

Scheduler for ArcGIS® | Users' Guide | Draft 2024

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I. Introduction to Scheduler

A. What is Scheduler for ArcGIS?

Scheduler for ArcGIS is a powerful tool that allows users to customize and automate the otherwise time-consuming tasks associated with managing an ArcGIS® Organization in a quick, easy, and efficient manner. By combining multiple tools and workflows, Scheduler allows users a greater variety of resolutions than ever before. By leveraging webhooks, Scheduler allows users to be much more responsive and have more control over what happens in their ArcGIS Organizations. Scheduler also supports back-end operations, such as starting and stopping services, rebuilding spatial indexes, publishing services, monitoring server health and status, and monitoring and responding to events based on server logs.

Some examples of things users can do with Scheduler include:

- Regularly scan an organization for invalid content, flag it for review, and send an e-mail to responsible parties. If that content is not addressed within a certain time frame, Scheduler can perform various escalation tasks.
- Scheduler can pull data from an external API every day, write the information to a CSV, then publish that CSV as a feature service.
- If a member of your ArcGIS Organization shares sensitive content (such as a service containing social security numbers or proprietary information), Scheduler can immediately unshare it and send an e-mail to alert the appropriate contacts.
Note: This is only possible for ArcGIS® Enterprise Organizations
- Scheduler can automatically run resource-intensive tasks during off hours.

Additional functionality includes:

- Automate routine tasks, including multi-step operations, so that they run on a schedule of the user's choosing
- Manage your webhooks, both ones used in Scheduler and elsewhere (Enterprise only)
- Automate server operations, such as starting and stopping services, rebuilding indexes, checking for and restarting stopped services, monitoring portal health, and publishing services from CSV.
- Bulk manage services (start, stop, edit, delete, as well as view their properties, including some properties that can't be seen anywhere else) (Enterprise only)
- Take action in response to events that occur in the ArcGIS® Server logs (Enterprise only).
- Monitor geoprocessing jobs and cancel jobs that are stuck.
- Ensure optimization of spatial data and underlying tables by rebuilding database indexes.
- Create administrative reports on a schedule (and, optionally, have them emailed to you).
- Run custom scripts. Scheduler can run any script that can be run in the command line.
- Report on the progress of tile caching.

B. Acquiring Scheduler for ArcGIS

Scheduler can be acquired in one of two ways:

1. Visit the ArcGIS Marketplace and search for "Scheduler for ArcGIS"
 - a. NOTE: Scheduler is not available via the ArcGIS Marketplace during Beta
2. Contact the GEO Jobe Sales Team at sales@geo-jobe.com

C. Installing Scheduler for ArcGIS

Scheduler is only installed on-premise; there is no SaaS version available. This means users have complete control over where their copy of Scheduler is installed, as well as what information from their ArcGIS Organization it may touch. Scheduler can be run on any machine that can access your ArcGIS Organization and can run as a service or on localhost*.

** Unless you are using webhooks. In that case, Scheduler must be installed on a server with a fully qualified domain name and a valid certificate from an external certificate authority (i.e. not self-signed). If a user wishes to run Scheduler on localhost and leverage webhooks, they can do so as long as they use a URL rewrite to create a fully qualified domain name for localhost.*

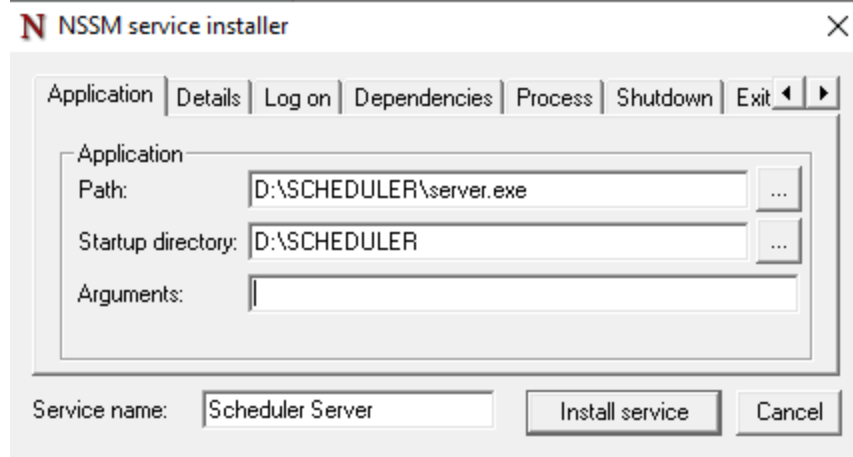
Scheduler for ArcGIS relies on MongoDB® (included in the ZIP file) to operate. You will also need to install it on any machine that Scheduler (or Scheduler Satellite) is installed on. We also recommend installing MongoDB Compass as part of the installation process. Compass is a GUI interface used for interacting with the database, enabling a user to access the database's information more easily..

Scheduler for ArcGIS also requires Internet Information Services (IIS) installed on the machine to operate. Be sure that IIS has been installed before performing the Scheduler installation. For Windows Server, you can install IIS by visiting the **Start Menu > Administrative Tools > Server Manager**, then **Add roles** and select **Web Server (IIS)**. For Windows 11, you can install it by visiting **Control Panel > Programs > Programs and Features > Turn Windows features on or off** and select **Internet Information Services**.

1. *New Installation Instructions*

- a. Unzip the Scheduler for ArcGIS build to the proper location. This can be under **C:\inetpub\wwwroot\scheduler** or any location you wish. You will need to add this location as an application in IIS. Make sure that your license file, **SCHED-geojobe.license.txt**, is in the main directory.
- b. Install **scheduler/installs/MongoDB-windows-*.exe**. If you don't already have MongoDB installed on your server, you can find the installation file, **mongodb-windows-x86_64-7.x.x-signed.msi**, in the **scheduler/installs** folder that was unzipped in step a. Follow MongoDB's installation wizard to install (default options are recommended).
- c. Install the required IIS Modules. In the **scheduler/installs/standalone** folder, there are two files - **1_rewrite_amd64_en-US.msi** and **2_requestRouter_amd64.msi**. These IIS modules must be installed in the order just listed for Scheduler for ArcGIS Enterprise to work properly. They are used by the application to create a reverse proxy to forward requests through IIS to the server application.
- d. Install and Start the Windows Service.
 - Run as administrator the **scheduler/installs/install_server.bat** file.
 - Click the three dots next to the Path setting. Navigate one directory up to the main Scheduler folder. Then select the **server.exe** file and click the open button.
 - Click the **Install Service** button.

Run the **services** application on Windows and make sure that “Scheduler Server” is running. If not, start the service.



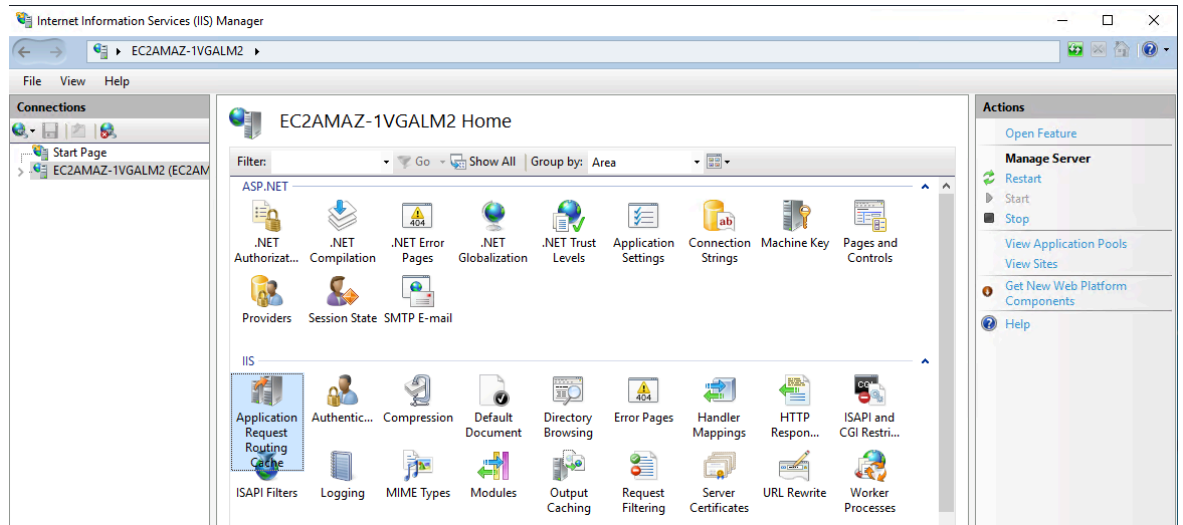
If you have already installed the service, you can run the **edit_server.bat** file.

If you need to delete the service, run the **remove_server.bat** file.

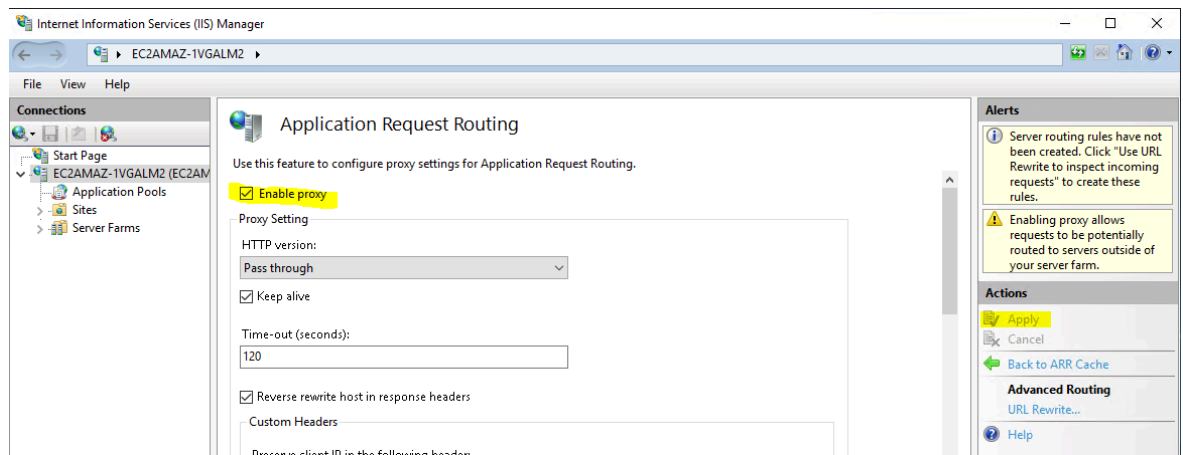
- In IIS, Enable Application Request Router proxy.

Under connections, click on the server entry under the start page.

In the center panel under the IIS section, double-click on the Application Request Routing icon.



Click the **Enable Proxy** checkbox in the center panel, then on the right panel click the **Apply** button.



- You can now open a browser to **https://yourdomain.com/scheduler** and use the application.

2. Installing Scheduler Satellite on an ArcGIS/Data Source Server

Scheduler Satellite is an additional, optional application that can be used to access local files that cannot be accessed remotely. It will be included as a zip file in the main Scheduler build and can be installed on multiple other machines. The Satellite application communicates directly with the main Scheduler for ArcGIS to enable you

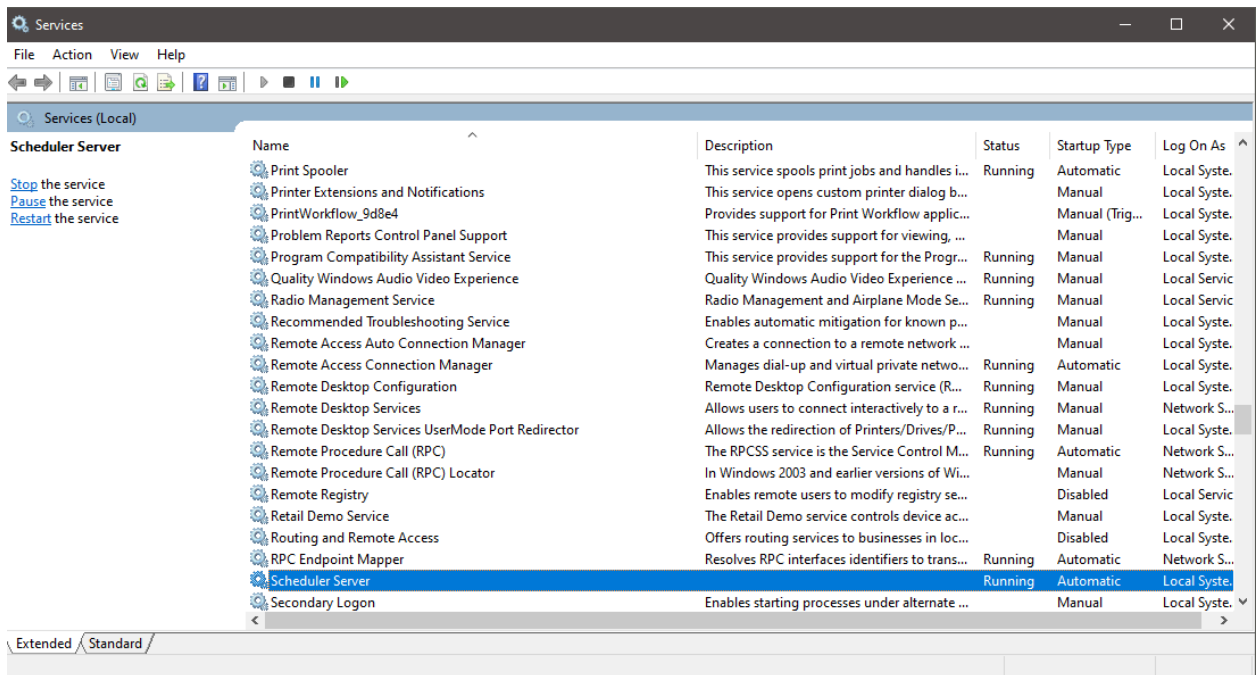
to perform actions from the Scheduler interface where access would not have been previously possible.

