

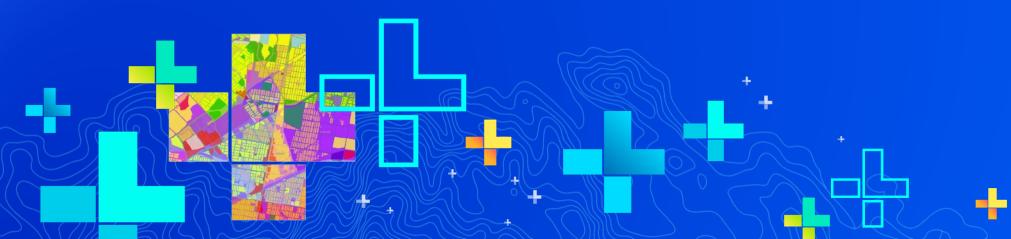


# **ArcGIS Online: An Introduction to Security, Privacy, and Compliance**

Andrea Rosso

Michael Young

Paul Ross



SEE WHAT OTHERS CAN'T

# **ArcGIS Online Security**

# You

- App Configuration
- Access
- Credentials
- Roles, Privileges
- Sharing
- Authentication Options
- Password Policy
- Personal Information
- Tracking Usage

# Esri

- Software Design & Security
- Privacy
- Secure Operations
- Certifications/Compliance
- Customer Communication
- Customer Data
- OS, Network, Firewall Config

# Infrastructure Partners

- Compute
- Storage
- Database
- Network
- Physical Security

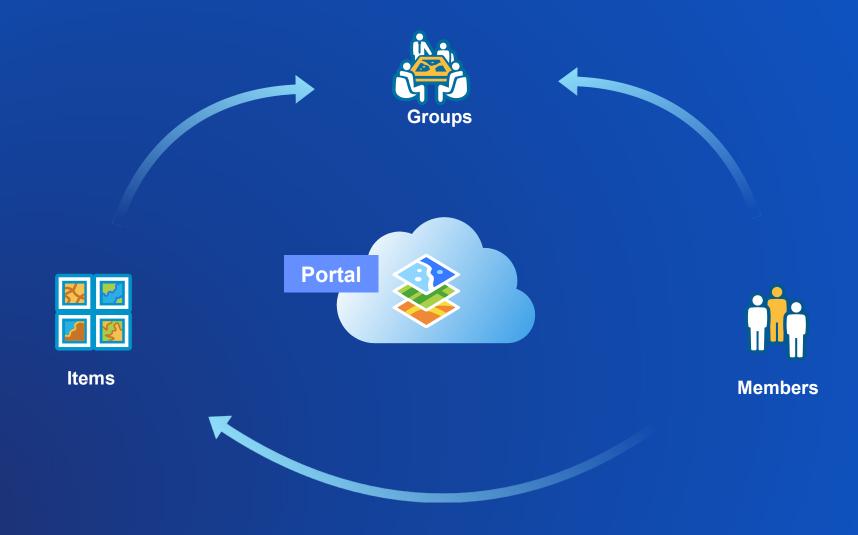
# Agenda

- Platform Security
- Deployment Architecture
- Compliance
- Security Advisor Tool

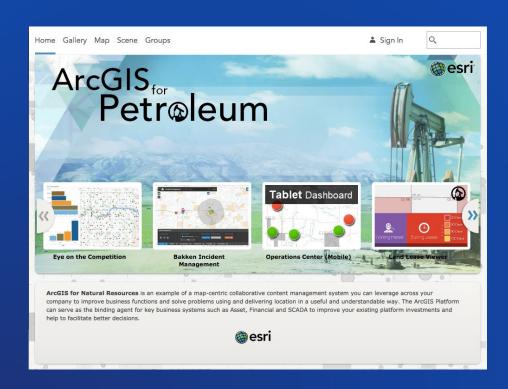
# **Platform Security**

Andrea Rosso

# **Portal Information Model**

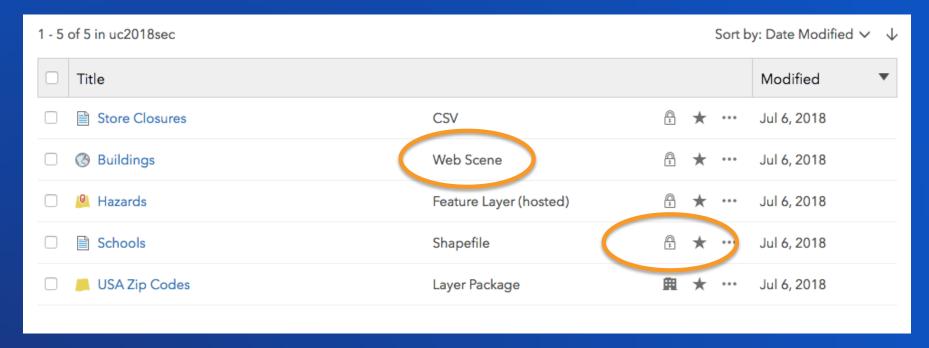


## **Portal**



- Your Organization
- Custom Url (yoururl.maps.arcgis.com)
- Public or Private
- All Organization Settings

