ArcGIS Data Appliance 2025 Raster Services Help

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Get started

Introduction to ArcGIS Data Appliance

ArcGIS Data Appliance is an Esri content solution that allows you to quickly create, publish, and share maps and related content (for example, elevation data, places locator) with colleagues securely behind your firewall. It connects directly to your internal network and is preloaded with terabytes of detailed data from industry-leading data providers to enhance your ArcGIS and web apps. Your maps are powered by the back-end infrastructure of the data appliance and a server.

Note: This Data Appliance Help PDF file (arcgis_data_appliance.pdf) is for the raster basemap and reference services on ArcGIS Data Appliance Collections 1 through 5.

ArcGIS Data Appliance consists of hardware and data. It runs with ArcGIS Enterprise, which helps make data appliance services available to others in your organization and, optionally, anyone with an internet connection. The data appliance hardware is a set of hard drives preloaded with data to support configuration with the data product option you licensed from Esri.

This version of ArcGIS Data Appliance includes the following:

- Raster basemap and reference services with cartographic mapping content to help you start building critical GIS applications right away.
- Esri's Terrain service, providing a consolidated, multiresolution dataset essential for a wide range of use cases, from scientific study to everyday applications including hazard mitigation, conservation, infrastructure, national security, and more.*
- Terrain 3D service, providing terrain content for visual context and analysis in ArcGIS Pro and Scene Viewer.
- Elevation analysis services that allow you to perform raster analysis on world elevation data. Use the Profile geoprocessing service tool to create elevation profiles along any given polyline features. Use the Viewshed geoprocessing service tool to create viewsheds for any given observation point features anywhere on the surface of the earth. Use the Summarize Elevation geoprocessing tool to calculate summary statistics for features you provide based on the elevation in the Terrain data.*

*Not included with World Basic (Collection 1).

ArcGIS Data Appliance includes a World Gazetteer with most product options that allows you to find on a map more than 30 million places around the world. World Gazetteer ships separately. Learn more about World Gazetteer on the ArcGIS Data Appliance website.

ArcGIS Data Appliance includes Esri Vector Basemaps with most product options. These maps have a smaller footprint on disk and can be published in many styles using an Enterprise portal. Esri Vector Basemaps ships separately. Learn more about Esri Vector Basemaps on the ArcGIS Data Appliance website.

ArcGIS Data Appliance includes OpenStreetMap (OSM) Vector Basemaps with most product options. These maps have a smaller footprint on disk and can be published in several styles using an Enterprise portal. OSM Vector Basemaps ships separately. Learn more about OSM Vector Basemaps on the ArcGIS Data Appliance website.

Product options

There are eight product options available with ArcGIS Data Appliance 2025. Most Data Appliance product options are composed of multiple components, as shown in the following table:

Product option	What's included
ArcGIS Data Appliance World Basic	Collection 1; and OSM Vector Basemaps: Basic (WMA only)

Product option	What's included
ArcGIS Data Appliance World Standard	Collection 2; Esri Vector Basemaps, OpenStreetMap Vector Basemaps, and World Gazetteer
ArcGIS Data Appliance World Advanced	Collection 3; Esri Vector Basemaps, OpenStreetMap Vector Basemaps, and World Gazetteer
ArcGIS Data Appliance North America Standard	Collection 4; Esri Vector Basemaps, OpenStreetMap Vector Basemaps, and World Gazetteer
ArcGIS Data Appliance North America Advanced	Collection 5; Esri Vector Basemaps, OpenStreetMap Vector Basemaps, and World Gazetteer
ArcGIS Data Appliance: World Gazetteer	World Gazetteer
ArcGIS Data Appliance: Esri Vector Basemaps	Esri Vector Basemaps
ArcGIS Data Appliance: OpenStreetMap Vector Basemaps	OpenStreetMap Vector Basemaps

Each of the following product components can be downloaded from My Esri or may ship separately on its own USB flash drive:

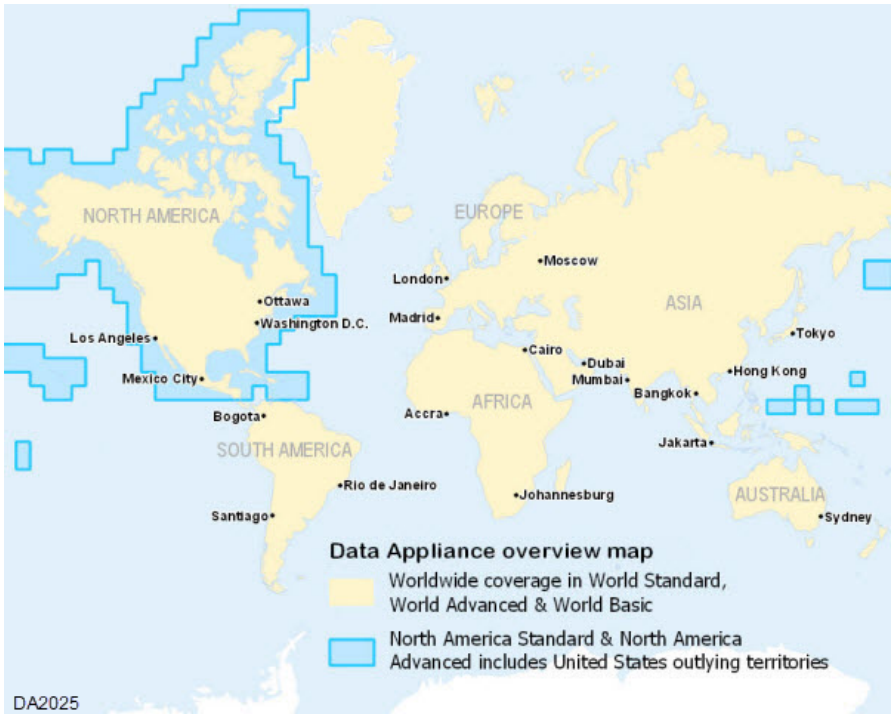
- OSM Vector Basemaps: Basic (WMA only) and its help documentation downloaded from My Esri or on the World Basic flash drive.
- World Gazetteer.
- Esri Vector Basemaps.
- OpenStreetMap Vector Basemaps.

See ArcGIS Data Appliance 2025 content for more information on the collections and services available with ArcGIS Data Appliance 2025.

Data Appliance coverage map

As illustrated in the following coverage map, coverage is provided at the following scales:

- World Basic—Worldwide coverage down to ~1:144k.
- World Standard and World Advanced—Worldwide coverage down to largest scale available.
- North America Standard and North America Advanced—Regional coverage down to largest scale available, as indicated on the inset map; coverage includes United States outlying territories.



ArcGIS Data Appliance 2025 content

A data appliance collection is a set of hard drives in a RAID array containing data and resources required for publishing services. Data Appliance collections are composed of the following contents:

Collection	Contents
Collection 1	Includes the World Imagery basemap (published as a 2D map service), World Hillshade, World Hillshade (Dark), and World Ocean Base layers, at small and medium scales down to 1:144,000 (Level [L] 12), where available; and World Elevation (published as a 3D image service) for the World Basic product option.
Collection 2	Includes the World Imagery basemap (published as a 2D map service), World Hillshade, World Hillshade (Dark), and World Ocean Base layers with content for the world to 1:1,000, but with limited availability from 1:9,000 to 1:1,000 (L16–L19); the Arctic and Antarctic services; World Elevation (published as 2D and 3D image services) and elevation analysis services for the World Standard product option.
Collection 3	Includes the World Imagery basemap (published as a 2D map service), World Hillshade, World Hillshade (Dark), and World Ocean Base layers with content for the world to 1:282 (L21), where available; the Arctic and Antarctic services; World Elevation (published as 2D and 3D image services) and elevation analysis services for the World Advanced product option.
Collection 4	Includes the World Imagery basemap (published as a 2D map service), World Hillshade, World Hillshade (Dark), and World Ocean Base layers with content for North America to 1:1,000, but with limited availability from 1:9,000 to 1:1,000 (L16–L19); World Elevation (published as 2D and 3D image services) and elevation analysis services for the North America Standard product option.
Collection 5	Includes the World Imagery basemap (published as a 2D map service), World Hillshade, World Hillshade (Dark), and World Ocean Base layers with content for North America to 1:282 (L21), where available; World Elevation (published as 2D and 3D image services) and elevation analysis services for the North America Advanced product option.
Esri Vector Basemaps	Ships separately on a USB flash drive or may be downloaded from My Esri and includes all vector basemap styles (published as vector tile layers on a portal) and two vector tile packages (published as hosted vector tile services) for the World Standard and Advanced, North America Standard and Advanced, and the Esri Vector Basemaps product option.
OpenStreetMap Vector Basemaps	Ships separately on a USB flash drive or may be downloaded from My Esri and includes all vector basemap styles (published as vector tile layers on a portal) and two vector tile packages (published as hosted vector tile services) for the World Standard and Advanced, North America Standard and Advanced, and the OpenStreetMap (OSM) Vector Basemaps product option.[1]
OSM Vector Basemaps: Basic (WMA only)	Ships separately on the World Basic USB flash drive or may be downloaded from My Esri and includes all OSM Vector Basemaps (WMA only down to 1:144,000) styles (published as vector tile layers on a portal) and a vector tile package (published as a hosted vector tile service) for the World Basic product option.[1]
World Gazetteer	Ships separately on a USB flash drive or may be downloaded from My Esri and includes the World Gazetteer locator for the World Standard and Advanced, North America Standard and Advanced, and the World Gazetteer product option.

[1] ArcGIS Data Appliance: OpenStreetMap Vector Basemaps is in Mature Support in ArcGIS Data Appliance 2025. This is the last release for OSM Vector Basemaps. For ArcGIS Data Appliance 2026, OSM Vector Basemaps will be replaced with Open Basemap Vector Basemaps, which will include open data from OpenStreetMap and other sources.

Note:
The Data Appliance Raster Services Help PDF file (`arcgis_data_appliance_2025_raster_services_help.pdf`) can be downloaded from My Esri for Collections 1 through 5.

For details on the services available with each product option, see the Data Appliance service summary table below.

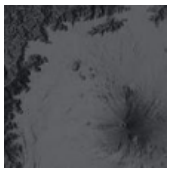
Data Appliance service summary

The following tables summarize the differences between the services included with each Data Appliance product option:

Basemaps

Service	Thumbnail	Overview	Coverage for World Basic (Collection 1)	Coverage for World Standard (Collection 2)	Coverage for World Advanced (Collection 3)	Coverage for North America Standard (Collection 4)	Coverage for North America Advanced (Collection 5)
World Imagery		Includes high-resolution imagery for North America, Europe, and other areas around the world and low-resolution satellite imagery for the rest of the world.	~1:591M to ~1:144,000 Global	~1:591M to ~1:72,000 Global ~1:36,000 to ~1:1,000 Limited global coverage Geographic coverage and levels of detail for ~1:36,000 to ~1:1,000 is a subset of what is included with World Advanced. See the coverage map.	~1:591M to ~1:72,000 Global ~1:36,000 to ~1:282 Limited global coverage ~1:36,000 to ~1:282. Complete contiguous United States, Australia, New Zealand, and most of Europe coverage where available. See the coverage map.	~1:591M to ~1:144,000 Global ~1:36,000 to ~1:1,000 Limited North America coverage Geographic coverage and levels of detail for ~1:36,000 to ~1:1,000 is a subset of what is included with North America Advanced. See the coverage map.	~1:591M to ~1:144,000 Global ~1:36,000 to ~1:1,000 Complete contiguous United States coverage ~1:36,000 to ~1:282 Limited North America coverage. See the coverage map.

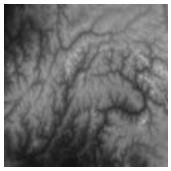
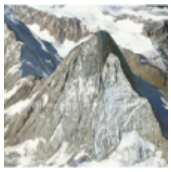
Service	Thumbnail	Overview	Coverage
Antarctic Imagery		15-meter TerraColor imagery designed to be used as a basemap for overlaying other data for the Antarctic region.	World Standard (Collection 2) and World Advanced (Collection 3): ~1:902,000,000 down to ~1:110,000

Service	Thumbnail	Overview	Coverage
Arctic Imagery		15-meter TerraColor imagery designed to be used as a basemap for overlaying other data for the Arctic region.	World Standard (Collection 2) and World Advanced (Collection 3): ~1:902,000,000 down to ~1:110,000
Arctic Ocean Base		Designed to be used as a basemap by marine GIS professionals and as a reference map by anyone interested in ocean data.	World Standard (Collection 2) and World Advanced (Collection 3): ~1:902,000,000 down to ~1:881,000
World Hillshade		Portrays elevation as an artistic hillshade. It was designed to be used as a backdrop for topographical, soil, hydro, land cover, or other outdoor recreational maps.	World Basic (Collection 1): ~1:591,000,000 to ~1:144,000 Global World Standard (Collection 2), World Advanced (Collection 3), North America Standard (Collection 4), North America Advanced (Collection 5): ~1:591,000,000 to ~1:144,000 Global; ~1:72,000 to ~1:9,000 Select areas in United States and Europe
World Hillshade (Dark)		Portrays elevation as an artistic hillshade. It was designed to be especially useful in building maps that provide terrain context while highlighting feature layers and labels.	World Basic (Collection 1): ~1:591,000,000 to ~1:144,000 Global World Standard (Collection 2), World Advanced (Collection 3), North America Standard (Collection 4), North America Advanced (Collection 5): ~1:591,000,000 to ~1:144,000 Global; ~1:72,000 to ~1:9,000 Select areas in United States and Europe
World Ocean Base		Map of the oceans showing bathymetry.	World Basic (Collection 1): ~1:591,000,000 to 1:577,000; ~1:288,000 to ~1:144,000 Limited global coverage World Standard (Collection 2), World Advanced (Collection 3), North America Standard (Collection 4), North America Advanced (Collection 5): ~1:591,000,000 to ~1:577,000 Global; ~1:288,000 to ~1:9,000 Limited global coverage

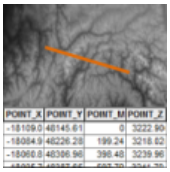
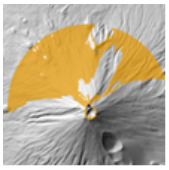
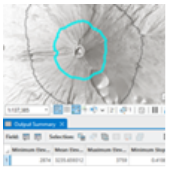
Reference layers

Service	Thumbnail	Overview	Coverage
Arctic Ocean Reference		Designed to be used as the reference layer for the Arctic Ocean Base map, this reference layer includes marine water body names, undersea feature names, and derived depth values in meters.	World Standard (Collection 2), and World Advanced (Collection 3): ~1:902,000,000 down to ~1:881,000

World Elevation

Service	Thumbnail	Overview	Coverage
Terrain		World elevation layer composed of multiresolution and multisource elevation data (DTM) that provides access to elevation values and derivatives such as slope, aspect, and hillshade to use in analysis and visualization.	World Standard (Collection 2), World Advanced (Collection 3), North America Standard (Collection 4), North America Advanced (Collection 5): Includes global elevation data from multiple sources with resolutions ranging from 1,000 meters globally to 2 meters in a few regions
Terrain 3D		World elevation surface to use for oblique viewing in Scenes in ArcGIS Pro and ArcGIS Online Scene Viewer.	World Basic (Collection 1), World Standard (Collection 2), World Advanced (Collection 3), North America Standard (Collection 4), North America Advanced (Collection 5): Includes global elevation data from multiple sources with resolutions ranging from 1,000 meters globally to 2 meters in a few regions

Elevation analysis

Data	Thumbnail	Overview	Coverage
Profile		The Profile geoprocessing tool calculates profile tables for lines you specify on a global elevation dataset.	World Standard (Collection 2), World Advanced (Collection 3), North America Standard (Collection 4), North America Advanced (Collection 5): Includes global elevation data from multiple sources, with resolutions ranging from 1,000 meters globally, 30 meters for most latitudes, and 10 meters in the continental United States
Viewshed		The Viewshed geoprocessing tool creates viewshed polygons for observation points you specify on a global elevation dataset.	World Standard (Collection 2), World Advanced (Collection 3), North America Standard (Collection 4), North America Advanced (Collection 5): Includes global elevation data from multiple sources, with resolutions ranging from 90 meters for most latitudes, 30 meters for most latitudes, and 10 meters in the continental United States
Summarize Elevation		The Summarize Elevation geoprocessing tool calculates elevation, slope and aspect statistics for point, line or polygon features you specify on a global elevation dataset.	World Standard (Collection 2), World Advanced (Collection 3), North America Standard (Collection 4), North America Advanced (Collection 5): Includes global elevation data from multiple sources, with resolutions ranging from 90 meters for most latitudes, 30 meters for most latitudes, and 10 meters for most latitudes

Locators

Service	Overview	Coverage
World Gazetteer	This locator allows you to geocode various types of places around the world.	World Standard, World Advanced, North America Standard, North America Advanced: References a geodatabase of more than 27 million geographical names including more than 12 million unique features with roughly 4.8 million populated places and 15 million alternate names. including countries, states and provinces, administrative areas (for example, counties), cities, landmarks, water bodies, and more

What's new

ArcGIS Data Appliance 2025 includes the following improvements and enhancements:

Note:
ArcGIS Data Appliance provides information about the ArcGIS Data Appliance product options, and ArcGIS Data Appliance 2025 content includes a table to help you understand the difference between the services in each product option.

Esri Vector Basemaps

Esri Vector Basemaps, an additional set of basemaps in vector tile format, is available in Web Mercator Auxiliary Sphere projection and WGS84/GCS tiling scheme; it ships separately on a USB flash drive or can be downloaded from My Esri with most product options. There are five new vector tile layers (map styles) as well as updates to 54 existing style items. The vector tile packages contain updated global data from a variety of sources including commercial, authoritative agencies, and open-source providers, as well as local authoritative data from the Esri Community Maps Program. Vector basemaps can also be customized.

Note:
This feature is not included with the World Basic product option.

OpenStreetMap Vector Basemaps

OpenStreetMap (OSM) Vector Basemaps, an additional set of basemaps in vector tile format, is available in Web Mercator Auxiliary Sphere projection and WGS84/GCS tiling scheme; it ships separately on a USB flash drive or can be downloaded from My Esri with most product options. There is one new and 12 updated OSM vector map styles. The contents of these maps are built from the OpenStreetMap Daylight Distribution data. Vector basemaps can also be customized.

Note:
OSM Vector Basemaps: Basic (WMA only), a set of basemaps in vector tile format, is included on the ArcGIS Data Appliance 2025 World Basic USB flash drive (ships separately or downloaded from My Esri) as part of the World Basic product option.

Note:
ArcGIS Data Appliance: OpenStreetMap Vector Basemaps is in Mature Support in ArcGIS Data Appliance 2025. This is the last release for OSM Vector Basemaps. For ArcGIS Data Appliance 2026, OSM Vector Basemaps will be replaced with new Open Basemap Vector Basemaps, which will include open data from OpenStreetMap and other sources.

World Gazetteer

The World Gazetteer is a places locator that allows you to geocode various types of places around the world. The World Gazetteer locator is composed solely of open-source content, primarily from GeoNames. The GeoNames database itself contains more than 27 million geographical names and consists of more than 12 million unique features with roughly 4.8 million populated places and 15 million alternate names. The gazetteer references a

dataset including countries, states and provinces, administrative areas (for example, counties), cities, landmarks, water bodies, and more. It ships separately on a USB flash drive or can be downloaded from My Esri with most product options.

Note:
World Gazetteer is not included with the World Basic product option.

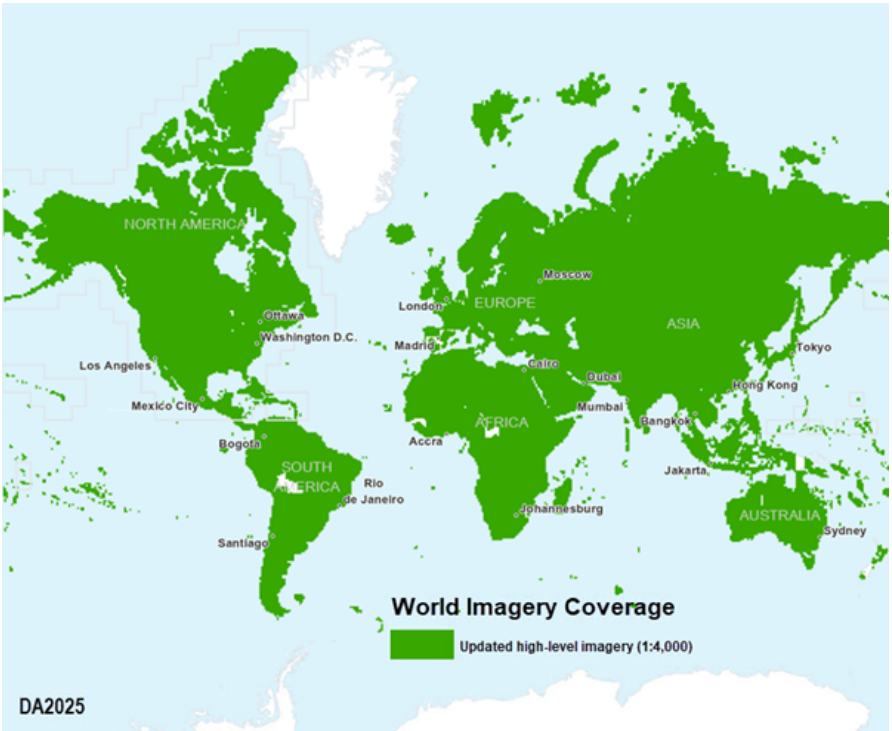
World Places Locator is no longer included with ArcGIS Data Appliance.

World Imagery

The World Imagery basemap was updated with more recent, higher-accuracy, and more detailed imagery.

World Imagery receives updated high-resolution, commercially licensed content globally and contributions from the GIS community in select areas. The commercial content is sourced from Maxar's constellation of high-resolution imaging satellites, while the community contributions are generally high-resolution aerial photography. Additional information is available in the World Imagery service description and in the associated metadata layer provided with your source documents.

The following map shows the updated coverage in this release:



License:
Coverage is defined by the product option you licensed.

World Hillshade and World Hillshade (Dark)

The World Hillshade and World Hillshade (Dark) layers were updated with lidar-derived 30-centimeter elevation data for the Nebraska (USA) counties of Sarpy, Douglas, and Lancaster; 50-centimeter elevation data for Hong Kong

and Cook County (Illinois, USA); 1-meter elevation data for Slovenia, England, France, Berlin (Germany), Hamburg (Germany), and parts of Poland, New Zealand, and the United States; 2-meter elevation data for Saxony-Anhalt (Germany); 5-meter elevation data for New South Wales (Australia) and parts of Poland; and 10-meter elevation data for Italy and the United States.

This release also includes commercial licensed elevation data from Maxar at 50 centimeters for large parts of Asia and Africa along with a few areas in Europe, North America, South America, and Australia.

World Elevation

The Terrain 3D layer was updated with lidar-derived 30-centimeter elevation data for the Nebraska (USA) counties of Sarpy, Douglas, and Lancaster; 50-centimeter elevation data for Hong Kong and Cook County (Illinois, USA); 1-meter elevation data for Slovenia, England, France, Berlin (Germany), Hamburg (Germany), and parts of Poland, New Zealand, and the United States; 2-meter elevation data for Saxony-Anhalt (Germany); 5-meter elevation data for New South Wales (Australia) and parts of Poland; and 10-meter elevation data for Italy and the United States.

The Terrain layer was updated with lidar-derived 30-centimeter elevation data for the Nebraska (USA) counties of Sarpy, Douglas, and Lancaster; 50-centimeter elevation data for Cook County (Illinois, USA); 1-meter elevation data for England, France, Wales, Bavaria (Germany), Saxony (Germany), Brandenburg (Germany), parts of New Zealand, and the United States; and 10-meter elevation data for Italy and the United States.

Elevation Analysis

The Profile, Viewshed, and Summarize Elevation geoprocessing tools were updated with 10-meter elevation data for Italy and the United States along with 30-meter elevation data for the United States, Canada, and Mexico.

In addition, the Profile tool was updated with the GEBCO 2023 grid for the 500 m (15 arc second) DEM Resolution option.

Frequently asked questions

Listed below are questions or issues you may encounter when working with ArcGIS Data Appliance 2025 content, as well as recommended solutions.

How does ArcGIS Data Appliance work?

ArcGIS Data Appliance contains maps that you can publish on ArcGIS Server. The maps have been cached at a set of fixed scale levels for optimum performance. Once you publish these maps to your GIS server, you can use them in any ArcGIS Server client application, such as ArcMap, or web and mobile mapping apps. See Use services for more information.

How do I set up ArcGIS Data Appliance?

You set up ArcGIS Data Appliance by connecting the appliance to your GIS server and publishing the ArcGIS Data Appliance maps through ArcGIS Server. The service definitions you'll need to publish, as well as their associated map caches, are included with each ArcGIS Data Appliance data collection.

If you've published an ArcGIS Server service previously, you may find this process familiar. If you're new to publishing services or working with ArcGIS Server, you'll find instructions in Set up ArcGIS Data Appliance (new user).

What services are available?

For a complete list of available services, see the Directory of maps and data.

Are there any use restrictions when using services?

The data is provided by multiple third-party data vendors under license to Esri for inclusion in ArcGIS Data Appliance for use with Esri software. Redistribution rights are granted by Esri and the data vendor for hard-copy renditions or static, electronic map images that are plotted, printed, or publicly displayed with proper metadata and source or copyright attribution to the respective data vendor or vendors. For copyright and attribution information, see the service description for a specific map service in the Directory of maps and data.

Can I view the metadata for a service?

Yes. For information about viewing metadata, see one of the following metadata topics:

- Metadata for services in the ArcGIS Server 11.3 help under **Manage Services** > **Publish services**
- Metadata for services in the ArcGIS Server 11.2 help under **Manage Services** > **Publish services**
- Metadata for services in the ArcGIS Server 11.1 help under **Manage Services** > **Publish services**
- Metadata for services in the ArcGIS Server 10.9.1 help under **Manage Services** > **Publish services**

Why are my map services missing some tiles at specific levels of detail?

In some cases, when you upgrade ArcGIS Data Appliance from one version to the next, the new service or services may not recognize all of the new content available on the new version of ArcGIS Data Appliance. You can resolve this by rebooting the machine where ArcGIS Server is installed after you Delete ArcGIS services from the previous ArcGIS Data Appliance version.

How do I configure my server to display a Map Data Not Available tile?

There is nothing you need to do. ArcGIS Data Appliance is preconfigured so the ArcGIS Server tile handler automatically returns a blank or Map Data Not Available tile for empty map areas.

With the announcement that some raster basemaps entered Mature Support in 2021, how does this impact ArcGIS Data Appliance?

As of 2021, as announced in the Lifecycle for Esri's hosted raster basemap services blog post, the majority of the raster basemaps on ArcGIS Data Appliance are in Mature Support. This means there will be no additional updates for those basemaps. This is why ArcGIS Data Appliance: Esri Vector Basemaps are delivered to every ArcGIS Data Appliance Standard and Advanced customer. Esri Vector Basemaps have full equivalents to the raster basemaps, as well as numerous offerings that do not exist in raster format. ArcGIS Data Appliance 2022 was the last release to include updates for those raster basemaps. There are several raster basemaps for imagery and elevation that will continue to receive updates because there are no vector basemap equivalents.

Which Esri Vector Basemaps are available to replace raster basemaps?

Raster basemap in Mature Support	Recommended Esri Vector Basemap equivalent
World Dark Gray Canvas Base and Reference	Dark Gray Canvas
World Light Gray Canvas Base and Reference	Light Gray Canvas
World Boundaries and Places	Hybrid Reference
World Transportation	Hybrid Reference
National Geographic World Map	National Geographic Style
World Street Map	World Street Map
World Topographic Map	World Topographic Map

System requirements

System requirements for ArcGIS Data Appliance 2025

The system requirements for ArcGIS Data Appliance 2025 are described below.

