WhereScape Source Enablement Pack - File Parser

This is a guide for installing Source Enablement Packs for WhereScape RED 8.6.6.1 or higher

Prerequisites

- Python 3.8 or higher
    - Download python installer from https://www.python.org/downloads/
    - Select "Add Python 3.x to PATH" from installation Window
- PIP Manager
    - From Command Prompt (Run As Administrator) run below command

PIP Manager Install

```
python -m pip install --upgrade pip
```

- Python Packages
    - From Command Prompt (Run As Administrator) run below command -

Install Python Package

```
pip install pandas fastavro openpyxl xlsxwriter xlrd pyarrow fastparquet pyorc avro
avro_python3 jsonpath_ng openpyxl Pillow pyarrow xmltodict lxml
pip install --upgrade pandas

Amazon S3
pip install boto3

Azure DataLake Storage Gen2
python -m  pip install azure-storage==0.36.0
python -m  pip install azure-storage-file-datalake

Google Cloud
python -m  pip install --upgrade gcloud
python -m  pip install google_api_python_client google_auth_oauthlib protobuf google-cloud-
core google-cloud-datastore google-cloud-storage
```

NOTE: Above mentioned python packages can be installed by running install_WslPython_Modules.bat(refer to section *Enablement Pack Setup Scripts*.)

Enablement Pack Setup Scripts

The Enablement Pack Install process is entirely driven by scripts. The below table outlines these scripts, their purpose and if "Run as Administrator" is required.

#	Enablement Pack Setup Scripts	Script Purpose	Run as Admin	Intended Application
1	Setup_Enablement_Pack.ps1	Installs or updates source enablement pack in existing RED Metadata Repository for target database Installs Python scripts and UI Config Files for browsing files from Windows,Amazon S3,Azure Datalake Storage gen2,Google Cloud Storage	Yes	New and Existing installations
2	install_WslPython_Modules.bat	Installs or updates WslPython Modules and required Python libraries on this machine Installs required python packages for Amazon S3,Azure Datalake Storage gen2,Google Cloud Storage mentioned in *Prerequisites* section	Yes	New and Existing installations

Powershell script above provides some help at the command line, this can be output by passing the "-help" parameter to the script.

Note that on some systems executing Windows Powershell scripts is disabled by default, see troubleshooting for workarounds

Source Enablement Pack Installation

Installation Script to existing target database repository

Run Windows Powershell as Administrator

Install Source Connectivity Packs

```
<Script1 Location > Powershell -ExecutionPolicy Bypass -File .\Setup_Enablement_Pack.ps1
```

Important Upgrade Notes

This enablement pack will overwrite any existing Source Enablement Pack UI Configs:

Connection UI Config	Load UI Config
Amazon S3	Load From Amazon S3
Azure Data Lake Storage Gen2	Load From Azure Data Lake Storage Gen2
Google Cloud	Load From Google Cloud

To ensure existing Source Enablement Pack connections and associated Load Tables continue to browse and load:

Go into UI Configuration Maintenance in RED prior to installing this Enablement Pack and rename the affected UI Configurations. While the updated Load Template will work with previous Source Enablement Pack's we recommend moving these previous versions of Load Tables to newly created Parser based connections following this install. The earlier versions of the Source Enablement Pack will be deprecated following this release.

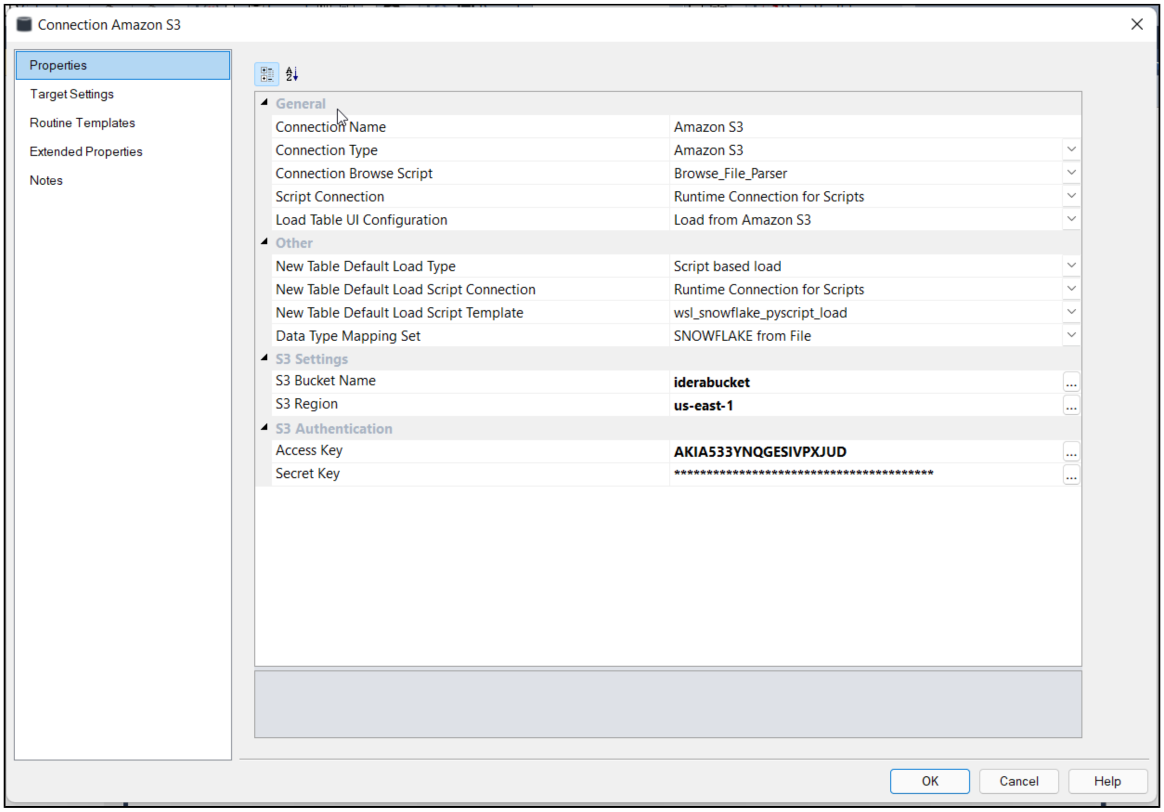
File Parser Connection Setup

Post install checks:

1. File Parser Browse Script - In RED ensure the File Parser Browse Script was installed, under the Host Scripts object tree node check for the object named: 'Browse_File_Parser'
2. UI Configurations - In RED check the Menu: 'Tools->UI Configurations->Maintain UI Configurations' for the appropriate UI Configurations*.

