

Federal GIS Conference 2014

February 10–11, 2014 | Washington DC



Leveraging ArcGIS in the Amazon Cloud

Bonnie Stayer, Esri

Amy Ramsdell, Blue Raster

Session Outline

- **AWS Overview**
- **ArcGIS in AWS**
- **Cloud Builder**
- **Benefits**
- **Security**
- **Case Study: Blue Raster and Dept. of Ed.**

AWS Overview



Services ▾

Edit ▾

Amazon Web Services

Compute & Networking

-  **Direct Connect**
Dedicated Network Connection to AWS
-  **EC2**
Virtual Servers in the Cloud
-  **Elastic MapReduce**
Managed Hadoop Framework
-  **Route 53**
Scalable Domain Name System
-  **VPC**
Isolated Cloud Resources

Storage & Content Delivery

-  **CloudFront**
Global Content Delivery Network
-  **Glacier**
Archive Storage in the Cloud
-  **S3**
Scalable Storage in the Cloud
-  **Storage Gateway**
Integrates On-Premises IT Environments with Cloud Storage

Databases

-  **DynamoDB**
Predictably Fast NoSQL Database
-  **Elasticache**
In-Memory Cache
-  **Amazon RDS**
Managed Relational Database
-  **Amazon Redshift**
Managed Data Warehouse

Deployment

-  **AWS CloudFormation**
Template-Based Infrastructure as Code
-  **AWS CloudTrail**
Resource Activity Logging
-  **AWS CodeDeploy**
Orchestration of Application Deployments
-  **AWS Elastic Beanstalk**
Elastic Compute Environment
-  **AWS IAM**
Security and Access Control
-  **AWS OpsWorks**
DevOps

Utility Computing

**ON DEMAND
UNIFORM
PAY AS YOU GO
AVAILABLE**




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UNIFORM
PAY AS YOU GO
AVAILABLE**



Amazon Web Services

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Integrates On-Premises IT Environments with Cloud Storage

Database

 **DynamoDB**
Predictable and Scalable NoSQL Data Store


 **ElastiCache**
In-Memory Cache

 **RDS**
Managed Relational Database Service


 **Redshift**
Managed Petabyte-Scale Data Warehouse Service

Deployment & Management

 **CloudFormation**
Templated AWS Resource Creation

 **CloudTrail**
User Activity and Change Tracking


 **CloudWatch**
Resource and Application Monitoring


 **Elastic Beanstalk**
AWS Application Container

 **IAM**
Secure AWS Access Control

 **OpsWorks**
DevOps Application Management Service


Analytics


 **Data Pipeline**
Orchestration for Data-Driven Workflows

 **Elastic MapReduce**
Managed Hadoop Framework

 **Kinesis**
Real-time Processing of Streaming Big Data

App Services

 **CloudSearch**
Managed Search Service

 **Elastic Transcoder**
Easy-to-use Scalable Media Transcoding

 **SES**
Email Sending Service

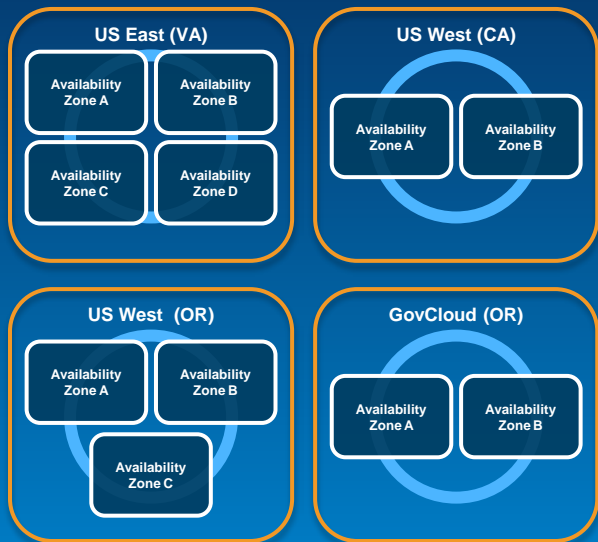
 **SNS**
Push Notification Service

 **SQS**
Message Queue Service

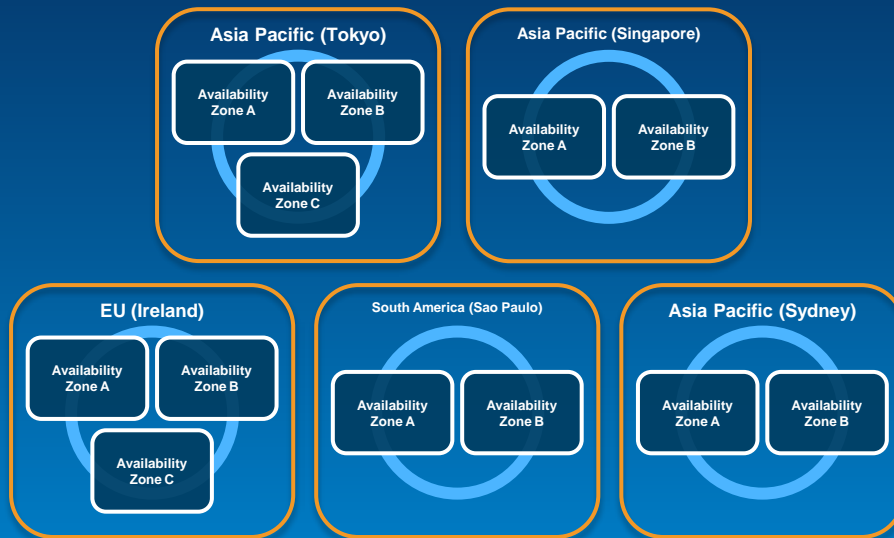
 **SWF**
Workflow Service for Coordinating Application Components



US Regions



Global Regions

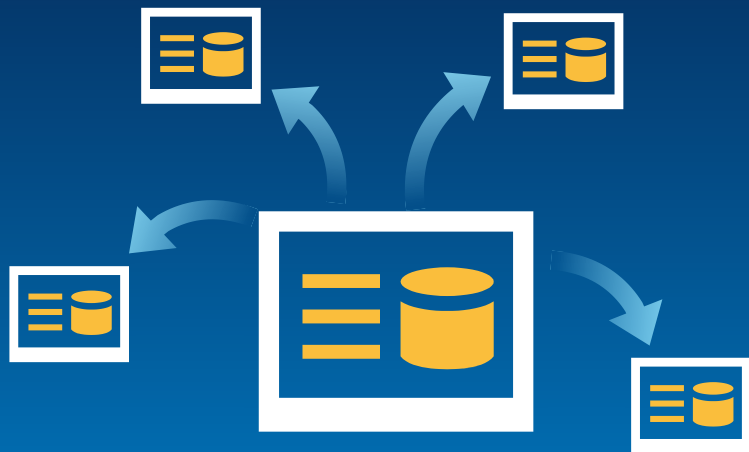


Note: Conceptual drawing only. The number of Availability Zones may vary.



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)

