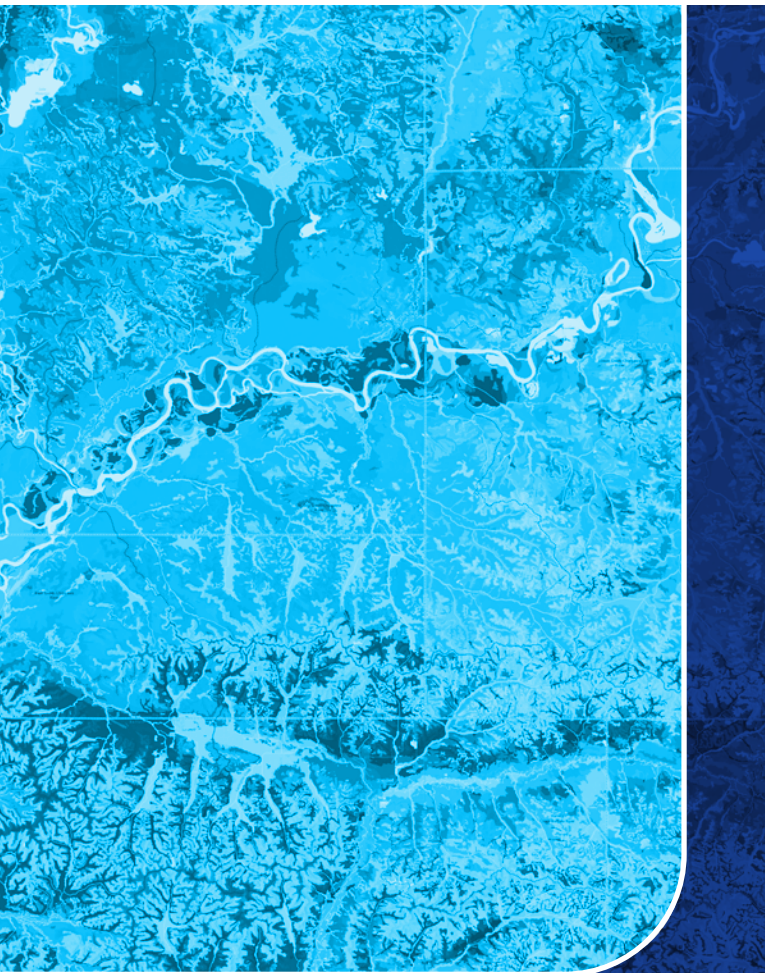




10.9

ArcGIS ENTERPRISE Functionality Matrix



ArcGIS Enterprise is the foundational software for geographic information system (GIS) technology, mapping and visualization, analytics, and Esri's suite of geospatial applications. It is software that is self-hosted in public cloud, private cloud, and on-premises infrastructure.

This functionality matrix features the vast and diverse capabilities in ArcGIS Enterprise so you can identify which products best fit your needs.

You can manage, map, analyze, and share GIS data with ArcGIS Enterprise to power your data-driven decisions. ArcGIS Enterprise comes with enterprise-ready features including full data management control that empowers you to visualize your data spatially, perform analysis in your web browser to discover patterns and trends, and share and collaborate inside and outside your organization.

ArcGIS Enterprise includes options that provide comprehensive functionality for mapping, image exploitation, real-time data, big data analytics, and data science. It also powers the full suite of applications for field data collection, analytics, operational overviews, and workforce tracking.

Powerful, collaborative, and secure—ArcGIS Enterprise epitomizes modern GIS in your infrastructure.

ArcGIS Enterprise comes with tools to get you started including wizard-like builders for simple single-machine deployments, Chef and PowerShell Desired State Configuration (DSC) scripts to automate custom deployments, and machine-generated images to jump-start cloud deployments on Amazon Web Services (AWS) and Microsoft Azure. New in the latest release, ArcGIS Enterprise on Kubernetes enables deployments on Amazon Elastic Kubernetes Service (Amazon EKS), Azure Kubernetes Service (AKS), and Red Hat OpenShift-based private clouds.