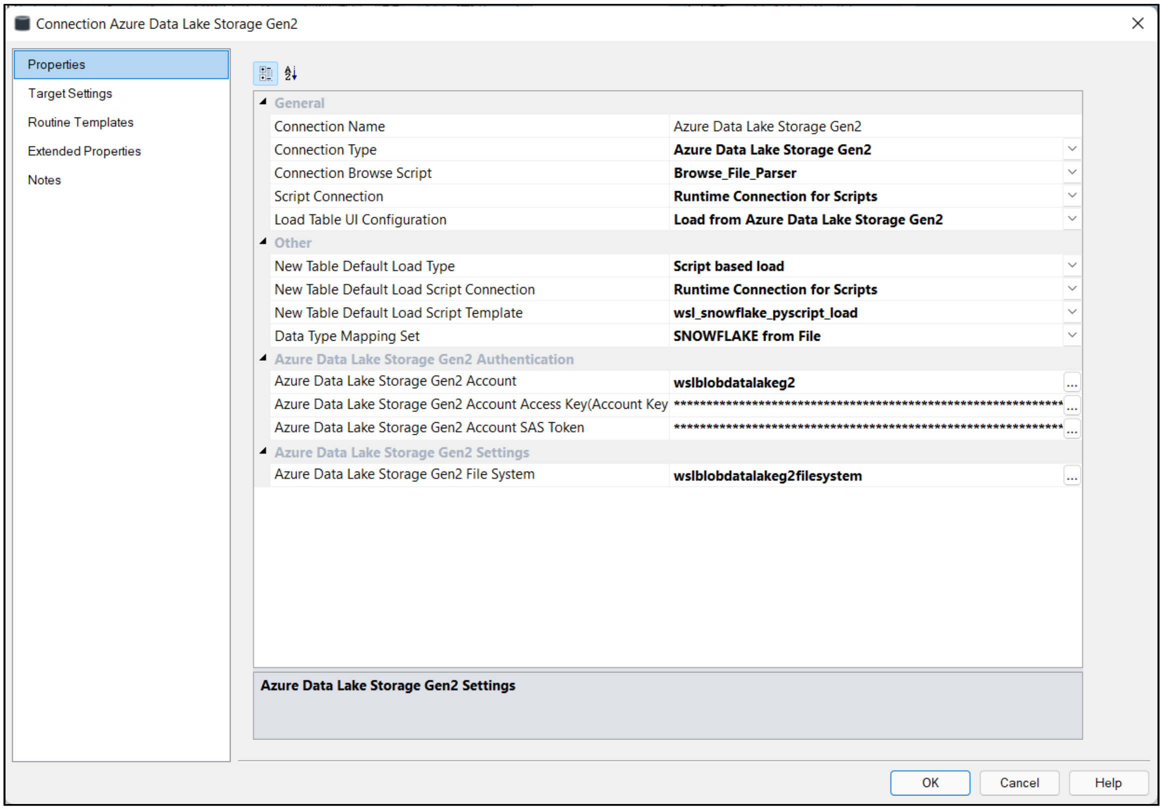
**Note: UI Configurations generally come in sets of 2 or 3 for a particular source type, a minimum set will have both a Connection UI Config and a Load UI Config, optionally a Column UI config may also be included.*

Amazon S3 Connection Setup



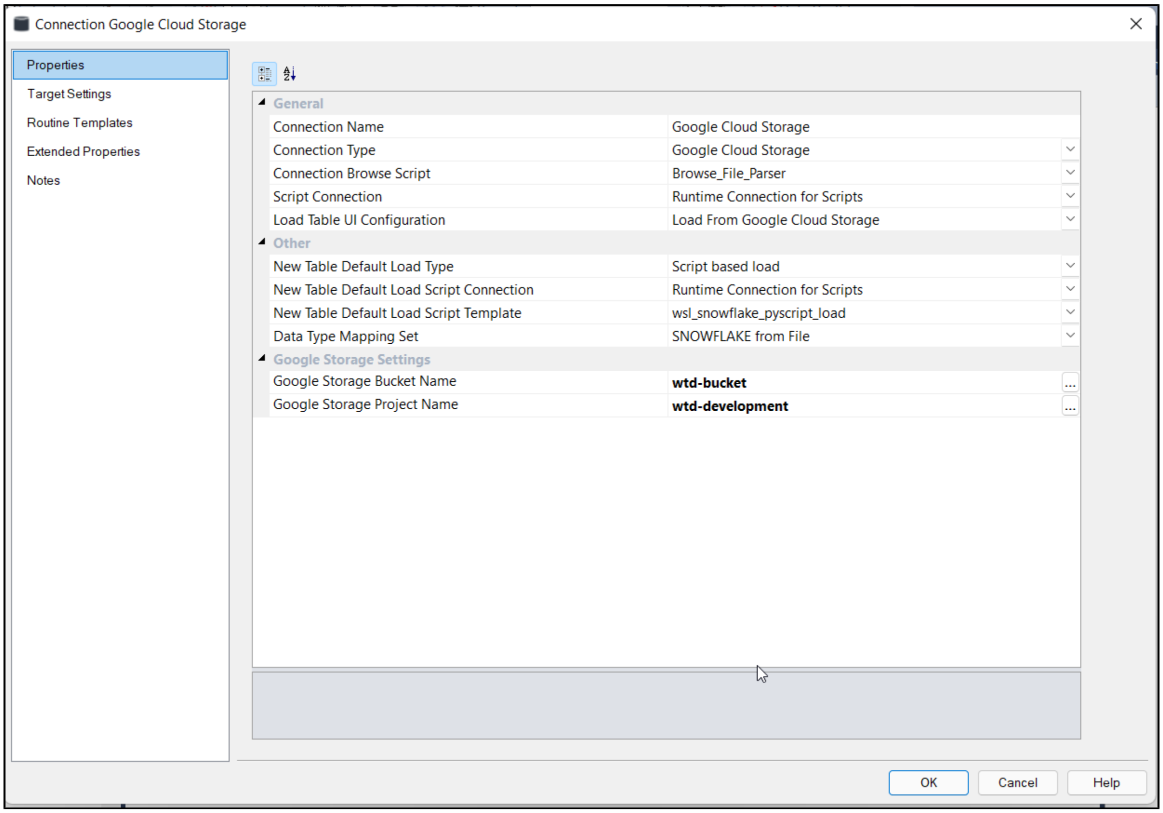
General	
Connection Name	Amazon S3
Connection Type	Amazon S3
Connection Browse Script	Browse_File_Parser
Script Connection	Runtime Connection for Scripts
Load Table UI Configuration	Load from Amazon S3
Other	
New Table Default Load Type	Script based load
New Table Default Load Script Connection	Runtime Connection for Scripts
New Table Default Load Script Template	wsl_snowflake_pyscript_load
Data Type Mapping Set	SNOWFLAKE from File
S3 Settings	
S3 Bucket Name	iderabucket
S3 Region	us-east-1
S3 Authentication	
Access Key	AKIA533YNQGESIVPXJUD
Secret Key	**