Demo

AWS Management Console



ArcGIS in AWS







**Ubuntu with
PostgreSQL**



**Windows Server
with SQL Server**



**Windows Server
with SQL Express**



Esri AMI



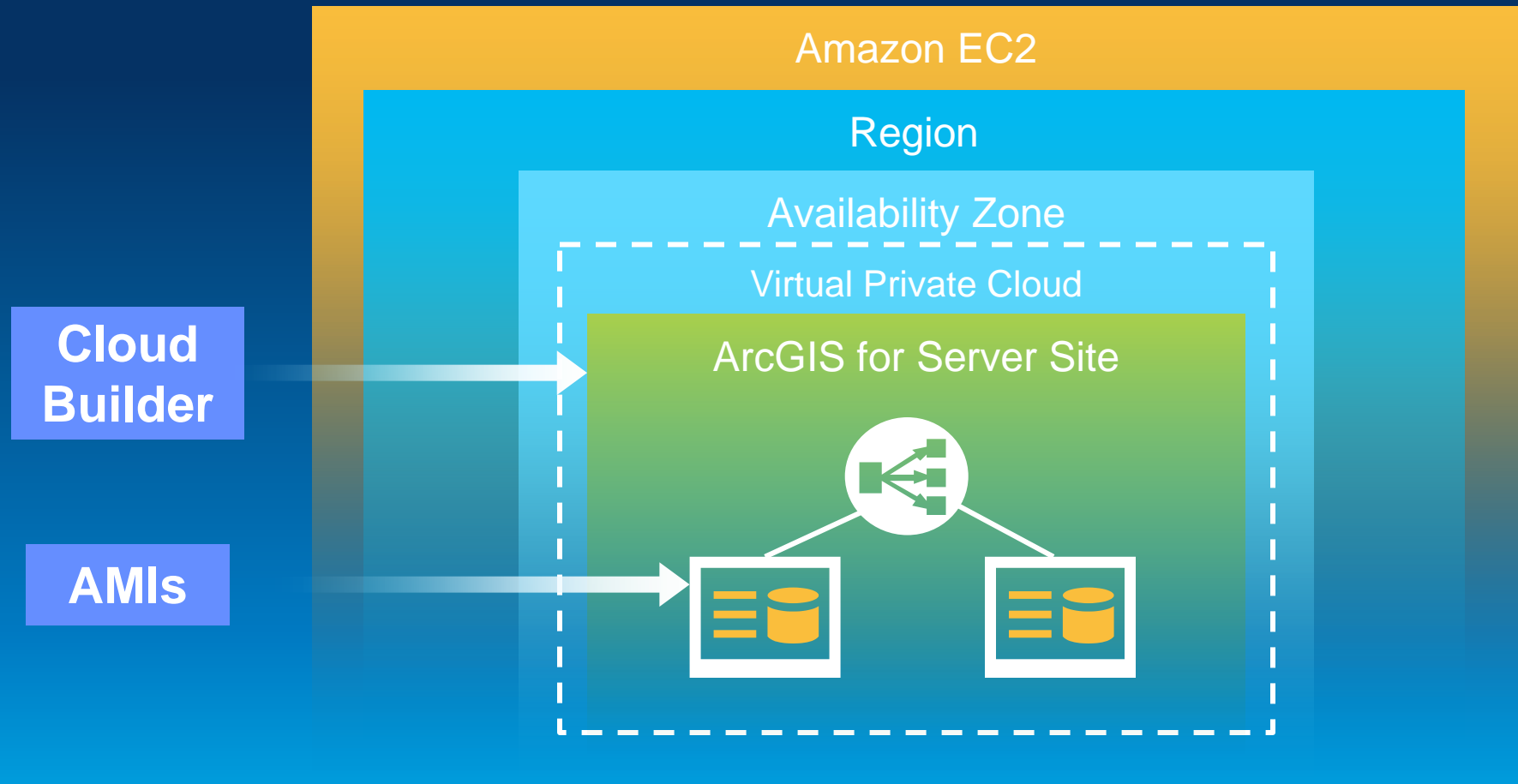
Services



Web Application

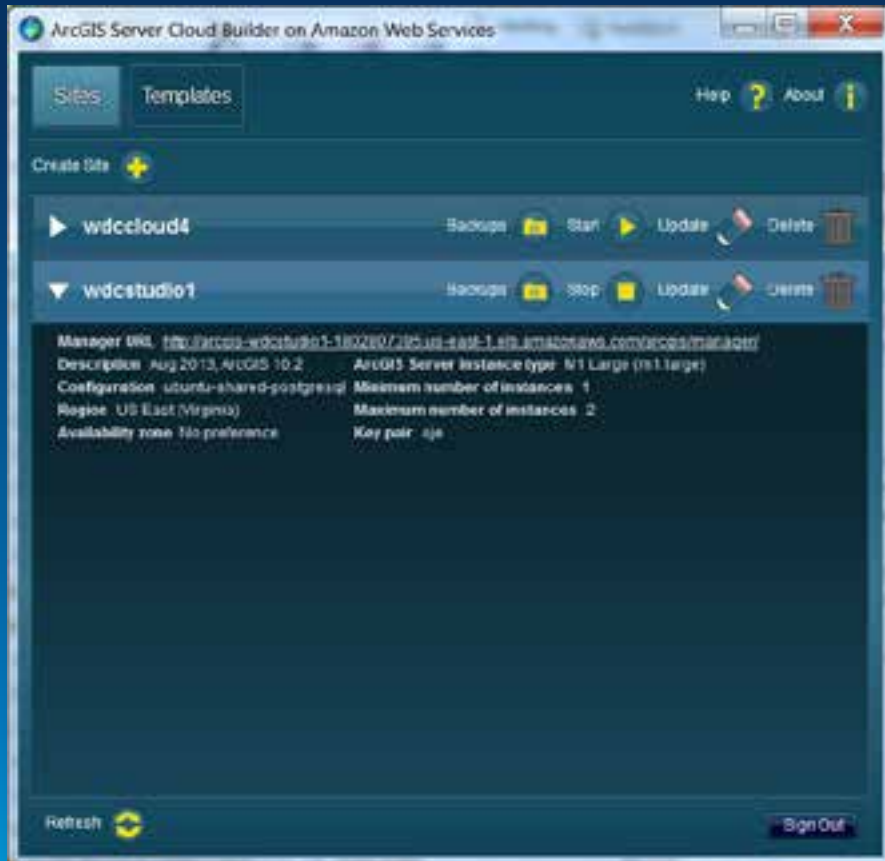


Custom AMI



Cloud Builder





- 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**

Demo

Cloud Builder



1. Initial setup

- a. Sign up for an Amazon Account
- b. Send AWS account # to service@esri.com
- c. Get Cloud Builder (<http://customers.esri.com>)

1. **Initial setup**
2. **Deploy site using Cloud Builder**

1. **Initial setup**
2. **Deploy site using Cloud Builder**
3. **Publish Services**
 - a. **Copy/replicate data to server (optional)**
 - b. **Publish services**

1. **Initial setup**
2. **Deploy site using Cloud Builder**
3. **Publish Services**
4. **Create web maps/apps**

Benefits



- **Can help you optimize...**

- **Setup Time**
- **Scalability**
- **Cost**



- **No hardware acquisition time**
- **Literally minutes to launch a new server**
- **Esri pre-built AMIs**
- **Can save own AMIs**





- Amazon offers monitoring & auto-scaling
- Detects CPU load, starts new server
- You set up max & min instances, thresholds

- **Machine cost**

- Instance size and type
- Storage
- Bandwidth



- **Other costs**

- Extra storage: S3, CloudFront
- Elastic Load Balancer, Elastic IP, Route 53
- Monitoring: CloudWatch

- **Running Servers (includes OS licensing):**

- On Demand – hourly rate
- Reserved Instance – upfront charge, reduced hourly rate



- **Storing Data (per month):**

- Transfer in to AWS: free
- Transfer out from AWS: sliding scale (1 GB free, then \$0.12/GB max)
- Storage: \$0.05 / GB of volume size



- 1 Windows Large Instance
- On-Demand Pricing (per hour, no upfront)
- US East (Northern VA)

$$\begin{array}{r} 24 \times 365 \\ \times \underline{\$0.351/\text{hr}} \\ \hline \$3074.76/\text{yr} \end{array}$$

- Reserved Instance Pricing
- Heavy Utilization (always on)

$$\begin{aligned} & \$730 + \\ & 24 \times 365 \\ & \times \underline{\$0.128/\text{hr}} \\ & \mathbf{\$1851.28/\text{yr}} \end{aligned}$$

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

$$\begin{array}{r} 24 \times 7 \\ \times \underline{\$0.351/\text{hr}} \\ \hline \$58.97/\text{wk} \end{array}$$

Security



Customer

Customer Data

Platform, Applications, Identity & Access Management

Operating System, Network & Firewall Configuration

Client-side Data Encryption &
Data Integrity Authentication

Server-side Encryption
(File System and/or Data)

Network Traffic Protection
(Encryption/Integrity/Identity)

- Customers implement their own set of controls
- Multiple customers with FISMA Low and Moderate ATOs

Amazon

Foundation Services

Compute

Storage

Database

Networking

AWS Global
Infrastructure

Availability Zones

Regions

Edge Locations

- SAS-70 Type II
- ISO 27001/ 2 Certification
- Payment Card Industry (PCI)
- Data Security Standard (DSS)
- NIST Compliant Controls
- DoD Compliant Controls
- FedRAMP Compliant Controls
- HIPAA and ITAR Compliant

Dedicated Instances

Single Tenant Physical Nodes

Run your virtualized operating systems and apps in a “single tenant per physical node” model within the AWS infrastructure

Security Groups

Instance firewalls

Firewall control on instances via Security Groups

CLIs and APIs

Instantly audit your entire AWS infrastructure from scriptable APIs – generate an on-demand IT inventory enabled by programmatic nature of AWS

VPC

Subnet control

Create low level networking constraints for resource access, such as public and private subnets, internet gateways and NATs

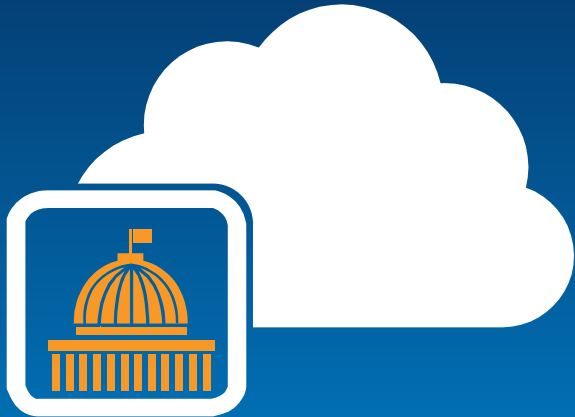
Bastion hosts

Only allow access for management of production resources from a bastion host.
Turn off when not needed

Direct Connect & VPN

Private connections to VPC

Secured access to resources in AWS over software or hardware VPN and dedicated network links



- **ITAR-compliant**
- **Supports CUI workloads**
- **Available to U.S. government clients**
- **More expensive**
- **Esri AMIs**



Migrating Department of Education ArcGIS Servers to Amazon Web Services Cloud Hosting

Amy Ramsdell, Blue Raster
@amyrams



Background

National Center for Education Statistics (NCES)

- ∅ Primary federal entity for collecting and analyzing education data
- ∅ NCES uses the Esri ArcGIS platform to provide geospatial context to education data



SDDS SCHOOL DISTRICT DEMOGRAPHICS SYSTEM

[Home](#) | [Staff](#) | [Contact](#)

[About](#) | [Public Products](#) | [Data Tables](#) | [Map Viewer](#) | [Download Data](#) | [Download Maps](#) | [Reference](#)

What is SDDS?