To Install Scheduler Satellite:

- a. Unzip the Scheduler Satellite build to the proper location. This can be under **C:\SchedulerSatellite** or any location you wish. You will need to add this location as an application in IIS. Be sure to include your license file, **SCHED-geojobe.license.txt**, in the main directory of Scheduler Satellite.
- b. Install **scheduler/installs/MongoDB-windows-*.exe**. If you don't already have MongoDB installed on your server, you can find the installation file, **SchedulerSatellite/installs folder** that was unzipped in step a. Follow MongoDB's installation wizard to install (default options are fine). Follow MongoDB's installation wizard to install (default options are fine).
- c. Install and Start the Windows Service.
 - Run as administrator the **SchedulerSatellite/installs/install_server.bat** file.
 - Click the three dots next to the Path setting. Navigate one directory up to the main Scheduler folder. Then select the **satellite.exe** file and click the open button.
 - Click the **Install Service** button.
 - Run the **Services** application on Windows and make sure that "Scheduler Satellite" is running. If not, start the service.
 - See **Section I: Scheduler Satellite** for more information on how to configure Satellite in the Scheduler for ArcGIS application.

3. Updating an Existing Version of Scheduler for ArcGIS or Scheduler Satellite

- a. Stop the current Scheduler for ArcGIS/Scheduler Satellite service.



- b. Update the name for your current Scheduler folder to include the suffix “_old”. This is recommended best practice until the update is complete, so you can roll back if an unexpected error occurs during installation.
- c. Recreate the original Scheduler folder, then move the Zip file containing the update to the same location where you installed Scheduler for ArcGIS, then extract it. We recommend moving the files while they are still zipped, as this is a faster and more efficient use of both your computer’s resources and your time. If you do not have it, we recommend using 7zip to extract the files. 7zip is faster, more efficient, and more reliable than the default Windows process.
- d. If you made custom changes to config/**nodeconfig.json**, copy those files as needed from the **_old** directory into the new directory.
- e. Restart the Scheduler Service.

- f. Test the update at the same URL you used to access Scheduler for ArcGIS before. If the webpage loads and you can sign into Scheduler for ArcGIS, you may delete the **_old** folder created in step b. If you cannot get that far, please reach out to GEO Jobe's Support Division (support@geo-jobe.com) for additional help.

4. *Changing the port of your Scheduler Service or Scheduler Satellite Service*

- a. Scheduler by default runs internally on port (7501), and Scheduler Satellite runs on port (3000). If you wish to change the port number, follow these steps:
 - Temporarily stop the Scheduler service if it is running.
 - In the Scheduler base directory, edit the **web.config** file, find the line

```
<action type="Rewrite"
url="http://localhost:7501/{R:1}" />
```
 - And change it to

```
<action type="Rewrite"
url="http://localhost:yourPortNumber/{R:1}" />
```
 - Save this file and edit your text editor.
 - Under the **<schedulerhome>/config** directory, edit the **nodeconfig.json** file and update the **port** to your new port number.
 - Restart the service or use **<schedulerhome>/installs/install_server.bat** to create the service.

Licensing

The licensing for Scheduler for ArcGIS is based on connectors, specifically per connector or the URL used to access your ArcGIS Organization. Each unique ArcGIS Organization requires a separate connector for Scheduler usage. The license encompasses unlimited implementations of Scheduler Satellite, facilitating access to data sources for integration with your Scheduler application. Additionally, a Scheduler license allows access for unlimited users to the application.

Your license is contained in a file in your main Scheduler/Scheduler Satellite directory called **SCHED-geojobe.license.txt**. Opening this file in a text editor you can see your expiration and connector information. You may also change the name of the license file that Scheduler for ArcGIS is looking for by opening **scheduler/server-side/config/nodeconfig.json** and changing the **licenseFilename** field.

Installation Requirements

System Requirements:

- Windows Server 2016 or higher server OR
- Windows 10 or higher personal computer
- MongoDB installation required
- Recommended server specs:
 - Quad-core processor minimum, 8 core or higher recommended for larger orgs
 - 16 GB RAM for optimal performance
- If users want to run tasks based on ArcGIS Server Logs, Scheduler Satellite must be installed on the machine where the log files are located.
- If they want to use webhooks, Scheduler must be installed on a machine with a valid certificate from a certifying authority (i.e. not self-signed). Scheduler can run on localhost but they must use a URL rewrite in IIS to create a fully qualified domain name that is HTTPS.

D. Configuring Scheduler for ArcGIS

Setting up Scheduler for the First Time

1. When the application first loads, you will be asked to create both an organization superuser account, which will login with credentials from one of the ArcGIS organizations licensed for Scheduler, and an internal superuser account, which will login with credentials saved to Scheduler and will not interact with the organization to login. This internal superuser account can serve as a backup account in case you are not able to login with your organization credentials. Scheduler must have at least one internal superuser to function, to ensure that you won't ever get locked out of the application. Both superuser accounts (and all superuser accounts) will be able to perform all functions on all licensed identities, so they should belong to someone who can be trusted. For the ArcGIS organization superuser, the username should be the username of whatever org credentials you're going to be logging in with. For the internal superuser, the username can be whatever you want. We strongly recommend that any superuser be a native org admin in their organization. Superusers have the ability to refresh tokens, and some aspects of Scheduler will not work properly if the saved token doesn't belong to an admin.
2. Once you've created the initial users, you will be asked to add one or more identities from those that are licensed for Scheduler. You must add the identity that you are using for the superuser's credentials and can add others as well. This is for your ArcGIS® Online and ArcGIS Enterprise Organizations. When you click the + ADD Button, you will be prompted to enter your Organizations Name and URL, which is the licensed connector to your ArcGIS Org. You will need an App ID and then you will use OAuth to log in.
3. After you're done adding identities, click Proceed to Login. You will then be directed to the login page, where you should log in with the superuser credentials and identity that they just set up.
4. Once you're logged in, you should configure the following in Settings (you won't be able to make tasks until you have configured the logs folder and task output files folder):
 - a. The logs folder. This is where the logs that Scheduler generates for each task will be stored. This is required.
 - b. The task output files folder. This is where files generated by Scheduler tasks (for example, if you're exporting something to CSV) will go. This is required.
 - c. The Scheduler URL for Webhooks and Satellite. This is the URL where the Scheduler application is installed so that webhooks and/or Satellites can communicate with it. This is optional, if you do NOT want to use webhooks or Satellite, you don't need it. If you want to use Satellite, the URL needs to be reachable from another machine (i.e. not localhost, you can run Scheduler on localhost but for this property, you would need either a FQDN if you have

- one, or the IP address of the machine). If you want to use webhooks, see the section about requirements for using webhooks.
- d. Event collections files folder. This is where event collections will be stored. This is optional and you can leave it blank if you don't intend to use event collections.
 - e. Email settings. This is what will be used for Scheduler to send emails, and works the same as email settings in our other products. This is optional but highly recommended, as the ability to send emails to alert people of potential problems is an important use for Scheduler.
5. You are now ready to make tasks and start using Scheduler.

E. Setting Up Mail Capabilities

To set up settings for sending email notifications, click on the cog icon in the top right of the Scheduler page.

There are two options for mail types that can be configured:

- **SMTP**
 - Standard SMTP options are available in this section, including host, port, username, and password. If there is a configuration that is not supported here, the Custom Mail Type can be used instead.
- **Custom**
 - Scheduler uses Nodemailer for its mail system, so any transport configuration that works in Nodemailer can be entered here. The format for

this section is JSON, and you can get a list of options at <https://nodemailer.com/smtp/#examples>.

- If you are using a credential-less internal email server without authentication, use the following config under the Custom Config section, below:

```
{  
  "host": "yourhostinfo",  
  "port": 25,  
  "tls": { "rejectUnauthorized": false}  
}
```

Additional Settings:

Maximum Concurrent Mail Settings: Different email services have rules about the number of concurrent connections that can be made at one time. If you are unsure of the correct value, consult the documentation for the email service you wish to use.

Test Mail Settings: To test your connection settings, you can use the Test Mail Settings button to check if your connection settings are valid.

F. General Settings

This page contains general settings. For the general settings:

- **Accessibility Mode** enables some additional options to make Scheduler more accessible (This will be moved outside the tab to make it easier to get to).
- The **Logs Folder** indicates where to store the task logs. If you change this option, all current logs will be moved to the new location. **Users shouldn't move logs manually, otherwise, Scheduler won't be able to find them.**
- The **Delete Logs** option allows users to choose to automatically delete logs after a certain number of days.
- The **Task Output Files Folder** is the default location for files generated by tasks, such as CSVs. For the individual tool in the task, a different output file location can be specified by putting in a full file path. Otherwise, if you just put in the file name

with no file path, or the custom file location doesn't work, it will default to the folder indicated here.

- **Task Run Concurrency** indicates the number of tasks that can run at once. In most cases, this should be 1, but if you have a super-powerful server, you can try putting it higher, but this could use a lot of resources or cause Scheduler to run slow.
- **Token Expiration Reminders** gives you the option to have Scheduler send you an email to warn you of organization tokens that have expired and/or are expiring soon. You can choose how often Scheduler will email you, and who the emails will be sent to. You will not receive emails about organizations with saved credentials, as Scheduler will refresh these tokens automatically.
- The **Calendar Settings** specify the number of years' worth of tasks that are displayed on the calendar, more years means the calendar will take longer to load, depending on how many tasks you have and how frequently you run them.
- **Check for Feature Service Updates Frequency** applies to tasks that are triggered by feature service updates. This property indicates how often Scheduler will check for feature service updates. The default is once per hour. Checking for feature service updates is a relatively resource-intensive process, so if your triggered tasks will be watching many feature services and/or very large feature services, checking too frequently could lead to decreased performance.
- The **Scheduler URL** for **Webhooks and Scheduler Satellite** is the URL where the Scheduler application can be reached from another machine. This will be used for Satellite and it will also be the payload URL for webhooks, but there are different requirements depending on what you want to use it for (Notice the two different buttons for testing). For Satellite, it just needs to be a valid URL that is reachable from an outside machine (i.e. not localhost, if it's running on localhost use the IP address). For webhooks this must be a fully qualified domain name, it must be HTTPS, and the hosting server where Scheduler is installed must have a valid cert that is not self-signed (these are Esri's requirements). To validate the payload URL, a test webhook will be created and then deleted in one of the Enterprise organizations, to ensure that the URL is valid and able to receive the message from

the webhook. If you don't intend to use webhooks or Satellite, this property isn't necessary.

- The **Event Collection Files Folder** specifies the output folder for event collection files. If you don't intend to use event collections, this isn't necessary.

G. Users

Superusers and admins can create, edit and delete users here. A user's Scheduler username must correspond to an admin user in one of the licensed orgs. Users can be enabled to use Scheduler with one or more of the licensed orgs; superusers are enabled for all orgs by default.

Scheduler has several options for configuring users, including different roles and different permitted organizations that users can interact with. This allows Scheduler superusers to grant other users access to Scheduler while limiting the actions they can perform.

Here is an image showing the Scheduler Roles and Permissions:

Action	Role		
	Superuser	Admin	Viewer
Login with org credentials	Yes	Yes for permitted identities, but not recommended	No
View tasks	Yes	Yes	Yes
Add custom task	Yes	Yes for permitted identities	No
Add template task	Yes	Yes for permitted identities	No
Enable task	Yes	Yes for permitted identities	No
Disable task	Yes	Yes for permitted identities	No
Transfer task	Yes, as long as the target user has permission to use all of the tasks' identities	Yes, as long as both the Scheduler user and the target user have permission to use all of the tasks' identities	No
Delete task	Yes	Yes for permitted identities	No
Run task	Yes	Yes for permitted identities (if a task has more than one identity it will run it only for the permitted ones)	No
Edit task	Yes	Yes for permitted identities	No
View logs	Yes	Yes	Yes
Delete logs	Yes	Yes for permitted identities	No
View schedule adjustments on the calendar	Yes	Yes	Yes
Add or remove schedule adjustments on the calendar	Yes	Yes for permitted identities	No
View services	Yes	Yes	Yes
Start service	Yes	Yes	No
Stop service	Yes	Yes	No
View individual service info	Yes	Yes	Yes
Edit service	Yes	Yes	No
View webhooks	Yes	Yes	Yes
Create webhook	Yes	Yes for permitted identities	No
Delete webhook	Yes	Yes for permitted identities	No
Update webhook	Yes	Yes for permitted identities	No
Update payload URL	Yes	Yes for permitted identities	No
Activate webhook	Yes	Yes for permitted identities	No
Deactivate webhook	Yes	Yes for permitted identities	No
Export webhook	Yes	Yes	Yes
Import webhook	Yes	Yes for permitted identities	No
View event collections	Yes	Yes	Yes
Create event collection	Yes	Yes, with webhooks for permitted identities	No
Update event collection	Yes	Yes, if all of the webhooks are for permitted identities	No
Delete event collection	Yes	Yes, if all of the webhooks are for permitted identities	No
View organizations	Yes	Yes	Yes
Add organization	Yes	No	No
Update organization	Yes	No	No
Refresh organization token	Yes	Yes for permitted identities	No
Delete organization	Yes	No	No
View connections	Yes	Yes	Yes
Add connection	Yes	No	No
Update connection	Yes	No	No
Delete connection	Yes	No	No
View server logs	Yes	Yes	Yes
View users	Yes	Yes	No
Add user	Yes	No	No
Update user	Yes	No	No
Delete user	Yes	No	No
View Satellites	Yes	Yes	Yes
Add Satellite	Yes	No	No
Delete Satellite	Yes	No	No
Update Satellite	Yes	No	No
View server event collections	Yes	Yes	Yes
Create server event collection	Yes	Yes	No
Delete server event collection	Yes	Yes	No
Update server event collection	Yes	Yes	No
View Settings	Yes	Yes	Yes
Update Settings	Yes	No	No

User Types

Scheduler has two user types: organization users and internal Scheduler users. Organization users are users with accounts in one or more of your ArcGIS organizations licensed for Scheduler. Organization users login to Scheduler by using Esri's OAuth2 authentication to login to their organization; thus, an organization's username in Scheduler should match their username in the organization they will use to login. When an organization user logs in, if they are a native org admin, their token is saved to Scheduler's database and used to run tasks, create and view webhooks, and perform other functions. If they are not a native org admin, their token will not be saved, because a native org admin's token is necessary to perform many of Scheduler's operations. However, they will still be able to use the native org admin token that is stored with Scheduler's identities, so only people who are trusted and knowledgeable should be permitted to use Scheduler as administrators or superusers (see below).