Azure Data Lake Storage Gen2 Connection Setup



General	
Connection Name	Azure Data Lake Storage Gen2
Connection Type	**Azure Data Lake Storage Gen2**
Connection Browse Script	**Browse_File_Parser**
Script Connection	**Runtime Connection for Scripts**
Load Table UI Configuration	**Load from Azure Data Lake Storage Gen2**
Other	
New Table Default Load Type	**Script based load**
New Table Default Load Script Connection	**Runtime Connection for Scripts**
New Table Default Load Script Template	**wsl_snowflake_pyscript_load**
Data Type Mapping Set	**SNOWFLAKE from File**
Azure Data Lake Storage Gen2 Authentication	
Azure Data Lake Storage Gen2 Account	**wslblobdatalakeg2**
Azure Data Lake Storage Gen2 Account Access Key(Account Key	**
Azure Data Lake Storage Gen2 Account SAS Token	**
Azure Data Lake Storage Gen2 Settings	
Azure Data Lake Storage Gen2 File System	**wslblobdatalakeg2filesystem**

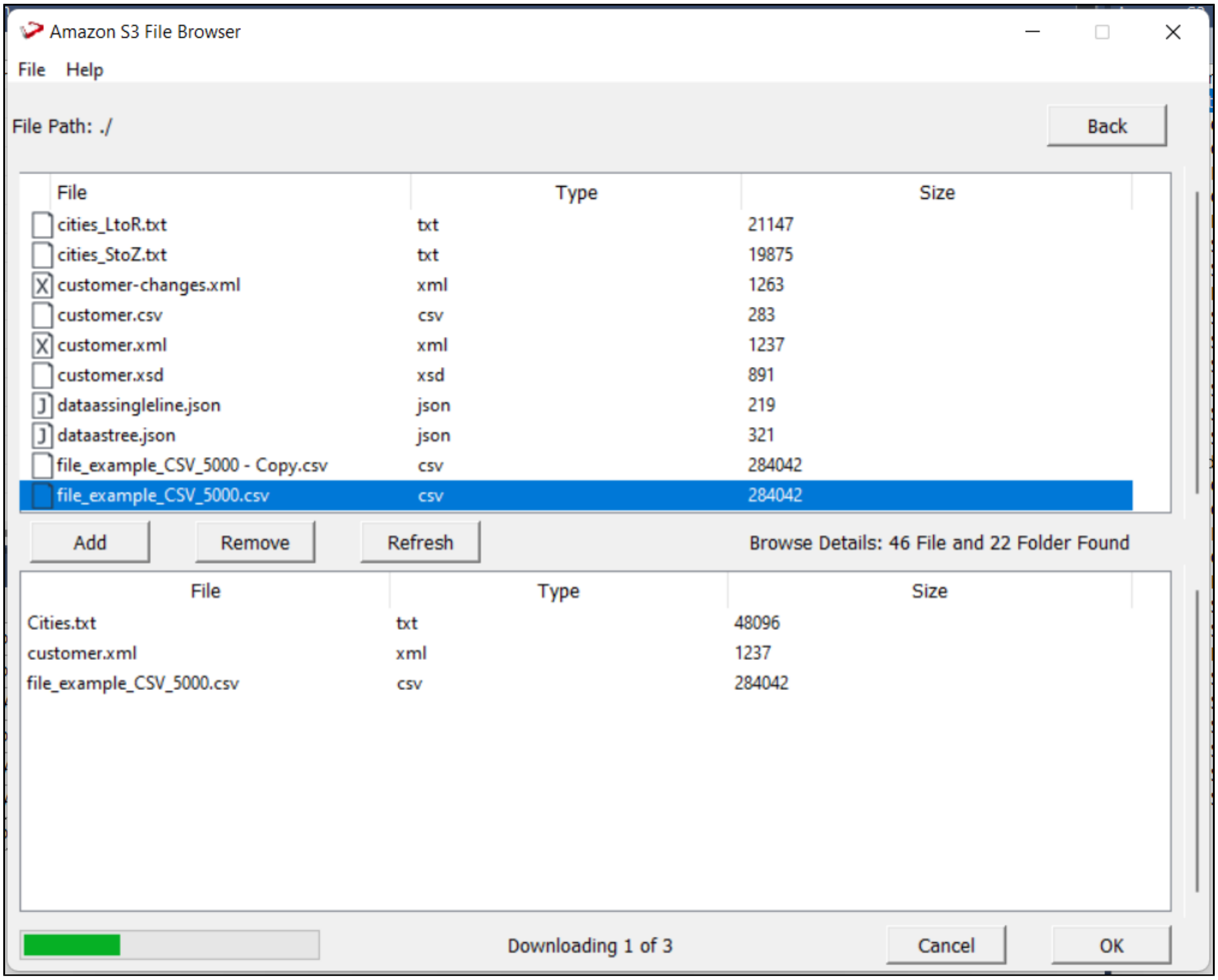
Google Cloud Connection Setup



General	
Connection Name	Google Cloud Storage
Connection Type	Google Cloud Storage
Connection Browse Script	Browse_File_Parser
Script Connection	Runtime Connection for Scripts
Load Table UI Configuration	Load From Google Cloud Storage
Other	
New Table Default Load Type	Script based load
New Table Default Load Script Connection	Runtime Connection for Scripts
New Table Default Load Script Template	wsl_snowflake_pyscript_load
Data Type Mapping Set	SNOWFLAKE from File
Google Storage Settings	
Google Storage Bucket Name	**wtd-bucket**
Google Storage Project Name	**wtd-development**