Requirements for publishing

To host ArcGIS Data Appliance 2025 services, ArcGIS Server 10.9.1, 11.1, 11.2, or 11.3 is required. It must be installed, configured, and using the latest service packs. If ArcGIS Server is not running, or if you have problems with the installation, see the following:

- ArcGIS Server 11.3—ArcGIS Server (Windows) installation guide
- ArcGIS Server 11.2—ArcGIS Server (Windows) installation guide
- ArcGIS Server 11.1—ArcGIS Server (Windows) installation guide
- ArcGIS Server 10.9.1—ArcGIS Server (Windows) installation guide

Note:
ArcGIS Data Appliance 2025 is the last release that will include support for ArcGIS Server 10.9.1.

ArcGIS Pro 3.1 or later is needed to publish the map services.

The following services on Collections 1, 2, 3, 4, and 5 have special requirements:

- To publish the Terrain and Terrain3D services, ArcGIS Server 10.9.1 or later with ArcGIS Image Server and ArcGIS Pro 3.1 or later with a Standard or Advanced license are required.

  Note:
  The Terrain service is not included with Collection 1.

- To publish the Elevation and ElevationSync geoprocessing services, ArcGIS Server 10.9.1 or later with an Advanced license and ArcGIS Pro 3.1 or later with a Standard or Advanced license are required.

  Note:
  The Elevation and ElevationSync geoprocessing services are not included with Collection 1.

Supported system configurations

ArcGIS Data Appliance for Windows is built on Microsoft Windows Storage Server 2019 Standard and Microsoft Windows Storage Server 2016 Standard.

ArcGIS Server version	Operating system	Tested
ArcGIS Server 11.3	Windows Server 2022 Standard and Datacenter	Yes
ArcGIS Server 11.2	Windows Server 2022 Standard and Datacenter	Yes
ArcGIS Server 11.1	Windows Server 2022 Standard and Datacenter	Yes
ArcGIS Server 10.9.1	Windows Server 2016 Standard and Datacenter	Yes

Note:
ArcGIS Data Appliance may work in other environments supported by ArcGIS Server; however, ArcGIS Data Appliance 2025 has not been tested and certified on other environments.

For more information about ArcGIS Server 11.3 system requirements, see ArcGIS Server 11.3 system requirements.

For more information about ArcGIS Server 11.2 system requirements, see ArcGIS Server 11.2 system requirements.

For more information about ArcGIS Server 11.1 system requirements, see ArcGIS Server 11.1 system requirements.

For more information about ArcGIS Server 10.9.1 system requirements, see ArcGIS Server 10.9.1 system requirements.

For more information about supported system configurations, send an email to Data_Appliance@esri.com.

Esri product teams have a policy of supporting hardware, operating systems, compilers, web browsers, and web servers. For more information, see Supported Environment Policy.

Hardware documentation

Hardware documentation for ArcGIS Data Appliance is available on the Arxys website. On the **Arxys Support** page, scroll down to the **Arxys Support Documentation** section, and the documentation is in the **ArcGIS Data Appliance** section.

Setup

Set up ArcGIS Data Appliance 2025

You set up ArcGIS Data Appliance by connecting the appliance to ArcGIS Server and publishing the ArcGIS Data Appliance 2025 maps through ArcGIS Server. You publish the services using the service definition files and their associated map caches that are included with each data collection.

Before you set up ArcGIS Data Appliance, ensure that you have all the contents in the box that was shipped to you. For detailed information about what should be included in the box and other hardware information, see the Arxys website. On the **Arxys Support** page, scroll down to the **Arxys Support Documentation** section, and the documentation is on the **ArcGIS Data Appliance** tab.

In addition, verify that all the system requirements are met.

Setup instructions vary depending on whether you are a new or existing user; follow the instructions that apply to you:

- New user
- Existing user

Set up ArcGIS Data Appliance (new user)

Follow the steps below to complete the ArcGIS Data Appliance 2025 setup process to begin using basemaps.

1. Unpack the components
2. Install the rackmount kit
3. Cable the ArcGIS Data Appliance
4. Power on the server
5. Setup Windows Server
6. Log in to the ArcGIS Data Appliance
7. Update Windows Server
8. Create ArcGIS users on ArcGIS Data Appliance
9. Create shares for the new data collections
10. Configure the cache directories
11. Publish the services
12. Use the services

You can find instructions for steps 1 through 7 in the ArcGIS Data Appliance Quick Start Guide at the Arxys Support page on its website. Scroll down to the **Arxys Support Documentation** section, and the documentation is in the **ArcGIS Data Appliance** section.

Prerequisites

ArcGIS Server 10.9.1 or later is required for ArcGIS Data Appliance 2025. If you purchased a license for ArcGIS Data Appliance with ArcGIS Server, install ArcGIS Server before performing the steps. For more information about what's supported, see System requirements.

⚠ Caution:

It is imperative that care and precautions be taken when handling the data collection hard drives.

Step 1: Unpack the components

ArcGIS Data Appliance is shipped with the data collection hard disk drives installed, depending on your product option. It is recommended that two people remove ArcGIS Data Appliance from its shipping box.

Step 2: Install the rackmount kit

ArcGIS Data Appliance ships with a rackmount rail kit. Remove the hard disk drives from the system before attempting to install the ArcGIS Data Appliance into a rack. Follow the instructions shipped with the rackmount rail kit.

Step 3: Cable the ArcGIS Data Appliance

ArcGIS Data Appliance hardware requires two AC power sources. Connect both power cords. Connect a monitor to the VGA port. Connect a keyboard and mouse to USB ports. Network connectivity is required during the operation

of ArcGIS Data Appliance. Plug an Ethernet cable into the Ethernet port of the data appliance. A network cable should also be connected to the management port for later usage.

Step 4: Power on the server

To power on ArcGIS Data Appliance, press the power button. The Microsoft Windows operating system requires an initial configuration when used for the first time. Allow the server to boot uninterrupted; it may reboot as the final configuration is applied to the system.

Step 5: Setup Windows Server

Once the system is done booting, follow the on-screen instructions. Refer to the ArcGIS Data Appliance Quick Start Guide on the Arxys website for information about activating Windows and for details about system setup.

Step 6: Log in to ArcGIS Data Appliance

Follow the onscreen instructions to log in to ArcGIS Data Appliance.

Step 7: Update Windows Server

ArcGIS Data Appliance ships with the Microsoft Windows Server operating appliance. Microsoft routinely releases updates and patches to improve stability and security. Any updates released after ArcGIS Data Appliance has shipped must be applied.

Step 8: Create ArcGIS users on ArcGIS Data Appliance

To create ArcGIS users on ArcGIS Data Appliance, see Create ArcGIS users for instructions.

Step 9: Create shares for the new data collections

To create shares, see Create shares for instructions.

Step 10: Configure the cache directories

To configure the cache directories, see Configure the cache directories for instructions.

Note:
If you're using the World_Imagery service for World Standard or Advanced or North America Standard or Advanced collections, you also must configure the source documents directories.

Step 11: Publish the services

To publish the services included with ArcGIS Data Appliance, see the following topics:

- Publish basemap and reference layer services
- Publish World Elevation services
- Publish elevation analysis geoprocessing services

Note:
Optionally, add ExportTiles functionality to download map tiles from the server for offline use.

Step 12: Use the services

See Use services for instructions on how to use the services included with ArcGIS Data Appliance.

Set up ArcGIS Data Appliance (existing user)

Follow the steps below to complete the ArcGIS Data Appliance 2025 update process for existing ArcGIS Data Appliance users.

The update process consists of the following steps. For instructions and for help with the services, use the links below:

1. Unpack the components
2. Delete ArcGIS services from your previous ArcGIS Data Appliance installation
3. Shut down data appliance
4. Remove the old data collection hard drives and install the new ones
5. Power on the server
6. Verify the new data collection hard drives
7. Create shares for the new data collections
8. Configure the cache directories
9. Publish the services
10. Use the services

You can find instructions for steps 1, and 3 through 6 in the ArcGIS Data Appliance Administrator Guide at the Arxys Support page on its website. Scroll down to the **Arxys Support Documentation** section, and the documentation is in the **ArcGIS Data Appliance** section.

Prerequisites

ArcGIS Server 10.9.1 or later is required for ArcGIS Data Appliance 2025. If you are planning to upgrade to a more recent version of ArcGIS Server, it is recommended that you do so prior to installing your collections. For more information on what's supported, see System requirements. Services for ArcGIS Data Appliance data collections that are installed on your ArcGIS Data Appliance server will be unavailable during the installation process. This update takes approximately two hours to complete.

⚠ Caution:

It is imperative that care and precautions be taken when handling the data collection hard drives.

Step 1: Unpack the components

An ArcGIS Data Appliance update is shipped with the data collection hard disk drives, depending on your product option.

Step 2: Delete ArcGIS services from your previous ArcGIS Data Appliance installation

To update ArcGIS Data Appliance, ArcGIS services that use ArcGIS Data Appliance 2024 must be deleted from ArcGIS Server before you disconnect the hard drives. See Delete ArcGIS services for instructions.

Note:
After all the services are deleted, reboot the machine where ArcGIS Server is installed.

Legacy:
Do not delete the legacy services if you intend to continue to use these services.

Step 3: Shut down data appliance

Shut down the data appliance. Although the data appliance has hot-swappable hard drive bays, hot swapping an entire data collection is not supported.

Step 4: Remove the old data collection hard drives and install the new ones

For instructions on how to physically remove the old data collection hard drives and install the new data collection hard drives, see the sections on removing the old data collection and installing the new data collection in the ArcGIS Data Appliance Administrator Guide at the Arxys Support page on its website.

Legacy:
Do not unplug the legacy hard drives if you intend to continue to use these services.

Step 5: Power on the server

To turn on ArcGIS Data Appliance, press the power button. The Microsoft Windows Storage Server operating system performs a number of system checks to verify the integrity of the file system. Allow the data appliance to boot uninterrupted.

Step 6: Verify the new data collection hard drives

Before using the storage resources provided by ArcGIS Data Appliance, the health of the solid-state disk (SSD), hard disk drives (HDD), and redundant array of independent disks (RAID) arrays should be verified.

ArcGIS Data Appliance ships with the LSI Storage Authority (LSA) utility pre-installed. This utility is used to verify the status of the HDDs configured with imagery collections. LSA uses the local web browser. Use any local or domain administrative account to log in. See the section on checking collection health in the ArcGIS Data Appliance Administrator Guide at the Arxys Support page on its website.

Step 7: Create shares for the new data collections

To create shares, see Create shares for instructions.

Step 8: Configure the cache directories

To configure the cache directories, see Configure the cache directories for instructions.

Note:
If you're using the World_Imagery service for World Standard or Advanced, or North America Standard or Advanced collections, you also must configure the source documents directories.

Step 9: Publish the services

To publish the services included with ArcGIS Data Appliance, see the following topics:

- Publish basemap and reference layer services
- Publish World Elevation services
- Publish elevation analysis geoprocessing services

Note:
Optionally, add ExportTiles functionality to download map tiles from the server for offline use.

Step 10: Use the services

See Use services for instructions on how to use the services included with ArcGIS Data Appliance.

Delete ArcGIS services

To update to ArcGIS Data Appliance 2025 data collections, ArcGIS services that use the ArcGIS Data Appliance 2024 services must be deleted from ArcGIS Server before you disconnect ArcGIS Data Appliance 2024.

ArcGIS Data Appliance 2024 services

MapServer	ImageServer	GPServer
Antarctic_Imagery*		
Arctic_Imagery*		
Arctic_Ocean_Base*		
Arctic_Ocean_Reference*	Terrain**	Elevation**
World_Hillshade	Terrain3D	ElevationSync**
World_Hillshade_Dark		
World_Imagery		
World_Ocean_Base		

* These services are not included on Collections 1, 4, or 5.

** These services are not included on Collection 1.

Note:
When you delete a service from ArcGIS Server, any client application using the service can no longer access it.

To delete ArcGIS Data Appliance 2024 services, complete the following steps:

1. Sign in to ArcGIS Server using the ArcGIS Data Appliance data account with administrator privileges.
2. Start Server Manager and sign in using your Primary Site Administrator account.
3. Click **Services** and click **Manage Services**.
4. Locate each ArcGIS Data Appliance 2024 service in the **Services** module and select the services to stop using the **Stop** button ■.
5. Locate each ArcGIS Data Appliance 2024 service in the **Services** module and click the **Delete** button × to the right of the listed service name. When the **Are you sure you want to delete the service** message appears, click **Yes**.
   The service is deleted from your ArcGIS Server site.
6. After all the services are deleted, reboot the machine where ArcGIS Server is installed.

Now you can disconnect the earlier data appliance and connect the new appliance. For details on how to proceed with this process, see the data appliance hardware documentation on the Arxys website. Under **Arxys Support Documentation**, select the **ArcGIS Data Appliance** tab.

For more information about deleting ArcGIS services, see the following:

- For ArcGIS Server 11.3, see Delete a service in the ArcGIS Server 11.3 help by clicking **Manage Services** > **Work with services**.

- For ArcGIS Server 11.2, see Delete a service in the ArcGIS Server 11.2 help by clicking **Manage Services** > **Work with services**.
- For ArcGIS Server 11.1, see Delete a service in the ArcGIS Server 11.1 help by clicking **Manage Services** > **Work with services**.
- For ArcGIS Server 10.9.1, see Delete a service in the ArcGIS Server 10.9 help by clicking **Manage Services** > **Work with services**.

Create ArcGIS users

The ArcGIS user on ArcGIS Server must be created on ArcGIS Data Appliance. The following instructions are for a new ArcGIS Data Appliance configuration on Windows:

1. Sign in to ArcGIS Data Appliance as an administrator.
2. Right-click the **Start** menu and select **Computer Management**.
3. In the Computer Management application, click **Local Users and Groups** to expand the tree, and click the **Users** directory.
4. In the main pane, right-click and select **New User**.
   The **New User** wizard pane appears.
5. Use the **New User** wizard pane to create the user described in the following table. Configure the password to match the password for the respective account on ArcGIS Server, and set the password to never expire.

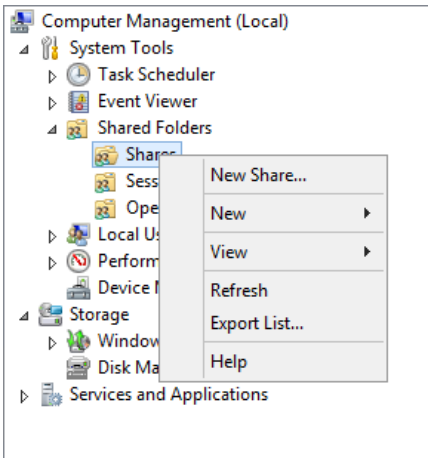
Username	Full name	Description
arcgis	ArcGIS Server account	Account to perform a variety of functions in support of ArcGIS Server

6. Click **Create** to create the user on ArcGIS Data Appliance.

Create shares

ArcGIS Data Appliance 2025 must be configured to share the ArcGIS Data Appliance collections with ArcGIS Server. The following instructions are for an ArcGIS Data Appliance configuration on Windows:

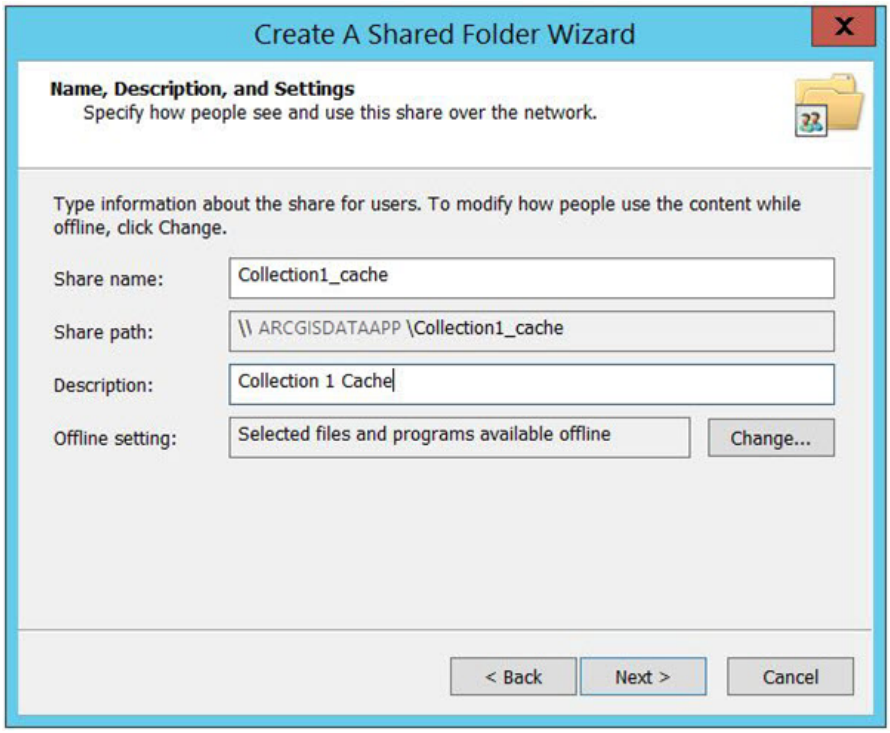
1. Sign in to ArcGIS Data Appliance as an administrator.
2. Right-click the **Start** menu and select **Computer Management**.
3. In the Computer Management application, click **Shared Folders** to expand the tree, right-click the **Shares** folder, and choose **New Share**.



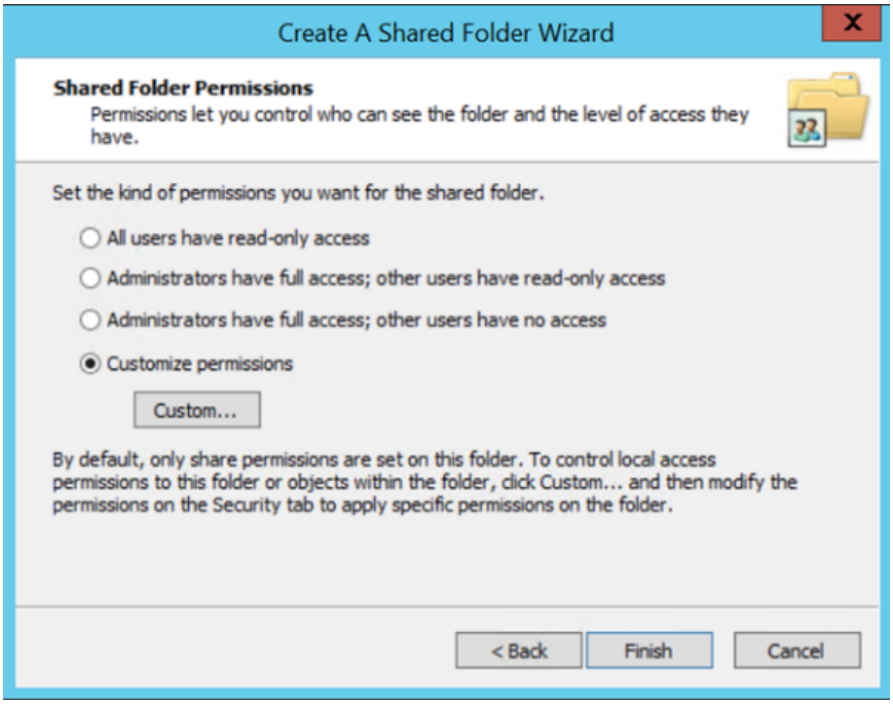
4. In the **Create a Shared Folder Wizard** window, click **Next** to begin.
5. For **Folder Path**, click **Browse**, and browse to the hard drive with the ArcGIS Data Appliance collection. Select the cache directory (or the source_documents directory) to be shared and click **OK**.
6. Click **Next**.
7. On the **Name, Description, and Settings** dialog box, provide the **Share name** and **Description** text as indicated in the following table. For **Offline setting**, accept the default.
   Each product option comes with one collection of drives. Each collection requires uniquely named shares for the cache and source documents directories. When you enter the share name and description, use the following naming convention for your cache shares and source document shares according to the product option you purchased.

Collection	Directory	Share name	Description
Collection 1	\Collection1\cache	Collection1_cache	Collection 1 Cache
	\Collection1\ source_documents	Collection1_source_documents	Collection 1 Source Documents
Collection 2	\Collection2\cache	Collection2_cache	Collection 2 Cache
	\Collection2\ source_documents	Collection2_source_documents	Collection 2 Source Documents
Collection 3	\Collection3\cache	Collection3_cache	Collection 3 Cache
	\Collection3\ source_documents	Collection3_source_documents	Collection 3 Source Documents

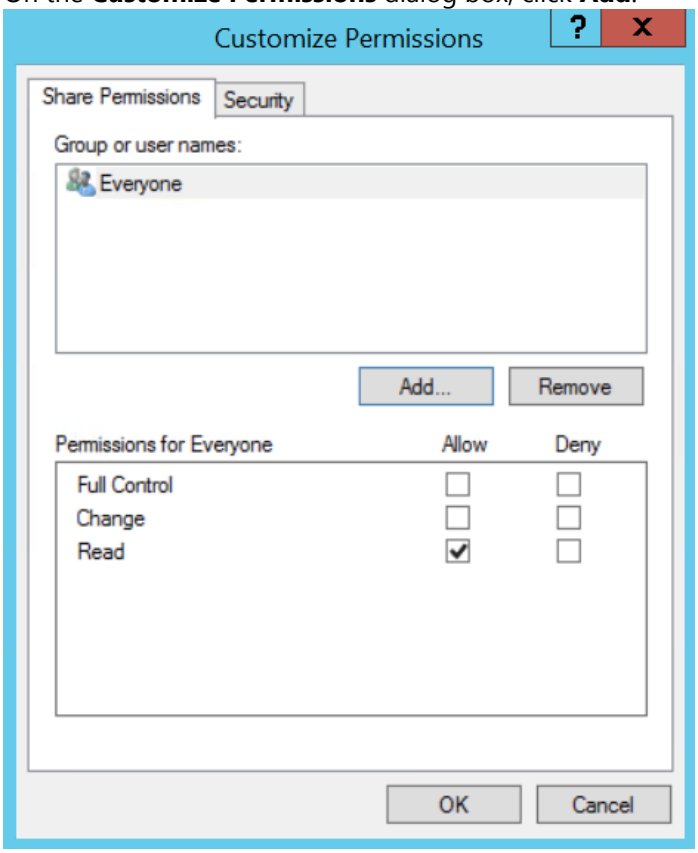
Collection	Directory	Share name	Description
Collection 4	\Collection4\cache	Collection4_cache	Collection 4 Cache
	\Collection4\ source_documents	Collection4_source_documents	Collection 4 Source Documents
Collection 5	\Collection5\cache	Collection5_cache	Collection 5 Cache
	\Collection5\ source_documents	Collection5_source_documents	Collection 5 Source Documents



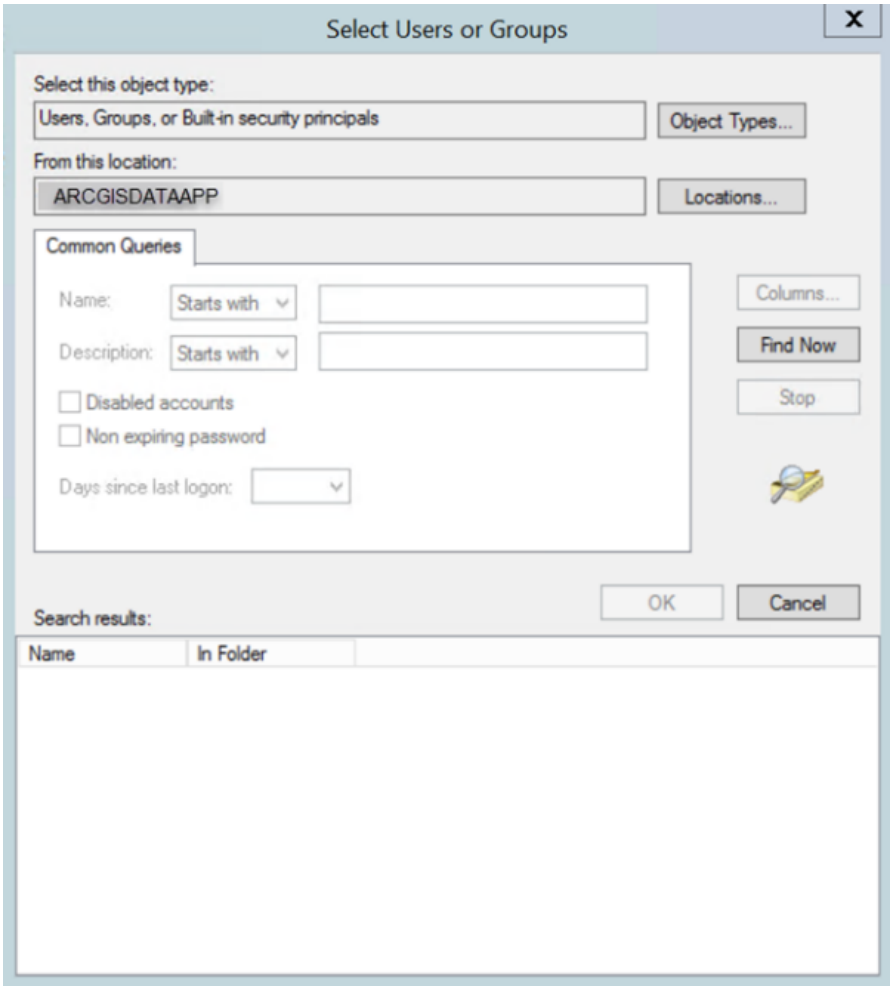
8. Click **Next**.
9. Choose the **Customize permissions** option and click **Custom**.



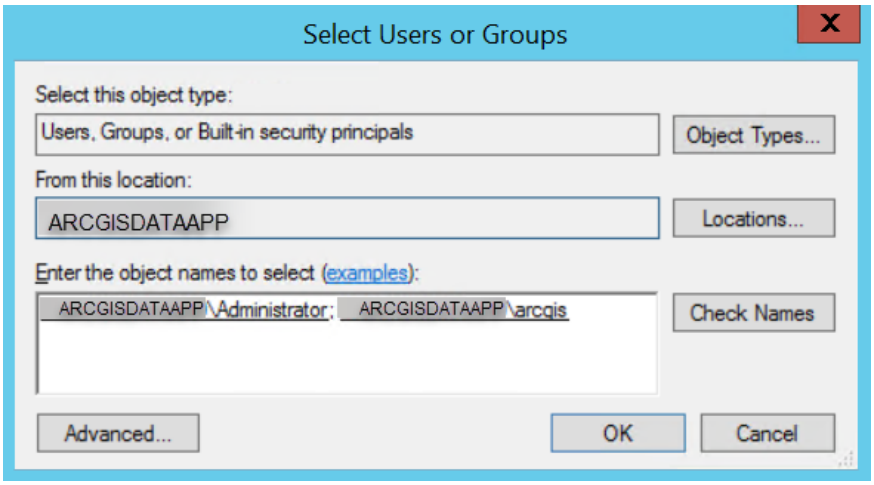
10. On the **Customize Permissions** dialog box, click **Add**.



11. On the **Select Users or Groups** dialog box, click **Advanced**.
    The **Select Users or Groups** dialog box expands.



12. Click **Find Now** to display a list of all local users. Press the `Ctrl` key and click the Administrator user and the arcgis user to highlight them. With both users highlighted, click **OK** above the **Search results** area.
The dialog box reverts to a smaller size, and the two users you selected are listed under **Enter the object names to select**.



13. Click **OK**.
14. Ensure that the permissions for the users and groups are set to **Full Control**.

15. Repeat steps 3 through 14 to create a share for the source_documents directories for the ArcGIS Data Appliance collection in your ArcGIS Data Appliance product option.

Configure the cache directories

ArcGIS Server maintains a list of directories in which it can find map cache tiles. You must explicitly add the ArcGIS Data Appliance cache directory to this list.

