

SHARE AND DOCUMENT MAPS WITH MAP PACKAGES

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Since ArcGIS 9.3.1 was released, you have been able to package a layer in a map as a layer package (.lpk) and easily share it via e-mail or upload it to ArcGIS Online. With ArcGIS 10, *complete map documents* can be shared using map packages (MPK).

Map packages include a map document (.mxd) and the data referenced by the map layers packaged into one portable file. Like layer packages, map packages make it easy to share maps that include the symbology of the source map by uploading the MPK file directly to ArcGIS Online or saving it locally and e-mailing it or making it available on a file share. Another valuable use for map packages is documenting your work, because a map package is a snapshot of the map and the current state of its data.

Packaging Data

Map packages can be created interactively through the ArcMap interface or by using the geoprocessing tools in the Package toolset. When using either method, ArcGIS prepares and validates the data that will be included in the map package along with the map document. Different data types are handled in different ways during this packaging process:

- If a layer references data in a personal geodatabase, the reference will be included, but the layer will be converted



participate in a relationship class will be consolidated into the map package. Likewise, when datasets that reference other datasets (e.g., geometric networks, topology, locators), those participating datasets will also be packaged.

- Raster data is included in map packages. Uncompressed rasters will be clipped based on the extent parameter specified in the Data Frame properties. Compressed rasters will not be clipped even if an extent has been specified.

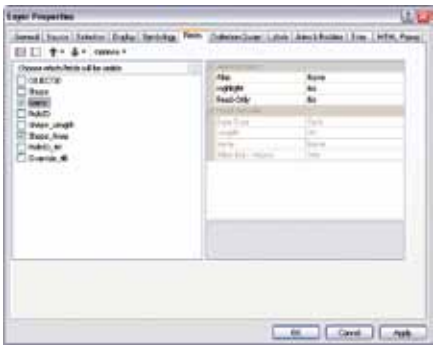
What You Can't Include in a Map Package

Currently, ArcGlobe and ArcScene documents cannot be shared in map packages. Unsupported layer types, such as Tool layers and Schematic layers, also cannot be included in map packages.

Preparing Your Data for Sharing

The actual process of generating a map package in ArcGIS 10 using the Package tool is simple and straightforward. However, the map and its data must be carefully prepared so they will be meaningful to others and can be intelligently and readily used by them.

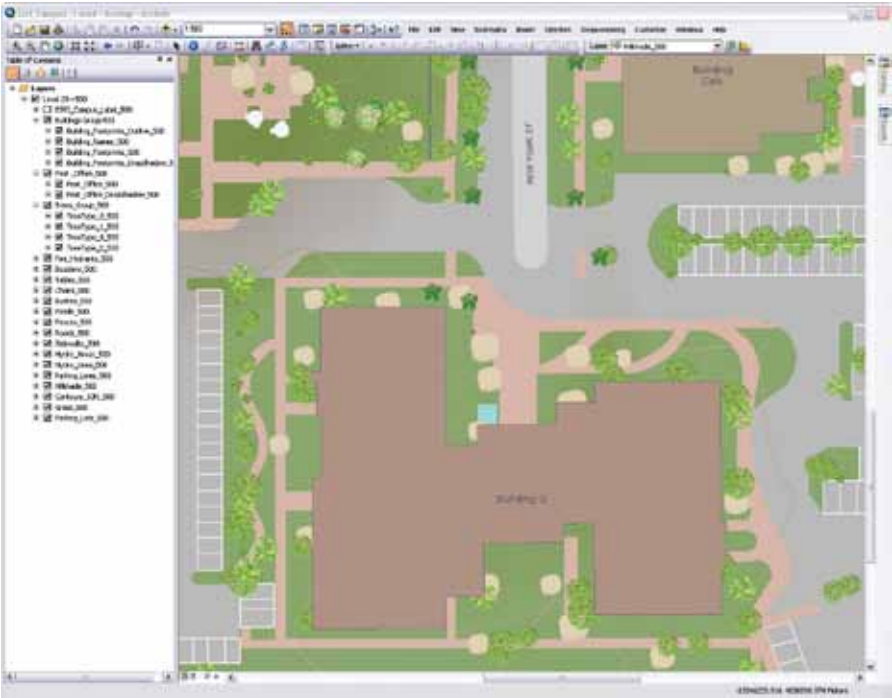
Simplify and minimize the data required for the map. Use an online basemap, such as imagery, to provide context for your



↑ When preparing the data in the map for sharing, turn off any unnecessary fields in the attribute table and create meaningful field aliases for the fields that will be displayed.

data. If the map uses data from a dataset larger than the area of interest, clip the data to the extent of the area of interest. For each layer that will be shared with the map, open Layer Properties and turn off any unnecessary fields in the attribute table. Create meaningful field aliases for the fields that will be displayed.