NOTE: For google cloud,Install and configure Google Cloud SDK

Cloud Browser



File Path: ./

File	Type	Size
cities_LtoR.txt	txt	21147
cities_StoZ.txt	txt	19875
customer-changes.xml	xml	1263
customer.csv	csv	283
customer.xml	xml	1237
customer.xsd	xsd	891
dataassingleline.json	json	219
dataastree.json	json	321
file_example_CSV_5000 - Copy.csv	csv	284042
file_example_CSV_5000.csv	csv	284042

Browse Details: 46 File and 22 Folder Found

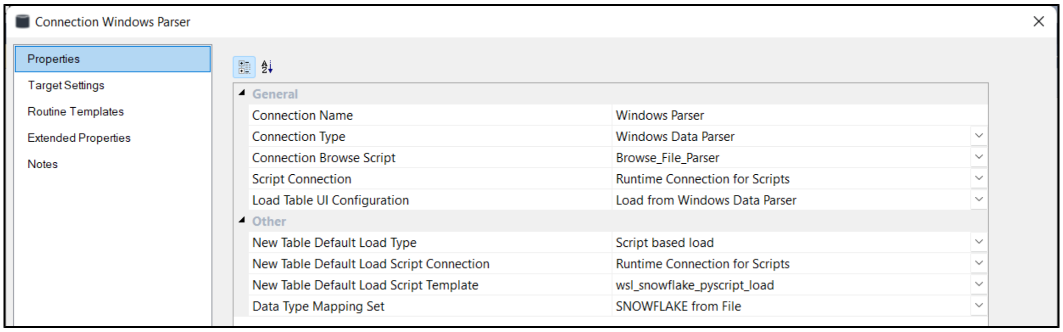
File	Type	Size
Cities.txt	txt	48096
customer.xml	xml	1237
file_example_CSV_5000.csv	csv	284042

Downloading 1 of 3

1. Select and click Add to copy files to staging area.
2. Click Back to navigate to previous directory
3. Click OK to download files for parsing.

Windows Parser Connection Setup

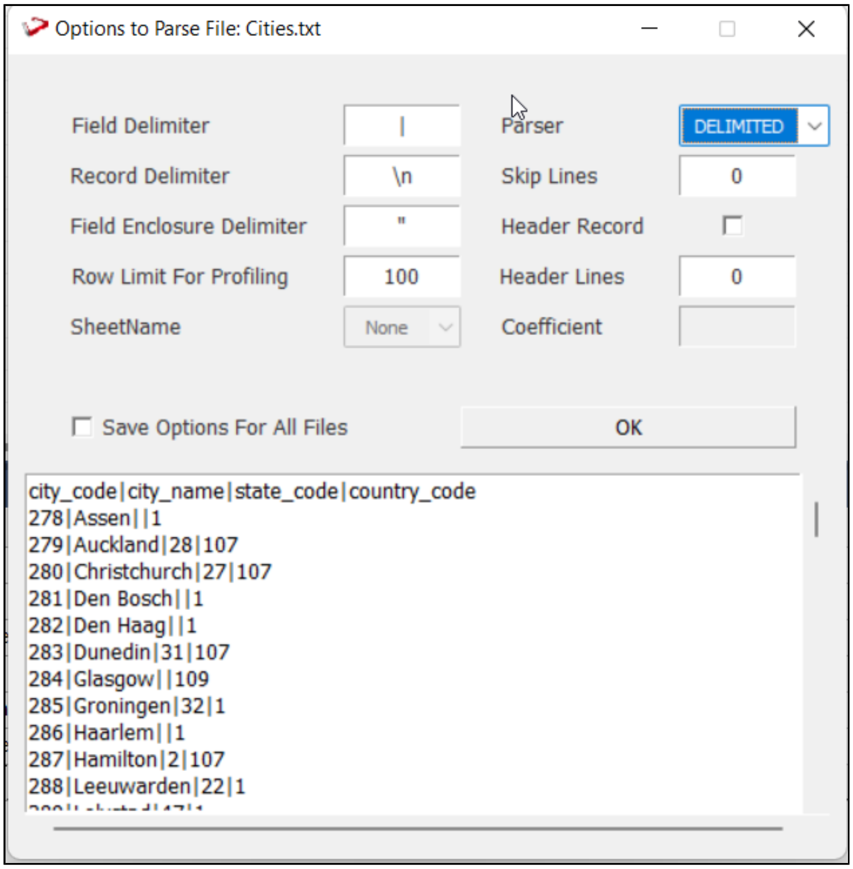
1. Login to RED
2. Check **Host Script** - Browse_File_Parser.py in objects list.
3. Check UI Configurations in Menu, Tools UI Configurations Maintain UI Configurations
4. Create new connection in RED
5. Select properties as shown in below screenshot



General	
Connection Name	Windows Parser
Connection Type	Windows Data Parser
Connection Browse Script	Browse_File_Parser
Script Connection	Runtime Connection for Scripts
Load Table UI Configuration	Load from Windows Data Parser
Other	
New Table Default Load Type	Script based load
New Table Default Load Script Connection	Runtime Connection for Scripts
New Table Default Load Script Template	wsl_snowflake_pyscript_load
Data Type Mapping Set	SNOWFLAKE from File

Browse Parser

Choose parser as per file type



Options to Parse File: Cities.txt

Field Delimiter: |

Record Delimiter: \n

Field Enclosure Delimiter: "