1. Sign in to ArcGIS Server using the ArcGIS Data Appliance data account with administrator privileges.
2. Start Server Manager and sign in using your Primary Site Administrator account.
3. Click the **Site** tab.
4. On the **Server Configuration** tab, click **Directories**.
5. Click the **Add Directory** button.
6. Provide a name, for example, `Collection1_Cache`. From the **Type** list, choose **Cache**.
7. For **Location**, provide the path to the cache directory on the ArcGIS Data Appliance collection you made when you created shares, for example, `\\ARCGISDATAAPP\CollectionX_cache`, in which X is the number of the collection you created shares for.
   You do not need to specify a **Description**, **Cleaning Mode**, or **Maximum File Age** value.
8. Click **Add** to add the directory.

Configure the source documents directories

⚠ Caution:

You must complete these steps before you publish the World_Imagery service; otherwise, you cannot view Imagery Citations.

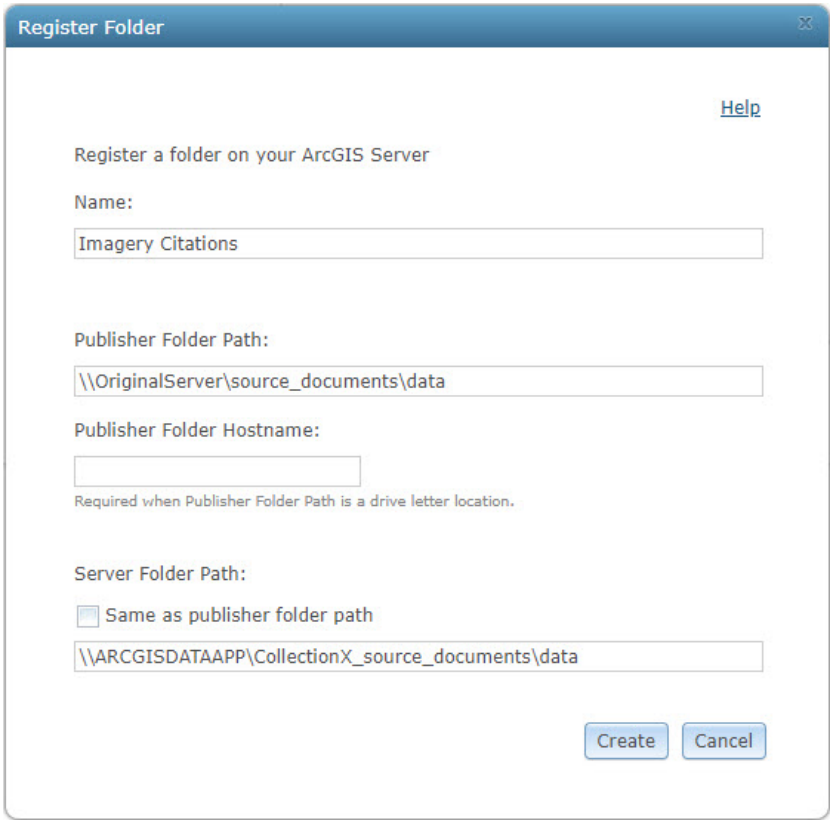
ArcGIS Server maintains a list of directories in which it can find file geodatabases. If you are publishing the World_Imagery service for World Standard (on Collection 2), World Advanced (on Collection 3), North America Standard (on Collection 4), or North America Advanced (on Collection 5), you need to explicitly add the ArcGIS Data Appliance source documents directories to this list.

Note:

You do not need to perform this step if you are publishing the World_Imagery service for Collection 1 (World Basic).

To configure the directories, complete the following steps:

1. Sign in to ArcGIS Server using the ArcGIS Data Appliance data account with administrator privileges.
2. Start Server Manager and sign in using your Primary Site Administrator account.
3. Click the **Site** tab.
4. On the **Server Configuration** tab, click **Data Stores**.
5. Click the **Register** drop-down arrow and choose **Folder**.
6. On the **Register Folder** dialog box, provide a value in the **Name** field, for example, `Imagery Citations`.



7. For **Publisher Folder Path**, type `\\OriginalServer\source_documents\data`.
   You do not need to specify a name for **Publisher Folder Hostname**.
8. For **Server Folder Path**, uncheck the **Same as publisher folder path** check box, and provide the path to the `source_documents\data` directory on the ArcGIS Data Appliance collection you created when you created shares, for example, `\\ARCGISDATAAPP\CollectionX_source_documents\data`, in which X is the number of the collection you created shares for.
9. Click **Create** to register the directory.

Publish basemap and reference layer services

Using ArcGIS Server Manager, you can publish a service definition file (`.sd`) as a service. The service definition is uploaded to the server as part of the publishing process. You don't have to copy it to the server first.

To publish a service definition using ArcGIS Server Manager, follow these steps for each service you want to create:

1. Open ArcGIS Server Manager and sign in.
2. Click **Services** > **Manage Services** > **Publish Service**.
3. Browse to **CollectionX_source_documents > service_definitions** on the ArcGIS Data Appliance data collection, for example, `\\ARCGISDATAAPP\CollectionX_source_documents\service_definitions`, where `CollectionX` is the number or letters of the ArcGIS Data Appliance collection for your product option.

Note:
If you plan to publish to ArcGIS Server 10.9.1, you should use the service definitions located in the service_definitions_10 folder. Also, for `Terrain3D`, a service definition file is no longer used; Terrain3D publishing steps are provided at the end of this topic.

ArcGIS Data Appliance 2025 service definitions include services as follows:

Map services

- `Antarctic_Imagery.sd`
- `Arctic_Imagery.sd`
- `Arctic_Ocean_Base.sd`
- `Arctic_Ocean_Reference.sd`
- `World_Hillshade.sd`
- `World_Hillshade_Dark.sd`
- `World_Imagery.sd`
- `World_Ocean_Base.sd`

Note:
Map services are on the following collections depending on your product option: Collection1 (World Basic), Collection2 (World Standard), Collection3 (World Advanced), Collection4 (North America Standard), or Collection5 (North America Advanced). World Basic and North America collections do not include the Antarctic or Arctic services.

Note:
If you want to view the Citations for the World Imagery map service, you must Configure ArcGIS Server to use the source documents directories before you publish `World_Imagery.sd`. This process is not necessary for the World_Imagery service included with World Basic (on Collection1).

Image services

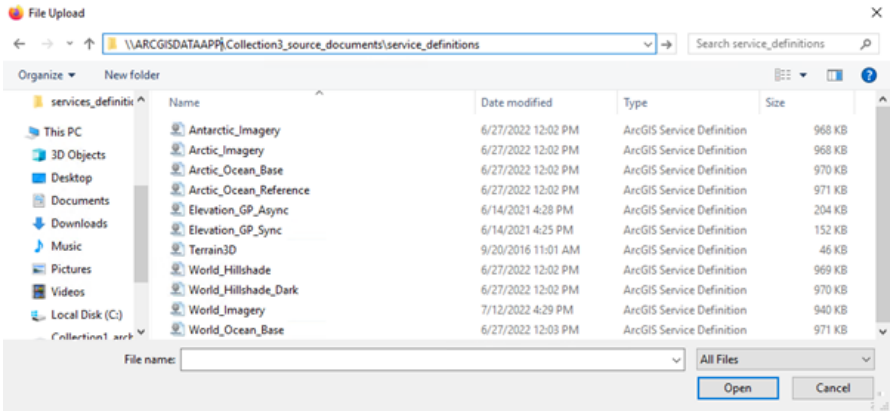
- `Terrain3D.sd`

Note:
If you plan to publish the Terrain3D service, you must have the ArcGIS Image Server installed.

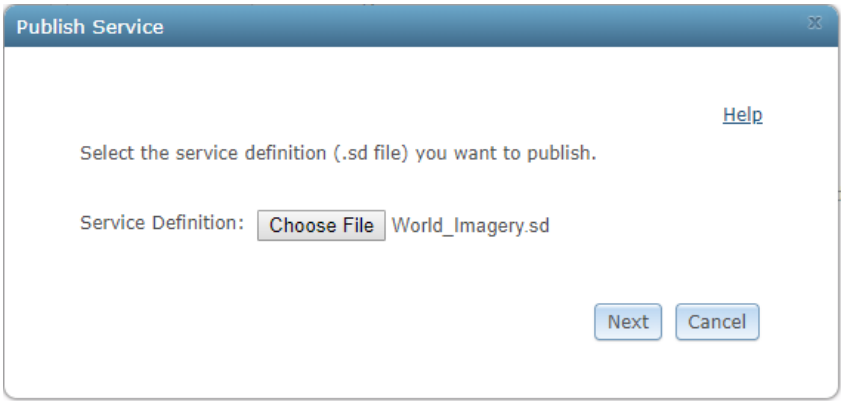
Note:
Image services are on the following collections depending on your product option: Collection1 (World Basic), Collection2 (World Standard), Collection3 (World Advanced), Collection4 (North America Standard), or Collection5 (North America Advanced).

Note:
For `Terrain3D` on ArcGIS Server, a service definition file is no longer used; Terrain3D publishing steps are provided at the end of this topic.

4. Select the service definition you want to publish, for example, `World_Imagery.sd`, and click **Open**.

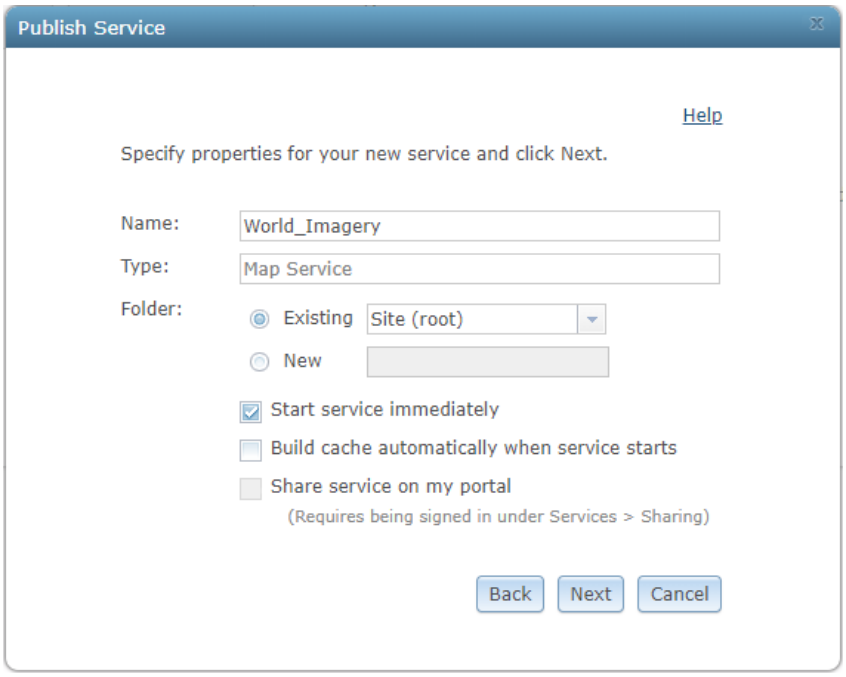


5. Click **Next**.



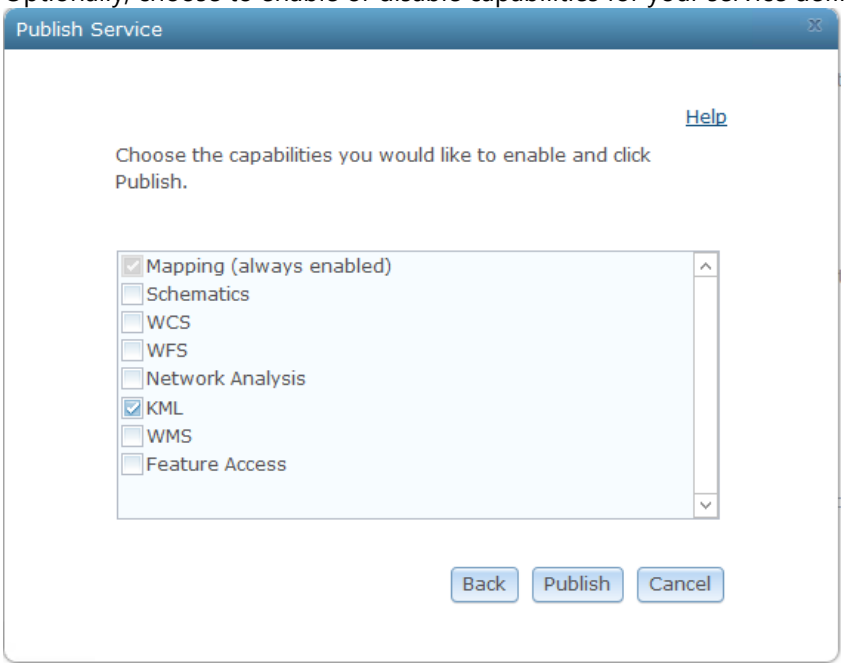
By default, the service definition is published to the server folder specified in the service definition configuration. You must publish the service definition to this root folder.

6. If **Build cache automatically when service starts** is checked, uncheck it.



Note:
It is recommended that all your service names match the names of the service definition file; you should not change a service name to a different name.

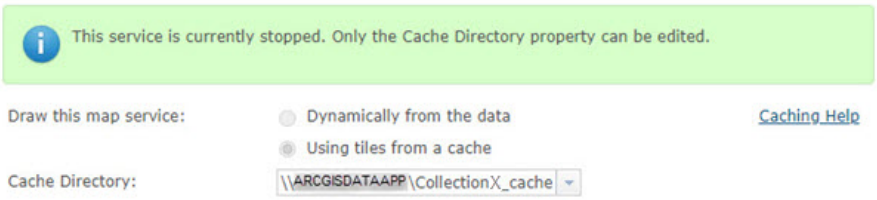
7. Optionally, choose the GIS server cluster that will host the published service definition.
   To learn more, see Upgrade a multiple-cluster site for Windows.
8. Click **Next**.
9. Optionally, choose to enable or disable capabilities for your service definition.



10. Click **Publish** to publish the service definition as a service.
    The new service appears in the list of available services.

    The publishing process uses the first directory in the server's list of cache directories. You need to change it to the ArcGIS Data Appliance cache directory that was previously created.

11. Click the **Stop** button ■ to stop the service.
12. Click the **Edit** button to edit the service properties.
13. Click **Caching**, and change the cache directory setting to reference the ArcGIS Data Appliance collection, for example, `\\ARCGISDATAAPP\CollectionX_cache`, where X is the number of the collection.



14. Click **Save** to save your changes, and click the **Start** button ▶ to restart the service.
15. Repeat this process for any other map services you want to publish.

Publish Terrain3D on ArcGIS Server

To publish the Terrain3D service on ArcGIS Server, complete the workflows below to edit the paths in the .json file, register data stores, and publish the .json file using ArcGIS REST administrator. You need ArcGIS Desktop Standard or Advanced along with ArcGIS Image Server to publish Terrain3D.

Edit the paths in the .json file

When ArcGIS Data Appliance is deployed in your network, the paths for the cache and source documents directories in the `.json` file need to be updated.

In the following steps, the `server-ip` value is the network IP or server name of the data appliance, and `CollectionX` is the collection where the Terrain3D service is located: Collection1 (World Basic), Collection2 (World Standard), Collection3 (World Advanced), Collection4 (North America Standard), or Collection5 (North America Advanced).

Complete the following steps to update the paths:

1. In a text editor, browse to `.\CollectionX_source_documents\Terrain3D_11\JSON` and open `Terrain3D.ImageServer.json`.
2. Find and replace `\\\\server-ip\\CollectionX_cache` with `\\\\user-server-ip\\CollectionX_cache`, where `user-server-ip` is the network IP or server name of ArcGIS Data Appliance, and `CollectionX` is the collection where the Terrain3D image service is located.

3. Find and replace `\\\\server-ip\\CollectionX_source_documents` with `\\\\user-server-ip\\CollectionX_source_documents`, where `user-server-ip` is the network IP or server name of ArcGIS Data Appliance, and `CollectionX` is the collection where the Terrain3D image service is located.

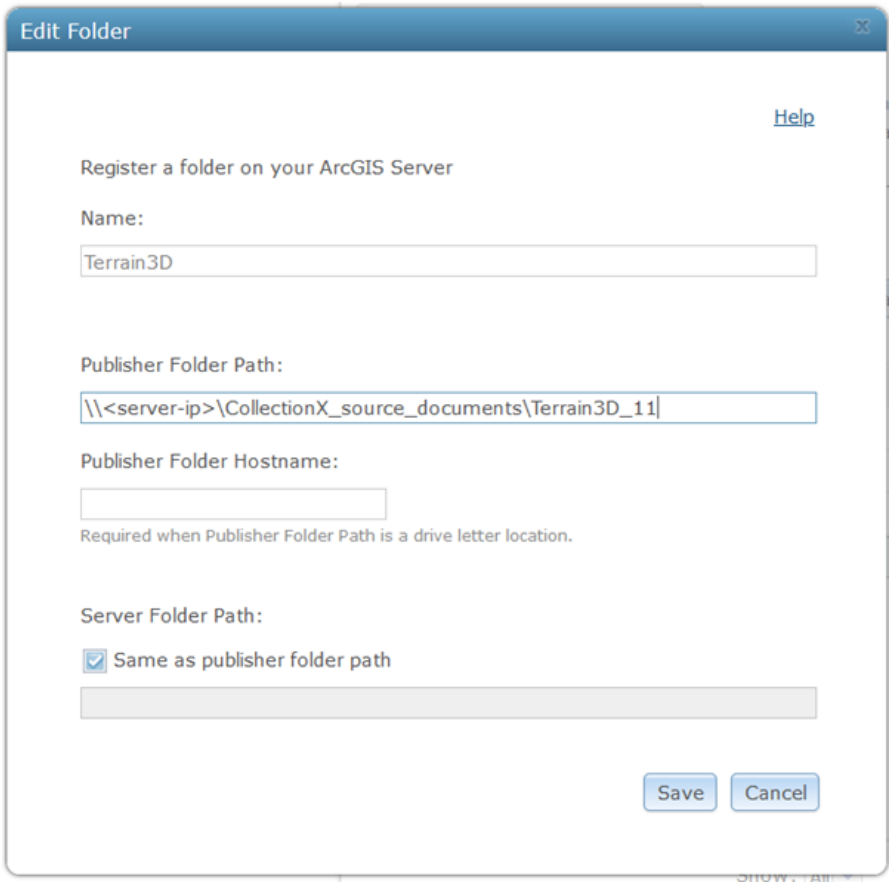
   Note:
   Ensure that the paths contain double backslashes (\\\\).

4. Save the changes.

Register data stores

Complete the following steps to register the data stores for Terrain3D:

1. Sign in to ArcGIS Server using the ArcGIS Data Appliance data account with administrator privileges.
2. Start Server Manager and sign in using your Primary Site Administrator account.
3. Click the **Site** tab.
4. From the **Server Configuration** tab, click **Data Stores**.
5. Click the **Register** drop-down arrow and choose **Folder**.
6. Provide a value for the **Name** parameter, for example, `Terrain3D`.



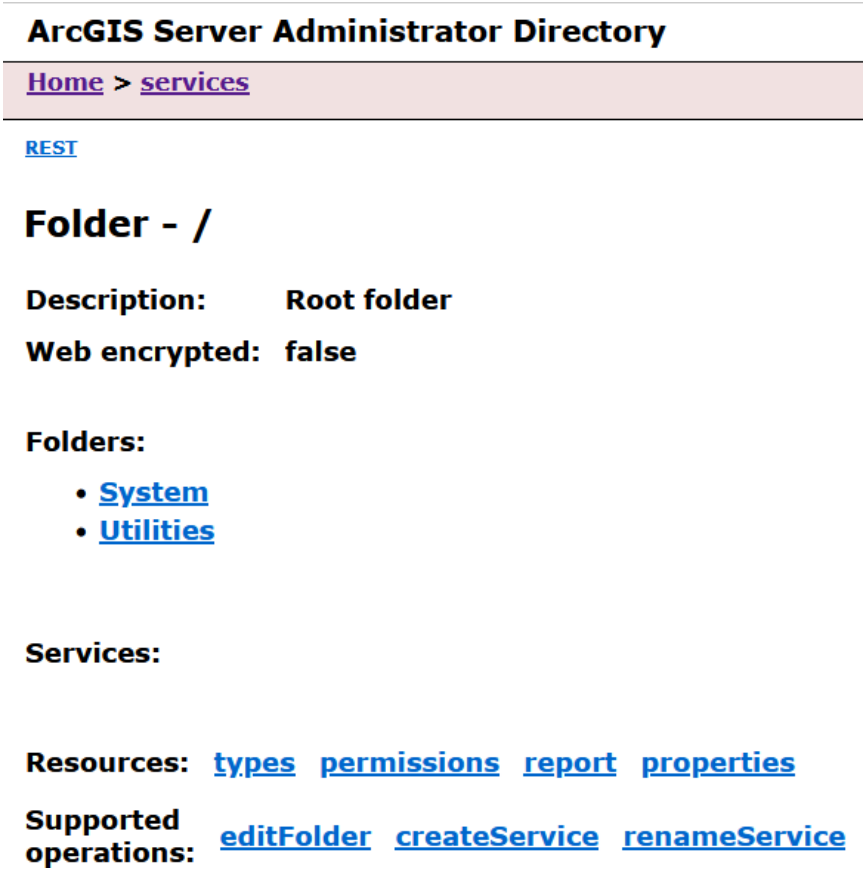
7. For **Publisher Folder Path**, use `\\<server-ip>\CollectionX_source_documents\Terrain3D_11`, where `<server-ip>` is the network IP or server name of ArcGIS Data Appliance, and `CollectionX` is the collection where the Terrain3D image service is located.
   You do not need to specify a name for **Publisher Folder Hostname** or **Server Folder Path**.
8. Click **Create** to register the directory.

Publish the .json file using ArcGIS REST administrator

Follow the steps below to publish the `\Terrain3D_11\JSON\Terrain3D.ImageServer.json` file using ArcGIS REST administrator.

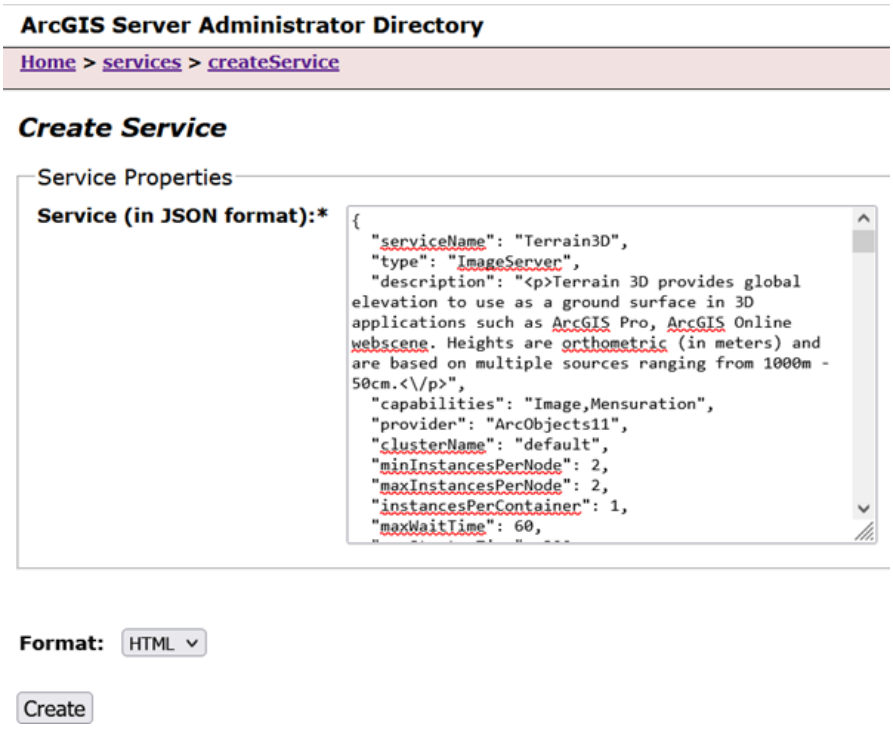
1. Sign in to the ArcGIS Server Administrator Directory using the URL `https://<server name>:6443/arcgis/admin`.

2. Click **services** to view the available services under the root folder.
3. Click **CreateService**.



The **Create Service** page appears.

4. Copy and paste the contents of `Terrain3D.ImageServer.json` into the **Service (in JSON format)** field.



5. Click **Create** to complete the publishing of the Terrain3D service.
   The Terrain 3D service is ready to use.

   Refer to Use the Terrain3D service for instructions on how to use service in ArcGIS Pro, and ArcGIS Online or Portal for ArcGIS.

For more information about ArcGIS Server 11.3, see Share a service with your ArcGIS organization using Server Manager in the ArcGIS Server 11.3 help by clicking **Manage services** > **Work with services**.

For more information about ArcGIS Server 11.2, see Share a service with your ArcGIS organization using Server Manager in the ArcGIS Server 11.2 help by clicking **Manage services** > **Work with services**.

For more information about ArcGIS Server 11.1, see Share a service with your ArcGIS organization using Server Manager in the ArcGIS Server 11.1 help by clicking **Manage services** > **Work with services**.

For more information about ArcGIS Server 10.9.1, see Share a service with your ArcGIS organization using Server Manager in the ArcGIS Server 10.9.1 help by clicking **Manage services** > **Work with services**.

Publish the World Elevation services

The World Elevation services—Terrain and Terrain 3D image services—are available with most product options on Collections 1, 2, 3, 4, and 5. To use the Terrain and Terrain 3D services, you must publish the services on ArcGIS Server 10.9.1, 11.1, 11.2, or 11.3 with ArcGIS Image Server and ArcGIS Pro 3.1 or later with a Standard or Advanced license.

Note:
The Terrain service is not included with Collection 1.

Terrain

The components for setting up the Terrain image service are organized under the `WorldElevation` folder at `\\<server-ip>\CollectionX_source_documents\data`, where `<server-ip>` is the network IP or server name of the data appliance, and `CollectionX` is the collection where the World Elevation content is located: Collection2 (World Standard), Collection3 (World Advanced), Collection4 (North America Standard), or Collection5 (North America Advanced).

Note:
In the following steps, when the UNC path `\\<server-ip>\CollectionX_source_documents\data` is mentioned, `<server-ip>` denotes the network IP or server name of the data appliance, and `CollectionX` denotes the collection where the World Elevation content is located.

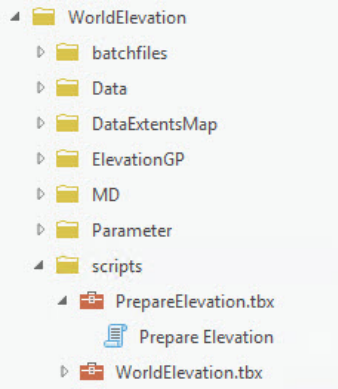
Use the following workflows to prepare the Terrain content and publish the Terrain image service.

Prepare the Terrain content

The mosaic datasets and auxiliary files are prepared using the default path `Y:\WorldElevation`, which needs to be repaired based on the UNC path of the World Elevation content on ArcGIS Data Appliance. In addition, path information for RasterFunctionTemplates and `.json` files for publishing need to be updated.

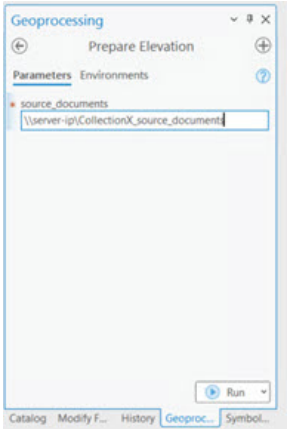
Follow the steps below to repair the paths:

1. Start ArcGIS Pro. On the start page, under **New Project**, click **Map**, and provide a name for the project.
2. In **Catalog** pane, right-click **Folders** under the **Project** tab, and click **Add Folder Connection**. In the **Add Folder Connection** dialog box, provide the UNC path of the WorldElevation folder, for example, `\\<server-ip>\CollectionX_source_documents\data\WorldElevation`.
3. Click **OK**.
4. Under Folders, expand the WorldElevation folder in the **Catalog**. Under scripts, expand `PrepareElevation.tbx`, and double-click the Prepare Elevation tool.



The **Prepare Elevation** dialog box appears.