## **Items**

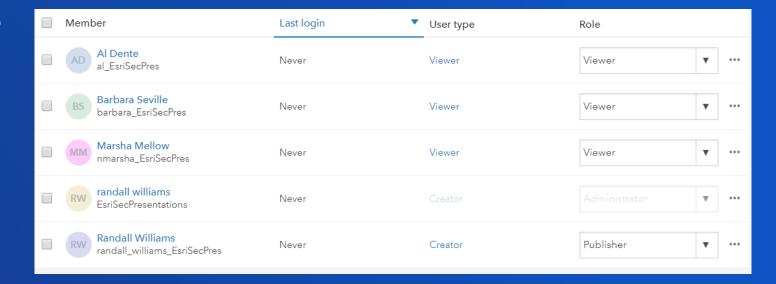


- Types
  - Web Map
  - Services
  - Data
  - \_ ...

- · Private by default
- Can Share to
  - Groups
  - Organization
  - Everyone/Public

# Members (Users)

- Members own items and groups
- Members have a profile
- Configurable Discoverability
  - No one
  - Organization
  - Everyone
- Members have a Role





# Roles

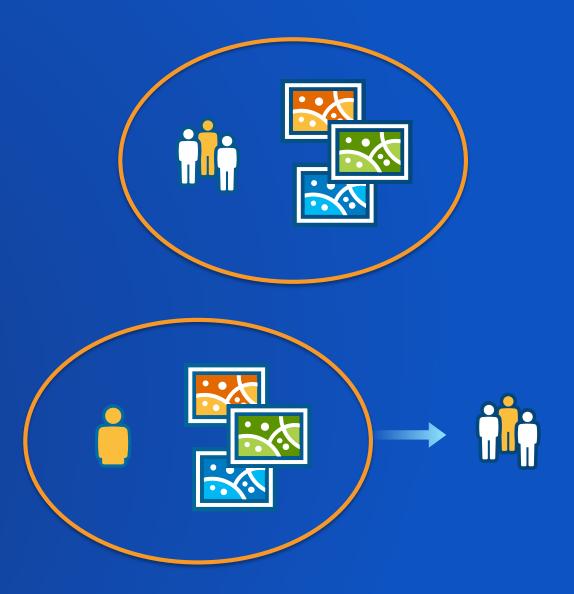
- Built-in Roles
  - Administrator
  - Publisher
  - User
  - Data Editor
  - Viewer
- Custom Roles
  - Templates
  - Fine Grained Privileges

Create a new role		Save role Discard
Role name		
Description		
Privilege compatibility		
View View and	d edit View, edit, create and manage	
Compatible with Creator user type		
Role privileges		
Import settings from an existing role or ten	nplate Toggle all on Collapse all	
General Privileges		
Members [-]	Groups [-	Content [-
☐ View	Create, update, and delete	Create, update, and delete
	Join organizational groups	Publish hosted feature layers
	Join external groups  View groups shared with organization	Publish hosted tile layers     Publish hosted scene layers
	g	☐ View content shared with organization
Sharing [-]	Premium Content [-	Features [-
Share with groups	Geocoding	Edit
Share with organization	Network Analysis	Edit with full control
Share with public Make groups visible to organization	Spatial Analysis GeoEnrichment	
Make groups visible to public	Demographics	
Make groups available to Open Data	Elevation Analysis	
Administrative Privileges		
Members [-]	Groups [-	Content [-
☐ View all	☐ View all	☐ View all
Update	Update	Update
Delete	Delete	Delete
Invite	Reassign ownership	Reassign ownership



# Groups

- Contain Items and Members
- Members have access to items in group
- Group owners can share items to their own groups
- Groups can be visible to:
  - No one (private)
  - Organization
  - Everyone
  - Items do not inherit visibility
- Groups with Update Capabilities



# **Feature Layer Editing**

- Users who always can edit
  - Owner
  - Admins
  - Members of Groups w/ Update
- Enable Editing
  - Anyone who can access the service
  - Options
    - Add, update and delete features
    - Only update feature attributes
    - Only add new features

#### Feature Layer (hosted) Editing Enable editing. Keep track of created and updated features. Keep track of who created and last updated features. Enable Sync (disconnected editing with synchronization). • Who can edit features? Share the layer to specific groups of people, the organization or publicly via the Share button on the Overview tab. This layer is not shared. What kind of editing is allowed? Add, update, and delete features Add and update features Add features Update features Update attributes only · What features can editors see? Editors can see all features Editors can only see their own features (requires tracking) Editors can't see any features, even those they add · What features can editors edit? Editors can edit all features Editors can only edit their own features (requires tracking) . What access do anonymous editors (not signed in) have? The same as signed in editors Only add new features, if allowed above (requires tracking) Who can manage edits? o You Administrators Data curators with the appropriate privileges



Allow others to export to different formats.