Row Limit For Profiling: 100

SheetName: None

Parser: DELIMITED

Skip Lines: 0

Header Record: □

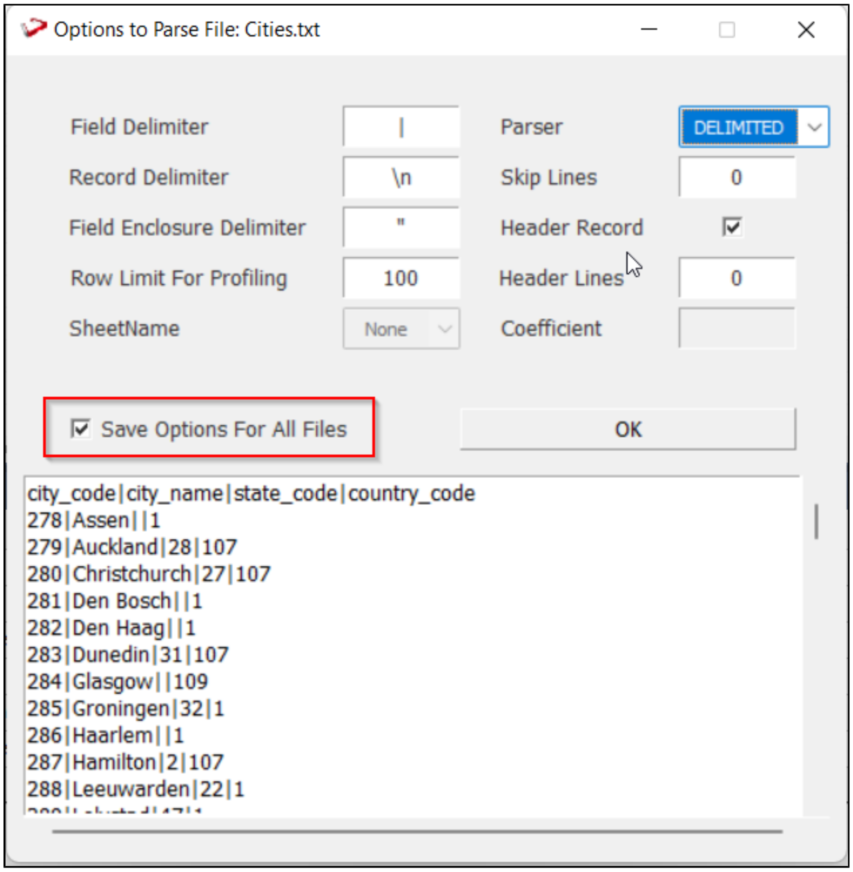
Header Lines: 0

Coefficient:

□ Save Options For All Files

```
city_code|city_name|state_code|country_code
278|Assen||1
279|Auckland|28|107
280|Christchurch|27|107
281|Den Bosch||1
282|Den Haag||1
283|Dunedin|31|107
284|Glasgow||109
285|Groningen|32|1
286|Haarlem||1
287|Hamilton|2|107
288|Leeuwarden|22|1
```

If the files are of same type and parsing options are same, check highlighted box to save same options.



Options to Parse File: Cities.txt

Field Delimiter	|	Parser	DELIMITED
Record Delimiter	\n	Skip Lines	0
Field Enclosure Delimiter	"	Header Record	☑
Row Limit For Profiling	100	Header Lines	0
SheetName	None	Coefficient	

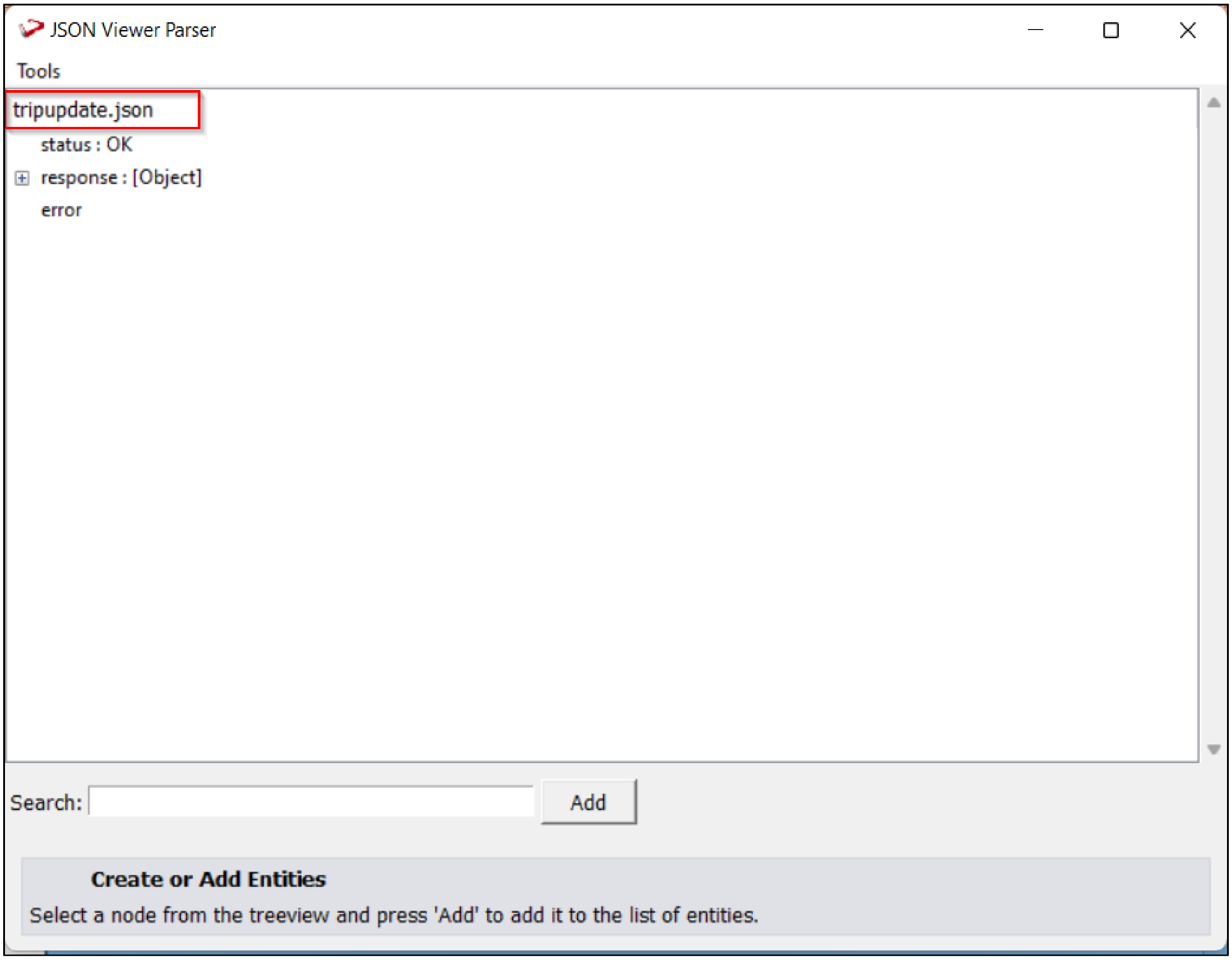
☑ Save Options For All Files

```
city_code|city_name|state_code|country_code
278|Assen||1
279|Auckland|28|107
280|Christchurch|27|107
281|Den Bosch||1
282|Den Haag||1
283|Dunedin|31|107
284|Glasgow||109
285|Groningen|32|1
286|Haarlem||1
287|Hamilton|2|107
288|Leeuwarden|22|1
```

