

ArcGIS® GeoEvent Server

FlightAware Connector



NOTE: The Real-Time GIS Team strives to update product tutorials to reflect the latest release. Depending on the version of GeoEvent Server you are using, there may be inconsistencies between your environment and the illustrations and/or specific steps in exercises or videos bundled with the tutorial. The concepts outlined, however, should be applicable across different versions of GeoEvent Server.

FlightAware Connector

- Introduction 4
 - GeoEvent Server Overview 4
 - What to expect from this abstract..... 4
 - Developer Notes 4
- FlightAware Connector Overview 4
 - Recent updates 5
 - Compatibility..... 5
 - Prerequisites 6
- Upgrading from a Previous Version 6
 - Determine your component’s version 6
 - Replace the Connector..... 7
 - Upgrade the Connector 7
 - Import a GeoEvent Server configuration 8
- Tune GeoEvent Server to support the FlightAware Firehose 8
- Deploying and configuring the FlightAware Connector..... 10
 - Add the FlightAware Transport to GeoEvent Server 10
 - Deploy via GeoEvent Manager (option 1)..... 10
 - Add to GeoEvent Server deploy folder (option 2) 11
 - Add the FlightAware Adapter to GeoEvent Server 11
 - Deploy via GeoEvent Manager (option 1)..... 11
 - Add to GeoEvent Server deploy folder (option 2) 12
 - Verify the GeoEvent Definitions were added 12
 - Create the FlightAware Connector 13
 - Explore the FlightAware Connector..... 14
 - Create a FlightAware Input 17
- Example using the FlightAware Input 19
 - Create a Stream Service output..... 19
 - Create a GeoEvent Service..... 20
 - View the FlightAware data in a client 21
- Example Web Maps with FlightAware Data 22

Troubleshooting.....	26
Logging configuration	26
Transport.....	26
Adapter	26
Log messages	26
Adapter is invalid (it probably doesn't exist)	26
Congratulations!	27

Introduction

GeoEvent Server Overview

[ArcGIS GeoEvent Server](#) extends the capabilities of your enterprise GIS with support for Real-Time GIS. GeoEvent Server enables real-time data streaming and analytics in your everyday GIS applications, workflows, and analyses. Use GeoEvent Server to:

- Extend existing GIS data and IT infrastructure with support for real-time event processing.
- Incorporate data received from real-time events into your ArcGIS Enterprise workflows.
- Perform continuous processing and analysis on streaming data as it is received in real-time.
- Store large volumes of data from real-time observations in the spatiotemporal big data store.
- Visualize large volumes of real-time observations using dynamic on-the-fly data aggregations.
- Notify those who need to know about patterns of interest with updates and alerts in real-time.
- Produce new streams of data that can be leveraged throughout the ArcGIS platform.

Commercial organizations, transportation managers, defense and intelligence analysts – anyone with a need to leverage streaming data – can use GeoEvent Server to receive, analyze, and produce streaming data from a variety of sources including mobile devices, in-vehicle GPS devices, sensor networks, online social media, RFID tags, environmental monitors, and more.

What to expect from this abstract

The intended audience for this abstract is those who have worked with GeoEvent Server. The narrative in this abstract highlights what the included release does and how to add it to GeoEvent Server.

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

Developer Notes

The Java Archive (JAR) files provided with this release are a compiled resource. The source code has not been made available to the developer community but is actively maintained by the GeoEvent Server product team. To submit issues for this item, you can access the item's ArcGIS GeoEvent Gallery page here:

<https://www.arcgis.com/home/item.html?id=9a49618c30a54071ab75c69e3f4e6090>

FlightAware Connector Overview

The FlightAware Connector for GeoEvent Server allows you to receive a real-time data stream from the FlightAware web service using the FlightAware Firehose API (for more information see https://flightaware.com/commercial/firehose/firehose_documentation.rvt). The Firehose data stream

provides a real-time feed of flight positions and flight status data for more than 250,000 flights worldwide.

All 20 data types are supported including:

- Flightplan
- ExtendedFlightInfo
- FLIFO
- Departure
- Arrival
- Cancellation
- Position
- Offblock
- Onblock
- SurfaceOffBlock
- SurfaceOnBlock
- Ground_position
- Vehicle_position
- LocationEntry
- LocationExit
- NearSurfacePosition
- PowerOn
- FMSWX (FMS & Weather)
- KeepAlive
- Error

Recent updates

The latest release will automatically create the FlightAware Connector in GeoEvent Manager once the components are deployed. Please review the upgrade instructions in the next section prior to deploying to GeoEvent Server if you are upgrading an existing configuration. Refer to the *Release History.pdf* included with this deliverable for a complete list of updates to the FlightAware Connector and supporting documentation.

Compatibility

This release of the connector **is compatible with ArcGIS GeoEvent Server versions 10.6 or later**. The version of this connector does not need to match the version of ArcGIS GeoEvent Server you are using. A list of recent changes is provided in the Release History document.

NOTE: *The release strategy for ArcGIS GeoEvent Server items delivered on the ArcGIS GeoEvent Server Gallery was updated in 2019. Going forward, a new release of this item will only be created when:*

- *a bug is found,*
- *enhancements with new capabilities are required,*

- or the current release is not compatible with new versions of GeoEvent Server. This strategy makes upgrades of these custom components easier since you will not have to upgrade them for every release of ArcGIS GeoEvent Server. The documentation for the latest release has been updated and includes instructions for updating your configuration to align with this strategy.

Prerequisites

To use the FlightAware Connector for GeoEvent Server you must:

- Have a FlightAware account/subscription. Visit the link above to create an account.
- Ensure your organization and Windows firewall allow inbound TCP traffic through port 1501.
- Have sufficient machine resources. Since the FlightAware data stream load and frequency are extremely high, the machine running GeoEvent Server should have enough CPU cores and RAM to accommodate (recommended is 8 cores with 16GB+ RAM).
- There may be additional licensing requirements for your FlightAware subscription to take advantage of all message types and connector properties.

Upgrading from a Previous Version

If you are upgrading from a previous version of the connector, you will need to do a few things before you upgrade.

NOTE: *The upgrade processes documented below will generally be applicable to any components deployed to GeoEvent Server. However, specific instructions may differ between components, so consult the upgrade documentation for each custom component before upgrading.*

Determine your component's version

To determine which version of the connector you currently have deployed, follow the steps below.

1. In **GeoEvent Manager**, navigate to **Site > Components > Transports** and search for **FlightAware**.
2. If the **Flight Aware** transport does not appear in the list, you do not have the transport installed.
 - a. Follow the instructions in the Add the Connector to GeoEvent Server section below to deploy the transport.
3. If the **Flight Aware** transport is listed, the version will be indicated.
 - a. If this version matches the version of the new release **flightaware-transport-10.6.0.jar** file provided with this release, follow the instructions in the Replace the Connector section below.
 - b. If the version does not match, you are using a different version and must follow the steps in the Upgrade the Connector section below.
4. In **GeoEvent Manager**, navigate to **Site > Components > Adapters** and search for **FlightAware**.
 - a. Repeat the same checks as in steps 2 & 3 above for the **flightaware-adapter-10.6.0.jar** adapter file.

Replace the Connector

If the version of the transport and adapter matches the version you have deployed, follow the steps below to replace the connector with the latest release.

1. In **File Explorer**, navigate to the GeoEvent Server **deploy** folder:

```
<arcgis_server_installation_directory>\GeoEvent\deploy
```

2. Delete the old **flightaware-transport-10.6.0.jar** and **flightaware-adapter-10.6.0.jar** files from the **deploy** folder.
3. Copy the new **flightaware-transport-10.6.0.jar** and **flightaware-adapter-10.6.0.jar** files provided in the **components** folder of this release to the **deploy** folder.
4. Proceed to the section [Explore the FlightAware Connector](#) to finish your configuration of the new connector.
5. GeoEvent Definitions may have changed, so please review your GeoEvent Services for processors such as the Field Mapper.

