



Working Offline – Practical Aspects

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Overview

Working Offline – Practical Aspects:

- Offline capabilities within the ArcGIS ecosystem
- How to take your maps **offline**?
 - Demo: MMPKs
- **Field Apps**: offline data collection
 - Demo: Map Areas and offline data collection in Field Maps
- **ArcGIS Pro**: offline capabilities
 - Demo: Offline editing and sync



Offline capabilities within the ArcGIS Ecosystem

Desktop

ArcGIS Pro:

- Preparation offline data
 - Mobile Map Packages
- Offline editing
 - Download local copy
 - Sync changes to original
 - Conflict resolution

Portal

ArcGIS Online or Portal for ArcGIS

- Preparation offline data
 - Enabling maps for offline use
 - Generation of offline Map Areas
- Offline editing

Field Apps

ArcGIS Field Maps

- Offline data collection
- Offline read-only maps

ArcGIS Survey123

- Offline map-based questions
- Local surveys

ArcGIS Quickcapture

- Offline data collection



Preparing Offline Data

Preparing offline data: getting started

Different tools within the ArcGIS ecosystem will allow you to start preparing your offline data.

ArcGIS Pro:

- Launch feature services or create a webmap
- Create MMPKs

ArcGIS Online or Enterprise:

- Create a webmap and create or edit map areas

App Designers:

- Check if all elements in the web map are compliant for offline map use (Field Maps)

(1) Ways to take maps offline: **map areas**

Author-defined map areas

- Prepare ahead of time
- Streamlined experience for mobile worker
- Optimized and packaged updates
- Scalability

