

# **ArcGIS® Server 10 Functionality Matrix**



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# ArcGIS Server 10

## Functionality Matrix

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# ArcGIS Server 10

## Functionality Matrix

### Introduction

ArcGIS® Server allows you to share your geographic information system (GIS) resources across an enterprise and across the Web. GIS resources are the maps, globes, address locators, geodatabases, and tools that you want to share with others. You can host GIS resources on your ArcGIS Server system and allow client applications, like Web mapping applications and mobile devices, to use and interact with the resources.

Sharing your GIS resources on a GIS server allows you to not only distribute data and convey information to a wider audience but also disseminate GIS functionality via services and applications to internal and external end users in an intuitive manner.

ArcGIS Server is composed of a scalable line of editions based on functionality and levels based on capacity.

This document is a guide for determining the edition and capacity level of ArcGIS Server that best fits your organization.

### Functionality Matrix

#### *Selecting the Right ArcGIS Server Edition and Level*

When selecting the appropriate ArcGIS Server edition and level for your organization, consider these two questions:

1. What functionality (features and capabilities) do you require?
2. What level of capacity (storage and number of simultaneous connections) do you want to support?

#### Functionality

ArcGIS Server functionality is provided via three editions: Basic, Standard, and Advanced. In the matrix below, functionality is grouped into categories. For more information about each category, see the Functionality Matrix Details section of this document.

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Functionality	Editions		
	Basic	Standard	Advanced
Geodatabase Management	Included	Included	Included
Geodatabase Replication	Included	Included	Included
GIS Web Services	Geodata Service Only	Included	Included
Web Mapping Applications	Not Available	Included	Included
Web Editing	Not Available	Included	Included
Geoprocessing	Not Available	Included	Included
Advanced Geoprocessing	Not Available	With Extensions	Included
ArcGIS Mobile Application/SDK	Not Available	Not Available	Included

Additionally, you can supplement ArcGIS Server functionality by adding ArcGIS Server extensions.

Extensions	Editions		
	Basic	Standard	Advanced
3D	Not Available	Not Available	Included
Spatial	Not Available	Not Available	Included
Geostatistical	Not Available	Not Available	Included
Network	Not Available	Optional	Included
Geoportal	Not Available	Optional	Optional
Image	Not Available	Optional (Windows only)	Optional (Windows only)
Data Interoperability	Not Available	Optional (Windows only)	Optional (Windows only)
Workflow Manager	Not Available	Optional (Windows only)	Optional (Windows only)
Schematics	Not Available	Not Available	Optional (Windows only)

For further details on the typical functions and capabilities included with each extension, refer to [www.esri.com/software/arcgis/arcgisserver/extensions.html](http://www.esri.com/software/arcgis/arcgisserver/extensions.html).

**Capacity** The ArcGIS Server editions described in the previous section are available at two levels, scaled according to capacity: Workgroup and Enterprise.

	Capacity Level	
	Workgroup	Enterprise
Simultaneous connections to multiuser geodatabase	10	Unlimited
Multiuser geodatabase storage capacity	10 GB	Unlimited
Maximum number of licensable cores	4 cores	Unlimited
Distributed deployment of ArcGIS Server components	Not supported*	Supported

\* Workgroup level components can be installed on only one machine.

Selecting functionalities and the capacity level specifies the ArcGIS Server edition and level. For example, ArcGIS Server Standard Enterprise supports unlimited simultaneous connections, a large multiuser geodatabase, and a standard set of functions. For more examples, see the ArcGIS Server Example Scenarios section below.

## Functionality Matrix Details

### *Geodatabase Management*

ArcGIS Server allows you to manage your geodata in a variety of database management systems. Data can be stored in a central database and support the concurrent multiuser editing necessary for many data management workflows. With ArcGIS Server, you have the ability to create and load spatial data into geodatabases.

Functionality	Editions		
	Basic	Standard	Advanced
Geodatabase Management	Included	Included	Included

### What Is a Geodatabase?

The geodatabase is the common data storage and management framework for ArcGIS. It combines "geo" (spatial data) with "database" (data repository) to create a central data repository for spatial data storage and management. A geodatabase stores geometry, a spatial reference system, attributes, and behavioral rules for data. Various types of geographic datasets can be collected within a geodatabase, including feature classes, attribute tables, raster datasets, network datasets, topologies, and many others.