The School District Demographics System provides access to school district demographic and related geographic data. The site's purpose is:

- 1 To provide access to information about demographics, social characteristics, and economics of children and school districts from the National Center for Education Statistics (NCES) of the U.S. Department of Education.
- 2 To enable users to directly access school district geographic and demographic data.
- 3 To provide information about school district demographic concepts, uses, and applications to facilitate effective use of these information resources.

Map Viewers



STANDARD

Map Viewer allows users to view maps of states, school districts and school points, while overlaying U.S. Census Bureau and Education data.

Select

EXPRESS

Create your map the easy way. Select your data theme, set your options, and you're done.

[Start Map Viewer Express](#)

MOBILE

Introducing the **NEW** SDDS Map Viewer Mobile designed especially for iPad (also for use by other mobile devices).

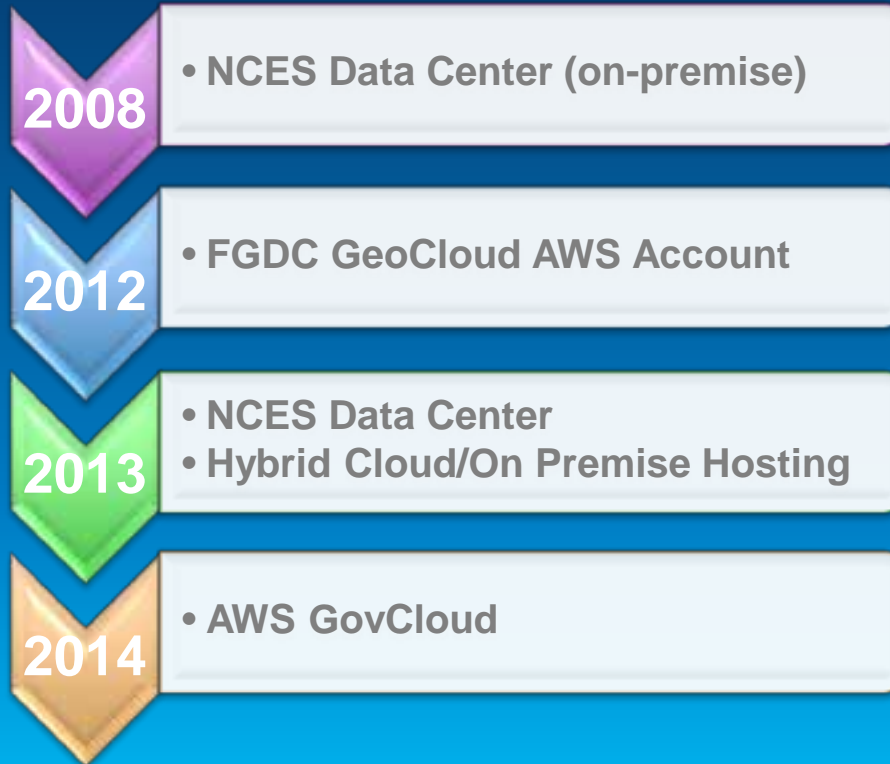
[Start Map Viewer Mobile](#)

NEW DEMOGRAPHIC PROFILE WEBMAP

Introducing the **NEW** Demographic Profile Webmap with American Community Survey 2006-10 and Census 2010 profile data, including percentages.

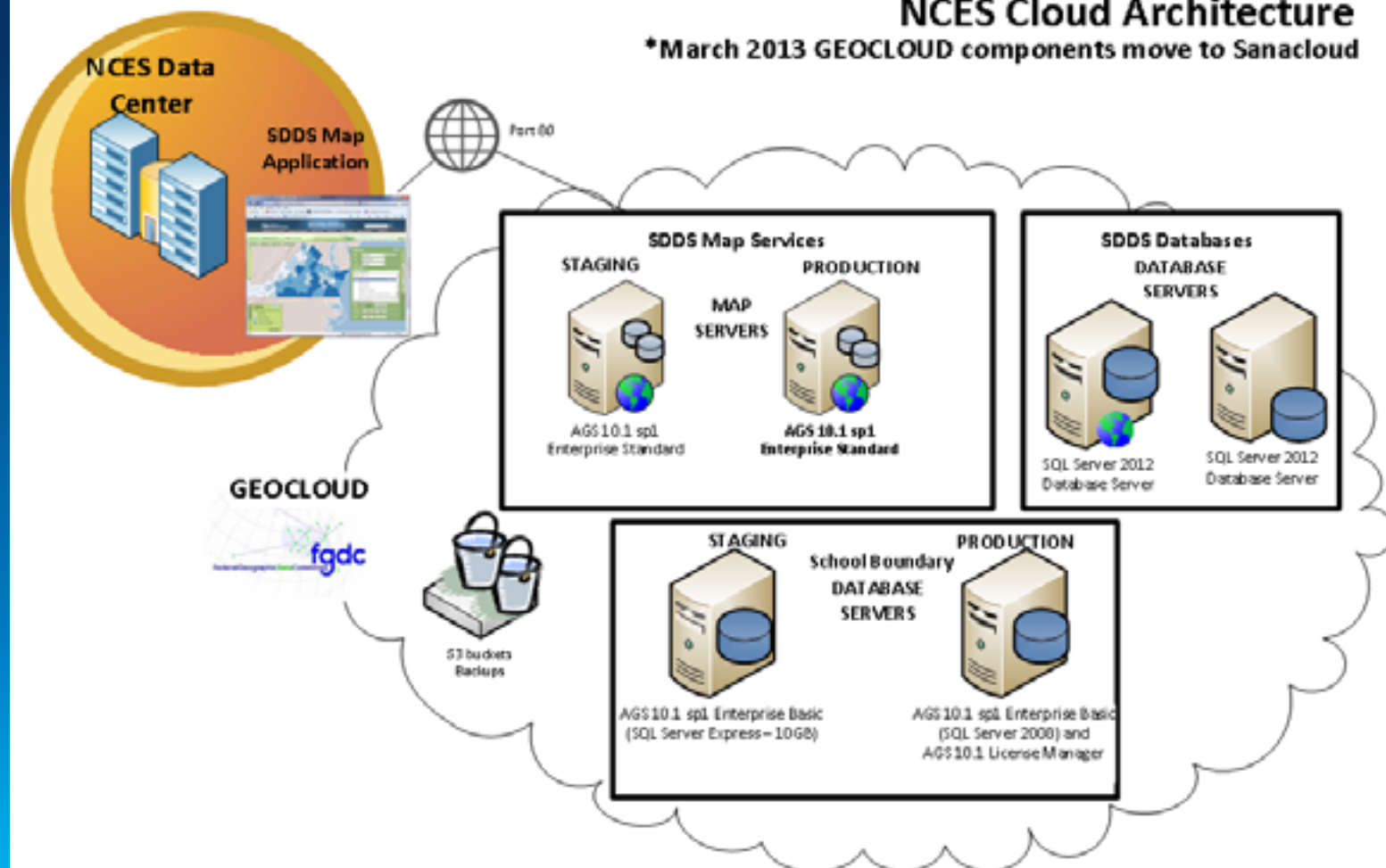
[Demographic Profile Webmap](#)

Progression of NCES ArcGIS Servers



NCES Cloud Architecture

*March 2013 GEOCLOUD components move to Sanacloud



Planning



Federal Cloud First Policy – Migrating ArcGIS

The screenshot shows the GSA website's 'Cloud IT Services' page. At the top, there is a navigation bar with 'WHAT GSA OFFERS', 'DOING BUSINESS WITH GSA', 'LEARN MORE', and 'BLOG'. Below this is a search bar and a breadcrumb trail: 'Home > Services > Services > Informational > Telecommunications > Cloud IT Services'. The main heading is 'Cloud IT Services'. The page is divided into three columns. The left column is a navigation menu with items like 'Overview', 'Cloud IT Services', 'Cloud SaaS Templates', 'Governmentality', 'Data Center Services', 'SaaS IT', 'What are Products and Services', 'What are IT Services', 'Software Products and Services', 'State contract services', 'Interoperability', 'What are Cloud Business Use', 'What is it?', and 'IT Solutions Page'. The middle column contains the main text, starting with 'The Cloud First policy mandates that agencies take full advantage of cloud computing benefits...'. It is divided into three sub-sections: 'COMMERCIAL SERVICES CONTRACTS', 'END-TO-END SOLUTIONS CONTRACTS', and 'Telecommunications services'. The right column features a 'Chat Now!' button, a 'Use Our Self-Service Tool' section, and a 'GET UPDATES' section with a green checkmark icon. At the bottom, there is a 'CLOUD BROCHURE' section with a thumbnail image.

