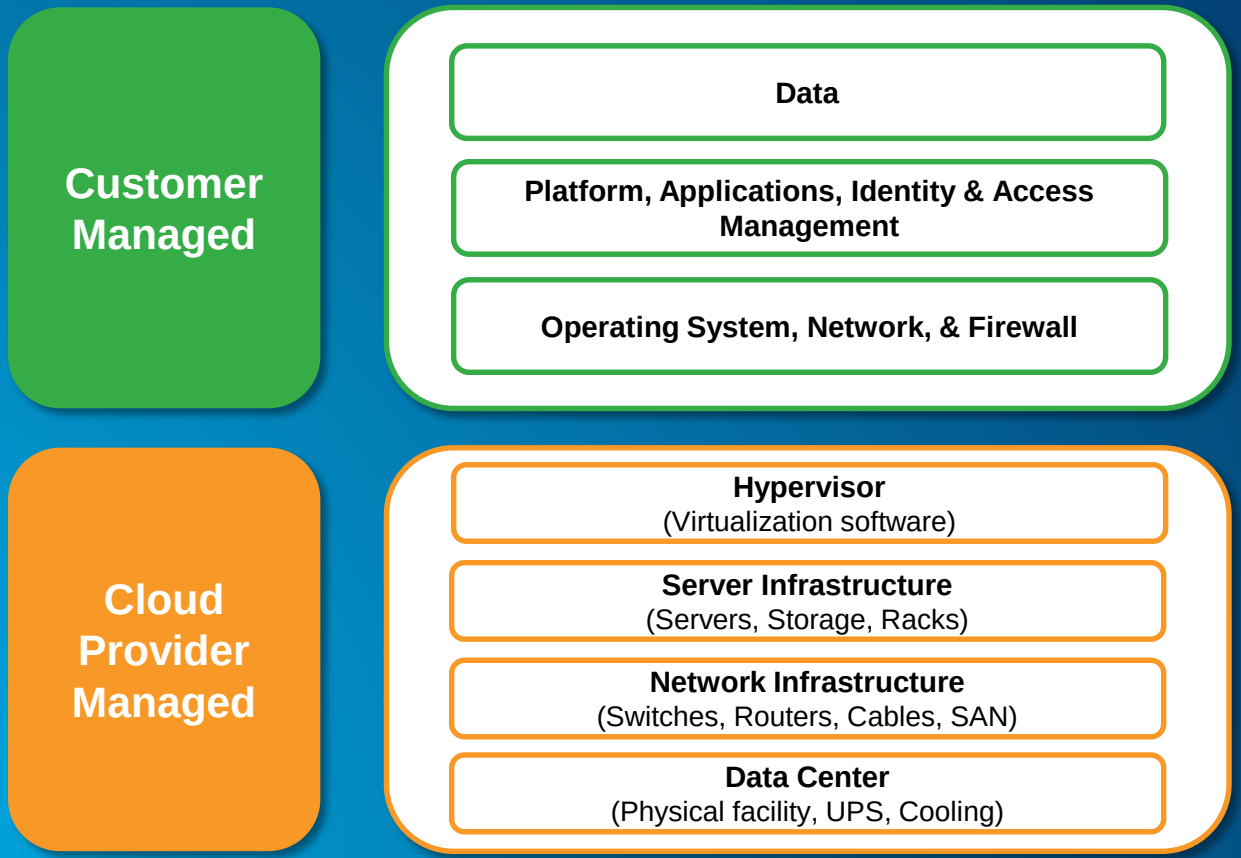

ArcGIS Server Cloud Builder for Microsoft Azure
Terms of Use
Help
Contact Us
Deploy Portal - Machine Names
Specify Number of Machines and Individual Names for the Machines
SERVER
Number:
2
Size:
Medium
Names:
Server-0,Server-1
PORTAL
Primary:
Portal-Pri
Secondary:
Portal-Sec
Size:
Medium
WEBPROXY
Number:
2
Size:
Small
Names:
WebProxy-0,WebProxy-1
DATASTORE
Primary:
DataStore-Pri
Secondary:
DataStore-Sec
Size:
Medium
back
next
cancel