ArcGIS Enterprise on Kubernetes is a new deployment option with a separate list of features and capabilities. See page 12 for more information on this option. The remainder of this document applies to the Windows and Linux deployment options.

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ArcGIS ENTERPRISE

Functionality Matrix

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- Included
- Additional Purchase

¹ Visit page 12 to learn more about ArcGIS Enterprise on Kubernetes.

² Only applicable if you have the corresponding ArcGIS Desktop or ArcGIS Pro extension.

CAPABILITIES

Run on Windows

Run on Linux

Run on Kubernetes ¹

Deploy in the cloud

Deploy on-premises

Deploy disconnected from the open internet

Script and automate workflows

Create analytical models and model chains

Edit data on the web

Create OGC-compliant web services

Convert location information to x,y (geocode)

Visualize data as a schematic diagram

Support disconnected/field editing

Publish geoprocessing services and web tools

Serve ArcGIS 3D Analyst tools ²

Serve ArcGIS Geostatistical Analyst tools ²

Serve ArcGIS Spatial Analyst tools ²

Create dynamic image and raster mosaics

Perform on-the-fly raster processing and analytics

Process and analyze big data

Analyze streaming data in real time

Generate geoenabled alerts

Create and monitor geofences

Use data science Python libraries

Leverage built-in scheduling

GIS Server Advanced

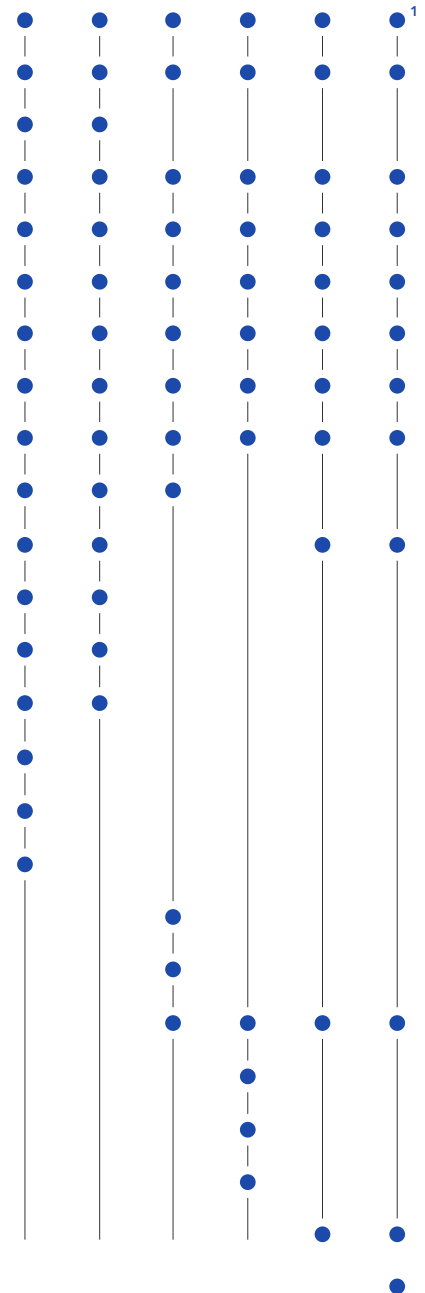
ArcGIS GIS Server Standard

ArcGIS Image Server

ArcGIS GeoEvent Server

ArcGIS GeoAnalytics Server

ArcGIS Notebook Server



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- Included
- Additional Purchase

³ The only geoprocessing services that can be served are those that are preconfigured within the server; you cannot add or modify geoprocessing services.

⁴ ArcGIS Network Analyst extension is required.