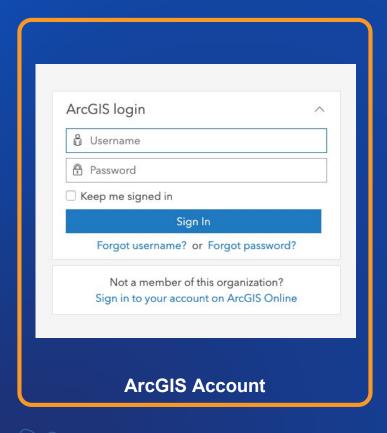
# **Hosted Feature Layer Views**

- A Feature Layer based on another Feature Layer
- Can have different settings:
  - Sharing
  - Editing
  - Export
  - Filters
  - Metadata
  - Time settings
- Can only be created by owner of base layer

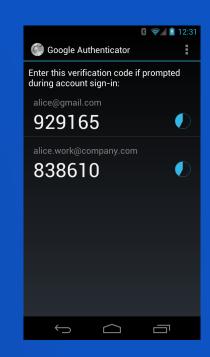




# **Authentication Options – ArcGIS Accounts**

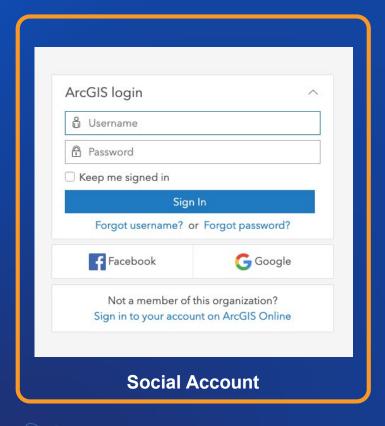


- Multi-Factor Authentication
  - Additional security with second factor at login
  - Support for Google Authenticator or MS Authenticator
  - Admin needs to enable for Organization
  - Must have 2 admins
  - Members setup their own Multi-factor
- Password Policy
  - Default Password Policy
    - 8 characters with at least 1 number
    - Weak passwords validation
  - Can Customize
    - Complexity
    - History
    - Expiration



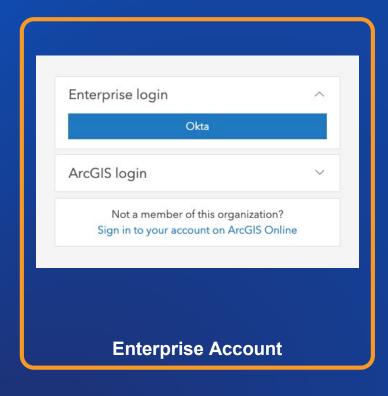
#### 4

# **Authentication Options – Social Accounts**

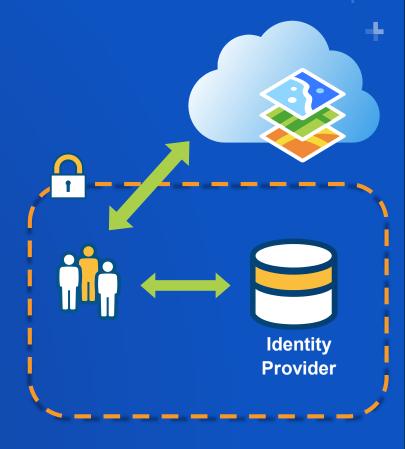


- Facebook Logins
- Google Logins
- By Invitation
- Social Login maps to unique username in Organization
- Requires an email
- Sign out doesn't sign out of your Social login

# **Authentication Options – Enterprise Accounts**



- Use your own identity provider
  - SAML 2.0
    - ADFS
    - NetIQ Access Manager
    - Shibboleth
    - ....
- Can add members:
  - Automatically upon login
  - With an Invitation
- Can allow or disallow ArcGIS Online and Social Identities
- Enterprise groups are supported



# **Admin Organization Controls**

- HTTPS and HSTS
- Disable Sharing to Everyone
- Disable Bio
- Disable Comments
- Setup Admin Contacts
- Setup Purchasers

#### Security

Configure the security settings for your organization.

#### **Policies**



- Allow anonymous access to your organization's website, EsriSecPres.maps.arcgis.com.
  - What does this mean?
- Allow members to edit biographical information and who can see their profile.

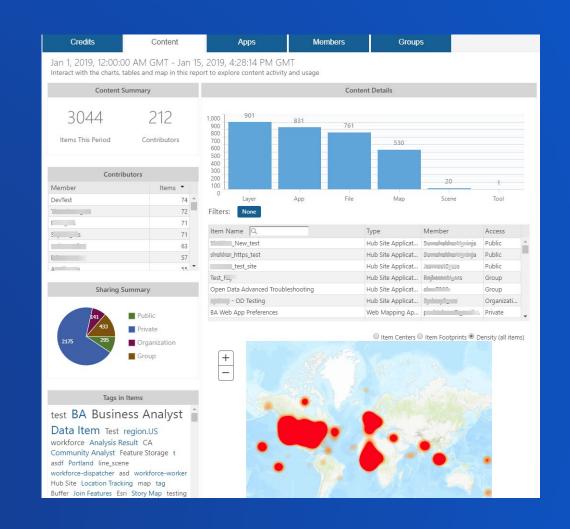
#### Sharing and Searching



- Members can share content publicly.
- Members can search for content outside the organization.
- Show social media links on item and group pages.