Parser for JSON and XML Files

The JSON parser GUI's main pane, The file name is highlighted, and the JSON tree structure is shown below it.

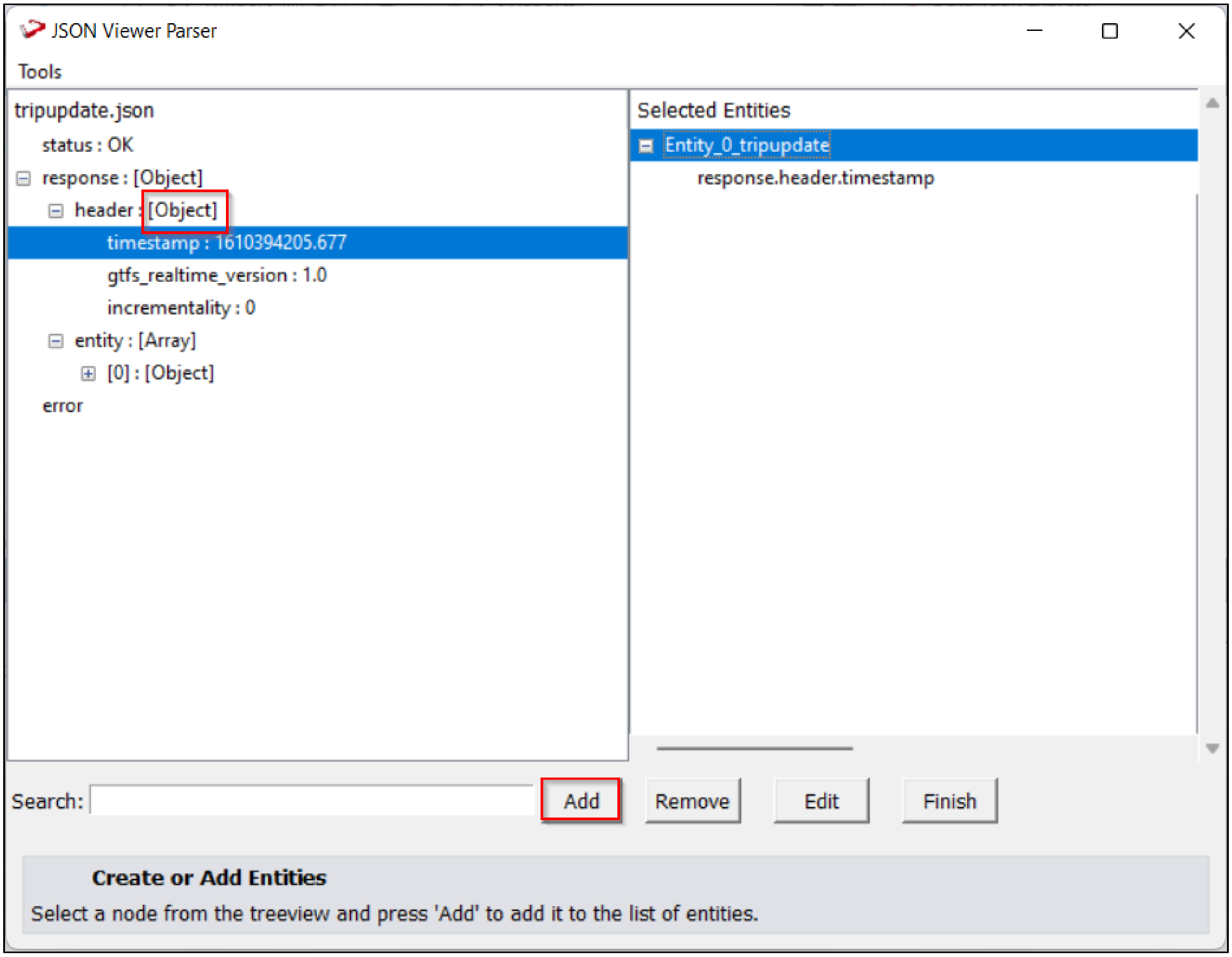
Hovering the cursor over any widget or element in the GUI will display information about that widget or element in the bottom help box.



Create or Add Entities

Select a node from the treeview and press 'Add' to add it to the list of entities.

Select any node in the JSON tree and press the "Add" button at the bottom to create a new entity. On the right side of the window, a new pane will appear. The name of the new entity will be "Entity 0" by default. If the selected node is a leaf node (key value pair), this new entity will include only its key; if the selected node is an object or array, this new entity will include all of its children. The data type of the node is highlighted in the figure below.



tripupdate.json
status : OK
response : [Object]
header : [Object]
timestamp : 1610394205.677
gtfs_realtime_version : 1.0
incrementality : 0
entity : [Array]
[0] : [Object]
error