Users who don't have credentials with one of your ArcGIS organizations can be added as internal Scheduler users. These users login with a unique set of credentials that are saved to and validated by Scheduler. Internal users do not interact with your organization to login.

User Roles

Scheduler has three roles: Superuser, Administrator, and Viewer.

Superusers can perform all activities, including creating, editing, and deleting users, identities, and connections. Superusers can also access and use all identities licensed for Scheduler. Scheduler must have at least one superuser. When you open Scheduler for the first time, you will be required to create a superuser, who will then be able to create other users. Only people who are highly trusted and knowledgeable about all of the organizations licensed for Scheduler should be superusers.

Administrators can create and run tasks, create and use webhooks and event collections, and manage services, but they cannot create or manage users, identities or Satellites. Additionally, you can grant administrators access to only certain organizations that you have licensed for Scheduler. In this case, administrators will only be able to create, edit, and use tasks, webhooks, and event collections for the permitted identities. For example, you may want to give

someone access to use Scheduler within your development environment, but not your production environment. This will give you greater control over what users can do in Scheduler, allowing you to add more users without worrying that a user from one organization will interfere with tasks in another.

Viewers can see tasks, webhooks, event collections, services, and Satellites, and can open them up to look at them, but cannot create, update, use, or delete them. Most buttons will be disabled for viewers. People who are not necessarily familiar with your organization but who want to understand what Scheduler is doing, or who want to be able to see services and webhooks, would be good candidates to be viewers.

Scheduler is a powerful tool that can reach deep into your organization and allow a user to interact with content, services, server machines, and other aspects of your organization. Because of this, GEO Jobe highly recommends that only native org admins be permitted to use Scheduler as superusers or administrators. If you want someone who is not a native org admin to be able to use Scheduler, GEO Jobe highly recommends making them a viewer.

H. Setting Up Identities

This is where you will set up your ArcGIS Online Organizations and ArcGIS Enterprise Organizations Tokens and be able to refresh, delete, or edit them. You can add others, provided that they're included in your license, the license contains the list of orgs you can use Scheduler with and you can add those on the identities page. You can also check the connections and see where your credentials are stored, and even create or delete new connections.

Organizations

The Organizations tab works similarly to how organizations are added to Backup My Org and Clean My Org.

Organizations		Connections			
ArcGIS Online Organizations +					
Organization	Log Folder ID	URL	Auth	Token Expires	
GEO Jobe Demo	63bde68b10b0000529ddc6bf	https://geo-jobe-demo.maps.arcgis.com	OAuth2	11/22/2023 3:55 AM 	 
ArcGIS Enterprise Organizations +					
Organization	Log Folder ID	URL	Auth	Token Expires	
Enterprise 108	645bb147c7c8a5d8e9a9109	https://enterprise108.geopowered.com/portal	OAuth2	11/21/2023 1:43 PM 	 
Enterprise 11	654423e427a4f8dbe7d0b383	https://enterprise11.geopowered.com/portal	OAuth2	11/16/2023 4:34 PM 	 

Organization Tokens

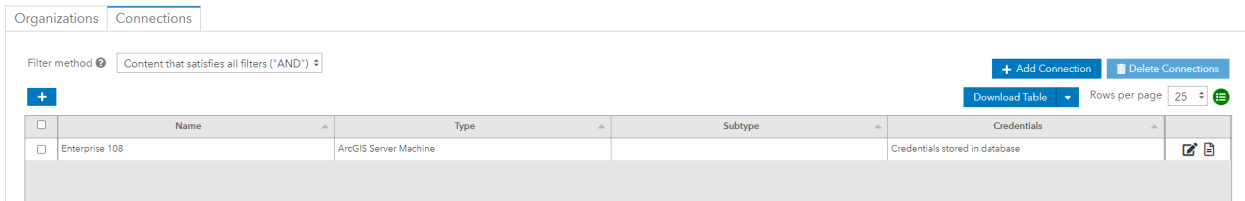
To interact with organizations, Scheduler requires a valid token for that organization. Organization tokens expire after 14 days. The Identities card on the home page will show a warning if a token is expired or expiring soon, and a warning will also appear next to the identity on the Identities page. Scheduler tokens are generated in two ways:

1. When an organization user logs in with their credentials, your token will be saved to that identity **if you are a native org admin**.
2. Users can generate a new token by clicking the Refresh token button and entering your organization's credentials.

GEO Jobe highly recommends that only native org admins save their tokens to Scheduler by clicking the Refresh token button. Scheduler will automatically not save a user's token when logging in if they are not a native org admin. If the token saved to an identity does not belong to native org admin, some functionality may fail or behave unexpectedly. A warning will appear at the top of every page if a token saved to Scheduler does not belong to a native admin. If this occurs, a native admin should replace the token with their own by refreshing the token for the organization in question.

Connections

The Connections tab manages connections to things that aren't orgs. Scheduler for ArcGIS supports connecting to ArcGIS Server machines and SQL Server databases.



Name	Type	Subtype	Credentials
Enterprise 108	ArcGIS Server Machine		Credentials stored in database

For ArcGIS Server machines, users can add the machine as either a federated server or a standalone server. If the server is federated to one of the orgs in the Organizations tab, they can choose to use that org's credentials. Otherwise, they can input the server credentials manually. For SQL Server, they will need to input the credentials.

For ArcGIS Server machine connections, you can also configure Satellite. We currently don't use Satellite with SQL Server connections, but we may in the future. In the Satellite configuration, users will need to input the URL where the Satellite can be reached. They will need to input the root directory of the server logs, which is in their ArcGIS Server installation. Most of the time there will only be one root directory, but there can be more than one if they have multiple machines or have changed the name of a machine (the logs are put in folders by machine name). Users will also need to configure the polling frequency, which is how often Satellite will check the server logs and the file path where server event collections will be stored on the Satellite machine. Once Satellite is set up, users can also view the server logs for that connection in a searchable table by clicking on the server logs button.

I. Scheduler Satellite

Scheduler Satellite is an additional, optional application that can be used to access local files that cannot be accessed remotely. Satellite works by reading local files, storing the information in a more manageable format in MongoDB, and then

sending that data back to the parent application. Satellite is included as a zip file in the main Scheduler build and can be installed on multiple other machines. Satellite is needed to do the following:

- View the server logs in the Server Logs Viewer.
- Trigger tasks based on events in the server logs.

If you don't want to perform any of the above functions, Satellite is not necessary. If you do want to use Satellite, it should be installed (along with MongoDB) and run as a service in the same way as the main application, on any machine where you want to access local files to use in Scheduler (for example, an ArcGIS Server machine). Satellite does not have its own interface, so it is not necessary to set up the front end; everything is managed via the parent application. Like the main Scheduler application, Satellite can be run on localhost, but will need to be accessible from the parent application, via an IP address, configuration in IIS, or a similar method. Satellite must be connected to the parent application to function. Like the Scheduler parent, Satellite uses MongoDB to store information. You can install Satellite on multiple machines, but each machine should only have one Satellite installed. Installations of Satellite on different machines do not interact with each other.

Configuring Satellite

Once you have Satellite running, do the following in the parent Scheduler application:

1. Go to the Settings page, accessible via the settings icon in the top bar.
2. If it is not already set, configure the Scheduler URL for Webhooks and Scheduler Satellite. Input the URL where the main Scheduler application is installed, which should be accessible externally. This is the URL that Satellite will use to send information to the parent application.
3. Go to the Satellites page, accessible via the satellite icon in the top bar next to the settings icon.
4. Click Add Satellite.
5. Enter a name for the Satellite. This can be whatever you want.
6. Enter the Satellite URL. This is the externally accessible URL where Satellite is running.

7. Enter the log files path. The server logs can be found in the logs folder of your ArcGIS Server installation, for example, **C:\arccgisserver\logs**. The exact location will depend on where you have installed ArcGIS Server. Within the logs folder, there will be one or more folders. Include the full path(s) for one or more of these folders in the log files path property, separated by commas. Do not include the /server, /services, or /errorreports subfolders in the file path, as Scheduler will automatically search those folders.
8. Choose a polling frequency. This is how often Satellite will consume the server log files and transfer them to MongoDB, and it is also how often Satellite will check for server logs to trigger tasks. More frequent polling will allow tasks to respond more quickly to events on your server, but it will also consume more resources. The Server Logs Viewer always pulls the latest logs and so will always be up to date.
9. Enter a file path to store event collections (see below). If you don't want to use server event collections, leave this blank.
10. Select one or more connections. You can only have one connection of each type per Satellite (since Satellite is installed on a specific machine and, for example, there can only be one installation of ArcGIS Server on a machine). If you want to use Satellite with multiple servers, you will need one Satellite per server. Currently, only ArcGIS Server machines are supported.
11. Click Add. Scheduler will attempt to connect to Scheduler Satellite. If the connection is successful, the Satellite will be added.

The Satellites Table

The Satellites table shows each Satellite whether it is running and accessible from the parent, its associated connections, and its URL. You can also view the Satellite logs by clicking the "View satellite logs" button. The Satellite logs record errors that occur while Satellite is checking the server logs, triggering tasks, etc. You can clear this log file, or download it. The Satellite logs do not have anything to do with either the task logs or the server logs. Logs for tasks triggered by Satellite will appear on the main Logs page like all other task logs, and server logs are visible for individual connections in the Connections tab of the Identities page.

You can edit a Satellite by changing any of its properties. If you remove a connection, Scheduler's information will be removed from the connection, you will

not be able to access server logs for that connection, and tasks for that connection triggered by server logs won't run. You can also delete the Satellite itself. Deleting a Satellite will remove the Satellite's information from the Scheduler parent, stop any jobs running on the Satellite (such as checking server logs) and delete the Satellite database on the Satellite machine, meaning the server logs and all other data will be deleted. This will not uninstall the Satellite application or stop the Satellite service, but the Satellite will no longer perform any functionality and will not be accessible from the parent.

II. Tasks

A. What is a Task?

Tasks are the core of Scheduler's functionality. A task consists of one or more steps and is highly configurable. While Scheduler is designed to create workflows where the output of one step is used as the input for the next, a task can also consist of steps that are unrelated to each other and are grouped together just for convenience. For example, you might want to have a task that exports a set of items, exports a set of groups, and exports a set of users. These steps don't interact with each other but it can be convenient to put them in a single task if they all run at the same time.

Each step uses a tool. Tools are designed to be simple and to perform a single action so that users have the flexibility to combine them.

- **Find and Export Content Tools** either find content in an ArcGIS Online or Enterprise Org (items, users, and/or groups) and pass it to another step, or export content.
- The **Export Tools** works by choosing which data you would like to export and easily exports that data.
- **Update Content tools** update items, users, and groups.
- **Validate Content tools** validate items, users, and groups based on a variety of parameters. These tools return all content and classify it into the categories of either valid (success) or invalid (failure). Users can then choose to take action on invalid

content (whether to tag it or email someone), but they can also take action on valid content (add these web maps to a group, but only if all of their layers are working).

- **Manage Server Content tools** manage services, geoprocessing jobs, and databases.
- **Monitor tools** are a way for people with ArcGIS Online to detect changes to items, users, and groups since ArcGIS Online doesn't have webhooks. Monitor tools can also be used to detect certain changes that aren't captured by webhooks (see below).
- **Miscellaneous tools** are other things, such as sending emails or creating administrative reports.

Each step in a task has several settings. The user can choose a custom name for the step, which is optional (if they don't include it, the name of the step will just be the name of the tool). You can choose the content processed by a step, which can be all content in their org, content that passes filters, content from another step, and several other options. Also, you can choose what to do with successful and failed content, and can choose different actions for each: content can either proceed to another step or exit the workflow reporting success or failure. This allows users to create complex workflows with multiple pathways.

For example:

- You could check to see whether all of a web map's services are valid (Validate Web Maps Services). If they are valid, they can be added to a public group (Share Items With Groups). If they're not, the user can proceed to a different set of steps, which will tag them (Add Tags to Items) and then email their owners to let them know that they need to fix their map (Email Users).

To help you with their workflows, there is a Validate button. The validate button analyzes the workflow and finds both errors (things that will break the task) and warnings (things that won't break the task but are undesirable in most cases, *e.g.*, a step is being skipped).

The validation will run whenever the user clicks the button, when they go to the next step, or save the task. When the user clicks the button, a modal will pop up saying whether it's

valid or not. When they go to the next step or save, the modal will pop up if there are errors or warnings. You can also use the Visual View to see a flowchart representing their workflow and edit that workflow by clicking and dragging.