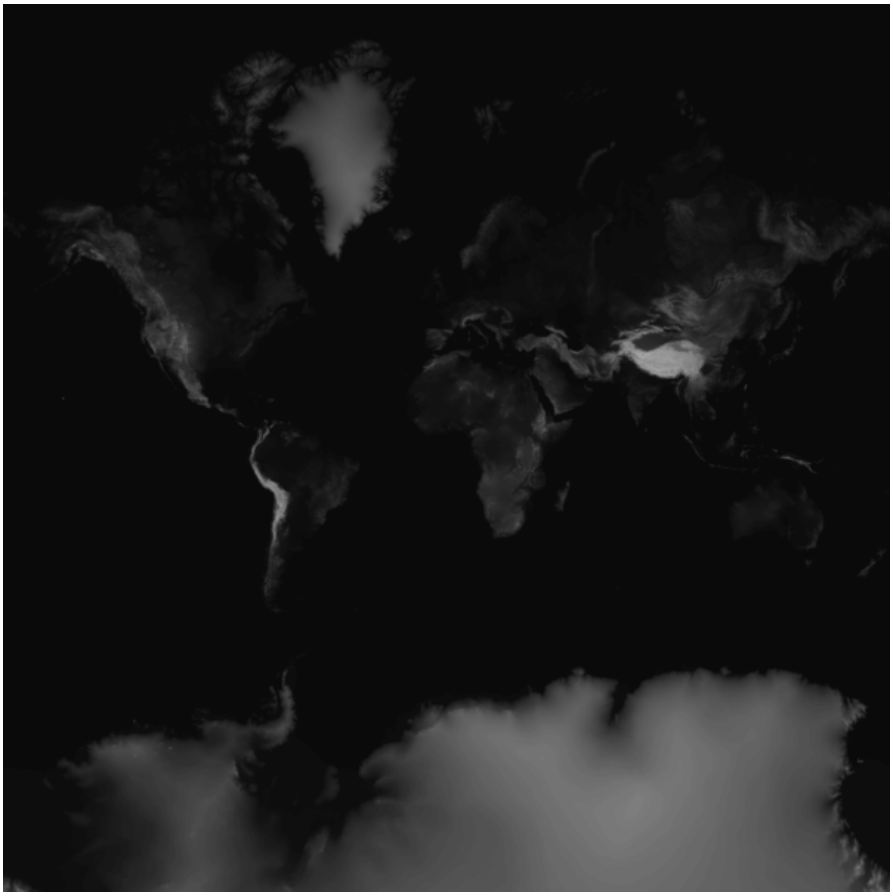
5. In the **source_documents** field, insert the UNC path, for example, `\\<server-ip>\CollectionX_source_documents`.



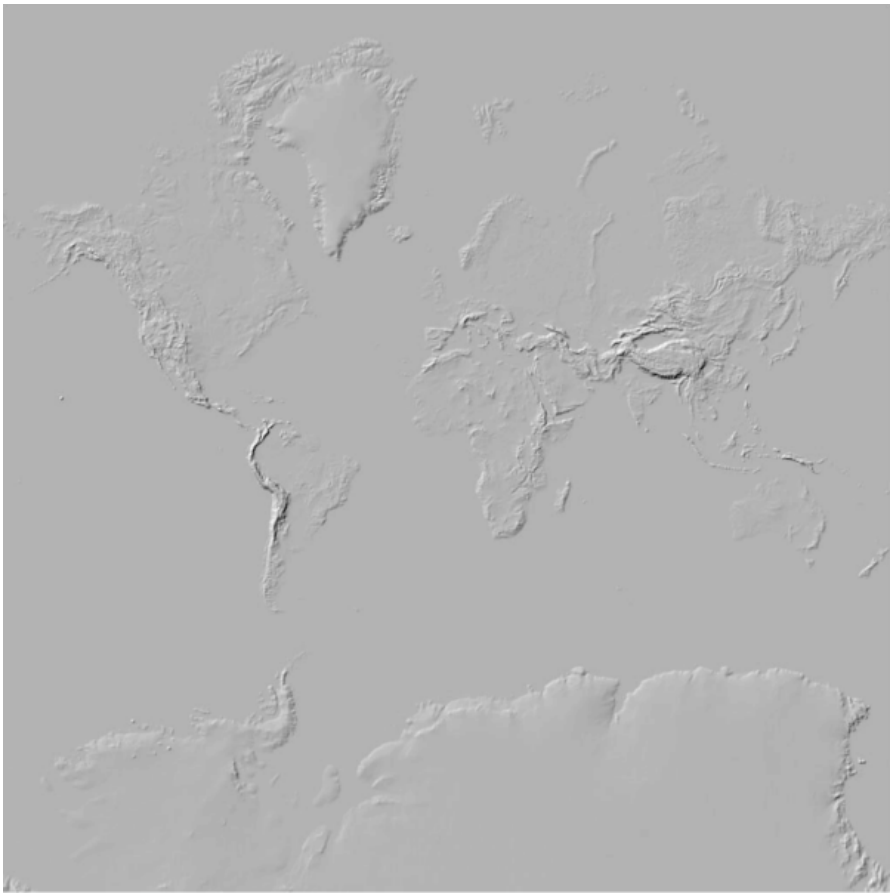
6. Click **Run**.
   This make take a few minutes, and upon successful completion, you see following message:

   The tool has repaired paths for the **S_EGM2008**, **D_HollandFix, R_WorldDTMHillshade**, and **D_WorldDTM** mosaic dataset items which are now pointing to the UNC path. It has also filled in path information for RasterFunctionTemplates and `.json` files for publishing.

7. From the **Catalog** pane, browse to `.\WorldElevation\MD\WorldElevation.gdb` and expand the geodatabase. Drag the **D_WorldDTM** mosaic dataset to the **Map** window.
   It draws as elevation (DTM) for the whole world.



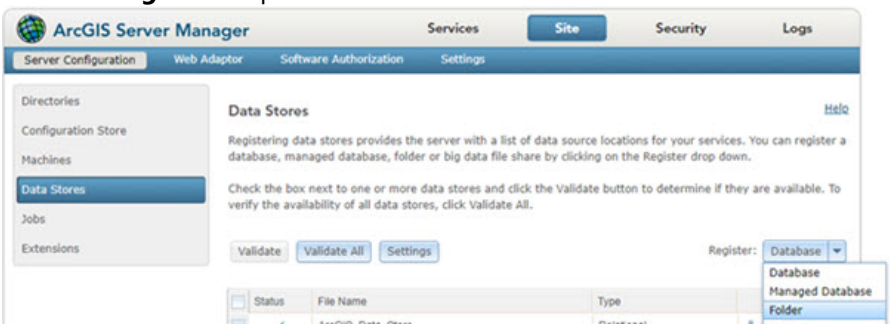
8. As a quick check, drag the **R_WorldDTMHillshade** mosaic dataset to the **Map** window. You see the hillshade visualization of elevation.



Publish the Terrain image service

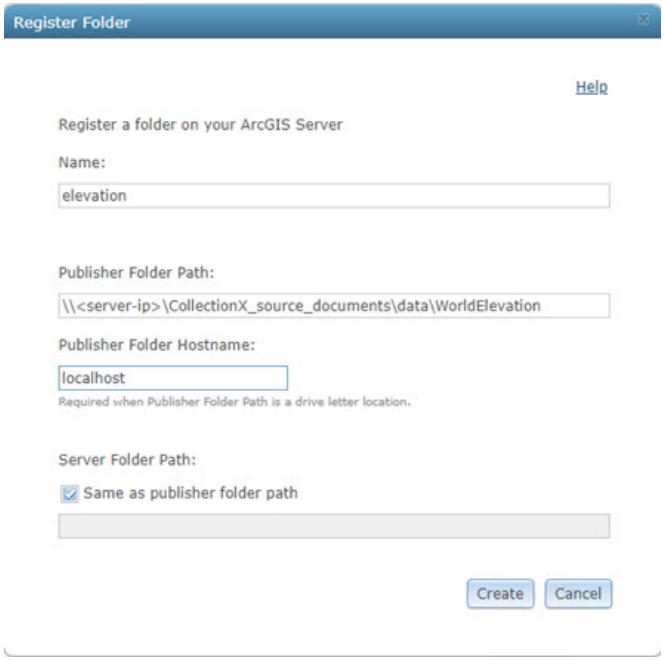
Once the mosaic dataset paths and raster function templates are fixed, you must publish the service.

1. Open ArcGIS Server Manager (`https://localhost:6443/arcgis/manager`), and sign in with publisher or administrator credentials. Make sure ArcGIS Server has read permission on the WorldElevation folder and register the `.\WorldElevation` folder as Data Store.
   a. Click **Site** > **Server Configuration** > **Data Stores**.
   b. Click the **Register** drop-down arrow and choose **Folder**.



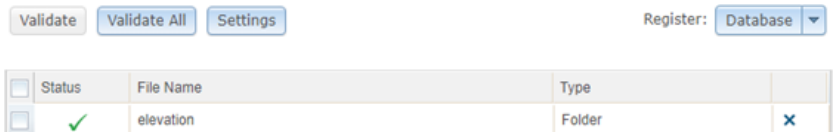
   c. In the **Register Folder** window, fill out the **Name** and **Publisher Folder Path** boxes. For **Publisher Folder Path**, provide the UNC path of the WorldElevation folder, for example, `\\<server-ip>\CollectionX_source_documents\data\WorldElevation`.

d. For **Publisher Folder Hostname**, specify the machine that is hosting the publisher's folder.
You can specify the machine name (for example, MyServer), fully qualified domain name (for example, MyServer.domain.com), IP address (for example, 12.34.56.789), or localhost (localhost).



e. Click **Create**.
This registers your folder with the server.

f. Click the check box for the folder just registered, and click **Validate**.
A green check mark under **Status** indicates that the UNC path is validated by the server.



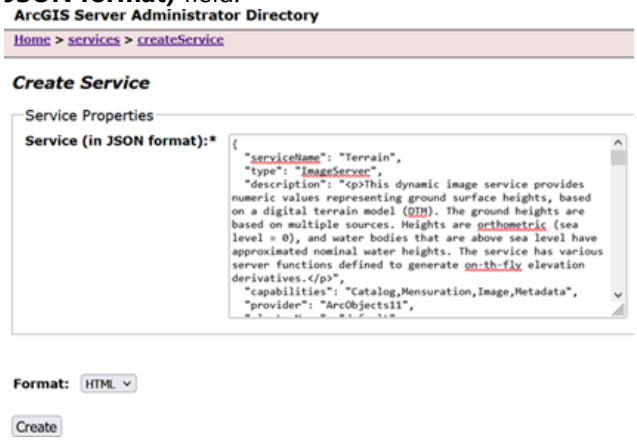
2. Sign in to the ArcGIS Server Administrator Directory using the URL `https://<server name>:6443/arcgis/admin`.

a. Click **services** to view the available services under the root folder.

b. Click **CreateService**.

The **Create Service** page appears.

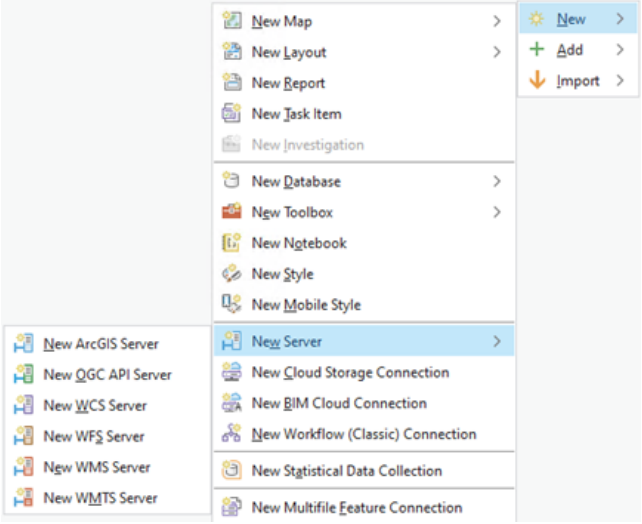
c. Copy and paste the contents of `.\WorldElevation\Parameter\json\Terrain.txt` into the **Service (in JSON format)** field.



d. Click **Create** to complete the publishing of the Terrain service.
The Terrain service is ready to use.

3. To use the Terrain service in ArcGIS Pro, follow these steps.

a. In the ArcGIS Pro **Catalog** window, right-click **New** > **New Server** > **New ArcGIS Server**.



The **Add ArcGIS Server Connection** window appears.

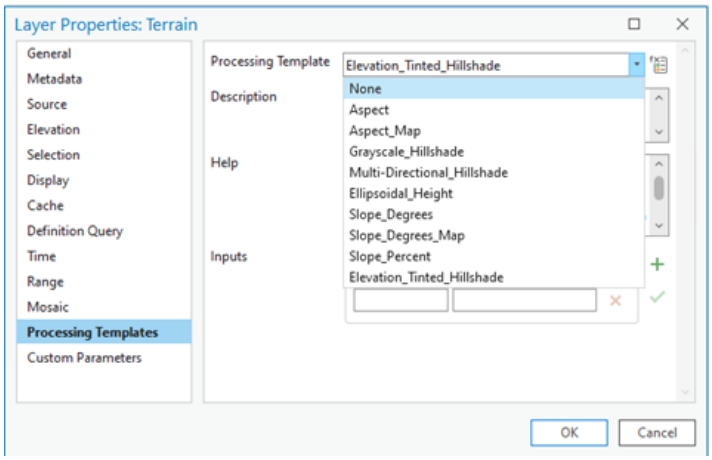
b. Provide the server URL where the Terrain service was published and credentials (optional) to make the ArcGIS Server connection.
A server connection is made.

c. Drag the Terrain service to the **Map** window from the recently made server connection in the catalog.

d. By default, the service renders as an elevation (DTM) raster.

e. From the **Contents** pane, right-click **Terrain** and click **Properties** > **Processing Templates**.

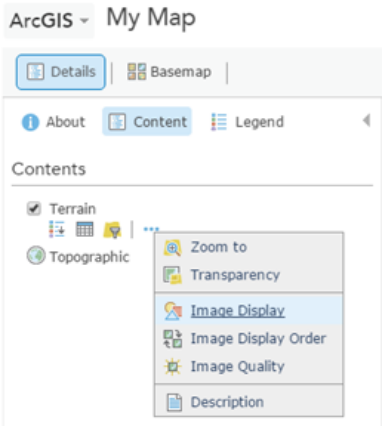
f. From the **Processing Template** drop-down list, choose one of the functions defined on the service.



g. Click **OK**.
The Raster function dynamically renders the elevation derivative selected from the drop-down list.

Note:
Slope_Degrees, Slope_Degrees_Map, and Slope_Percent have known issues when published on ArcGIS Enterprise server 11.0 and 11.1. These functions do not return correct values or render correctly.

4. To use the Terrain service in **ArcGIS Online Map Viewer**, follow these steps.
   a. Go to the REST endpoint where the Terrain service is published, for example, `http://localhost:6080/arcgis/rest/services/Terrain/ImageServer`.
   b. Click **ArcGIS Online Map Viewer**.
   The Terrain service opens in Map Viewer Classic in a browser. By default, it renders as elevation (DTM).
   c. Click **Terrain** > **More Options** > **Image Display** > **Renderer** to choose from the server functions defined on the service.



The Raster function dynamically renders the elevation derivative selected from the drop-down list.

Publish the Terrain 3D service

Follow the steps detailed under Publish basemap and reference layer services to publish the Terrain3D service on your ArcGIS Server installation.

Publish the elevation analysis geoprocessing services

Elevation analysis geoprocessing services allow you to perform raster analysis on world elevation data. Use the Profile geoprocessing service tool to create elevation profiles along any given polyline features. Use the Viewshed geoprocessing service tool to create viewsheds for any given observation point features anywhere on the surface of the earth. Use the Summarize Elevation tool to calculate summary statistics of elevation, slope, and aspect for any given point, polyline, or polygon features. To publish the Elevation geoprocessing services, ArcGIS Server 10.9.1 or later with an Advanced license is required. The data preparation steps below require ArcGIS Pro 3.1 or later with a Standard or Advanced license.

Tools and data location

The geoprocessing tools and data for setting up the elevation geoprocessing services are organized under the `ElevationGP` folder at `\\<server-ip>\CollectionX_source_documents\data\WorldElevation`, where `<server-ip>` is the network IP or server name of the data appliance, and `CollectionX` is the collection where the World Elevation content is located: Collection2 (World Standard), Collection3 (World Advanced), Collection4 (North America Standard), or Collection5 (North America Advanced). The elevation analysis geoprocessing services are not included with Collection 1.

Note:
In the following steps, when the UNC path `\\<server-ip>\CollectionX_source_documents\data` is mentioned, `<server-ip>` denotes the network IP or server name of the data appliance, and `CollectionX` denotes the collection where the World Elevation content is located.

Use the following workflows to publish the Elevation and ElevationSync .json files.

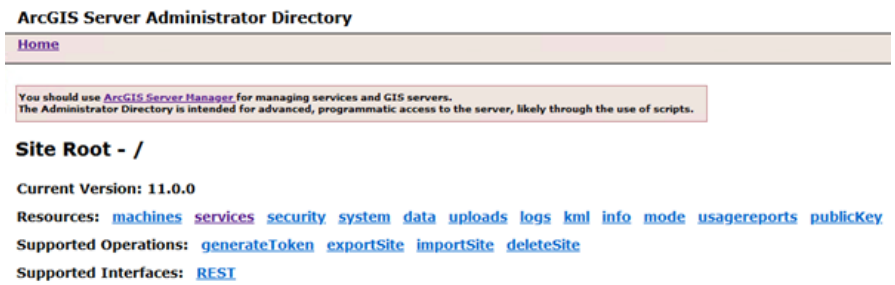
Repair the mosaic dataset paths

The elevation geoprocessing services use a set of derived and referenced mosaic datasets as the elevation data source. These mosaic datasets were updated for your environment when you previously ran the Prepare Elevation tool while publishing the Terrain service. In addition, path information has been filled in for configuration and `.json` files required for publishing.

Publish the Elevation and ElevationSync `.json` files

Follow the steps below to publish the `Elevation.json` and `ElevationSync.json` files using ArcGIS REST administrator.

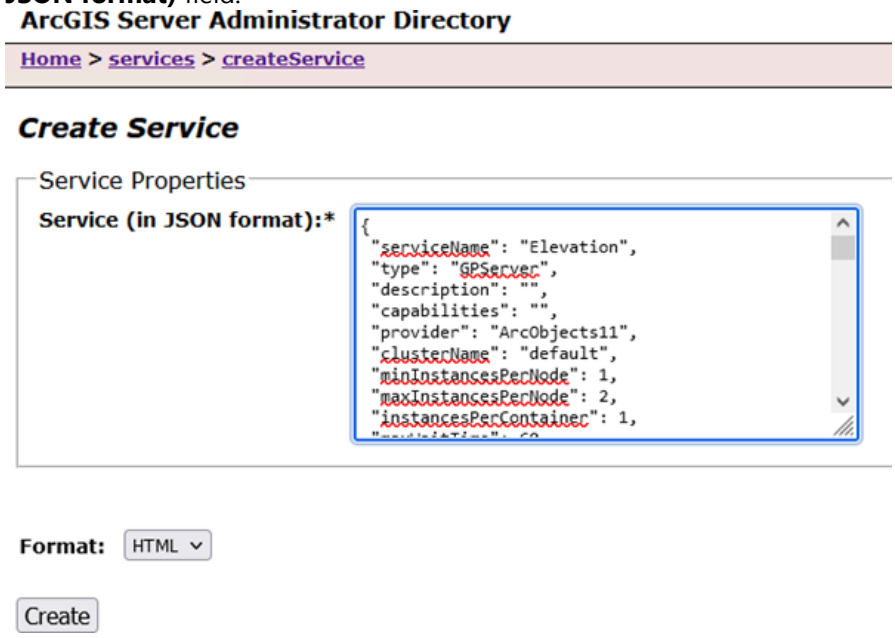
1. Sign in to the ArcGIS Server Administrator Directory using the URL `https://<server name>:6443/arcgis/admin`.



2. Click **services** to view the available services under the root folder.
3. Click **CreateService**.

The **Create Service** page appears.

4. Copy and paste the contents of `.\WorldElevation\ElevationGP\json\Elevation.json` into the **Service (in JSON format)** field.



5. Click **Create** to complete the publishing of the Elevation geoprocessing service.
   The Elevation service is ready to use.
6. Repeat steps 1 through 5 using `ElevationSync.json` instead of `Elevation.json` to complete the publishing of the ElevationSync geoprocessing service.

For information about how to use the elevation analysis services, see Use the elevation analysis geoprocessing services.

Add ExportTiles functionality

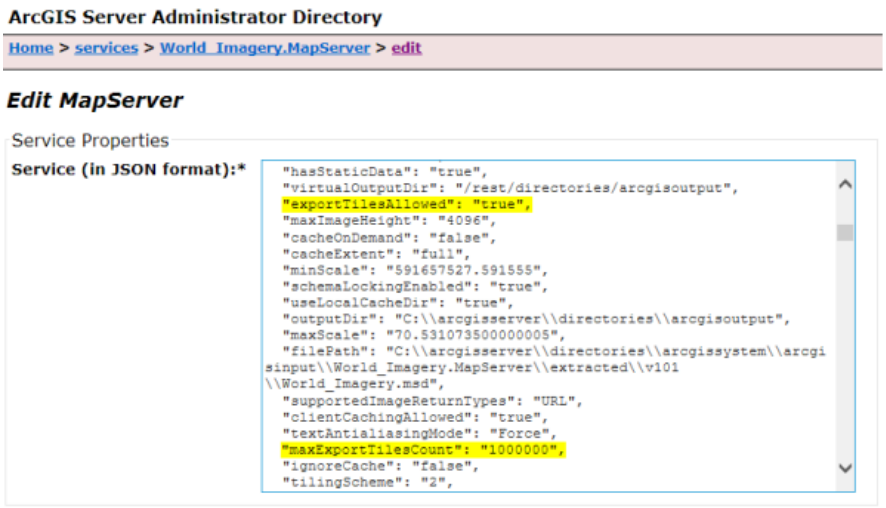
The ArcGIS client APIs allow apps to download map tiles from the server for offline use.

You can export tiles from an existing tile cache to a new tile cache or a tile package. This functionality is added by updating the `exportTilesAllowed` property to `true` in the service properties.

1. Sign in to the ArcGIS Server Administrator Directory using the URL `https://<server name>:6443/arcgis/admin`.

2. Click **services** to view the available services under the root folder.
3. Click any service that you published to this folder, for example, **World_Imagery**.

   The service properties page appears.
4. Scroll to the bottom of the page and click **edit**.
5. On the **Edit MapServer** page, find `exportTilesAllowed` in the **Service Properties** text area. Update the `exportTilesAllowed` property to `true`.



6. Optionally, update the `maxExportTilesCount` property to `1000000` to export a larger tile package.
7. Click **Save Edits** to save and restart the service.

The service is now set up so you can export tiles. Repeat these steps for all services from which you want to export tiles.

Directory of maps and data

Directory of maps and data

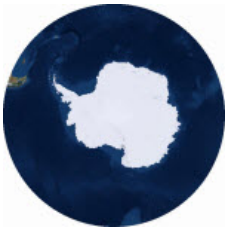
The following ArcGIS Data Appliance 2025 services are available for you to publish and use with your ArcGIS applications. Click the service name to view a full service description including copyright and attribution information.

The services are grouped into the following categories:

- Basemaps—Layers intended to be used on their own or overlaid with other layers
- Reference layers—Layers intended to be overlaid on basemaps to provide reference information
- World Elevation—Elevation layers for analysis and 2D and 3D visualizations
- Elevation analysis—Geoprocessing tools for performing analysis on elevation data
- Locators—Intended for geocoding places

Basemaps

Antarctic Imagery

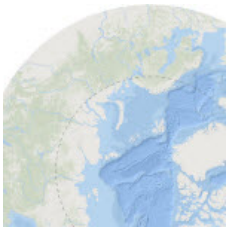


This map provides 15-meter TerraColor imagery for the polar region of Antarctica.

Arctic Imagery

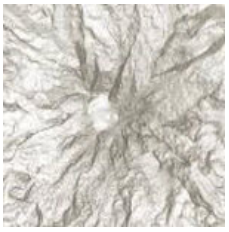
This map provides 15-meter TerraColor imagery for the Arctic polar region.

Arctic Ocean Base



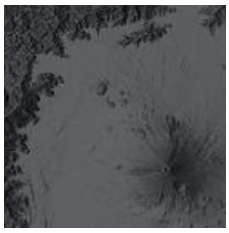
This map includes bathymetry overlaid on land-cover and shaded relief imagery for the Arctic polar region.

World Hillshade



This map portrays elevation as an artistic hillshade.

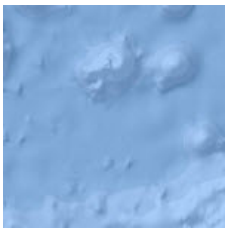
World Hillshade (Dark)



This map portrays elevation as an artistic hillshade in a dark color palette.

World Imagery

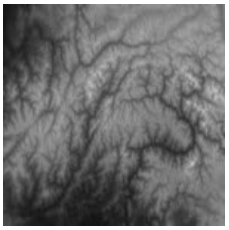
This map is a compilation of satellite and aerial imagery worldwide.

World Ocean Base  This map includes bathymetry and inland waters and roads overlaid on land-cover and shaded relief imagery.		

Reference layers

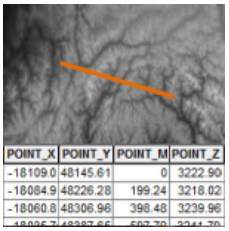
Arctic Ocean Reference  This map includes marine water body names, undersea feature names, and derived depth values for use with the Arctic Ocean Base map.

World Elevation

Terrain  This is a world elevation layer composed of multiresolution and multisource elevation data (DTM), which provides access to elevation values and derivatives such as slope, aspect, and hillshade to use in analysis and visualization.	Terrain 3D  This is a world elevation surface to use for oblique viewing in scenes in ArcGIS Pro and ArcGIS Online Scene Viewer.

Elevation analysis

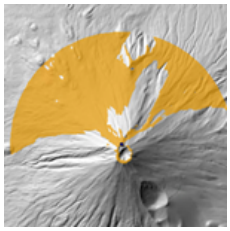
Profile



POINT_X	POINT_Y	POINT_M	POINT_Z
-18109.0	48145.61	0	3222.90
-18084.9	48226.28	199.24	3218.02
-18060.8	48306.96	398.48	3239.96

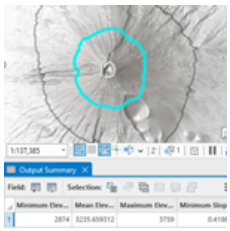
The Profile geoprocessing tool calculates profile tables for lines you specify on a global elevation dataset.

Viewshed



The Viewshed geoprocessing tool creates viewshed polygons for observation points you specify on a global elevation dataset.

Summarize Elevation



The Summarize Elevation geoprocessing tool calculates summary statistics of elevation, slope, and aspect for point, polyline, or polygon features you specify on a global elevation dataset.

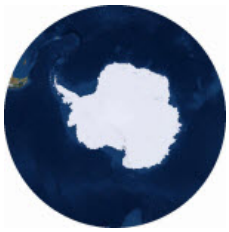
Locators

World Gazetteer

This places locator allows you to geocode various types of places around the world. The World Gazetteer references a dataset including countries, states and provinces, administrative areas, cities, landmarks, water bodies, and more.

Basemaps

Antarctic Imagery



This map provides 15-meter TerraColor imagery for the polar region of Antarctica.

Map Service Name: Antarctic_Imagery

Note:
The Antarctic Imagery map is not included with Collection 1.

Description

The Antarctic Imagery map is designed to be used as a basemap for overlaying other data for the Antarctic region. The Antarctic Imagery map includes imagery from 90 to 50 degrees south latitude, though the projection will support display of data to lower latitudes.

Attribution

Source: Earthstar Geographics

Coordinate system

WGS 1984 Antarctic Polar Stereographic (WKID 3031)

Map service data format

Map server cache in JPEG format

Coverage

Coverage is provided in World Standard (Collection 2) and World Advanced (Collection 3) from ~1:902,590,245 down to ~1:110,179.

