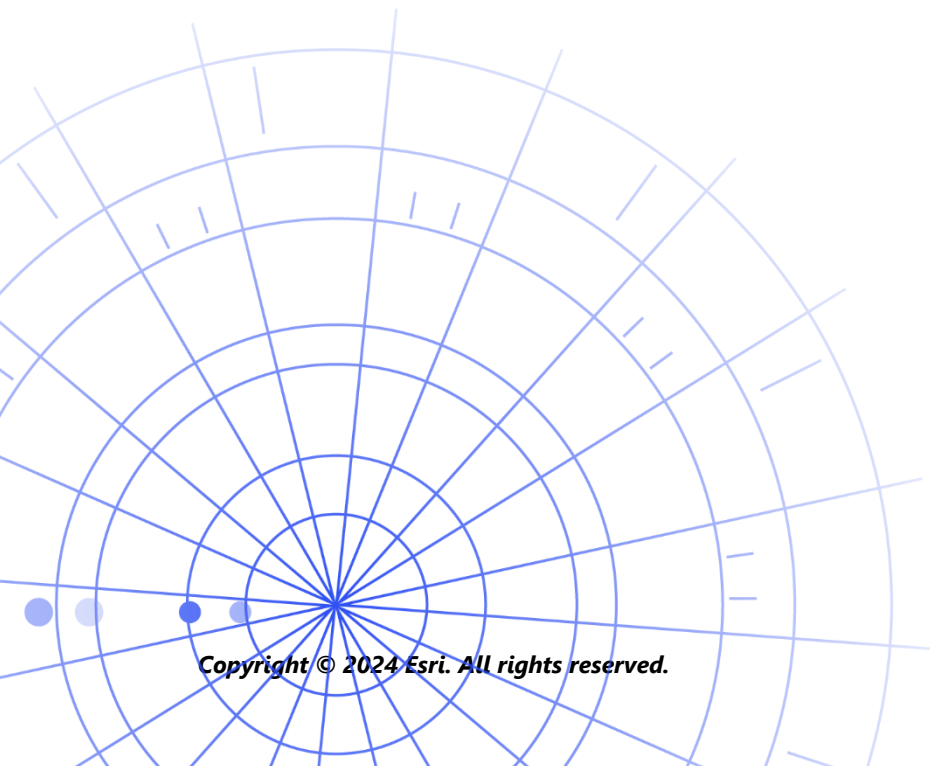# Take Your Web Maps Offline

## with ArcGIS Field Maps

Essential tasks and best practices for taking your web maps offline and into the field with ArcGIS Field Maps

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# Task checklist

| TASK | COMPLETE |
|------|----------|
| 1. Introduction | ☐ |
| 2. Prepare data | ☐ |
| 3. Set the basemap | ☐ |
| 4. Create map areas | ☐ |
| 5. Download map areas | ☐ |
| 6. Sync data | ☐ |
| 7. Update map areas | ☐ |
| 8. FAQ | ☐ |

# 1. Introduction

With ArcGIS Field Maps, you can take your web maps offline and with you wherever you go. It could be in a wildlife preserve, 50 yards off the coast, or in a section of town notorious for spotty cell service. If your mobile workers don't have an internet connection, or if you don't want them using cellular data, Field Maps has you covered.
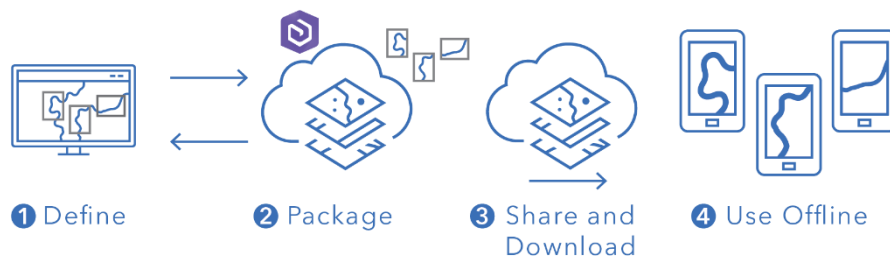
Once your maps are ready for offline use, your mobile workers can collect data and explore assets whether or not they have an internet connection. Any work they do offline can be synced to the office once they are back in a connected environment.

