ArcGIS Enterprise 11.4 system requirements (Windows)

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System requirements for ArcGIS Enterprise

ArcGIS Enterprise 11.4 system requirements

ArcGIS Enterprise provides a system for mapping, visualization, data management, and analytics, as well as a flexible deployment model allowing for use on-premises, in the cloud, and on virtual machines.

A base ArcGIS Enterprise deployment includes several components that are designed to work together. In addition to these components, you can add one or more ArcGIS Server licensing roles or other ArcGIS Server types to your ArcGIS Enterprise deployment to meet specific workflow requirements in your organization.

This page lists support information that is common to most parts of an ArcGIS Enterprise deployment—such as cloud and virtualization support policies—and provides links to other pages to help you understand the requirements for each component and site in an ArcGIS Enterprise deployment.

System requirements pages

Each ArcGIS Enterprise component has specific requirements unique to that component. Read the system requirements page for each component, site, and app you deploy as well as the requirements pages for tools such as ArcGIS Enterprise Builder or ArcGIS Enterprise SDK. Use the following links to access each page:

- ArcGIS Server
- Portal for ArcGIS
- ArcGIS Data Store
- ArcGIS Web Adaptor
- ArcGIS Enterprise Builder
- ArcGIS GeoEvent Server
- ArcGIS Mission Server
- ArcGIS Notebook Server
- ArcGIS Video Server
- ArcGIS Workflow Manager Server
- ArcGIS Knowledge Server
- ArcGIS Enterprise SDK
- Apps supported with ArcGIS Enterprise

Microsoft Windows operating system requirements

The following Windows operating systems are supported for most ArcGIS Enterprise components and sites. At present, the exceptions to this are ArcGIS Notebook Server and ArcGIS Video Server..

Supported operating system	Latest update or service pack tested
Windows Server 2022 Standard and Datacenter	September 2024 update
Windows Server 2019 Standard and Datacenter	September 2024 update
Windows Server 2016 Standard and Datacenter	September 2024 update

Note:

- Prior and future updates or service packs for these operating system versions are supported unless otherwise stated. The operating system version and updates must also be supported by the operating system provider.
- The Desktop Experience option is required on all versions of Windows Server.
- ArcGIS software is developed and certified to support file system path names with a maximum path length of 260 characters.

See the page for each component you want to install for additional operating system requirements.

Firewall settings

Each component in an ArcGIS Enterprise deployment communicates over a specific set of ports. If a port is used to communicate between machines, you must open that port in the machine's firewall. If a port is used for internal communication, verify the port isn't being used by another application that is running on the machine.

Use the following list and links to help you find all the ports used by each component you can have in an ArcGIS Enterprise deployment:

- Portal for ArcGIS
- ArcGIS Server—All ArcGIS Server roles and extension types use these same ports. Some roles use additional ports for communication. Use the following links to access these additional port requirements.
  - ArcGIS GeoEvent Server
  - ArcGIS Workflow Manager Server
- ArcGIS Web Adaptor—By default, ports 443 and 80 are used on ArcGIS Web Adaptor machines.
- ArcGIS Data Store
- ArcGIS Notebook Server
- ArcGIS Mission Server

View a diagram of the ports used in an ArcGIS Enterprise deployment.

Supported web browsers

Most ArcGIS Enterprise components include wizards or interfaces that you access through a web browser. The following browsers are supported for most components:

- Google Chrome version 122 and later
- Microsoft Edge version 122 and later
- Mozilla Firefox version 125 and later
- Mozilla Firefox version 115 (ESR)
- Safari version 16 and later

*Scene Viewer and scene-based apps have their own browser requirements. Some of the ArcGIS apps also have their own requirements. See each app's documentation for details.

For best performance and full functionality, use the latest version of a browser listed above. Only WebGL2-enabled, 64-bit browsers are supported. The website uses the local storage capabilities (similar to cookies) of the browser. If

this storage is disabled, the site will not function properly. To learn how to enable local storage, consult the browser's documentation.

ArcGIS Enterprise on cloud platforms

You can deploy ArcGIS Enterprise on many cloud platforms. Any cloud platform that provides virtual machines that meet the basic system requirements for operating system and system specifications is supported for use with ArcGIS Enterprise.

In addition to basic support, Esri provides deployment tooling and prebuilt virtual machine images on two cloud platforms: Amazon Web Services (AWS) and Microsoft Azure. When deploying on these two cloud platforms, it's recommended that you use the specialized tooling and images to simplify deployment.

Esri does not provide technical support for provisioning and configuring cloud infrastructure beyond what ArcGIS Enterprise deployment tooling creates and manages as part of its normal operations. For cloud platforms other than AWS and Azure, for which Esri does not provide specialized deployment tooling, support is limited to troubleshooting software-specific issues.

ArcGIS Enterprise also supports native cloud functionality such as storage and databases on several cloud platforms. Examples include Amazon Simple Storage Service (S3) and Microsoft Azure SQL Database. See the documentation for each ArcGIS component for information on the native cloud functionality that's supported.

Note:
Implementing ArcGIS Notebook Server on a cloud platform has a few additional requirements. See the ArcGIS Notebook Server system requirements for details.

Supported virtualization environments

All components of ArcGIS Enterprise are fully supported on virtual environments as long as they run on supported operating systems. When running third-party applications with ArcGIS Enterprise, such as relational databases, the application must also be supported in a virtual environment. Check the third-party vendor for its virtualization support.

The following virtualization environments are known to perform well with ArcGIS Enterprise and its components:

- VMware vSphere 7.0, 8.0
- Microsoft Hyper-V

Inclusion on the list above does not imply an endorsement or higher level of support. A lack of inclusion on the list above does not imply that an environment or specific version is not supported; it means that it is not an environment or version that Esri or its partners have explicitly tested.

For additional information, see Deploy ArcGIS Server on virtualized hardware.

ArcGIS Enterprise architecture

You must install all ArcGIS Enterprise components for a single deployment within a single data center or equivalent, such as a cloud region or network, to provide low latency connectivity between each component. In some cases, it is required that you have components or directories in the same data center.

The following are examples:

- If you have an ArcGIS Server site that contains three machines, all three machines must reside in the same data center; the machines cannot be split across multiple data centers.

- Federated ArcGIS Server sites, the portal with which they are federated, the portal's hosting server, and each type of ArcGIS Data Store in an ArcGIS Enterprise deployment must reside in the same data center.
- All Portal for ArcGIS, ArcGIS Data Store, and ArcGIS Server machines in a highly available ArcGIS Enterprise deployment must be in the same data center; the primary and standby machines cannot be split across separate data centers.
  To safe guard against loss of a single data center, you can create a secondary deployment in a separate data center. See Disaster recovery and replication for more information.
- Web services and the data they reference need to be in the same data center or cloud region to avoid performance problems. Therefore, your data source and the ArcGIS Server site where the service is running must be in the same data center.
- Performance may be poor when ArcGIS Server sites and their corresponding configuration stores and other ArcGIS Server directories are not in the same data center. Similarly, performance may be poor when Portal for ArcGIS machines and their content directories are not in the same data center.

In addition, ArcGIS clients (such as ArcGIS Pro) that publish to ArcGIS Enterprise should be deployed in the same cloud region or network as ArcGIS Enterprise to avoid latency and performance problems when publishing web layers. This is especially important when publishing hosted layers, which copy data from the data source to machines in the ArcGIS Enterprise deployment.

ArcGIS Enterprise Builder 11.4 system requirements

ArcGIS Enterprise Builder deploys ArcGIS Enterprise on a single machine on premises. The system and hardware requirements required to run ArcGIS Enterprise Builder are listed below.

Note:
As of ArcGIS Enterprise 11.4, ArcGIS License Manager is no longer required to enable named user licensing for ArcGIS Pro, ArcGIS Pro extensions, ArcGIS Drone2Map, and ArcGIS AllSource.

Before you implement or upgrade an ArcGIS Enterprise deployment using ArcGIS Enterprise Builder, review the deprecation notices on the Esri support site to determine whether your hardware and software components are still compatible with the current release of ArcGIS Enterprise Builder. Also review all current system requirements of the individual product components. You can access this information from the ArcGIS Enterprise Installation Guides documentation.

Note:
ArcGIS Enterprise components require the Microsoft Visual C++ 2015–2022 Redistributable (x64) minimum version 14.38.33130. Obtain the Microsoft Visual C++ Redistributable for Visual Studio 2015–2022 file from the Microsoft site.

If the Visual C++ 2015 - 2022 Redistributable is not already installed, running the ArcGIS Enterprise Builder `setup.exe` will install it for you. However, running the ArcGIS Enterprise Builder `setup.msi` directly will not install the redistributable. If the Microsoft Visual C++ 2015 - 2022 Redistributable (x64) is not already installed, running the `setup.msi` will fail to run ArcGIS Enterprise Builder.

Prerequisites

The following prerequisites must be installed on the machine where ArcGIS Web Adaptor (IIS) will be installed:

- Microsoft Web Deploy 4.0
- ASP.NET Core Runtime - Windows Hosting Bundle 8.x

Note:
You must install the ASP.NET Core Runtime - Windows Hosting Bundle, which includes the .NET Runtime and IIS support.

Caution:
If you installed the ASP.NET Core Runtime - Windows Hosting Bundle before enabling IIS and the required components, you must repair the bundle installation using the bundle installer.

Microsoft Windows operating system requirements

The following 64-bit operating systems satisfy the minimum operating system requirements.

Supported operating system	Latest update or service pack tested
Windows Server 2022 Standard and Datacenter	September 2024 update

Supported operating system	Latest update or service pack tested
Windows Server 2019 Standard and Datacenter	September 2024 update
Windows Server 2016 Standard and Datacenter	September 2024 update

Development environments

Supported operating system	Latest update or service pack tested
Windows 11 Pro and Enterprise	September 2024 update

Note:

- Prior and future updates or service packs for these operating system versions are supported unless otherwise stated. The operating system version and updates must also be supported by the operating system provider.
- ArcGIS is only supported on 64-bit CPUs with x86-64 architecture.
- The Desktop Experience option is required on all versions of Windows Server.
- Windows 11 is supported for basic testing and application development use only.
- Machines with an underscore (_) in their names are not supported. Several widely used internet host name specifications have designated the underscore character as nonstandard. Although Microsoft Windows allows you to use the underscore in a machine name, it can cause problems when you interact with other servers and platforms. For this reason, the installation will not proceed on servers that have an underscore in the host name.
- You cannot install on domain controllers. Installing on a domain controller may adversely affect functionality.

Disk space requirements

ArcGIS Enterprise Builder (Windows) requires 20 GB of free disk space on the system drive (often the `C:` drive), where setup files are staged and log files are written. Additionally, the builder requires a minimum of 45 GB of free disk space on the installation drive, which you will specify during setup. This disk space is necessary for completing the initial installation of components and for the storage of data, logs, and configuration files as your base deployment expands.

Note:

Most users need more than 45 GB of space on their installation drive. A production system should have 90 GB or more of free disk space on each machine in the deployment.

Memory requirements

It is recommended that you have at least 56 GB of available RAM to install ArcGIS Enterprise Builder. If you will publish hosted scene layers and hosted 3D tiles layers, a minimum of 72 GB of free RAM is needed.

Firewall settings

The components in a base ArcGIS Enterprise deployment communicate on specific ports. You must open these ports on your firewall before installing the software.

ArcGIS Web Adaptor communicates over ports 80 and 443. See the following for information on the ports used by each additional component that is installed using ArcGIS Enterprise Builder:

- Ports used by ArcGIS Server
- Ports used by Portal for ArcGIS
- Ports used by ArcGIS Data Store

Trusted certificates

ArcGIS Enterprise deployments require HTTPS to be enabled on the machine where the base deployment is installed. For details, review steps to enable HTTPS on your web server.

If your deployment's web server is IIS, learn how to use a sample script to create a domain certificate.

Supported web browsers

The ArcGIS Enterprise Configuration Wizard supports the following web browsers:

- Google Chrome version 122 and later
- Microsoft Edge version 122 and later
- Mozilla Firefox version 125 and later
- Mozilla Firefox version 115 (ESR)
- Safari version 16 and later

Supported virtualization environments and cloud platforms

Virtualization and cloud environment support is the same for all components of a base ArcGIS Enterprise deployment. See ArcGIS Enterprise on cloud platforms and Supported virtualization environments in the ArcGIS Enterprise system requirements for details.

Coordinate system files

You may require additional coordinate system files on the hosting server and portal machines. See Coordinate system requirements for more information.

Portal for ArcGIS 11.4 system requirements

The system and hardware required to run Portal for ArcGIS are listed below.

Note:
As of ArcGIS Enterprise 11.4, ArcGIS License Manager is no longer required to enable named user licensing for ArcGIS Pro, ArcGIS Pro extensions, ArcGIS Drone2Map, and ArcGIS AllSource.

It's recommended that you review the deprecation notice to determine if your hardware and software components are still compatible with the current ArcGIS version.

Note:
ArcGIS Enterprise components require the Microsoft Visual C++ 2015–2022 Redistributable (x64) minimum version 14.38.33130. Obtain the Microsoft Visual C++ Redistributable for Visual Studio 2015–2022 file from the Microsoft site.

If the required Visual C++ Redistributable is not installed, running the Portal for ArcGIS `setup.exe` file will install it. Running the Portal for ArcGIS `setup.msi` file will not install the Microsoft Visual C++ Redistributable (x64). Therefore, if you want to run the Portal for ArcGIS `setup.msi` file, the Microsoft Visual C++ 2015-2022 Redistributable (x64) must already be installed.