B. Template Tasks

These are some commonly used tasks that are easily accessible. You may choose from a number of templates that are set up and ready to use, with all the steps and actions to help save time and money. Whether it's Items, Users, or Groups, Template Tasks have a little bit of everything you may need.

1. *Scheduled Online Tasks*

Our Scheduled Online tasks are part of the Template Tasks. With these, you will be able to set any of our Template Tasks to run at any time you need.

a. Disable Users Without Multi-factor Authentication (MFA)

Find users who do not have MFA Enabled, instruct them to enable MFA, and disable them if they fail to do so. When the task initially finds a user without MFA enabled, Scheduler will send them an email and add a tag to their account. The next time the task is run, if the user has enabled MFA, the tag will be removed; if the user has not enabled MFA, their account will be disabled.

b. Find and Export Invalid Groups

Find groups that are missing selected details or properties and export them to CSV/JSON, find groups with invalid items and export them to CSV/JSON, and find groups with invalid users and export them to CSV/JSON.

c. Find and Export Invalid Items

Find items that are missing selected details properties and export them to CSV/JSON, then find web maps with invalid services and export those services to CSV/JSON.

d. Find and Export Invalid Users

Find users that are missing selected details properties and export them to CSV/JSON.

e. Remove Broken Services from Web Maps

Detect web map services with one or more problematic characteristics, then remove them from their maps.

f. Remove Invalid Users from Groups

Find users that are missing selected details or properties and remove them from groups.

g. Share Non-Public Layers on Public Web Maps

Find non-public layers on public web maps and share them publicly. Layers can be shared publicly if they belong to the organization(s) assigned to the task, or optionally, to another of your organizations licensed for Scheduler. If the layers cannot be shared publicly, they will be removed.

2. Triggered Online Tasks

a. Prevent Public Sharing of Sensitive Information

This task is triggered by a webhook that fires when items are shared publicly. The task will search the attribute data of services that are shared publicly for sensitive information, such as Social Security Numbers, that shouldn't be made public. You can choose to search attributes for particular text strings, or you can search by regular expression. If a service is found to contain sensitive information, its sharing will be reverted to org level and its owner will be informed of what happened.

C. Custom Tasks

1. Scheduled Tasks

When you first create a custom task, you are asked how you would like to schedule it. The Scheduled Task creates a task that runs on a schedule to be determined by you. You can set this up to run however you want. There are three options for scheduled tasks:

- **On demand only:** This task will only run when the user tells it to, by using the Run Now button in the Tasks table. Note that all scheduled tasks can be run on demand

at any time using the Run Now button; this option simply means that this is the only way the task can be run.

- **On a regular schedule:** The task can run either every X minutes (as frequently as every 5 minutes), hours, days, etc., or on the first or last Sunday/Monday, etc. of every month or year. For tasks that run every X minutes, hours, days, etc., users can select to only run the task on certain days of the week. For tasks that run more than once per day, users can also choose to only run the task between certain times of the day.
- **Custom schedule:** The user can type in or upload a CSV of custom dates and times, either as Unix timestamps in milliseconds, or text strings in the format yyyy-mm-dd hh:mm:ss (if users are not familiar with Unix timestamps, there are several websites that can convert normal dates to Unix timestamps; users should ensure that the results are in milliseconds).

2. *Enterprise Event-Driven Tasks*

Create a task that runs in response to events on your Portal that are captured by webhooks. Because webhooks are only available for Enterprise, this is ENTERPRISE ONLY, and will only be available if there is at least one Enterprise organization configured in identities. Users will be able to create webhooks within the task wizard, or use existing ones. These tasks will run whenever the selected trigger fires.

3. *Server and Database-Driven Tasks*

Create a task that runs in response to events on a server or pertaining to an Enterprise service. Currently, Scheduler supports two types of server event triggers, server logs and feature service updates. A server logs triggered task will run whenever Satellite detects server logs that pass filters defined by the user (such as a particular severity level, code, or message text). For example, a server event triggered task might detect server logs whose codes indicate that a service has crashed, then automatically restart that service. However, to create this type of task, you must have one or more connections set on the Identities page, and connected to an installation of Scheduler Satellite. Satellite can be configured to regularly pull information directly from the server log files on an ArcGIS Server machine.

Tasks triggered by feature service updates do not require Scheduler Satellite. These tasks will run when one or more Enterprise feature services, defined by filters, accumulate(s) at least the selected number of updates (records added or deleted). For example, if a feature service accumulates a certain number of updates, you might want to rebuild the indexes of the service or its corresponding database in order to improve performance. Scheduler monitors feature services by comparing the service's current list of Object IDs against a snapshot from the last time it checked those services. The frequency with which Scheduler checks feature services for changes can be configured on the Settings page.

4. ArcGIS Online Service-Driven Tasks

Create a task that runs in response to events pertaining to a service in ArcGIS Online. Currently, Scheduler supports one type of AGOL service event triggers, feature service updates. These tasks work similarly to tasks triggered by Enterprise feature service updates, but are based around items in an AGOL organization rather than services on an ArcGIS Server connection. These tasks will run when one or more feature services, defined by filters, accumulate(s) at least the selected number of updates (records added or deleted). For example, if a feature service accumulates a certain number of updates, you might want to rebuild the indexes of the service. Scheduler monitors feature services by comparing the service's current list of Object IDs against a snapshot from the last time it checked those services. The frequency with which Scheduler checks feature services for changes can be configured on the Settings page (one setting is used for both AGOL and Enterprise services).

D. Task Completion Options

Task Completion Options: You can choose to email CSVs of successful and/or failed content to a variety of people, so you can be alerted right away if a problem is found, or know that your tasks succeeded. You can also choose the log level, which is what is recorded in the task's log. The standard (low) level only records critical errors and which steps ran. The verbose (medium) level records all errors. The debug (high) level records every single action taken. A higher log level can provide



more detail but can also cause a task to run more slowly and consume more system resources.

1. Successes, Failures, and Result Counts



Every successful task run returns a count of content that has succeeded and failed. If a task fails before it can determine what content is to be processed, the successful results and failed results column will show N/A. It is important to note that content is marked as successful if it exits the task reporting success, and failed if it exits the task reporting failure. Content exits the task marked as success or failure per conditions configured by the user in the task steps. Success or failure reflects that content's final behavior, not its performance on each step, and is dependent on the user's choices.

Consider a task which transfers items to a new owner. Content that is successfully transferred exits reporting success, and content that fails to transfer proceeds to the next step, which exports that content. Content that is exported successfully will exit reporting success, and content that fails to export will exit reporting failure. In this case, both content that transfers successfully and content that fails to transfer to the new owner but that is able to be exported will be reported as successes, but users will be able to see the content that failed to transfer by looking at the CSV. If the user would like to mark that content as failed results in the log, they can configure the export step to exit reporting failure even if the export succeeds. Scheduler's default is for the last step in the tool's workflow to have successful content exit reporting success, and failed content to exit reporting failure, but these can be changed by the user.

For example, imagine that for the task shown below, the task attempts to transfer 100 items to a new owner. 75 items are successfully transferred, 20 fail to be transferred but are successfully exported, and 5 fail to be transferred and also fail to export. Successes and failures will be calculated differently depending on the settings.



Actions		Step	Tool	Step Name (optional)	Input	Successful Results Action	Failed Results Action	
↑ ↓		1	Move Items		Items that pass selected filters 	Exit reporting success ▾	Go to next step ▾	✗
↑ ↓		2	Export Items to CSV		Output from previous applicable step(s) 	Exit reporting success ▾	Exit reporting failure ▾	✗

If the task were configured as above, the items that were transferred successfully would exit reporting success. The items that failed to transfer but that exported successfully would also exit reporting success. Only the items that both failed to transfer and failed to export would exit reporting failure. Thus, for the scenario above, there would be 95 successful results and 5 failed results.

Actions		Step	Tool	Step Name (optional)	Input	Successful Results Action	Failed Results Action	
↑ ↓		1	Move Items		Items that pass selected filters 	Exit reporting success ▾	Go to next step ▾	✗
↑ ↓		2	Export Items to CSV		Output from previous applicable step(s) 	Exit reporting failure ▾	Exit reporting failure ▾	✗

If the task were configured in this way instead, all items that failed to transfer would exit reporting failure, even if they exported successfully. Thus, this version of the task would have 75 successful results and 25 failed results. The ability to control whether results are reported as successes or failures provides maximum flexibility for users.

For tools that use items, groups, users or services as their input, successful results plus failed results will equal the total number of items, groups, users, or services that entered the task. It should be noted that under certain configurations, an item, group, user, or service can enter the task more than once, if steps operate independently of each other. Consider a different variant of the task above:

Actions		Step	Tool	Step Name (optional)	Input	Successful Results Action	Failed Results Action	
↑ ↓		1	Move Items		All items in the organization 	Exit reporting success ▾	Exit reporting failure ▾	✗
↑ ↓		2	Export Items to CSV		All items in the organization 	Exit reporting success ▾	Exit reporting failure ▾	✗

In this case, both steps take all items in the organization as their input. If there are 1,000 items in the organization, every item will enter the task twice and exit the task twice, and therefore, there will be 2,000 total results.

For administrative reports, the total number of results will reflect the total number of reports created. For portal operational health and security scans, the total number of results will reflect the total number of scans run; however, one scan can return multiple issues, which can be viewed in the CSV report. For tools where there is no content to count, such as Run Custom Scripts, the tool will have one successful result if it succeeds and one failed result if it fails.

2. Exporting and Importing Task Steps

The steps in the Configure Steps table can be exported as a JSON file using the Export Task Steps button. This file can then be imported into a new task using the Import Task Steps button. This functionality allows users to send a task's steps to another person so that they can recreate the task to themselves, and can also be used to copy a task's steps and then modify them without having to start from scratch. If users wish to customize Scheduler's built in task templates, they can export the template, import it into a custom task, and make the desired modifications.

3. What are Task Templates?

Task Templates are a set of pre-arranged steps and rules. Task Templates come with Scheduler and reflect what users are likely to use often.

E. Task Validation

Task Validation is a check system by which the user can ensure that all of their assigned steps within a task are setup logically.

For example:

- *If a user attempts to have a step receive input from a previous step that does not produce an output, Task Validation will produce an error message informing the user of the problem.*

The validate button validates the task steps to ensure that there are no problems that will interfere with the task's ability to run. Validation returns two kinds of issues: errors, which will break the task and must be fixed before saving, and warnings, which are issues that may cause a problem but that also may be desirable. Errors include a tool whose content type is incompatible with the content it is configured to receive (for example, a users tool processing the content from a step that returns items), a step whose input has not been set, or an invalid input setting. Warnings include steps that are being skipped (this is not desirable, but users may want to have a task temporarily skip one or more steps for testing purposes) or a step that uses an event collection used by another step or task.


Users can validate their steps at any time by clicking the Validate button. A modal will open, reporting any problems. Validation will also run automatically when the user moves to another step. In this case, the modal will open if there are any errors or warnings, but if all steps are valid, it will proceed immediately to the other step.

F. Task Views

In this view screen, the user is able to see a table that lists every task saved. The table lists tasks in groups of 25 and by default is sorted by Date Modified in descending order.


The user has the ability to both choose what field is the sorting field and whether the table is then sorted in ascending or descending order. Furthermore, the user can apply filters to the table to customize what tasks are shown.

1. *Editing Existing Tasks*

Even after a task has been created, it can still be edited. On the far right side of the task table, each task will have an icon of a pencil in a box.  This icon is the “edit task” icon and clicking it allows the user to change the task at every level.


2. *Running Tasks on Demand*

While Scheduler is primarily designed for task automation by way of setting a run schedule, it does allow for the user to both set a task to be run “by demand only” and for a scheduled task to be run on demand.

On the far right side of the task table, there is in each row, an icon of a play button surrounded by a circle.  Clicking this icon will run the associated task immediately.

G. Additional Notes on Tasks

1. *Filtering Tasks Table*

Users can filter which tasks are shown on the task table. By clicking on the  icon at the top left corner of the table, the user can define a single filter or a combination of multiple filters.

Tasks can be filtered by the following categories:

- *Name*
- *Date Created*
- *Date Modified*
- *Enabled*
- *Organization*

- *Owner*
- *Schedule Type*
- *Tag*
- *Task ID*
- *Type*

2. Downloading Tasks Table

Users have the ability to download the task table in either a CSV or a JSON format. The table can be downloaded either in its entirety or if a filter is applied to the table, the filtered results can be downloaded. This is done by clicking on the “Download Table” button in the Task View.

Downloaded tables are automatically named in the following format:

“tasks”_YYYY_MM_DD_HHMMSS

III. Logs

Each time a task runs, one log is created for each identity that the task uses. This is both a record in MongoDB and a JSON file that’s stored in the logs folder location indicated in Settings. Logs in the Logs table are sorted with the most recent first. All logs contain a summary of all the steps that ran, any files that were created, and any critical errors. They will also record how many pieces of content (items, users, groups, services, etc.) were exported reporting success or failure, and what caused the task to run (its regular schedule, run on demand by a user, triggered by a webhook or server event). Beyond that, what’s in the log files depends on the log level selected for the task. Changing the log level will change what information is logged going forward, but won’t impact logs already created. A table of every message in the log can be viewed by clicking the info-circle in the Details field of the

Logs table, and these messages can be filtered. This modal will also show the summary of steps that ran and will contain links to download any output files.

A. What are Logs?

The logs table shows tasks in the queue, which are tasks that are going to run. Tasks in the queue are always at the top of the table. For scheduled tasks, the queue contains the next scheduled run time. When the task runs, a new run time will be calculated and inserted into the queue.