SERVICE TYPES

Cached service—Map, image	●	●	●			
Dynamic map service	●	●				
Feature service	●	●				
Geocoding service	●	●				
Geodata service	●	●				
Geometry service	●	●				
Geoprocessing service	●	●	● ³		● ³	
Image service—From mosaic dataset			●			
Image service—From single raster	●	●	●			
Network service	●	● ⁴				
Parcel fabric service	●	●				
Print service	●	●				
Ready-to-use Python notebook						●
Schematic service	●	●				
Stream service				●		
Utility network service	●	●				

HOSTED LAYER TYPES

Feature layer	●	●					02
Hosted map image layer	●	●					03
Imagery layer			●				04
Scene layer	●	●					05
Raster tile layer	●	●					06
Vector tile layer	●	●					07

CONTENT

ArcGIS Living Atlas of the World	●	●					08
ArcGIS StreetMap Premium (display, routing, geocoding)	○	○					09
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- Included
- Additional Purchase

⁵ Windows only

⁶ GeoEvent Server can ingest data from system files. Data in a system file should be text readable and formatted as delimited text, generic JSON, or XML. GeoEvent Server can poll a feature service's feature layer for feature records and process these as event records. GeoEvent Server integrates with a traditional relational database management system (RDBMS) through a feature service; direct connections to underlying database tables are not supported.

EXTENSIONS

ArcGIS Network Analyst

ArcGIS LocateXT

ArcGIS Data Interoperability ⁵

ArcGIS Data Reviewer ⁵

ArcGIS Workflow Manager ⁵

ArcGIS Maritime ⁵

ArcGIS Defense Mapping ⁵

ArcGIS Production Mapping ⁵

ArcGIS Roads and Highways ⁵

ArcGIS Pipeline Referencing ⁵

GIS Server Advanced

ArcGIS GIS Server Standard

ArcGIS Image Server

ArcGIS GeoEvent Server

ArcGIS GeoAnalytics Server

ArcGIS Notebook Server

INPUT DATA TYPES

3D features (points, objects, extrusions)

3D scenes

Address locators

Big data—Feature

Big data—Imagery/Raster

Feature data (points, lines, polygons)

Imagery/Raster data—Mosaic dataset

Imagery/Raster data—Single raster

Integrated mesh

Lidar/Terrain data—Mosaic dataset

Lidar/Terrain data—Single raster

Multipatch data

Parcel fabric

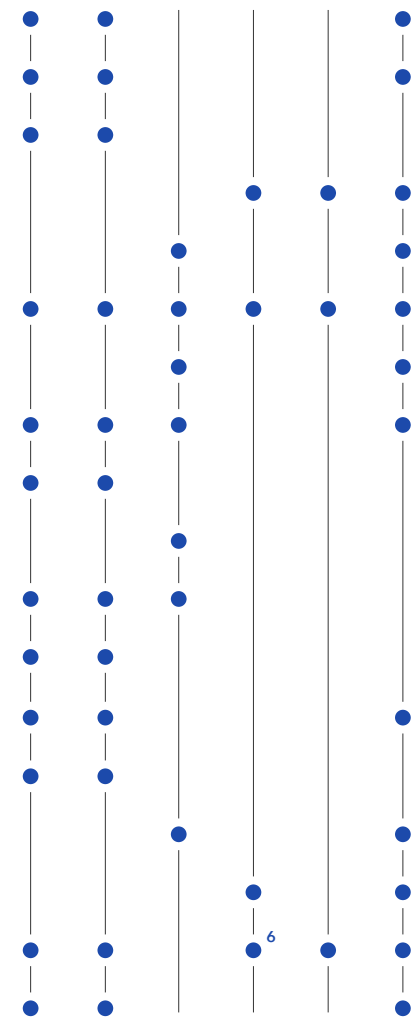
Point clouds

Raster elevation surfaces

Real-time data streams

Tabular data

Utility networks



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User Roles

User capabilities are unlocked by the role you assign a user. You can use the default user roles and create custom roles.

