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  - • Enhancing Incident Resolution: Postmortems with ArcGIS Monitor

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# Agenda

- What brought us here?
- What has Monitor done for us?
- What's next on our journey with Monitor?



# ◦ • What brought us here

- The Dreaded Message
- All Hands Meeting
- The Platform



# The Dreaded Message

Concerned User 8:16 am

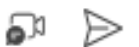


Hey, is the server down?

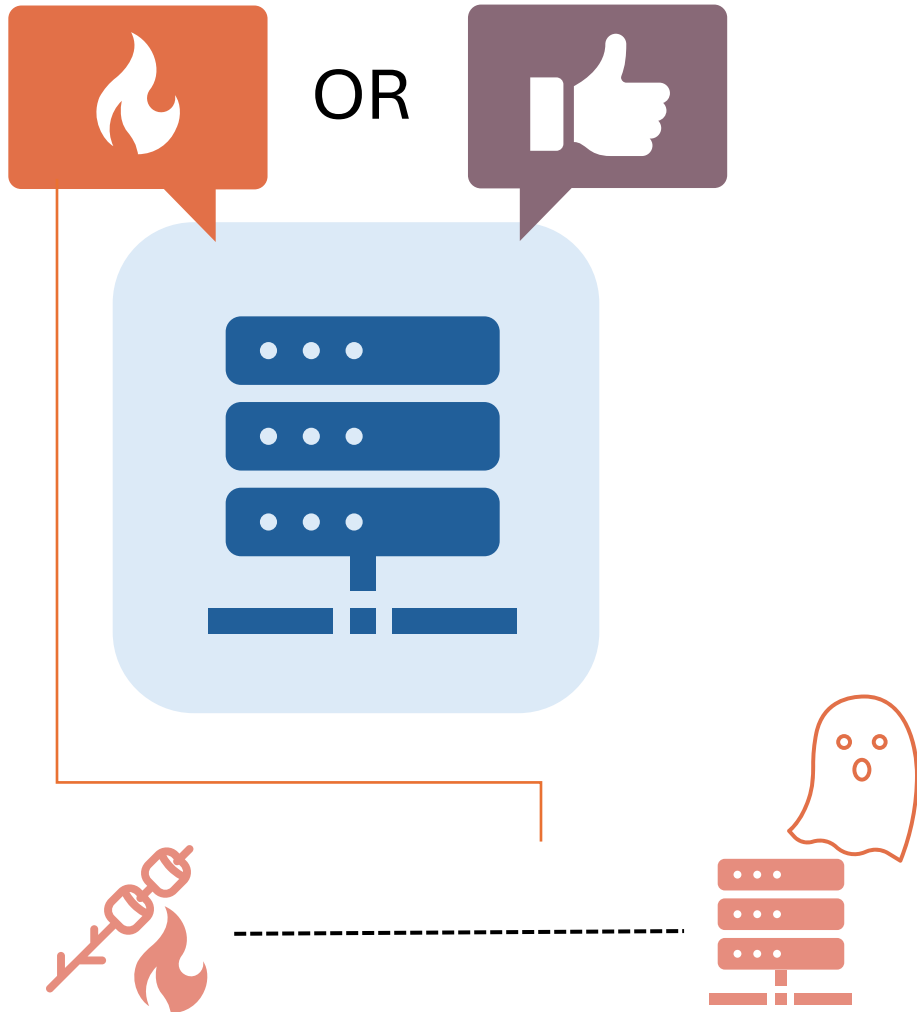
Cringe Levels:

1. Is something down?
2. Need more info.
3. User is needing to inform me.

Type a message



# Is This Fine?

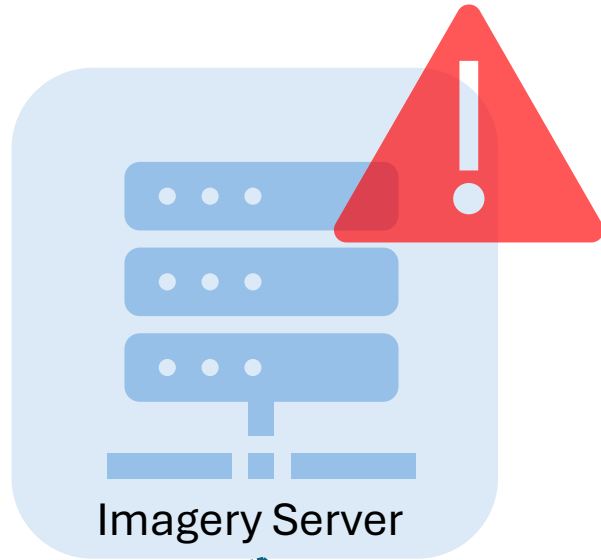


In each case we must determine validity and then extent

Challenges:

- Hard to get to big picture
- Defining normal behavior

# All Hands Meeting



**When:** 1/26/2023

**Event:** Off Site Meeting with all IT GIS Staff

**Issue:** ArcGIS Server is down on server hosting imagery

**Application:** ArcGIS Server

**Impact:** Large

## **Lesson Learned:**

1. Always Bring a Laptop
2. Install Monitor



*Applications with aerials  
as a base layer*

# What does Monitor do?

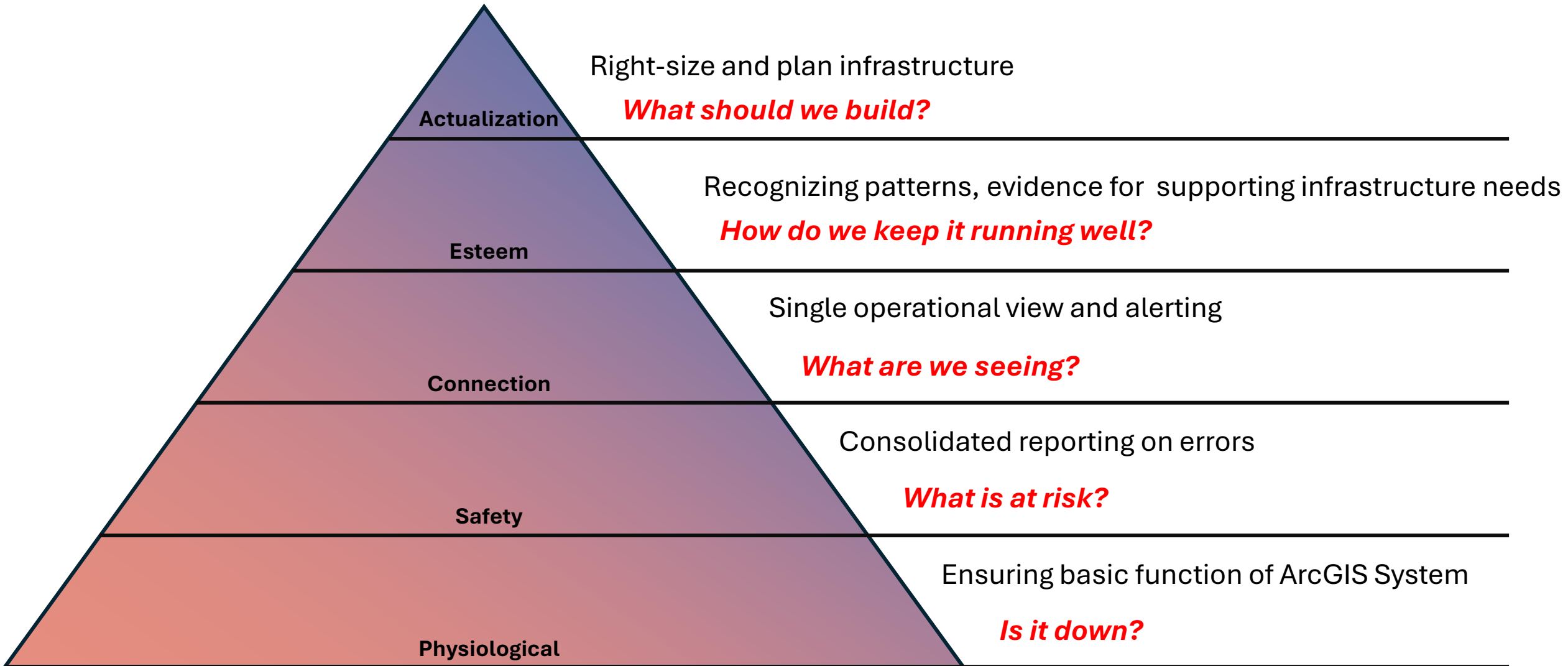
- A. Monitors GIS infrastructure health and performance
- B. Provides insights on system usage and performance metrics
- C. Helps identify and resolve GIS deployment issues
- D. Monitors the moon phases for GIS optimization

# What is ArcGIS Monitor

ArcGIS Monitor is designed to collect, analyze, and optimize the health of your enterprise geographic information system (GIS) implementations. It helps maximize your enterprise GIS investment by proactively identifying possible issues and providing timely and actionable insights on status, availability, usage, system performance, and resource utilization. Alerts facilitate rapid resolution by providing system administrators with real-time notifications when measurements are outside defined system thresholds. Reports can be used to visualize historical data and enhance communications within the organization.



# Key Problems



# ArcGIS Monitor Implementation

- Monitor was scoped as part of an Enterprise Design
- Server was ready
- Installed, registered components, began playing with the system

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Installed  
2/6/2023  
version  
2023.0

