Configuring ArcGIS Enterprise in Disconnected Environments

BILL MAJOR
Disconnected Environments

Not everyone has internet access?

- How many of you run disconnected today, i.e. no internet access?
- Many customers run ArcGIS Enterprise with no access to internet resources.
  - No access to AGOL Base Maps
  - No access to http://js.arcgis.com
  - No access to lots of cool stuff, e.g. GeoEnrichment Services or Living Atlas Layers
- Security often dictates running disconnected environments.
- Disconnected environments create unique challenges that need to be addressed in order to take full advantage of on-premises Web GIS with ArcGIS Enterprise.
Agenda
Disconnected Environment Considerations

• Portal for ArcGIS On-premises Services
• Portal for ArcGIS Back-end
• Security
• Configuring Apps
Web GIS Deployment Patterns

Begin with ArcGIS Online & SaaS

ArcGIS Enterprise
Customer Managed Infrastructure
On-premises
Private Cloud
Public Cloud
(AWS, Azure, others)
Managed Services

Basemaps & Content Services

ArcGIS Online

Begin with ArcGIS Enterprise & Software
Friendly reminder before you get started…..
Disconnected environment preparation steps

• Download all the software installers and data products from My Esri
  - Windows vs. Linux
  - ArcGIS Server, Portal for ArcGIS, Web Adaptor, ArcGIS Data Store, License Manager, ArcGIS Pro, ArcGIS Desktop, lasted JSAPI 3.x and 4.x, ArcGIS Maps for Office Portal Resources, etc.
  - Living Atlas Boundary Layers

• Get licenses that you will need
  - Server Roles, Portal named users, Insight Users, etc.

• Consider open source downloads from [http://esri.github.io/](http://esri.github.io/)
  - Ago-assistant
Portal for ArcGIS
On-premises Services
Custom Basemaps for ArcGIS Enterprise
Where will your Basemaps come from?

• Add a cached service to Portal map viewer

![Add Layer from Web](https://i.imgur.com/55XGZ.png)

• Save Web Map as a new item and share with Everyone
• Add item to a custom public group
• Select custom group in the Basemap gallery option and select a default Basemap
• Esri Commercial Data Appliance (CDA) offers AGOL Basemap capabilities
Enabling On-premises Utility Services in Portal

- There are a number of Portal Utility Services that bring a lot of functionality to your on-premises Portal. Some of them include:
  - Printing – Enable ArcGIS Server Print Service to use the Export Web Map Task.
  - Geocoding - ArcGIS Online World Geocode Service is unavailable in disconnected environments
    - Utilize Esri Streetmap Premium Geocode Services published on-premises
    - World Geocode Service on-premises
    - Custom Geocoding Service
  - Geometry – Utilize the Geometry Services of an on-premises ArcGIS Server
  - Routing – ArcGIS Online Routing Service is unavailable in disconnected environments.
    - Utilize Esri Streetmap Premium Routing Services published on-premises
    - Custom Routing Service
  - Analysis Utility Services, e.g. Hydrology, Elevation, and Network
Portal for ArcGIS Back-end Considerations
What is this?

- Located at `<Portal Install Directory>\customizations\10.5.1\webapps\arcgis#home\js\arcgisonline`
- Detailed in the Portal Administrator [Help](#)
- Provides additional configuration of the Portal UI
- You may want to do this if you're configuring a disconnected deployment or modifying the portal's behavior to match the requirements of your organization
- Use extreme caution when editing; always make a backup!
- **Note:** Not maintained (but not overwritten) in an upgrade
  - Will need to reapply edits after upgrade
config.js
Important Settings for Disconnected Environments

- Set the extentService
- Add Security Classification Banners
- Add Footer Links
- Restrict My Organization page to Portal Admins only
- Enable/Disable Show Social Media Links
- Enable/Disable search ArcGIS Online
Demo

Portal Advanced Customization

Editing config.js file properties
Updating which Language Content Appears in Search Results

• How often have you searched for “Streets” and seen the following?