Specify a useful primary display field or use a display expression. The primary display field is used in MapTips, the Identify dialog box, and the Attributes window. With ArcGIS 10, a display expression can be used instead of a primary display field.



↑ Map packages let you share complete maps that include the symbology and data of the source map.

- to a file geodatabase.
- By default, data in an ArcSDE geodatabase will be referenced rather than included. Consequently, anyone using the map package that uses data from an ArcSDE geodatabase will need to have access to that geodatabase. Alternatively, you can include the data sourced from an ArcSDE geodatabase in the map package by checking the Include ArcSDE geodatabase data check box when using the Package tool.
 - The data in layers that contain a join or

A display expression is a custom string that can include values from multiple fields in the same way that label expressions can be created. To create a display expression, click the Display tab on the Layer Properties or Table Properties dialog box and click the Expression button. You can use Visual Basic Script or JScript to add logic or text processing capabilities to the expression.

Add documentation in the ArcMap document by choosing File > Map Document Properties and entering the map title, description, author, credits, and tags. Make sure the check box for Store relative pathnames to data sources is checked. In the map layout, add your agency's name and logo, if appropriate.

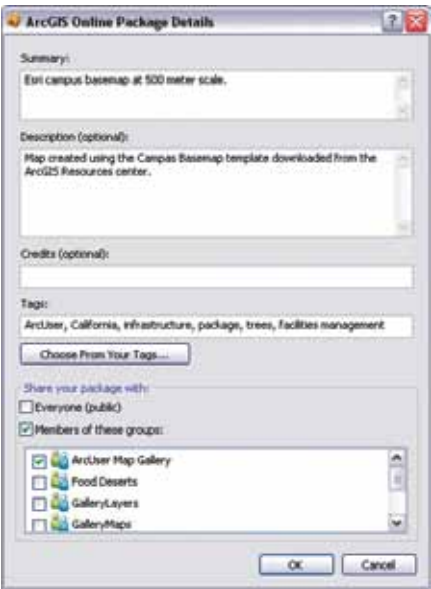
Guide map users to the important information in your map. Symbolize layers to highlight important attributes or classes of features. Change the default full extent (which is the extent of the largest layer) to a custom extent that encompasses the area of interest. Specify appropriate display units and units for the x,y readout on the status bar. Make the map easier to use by turning on MapTips and HTML pop-ups for the key operational layers and creating bookmarks at useful extents in the map.

The Schema Only parameter can be used to consolidate the schema of an input

data source to incorporate the schema—but not the data—for layers or records in a map package. Data sources that do not support the Schema Only parameter will not be consolidated or packaged.

Creating Map Packages with the Package Tool

1. To create a map package, choose File > Create Map Package from the ArcMap Standard toolbar.
2. On the dialog box, specify whether the map package will be uploaded to ArcGIS Online or saved locally.
3. Click Validate. Validation checks your data for errors or issues that might impede performance or usability (for example, layers that do not have HTML pop-ups enabled). Any issues discovered are listed in a window. Right-click each item in the list to address these issues.
4. Click the Share button (which becomes enabled after validation is complete).
5. If you are uploading the map package to ArcGIS Online, you'll be prompted to sign in to arcgis.com using your Esri Global Account.
6. The Package Details dialog box appears. If uploading the map package to ArcGIS Online, fill in the fields specifying if you are sharing it with everyone or with specific groups. Click OK.



↑ If uploading the map package to ArcGIS Online, specify who will be allowed to access the map package.