Now at  
version  
2023.3

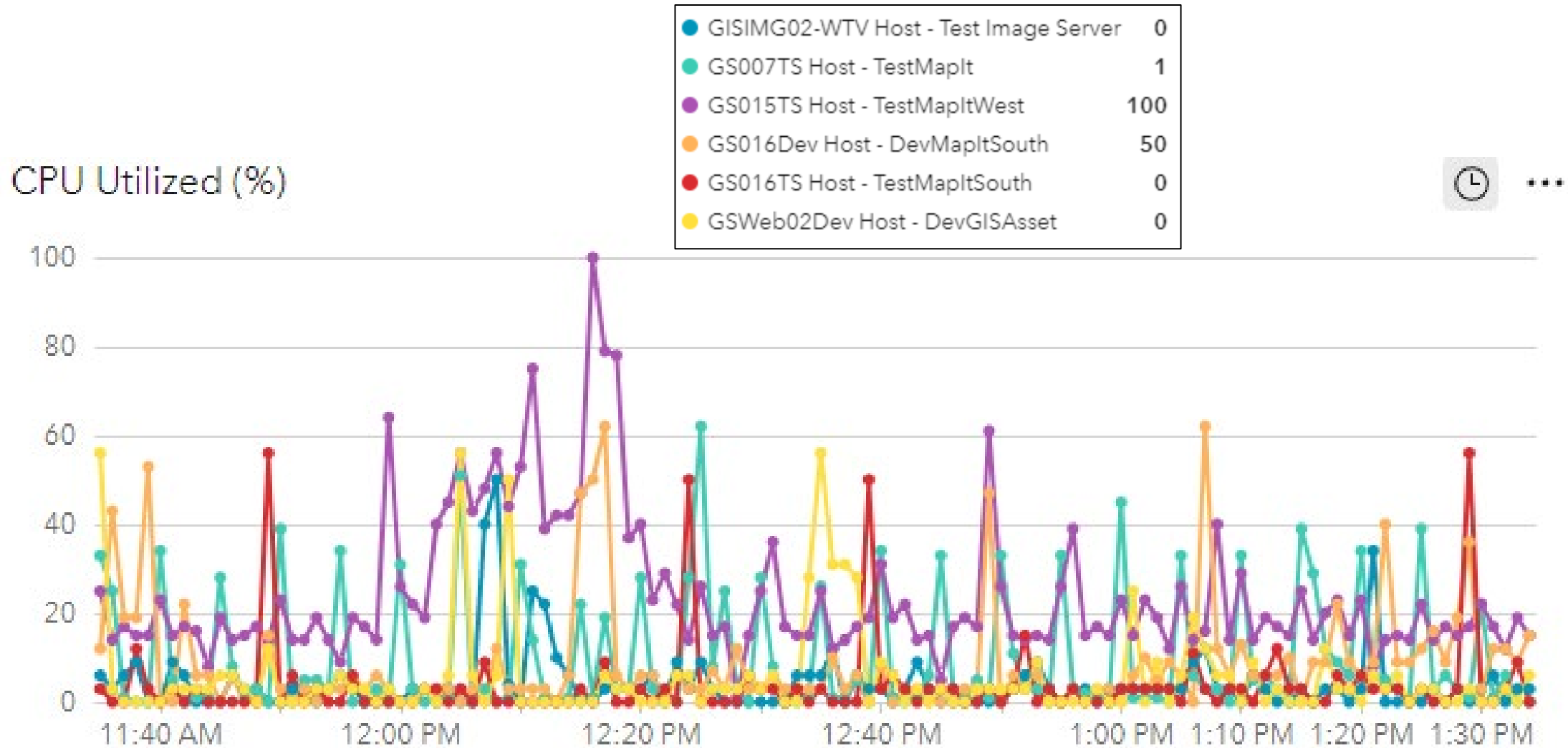


# What Monitor has done for us

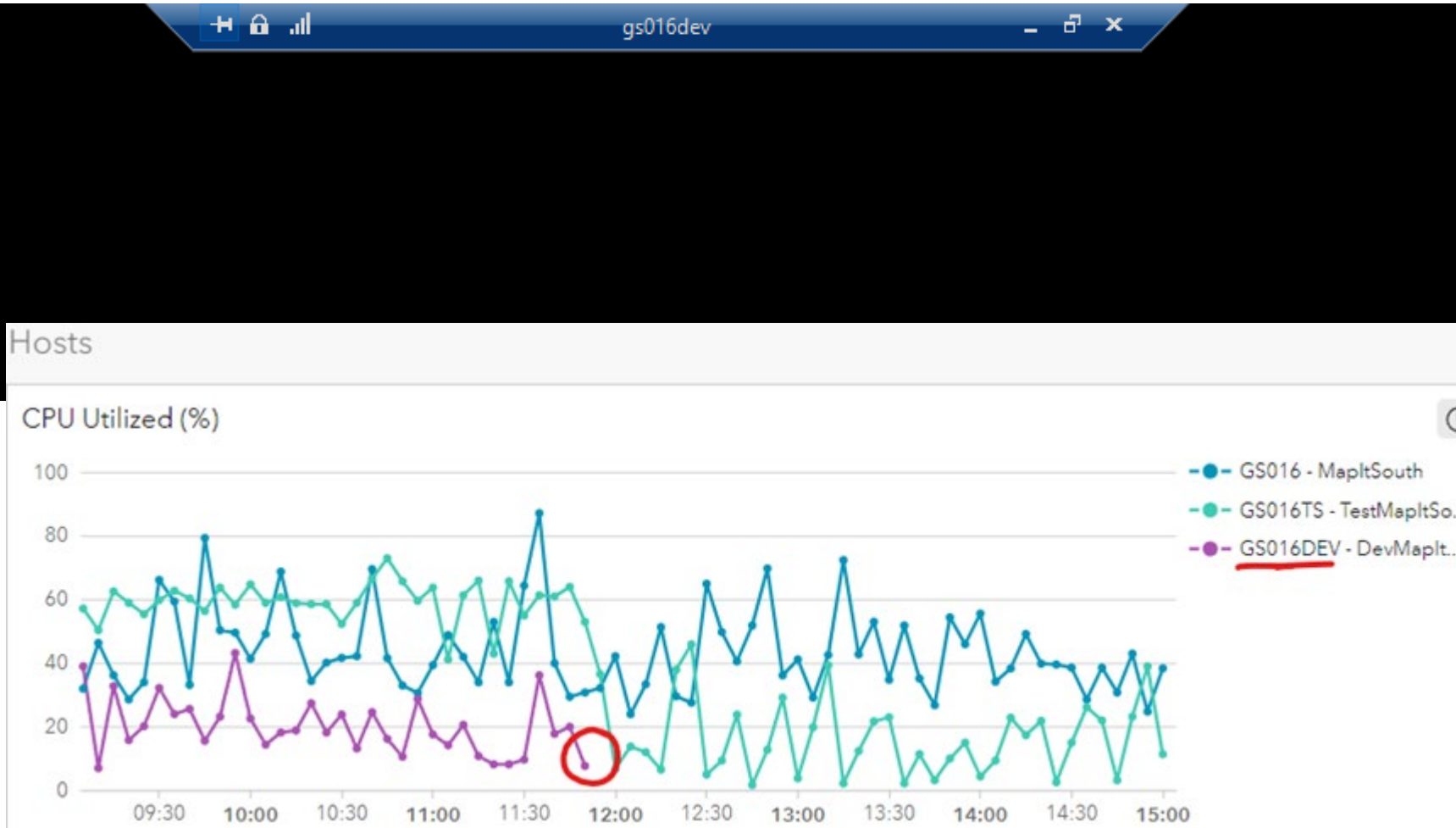
- Go-to system for incident resolution
- Expedited incident resolution