Microsoft Windows operating system requirements

The following 64-bit operating systems satisfy the minimum operating system requirements.

Supported operating system	Latest update or service pack tested
Windows Server 2022 Standard and Datacenter	September 2024 update
Windows Server 2019 Standard and Datacenter	September 2024 update
Windows Server 2016 Standard and Datacenter	September 2024 update

Development environments

Supported operating system	Latest update or service pack tested
Windows 11 Pro and Enterprise	September 2024 update

Note:

- Prior and future updates or service packs for these operating system versions are supported unless otherwise stated. The operating system version and updates must also be supported by the operating system provider.
- ArcGIS is only supported on 64-bit CPUs with x86-64 architecture.
- The Desktop Experience option is required on all versions of Windows Server.
- Windows 11 is supported for basic testing and application development use only.
- Machines with an underscore (_) in their names are not supported. Several widely used internet host name specifications have designated the underscore character as nonstandard. Although Microsoft Windows allows you to use the underscore in a machine name, it can cause problems when you interact with other servers and platforms. For this reason, the installation will not proceed on servers that have an underscore in the host name.
- You cannot install on domain controllers. Installing on a domain controller may adversely affect functionality.

Hardware requirements

The following are the minimum hardware requirements to install Portal for ArcGIS:

- Processor—2 cores minimum for development and testing, 4 cores minimum highly recommended for production systems
- Memory/RAM—8 GB
- Disk space—20 GB

All content created by your users will also be stored on disk. Carefully consider how data will be uploaded and created by your users and allocate disk space accordingly. Optionally, you can change the location of where the portal stores its content after installing the software.

Firewall settings

Portal for ArcGIS communicates through specific ports. You must open these ports on your firewall before installing the software. For information on the ports Portal for ArcGIS requires for communication, see Ports used by Portal for ArcGIS.

Domain name service and fully qualified domain name requirements

Your organization's domain name service (DNS) must include an entry of the fully qualified domain name (FQDN) of the machine hosting Portal for ArcGIS. Similarly, if you'll be using ArcGIS Server with your portal, it's recommended that you include FQDN entries for each site you intend to federate with Portal for ArcGIS.

Note:

Portal for ArcGIS only supports a single organization URL.

Optionally, you can configure your DNS to use a friendly name for the portal (for example, `friendly.example.com` instead of `portal.example.com`). When doing this, assign the name to the portal machine before you install the software. Then use the friendly name when setting up the portal. For example, setup activities that require use of the friendly name include the following:

- Configure ArcGIS Web Adaptor with your portal.
- Federate an ArcGIS Server site with your portal.

- Add Portal for ArcGIS to your organization's reverse proxy server. If you're not using a reverse proxy server, it's recommended that you assign a friendly name to the machine hosting ArcGIS Web Adaptor.

⚠ Caution:

If you configure a friendly DNS name after setting up your portal, existing items in the portal may become unusable, as they will include the nonfriendly name. You'll need to manually re-create each item to use them again.

SSL certificates

Portal for ArcGIS is configured with a self-signed server certificate, which allows you to do initial testing of the portal and helps you quickly verify that your installation was successful. You must request a certificate from a trusted certificate authority (CA) and configure the portal to use it. The certificate can be signed by a corporate (internal) or commercial CA.

You must configure each applicable ArcGIS component in your organization with a certificate from a corporate or commercial CA. Common examples include ArcGIS Web Adaptor and ArcGIS Server. For example, ArcGIS Server includes a configured self-signed certificate. If you'll be federating the ArcGIS Server site with your portal, it's very important that you request a CA-signed certificate and configure the ArcGIS Server site and web adaptor to use it.

For more information, see Security best practices.

ArcGIS Web Adaptor

ArcGIS Web Adaptor is an optional component of an ArcGIS Enterprise deployment that allows you to integrate your portal with your existing web server and organization's security mechanisms. ArcGIS Web Adaptor is required when configuring web-tier authentication, such as Integrated Windows Authentication (IWA), basic authentication via Lightweight Directory Access Protocol (LDAP), or client certificate authentication. ArcGIS Web Adaptor can also be integrated within a network path that includes other reverse proxy or load balancer appliances.

For more information about ArcGIS Web Adaptor, how it affects the ArcGIS Enterprise organization URL, and the use of third-party solutions, see the following topics:

- Use ArcGIS Web Adaptor
- Organization URL
- Integrate your portal with a reverse proxy or load balancer

Supported web browsers

For the best performance in the portal website, use the latest versions of the browsers listed below. The website leverages the local storage capabilities (similar to cookies) of the browser. If this storage is disabled, the site will not function properly. To learn how to enable local storage, consult the browser's documentation.

- Google Chrome version 122 and later
- Microsoft Edge version 122 and later
- Mozilla Firefox version 125 and later
- Mozilla Firefox version 115 (ESR)
- Safari version 16 and later

*Scene Viewer and scene-based apps have their own browser requirements. Some of the ArcGIS apps also have their own requirements. See each app's documentation for details.

External access

If you'll be using services provided by Esri, such as basemaps, ArcGIS Living Atlas of the World content, and data from ArcGIS Online, the machine hosting Portal for ArcGIS must have access to the internet. If your portal will not have access to the internet, you'll need to perform some additional configuration steps to ensure that your portal is pointing to local resources. For instructions, see Configure a disconnected deployment.

The machine hosting Portal for ArcGIS must also have access to the internet to use distributed collaboration with an ArcGIS Online organization.

Supported virtualization environments and cloud platforms

Virtualization and cloud environment support is the same for all components of a base ArcGIS Enterprise deployment. See ArcGIS Enterprise on cloud platforms and Supported virtualization environments in ArcGIS Enterprise system requirements for details.

Coordinate system files

You may require an additional coordinate system file on the Portal for ArcGIS machines. See Coordinate system requirements for more information.

ArcGIS Server 11.4 system requirements

The system and hardware requirements to run ArcGIS Server are listed below.

It's recommended that you review the deprecation notice to determine whether your hardware and software components are still compatible with the current ArcGIS version.

ArcGIS Notebook Server has additional requirements. See ArcGIS Notebook Server system requirements.

Note:
ArcGIS Enterprise components require the Microsoft Visual C++ 2015–2022 Redistributable (x64) minimum version 14.38.33130. Obtain the Microsoft Visual C++ Redistributable for Visual Studio 2015–2022 file from the Microsoft site.

If the required Visual C++ Redistributable is not already installed, running the ArcGIS Server `setup.exe` file will install it. Running the ArcGIS Server `setup.msi` file will not install it. Therefore, to run the ArcGIS Server `setup.msi` file, the Microsoft Visual C++ 2015 - 2022 Redistributable must already be installed.

Microsoft Windows operating system requirements

The following 64-bit operating systems satisfy the minimum operating system requirements.

Supported operating system	Latest update or service pack tested
Windows Server 2022 Standard and Datacenter	September 2024 update
Windows Server 2019 Standard and Datacenter	September 2024 update
Windows Server 2016 Standard and Datacenter	September 2024 update

Development environments

Supported operating system	Latest update or service pack tested
Windows 11 Pro and Enterprise	September 2024 update

Note:
- Prior and future updates or service packs for these operating system versions are supported unless otherwise stated. The operating system version and updates must also be supported by the operating system provider.
- ArcGIS is only supported on 64-bit CPUs with x86-64 architecture.
- The Desktop Experience option is required on all versions of Windows Server.
- Windows 11 is supported for basic testing and application development use only.
- Machines with an underscore (_) in their names are not supported. Several widely used internet host name specifications have designated the underscore character as nonstandard. Although Microsoft Windows allows you to use the underscore in a machine name, it can cause problems when you interact with other servers and platforms. For this reason, the installation will not proceed on servers that have an underscore in the host name.
- You cannot install on domain controllers. Installing on a domain controller may adversely affect functionality.

Hardware requirements

The minimum RAM requirement for ArcGIS GIS Server, ArcGIS GeoEvent Server, ArcGIS Image Server, or ArcGIS Knowledge Server is 8 GB per machine.

For a production environment, hardware requirements are not listed because the user and business needs of the software may vary. These requirements must be considered in determining hardware needs to meet performance and scalability expectations.

ArcGIS Server requires a minimum of 10 GB of available disk space.

Firewall settings

ArcGIS Server communicates on specific ports. You must open these ports on your firewall before installing the software. For more information on the ports ArcGIS Server requires for communication, see Ports used by ArcGIS Server.

Domain name system (DNS) and fully qualified domain name (FQDN) recommendations

If you'll be federating your site with an ArcGIS Enterprise portal, it's recommended that you configure your organization's domain name system (DNS) to include fully qualified domain name (FQDN) entries for each site you intend to federate with the portal. Portal for ArcGIS will request the FQDN of each site when you federate.

SSL certificates

ArcGIS Server comes configured with a self-signed certificate, which allows you to do initial testing of the ArcGIS Server site and helps you quickly verify that your installation was successful. You must request a certificate from a trusted certificate authority (CA) and configure the ArcGIS Server site to use it. This could be a domain certificate issued by your organization or a CA-signed certificate.

Like ArcGIS Server, Portal for ArcGIS also comes with a configured self-signed certificate. If you'll be federating an ArcGIS Server site with an ArcGIS Enterprise portal, you should request a certificate from a trusted CA and configure the portal to use it. For more information, see Security best practices.

.NET 8 requirement for .NET Extension Support

The .NET Extension Support feature, supporting .NET-based server object extensions (SOEs) and server object interceptors (SOIs), requires .NET 8. If .NET 8 is not found, the .NET Extension Support feature will not be available for installation.

If you use .NET-based SOEs or SOIs, you must install either .NET Desktop Runtime 8 (x64) or .NET SDK 8 (x64) prior to installing ArcGIS Server.

Geoprocessing requirements

If you use the ArcGIS Pro-based geoprocessing tools that are installed with ArcGIS Server, see ArcGIS Server and ArcPy for where to find the Python 3 files.

Page file size requirements

Ensure that a sufficient page file size is configured for the ArcGIS Server machine. You should consult with your IT administrator or follow best practices from Microsoft.

Supported web browsers

ArcGIS Server Manager requires one of the following web browsers:

- Google Chrome version 122 and later
- Microsoft Edge version 122 and later
- Mozilla Firefox version 125 and later
- Mozilla Firefox version 115 (ESR)
- Safari version 16 and later

Supported virtualization environments and cloud platforms

Virtualization and cloud environment support is the same for all components of a base ArcGIS Enterprise deployment. See ArcGIS Enterprise on cloud platforms and Supported virtualization environments in the ArcGIS Enterprise system requirements for details.

Supported databases and data warehouses

See the requirements for each database that can be registered with ArcGIS Server sites:

- Dameng
- IBM Db2
- Microsoft SQL Server
- Oracle
- PostgreSQL
- SAP HANA
- Teradata Vantage requirements
- Databases and data warehouses in the cloud

Most of the databases listed above require you to install and configure an ODBC client on the ArcGIS Server machines to connect. For that reason, you must consider the operating systems supported for the ODBC drivers when deciding which operating system to use for your ArcGIS Server machines; the operating system must be supported for both ArcGIS Server and the ODBC driver.

Software version requirements

If the ArcGIS Server site acts as the hosting server for an ArcGIS Enterprise deployment, the ArcGIS Server software version must be the same as the other base ArcGIS Enterprise components.

Note:
ArcGIS Server 11.0 and later cannot be installed on the same machine as any version of ArcMap, ArcReader, and ArcGIS Engine clients.

Coordinate system files

Stand-alone and hosting server sites may require additional coordinate system files. See Coordinate system requirements for more information.

ArcGIS Web Adaptor 11.4 system requirements

The system and hardware requirements to run ArcGIS Web Adaptor are listed below. For information about earlier versions, see Archives.

Review the deprecation notice to determine whether your hardware and software are still compatible with the current ArcGIS version.

ArcGIS Web Adaptor (IIS)

ArcGIS Web Adaptor (IIS) can be installed on a Microsoft Windows machine and integrated with an Internet Information Server (IIS) web server.

Microsoft IIS required components

Microsoft Internet Information Server (IIS) must be enabled along with specific IIS components. The setup will not proceed if IIS is not detected and specific IIS components enabled.

If you have IIS 10 installed but are missing required IIS components, the setup will display the **IIS requirements verification** dialog box. This gives you the option to allow the installation to automatically enable any missing required IIS components. To do so, click **I agree**.

Note:
If you're going to perform a silent installation of ArcGIS Web Adaptor, all required IIS components must be enabled manually. The setup will not automatically enable missing IIS components when you perform a silent installation.

To learn how to enable IIS on your operating system and optionally enable the missing IIS 10 components manually, see Manually enable IIS and required IIS components.

Caution:
To successfully install and configure ArcGIS Web Adaptor, you must enable IIS and the required components before installing the prerequisites specified in the next section.

Prerequisites

The following prerequisites must be installed on the machine where ArcGIS Web Adaptor (IIS) will be installed:

- Microsoft Web Deploy 4.0
- ASP.NET Core Runtime - Windows Hosting Bundle 8.x

Note:
You must install the ASP.NET Core Runtime - Windows Hosting Bundle, which includes the .NET Runtime and IIS support.

Caution:
If you installed the ASP.NET Core Runtime - Windows Hosting Bundle before enabling IIS and the required components, you must repair the bundle installation using the bundle installer.