# **Keeping Track of Usage – Status Dashboard**

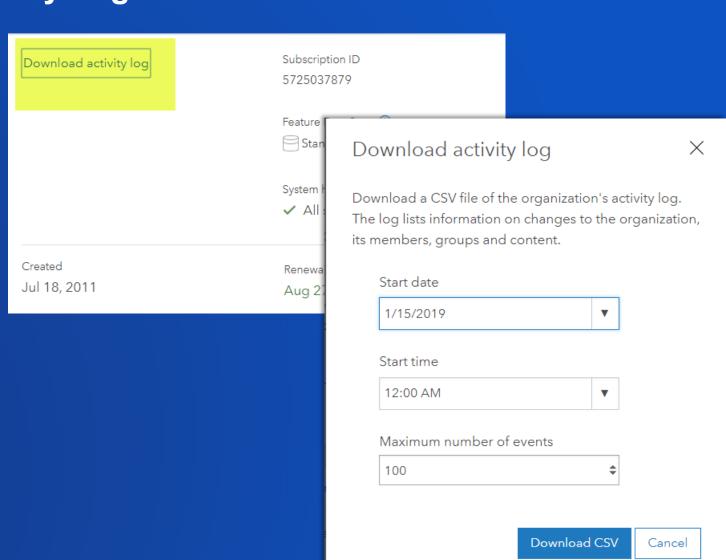
- Credits
- Content
- Apps
- Members
- Groups



#### - 4

# **Keeping Track of Usage – Activity Log**

- What
  - Organization
  - Item
  - User
  - Group
- Who
  - Id
  - Owner
  - actor
- Action
  - Request
  - Data
- When
  - UTC and Epoch
- From Where
  - IP address



# **Keeping Track of Usage – Activity Log**

## **Activity Log Example**

.4	Α	В	С	D	E	F	G	Н	1	J	K	L	M	N	0	Р	Q	R	S
1	id	idTyp	eorgld	owner	actor	ip	action	created	created_utc	request	reqld	clientId	data						
2 ^		u	WI7Y1m9		The standard	198.1	login	1546318814111	1/1/2019 5:00	/sharing/rest/oauth2/token	1c47a745646f4b09b73588 arc	gisprodesktop							
3		u	WI7Y1m9			198.1	login	1546318823182	1/1/2019 5:00	/sharing/rest/generateToken	98813591834540c0a51fe3 ref.	http://www.arcgis.com							
4 1		1 i	WI7Y1m			198.1	add	1546318835306	1/1/2019 5:00	/sharing/rest/portals/self/collaborations/6fd	e43014379efc4391ab04811f6	7963c54	{"name":"	462beeb8	-8f5f-4de9-	3e8-12ac9	bb18566.crp	k"}	
5 1		1 i	WI7Y1m			198.1	update	1546318836441	1/1/2019 5:00	/sharing/rest/portals/self/collaborations/6f6	ded006c5d37141eab37b78564	8d1b595	{}						
6 1		1 i	WI7Y1m			198.1	delete	1546318836573	1/1/2019 5:00	/sharing/rest/portals/self/collaborations/6f6	ded006c5d37141eab37b78564	8d1b595							
7		u	WI7Y1m9			198.1	login	1546318844809	1/1/2019 5:00	/sharing/oauth2/token	775dbaaa946b4732a6e2c3arc	gisdesktop							
8		u	WI7Y1m9			198.1	login	1546318883084	1/1/2019 5:01	/sharing/rest/oauth2/token	e84901650b224843a000el arc	gisprodesktop							
9 is		u	WI7Y1m9		sha:	es: 198.1	login	1546318884280	1/1/2019 5:01	/sharing/rest/oauth2/token	c8f258ab762047ec96499a arc	gisprodesktop							
10		u	WI7Y1m92			198.1	login	1546318909201	1/1/2019 5:01	/sharing/rest/oauth2/token	75ea048523d244cba8679f arc	gisprodesktop							
11		u	WI7Y1m9			198.1	login	1546318911806	1/1/2019 5:01	/sharing/rest/oauth2/token	0c4344ae46a34adbba373f arc	gisprodesktop							
12 Ja		nj u	WI7Y1m9		N	a 198.1	login	1546318912175	1/1/2019 5:01	/sharing/rest/oauth2/token	c559e94e791c473b9347ef arc	gisprodesktop							
13 51		ss u	WI7Y1m9		S	s 198.1	login	1546318922605	1/1/2019 5:02	/sharing/rest/oauth2/token	28e802ac80504432a89a2aarc	gisprodesktop							
14		u	WI7Y1m9			198.1	login	1546318928810	1/1/2019 5:02	/sharing/rest/oauth2/token	3c2e550f50a340be817d50 arc	gisprodesktop							
15		u	WI7Y1m92			198.1	login	1546318947471	1/1/2019 5:02	/sharing/rest/oauth2/token	c5f8da08875e404b857148 arc	gisprodesktop							
16		u	WI7Y1m9			198.1	login	1546319018444	1/1/2019 5:03	/sharing/rest/oauth2/token	f452ac8c9978458491cd4d arc	gisprodesktop							
17 /		s u	WI7Y1m9			198.1	login	1546319028396	1/1/2019 5:03	/sharing/rest/oauth2/token	50fa0f678ce04248aa80c3carc	gisprodesktop							
18 sc		с ср	WI7Y1m9			198.1	update	1546319037463	1/1/2019 5:03	/sharing/rest/portals/self/collaborations/22	19275c50ee6024146b3a8ae770	bfbabdf	{"portalld"	:"8bd218	ff-7966-42fa	a-a87f-cdae	ec47a178",	role":"Gue	st","status
19 52		7. i	WI7Y1m			198.1	add	1546319053392	1/1/2019 5:04	/sharing/rest/portals/self/collaborations/22	182041a8a17c546e48504c28f3	e7e08c6	{"name":"	3ca94ec	-211a-44cc-	a758-1651a	77ea8a7.cr	ok"}	
20 52		7. i	WI7Y1m			198.1	update	1546319055641	1/1/2019 5:04	/sharing/rest/portals/self/collaborations/22	19e9f5d67dffb44d9b10577a311	c70da7	{}						
21 52		7. i	WI7Y1m			198.1	delete	1546319055739	1/1/2019 5:04	/sharing/rest/portals/self/collaborations/22	19e9f5d67dffb44d9b10577a311	c70da7							
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23 b		12 i	WI7Y1m			198.1	update	1546319079507	1/1/2019 5:04	/sharing/rest/portals/self/collaborations/22	b597a0249734401088d2cf1b3	ab7e36f							
24 b		12 i	WI7Y1m			198.1	update	1546319079584	1/1/2019 5:04	/sharing/rest/portals/self/collaborations/22	b597a0249734401088d2cf1b3	ab7e36f							
25 19		9. i	WI7Y1m			198.1	update	1546319080313	1/1/2019 5:04	/sharing/rest/portals/self/collaborations/22	1b597a0249734401088d2cf1b3	ab7e36f	{}						
26 19	2	9. i	WI7Y1m			198.1	delete	1546319080519	1/1/2019 5:04	/sharing/rest/portals/self/collaborations/22	b597a0249734401088d2cf1b3	ab7e36f							
27		u	WI7Y1m9				login	1546319096183	1/1/2019 5:04	/sharing/generateToken	0b56e228b2c24175a4d19cref.	http://www.arcgis.com							
28		u	WI7Y1m9			198.1	login	1546319125446	1/1/2019 5:05	/sharing/oauth2/token	88fff571a3f64ea59a0c7ce dro	ne2map							
29		u	WI7Y1m92			203.1	login	1546319136761	1/1/2019 5:05	/sharing/rest/oauth2/token	4e64fd0cf3ca485e97b6a7carc	gisprodesktop							
30		u	WI7Y1m9		1010001111 00	198.1	login	1546319185690	1/1/2019 5:06	/sharing/rest/oauth2/token	7509bce05c794d5a9f707c arc	gisprodesktop							