There will always only be one scheduled task run per task per identity in the Logs table (that is, it only shows the next run time, not any future ones). When a task is run on demand or triggered by a webhook or server event, it will also be added to the queue.

On the Settings page, users can choose to delete logs every X days, to keep the logs from taking up too much space. This will delete both the database records and the files.

B. Log Table

The Log Table is a clean, easy-to-view table with all the information broken down into neat columns and rows. From here, the user can see what scans have run or are scheduled to run still. You can easily view the status of scans shown. *The identifying icons are either a green check mark (indicating a successful task completion), a red check mark (indicating a failure of the task), or a calendar icon (indicating that the task is scheduled to run but has not yet done so).* It shows the identity the task is running for and the successful and unsuccessful results, making it a very useful tool.

In this view screen, the user is able to see a table that lists the log of every task run. The table lists logs in groups of 25 and, by default, is sorted by Start Time in descending order.

The user has the ability to both choose what field is the sorting field and whether the table is then sorted in ascending or descending order. Furthermore, the user can apply filters to the table to customize what logs are shown.

Logs can be filtered by the following categories:

- *Task Name*
- *End Time*
- *Initiated By*
- *Start Time*
- *Status*
- *Task ID*

C. Log Details

Clicking on the Log Details button to the right of the table will bring up a smaller window with a Summary of the scan. It will show the level the scan was run and the output files it used.

You can also look at the details and get the Logs File in JSON form quickly and easily. This makes it easy to download the table and export it right to CSV or JSON.

D. Downloading Logs

1. Log Table

Users have the ability to download the log table in either a CSV or a JSON format. The table can be downloaded either in its entirety; or if a filter is applied to the table, the filtered results can be downloaded. This is done by clicking on the “Download Table” button in the Logs View.

Downloaded tables are automatically named in the following format:

“logs”_YYYY_MM_DD_HHMMSS

2. Log Files

The information contained in Scheduler's task logs is stored in JSON files on the machine where Scheduler is installed. Before users can start making and using tasks, they must configure the Logs Folder property Settings, where they can choose a folder to store the Scheduler log files. Within that folder, a sub-folder will be created for each identity's logs. The folder will be labeled as "schedulerLogs_" and then the identity's ID in MongoDB, which can be found in the Log Folder ID column in the Organizations tab of the Identities page. Within each folder, the individual log files are labeled <task name>_<date>_<time>_log.json.

All log files must be kept in the same location. If users want to move the log files to a different location, they should change the Logs Folder property in Settings. This will move the log files to the new location and also update the settings to allow Scheduler to find the files in the new location. **Do not move the log files manually, otherwise, Scheduler will not be able to find them.**

E. Server Logs

Scheduler for ArcGIS also provides access to ArcGIS Server logs. Scheduler's Server Logs Viewer allows users to view, filter and download server logs, and Scheduler can also trigger logs based on events in the server logs. To use server logs, users must add a connection to an ArcGIS Server machine and then install Scheduler Satellite on that machine and connect to it in the main Scheduler.

Note: The following discussion applies to working with server logs via Scheduler Satellite. Scheduler has a tool, Export Server Logs, that can export server logs via the API without the need to configure Scheduler Satellite. In this case users would be limited to whatever query they configure the tool for, and this method of getting the server logs may be inefficient for

organizations with large server logs. The similar tool Export Portal Logs also does not require Scheduler Satellite.

1. What are they and how are they different from other logs?

Unlike task logs, which are created by Scheduler, server logs are created by Esri as out-of-the-box functionality that comes with ArcGIS Server. When events occur on the server, a record of it will be written to a log file within the installation of ArcGIS Server. What events are logged depends on the server log level, which can be set in ArcGIS Server Manager. A Scheduler Satellite installed on the ArcGIS Server machine can read the logs, transfer their content to a database, and then send the data to the main Scheduler application. This allows for faster processing and more flexible querying than getting the logs via the API.

2. Where to find server logs

On the ArcGIS Server machine, the log files are stored in a folder called “logs” in the ArcGIS Server installation. The path of that location depends on where the user has chosen to install ArcGIS Server, but it generally looks something like *C:\arcgisserver\logs*. With this logs folder are one or more folders corresponding to ArcGIS Server machines. Users should input the paths of these folders, for example *C:\arcgisserver\logs\<machine name>* in the Log file path(s) property when configuring Satellite. These folders have their own folders called errorreports, server and services. Scheduler pulls from the server and services folders; the content of the errorreports folder is not human readable and therefore is not included. These inner folders should *not* be included in the Log file path(s) property, as Scheduler already knows to look for them. Because these log folders and files are created by Esri, users should not move or modify them.

In Scheduler, users can view server logs for an ArcGIS Server machine by going to the Connections tab of the Identities page and clicking on the View server logs button next to the connection. Satellite must be reachable in order to view the server logs. The Server Logs Viewer will then open with a table displaying all server logs created since Satellite

started reading the server logs on that machine. A variety of filters can be used to search these logs, and they can also be downloaded as a CSV or JSON.

Users should note that what logs are recorded depends on the server log level, which is based on the severity of the event, as determined by Esri. If an event is below the severity level specified in the server log level setting in ArcGIS Server Manager, it will not be recorded in the logs. Changing the log level setting will change what logs are recorded going forward, but it won't apply retroactively.

IV. Calendar

The calendar shows all scheduled tasks and when they will run, with an interface similar to Google Calendar. Only tasks that are enabled will appear here since disabled tasks don't run. There is a month view, which shows the whole month and a list of tasks for each day, and a week and day view, which shows hour by hour. The start times are accurate; on the calendar, all tasks are shown as taking 10 minutes because that's what was needed to create a bar on the calendar big enough for the task's name, but this does not reflect how long the task will take or when it will end. There is no way to predict ahead of time how long a task will take, this is purely for visualization purposes. Tasks that run no more than once per day will appear at their scheduled start time. To avoid the calendar getting too crowded, tasks that run multiple times per day will appear at the top as all-day events.

Users can get more info about a task's run time by clicking on a day (in the month view) or the task itself (in the week and day views). The sidebar will show the tasks and what their schedule is. Users can also edit a task's schedule for a particular day without changing the overall schedule. So if, for example, there's going to be server maintenance on a particular day and they don't want the task to run during that time, for that day only they can disable it or move it to a different time.

V. Services

If you have one or more Enterprise connections set up, this table will show those connections' services and their properties. Unlike items, users, and groups, which all, for the most part, have the same properties, there are a huge number of properties that services can have, and different services have different combinations of properties.

There are far too many to show every one of them on the table. We've selected a few common ones to display, but if users want to see a field that isn't currently in there, you can request it. The same applies to the filters. All of the properties for an individual service can be viewed and edited by clicking the edit icon, which will open a JSON editor similar to that used in Admin Tools. Users can also bulk start and stop services. Scheduler can be used as a services viewer even if you don't intend to run tasks that interact with the services.

If your feature services come from data stored in database tables, if that database is one of your database connections in Scheduler, you can configure Scheduler to access those tables. Scheduler does not have the ability to automatically determine the location of a service's underlying database, so these pairings need to be configured manually. You can do this in the Database Tables modal on the Services page. Enter the service layer information and the corresponding table, and for any activity that uses the service layer, Scheduler will be able to find the corresponding table. Optionally, you can select indexes to use when rebuilding indexes. One usage of this functionality might be to create a triggered task that runs when a feature service has been updated a certain number of times and that rebuilds the indexes of the underlying tables for that service in order to improve performance.

VI. Webhooks

We haven't used webhooks in our products before, and many users may not know they exist, since they're not visible in the normal interface in Enterprise. As such, many users might have a lot of questions about them. A good resource is our blog article about webhooks:

<https://geo-jobe.com/mapthis/get-hooked-on-arcgis-webhooks/>. From that article:

“Generally speaking, webhooks are event listeners that respond whenever a particular action occurs. The webhook detects the action and then sends information about the action (the payload) to the URL of the application configured to receive it. That application can then perform some functionality based on the information contained in the payload. In the example above, the webhook would contain the ID of the item that was shared publicly, and the application could then do something to that item, such as tag it or unshare it, or simply alert an admin.”

“Esri provides two kinds of webhooks for ArcGIS: hosted feature service webhooks and webhooks for items, users, and groups. Hosted feature service webhooks are available in ArcGIS Online, and also in Beta on Enterprise 11. These webhooks detect actions such as editing or adding features. Webhooks for items, users, and groups are available in Enterprise 10.7 and above and detect actions such as sharing content, changing ownership of content, or creating content. Webhooks are not accessible in the normal ArcGIS organization interface, but can be viewed and managed via the REST API.”

Right now, Scheduler only deals with webhooks for items, users, and groups. We may include service webhooks in the future but don't have immediate plans to do so. Scheduler can use webhooks to trigger tasks, and it can also serve as an all-purpose webhooks manager, allowing users to view, edit, create, delete, activate, deactivate, and clone all of their webhooks, regardless of whether they're being used in Scheduler. This will be useful for people who use webhooks a lot even if they don't plan to use them to trigger tasks. Below are some more questions people might have about webhooks.

VII. Event Collections

Webhooks triggers and server event triggers are powerful tools that can allow Scheduler to respond immediately to events that occur in an organization or on a server. However, for events that occur frequently, it may not be desirable to run a task every time the event occurs. For example, a Scheduler user may want to know about items being shared publicly, but in a large organization where items are shared publicly often, it would be untenable to have a task run every time an item is shared publicly. To solve this problem, Scheduler has event collections. Event collections use triggers just like triggered tasks do, but rather than causing a task to run, when the trigger fires, the content it returns will be written to a file. This file

can then be used as input for a scheduled task that will process all the content the file contains. So in the example above, a user could configure a webhooks event collection that will record when items are shared, and then set up a scheduled task that runs once a day to validate the items. Because most server logs don't return content, for server log event collections, the task will run if the event collection contains any content. To prevent the same content or logs from being processed over and over again, the event collection will be cleared after each time it is run. Webhooks event collections have the option to only clear content that exited the task successfully, which will result in the task retrying failed content until it succeeds.

Event collections for webhooks can be found in the Event Collections tab of the Webhooks page, and their files are stored on the machine where Scheduler is installed in the folder specified in the Event Collection Files Folder setting on the Settings page. All event collections must be kept in the same location. If users want to move the event collection files to a different location, they should change the Event Collection Files Folder property in Settings. This will move the event collections to the new location and also update the settings to allow Scheduler to find the files in the new location. **Do not move the event collections files manually, otherwise Scheduler will not be able to find them.**

Event collections for server events can be found in the Server Event Collections tab of the Satellites page. Server event collection files are stored on the machine where Satellite is installed in the folder specified in the Event collections files path option in the Satellite's settings.

VIII. Security

Do GEO Jobe Products for ArcGIS store or access my username and password?

- As per Esri's best practices, GEO Jobe Products for ArcGIS leverages OAuth 2.0 to generate a token that represents your session and is used to commit actions against the platform on your behalf. Please note that GEO Jobe Products installed on-prem may provide an (opt-in) feature for the to store credentials on the database as an encrypted string. This is only used for the automatic refresh of the login token. Any

credentials stored are encrypted via AES-256-CBC in the local database on the Scheduler Server.

- GEO Jobe's products use OAuth 2.0 through Esri's REST API (already part of their existing Esri Enterprise environment), so the port is 443 if installed for HTTPS with SSL.

Does GEO Jobe have access to my account if I use their products?

- No. GEO Jobe does not have access to your account. All code related to our Products for ArcGIS runs in your local browsers on your machine and executes requests directly against the platform through Esri's REST API.

Does GEO Jobe have access to my data?

- No. GEO Jobe does not have access to your account. All code related to our products run in your local browser on your machine and executes requests directly against the platform through Esri's REST API.

What are some best practices for serving the Client-Side application in IIS?

- Be sure to enable HTTPS bindings to run the Scheduler client-side application.
- Use a legitimate signed certificate for your HTTPS binding instead of a self-signed certificate.
- For additional security, keep the client-side application inside your internal network, away from facing the public.

Enabling Security on a MongoDB Installation

NOTE: If you are running any other GEO Jobe products on the same server, this workflow may cause issues with the other applications unless you also follow the same instructions and adjust the connection information in each products' config/nodeconfig.json.

1. In Command Prompt, navigate to the MongoDB installation directory with `mongo.exe`, the default is

```
cd /D "C:\Program Files\MongoDB\Server\x.y\bin"
```
2. Type **mongo** from this directory in the command prompt to start the mongo shell.
(Note: if you are already using authentication with mongo, you will need to log in with administrator credentials.)
3. Type:
use Scheduler

4. Copy and paste in the following lines, changing *yourusername* and *yourpassword* to the desired values:

```
db.createUser({"user": "yourusername", "pwd": "yourpassword", "roles": [ { "role": "dbOwner", "db": "Scheduler" } ]})  
db.grantRolesToUser("yourusername", [ { role: "readWrite", db: "Scheduler" } ])
```
5. Type **exit** to leave the mongo shell.
6. To enable mongoDB with authentication, edit the file in the default mongo installation directory **C:\Program Files\MongoDB\Server\x.y\bin\mongod.cfg**
7. Find the line starting with #security and paste the following lines underneath:

```
security:  
  authorization: enabled
```
8. Save the file and close.
9. In the CleanMyOrg directory, edit the file called: **C:\Scheduler\config\nodeConfig.json**
10. Edit the "url" line of "mongoDB" to read:

```
"url": "mongodb://yourusername:yourpassword@localhost:27017/Scheduler",
```
11. Save the file and close.
12. Open Windows Services and restart the "**MongoDB Server**" windows service.
13. Restart the "**Scheduler Server**" windows service.