Supported web servers

The IIS web server versions available on supported Windows operating systems are supported for use with ArcGIS Web Adaptor (IIS).

Updates on these operating systems and web servers are supported unless otherwise stated. The operating system version and updates must also be supported by the application or web server provider.

Maximum installation instances

The maximum number of instances of ArcGIS Web Adaptor (IIS) you can install on a single machine depends on how you install the first ArcGIS Web Adaptor instance. If you install the first instance using the ArcGIS Web Adaptor setup program, you can install a maximum of 51 instances of the same version of ArcGIS Web Adaptor on a single machine. However, if you install the first instance using ArcGIS Enterprise Builder, you can install a maximum of 50 instances of the same version or ArcGIS Web Adaptor on a single machine. If more instances are required, install them on a separate machine.

If you have earlier versions installed on the machine, you are not required to uninstall them. For example, you can have 5 instances of ArcGIS Web Adaptor at an earlier release and 51 instances of ArcGIS Web Adaptor 11.4 installed on the same machine. The maximum value only applies to instances of the same software version.

Hardware requirements

ArcGIS Web Adaptor (IIS) requires a minimum of 8 GB of memory, with more potentially required depending on the number of ArcGIS Web Adaptor instances installed and the number and size of the requests received.

For hardware considerations when upgrading to ArcGIS Web Adaptor 11.4, see Upgrade ArcGIS Web Adaptor.

ArcGIS Web Adaptor (Java Platform)

ArcGIS Web Adaptor (Java Platform) can be installed on a Windows or Linux machine and integrated with an application or web server.

Supported application and web servers

The following application and web servers are supported:

- Apache Tomcat 9.0.19
- GlassFish 5.1
- IBM WebSphere 8.5.5.9, 9, and Liberty
- JBoss Enterprise Application Platform 7
- Oracle WebLogic 12c R2 and 14c

Updates on these application or web servers are supported unless otherwise stated.

Java support

ArcGIS Web Adaptor (Java Platform) can support Java 8, Java 11, and Java 17 based on the Java compliance level on the application server where the web adaptor is deployed.

Supported Windows operating systems

The following Windows operating systems (OS) are supported for ArcGIS Web Adaptor:

Supported operating system	Latest update or service pack tested
Windows Server 2022 Standard and Datacenter	September 2024 update
Windows Server 2019 Standard and Datacenter	September 2024 update
Windows Server 2016 Standard and Datacenter	September 2024 update

Supported operating system	Latest update or service pack tested
Windows 11 Pro and Enterprise	September 2024 update

Note:

- Prior and future updates or service packs to these OS versions are supported unless otherwise stated. The OS version and updates must also be supported by the OS provider.
- The Desktop Experience option is required on all versions of Windows Server.
- ArcGIS is only supported on 64-bit CPUs with x86-64 architecture.
- Windows 11 is supported for basic testing and application development use only.

Supported web browsers

The Web Adaptor Configuration wizard supports the following web browsers:

- Google Chrome version 122 and later
- Microsoft Edge version 122 and later
- Mozilla Firefox version 125 and later
- Mozilla Firefox version 115 (ESR)
- Safari version 16 and later

Supported virtualization environments and cloud platforms

Virtualization and cloud environment support is the same for all components of a base ArcGIS Enterprise deployment. See ArcGIS Enterprise on cloud platforms and Supported virtualization environments in ArcGIS Enterprise system requirements for details.

ArcGIS Data Store 11.4 system requirements

The system and hardware requirements that are required to run ArcGIS Data Store are listed below. ArcGIS Data Store is a component of ArcGIS Enterprise; they both support the same operating systems and browsers.

Each type of ArcGIS Data Store requires different amounts of memory, disk space, and other resources. Ensure your machines meet the requirements for each. It is not recommended that you put more than one data store type on the same machine, but if you do, ensure your machine meets the combined requirements for all data stores and other software you have installed on the machine. Be aware, though, that resource contention on the machines could render one or more of the data stores inoperable.

It's recommended that you review the deprecation notice to determine if your hardware and software components are still compatible with the latest version of ArcGIS Data Store.

Note:
ArcGIS Enterprise components require the Microsoft Visual C++ 2015–2022 Redistributable (x64) minimum version 14.38.33130. Obtain the Microsoft Visual C++ Redistributable for Visual Studio 2015–2022 file from the Microsoft site.

If the required Visual C++ Redistributable is not installed, running the ArcGIS Data Store `setup.exe` file will install it. Running the ArcGIS Data Store `setup.msi` file will not install the Microsoft Visual C++ Redistributable (x64). Therefore, to run the ArcGIS Data Store `setup.msi`, the Microsoft Visual C++ 2015 - 2022 Redistributable (x64) must already be installed.

Windows operating system requirements

The following 64-bit operating systems satisfy the minimum operating system requirements.

Supported operating system	Latest update or service pack tested
Windows Server 2022 Standard and Datacenter	September 2024 update
Windows Server 2019 Standard and Datacenter	September 2024 update
Windows Server 2016 Standard and Datacenter	September 2024 update

Development environments

Supported operating system	Latest update or service pack tested
Windows 11 Pro and Enterprise	September 2024 update

Note:

- Prior and future updates or service packs for these operating system versions are supported unless otherwise stated. The operating system version and updates must also be supported by the operating system provider.
- ArcGIS is only supported on 64-bit CPUs with x86-64 architecture.
- The Desktop Experience option is required on all versions of Windows Server.
- Windows 11 is supported for basic testing and application development use only.
- Machines with an underscore (_) in their names are not supported. Several widely used internet host name specifications have designated the underscore character as nonstandard. Although Microsoft Windows allows you to use the underscore in a machine name, it can cause problems when you interact with other servers and platforms. For this reason, the installation will not proceed on servers that have an underscore in the host name.
- You cannot install on domain controllers. Installing on a domain controller may adversely affect functionality.

Disk space requirements

To install and configure ArcGIS Data Store requires a minimum of 13 GB of available disk space on the system drive. This is the minimum disk space requirement for a machine with one empty data store type; it does not take into account all the data you will store in the data store or backup files that might be stored on the machine. Given this requirement, plan to install ArcGIS Data Store on machines with large quantities of available disk space.

Note:

Monitor your data store logs so you are aware when a machine begins to run out of disk space. When a relational data store, spatiotemporal big data store, or object store machine contains less than 10 GB of free disk space, ArcGIS Data Store begins logging warnings that you are running out of disk space. If you configure email notifications for the portal, the administrative contacts in that list will receive an email when the machines get close to running out of disk space. Once the disk drive contains less than 5 GB of free space, the relational and spatiotemporal big data stores and the object store are placed in read-only mode, and the graph store shuts down. At this point, administrative contacts will receive another email indicating the data store is in read-only mode or shut down.

To determine the amount of disk space needed on a dedicated ArcGIS Data Store machine, take all of the following into consideration:

- The software installation uses 2.8 GB of disk space.
- Each data store uses an additional amount of space when created and still empty:
  - Spatiotemporal big data store = 200 MB
  - Tile cache data store = 1 MB
  - Graph store = 100 MB
  - Object store = 500 MB
  - Relational data store = 2.5 GB*

  *An empty relational data store uses up to 2.5 GB of disk space over time, to support high availability and a reliable backup policy. Upon configuration of the relational data store, approximately 200 MB of disk space is used. The amount of disk space used by the empty relational data store will grow by about 200 MB per hour over

the course of 11 hours until settling at 2.5 GB at that time. Data stored in the system during use is in addition to this baseline storage requirement.

- A minimum of 20 percent of the disk space on each machine must be available for temporary files when configuring or upgrading a spatiotemporal big data store.
- You must estimate the amount of disk space needed for the data stored in the data stores. The numbers above are the minimum for empty data stores. That amount of free disk space allows you to create the data store. Additional space is needed to use it.
- Backup files stored on the data store machine also consume disk space. If you do not configure backups to be written to a shared location or cloud storage, you must plan for this additional use of disk space.

Memory requirements

The minimum memory required to configure a single, empty ArcGIS Data Store on a machine varies by type.

Note:
Meeting the minimum free memory requirements ensures the data store will start. Once in use, additional memory is required.

The following minimum memory requirements assume you install each type of ArcGIS Data Store on its own machine; no other data store type or ArcGIS Enterprise component is installed on the machine. Amounts listed reflect the amount of free memory that must be available on the machine before installing ArcGIS Data Store and configuring a data store.

- Relational data store = 8 GB
- Spatiotemporal big data store = 16 GB
- Graph store = 32 GB
- Object store = 16 GB

Note:
For better performance, the object store requires a minimum of 32 GB of free memory.

Minimum CPU architecture requirements for graph stores

The processors in the machines where you install the graph store must use the Advanced Vector Extension 2 (AVX2) instruction set architecture.

Firewall settings

ArcGIS Data Store uses specific ports to communicate with the portal, the hosting server, and machines inside the data store.

See Ports used by ArcGIS Data Store for information on the ports you must open in the firewall and on machines to allow this communication to take place.

Supported web browsers

ArcGIS Data Store administration resources and the Data Store Configuration wizard require one of the following web browsers:

- Google Chrome version 122 and later
- Microsoft Edge version 122 and later
- Mozilla Firefox version 125 and later
- Mozilla Firefox version 115 (ESR)
- Safari version 16 and later

Supported virtualization environments and cloud platforms

Virtualization and cloud environment support is the same for all components of a base ArcGIS Enterprise deployment. See ArcGIS Enterprise on cloud platforms and Supported virtualization environments in ArcGIS Enterprise system requirements for details.

ArcGIS GeoEvent Server 11.4 system requirements

The operating system and hardware requirements to run ArcGIS GeoEvent Server are listed below.

Operating system requirements

ArcGIS GeoEvent Server has the same operating system requirements as the ArcGIS Server software component in ArcGIS Enterprise.

For more information, see ArcGIS Server 11.4 system requirements.

Hardware requirements

The ingestion and analysis of real-time data can be machine resource intensive. The allocation and consumption of resources can be highly variable depending on the configuration. Review the recommendations below to ensure a successful deployment of GeoEvent Server.

- It is recommended that production systems have at least 16 GB of the latest generation of RAM (such as DDR4) to optimize event record throughput and processing. Use cases that may require additional RAM include the following:
  - Using a large volume of geofences
  - Using highly complex geofences (polygons with thousands of vertices)
  - Monitoring for continuous incidents
- GeoEvent Server should be deployed on machines with at least 4 physical cores and 8 logical/virtual processors. Production systems will likely require 8 physical cores to achieve adequate performance.
- A higher network bandwidth connection (such as 1 GB or 10 GB) that supports higher input/output operations per second (IOPS) is recommended to reduce latency in receiving and sending event data.

Many production systems may require additional CPU cores and RAM.

GeoEvent Server requires a minimum disk space identical to and in addition to the 10 GB recommended by ArcGIS Server. Additional disk space for each configured input and output is required, as discussed below. The amount of disk space required varies depending on the number of input and output connectors being used.

An instance of GeoEvent Server configured with a single input or output (including stream services) will create a single Kafka topic in the ArcGIS GeoEvent Gateway.

- Each topic will have, by default, three partitions.
- Each topic partition, by default, can grow to 400 MB.
- Each input or output, therefore, requires a maximum of 1.2 GB of disk space.

The additional disk space for each input and output is necessary to account for the on-disk event queues used by the ArcGIS GeoEvent Gateway.

For more information, see the following:

Deploy GeoEvent Server on virtualized hardware
ArcGIS Server licensing roles
ArcGIS Enterprise Builder 11.4 system requirements
Kafka on-disk storage
ZooKeeper on-disk storage
Change the location of Kafka and ZooKeeper data files

Software requirements

ArcGIS Server must be installed and configured on the machine before installing GeoEvent Server.

Supported web browsers

GeoEvent Server requires one of the following web browsers to be installed:

- Google Chrome version 122 and later
- Microsoft Edge version 122 and later
- Mozilla Firefox version 125 and later
- Mozilla Firefox version 115 (ESR)
- Safari version 16 and later

ArcGIS Notebook Server 11.4 system requirements

ArcGIS Notebook Server is an ArcGIS Server role, licensed and configured for the purpose of hosting ArcGIS Notebooks. The server role uses Docker containers to host and run notebooks and provides an isolated and secure environment for the notebooks without interfering with operations of the host operating system.

Learn more about Mirantis Container Runtime and Docker Engine from binaries and their role in ArcGIS Notebook Server.

The system and hardware requirements to run ArcGIS Notebook Server are listed below.

Hardware requirements

An ArcGIS Notebook Server node using Windows containers requires, at minimum, a 4-core processor, 32 GB of RAM, and 100 GB of disk space.

An ArcGIS Notebook Server node using Linux containers requires, at minimum, a 4-core processor, 16 GB of RAM, and 75 GB of disk space.

For a production environment, hardware requirements are not listed because the user and business needs of the software may vary. These requirements must be considered in determining hardware needs to meet performance and scalability expectations.

Firewall settings

ArcGIS Notebook Server communicates on port 11443. You'll need to open this port on your firewall before installing the software.

To communicate with the ArcGIS Enterprise portal with which it's federated, ArcGIS Notebook Server needs access to port 7443 on the portal machine.

Note:
This component is only one part of an ArcGIS Enterprise deployment. See ArcGIS Enterprise system requirements for a diagram and links to information about the ports needed to communicate with other components in an Enterprise portal.