Arctic Imagery

This map provides 15-meter TerraColor imagery for the Arctic polar region.

Map Service Name: Arctic_Imagery

Note:
The Arctic Imagery map is not included with Collection 1.

Description

The Arctic Imagery map is designed to be used as a basemap for overlaying other data for the Arctic region. The Arctic Imagery map includes imagery from 90 to 50 degrees north latitude, though the projection will support display of data to lower latitudes.

Attribution

Source: Earthstar Geographics

Coordinate system

Alaska Polar Stereographic (WKID 5936)

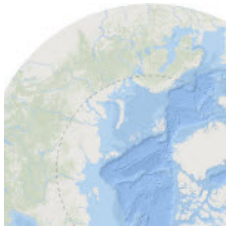
Map service data format

Map server cache in JPEG format

Coverage

Coverage is provided in World Standard (Collection 2) and World Advanced (Collection 3) from ~1:902,590,245 down to ~1:110,179.

Arctic Ocean Base



This map includes bathymetry overlaid on land-cover and shaded relief for the Arctic polar region.

Map Service Name: Arctic_Ocean_Base

Note:
The Arctic Ocean Base map is not included with Collection 1.

Description

The Arctic Ocean Base map features marine bathymetry. This layer is designed to be used as a basemap by marine GIS professionals and as a reference map by anyone interested in ocean data. Land features include inland waters and roads overlaid on land-cover and shaded relief imagery. This web map allows you to view the Arctic Ocean Base with the Arctic Ocean Reference layer drawn on top.

The map was compiled from a variety of best available sources from several data providers, including General Bathymetric Chart of the Oceans GEBCO_08 Grid version 20100927, the International Bathymetric Chart of the Arctic Ocean, and the National Oceanic and Atmospheric Administration (NOAA) for the oceans; and Garmin, and Esri for topographic content.

The Arctic Ocean Base currently provides coverage down to a scale of ~1:881,000. The Arctic Ocean Base can and will be extended with higher-resolution bathymetric data. You can contribute your bathymetric data to this map and have it served by Esri for the benefit of the GIS community. For more information about how to contribute data, contact Oceanbasemapteam@esri.com.

Note:
Data from the GEBCO_08 Grid shall not be used for navigation or for any other purpose relating to safety at sea. The GEBCO_08 Grid is largely based on a database of ship-track soundings with interpolation between soundings guided by satellite-derived gravity data. In some areas, data from existing grids are included. The GEBCO_08 Grid does not contain detailed information in shallower water areas, and information concerning the generation of the grid can be found on GEBCO website at www.gebco.net/data_and_products/gridded_bathymetry_data/. The GEBCO_08 Grid is accompanied by a Source Identifier (SID) Grid, which indicates which cells in the GEBCO_08 Grid are based on soundings or existing grids and which have been interpolated. The latest version of both grids and accompanying documentation is available to download, on behalf of GEBCO, from the British Oceanographic Data Centre (BODC) website at www.bodc.ac.uk/data/hosted_data_systems/gebco_gridded_bathymetry_data/. The names of the IHO (International Hydrographic Organization), IOC (Intergovernmental Oceanographic Commission), GEBCO (General Bathymetric Chart of the Oceans), NERC (Natural Environment Research Council) or BODC (British Oceanographic Data Centre) may not be used in any way to imply, directly or otherwise, endorsement or support of either the Licensee or their mapping system.

Contributors

The following table names the current Community Maps Program contributors to the Arctic Ocean Basemap hosted by Esri and provides information on their specific content. The basemap was compiled to uniform cartography using a variety of best available sources from these data providers.

Contributor	Coverage	Resolution	Scales
General Bathymetric Chart of the Oceans (GEBCO)	Global	927 meters	~1:591,000,000 - 1:577,000
National Oceanic and Atmospheric Administration	US coastal waters, Great Lakes	110 meters - 40 centimeters	~1:18,000,000 - 1:9,000 in select areas
Seafloor Mapping Lab of California State University Monterey Bay	Southern California coast, Channel Islands	25 meters - 2 meters	~1:288,000 - 1:72,000
Canadian Hydrographic Service	North Pacific, Queen Charlotte Sound, Newfoundland Sea, Labrador Sea, and Gulf of St. Lawrence	250 meters - 80 meters	~1:4,500,000 - 1:72,000
University of New Hampshire Center for Coastal and Marine Mapping/Joint Hydrographic Center	Beringian Margin, Bowers Ridge, Necker Ridge, Line Islands, Mariana Trench, Mendocino Ridge, Sigsbee Escarpment, Florida Escarpment, and Atlantic Shelf	180 meters - 60 meters	~1:2,300,000 - 1:72,000
Geological Survey of Ireland	Western coast of Ireland up to 1,000 miles offshore, higher-resolution data in nearshore areas	111 meters, 5 meters	~1:2,300,000 – 1:9,000
OceanWise	Coastal waters around the islands of Great Britain and Ireland	186 meters	~1:4,500,000 – 1:9,000

Attribution

Sources: Esri, GEBCO, NOAA NGDC, Garmin, and other contributors

Coordinate system

Alaska Polar Stereographic (WKID 5936)

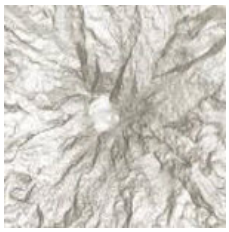
Map service data format

Map server cache in JPEG format

Coverage

Coverage is provided in World Standard (Collection 2) and World Advanced (Collection 3) from ~1:902,590,245 down to ~1:881,435.

World Hillshade



This map portrays elevation as an artistic hillshade.

Map Service Name: World_Hillshade

Description

World Hillshade is designed to be used as a backdrop for topographical, soil, hydro, land cover, or other outdoor recreational maps.

The map was compiled from a variety of sources from several data providers. The basemap has global coverage down to a scale of ~1:144,000. In parts of North America, Asia, Africa, Europe, and Oceania, coverage is provided down to ~1:9,000.

Attribution

Sources: Maxar, Airbus, USGS, NGA, NASA, CGIAR, NLS, OS, NMA, Geodatastyrelsen, GSA, GSI, Intermap, and the GIS User Community

Coordinate system

Web Mercator Auxiliary Sphere (WKID 102100)

Tiling scheme

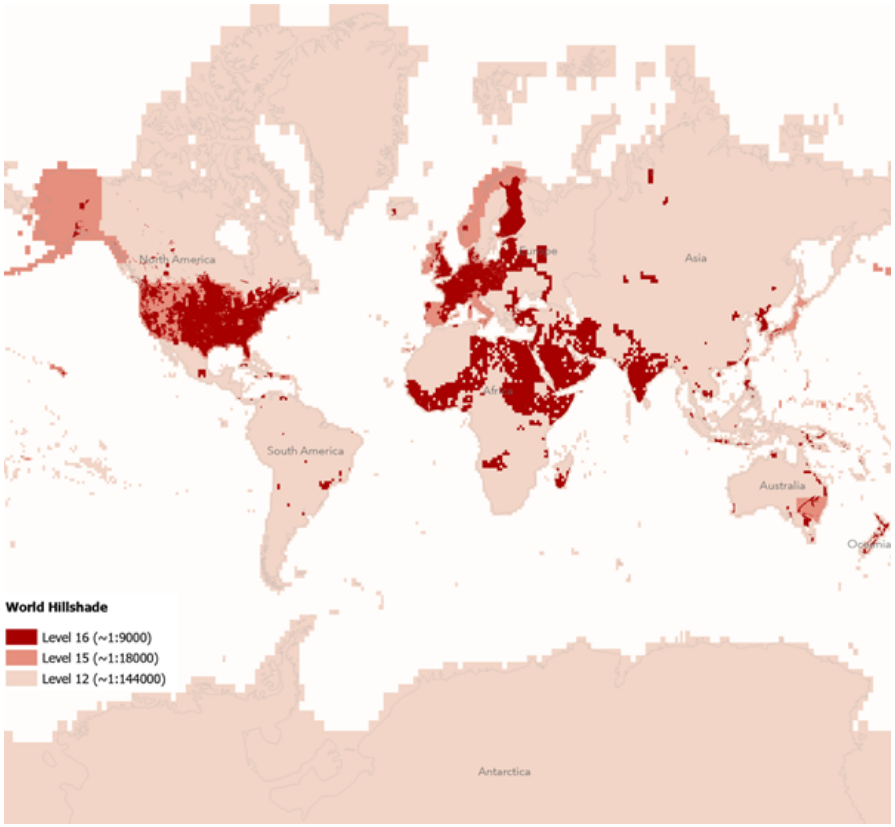
Web Mercator Auxiliary Sphere

Map service data format

Map server cache in JPEG format

Coverage

As illustrated in the coverage map, coverage is provided at the following scales:



World Basic (Collection 1)

~1:591,000,000 down to ~1:144,000 worldwide

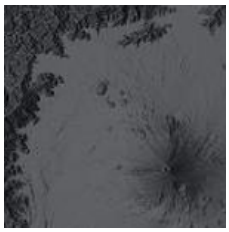
World Standard (Collection 2) and World Advanced (Collection 3)

- ~1:591,000,000 down to ~1:144,000 worldwide
- ~1:72,000 to ~1:9,000 in select areas in North America, Asia, Africa, Europe, and Oceania

North America Standard (Collection 4) and North America Advanced (Collection 5)

- ~1:591,000,000 down to ~1:144,000
- ~1:72,000 down to ~1:9,000 in select areas

World Hillshade (Dark)



This map portrays elevation as an artistic hillshade in a dark color palette and provides terrain context while highlighting feature layers and labels.

Map Service Name: World_Hillshade_Dark

Description

The map was compiled from a variety of sources from several data providers. The basemap has global coverage down to a scale of ~1:144,000. In parts of North America, Asia, Africa, Europe, and Oceania, coverage is provided down to ~1:9,000.

This dark version of World Hillshade is especially useful in building maps that provide terrain context while highlighting feature layers and labels.

Attribution

Sources: Maxar, Airbus, USGS, NGA, NASA, CGIAR, NLS, OS, NMA, Geodatastyrelsen, GSA, GSI, Intermap, and the GIS User Community

Coordinate system

Web Mercator Auxiliary Sphere (WKID 102100)

Tiling scheme

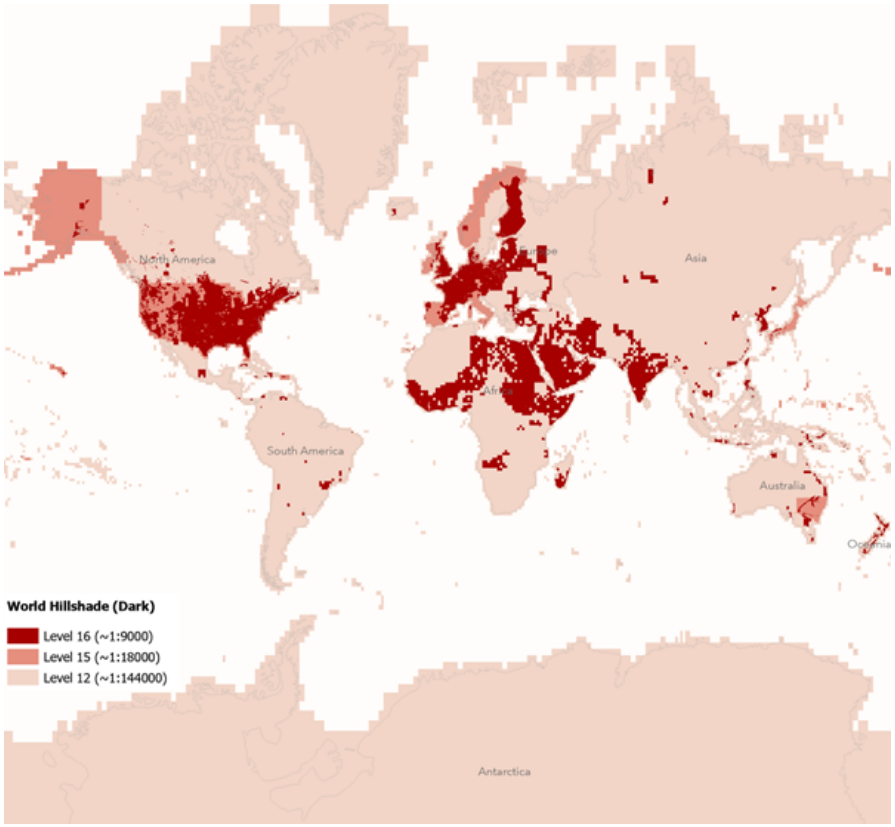
Web Mercator Auxiliary Sphere

Map service data format

Map server cache in JPEG format

Coverage

As illustrated in the coverage map below, coverage is provided at the following scales:



World Basic (Collection 1)

~1:591,000,000 down to ~1:144,000 worldwide

World Standard (Collection 2) and World Advanced (Collection 3)

- ~1:591,000,000 down to ~1:144,000 worldwide
- ~1:72,000 to ~1:9,000 in select areas in the United States and Europe

North America Standard (Collection 4) and North America Advanced (Collection 5)

- ~1:591,000,000 down to ~1:144,000
- ~1:72,000 down to ~1:9,000 in select areas

World Imagery

This map is a compilation of satellite and aerial imagery worldwide.

Map Service Name: World_Imagery

Description

World Imagery provides 1-meter or better satellite and aerial imagery for most of the world's landmass and lower-resolution satellite imagery worldwide. The map is currently comprised of the following sources:

- Worldwide 15-meter resolution TerraColor imagery at small and medium map scales.
- Maxar imagery basemap products around the world: Vivid Premium at 15-centimeter high-definition (HD) resolution for select metropolitan areas, Vivid Advanced 30-centimeter HD for more than 1,000 metropolitan areas, and Vivid Standard from 1.2-meter to 0.6-centimeter resolution for the most of the world, with 30-centimeter HD across the United States and parts of Western Europe. More information on the Maxar products is included below.
- High-resolution aerial photography contributed by the GIS User Community. This imagery ranges from 30-centimeter to 3-centimeter resolution. You can contribute your imagery to this map and have it served by Esri through the Community Maps Program.

Maxar basemap products

Maxar imagery basemap products include Vivid Premium, Vivid Advanced, and Vivid Standard.

Vivid Premium

This basemap provides committed image currency in a high-resolution, high-quality image layer over defined metropolitan and high-interest areas across the globe. The product provides 15-centimeter HD resolution imagery.

Vivid Advanced

This basemap provides committed image currency in a high-resolution, high-quality image layer over defined metropolitan and high-interest areas across the globe. The product includes a mix of native 30-centimeter and 30-centimeter HD resolution imagery.

Vivid Standard

This basemap provides a visually consistent and continuous image layer over large areas through advanced image mosaicking techniques, including tonal balancing and seamline blending across thousands of image strips. Available from 1.2-meter down to 30-centimeter HD.

See the Maxar blog, Introducing HD: See More, Do More with High-Definition Imagery, for more information.

Attribution

Sources: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Coordinate system

Web Mercator Auxiliary Sphere (WKID 102100)

Tiling scheme

Web Mercator Auxiliary Sphere

Map service data format

Map server cache in JPEG format

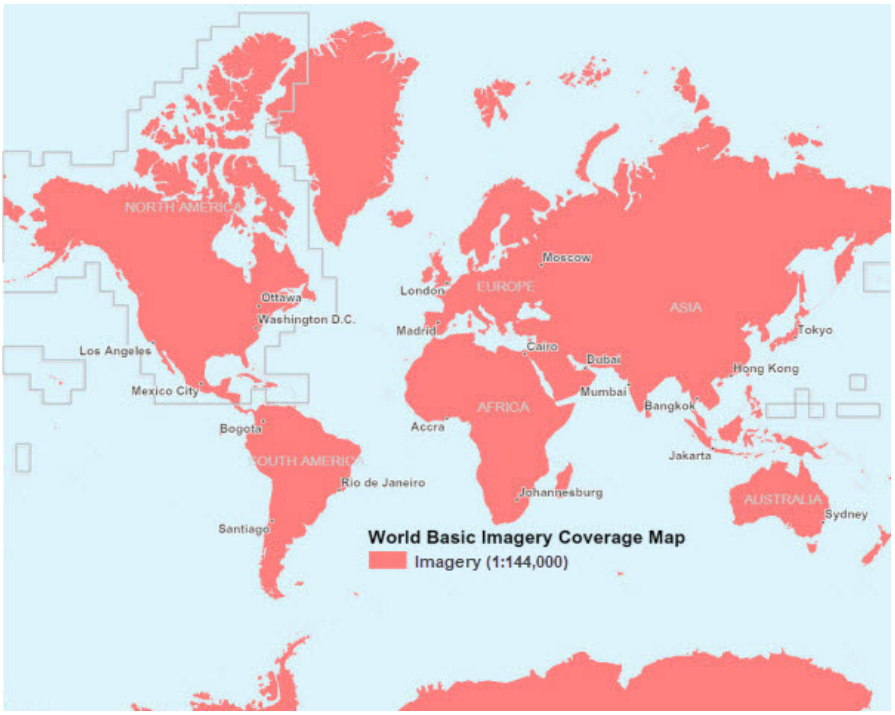
Metadata

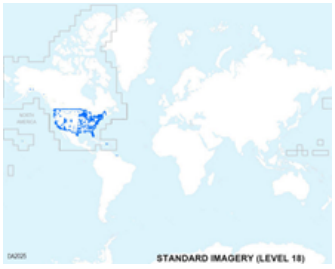
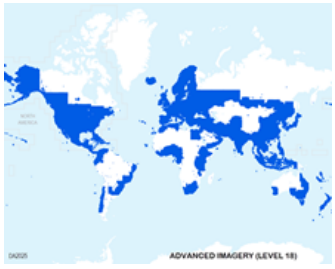
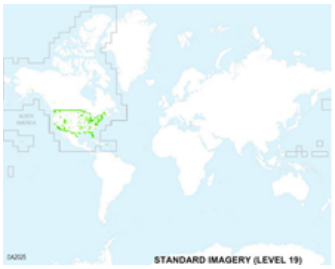
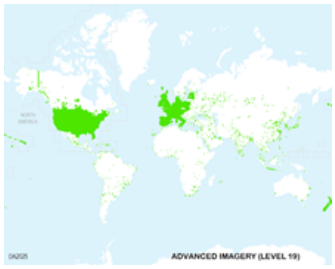
When the data appliance is installed, citation data (also known as metadata) is automatically exposed through the REST endpoint for the World_Imagery service. These are not feature services but rather feature layers within a map service. The key difference is that feature layers can be queried, but they cannot be edited. In ArcGIS Pro, use the **Explore** tool on the **Map** tab to see the resolution, collection date, and source of the imagery at the location you click. In Map Viewer, with pop-ups enabled on the layer, click the location to identify the source information. In ArcMap, use the **Identify** tool to identify the source information at the location you click. Values of 99999 mean that metadata is not available for that field. The metadata applies only to the best available imagery at that location. You may need to zoom in to view the best available imagery.

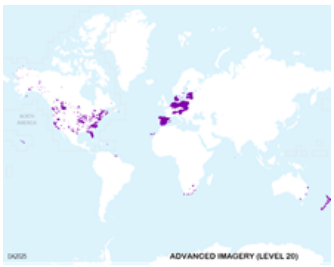
You can view the citation layer at `http://<services.arcgisonline.com>/arcgis/rest/services/World_Imagery/MapServer/4` (substitute `<services.arcgisonline.com>` with the local ArcGIS server name).

Coverage

As illustrated in the coverage maps below, worldwide coverage is provided in World Basic (Collection 1) down to ~1:144,000; World Standard (Collection 2) down to ~1:1,000, and World Advanced (Collection 3) down to ~282; and regional coverage is provided in North America Standard (Collection 4) down to ~1:1,000, and North America Advanced (Collection 5) down to ~282.



Scale (Level)	Standard	Advanced
1:4,000 (Level 17)		
1:2,000 (Level 18)		
1:1,000 (Level 19)		

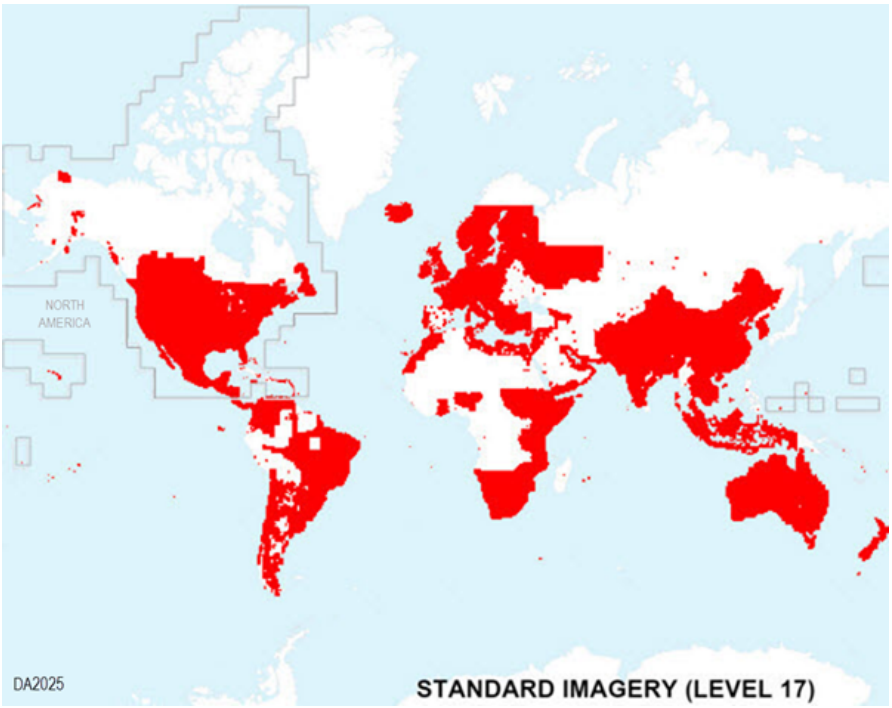
Scale (Level)	Standard	Advanced
1:600 (Level 20)	Not available	
1:282 (Level 21)	Not available	

Larger-coverage maps for Standard and Advanced Imagery are available below.

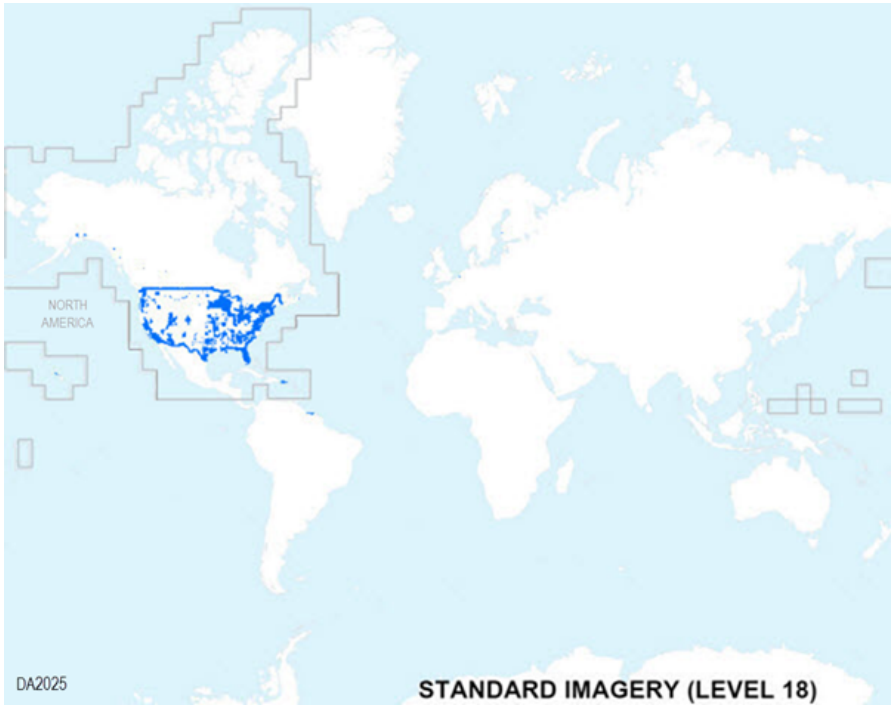
Standard Imagery coverage maps

The following coverage maps are applicable to both World and North America Standard.

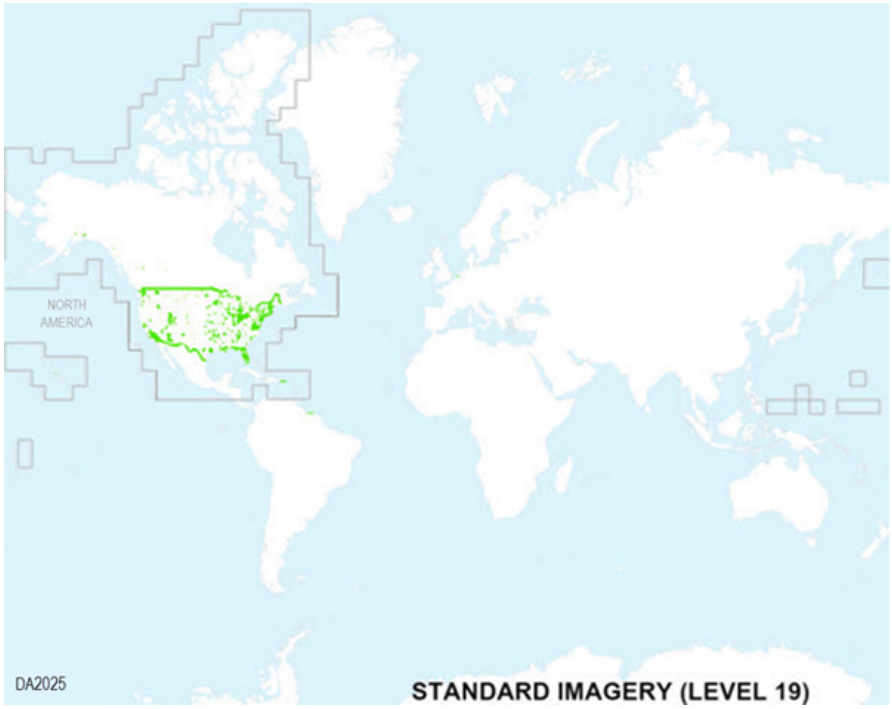
Standard Imagery coverage map at 1:4,000 (Level 17)



Standard Imagery coverage map at 1:2,000 (Level 18)



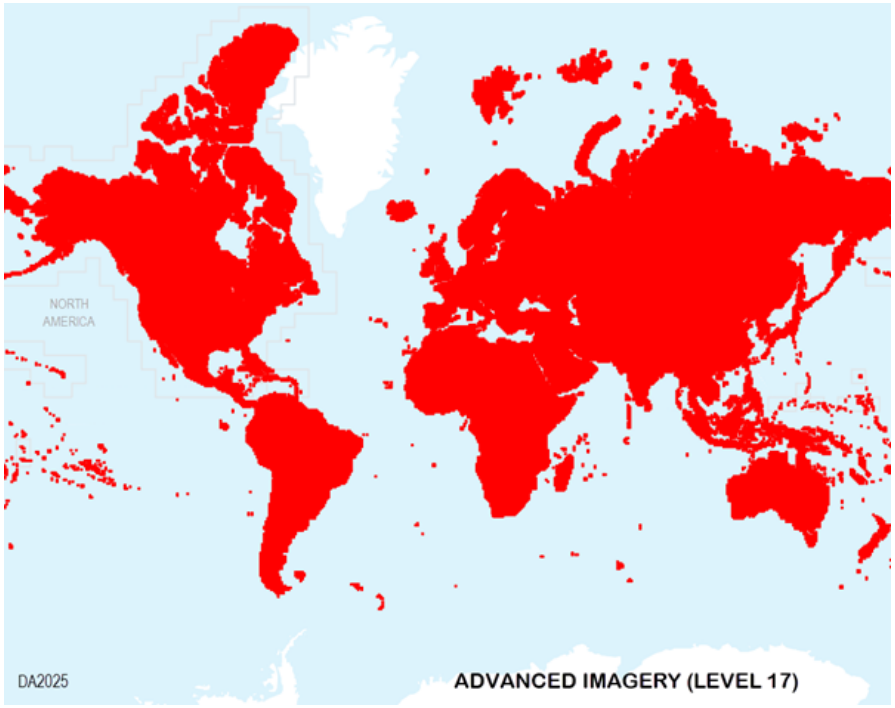
Standard Imagery coverage map at 1:1,000 (Level 19)



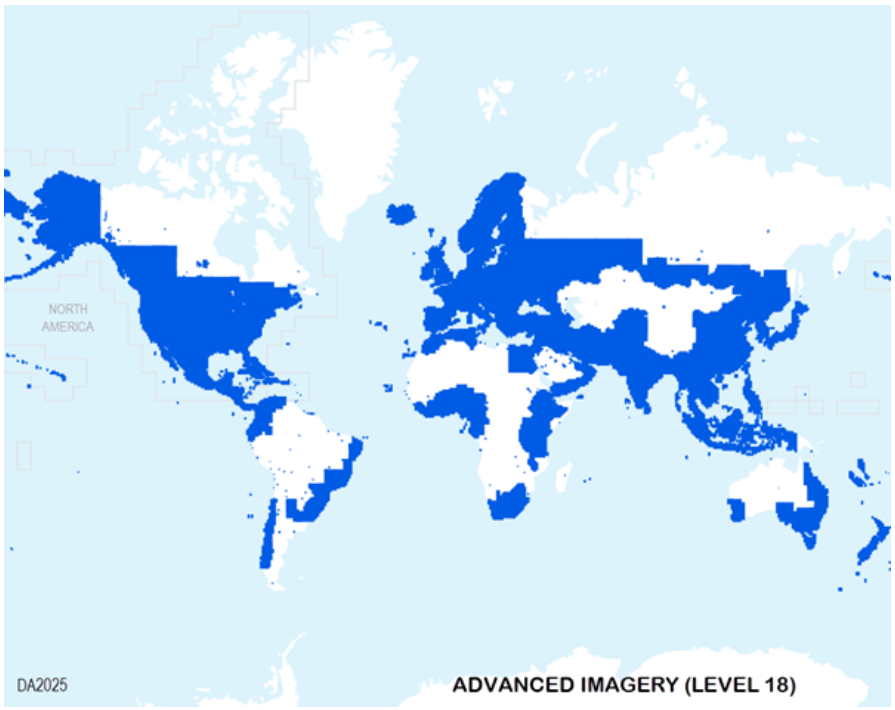
Advanced Imagery coverage maps

The following coverage maps are applicable to both World and North America Advanced.