COMPATIBLE USER TYPES

Role	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
GIS Professional	Yes	Yes	Yes	Yes	Yes
Creator	Yes	Yes	Yes	Yes	Yes
Fieldworker	Yes	Yes	Yes	No	Yes
Editor	No	No	No	Yes	Yes
Viewer	No	No	No	No	Yes

ArcGIS ENTERPRISE PORTAL CAPABILITIES

Browse and view data, layers, web maps, and apps						
Visualize data on a map						
Visualize data in 3D						
Query and filter data dynamically						
Search for a location (geosearch)						
Generate turn-by-turn directions						
Change the way the data is styled (symbolize)						
Measure distances						
Add and create items						
Publish layers and services						
Convert location information to x,y coordinates (geocode)						
Save data as layers and web maps						
Share data, layers, and web maps with others						
Create web mapping applications from web maps						02
Edit data						03
Save modified data as a new item						04
Analyze data						05
Secure content using groups						06
Apply security to data, layers, web maps, and apps						07
Create views of existing data						08
Create tailored websites and pages						09
Create and manage distributed collaborations						10
Manage licensing						11
Add and manage members						
Disable member accounts						
Delete members						

Supported Databases and Data Connections

- ⁷ To use cloud-hosted databases, your ArcGIS Enterprise deployment must be colocated with the database in the same cloud environment.
- ⁸ IBM Informix and IBM Db2 for z/OS are only supported when publishing from ArcGIS Desktop 10.x.
- ⁹ Compatible with publishing workflows between ArcGIS Enterprise 10.6 and later and ArcGIS Pro 2.1 and later. SAP HANA enterprise geodatabases cannot be used with previous versions of ArcGIS Enterprise or ArcGIS Desktop (ArcMap or ArcGIS Pro).
- ¹⁰ GeoAnalytics Server also supports writing your analysis results back to these sources.
- ¹¹ Shapefiles, Parquet, ORC, and delimited files are supported.
- ¹² Support software for the input data sources is shipped. GeoEvent Server also supports writing back to these sources. Support for additional input data sources can be added to the software from the [ArcGIS GeoEvent Server Gallery](#) and the [ArcGIS GeoEvent Server Partner Gallery](#).

Supported database types for enterprise geodatabases + query layers	Supported database types for query layers
Amazon Aurora PostgreSQL ⁷ Amazon RDS for Oracle ⁷ Amazon RDS for PostgreSQL ⁷ Amazon RDS for Microsoft SQL Server ⁷ IBM Db2 ⁸ IBM Informix ⁸ Microsoft Azure Database for PostgreSQL ⁷ Microsoft Azure SQL Database ⁷ Microsoft SQL Server PostgreSQL SAP HANA ⁹ SAP HANA Cloud ⁷ Oracle Oracle Autonomous Transaction Processing ⁷ Oracle co-managed systems ⁷	Dameng SQLite Teradata
Input data supported by ArcGIS GeoAnalytics Server	Raster stores supported by ArcGIS Image Server when running raster analytics
Hosted feature layers Feature services Stream services Big data file shares - Apache Hadoop HDFS ¹⁰ - Apache Hive - AWS S3 and S3-compatible storage ^{10, 11} - Azure Data Lake Store ^{10, 11} - Local and network file shares ^{10, 11} - Microsoft Azure Storage ¹⁰	Alibaba Cloud Object Storage Service (OSS) AWS S3 and S3-compatible storage Local file shares Microsoft Azure Storage
Input data supported by ArcGIS GeoEvent Server ¹²	
Hosted feature layers Feature services Stream services Local and network file shares Kafka Network protocols - HTTP - TCP - UDP - RSS - WebSocket	

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Supported Cloud Environments

ArcGIS Enterprise can be deployed in any cloud platform using infrastructure that meets the system requirements. For AWS and Microsoft Azure, ArcGIS Enterprise comes with prebuilt images and deployment tooling that makes it even easier to install and configure your deployment.

New in the latest release, ArcGIS Enterprise on Kubernetes enables deployments on Amazon EKS, AKS, and Red Hat OpenShift-based private clouds.

