

ArcGIS® GeoEvent Extension for Server

User Conference 2016
Snowplow Demo



NOTE: The ArcGIS GeoEvent Extension team updates the product tutorials frequently to reflect the latest version of the software. Depending on the product release you are using, there may be inconsistencies between your environment and illustrations or specific steps in the exercises. Concepts outlined in the exercises, however, should be applicable across product versions.

GeoEvent Extension – Snow Plow Demo

Overview	3
What to expect from this abstract.....	3
Requirements.....	3
Publishing the Snow Plow map packages	4
Demo 1: Processing to Detect Events of Interest	6
Importing configuration in GeoEvent	6
Add the Track Idle Detector Processor to the GeoEvent Extension	7
Demo 2: Snow Plow tracking and status.....	8
Importing configuration in GeoEvent	8
Publishing Stream Service.....	8
Add the Field Splitter Processor to the GeoEvent Extension.....	9
Test your input by simulating event data	9
Resetting Streets to initial status of not Plowed	11
Bread Crumb Trail on the Operations Dashboard.	11
Rotating the symbols in webmap	11
Congratulations!	12

Overview

The [ArcGIS GeoEvent Extension for Server](#) is an extension to ArcGIS for Server. Introduced with the ArcGIS 10.2 release, the GeoEvent Extension can be used to incorporate real-time event data into the ArcGIS platform, satisfying a growing demand across multiple industries to include real-time streaming data into everyday GIS applications, workflows, and analyses.

Commercial organizations, transportation managers, and defense and intelligence analysts – anyone with a need to leverage real-time streaming data can use the GeoEvent Extension to receive, analyze, and produce real-time intelligence from a variety of sources including mobile devices, in-vehicle GPS devices, social media content, RFID tags, and environmental monitoring devices.

What to expect from this abstract

The intended audience for this abstract is those who have worked with the GeoEvent Extension. If you have not used the GeoEvent Extension before, it is recommended you start with the Introduction to GeoEvent Extension tutorial available, along with other tutorials, on the [ArcGIS GeoEvent Gallery](#). The introduction tutorial provides a foundation for the concepts highlighted below.

The narrative and exercises in this abstract highlight what the included processor does and how to add it to the GeoEvent Extension.

After completing this tutorial you should be able to:

- Track snow plow status based for the simulated data.

Requirements

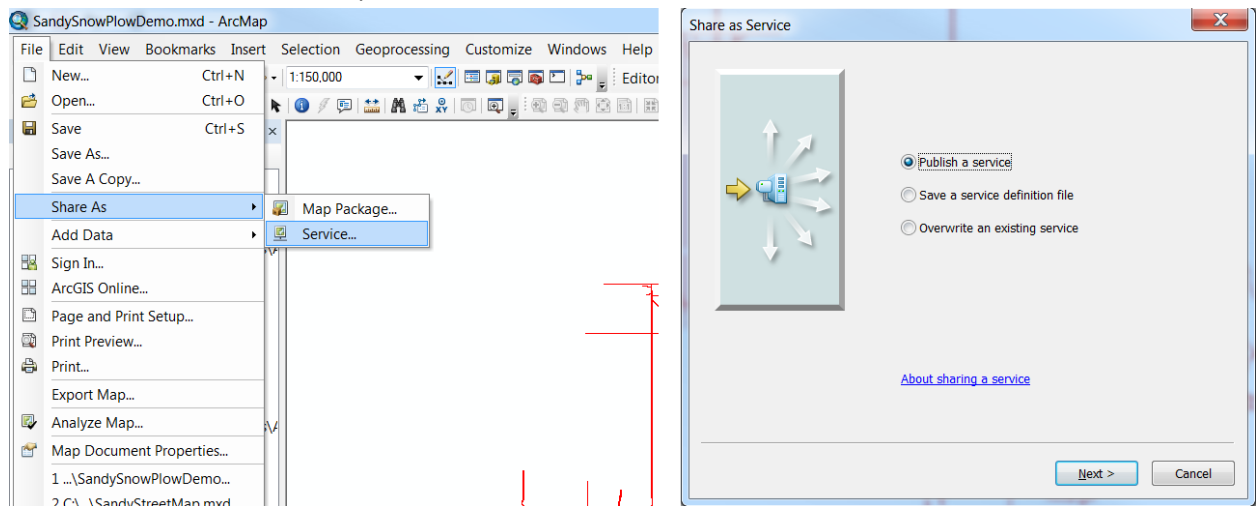
Requirements for the demo.