Upgrade the Connector

If the version of the deployed connector components do not match the version you are upgrading to, follow the steps below.

1. In **GeoEvent Manager**, navigate to **Site > GeoEvent > Configuration Store** and click **Export Configuration** to export your current configuration of GeoEvent Server.

- a. Name and save the exported configuration (.xml) file and store it in a safe place.

2. Navigate to **Manager > Inputs**. For each GeoEvent Input that utilizes this connector:

- a. Document the properties and use of the current input.

- b. Delete the input.

3. In **File Explorer**, navigate to the GeoEvent Server **deploy** folder and delete the old **flightaware-transport-<version>.jar** and **flightaware-adapter-<version>.jar** files from:

```
<arcgis_server_installation_directory>\GeoEvent\deploy
```

4. **(OPTIONAL)** If you are upgrading ArcGIS GeoEvent Server to a new version, do so now following the steps outlined in [Upgrading GeoEvent Server](#).
5. See the instructions below in the [Deploying and configuring the FlightAware Connector](#) section for information on deploying the new version of the connector.

6. In GeoEvent Manager, navigate to **Manager > Inputs**. For each GeoEvent Input that utilized this connector (documented from step 2 above).
 - a. Create a new input with the properties you documented.

Import a GeoEvent Server configuration

If you are using a GeoEvent Server configuration file (.xml) to import a configuration that utilizes this connector, follow these steps below to import it into GeoEvent Server.

1. If the connector is not already deployed on your machine, deploy it using the steps in [Deploying and configuring the FlightAware Connector](#) below.
2. In **GeoEvent Manager**, navigate to **Site > GeoEvent > Configuration Store** and click **Import Configuration** and import the configuration (.xml) file.
3. Navigate to **Manager > Inputs**, any inputs created using this connector may display an error. For each input that is displaying an error:
 - a. Replace the broken input with a new input using the same properties.
 - b. Note that you may need to consult the configuration XML file for these property values.

Tune GeoEvent Server to support the FlightAware Firehose

The GeoEvent Server configuration should be updated to accommodate the incoming load from the FlightAware Firehose. First, you will increase the JVM max memory allocation to a minimum of 12GB.

1. In **Windows Explorer**, navigate to the GeoEvent Server install folder (typically at `C:\Program Files\ArcGIS\Server\GeoEvent\etc`) and open the **ArcGISGeoEvent.cfg** file in a text editor.
2. Scroll until you find ***wrapper.java.additional.##=-Xmx4g*** and change the default value of **4g** to **12g**.
 - a. If your **-Xmx** value is set to anything else, change it to 12g.
 - i. You can set this value up to a maximum of 32g. Make sure you don't set this value to anything greater than 75% of your machine's total memory
 - b. The result should be ***wrapper.java.additional.##=-Xmx12g*** as illustrated below.
 - c. The number after the keyword **wrapper.java.additional** is relative to the previous line and may not match the number in the diagram below. Don't change it.


```

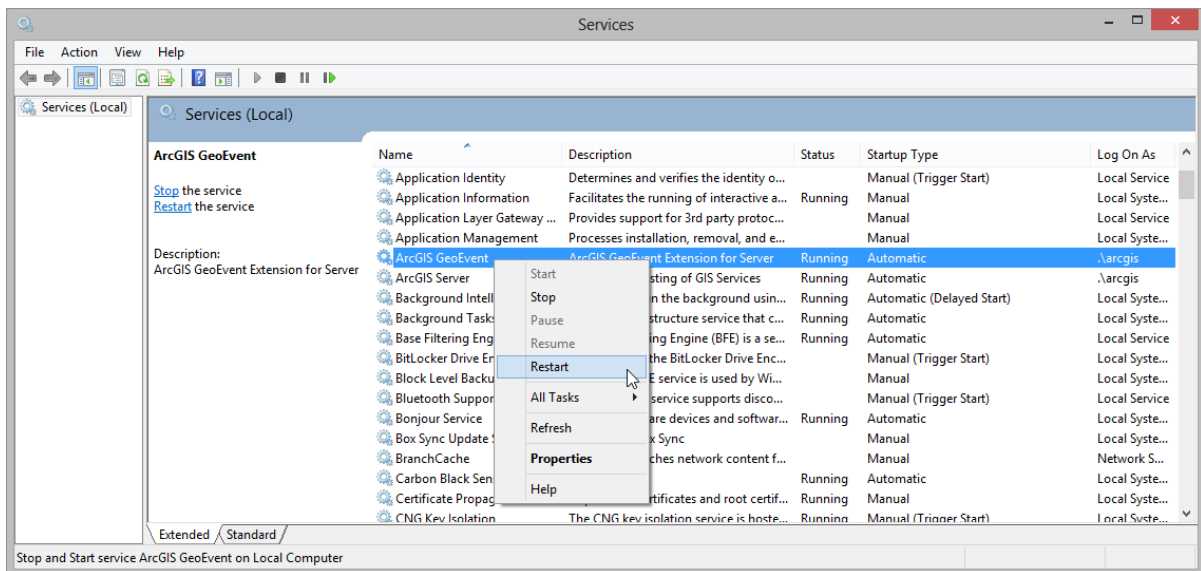
ArcGISGeoEvent.cfg
40 wrapper.working_dir=%KARAF_BASE%
41 wrapper.java.command=%GEOEVENT_JAVA_HOME%/bin/java
42 wrapper.java.mainclass=org.apache.karaf.wrapper.internal.service.Main
43 wrapper.java.classpath.1=%KARAF_BASE%/lib/boot/*.jar
44 wrapper.java.classpath.2=%KARAF_BASE%/lib/wrapper/*.jar
45 wrapper.java.library.path.1=%KARAF_BASE%/lib/wrapper/
46
47 # Application Parameters. Add parameters as needed starting from 1
48 #wrapper.app.parameter.1=
49
50 # JVM Parameters
51 # note that n is the parameter number starting from 1.
52 wrapper.java.additional.1=-Djava.endorsed.dirs="%GEOEVENT_JAVA_HOME%/jre/lib/endorsed;%GEOEVENT_JAVA_HOME%/lib/endorsed;%KARAF_HOME%/lib/endorsed"
53 wrapper.java.additional.2=-Djava.ext.dirs="%GEOEVENT_JAVA_HOME%/jre/lib/ext;%GEOEVENT_JAVA_HOME%/lib/ext;%KARAF_HOME%/lib/ext"
54 wrapper.java.additional.3=-Dkaraf.instances="%KARAF_HOME%/instances"
55 wrapper.java.additional.4=-Dkaraf.home="%KARAF_HOME%"
56 wrapper.java.additional.5=-Dkaraf.base="%KARAF_BASE%"
57 wrapper.java.additional.6=-Dkaraf.data="%KARAF_DATA%"
58 wrapper.java.additional.7=-Dkaraf.etc="%KARAF_ETC%"
59 wrapper.java.additional.8=-Dkaraf.log="%KARAF_LOG%"
60 wrapper.java.additional.9=-Dkaraf.restart.jvm.supported=true
61 wrapper.java.additional.10=-Djava.io.tmpdir="%KARAF_DATA%/tmp"
62 wrapper.java.additional.11=-Djava.util.logging.config.file="%KARAF_ETC%/java.util.logging.properties"
63 wrapper.java.additional.12=-Dcom.sun.management.jmxremote
64 wrapper.java.additional.13=-Dkaraf.startLocalConsole=false
65 wrapper.java.additional.14=-Dkaraf.startRemoteShell=false
66 wrapper.java.additional.15=-Djavax.xml.xpath.XPathFactory:http://java.sun.com/jaxp/xpath/dom=com.sun.org.apache.xpath.internal.jaxp.XPathFactoryImpl
67
68 wrapper.java.additional.16=-XX:+UseConcMarkSweepGC
69 wrapper.java.additional.17=-XX:+CMSClassUnloadingEnabled
70
71 # Minimum and Maximum Java Heap Sizes
72 wrapper.java.additional.18=-Xms1g
73 wrapper.java.additional.19=-Xmx12g
74
75 # Uncomment to enable jmx
76 #wrapper.java.additional.n=-Dcom.sun.management.jmxremote.port=1616
77 #wrapper.java.additional.n=-Dcom.sun.management.jmxremote.authenticate=false
78 #wrapper.java.additional.n=-Dcom.sun.management.jmxremote.ssl=false
79 #wrapper.java.additional.n=-Dcom.sun.management.jmxremote.local.only=false