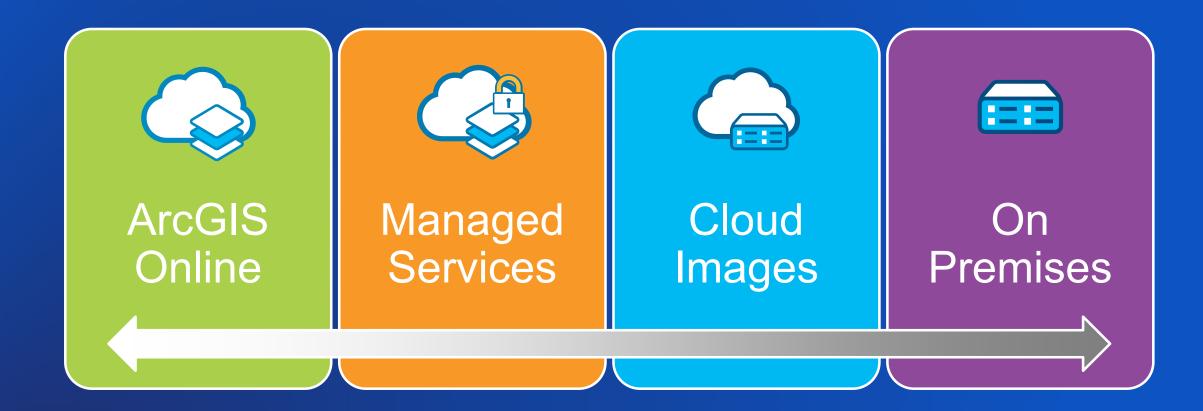


### Recommendations

- Setup Admin Contacts
- Use MFA or your own IDP
- Don't share Editable Feature Layers to Everyone and Use Views
- Setup Custom Roles and restrict full Admins
- Older Organizations
  - HTTPS Only
  - Standardized Queries Only
- Private Organizations
  - Disable Public Sharing
  - Disable Anonymous Org Access

