ArcGIS for Server: An Introduction

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Esri Product Management
Agenda

- Product overview
- What is ArcGIS for Server (GIS Server)
- Publishing GIS resources onto the web
- Working with ArcGIS Online/Portal for ArcGIS
- Clients for web services
- ArcGIS for Server extensions
- Editions and licensing levels
- Summary
ArcGIS Is a Platform
Enabling GIS Everywhere

Available in the Cloud . . .
. . . and On-Premises
ArcGIS for Server enables Web GIS in Your Infrastructure

**Desktop**

**Web**

**Device**

**Portal**

**GIS Server**

- Includes data from ArcGIS Online
- Web Adaptor, Multi-User geodatabase

**Online Content and Services**

**Client applications**

- E.g.: Collector, Dashboard, Explorer, Esri Maps for … Apps, and Web AppBuilder

**GIS Servers**

- Ready to use content

**Portal for ArcGIS extension**

- Includes data from ArcGIS Online
What is ArcGIS for Server?

- Enables “Web GIS” in your infrastructure
- Ready to use applications and GIS services
  - Spatial data management
  - Visualization
  - Analysis
- Share your GIS work and resources
- Spatially enable your organization
  - Promote “maps everywhere”
What are GIS services?

- **GIS Service** → GIS resource running on a server
  - vs. GIS application on your local computer

- Share GIS resource to the web

- **Map**
- **Feature**
- **Network**
- **Geodata**
- **Geoprocessing**
- **Image**
- **Locator**
- **Schematics**
ArcGIS for Server – Web protocols

- Its GIS services can be accessed via:
  - Representational State Transfer (REST)
  - Simple Object Access Protocol (SOAP)
  - Keyhole Markup Language (KML)
  - Open Geospatial Consortium (OGC)
ArcGIS for Server – GIS Server

• Pure web services GIS server
  - Easy install and configuration
  - Self contained
  - No external dependencies
• Built for resilience
• Designed for enterprise systems
• Works on-premises or in the cloud
• Works with other server-side components
  - Web Adaptor
  - Multi-user geodatabase
Review: ArcGIS for Server Architecture

10.1 and later releases

ArcGIS Server site

http://6080

GIS Server

Service directories
Manager
Server Administrator API

ArcGIS account (OS level)

Configuration store
Server directories

Data

Primary Site Administrator (PSA)
ArcGIS Server Manager

- Web browser based administrative console to manage Server:
  - Services, site management, security, and logs
ArcGIS Services Directory exposes GIS services
- http://localhost/ArcGIS/rest
Service Administrator Directory

- Enables **scripting of Server administration tasks**
  - E.g., Join machine to a site, start/stop services
- Can be invoked from:
  - Python, Java, JavaScript, C#, PowerShell, Ruby, Scala, Perl, etc.
Demo
ArcGIS Server Manager
Services Directory
Server Admin Directory
ArcGIS for Server – Web Adaptor

- Enables ArcGIS Server to work with 3rd party web server
  - E.g., IIS, Web Sphere, etc.
- Leverage web server features
- Provides more flexibility to control site access
- Conceptually like a reverse proxy
ArcGIS for Server – Multi-user Geodatabase

• Central data repository for your spatial data and storage and management
• Enables geospatial data modeling
  - Topology, Geometric network, Network dataset, Mosaic dataset
• Functionality includes: versioned editing, geodatabase replication, and archiving
• Supported DBMS platformers: DB2, Informix, Oracle, PostgreSQL, and SQL Server
ArcGIS for Server administrative tech sessions

- **ArcGIS for Server: Administrative Scripting and Automation**
  - Tues 1:30 pm  Ballroom 6F
  - Thurs 10:15 am  Room 1 A/B

- **Securing ArcGIS Server Services – An Introduction**
  - Wed 1:30 pm  Ballroom 6C

- **Securing ArcGIS Server Services – Advanced**
  - Tues 1:30 pm  Ballroom 6D
  - Wed 10:15 am  Ballroom 6E
Publishing workflow for GIS Services

1. Author
2. Publish
3. Share/Use
Authoring Maps for ArcGIS for Server
Create professional looking maps for the web

- Leverage ArcMap’s powerful cartographic capabilities
- **WYSIWYG** map authoring user experience
- Follow best practices for optimal maps
Publishing GIS resources

- **Share As Service** wizard
  - Publish GIS service
  - Create service definition file
  - Overwrite an existing GIS service

- **Service Editor**
  - Defines GIS service properties

- **Analyze map for optimization**
  - Fix errors and address warnings
Web Mapping - Terminology
Common ArcGIS for Server concepts

- Map service
  - 2 types
    - Cached vs. Dynamic

- Web-based map
  - Data content
    - Base Maps vs. Operational layers
Cached Map Service

- Pre-render data as a collection of images stored on the server
- Used for data that does not change frequently
- Can be vector and raster data
Map caching sessions

- Designing and Using Cached Map services
  - Tues 1:30 pm Room 2
  - Thurs 10:15 am Room 2

- Caching Imagery using ArcGIS
  - Tues 3:15 pm Ballroom 6D
Dynamic Map Service

- Map service data content is generated on-the-fly as needed
- Used for data that changes/updated frequently
- Typically vector data
2. Publishing GIS resources

• You can publish
  1. GIS Service or
  2. Service Definition file
     - Defines service schema and can be used to publish GIS service later

• All GIS resources are published with the same workflow
Demo

Workflow
Publish a map service
Map authoring sessions

• **Publishing GIS Services to ArcGIS for Server**
  - Tues 10:15 am  Room 2
  - Thurs 8:30 am  Room 2

• **Best Practices for Designing Effective Map Services**
  - Tues 3:15 pm  Room 2
  - Wed 1:30 pm  Room 2
Data content in a web-based map