```

3. Click **File > Save** to save the updates to the **ArcGISGeoEvent.cfg** file.


For the changes to be applied to GeoEvent Server you must restart the ArcGIS GeoEvent Server service.

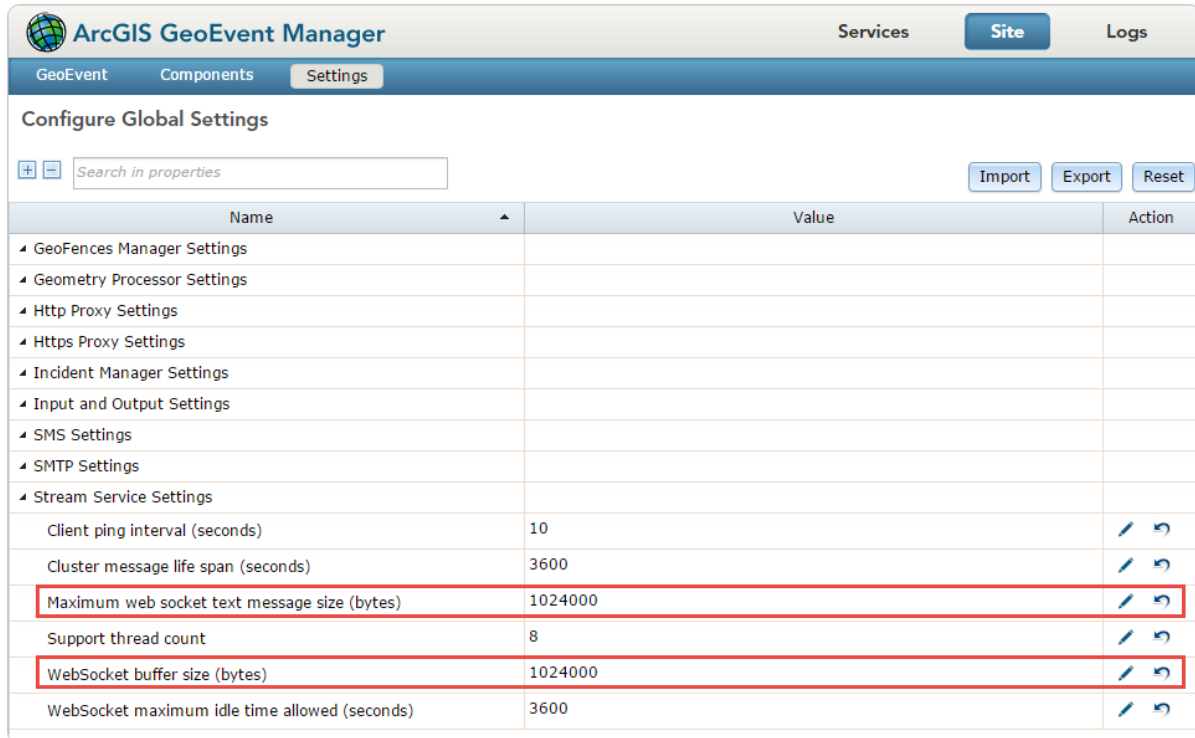
4. Open **Windows Services** and right-click the **ArcGIS GeoEvent Server** Windows service and choose **Restart** to apply the changes to the GeoEvent Server configuration.















Since you will be sending the FlightAware data to a stream service in this tutorial, you will now update the WebSocket parameters in GeoEvent Server.

5. In **GeoEvent Manager** navigate to **Site > Settings** and locate the **Stream Service Settings** section.

- Change the **Maximum web socket text size (bytes)** and **WebSocket buffer size (bytes)** property default values of **10240** to **1024000** by clicking  to edit and save each as illustrated below.



The screenshot shows the ArcGIS GeoEvent Manager interface with the 'Settings' tab selected. Under 'Configure Global Settings', there is a search bar and buttons for 'Import', 'Export', and 'Reset'. A table lists various settings categories and their values. Two rows are highlighted with red boxes:

Name	Value	Action
Client ping interval (seconds)	10	 
Cluster message life span (seconds)	3600	 
Maximum web socket text message size (bytes)	1024000	 
Support thread count	8	 
WebSocket buffer size (bytes)	1024000	 
WebSocket maximum idle time allowed (seconds)	3600	 

GeoEvent Server is now configured to receive the higher load and frequency of data provided by the FlightAware Firehose.

Deploying and configuring the FlightAware Connector

Add the FlightAware Transport to GeoEvent Server

To get started, you will first add the FlightAware Transport to ArcGIS GeoEvent Server. Choose one of the two options below for deploying the FlightAware Transport.

Deploy via GeoEvent Manager (option 1)

NOTE: There is a known issue deploying custom components via GeoEvent Manager in some browsers.

If you receive an error while trying to deploy via GeoEvent Manager, refer to [Add to deploy folder \(option 2\)](#) section below.

- In **GeoEvent Manager**, navigate to **Site > Components > Transports** and click **Add Local Transport**.
- Click **Choose Files** and browse to the **components** folder provided with this connector (... \GeoEvent-FlightAware-r#\components).
- Select the **flightaware-transport-10.6.0.jar** file and click **Open**.
 - The 10.6.0.jar** is compatible with ArcGIS GeoEvent Server version 10.6 and later.
- Click **Add** to add the new transport to GeoEvent Server. It will now appear in the list of **Transports**.

NOTE: The version number of the new adapter may differ from the version of GeoEvent Server and other adapters. However, the FlightAware Connector will work on all 10.6.x versions of GeoEvent Server.

Add to GeoEvent Server deploy folder (option 2)

1. Navigate to the GeoEvent Server **deploy** folder at:
`<arcgis_server_installation_directory>\GeoEvent\deploy`
2. Add the **flightaware-transport-10.6.0.jar** file to this folder.
 - The **10.6.0.jar** is compatible with ArcGIS GeoEvent Server version 10.6 or later.
3. Open **ArcGIS GeoEvent Manager** and navigate to **Site > Components > Transports**.
4. Verify the **FlightAware Inbound Transport** appears in the list of available adapters.

NOTE: The version number of the new transport may differ from the version of GeoEvent Server and other transports. However, the FlightAware Connector will work on all 10.6.x versions of GeoEvent Server.



Add the FlightAware Adapter to GeoEvent Server

Next, you will add the FlightAware Adapter to ArcGIS GeoEvent Server. Choose one of the two options below for deploying the FlightAware Adapter.

