# ArcGIS Server Performance and Scalability – Optimizing GIS Services

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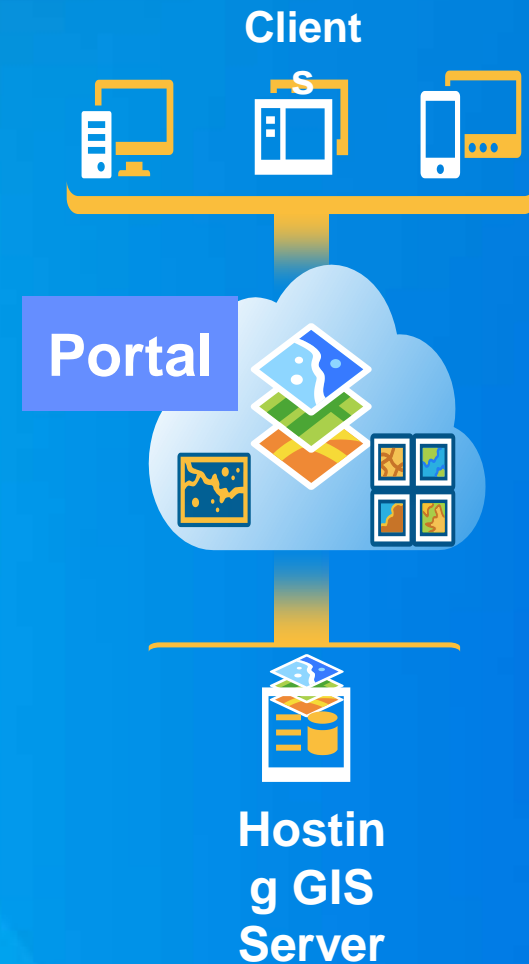
# ArcGIS Server Performance and Scalability – Optimizing GIS Services