In addition to deploying in various cloud platforms, ArcGIS Enterprise supports cloud-native features in several clouds. This includes support for cloud-native storage and cloud-managed databases. See this [functionality matrix](#) for an overview and the documentation for specific details on what features are supported with the different cloud stores.

Cloud-native storage includes the following:

- AWS S3 and S3-compatible storage
- Microsoft Azure Storage
- Alibaba Cloud OSS

Supported OGC and Open Web Services

As part of [Esri's Open Vision](#), ArcGIS Enterprise can serve out the following Open Geospatial Consortium, Inc. (OGC), and open web services:

- Web Map Service (WMS) (versions 1.0, 1.1, 1.1.1, and 1.3)
- Web Feature Service (WFS) (versions 1.0, 1.1, and 2.0)
- Web Coverage Service (WCS) (versions 1.0.0, 1.1.0, 1.1.1, 1.1.2, and 2.0.1)
- Web Map Tile Service (WMTS) (version 1.0)
- Web Processing Service (WPS) (version 1.0)
- Keyhole Markup Language (KML) (version 2.2)
- GeoJSON

ArcGIS Image Server can serve out Web Coverage Service at the same versions listed.

Security, Authentication, and Authorization

ArcGIS Enterprise comes with a robust and effective security framework that includes options for managing access and enforcing permissions for secured resources. Supported [configurable security settings](#) include the following:

- Web-tier authentication (IWA, PKI)
- GIS-tier authentication with multifactor authentication (built-in identity)
- Integration with SAML 2.0 and OpenID Connect identity providers
- Enterprise Groups (Active Directory, LDAP, and SAML 2.0)
- Transport Layer Security (TLS) 1.2 and optional support for TLS 1.0 and TLS 1.1 for backward compatibility

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Deploying ArcGIS Enterprise

¹³Ubuntu only.

¹⁴You can upgrade using these tools if you first installed your deployment using these tools.

There are three deployment options for ArcGIS Enterprise: Windows, Linux, and Kubernetes.

For Windows and Linux, you can deploy ArcGIS Enterprise manually, installing and configuring each component in sequence, or you can automate the deployment process by using one of the ArcGIS Enterprise deployment automation tools. Customers interested in deploying on Kubernetes should have a Kubernetes cluster available as well as appropriate expertise in managing a Kubernetes environment. See the Kubernetes section on page 12 for more information.

The following matrix compares common deployment characteristics among the ArcGIS Enterprise deployment automation tools.

Automation Tool					
DEPLOYMENT CHARACTERISTICS	Chef	PowerShell DSC	AWS	Azure	ArcGIS Enterprise Builder
Cloud deployments	●	●	●	●	
On-premises deployments	●	●			●
Windows OS	●	●	●	●	●
Linux OS	●		●		●
Single-machine deployments	●	●	●	●	●
Multimachine deployments	●	●	●	●	
High-availability deployments	●	●	●	●	
Base ArcGIS Enterprise deployment setup	●	●	●	●	●
ArcGIS Server setup	●	●	●	●	
Image Server setup	●	●	●	●	
GeoEvent Server setup	●	●	●	●	
GeoAnalytics Server setup	●	●	●	●	
Notebook Server setup ¹³	●	●	●	●	
Ability to upgrade the deployment ¹⁴	●	●	●	●	●
Configurable deployment templates	●	●	●		
Configurable machine images			●	●	
Command line interface	●	●	●	●	●
Wizard-style interface			●	●	●

User Type Licensing

USER TYPES

ArcGIS Enterprise uses an identity-based security model. To access content secured within ArcGIS Enterprise, individuals must be a member of the ArcGIS Enterprise deployment and have an identity within the system. Throughout ArcGIS, identities are licensed and allocated through user type licensing.

There are five general-purpose user types—Viewer, Editor, Fieldworker, Creator, and GIS Professional—each with its own capabilities and included applications. See the [User Types page on esri.com](#) for more information on the user types and their capabilities and applications.