User-defined map areas

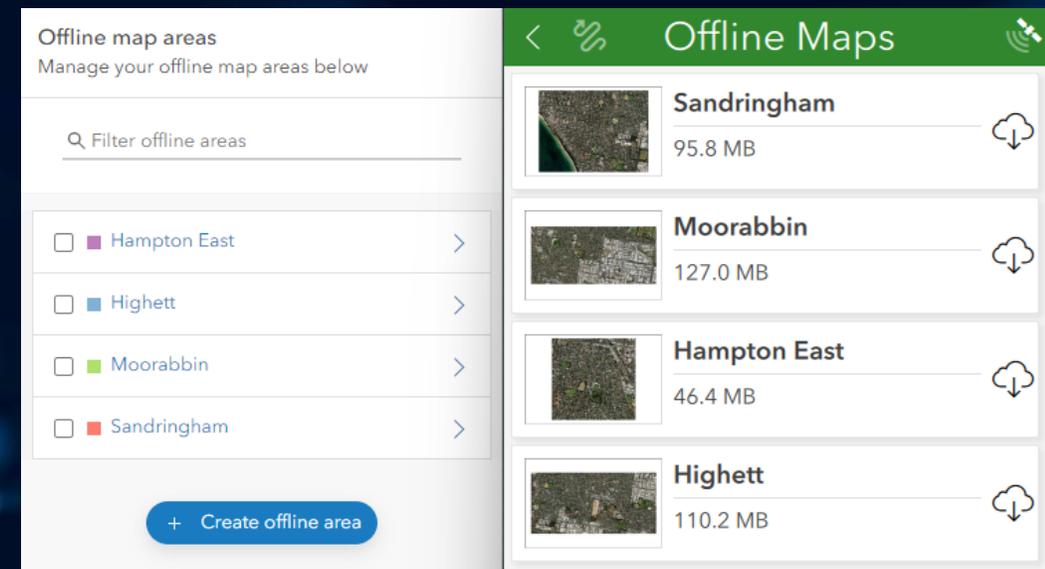
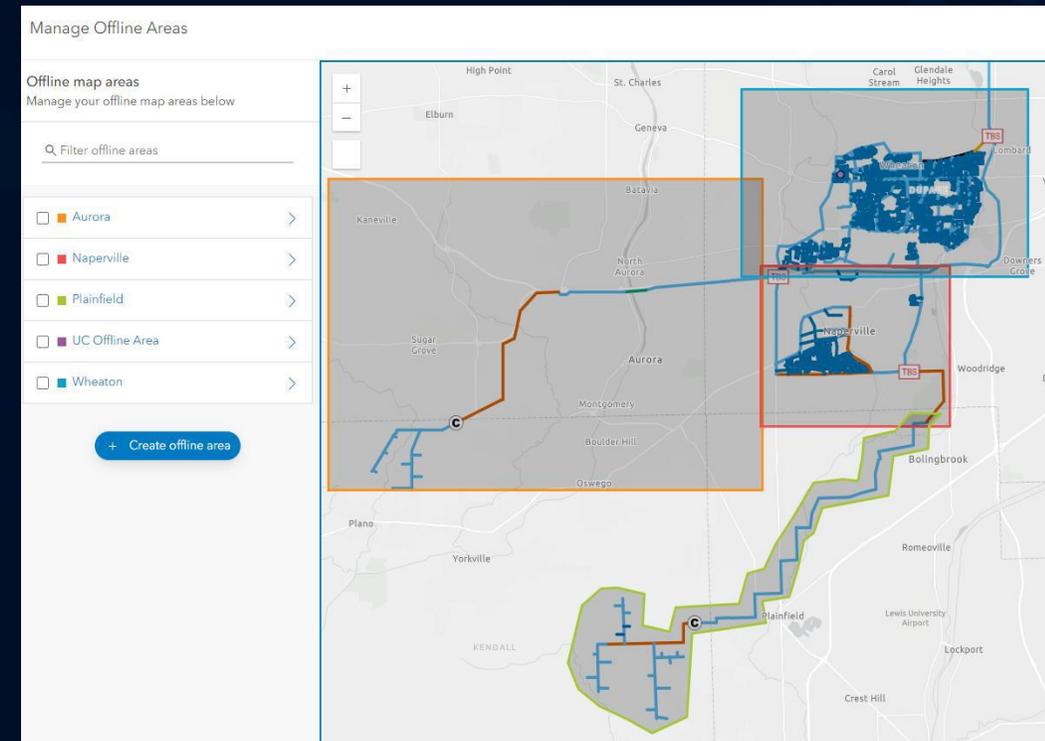
- Flexibility for mobile workers
- Define necessary extent and scale
- Increases load on the server

(2) Ways to take maps offline: **MMPKs**

- Sideload large map files
- Include advanced symbology and data
- Requires full download to update

Offline map areas: generate multiple map areas

- Create in Field Maps designer, ArcGIS Online or ArcGIS Enterprise Portal
- Up to 16 map areas per map
- Size limitation: recommended to keep max file size map areas under 1 GB for performance and reliability



Offline map areas: map settings

Define available **levels of detail** when creating the mobile app:

- Useful when coupled with scale dependent layers in the map
- Helps ensure proper map scale is available
- Applies to Esri Basemaps and Custom Basemaps
- Define multiple levels of detail or only one

Map

Map area level of detail

Set the range for mobile workers to select from when adding a new offline map area.

Lowest level of detail

County (1:750,000) ▼

Highest level of detail

Street (1:5,000) ▼

Offline map areas: updates

- Automatically schedule updates daily/weekly/monthly
- Manually recreate when web map or layers have been changed
- Considerations:
 - o Read-only (?)
 - o Update frequency of data

The screenshot shows the 'Manage Offline Areas' interface. At the top, there is a title 'Manage Offline Areas'. Below it, there is a table with columns for 'Next Update' and 'Updates'. The first row shows 'Aurora' with a 'Next Update' of 'Jul 4, 2024' and 'Updates' of 'Weekly at 03:33:00'. A context menu is open over the 'Aurora' row, showing options: 'Edit', 'Recreate offline area', and 'Delete'. Below the table, there is a 'Packages' section. A tip box is visible, stating: 'Tip: If you have added or removed layers from the map, select update on your offline map area'. The size '132M' is shown at the bottom right.