ArcGIS Server is designed to manage multiuser geodatabases. Multiuser geodatabases leverage ArcSDE® technology, implemented on a relational database management system (RDBMS).

The Enterprise level supports the following RDBMS:

- IBM® DB2®
- Informix® Dynamic Server
- Microsoft® SQL Server®
- Oracle®
- PostgreSQL

The Workgroup level supports the following RDBMS:

- Microsoft SQL Server Express

For the most up-to-date information about supported databases, visit [resources.arcgis.com/content/arcgis-server-supported-relational-database-management-systems-arcade](http://resources.arcgis.com/content/arcgis-server-supported-relational-database-management-systems-arcade).

### ***Geodatabase Replication***

Geodatabase replication enables GIS data to be shared across two or more geodatabases. Data changes can be made in each geodatabase, then synchronized.

Geodatabase replication

- Is built on top of the versioning environment
- Supports the advanced geodatabase data model, such as topologies and geometric networks
- Can work in an asynchronous model (The replication is loosely coupled so that each replicated geodatabase can work independently and still synchronize changes with one another.)
- Does not require a uniform DBMS across replicas
- Works in a connected or disconnected environment

Geodata replication can be enabled over the Internet via the Geodata Web service.

Functionality	Editions		
	Basic	Standard	Advanced
Geodatabase Replication	Included	Included	Included

**Web Services**

ArcGIS Server allows you to share your spatial data and functionality through the use of Web services. Web services make it easy to share the use of resources across client applications, including ArcGIS Desktop, ArcGIS Explorer, Web mapping applications, and mobile devices.

Functionality	Editions		
	Basic	Standard	Advanced
GIS Web Services	Geodata Service Only	Included	Included

**What Are GIS Web Services?**

GIS Web services are used to share resources over a local network or the Internet. ArcGIS Server Web services conform to Web standards (Representational State Transfer [REST]); industry standards (Simple Object Access Protocol ([SOAP])); and Open Geospatial Consortium, Inc.<sup>®</sup> (OGC<sup>®</sup>), standards.

Both ArcGIS Server Standard and Advanced editions support the following types of Web services:

- Feature (for Web editing)
- Geodata (for geodatabase replication)
- Geocode (for finding and displaying addresses/locations on a map)
- Geometry (for geometric calculations such as calculating areas and lengths)
- Geoprocessing (for modeling and analysis of spatial data)
- Globe (for 3D and globe rendering)
- Image (for serving raster data and providing control over imagery delivery)
- Keyhole Markup Language (KML)\*
- Map (for cached and optimized map services)
- Mobile (for running services on field devices)
- Network Analyst (for routing, closest facility location, or service area analysis)
- Search (for enterprise search of GIS assets)
- Web Coverage Service (WCS)\*
- Web Feature Service (WFS)\* and Transactional Web Feature Service (WFS-T)
- Web Map Service (WMS)\*

\* Supports OGC standards.

**Web Mapping Applications**

ArcGIS Server supports a variety of Web mapping applications including

- ArcGIS<sup>SM</sup> Online Web Map
- ArcGIS Explorer Online
- ArcGIS Mapping for Flex<sup>TM</sup>
- ArcGIS Mobile Applications (with ArcGIS Server Advanced Enterprise)
- ArcGIS Server Web Mapping Application
- ArcGIS for iPhone<sup>®</sup>
- ArcGIS Mapping for SharePoint<sup>®</sup>



Application developers can build custom Web mapping applications using ArcGIS application programming interfaces (APIs), such as

- ArcGIS API for JavaScript™
- ArcGIS API for Flex
- ArcGIS API for Silverlight®
- ArcGIS API for iPhone
- ArcGIS Mobile Software Developer Kit (SDK)

ArcGIS Server also provides a Web Application Developer Framework (ADF™) for .NET and Java™.

Functionality	Editions		
	Basic	Standard	Advanced
Web Mapping Applications	Not Available	Included	Included

### ***Web Editing***

The ability to make spatial and attribute edits and updates to the geodatabase via the Web is made possible through the following ArcGIS Server services:

- Feature service (new at ArcGIS Server 10)
- Geometry service
- WFS

#### **Feature services**

Feature services support geodatabase editing across the Internet. Through this Web service, users can add, delete, and update geographic features from Web browsers, mobile applications, and ArcGIS Desktop seats.

The feature service is implemented as a stateless REST Web service. It exposes feature templates created in ArcGIS Desktop to clients to enable structured editing of your GIS data over the Web.

