Getting Started with ArcGIS Server

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Agenda

- Overview of ArcGIS Server 9.3.1
- Working with GIS Services
- Using Web GIS Service Clients
- ArcGIS Online
- Map Caching
- ArcGIS Mobile
- Help Resources
- Questions?
What is ArcGIS Server?

- **A complete integrated system**
- **Author** ArcGIS files in a familiar environment (ArcMap, ArcGlobe, ModelBuilder)
- **Publish/Serve** ArcGIS files (.mxd/.msd, .3dd, .tbx, etc.) as services
- **Use** in a wide variety of clients
  - Desktop
  - Web
  - Mobile
ArcGIS Server
Complete & Interoperable Server-Based GIS

- Enterprise ready
- Open APIs
- Support for IT, Web, and industry standards
- Scalable
- High performance

Making GIS Knowledge Available to Anyone
## Editions and Levels of ArcGIS Server

<table>
<thead>
<tr>
<th>Edition</th>
<th>Edition includes</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>• ArcSDE • Geodata services for replication</td>
<td>Workgroup: • SQL Server Express • 10 users</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enterprise: • Any supported database • Unlimited users</td>
</tr>
<tr>
<td>Standard</td>
<td>Basic features plus • Map, globe, geocoding, geoprocessing (ArcView tools) • Web editing • Web ADF</td>
<td>“”</td>
</tr>
<tr>
<td>Advanced</td>
<td>Standard features plus • Advanced geoprocessing • Mobile ADF (Enterprise level)</td>
<td>“”</td>
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What are GIS services?

- **GIS service = GIS resource running on a server**
  - Vs. GIS application on your local computer
- **Almost any GIS operation that you can do locally may also be run using a service.**
What types of services can ArcGIS Server offer?

- **Map**
  View or query a 2D map on the server.

- **Globe**
  View or query a 3D globe on the server.

- **Geocode**
  Perform address matching on the server.

- **Geodata**
  Perform data replication, extraction, or query over the intranet or Internet.

- **Geoprocessing**
  Run a tool or model on the server and get the results back.

- **Image**
  Provide access to raster data through a Web service.

- **Geometry**
  Help applications do geometric calculations (buffer, project, calculate area and length, etc.).
## What do I need to author?

<table>
<thead>
<tr>
<th>Service type</th>
<th>Published using</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map</td>
<td>Map document (.mxd or .pmf) or map service definition (.msd)</td>
</tr>
<tr>
<td>Globe</td>
<td>Globe document (.3dd, .pmf – 3D Analyst)</td>
</tr>
<tr>
<td>Geocode</td>
<td>Locator (.loc file or geodatabase)</td>
</tr>
<tr>
<td>Geodata</td>
<td>Geodatabase connection (.sde) or map document with geodatabase layer</td>
</tr>
<tr>
<td>Geoprocessing</td>
<td>Toolbox containing a model (.tbx) or map document (.mxd) with tool layer</td>
</tr>
<tr>
<td>Image</td>
<td>Raster dataset or layer file referencing a raster (.lyr) or image service file (.iscdef)</td>
</tr>
<tr>
<td>Geometry</td>
<td>Does not require a GIS resource</td>
</tr>
</tbody>
</table>
GIS Server Components

GIS server composed of a SOM and one or more SOCs

**SOM: Server Object Manager**
Accepts and routes requests for GIS services

**SOC: Server Object Container**
Hosts and processes requests for GIS services
SOM (Server Object Manager)

- Manages GIS services running on SOC machines
- Responsible for directing requests for services
  - Tracks services on each SOC
  - Handles load balancing for incoming requests
  - Passes each request to SOC best prepared to process it

1. Request for GIS service
2. Routed to an available SOC
SOC (Server Object Container)

- Processes requests for GIS services
- Configuration can have one or several SOCs
- More SOCs = Increased ability to process requests

1. Request for GIS service "abc"

2. All GIS services run on all SOCs in your configuration
How do I manage my server?

- **ArcCatalog (Desktop)**
  - Manage and publish services.
  - Modify server configuration.