• At 10.4 and later, organizations can hide from search results all language content not relevant to their organization.

• Provides the added benefit of removing many default Portal items that have external URLs that are inaccessible in disconnected environments.
Updating which Language Content Appears in Search Results

• Use Portal Administrator API to update
ArcGIS Pro is licensed with Portal for ArcGIS + ArcGIS License Manager

Setup:
1. In ArcGIS License Manager,
   - Configure with license file (.lic) → obtained from My.Esri.com
   - Generate a Portal configuration file (.json) from license file
2. In Portal Administrator Directory,
   - Import Portal configuration file
     - https://portal.domain.com:7443/arcgis/portaladmin
3. Use Portal to manage ArcGIS Pro licenses to Named Users
   - New controls available on My Organization page

LicensingArcGIS Pro with Portal for ArcGIS
Security
Setting up SSL Certificates and Trusts

Server Certificates and Trust Stores

• Typically, disconnected environments are done for security reasons.
• Most of these organizations have strict SSL requirements that must be adhered to for compliance.
• Many of these environments have Certificate Authorities for signing server certificates for server identification and issuing user certificates for client identification (i.e. Public Key Infrastructure).
• There are a number of adjustments needed to configure Portal and ArcGIS Server to work properly in these types of environments.
Setting up SSL Certificates and Trusts

Server Certificates and Trust Stores

- Portal for ArcGIS and ArcGIS Server install self-signed certificates to support ports 7443 and 6443, respectively.
- Consuming services from self-signed certificates is highly discouraged.
- To overcome this, install separate Web Adaptors for Portal and ArcGIS Server and SSL-enable your web server.
- Users only communicate with Web Server over 443.

![Diagram showing SSL configuration for Portal and ArcGIS Server]
Setting up SSL Certificates and Trusts

Updating Server Certificates

- Some organizations take this a step further, mandating that no HTTP(S) ports serve content without using a properly signed server certificate. Users must update the self-signed certificates with CA signed certificates.

- Portal Administrator Directory provides tools to generate a new Certificate Signing Request and ability to import Intermediate or Root certificates for trust.

- ArcGIS Server Administrator Directory provides a near identical interface.
Configuring Apps
Living Atlas of the World

Esri curated set of ready-to-use content
It includes both Esri published and user published content

- Basemaps
- Demographics and Lifestyle
- Transportation
- Urban Systems
- Imagery
- Landscape
- Earth Observations
- Boundaries and Places
Living Atlas
Types of Content

• Live Content: Hosted in ArcGIS Online
  - Items are installed in Portal but item URLs reference Online
  - Internet connection is required for access
  - Read-only content
  - Data types (web maps, apps, scenes and layers)

• Local Content: Hosted in Portal for ArcGIS
  - Boundary layers service definition files (by country)
    - Download from MyEsri or request DVD
    - Publish to Portal as hosted feature services
    - Run analysis in Insights for ArcGIS or Portal
Living Atlas
Publishing Boundary Layers to ArcGIS Enterprise

- Disable online Living Atlas Content
- Download Boundary Layers from My Esri
  - 10.5.1 will make available 100+ countries of data
- Make/move the SD files available to the Portal server
- Run a Python script provided by Portal installation to publish SD files as Hosted Feature Services
  - `<Portal installation directory>\tools\publishboundarylayers`
Demo

Publishing Boundary Layers
Deploying Esri JSAPI On-Premises

- Portal 10.5.1 comes with JSAPI 3.20 and 4.3 – can use this as needed
- 3.21 and 4.4 just released!
- Download from [https://developers.arcgis.com/downloads/](https://developers.arcgis.com/downloads/)
  - Download the API and Documentation
- Deploy to your own web server following the Help Documentation
- Use to:
  - Update links in Web Application Templates
  - On-premises JSAPI web development
  - ArcGIS Server REST Handlers
Demo

