

# Avoiding Unhappy Web and Mobile Users

Frank Roberts  
Innovate! Inc.



# Topics

- Who is this guy?
- What has changed
- Lessons learned
- ArcServer Monitor
- Summary



# Who is this guy?

- 1991 – 2011: GIS Manager for Coeur d'Alene Tribe
- 2011: Innovate! Inc.
- Stuff:
  - Business Case For GIS – ESRI
  - National Academy of Sciences
  - Started field collection with GPS about 1993
  - Director of IT
- Innovate Inc.
  - Based in Alexandria VA
  - 12 Years old
  - Esri Business Partner
  - 70 Staff



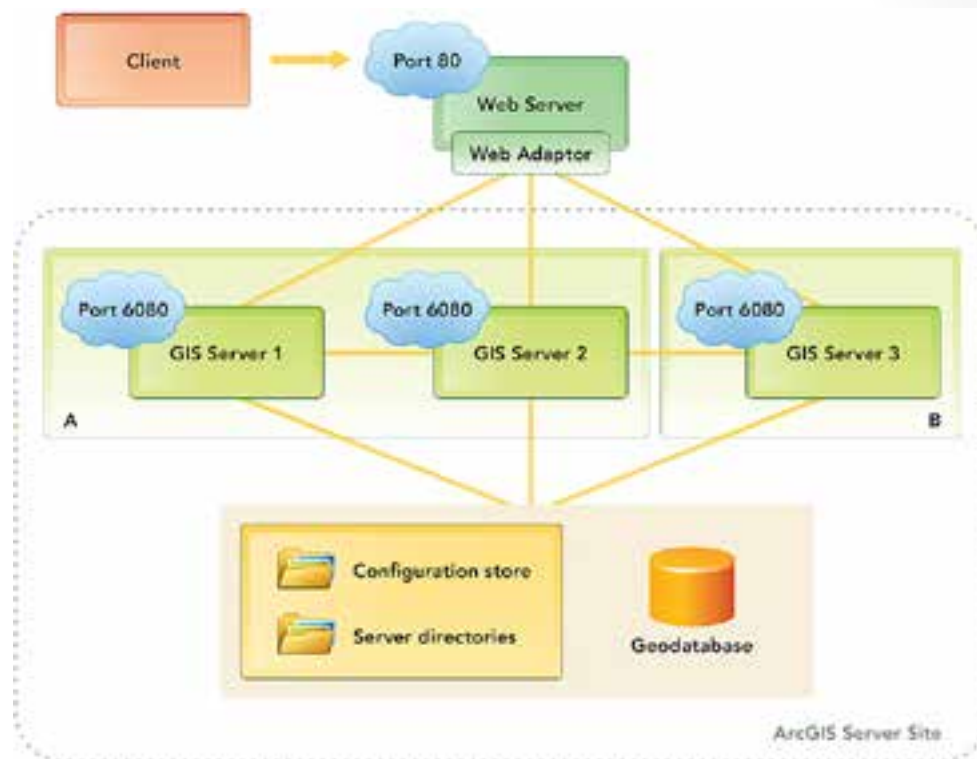
# The Difference

- History GIS/GPS Field Data Collection
  - Trimble GPS/Differential Collection
    - One device- turn it on collect point
  - ArcPad Data Collection
    - One device – turn it on collect point
  - ArcGIS Mobile - Web –
    - One device, internet, one web server, one ArcGIS server, one SDE server, one RDBM



# Mobile and Web Components

- GIS Data
- Data in ArcSDE/Geodatabases
- ArcServer
- Web Adapter
- Internet
- Web Browser or Mobile Device (Client)



# Lesson #1

- It's really all about good database design
  - Field Alias in the GeoDatabase
    - These then cascade to all the field forms
  - Domains
    - Create domain
    - This will then translate to pick lists/drop downs
  - Don't get too complicated, related tables don't work very well yet!
  - Don't forget global ID's

# Lesson #2

- Attachments are cool!
- Having access to images or reports in the field can be useful
- Collecting images and other files in the field can also be very useful and make information reconciliation much better than in the old model
- Know your target field collection device, cuz they don't handle attachments the same

