



ArcGIS GeoEvent Extension for Server: Best Practices

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Live Data: Ubiquitous, Plenteous

- **Internet of Things (excluding PCs, phones, and tablets)**
 - **2009: 0.9 billion devices**
 - **2020: 26 billion devices**
 - *Source: Gartner*
- **Total amount of digital data created**
 - **2010: 1.2 zettabytes**
 - **2013: 4 zettabytes**
 - **2020: 35 zettabytes**
 - **(Zettabyte = 1 billion terabytes)**
 - *Sources: IDC, VSAT Voice*

ArcGIS GeoEvent Extension

- Listen for live data inputs of any kind
- Generate outputs (e.g. write to feature services)
- Filter live data
- Apply GeoFences to live data
- Enrich live data

“I built my own system to handle live data.
It was easy and it’s awesome.”

No one ever

Benefits of GeoEvent Extension

- We've built what's hard about live data handling
- You build what's specific to you (the easy part!)
- We'll fully support you
- Let me show you how it works...

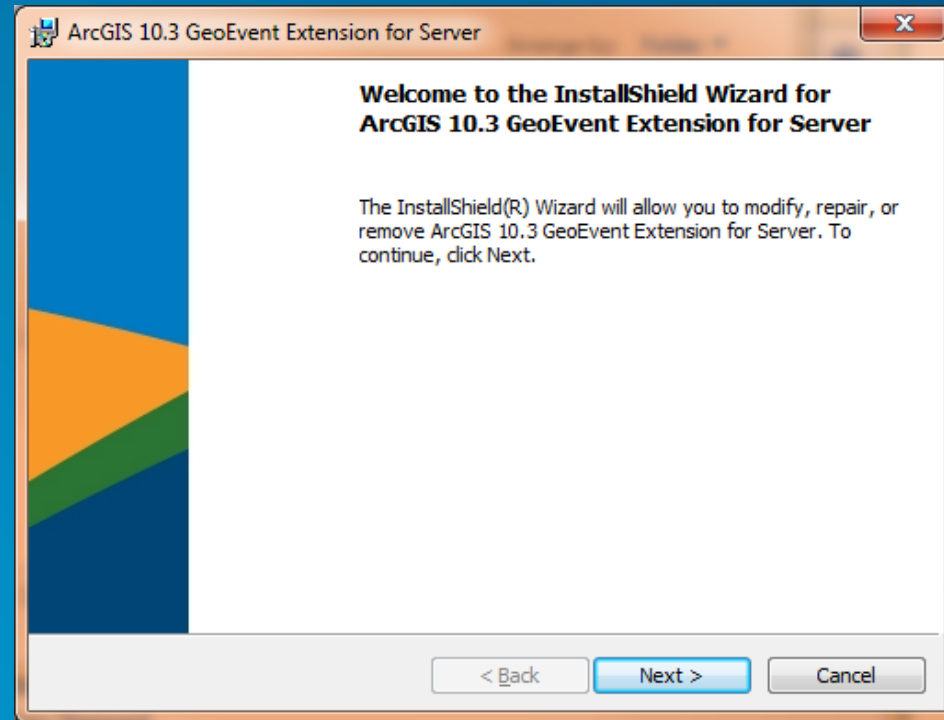
Agenda

- **Getting started**
- **Basic concepts**
- **Advanced topics**

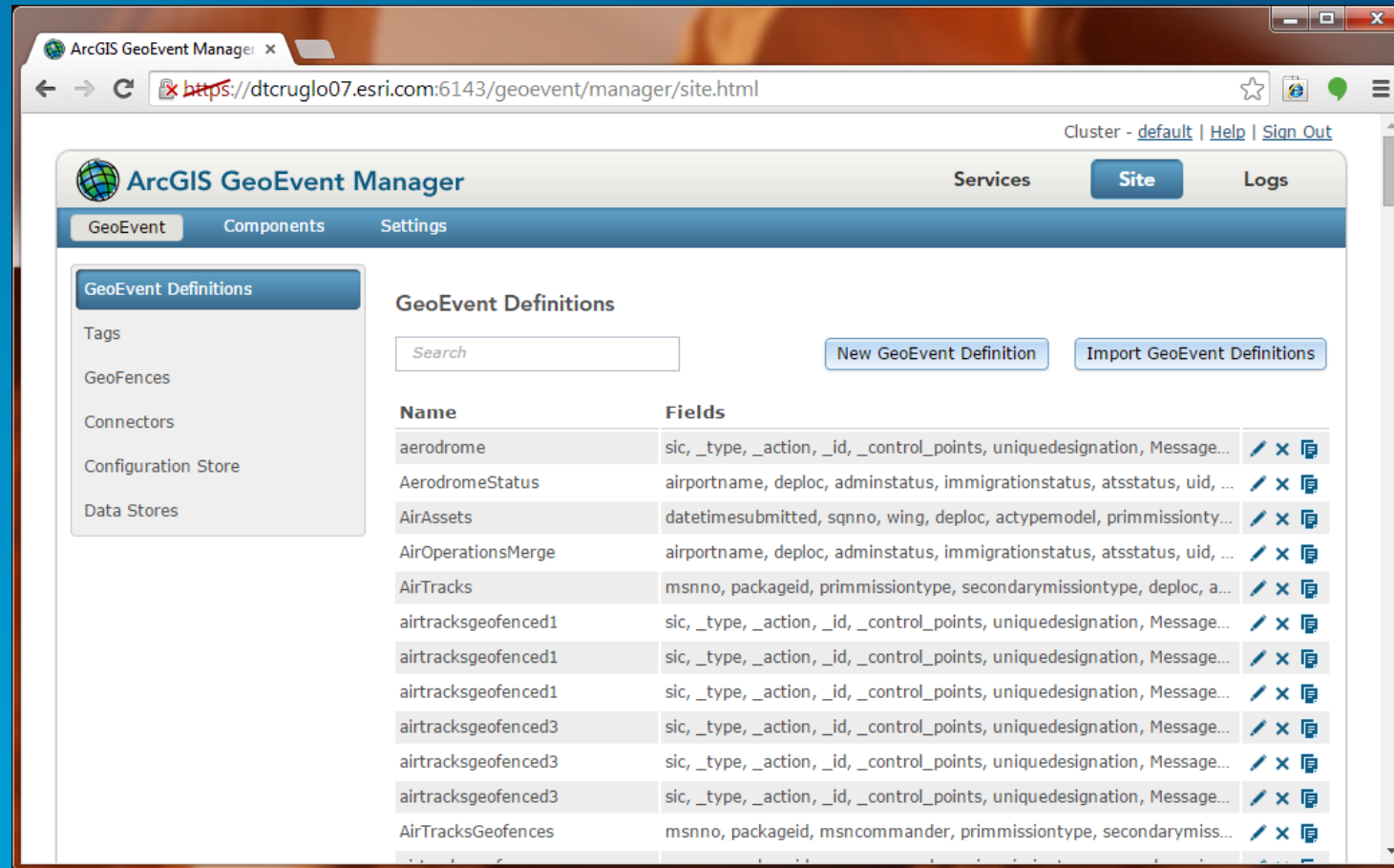
How to Get GeoEvent Extension

- **Now:**
 - Check to see if your organization already has it
 - Or subscribe to Esri Developer Network (EDN)
- **Later:**
 - Purchase it if you don't have it yet
 - It's an extension to ArcGIS for Server

Installation and Configuration



Installation and Configuration



The screenshot displays the ArcGIS GeoEvent Manager web interface. The browser address bar shows the URL <https://dtcruglo07.esri.com:6143/geoevent/manager/site.html>. The page title is "ArcGIS GeoEvent Manager" and the current cluster is "default". Navigation links for "Help" and "Sign Out" are visible. The main navigation bar includes "Services", "Site" (selected), and "Logs". A secondary navigation bar contains "GeoEvent", "Components", and "Settings". A left-hand sidebar lists menu items: "GeoEvent Definitions" (selected), "Tags", "GeoFences", "Connectors", "Configuration Store", and "Data Stores".

The main content area is titled "GeoEvent Definitions" and features a search input field and two buttons: "New GeoEvent Definition" and "Import GeoEvent Definitions". Below this is a table listing various GeoEvent Definitions.