Operating system requirements

The following 64-bit operating systems satisfy the operating system requirements. Support is not provided for 32-bit operating systems; the setup will only proceed if the operating system is 64 bit.

Note:
Windows Server 2022 is the only operating system that is supported for ArcGIS Notebook Server and Windows containers.

Mirantis Container Runtime for ArcGIS Notebook Server (Windows containers)

ArcGIS Notebook Server with Windows containers and Mirantis Container Runtime supports the following operating systems:

Operating system	Docker edition	Notebook runtime (Container) image type	Additional requirements
Windows Server 2022 Standard and Datacenter	Mirantis Container Runtime version 23.0.14 or later	Windows	Hyper-V is optional. There are limitations to the maximum number of containers that can run with Hyper-V isolation on Windows Server 2022 Standard. See the Windows FAQ for more information.

Docker Engine from binaries (Windows containers)

ArcGIS Notebook Server with Windows containers installed with Docker Engine from binaries supports the following operating systems:

Operating system	Docker edition	Notebook runtime (Container) image type	Additional requirements
Windows Server 2022 Standard and Datacenter	Docker Engine - Community version 27.1.2 or later	Windows	Optionally, you can install Hyper-V. **Note:** There are limitations to the maximum number of containers that can run with Hyper-V isolation on Windows Server 2022 Standard. See the Windows FAQ for more information.

Additional OS information

If you are upgrading ArcGIS Notebook Server on a machine currently running Windows Server 2019, you must also upgrade your operating system to Windows Server 2022. See Upgrade ArcGIS Notebook Server for steps.

Machines with an underscore in the name are not supported. The setup will not proceed if an underscore is detected in the machine name.

The operating system of your ArcGIS Notebook Server machines can be different from those of the other machines in your ArcGIS Enterprise deployment. The most common scenario for this is to deploy ArcGIS Notebook Server on Linux machines while the rest of the ArcGIS Enterprise deployment is on Microsoft Windows machines.

Several internet host name specifications have designated the underscore character as nonstandard. Although Microsoft Windows allows the underscore in a machine name, it can still cause problems when you interact with other servers and platforms. For this reason, ArcGIS Notebook Server will not install on servers that have an underscore in the host name.

ArcGIS Notebook Server is not supported on domain controllers. Installing ArcGIS Notebook Server on a domain controller may adversely affect functionality.

Prior and future updates or service packs on these operating system versions are supported unless otherwise stated. The operating system version and updates must also be supported by the operating system provider.

Cloud implementations

You can deploy ArcGIS Notebook Server in the cloud. Cloud platforms allow you to add capabilities to your ArcGIS Notebook Server deployment, including resizing computer capacity and automatically distributing application network traffic across multiple instances for better performance.

Esri images

The ArcGIS Enterprise Microsoft Azure image provided by Esri includes an installation of ArcGIS Notebook Server. You can use ArcGIS Enterprise Cloud Builder for Microsoft Azure, but you must manually install Mirantis Container Runtime or Docker Engine from binaries and configure them after installation, as Cloud Builder will not perform these steps.

Note:
Esri Technical Support is available for Esri software on cloud platforms. However, support may not be provided for Microsoft Azure machine images that have been modified beyond standard Esri or operating system updates. It's recommended that you do not modify software released by Esri.

If you require a different configuration, see the next section.

Other images

To deploy ArcGIS Notebook Server on a different operating system, different machine type, or different cloud platform from what is provided by Esri, you must install and configure the software on an instance offered by your cloud provider. The instance must meet the hardware, software, firewall, SSL certificate, and domain name requirements described on this page. Keep in mind the following if you install and configure your own cloud instance for ArcGIS Notebook Server:

- Deploying ArcGIS Notebook Server on Windows machines in Amazon Web Services is not supported. It's recommended that you deploy the software on Ubuntu machines if you use Amazon Web Services.
- You can deploy ArcGIS Notebook Server on Azure virtual machines running either a supported Windows or Linux platform.
- If you deploy your own Microsoft Azure Windows instance, the Microsoft Server 2022 with Containers image is recommended.

SSL certificates

ArcGIS Notebook Server is preconfigured with a self-signed certificate that allows the server to be initially tested and to help you quickly verify that your installation was successful.

You must request a certificate from a trusted certificate authority (CA) and configure ArcGIS Notebook Server to use it. This can be a domain certificate issued by your organization or a CA-signed certificate. The certificate must have a Subject Alternative Name (SAN) configured, or ArcGIS Notebook Server will not work properly.

Note:
Certificates created using IIS do not have the option to include a SAN. Use the script in Create a domain certificate, which includes a SAN, with the certificate created.

Portal for ArcGIS also includes a preconfigured self-signed certificate. Because you'll federate an ArcGIS Notebook Server site with your portal, request a certificate from a trusted CA and configure the portal to use it.

Software prerequisites

Before installing ArcGIS Notebook Server, you must have at least a base deployment of ArcGIS Enterprise ready. During the setup process, you will federate your new ArcGIS Notebook Server site with your ArcGIS Enterprise portal. ArcGIS Notebook Server can be installed on a machine that has other ArcGIS Enterprise software (of the same version) installed.

- ArcGIS Notebook Server on Windows containers requires Mirantis Container Runtime or Docker Engine from binaries to be installed. See Install Mirantis Container Runtime for ArcGIS Notebook Server (Windows containers) or Install Docker Engine from binaries for more information.
- Starting at 10.8, instances of ArcGIS Web Adaptor running on IIS web servers enable the WebSocket protocol by default. No action is needed. Previously, enabling WebSocket was an essential part of ArcGIS Notebook Server installation, as the protocol is required for notebooks to work with the web adaptor.

Domain name system and fully qualified domain name recommendations

It's recommended that you configure your organization's domain name system (DNS) to include fully qualified domain name (FQDN) entries for the ArcGIS Notebook Server site. Portal for ArcGIS will request the FQDN of the site when you federate.

Supported web browsers

To use the ArcGIS Notebook Server Configuration Wizard, as well as the notebook editor, the following web browsers are supported:

- Google Chrome version 122 and later
- Microsoft Edge version 122 and later
- Mozilla Firefox version 125 and later
- Mozilla Firefox version 115 (ESR)
- Safari version 16 and later

ArcGIS Mission Server 11.4 system requirements

The system and hardware requirements for ArcGIS Mission Server are listed below.

Hardware requirements

The minimum RAM requirement for ArcGIS Mission Server is 8 GB per machine.

For a production environment, minimum hardware requirements are not listed because the user and business needs of the software may vary. These requirements must be considered in determining hardware needs to meet performance and scalability expectations.

Port availability

Verify that ports 20443, 20301, and 20160 are available on the ArcGIS Mission Server machine. Ports 20443 and 20301 must be reachable by ArcGIS Web Adaptor (if used) or external clients. If a firewall is in place between ArcGIS Web Adaptor or external clients, open ports 20443 and 20301 in the firewall. If ArcGIS Mission Server is configured to be highly available, ensure that communication between ArcGIS Mission Server machines is possible via port 20160. Additionally, ensure Mission Server can communicate to ArcGIS Portal and ArcGIS Server via ports 7443 and 6443 respectively.

Note:
This component is only one part of an ArcGIS Enterprise deployment. See ArcGIS Enterprise system requirements for a diagram and links to information about the ports needed to communicate with other components in an Enterprise portal.

Windows operating system requirements

Several internet host name specifications have designated the underscore character as nonstandard. Although Microsoft Windows allows the underscore in a machine name, it can still cause problems when you interact with other servers and platforms. For this reason, ArcGIS Mission Server will not install on servers that have an underscore in the host name.

The operating system of your ArcGIS Mission Server machines can be different from those of the other machines in your ArcGIS Enterprise deployment.

ArcGIS Mission Server is not supported on domain controllers. Installing ArcGIS Mission Server on a domain controller may adversely affect functionality.

The following 64-bit operating systems satisfy the minimum operating system requirements. Support is not provided for 32-bit operating systems; the setup will only proceed if the operating system is 64 bit.

Supported operating system	Latest update or service pack tested
Windows Server 2022 Standard and Datacenter	September 2024 update
Windows Server 2019 Standard and Datacenter	September 2024 update
Windows Server 2016 Standard and Datacenter	September 2024 update

Prior and future updates or service packs on these operating system versions are supported unless otherwise stated. The operating system version and updates must also be supported by the operating system provider.

Cloud implementation

ArcGIS Mission Server cloud implementation is currently supported on Amazon Web Services (AWS) and Microsoft Azure.

SSL certificates

ArcGIS Mission Server is preconfigured with a self-signed certificate that allows the server to be initially tested and to help you quickly verify that your installation was successful.

You must request a certificate from a trusted certificate authority (CA) and configure ArcGIS Mission Server to use it. This can be a domain certificate issued by your organization or a CA-signed certificate. The certificate must have a Subject Alternative Name (SAN) configured or ArcGIS Mission Server will not work properly.

Note:
Certificates created using IIS do not have the option to include a SAN. Use the script in Create a domain certificate, which includes a SAN, with the certificate created.

Portal for ArcGIS also includes a preconfigured self-signed certificate. Because you'll federate an ArcGIS Mission Server site with your portal, request a certificate from a trusted CA and configure the portal to use it.

Software prerequisites

ArcGIS Mission Server can be installed on a separate machine or on the same machine as other ArcGIS Enterprise components. All software components must use the same software version whether you're installing for the first time or upgrading from an earlier version.

As per the requirements of the base deployment, the ArcGIS Data Store configured as a relational store is required. When setting up an ArcGIS Mission Server site, you must federate it with your portal. A message appears will appear if no data store is detected. During ArcGIS Mission Server set up, you will federate your new ArcGIS Mission Server site with your ArcGIS Enterprise portal.

During ArcGIS Mission Server set up, you will federate your new ArcGIS Mission Server site with your Enterprise portal.

Note:
Whether you are installing a new deployment or upgrading from an earlier version, ensure that all your software components—the ArcGIS Enterprise portal, an ArcGIS Server site, and ArcGIS Data Store—are installed and running ArcGIS Enterprise 11.4.

Domain name system and fully qualified domain name recommendations

It's recommended that you configure your organization's Domain Name System (DNS) to include Fully Qualified Domain Name (FQDN) entries for the ArcGIS Mission Server site. The ArcGIS Enterprise portal will request the FQDN of your server site when you federate it.

Supported web browsers

The ArcGIS Mission Server installation wizard is supported by all web browsers including but not limited to the following:

- Google Chrome version 122 and later

- Microsoft Edge version 122 and later
- Mozilla Firefox version 125 and later
- Mozilla Firefox version 115 (ESR)
- Safari version 16 and later

ArcGIS Video Server 11.4 system requirements

For a production environment, the user and business needs for the software may vary. These requirements must be considered in determining hardware needs to meet performance and scalability expectations. Some minimum requirements are listed below. Minimum requirements will support the application, but may not perform well.

Hardware requirements

Item	Supported and recommended
CPU	Minimum: 2 cores, simultaneous multithreading Simultaneous multithreading or hyperthreading of CPUs typically features 2 threads per core. A multithreaded 2-core CPU will have 4 threads available for processing, while a multithreaded 6-core CPU will have 12 threads available for processing.
Storage	Minimum: 200 GB of free space*
Memory/RAM	Minimum: 8 GB
Dedicated (not shared) graphics memory	Minimum: 6 GB or more If you're using a notebook computer with an integrated GPU, consider increasing the system RAM to compensate for the use of shared memory.

*Storage (link to Video Storage section below) on the Video Server will depend on how this is configured

GPU requirements

It is highly recommended that you install ArcGIS Video Server in an NVIDIA GPU environment that supports NVENC (encoding) and NVDEC (decoding) for optimal publishing, encoding, use, and dissemination of video services. Driver version 531.61 or higher is required. See the NVIDIA support matrix for a complete list of GPU cards that support video encoding and decoding.

Video Server can be installed on a machine without GPU, but certain functionality will be lost and streaming performance will be affected. This includes not having the option to select output resolutions when publishing on-demand video, inability to publish video files encoded with non-h.265 and h.264 codecs, cannot rotate video in landscape mode to portrait mode, and latency or buffering when viewing video services

Item	Supported and recommended
GPU type	NVIDIA GPU with CUDA compute capability 12.1 or above. See the list of CUDA-enabled cards to determine compute capability of a GPU.
GPU driver	NVIDIA GPU drivers: version 531.61 or later is required.
Dedicated graphics memory	Minimum: 6 GB or more.

Note:
An out-of-date GPU driver may cause encoding and decoding issues or for the server to report that it has no GPU. Verify that you have up-to-date GPU drivers directly provided by NVIDIA.

Support and recommendations

There are numerous areas of consideration when publishing video that range from supported video file formats to metadata telemetry requirements. Each of these considerations will impact how the video is published and stored.

Supported video file formats

The supported video formats, including high resolution 4K formats, are listed in the following table:

Description	Extension
MOV file	.mov
MPEG-2 Transport Stream	.ts
MPEG-2 Program Stream	.ps
MPEG file	.mpg
MPEG-2 file	.mpg2
MPEG-2 file	.mp2
MPEG file	.mpeg
VLC (mpeg2)	.mpeg2
MPEG-4 Movie	.mp4
MPEG-4 file	.mpg4
H264 Video file	.h264
H265 Video file	.h265
VLC Media file (mpeg4)	.mpeg4
VLC Media file (vob)	.vob

Supported video codec formats

The supported video codec formats include h.264 and h.265, which hls natively supports and does not require GPU to do encoding along with .av1, .mpeg1, .mpeg2, .mpeg4, .wmv, and .mjpeg.

