Automation Hookup: REST, Webhooks and More

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#data19
Create a new site for Sales team
Add ~100 user accounts
New project for each product line
Learning Objectives

Automating Content Management

- REST API
- Tableau Server Client

Automation Hookup

Receiving notifications as events happen

- Webhooks
Tableau Developer Tools

Automation / Integration
Automate tedious tasks, create custom workflows and manage Tableau content

Extensibility
Give dashboards new capabilities, and integrate them with other applications

Advanced Analytics
Integrate Tableau with advanced models in R, Python, and Matlab

Embedding
Embed Tableau content into other applications

Data Connectivity
Get any data into Tableau via custom connector or extract

developer.tableau.com
Integrate and visualize the data from your R, Python, and Matlab models in Tableau. Advanced Analytics Tableau Developer Tools developer.tableau.com

Automation / Integration
Automate tedious tasks, create custom workflows and manage Tableau content

REST API  Webhooks
Metadata API  TSC
Hyper API  TSM

developer.tableau.com
Tableau REST API
What is REST?

Where to **ACT** - the resource
The server, site, or endpoint where the action is requested

What to **DO** - the operation
HTTP verb such as GET, POST, PUT, or DELETE

Which **DATA** to use
Resource IDs and query filters: appended to URL
Authentication tokens and request metadata: included in request header
Parameters for operations: sent in request body
Tableau Server/Online REST API Capabilities

User management
Create, query, and update users

Content and permission management
Query, modify, and publish workbooks and data sources

Server and site organization
Manage sites, projects, groups, permissions, schedules, subscription, tags, etc.
What Can Tableau REST API Do?

- Embedded Analytics
- Content Auditing
- Workflow Integration
- Enterprise Automation
REST Example: Create a New Project

Site URI

POST https://server-address/api/3.6/sites/site-id/projects

Authentication token in header

X-Tableau-Auth: 12ab34cd56ef78ab90cd12ef34ab56cd

Request body

```json
{
    "project": {
        "name": "My Little Llama",
        "description": "Sales analysis for My Little Llama product line"
    }
}
```
REST Example: Query Projects on a Site

List all projects

```
GET https://server-address/api/3.6/sites/site-id/projects
```

Or... filter results to specific project name

```
[...]/projects?filter=name:eq:My+Little+Llama
```

Or... sort results by creation date

```
[...]/projects?sort=createdAt:asc
```

Or... why not both?

```
[...]/projects?filter=name:eq:My+Little+Llama&sort=createdAt:asc
```
Demo of REST Workflow

Questions? Please note them down

Example code and Postman requests will be available online
Tableau Server Client
Tableau Server Client (TSC)

Open-source client library written in Python

Built on the Tableau Server REST API

Abstracts the lower-level HTTP communication and error handling

Available on PyPI - `pip install tableauserverclient`
TSC Example: Create a New Project

Connect to site and authenticate

```python
import tableauserverclient as TSC
server = TSC.Server("https://server-address", use_server_version=True)
tableau_auth = TSC.PersonalAccessTokenAuth("token-name", "token")
with server.auth.sign_in(tableau_auth):
    llama_project = TSC.ProjectItem("My Little Llama", "Sales analysis for My Little Llama product line")
    new_project = server.projects.create(llama_project)
```

Create the project
TSC Demo

Questions? Please note them down

Example code and Postman requests will be available online
Webhooks in Tableau
Web-huh?

A notification that an event has occurred on a server or service

Originating service sends HTTP POST message to external URL

The destination is responsible for handling the message contents

More efficient than polling, when watching for state changes
are we there yet?
YES!
WE ARE THERE.
APIs and Webhooks: why have both?

Application Programming Interface (API)
- User tells the service to perform actions
- User polls the service to get current status

Webhooks
- Service sends out near-real-time notifications of events
Webhooks End-to-end Workflow

Site event
Destination URL
Webhook name
Webhooks Capabilities in Tableau 2019.4

Available for server admins and site admins

Managed via REST API

Content of outgoing POST request includes:

- Event type and timestamp
- Resource name, type, and ID
- Site ID
<table>
<thead>
<tr>
<th><strong>Data Sources</strong></th>
<th><strong>Workbooks</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Source Created</td>
<td>Workbook Created</td>
</tr>
<tr>
<td>Data Source Updated</td>
<td>Workbook Updated</td>
</tr>
<tr>
<td>Data Source Deleted</td>
<td>Workbook Deleted</td>
</tr>
<tr>
<td>Data Source Refresh Started</td>
<td>View Deleted</td>
</tr>
<tr>
<td>Data Source Refresh Succeeded</td>
<td>Workbook Refresh Started</td>
</tr>
<tr>
<td>Data Source Refresh Failed</td>
<td>Workbook Refresh Succeeded</td>
</tr>
<tr>
<td></td>
<td>Workbook Refresh Failed</td>
</tr>
</tbody>
</table>
Webhook Example: Workbook Created

Request URI

```
POST https://server-address/api/3.6/sites/site-id/webhooks
```

Request Body

```
{
  "webhook": {
    "webhook-source": {
      "webhook-source-event-workbook-created": {}
    }
  },
  "webhook-destination": {
    "webhook-destination-http": {
      "method": "POST",
      "url": "https://destination.url.com"
    }
  },
  "name": "Notify Sofía about new workbook"
}
```
Demo: Set Up a Webhook

Questions? Please note them down

Example code and Postman requests will be available online
What’s Ahead for Webhooks in Tableau?

More events!

UI and Event history!

Non-admin users!

Customizable payload!
Bringing it all together
Sofía’s Requirements

Set up 100 user accounts on the new Sales Team site

Make a project for each product line

Send notifications for new content
Learning Objectives

Automating Content Management
- ✓ REST API
- ✓ Tableau Server Client

Receiving notifications as events happen
- ✓ Webhooks

Any questions for us?
Tableau Developer Program:
a safe space to innovate and learn

Free Development Site
Early API Access
Engineering Team Connection

First to know
Community
Wake up the TREX in you

developer.tableau.com
#DataDev Resources

Tableau on GitHub
github.com/tableau

Tableau Developer Tools
tableau.com/developer/tools

Tableau on YouTube
youtube.com/user/tableau
Webhooks: Integrate Tableau into Custom Workflows

Nov 13 | 4:00 – 5:01 | Level 2 – Mandalay Bay L
Nov 14 | 12:30 – 1:31 | Level 2 – Lagoon H
Nov 14 | 4:00 – 5:01 | North Convention Center – Islander G
Automate your Tableau Life with Python

Nov 14 | 10:30 – 12:30 | North Convention Center – South Pacific H

Nov 15 | 10:30 – 12:31 | North Convention Center – South Pacific H

Automation and Integration APIs

Nov 15 | 2:15 – 3:16 | Level 2 - Oceanside C
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