IX. Frequently Asked Questions

How does Scheduler store data?

Like our other products, Scheduler uses MongoDB to store data. It also stores log files (as JSON), event collections (as JSON), and output files generated by tools (whatever format the user has selected). Any data Scheduler stores will be on the machine where Scheduler is installed. Nothing is sent to GEO Jobe or saved to GEO Jobe servers. All passwords stored in MongoDB are encrypted.

What is the storage and resources usage?

In terms of storage, the main thing that needs to be stored are the databases, including the caches and the log files, as well as any output files that may be generated (for example, if a task exports content to CSV). For the product itself and its databases, storage usage is probably similar to Clean My Org. The main potential issue with storage comes with generating many or large log files. The log files themselves are just JSON, but if you have a giant org and you're running tasks on tens of thousands of items per day and logging every single thing that happens to each of those items, that can add up. There is an option to automatically delete log files every X days, and 3 different log levels that vary greatly in the amount of content that they'll record. In terms of resource usage, the biggest factors, as with our other products, are the size of your org and the specifications of the server running Scheduler.

Beyond that, it really depends on what you do. Currently, tasks have a "resource intensiveness" property that describes their resources usage relative to other tools for the same organization, to give users a ballpark idea of whether their task is low-intensity or high-intensity. For high-intensity tasks, it may be a good idea to schedule them during off hours. If using webhooks, it depends on the webhooks you use and the tasks you run. If you set up a task to run every time an item is added and you have a giant org where an item is being added every 30 seconds, that might be a problem. To mitigate resource usage with webhooks, you can use event collections. Rather than running a full task, event collections respond to webhooks by simply writing the information to a file, which is much faster. You can then use the event collection as the input for a scheduled task—for example, if people are adding items every 30 seconds, you can just set up an event collection, and then run your task on all those items at the end of the day.

Will webhooks overwhelm my server with requests?

People who hear about webhooks might be concerned that their server will be constantly hit with messages from the webhooks. To some extent, people will need to use good judgment and not set up webhooks that will be going off all the time (see above about webhooks and resource intensiveness). Beyond that, webhooks have a property that will deactivate them after X failures in Y days (where X and Y are configurable, both are 5 by default), at which point they will no longer fire. So if

the server goes down and webhooks attempt to make repeated requests to it, they'll hit the failure limit and deactivate, so when the server comes back up it won't be hit with all of those accumulated webhooks requests at once.(Note: the user will have to reactivate the webhook if they want to keep using it; which can be done in Scheduler).

Can I use my existing items, users, and groups webhooks in Scheduler?

Yes. Scheduler provides an interface to manage all webhooks in all of your licensed organizations, whether they're being used in Scheduler or not. This interface provides all the functionality that is available in Esri's API (activate, deactivate, create, update, delete). A particular webhook can only be used in one application at a time, so if you want an existing webhook to be used in Scheduler, it will no longer be able to be used in the application it's currently assigned to. You can change the application that receives a webhook by updating the payload URL in Scheduler. Alternatively, you can use the Export/Import Webhooks functionality to clone webhooks—export the webhooks to CSV, change the identity, payload URL, or whatever else, then import them.

Can I use the /delete webhook to prevent content from being deleted?

Sadly, no. The /delete webhook only fires after content has been deleted; by the time the webhook fires, the content is already gone and cannot be accessed in any way. Scheduler can export deleted content based on its record in the cache (in most cases), allowing the user to see what was deleted, but that's it. For groups, there is another webhook that will detect when delete protection is removed. It takes a little while for Scheduler to receive the webhook and run the task, so if they delete the group immediately after removing delete protection, Scheduler won't catch it in time, but if they don't delete it immediately, Scheduler could see that delete protection had been removed and then, for example, email the person who triggered the webhook and tell them not to delete that group. There is no webhook for removing delete protection for items, but you can use the Monitor tools to detect whether delete protection has been added and/or removed.

Does Esri have plans to add webhooks to AGOL? What if I have AGOL (or can't get webhooks working due to not having a server that meets the requirements) and want to watch for changes?

As of now, we aren't aware of any future plans to add webhooks to AGOL. As an alternative to webhooks AGOL, our Monitor tools can be used in scheduled tasks to take a snapshot of items, users, and group properties. Each time the tool is run the new snapshot will be compared to the old one, and in this way Scheduler can detect when items, groups, and users have changed in AGOL. Scheduler can also use snapshots to detect when items, groups and users have been added or deleted. These tasks will still need to be scheduled, so they aren't immediate and proactive the way webhooks are, and Scheduler currently doesn't have a Monitor tool to match every webhook situation, but the Monitor tools are a good option in many cases when you can't use webhooks, and we will continue to improve them.

What if I want to watch for a type of change that is not captured by webhooks?

Webhooks capture many activities in an organization, but not all. One important activity that users may be interested in watching that Esri does not have a webhook for is adding or removing delete protection from items (there is a webhook for adding or removing delete protection from groups). Additionally, webhooks do not always contain the desired level of specificity. For example, the /update webhook fires whenever an item, user or group's details change, such as tags, title, description, etc. However, the /update webhook does not contain information on which of those properties was changed, so there would be no way to trigger a task that ran in response to changes to tags but not changes to other properties. For both of these cases, users can use the Monitor tools. The Monitor tools can be configured to detect changes to any combination of individual properties for items, users or groups. For the first example, Detect Changes to Items Properties could be used to find items that have had delete protection changed. Similarly, the Monitor tools could be configured to only watch for changes to tags, and not to any other details.

X. Additional Assistance

If you require additional assistance with using or maintaining Scheduler for ArcGIS - or if you have a feature request -, please contact GEO Jobe's Support Division. You can do so through the live chat on our website (<https://geo-jobe.com>), via phone (+1 844.436.5623, ext. 2), or through e-mail (support@geo-jobe.com).

If you would like to renew or expand your license, please contact GEO Jobe's Sales Department. They can be contacted via phone (+1 844.436.5623, ext. 1) or e-mail (sales@geo-jobe.com).

XI. Glossary

API - An API, or Application Programming Interface, is the way different software applications communicate.

ArcGIS Enterprise - Esri's software for creating maps, processing and interpreting data with a geospatial context, and presenting that information in an accessible way.

ArcGIS Server- Responds to requests issued to the GIS web services. ArcGIS Server can draw maps, run tools, serve imagery, synchronize databases, project geometry, search for data, and perform many other operations offered by ArcGIS.

CSV - CSV stands for "Comma-Separated Values". This is a file format that allows information from a table to be stored in plain-text.

Federated Server - integrates the security and sharing models of your portal with one or more ArcGIS Server sites. Federation is optional unless you want to do the following: Configure your site with a Security Assertion Markup Language (SAML) identity provider.

Geoprocessing - A framework and set of tools for processing geographic and related data. The comprehensive suite of geoprocessing tools can be used to perform spatial analysis or manage GIS data in an automated way. Geoprocessing is for everyone that uses ArcGIS Pro.

JSON - An open standard file format and data interchange format that uses human-readable text to store and transmit data objects consisting of attribute-value pairs and arrays. It is a common data format with diverse uses in electronic data interchange, including that of web applications with servers.

MongoDB - Is a source-available cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents with optional schemas.

Multi-factor authentication (MFA) - Is a multi-step account login process that requires users to enter more information than just a password. For example, along with the password, users might be asked to enter a code sent to their email, answer a secret question, or scan a fingerprint.

Rest API- REST is a software architectural style that was created to guide the design and development of the architecture for the World Wide Web. REST defines a set of constraints for how the architecture of a distributed, Internet-scale hypermedia system, such as the Web, should behave.

SMTP - The Simple Mail Transfer Protocol is an Internet standard communication protocol for electronic mail transmission. Mail servers and other message transfer agents use SMTP to send and receive mail messages.

SQL Server - Is a relational database management system (RDBMS). Applications and tools connect to a SQL Server instance or database, and communicate using Transact-SQL (T-SQL).

Superuser - In computing, the superuser is a special user account used for system administration. Depending on the operating system, the actual name of this account might be root, administrator, admin or supervisor.

Tile Caching - Is the process by which images are downloaded and saved to a cache for faster retrieval, thus improving performance of client applications.

Unix - A family of multitasking, multi-user computer operating systems that derive from the original AT&T Unix, whose development started in 1969 at the Bell Labs research center by Ken Thompson, Dennis Ritchie, and others.

Webhooks - The term webhook generally means posting an event to another system over the web through an API.

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XIII. Tool List

Find and Export Content

Export Items To CSV

Description: This tool exports items to a CSV with the selected fields.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items, File

Resource Intensiveness: Moderate (if including the Groups, Number of Shared Groups, JSON Data, Comments Enabled, Item Control or Size fields) or Low (if not including any of the above fields)

Additional Considerations: You will be given the option to input a file name. If the file name is not unique to each task run, you can choose to append to the file or overwrite it each time the task is run. If you want a file name that will be unique each time the task is run, you can use the Text Generator to include the date and time in the file name. Additionally, including the Groups, Number of Shared Groups, JSON Data, Comments Enabled, Item Control or Size fields will cause the export to take longer, as these properties require additional API calls.

Export Items To JSON

Description: This tool exports items to JSON.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items, File

Resource Intensiveness: Moderate

Additional Considerations: You will be given the option to input a file name. If the file name is not unique to each task run, you can choose to append to the file or overwrite it each time the task is run. If you want a file name that will be unique each time the task is run, you can use the Text Generator to include the date and time in the file name.

Export Web Map Services To CSV

Description: This tool exports information about web maps services in the form of a CSV. If this tool receives input from a preceding step that outputs web map layers, you will be able to choose whether to export all layers on the web maps or only the layers output by the preceding step.

Organization Type: ArcGIS Online and Enterprise

Input: Items (Web Maps)

Output: Items (Web Maps With Layers), File

Resource Intensiveness: Moderate

Additional Considerations: You will be given the option to input a file name. If the file name is not unique to each task run, you can choose to append to the file or overwrite it each time the task is run. If you want a file name that will be unique each time the task is run, you can use the Text Generator to include the date and time in the file name.

Find Items By Filters

Description: This tool finds items that meet conditions indicated by filters, for the purpose of passing them on to another step.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items

Resource Intensiveness: Low

Additional Considerations: When running an item tool, you will be able to set filters within the tool. This tool is designed primarily for situations where items are passed to a tool of a different content type (for example, a users tool that acts on the owners of the found items).

Find Web Maps By Layer Sharing

Description: This tool finds web map layers whose corresponding items have the indicated sharing level. The additional option to find layers not publicly accessible finds any layers that would interfere with a web map being publicly accessible, whether because their sharing level is org or private, or because they're not publicly accessible via their URL.

Organization Type: ArcGIS Online and Enterprise

Input: Items (Web Maps)

Output: Items (Web Maps With Layers)

Resource Intensiveness: High

Additional Considerations: None

Export Groups To CSV

Description: This tool exports groups to a CSV with the selected fields.

Organization Type: ArcGIS Online and Enterprise

Input: Groups

Output: Groups, File

Resource Intensiveness: Moderate (if including the Provider Group Name, Users or User Membership fields) or Low (if not including any of the above fields)

Additional Considerations: You will be given the option to input a file name. If the file name is not unique to each task run, you can choose to append to the file or overwrite it each time the task is run. If you want a file name that will be unique each time the task is run, you can use the Text Generator to include the date and time in the file name. Additionally, including the Provider Group Name, Users or User Membership fields will cause the export to take longer, as these properties require additional API calls.

Export Groups To JSON

Description: This tool exports groups to JSON.

Organization Type: ArcGIS Online and Enterprise

Input: Groups

Output: Groups, File

Resource Intensiveness: Low

Additional Considerations: You will be given the option to input a file name. If the file name is not unique to each task run, you can choose to append to the file or overwrite it each time the task is run. If you want a file name that will be unique each time the task is run, you can use the Text Generator to include the date and time in the file name.

Export Groups To JSON

Description: This tool exports groups to JSON.

Organization Type: ArcGIS Online and Enterprise

Input: Groups

Output: Groups, File

Resource Intensiveness: Low

Additional Considerations: You will be given the option to input a file name. If the file name is not unique to each task run, you can choose to append to the file or overwrite it each time the task is run. If you want a file name that will be unique each time the task is run, you can use the Text Generator to include the date and time in the file name.

Find Groups By Filters

Description: This tool exports groups to JSON.

Organization Type: ArcGIS Online and Enterprise

Input: Groups

Output: Groups

Resource Intensiveness: Low

Additional Considerations: When running a group tool, you will be able to set filters within the tool. This tool is designed primarily for situations where groups are passed to a tool of a different content type (for example, a users tool that acts on the owners of the found groups).

Export Users To CSV

Description: This tool exports users to a CSV with the selected fields.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users, File

Resource Intensiveness: Moderate (if including the Groups or Entitlements fields) or Low (if not including either of the above fields)

Additional Considerations: You will be given the option to input a file name. If the file name is not unique to each task run, you can choose to append to the file or overwrite it each time the task is run. If you want a file name that will be unique each time the task is run, you can use the Text Generator to include the date and time in the file name. Additionally, including the Groups or Entitlements fields will cause the export to take longer, as these properties require additional API calls.

Export Users To JSON

Description: This tool exports users to JSON.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users, File

Resource Intensiveness: Moderate

Additional Considerations: You will be given the option to input a file name. If the file name is not unique to each task run, you can choose to append to the file or overwrite it each time the task is run. If you want a file name that will be unique each time the task is run, you can use the Text Generator to include the date and time in the file name.