Name	Fields	
aerodrome	sic, _type, _action, _id, _control_points, uniquedesignation, Message...	✎ ✕ 🗑
AerodromeStatus	airportname, deploc, adminstatus, immigrationstatus, atsstatus, uid, ...	✎ ✕ 🗑
AirAssets	datetimesubmitted, sqnno, wing, deploc, actypemodel, primmissionty...	✎ ✕ 🗑
AirOperationsMerge	airportname, deploc, adminstatus, immigrationstatus, atsstatus, uid, ...	✎ ✕ 🗑
AirTracks	msnno, packageid, primmissiontype, secondarymissiontype, deploc, a...	✎ ✕ 🗑
airtracksgeofenced1	sic, _type, _action, _id, _control_points, uniquedesignation, Message...	✎ ✕ 🗑
airtracksgeofenced1	sic, _type, _action, _id, _control_points, uniquedesignation, Message...	✎ ✕ 🗑
airtracksgeofenced1	sic, _type, _action, _id, _control_points, uniquedesignation, Message...	✎ ✕ 🗑
airtracksgeofenced3	sic, _type, _action, _id, _control_points, uniquedesignation, Message...	✎ ✕ 🗑
airtracksgeofenced3	sic, _type, _action, _id, _control_points, uniquedesignation, Message...	✎ ✕ 🗑
airtracksgeofenced3	sic, _type, _action, _id, _control_points, uniquedesignation, Message...	✎ ✕ 🗑
AirTracksGeofences	msnno, packageid, msncommander, primmissiontype, secondarymiss...	✎ ✕ 🗑

Basic Configuration

Demo

Best Practices for Getting Started

- [GeoEvent tutorials on ArcGIS.com](#)

First GeoEvent Service

Demo

Live Data Streams

- **GPS**
- **Mobile devices**
- **Social media**
- **Sensors**
- **Simulators**
- **Or anything else (via SDK)**

Better Together

- **GeoEvent Extension**
- **Operations Dashboard**

Live Data

Demo:

- GeoEvent Manager
- Operations Dashboard

Connector

- **An input or output type**
- **Connector = Adapter + Transport**
 - **Adapter: converts between GeoEvents and raw data**
 - **Transport: sends and receives raw data**

Adapters (Included)

Generic JSON Inbound Adapter	inbound	10.3.0	This adapter extracts GeoEvents from a JSON object (or several GeoEvents from an array of JSON objects).
Feature JSON Outbound Adapter	outbound	10.3.0	This adapter is capable of writing JSON data compatible with ArcGIS Server feature services.
GeoEventCache	outbound	10.3.0	Capable of storing geoevents in a cache.
Feature JSON Inbound Adapter	inbound	10.3.0	This adapter extracts features from the JSON structure that comes from queries on ArcGIS Server Feature Services.
Feature JSON Outbound Adapter	outbound	10.3.0	This adapter is capable of writing JSON data compatible with ArcGIS Server feature services.
Message Formatter Outbound Adapter	outbound	10.3.0	Adapter that allows administrator to create any formatted text message based on a template. Useful for creating human readable strings to be sent via e-mail or dumped to a log file that will be processed by analysts.
RSS Inbound Adapter	inbound	10.3.0	Capable of receiving text data in RSS format.
RSS Outbound Adapter	outbound	10.3.0	Capable of transmitting text data in RSS format.
Text Inbound Adapter	inbound	10.3.0	Capable of receiving text data in CSV (or similar) format.
Text Outbound Adapter	outbound	10.3.0	Capable of transmitting text data in CSV (or similar) format.
XML Inbound Adapter	inbound	10.3.0	This adapter extracts GeoEvents from an XML string.