# Lesson #3 - Tune

- Tune up your mxd
- Load test your ArcServer

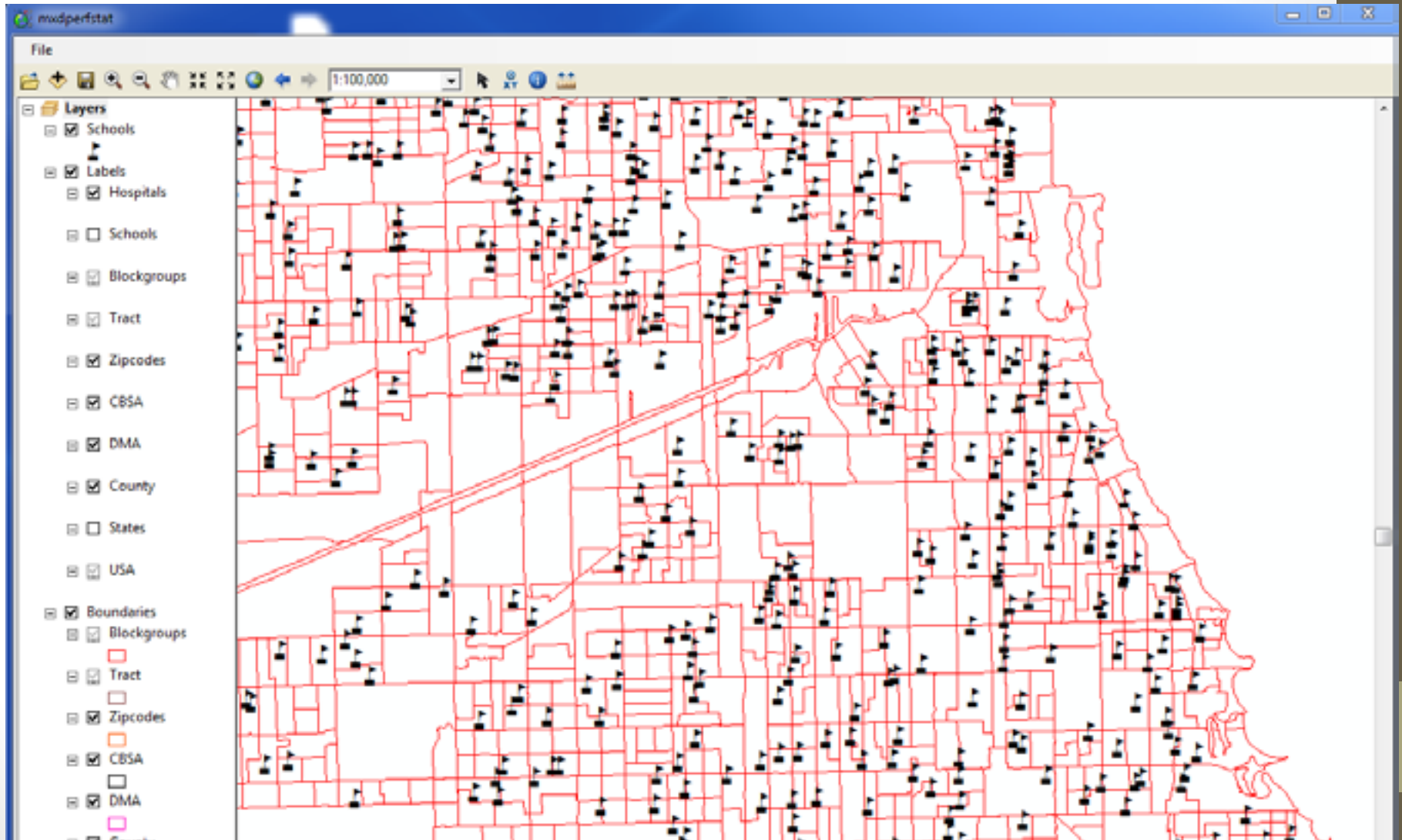


# How to Run

- From command prompt:

```
mxdperfstat10.2.exe -mxd TruvenChicago.mxd
```

# What Happens



# Output

Map Display Performance (sec) for each scale

Scale	Refresh Time(sec)	VisibleLayers
100,000	1.19	11
100,000	1.20	13
50,000	.51	13
24,000	.31	15
10,000	.19	14
5,000	.10	14
1,000	.14	14

