Web GIS Deployment for Administrators

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Agenda

• Web GIS Concepts
• Web GIS Deployment Patterns
• Components of an On-Premises Web GIS
• Federation of Server with Portal
• Security
• Q&A
Web GIS Concepts
Web GIS | Transformation of the ArcGIS Platform

Web GIS

Desktop

Apps

Web Maps
Web Scenes
Layers

System of Engagement

Systems of Record

Server GIS
Geoinformation Model | Abstracts and Organizes Geospatial Data

Apps

Web GIS

Web Scenes
Web Maps

Portal

Layers

Real-Time
Enterprise Data
Imagery

GIS Maps & Data
Distributed Data
Web GIS | How is it Different from Server GIS?

**Server GIS**
Silo’d use of GIS services within custom applications

**Web GIS**
Pervasive use of web layers, scenes, and maps within all of the ArcGIS apps

Diagram showing the differences between Server GIS and Web GIS:
- **Users**
- **App**
- **Services**
- **Data**

... n+1

Diagram showing the Web GIS portal connecting to
- **Web Maps**
- **Web Scenes**
- **Web Layers**

Connected to
- **Services**
- **Data**
 Deliver information products as apps (including all of the ArcGIS apps) to the right user at the right time.
Web GIS | Components & Characteristics

• Deliver information products as apps (including all of the ArcGIS apps) to the right user at the right time

• Geoinformation model, content management, and sharing model
Web GIS | Components & Characteristics

- Deliver information products as apps (including all of the ArcGIS apps) to the right user at the right time
- Geoinformation model, content management, and sharing model
- Integration with other systems and services
Web GIS Deployment Patterns
Web GIS Deployment Patterns | Overview

SaaS & Public Cloud | Hybrid | On-premises
Deployment Patterns | Drivers

• Limited IT resources
• IT mandate to be SaaS or “cloud first”
• New to GIS

• Want to enable Web GIS while managing content & capabilities on private infrastructure
• Use hosted services, content and capabilities as needed

• Must maintain control of compute environment
• Need full control over data and system security
## Deployment Patterns | System Management

<table>
<thead>
<tr>
<th></th>
<th>SaaS &amp; Public Cloud</th>
<th>Hybrid</th>
<th>On-premises</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application</strong></td>
<td>Esri + Customer</td>
<td>Esri/Customer</td>
<td>Customer</td>
</tr>
<tr>
<td><strong>Network</strong></td>
<td>Esri</td>
<td>Esri/Customer</td>
<td>Customer</td>
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<tr>
<td><strong>Security</strong></td>
<td>Esri</td>
<td>Esri/Customer</td>
<td>Customer</td>
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<tr>
<td><strong>Infrastructure</strong></td>
<td>Cloud Service Provider</td>
<td>Esri/Customer</td>
<td>Customer</td>
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Deployment Patterns | Users & Apps

“Internal” Users

Can typically access *internal & external* web resources

“External” Users

Can typically access *only external* web resources
## Selecting the Right Pattern(s) | Conceptual Level

<table>
<thead>
<tr>
<th>Considerations</th>
<th>Low, Moderate, Advanced</th>
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<tbody>
<tr>
<td>IT Maturity</td>
<td>Infrastructure, Integration, Innovation</td>
</tr>
<tr>
<td>IT &amp; CIO Focus</td>
<td>Cloud First, Ok w/ Cloud, Cloud Averse</td>
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<tr>
<td>Cloud Policy / Preference</td>
<td>Easy, Moderately Easy, or Hard to Provision Infrastructure</td>
</tr>
<tr>
<td>Infrastructure Elasticity</td>
<td>Very Sensitive (e.g. HIPPA), Business Sensitive, Somewhat, Not Sensitive</td>
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<tr>
<td>Data Sensitivity <em>(security)</em></td>
<td>Web Mapping, Cartographic Mapping, 3D, Analysis, Real-time, Big Data</td>
</tr>
<tr>
<td>GIS Workflows <em>(next 2-3 years)</em></td>
<td>Heavy, Some, None</td>
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<tr>
<td>Public / Constituent Engagement</td>
<td>External and Internal, Internal Only, Limited, None</td>
</tr>
<tr>
<td>Level of Collaboration / Sharing</td>
<td>Prefer, Ok, None</td>
</tr>
<tr>
<td>Use of 3rd Party Services</td>
<td>COTS, Custom, No Preference</td>
</tr>
<tr>
<td>Preference for COTS or Custom</td>
<td>Very, Some, Limited, Note</td>
</tr>
<tr>
<td>Comfort Outsourcing to Esri</td>
<td>None, 95%, 99% +</td>
</tr>
<tr>
<td>Service Level Agreement</td>
<td>None, Future, Imminent</td>
</tr>
<tr>
<td>Disaster Recovery Strategy</td>
<td></td>
</tr>
</tbody>
</table>
Components of an On-Premises Web GIS
In the SaaS offering, ArcGIS Online, the portal is maintained by Esri in the cloud:

For an on premise deployment using Portal for ArcGIS there are three main components that make up a Web GIS:

- Portal for ArcGIS
- Hosting server (ArcGIS Server)
- ArcGIS Data Store
Web GIS | Anatomy of the Portal

System of Engagement
On-premises Web GIS components

Supports hosted data as well as the app and collaboration infrastructure; does **not** replace Server GIS infrastructure

Portal for ArcGIS
Hosting server (ArcGIS Server)
ArcGIS Data Store

System of Record
Server GIS infrastructure

Supports publishing of authoritative data from enterprise geodatabases; can be used in conjunction with a Web GIS