Home > Services > Services > Informational > Telecommunications > Cloud IT Services

GSA U.S. General Services Administration

WHAT GSA OFFERS DOING BUSINESS WITH GSA LEARN MORE BLOG

Home > Services > Services > Informational > Telecommunications > Cloud IT Services

Cloud IT Services

The Cloud First policy mandates that agencies take full advantage of cloud computing benefits to maximize capacity utilization, improve IT flexibility and responsiveness, and minimize cost.

We help agencies comply with mandates and guidelines for moving to the cloud. Our cloud IT services provide convenient, on-demand access to a shared pool of computing services that can be rapidly and easily reconfigured, provisioned, and released.

To help your agency move to the cloud more efficiently and better plan for developing new cloud applications, [please refer to the attached Cloud Migration Statement of Objectives \(SOO\) template below.](#)

COMMERCIAL SERVICES CONTRACTS

Email as a Service (EaaS)

The [Email as a Service \(EaaS\) Purchase Agreement \(PAA\)](#) offers email cloud solutions, migration services, integration services and more.

END-TO-END SOLUTIONS CONTRACTS

IT solutions

[Governmentwide Acquisition Contracts \(GWACs\)](#) offer cloud services as part of a total IT solution.

Telecommunications services

[EaaS](#) helps federal agencies build seamless, secure operating environments with the best available technology including storage in the cloud.

State, local, and tribal governments

Most governments are eligible to buy cloud solutions from the programs above with GSA's [Governmentwide Purchasing Program](#).

Chat Now!

24 hours a day, Mon - Fri
(202) 696-6244
7700@gsa.gov

Use Our Self-Service Tool
Start to find the best IT product to meet your requirements?
By our USA IT Solutions Page!

GET UPDATES

Get email updates when this page changes.

FOR MORE INFORMATION

- Cloud First Policy (CFFP)
- Cloud Computing Glossary
- Creating Effective Cloud Computing Contracts (CFC3)
- Federal Data Center Consolidation Initiative
- Federal IT and Acquisition Management Program Authority
- Big Data Capabilities Procurement Strategy (BDC) Buy for the Cloud (BFC3)

CLOUD BROCHURE

The image shows the front cover of the 'FEDERAL CLOUD COMPUTING STRATEGY' document. At the top, there is a small graphic of a cloud. Below it, the title 'FEDERAL CLOUD COMPUTING STRATEGY' is centered in a large, blue, serif font. Underneath the title, the name 'Vivek Kundra' and his title 'US Chief Information Officer' are listed. The date 'FEBRUARY 9, 2011' is printed below that. At the bottom center, there is a circular logo featuring a stylized building and the text 'U.S. GENERAL SERVICES ADMINISTRATION'.

FEDERAL CLOUD COMPUTING STRATEGY

Vivek Kundra
US Chief Information Officer

FEBRUARY 9, 2011

Support Forums

amazon web services

Sign In Account / Orders

AWS Products & Solutions

Discussion Forums

Welcome to the Amazon Web Services Discussion Forums. Post your questions and feedback to these forums, use the RSS feeds and e-mail matches to stay in tune with AWS topics that interest you.

View on: [Give Support or give availability](#)

AWS Support is a one-on-one, fast-response support channel that is staffed 24x7x365 with experienced technical support engineers. The service helps customers of all sizes and technical abilities to successfully utilize the products and features provided by AWS. All plans offer an unlimited number of account cases with pay-by-the-month pricing and no long-term contracts.

View 4,895 Forums 425 Feeds

Search Forums: [Advanced search options](#)

Forum / Category	Views	Threads / Messages	Last Post
Amazon Web Services			
<ul style="list-style-type: none"> Alexa Top Sites The Alexa Top Sites web service provides access to lists of web sites ordered by Alexa traffic rank. 	122,212	286 / 1,024	Feb 5, 2014 11:45 PM Re: help
<ul style="list-style-type: none"> Alexa Web Information Service The Alexa Web Information Service makes available real-time information about the traffic and structure of the web available to developers. 	176,098	608 / 3,125	Feb 4, 2014 11:17 AM Re: redirection
<ul style="list-style-type: none"> Amazon CloudFront Amazon CloudFront is a content delivery web service. 	255,397	3,409 / 13,338	Feb 5, 2014 10:58 AM Re: Cache
<ul style="list-style-type: none"> Amazon CloudSearch Amazon CloudSearch is a fully-managed service in the AWS Cloud that makes it easy to set up, manage, and scale a search solution for your website or application. 	37,470	226 / 1,120	Feb 5, 2014 9:44 PM Re: Tomb

Popular Tags

ec2

Popular Forums

Amazon Elastic Compute Cloud

Support Plans

AWS Support Features

	Basic	Developer	Business	Enterprise
Customer Service - 24x7x365	✓	✓	✓	✓
Support Forums	✓	✓	✓	✓
Documentation, White Papers, Best Practice Guides	✓	✓	✓	✓
Access to Technical Support	Support by Health Checks (what's this? 6)	Email (best business hours)	Phone, Chat, Email, Live Screen Sharing (24/7)	Phone, Chat, Email, Live Screen Sharing, TAM (24/7)
Priority Case Handling	Technical Customer Service Associate	Cloud Support Associate	Cloud Support Engineer	1x Cloud Support Engineer
Named Contacts (what's this? 6)		1	5	Unlimited
Response Time		<12 hours	<1 hour	<15 minutes
Architecture Support (what's this? 6)		Building Blocks	Use Case Guidance	Application Architecture
Best Practice Guidance		✓	✓	✓
Client Side Diagnostic Tools		✓	✓	✓
Identity Access Management (IAM) (what's this? 6)			✓	✓

Costs to project for expansion

- ∅ Operating hours
- ∅ Use Reserved Instances
- ∅ Use AWS Cost Calculator
- ∅ Bring Your Own License for SQL Server/Oracle or other database
- ∅ ArcGIS licensing

The screenshot shows the Amazon Web Services Cost Calculator interface. At the top, it says "amazon web services SIMPLE MONTHLY CALCULATOR". There is a language dropdown set to "English" and a link to "Need Help? Watch the Video or Read How AWS Pricing Works". A news banner below the header reads: "NEW! AWS lowers its pricing again - 80% reduction in Amazon EC2 Dedicated Instances and Lower On-Demand and Reserved pricing for Amazon RDS".

The main section is titled "FREE USAGE TIER: New Customers get free usage tier for first 12 months" and shows an "Estimate of your Monthly Bill (\$ 0.00)".

Under "Services", there is a "Choose region:" dropdown set to "US East (US Standard Original)". A note states: "Inbound Data Transfer is free and Outbound Data Transfer is 1 GB free per region per month." Below this is a description of Amazon Elastic Compute Cloud (Amazon EC2) and a "Continue" button.