Metadata telemetry requirements

To compute and display metadata telemetry information from the video onto a map, the below metadata fields are required. Videos that contain only a subset of the metadata will still display partial telemetry information.

For example, if the video file or corresponding side car metadata files only contain the Precision Time Stamp, Sensor Latitude, and Sensor Longitude fields, the location of the sensor will be displayed on the map, but the footprint of the video frames will not be displayed, and some functionality such as capturing a video frame will not be supported

Field Name	Description	Units	Telemetry
SensorLatitude	Sensor latitude based on WGS84 ellipsoid that ranges -90.0 to 90.0	Degrees	Sensor Location - 3D Sensor Trail - 3D Only one timestamp field is required.
SensorLongitude	Sensor longitude based on WGS84 ellipsoid that ranges -180.0 to 180.0	Degrees	
TimeStamp	Date and Time stamp with optional milliseconds	String in format: YYYY-MM-DD HH-MM-SS.zzz	
UnixTimeStamp	Coordinated Universal Time (UTC)	Microseconds since 1970 (Unix epoch)	
SensorEllipsoidHeight	Sensor ellipsoid height as measured from the reference WGS84 ellipsoid	Meters	Sensor Location – 3D Sensor Trail – 3D Only one field is required for 3D locations.
SensorTrueAltitude	Altitude of sensor as measured from Mean Sea Level (MSL)	Meters	
PlatformHeading	Asset (platform) heading relative to True North, measured clockwise in the horizontal plane looking down that ranges 0.0 to 360.0	Degrees	
PlatformPitch	Asset (platform) pitch relative to horizontal plane with positive angles for nose above the horizontal plane	Degrees	Sensor Sight Line Frame Outline (Footprint) Frame Center (Footprint Centerpoint)
PlatformHeading	Asset (platform) roll angle relative to horizontal plane with positive angles for left wing above the horizontal plane	Degrees	
PlatformRoll	Asset (platform) roll angle relative to horizontal plane with positive angles for left wing above the horizontal plane.	Degrees	
SensorRelativeRoll	Relative roll angle of sensor to aircraft platform where top of image level is 0 degrees and positive angles are clockwise when looking from behind camera.	Degrees	
SensorRelativeElevation	Relative angle of sensor pointing direction to the platform horizontal plane where negative angles down	Degrees	
SensorRelativeAzimuth	Relative angle of sensor pointing direction to platform longitudinal axis as seen from platform that ranges 0.0 to 360.0	Degrees	
HorizontalFOV	Horizontal field of view of selected imaging sensor	Degrees	
VerticalFOV	Vertical field of view of selected imaging sensor	Degrees	

Note:
Fields in metadata file must reflect the Field Names above (Field Names are case, space, and dash insensitive). Field headers in metadata file can be matched to the Field Names using a field mapping file. Field Names are only supported in EN locale.

When the metadata is complete and accurate, the application will calculate the video frame corners, and the size, shape, and position of the video frame outline, which can then be displayed on a map. The 12 Field Names comprise the minimum metadata required to compute the transform between video and map, to display the video footprint on the map, and to enable other functionality.

Field mapping metadata

In the event the original metadata file does not contain the 12 field names, a field mapping CSV file can be created following the below schema, with a **Metadata Field Name** column ("Metadata") conveying the field names in the metadata file that would be matched to the expected **Video Server Field Names** ("Field Name") listed below. This CSV table must contain the two listed columns- "Field Name" for Video Server's expected metadata fields, and a "Metadata" column for the fields which need to be mapped. Once created, this field mapping file should be included in the upload along with the video file and corresponding metadata file.

Field Name
SensorLatitude
SensorLongitude
TimeStamp
SensorEllipsoidHeight
PlatformHeading
PlatformPitch
PlatformHeading
PlatformRoll
SensorRelativeRoll
SensorRelativeElevation
SensorRelativeAzimuth
HorizontalFOV
VerticalFOV

Time shifting metadata

For optimal metadata results, the video data and metadata should be time synchronous. If the time stamp linking the video and metadata are not accurately synchronized, the video footprint and sensor locations on the map will be offset from the view in the video player.

If the time shift is observable and consistent, a time shift csv file can be used to adjust the timing of the metadata to match the video. The csv should contain two columns labeled **ElapsedTime** (the time location in the video where the time shift occurs) and **TimeShift** (the amount of time offset in seconds). If the time shift between the video and metadata is inconsistent, you can list multiple positions in the video with the associated time shift in the csv file.

Once created, this time shift file would be included in the upload along with the video file and corresponding metadata file if applicable.

ElapsedTime	TimeShift
0.00:00:00 (days.hours:minutes:seconds)	0.00:00:00 (days.hours:minutes:seconds) (Video time in seconds relative to metadata. Use negative values if the video footprint lags.)

Video Storage

By default, ArcGIS Video Server stores all video and metadata files on the file system. Optionally, an organization can register an existing object data store to use as the output location of video and metadata.

During Video Server site creation, the config-store, directories, and logs locations can be specified. By default, these are all stored on the Video Server file system. The config-store can optionally be stored in a cloud store. The config-store contains a services and an uploads folder that store json files about the video uploaded and the output service created.

When a video is published, the video is uploaded to the Video Server file system or object store based on how it was configured. During the publishing process, if in a GPU environment and multiple output resolutions are selected, the uploaded video will be transcoded into additional resolutions and the output files are stored in the directories/arcgisvideoservices location. This will also be the location where the original uploaded video is also stored. The more output resolutions selected, the more storage the service requires to successfully and efficiently stream the service in each resolution.

The directories/arcgisvideouploads location stores the original video file based on the fileId created during upload. When using ArcGIS Excalibur to publish video services, the original uploaded video is deleted from this location as the original video will remain in the arcgisvideoservices location.

Windows operating system requirements

Several internet host name specifications have designated the underscore character as nonstandard. Although Microsoft Windows allows the underscore in a machine name, it can cause problems when you interact with other servers and platforms. For this reason, ArcGIS Video Server will not install on servers that have an underscore in the host name.

The operating system of your ArcGIS Video Server machines can be different from those of the other machines in your ArcGIS Enterprise deployment.

ArcGIS Video Server is not supported on domain controllers. Installing ArcGIS Video Server on a domain controller may adversely affect functionality.

The following 64-bit operating systems satisfy the minimum operating system requirements. Support is not provided for 32-bit operating systems; the setup will only proceed if the operating system is 64 bit.

Supported operating system	Latest update or service pack tested
Windows Server 2022 Standard and Datacenter	SP (21H2)
Windows Server 2019 Standard and Datacenter	May 2022 update
Windows Server 2016 Standard and Datacenter	May 2022 update

Prior and future updates or service packs on these operating system versions are supported unless otherwise stated. The operating system version and updates must also be supported by the operating system provider. ArcGIS is only

supported on 64-bit CPUs with x86-64 architecture. The Desktop Experience option is required on all versions of Windows Server.

Windows 11 is supported for basic testing and application development use only. It is not recommended for deployment in a production environment.

Cloud implementation

ArcGIS Video Server can manually be deployed in Microsoft Azure and Amazon Web Services. Full support for Microsoft Azure and Amazon Web Services cloud formation templates are not currently supported.

SSL certificates

ArcGIS Video Server is preconfigured with a self-signed certificate that allows the server to be initially tested and to help you quickly verify that the installation was successful.

You must request a certificate from a trusted certificate authority (CA) and configure ArcGIS Video Server to use it. This can be a domain certificate issued by your organization or a CA-signed certificate. The certificate must have a Subject Alternative Name (SAN) configured or ArcGIS Video Server will not work properly.

Note:
Certificates created using IIS do not have the option to include a SAN. Use the script in Create a domain certificate, which includes a SAN, with the certificate created.

Portal for ArcGIS also includes a preconfigured self-signed certificate. Because you'll federate an ArcGIS Video Server site with your portal, request a certificate from a trusted CA and configure the portal to use it.

Software prerequisites

ArcGIS Video Server can be installed on its own or with other ArcGIS Enterprise 11.4 components.

Note:
Whether you are installing a new deployment or upgrading from an earlier version, ensure that all the software components—the ArcGIS Enterprise portal, an ArcGIS Server site, and ArcGIS Data Store—are installed and running ArcGIS Enterprise 11.4.

During ArcGIS Video Server set up, you will federate the new ArcGIS Video Server site with your Enterprise portal.

Domain name system and fully qualified domain name recommendations

It's recommended that you configure your organization's domain name system (DNS) to include fully qualified domain name (FQDN) entries for the ArcGIS Video Server site. The ArcGIS Enterprise portal will request the FQDN of your server site when you federate it.

Supported web browsers

The ArcGIS Video Server installation wizard is supported by all web browsers including, but not limited to, the following:

- Google Chrome version 122 and later
- Microsoft Edge version 122 and later
- Mozilla Firefox version 125 and later

- Mozilla Firefox version 115 (ESR)
- Safari version 16 and later

ArcGIS Workflow Manager Server 11.4 system requirements

ArcGIS Workflow Manager is an ArcGIS Enterprise server role that includes a web app that can be integrated with Enterprise.

The system and hardware requirements to run Workflow Manager Server are listed below.

Software prerequisites

Workflow Manager Server requires an ArcGIS Enterprise deployment.

You can install Workflow Manager Server on its own machine, separate from the hosting server machine, or on the hosting server machine. For production deployments, it is recommended that you install Workflow Manager Server on its own machine. In this scenario, ArcGIS Server must be installed but does not need to be licensed as a GIS server.

Learn more about licensing Workflow Manager

Port availability

To communicate with ArcGIS Enterprise, Workflow Manager needs access to the following ports where base deployment components are installed:

Port number	Protocol	Component
13443	HTTPS	Used by Workflow Manager. This port must be opened before installing the software. If there is a firewall between ArcGIS Web Adaptor and Workflow Manager, port 13443 must be open between the machine hosting ArcGIS Web Adaptor and Workflow Manager.
7443	HTTPS	Used by Portal for ArcGIS.
6443	HTTPS	Used by ArcGIS Server and any hosted or federated server machines that will be used to run tools.
13820 13830 13840	TCP	Used by highly available Workflow Manager deployments.

Supported web browsers

Workflow Manager requires one of the following web browsers:

- Google Chrome
- Mozilla Firefox
- Microsoft Edge

Note:
Use Chrome or Firefox for the best experience.

SSL certificates

Workflow Manager Server is preconfigured with a self-signed certificate that allows you to verify that the installation was successful.

You must request a certificate from a trusted certificate authority (CA) and configure Workflow Manager Server to use it. This can be a domain certificate issued by your organization or a CA-signed certificate.

Portal for ArcGIS also includes a preconfigured self-signed certificate. Because you will federate Workflow Manager Server with an ArcGIS Enterprise portal, request a certificate from a trusted CA and configure the portal to use it.

Learn more about security best practices

Coordinate system requirements

To perform geographic transformations (for example, NTv2, GEOCON, and NADCON5) and vertical transformations (for example, EGM and VERTCON) requires additional coordinate system files to properly transform and render features.

The following are the additional coordinate system files that you can use on ArcGIS Server machines:

- ArcGIS Coordinate Systems Data—Install ArcGIS Coordinate Systems Data on all machines in stand-alone and federated ArcGIS GIS Server sites, including the hosting server site.

  Note:
  When you upgrade ArcGIS Server to 11.4, you must uninstall the previous version of ArcGIS Coordinate Systems Data before you install the 11.4 version of ArcGIS Coordinate System Data.

- Third-party transformation grids—You may need to obtain transformation grids from the appropriate third-party providers and place them on machines in stand-alone and federated ArcGIS GIS Server sites, including the hosting server site.

Install ArcGIS Coordinate Systems Data

The ArcGIS Coordinate Systems Data component is required if you will perform geographic or vertical transformations.

Follow the steps below to install ArcGIS Coordinate Systems Data.

1. Download the ArcGIS Coordinate Systems Data installation from My Esri.
   The download is available in the **Downloads** > **ArcGIS Enterprise (Windows)** section of My Esri. The downloaded file name is `ArcGIS_Coordinate_Systems_Data_Windows_<release_part#>`.
2. Place the installation file on each machine in all GIS Server sites in your deployment.
3. Browse to the location where you placed the ArcGIS Coordinate Systems Data file, and double-click it to start the installation process.
4. Accept the destination folder to which files are extracted and placed in a folder named CoordinateSystemsData, or click **Browse** to select a different destination.
   The default destination folder for the CoordinateSystemsData folder and files is `<System Drive>\Users\<username>\Documents\ArcGIS <version>`.
5. Click **Next**.
   A message indicates when the files have been successfully extracted, and the **Launch the setup program** check box is checked by default.

   Note:
   To install the software later, uncheck the **Launch the setup program** check box and click **Close**. When you're ready to install, browse to the CoordinateSystemsData folder in the destination you specified in the previous step, and double-click `Setup.exe`.

6. Click **Close**.

7. In the first window of the setup wizard, click **Next**.
8. Review the license agreement and choose an option:
   - If you agree to the terms, click the option to accept the agreement and click **Next**.
   - If you do not agree to the terms, click **Cancel** to exit the installation.
9. Optionally, in the **Select Features** window, choose the grids to exclude from the installation. Click the corresponding button in the list and choose **This feature will not be available**.
   If you later require a feature you excluded from the original installation, you can modify the installation.
10. In the same window, accept the default installation folder location, or click **Change** to specify a different folder. Ensure you selected one of the features to install to enable the option to change installation folders.
11. Click **Next**.
12. Click **Install**.
13. When the installation is complete, click **Finish**.