# Single Operational Picture - CPU

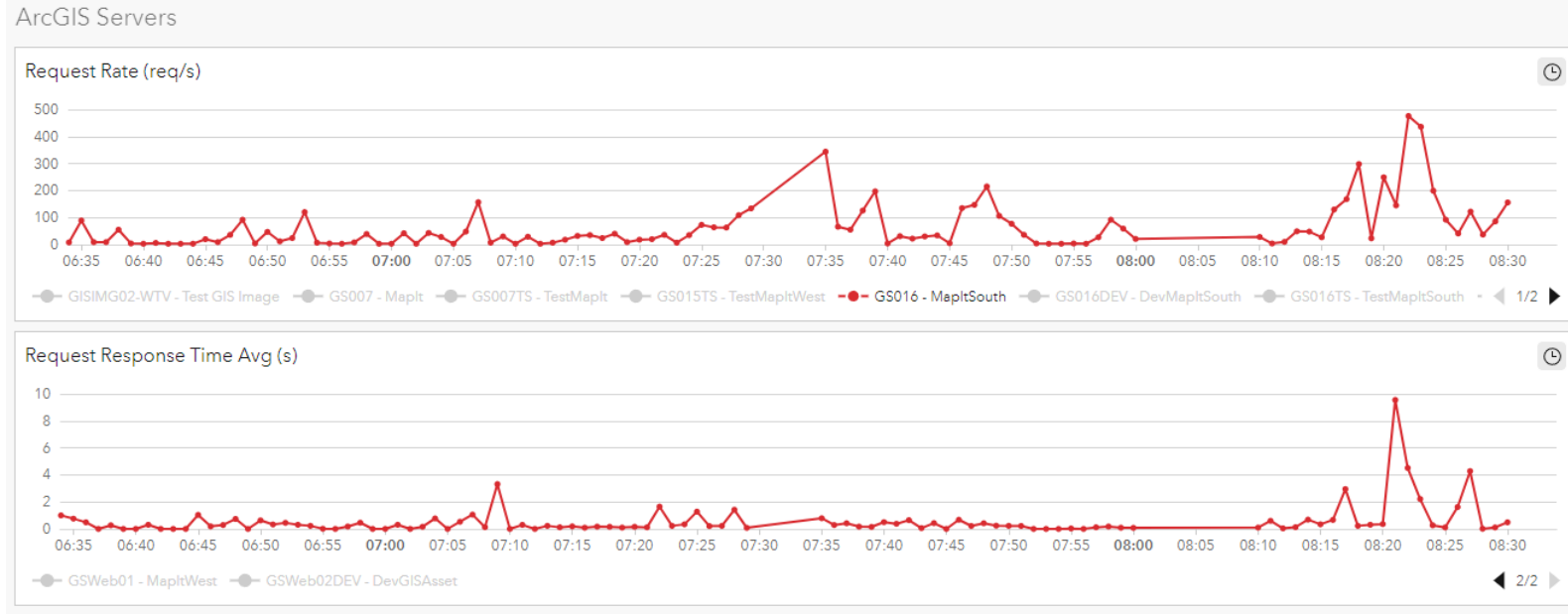
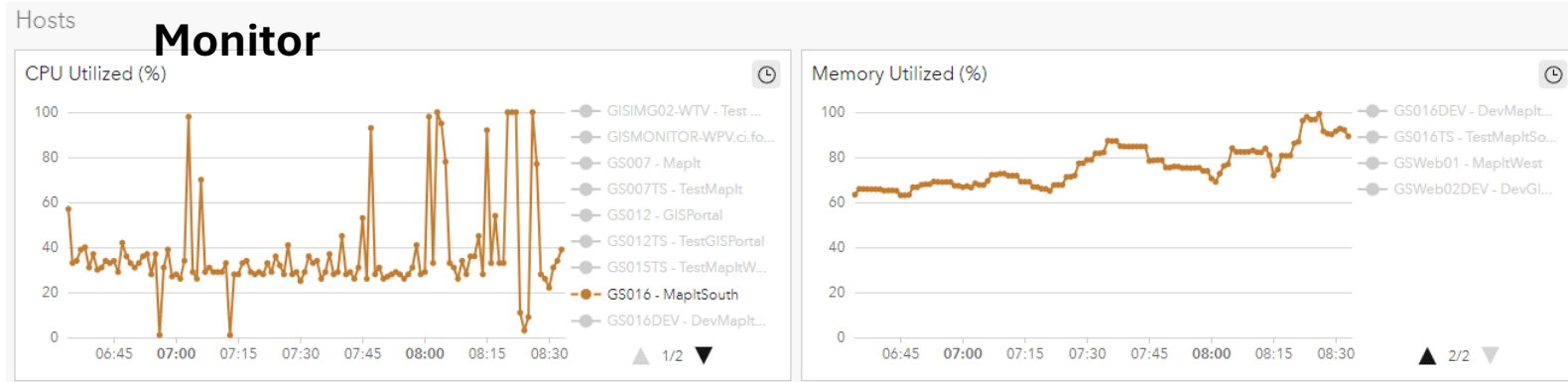