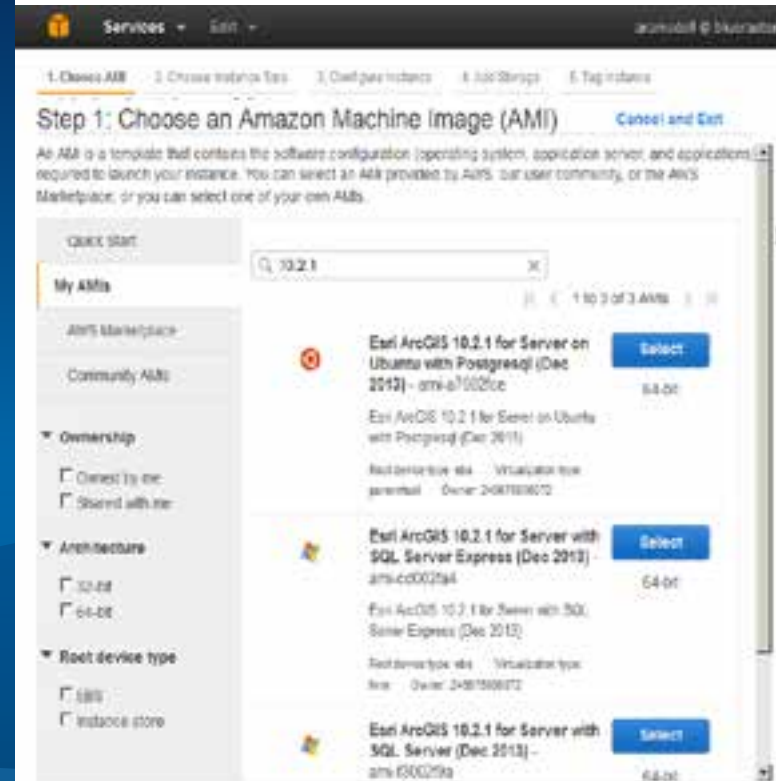
The "Compute: Amazon EC2 Instances:" section contains a table with columns: "Description", "Instances Usage", "Type", "Billing Option", and "Monthly Cost". There is one row with a green plus icon and the text "Add New Row".

The "Storage: Amazon EBS Volumes:" section contains a table with columns: "Description", "Volumes", "Volume Type", "Storage", "IOPS", and "Snapshot Storage". There is one row with a green plus icon and the text "Add New Row".

The "Elastic IP:" section has three input fields: "Number of Additional Elastic IPs:" (0), "Elastic IP Associated Time:" (0) with a dropdown for "Hours/Week", and "Number of Elastic IP Examples:" (0) with a dropdown for "Per Month".

The "Data Transfer:" section has three input fields: "Inter-Region Data Transfer Out:" (0) with a dropdown for "GB/Month", "Data Transfer Out:" (0) with a dropdown for "GB/Month", and "Data Transfer In:" (0) with a dropdown for "GB/Month".

Considerations: Launching an Esri AMI from AWS Console



Services + Edit + arnold@amazon.com

1. Choose AMI 2. Choose instance type 3. Configure instance 4. Add Storage 5. Tag instance

Step 1: Choose an Amazon Machine Image (AMI) [Cancel and Exit](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace, or you can select one of your own AMIs.

QUICK START

My AMIs

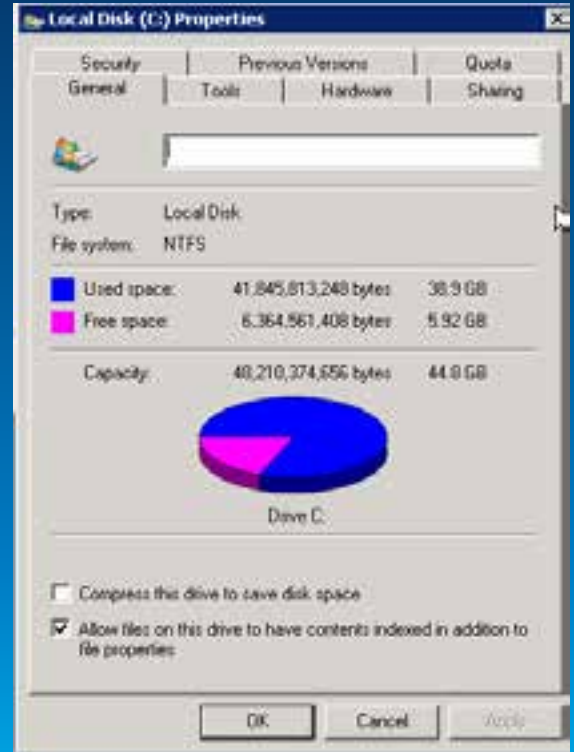
Search: 10.2.1 X

1 to 3 of 3 AMIs

AMI ID	AMI Name	Architecture	Root Device Type	Virtualization Type	Size (GB)	Action
ami-a7002f0c	Esri ArcGIS 10.2.1 for Server on Ubuntu with PostgreSQL (Dec 2012)	x86_64	ephemeral	paravirtual	64	Select
ami-c0029a	Esri ArcGIS 10.2.1 for Server with SQL Server Express (Dec 2013)	x86_64	ephemeral	paravirtual	64	Select
ami-c0029a	Esri ArcGIS 10.2.1 for Server with SQL Server (Dec 2013)	x86_64	ephemeral	paravirtual	64	Select

Disk Space

- ∅ ~ 40 GB taken by OS and Programs
- ∅ Good rule of thumb keep 10% disk space
- ∅ Easy to increase root disk space in AWS console
 - 1) Take snapshot of existing volume
 - 2) Create a new volume and resize it
 - 3) Detach existing
 - 4) Attach new



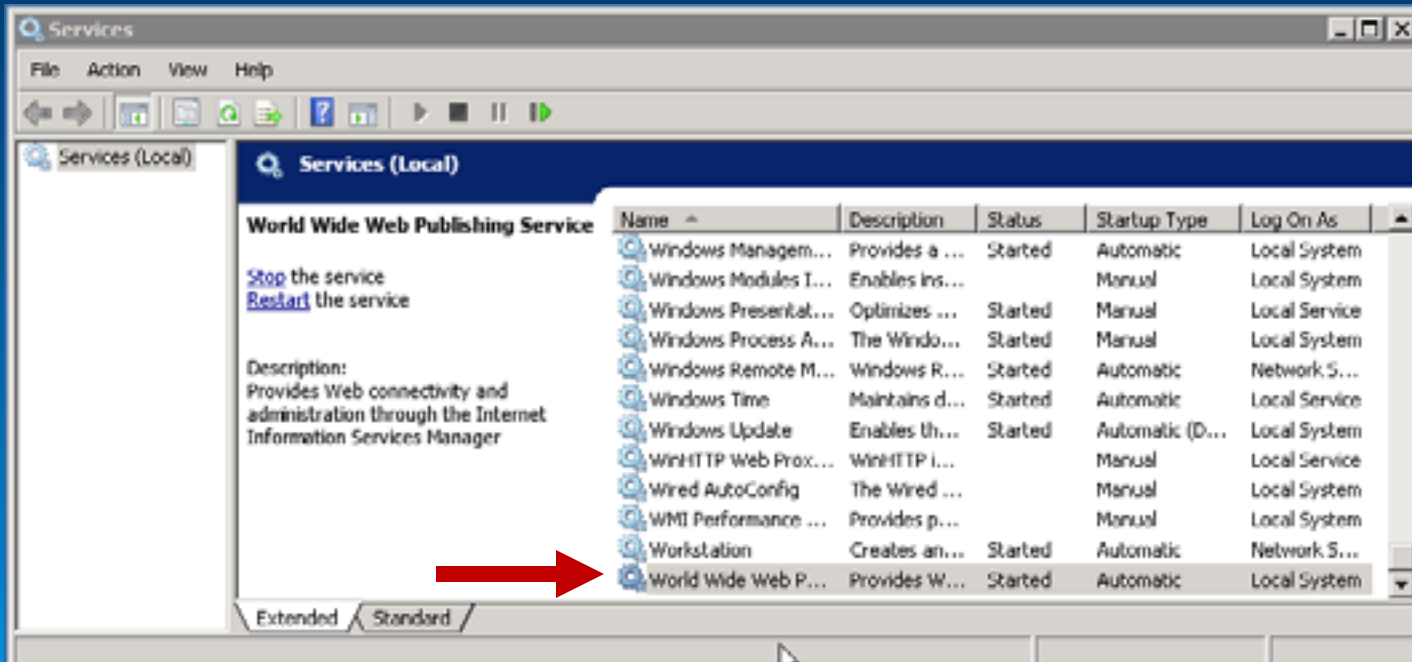
What Ports to Open on the Security Group?