You can prepare web maps for offline workflows using the Field Maps Designer web app. If you need to take local data, or data not supported by web maps, offline, see this note below.
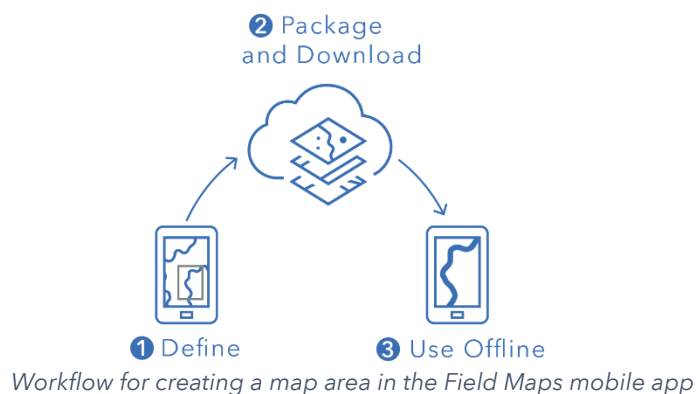
## Main processes

There are three main processes involved with taking web maps offline: creating offline map areas in the office or on a mobile device, and syncing data updates.

**Create map areas in Field Maps Designer–**Package areas of your web map for download in Field Maps Designer. You can customize the extent of map areas, and package them with all of the assets and attachments within that extent. Map areas then become available to download on the mobile worker's device–ready for offline use.
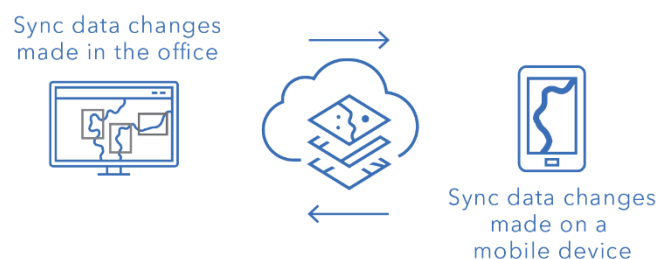


*Workflow for creating a map area in Field Maps Designer*

**Create map areas in the Field Maps mobile app**–When mobile workers encounter unexpected work, or a unique area not already defined, they can create a map area on their device using the Field Maps mobile app. After they define its extent, the map area is packaged and automatically downloaded with all of its assets and attachments–ready for offline use.



*Workflow for creating a map area in the Field Maps mobile app*

**Sync data**–When mobile workers are back in a connected environment, they can send and receive data updates between their devices and the office.



*Workflow for syncing data changes between the office and mobile devices*

**Note**: This guide teaches you how to take web maps offline. If you need to do any of the following, create and share a mobile map package (MMPK) for offline use instead:

- Copy maps directly to a mobile device
- Include local data that you don't want to publish online
- Include data or advanced symbology not supported in web maps

For more information, see Create an MMPK for offline use.

# 2. Prepare data

Make sure the data in your map meets the following requirements for offline use:

- Data must be available online.
- Map and layers must be enabled for offline use.

Tip: When selecting the basemap to take offline, use vector tiles basemaps (as opposed to raster) to enhance the performance of your offline workflows in Field Maps.

## Data must be available online

Because the offline map you'll be creating is derived from a web map, your data must be available online and not just locally (on your desktop). One way to make your data available online is by publishing it as a hosted feature layer on either ArcGIS Online or ArcGIS Enterprise.