# Pinpointing Timelines

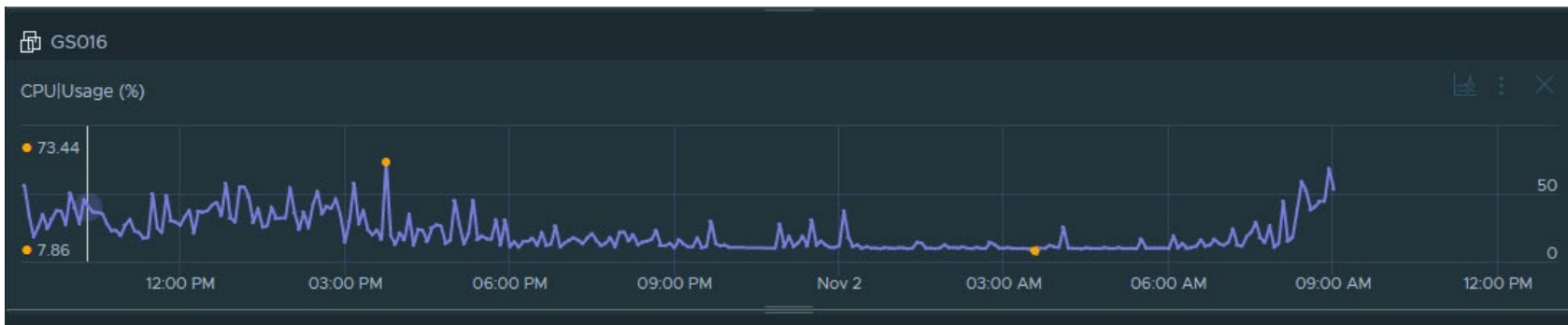


Server  
Unresponsive,  
could pinpoint  
behavior  
before outage.