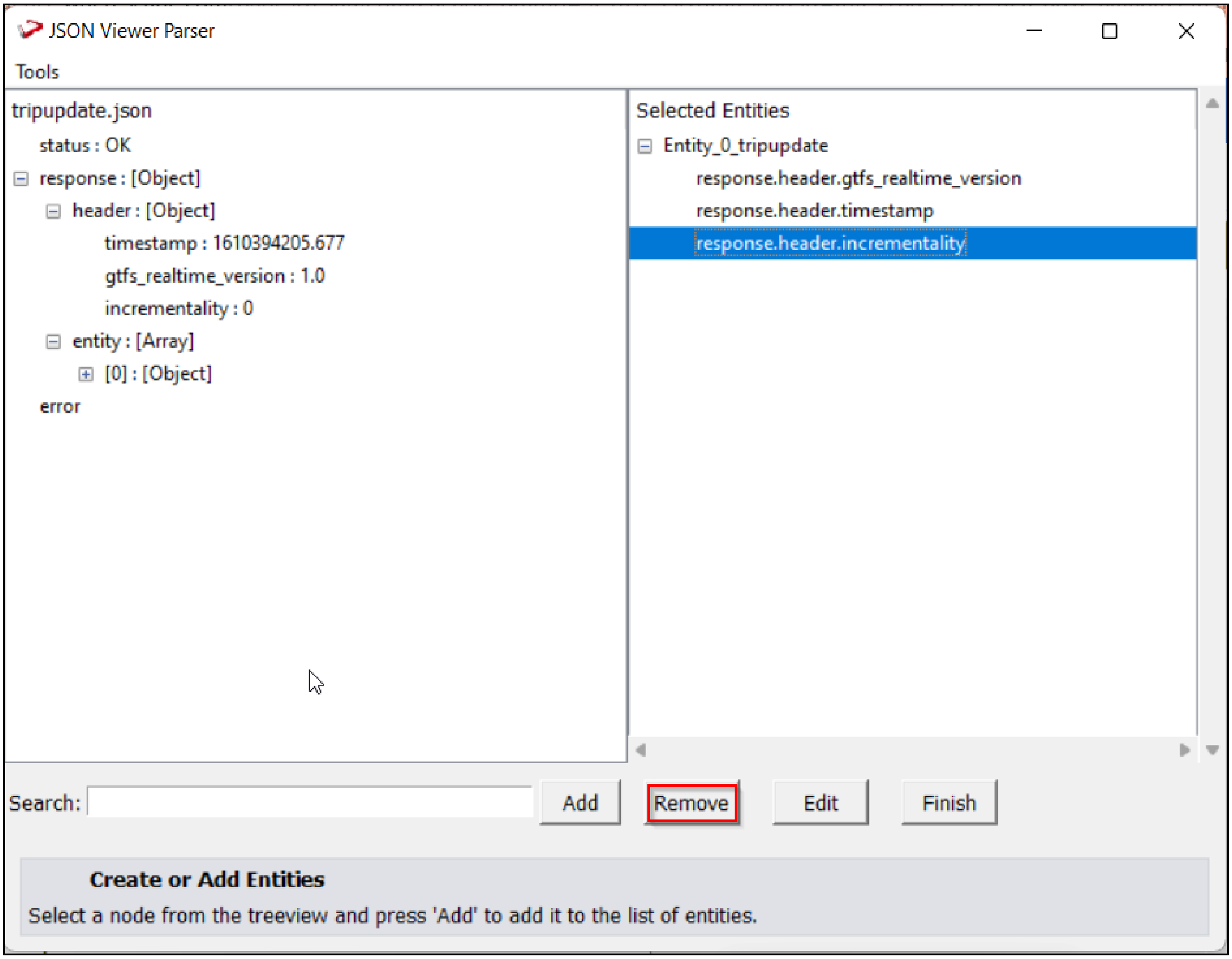
Selected Entities
Entity_0_tripupdate
response.header.timestamp

Create or Add Entities

Select a node from the treeview and press 'Add' to add it to the list of entities.

Select the entity and use the "Remove" button to remove any specific node. To remove the entire entity object, choose the primary node (for example, Entity_0) and press the "Remove" button in the same way.

Note: Holding the "Ctrl" key on the keyboard while clicking on different nodes allows the user to select multiple nodes.



tripupdate.json

```
status : OK
⊟ response : [Object]
    ⊟ header : [Object]
        timestamp : 1610394205.677
        gtfs_realtime_version : 1.0
        incrementality : 0
    ⊟ entity : [Array]
        ⊞ [0] : [Object]
error
```

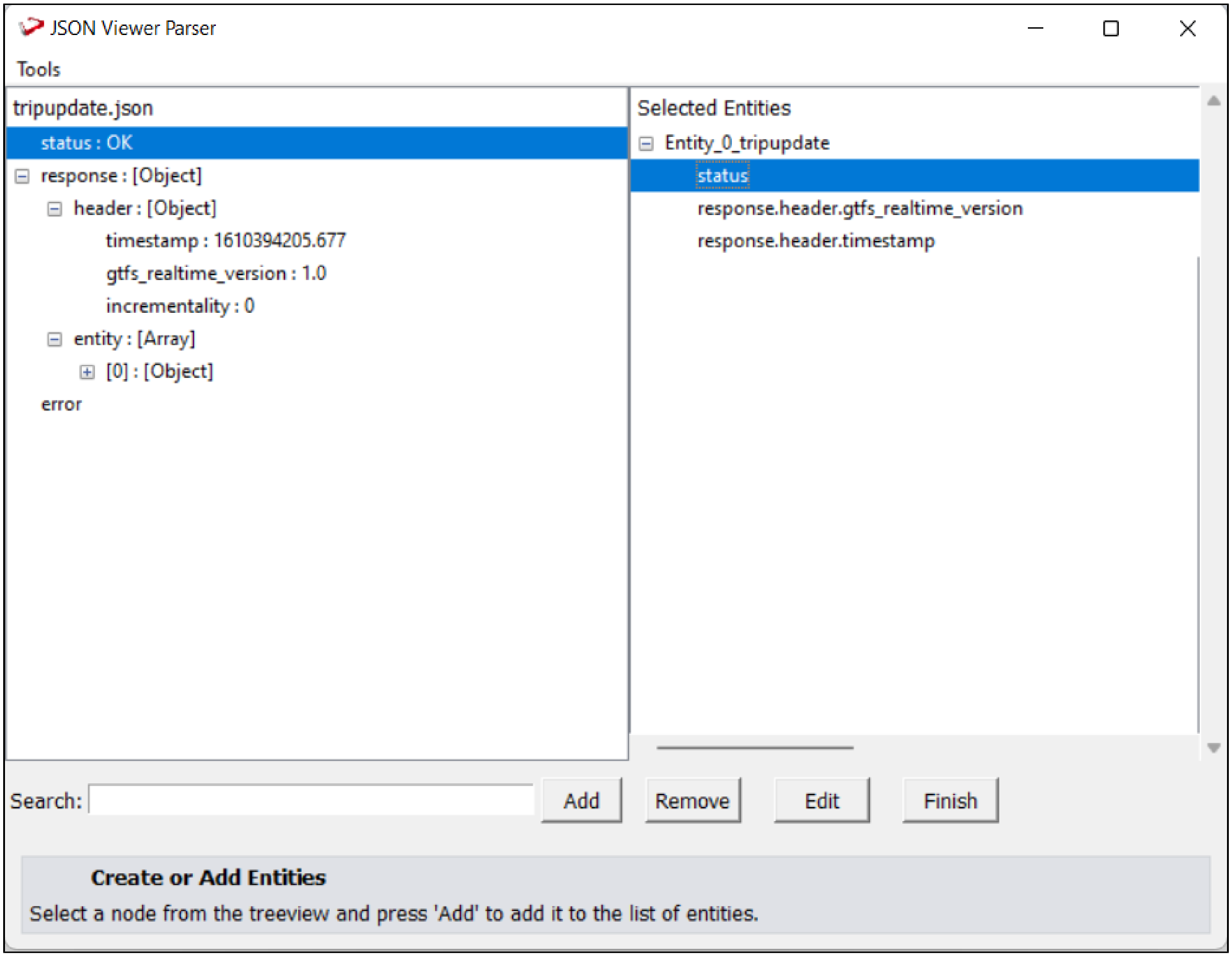
Selected Entities

```
⊟ Entity_0_tripupdate
    response.header.gtfs_realtime_version
    response.header.timestamp
    response.header.incrementality
```