Michael Young

# Deployment Architecture Options



4

Responsibility

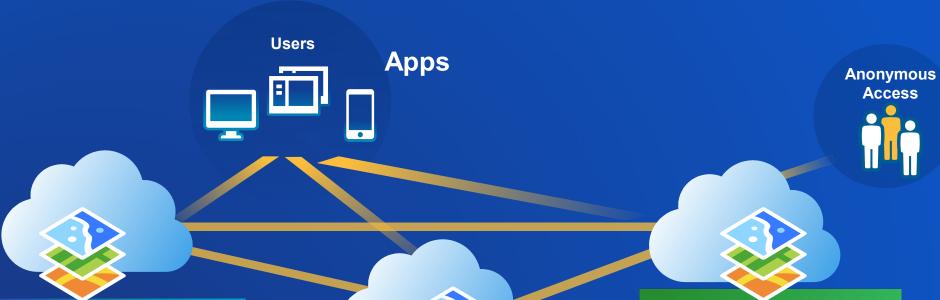
Responsibility	ArcGIS On-Premises	ArcGIS Cloud Images	EMCS Advanced+ FedRAMP Moderate	ArcGIS Online FedRAMP Tailored Low
Data Classification & Accountability				
Client & End-Point Protection				
Identity and Access Management				
Application Level Controls				
Network Controls				
Physical Security				







**Hosting Options** 



#### **On-Premises**

- Ready in months/years
- ArcGIS Enterprise behind your firewall
- You manage & certify

#### **Esri Managed Cloud Services**

- Ready in weeks
- ArcGIS Enterprise in the cloud
- **Dedicated services**

#### **ArcGIS Online**

- Ready in minutes
- Centralized geo discovery
- Multi-tenant
- **FedRAMP Tailored Low**

All options can be combined or separate

**Access** 

**User Scenario – ArcGIS Online Alone** 

I want to share and process operational data with field workers.



ArcGIS Online

- Rapid Deployment (SaaS)
- Low TCO
- Utilize content / Basemaps
- Data: Low Impact

**User Scenario – ArcGIS Online + Cloud Images** 

I need to pilot a solution that requires basemaps and some ArcGIS Server specific features.



ArcGIS Online

- RapidDeployment(SaaS)
- Low TCO
- Data: Low Impact



Cloud Images

- Build to Suit
- ArcGIS Server/Portal
- Customer manages all security aspects

**User Scenario – ArcGIS Online + On-Premises** 

I want to share sensitive data internally, but provide subsets to external and public users.



ArcGIS Online

- Rapid Deployment (SaaS)
- External Data
- SAML (Enterprise Logins)
  - Internal Data
  - Disconnected
  - Integrated Security

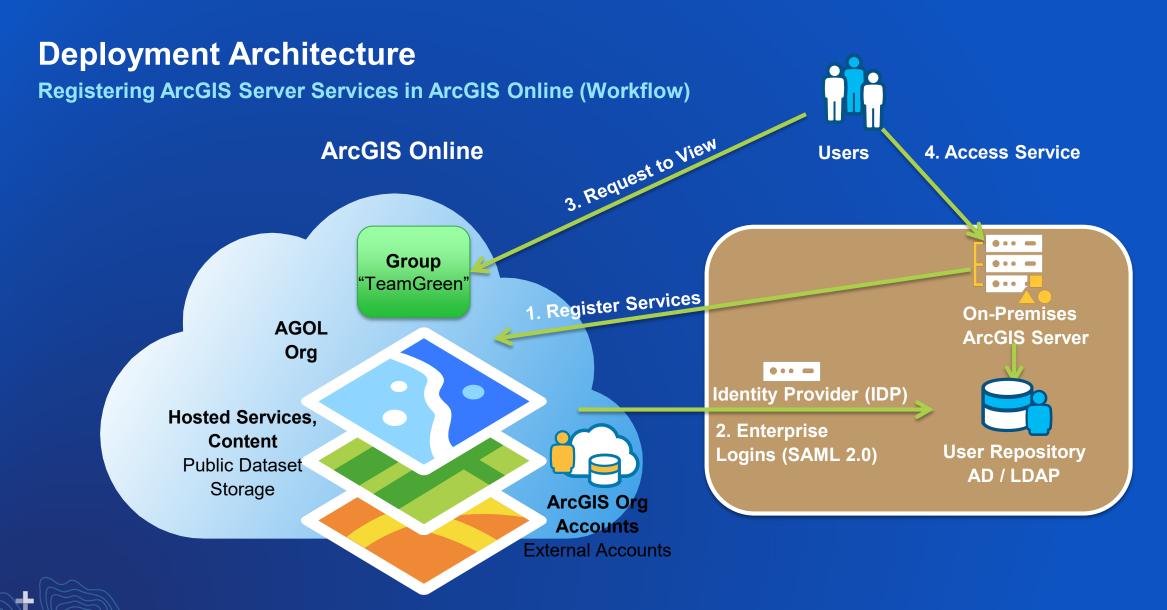


On Premises

Example: EPA's FISMA Authorized GeoPlatform

Registering ArcGIS Server Services in ArcGIS Online

- Common for large enterprises
  - Primary reason
    - Data Segmentation / Prevent storing sensitive data in the cloud
- What is stored in ArcGIS Online? Service Metadata
  - Username & password Default, not saved
  - Initial extent Adjust to a less specific area
  - Name & tags Address with organization naming convention
  - IP Address Utilize DNS names within URL's
  - Thumbnail image Replace with any image as appropriate