#### **Geometry service**

The geometry service helps applications do geometric calculations such as buffering, simplifying, calculating areas and lengths, merging, splitting, and projecting. Often, the geometry service is used in combination with the feature service to support sophisticated GIS editing over the Web.

#### **WFS**

WFS is an OGC specification. WFS returns actual features with geometry and attributes that clients can use in any type of geospatial analysis. WFS also supports filters that allow users to perform spatial and attribute queries on the data.

A WFS-T allows WFS editors to apply changes to the data in the source database through the WFS.

Functionality	Editions		
	Basic	Standard	Advanced
Web Editing	Not Available	Included	Included

### ***Geoprocessing***

ArcGIS Server provides an extensive array of geoprocessing functionality.

Functionality	Editions		
	Basic	Standard	Advanced
Geoprocessing	Not Available	Included	Included
Advanced Geoprocessing	Not Available	With Extensions	Included

### **What Is Geoprocessing?**

Geoprocessing takes an input dataset, performs an operation on that dataset, and returns the result of the operation as an output dataset.

With ArcGIS Server, you can publish geoprocessing services that allow you to submit jobs to the server and get back a set of results. Building a geoprocessing service requires that you first create a model using the ModelBuilder™ feature in ArcGIS Desktop. A model is a logical sequence of geoprocessing tools and scripts that help you automate a GIS operation. The server accesses the model and does the work, freeing your computer's resources and eliminating the problem of sharing copies of the model.

- Geoprocessing supports tools comparable to the ArcGIS Desktop ArcView® software-level geoprocessing toolbox.
- Advanced geoprocessing supports additional tools comparable to the ArcGIS Desktop ArcInfo® software-level geoprocessing toolbox. Advanced routing, suitability analysis, and map book production are examples of advanced geoprocessing.

### ***ArcGIS Mobile Application/SDK***

Esri provides two out-of-the-box, configurable mobile applications. The applications are designed for use on Windows® Mobile and Windows Desktop devices and are ideal in workforce automation projects. Use the Mobile Project Center to create field projects that can be downloaded directly to the device. The application leverages the Global Positioning System (GPS) through National Marine Electronics Association (NMEA) protocol, providing location awareness for map navigation and GIS data collection workflows.

Out-of-the-box tasks include

- View Map
  - Feature, annotation, and raster display
  - Stored in mobile service cache

- Collect Features
  - A dictionary of feature types is provided.
  - Create new points, lines, and polygons.
  - Fill out attribute form.
  - Capture a single photograph for each feature.
- Search Features
  - A dictionary of feature types is provided.
  - Build spatial and attribute query.
  - Add search results to list.
- View Work List
  - A list of features is displayed.
  - Update attributes from list.
  - Delete features from list.
- Manage Edits (formerly known as Synchronize)
  - View edits in cache.
  - View sync results.
  - Get data from server.
  - Post edits to server.
- Capabilities
  - User sign-in
  - Field crew tracking

The ArcGIS Mobile SDK provides you with a set of .NET tools to build a full range of custom, small-footprint mobile GIS applications that deliver mobile mapping and GIS functionality.

The software development kit includes

- Map Control
  - Display mobile service cache.
  - Include custom map layers.
- Mobile Service
  - Communication component with GIS server
  - Ability to get and post data with mobile Web service
  - Cache for features, annotation, and rasters

### ■ Map Actions

- Zoom In, Zoom Out, Pan, and Sketch tools
- Used to interact with map control

### ■ GPS Integration

- GPS connection (file or serial)
- GPS display for map control
- NMEA protocol support

### ■ Editing Support

- Edit directly to local cache.
- Edit feature layers only in cache.
- ActiveX Data Objects (ADO) .NET to create, edit, and delete features.
- Sync edits using mobile service.

Functionality	Editions		
	Basic	Standard	Advanced
ArcGIS Mobile Application/SDK	Not Available	Not Available	Included (.NET only)

For the most up-to-date information about supported platforms, visit  
<http://resources.arcgis.com/content/arcgis-server-server-requirements#SupportedPlatforms>.