Deploy via GeoEvent Manager (option 1)

1. Navigate to **Site > Components > Adapters** and click **Add Local Adapter**.
2. Click **Choose Files** and browse to the **components** folder provided with this connector (`...\FlightAwareConnector\components`).
3. Select the **flightaware-adapter-10.6.0.jar** file and click **Open**.
4. Click **Add** to add the new adapter to GeoEvent Server. It will now appear in the list of **Adapters**.

NOTE: The version number of the new adapter may differ from the version of GeoEvent Server and other adapters. However, the FlightAware Connector will work on all 10.6.x versions of GeoEvent Server.

Add to GeoEvent Server deploy folder (option 2)

1. Navigate to the GeoEvent Server **deploy** folder at:
`<arcgis_server_installation_directory>\GeoEvent\deploy`
2. Add the **flightaware-adapter-10.6.0.jar** file to this folder.
 - **The 10.6.0.jar** is compatible with ArcGIS GeoEvent Server version 10.6 or later.
3. Open **ArcGIS GeoEvent Manager** and navigate to **Site > Components > Adapters**.
4. Verify the **FlightAware Inbound Adapter** appears in the list of available adapters.

NOTE: The version number of the new adapter may differ from the version of GeoEvent Server and other adapters. However, the FlightAware Connector will work on all 10.6.x versions of GeoEvent Server.



Verify the GeoEvent Definitions were added

By adding the FlightAware Adapter to GeoEvent Server, several new [GeoEvent Definitions](#) were created that will support the connector. You can explore those on the **Site > GeoEvent > GeoEvent Definitions** page in GeoEvent Manager.

NOTE: This latest version added one new GeoEvent Definition *FlightAwareFlifo* and also added fields to the existing GeoEvent Definition schemas.

GeoEvent Definitions New Import Delete

flight Additional Filter Criteria: None

<input type="checkbox"/> Name	Fields	Action
<input type="checkbox"/> FlightAwareArrival	type, ident, orig, dest, aat, timeType, id, pitr, faci...	
<input type="checkbox"/> FlightAwareCancellation	type, ident, orig, dest, id, pitr, facility_hash, facili...	
<input type="checkbox"/> FlightAwareDeparture	type, ident, orig, dest, adt, eta, id, pitr, aircraft...	
<input type="checkbox"/> FlightAwareError	type, error_msg	
<input type="checkbox"/> FlightAwareExtendedFlightInfo	type, ident, id, pitr, orig, dest, atcident, facility_...	
<input type="checkbox"/> FlightAwareFlifo	pitr, type, ident, id, orig, dest, status, scheduled...	
<input type="checkbox"/> FlightAwareFlightPlan	type, ident, status, orig, dest, fdt, edt, eta, pre...	
<input type="checkbox"/> FlightAwareFMSWX	type, hexid, pitr, clock, lat, lon, alt, alt_gnss, ver...	
<input type="checkbox"/> FlightAwareGroundPosition	type, ident, airport, lat, lon, clock, id, updateTyp...	
<input type="checkbox"/> FlightAwareKeepAlive	type, serverTime, pitr	
<input type="checkbox"/> FlightAwareLocationEntry	type, ident, airport, lat, lon, clock, id, pitr, hexid, ...	
<input type="checkbox"/> FlightAwareLocationExit	type, ident, airport, lat, lon, clock, id, pitr, hexid, ...	
<input type="checkbox"/> FlightAwareNearSurfacePosition	type, ident, airport, lat, lon, clock, id, updateTyp...	
<input type="checkbox"/> FlightAwareOffblock	type, ident, id, clock, pitr, reg, hexid, orig, dest, l...	
<input type="checkbox"/> FlightAwareOnblock	type, ident, id, clock, pitr, reg, hexid, orig, dest, l...	
<input type="checkbox"/> FlightAwarePosition	type, ident, lat, lon, clock, id, updateType, air_gr...	
<input type="checkbox"/> FlightAwarePowerOn	type, ident, id, clock, pitr, reg, hexid, airport, ori...	
<input type="checkbox"/> FlightAwareSurfaceOffblock	type, ident, id, clock, pitr, reg, hexid, orig, dest, l...	
<input type="checkbox"/> FlightAwareSurfaceOnblock	type, ident, id, clock, pitr, reg, hexid, orig, dest, l...	
<input type="checkbox"/> FlightAwareVehiclePosition	type, ident, airport, lat, lon, clock, id, updateTyp...	

Create the FlightAware Connector

When you add the adapter, a new connector will automatically be created for you. However, if you delete the one automatically created or need to create an additional connector with different default values, follow the steps in this section. If you do not need to create a FlightAware Connector, proceed to the next section [Explore the FlightAware Connector](#) and Save the new connector.

1. In **GeoEvent Manager**, navigate to **Site > GeoEvent > Connectors**.
2. Click **Create Connector** and configure the properties of the new connector as illustrated below.

Editing Connector - receive-flightaware-connector

Name:*

Label:*

Description:

Type: Input Output

Adapter:

Transport:

Default Input Name:*

Configure Properties

Shown Properties

- FlightAware Host
- Port Number
- Username
- Password
- Feed Type Group
- Flight Position
- Flight Plan
- Departure
- Arrival
- Cancellation
- Offblock
- Onblock
- Surface Offblock
- Surface Onblock
- Power On
- Ground Position
- Vehicle Position
- Location Entry
- Location Exit
- Near Surface Position
- FMS & Weather
- Mode
- Point in Time Recovery (Epoch Seconds)
- Start Time Range (Epoch Seconds)
- End Time Range (Epoch Seconds)
- Airline Filter
- Airport Filter
- Flight Identifications
- Operator Type Filter
- Area of Interests
- Densify Lines
- Max Segment Length (m)
- Curve Type

Advanced Properties

- Use Compression
- Strict Unblocking
- Rate Limit (sec between)
- Version
- Timeout

Hidden Properties

- Format
- Request Keep Alive

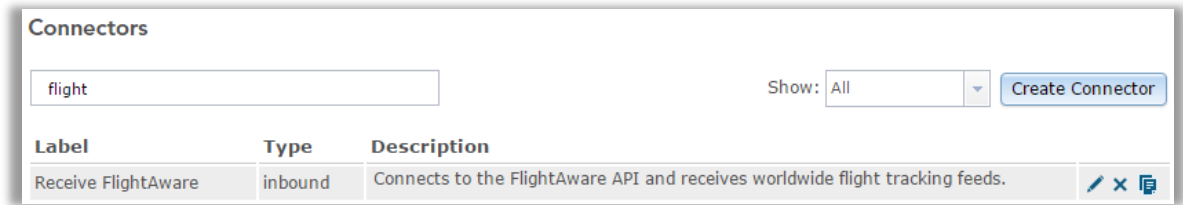
- a. If you only have one set of credentials for connecting to FlightAware, you can set the default values of the **Username**, **Password**, and **Host** here.
 - b. Review and update the default values for all other properties.
3. Click **Create** to create the new *flightaware-in* connector.

Explore the FlightAware Connector

We will now explore the properties of the FlightAware Connector and modify any defaults you wish.

NOTE: This section is important and must be completed prior to creating any new inputs.

1. Navigate to **Site > GeoEvent > Connectors** and in the search box enter **flight**. Notice you now have a new **Receive FlightAware** connector in the list.