# Differing Figures

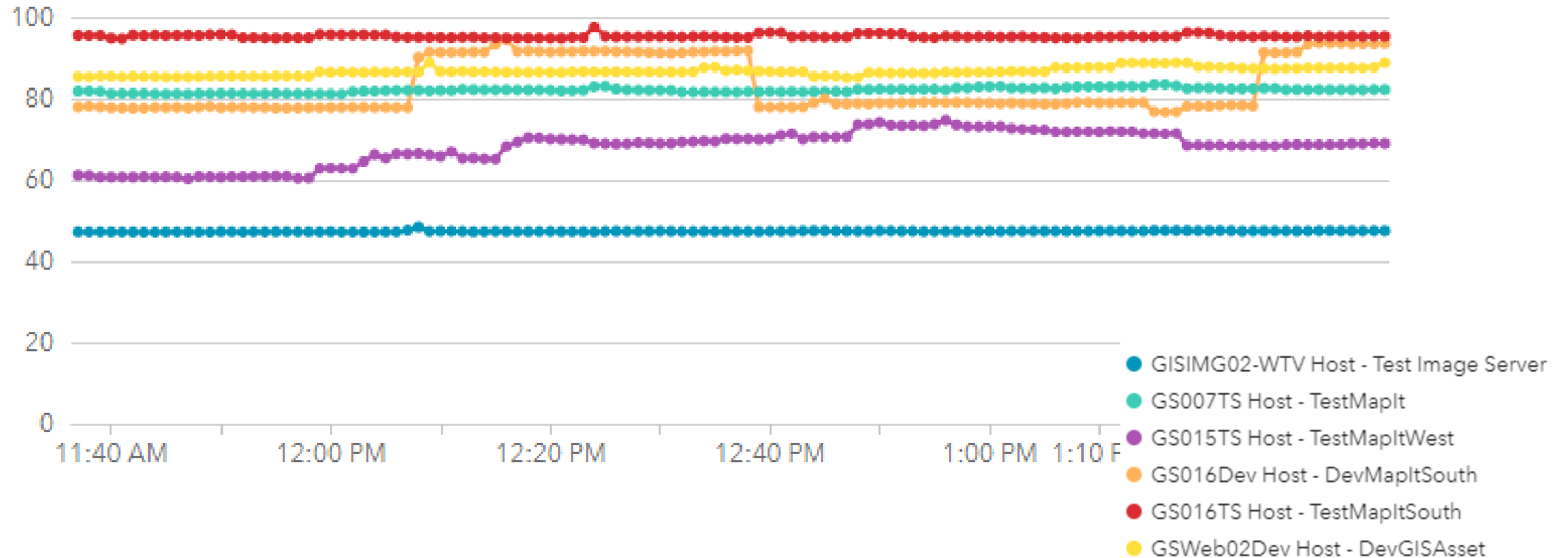


## VMware



# Single Operational Picture - Memory

Memory Utilized (%)



# Monitoring Post Upgrade

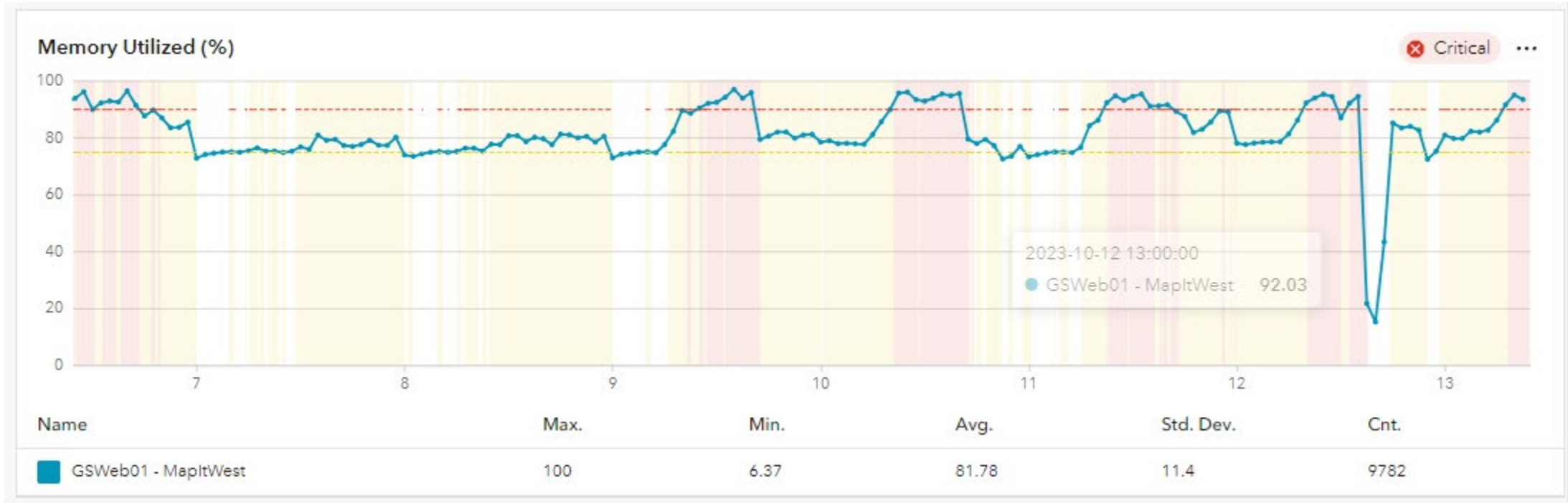


The memory on one of our servers was consistently near 80% after an OS upgrade.

We were able to relay this and address the issue with our Platform Team.



# More memory needed after ArcGIS Server Upgrade



# Single Operational Picture - Alerts

## Alerts

Search by component or metric name

Left panel

All Alerts

Open Alerts

Favorites

Showing 1 - 60 of 12,427 in All Alerts

Labels Sort Filter Hide (1)