- Ø Ports 80 and 443 open by default
 - Ø ArcGIS Server uses 6080
 - Ø Use Web Adaptor to configure for port 80
 - Ø Download from Esri Customer Care Portal
- Ø Open 6080 in security group if not using Web Adaptor

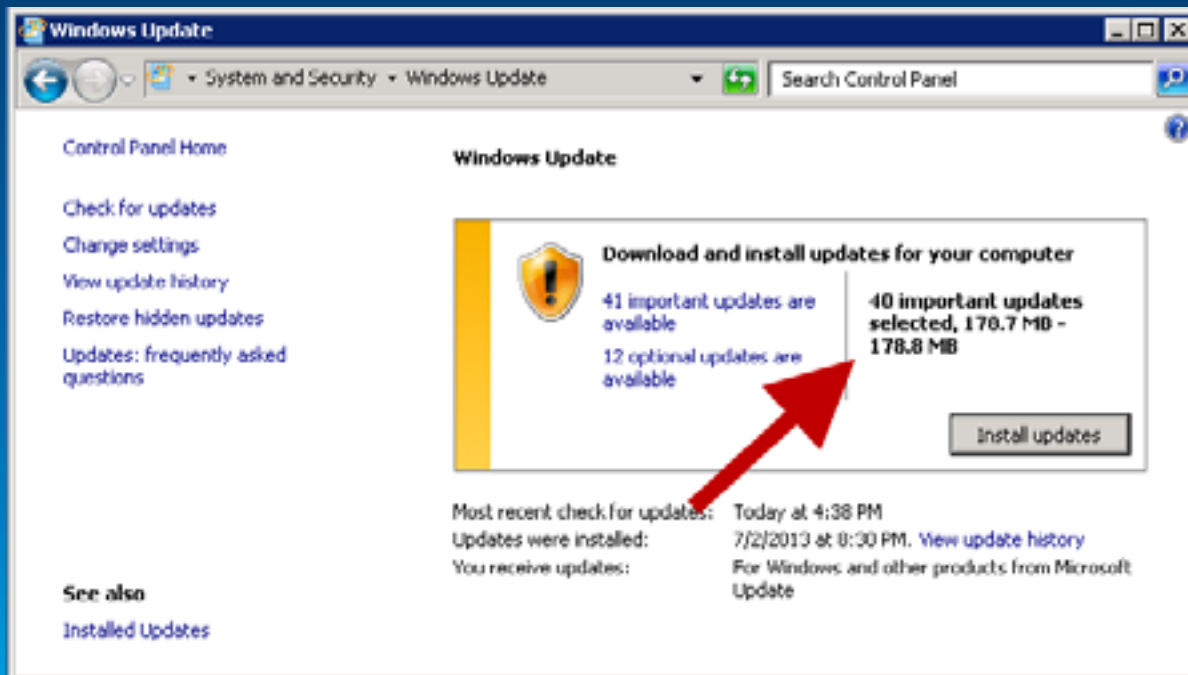
The screenshot shows the AWS IAM console interface for a Security Group named 'ED ARCGIS'. The 'Inbound' tab is selected, displaying a list of rules. The 'Create a new rule' dropdown is set to 'Custom TCP rule'. The 'Port range' is empty, and the 'Source' is set to '0.0.0.0/0'. An 'Add Rule' button is visible at the bottom right of the rule configuration area. The table below lists the existing rules:

Port Range	Protocol	Source	Action
1433 (MS SQL)	TCP	0.0.0.0/0	Delete
1433 (MS SQL)	TCP	99.0.0.0/32	Delete
1433 (MS SQL)	TCP	sg-6efe9406 (Dept of Ed EdFacts)	Delete
0 - 65535	TCP	sg-82d394ea (ED ARCGIS)	Delete
80 (HTTP)	TCP	0.0.0.0/0	Delete
443 (HTTPS)	TCP	0.0.0.0/0	Delete
27000	TCP	18.0.0.0/32	Delete
27000	TCP	108.0.0.0/32	Delete
27000	TCP	7.0.0.0/32	Delete
27000	TCP	9.0.0.0/32	Delete

Start WWW service for Web Adaptor



Apply Windows Updates



The screenshot shows the Windows Update control panel window. The title bar reads "Windows Update". The breadcrumb navigation shows "System and Security > Windows Update". A search bar is present with the text "Search Control Panel".

On the left side, there is a navigation menu with the following links:

- Control Panel Home
- Check for updates
- Change settings
- View update history
- Restore hidden updates
- Updates: frequently asked questions

The main content area is titled "Windows Update". It features a yellow shield icon with an exclamation mark. The text reads:

Download and install updates for your computer

41 important updates are available
12 optional updates are available

40 important updates selected, 170.7 MB - 178.8 MB

An "Install updates" button is located to the right of the update counts. A red arrow points from the "Install updates" button back to the "40 important updates selected" text.

Below this section, the following information is displayed:

Most recent check for updates: Today at 4:38 PM
Updates were installed: 7/2/2013 at 8:30 PM. [View update history](#)
You receive updates: For Windows and other products from Microsoft Update

At the bottom left, there is a "See also" section with the link "Installed Updates".

Apply Database Updates

The screenshot shows the Microsoft SQL Server Enterprise Manager interface. The left pane displays the server hierarchy for 'AMAZON-V9N33PA (SQL Server 10.50.4270 - SP2)'. The right pane shows the execution of the query 'DBCC TRACESTATUS (4199, -1)'. The Results pane displays a single row of data:

TraceFlag	Status	Global	Session
4199	0	0	0

The status bar at the bottom indicates 'Query executed succ...', 'AMAZON-V9N33PA (10.50.SP2)', 'AMAZON-V9N33PA/Admin...', 'TD', '00:00:00', and '1 rows'.

What do I need to publish a Map Service?

Folder: ED

Current Version: 10.11

View Footprints In: [ArcGIS.com Map](#)

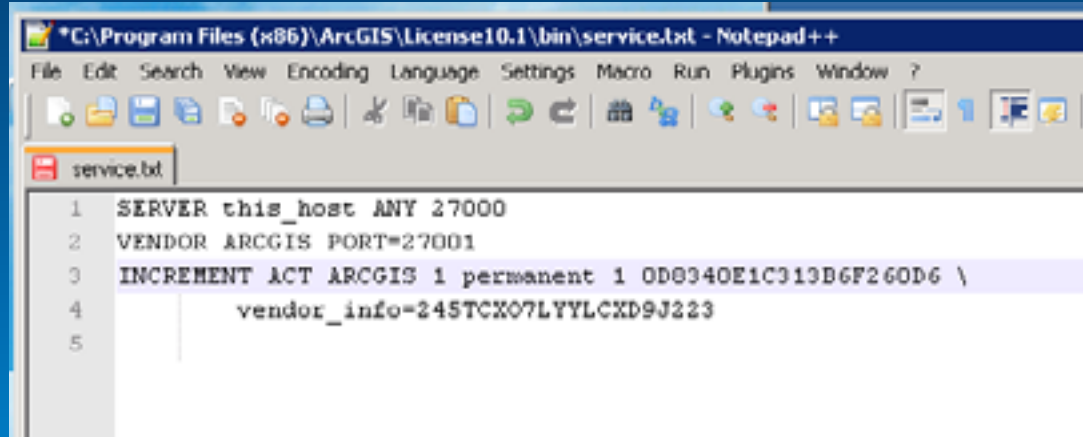
Services:

- [ED/AchievementResults_2010_2011_7](#) (MapServer)
- [ED/demographic_profile_map](#) (MapServer)
- [ED/EDSB_BASE](#) (MapServer)
- [ED/exportData](#) (MapServer)
- [ED/LocaleAssignmentService3](#) (MapServer)
- [ED/optionalLayers](#) (MapServer)
- [ED/queryDistrictData](#) (MapServer)
- [ED/querySchoolData_mobile](#) (MapServer)
- [ED/querySchoolData](#) (MapServer)
- [ED/queryStateData](#) (MapServer)
- [ED/sdds_data_extraction](#) (GPServer)
- [ED/states](#) (MapServer)

Supported Interfaces: [REST](#) [SOAP](#) [Sitemap](#) [Geo Sitemap](#)