## *Hosted Feature and Tile Services*

Ravi Narayanan

# Agenda

◆ **Performance and Scalability when publishing to Portal**

  ◆ **Hosted Feature and Tile Services**

**Clients**

**Portal**

**Hosting GIS Server**

# Scope

**SCALABILITY:  Ability of Portal for ArcGIS to accommodate a growing number of Hosted Services**

**PERFORMANCE: Usability of the services with increasing number of Hosted services.**

# Why Scalability and Performance is Important?

1. Hosted Services are Core to WebGIS
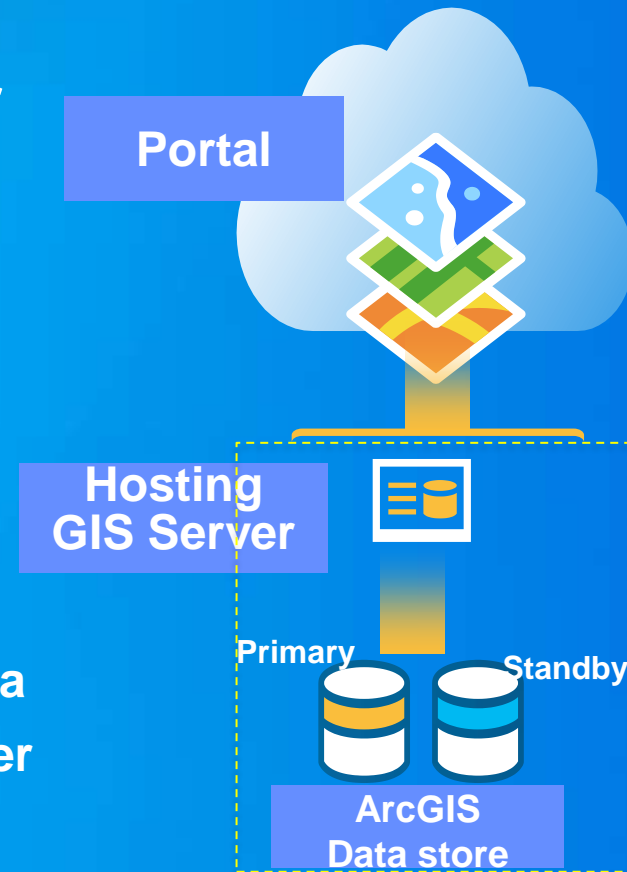
2. Information Worker = Publisher

Portal for ArcGIS

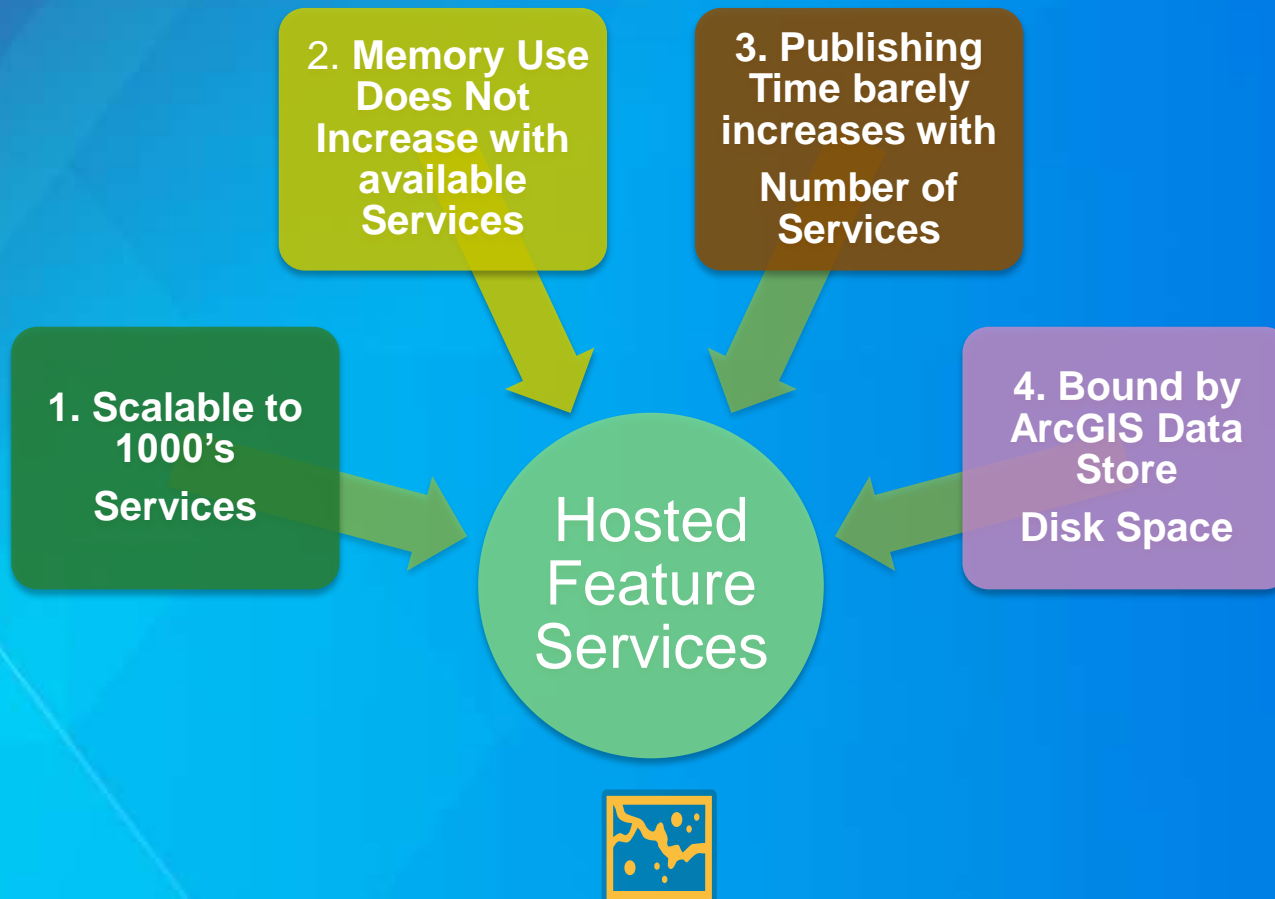3. Easy to Publish

and Share local Data

4.20 Publishers +

~1 service/week

=

1000+ services/year

# Configuring Portal for ArcGIS with Hosting GIS Server

- ◆ **Required Components: Portal for ArcGIS, GIS Server and ArcGIS Data Store**

- ◆ **ArcGIS Data Store is a key component of Portal for ArcGIS with Hosting ArcGIS Server.**
  - ◆ **Introduced at version 10.3**
  - ◆ **Stores Hosted Feature Service data**
  - ◆ **Enables publishing of large number of feature services**
  - ◆ **High-Availability of data**
  - ◆ **Back up and restore capability of data**