2. Confirm the properties for the connector are configured as illustrated below.

Editing Connector - receive-flightaware-connector

Name:*

Label:*

Description:

Type: Input Output

Adapter:

Transport:

Default Input Name:*

Configure Properties

Shown Properties

- FlightAware Host
- Port Number
- Username
- Password
- Feed Type Group
- Flight Position
- Flight Plan
- Departure
- Arrival
- Cancellation
- Offblock
- Onblock
- Surface Offblock
- Surface Onblock
- Power On
- Ground Position
- Vehicle Position
- Location Entry
- Location Exit
- Near Surface Position
- FMS & Weather
- Mode
- Point in Time Recovery (Epoch Seconds)
- Start Time Range (Epoch Seconds)
- End Time Range (Epoch Seconds)
- Airline Filter
- Airport Filter
- Flight Identifications
- Operator Type Filter
- Area of Interests
- Densify Lines
- Max Segment Length (m)
- Curve Type

Advanced Properties

- Use Compression
- Strict Unblocking
- Rate Limit (sec between)
- Version
- Timeout

Hidden Properties

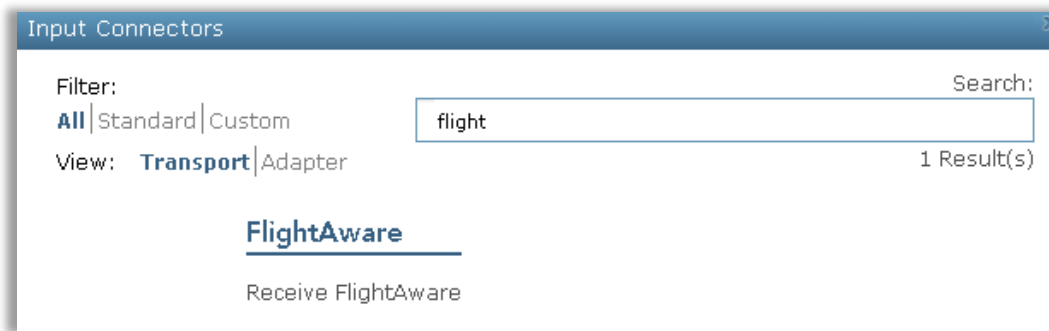
- Format
- Request Keep Alive

- a. If you only have one set of credentials for connecting to FlightAware, you can set the default values of the **Username**, **Password**, and **Host** here.
 - b. Review and update the default values for all other properties.
3. Even if you have not changed anything, click **Save** to save the **flightaware-in** connector. This allows you to create an input from the newly created connector.

Create a FlightAware Input

With the FlightAware Connector now added to GeoEvent Server, you will now create a FlightAware input and start receiving real-time flight information.

1. Navigate to **Manager > Inputs** and click **Add Input**.
2. In the search box enter **flight** and click **Select** to choose the **Receive FlightAware** Input Connector.



3. Configure the properties of the **Receive FlightAware** Input Connector as illustrated below using your appropriate **Port (1501** is the default port for the FlightAware feed), **Username**, and **Password**.

NOTE: Refer to the tooltips on each property for more information on each.

A screenshot of the 'Creating Input - Receive FlightAware' configuration form. The form has five fields, each with a label and an asterisk indicating it's required. The fields are: 'Name*' with the value 'flightaware-in'; 'FlightAware Host*' with the value 'firehose.flightaware.com'; 'Port Number*' with the value '1501'; 'Username*' with the value 'username'; and 'Password*' with a masked value represented by seven dots.

4. Choose the Feed Type Group you wish to receive messages for. FlightAware only allows messages from a single Feed Type Group for each connection. If you need messages from a second Feed Type Group (e.g. Airborne and Surface) you will need to create a second FlightAware Input. After selecting a Feed Type Group, you will be able to enable each message type by setting its value to Yes. Setting the value to No will disable that message type.
 - a. Airborne – Any message type related to aircraft: Flight Position, Flight Plan, Departure, Arrival, Cancellation, Offblock, Onblock, Surface Offblock, Surface Onblock, and Power On.

Feed Type Group*:	Airborne
Flight Position:	<input checked="" type="radio"/> Yes <input type="radio"/> No
Flight Plan:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Departure:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Arrival:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Cancellation:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Offblock:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Onblock:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Surface Offblock:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Surface Onblock:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Power On:	<input type="radio"/> Yes <input checked="" type="radio"/> No

- b. Surface – Any message type related to surface vehicles or surface features: Ground Position, Vehicle Position, Location Entry, Location Exit, Near Surface Position.

Feed Type Group*:	Surface
Ground Position:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Vehicle Position:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Location Entry:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Location Exit:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Near Surface Position:	<input type="radio"/> Yes <input checked="" type="radio"/> No







- c. Weather – Weather related information: FMS/W

Feed Type Group*:	Weather
FMS & Weather:	<input type="radio"/> Yes <input checked="" type="radio"/> No

5. Select the Mode

- Live – receives the latest messages from FlightAware without any historical events.
- PITR – starts receiving messages from the provided Point In Time Reference (as an Epoch value). Once the messages between the current time and the PITR have been received, it continues to receive live data.
- Range – receives messages from a given Point In Time Reference start to a Point In Time Reference end. Once all the messages have been received in the time range, no further messages will be received.

6. Set the filters Airline Filter, Airport Filter, Flight Identifications, Operator Type Filter, and Area of Interests. Please consult the FlightAware documentation for usage.
7. Enable line densify – Setting to Yes will add additional vertices to any polyline geometries. Lines will be geodetically densified (great-arc) using the shortest path algorithm.
8. For Advanced properties
 - a. Use Compression – compress the data using Zip compression.
 - b. Strick Unblocking – Uses settings on our FlightAware account to determine the aircraft that are tracked.
 - c. Rate Limit – The number of seconds between each message. Messages in between are dropped.
 - d. Version – FlightAware is now recommending you set the version for all requests. Please use the **23** setting unless you have a good reason to use another version.
 - e. Timeout – The number of seconds the TCP connection waits for a valid connection.
9. Once configured, click **Save** to create the new input.
10. Navigate to **Manager** and in the **Inputs** section you should see **flightaware-in** input is now receiving data.

▼ Inputs						
Name	Count	Rate	Max Rate	Time Since Last	Action	
 flightaware-in [Running On: tiemang]	1,407	43 /sec	 52 /sec	00:00:06		  

Example using the FlightAware Input

To round out this exercise, you will create a Stream Service Output in GeoEvent Server and add it to a map and a dashboard.

Create a Stream Service output

1. Navigate to **Manager > Outputs** and click **Add Output**.
2. In the search box enter **stream** and click **Select** to choose the **Send Features to a Stream Service** Output Connector.

NOTE: Since the FlightAware data feed is sending higher volume and higher frequency data, it is recommended you use the stream service capabilities available with GeoEvent Server. For more information on stream services see [What is a Stream Service?](#)

3. Configure the **Send Features to a Stream Service** Output Connector as illustrated below and then click **Publish Stream Service**.

Creating Output - Send Features to a Stream Service

Save Cancel

Name*:

GeoEvent Definition Name:

ArcGIS Server Connection*: Register ArcGIS Server

Folder:

Stream Service Name*: Publish Stream Service

Advanced

NOTE: The *FlightAwarePosition* stream service will not be available from the *Stream Service Name* drop-down until you perform Step 8 and 9 below.

4. On the **Publish Stream Service** dialog, configure the new stream service as illustrated below.

Publish a new stream service.

Name:

Cluster Name:

Store Latest:

Geometry Type:

Advanced

Publish Cancel

NOTE: For more information on working with stream services including the other properties available, refer to the [Stream Services Tutorial](#).

5. Click **Publish** to publish the new stream service.
6. Ensure the configuration matches the illustration in **Step 7** above and click **Save** to save the new output.

Create a GeoEvent Service

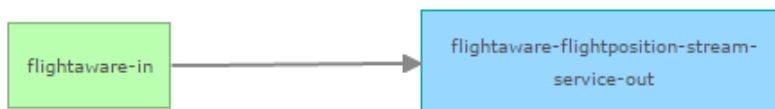
1. Navigate to **Manager > GeoEvent Services** and click **Add Service**.
2. On the **Add New Service** dialog, enter the information as illustrated below and click **Create**.