Segment sensitive data internally and public data in cloud

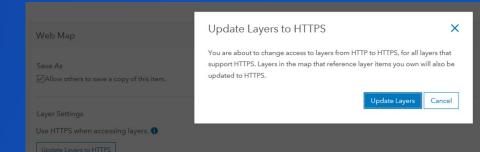
Registering ArcGIS Server Services in ArcGIS Online

- Where are internal and cloud datasets combined?
  - At the browser
  - The browser makes separate requests for information to multiple sources and does a "mash-up"
  - Token security with TLS or even a VPN connection could be used between the device browser and on-premises system



**Significant Security Change Coming** 

- TLS 1.2 only was enforced in 2019
- In 2020 all ArcGIS Online organizations will have HTTPS only enforced
  - Allows utilizing HSTS across domain, as opposed to specific services
- Customers utilizing HTTP only services with ArcGIS Online and external HTTP services need to begin preparing now
  - Maps/services/apps with HTTP calls will break and need to be fixed
  - Capabilities to make the transition easier
    - Update Map Layers to HTTPS
    - HTTP Checker added to AGO Security Advisor tool

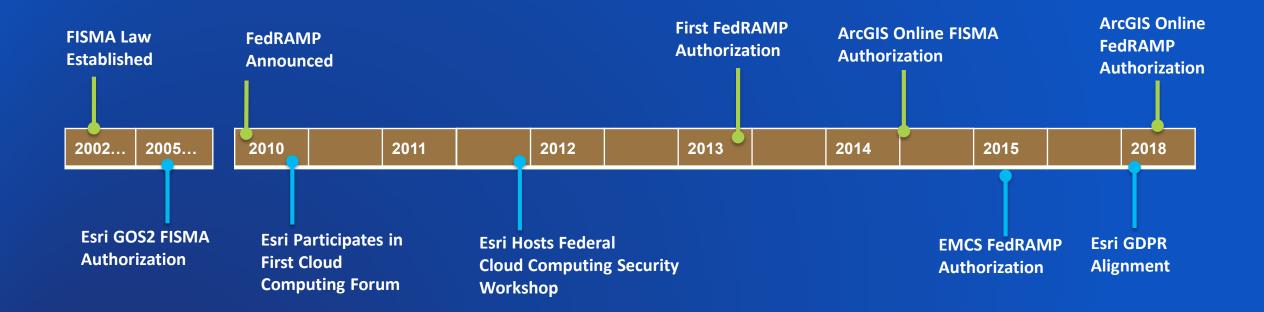


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# Compliance

- Milestones
- Cloud Infrastructure Providers
- Privacy Assurance / GDPR
- Security Assurance / FedRAMP

#### **Milestones**





**Cloud Infrastructure Providers** 

- ArcGIS Online Utilizes World-Class Cloud Infrastructure Providers
  - Microsoft Azure
  - Amazon Web Services

**Cloud Infrastructure Security Compliance** 







**Privacy Assurance** 

- EU-U.S. Privacy Shield self-certified
  - General Esri Privacy Statement
  - Products & Services Privacy Statement Supplement
- TRUSTe
  - Provides privacy certification and dispute resolution
- General Data Protection Regulation (GDPR)
  - Stronger privacy assurance
- California Consumer Privacy Act (CCPA)
  - Currently working on ensuring alignment by enforcement 1/1/2020









#### **Protect By Design**

- Esri established a formal Security Development Lifecyle in 2017
- Addresses governance structure (CISO Products, CISO Corporate)
- Guideline practices based on BSIMM, OWASP, CWE/SANS
- Most rigorous security measures with ArcGIS Enterprise & Online
- Static, Dynamic, and Component Analysis + 3<sup>rd</sup> party testing
- Product Security Incident Response Team (PSIRT) established
- FedRAMP Tailored Low Authorization drives continuous monitoring
- ArcGIS Online customer datasets are now encrypted at rest



#### **Esri Software Security and Privacy**

Esri is committed to delivering secure geospatial software and services that meet the needs of customers, from individuals to large organizations. While Esri has always taken the security of its products seriously, the importance of embedding security and privacy into the development life cycle has increased as Esri continually advances its Web GIS platform and software-as-a-service (SaaS) offerings such as ArcGIS Online. This document summarizes key aspects of Esri's Secure Development Life Cycle.

Security policies spanning the company are set at the corporate level under the guidance of the Chief Information Security Officer (CISO). Also at the corporate level, the Legal and Human Resources Departments safeguard alignment with evolving privacy needs, ensuring that employees are appropriately vetted before onboarding, and push for advancement of business continuity efforts. Corporate security controls are inherited across Esri, while functional areas (such as engineering and operations) are responsible for specific security control families, as seen in figure 1 below.