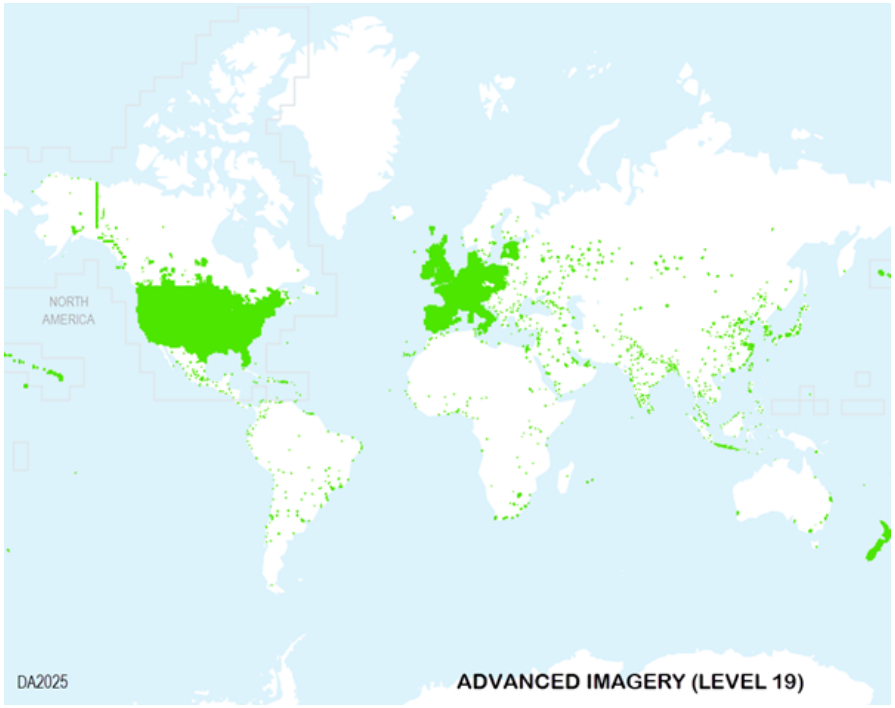
Advanced Imagery coverage map at 1:4,000 (Level 17)



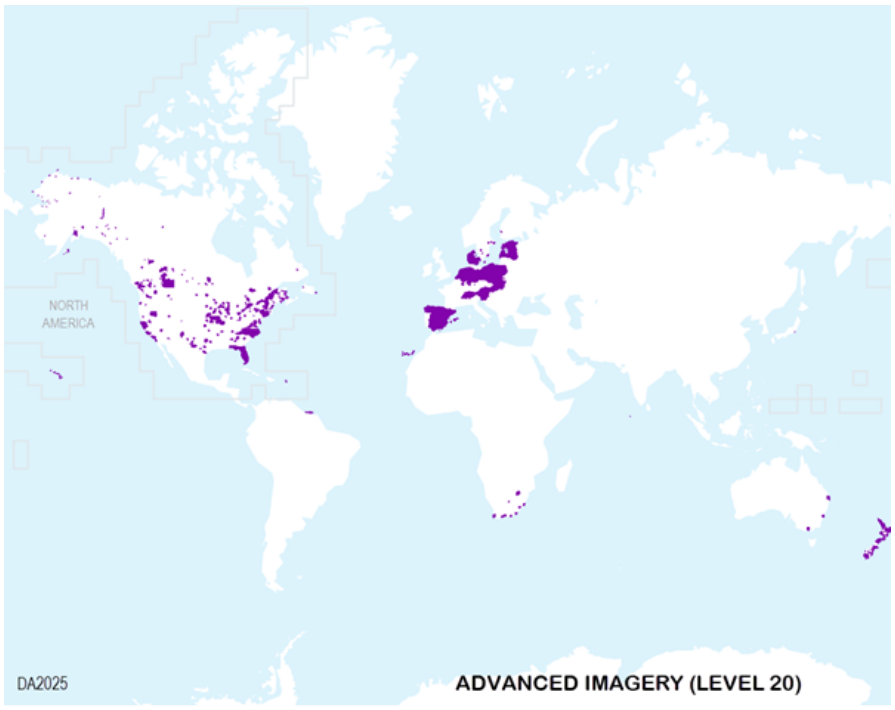
Advanced Imagery coverage map at 1:2,000 (Level 18)



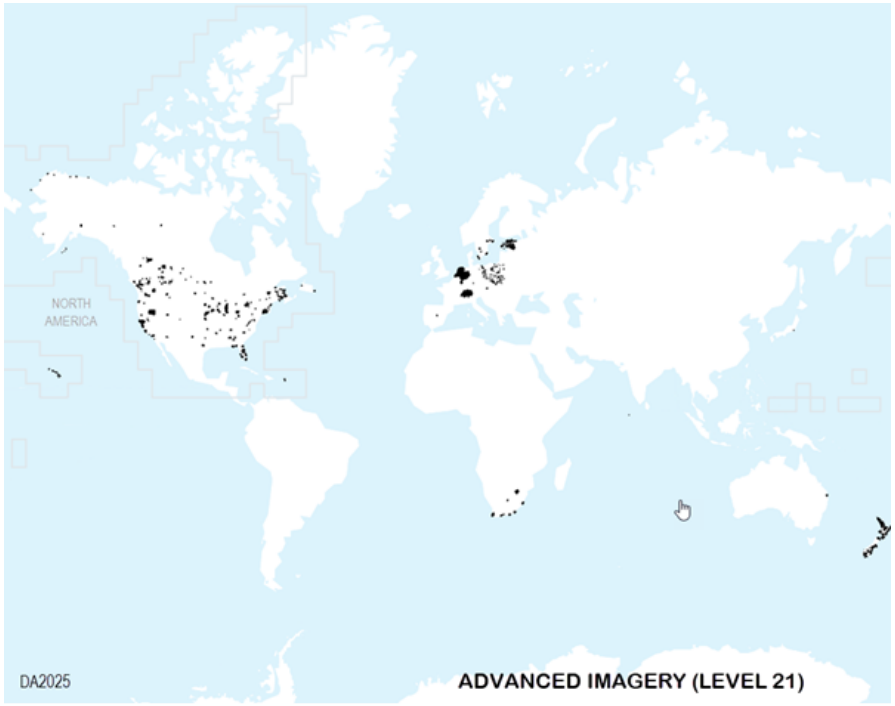
Advanced Imagery coverage map at 1:1,000 (Level 19)



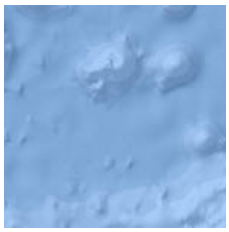
Advanced Imagery coverage map at 1:600 (Level 20)



Advanced Imagery coverage map at 1:282 (Level 21)



World Ocean Base



This map includes bathymetry and inland waters and roads, overlaid on land-cover and shaded relief imagery.

Map Service Name: World_Ocean_Base

Description

This map is designed to be used as a basemap by marine GIS professionals and as a reference map by anyone interested in ocean data. The basemap features marine bathymetry. Land features include inland waters and roads overlaid on land cover and shaded relief imagery.

The map was compiled from a variety of best available sources from several data providers, including General Bathymetric Chart of the Oceans GEBCO_08 Grid, National Oceanic and Atmospheric Administration (NOAA), National Geographic, Garmin, Geonames.org, Esri, and various other contributors. The basemap was designed and developed by Esri.

Note:

Data from the GEBCO_08 Grid shall not be used for navigation or for any other purpose relating to safety at sea. The GEBCO_08 Grid is largely based on a database of ship-track soundings with interpolation between soundings guided by satellite-derived gravity data. In some areas, data from existing grids are included. The GEBCO_08 Grid does not contain detailed information in shallower water areas, and information concerning the generation of the grid can be found on GEBCO website at www.gebco.net/data_and_products/gridded_bathymetry_data/. The GEBCO_08 Grid is accompanied by a Source Identifier (SID) Grid, which indicates which cells in the GEBCO_08 Grid are based on soundings or existing grids and which have been interpolated. The latest version of both grids and accompanying documentation is available to download, on behalf of GEBCO, from the British Oceanographic Data Centre (BODC) website at www.bodc.ac.uk/data/hosted_data_systems/gebco_gridded_bathymetry_data/. The names of the IHO (International Hydrographic Organization), IOC (Intergovernmental Oceanographic Commission), GEBCO (General Bathymetric Chart of the Oceans), NERC (Natural Environment Research Council) or BODC (British Oceanographic Data Centre) may not be used in any way to imply, directly or otherwise, endorsement or support of either the Licensee or their mapping system.

Contributors

The following table names the current Community Maps Program contributors to the World Ocean Basemap hosted by Esri and provides information on their specific content. The basemap was compiled to uniform cartography using a variety of best available sources from these data providers.

Contributor	Coverage	Resolution	Scales
General Bathymetric Chart of the Oceans (GEBCO)	Global	927 meters	~1:591,000,000 - 1:577,000

Contributor	Coverage	Resolution	Scales
National Oceanic and Atmospheric Administration	US coastal waters, Great Lakes	110 meters - 40 centimeters	~1:18,000,000 - 1:9,000 in select areas
Geoscience Australia	Australian coastal waters		~1:9,000,000 – 1:72,000 in select areas
Seafloor Mapping Lab of California State University Monterey Bay	Southern California coast, Channel Islands	25 meters - 2 meters	~1:288,000 - 1:72,000
Canadian Hydrographic Service	North Pacific, Queen Charlotte Sound, Newfoundland Sea, Labrador Sea, and Gulf of St. Lawrence	250 meters - 80 meters	~1:4,500,000 - 1:72,000
University of New Hampshire Center for Coastal and Marine Mapping/Joint Hydrographic Center	Beringian Margin, Bowers Ridge, Necker Ridge, Line Islands, Mariana Trench, Mendocino Ridge, Sigsbee Escarpment, Florida Escarpment, and Atlantic Shelf	180 meters - 60 meters	~1:2,300,000 - 1:72,000
Davey Jones' Locker Seafloor Mapping/Marine GIS at Oregon State University	American Samoa	200 meters	~1:2,300,000 - 1:72,000
National Institute of Water and Atmospheric Research Ltd (NIWA)	New Zealand, higher-resolution data of Hauraki Gulf and Cook Strait	250 meters, 20 meters	~1:4,500,000 – 1:72,000
Geological Survey of Ireland	Western coast of Ireland up to 1,000 miles offshore, higher-resolution data in nearshore areas	111 meters, 5 meters	~1:2,300,000 – 1:9,000
OceanWise	Coastal waters around the islands of Great Britain and Ireland	186 meters	~1:4,500,000 – 1:9,000
Khaled bin Sultan Living Oceans Foundation	Red Sea	2.5 meters - 7.5 meters	~1:288,000 - 1:9,000 in select areas
University of Hawaii School of Ocean and Earth Science and Technology	Hawaiian Islands	50 meters	~1:288,000 - 1:9,000 in select areas

Attribution

Sources: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

Coordinate system

Web Mercator Auxiliary Sphere (WKID 102100)

Tiling scheme

Web Mercator Auxiliary Sphere

Map service data format

Map server cache in JPEG format

Coverage

Coverage is provided at the following scales:

World Basic (Collection 1)

~1:591,000,000 to 1:577,000 worldwide; ~1:288,000 to ~1:144,000 in select areas

World Standard (Collection 2) and World Advanced (Collection 3)

~1:591,000,000 to ~1:577,000 worldwide; ~1:288,000 to ~1:9,000 in limited areas based on regional hydrographic survey data

North America Standard (Collection 4), North America Advanced (Collection 5)

Regional coverage from ~1:591,000,000 to ~1:9,000 in limited areas based on regional hydrographic survey data

Reference layers

Arctic Ocean Reference

This map includes marine water body names, undersea feature names, and derived depth values for use with the Arctic Ocean Base map.

Map Service Name: Arctic_Ocean_Reference

Note:
The Arctic Ocean Reference layer is not included with Collection 1.

Description

The Arctic Ocean Reference layer is designed to be used as the reference layer for the Arctic Ocean Base map. The reference layer includes marine water body names, undersea feature names, and derived depth values in meters. Features over land include administrative boundaries and labels and cities.

The reference layer was compiled from a variety of best available sources from several data providers, including General Bathymetric Chart of the Oceans GEBCO_08 Grid, IHO-IOC GEBCO Gazetteer of Undersea Feature Names August 2010 version (www.gebco.net), the National Oceanic and Atmospheric Administration (NOAA), and National Geographic, Garmin, Geonames.org, and Esri, and various other contributors. For details on the Community users who contributed bathymetric data for this map through the Community Maps Program, see Contributors in the Arctic Ocean Base description.

The Arctic Ocean Reference map currently provides coverage down to a scale of ~1:881,000. The Arctic Ocean Reference map can and will be extended with higher-resolution bathymetric data. You can contribute your bathymetric data to this map and have it served by Esri for the benefit of the GIS community. For more information on how to contribute data, contact Oceanbasemapteam@esri.com.

Note:
Data from the GEBCO_08 Grid shall not be used for navigation or for any other purpose relating to safety at sea. The GEBCO_08 Grid is largely based on a database of ship-track soundings with interpolation between soundings guided by satellite-derived gravity data. In some areas, data from existing grids are included. The GEBCO_08 Grid does not contain detailed information in shallower water areas, and information concerning the generation of the grid can be found on GEBCO website at www.gebco.net/data_and_products/gridded_bathymetry_data/. The GEBCO_08 Grid is accompanied by a Source Identifier (SID) Grid, which indicates which cells in the GEBCO_08 Grid are based on soundings or existing grids and which have been interpolated. The latest version of both grids and accompanying documentation is available to download, on behalf of GEBCO, from the British Oceanographic Data Centre (BODC) website at www.bodc.ac.uk/data/hosted_data_systems/gebco_gridded_bathymetry_data/. The names of the IHO (International Hydrographic Organization), IOC (Intergovernmental Oceanographic Commission), GEBCO (General Bathymetric Chart of the Oceans), NERC (Natural Environment Research Council) or BODC (British Oceanographic Data Centre) may not be used in any way to imply, directly or otherwise, endorsement or support of either the Licensee or their mapping system.

Attribution

Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, Geonames.org, and other contributors

Coordinate system

Alaska Polar Stereographic (WKID 5936)

Map service data format

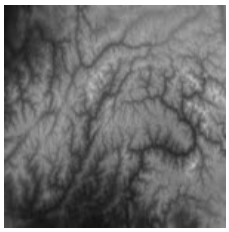
Map server cache in PNG32 format

Coverage

Coverage is provided in World Standard (Collection 2) and World Advanced (Collection 3) from ~1:902,590,245 down to ~1:881,435.

World Elevation

Terrain



The Terrain multiresolution layer provides access to elevation values for use in analysis with functions for slope, aspect, and hillshade.

Service Name: Terrain

Note:
The Terrain service is not included with Collection 1.

Description

This dynamic image service provides numeric values representing ground surface heights based on a digital terrain model (DTM). The ground heights are based on multiple sources. Heights are orthometric (sea level = 0), and water bodies that are above sea level have approximated nominal water heights.

This layer is generally not optimal for direct visualization. By default, 32-bit floating point values are returned, resulting in higher bandwidth requirements. Therefore, usage should be limited to applications that require elevation data values. Alternatively, client applications can select from numerous additional functions, applied on the server, that return rendered data. For visualizations such as hillshade, elevation tinted hillshade, and slope, consider using the appropriate server-side function defined on this service.

Server functions

This layer has server functions defined for the following elevation derivatives:

- Slope Degrees
- Slope Percentage
- Aspect
- Ellipsoidal Height
- Hillshade
- Multi-Directional Hillshade
- Elevation Tinted Hillshade
- Slope Map
- Aspect Map

Data sources

The data for this layer comes from the multiple sources listed below, with original source data in its native coordinate system. Depending on the scale being viewed, data from one of these datasets is returned.

Data	Source native pixel size	Approximate pixel size (meters)	Coverage	Primary source	Country/ Region
Australia 1m	1 meter	1	Partial areas of Australia	Geoscience Australia	Australia
Moreton Bay, Australia 1m	1 meter	1	Moreton Bay region, Australia	Moreton Bay Regional Council	Australia
New South Wales, Australia 5m	5 meters	5	New South Wales State, Australia	DFSI	Australia
SRTM 1 arc second DEM-S	0.0002777777777779 degrees	31	Australia	Geoscience Australia	Australia
Burgenland 50cm	0.5 meters	0.5	Burgenland State, Austria	Land Burgenland	Austria
Upper Austria 50cm	0.5 meters	0.5	Upper Austria State, Austria	Land Oberösterreich	Austria
Austria 1m	1 meter	1	Austria	BEV	Austria
Austria 10m	10 meters	10	Austria	Geoland	Austria
Canada HRDEM 1m	1 meter	1	Partial areas of the southern part of Canada	Natural Resources Canada	Canada
Canada HRDEM 2m	2 meters	2	Partial areas of the southern part of Canada	Natural Resources Canada	Canada
Denmark 40cm	0.4 meters	0.4	Denmark	KDS	Denmark
Denmark 10m	10 meters	10	Denmark	KDS	Denmark
England 1m	1 meter	1	70 percent of England	Environment Agency	England
Estonia 1m	1 meter	1	Estonia	Estonian Land Board	Estonia
Estonia 5m	5 meters	5	Estonia	Estonian Land Board	Estonia
Estonia 10m	10 meters	10	Estonia	Estonian Land Board	Estonia
Finland 2m	2 meters	2	Finland	NLS	Finland
Finland 10m	10 meters	10	Finland	NLS	Finland
France 1m	1 meter	1	France	IGN-F	France
Bavaria 1m	1 meter	1	Bavaria State, Germany	Bayerische Vermessungsverwaltung	Germany

Data	Source native pixel size	Approximate pixel size (meters)	Coverage	Primary source	Country/ Region
Berlin 1m	1 meter	1	Berlin State, Germany	Geoportal Berlin	Germany
Brandenburg 1m	1 meter	1	Brandenburg State, Germany	GeoBasis-DE/LGB	Germany
Hamburg 1m	1 meter	1	Hamburg State, Germany	LGV Hamburg	Germany
Nordrhein-Westfalen 1m	1 meter	1	Nordrhein-Westfalen State, Germany	Land NRW	Germany
Saxony 1m	1 meter	1	Saxony State, Germany	Landesamt für Geobasisinformation Sachsen (GeoSN)	Germany
Sachsen-Anhalt 2m	2 meters	2	Sachsen-Anhalt State, Germany	LVermGeo LSA	Germany
Hong Kong 50cm	0.5 meter	0.5	Hong Kong	CEDD	Hong Kong
Italy TINITALY 10m	10 meters	10	Italy	INGV	Italy
Japan DEM5A, DEM5B	0.000055555555 degrees	5	Partial areas of Japan	GSI	Japan
Japan DEM10B	0.00011111111 degrees	10	Japan	GSI	Japan
Latvia 1m	1 meter	1	Latvia	Latvian Geospatial Information Agency	Latvia
Latvia 10m	10 meters	10	Latvia	Latvian Geospatial Information Agency	Latvia
Latvia 20m	20 meters	20	Latvia	Latvian Geospatial Information Agency	Latvia
Lithuania 1m	1 meter	1	Lithuania	NZT	Lithuania
Lithuania 10m	10 meters	10	Lithuania	NZT	Lithuania
Netherlands (AHN3/ AHN4) 50cm	0.5 meter	0.5	Netherlands	AHN	Netherlands
Netherlands (AHN3/ AHN4) 10m	10 meters	10	Netherlands	AHN	Netherlands

Data	Source native pixel size	Approximate pixel size (meters)	Coverage	Primary source	Country/ Region
New Zealand 1m	1 meter	1	Partial areas of New Zealand	Land Information New Zealand	New Zealand
Northern Ireland 10m	10 meters	10	Northern Ireland	OSNI	Northern Ireland
Norway 10m	10 meters	10	Norway	NMA	Norway
Poland 1m	1 meter	1	Partial areas of Poland	GIGIK	Poland
Poland 5m	5 meters	5	Partial areas of Poland	GIGIK	Poland
Scotland 1m	1 meter	1	Partial areas of Scotland	Scottish Government et al.	Scotland
Slovakia 10m	10 meters	10	Slovakia	GKÚ	Slovakia
Slovenia 1m	1 meter	1	Slovenia	ARSO	Slovenia
Madrid City 1m	1 meter	1	Madrid city, Spain	Ayuntamiento de Madrid	Spain
Spain 2m (MDT02 2019 CC-BY 4.0 scne.es)	2 meters	2	Partial areas of Spain	IGN	Spain
Spain 5m	5 meters	5	Spain	IGN	Spain
Spain 10m	10 meters	10	Spain	IGN	Spain
Varnamo 50cm	0.5 meters	0.5	Varnamo municipality, Sweden	Värnamo Kommun	Sweden
Canton of Basel-Landschaft 25cm	0.25 meters	0.25	Canton of Basel-Landschaft, Switzerland	Geoinformation Kanton Basel-Landschaft	Switzerland
Grand Geneva 50cm	0.5 meters	0.5	Grand Geneva metropolitan, France/ Switzerland	SITG	Switzerland and France
Switzerland swissALTI3D 50cm	0.5 meters	0.5	Switzerland and Liechtenstein	swisstopo	Switzerland and Liechtenstein
Switzerland swissALTI3D 10m	10 meters	10	Switzerland and Liechtenstein	swisstopo	Switzerland and Liechtenstein

Data	Source native pixel size	Approximate pixel size (meters)	Coverage	Primary source	Country/ Region
OS Terrain 50	50 meters	50	United Kingdom	Ordnance Survey	United Kingdom
Douglas County 1ft	1 foot	0.3048	Douglas County, Nebraska, USA	Douglas County NE	United States
Lancaster County 1ft	1 foot	0.3048	Lancaster County, Nebraska, USA	Lancaster County NE	United States
Sarpy County 1ft	1 foot	0.3048	Sarpy County, Nebraska, USA	Sarpy County NE	United States
Cook County 1.5 ft	1.5 foot	0.46	Cook County, Illinois, USA	ISGS	United States
3DEP 1m	1 meter	1	Partial areas of the conterminous United States, Puerto Rico	USGS	United States
NRCS 1m	1 meter	1	Partial areas of the conterminous United States	NRCS USDA	United States
FEMA LiDAR DTM	3 meters	3	Partial areas of the conterminous United States	FEMA	United States
NED 1/9 arc second	0.000030864197530866 degrees	3	Partial areas of the conterminous United States	USGS	United States
3DEP 5m	5 meters	5	Alaska, United States	USGS	United States
NED 1/3 arc second	0.000092592592593 degrees	10	Conterminous United States, Hawaii, Alaska, Puerto Rico, and Territorial Islands of the United States	USGS	United States

Data	Source native pixel size	Approximate pixel size (meters)	Coverage	Primary source	Country/ Region
NED 1 arc second	0.0002777777777779 degrees	31	Conterminous United States, Hawaii, Alaska, Puerto Rico, Territorial Islands of the United States; Canada and Mexico	USGS	United States
NED 2 arc second	0.000555555555556 degrees	62	Alaska, United States	USGS	United States
Wales 1m	1 meter	1	Wales	Welsh Government	Wales
SRTM 1 arc second	0.0002777777777779 degrees	31	All land areas between 60 degrees north and 56 degrees south except Australia	NASA	World
EarthEnv-DEM90	0.00083333333333333 degrees	93	Global	N Robinson,NCEAS	World
SRTM v4.1	0.00083333333333333 degrees	93	All land areas between 60 degrees north and 56 degrees south except Australia	CGIAR-CSI	World
GMTED2010 7.5 arc second	0.00208333333333333 degrees	232	Global	USGS	World
GMTED2010 15 arc second	0.00416666666666666 degrees	464	Global	USGS	World
GMTED2010 30 arc second	0.0083333333333333 degrees	928	Global	USGS	World

For more information, see Use the Terrain service.

Mosaic method

This image service uses a default mosaic method of By Attribute, using Field Best and target of 0. Each of the rasters has been attributed with Best field value that is generally a function of the pixel size such that higher-resolution datasets are displayed at higher priority. Other mosaic methods can be set, but care should be taken because the order of the rasters may change. Where required, queries can also be set to display only specific datasets, such as only National Elevation Dataset (NED), or the lock raster mosaic rule used to lock to a specific dataset.

Accuracy

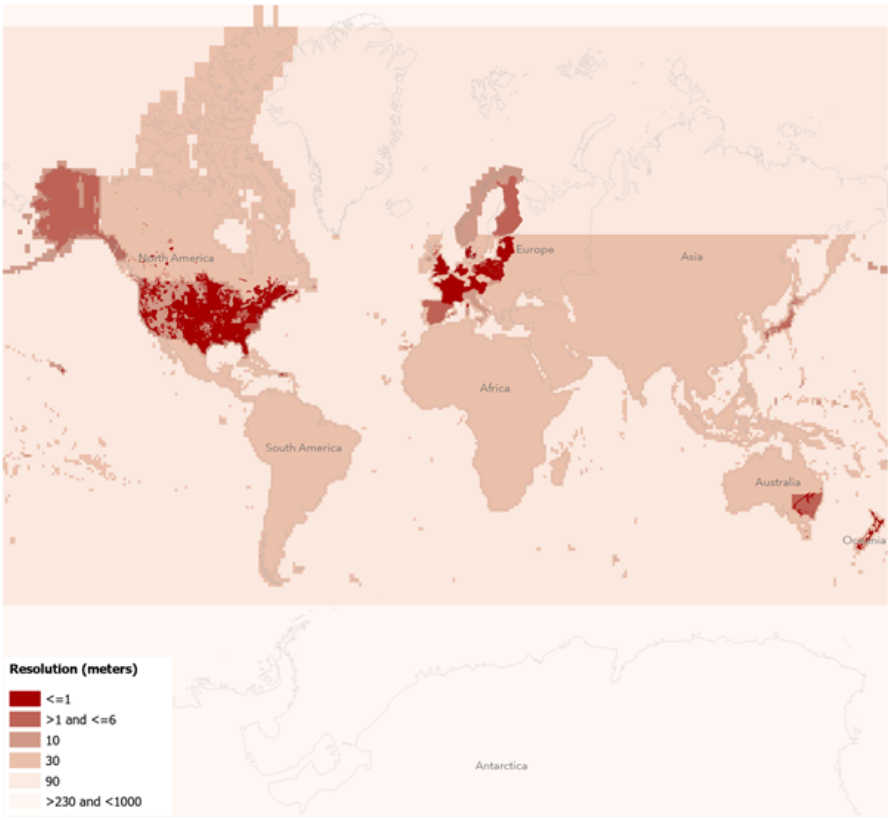
The accuracy of these services will vary as a function of location and data source. Refer to the metadata available in the services, and follow the links to the original sources for further details. Estimates of CE90 and LE90 are included as attributes.