Add New Service

Service Name: *

Service Description:

- From the menu, drag and drop the **flightaware-in** input and the **flightaware-flightposition-stream-service-out** output onto the canvas and connect as illustrated below.



- Click **Publish** to publish the new GeoEvent Service. At the top of the page, notice the **flightaware-flightposition** GeoEvent Service is **Started** and it is receiving and sending data to the stream service.

flightaware-flightposition

GeoEvent Service for the FlightAware flight position data.

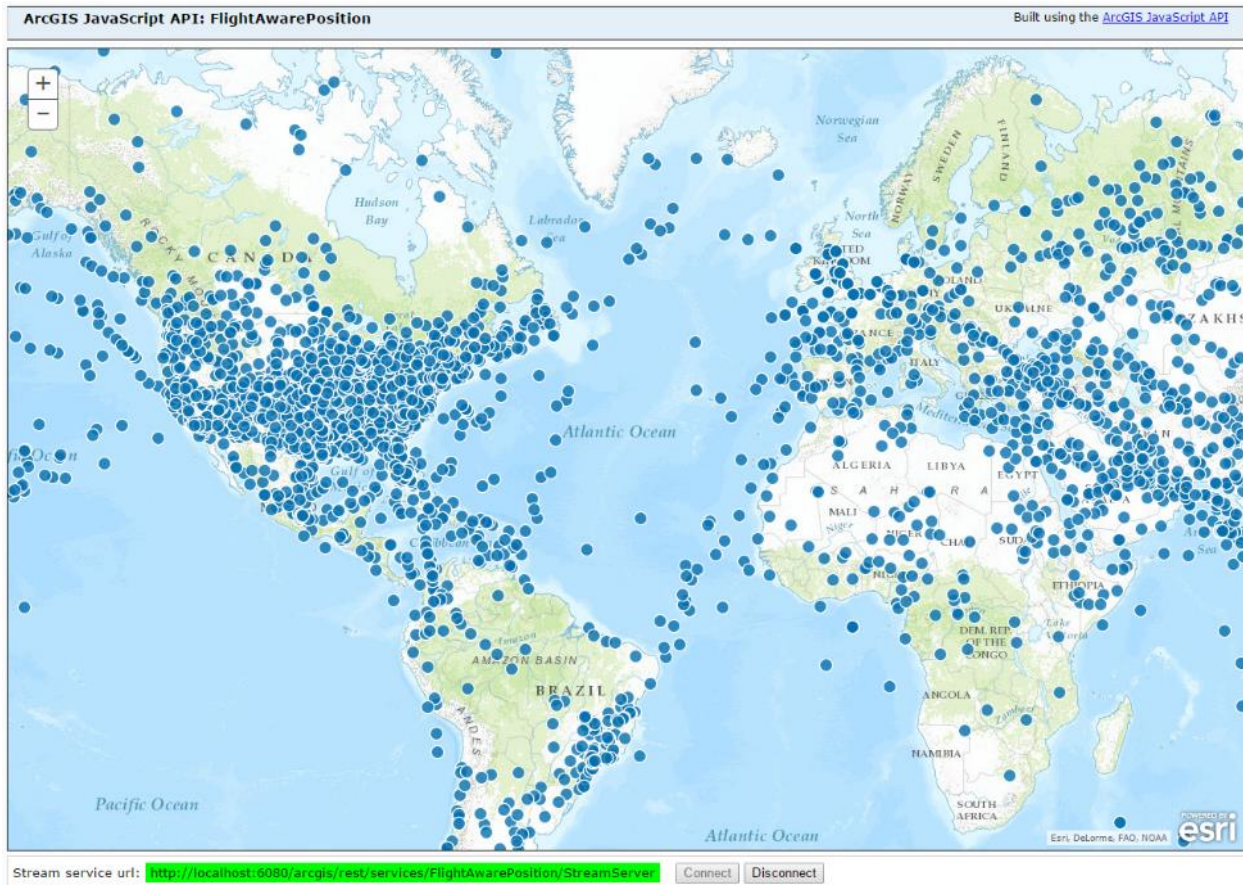
Status	In/Out	Count	Rate (over last 5 mins)	Max Rate	Time Since Last	Action
STARTED	In	2,263	75 /sec	137 /sec	00:00:00	
	Out	2,263	75 /sec	137 /sec	00:00:00	

View the FlightAware data in a client

Next, you will view the FlightAware flight positions streaming data in a client, specifically in the ArcGIS JavaScript application.

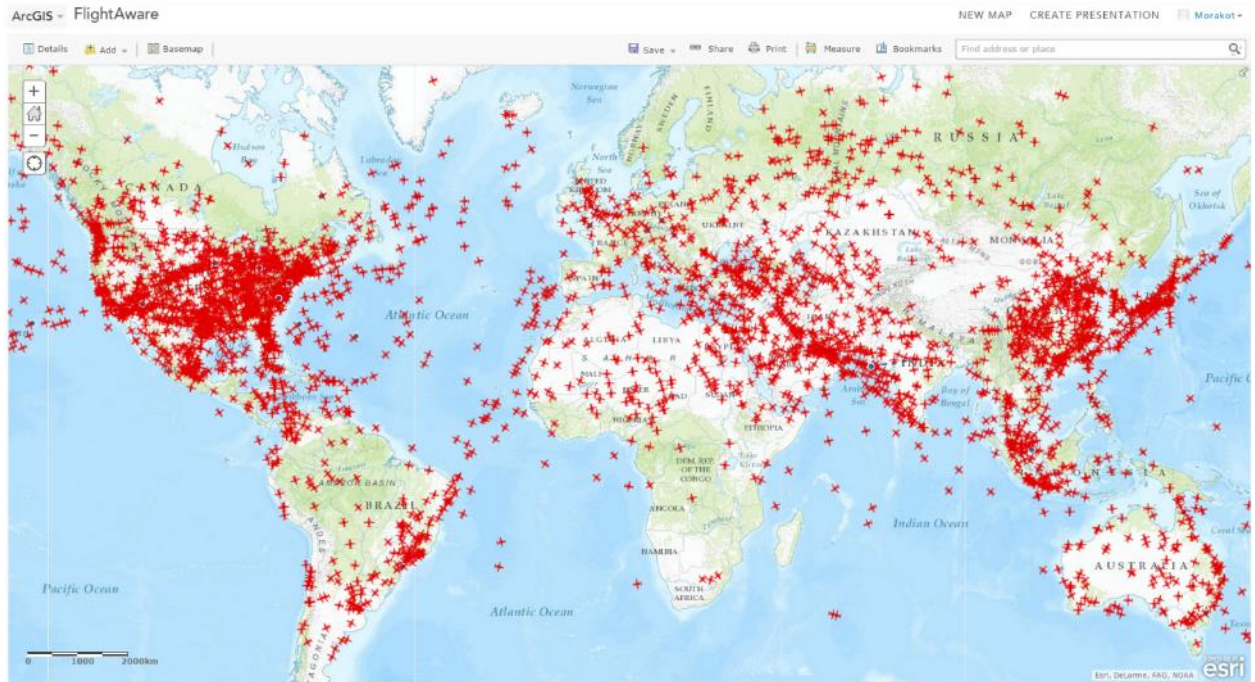
- In a web browser, open the **ArcGIS REST Services Directory** (typically at: <http://localhost:6080/arcgis/rest/services>).
- In the **Services** section, click **FlightAwarePosition (StreamServer)** to view the properties.
- Next to the **View In** property, click **ArcGIS JavaScript** to launch the application.