Transports (Included)

Feature Service Inbound Transport	inbound	10.3.0	Feature Service InboundTransport implementation.
Feature Service Outbound Transport	outbound	10.3.0	Feature Service OutboundTransport implementation.
File Inbound Transport	inbound	10.3.0	File Transport for inbound streams
File Outbound Transport	outbound	10.3.0	File Transport for outbound streams.
Inbound Rest Transport.	inbound	10.3.0	Inbound Rest Transport.
Http Outbound Transport implementation.	outbound	10.3.0	Http Outbound Transport implementation.
Basic Authentication Inbound Rest Transport.	inbound	10.3.0	Basic Authentication Inbound Rest Transport.
Basic Authentication Outbound Rest Transport.	outbound	10.3.0	Basic Authentication Outbound Rest Transport.
Inbound HTTP Transport using Open Authentication.	inbound	10.3.0	Inbound HTTP Transport using Open Authentication.
Outbound HTTP Transport using Open Authentication.	outbound	10.3.0	Outbound HTTP Transport using Open Authentication.
SMS Outbound Transport	outbound	10.3.0	SMS Outbound Transport.
SMTP Outbound Transport	outbound	10.3.0	SMTP OutboundTransport implementation.
Stream Service Transport for outbound streams.	outbound	10.3.0	Stream Service Transport for outbound streams.
TCP Inbound Transport	inbound	10.3.0	TCP Inbound Transport
TCP Outbound Transport	outbound	10.3.0	TCP Transport for outbound streams.
UDP Inbound Transport	inbound	10.3.0	UDP Transport for inbound streams
UDP Outbound Transport	outbound	10.3.0	UDP Transport for outbound streams. This transport can be used to send data to broadcast, multicast, or unicast addresses.
Websocket Inbound Transport	inbound	10.3.0	Websocket Transport for inbound streams.
Websocket Outbound Transport	outbound	10.3.0	Web Socket Transport for outbound streams.
XMPP Outbound Transport	outbound	10.3.0	XMPP Outbound Transport.

Best Practices for Adapters and Transports

- Use included adapters and transports if possible
- Use GeoEvent SDK if necessary to build your own (Java)
 - If you do, try to make them generic

Input Connectors (Included)

ArcGIS Server	Poll an ArcGIS Server for features
File	Watch a folder for new .csv files Watch a folder for new .json files
RSS	Receive RSS
Socket	Receive text from a TCP socket Receive text from a UDP socket
Web	Receive features on a REST endpoint Receive JSON on a REST endpoint Poll an external website for JSON
WebSocket	Receive JSON on a WebSocket

Input Connectors (GeoEvent Gallery)

ActiveMQ	Receive feature JSON from ActiveMQ Receive JSON from ActiveMQ Receive text from ActiveMQ
Instagram	Receive media feed from Instagram
NMEA	Receive NMEA on a UDP socket
Sierra Wireless	Receive Sierra Wireless using RAP
Trimble	Receive Trimble using TAIP
Twitter	Receive Tweets from Twitter

Input Connectors (GeoEvent Partner Gallery)

exactEarth	Receive AIS
Networkfleet *	Receive Networkfleet
Zonar *	Receive Zonar

Output Connectors (Included)

ArcGIS Server	Add a feature Update a feature
Email	Send an email
File	Write to a .csv file Write to a .json file
Instant message	Send an instant message
Socket	Publish text to a TCP socket Publish text to a UDP socket
Text message	Send a text message
Web (including KML and RSS)	Publish GeoEvents on a REST endpoint Push JSON to an external website
WebSocket	Publish JSON to a WebSocket Push JSON to an external WebSocket

Output Connectors (GeoEvent Gallery)

ActiveMQ	Send text to ActiveMQ
Hadoop	Write to Hadoop
MongoDB	Write to MongoDB
Twitter	Send a Tweet

Output Connectors (GeoEvent Partner Gallery)

AGI *	Send to Cesium
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Best Practices for Connectors

- “Incoming Data Contains GeoEvent Definition”: careful! (Demo)
- Use included connectors when possible
- Create custom connectors if needed (no code)
 - Make them generic if possible
- Remember:
 - Connector = Adapter + Transport
- Try [solutions-geoevent-java](#) repository

solutions-geoevent-java

- **Open source connectors and processors**
- **Provided by Esri through GitHub**

solutions-geoevent-java

GitHub repository

Resources

- **Documentation:** <http://pro.arcgis.com/en/share/geoevent-processor>
- **GeoEvent Gallery:**
<http://www.arcgis.com/home/group.html?owner=GeoEventTeam&title=ArcGIS%20GeoEvent%20Processor>
- **Support:** <http://support.esri.com>



Understanding our world.