Layer Properties

Item	At Scale	Layer Name	Refresh Time (sec)	Recommendations	Features	Vertices	Labeling	Geography Phase (sec)	Graphics Phase (sec)	Cursor Phase (sec)	DBMS CPU	DBMS LIO	DBMS PIO	Source	LayerType	Layer Spatial Reference	LayerQueryDef
1	100,000	Schools	.98	Simplify labeling, symbology: GraphicsPhase= 16	162		False	.11	.30	.02	.00			C:\Data\Travis SpeedTest\Latmark\WM.gdb	esriGeometryPoint	WGS_1984_Web_Mercator_Auxiliary_Sphere	
2	100,000	Hospitals	1.11	Simplify labeling, symbology: GraphicsPhase=1.00;	11		True	.11	1.00	.00	.00			C:\Data\Travis SpeedTest\Latmark\WM.gdb	esriGeometryPoint	WGS_1984_Web_Mercator_Auxiliary_Sphere	
3	100,000	Zipcodes	.98	Simplify labeling, symbology: GraphicsPhase=17.	22	1,048	True	.09	.37	.00	.00			C:\Data\Travis SpeedTest\Boundary\WM.gdb	esriGeometryPolygon	WGS_1984_Web_Mercator_Auxiliary_Sphere	
4	100,000	USA	.97	Simplify labeling, symbology: GraphicsPhase= 16.	1	631	True	.09	.36	.00	.00			C:\Data\Travis SpeedTest\Boundary\WM.gdb	esriGeometryPolygon	WGS_1984_Web_Mercator_Auxiliary_Sphere	
5	100,000	USA	.94	Simplify labeling, symbology: GraphicsPhase= 13.	1	641	True	.09	.33	.00	.00			C:\Data\Travis SpeedTest\Boundary\WM.gdb	esriGeometryPolygon	WGS_1984_Web_Mercator_Auxiliary_Sphere	
6	100,000	County	.95	Simplify labeling, symbology: GraphicsPhase= 14.	1	374	True	.09	.34	.00	.00			C:\Data\Travis SpeedTest\Boundary\WM.gdb	esriGeometryPolygon	WGS_1984_Web_Mercator_Auxiliary_Sphere	
7	100,000	Zipcodes	.95	Simplify labeling, symbology: GraphicsPhase= 14.	22	1,048	False	.09	.34	.00	.00			C:\Data\Travis SpeedTest\Boundary\WM.gdb	esriGeometryPolygon	WGS_1984_Web_Mercator_Auxiliary_Sphere	

# Using Results

Truven 2003 Results (2.67 GHz, 8 GB RAM, ?? RPM Drives, RAID 1)

Scale	Refresh Time(sec)	Visible Layers	Scale	Refresh Time(sec)	Visible Layers	Scale	Refresh Time(sec)	Visible Layers	Average	Comments
100,000	1.19	13	100,000	1.17	13	100,000	1.3	13	1.22	
50,000	0.67	13	50,000	0.59	13	50,000	0.58	13	0.61	Slowest
24,000	0.38	15	24,000	0.47	15	24,000	0.3	15	0.38	
10,000	0.22	14	10,000	0.2	14	10,000	0.2	14	0.21	
5,000	0.23	14	5,000	0.23	14	5,000	0.17	14	0.21	
1,000	0.22	14	1,000	0.19	14	1,000	0.2	14	0.20	

Truven 2008 Results (2 CPU, 2.5GHz, 64GB RAM, 10,000 RPM SAS Drives, RAID Physical Machine, )

Scale	Refresh Time(sec)	Visible Layers	Scale	Refresh Time(sec)	Visible Layers	Scale	Refresh Time(sec)	Visible Layers	Average	Comments
100,000	1.14	13	100,000	1.19	13	100,000	1.13	13	1.15	Fastest
50,000	0.58	13	50,000	0.59	13	50,000	0.53	13	0.57	
24,000	0.41	15	24,000	0.46	15	24,000	0.43	15	0.43	Slowest
10,000	0.32	14	10,000	0.31	14	10,000	0.27	14	0.30	Slowest
5,000	0.24	14	5,000	0.27	14	5,000	0.24	14	0.25	Slowest
1,000	0.24	14	1,000	0.23	14	1,000	0.25	14	0.24	Slowest