**Portal**

**Hosting GIS Server**

**Primary**

**Standby**

**ArcGIS Data store**

# Scalability - Hosted Feature Services

**2. Memory Use Does Not Increase with available Services**

**3. Publishing Time barely increases with**

**Number of Services**

**1. Scalable to 1000's Services**

**4. Bound by ArcGIS Data Store**

**Disk Space**

Hosted Feature Services

# Scalability : Hosted Feature Services

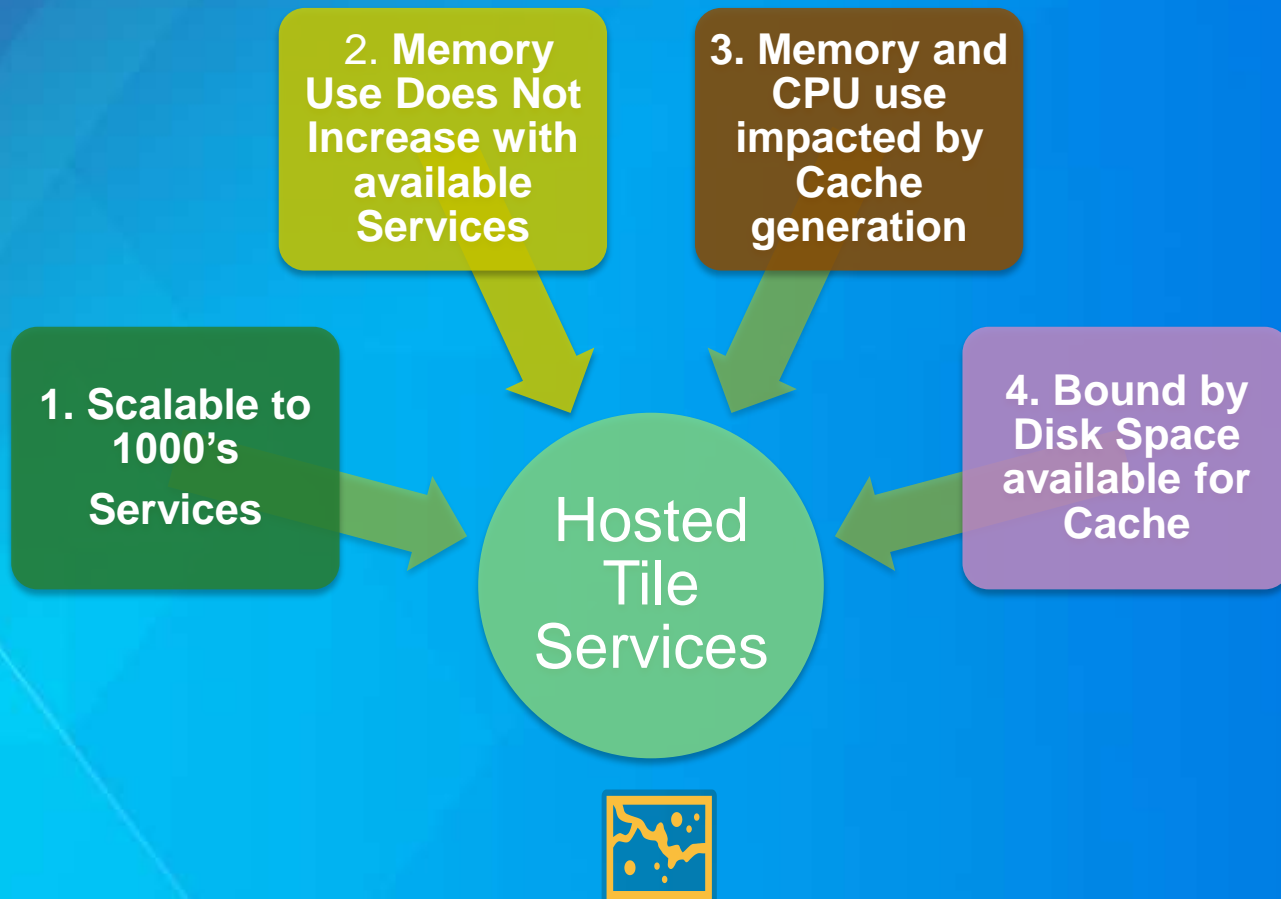| Number of Services | Publishing Time (sec) |
|---|---|
| 5 | 19 |
| 50 | 20 |
| 500 | 20 |
| 1000 | 20 |
| 5000 | 32 |
| 10000 | 42 |
| 20000 | 51 |

