Troubleshooting Performance Issues with Enterprise Geodatabases

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Troubleshooting Topics

• **Is it the Geodatabase?**
  - Isolate
  - Are there alternative methods/workflows to test

• **Configure**
  - Ensure proper configuration
  - Revisit annually

• **Baseline**
  - Keep a performance baseline and continually update

• **Maintain**
  - Have proper maintenance (e.g. analyze) in place and revisit workflow annually
Troubleshooting Performance Issues

- Backup (that has been restored to staging/test)
- Open a Tech Support Incident
- Isolate
- Monitor
  - system resources
  - logging
Performance and the Platform
Services Based

- **Network**
  - Bandwidth
  - Latency
- **Desktops**
  - WAN?
- **Workflows**
  - Editing vs Viewing/Analysis
Performance: Understand the Stack and Isolate

is the problem in the database?
Common Issues

- Poor service design – symbology, layers, complexity, scale dependency, etc..
- Poor application logic
- Poor version or database architecture.
- Poor or No Maintenance practices
Geodatabase: Proper Maintenance = Performance

- Well designed automated maintenance process - nightly, weekly, etc..
- Well designed and maintained Version and Replica architecture
- include Backup, ETL’s, Reporting, etc…
Monitor

- **Server Resources** (cpu utilization, memory, storage i/o)
  - Windows and Linux tools (top, vmstat, iostat, etc.)
  - Windows Events
  - ESRI System Monitor

- **Client Performance**
  - various tools and logs (e.g. ArcGIS Server logs)

```plaintext
2013-05-21 13:00:43 PDT DETAIL: parameters: $1 = '13580'
2013-05-21 13:00:43 PDT LOG: duration: 0.000 ms parse
sde_1369166443_0_793: SELECT lineage_id FROM
prod.sde.sde_state_lineages WHERE lineage_name = $1 AND lineage_id <= $2 ORDER BY lineage_id
2013-05-21 13:00:43 PDT LOG: duration: 0.000 ms bind
sde_1369166443_0_793: SELECT lineage_id FROM
prod.sde.sde_state_lineages WHERE lineage_name = $1 AND lineage_id <= $2 ORDER BY lineage_id
2013-05-21 13:00:43 PDT DETAIL: parameters: $1 = '13579', $2 = '13580'
```
Logs and Tools

• Tools
  - Esri system monitor
  - Database administrative tools
  - 3rd Party tools

• Logs
  - ArcGIS Server Logs
  - SDEIntercept Log
  - OS Logs
  - Database tracing and profiling
Monitor Resources

Physical and Virtual Environments

• Be careful of any of the following thresholds:
  - Processor utilization > 70%
  - Memory utilization > 80% of physical
  - Storage utilization > 80% of storage capacity
  - Average Disk Seconds / Read > 10ms
  - Average Disk Seconds / Write > 10ms

• If Cloud deployment
  - different locations may have different behavior (resources/equipment)