Innovate 2008 32 bit TestBed ( 1 CPU, 2.2 GHz, 2 GB RAM, 10,000 RPM SAS Drives, RAID 5, Disk Cache disabled)

Scale	Refresh Time(sec)	Visible Layers	Scale	Refresh Time(sec)	Visible Layers	Scale	Refresh Time(sec)	Visible Layers	Average	Comments
100,000	1.2	13	100,000	1.22	13	100,000	1.23	13	1.22	Tie with 2003
50,000	0.51	13	50,000	0.51	13	50,000	0.51	13	0.51	Fastest
24,000	0.31	15	24,000	0.31	15	24,000	0.31	15	0.31	Fastest
10,000	0.19	14	10,000	0.19	14	10,000	0.19	14	0.19	Fastest
5,000	0.16	14	5,000	0.16	14	5,000	0.16	14	0.16	Fastest
1,000	0.14	14	1,000	0.14	14	1,000	0.14	14	0.14	Fastest

# Innovate Load Test



Currently Monitoring: InnovateGeol

Last Test: 06/25/14 15:01  
Services Monitored: 8  
Tokens Monitored: 1  
Errors: 4



Dashboard

Server Logs

Service Monitor

Token Monitor

Quick Links

Admin

## Server Load Test

1) Enter a public Rest Endpoint to parse: (e.g. <http://it.innovateteam.com/api/ogs/rest/services>)

Parse Rest Endpoint

2) Select the number of times to cycle the test.  A value of 1 will perform draw requests at 22 different extents.

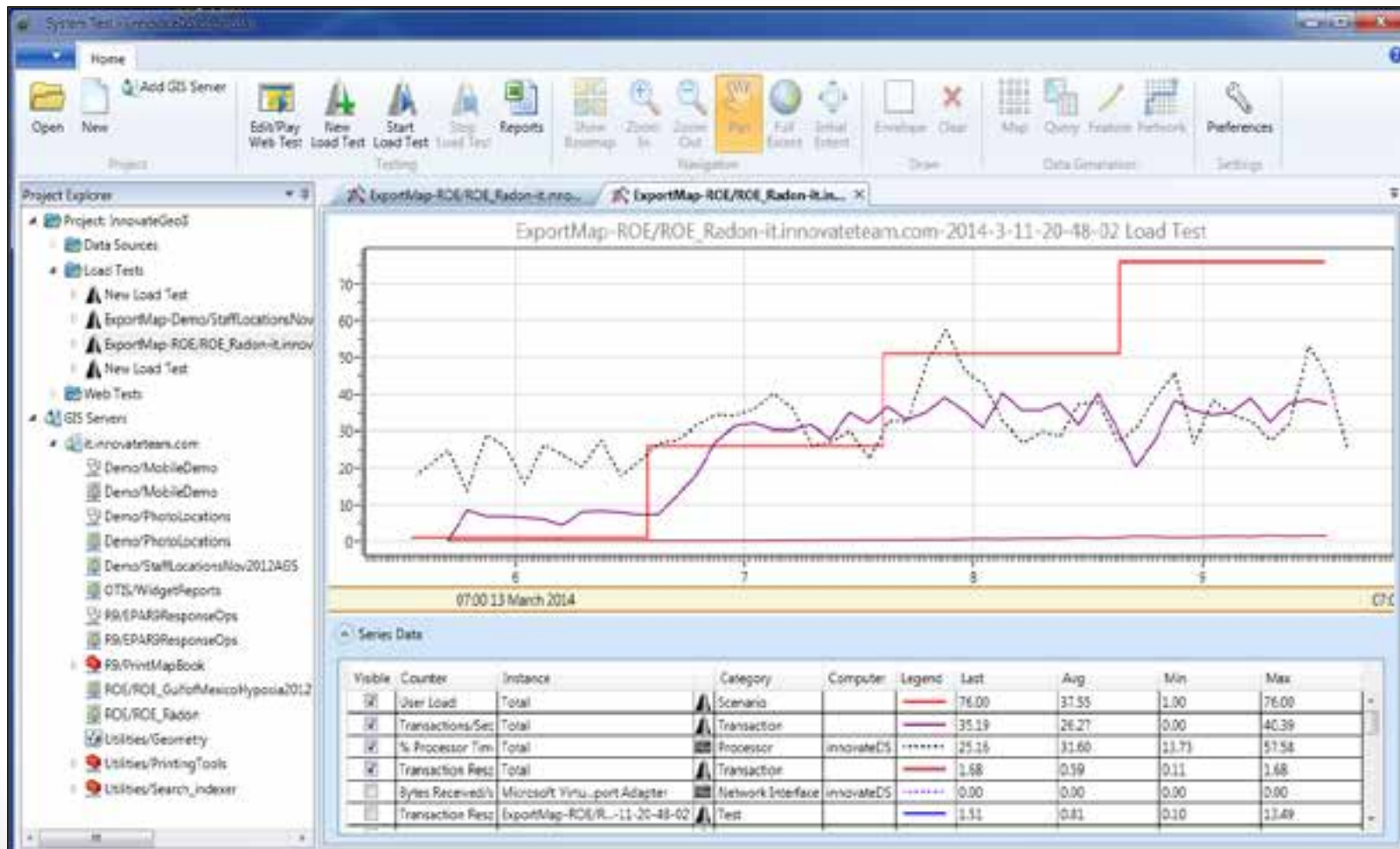
3) Select a single map service to load test, or load test all map services.