# Performance - Hosted Feature Services

| | |
|---|---|
| Query | • Response time constant with increasing number of services (28 – 29 ms/request with 5000 services) |
| Throughput | • Constant with sustained load over 24-hr period with multiple clients |
| Wakeup Time | • Time to initialize an idle service. Very low ~170 ms |
| Disk I/O | • Query/Editing performance bound by Disk I/O on the data store machine<br>• Use faster Disk (SSD) |

**Demo – Services Directory**

# Scalability  - Hosted Tile Services

**2. Memory Use Does Not Increase with available Services**

**3. Memory and CPU use impacted by Cache generation**

**1. Scalable to 1000's Services**

**4. Bound by Disk Space available for Cache**

Hosted Tile Services

# Hosted Tile and Feature Services – Key Take Away Points

**Hosted Feature Services**

- Core medium for sharing data in WebGIS

**Hosted Tile & Feature Services**

- Scalable to thousands of services

**Hosted Feature & Tile Services**

- Use very minimal resources on the GIS Server

## Other Sessions

Wed – July 22 2015

◆ 10:15am - 11:30am        Portal for ArcGIS: An Introduction
            Room 04

Thu – July 23 2015

◆ 10:15am - 11:30am        Working with Feature Services
            Room 31 B

# Your Two Options



**Go faster**



**Add Capacity
Remove road blocks**

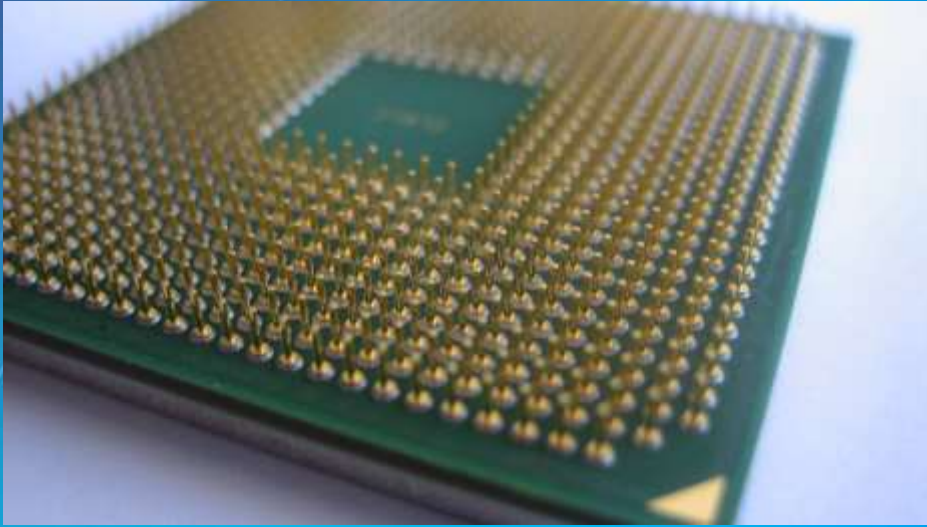# Handling Memory Bottlenecks

- **Buy more**
- **Page file**
- **Tune instances**
- **Cache tiles**

# Tune Instances



- **Review statistics**
- **Cache services (max 1)**
- **Idle timeout**

# CPU Bottleneck Options



- More machines
- Generate cache
- Idle timeout

# Network Bottleneck Options

**Client - Server**

- **cacheControlMaxAge**

- **Generalize data**

**Server – Back End**

- **Bandwidth**

- **Move data locally**

- **Single Cluster Mode**

# Database Connection Bottleneck Options



- **Each ArcSOC has own connections.**
- **Parameter differences multiply connections**
- **Extract to local files**

# Recommended Sessions

- **Performance**

  - **Troubleshooting SQL Server Enterprise Geodatabase Performance Issues (Wed 1:30 – 2:15)**

  - **Troubleshooting Enterprise Geodatabase Performance Issues (Wed 3:00 – 3:30)**

  - **Enterprise GIS: Performance and Scalability (Wed 3:15)**

# Afterwards…

**Please feel free to contact us.  Share your feedback.**

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- **Jeremy Bartley (jbartley@esri.com)**
- **Ravi Narayanan (nrayanan@esri.com)**

**The slides for this presentation are available at: http://1drv.ms/1SumZLX**

# Survey

- **Quick to fill out**

- **Esri Events App or Paper**

- **We read your comments!**