Attribution

Sources: USGS, NGA, NASA, CGIAR, NLS, OS, NMA, Geodatastyrelsen, GSA, GSI and the GIS User Community

Coverage

The following coverage map illustrates the coverage of the layer:



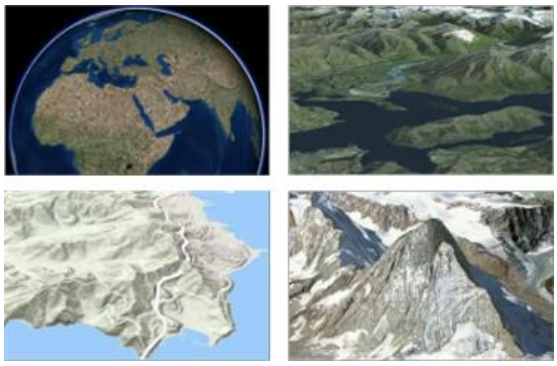
Terrain 3D

The Terrain 3D layer provides global elevation data for work in 3D.

Service Name: Terrain3D

Description

Terrain 3D is a cached tiled elevation image service layer in which the cache is compressed using Limited Error Raster Compression (LERC). This elevation surface is suitable for use in 3D clients such as Scene Viewer and ArcGIS Pro scenes for oblique viewing.



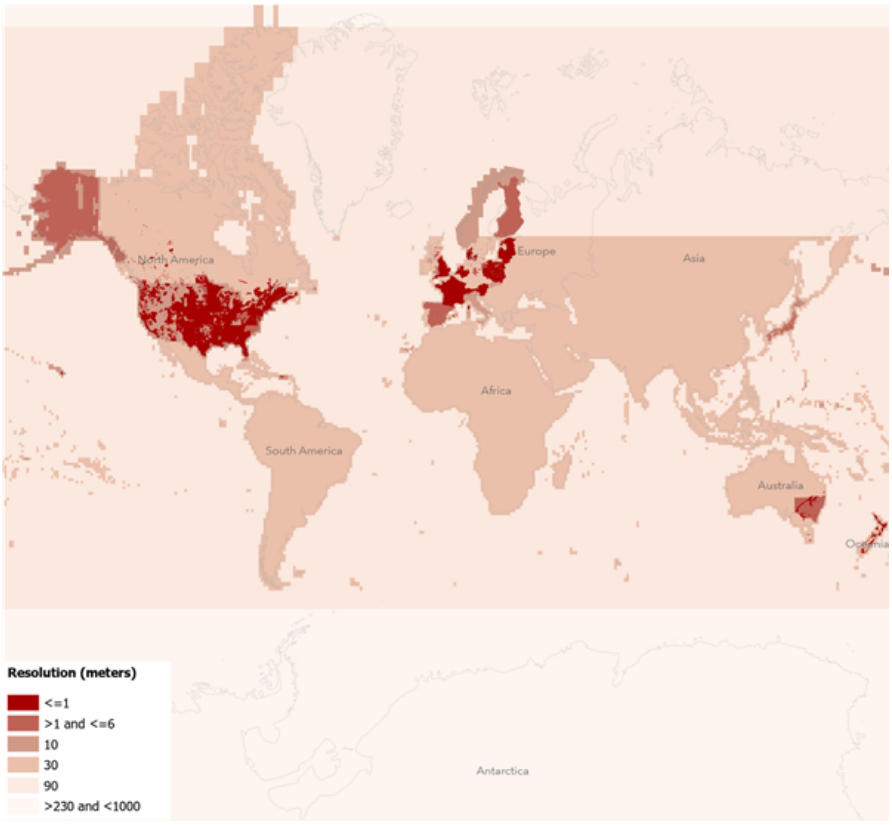
For more information, see Use the Terrain 3D service.

Attribution

Sources: USGS, NGA, NASA, CGIAR, NLS, OS, NMA, Geodatastyrelsen, GSA, GSI, and the GIS User Community

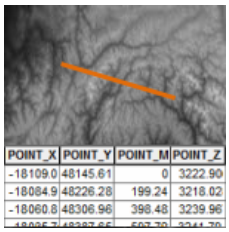
Coverage

The following coverage map illustrates the coverage of the layer:



Elevation analysis

Profile



POINT_X	POINT_Y	POINT_M	POINT_Z
-18109.0	48145.61	0	3222.90
-18084.9	48226.28	199.24	3218.02
-18060.8	48306.96	398.48	3239.96

The Profile geoprocessing tool returns an elevation profile table for the input line features based on the Terrain layer.

Service Names: Elevation and ElevationSync

Note:
The Profile geoprocessing tool is not included with Collection 1.

Description

The Elevation and ElevationSync geoprocessing services provide the Profile geoprocessing tool. The Profile tool is used to create a table of elevation values along input profile lines. The output can be used to create an elevation profile graph.

This tool can use line features that you interactively draw or those from a line layer.

Background

See Use the elevation analysis services for more information about how this service works; in particular, see the Profile section.

See Publish the elevation analysis services for details about the configurations needed to enable this service.

Data

Various parts of the world are covered by different resolutions of data.

1,000-meter resolution

This tool currently works worldwide based on the General Bathymetric Chart of the Oceans (GEBCO) data at 30-arcsecond (approximately 1,000-meter) resolution.

500-meter resolution

This tool currently works worldwide based on GEBCO data at 15-arcsecond (approximately 500-meter) resolution.

90-meter resolution

This tool currently works worldwide between 60 degrees north and 56 degrees south based on the 3-arcsecond (approximately 90-meter) resolution Shuttle Radar Topography Mission (SRTM) dataset.

30-meter resolution

In North America (Canada, the United States, and Mexico), the tool uses 1-arcsecond (approximately 30-meter) resolution data from the United States Geological Survey (USGS) National Elevation Dataset (NED). In Australia, the tool is available based on the 1-arcsecond (approximately 30-meter) resolution SRTM DEM-S dataset from Geoscience Australia. In the remaining parts of the world (Africa, South America, most of Europe and continental Asia, the East Indies, New Zealand, and islands of the western Pacific), the tool is available based on the 1-arcsecond (approximately 30-meter) resolution SRTM data between 60 degrees north and 56 degrees south.

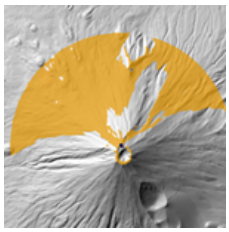
10-meter resolution

In the continental United States, the tool is available based on the 1/3-arcsecond (approximately 10-meter) resolution USGS NED. In Norway, Finland, Estonia, Denmark, Austria, Spain, Japan, Latvia, Lithuania, the Slovak Republic, Italy, Switzerland, and Liechtenstein, the tool is available based on approximately 10-meter resolution data from various authoritative sources.

Attribution

Sources: USGS, NASA, CGIAR, GEBCO, NLS, NMA, Geodatastyrelsen, GSA, GSI, and the GIS User Community

Viewshed



The Viewshed geoprocessing tool creates viewshed polygons for observation points you specify on a global elevation dataset.

Service Name: Elevation

Note:
The Viewshed geoprocessing tool is not included with Collection 1.

Description

The Elevation geoprocessing service provides the Viewshed geoprocessing tool. The Viewshed tool calculates visible areas for a given set of input observation points.

This tool can use point features that you interactively draw or those from a point layer.

Background

See Use the elevation analysis services for more information about how this service works; in particular, see the Viewshed section.

See Publish the elevation analysis services for details on the configurations needed to enable this service.

Data

Various parts of the world are covered by different resolutions of data.

90-meter resolution

This tool currently works worldwide between 60 degrees north and 56 degrees south based on the 3-arcsecond (approximately 90-meter) resolution Shuttle Radar Topography Mission (SRTM) dataset.

30-meter resolution

In North America (Canada, the United States, and Mexico), the tool uses 1-arcsecond (approximately 30-meter) resolution data from the United States Geological Survey (USGS) National Elevation Dataset (NED). In Australia, the tool is available based on the 1-arcsecond (approximately 30-meter) resolution SRTM DEM-S dataset from Geoscience Australia. In the remaining parts of the world (Africa, South America, most of Europe and continental Asia, the East Indies, New Zealand, and islands of the western Pacific), the tool is available based on the 1-arcsecond (approximately 30-meter) resolution SRTM data between 60 degrees north and 56 degrees south.

10-meter resolution

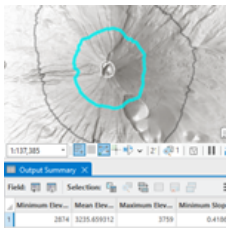
In the continental United States, the tool is available based on the 1/3-arcsecond (approximately 10-meter) resolution USGS NED. In Norway, Finland, Estonia, Denmark, Austria, Spain, Japan, Latvia, Lithuania, the Slovak

Republic, Italy, Switzerland, and Liechtenstein, the tool is available based on approximately 10-meter resolution data from various authoritative sources.

Attribution

Sources: USGS, NASA, CGIAR, GEBCO, NLS, NMA, Geodatastyrelsen, GSA, GSI, and the GIS User Community

Summarize Elevation



The Summarize Elevation geoprocessing tool calculates elevation, slope, and aspect statistics for point, line, or polygon features you specify on a global elevation dataset.

Service Name: Elevation

Note:
The Summarize Elevation geoprocessing tool is not included with Collection 1.

Description

The Elevation geoprocessing service provides the Summarize Elevation geoprocessing tool. The Summarize Elevation tool is used to calculate elevation, slope, and aspect statistics for a given set of input point, line, or polygon features.

This tool can use features that you interactively draw or those from a feature layer.

Background

See Use the elevation analysis services for more information about how this service works; in particular, see the Summarize Elevation section.

See Publish the elevation analysis services for details about the configurations needed to enable this service.

Data

Various parts of the world are covered by different resolutions of data.

90-meter resolution

This tool currently works worldwide between 60 degrees north and 56 degrees south based on the 3-arcsecond (approximately 90-meter) resolution Shuttle Radar Topography Mission (SRTM) dataset.

30-meter resolution

In North America (Canada, the United States, and Mexico), the tool uses 1-arcsecond (approximately 30-meter) resolution data from the United States Geological Survey (USGS) National Elevation Dataset (NED). In Australia, the tool is available based on the 1-arcsecond (approximately 30-meter) resolution SRTM DEM-S dataset from Geoscience Australia. In the remaining parts of the world (Africa, South America, most of Europe and continental Asia, the East Indies, New Zealand, and islands of the western Pacific), the tool is available based on the 1-arcsecond (approximately 30-meter) resolution SRTM data between 60 degrees north and 56 degrees south.

10-meter resolution

In the continental United States, the tool is available based on the 1/3-arcsecond (approximately 10-meter) resolution USGS NED. In Norway, Finland, Estonia, Denmark, Austria, Spain, Japan, Latvia, Lithuania, the Slovak Republic, Italy, Switzerland, and Liechtenstein, the tool is available based on approximately 10-meter resolution data from various authoritative sources.

Attribution

Sources: USGS, NASA, CGIAR, GEBCO, NLS, NMA, Geodatastyrelsen, GSA, GSI, and the GIS User Community

Use

Use services

You can develop apps using the maps and globes available with ArcGIS Data Appliance. If there's an individual map you want to use in a map or app you've created, visit the following topics to learn where to go for instructions on adding the service to the map or app:

- Use basemap and reference services
- Use the World Elevation services
- Use the elevation analysis geoprocessing services

Use basemap and reference services

Once you've published map services, those map services can be used in a large number of Esri and non-Esri applications.

For information about the available map services, see Directory of maps and data.

ArcGIS 11.3

For information about clients for ArcGIS 11.3, including Esri client applications and non-Esri client applications, see Clients for map services in the ArcGIS Server 11.3 help under **Manage Services** > **Types of services** > **Map services**.

ArcGIS 11.2

For information about clients for ArcGIS 11.2, including Esri client applications and non-Esri client applications, see Clients for map services in the ArcGIS Server 11.2 help under **Manage Services** > **Types of services** > **Map services**.

ArcGIS 11.1

For information about clients for ArcGIS 11.1, including Esri client applications and non-Esri client applications, see Clients for map services in the ArcGIS Server 11.1 help under **Manage Services** > **Types of services** > **Map services**.

ArcGIS 10.9.1

For information about clients for ArcGIS 10.9.1, including Esri client applications and non-Esri client applications, see Clients for map services in the ArcGIS Server 10.9.1 help under **Manage Services** > **Types of services** > **Map services**.

Use the World Elevation services

With ArcGIS Data Appliance 2025, the Terrain and Terrain 3D services are available to use for visualization and analysis. The following sections explain how to use the services:

- Use the Terrain service
- Use the Terrain3D service

Use the Terrain service

Once you've published the terrain image service, you can use it in ArcGIS 10.9.1 or later, ArcGIS Pro 3.1 or later, and ArcGIS Online. Terrain is a dynamic image service comprising multiple sources and resolutions ranging from 1,000 meters to 0.25 meters. It can be used for visualization and analysis.

The following sections explain how to do the following:

- Use Terrain in ArcGIS Desktop
- Use Terrain in ArcGIS Online or Portal for ArcGIS

Use Terrain in ArcGIS Desktop

The following sections explain how to do the following:

- Use the Terrain service in ArcGIS Pro
- Use Terrain for analysis in ArcGIS Pro

Use the Terrain service in ArcGIS Pro

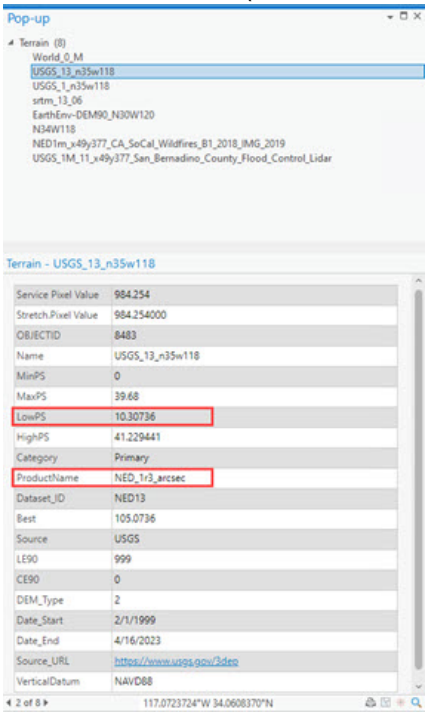
To use the Terrain service in ArcGIS Pro, complete the following steps:

1. Start ArcGIS Pro and choose the **Map** project template.
2. On the **Insert** tab, click **Connections** and choose **New ArcGIS Server**.
3. Provide the URL of the server where you published the Terrain service.
4. On the **Map** tab, click **Add Data**, and click **Data**.
5. Click **Servers**, double-click the server connection, and select the **Terrain** service.
   The Terrain service is added to the map. By default, the service renders as an elevation (DEM) raster.
6. Right-click **Terrain**, and click **Properties** > **Processing Templates**.
7. From the **Processing Template** drop-down list, choose one of the functions defined on the service.
8. Click **OK**.
   The map dynamically renders the elevation derivative selected from the drop-down list.

Use Terrain for analysis in ArcGIS Pro

The Terrain service includes data with resolutions ranging from more than 1,000 meters to approximately 0.25 meters in some limited areas, and each record (raster item) is populated with the **Dataset_ID** and **ProductName** values, which can be used for filtering. Since the service is composed of multiple-resolution datasets, it is recommended that you filter a single resolution (or dataset) before consuming it for analysis. The following steps are for creating a temporary layer using the Make Image Server Layer geoprocessing tool for a particular area of interest.

1. Add the Terrain service to a map in ArcGIS Pro.
2. Zoom to `Crafton Hills, CA, USA` at scale of 1:18000.
3. Click **Identify** on the Terrain service.
   A list of raster items is returned.
4. Examine the **LowPS** (cell resolution in meters) values of rasters in the **Identify** result window.



5. Determine the resolution you need to work with and note the **ProductName** field value.
   This example is for the NED_1r3_arcsec dataset, which has a resolution of approximately 10.3 meters.
6. Open the Make Image Server Layer tool.
7. Define the parameters.
   a. For **Input Image Service**, browse to the server connection for the `TerrainImageServer` image service.
   b. Set **Expression** to `"ProductName" = 'NED_1r3_arcsec'`.
   c. Optionally, set the output coordinates from the environment setting, if the request being made is different from the image service coordinates (Web Mercator).
   d. Specify the extent. It should be less than 5000 x 5000 pixels. If the pixel size is 10 meters, the max extent should be 50,000 meters x 50,000 meters.

      Note:
      The request size of the output layer is limited to 5,000 by 5,000 pixels (property defined on mosaic datasets and service). The administrator or publisher can increase this limit on the mosaic and service, if required.

   e. Specify the **Output Cell Size** value as `10.3`.

f. Click **Run** to run the tool.

On successful completion, a temporary layer is generated and added to the **Contents** pane with cell size, coordinate system, extent, and expression parameters defined in the tool. This temporary elevation layer can now be used in other geoprocessing tools (for example, Contours) for further analysis.

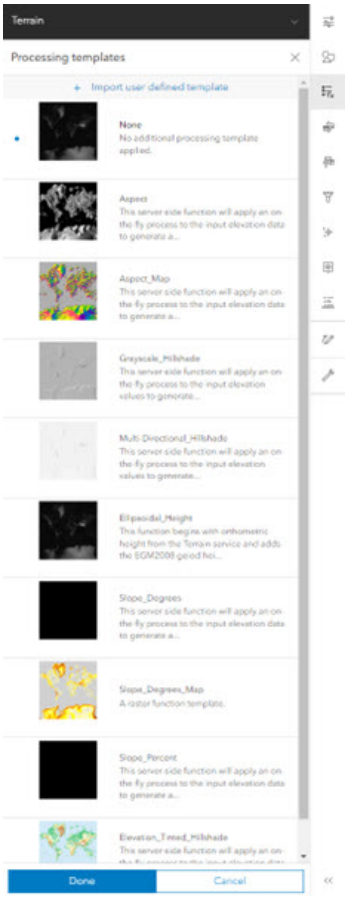
For information about using mosaic datasets and image services in geoprocessing tools, see Using mosaic datasets and image services in geoprocessing tools in the ArcGIS Pro help.

Use Terrain in ArcGIS Online or Portal for ArcGIS

To use the Terrain service in ArcGIS Online or Portal for ArcGIS, complete the following steps:

1. Go to the REST endpoint of the Terrain service, for example, `https://localhost:6443/arcgis/rest/services/Terrain/ImageServer`.
2. Click **ArcGIS Online Map Viewer**.
   The Terrain service opens in Map Viewer in a browser. By default, it renders as elevation (DTM).
3. In the right side pane, click the **Processing templates** button .

The **Processing templates** pane appears, listing all the processing templates associated with the Terrain layer.



4. Choose **Grayscale_Hillshade** and click **Done**.
   The map renders the hillshade.

   Optionally, you can select any other available renderer for visualization in Map Viewer.

Use the Terrain3D service

Once you've published the Terrain 3D service, you can use it in ArcGIS 10.9.1 or later, ArcGIS Pro 2.9 or later, and ArcGIS Online. The following sections explain how to use the Terrain 3D service:

- Use the service in ArcGIS Pro
- Use the service in ArcGIS Online or Portal for ArcGIS

Use the service in ArcGIS Pro

To use the Terrain3D service in ArcGIS Pro, complete the following steps:

1. Start ArcGIS Pro and choose the **Global_Scene** project template.
2. On the **Insert** tab, click **Connections** and choose **New ArcGIS Server**.
3. Provide the server URL where you published the Terrain3D service.
4. On the **Map** tab, click **Add Data** > **Elevation Source**.
5. Click **Servers**, double-click the server connection, and select the **Terrain3D** service.

The elevation source is added to the ground.

6. Optionally, turn off or remove the default ArcGIS Online elevation layer (WorldElevation3D/Terrain3D) from **Ground**.
7. Zoom to any location and tilt the scene to view the oblique views.

With ArcGIS Pro, you can add your unique 2D and 3D data layers to the scene. Your data is added to the elevation surface. If your data has defined elevation (z-coordinates), this information is honored in the scene. You can then share your work as a web scene with others in your organization or with the public.

For information about scenes in ArcGIS Pro, see Scenes in the ArcGIS Pro help under **Maps and scenes** > **Author maps and scenes**.

Use the service in ArcGIS Online or Portal for ArcGIS

To use the Terrain3D service in ArcGIS Online or Portal for ArcGIS, complete the following steps:

1. Sign in to ArcGIS Online or your organization's Portal for ArcGIS.
2. Open Scene Viewer.
3. On the **Designer** toolbar, click **Add Layers** to add layers, and click **ArcGIS web service** to open the **Enter Layer URL** pane.
4. In the **Enter Layer URL** pane, in the **Layer URL** text box, enter the REST endpoint of the Terrain3D service published on your server, for example, `https://localhost:6443/arcgis/rest/services/Terrain3D/ImageServer`.
5. Click **Add** to add the layer to your scene.
   The Terrain3D elevation layer is added as **Ground**.

Using Scene Viewer in ArcGIS Online, you can create and interact with 3D scenes. Your data is added to the elevation surface. If your data has defined elevation (z-coordinates), this information is honored in the scene. You can then share your work as a web scene with others in your organization or with the public.

For information about using the 3D scene viewer, see Get started with Scene Viewer in the ArcGIS Online help.

Use the elevation analysis geoprocessing services

With the Elevation and ElevationSync geoprocessing services running on your data appliance, you can perform raster analysis and map and share the results with others in your organization. By having these services running on a data appliance, you don't need to find authoritative base data. You can create results more quickly than if you had to acquire and maintain terabytes of data on local machines.

With ArcGIS Data Appliance 2025, the elevation geoprocessing tools Profile, Viewshed, and Summarize Elevation are available. First, to access the functionality, you must activate the particular service, which is discussed in the next section. More specific details about the Profile, Viewshed, and Summarize Elevation tools are provided in the sections that follow.

Elevation geoprocessing services details

Once you've published the elevation analysis geoprocessing services, you can use the services in ArcGIS Enterprise 10.9.1 or later, ArcGIS Pro 3.1 or later, and ArcGIS Online.

For general information about using services, see Using geoprocessing services in the ArcGIS Server help by clicking **Manage Services** > **Types of services** > **Geoprocessing services** or Use geoprocessing services in ArcGIS Pro in the ArcGIS Pro help by clicking **Help** > **Analysis and geoprocessing** > **Geoprocessing** > **Share geoprocessing** > **Share analysis with geoprocessing services** > **Using**.

Elevation data

The elevation data used by the services is collated and curated by Esri and made available as part of the ArcGIS Data Appliance 2025 installation. A key benefit is that the elevation data has already been preprocessed and optimized for fast performance. As new areas and better resolutions are made available, they will be included in future updates.

The elevation data comes from the U.S. Geological Survey (USGS), U.S. National Geospatial-Intelligence Agency (NGA), U.S. National Aeronautics and Space Administration (NASA), and other authoritative sources. While elevation data is available for the entire surface of the earth, there are higher resolutions available for particular geographic extents. The following table lists the available data resolutions, the area covered by each, and the primary sources. The data is furnished in a spherical coordinate system with units of arc seconds, but it is listed here by its metric approximations for convenience.

Resolution	Area covered	Source
10 meters (1/3 arc second)	1. The continental United States 2. Norway, Finland, Estonia, Denmark, Austria, Spain, Japan, Latvia, Lithuania, the Slovak Republic, Italy, Switzerland, and Liechtenstein	USGS National Elevation Dataset and other authoritative sources.
30 meters (1 arc second)	1. The continental United States, Canada, and Mexico 2. Africa, South America, most of Europe and continental Asia, the East Indies, New Zealand, and islands of the western Pacific between 60 degrees north and 56 degrees south 3. Australia	1. USGS National Elevation Dataset. 2. The 1 arc second (approximately 30 meters) resolution Shuttle Radar Topography Mission (SRTM) dataset. 3. In Australia, the tool is available based on the 1 arc second (approximately 30 meters) resolution SRTM DEM-S dataset from Geoscience Australia.

Resolution	Area covered	Source
90 meters (3 arc seconds)	The land surface of the world between 60 degrees north and 56 degrees south	Shuttle Radar Topography Mission (SRTM).
500 meters (15 arc seconds)	The entire surface of the world	General Bathymetric Chart of the Oceans (GEBCO).
1,000 meters (30 arc seconds)	The entire surface of the world	General Bathymetric Chart of the Oceans (GEBCO).

Bathymetry data for the oceans is also included in the global elevation service, allowing you to derive profiles down to the seafloor over ocean areas.

Control the resolution

Which source data is used depends on the setting of the **DEM Resolution** parameter as well as the particular location of the line feature for which you are trying to create a profile.

Profile

The Profile tool allows you to create profiles of your choosing anywhere on the surface of the earth.

View the following sections for more information on the Profile tool:

- Elevation profile
- Asynchronous and synchronous Profile tool differences
- Use the Profile tool in ArcGIS Pro
- Tool parameters
- Usage notes

Elevation profile

An elevation profile shows you the height (or depth) of a surface along the length of a linear feature. It is an effective way to visualize and understand the elevation and topography of the surface of the earth.

Asynchronous and synchronous Profile tool differences

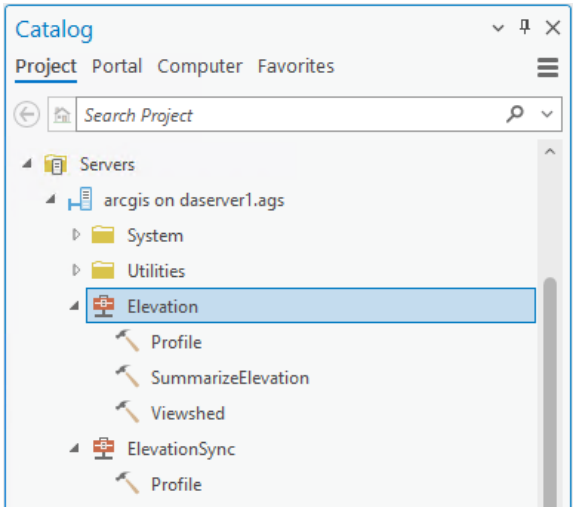
There are two Profile tools available, one in the Elevation toolbox and the other in the ElevationSync toolbox. They do essentially the same thing but with different intended uses. The first one is an asynchronous task, designed for long-running tasks, such as batch processing a large number of profile lines at once from a single input feature class. The synchronous task (the one in the ElevationSync toolbox) is designed for interactive profile applications, which typically have fewer input lines and require a faster response. For example, if you are creating a profile web app that generates profile graphs on the fly, use the synchronous tool.

There should be no noticeable difference between the asynchronous and synchronous Profile tools, with the exception that the asynchronous Profile tool allows a maximum of 1,000 input line features at a time, whereas the synchronous Profile tool allows a maximum of 100.