- **ArcGIS Server Manager (Web)**
  - Manage and publish services.
  - Modify server configuration.
  - Create mobile and Web applications.
  - View logs.
  - Manage security.
Optimized Map Services

• High-performance mapping engine new at 9.3.1
• Two parts – mapping engine and map optimization
• Supports the creation of very fast dynamic maps as well as cached maps

Workflow
1. Generate map in ArcMap.
2. Analyze map.
3. Optimize map.
4. Save as .msd file.
5. Publish to ArcGIS Server.

ArcGIS Server Performance and Scalability
This afternoon 3:00–4:30 PM – Tryon Room
DEMO: OPTIMIZED MAP SERVICES
Map Caching
How can I get my services to be as fast as ArcGIS Online?

Map Caches

• Map and globe caches are the fastest way to serve your maps.
• Precreate map/globe images as tiles at multiple scale levels:
  – Choose scale levels of detail and tile size.
  – Users retrieve files from server rather than dynamically creating maps.
  – Queries still use dynamic data.
Caching (continued)

- You create the cache in ArcCatalog.
- Available for map services and globe services
- Best for
  - Public map and globe services
  - Static data
- Not the best for
  - Web editing applications
  - Desktop clients that need individual layer control
  - Constantly changing data

**Session tomorrow morning at 8:30 AM here in the Tryon Room will cover caching in depth.**
What clients can I use with ArcGIS Server?

- **Desktop client**
  - ArcMap, ArcGIS Explorer, ArcReader, ArcGIS Engine application

- **Web application**
  - Server based: .NET, Java
  - Browser based: JavaScript, Flex, or Silverlight via REST

- **Mobile client**
  - ArcGIS Mobile application for Windows Mobile devices
  - .NET SDK for Mobile and Tablet platforms

- **OGC clients (via WMS, WFS, WCS, KML)**
  - OpenLayers, Gaia, Google Earth . . .
Using GIS services in Web applications

- Server based – Web ADF
  - ArcGIS Server Web ADF for the Microsoft .NET Framework
  - ArcGIS Server Web ADF for the Java Platform
  - Create using
    - ArcGIS Server Manager
    - Integrated Development Environment (IDE)—Eclipse, Microsoft Visual Studio, etc.

- Browser-based rich Internet applications (RIA)
  - ArcGIS API for JavaScript
  - ArcGIS API for Flex
  - ArcGIS API for Silverlight
  - Create using
    - JavaScript editor or text editor
    - Adobe Flex Builder
    - Microsoft Visual Studio or Expression Blend
What can you do with a server-based Web mapping application created with the Web ADF?

- **Use many kinds of services**
  - ArcGIS Server, ArcIMS, WMS, ArcGIS Online Services, etc.
- **Many tasks**
  - Search and query
  - Geoprocessing
  - Printing
  - Data editing
  - Finding addresses
What is REST?

• REST = Representational State Transfer
  – API for interacting with services via a URL
  – Example: Use the StreetMap service to export a .jpg image of the United States.
    – [URL](http://server.arcgisonline.com/ArcGIS/rest/services/ESRI_StreetMap_World_2D/MapServer/export?bbox=-122.2,24.89,-70.59,46.92&format=jpg&f=image&size=800%2C800)
  – ArcGIS Services Directory exposes REST API.
    – [URL](http://localhost/ArcGIS/rest)

• REST services power Web APIs.
• Simple interface is available from any API.
• **Services Directory** is used to browse the contents of ArcGIS Server and obtain the information needed to develop applications and test services.
What can I do with browser-based rich Internet applications (RIAs)?