Find Empty User Folders

Description: This tool finds user folders with no items.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users, Folders

Resource Intensiveness: Moderate

Additional Considerations: None

Find Users By Number Of Items

Description: This tool finds users based on the number of items they own. You can choose to search for users with greater than or less than a certain number of items.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users

Resource Intensiveness: Low

Additional Considerations: None

Find Users by Filters

Description: This tool finds users that meet conditions indicated by filters, for the purpose of passing them on to another step.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users

Resource Intensiveness: Low

Additional Considerations: When running a users tool, you will be able to set filters within the tool. This tool is designed primarily for situations where users are passed to a tool of a different content type (for example, an items tool that acts on items owned by the found users).

Update Content

Add Items To Categories

Description: This tool adds items to one or more categories.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items

Resource Intensiveness: Moderate

Additional Considerations: An item cannot be assigned to more than 20 categories.

Remove Items From Categories

Description: This tool removes items from one or more categories.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items

Resource Intensiveness: Moderate

Additional Considerations: None

Add Tags To Items

Description: This tool adds tags to items, either appending to existing tags or replacing them.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items

Resource Intensiveness: Moderate

Additional Considerations: None

Remove Tags From Items

Description: This tool removes tags from items.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items

Resource Intensiveness: Moderate

Additional Considerations: If the tool is running on a version of Enterprise that requires items to have at least one tag, the tool will not remove an item's last tag.

Move Items

Description: This tool moves items either to a different owner or to a different folder belonging to the same owner. If moving the items to a new owner, you can choose whether to move the item to a folder with the same name as the source folder, or select a different folder belonging to that owner. If a folder with the selected name does not already exist for the selected user, one will be created. If the folder name is left blank, the items will be moved to the root folder.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items

Resource Intensiveness: Moderate

Additional Considerations: Some types of related items, such as views, cannot be moved themselves, and instead will be moved when their parent item is moved. If you select one of these items without also selecting its parent item, the item will fail to be moved. If you move a parent item, its related items will be moved even if you didn't select them.

Rebuild Indexes For Feature Service Layers

Description: This tool rebuilds the spatial indexes of hosted feature service layers in ArcGIS Online, which can improve performance.

Organization Type: ArcGIS Online only

Input: Items (Hosted feature services)

Output: Items (Hosted feature services)
Resource Intensiveness: Moderate
Additional Considerations: None

Remove Layers From Web Maps

Description: This tool removes layers from web maps. It takes as its input layers from web maps in previous steps.

Organization Type: ArcGIS Online and Enterprise

Input: Items (Web Maps With Layers)

Output: Items (Web Maps With Layers)

Resource Intensiveness: Moderate

Additional Considerations: None

Share Items

Description: This tool updates the sharing (access) property of items.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items

Resource Intensiveness: Moderate

Additional Considerations: None

Share Web Map Layers

Description: This tool updates the sharing (access) property of layers on web maps. Optionally, you can share web map layers that belong to another of your organizations that is licensed for Scheduler, provided that it has a current token.

Organization Type: ArcGIS Online and Enterprise

Input: Items (Web Maps)

Output: Items (Web Maps With Layers)

Resource Intensiveness: High

Additional Considerations: You cannot update the sharing of layers that belong to an organization not licensed for Scheduler. Additionally, because one of the primary uses of this tool is to ensure that all layers of a publicly shared web map are also shared publicly, a map will only be reported as a success if all layers are shared successfully.

Update Items Delete Protection

Description: This tool enables or disables delete protection for items.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items

Resource Intensiveness: Moderate

Additional Considerations: None

Add Tags To Groups

Description: This tool adds tags to groups, either appending to existing tags or replacing them.

Organization Type: ArcGIS Online and Enterprise

Input: Groups

Output: Groups

Resource Intensiveness: Moderate

Additional Considerations: None

Remove Tags From Groups

Description: This tool removes tags from groups.

Organization Type: ArcGIS Online and Enterprise

Input: Groups

Output: Groups

Resource Intensiveness: Moderate

Additional Considerations: If the tool is running on an organization whose version requires groups to have at least one tag, the tool will not remove a group's last tag.

Add Users To Groups

Description: This tool adds users to groups. You have the option to wait for the user to accept an invitation, or add the user immediately. The tool takes groups as its primary input and users as its secondary input. Groups can come from another step, or by selecting the "all content", "quick filter" or "event collection" input options. Users must come from another step.

Organization Type: ArcGIS Online and Enterprise

Input: Groups, Users

Output: Groups

Resource Intensiveness: Moderate

Additional Considerations: Only users with permission to own items can be added to groups with the shared update capability.

Remove Users From Groups

Description: This tool removes users from groups. It takes groups as its primary input and users as its secondary input. Groups can come from another step, or by selecting the "all content", "quick filter" or "event collection" input options. Users must come from another step.

Organization Type: ArcGIS Online and Enterprise

Input: Groups, Users

Output: Groups

Resource Intensiveness: Moderate

Additional Considerations: Because every group must have an owner, this tool cannot remove a group's owner.

Share Groups

Description: This tool updates the sharing (access) property of groups.

Organization Type: ArcGIS Online and Enterprise

Input: Groups

Output: Groups

Resource Intensiveness: Moderate

Additional Considerations: None

Share Items With Groups

Description: This tool adds (shares) items to groups. The tool takes groups as its primary input and items as its secondary input. Groups can come from another step, or by selecting the "all content", "quick filter" or "event collection" input options. Items must come from another step.

Organization Type: ArcGIS Online and Enterprise

Input: Groups, Items

Output: Groups

Resource Intensiveness: Moderate

Additional Considerations: If the owners of the items aren't already members of the groups, they will be added.

Unshare Items From Groups

Description: This tool removes (unshares) items from groups. The tool takes groups as its primary input and items as its secondary input. Groups can come from another step, or by selecting the "all content", "quick filter" or "event collection" input options. Items must come from another step.

Organization Type: ArcGIS Online and Enterprise

Input: Groups, Items

Output: Groups

Resource Intensiveness: Moderate
Additional Considerations: None

Update Groups Delete Protection

Description: This tool enables or disables delete protection for groups.
Organization Type: ArcGIS Online and Enterprise
Input: Groups
Output: Groups
Resource Intensiveness: Moderate
Additional Considerations: None

Add Tags To Users

Description: This tool adds tags to users, either appending to existing tags or replacing them.
Organization Type: ArcGIS Online and Enterprise
Input: Users
Output: Users
Resource Intensiveness: Moderate
Additional Considerations: None

Remove Tags From Users

Description: This tool removes tags from users.
Organization Type: ArcGIS Online and Enterprise
Input: Users
Output: Users
Resource Intensiveness: Moderate
Additional Considerations: If the tool is running on an organization whose version requires users to have at least one tag, the tool will not remove a user's last tag.

Email Users

Description: This tool emails users in the organization, using the email address in their organization profile. Optionally, you can choose to include all files generated in previous steps as attachments.
Organization Type: ArcGIS Online and Enterprise
Input: Users
Output: Users
Resource Intensiveness: Moderate

Additional Considerations: Users must have valid email addresses in their organization profiles. Additionally, email settings for Scheduler must be set on the Settings page.

Enable / Disable Users

Description: This tool enables or disables a user's ability to login.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users

Resource Intensiveness: Moderate

Additional Considerations: None

Remove Users Entitlements

Description: This tool removes entitlements (licenses) from users.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users

Resource Intensiveness: Moderate

Additional Considerations: None

Remove Users Entitlements

Description: This tool removes entitlements (licenses) from users.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users

Resource Intensiveness: Moderate

Additional Considerations: None

Update Users Access

Description: This tool updates the sharing (access) property of users.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users

Resource Intensiveness: Moderate

Additional Considerations: None

Update Users Type And Role

Description: This tool updates a user's type and role.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users

Resource Intensiveness: Moderate

Additional Considerations: The organization must have enough of the given license type for the users selected.

Validate Content

Validate Items Details

Description: This tool checks items for validity based on whether the item has one or more of the following: a description, a summary, access and use constraints (terms of use), credits (attribution), valid metadata, a thumbnail, at least the selected number of tags, no more than the selected number of tags, at least the selected number of categories, and/or no more than the selected number of categories. Items that meet the criteria will be returned as successful results, while items that don't meet the criteria or that cannot be accessed will be returned as failed results.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items

Resource Intensiveness: Moderate (if validating metadata) or Low (if not validating metadata)

Additional Considerations: None

Validate Web Maps Services

Description: This tool validates the services on web maps. Web maps whose layers are valid will be returned as successful results, while web maps with one or more invalid layers will be returned as failed results. There are several issues you can choose to check for:

- "Services that return a valid response" checks to see whether a service with a URL returns a success response. Services that return an error response or that time out will fail this check.
- "Services whose item ID is found in the organization" checks to see whether the service's item ID corresponds to an item in the organization the web map belongs to. Services that don't have an item ID, services whose item ID corresponds to an item that has been deleted, or services whose item ID belongs to another organization will fail this check.

- "Services whose URL matches the accompanying item ID" finds services that have an item ID that corresponds to an item with the same URL as the service. Services that don't have an item ID property or whose item ID corresponds to an item with a different URL will fail this check.

Organization Type: ArcGIS Online and Enterprise

Input: Items (Web Maps)

Output: Items (Web Maps With Layers)

Resource Intensiveness: High

Additional Considerations: Services that return an invalid response will not be able to be displayed on a map. A missing or invalid item ID won't affect the service's ability to be displayed on a map, but it may affect the service's ability to display saved popups, symbology, labels, etc. It will also affect the service's ability to be found as a dependency of the map, which will interfere with tools, including some GEO Jobe tools, that rely on dependency trees.

Validate Text In Service Fields

Description: This tool searches for text in service fields. You can type in text to search for or search by custom regular expression. You can choose whether valid services are those that contain or do not contain the input text. Among other things, this tool can be used to ensure that publicly accessible services do not contain sensitive information.

Organization Type: ArcGIS Online and Enterprise

Input: Items (Feature Services, Map Services, Tables)

Output: Items (Feature Services, Map Services, Tables)

Resource Intensiveness: High (if searching for plain text) or Very High (if searching by regular expression). If searching by regular expression, resource intensity will depend on the number of features in the service and the maximum number of features that can be returned by a query.

Additional Considerations: Services that return an invalid response will not be able to be displayed on a map. A missing or invalid item ID won't affect the service's ability to be displayed on a map, but it may affect the service's ability to display saved popups, symbology, labels, etc. It will also affect the service's ability to be found as a dependency of the map, which will interfere with tools, including some GEO Jobe tools, that rely on dependency trees.

Validate Groups Details

Description: This tool checks a group's details for validity based on whether the group has one or more of the following: a description, a summary, a thumbnail, at least the selected number of tags, and/or no more than the selected number of tags. Groups that meet the criteria will be returned as successful results, while groups that don't meet the criteria or that cannot be accessed will be returned as failed results.

Organization Type: ArcGIS Online and Enterprise

Input: Groups

Output: Groups

Resource Intensiveness: Low

Additional Considerations: None

Validate Groups Items

Description: This tool checks a group's details for validity based on whether the group has one or more of the following: group has at least the selected number of items, group has no more than the selected number of items, the sharing level of the items is equal to/higher than/lower than the sharing level of the group, items have a description, items have a summary, items have access and use constraints (terms of use), items have credits (attribution), items have valid metadata, items have a thumbnail, items have at least the selected number of tags, items have no more than the selected number of tags, items have at least the selected number of categories, and/or items have no more than the selected number of categories. Groups that meet the criteria will be returned as successful results, while groups that don't meet the criteria or that cannot be accessed will be returned as failed results.

Organization Type: ArcGIS Online and Enterprise

Input: Groups

Output: Groups

Resource Intensiveness: Moderate

Additional Considerations: None

Validate Groups Users

Description: This tool checks a group's users for validity based on one or more of the following: group has at least the selected number of users, group has no more than the selected number of users, users have a description, users have a thumbnail, users have an email, users have ever logged in, users are enabled to login, users have Multi-Factor Authentication (MFA) enabled, users have at least the selected number of tags, users have no more than the selected number of tags, users have at least the selected number of categories, and/or users have no more than the selected number of categories. Groups that meet the criteria will be returned as successful results, while groups that don't meet the criteria or that cannot be accessed will be returned as failed results.

Organization Type: ArcGIS Online and Enterprise

Input: Groups

Output: Groups

Resource Intensiveness: Moderate

Additional Considerations: None

Validate Users Details

Description: This tool checks a user's details for validity based on whether the user has one or more of the following: a description, a summary, an email address, last login date (has logged in), an enabled account, MFA enabled, a thumbnail, at least the selected number of tags, no more than the selected number of tags, at least the selected number of categories, and/or no more than the selected number of categories. Users that meet the criteria will be returned as successful results, while users that don't meet the criteria or that cannot be accessed will be returned as failed results.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users

Resource Intensiveness: Low

Additional Considerations: None

Manage Server Content

Create / Update Layer From File

Description: This tool publishes a service from a CSV or GeoJSON, or creates a KML layer from a KML file. When the tool runs for the first time, it will create a service or layer if one with the given name does not exist already. Subsequent runs of the tool will update the existing service or layer.

Organization Type: ArcGIS Online and Enterprise

Input: File

Output: Service / Layer

Resource Intensiveness: Variable depending on the size of the file

Additional Considerations: The file must be located on the machine where Scheduler is installed. When creating a layer from a CSV, you will be asked to specify the fields, if any, used for location information. The schema of a CSV layer, including the location fields, field names and field types, cannot be changed after the layer is initially created. For KML files, due to caching in your organization, changes to a KML layer may not immediately appear in Map Viewer. If this happens, you can cause Map Viewer to display the latest data by logging out and logging back in, or by opening the map in private browsing.

Start Services

Description: This tool starts Enterprise services.