Server
Connects to Data by reference
Enterprise geodatabase
Web GIS | The Geoinformation Model
Web GIS | The Role of Server for ArcGIS
Web GIS | The Role of Server for ArcGIS

Geodata | Feature Class
---|---
GeoServices | Service
Portal | Web Layer
 | Web Layer
 | Web Layer
Web GIS | The Role of Server for ArcGIS
Web GIS | Referenced Architecture

Publisher

Publish & register from Desktop Client

Standalone GIS Server

Manually linked URL

Portal for ArcGIS

portal

portal
Demo

Registering Portal Content in a Referenced Architecture
Web GIS | Enterprise Data Store (SDE)

Publisher
(ArcMap)

GDB Administrator
(ArcMap)

Enterprise Geodatabases & Files

Portal

Server
(visualization)

Server
(analysis)
Web GIS | Enterprise Data Store (SDE)

- System of Record
  - Authoritative Data
- Capabilities
  - Map Services
  - Image Services
  - Geoprocessing Services
  - Geocoders
  - Geodata Services

But what about all the data that gets created through a system of engagement? How do we architect for that...?
Federation | Referenced vs. Federated
Server + Portal Share an Identity Store

Portal items created for existing services (owned by federating admin)

ALL new services get a portal item owned by portal user

Access to Secure Server URLs through portal users ONLY

Security goes from community based -> Ownership Based
Federation | Advantages

- Create a fully integrated SSO across an on-premises Web GIS implementation (e.g. IWA)
- Leverage Portal’s ownership based security model
- Publish content directly to your Portal
  - More on this later…
Publisher Federated GIS Server

Publish

Service is automatically added to the Portal

Portal for ArcGIS
Demo

Federated Portal & Server for ArcGIS
Server & Data Stores | Enterprise Managed (SDE) vs. ArcGIS Managed

Enterprise Managed Data Store (SDE)

- Portal
- Publisher (ArcMap)
- GDB Administrator (ArcMap)
- Server (visualization)
- Server (analysis)
- Geodatabases & Files

ArcGIS Managed Data Store

- Portal
- Publisher (ArcMap or Pro)
- Server (hosting)
- ArcGIS Managed
- ArcGIS Data Store
Web GIS | Why ArcGIS Data Store?

- Publish large number of hosted feature layers
- Publish hosted scene layers to Portal
- Archive high volume, real-time data
- Created backups of hosted content automatically
- Failover Capabilities
Web GIS | Why ArcGIS Data Store?

- Use Cases
  - Esri Maps for Office
  - Survey123
  - Analysis Tools
  - Drag + Drop CSV
  - Upload Shapefile
  - Anything that mimics a “hosted” experience…
Web GIS | Key Takeaways

- Your architecture will impact end-user capabilities
- Always plan with the business cases in mind
- Tie your technical GIS to business value for greatest success
Demo

Providing an On-Premises Hosting Experience in Portal
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Security
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- Web Scenes
- Web Layers
- Services
- Data

... n+1

**Portal**
Security | Identity Matters

- **Named users**
  - License software for use
  - Specify permissions
  - Enable ownership

- **Benefits**
  - Create & manage your own mapping content
  - Control sharing via groups
  - Setup and access your favorites from anywhere
  - Identify authoritative content contributors
Security | Key Concepts

![Security Key Concepts Diagram]

Organization <-> User

User <-> Identity

Identity <-> Role

Role <-> Privilege

Authorization (capabilities)

Authorization (content)
- **Named User**
  - Own content or groups
  - Join groups
- **Groups**
  - Control access
  - Organize items
- **Items**
  - Files: PDF, MPK, XLS, etc.
  - Links: Services & applications
- **Tags**
  - Index content
Security | User Hierarchy

GIS portal

Named Users

User
Publisher
Administrator
Security | Authentication Models

- Built-In Identity Store
- Integrated Window Authentication (IWA)
- SAML (Security Assertion Markup Language)
Security | Built-In Identity Store

Characteristics:
- Default / No Setup
- Quick & Easy
- Users are managed separately from AD

When You Might Use It:
- Small Number of Users
- No need for AD Integration
Security | Integrated Windows Authentication

Characteristics:
• Integrated with Active Directory
• ONLY in Portal for ArcGIS
• SSO Experience
• Supports Enterprise Groups
• No “built-in” access

When You Might Use It:
• All Portal Users are Maintained within AD
• You want to leverage AD User and Groups
• You want a SSO Experience
• Do not want to double manage
What is SAML?

- SAML is a standard that allows for exchanging authentication and authorization data between parties
- Three Players in SAML
  - Service Provider (Portal for ArcGIS)
  - Identity Provider (e.g. AD FS)
  - User

1) Initial service request
2) Redirect to IdP
3) IdP authentication
4) Return SAML token
5) SAML token allows access
When You Might Use It:

- ArcGIS Online
  - Only Enterprise/SSO Option
- Portal for ArcGIS
  - Allow built-in + Enterprise access
  - Allow access from multiple domains in an AD Forest

Security | SAML

Portal for ArcGIS

Groups

Users

SAML (e.g., ADFS)

Remote user store
Demo

Single Sign-On with IWA vs. SAML
• No such thing as a standalone Portal
  - It is a portion of your on-premises Web GIS
• Architect with your users in mind
• Server/Portal Federation unlocks additional functionality
• Pick the security model that fits your needs
Questions?
Thank you

Please remember to fill out a survey