- JavaScript, Flex, Silverlight APIs through the REST API
- Mash up with other services
  - ArcGIS Online
  - Google Maps
  - Microsoft Bing Maps
- Embed maps in any existing HTML page
- Work with ArcGIS Services
  - Geoprocessing
  - Find Address (Geocoding)
  - Query
DEMO: CREATING A BROWSER-BASED WEB APPLICATION USING THE JAVASCRIPT API

http://resources.esri.com/arcgisserver/apis/javascript/arcgis/index.cfm?fa=home
SAMPLE APPLICATION COMBINING A GEOPROCESSING SERVICE AND MAP SERVICE

http://mapapps.esri.com/serverdemos/siteselection/index.html#xml
What is ArcGIS Online?
Your foundation for online GIS

- ArcGIS Online provides GIS services to ArcGIS users
  - Imagery, street maps, physical features, etc.

- ArcGIS Online uses ArcGIS Server.
  - Essentially a very large ArcGIS Server implementation

- You don’t need ArcGIS Server to consume the services:
  - ArcMap, ArcGIS Explorer, ArcGlobe, ArcReader, and Web mapping applications are all supported clients.
Share your work with others through ArcGIS Online

- Key new functionality of ArcGIS Online is the ability to share your maps, layers, services, and tools with others on ArcGIS Online.
- Content is then searchable through www.arcgisonline.com.
Resource Center for ArcGIS Server

- Central location for ArcGIS resources
- ArcGIS Web APIs
- Sample GIS server
- ArcGIS Online
- Help
- Support
  - Forums
  - Development Blog
  - Technical articles
  - Software updates
  - Code Gallery

http://resources.esri.com/arcgisserver
DEMO:
USING REST SERVICES
How do I create mobile applications?

- Use ArcGIS Server Manager to
  - Serve mobile maps
  - Create mobile projects
- Server Manager is a host for
  - Deploying mobile projects
  - Deploying mobile applications
  - Serving mobile maps
ArcGIS Mobile Application

- Task-driven user experience
- Create and configure using ArcGIS Server Manager
- Target applications
  - Simple GIS feature editing
  - Map viewing
- Target platforms
  - Windows Mobile 5/6
    - Pocket PC
    - Smartphone
  - Windows XP/Vista
  - Tablet PCs
ArcGIS Mobile Application

- GIS tasks
  - View and navigate maps.
  - Collect new GIS features.
  - Update existing GIS features.
  - Synchronize with GIS server.
  - Use Global Positioning System.
  - Search for GIS features.
  - Manage a work list.
  - Check device status.
DEMO: CREATING A MOBILE APPLICATION

ArcGIS MOBILE—AN INTRODUCTION
WEDNESDAY 10:30–NOON
INDEPENDENCE ROOM
What resources are available?

• The best place to start is the new site at http://resources.arcgis.com.
ArcGIS Server

Links are neatly organized on the left side of the page, with quick access to all of the available resources.
Installation and configuration

• Installation
  – Postinstallation
• Getting the most from your deployment
• Security
• Scalability
• Licensing
• Extensions
How do I install ArcGIS Server?

• Plan for installation
  – Review system requirements
    • [http://support.esri.com](http://support.esri.com) > Software > ArcGIS Server > System Requirements

• Install components on appropriate server
  – One box – Single tier
  – Many boxes – Multitier

• Postinstallation
  – Configures and authorizes ArcGIS Server
How do I secure my services and applications?

**Web clients (Internet)**
- **Examples**
  - Web browsers
  - Server-based Web applications
  - Desktop and mobile applications
- **Role-based security**
  - Users are in roles that are granted access
  - Administered from ArcGIS Server Manager
  - Stored in a database or operating system

**Local clients (Intranet)**
- **Examples**
  - Server-based Web applications
  - Desktop and mobile applications
  - Operating system users in agsusers/agsadmin

**Database clients**
- Operating system
- Database authentication

**Web ADF Runtime or SDK**
- Web applications

**Server Object Manager (SOM)**
- Server Object Container (SOC)
- ArcSDE

**File server**
- Geodatabase
What extensions are available?

- Standard or Advanced editions
  - Network
  - Data Interoperability
  - Image
  - Job Tracking
- Advanced edition
  - Spatial
  - 3D Analyst
  - Geostatistical
  - Schematics
Questions?

Visit the Support Services or the Product islands in the exhibit hall for more information.

Please remember to fill out your surveys!

THANK YOU