Deploying Esri JS API
Web Application Template Downloads

Update JSAPI Links

• If you download Web Application Template to host on your own web server, the source code links point to http(s)://js.arcgis.com.
• Update links to on-premises installation of the Esri JS API or Portal’s JS API.
  - Note that version of API should be maintained
• Point to your Portal in config files
• Publish/Preview of Web Application Templates within Portal work as-is, since Portal deploys with its own internal version of the JSAPI.
• Some have links to Elevation and Geometry Services that will need to be updated also.
Web Application Template Downloads

Example Update

```html
<html>
  <head>
    <title></title> <!-- Define the versions of IE that will be used to render the page. See Microsoft -->

    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta charset="utf-8">

    <!-- Responsive -->
    <meta name="viewport" content="width=device-width, initial-scale=1, maximum-scale=1, user-scalable=no">
    <meta name="mobile-web-app-capable" content="yes">
    <meta name="apple-mobile-web-app-capable" content="yes">
    <meta name="apple-mobile-web-app-status-bar-style" content="default">

    <!-- End Responsive -->

    <!-- Use protocol relative urls that way if the browser is viewing the page via HTTPS the js/css files -->
    <link rel="stylesheet" href="/js/arcgis/3.13/exxi/css/exxi.css"/>
    <link rel="stylesheet" href="/js/arcgis/3.13/exxi/css/exxi-exxi.css"/>

    <!-- Load any application specific styles -->
    <link rel="stylesheet" href="/css/styles.css"/>
  </head>
```

Setting your own Elevation Image Service

- In order to use Scene Viewer in disconnected environments, an organization must make available an Elevation Service.
- Used by Portal Scene Viewer, ArcGIS Earth, ArcGIS Pro
- Must be configured a particular way:
  - Image Service
  - Cached using LERC tiling format
- Update as a Utility Service
Insights for ArcGIS
Analytic Projects – Workbook, Pages, and Cards

• App for exploratory analysis
• Combine Analysis and Visualization on cards
• Record, share and collaborate
Insights for ArcGIS Deployment

- Requires ArcGIS Enterprise 10.5.x
- Install on Portal for ArcGIS machine
  - *if working in a distributed environment run on hosting server as well*
  - **** Make sure to highlight that it’s only 1 installer
- Configure Insights for ArcGIS license (.json) via Portal Admin
- Provision licenses to users via Portal for ArcGIS
Operations Dashboard Deployment Utility (10.3.4)
Enable ability to download/open Windows client from Portal

• Step 1 - Preparations
  - Download and extract deployment utility from “My Esri”
  - Have security certificate ready
  - Know your Portal URL
  - Have write access to Portal’s \apps\dashboard-win folder

• Step 2 – Run deployment utility

• Step 3 – Deploy to Portal
  - Copy output folder from step 2 to Portal’s \apps\dashboard-win folder ****** consider putting needs to be a server admin
  - Create an application item of Operations Dashboard
ArcGIS Maps for Office with a Disconnected Portal

http://www.esri.com/software/arcgis/arcgisonline/apps/download

- For disconnected Portal deployments, requires resource files
  - Separate download, need to install on Portal machine
Web AppBuilder Developer Edition Disconnected

- Deploy a local JSAPI for 3.x and 4.x
- Need a local Geometry Service enabled on an ArcGIS Server
- Change env.js and config.json files to point to these local resources
- ArcGIS Blog posting
Questions?
Other Relevant Sessions

• ArcGIS Enterprise: Architecture Best Practices
  - Tuesday 10:30am

• High Availability and Disaster Recovery for ArcGIS Enterprise
  - Tuesday 8:30am, Thursday 3:15pm

• Web GIS: Architectural Patterns and Practices
  - Tuesday 10:15am, Thursday 10:15am

• ArcGIS Enterprise Security: An Introduction
  - Tuesday 10:15am, Thursday 8:30am

• ArcGIS Enterprise Security: Advanced Topics
  - Tuesday 1:30pm, Thursday 10:15am

• Building Security into Your System
  - Tuesday 4:30pm
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