- See Publish hosted feature layers in ArcGIS Online
- See Publish hosted feature layers in ArcGIS Enterprise

## Map and layers must be enabled for offline use

Web maps and their layers must be enabled for offline use. You can enable the map for offline use in the Field Maps Designer web app as well as check whether the layers are enabled for offline use and resolve errors. You can also enable layers for offline use from the item details page in ArcGIS Online or ArcGIS Enterprise.

- See Configure the map to work offline in Field Maps Designer
- See Enable the layers and map for offline use in ArcGIS Online
- See Enable the layers and map for offline use in ArcGIS Enterprise

# 3. Set the basemap

Set the basemap used when maps are taken offline. You can use the basemap defined by the web map or a tile package that's referenced from the mobile device or your organization. Using a tile package allows you to download a larger and more detailed basemap for offline use.

The different options for setting the offline basemap are detailed below. To learn how to set the offline basemap in Field Maps Designer, see Set the offline basemap.

## Reference a tile package on the device

You can copy (sideload) a tile package directly to the mobile worker's device and reuse it across multiple maps and map areas as the offline basemap. This has a few advantages over downloading the basemap:

- Sideloading a basemap is faster than downloading one.
- Basemaps can encompass larger areas.
- Basemaps copied to the device are available to all mobile workers, saving space on shared devices by not requiring multiple downloads.

If you want the copied basemap to be the default used when downloading a map, the map must reference it and it must be copied to the mobile worker's device. This avoids downloading the basemap along with the rest of the data. See Create a basemap to copy directly onto devices for more information.

## Reference a tile package from your organization

You can reference a tile package from your organization and reuse it across multiple maps and map areas as the offline basemap. This option has similar advantages to referencing a tile package on the device:

- Basemaps can encompass larger areas.
- Basemaps referenced from your organization only need to be downloaded once when used across multiple maps and map areas.
- Basemaps referenced from your organization are available to all mobile workers, but they must be downloaded for each signed-in user.

## Use the basemap defined by the web map

You can use the basemap defined by the web map as the offline basemap. If you select this option, the basemap will download with the web map in Field Maps. While this option doesn't require you to prepare a separate basemap, it does not include the same advantages as referencing a tile package from the device or your organization.

**Tip**: When selecting the basemap to take offline, use vector tile basemaps (as opposed to raster) to enhance the performance of your offline workflows in Field Maps. This helps create smaller downloads for typical map extents and allows for larger extents at higher levels of detail.

# 4. Create map areas

Creating map areas ahead of time is the best way to take web maps offline. Creating map areas allows you to prepackage one or more areas of a map that include all the data and attachments within the extent of the area. Mobile workers can download map areas without having to configure the extent or level of detail of the map they'll be working with.

It's good practice to create map areas when you have multiple users performing work in the same areas. Create a map area for any place where mobile workers won't have a reliable internet connection. A map can contain up to 16 map areas.

Map areas created in Field Maps Designer, ArcGIS Online, or ArcGIS Enterprise can be accessed in the Field Maps mobile app.  Mobile workers can then work with map areas offline the same way they work with a web map.

## Best practices for creating map areas

The following are best practices for creating map areas:

- To minimize download size, consider creating a polygon map area (as opposed to the standard rectangle).
- Set an appropriate level of detail for the extent of your map area.
- Determine how often map areas should be repackaged by setting up a packaging schedule. The schedule should be determined by how frequently the data in your map is being updated, however, it isn't required for mobile workers to access the most current data (which they can access with sync).

  Repackaging the map provides the latest updates when the map area is downloaded and should be scheduled after all data processes have been completed (such as during non-working hours). If the data in your maps isn't updated very often, you shouldn't need to repackage very frequently.

For more information and best practices, see the following:

- Create and manage map areas in Field Maps Designer

- Create, edit, and manage map areas in ArcGIS Online

- Create, edit, and manage map areas in ArcGIS Enterprise

# 5. Download map areas

Now that you have configured your map for offline use, mobile workers can either download map areas you defined, or they can define and download map areas in Field Maps.