Next Update	Updates
Jul 4, 2024	Weekly at 03:33:00

Tip: If you have added or removed layers from the map, select update on your offline map area

132M

Offline map areas: tips for working offline

- Make sure that all items (feature layers, tile layers, etc.) have the **same spatial reference** as the web map
- Maps that contain the same hosted or ArcGIS Server feature layer FC multiple times do not support offline use, even if styled or filtered differently:
 - For hosted feature layers: create hosted feature layer views. Distinct layers are provided that can be added to the webmap
 - For ArcGIS Server feature layers: publish separate feature services that have unique names

Offline map areas: Is your data offline ready?

- Map and layers must be enabled for offline use: **check requirements!**
 - o Hosted feature layers
 - o ArcGIS Server feature layers
 - o Hosted tile layers (raster or vector)
- Check **offline compatibility** in Field Maps designer
 - o Item Details > Settings

Offline Offline disabled

When offline mode is enabled, a user can download the map in supported apps to use it in locations where there may be no internet access. Verify that the map is compatible with offline use and configure offline options. [Learn how.](#)

[Check Compatibility](#) [Options](#)

Offline map areas: Is your data offline ready?

Enable **sync** on your **feature layers** when taking maps offline

ArcGIS Online: hosted feature layer

- Read-only data: enable 'Enable Sync'
- Editable data: enable at least 'Enable Sync' and 'Enable editing' options
- Settings configured in the ArcGIS Online settings page of the item

Feature layer (hosted)

Editing

- Enable editing
- Keep track of changes to the data (add, update, delete features).
- Keep track of who edited the data (editor name, date and time).
- Enable Sync (required for offline use and collaboration).

Offline map areas: Is your data offline ready?

Enable **sync** on your **feature layers** when taking maps offline

ArcGIS Enterprise: feature service

- Read-only data: set the Query and Sync capabilities on the feature service
- Editable data: set the Query, Sync and any combination of Create, Delete, and Update on the feature service
- Settings configured in the
 - o ArcGIS Server Manager
 - o ArcGIS Enterprise Portal item settings page

The screenshot displays the 'Select and configure capabilities' interface for a feature service. It includes a list of capabilities with checkboxes, a 'Feature Access Configuration' section for URLs, and an 'Operations Allowed' section with checkboxes for various actions.

Select and configure capabilities

<input checked="" type="checkbox"/> Mapping (always enabled)	<input type="checkbox"/> Validation
<input type="checkbox"/> WCS	<input type="checkbox"/> WFS
<input type="checkbox"/> Network Analysis	<input type="checkbox"/> Topographic Production
<input type="checkbox"/> Version Management	<input type="checkbox"/> Network Diagrams
<input type="checkbox"/> Trace Network	<input type="checkbox"/> KML
<input type="checkbox"/> Linear Referencing	<input type="checkbox"/> WMS
<input type="checkbox"/> OGC Features	<input type="checkbox"/> Utility Network
<input type="checkbox"/> Parcel Fabric	<input checked="" type="checkbox"/> Feature Access

Feature Access Configuration

URLs

REST
URL:

SOAP
URL:

Operations Allowed

<input checked="" type="checkbox"/> Create	<input checked="" type="checkbox"/> Query	<input checked="" type="checkbox"/> Update
<input checked="" type="checkbox"/> Sync	<input checked="" type="checkbox"/> Delete	<input type="checkbox"/> Extract

Offline map areas: Is your data offline ready?