- ArcGIS for Server (10.3 & above)
- ArcGIS GeoEvent Extension for Server (10.3 & above)
- ArcGIS Data Store (10.3 & above)

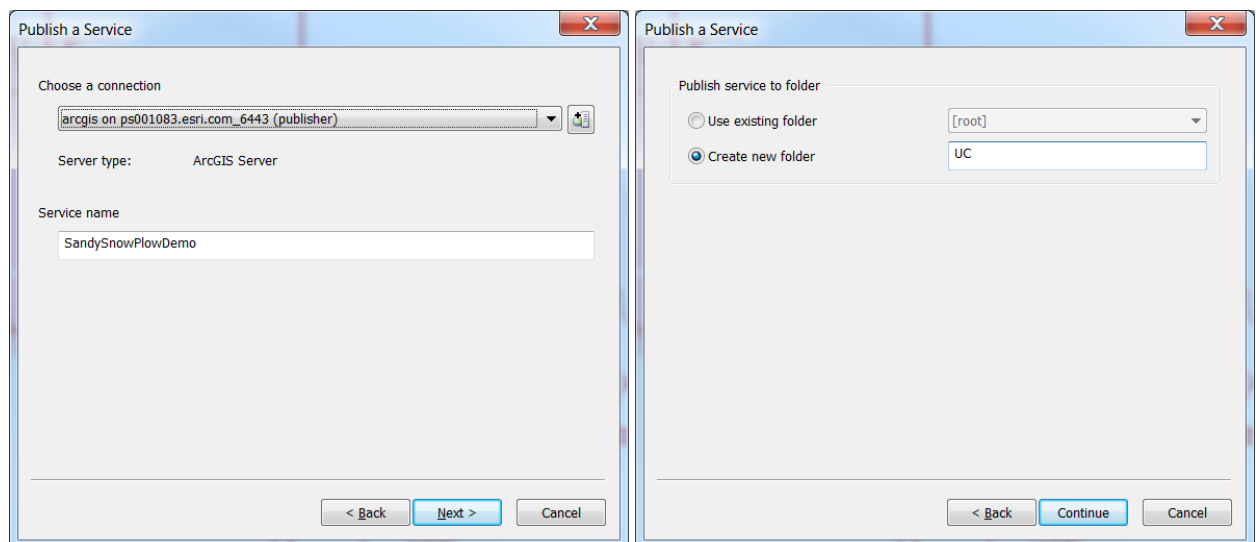
ArcGIS for Desktop is only needed for publishing the map packages.

Publishing the Snow Plow map packages

1. Open a Windows **File Explorer**.
2. Browse to the ...\\SnowPlowDemo\\ folder provided with this tutorial
3. Open the **SnowPlowDemo.mpk** map package in ArcMap.
4. In **ArcMap**, click **File** and choose **Share As > Service**.
5. Select the **Publish a service** option and click **Next**.



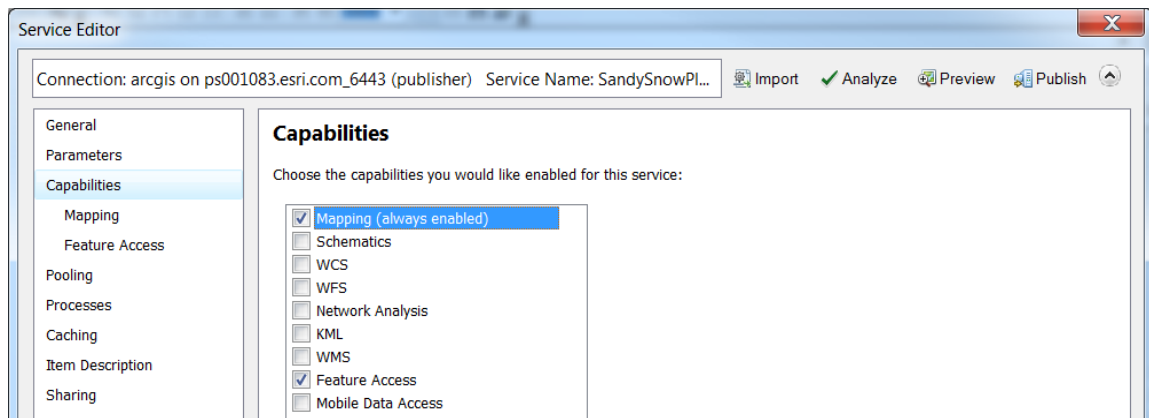
6. From the drop-down menu, choose an available connection to your local ArcGIS Server.
 - If you do not already have a connection to your ArcGIS Server for either publishing services or administering services) you will need to click *Create Server Connection*.
7. Click **Next** to accept the default service name **Flights**.
8. Choose **Create new folder** and enter **UC** in the text box and click **Continue**.