The security of Esri products and services is overseen by the Chief Information Security Officer (CISO)-Products, who leads Esri's Software Security & Privacy team. This team is embedded within product operations and engineering, providing security guidance and validation while fostering security advocates across the broad spectrum of product teams to help further embed security across Esri products



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#### **FedRAMP**

- ArcGIS Online Agency FedRAMP Tailored Low authorization-to-operate (ATO)
  - Referred to as a Low-Impact Software as a Service (Li-SaaS)
  - Standardizes US government security authorization process for cloud products and services
- Value to All Organizations
  - Recognized by many organizations around the globe as a gold standard for security
  - Mapping of ISO 27001 & 15408 controls available via Trust Center
  - Ensures annual 3<sup>rd</sup> party assessments

**Summary Across ArcGIS Online** 



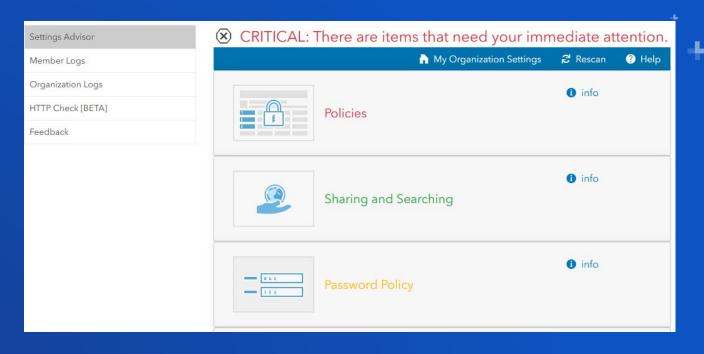
# **Security Advisor Tool**

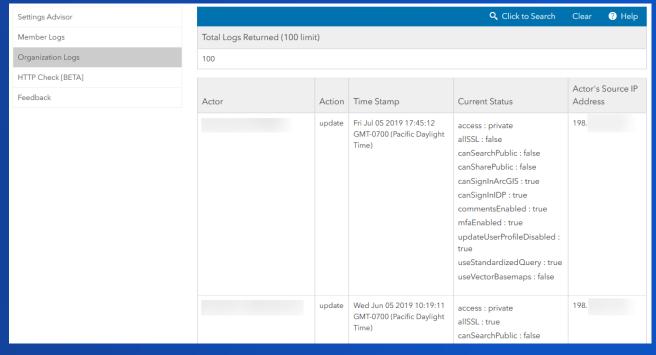
# **AGO Security Advisor Tool**

Launch from ArcGIS Trust Center

Launch Security Advisor

- Validate settings/usage against secure best practices
- GUI for organization & user level audit log visualization
- Welcome enhancement requests
  - SoftwareSecurity@Esri.com





# **AGO Security Advisor Tool**

- Version 2.0 released this week New HTTP Checker feature
  - Helps ease HTTPS enforcement in 2020 for customers with HTTP still enabled
  - Flags any HTTP references within your org



# Summary

# **Summary**

- FedRAMP Tailored Low authorization and GDPR alignment ensure ArcGIS Online security
   & privacy capabilities continue to advance
- Significant security advancements are coming that could directly affect your operations
  - HTTPS Only enforced in 2020
- Extensive security, privacy, compliance, and status info available
  - Trust Center Trust.ArcGIS.com
  - In-depth Cloud Security Alliance (CSA) answers readily available
  - Security best practice validation tool

# **Summary**

Want to learn more?

ArcGIS Trust Center	Overview	Security	Privacy	Compliance	Documents	Launch Security Advisor
	Search ArcGIS Trust Cent	ter	Q			

Security / Cloud

# Overview Cloud Cloud options ArcGIS Online capabilities ArcGIS Online guidance Esri Managed Cloud Services Enterprise Desktop Mobile

# ArcGIS Online Implementation Guidance

The following section identifies best practices to consider for ArcGIS Online. These best practices involve authentication, authorization, encryption, and application specific security settings that can improve the overall security posture of an organization's implementation of ArcGIS Online.

# Application security settings

ArcGIS Online enables customers to increase the security posture of their organization by applying security settings as appropriate. When possible, it is encouraged customers follow the best practices below.

In this topic

Report a Security Concern

Application security settings

Authentication

Authorization

Encryption

Logging and Auditing

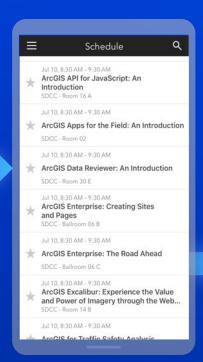
Related content

# Please Share Your Feedback in the App

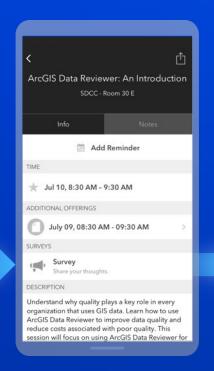
Download the Esri Events app and find your event



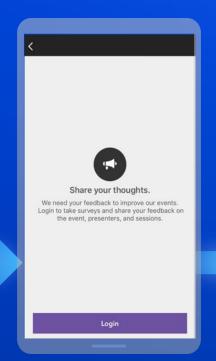
Select the session you attended



Scroll down to "Survey"



Log in to access the survey



Complete the survey and select "Submit"