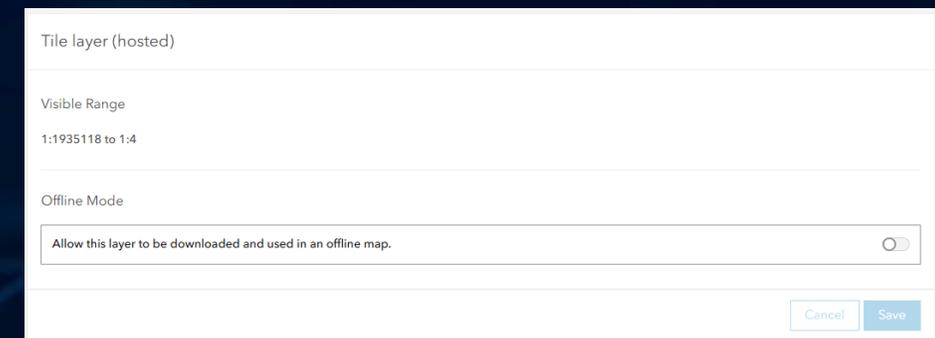
Enable **sync** on your hosted **tile layers** when taking maps offline

ArcGIS Online:

- Enable 'Allow this layer to be downloaded and used in an offline map' in the settings tab of the layer's item page

ArcGIS Enterprise:

- Enable 'Allow this layer to be downloaded and used in an offline map' in the settings tab of the layer's item page in Portal
- When publishing your tile layers in ArcGIS Pro, enable the 'Allow clients to export cache tiles' option



Tile layer (hosted)

Visible Range
1:1935118 to 1:4

Offline Mode

Allow this layer to be downloaded and used in an offline map.

Cancel Save

Mobile Map Packages (MMPKs): workflow

In ArcGIS Pro...

Customize the map:

- Layers (+ pop-ups)
- Basemaps (e.g., .tpk, .vtpk)
- Offline address search (i.e., .loc)
- Areas of interest



Mobile Map Packages (MMPKs): non-editing workflows

A standalone MMPK file can contain all the map's data/contents:

- Basemaps
- Data layers with advanced symbology (cfr., feature service)
- Pop-up information
- Geocoding: locator (Field Maps)

Accessed in apps by:

- Downloading to the device using ArcGIS Online or ArcGIS Enterprise Portal
- Sideloaded to the device directly

Demo – Creating a MMPK in ArcGIS Pro

Offline workflows with MMPK and offline areas

- Field Maps 
- Survey123 
- QuickCapture 
- ArcGIS Pro 

Field Apps: Working offline

Each app has been optimized for offline workflows based on its purpose:



- Field Maps – map centric
 - Prepare map areas for offline use – Field Maps Designer!
 - define map areas in the app
 - Download and use read-only MMPK
 - Download and use editable offline areas
 - Capture offline and sync updates



- Survey123 – form centric
 - Offline surveys
 - Sideload maps



- QuickCapture – rapid data collection
 - Sideload maps
 - Capture offline and sync later



Maps



+ New map

My maps (9)

Hidden maps (0)

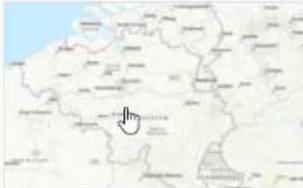
Folder

Filter

Grid

Date modified

1-9 out of 9



Event Planning Offline

Modified 13 May 2025



Event planning_2

Modified 13 May 2025



Event planning

Modified 13 May 2025

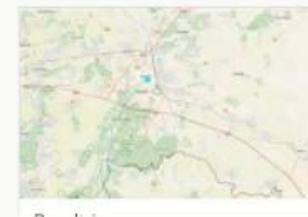
   



Testofflineaspects2

Modified 9 May 2025



11:30 Fri 16 May



71%   



Maps

 Search

Current



Event planning

 122,2 MB · 1 hour ago



On Device



Event Planning Offline - demo

Offline areas



ArcGIS Survey123

- Offline copy of surveys
- Offline maps via TPK, VTPK, MMPK
- basemap sideloaded on device
- Location referencing – stored on device



ArcGIS QuickCapture

- Download Project before going offline
- Mobile Map Package can be utilized as active map
- Captures stored on device and can be synced later