Modify or remove ArcGIS Coordinate Systems Data

If you require additional coordinate system grids that you did not install initially, you can modify the ArcGIS Coordinate Systems Data installation to install those missing files.

Uninstall ArcGIS Coordinate Systems Data before you install a newer version of ArcGIS Coordinate Systems Data or if you no longer need any of the coordinate systems it provides.

Follow these steps to modify the ArcGIS Coordinate Systems Data installation:

1. Sign in to the machine as a Windows administrator and open the list of installed software.
   There are multiple ways to access the list of software installed on Microsoft Windows machines, and how you access the list varies by Windows version. If you are unsure how to access the software list, consult the Microsoft documentation for the version of Windows that you are using.
2. Select **ArcGIS Coordinate Systems Data** from the software list.
   - To uninstall all components, click **Uninstall**. When prompted to confirm that you want to uninstall, click **Yes**.
   - To alter what features are installed, click **Modify** or **Change** to access the setup wizard, and proceed with the remaining steps.
3. Ensure **Modify** is selected and click **Next**.
4. Choose which set of coordinate systems data to add or remove from this machine:
   - To install all coordinate system data, click the drop-down menu next to **Coordinate Systems Data** and choose **This feature, and all subfeatures, will be installed on local hard drive**.
   - To install an individual coordinate systems dataset, click the drop-down menu next to the dataset and click **This feature will be installed on local hard drive**.
   - To remove an individual coordinate systems dataset, click the drop-down menu next to the dataset and click **This feature will not be available**.
5. Click **Next**.
6. Click **Install**.

Add third-party transformation grids

For some grid-based geographic and vertical transformations, ArcGIS Server includes their definitions but does not distribute the grid files due to license restrictions. You must obtain these grid files directly from their third-party provider or government agency. In some cases, you may need to purchase the grid files from their provider.

Once you obtain the grid files you require and you have installed ArcGIS Coordinate Systems Data on each machine in the ArcGIS Server site, create subfolders in the `CoordinateSystemsData\pedata` folder in the installation location on each machine in the site.

Sort files into folders by transformation type, region, country, and transformation method name. For example, an NTv2 file should be added into a `...\pedata\geographic\<your_region>\<your_country>\ntv2` subfolder and a geoid model can be added to a `...\pedata\vertical\<your_region>\<your_country>\geoid` subfolder. For detailed instructions, contact your local distributor.

ArcGIS Enterprise SDK 11.4 system requirements

The system and hardware requirements to run ArcGIS Enterprise SDK are listed below.

It is recommended that you review the deprecation notice to determine whether your hardware and software components are still compatible with the current ArcGIS version.

Operating system requirements

The following 64-bit operating systems satisfy the minimum operating system requirements. Support is not provided for 32-bit operating systems; the setup will only proceed if the operating system is 64 bit.

Supported operating system	Latest update or service pack tested
Windows Server 2022 Standard and Datacenter	September 2024 update
Windows Server 2019 Standard and Datacenter	September 2024 update
Windows Server 2016 Standard and Datacenter	September 2024 update

Supported operating system	Latest update or service pack tested
Windows 11 Pro and Enterprise	September 2024 update

Note:

- Prior and future updates or service packs for these operating system versions are supported unless otherwise stated. The operating system version and updates must also be supported by the operating system provider.
- ArcGIS is only supported on 64-bit CPUs with x86-64 architecture.
- The Desktop Experience option is required on all versions of Windows Server.
- Windows 11 is supported for basic testing and application development use only.
- Machines with an underscore (_) in their names are not supported. Several widely used internet host name specifications have designated the underscore character as nonstandard. Although Microsoft Windows allows you to use the underscore in a machine name, it can cause problems when you interact with other servers and platforms. For this reason, the installation will not proceed on servers that have an underscore in the host name.
- You cannot install on domain controllers. Installing on a domain controller may adversely affect functionality.

Disk space requirements

ArcGIS Enterprise SDK with all features for .NET on Microsoft Windows requires approximately 550 MB of disk space.

ArcGIS Enterprise SDK with all features for Java requires approximately 250 MB of disk space.

ArcGIS Enterprise SDK with all features for NodeJS requires approximately 500 MB of disk space.

Developer solutions (SDK) requirements

Development platform	Supported and recommended Integrated Development Environment (IDE)	SDK requirement
.NET	Visual Studio templates (which contain boilerplate code) are provided with ArcGIS Enterprise SDK for the .NET Platform and are supported in the IDE listed below. • Microsoft Visual Studio 2022 (C#, VB.NET) Community, Professional, Enterprise	ArcGIS Server is required when deploying an SOE and ArcGIS Pro is required when publishing map services. However, ArcGIS Server and ArcGIS Pro do not need to be installed on the same machine where the ArcGIS Enterprise SDK is installed; they can be on remote machines. .NET SDK 8 (x64)
Java	ArcGIS Enterprise SDK uses the Apache Maven framework for Java project build and management. Most Java IDE that support the Maven framework and JDK 17 can be used, such as IntelliJ IDEA, Eclipse IDE, or NetBeans. The documented and recommended IDE are as follows: • IntelliJ IDEA Ultimate (version 2023.3.X; the latest verified version is 2024.2.4) • IntelliJ IDEA Community (version 2023.3.X; the latest verified version is 2024.2.4) • Eclipse IDE for Java Developers (version 2024-09) • Eclipse IDE for Java EE Developers (version 2024-09)	ArcGIS Server is required to deploy an SOE or SOI and ArcGIS Pro is required to publish services. However, ArcGIS Server and ArcGIS Pro do not need to be installed on the same machine where the ArcGIS Enterprise SDK is installed; they can be on remote machines. Java Development Kit (JDK) version 17.0.10 or later in the JDK 17 series is supported for building SOE and SOI. Using Java 18 or later is not supported. Apache Maven 3.8.8 or later is supported, with the latest verified version being 3.9.9.
NodeJS	Any IDE	ArcGIS Server is required to deploy a custom data package file (`.cdpk`). ArcGIS Server Custom Data Feeds must also be installed on the same machine where ArcGIS Server is installed. However, ArcGIS Server and ArcGIS Enterprise SDK can be on different machines. NodeJS runtime version between 18.17.1 and 20.17.0 must be installed on the machine before installing ArcGIS Enterprise SDK.

ArcGIS Enterprise 11.4 software setup guide

Before installing ArcGIS Enterprise, it's important to understand prerequisites for and what's included in a base deployment. Additionally, learn how to deploy or upgrade it and extend functionality and capacity through server roles and extensions.

Base deployment

ArcGIS Enterprise comprises four software components. The minimum setup of ArcGIS Enterprise is called a base deployment, which consists of the following:

- ArcGIS Server, licensed as an ArcGIS Server Standard or ArcGIS Server Advanced and configured as the hosting server for your portal
- Portal for ArcGIS
- ArcGIS Data Store, configured as a relational and object data store
- Two installations of ArcGIS Web Adaptor, one installation for traffic to your portal and another for traffic to your hosting server

ArcGIS Server licensing roles

ArcGIS Server functionality is provided through server licensing roles. With the exception of the ArcGIS GIS Server, each server role is optional and licensed separately from the base deployment.

Deployment options

Esri offers several tools you can use to deploy ArcGIS Enterprise such as ArcGIS Enterprise Builder, cloud deployment tools, and script-based tools. Each tool has advantages and intended uses. To learn more, review the ArcGIS Enterprise Functionality Matrix and ArcGIS Enterprise deployment tools.

Get started

Before installing ArcGIS Enterprise components, be sure to review and meet system requirements. When you're ready to begin downloading licenses and components, visit My Esri.

Review and meet prerequisites

Keep the following prerequisites in mind:

- Ensure your infrastructure meets the system requirements for each ArcGIS Enterprise component.
- Administrative privileges are required for installation.
- Microsoft .NET 8 is required to install the ArcGIS Server .NET Extension Support feature.
- Review the ArcGIS Web Adaptor (IIS) system requirements for the latest requirements.

You can install a base deployment across one or more machines, any of which can be physical, virtual, or cloud machines. For details about the required machine specifications for ArcGIS Enterprise components, see the system requirements.

Obtain licenses and downloads from My Esri

1. Visit My Esri with privileges to take licensing action.

2. Under **My Esri** > **Licensing** > **License Esri Products**, select **Start Licensing** to begin the process of obtaining your licenses.
3. Select ArcGIS Enterprise and the version of the software you want to license.
4. Proceed through the steps to generate license files for ArcGIS Server and Portal for ArcGIS, including your server roles, user types, and applications, as applicable. For the Portal for ArcGIS license file, provide your ArcGIS Enterprise organization URL. See Organization URL for more information about how this URL can be determined in your environment.
5. Download your license and each ArcGIS Enterprise component, server role, and extension as applicable.

Localized setups

The following core components have localized setups:

- ArcGIS Server
- Portal for ArcGIS
- ArcGIS Data Store
- ArcGIS Web Adaptor

The following server roles have localized setups:

- ArcGIS GeoEvent Server
- ArcGIS Notebook Server
- ArcGIS Mission Server
- ArcGIS Video Server

Language packs

Language packs are separate and optional setups that can be used to view installed documentation in additional languages. Language packs are available in the following setups:

- Portal for ArcGIS
- ArcGIS Data Store
- ArcGIS Notebook Server
- ArcGIS Mission Server
- ArcGIS Video Server

Upgrades

When performing an upgrade of ArcGIS Enterprise, consider the following:

- The ArcGIS setup packages are designed to detect and upgrade an existing installation of the same ArcGIS product. The settings for the installation location are retained in the upgrade. See the installation guides for more information.
- If you are upgrading from a version from an earlier release series, you must obtain a new portal license file from My Esri.

Installation guides

For complete installation and upgrade instructions for a base ArcGIS Enterprise deployment, use the links below to access installation guides:

- ArcGIS Server
- Portal for ArcGIS
- ArcGIS Web Adaptor
- ArcGIS Data Store
- ArcGIS Enterprise Builder (Provides an installer to deploy and upgrade base ArcGIS Enterprise components on a single machine.)

Apps

System requirements for supported apps

Links to system requirements for supported apps in ArcGIS Enterprise are provided below.

System requirements pages

Each supported app in ArcGIS Enterprise may have its own system requirements. Some apps host their requirements in their app documentation, while requirements for others are found in the ArcGIS Enterprise documentation.

System requirements can be found in the documentation for each supported app:

- ArcGIS AppStudio
- ArcGIS Business Analyst
- ArcGIS Collector
- ArcGIS Dashboards
- ArcGIS Drone2Map
- ArcGIS Enterprise Sites
- ArcGIS Excalibur
- ArcGIS Experience Builder
- ArcGIS Explorer
- ArcGIS Field Maps
- ArcGIS for Office
- ArcGIS for SharePoint
- ArcGIS Indoors (Indoor Viewer and Indoor Space Planner)
- ArcGIS Insights
- ArcGIS Instant Apps
- ArcGIS Maps for Adobe Creative Cloud
- ArcGIS Mission Manager
- ArcGIS Navigator
- ArcGIS Ortho Maker
- ArcGIS QuickCapture
- ArcGIS Solutions
- ArcGIS StreetMap Premium
- ArcGIS Survey123
- ArcGIS Web AppBuilder
- ArcGIS Web Editor
- ArcGIS Workforce
- Scene Viewer

Supported web browsers

- Google Chrome version 122 and later
- Microsoft Edge version 122 and later
- Mozilla Firefox version 125 and later
- Mozilla Firefox version 115 (ESR)
- Safari version 16 and later

Refer to the system requirements page for each app to determine whether additional browsers are supported.

Scene Viewer requirements

You can use Scene Viewer on mobile devices and in desktop web browsers that support WebGL2, a web technology that is standard for rendering 3D graphics. For best results, verify that your mobile device, browser, and hardware meet the Scene Viewer requirements.

Browser requirements

Scene Viewer supports the latest versions of the following browsers:

- Google Chrome
- Microsoft Edge
- Mozilla Firefox
- Safari

WebGL2

Only WebGL2-enabled, 64-bit browsers are supported.

The latest versions of the most common desktop browsers have built-in WebGL2. To test whether your browser has WebGL2 enabled, open get.webgl.org/webgl2. To troubleshoot WebGL2-related issues, visit WebGL2 troubleshooting.

Be sure you keep your browser up to date, because WebGL2 is an evolving technology and each browser version brings improvements that Scene Viewer uses for optimal performance. For more information about WebGL2 requirements, visit the khronos wiki page.

Also, when using Scene Viewer in your browser, remember the following:

- Adjust the performance and quality settings in your browser to optimize performance or quality in your scene.
- To use Scene Viewer, your browser should have hardware acceleration enabled.

Hardware requirements

For best performance, it is recommended that your browser have a minimum of 8 GB system memory and modern graphics hardware for 3D.

Minimum requirements are a high-performance graphics card with at least 512 MB of video memory. For the best performance, it is recommended that you have a graphics card with at least 1 GB of video memory, especially for working with larger or more memory-intensive 3D scenes. High-performance, stand-alone graphics cards typically have better performance than integrated graphics cards.

Mobile requirements

Scene Viewer is supported on the following browsers and devices:

- Safari on iPhone and iPad Pro series
- Chrome on Samsung Galaxy S and Samsung Tab S series

Mobile devices must have a minimum of 6 GB of RAM, a powerful multicore CPU and GPU, and the latest version of Android or iOS installed.