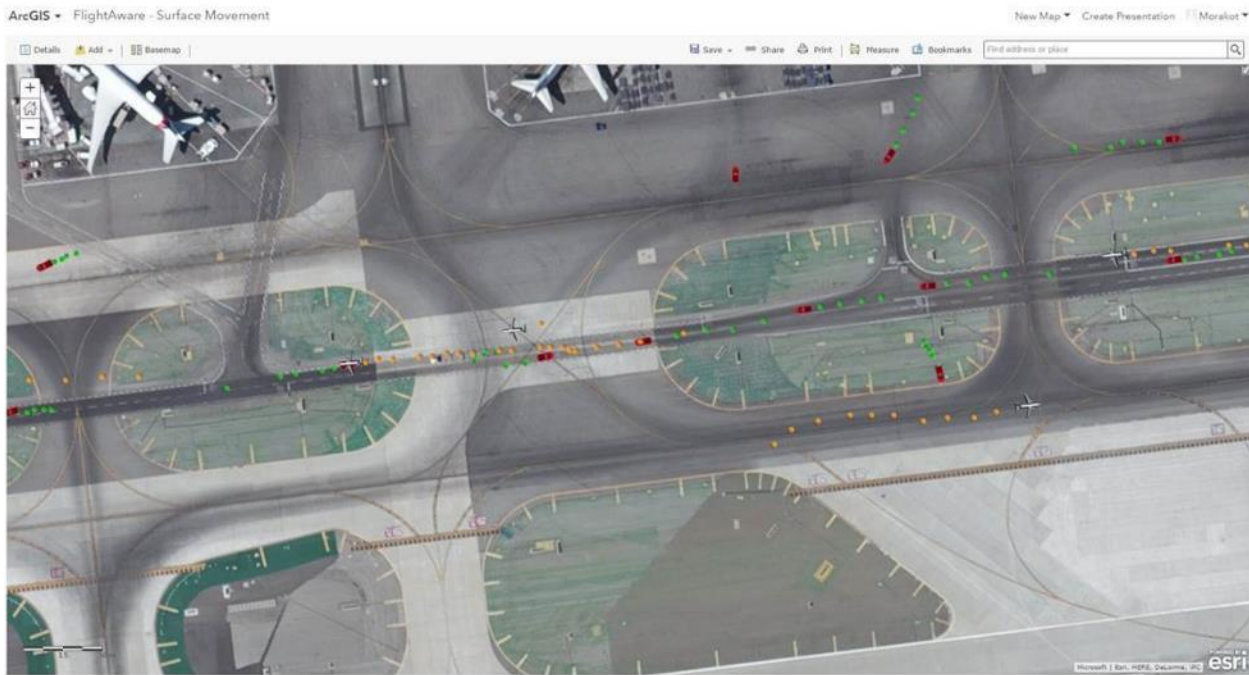
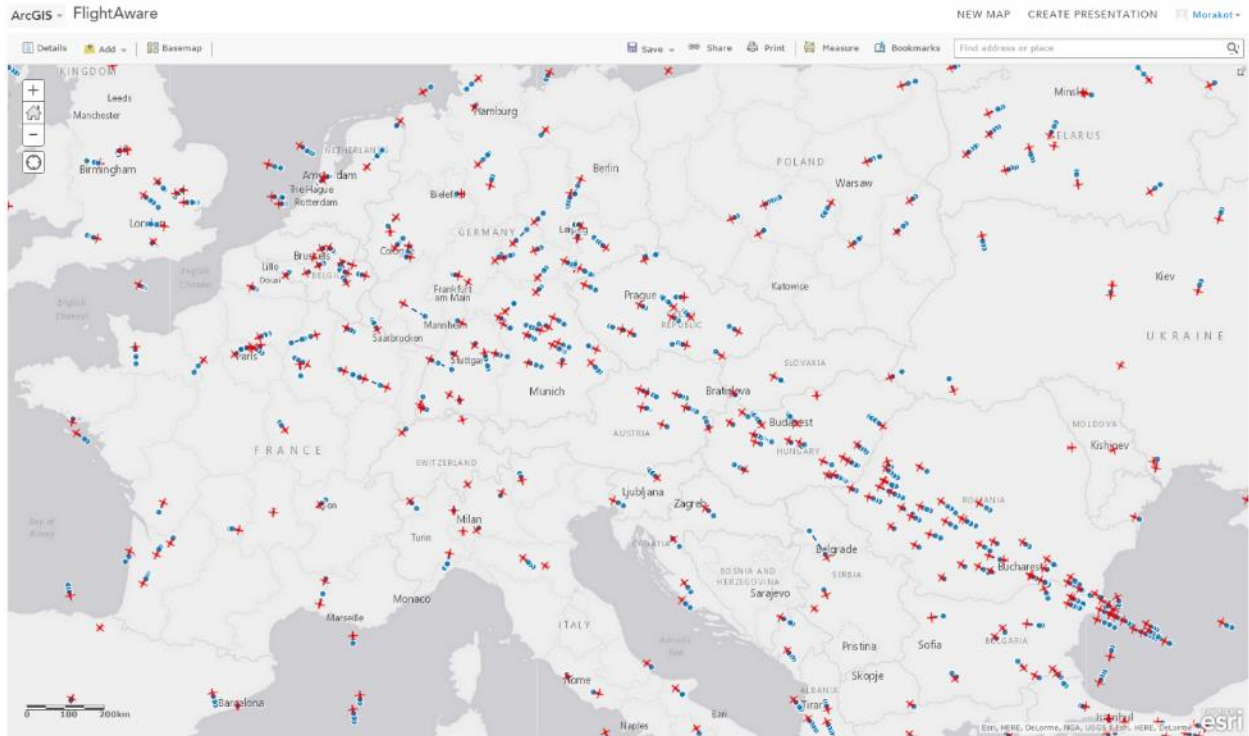
The application opens and you should now see the FlightAware flight position data on the map.