Connection Type: ArcGIS Server Machine

Input: Services

Output: Services

Resource Intensiveness: Low

Additional Considerations: None

Stop Services

Description: This tool stops Enterprise services.

Connection Type: ArcGIS Server Machine

Input: Services

Output: Services

Resource Intensiveness: Low

Additional Considerations: None

Check Tile Cache Status

Description: This tool checks the status of a tile cache to determine whether caching is sufficiently complete, based either on the total percentage of tiles cached or the percentage of each level cached.

Connection Type: ArcGIS Server Machine

Input: Service (Map Service or Tile Service)

Output: Service (Map Service or Tile Service)

Resource Intensiveness: Moderate

Additional Considerations: None

Create Tile Cache Status Report

Description: This tool creates a CSV report of the status of a tile cache, including the percentage complete for each level.

Connection Type: ArcGIS Server Machine

Input: Services (Map Services or Tile Services)

Output: File

Resource Intensiveness: Moderate

Additional Considerations: None

Check Portal Health

Description: This tool runs Esri's portal health check to ensure that all portal machines are running and free of problems.

Organization Type: Enterprise only

Input: Portals

Output: Portals

Resource Intensiveness: Low

Additional Considerations: None

Check Service Status

Description: This tool checks the status of individual services. Services that are running will be returned as successful results, while those that are stopped or have errors will be returned as failed results.

Connection Type: ArcGIS Server Machine

Input: Services

Output: Service

Resource Intensiveness: Low

Additional Considerations: None

Export Portal Logs

Description: This tool exports portal logs based on a variety of criteria.

Organization Type: Enterprise only

Input: Portals

Output: File

Resource Intensiveness: Variable depending on the options selected

Additional Considerations: The options you select within the tool will be superseded by your portal's log settings. Regardless of the log level you select in the tool's options, the tool can only return logs at the level you have selected for the portal to record. If you select the Debug log level option, but your portal log level is set to Warning, then the tool will only return logs with severity level of Warning and above. Additionally, the tool can only return logs for the time period that you have selected for the portal to retain logs. If you select logs for the last 180 days, but your portal is set to retain logs for 90 days, then the tool will only return logs for the last 90 days. You can find out more about portal log settings here: [Specify portal log settings](#).

Export Server Logs

Description: This tool exports server logs based on a variety of criteria.

Connection Type: ArcGIS Server Machine

Input: ArcGIS Server Machines

Output: File

Resource Intensiveness: Variable depending on the options selected

Additional Considerations: This tool creates a snapshot of server logs from a particular period of time using Esri's REST API. It does not require Scheduler Satellite. For more comprehensive

viewing and filtering of server logs, or to use server logs to trigger tasks, you can configure Scheduler Satellite on the server machine.

The options you select within the tool will be superseded by your server's log settings. Regardless of the log level you select in the tool's options, the tool can only return logs at the level you have selected for the server to record. If you select the Debug log level option, but your server log level is set to Warning, then the tool will only return logs with severity level of Warning and above. Additionally, the tool can only return logs for the time period that you have selected for the server to retain logs. If you select logs for the last 180 days, but your server is set to retain logs for 90 days, then the tool will only return logs for the last 90 days. You can find out more about server log settings here: [Specify server log settings](#).

Validate Portal Operational Health

Description: This tool checks for common issues with your organization's operational health and exports any issues found to a CSV. This tool checks for common issues with your organization's operational health and exports any issues found to a CSV. The tool runs the same scans as a script that Esri provides with some versions of Enterprise. You can find out more about those scans here: [Scan your organization for operational health issues](#).

Organization Type: Enterprise only

Input: Portals

Output: File

Resource Intensiveness: Variable depending on the options selected

Additional Considerations: None

Validate Portal Security Practices

Description: This tool checks for common issues with portal security and exports any issues found to a CSV. The tool runs the same scans as a script that Esri provides with some versions of Enterprise. You can find out more about those scans here: [Scan your portal for security best practices](#).

Organization Type: Enterprise only

Input: Portals

Output: File

Resource Intensiveness: Variable depending on the options selected

Additional Considerations: None

Cancel Geoprocessing Jobs

Description: This tool cancels geoprocessing jobs that have been running for a certain period of time and may be stuck.

Connection Type: ArcGIS Server Machine

Input: Services

Output: Services

Resource Intensiveness: Moderate

Additional Considerations: None

Export Geoprocessing Jobs

Description: This tool cancels geoprocessing jobs that have been running for a certain period of time and may be stuck.

Connection Type: ArcGIS Server Machine

Input: Services

Output: Services, File

Resource Intensiveness: Low

Additional Considerations: The tool can only return geoprocessing jobs for the time period that you have configured the server to retain geoprocessing jobs (the default is 6 hours). If you select geoprocessing jobs for the last 12 hours, but your server is set to retain geoprocessing jobs for 6 hours, then the tool will only return geoprocessing jobs for the last 6 hours. You can find out more about retaining geoprocessing jobs here: [Work with current geoprocessing jobs in Manager](#).

Rebuild Indexes

Description: This tool rebuilds the indexes of tables in a database, which can improve database performance.

Connection Type: Database

Input: Database Tables

Output: Database Tables

Resource Intensiveness: Moderate

Additional Considerations: Rebuilding indexes can negatively impact database performance while the tool is running. GEO Jobe recommends that this operation be performed outside of peak hours.

Monitor

Detect Added Items

Description: This tool finds items that have been added since the last time the task ran. Each time the tool runs, Scheduler will compare the current items in the organization against a

snapshot of items taken the last time the tool was run. If an item is in the current organization but not the snapshot, it will be marked as added.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items

Resource Intensiveness: Moderate

Additional Considerations: For Enterprise organizations, GEO Jobe recommends the use of webhooks for monitoring most changes to content. This tool is primarily meant to provide an alternative to webhooks for ArcGIS Online organizations.

Detect Changes To Items Properties

Description: This tool finds items whose properties have changed since the last time the task ran. The first time the task is run, you can choose whether to return all content indicated by the step input, or only content that has changed since the task was created. For all future times the task is run, it will return the content indicated by the step input whose selected properties have changed since the last time the task was run.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items

Resource Intensiveness: Moderate

Additional Considerations: For Enterprise organizations, GEO Jobe recommends the use of webhooks for monitoring most changes to content. This tool is primarily meant to provide an alternative to webhooks for ArcGIS Online organizations, as well as to watch for certain changes that aren't captured by webhooks. To track changes to item properties, Scheduler stores the selected properties in a separate cache and compares them to the item's current properties each time the tool is run.

Detect Deleted Items

Description: This tool finds items that have been deleted since the last time the task ran. Each time the tool runs, Scheduler will compare the current items in the organization against a snapshot of items taken the last time the tool was run. If an item is in the snapshot but not the organization, it will be marked as deleted. The deleted item will then be removed from the cache after it is found by the tool, so if you want a record of the item, you should export it to CSV or JSON.

Organization Type: ArcGIS Online and Enterprise

Input: Items

Output: Items

Resource Intensiveness: Moderate

Additional Considerations: For Enterprise organizations, GEO Jobe recommends the use of webhooks for monitoring most changes to content. This tool is primarily meant to provide an alternative to webhooks for ArcGIS Online organizations. To track items that have been deleted, Scheduler stores items to be watched in a separate cache and compares them to see whether an item has been deleted.

Detect Added Groups

Description: This tool finds groups that have been added since the last time the task ran. Each time the tool runs, Scheduler will compare the current groups in the organization against a snapshot of groups taken the last time the tool was run. If a group is in the current organization but not the snapshot, it will be marked as added.

Organization Type: ArcGIS Online and Enterprise

Input: Groups

Output: Groups

Resource Intensiveness: Moderate

Additional Considerations: For Enterprise organizations, GEO Jobe recommends the use of webhooks for monitoring most changes to content. This tool is primarily meant to provide an alternative to webhooks for ArcGIS Online organizations.

Detect Changes To Groups Properties

Description: This tool finds groups whose properties have changed since the last time the task ran. The first time the task is run, you can choose whether to return all content indicated by the step input, or only content that has changed since the task was created. For all future times the task is run, it will return the content indicated by the step input whose selected properties have changed since the last time the task was run.

Organization Type: ArcGIS Online and Enterprise

Input: Groups

Output: Groups

Resource Intensiveness: Moderate

Additional Considerations: For Enterprise organizations, GEO Jobe recommends the use of webhooks for monitoring most changes to content. This tool is primarily meant to provide an alternative to webhooks for ArcGIS Online organizations, as well as to watch for certain changes that aren't captured by webhooks. To track changes to group properties, Scheduler stores the selected properties in a separate cache and compares them to the group's current properties each time the tool is run.

Detect Deleted Groups

Description: This tool finds groups that have been deleted since the last time the task ran. Each time the tool runs, Scheduler will compare the current groups in the organization against a snapshot of groups taken the last time the tool was run. If a group is in the snapshot but not the organization, it will be marked as deleted. The deleted group will then be removed from the cache after it is found by the tool, so if you want a record of the group, you should export it to CSV or JSON.

Organization Type: ArcGIS Online and Enterprise

Input: Groups

Output: Groups

Resource Intensiveness: Moderate

Additional Considerations: For Enterprise organizations, GEO Jobe recommends the use of webhooks for monitoring most changes to content. This tool is primarily meant to provide an alternative to webhooks for ArcGIS Online organizations. To track groups that have been deleted, Scheduler stores groups to be watched in a separate cache and compares them to see whether a group has been deleted.

Detect Added Users

Description: This tool finds users that have been added since the last time the task ran. Each time the tool runs, Scheduler will compare the current users in the organization against a snapshot of users taken the last time the tool was run. If a user is in the current organization but not the snapshot, it will be marked as added.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users

Resource Intensiveness: Moderate

Additional Considerations: For Enterprise organizations, GEO Jobe recommends the use of webhooks for monitoring most changes to content. This tool is primarily meant to provide an alternative to webhooks for ArcGIS Online organizations.

Detect Changes To Users Properties

Description: This tool finds users whose properties have changed since the last time the task ran. The first time the task is run, you can choose whether to return all content indicated by the step input, or only content that has changed since the task was created. For all future times the task is run, it will return the content indicated by the step input whose selected properties have changed since the last time the task was run.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users

Resource Intensiveness: Moderate

Additional Considerations: For Enterprise organizations, GEO Jobe recommends the use of webhooks for monitoring most changes to content. This tool is primarily meant to provide an alternative to webhooks for ArcGIS Online organizations, as well as to watch for certain changes that aren't captured by webhooks. To track changes to user properties, Scheduler stores the selected properties in a separate cache and compares them to the user's current properties each time the tool is run.

Detect Deleted Users

Description: This tool finds users that have been deleted since the last time the task ran. Each time the tool runs, Scheduler will compare the current users in the organization against a snapshot of users taken the last time the tool was run. If a user is in the snapshot but not the organization, it will be marked as deleted. The deleted user will then be removed from the cache after it is found by the tool, so if you want a record of the user, you should export it to CSV or JSON.

Organization Type: ArcGIS Online and Enterprise

Input: Users

Output: Users

Resource Intensiveness: Moderate

Additional Considerations: For Enterprise organizations, GEO Jobe recommends the use of webhooks for monitoring most changes to content. This tool is primarily meant to provide an alternative to webhooks for ArcGIS Online organizations. To track users that have been deleted, Scheduler stores users to be watched in a separate cache and compares them to see whether a user has been deleted.

Miscellaneous

Create Administrative Report

Description: This tool creates and downloads one or more administrative reports. All report types are supported for ArcGIS Online. Item and Member reports are supported for Enterprise 10.9 and above. Administrative reports are not supported for Enterprise 10.8 and below.

Organization Type: ArcGIS Online (all report types) and Enterprise 10.9+ (Item and Member reports only)

Input: None

Output: Administrative Reports, Files

Resource Intensiveness: Moderate (for reports covering longer time periods) or Low (for reports covering shorter time periods or snapshots)

Additional Considerations: Some administrative reports are generated for a selected time period, while others are snapshots of your organization at the time the report is made. For reports that use time periods (Activity, Credit, Item View Count and Service Usage reports), if you select the past day, the report will be generated for the previous day from 12:00 AM to 11:59 PM. If you select the past week, the report will be generated for the most recent full week starting Monday at 12:00 AM and ending Sunday at 11:59 PM (for example, if the task runs on Thursday, the report will be from the preceding full week from Monday to Sunday). If you select the past month, quarter or year, the report will be generated for the most recent full month, quarter or year starting on the first day at 12:00 AM and ending on the last day at 11:59 PM. You can only create one administrative report of a given type for a given time period (for example, you can only create one Activity report for a particular week), so your task should not run more frequently than the selected report time period. Reports that generate snapshots (Item and Member reports) cannot be created more than once per hour.

Fetch External Data

Description: This tool fetches data from an external URL and writes it to a file. Supported formats are CSV, GeoJSON and KML. JSON is supported if the query is not paginated.

Organization Type: N/A

Input: None

Output: File

Resource Intensiveness: Variable depending on the nature of the data

Additional Considerations: This tool does not support fetching data that is paginated or that requires any form of authentication (other than a static token, client key or similar that can be entered as a query parameter).

Run Custom Script

Description: This tool runs a custom script on your server, either as a file or as a command line command.

Organization Type: N/A

Input: Custom Script

Output: None

Resource Intensiveness: Variable depending on the nature of the script

Additional Considerations: None

Send Email

Description: This tool sends an email to a list of addresses. Optionally, you can include the files generated by previous steps as attachments.

Organization Type: N/A



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Input: None

Output: None

Resource Intensiveness: Low

Additional Considerations: You must have email settings configured for Scheduler on the Settings page to use this tool.