Test Selected Service

Test All Services

4) Results should indicate the number of times a map image was created and the number of errors, if any.

# Esri System Tools



# Lesson #4

- Give Esri out of the box solutions a try:
  - ArcGIS App (soon to be retired)
  - ArcGIS Collector
  - Web Map Templates
  - FlexViewer (soon to be retired)
  - Web App builder (soon to be released)



# Web App Builder

The screenshot displays the ArcGIS WebApp Builder interface. At the top, the title bar reads "ArcGIS WebApp Builder" and "Region 9 Test", with a "Help" button on the right. Below the title bar, a configuration bar shows "Width 1024" and "Height 768" with an "OK" button. The main area is divided into two panels. The left panel, titled "Device Selection", contains a grid of device icons with labels: "The New iPad", "iPad & iPad2", "iPad Mini", "iPhone5/5S", "iPhone4/4S" (highlighted with a blue border), "iPhone & iPod Touch", "MEIZU MX2", "HTC One", "Samsung Note II", "Samsung Note III", and "Sony Xperia Z". The right panel shows a preview of the web application on an iPhone4/4S device, displaying a map of the Great Basin region with a search bar and navigation controls. Below the preview, the text "iPhone4/4S 320 x 480" is visible. At the bottom, a navigation bar includes a home icon, a "Back to Configure" button, and a "Saved" button.



# Lesson 5: Don't forget to monitor the server



# September 9th Honolulu Harbor 233,000-gallon molasses spill



# When tokens expire, web maps go down...

The molasses are coming.  
Where's... my... MAP?!

...and users aren't happy.



# Innovate!

Server Monitor

Currently Monitoring: InnovateGeol

Last Test: 06/25/14 14:01  
Services Monitored: 8  
Tokens Monitored: 1  
Errors: 4