ArcGIS Server Cloud Builder for Microsoft Azure
Terms of Use
Help
Contact Us
Deploy Portal - Credentials
Specify Credentials for the ArcGIS Administrator Accounts
SERVER ADMINISTRATOR
User name:
siteadmin
Password:
Re-Enter password:
PORTAL ADMINISTRATOR
User name:
portaladmin
Password:
Re-Enter password:
Email:
pheede@esri.com
Re-Enter Email:
pheede@esri.com
Security question:
What is your mother's maiden name?
Answer:
back
next
cancel


ArcGIS Server Cloud Builder for Microsoft Azure
Terms of Use
Help
Contact Us
License
Provide licenses for your deployment and the ArcGIS 'Run As' Account
ARCGIS 'RUN AS' ACCOUNT
User name:
arcgis
Password:
Re-Enter password:
SERVER SITE DEPLOYMENT
Site Name:
arcgis
License:
D:\Install\ArcGIS 10.3\Server_Ent_Adv.ecp
...
PORTAL SITE DEPLOYMENT
Site Name:
arcgis
License:
D:\Install\ArcGIS 10.3\Portal_100.ecp
...
back
next
cancel


ArcGIS Server Cloud Builder for Microsoft Azure
Terms of Use
Help
Contact Us
Summary
Summary of Deployment. Click Finish after reviewing
DNS Name:- xzg.cloudapp.net
Create New:- No
Portal With Hosted Server:- Yes
From Image:- arcgis103
Total Machines:- 8
Machine Names:- Server-0, Server-1, Portal-Pri, Portal-Sec, WebProxy-0, WebProxy-1, DataStore-Pri, DataStore-Sec
Server Site Name:- arcgis
Server License Path:- D:\Install\ArcGIS 10.3\Server_Ent_Adv.ecp
Site Administrator UserName:- a
Site Administrator Password:- **********
Portal Administrator:- adm
Portal Administrator:- ***
Portal Site Name:- arcgis
Portal License Path:- D:\Install\ArcGIS 10.3\Portal_100.ecp
ArcGIS 'Run As' Account:- arcgis
ArcGIS 'Run As' Password:- **********
Add Machines to Virtual Network:- No
File Share Option:- On Existing Machine
File Share Host:- Server-0
export to template
back
finish
cancel

Security


Customer Managed
Data
Platform, Applications, Identity & Access Management
Operating System, Network, & Firewall
Cloud Provider Managed
Hypervisor
(Virtualization software)
Server Infrastructure
(Servers, Storage, Racks)
Network Infrastructure
(Switches, Routers, Cables, SAN)
Data Center
(Physical facility, UPS, Cooling)

- **Question**
  - **If my cloud IaaS is FISMA/FedRAMP accredited and I deploy my app into that cloud, is the overall implementation FISMA/FedRAMP equivalent?**
- **Answer**
  - **No**

- **Question – Part 2**
  - **Okay, so it's not FISMA/FedRAMP equivalent, but the IaaS by itself ensures the solution is "secure enough", right?**
- **Answer**
  - **No**

Resources

- **Amazon EC2 - http://aws.amazon.com/ec2/?nc2=h_l3_c/**
- **ArcGIS for Server on AWS Help - http://server.arcgis.com/en/server/latest/cloud/amazon/amazon-quick-start-guide.htm**
- **Cloud Builder - http://server.arcgis.com/en/server/latest/cloud/amazon/overview-cloud-builder.htm**

- **ArcGIS for Server on Azure Starter Package - http://www.esri.com/software/arcgis/arcgisserver/deployment/tools-for-azure**

- **Esri Developer Network: http://www.esri.com/software/arcgis/edn**

Understanding our world.