Conceptual terms

• **Base Maps**
  - Geographic frame of reference
  - Contain static data

• **Operational Layers**
  - Information overlays that end users interact with
  - Contain dynamic data

• Operational layers display on top of base maps
3 Share/Use GIS Services

- **Register GIS services in a portal** (ArcGIS Online or Portal for ArcGIS)
  - Leverage GIS services in a Web Map
  - Promotes “maps everywhere” paradigm
- **Directly consume GIS services in client applications**
  - Many different client applications available, no programming required
Portal for ArcGIS - Extension

Included with ArcGIS for Server Standard and Advanced editions at 10.3

- **Map-centric content management system for your GIS assets**
- **Provides a user friendly “front end” to your GIS services**
  - Search and discovery
  - Simple mapping
  - Collaboration

- **Solution instead of ArcGIS Online when**
  - Additional security requirements
  - No public cloud option
What is a Web Map?

- Foundation for your maps and apps

Intelligent Maps

Services And Data

Supports
- Visualization
- Editing
- Popups
- Analysis
- Time
Clients to Web Maps

- Web Application Templates
- 10.3: Web App Builder for ArcGIS
- Desktop

GIS Server

- ArcGIS Online Portal for ArcGIS
- Web Map

- Explorer for ArcGIS
- Collector for ArcGIS

- Mobile Apps
- Location Analytics

- Esri Maps for ... Apps
- Operations Dashboard for ArcGIS

- Web Apps

Excel, PowerPoint, SharePoint, Dynamics CRM, Salesforce, Cognos, MicroStrategy, SAP
Web GIS in Large Organizations

- GIS Server for different Depts.
- Organization accesses all of its GIS assets through a portal
  - User friendly UX
  - Search and discovery
  - Collaboration
Demo

Explore Portal for ArcGIS
Portal for ArcGIS sessions

- Portal for ArcGIS: An Introduction
  - Tues 1:30 pm Ballroom 6C
  - Wed 3:15 pm Ballroom 6C
## ArcGIS for Server – Editions & Levels

<table>
<thead>
<tr>
<th>Edition</th>
<th>Includes</th>
<th>Level</th>
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<tbody>
<tr>
<td><strong>Basic</strong></td>
<td>• Multi-user geodatabase&lt;br&gt;• Geodata services for replication&lt;br&gt;• Read only feature services</td>
<td><strong>Workgroup</strong>&lt;br&gt;• SQL Server Express&lt;br&gt;• 10 users</td>
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<tr>
<td><strong>Standard</strong></td>
<td><strong>Basic features plus</strong>&lt;br&gt;• Map, globe, geocoding, geoprocessing (ArcView tools),&lt;br&gt;• Web editing</td>
<td>“”</td>
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<tr>
<td><strong>Advanced</strong></td>
<td><strong>Standard features plus</strong>&lt;br&gt;• Advanced geoprocessing&lt;br&gt;• ArcGIS Mobile&lt;br&gt;• Portal for ArcGIS extension</td>
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### ArcGIS for Server Extensions

You can add more capabilities, including advanced geoprocessing and imagery management, with ArcGIS for Server Extensions.

<table>
<thead>
<tr>
<th>Extension</th>
<th>Basic</th>
<th>Standard</th>
<th>Advanced</th>
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<tbody>
<tr>
<td>ArcGIS Schematics for Server</td>
<td>✓</td>
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<td>ArcGIS 3D Analyst for Server</td>
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<td>ArcGIS Spatial Analyst for Server</td>
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<td>ArcGIS GeoEvent Extension for Server</td>
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<td>ArcGIS Data Interoperability for Server</td>
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<td>ArcGIS Data Reviewer for Server</td>
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<td>ArcGIS Workflow Manager for Server</td>
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<tr>
<td>ArcGIS Image Extension for Server</td>
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<tr>
<td>Portal for ArcGIS</td>
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*Windows only.

In addition, ArcGIS for INSPIRE includes an ArcGIS for Server extension that delivers INSPIRE-compliant View and Download services.
ArcGIS for Server Resources

- Functionality Matrix whitepaper
- ArcGIS for Server 101 – ArcUser technical article
- Resource Center

ArcGIS for Server 101
Understanding architecture, deployment, and workflows

By Derek Law, Esri Product Manager

This article is for GIS managers and analysts who want an understanding of the fundamental concepts of ArcGIS for Server and its capabilities. It provides a general overview of ArcGIS for Server and discusses key features, architectures, and implementation. It refers specifically to the ArcGIS 10.3 for Server release.

The paradigm for GIS work has evolved over the last few decades. In the 1960s, GIS work was typically done on computer systems. In the late 1980s to early 1990s, personal computers were more common, and GIS work was performed across an organization's internal network with the client/central server IT model. In recent years, the explosion of the Internet, mobile devices, and new technologies has changed the landscape of GIS work.

If you register and share your ArcGIS for Server web services with ArcGIS Online, other users can discover and use them, greatly expanding the number of end users who can consume and leverage your GIS resources. Using ArcGIS for Server to share GIS resources over the web expands an organization's GIS infrastructure and enables them to make better decisions because everyone can access, collaborate, and work with the same geographic knowledge. ArcGIS for Server includes a GIS Server, Web Adaptor, and ArcGIS Server technology.

GIS Server
This is the core software that installs on a server machine and enables an ArcGIS Server site to be created. An ArcGIS Server site is an instance of ArcGIS for Server that...
Summary

- ArcGIS for Server enables Web GIS in your infrastructure
- Architecture
- Publishing GIS resources
  - Author > Publish > Share/Use
  - Design patterns and terminology
- Working with ArcGIS Online/Portal for ArcGIS and client applications
- Extensions
- Editions and Levels
Thank you...

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