Dashboard

Server Logs

Service Monitor

Token Monitor

Quick Links

Admin

Physical Memory Used



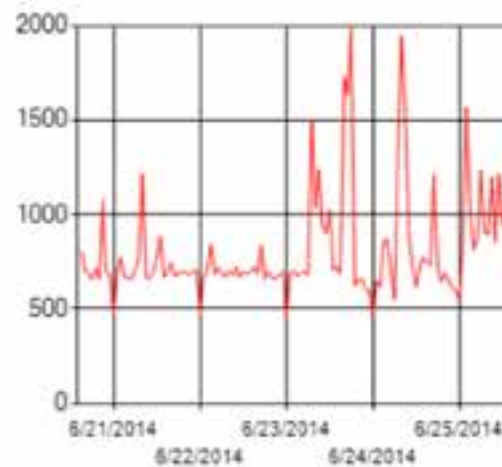
Disk Space Used



Next Token To Expire



ArcGIS Server Log Activity



More Info

Daily ArcGIS Server Errors



More Info



## Server Log

Type		All					
Time	Type	Code	Method Name	Source	Elapsed Time	Message	
6/26/2014 10:01:13 AM	FINE	8522	WebSecurityManager.authenticate	Server		HTTP Referer: Not Available	
6/26/2014 10:01:13 AM	INFO	9029		Rest		Request user: Anonymous user, Service: Utilities/Utilities/Search_indexer/GPServer	
6/26/2014 10:01:13 AM	FINE	8522	WebSecurityManager.authenticate	Server		HTTP Referer: Not Available	
6/26/2014 10:01:13 AM	INFO	9029		Rest		Request user: Anonymous user, Service: Utilities/Utilities/Geometry/GeometryServer	
6/26/2014 10:01:13 AM	SEVERE	9003		Rest		Unable to process request. Error handling service request: Could not find a service with the name 'Demo/MapServer/MobileDemo' in the configured clusters. Service may be stopped or ArcGIS Server may not be running.	
6/26/2014 10:01:13 AM	FINE	8522	WebSecurityManager.authenticate	Server		HTTP Referer: Not Available	
6/26/2014 10:01:13 AM	INFO	9029		Rest		Request user: Anonymous user, Service: Demo/Demo/MobileDemo/MobileServer	
6/26/2014 10:01:13 AM	INFO	9029		Rest		Request user: Anonymous user, Service: RS/RS/PrintMapBook/GPServer	

Dashboard

**Server Logs**

Service Monitor

Token Monitor

Quick Links

Admin



## Tokens Being Monitored

	Token	Expiration Date
<a href="#">View Results</a>	z3fcSXTDngguNhBN2Q1m9AQ0brJvGI2qFyiEbY0tgGILg2#bMkWcESxEFVyt45qO	9/24/2014 12:00:00 AM

Dashboard

Server Logs

Service Monitor

Token Monitor

Quick Links

Admin



Dashboard

Server Logs

Service Monitor

Token Monitor

Quick Links

Admin

Welcome **admin2!** | [Log Out](#) |

## Edit Email Recipients For Error Notification

No email recipients in the system. [Add A Record](#)