Use the Profile tool in ArcGIS Pro

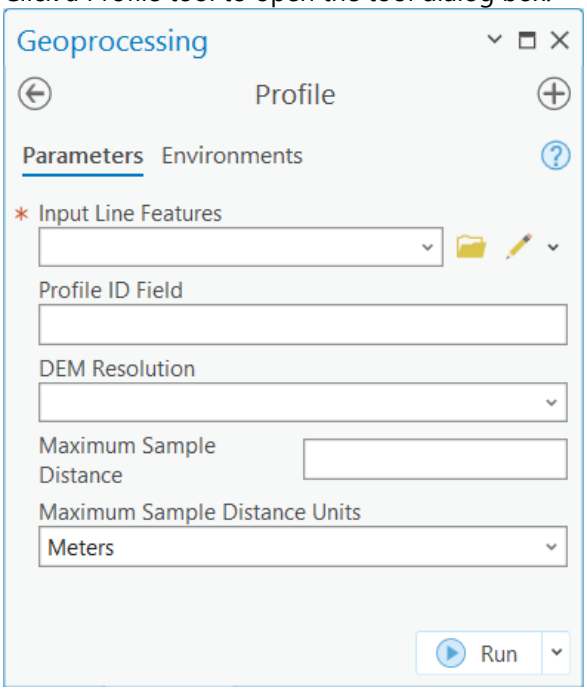
To create a profile in ArcGIS Pro, first connect to the ArcGIS Server site of your data appliance that is hosting the elevation geoprocessing services. Once that is done, you are ready to start creating profiles.

1. In the ArcGIS Pro **Catalog** pane, add a server connection to the ArcGIS Server site where the elevation services are published.
2. In the ArcGIS Pro **Catalog** pane, expand the server connection, and expand the **Elevation** and **ElevationSync** server toolboxes.



Note that there are two Profile tools available. The first is for asynchronous applications and the second is for synchronous ones.

3. Click a Profile tool to open the tool dialog box.



4. Specify the line for which you want to create the profile.
   There are two ways you can do this, depending on how the **Input Line Features** parameter is set:

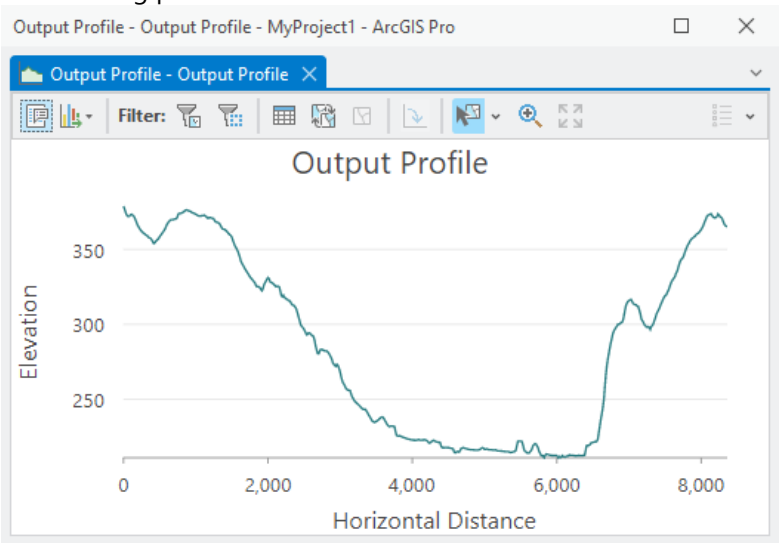
- Click the edit button to draw your profile line directly on the map. Click to add a vertex and double-click to finish.
- Click the browse button to browse to and select an existing line feature for which you want to create a profile.

5. Set the other parameters as you prefer, and specify a value for the maximum sample distance parameter.
6. Click **Run** to run the tool.
   The result is added to the table of contents of the current map as a feature layer.

The output is a polyline feature layer with elevation values extracted along the line you specified. The elevation values and distance values are stored as z- and m-values in the output features. Three attribute fields of the output features record the Terrain source data used in the calculation. The `Product Name` field identifies the elevation data product used in the analysis. The `Source` and `Source URL` fields give further details about the provider of the data. The following is an example of the attribute table of a profile output:

	OBJECTID *	Shape *	DEM Resolution	Product Name	Source	Source URL	Length Meters
1	1	Polyline ZM	10m	NED_1r3_arcsec	USGS	http://ned.usgs.gov	5962.230467

To create the profile chart in ArcGIS Pro, right-click the **Output Profile** layer in the table of contents and point to **Create Chart** on the context menu, and click **Profile Graph** on the menu to finish. The following is an example of the resulting profile chart:



Tool parameters

The following are the parameters for the Profile tool:

Parameter	Description
Input Line Features	The line feature for the information necessary to create a profile.
Profile ID Field	A string or integer unique identifier to tie profiles to their corresponding input line features.

Parameter	Description
DEM Resolution	The approximate spatial resolution (cell size) of the source elevation data used for the calculation. The default is 90m. The available values are `FINEST | 10m | 30m | 90m | 500m | 1000m`. The resolution keyword is an approximation of the spatial resolution of the digital elevation model. While many elevation sources are distributed in units of arc seconds, the keyword is an approximation of those resolutions in meters for easier understanding. The Finest option indicates that the highest-resolution DEM possible is to be used.
Maximum Sample Distance	The maximum sampling distance along the line to sample elevation values.
Maximum Sample Distance Units	The units for the MaximumSampleDistance. The available values are `Meters | Kilometers | Feet | Yards | Miles`.

Usage notes

The following notes provide information to help you use the Profile tool:

- The output line features are in the same coordinate system as the input line features. The z- and m-values of the vertices are in meters.
- The **Length Meters** output field holds the planimetric length of the profile line calculated as a geodesic distance and is the correct length regardless of the coordinate system of the data. This length will be different from the `shape_length` attribute due to the effects of map projection distortion.
- When the **Maximum Sample Distance** parameter is empty or not supplied, a default sampling distance is calculated based on how many vertices are available on the input line feature. If the input line feature contains fewer than 50 vertices, the default sampling distance is the length of the input line feature divided by 49. If the input has 50 or more, but fewer than 200 vertices, the default sampling distance is the length of the input line feature divided by 199. If the number of vertices is from 200 to the maximum of 1,024, the input line feature will not be densified if the **Maximum Sample Distance** parameter is empty or not specified.
- The maximum number of input lines is 1,000 for the asynchronous profile task. For the synchronous profile task, the maximum number of input lines is 100. If additional input lines are provided, the service will return an error and will not run.
- The maximum number of elevation values returned from the task is 2,000 for each input line. The task will return an error message and will not run if a request results in more than this maximum number of elevation values. If this occurs, either specify a larger sampling distance or input a line feature with fewer vertices, or both.
- The task will return an error message if the specified DEM resolution is not available at any of the input feature locations.

Viewshed

The Viewshed tool returns polygons of visible areas for a given set of input observation points.

View the following sections for more information on the Viewshed tool:

- Viewshed analysis
- Use the Viewshed tool in ArcGIS Pro

- Tool parameters
- Usage notes

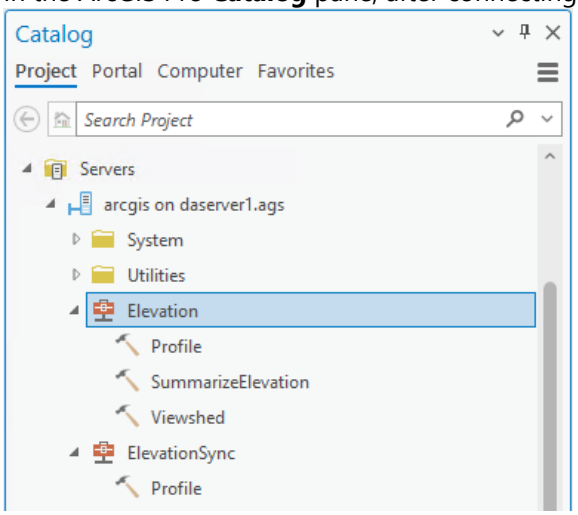
Viewshed analysis

The purpose of viewshed analysis is to identify visible areas. You specify the observer locations you are interested in, either from a dataset or interactively, and the Viewshed tool combines this with terrain data to create output polygons of visible areas, the areas that can be seen from the observer locations.

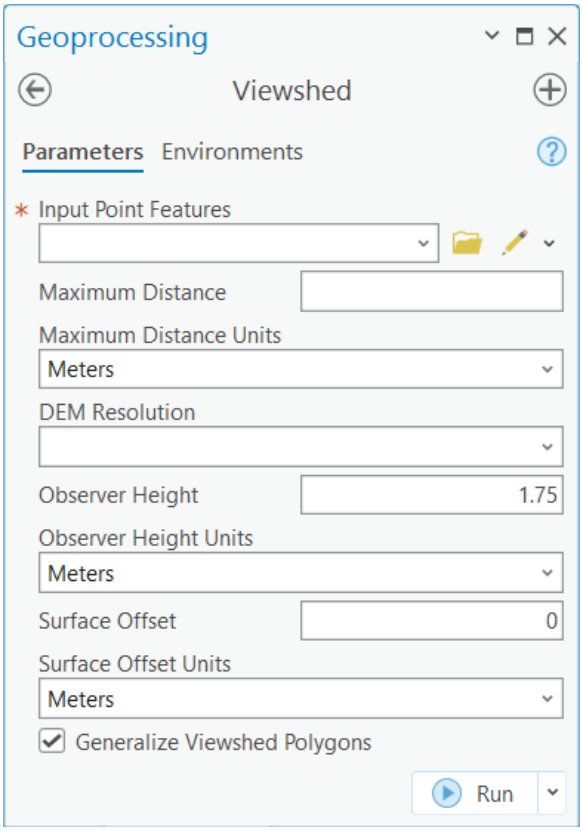
Use the Viewshed tool in ArcGIS Pro

To create a viewshed, first connect to the ArcGIS Server site of your data appliance that is hosting the elevation geoprocessing services. Once the server connection is ready, complete the following steps to run the Viewshed tool:

1. In the ArcGIS Pro **Catalog** pane, after connecting to the server, expand the **Elevation** toolbox.



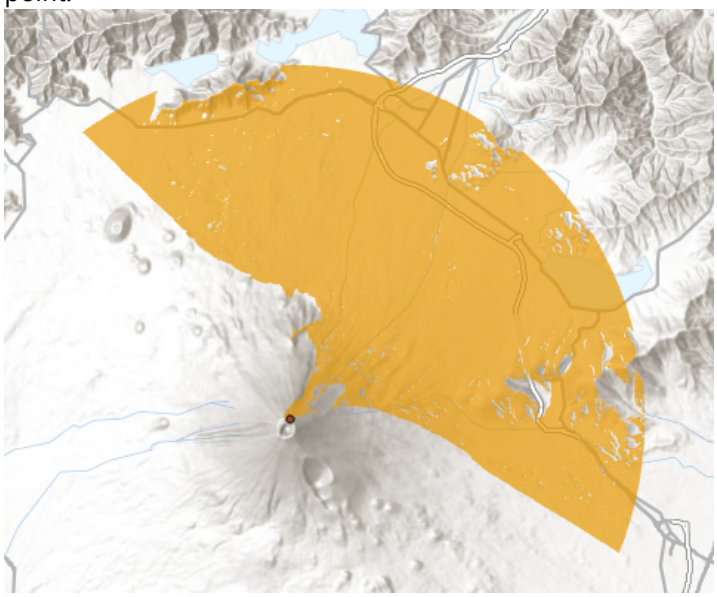
2. Click the Viewshed tool to open the tool dialog box.



3. Specify the input points for which you want to create the viewshed.
   There are two ways you can do this, depending on how the **Input Line Features** parameter is set:
   - Click the edit button to draw your input points directly on the map.
   - Click the browse button to browse to and select an existing point feature class or shapefile for which you want to create a viewshed.
4. Specify a value for **Maximum Distance** or leave it as the default.
   The largest value allowed in this parameter is 15 kilometers for the 10m and 30m DEM resolutions, and 50 kilometers for the 90m DEM resolution. If this parameter is not set, the default is 5 kilometers for the 10m DEM resolution, and 15 kilometers for the rest of the DEM resolutions.
5. Select a value for **DEM Resolution** to be used by the viewshed calculation, or leave it as the default.
   By default, the 90m resolution is used.
6. Specify a value for **Observer Height** or accept the default value, which represents the height of observers above the surface.
   Similarly, you can specify a value for **Surface Offset** that represents the height of targets above the surface.

   By default, the output viewshed polygons are simplified.
7. To get unsimplified output viewshed polygons, uncheck the **Generalize Viewshed Polygons** check box.
   Simplified viewshed polygons have smoother edges and a smaller output data size, allowing the result to be returned from the server significantly faster with a small loss of accuracy.
8. Click **Run** to run the tool.
   The output viewshed is added to the table of contents of the current map as a polygon feature layer.

The output polygon features represent areas that are visible to the input point features. The following is an example of the output viewshed created using the 10m DEM resolution, with a maximum distance of 15 km, for one observer point:



For each polygon in the output feature class, the attribute table has a `Frequency` field recording the number of observers that can see it. Three additional attribute fields record the Terrain source data used in the calculation. The `Product Name` field identifies the elevation data product used in the analysis. The `Source` and `Source URL` fields give further details about the provider of the data. The following is an example of the output viewshed attribute table:

	OBJECTID *	Shape *	Frequency	DEM Resolution	Product Name	Source	Source URL	Perimeter Kilometers
1	1	Polygon	1	10m	Japan_FGD_DEM10B	GSI Japan	http://www.gsi.go.jp/EN	333.096105

Tool parameters

The following are the parameters for the Viewshed tool:

Parameter	Description
Input Points	The point features to use as the observer locations.
Maximum Distance	The maximum viewing distance of the observers. The output viewshed will be calculated within this distance.
Maximum Distance Units	Specifies the units for the **Maximum Distance** parameter. The available values are `Meters` | `Kilometers` | `Feet` | `Yards` | `Miles`.
DEM Resolution	The approximate spatial resolution (cell size) of the source elevation data used for the calculation. The default is 90m. The available values are `FINEST` | `10m` | `30m` | `90m`. The resolution keyword is an approximation of the spatial resolution of the digital elevation model. While many elevation sources are distributed in units of arc seconds, the keyword is an approximation of those resolutions in meters for easier understanding. The Finest option indicates that the highest-resolution DEM possible is to be used.

Parameter	Description
Observer Height	The height above the surface of the observers. The default value of 1.75 meters represents the height of an average person. If the observers are looking from an elevated location such as an observation tower or a building, use that height instead.
Observer Height Units	Specifies the units for the **Observer Height** parameter. The default is meters. The available values are `Meters` | `Kilometers` | `Feet` | `Yards` | `Miles`.
Surface Offset	The height above the surface of the objects you are viewing. The default value is 0. If you are viewing buildings or wind turbines, use their height.
Surface Offset Units	Specifies the units for the **Surface Offset** parameter. The default is meters. The available values are `Meters` | `Kilometers` | `Feet` | `Yards` | `Miles`.
Generalize Viewshed Polygons	Specifies whether the viewshed polygons will be generalized. The viewshed calculation is based on a raster elevation model that creates a result with stair-stepped edges. To create a more pleasing appearance and improve performance, the default behavior generalizes the polygons. This generalization will not change the accuracy of the result for any location more than one-half of the cell size corresponding to each DEM resolution.

Usage notes

The following notes provide information to help you use the Viewshed tool:

- There are several elevation sources available that have different spatial resolutions and cover different areas. Not all resolutions are available for all areas. See the Elevation data section for more details. The tool returns an error message if the specified resolution is not available at any of the specified input observer locations.
- The tool uses a single resolution elevation source for the input features. If all input features don't fit into a single resolution, the tool identifies the highest resolution that covers the input features.
- If the **DEM Resolution** parameter is not set, the coarsest resolution (90m) is used. If Finest is specified, the tool uses the highest resolution available at the observer location that is allowed by the **Maximum Distance** parameter.
- For the **Maximum Distance** parameter, the largest value allowed for the 10m and 30m DEM resolutions is 15 kilometers. For the 90m DEM resolution, the largest value allowed is 50 kilometers. If this parameter is not set, the tool will use a default value based on the **DEM Resolution** parameter. For 10m resolution, the default maximum distance is 5 kilometers. For both the 30m and the 90m DEM resolutions, the default maximum distance is 15 kilometers.
- For water bodies, the tool uses the local water surface as the elevation surface. Oceans are assigned a value of zero and water bodies are assigned an appropriate flat local elevation.
- The output viewshed is returned as polygon features. The `Frequency` field is used to record the number of observation points from which each polygon is visible. The `DEMResolution` field is used to record the source DEM resolution for the viewshed computation.
- Three additional fields are returned that identify the Terrain source data used in the calculation. The `Product Name` field identifies the data product used in the analysis. The `Source` and `Source URL` fields give further details about the provider of the data.

- A lower DEM resolution results in a faster tool response. For example, the 90m resolution has the shortest response time. The tradeoff is that a lower DEM resolution has a lower accuracy in the viewshed result compared to that of a higher DEM resolution.
- The **Maximum Distance** parameter may also affect the tool response time. In general, using a smaller distance results in a shorter response time.
- The maximum number of input points is 1,000. If more than 1,000 input points are provided, the tool returns an error and will not run.

Summarize Elevation

The Summarize Elevation tool calculates summary statistics for features you provide based on the elevation in Terrain data. It accepts point, line, or polygon input and returns statistics for the elevation, slope, and aspect of the features.

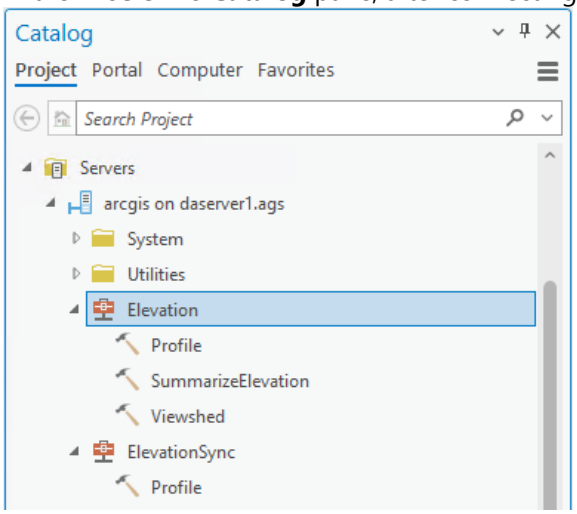
View the following sections for more information on the Summarize Elevation tool:

- Use the Summarize Elevation tool in ArcGIS Pro
- Tool parameters
- Usage notes

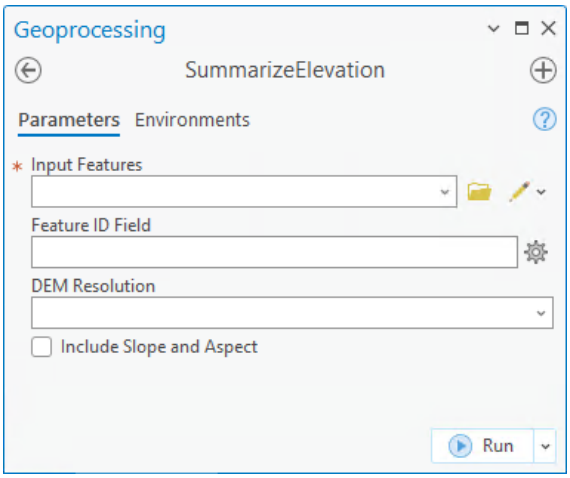
Use the Summarize Elevation tool in ArcGIS Pro

To calculate summary statistics for input features, first connect to the ArcGIS Server site of your data appliance that is hosting the elevation geoprocessing services. Once the server connection is ready, complete the following steps to run the Summarize Elevation tool:

1. In the ArcGIS Pro **Catalog** pane, after connecting to the server, expand the **Elevation** toolbox.



2. Click the SummarizeElevation tool to open the tool dialog box.



3. Specify the input features for which you want to calculate elevation statistics. The input features can be points, lines, or polygons.
   There are two ways you can do this, depending on how the **Input Features** parameter is set:
   - Click the Edit tool to draw your input features directly on the map.
   - Click the browse button to browse to and select an existing feature class or shapefile for which you want to run the tool.
4. Optionally, set the **Feature ID Field** parameter. Specify an **object ID** field or an **integer** field, or leave it blank. If no value is specified, the **object ID** field is used by default.
5. Select a **DEM Resolution** value that the statistic calculation will be based on.
   If no value is specified, the 90m DEM resolution is used by default.

   By default, only the elevation statistics are calculated.
6. To include slope and aspect statistic calculations, check the **Include Slope and Aspect** parameter.
7. Click **Run** to run the tool.

Once the tool finishes running, the result is returned as a feature class with the elevation, slope and aspect statistics attached as attribute fields in the feature attribute table. The elevation statistics are found in the **Minimum Elevation**, **Mean Elevation**, and **Maximum Elevation** fields. The slope statistics are found in the **Minimum Slope**, **Mean Slope**, and **Maximum Slope** fields. The aspect statistics are found in the **Mean Aspect** field.

The following is an example of the output feature attribute table:

	OBJECTID *	Shape *	ID	Minimum Elevation	Mean Elevation	Maximum Elevation	Minimum Slope	Mean Slope	Maximum Slope	Mean Aspect
1	1	Polygon Z	1	100.556801	121.574756	132.301376	1.082684	6.965386	21.493967	100.987395

Tool parameters

The following are the parameters for the tool:

Parameter	Description
Input Features	The input point, line, or area features for which the elevation will be summarized.
Feature ID Field	The unique ID field to use for the input features.

Parameter	Description
DEM Resolution	The approximate spatial resolution (cell size) of the source elevation data used for the calculation. The default is 90m. The available values are `FINEST | 10m | 30m | 90m`. The resolution keyword is an approximation of the spatial resolution of the digital elevation model. While many elevation sources are distributed in units of arc seconds, the keyword is an approximation of those resolutions in meters for easier understanding. The Finest option indicates that the highest-resolution DEM possible is to be used.
Include Slope and Aspect	Specifies whether slope and aspect values for the input features will be included in the output in addition to the elevation values. • Checked—Slope and aspect values will be included in the output. • Unchecked—Slope and aspect values will not be included in the output. This is the default.

Usage notes

The following notes provide information to help you use the Summarize Elevation tool:

- This tool summarizes the elevation, slope, and aspect information for the input features. The returned elevation values are in meters. The slope and aspect values are calculated and returned in degrees.
- There are several elevation sources available that have different spatial resolution and cover different areas. Not all resolutions are available for all areas. The tool will return an error message if the specified resolution is not available at any of the input feature locations.
- The maximum number of input features is 1,000. If more than 1,000 input features are provided, the tool will return an error and will not run.
- If the **DEM Resolution** parameter is not supplied, the 90-meter resolution SRTM data will be used. If **Finest** is specified, the tool will use the smallest resolution available at the input feature locations.
- The tool uses a single resolution elevation source for the input features. The highest resolution elevation source that covers the extent of all the input features will be used.
- The results are appended to the returned feature attribute table as fields. The **MinElevation**, **MeanElevation**, and **MaxElevation** fields summarize elevation. The **MinSlope**, **MeanSlope**, and **MaxSlope** fields summarize slope. The **MeanAspect** field summarizes aspect.
- The returned features are in the same shape type as the input features. For example, if the input features are points, the returned features are also points.
- Oceans and other major water bodies are ignored in the calculations and do not affect the summary values.

Reference

Common attributes for maps using the Web Mercator Auxiliary Sphere tiling scheme

All ArcGIS Data Appliance maps use the Web Mercator Auxiliary Sphere tiling scheme (WKID 102100), which is the same tiling scheme that ArcGIS Online, Google Maps, and Bing Maps use.

All ArcGIS Data Appliance maps use the same coordinate system, map DPI, and tile size. Cached levels of detail for each map and layer match; however, not all maps and layers contain all levels of detail.

Coordinate system: WGS 1984 Web Mercator (Auxiliary Sphere)

Units of measure: esriMeters

Global extent:

- XMin: -20037507.0671618
- YMin: -19971868.8804086
- XMax: 20037507.0671618
- YMax: 19971868.8804086

Spatial reference: 102100 (3857)

Map DPI: 96

Tile size of map cache: 256 pixels by 256 pixels

Levels of detail: The number of cached levels of detail varies among maps. The scale levels are calculated based on the tile size (256 by 256) and the WGS 1984 Web Mercator Auxiliary Sphere coordinate system so that when tiles are laid out starting at 180W and proceeding eastward, the final tile aligns perfectly (no overlap) with the first tile at the international date line.

The standard map scale and cell size for each layer are shown in the following table:

Layer level	Map scale	Cell size
L00	1:591,657,528	1 pixel = 1.40624 decimal degrees (Meters at equator: 156,543.033928)
L01	1:295,828,764	1 pixel = 0.70312 decimal degrees (Meters at equator: 78,271.516964)
L02	1:147,914,382	1 pixel = 0.35156 decimal degrees (Meters at equator: 39,135.758482)
L03	1:73,957,191	1 pixel = 0.17578 decimal degrees (Meters at equator: 19,567.879241)
L04	1:36,978,595	1 pixel = 0.08789 decimal degrees (Meters at equator: 9,783.939620)
L05	1:18,489,298	1 pixel = 0.04395 decimal degrees (Meters at equator: 4,891.969810)
L06	1:9,244,649	1 pixel = 0.02197 decimal degrees (Meters at equator: 2,445.984905)

Layer level	Map scale	Cell size
L07	1:4,622,324	1 pixel = 0.01099 decimal degrees (Meters at equator: 1,222.992453)
L08	1:2,311,162	1 pixel = 0.00549 decimal degrees (Meters at equator: 611.496226)
L09	1:1,155,581	1 pixel = 0.00275 decimal degrees (Meters at equator: 305.748113)
L10	1:577,791	1 pixel = 0.00137 decimal degrees (Meters at equator: 152.874057)
L11	1:288,895	1 pixel = 0.00069 decimal degrees (Meters at equator: 76.437028)
L12	1:144,448	1 pixel = 0.00034 decimal degrees (Meters at equator: 38.218514)
L13	1:72,224	1 pixel = 0.00017 decimal degrees (Meters at equator: 19.109257)
L14	1:36,112	1 pixel = 0.00009 decimal degrees (Meters at equator: 9.554629)
L15	1:18,056	1 pixel = 0.00004 decimal degrees (Meters at equator: 4.777314)
L16	1:9,028	1 pixel = 0.00002 decimal degrees (Meters at equator: 2.388657)
L17	1:4,514	1 pixel = 0.00001 decimal degrees (Meters at equator: 1.194329)
L18	1:2,257	1 pixel = 0.000005 decimal degrees (Meters at equator: 0.597164)
L19	1:1,128	1 pixel = 0.000003 decimal degrees (Meters at equator: 0.298582)
L20	1:564	1 pixel = 0.0000015 decimal degrees (Meters at equator: 0.149291)
L21	1:282	1 pixel = 0.00000075 decimal degrees (Meters at equator: 0.074646)
L22	1:141	1 pixel = 0.000000375 decimal degrees (Meters at equator: 0.037322)
L23	1:71	1 pixel = 0.0000001875 decimal degrees (Meters at equator: 0.018661)

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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.

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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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Support

Support for ArcGIS Data Appliance 2025

Support for ArcGIS Data Appliance 2025 is provided by both Esri and Arxys support teams. For the latest information about ArcGIS Data Appliance, see the ArcGIS Data Appliance website.

Esri support

For questions regarding the configuration and setup of ArcGIS services and usage, contact Esri using the following options:

- United States users—Contact Esri Support using one of the following options. Hours are Monday through Friday, 5:00 a.m. to 5:00 p.m. (Pacific time), excluding Esri holidays:
  - Phone—888-377-4575
  - Web page—https://support.esri.com/en-us/contact
- International users—Support is provided by your local Esri distributor.

Arxys support

For questions and support regarding ArcGIS Data Appliance hardware, contact Arxys using the following options:

- Phone—619-258-7800
- Email—support@arxys.com
- Web page—https://www.arxys.com/company/support/
- Hours—Monday through Friday, 8:00 a.m. to 5:00 p.m. (Pacific time)