Note: *It is not required that you publish the services to a folder named UC. The configuration provided for this demo will assume your services have been published into a services folder with this name.*

9. In the **Service Editor** menu:

- Click **Capabilities** and uncheck the checkbox for **KML**.
- Check the checkbox for **Feature Access**.

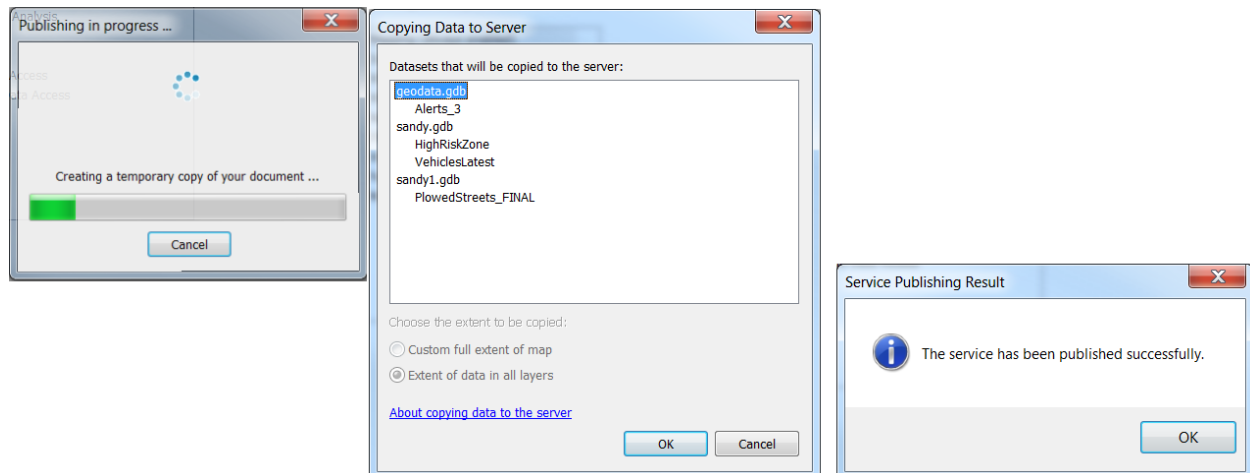


10. Click **Analyze** to identify any potential issues and errors before publishing the feature service.

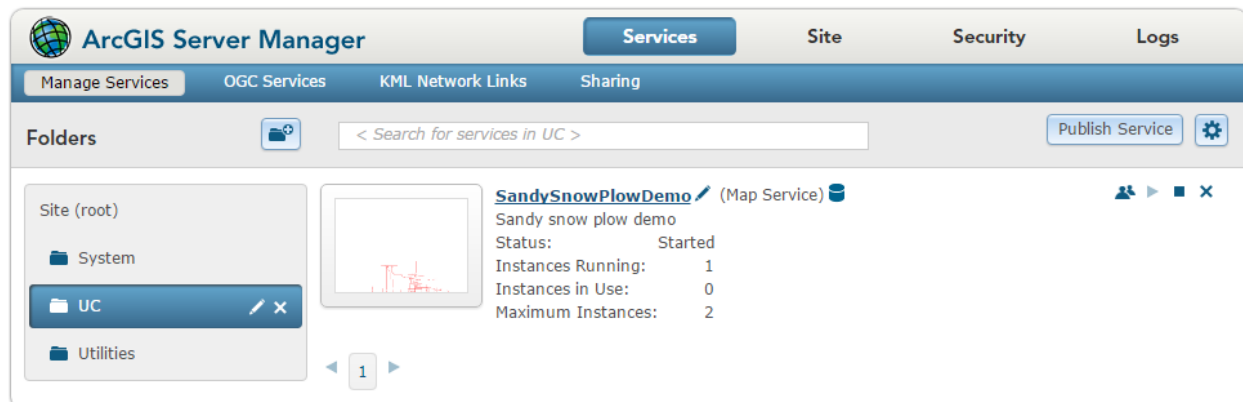
11. Click **Publish** to publish the feature service.

