ArcGIS Monitor: Introduction

Andrew Sakowicz, asakowicz@esri.com, Professional Services
Motivation
Growing complexity of ArcGIS Enterprise

Requires dependable infrastructure

Certificates
Load balancer
Firewall
ArcGIS Web Adaptor
Portal for ArcGIS
Storage with immediate consistency

ArcGIS Server
ArcGIS Data Store
Database
Identify typical cases

Overload System:
- users
- services
Identify typical cases

Unstable Infrastructure:
- Network
- NAS
- VMWare
Identify typical cases

Bottlenecks:
- configuration
- maintenance
- workflows
Monitoring Enterprise GIS

Challenges

- Multiple administrators
- Multiple disparate monitoring/diagnostic tools
- Data collected in a reactive fashion: on demand and for limited time
- Correlation of data with different timestamp is difficult
- ArcGIS administrators do not have access to all tools, data and reports
- Challenging to quickly identify the root cause and take appropriate measures
When problems arise, what is the root cause?
Value to Customers
Maximize GIS Investments

Administrators:
• Detect, diagnose, and resolve issues with availability, configuration, performance and usage
• Gather actionable, quantifiable operational metrics and usage trends over time

Managers:
• Increase communication among GIS and IT staff and senior management
• Reduce administration costs

Users:
• Improve end-user satisfaction
Primary audience is enterprise GIS / IT admins

- Users (“patients”)
- GIS / IT admins (“doctors”)
- Esri PS and Tech Support (“specialists”)

Although a novice user can install and configure, this tool is intended to empower experienced GIS / IT Administrators
Planning for ArcGIS Monitor deployment

- Approve MongoDB and other software prerequisites
- Identify environments and solutions to be monitored
- Select deployment option: centralized or distributed
- Prepare credentials and connectivity
- Assign ArcGIS Monitor administrator
Installation

Centralized deployment
On-premises option
Use “local” monitoring services for each “environment”
Do not use one Monitoring Service all environments

- **Pros:**
  - One server
  - Central admin

- **Cons:**
  - Longer collection times
  - CPU spikes when “concurrent” collection on one machine
Distributed deployment
Full stack monitoring
Use “remote” monitoring services for each “environment”
Multiple data centers over high latency, but managed from central location.

Users in remote datacenters should remote desktop to central data center to access System Monitor.
Configuration

Counters

ArcGIS Monitor
End to end
Actionable information
### Alerts: actionable information

**Starting point for troubleshooting**

#### Charts and Stats

- **Source**
- **Details**
- **Available in 10.6.1**

#### Analyze alert groups

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<thead>
<tr>
<th>ID</th>
<th>Last Alert</th>
<th>Collection</th>
<th>Level</th>
<th>Status</th>
<th>Hours</th>
<th>Count</th>
<th>Groups</th>
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<th>Rule</th>
<th>Counter Instance</th>
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Alert View 3/6/2018, 10:06:42 AM

Response Time(sec)

Chart Resolution: real-time value at collection interval when query less than 12 hrs

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<th>P50</th>
<th>P90</th>
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<td>Message</td>
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<td>3/6/2018, 8:04:03 AM</td>
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Availability
Aggregated view based on Critical alerts

- Downtime defined only by Critical alerts
### Categories

**ArcGIS Monitor**

- **Status**: 11/28/2017, 9:15:18
- **Web**: Status
- **ArcGIS**: Status
- **Database**: Status
- **Infrastructure**: Status
- **Usage**: Status
- **GeoInfo**: Status
- **User-defined**: Status
- **License**: Status

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</table>

**Collections**: 10  
**Samples / Hour**: 65,194

---

*The image shows a screenshot of ArcGIS Monitor with a dropdown menu labeled 'Categories' and a table with status information.*
Web

- Response Time
- HTTP code
ArcGIS

- Server
- Portal
- GeoEvent
- GeoAnalytics
- ArcSOC Optimizer

Additional portal stats coming soon, e.g. dependent items, views per item, users
ArcGIS: WebGIS Health

- Severity
- Healthy
ArcSOC Optimizer

Setting min / max instances across 100 to 1000s of services in dynamic environments is challenging
Database

- ArcGIS Datastore
- Oracle
- SQL Server

AWS RDS and SQL Azure coming soon
## Infrastructure

CPU, Memory, Disk, Network, Load Balancer stats

### Collection Status

<table>
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<th>Alerting</th>
<th>Monitor</th>
<th>Name</th>
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<tr>
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<td>✔️</td>
<td>SSL Check</td>
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### System