## Download an existing map area

If you already created map areas in Field Maps Designer, ArcGIS Online, or ArcGIS Enterprise, they are available for download in the Field Maps mobile app. Search for the web map that contains the map areas you created and select the map area to download. Once the map area is downloaded, it's ready for offline use.
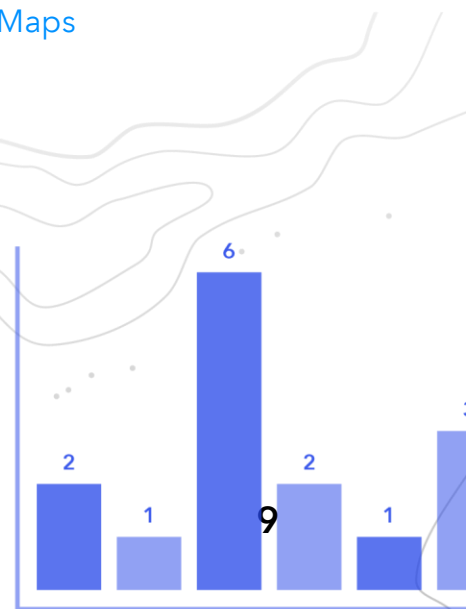
- See Download defined offline areas

## Define and download a map area in the app

You can't always plan everything ahead of time for your mobile workers. If they need to do offline work in an unexpected or unique area, they can define and download a map area on their mobile device. Once the map area is defined, it's automatically packaged, downloaded, and ready to use offline.

You can also set the level of detail mobile workers are allowed to use when they create map areas in Field Maps. This ensures that mobile workers download the required level of detail when working offline.

- See Define and download a map area
- See Define the level of detail for map areas created in Field Maps

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# 6. Sync data

Sync refers to updating changes in data between the office and the mobile worker. Once the mobile worker is back in a connected environment, they can send and receive data updates to and from the office and other mobile workers.

Rather than downloading the entire map again, sync only downloads the changes made since the previous version. You can also determine whether all features and attachments are downloaded during sync. Reducing these downloads makes syncing data between the office and mobile devices a relatively quick process. To learn more, see Deliver features and attachments.

If mobile workers are using read-only maps, they can only receive data updates when using the app—they can't send them. They can take notes on the map while offline and share their markup once back in a connected environment. To learn more, see Share markup.

## Sync data changes made on a mobile device

When a mobile worker is back in a connected environment, they can tap the sync button to send their data collection updates. By default, automatic sync is enabled. This means the device automatically syncs when it detects a data connection.

Any synced data updates the map in the office as well as the map on other mobile devices. Sync also updates the mobile device with any data changes made by other mobile workers, or those in the office, during their time offline. To learn how to sync updates, see Sync work.