12. When prompted, confirm that you want the **Flights** data set copied to the server's managed enterprise geodatabase. Publishing the service may take a couple of minutes.

13. Click **OK** to dismiss the **Service Publishing Result** dialog.



The published service can be accessed from ArcGIS Server manager & ArcGIS Server REST administrative directory.



ArcGIS REST Services Directory Logged in user : admin | [Logout](#) |
[Home](#) > [services](#) > [UC](#) [Help](#) | [API Reference](#)
[JSON](#) | [SOAP](#)

Folder: UC

Current Version: 10.41

View Footprints In: [ArcGIS Online map viewer](#)

Services:

- [UC/SandySnowPlowDemo](#) (FeatureServer)
- [UC/SandySnowPlowDemo](#) (MapServer)

Supported Interfaces: [REST](#) [SOAP](#) [Sitemap](#) [Geo Sitemap](#)

Demo 1: Processing to Detect Events of Interest

This demo shows how the GeoEvent Extension can be used to track a vehicle when it enters a particular GeoFence. It also demonstrates how we can track speeding vehicle (incident detector) or an idle vehicle (track idle processor). Email and SMS alerts can be sent for these incidents.

Importing configuration in GeoEvent

Follow the steps below to import the GeoEvent Extension configuration for Demo 1.

1. Open **GeoEvent Manager** at <https://localhost:6143/geoevent/manager/>.
2. Navigate to **Site > GeoEvent > Configuration Store**.
3. Click **Import Configuration** and browse to **SnowPlowDemo_D1.xml** file located in the ...\\SnowPlowDemo\\Demo1 folder included with this tutorial.
4. For **email-text-out** output, provide Sender's email address, Email Recipients and SMTP server host name. Click **Save**.

- For **sms-text-out** output, select the carrier and provide recipient's number. Click **Save**.

Add the Track Idle Detector Processor to the GeoEvent Extension

The Track Idle Detector processor can be downloaded from the [ArcGIS GeoEvent Gallery](#).

Follow the steps below to add the Track Idle Detector Processor to the GeoEvent Extension.

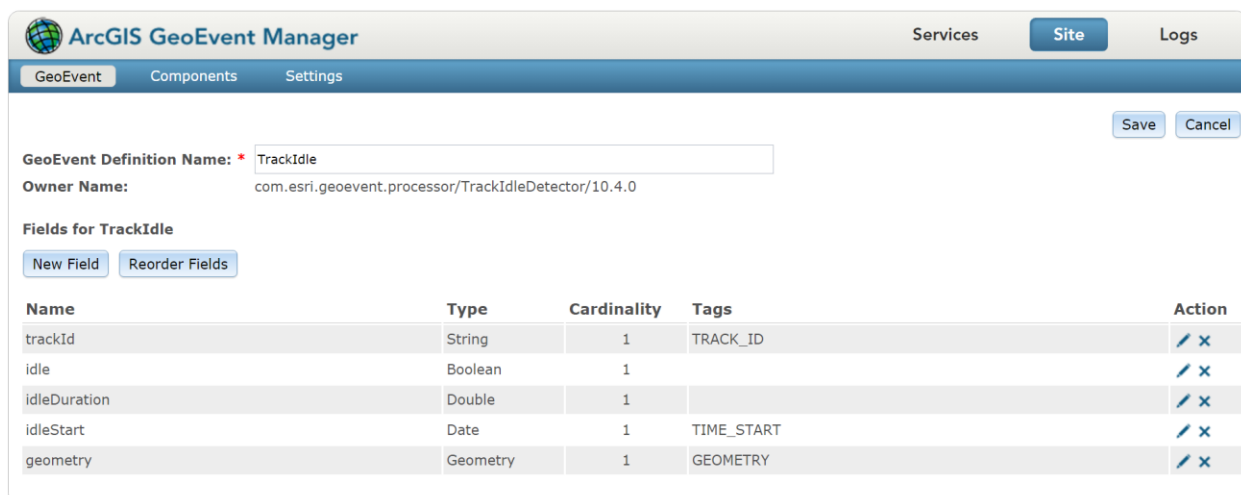
- In **ArcGIS GeoEvent Manager**, navigate to **Site > Components > Processors**.
- Click **Add Local Processor**.