- % Processor Time
- % Utilization Memory
- % Utilization Virtual
- Available Disk GB
- Available Memory GB
- Collection Time (sec)
- Committed Memory GB
- Disk % Idle
- Disk % Used
- Network Received mbps
- Network Sent mbps
- Paging File % Usage
- Paging File Free GB
- Paging File Usage GB
- Virtual Memory Free GB
- Virtual Memory Usage GB

### Database

- CPU
- Memory
- Disk
- Network
- Load Balancer

### Categories

- Web
- Database
- Infrastructure
- User-defined
- License

### Site

- Prod
- Dev
- Amazon
- Amazon-East
- Amazon-West
- % Processor Time
- Collection Time (sec)
- HTTP 200 Tr Interval
- HTTP 300 Tr Interval
- HTTP 400 Tr Interval
- HTTP 500 Tr Interval
- HTTP Code (%)
- HTTP Code (% Critical)
- HTTP Tr Interval
- Instances Running
- LB Host Health (%)
- LB Host Unhealthy Count
- LB Latency-Avg (sec)
- LB Latency-Max (sec)
- LB Region Tr Interval
- LB Tr Interval
- Memory Available MB
- Network Received MB Interval
- Network Sent MB Interval
- Page File Utilization (%)
- Volume Available MB
- Volume C Available MB
- Volume D Available MB
- Volume E Available MB
Usage

User stats

- Transactions
- Response Time
- HTTP Codes
GeoInfo
Requests per user IP
Customization

- Extensions returning signature json (any language)
- Rest API coming soon
Resources
ArcGIS Monitor system requirements

ArcGIS Monitor Administrator and ArcGIS Monitor Server can be installed on individual machines and have both share

Supported database for Monitor Server

**MongoDB** 3.4.x or 3.6.x is required to store the data collected by the counters. It is licensed under GNU Affero General Public License and can be found at [https://www.mongodb.com/download-center#community](https://www.mongodb.com/download-center#community).

Initially, 50GB of storage space is recommended for the MongoDB data store. Actual storage requirements may need to be adjusted to accommodate the counters and sample interval defined for your business needs.
Demo site – the latest features
https://arcgismonitor.esri.com/

ArcGIS Monitor

<table>
<thead>
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<th>Site</th>
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</tr>
</tbody>
</table>

Login

Status 1/8/2018, 8:15:07 PM

Collections: 3  Samples / Hour: 27,951

<table>
<thead>
<tr>
<th>ID</th>
<th>Alerts</th>
<th>Failures</th>
<th>Collection</th>
<th>Samples / Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>0</td>
<td>Dev</td>
<td>8,582</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>0</td>
<td>Prod</td>
<td>15,403</td>
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<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>Test</td>
<td>5,886</td>
</tr>
</tbody>
</table>

Status Report Guide:
- ▶ Fraction in each alerting monitor group represents alerting/total items. Example: 3/4 means 3 of 4 monitors are alerting
- ○ Fraction in each non-alerting monitor group represents non-alerting/total items. Example: 4/4 means 4 of 4 monitors are not alerting
- ◌ Empty monitor group indicates items are not defined
Gallery: [https://arcgismonitor.maps.arcgis.com](https://arcgismonitor.maps.arcgis.com)

- Tutorials
- Video
- Extensions / Tasks

[https://www.arcgis.com/home/group.html?id=58d996e9b40d45439d298d14fa309534&start=1&view=list&sortOrder=asc&sortField=owner#content]
Upgrade from System Monitor to ArcGIS Monitor

https://support.esri.com/en/technical-article/000017474

Discount packages are available to approved System Monitor 3 users
Upcoming features

- Internationalization (10.6.1)
- Localization
- Rest API
- Azure
- Microservices and Containers
Integrating with other monitoring tools

ArcGIS Monitor: Standards for effective Esri Platform monitoring

- Many excellent monitoring tools on the market that gather vast amount of data
- Understanding of Esri Platform internals required to provide actionable information
- Future Rest API will allow easy integration
- Recommended to evaluate stand alone ArcGIS Monitor before attempting integration
ArcGIS Monitor: Optimize Your Enterprise GIS Deployments

- Monitor the health, usage, SLA
- Improve performance
- Reduce administration costs
- Quickly diagnose:
  - Unstable infrastructure
  - Overloaded system
  - Bottlenecks

Scalable and non-intrusive: Used by Esri Managed Cloud Services to Monitor 500+ GIS Servers
Print Your Certificate of Attendance
Print stations located in the 140 Concourse

Tuesday
12:30 pm - 6:30 pm
GIS Solutions Expo
Hall B

5:00 pm - 6:30 pm
GIS Solutions Expo Social
Hall B

Wednesday
10:30 am - 5:15 pm
GIS Solutions Expo
Hall B

6:30 pm - 9:00 pm
Networking Reception
Smithsonian National Portrait Gallery
Please Take Our Survey in the Esri Events 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”