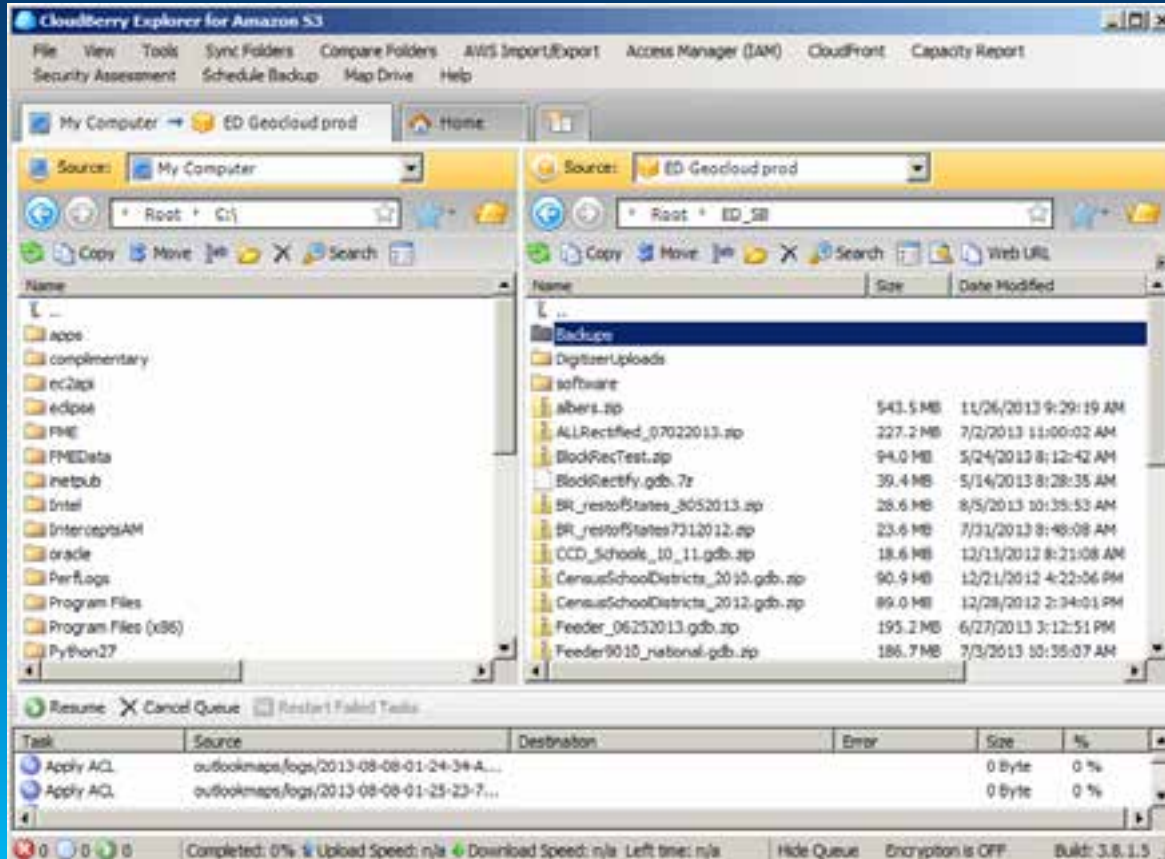
ArcGIS Desktop to administer and publish

- ∅ Publish with Desktop
 - ∅ Install on the server
 - ∅ Connect from your computer
- ∅ License Manager
 - ∅ Lock down ports to 27000, 27001
 - ∅ Add to Security Group



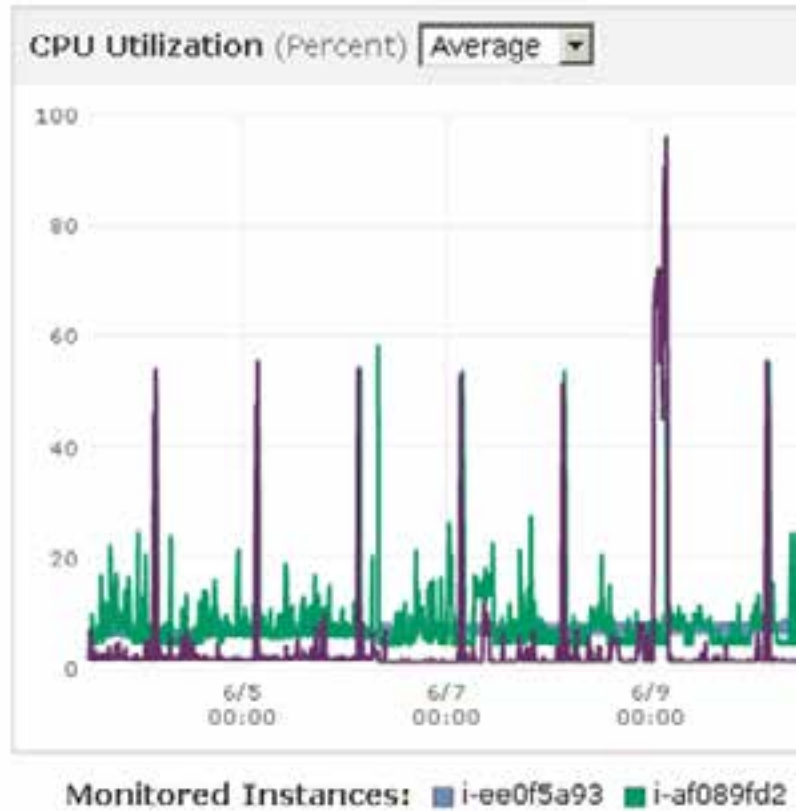
```
*C:\Program Files (x86)\ArcGIS\License10.1\bin\service.txt - Notepad++
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
service.txt
1 SERVER this_host ANY 27000
2 VENDOR ARCGIS PORT=27001
3 INCREMENT ACT ARCGIS 1 permanent 1 0D0340E1C319B6F260D6 \
4 vendor_info=245TCX07LYYLCKD9J223
5
```

Migrate Data and MXDS to AWS S3 via CloudBerry



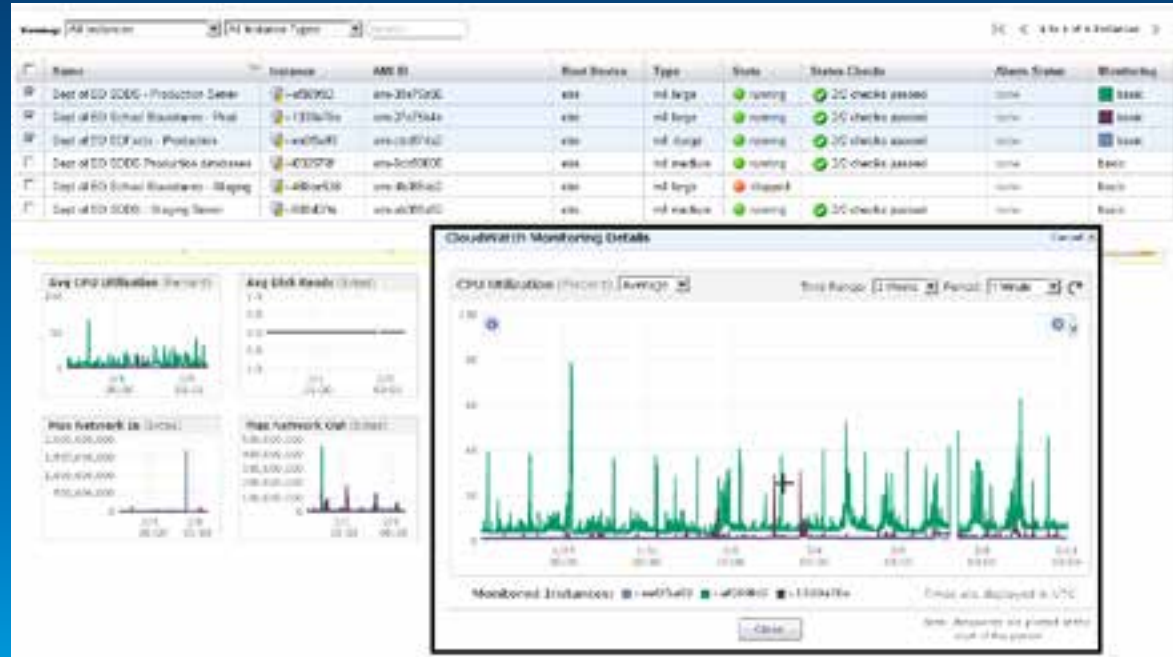
Monitoring

CloudWatch Monitoring Details



CloudWatch Metrics

1. Status Checks
2/2 checks
2. Create CloudWatch alarms
3. Good planning tool
server capacity



Amazon Service Health Dashboard

The screenshot shows the Amazon Service Health Dashboard for North America. The dashboard includes a navigation bar with the Amazon Web Services logo and the title 'SERVICE HEALTH DASHBOARD'. Below the navigation bar, there is a breadcrumb trail 'Amazon Web Services > Service Health Dashboard' and a 'Current Status - Feb 6, 2014' section. A paragraph of text explains that Amazon Web Services publishes up-to-the-minute information on service availability and provides instructions on how to report issues. The main content area features a table with columns for 'Current Status', 'Details', and 'RSS'. The table lists several services, all of which are marked as 'operating normally'. The row for 'Amazon Elastic Compute Cloud (N. Virginia)' is highlighted with a red border. The dashboard also includes tabs for 'North America', 'South America', 'Europe', and 'Asia Pacific', and a 'Contact Us' link.