- Click **Choose Files** and navigate to the **components** folder included with this abstract.
- Select the **trackidledetector-processor-*<your_version>*.jar** appropriate for your version of the GeoEvent Extension and click **Open**.

The Track Idle Detector Processor should now appear in your list of processors and can now be added to a GeoEvent Service.

Note: The fields *idlestart* & *geometry* in *TrackIdle* GeoEvent Definition must be tagged with tags *TIME_START* & *GEOMETRY* respectively.



Demo 2: Snow Plow tracking and status

This demo shows how the GeoEvent Extension can be used to snow plow status in a city. The demo has both snow plow and pick-up trucks. The movement of the snow plow will update the status on the street. Features in red indicate that the street is not plowed, yellow indicates plowing is progress and green indicates plowing is completed. Webapp for this may also be created to share with the community.

Importing configuration in GeoEvent

Follow the steps below to import the GeoEvent Extension configuration for Demo 2.

1. Open **GeoEvent Manager** at <https://localhost:6143/geoevent/manager/>.
2. Navigate to **Site > GeoEvent > Configuration Store**.
3. Click **Import Configuration** and browse to **SnowPlowDemo_D2.xml** file located in the ...\\SnowPlowDemo\\Demo2 folder included with this tutorial.

Publishing Stream Service

1. In **ArcGIS GeoEvent Manager**, navigate to **Services > Outputs** and click **plows-stream-service-out** output.
2. Click **Publish Stream Service** and set the properties as illustrated below.

Publish a new stream service.

Name: Vehicles

Geometry Type: Point

Display Field Name: vehiclename String

Override: ☐

Store Latest: ☐ Must register a Managed Database to enable store latest.

Advanced

Publish Cancel

3. Click **Publish** to publish the new stream service.
4. Click **Save** to save **plows-stream-service-out** output.

Add the Field Splitter Processor to the GeoEvent Extension

The Field Splitter processor can be downloaded from the [ArcGIS GeoEvent Gallery](#).

Follow the steps below to add the Field Splitter Processor to the GeoEvent Extension.

1. In **ArcGIS GeoEvent Manager**, navigate to **Site > Components > Processors**.
2. Click **Add Local Processor**.



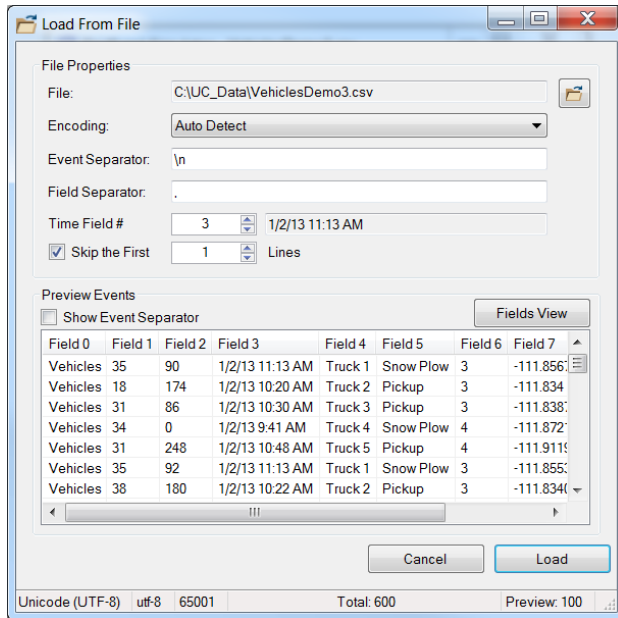
3. Click **Choose Files** and navigate to the **components** folder included with this abstract.
4. Select the **field-splitter-processor-*<your_version>*.jar** appropriate for your version of the GeoEvent Extension and click **Open**.


The Field Splitter Processor should now appear in your list of processors and can now be added to a GeoEvent Service.