## ArcGIS Server Example Scenarios

### *ArcGIS Server Advanced Enterprise*

#### ■ Large city government (population 250,000+)

#### ■ GIS department: Seven employees

- Supports four other departments (police, planning, engineering, and public works) with one GIS staff member each
  - ◆ Supports police with advanced crime analysis models and mapping (1 desktop user and 5 Web users)
  - ◆ Supports planning with demographic analysis and modeling (1 desktop user and 3 Web users)
  - ◆ Supports engineering with imagery and 3D visualization (1 desktop user, 5 ArcGIS Explorer users, and 10 Web users)
  - ◆ Supports public works with mobile data collection and mapping (1 desktop user and 40 field users)

- Provides multiple internal applications and services that require geocoding and mapping to non-GIS staff, including data updates (50 Web users)
- Provides multiple external Web mapping applications for public consumption (potentially thousands of concurrent Web users)
- Maintains extensive spatial databases and services
  - ◆ Land-use records for planning department (over 10 GB of vector data)
  - ◆ Asset inventories tied to city's enterprise resource planning (ERP) system
  - ◆ Public works project mapping tied to a work order management system
  - ◆ High-resolution aerial photography updated twice every five years (roughly 700 GB of imagery)
- Directive from mayor's office for better government transparency, including interactive maps of city projects and planning efforts for public access
- IT department maintaining a distributed system of servers and networks that supports all departments
- Deployment includes
  - A clustered geodatabase on top of a commercial database system for simultaneous editing
  - An ArcGIS Server deployment in the organization's DMZ for external consumption by general public
  - A separate ArcGIS Server node for mobile access and editing from the field
  - An internal ArcGIS Server deployment for basic mapping and querying capabilities
- Requires ArcGIS Server Advanced Enterprise because
  - Over 4 GB of data requiring simultaneous editing on the enterprise geodatabase
  - Overall, more than 10 simultaneous users connecting to the enterprise geodatabase (4 desktop users plus a number of map service connections that will exceed 20 given the potential load of Web users)
  - A deployment of ArcGIS Server involving more than one physical machine and four cores
  - Mobile capabilities required

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### ***ArcGIS Server Standard Workgroup***

- Small land-use planning and engineering consultant
- Two planners, three GIS analysts, and four engineers requiring access to project GIS database at any given time
  - 3 GB of vector data stored in SQL Server express and configured for concurrent edits from three desktop seats
  - Over 50 GB of imagery stored in TIFF files
  - 10 GB of data stored in file geodatabases
- Uses customer datasets and ArcGIS Online basemaps to augment applications and mapping efforts
- Provides several internal Web mapping applications to manage projects; Web applications configured to support up to 40 simultaneous users over the intranet
- Uses Data Interoperability, Network, and Image extensions
- Typical ArcGIS Server Standard Workgroup deployment because
  - Entire deployment can be sustained on a single four-core machine.
  - The number of concurrent users of the geodatabase does not exceed 10.
    - ◆ GIS analysts: Three connections from desktop seats
    - ◆ Planners, engineers, and other users: Five connections to configure map services that will support Web browser-based applications
  - Data stored in a multiuser geodatabase (SQL Server) does not exceed 4 GB.

### ***ArcGIS Server Standard Enterprise***

- Fortune 500 company
- GIS staff: Two developers, one GIS analyst
- Provides several GIS services for internal and external use
  - Routing, mapping, and geocoding services for Web users; potentially thousands of concurrent users
  - Mapping and querying capabilities for internal users (100 Web users)
  - All services integrated with the corporate e-commerce system through the company's enterprise service bus

- Configured a high-availability deployment of ArcGIS Server
  - Development environment: Two Esri® Developer Network (EDN™) licenses for development and testing
  - Staging environment: Distributed ArcGIS Server Standard Enterprise deployment including a clustered enterprise geodatabase and a GIS server farm of four physical 16-core blade servers and four redundant Web servers; ArcGIS Server licensed for staging environment
  - Production environment: Similar to staging environment; ArcGIS Server Standard Enterprise licensed for commercial use
- Requires ArcGIS Server Standard Enterprise because
  - Deployment distributed across multiple machines
  - Required functionality provided with Standard edition: mapping, geocoding, and routing (routing requires an additional extension)
  - Note: To support full enterprise deployment, organization makes use of development, staging, and commercial licenses of ArcGIS Server

***ArcGIS Server Basic  
Enterprise***

- County government
- 50 ArcGIS Desktop users
- Requires simultaneous editing of geodatabase

For more information about ArcGIS Server, visit [www.esri.com/arcgisserver](http://www.esri.com/arcgisserver) or contact your local Esri representative.



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