There are also several user type extensions available for user types in ArcGIS Enterprise. These extensions provide access to additional capabilities. Extensions available include the ArcGIS Utility Network, trace network, ArcGIS Parcel Fabric, and Workflow Manager.

USER TYPES INCLUDED WITH INITIAL PURCHASE

ArcGIS ENTERPRISE EDITION/LEVEL	CREATOR USER TYPE	VIEWER USER TYPE
ArcGIS Enterprise Standard	5	Unlimited
ArcGIS Enterprise Advanced	50	Unlimited
ArcGIS Enterprise Workgroup Standard	5	0
ArcGIS Enterprise Workgroup Advanced	10	0

Note—The information listed here may not be applicable if you licensed ArcGIS Enterprise as part of a special program, such as an enterprise agreement (EA) or an education site license. Contact your Esri representative for more details on how user types apply to your organization.

Historical—The Viewer user type is functionally equivalent to a Level 1 Named User license in previous releases, and the Creator user type is equivalent to a Level 2 Named User license.

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ArcGIS ENTERPRISE STANDARD AND ADVANCED

You can license ArcGIS Enterprise in two editions, offered at two different capacity levels. The editions are Standard and Advanced, and the levels are ArcGIS Enterprise and ArcGIS Enterprise Workgroup. Used collectively, the name *ArcGIS Enterprise* refers to any edition or level when there isn't a need to make a distinction.

ArcGIS ENTERPRISE WORKGROUP LEVEL

ArcGIS Enterprise Workgroup is a lower-capacity level of ArcGIS Enterprise. It offers all the same functionality as ArcGIS Enterprise but is designed for use in smaller teams and organizations. The Workgroup level has the following differences:

- There is a limit of 10 simultaneous desktop connections to workgroup geodatabases. Workgroup geodatabases are only supported in Microsoft SQL Server Express and have a maximum size of 10 GB.
- The Workgroup level is only [licensed for use](#) with file-based data sources (e.g., file geodatabases) and workgroup geodatabases. It is not licensed for use with enterprise geodatabases.
- The base ArcGIS Enterprise deployment must be an all-in-one installation on a single machine with up to four cores.
- Each server role has a four-core maximum. The additional roles can be deployed on machines that are separate from the base deployment. The spatiotemporal big data store may be configured on a single, separate four-core machine.
- User type extensions cannot be used with Workgroup licensing.
- The Workgroup level of ArcGIS Enterprise supports a maximum of 10 users per deployment regardless of edition. ArcGIS Enterprise Workgroup Standard includes five Creator user types. You can add up to five more user types (Viewer and/or Creator), so long as the total number of users for your deployment does not exceed 10. As ArcGIS Enterprise Workgroup Advanced already includes 10 Creator user types, additional user types (of any level) cannot be added.

For more information, contact your Esri representative.

OTHER LICENSING

ArcGIS GIS Server Basic is limited-capability software that primarily provides enterprise geodatabase functionality. ArcGIS GIS Server Basic cannot be federated as part of an ArcGIS Enterprise deployment and does not enable any Web GIS functionality.

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Kubernetes

ArcGIS ENTERPRISE ON KUBERNETES

New in 10.9, ArcGIS Enterprise on Kubernetes is a cloud-native deployment option designed to optimize scalability, resilience, and maintainability. It enables deployments in the cloud with Amazon EKS and AKS, and on-premises with Red Hat OpenShift Kubernetes Engine.

ArcGIS Enterprise on Kubernetes is architected based on the principles of microservices and containerization. Significant benefits will include enabling dynamic scaling to handle unpredictable user demand, streamlined deployments and upgrades, and improved economics for infrastructure costs along with potentially reduced administrative overhead.

ArcGIS Enterprise on Kubernetes is aimed at complex, multimachine deployments for organizations already familiar with Kubernetes technology. It is offered to ArcGIS Enterprise customers and partners that meet certain eligibility requirements. Please talk with your Esri account team or Esri distributor representative to learn more.



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