amazon web services SERVICE HEALTH DASHBOARD <http://status.aws.amazon.com/>

[Amazon Web Services](#) > Service Health Dashboard

Current Status - Feb 6, 2014

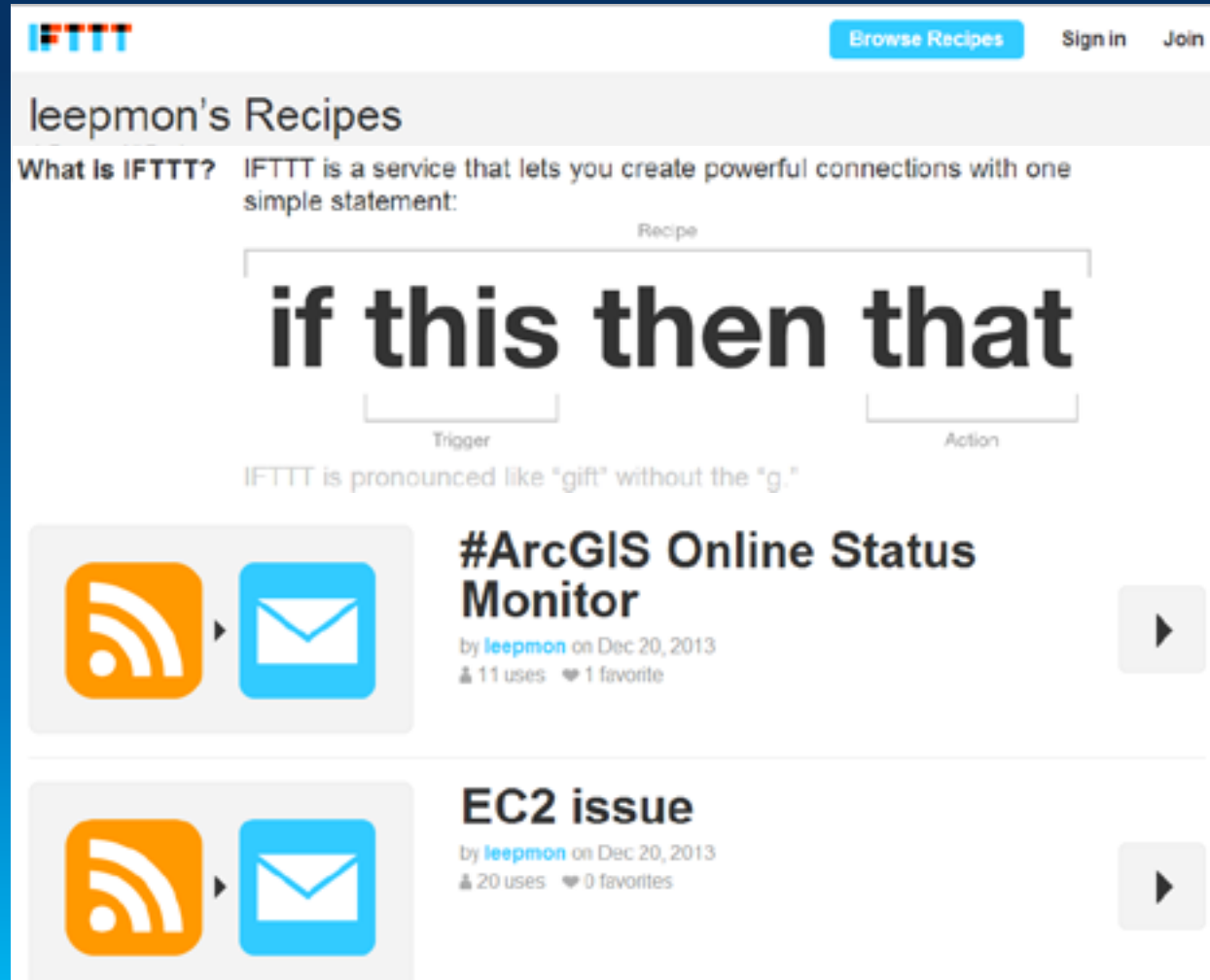
Amazon Web Services publishes our most up-to-the-minute information on service availability in the table below. Check back here any time to get current status information, or subscribe to an RSS feed to be notified of interruptions to each individual service. If you are experiencing a real-time, operational issue with one of our services that is not described below, please inform us by clicking on the "Contact Us" link to submit a service issue report.

North America	South America	Europe	Asia Pacific	Contact Us
Current Status				RSS
✓ Amazon CloudFront				RSS
✓ Amazon CloudSearch (N. California)				RSS
✓ Amazon CloudSearch (N. Virginia)				RSS
✓ Amazon Elastic Compute Cloud (N. California)				RSS
✓ Amazon Elastic Compute Cloud (N. Virginia)				RSS
✓ Amazon CloudWatch (N. Virginia)				RSS

IFTTT Recipes

Set up alerts

<https://ifttt.com/>



IFTTT [Browse Recipes](#) [Sign in](#) [Join](#)

leapmon's Recipes



What is IFTTT? IFTTT is a service that lets you create powerful connections with one simple statement:



Recipe

if this then that

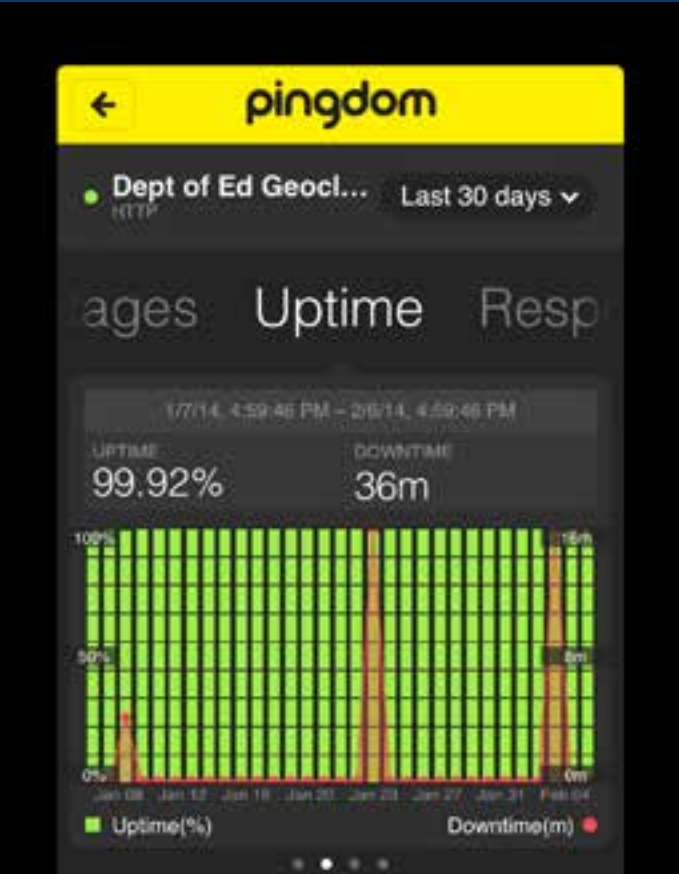
Trigger Action

IFTTT is pronounced like "gift" without the "g."

  **#ArcGIS Online Status Monitor**
by [leapmon](#) on Dec 20, 2013
▲ 11 uses ♥ 1 favorite

  **EC2 issue**
by [leapmon](#) on Dec 20, 2013
▲ 20 uses ♥ 0 favorites

Website Monitoring with Pingdom



Instance Backup Strategy

Instance backups automated with Powershell scripts

- ∅ Daily volume snapshots and weekly AMIs
- ∅ Script cleans up snapshots and AMIs to reduce storage costs



IAM Console Security

Ø Control users and groups within account

Ø Unique security credentials for access keys and login/passwords



The screenshot displays the AWS IAM console dashboard. The top navigation bar includes 'Services', 'List', and 'Filter/Sort/Display'. The main content area is titled 'Getting Started' and features a yellow banner with the text 'AWS Identity and Access Management (IAM) enables you to manage access to your AWS resources.' Below this is a button labeled 'Create a new group of users'. The dashboard is divided into several sections: 'Security Status' shows 'Root account MFA' as 'Disabled' and 'Password Policy' as 'Enabled'; 'IAM Resources' lists '0 Groups', '10 Users', and '3 Roles'; 'AWS Account Alias' provides a link to the account alias; and 'IAM Documentation' lists links to the IAM Getting Started Guide, Using IAM, IAM CLI Reference, IAM API Reference, and Report an Issue. The footer contains copyright information for AWS, Inc. and a 'Feedback' button.

Lessons Learned

- ∅ **Esri's Amazon Machine Image for ArcGIS Server is a successful approach for a GIS platform.**
- ∅ **Work closely with IT group and know your security requirements**
- ∅ **Benefits of Cloud hosting**
 1. **Rapidly deploy/develop**
 2. **Reliable**
 3. **Flexible**
- ∅ **Change configuration as needed**



Thank You – Questions?

Amy Ramsdell

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- **ArcGIS Cloud Security Roadmap & Best Practices for Federal Agencies**
 - Tues. 8:30am – 9:30am; 145 AB
 - Tues. 4:00pm – 5:00pm; 146 C
- **Understanding ArcGIS Deployments in Public and Private Clouds**
 - Tues. 11:00am – 12:00am; 151 A
- **ArcGIS and the Cloud – A Management Perspective**
 - Tues. 5:15pm – 6:15pm

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