Package Toolset

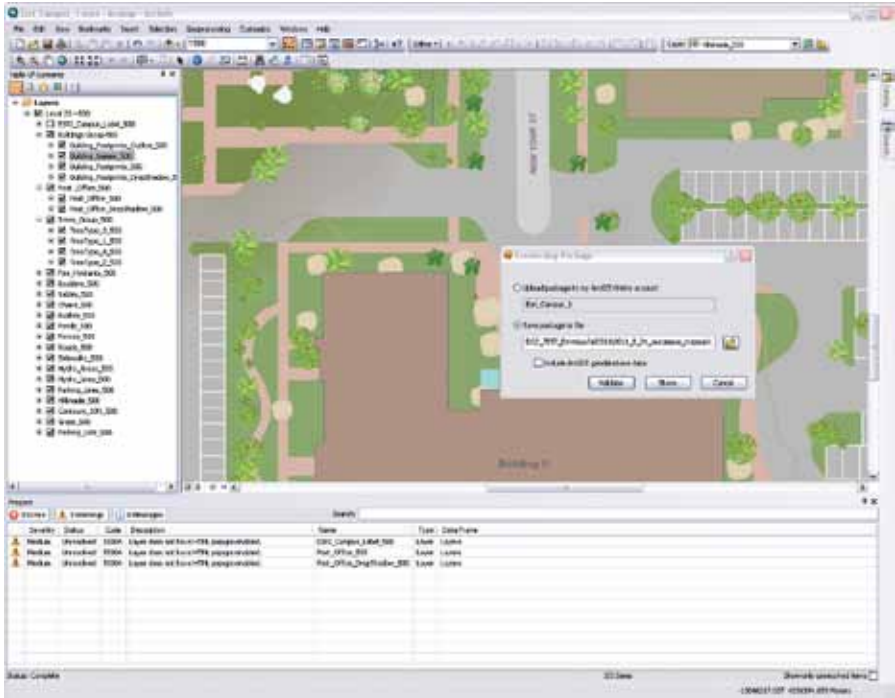
Alternatively, you can use the geoprocessing tools in the Package toolset (located in the Data Management toolbox) with Python and ModelBuilder to automate map sharing. These tools consolidate, package, and share map documents (and layers, too). See the help topics for usage, syntax, and code samples for individual tools. Table 1 lists descriptions of the tools in the Package toolset.

Managing Packages Uploaded to ArcGIS Online

Manage map packages created and uploaded by going to ArcGIS Online. Make sure the Show option at the top of the page is set to All Content (not Web Content only) so your content will not be filtered out. Packages uploaded to ArcGIS Online cannot be added to ArcGIS Online web maps. To make map packages available for web mapping applications and clients such as ArcGIS Explorer Online and ArcGIS for iOS, you need to publish your data as map services using ArcGIS Server.

Conclusion

Map packages can streamline workflows in several ways. They can standardize the cartography and data representation used by an organization through supplying the schemas and symbolization. Data collection tasks can be more quickly and



↑ Validation checks the data for errors and usability issues and returns a list of issues.

| Tool | Description |
|-------------------|--|
| Consolidate Layer | Consolidates one or more layers by copying all data and referenced data sources into a single folder. |
| Consolidate Map | Consolidates a map document and all referenced data sources to a specified output folder. |
| Package Layer | Packages one or more layers and all referenced data sources to create a single compressed .lpx file. |
| Package Map | Packages a map document and all referenced data sources to create a single compressed .mpk file. |
| Extract Package | Extracts the contents of a layer or map package to a specified folder. The contents of the output folder are updated with the contents of the input package. |
| Share Package | Shares a layer or map package by publishing to ArcGIS Online. |

↑ Table 1: The Package toolset

correctly accomplished by supplying staff or contractors with map packages. Map packages can be used to provide clients with deliverables as a fully functional digital version of the map that they can interact with and better understand. Finally, map packages are an efficient method for digitally archiving maps locally.

Maps are phenomenally efficient in presenting a great deal of information in a manner that is easily comprehended. Because GIS maps are interactive, they can be used to tell stories and let us interact with the results of analysis, understand the relationships in systems like water

utilities, or understand the operational status of emergency response situations.

At ArcGIS 10, ArcGIS has been transformed from a suite of software to a network that makes your information accessible from the desktop, web browser, or mobile device. Map packages are another step in this evolution—moving beyond collecting, integrating, and managing data to communicating complex information through maps. By sharing maps, not just data, geospatial intelligence becomes more widely accessible to knowledge workers or policy makers without requiring that they possess GIS expertise.

The screenshot shows the ArcGIS Online web interface. At the top, there's a navigation bar with 'ArcGIS', 'GALLERY', 'MAP', 'GROUPS', and 'MY CONTENT'. Below this, a search bar says 'Find maps, applications and more...'. The main content area displays a map package titled 'Esri_Campus_1'. It includes a thumbnail map, a description 'Esri campus basemap at 500 meter scale. Map Package by Esri (last modified: August 26, 2011)', and social media links for Facebook and Twitter. Below the map, there are buttons for 'Open', 'Share', 'Edit', 'Delete', 'Move To', and 'Update'. The 'Description' section states 'Map created using the Campus Basemap template downloaded from the ArcGIS Resources center.' The 'Access and Use Constraints' section shows 'No access and use constraints'. The 'Shared with' section lists 'ArcUser Map Gallery'. The 'Tags' section lists 'Artiller, California, infrastructure, package, trees, facilities management'. The 'Credits' section lists 'Esri'. The 'Size' section shows '545 KB'. The 'Extent' section shows 'Left: -117.22, Right: -117.19, Top: 34.07, Bottom: 34.05'. On the right side, there's a 'Comments (0)' section with a text input field and an 'Add a Comment' button.

↑ The uploaded map package will be available from your My Content tab on ArcGIS Online.

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