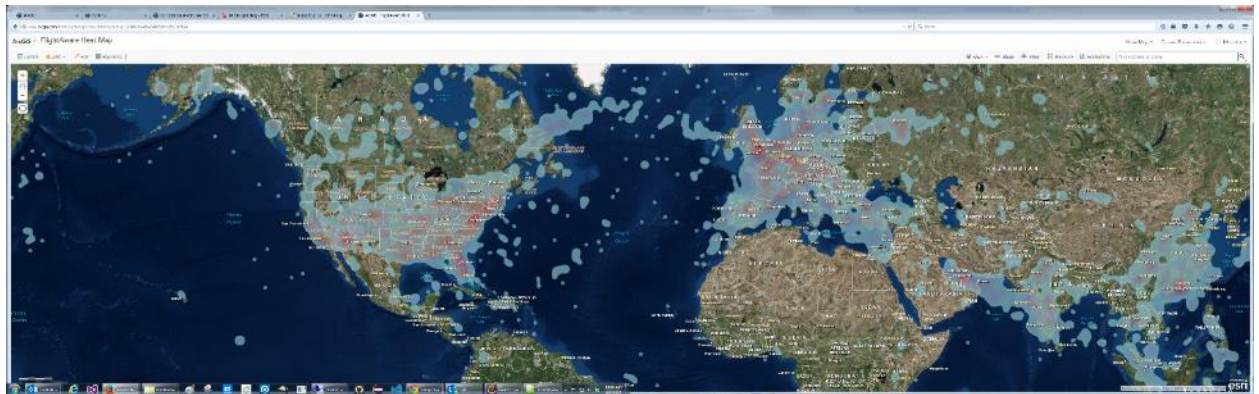
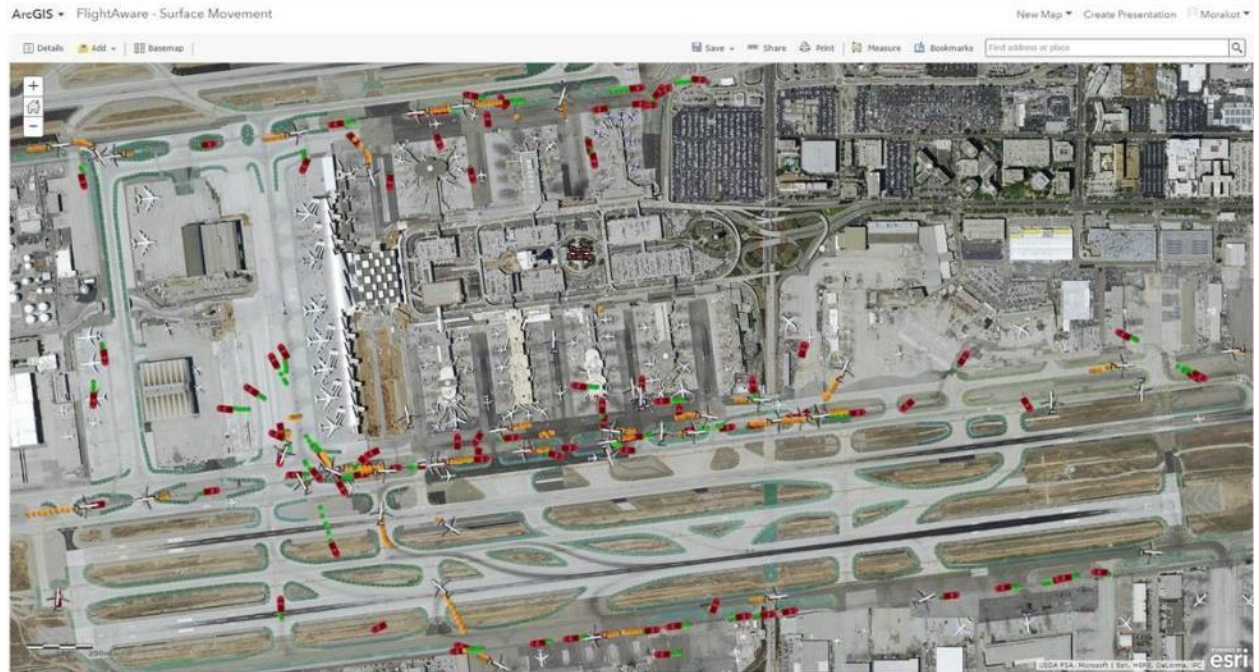


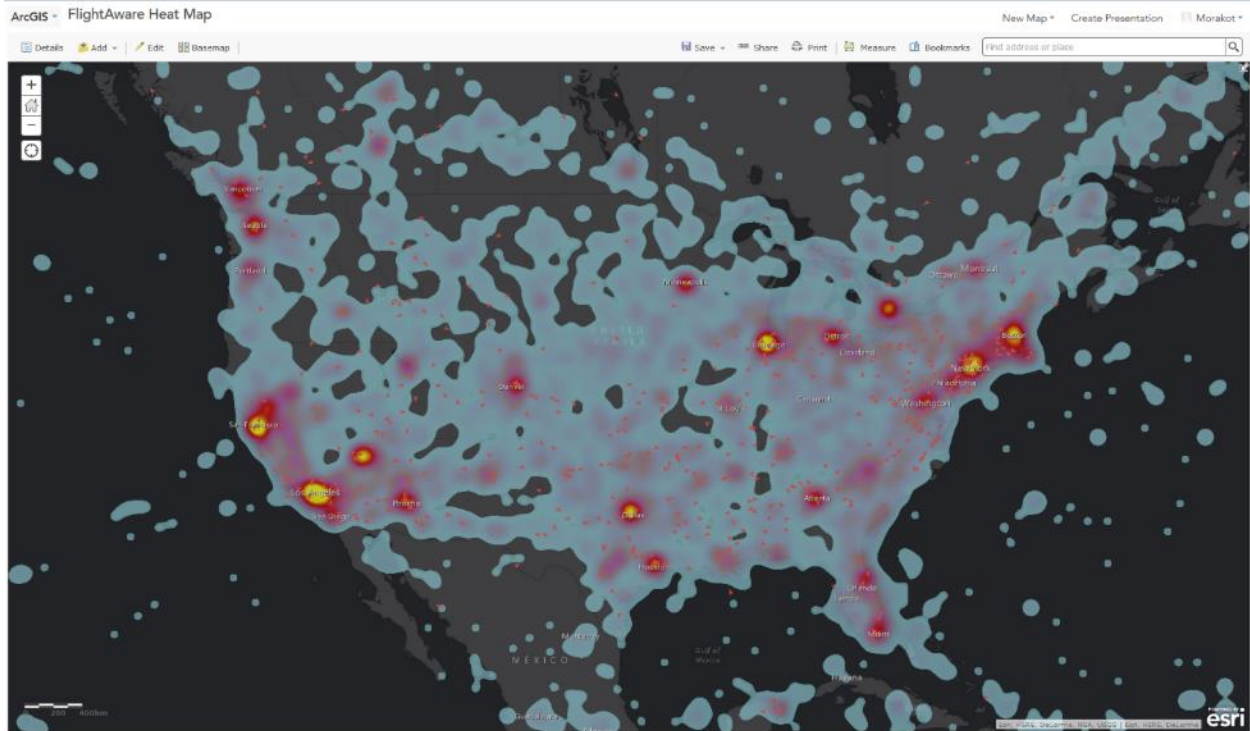
Example Web Maps with FlightAware Data

In addition to viewing the FlightAware streaming data in the JavaScript app, you can also add it to a web map on [ArcGIS Online](https://www.arcgis.com). Simply add the *FlightAwarePosition* layer to a web map by copying the *Stream Service URL* highlighted above in green to the *Add Layer from Web* dialog’s URL property. The *FlightAwarePosition* layer will then be added to a web map where you can modify the symbology, apply any necessary filtering, and update the streaming controls.









Troubleshooting

Logging configuration

Transport

Use `com.esri.goevent.transport.flightaware.FlightAwareTransport` to see details on the connector's connection to the data feed. These messages can be used to determine if the transport is receiving raw messages from FlightAware

- DEBUG will show any issues in receiving data.
- TRACE will show a low-level trace of the connection and data received.

Adapter

Use `com.esri.goevent.adapter.flightaware.FlightAwareAdapter` to see details on how the connector is adapting (parsing) the incoming events.

- DEBUG will show any issues in parsing the JSON as it is being interpreted into GeoEvents.
- TRACE will show all logical steps in adapting the JSON into GeoEvents.

Log messages

Adapter is invalid (it probably doesn't exist)

The warning log message *"Imported the connector 'FlightAware', however the adapter 'com.esri.goevent.adapter.inbound/FlightAware/10.x.x' is invalid (it probably doesnt*

`exist)` .” can safely be ignored. This log message is logged after the adapter is added, but before it is instantiated.

Congratulations!

By completing the exercises in this tutorial, you learned how to add the provided FlightAware transport and adapter to GeoEvent Server and created/explored a the FlightAware Connector. In addition, you created an input that allowed you to connect to your FlightAware data feed and you should have begun receiving data.

For more information on working with GeoEvent Server, including creating outputs, GeoEvent Services, and performing real-time filtering and analytics on the data received, refer to the [Introduction to GeoEvent Server Tutorial](#) on the [ArcGIS GeoEvent Server Gallery](#).

If you have questions, comments, or feedback regarding this tutorial start a discussion on the [GeoEvent Server Forum](#) and tag your post with GEOEVENT TUTORIAL FEEDBACK.