Portal for ArcGIS Web Styles installation

Esri provides a growing set of 3D models to symbolize points in your scenes. Consequently, a limited set of 3D models (Basic Shapes) is installed by default in the symbol gallery. For ArcGIS Enterprise 10.7.1 and later, to get the complete set of 3D symbology in your symbol gallery, such as Vegetation, install Portal for ArcGIS Web Styles. The Web Styles setup is available for download from My Esri.

When you install ArcGIS Enterprise using ArcGIS Enterprise Builder, the Web Styles component is automatically installed. Otherwise, install Web Styles after all other ArcGIS Enterprise components have been installed.

Troubleshoot rendering problems

Scene Viewer requires optimal browser functionality to perform properly. You will see a message that states there is a problem loading Scene Viewer when Scene Viewer detects that rendering in your browser is compromised. The error message gives additional details as to the nature of the problem:

- Your browser isn't using hardware acceleration for rendering
- Your browser doesn't seem to support WebGL2

Additionally, Scene Viewer may open without an error message, but the rendering quality is still compromised.

Your browser isn't using hardware acceleration for rendering

When Scene Viewer doesn't detect hardware acceleration in your browser, this message appears. Common reasons the hardware acceleration isn't enabled can be that your browser settings aren't configured properly or the browser has blocked your graphics card.

Configure hardware acceleration in your browser settings

Each browser has its own configuration options, and the hardware acceleration may be disabled. To enable hardware acceleration for rendering in your browser, see below.

Configure hardware acceleration in Chrome

For Chrome, do the following:

1. In the browser menu, go to **Settings** > **System**.
2. Click the **Use hardware acceleration when available** toggle button.
3. Click **Relaunch** to restart your browser.

Configure hardware acceleration in Firefox

For Firefox, do the following:

1. In the browser menu, go to **Menu** > **Options** > **System**.
2. Click **General**.
3. Under **Performance**, check the **Use recommended performance settings** check box.
4. Restart your browser.

Configure hardware acceleration in Microsoft Edge

For Microsoft Edge, do the following:

1. In the browser menu, go to **Settings** > **System**.
2. Click the **Use hardware acceleration when available** toggle button.
3. Click **Restart** to restart your browser.

Your browser has blocked your graphics card

Some browsers determine that a specific graphics card doesn't meet the requirements of the browser and block the graphics card. In this case, you still have the option to bypass the browser's decision to block your graphics card. Although this is not always recommended, it may resolve the issue in Scene Viewer.

Bypass a blocked graphics card in Chrome

For Chrome, do the following:

1. Type `chrome://flags` in the address bar.
2. Click **Enable** under **Override software rendering list**.
3. Restart your browser.

Bypass a blocked graphics card in Firefox

For Firefox do the following:

1. Type `about:config` in the address bar.
2. Type `webgl.enable-webgl2` in the search bar.
3. Set the value to **true**.
4. Restart your browser.

Your browser doesn't seem to support WebGL2

This message appears when Scene Viewer doesn't detect WebGL2 in your browser. A good way to confirm this is to go to get.webgl.org/webgl2. You should see a spinning cube to confirm WebGL2 is available in your browser. Otherwise, the website indicates your browser doesn't support WebGL2. If you don't see a spinning cube, ensure that WebGL2 is enabled through your browser settings and your browser and hardware meet the Scene Viewer requirements.

Scene Viewer opens but the rendering quality is compromised

Sometimes Scene Viewer opens without an error message, but you still may experience a problem. Some examples are as follows:

- All icons and labels are missing, but they display in another browser or device.
- Rendering artifacts (for example, atmosphere and shadows rendering in black or geometry rendering with dots).
- Major color problems exist in the scene (for example, all colors are inversed or all colors render green or black).

If you are experiencing any of the above issues, confirm the following:

- Your browser has hardware acceleration enabled.
- Your browser has WebGL2 enabled.

- Your browser and computer meet all the Scene Viewer requirements.

If you still see an issue in Scene Viewer, try switching to another browser. Another option is to update your video driver. It is recommended that you go to the vendor's website to download the latest driver. Finally, if all the above suggestions haven't fixed the problem, report your problem in the Esri Community forums or contact Esri Technical Support for additional help.

Supported databases

ArcGIS 11.4 and ArcGIS Pro 3.4 requirements for Dameng

ArcGIS Pro and ArcGIS Server support connections to Dameng databases.

Visit Esri Technical Support for information on the Esri Supported Environment Policy.

Supported database versions

The following Dameng releases are the minimum supported with ArcGIS. Patches or updates on these versions are supported but not certified.

- Dameng V 8.1.0.147
- Dameng V 7.1.6
- Dameng V 7.1.5

Database requirements/limitations

- Geodatabase functionality is not supported with Dameng.
- Dameng is not supported as a data store item in an ArcGIS Enterprise portal.

Cloud support

See Requirements for using ArcGIS with databases in the cloud for information on support for database services and databases deployed in the cloud.

Software required to connect to a DBMS

Your client machine (for example, the one running ArcGIS Pro or ArcGIS Server) must have the appropriate database client files installed for the RDBMS you are using. These client files are available from their respective RDBMS vendors. See Database clients for more information.

Note:
You must use the Dameng 8.x ODBC client to connect from ArcGIS Server on Linux to Dameng.

You can use the Dameng 8.x or 7.x ODBC client to connect from clients on Microsoft Windows to Dameng.

ArcGIS 11.4 and ArcGIS Pro 3.4 requirements for IBM Db2

ArcGIS Pro and ArcGIS Enterprise on Linux and Microsoft Windows support connections to IBM Db2 databases and enterprise geodatabases in Db2.

Visit Esri Technical Support for information on the Esri Supported Environment Policy.

Supported database versions

The following IBM Db2 releases and fix pack versions are the minimum certified and supported with ArcGIS. Unless noted otherwise, newer fix pack versions on these versions are supported but not certified.

IBM Db2 Version 11.1 Mod 4 Fix Pack 5

IBM Db2 Version 11.5

Database requirements and limitations

Db2 databases on Linux, UNIX, or Microsoft Windows must be configured to use UTF-8 encoding.

Requirements and limitations that apply to specific versions of Db2 are as follows:

IBM Db2 V11.1 (64 bit)

- Minimum required service packs/patches: Mod 4 Fix Pack 5.
- Db2 Spatial Extender is included in the Db2 database product media.
- Recommended service packs/patches: n/a.

IBM Db2 V11.5 (64 bit)

- Minimum required service packs/patches: Fix Pack 0.
- Db2 Spatial Extender is included in the Db2 database product media.
- Recommended service packs/patches: n/a.
- You cannot enable a geodatabase in V11.5, Mod 9 due to Db2 issue DT245904.

Supported operating systems

- If your database management system is installed on a server where ArcGIS products are installed, the server operating system must meet the ArcGIS product system requirements as well as the operating system requirements for your Db2 version.
- If your database is not installed on the same server as an ArcGIS product, see the IBM documentation for operating system requirements for your Db2 version.

ArcGIS is tested and certified on Db2 Enterprise Server Edition. Other versions of Db2, such as Db2 Workgroup Server Edition and Db2 Personal Edition, share a common code base and are supported as long as they meet the ArcGIS Server requirements.

Cloud support

See Requirements for using ArcGIS with databases in the cloud for information on support for database services and databases deployed in the cloud.

Software required to connect to a DBMS

Your client machine (for example, the one running ArcGIS Pro or ArcGIS Server) must have the appropriate database client files installed for the RDBMS you are using. These client files are available from their respective RDBMS vendors. See Database clients for more information.

ArcGIS 11.4 and ArcGIS Pro 3.4 requirements for Microsoft SQL Server

ArcGIS supports connections to Microsoft SQL Server databases and enterprise geodatabases in SQL Server.

SQL Server databases used to store a geodatabase must be configured with a collation that is not case sensitive.

Visit Esri Technical Support for information on the Esri Supported Environment Policy.

Supported database versions

The following Microsoft SQL Server releases are the minimum certified versions supported with ArcGIS. SQL Server service packs and cumulative updates on these versions are supported but not certified.

Enterprise, Standard, Developer*, and Express editions

Microsoft SQL Server 2022 (64 bit)

Microsoft SQL Server 2022 on Linux (64 bit)

Microsoft SQL Server 2019 (64 bit)

Microsoft SQL Server 2019 on Linux (64 bit)

Microsoft SQL Server 2017 (64 bit)

Microsoft SQL Server 2017 on Linux (64 bit)

Note:
*Developer edition is only supported in nonproduction environments.

Supported operating systems

If your database management system is installed on a server where ArcGIS products are installed, the server operating system must meet the ArcGIS product system requirements as well as the operating system requirements for your SQL Server version.

If your database is not installed on the same server as an ArcGIS product, see the Microsoft documentation for operating system requirements for your SQL Server version.

Cloud support

See Requirements for using ArcGIS with databases in the cloud for information on support for database services and databases deployed in the cloud.

Software required to connect to SQL Server

Any client machines that connect directly to SQL Server must have a SQL Server client installed. SQL Server clients for Microsoft Windows and Linux are distributed by Microsoft. SQL Server clients for Windows are also available on My Esri. You must install a client that is the same version or a newer version than the SQL Server database to which you want to connect. If you upgrade SQL Server, upgrade the SQL Server clients at the same time. When a version of SQL Server is no longer supported by ArcGIS, the corresponding SQL Server client library will no longer be supported either.

Supported minimum SQL Server clients are as follows:

- SQL Server 2022
  - Microsoft ODBC Driver 18.1 for SQL Server**
- SQL Server 2019
  - Microsoft ODBC Driver 18 for SQL Server**
  - Microsoft ODBC Driver 17.3 for SQL Server
- SQL Server 2017
  - Microsoft ODBC Driver 18 for SQL Server**
  - Microsoft ODBC Driver 17 for SQL Server

** Microsoft changed the default encryption setting for the ODBC driver to yes with the release of ODBC Driver 18. To ensure existing database connections continue to work even if you update to ODBC Driver 18, encryption is set to no by default. To use an encrypted connection instead, you can configure the database connection as described in Encrypted connections to SQL Server databases.

ArcGIS 11.4 and ArcGIS Pro 3.4 requirements for Oracle

ArcGIS supports connections to Oracle databases and enterprise geodatabases in Oracle.

Visit Esri Technical Support for information on the Esri Supported Environment Policy.

Supported database versions

Oracle 19c is the only version supported with the latest ArcGIS software. The following Oracle 19c patch version is the minimum certified and supported with ArcGIS. Newer Oracle updates on this version, including patches, are supported.

Standard 2 (SE2)/Enterprise (EE) Editions:

Oracle 19c (64 bit) 19.3.0.0

Click here for more information on Oracle Patch Support

Supported operating systems

If your database management system is installed where ArcGIS products are installed, the operating system must meet the ArcGIS product system requirements as well as the operating system requirements for your Oracle version.

If your database is not installed on the same server as an ArcGIS product, see the Oracle documentation for operating system requirements for your Oracle version.

Additional requirements for the ST_Geometry shape library

Esri supports the following operating systems when you use the ST_Geometry shape library and configure Oracle external procedure (extproc).

- IBM AIX (64 bit)
- Linux (64 bit)
- Solaris (64 bit)
- Microsoft Windows (64 bit)

When the ST_Geometry shape library is on Windows, you need the latest Microsoft Visual C++ Redistributable for Visual Studio 2015, 2017, 2019, and 2022 installed on the Oracle database machine. See the latest supported Visual C++ downloads from Microsoft support for more information.

Note:
Support for the Oracle Exadata Database Machine is based on Oracle guidance that original equipment manufacturer (OEM) software that supports both Oracle Linux and Oracle real application clusters (RAC) is compatible with Oracle Exadata.

Database requirements/limitations

In an Oracle multitenant architecture, you can create geodatabases in pluggable databases only.

Branch versioning is not supported in user-schema geodatabases.

The Oracle Text component must be installed. The Text component is installed by default in Oracle; however, if you did not perform a default installation, the Text component may not have been installed.

Oracle database patch support

See Oracle Support for all Oracle patch set (and Interim Patch) documentation and installation instructions. Esri recommends making a full backup of your Oracle database prior to applying any Oracle patch sets or interim patches. If functionality that was working prior to applying the Oracle patch set or interim patch stops working, return to the previous version of Oracle. Contact Oracle support as needed.

Cloud support

See Requirements for using ArcGIS with databases in the cloud for information on support for database services and databases deployed in the cloud.

Software required to connect to a DBMS

Your client machine (for example, the one running ArcGIS Pro or ArcGIS Server) must have the appropriate database client files installed for the RDBMS you are using. These client files are available from their respective RDBMS vendors. See Database clients for more information.

Note:
It is recommended that ArcGIS clients use the newest Oracle client supported for the Oracle database version to which you connect.

ArcGIS 11.4 and ArcGIS Pro 3.4 requirements for PostgreSQL

ArcGIS supports connections to PostgreSQL databases and enterprise geodatabases in PostgreSQL.

Visit Esri Technical Support for information on the Esri Supported Environment Policy.

Minimum supported database versions

The following versions of PostgreSQL and PostGIS are supported with ArcGIS. The specific versions listed are the minimum minor version supported and certified for each supported major release of PostgreSQL and PostGIS. Newer minor versions are supported, but are not certified unless otherwise stated. The PostgreSQL version and updates must also be supported by the PostgreSQL Global Development Group.