5 Open

0 Info

7,383 Warning

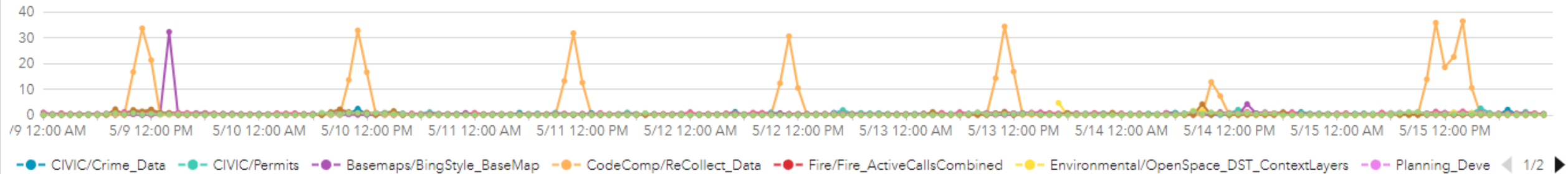
5,044 Critical

<input type="checkbox"/> Alert Source		Labels	State	Type - Subtype
<input type="checkbox"/> Request Response Time Max GS015TS AGS - TestMapItWest	⚠️ ☆ ...	Test	Pending	ArcGIS Ser
<input type="checkbox"/> Memory Utilized GS016Dev Host - DevMapItSouth	⚠️ ☆ ...	Test Water	Pending	Host - Win
<input type="checkbox"/> Request Response Time Avg Planning_Development/Zoning_case_service	⚠️ ☆ ...	None	Resolved	Service - M
<input type="checkbox"/> Request Response Time Avg GS007TS AGS - TestMapIt	⚠️ ☆ ...	Test	Resolved	ArcGIS Ser
<input type="checkbox"/> Request Response Time Max GS007TS AGS - TestMapIt	⚠️ ☆ ...	Test	Resolved	ArcGIS Ser

Note: if everything is critical nothing is critical

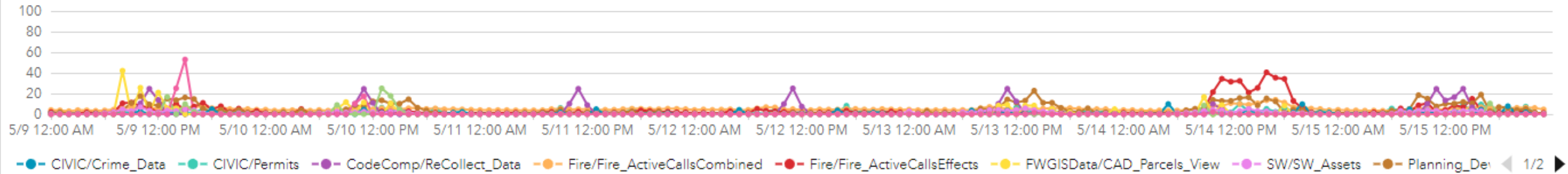
# Single Operational Picture - Services

Average Response Time (secs) - GIS Services



Average request response time (in seconds) for ArcGIS Server services.

Instances Saturation (%) - GIS Services



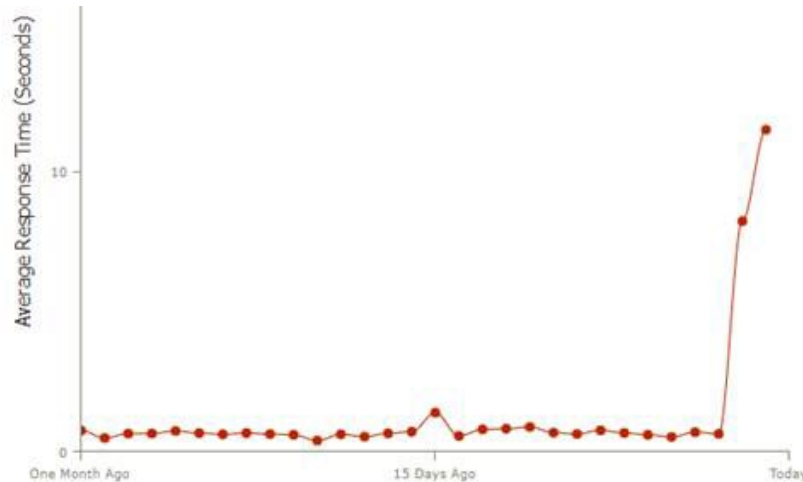
"Instance saturation" refers to the percentage of ArcSOC processes that were busy during the specified time-period.

# Identifying Patterns / Changing Use Case

- Orthos\_2017\_WKID3857 (Ima
  - Orthos\_2019 (Image)
  - Orthos\_2019\_WKID3857 (Ima
  - Orthos\_2020 (Image)
  - Orthos\_2020\_WKID3857 (Ima
  - Orthos\_2021 (Image)
  - Orthos\_2021\_WKID3857 (Ima
  - Orthos\_2022 (Image)
  - Orthos\_2022\_WKID3857 (Ima
  - Orthos\_2023 (Image)
  - Orthos\_2023\_WKID3857 (Ima
- System
- Terrain
- Utilities



Show: Total Requests Age: Last 30 days



Show: Average Response Time (Seconds) Age: Last 30 days

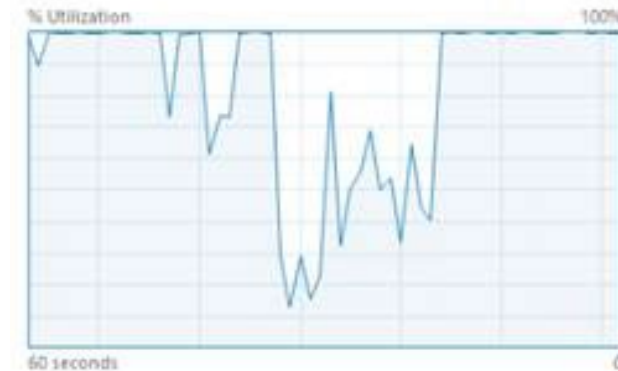
**When:** 6/8/2023

**Description:** CPU spiking on Imagery Server

**Application:** ArcGIS Server

**Resolution:** Traced IP address for incoming requests, tied to new departmental use case with, and a high refresh rate.