For Text Messages

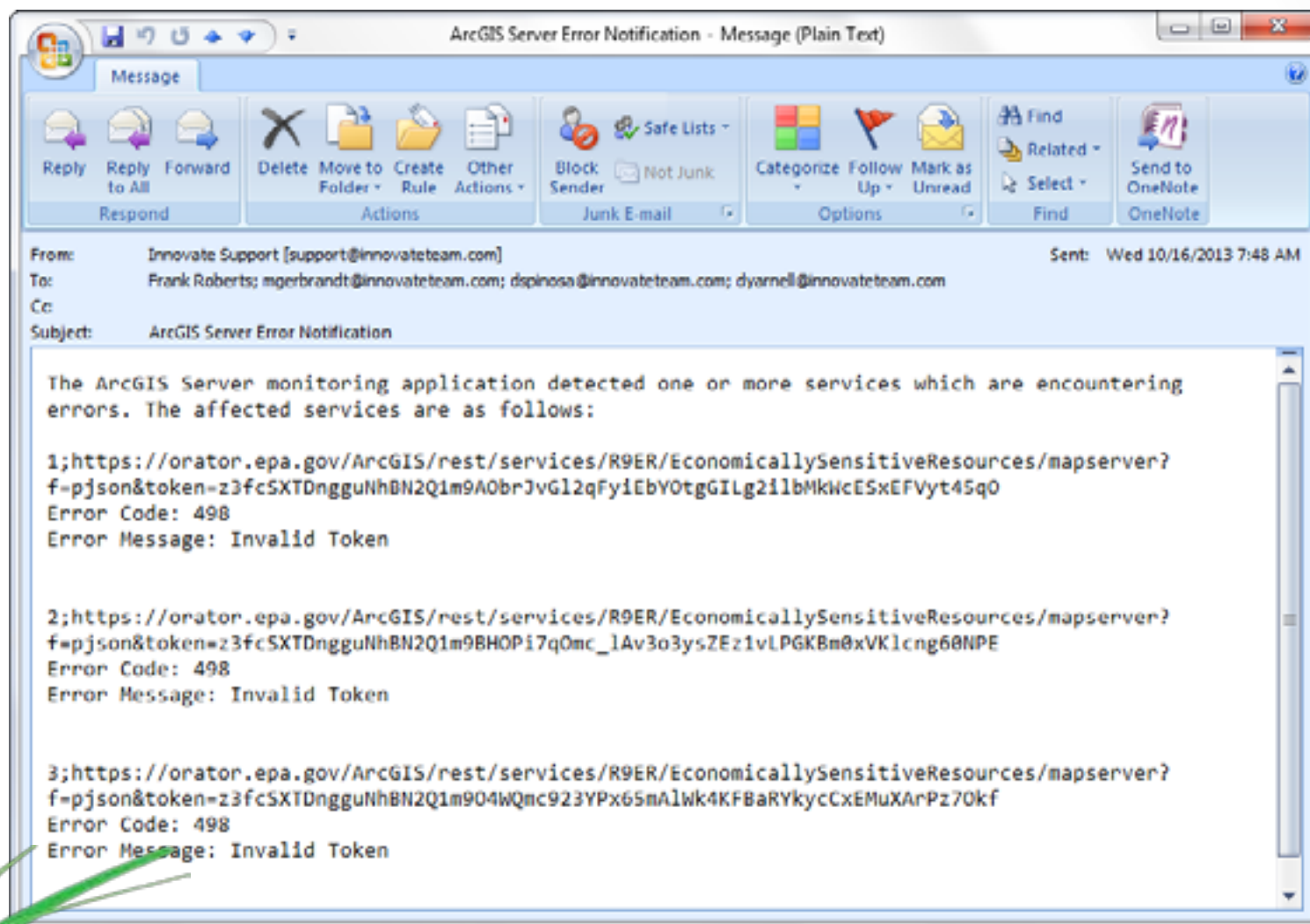
- AT&T: [phonenumber@txt.att.net](mailto:phonenumber@txt.att.net)
- Sprint: [phonenumber@messaging.sprintpcs.com](mailto:phonenumber@messaging.sprintpcs.com)
- T-Mobile: [phonenumber@tmomail.net](mailto:phonenumber@tmomail.net)
- Verizon: [phonenumber@vtext.com](mailto:phonenumber@vtext.com)

## Edit Services and Tokens to Monitor [Insert New](#)

Service Url	Token	Token Start Date	Duration (Days)	Skip Test (Yes/No)	
<a href="http://it.innovateteam.com:8080/arcgis/rest/services">http://it.innovateteam.com:8080/arcgis/rest/services</a>				Yes	<a href="#">Edit</a> <a href="#">Delete</a>
<a href="http://it.innovateteam.com:8080/arcgis/rest/services/Demo/PhotoLocations/FeatureServer">http://it.innovateteam.com:8080/arcgis/rest/services/Demo/PhotoLocations/FeatureServer</a>				No	<a href="#">Edit</a> <a href="#">Delete</a>
<a href="http://it.innovateteam.com:8080/arcgis/rest/services/Demo/PhotoLocations/MapServer">http://it.innovateteam.com:8080/arcgis/rest/services/Demo/PhotoLocations/MapServer</a>				Yes	<a href="#">Edit</a> <a href="#">Delete</a>



# Email Alert on the hour



# Solution Benefits

- Cloud hosted – 99.9% uptime
- On-premises hosting if wanted
- Small foot print
- Affordable cost to implement



# Summary

1. Current solution is complex
2. Don't forget about attachments
3. Tune up the mxd
4. Utilize the free Esri Apps and Samples
5. Monitor the Server

# For More Information Contact me

Frank Roberts

208.699.2712

[froberts@innovateteam.com](mailto:froberts@innovateteam.com)