- PostgreSQL 15.8 (64 bit)
  - PostGIS 3.4
- PostgreSQL 14.13 (64 bit)
  - PostGIS 3.4
- PostgreSQL 13.16 (64 bit)
  - PostGIS 3.4

Note:
Due to changes in PostgreSQL data type support, if your database contains a geodatabase, you must use the pg_dump and pg_restore commands to upgrade PostgreSQL from 11.x or earlier to one of the versions listed above. When you use this method to upgrade, it removes unused, unsupported OID fields from geodatabase system tables that would otherwise block you from upgrading PostgreSQL.

After you upgrade to a supported PostgreSQL release, if the database contains a geodatabase, ArcGIS 10.8 and earlier clients and ArcGIS Pro 2.5 and earlier can no longer use the data; you must upgrade your ArcGIS clients.

Esri tests and certifies PostgreSQL installations that are available from `PostgreSQL.org`. For each PostgreSQL release that Esri supports, available PostGIS modules are also tested and certified. No other modules extending PostgreSQL functionality are included in Esri certification.

A supported PostgreSQL installation for Microsoft Windows is available for download from My Esri.

EDB Postgres Advanced Server

ArcGIS supports EDB Postgres Advanced Server. Supported versions are based on the minimum certified PostgreSQL and PostGIS versions listed in the previous section.

You can use the Create Enterprise Geodatabase geoprocessing tool to create a geodatabase in EDB Postgres Advanced Server. Only the PostGIS spatial type is supported in EDB Postgres Advanced Server, not ST_Geometry.

Supported operating systems for ST_Geometry

The following operating systems have been tested and are the minimum supported version for the ST_Geometry library. If you use a database or geodatabase in PostgreSQL that uses the ST_Geometry type, the PostgreSQL database cluster must be installed on one of these operating systems.

The operating system version and updates you use must also be supported by the operating system provider.

Microsoft Windows

To use the ST_Geometry type in PostgreSQL on Windows, you need the latest Microsoft Visual C++ Redistributable for Visual Studio 2015–2022 installed on the PostgreSQL machine. See the latest supported Visual C++ downloads from Microsoft support for more information.

Supported operating system	Latest update or service pack tested
Windows Server 2022 Standard and Datacenter	September 2024 update
Windows Server 2019 Standard and Datacenter	September 2024 update
Windows Server 2016 Standard and Datacenter	September 2024 update

Development environments

Supported operating system	Latest update or service pack tested
Windows 11 Pro and Enterprise	September 2024 update

Note:

- Prior and future updates or service packs for these operating system versions are supported unless otherwise stated. The operating system version and updates must also be supported by the operating system provider.
- Windows 11 is supported for basic testing and application development use only.

Cloud support

See Requirements for using ArcGIS with databases in the cloud for information on support for database services and databases deployed in the cloud.

Connections to PostgreSQL

ArcGIS applications that can connect to a PostgreSQL database contain the PostgreSQL client libraries that are required to make a connection. These applications include ArcGIS Server and ArcGIS Pro.

Only database authenticated connections are supported from ArcGIS to PostgreSQL.

ArcGIS 11.4 and ArcGIS Pro 3.4 requirements for SAP HANA

ArcGIS Pro and ArcGIS Enterprise on Microsoft Windows and Linux support connections to SAP HANA databases and enterprise geodatabases in SAP HANA.

Visit Esri Technical Support for information on the Esri Supported Environment Policy.

Supported database versions

SAP HANA 2.0 SPS 05 and later service pack releases are supported for use with ArcGIS.

Supported operating systems

SAP HANA is available either in the cloud or as a preconfigured system on Linux. Contact SAP for the available configurations.

Cloud support

See Requirements for using ArcGIS with databases in the cloud for information on support for database services and databases deployed in the cloud.

Software required to connect to a DBMS

Your ArcGIS client machines that connect to SAP HANA—for example, the ones running ArcGIS Pro or ArcGIS Server—must have a supported SAP HANA client installed and configured.

SAP HANA clients are available to existing SAP users from the SAP Support Portal under Software Downloads.

Install a version of the SAP HANA client that is supported for the version of SAP HANA to which you connect.

Note:
If you install SAP HANA client version 2.4, you must apply revision patch 186 (2.04.186). If you install SAP HANA client version 2.5, the minimum supported revision patch is 109 (2.05.109).

Install 32- and 64-bit applications and clients on separate machines to avoid issues that arise when different versions of the same drivers are installed on the same machine.

ArcGIS 11.4 and ArcGIS Pro 3.4 requirements for Teradata Vantage

ArcGIS Pro and ArcGIS Server support connections to Teradata Vantage.

Visit Esri Technical Support for information on the Esri Supported Environment Policy.

Supported versions

The following Teradata Vantage releases are supported with ArcGIS. Service packs on these releases are supported but not certified.

Vantage Advanced SQL Engine 17.10

Vantage Advanced SQL Engine 17.0

Database requirements/limitations

- ODBC connections must use Teradata session mode and Native Large Object Support.
- Geodatabase functionality is not supported with Teradata.
- All spatial columns must be named, or aliased to, SHAPE for ArcGIS to recognize it as a spatial column in the table.
- Teradata is not supported as a data store item in an ArcGIS Enterprise portal.

Cloud support

See Requirements for using ArcGIS with databases in the cloud for information on support for database services and databases deployed in the cloud.

Software required to connect to a DBMS

Your client machine (for example, the one running ArcGIS Pro or ArcGIS Server) must have the appropriate database client files installed for the RDBMS you are using. These client files are available from their respective RDBMS vendors. See Database clients for more information.

Requirements for using ArcGIS 11.4 and ArcGIS Pro 3.4 with databases in the cloud

There are two basic types of databases in the cloud: databases that are installed on virtual machines in the cloud and databases that are available as database-as-a-service offerings.

When you use a database installed on a virtual machine in the cloud, you have access to the virtual machine where the database is installed and are usually responsible for maintaining it. This is generally true whether you install the database on the virtual machine or you use an image to launch an instance that includes an installation of the database. You are also responsible for most maintenance tasks on these types of databases.

This is different from database-as-a-service offerings. For these types of databases and data warehouses, you do not have access to the machine that serves up the database or data warehouse, and you do not have to perform maintenance tasks, such as applying security patches, on the database, data warehouse, or operating system.

Connections from ArcGIS software to databases or data warehouses in the cloud must originate from machines in the same cloud. For best performance, connections should originate from machines in the same cloud region. In the majority of cases, connection and query performance is poor when you connect from ArcGIS clients installed on-premises to databases or data warehouses in the cloud, connect from ArcGIS clients in the cloud to databases or data warehouses on-premises, or make connections between clients and databases or data warehouses in different cloud regions. In these scenarios, connections to the database may time out.

Support for databases installed in the cloud

To determine whether a cloud platform is supported for use with ArcGIS, you must know the specifications of the cloud virtual machines. A cloud platform is supported for use with a database that ArcGIS supports as long as the virtual machines provided on that cloud platform meet the operating system and system specification requirements for use with the ArcGIS clients and database you want to install.

Support for these virtual machines is predicated on the assumption that the virtual machines behave the same as a physical machine available on-premises that has the same specifications. In most cases, Esri Support attempts to replicate issues using on-premises machines with the same specifications as the cloud virtual machine you are using.

In addition, Oracle Base Database Service is certified for use with ArcGIS.

Supported cloud-based database services

Esri provides tooling to deploy ArcGIS Enterprise software, ArcGIS Desktop software, and many supported database-as-a-service offerings on Amazon Web Services (AWS) and Microsoft Azure. When deploying on these two cloud platforms, it's recommended that you use the specialized tooling and Esri images to simplify deployment and technical support. For cloud platforms for which Esri does not provide specialized deployment tooling, support is limited to troubleshooting ArcGIS software-specific issues that can be replicated on-premises.

The following database-as-a-service offerings are supported for use with ArcGIS. When minor versions are listed, they are the minimum supported minor versions.

The links below take you to external documentation provided by cloud vendors.

- Amazon Aurora (PostgreSQL-compatible edition) versions 13.16, 14.13, and 15.8
  AWS installs a compatible PostGIS version.
- Amazon Relational Database Service (RDS) for Oracle

- Amazon RDS for PostgreSQL versions 13.15, 14.12, and 15.7
  For each of these supported versions of Amazon RDS for PostgreSQL, ArcGIS supports the PostGIS versions that Amazon Web Services supports.
- Amazon RDS for SQL Server versions 2017, 2019, and 2022
- Google Cloud SQL for PostgreSQL 13.15, 14.12, and 15.7
  For each of these supported versions of Google Cloud SQL for PostgreSQL, ArcGIS supports the PostGIS versions that Google Cloud supports.
- Google Cloud SQL for SQL Server 2017, 2019, and 2022
- Microsoft Azure Database for PostgreSQL (Flexible Server) 13.15, 14.12, and 15.7 and Microsoft Azure Cosmos DB for PostgreSQL versions 13.15, 14.12, and 15.7
  For each of these supported versions of Microsoft Azure Database for PostgreSQL, ArcGIS supports the PostGIS versions that Microsoft Azure supports.
- Microsoft Azure SQL Database or Microsoft Azure SQL Managed Instance version 12
- Oracle Autonomous Database—Autonomous Data Warehouse and Autonomous Transaction Processing
- SAP HANA Cloud

Geoprocessing tools are supported on equivalent database-as-a-service offerings unless otherwise stated in the geoprocessing tool usage information. For example, if tool usage indicates the tool is supported with PostgreSQL, it works with Amazon RDS for PostgreSQL, Aurora PostgreSQL, Azure Database for PostgreSQL, and Google Cloud SQL for PostgreSQL unless the tool's usage statements indicate these are not supported.

Limitations

Geodatabases are not supported in Microsoft Azure Cosmos DB for PostgreSQL.

Because you cannot load the ST_Geometry library to a database-as-a-service offering, only the PostGIS spatial types are supported when using Amazon Aurora (PostgreSQL-compatible edition), Amazon RDS for PostgreSQL, Google Cloud SQL for PostgreSQL, and Microsoft Azure Database for PostgreSQL (all options), and only the SDO_Geometry spatial type is supported when using Amazon RDS for Oracle or Autonomous Transaction Processing.

The following functions are not present in geodatabases in Amazon RDS for Oracle or Autonomous Transaction Processing: `GDB_UTIL.get_extent()`, `GDB_UTIL.geometry_type`, and `GDB_UTIL.spatial_ref_info()`.

Amazon RDS for Oracle is not included in ArcGIS Enterprise on Amazon Web Services deployment tools; use AWS tools instead to create an Amazon RDS for Oracle instance.

If you do not use or cannot use the Esri cloud deployment tools to create the database, and you want to create a geodatabase in any of the supported database-as-a-service offerings listed above, you must use the Enable Enterprise Geodatabase geoprocessing tool to create a geodatabase. Do not use the Create Enterprise Geodatabase tool.

Only sde-schema geodatabases are supported when you create a geodatabase in Amazon RDS for SQL Server, Google Cloud SQL for SQL Server, Microsoft Azure SQL Database, or Microsoft Azure SQL Managed Instance.

Operating system authenticated connections are not supported from ArcGIS clients to database-as-a-service offerings. Microsoft Entra ID options are available when connecting to Azure SQL Database or Azure SQL Managed Instance.

Supported cloud data warehouses

The following data warehouses hosted in cloud environments are supported:

- Amazon Redshift
- Google BigQuery
- Snowflake

Geodatabases are not supported in the cloud data warehouses listed above.

Software required to connect to a database or data warehouse

If you use an Azure image provided by Esri to deploy ArcGIS Enterprise and ArcGIS Pro, the required database clients are already installed that allow you to connect to supported database-as-a-service offerings on Azure. Similarly, if you use ArcGIS Enterprise on Amazon Web Services deployment tools, the database clients are installed that allow you to connect to supported Amazon RDS offerings.

If you install an ArcGIS client on a virtual machine in the cloud or connect to a database other than those listed in the Supported cloud-based database services section above, you may need to install database management system client files on the ArcGIS client machine. These client files are available from their respective database vendors. Follow instructions from the vendors to install and configure these files, and read the connection information in ArcGIS help for additional configuration needed to connect from ArcGIS clients.

To connect to Microsoft Azure SQL Database or Microsoft Azure SQL Managed Instance, use at least the minimum ODBC version supported by Microsoft.

The minimum SAP HANA ODBC client required to connect from ArcGIS to SAP HANA Cloud is 2.15.17. Install your ArcGIS client on a machine (physical or virtual) that is located as close as possible to the location where you deployed SAP HANA Cloud.

To connect from ArcGIS to Redshift or Snowflake, install the latest version of the corresponding supported client files provided by the vendor.

To connect from ArcGIS to BigQuery, install Magnitude Simba ODBC driver version 2.5.2.1004 or later.

ArcGIS Enterprise on Kubernetes includes client files to connect to the databases and cloud data warehouses that it supports.

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This product includes software developed by the JDOM Project.

Note:
The jdom.org site has gone offline as of July 22, 2024. An alternative site may be https://github.com/hunterhacker/jdom#introduction-to-the-jdom-project.

This product includes software developed by the Indiana University Extreme! Lab (https://www.extreme.indiana.edu).

Note:
As of August 2024, the webite now states: "This site has been deprecated. You can access an archive of this site at https://web.archive.org/web/20210225153105/https://www.extreme.indiana.edu/".

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