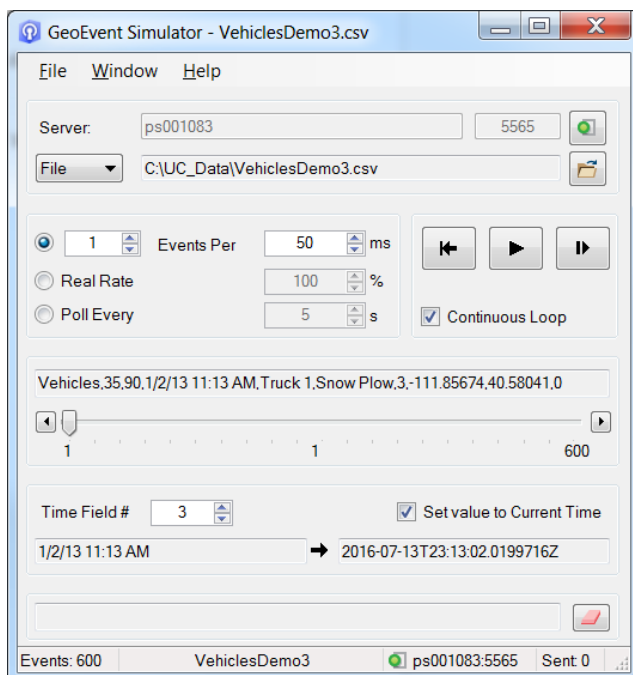
Test your input by simulating event data

Open the **GeoEvent Simulator** and configure it as indicated below:

- Click **Load File** and browse to locate the **VehiclesDemo1.csv** file located in ...\\SnowPlowDemo\\Demo1 folder included with this tutorial. You can also browse the **VehiclesDemo2.csv** file located in...\\SnowPlowDemo\\Demo2 folder.
- Set **Time Field #** property to **3**.
- Check **Skip the First** checkbox, set it to **1** lines. Click **Load**.



- Check the **Set value to Current Time** checkbox to simulate *real-time* data.
- Check the **Continuous Loop** checkbox.
- Click **Click to Connect** to establish your server connection to the TCP port 5565.
- Set it to 1 Events Per 50 ms and then Click Play  to simulate the vehicle data.



If your GeoEvent Service components are configured correctly you should see an event display in the TCP Server application and the event counts on the GeoEvent Manager's Monitor page should increment as illustrated below.

Resetting Streets to initial status of not Plowed

- Import the **SnowPlowDemo_ResetPlowStatus.xml** located in ...\\SnowPlowDemo\\Demo2\\ *folder* into GeoEvent via **GeoEvent Manager**.
- Run the **PlowStatusReset.csv** file from ...\\SnowPlowDemo\\Demo2\\ *folder* through the **GeoEvent simulator**.


Bread Crumb Trail on the Operations Dashboard.

Events can be filtered on the client (only for visualization) by configuring a filter with the settings as illustrated below.

The screenshot shows the 'Query Definition' dialog box. The 'Layer' is set to 'SandySnowPlowDemo - Vehicles'. The 'Name' is 'New Query'. The 'Query' tab is selected. Under 'Specify your query criteria', the 'Type' is '<All types>'. The 'Field' is 'time Date', the 'Operator' is 'Is within', and the 'Value' is 'Relative to current time'. Below this, there are dropdowns for 'the last', a text input '2', and a dropdown for 'Minutes'. An 'Add' button is to the right. At the bottom, it says 'No criteria specified'. 'OK' and 'Cancel' buttons are at the bottom right.

Rotating the symbols in webmap

In order to indicate the direction in which the vehicle travels, the symbols for the Vehicles Latest layer may be rotated in webmap by following the workflow below.

1. Hover the cursor over Vehicles Latest layer and click on **Change Style** icon 
2. Select **vehicletype** from the attribute to show option
3. Click **Options** under (Unique Symbols)
4. **Check** Rotate symbols & select **heading** and **Clockwise**.

The screenshot shows the 'Rotate symbols (degrees)' checkbox checked. Below it is a dropdown menu with 'heading' selected. At the bottom, there are two radio buttons: 'Clockwise' (selected) and 'Counterclockwise'.

Congratulations!

By completing the exercises in this module you learned how to use the GeoEvent Extension to solve a real world problem. You can now extend this demo based on your use case.