## Sync data changes made in the office

Data changes made to map areas in the office can be synced with a mobile worker's device. You can manually update the map areas once your changes are made, or you can schedule updates. Once a map area is updated in the office, an update is available for sync or download on mobile devices.
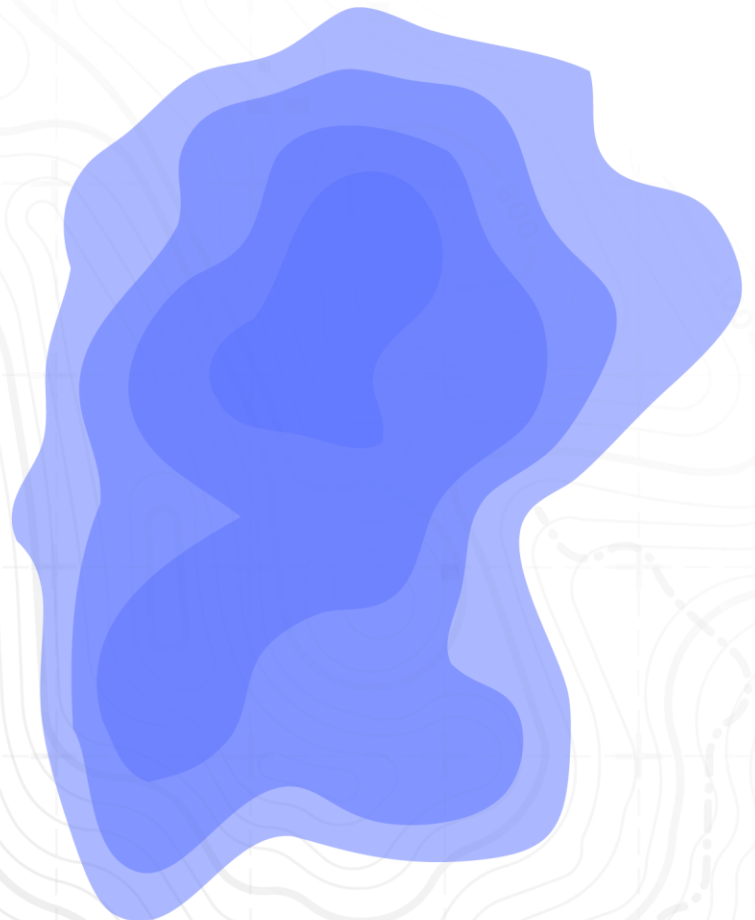
To learn how to update map areas in the office, see Create and manage offline areas in Field Maps Designer, Create, edit, and manage map areas in ArcGIS Online, or Create, edit, and manage map areas in ArcGIS Enterprise.

# 7. Update map areas

While you can use Sync to update your map area with the latest data changes, updating other parts of the map requires a different process. To make changes to the map's symbology, add or remove layers, update the form used for data collection, or change anything other than what is included in synced data updates, you will need to do one or both of the following:

- Re-create a map area made in ArcGIS Online or ArcGIS Enterprise. The mobile worker will need to remove the old map area from their device and download the new one.

- Remove, re-create, and download the map area the mobile worker made on their device.

See Update an offline area for more information.

# 8. FAQ

### Is it better to make map areas in the office or on a mobile device?

That depends. It's typically best practice to make map areas ahead of time, in the office. This way mobile workers won't have to wait for their map area to package when getting ready for work. A map area made in the office is also shared with your entire organization.

A mobile worker should only be making a map area on their device when they come across unexpected work or work that is unique to them. That map area will only be available on the device it was created on.

### Can I copy a map directly to a mobile device for offline use?

Yes. To copy a map to a mobile device, create a mobile map package (MMPK). See Create an MMPK for offline use.

### Do mobile workers need to remove and redownload a map area before each workday?

If mobile workers only need to update the data in the map, they do not need to redownload it. They can sync the map to see these changes. If they need to update changes to the map itself (see section 7), they need to remove and redownload the map area to get the latest version of the map.

### If I created map areas, is the online version of the map still available in Field Maps?

Yes. If you created map areas for download, mobile workers can still access the online version of the map in the Field Maps mobile app.

### Should I enable auto-sync or have mobile workers manually sync their data updates?

Auto-sync is enabled by default and helps to ensure that you and your workforce have access to the most current data during the workday. In most cases, you'll want to enable auto-sync so it's one fewer task for mobile workers to think about.

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There are some workflows for which you may want mobile workers to manually sync their data. For example, you may want them to complete work in an area or project before syncing to ensure the full picture is communicated to the rest of the organization.

### Can I use location sharing offline?

Yes. Location tracks will be stored on your device while working offline. Once you are back in a connected environment, the tracks will upload to your location sharing service.

### What offline capabilities are included with Field Maps Designer?

Field Maps Designer allows you to enable maps for offline use, configure offline settings, set the basemap used offline, and create map areas for use in the Field Maps mobile app. See Configure the map.