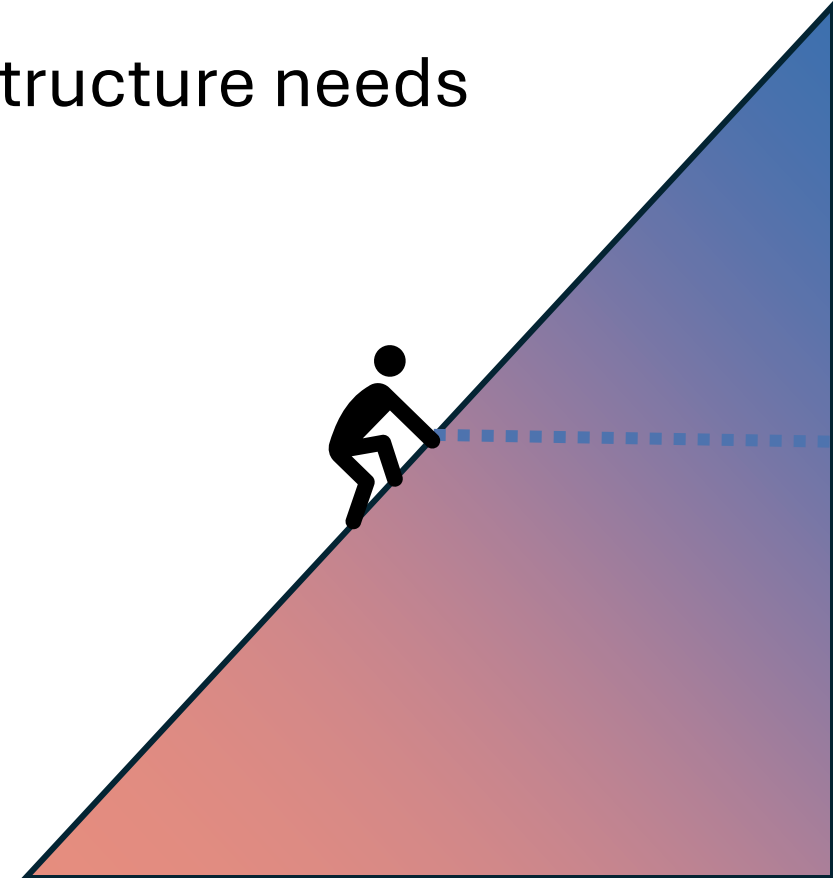
**CPU** Intel(R) Xeon(R) CPU E5-2670 v3 @ 2.30GHz



Utilization	Speed	Base speed:	2.29 GHz
100%	2.29 GHz	Sockets:	2
Processes	Threads	Virtual processors:	2
182	3699	Virtual machine:	Yes
	Handles	L1 cache:	N/A
	102078		

# Outcomes

- Quick and clear picture of the performance of our systems
- We have context for explaining normal and abnormal behavior
- We have data to demonstrate and justify infrastructure needs





# What's Next

- Fine Tuning on Alerts
- Dashboard on Vitals
- Teams Channel for Outage Scenarios
- Right-size infrastructure
- Learn and Grow





# Upgrade and Setup Tips

## **Upgrades:**

- Take server snapshots prior to upgrade

## **Registering Components:**


- When registering components like ArcGIS Servers and Portals, use a consistent naming convention. This practice helps in identifying alerts, recognizing components in analysis graphs, and maintaining a cleaner look for the graphs.

## **Labels:**

- Add labels when registering components. Note that related Service and Storage components created after registering ArcGIS Server and Host components won't automatically receive labels
- For the Service components, use filtering and then bulk apply the labels.
- Labels such as Dev, Test, and Prod help to more easily create data expressions for specific component groups, display them in charts and graphs, define collections for notifications, and make them available as a feature service outside Monitor.

## **Alerts:**

- Configure the metrics controlling Alerts via the Administration menu by clicking Metrics. As you register more components in Monitor, review and adjust the metrics beyond Esri defaults to ensure relevant alerts. This is especially important before enabling notifications.



# Helpful Resources

The Esri ArcGIS Monitor Community page has provided valuable for us to help identify new functionality in the new version releases as well as keeping an eye on the blog posts for step-by-step examples of how to build new performance metrics.

- **ArcGIS Monitor Community:** <https://community.esri.com/t5/arcgis-monitor/ct-p/arcgis-monitor>
- **5 Useful ArcGIS Server Analysis Elements in ArcGIS Monitor:** <https://www.esri.com/arcgis-blog/products/monitor/administration/5-useful-arcgis-server-analysis-elements-in-arcgis-monitor/>
- **ArcGIS Monitor: Analysis Elements for Enterprise portal content:** <https://www.esri.com/arcgis-blog/products/monitor/administration/arcgis-monitor-analysis-elements-for-enterprise-portal-content/>
- **ArcGIS Monitor: Analysis Elements for Enterprise portal performance:** <https://www.esri.com/arcgis-blog/products/monitor/administration/arcgis-monitor-analysis-elements-for-enterprise-portal-performance/>





Any Question?