ArcGIS Pro – Going offline



- Opportunity to take your license 'offline'
- No direct access to 'online' data – Living Atlas/portal/...
- Work on local copies of offline enabled portal service layers

User	Last Used
 academy arcgis ArcGIS.Academy	 13 May 2025 (Disconnected)

User

 academy arcgis
ArcGIS.Academy

 ArcGISPro_1
Disconnected.
Last used: 1 mins ago
Active until: 14 Sept 2025 23:59

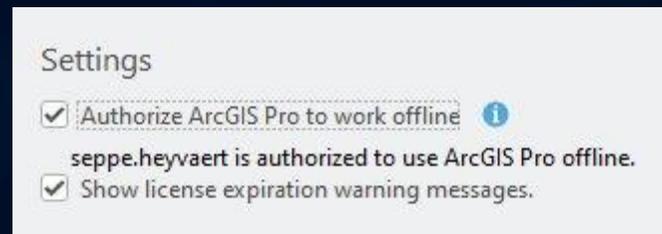
ArcGIS Pro – Offline workflows



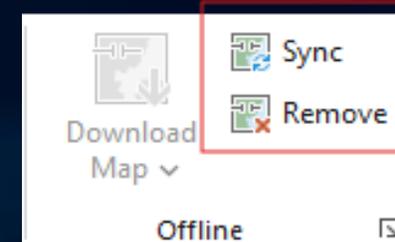
- Downloading a map creates a local replica
- Updates and Edits performed on the local replica
- After offline workflows – Sync to the original copy



Go Offline



Edit locally



Sync to online copy

Project Map Insert Analysis View Edit Imagery Share Geopoint PerTools custom tools Help

Paste Cut Copy Copy Path Explore Bookmarks Go To XY Basemap Add Data Add XY Table To Point Add Graphics Layer Select Select By Attributes Select By Location Clear Measure Locate Infographics Coordinate Conversion Pause Lock View Unplaced Convert Download Map Sync Remove

Contents Map Event Planning Offline Camping Regular A1

Search

Drawing Order

- Map
- Light Gray Reference
- Light Gray Base

The map displays a large portion of Europe, including the British Isles, France, Belgium, the Netherlands, Germany, and Luxembourg. Major cities such as London, Paris, Brussels, Amsterdam, Cologne, and Luxembourg are labeled. Regional names like 'HAUTS-DE-FRANCE', 'REGION WALLONNE', and 'LUXEMBOURG' are also visible. The map is overlaid with a grid and various data layers.

1:1,769,568 7,5495991°E 51,4791139°N Selected Features: 0

Project Map Insert Analysis View Edit Imagery Share Geopoint PerfTools custom tools Help Feature Layer Labeling Data

Paste Cut Copy Copy Path Clipboard Explore Bookmarks Go To XY Basemap Add Data Add Graphics Layer Add Data From Path XY Table To Point Select Select By Attributes Select By Location Zoom To Measure Locate Infographics Coordinate Conversion Pause Lock View Unplaced More Convert Download Map Sync Remove

Contents

Event Planning Offline x Camping Regular A1 x

Event Planning Offline

Drawing Order

- Camping Regular A1
 - Restrooms
- Emergency services
 - Hulpdienst
 - Police
 - Brandweer
 - Ambulance
- Emergency exit
- EHBO Posts
 - Type
 - Vaste Post
 - Mobiel Team
- Firefighter Posts
- Event Zones
 - ZoneType,SubType
 - Car parking
 - Bicycle parking
 - Camping
 - Bus stop
 - Main event
 - Main entrance
 - Main exit
 - Emergency Exit
 - Wc
 - Ext tent
 - Stage
- Zone Werchter

Map

Rock Werchter

1:4,254 4,6780559°E 50,9777036°N Selected Features: 2



Questions



Last session in the Web and Mobile apps track
Power BI and GIS Integration



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OF
WHERE**[®]

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