Create or Add Entities

Select a node from the treeview and press 'Add' to add it to the list of entities.

To add a new node from a JSON tree to an entity that has already been created. Select the node in the JSON tree to which the node should be added (Example: Entity_0), select one or more nodes, and click "Add" to add the selected node to the selected entity.



tripupdate.json

```
status : OK
⊟ response : [Object]
    ⊟ header : [Object]
        timestamp : 1610394205.677
        gtfs_realtime_version : 1.0
        incrementality : 0
    ⊟ entity : [Array]
        ⊞ [0] : [Object]
error
```

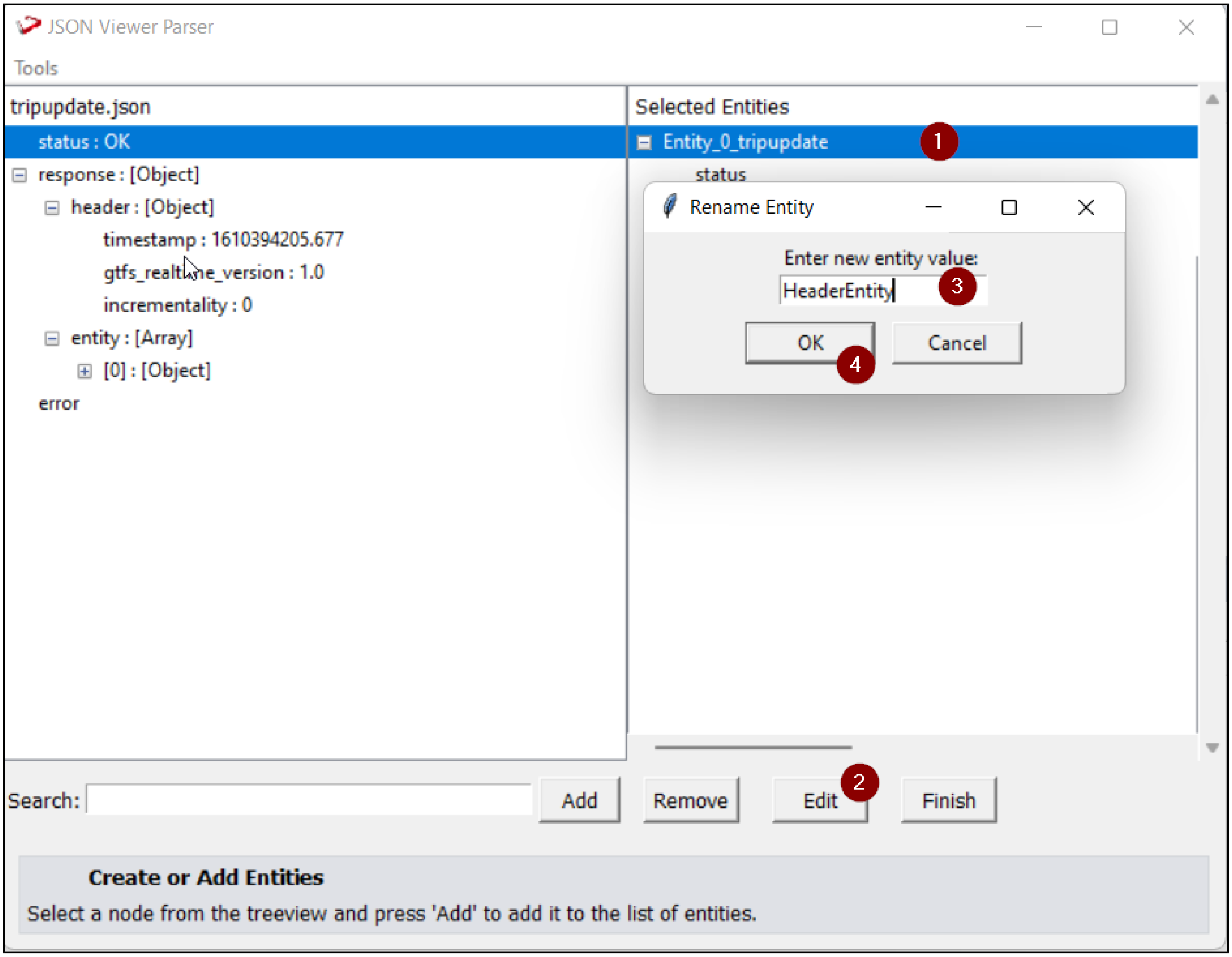
Selected Entities

```
⊟ Entity_0_tripupdate
    status
    response.header.gtfs_realtime_version
    response.header.timestamp
```

Create or Add Entities

Select a node from the treeview and press 'Add' to add it to the list of entities.

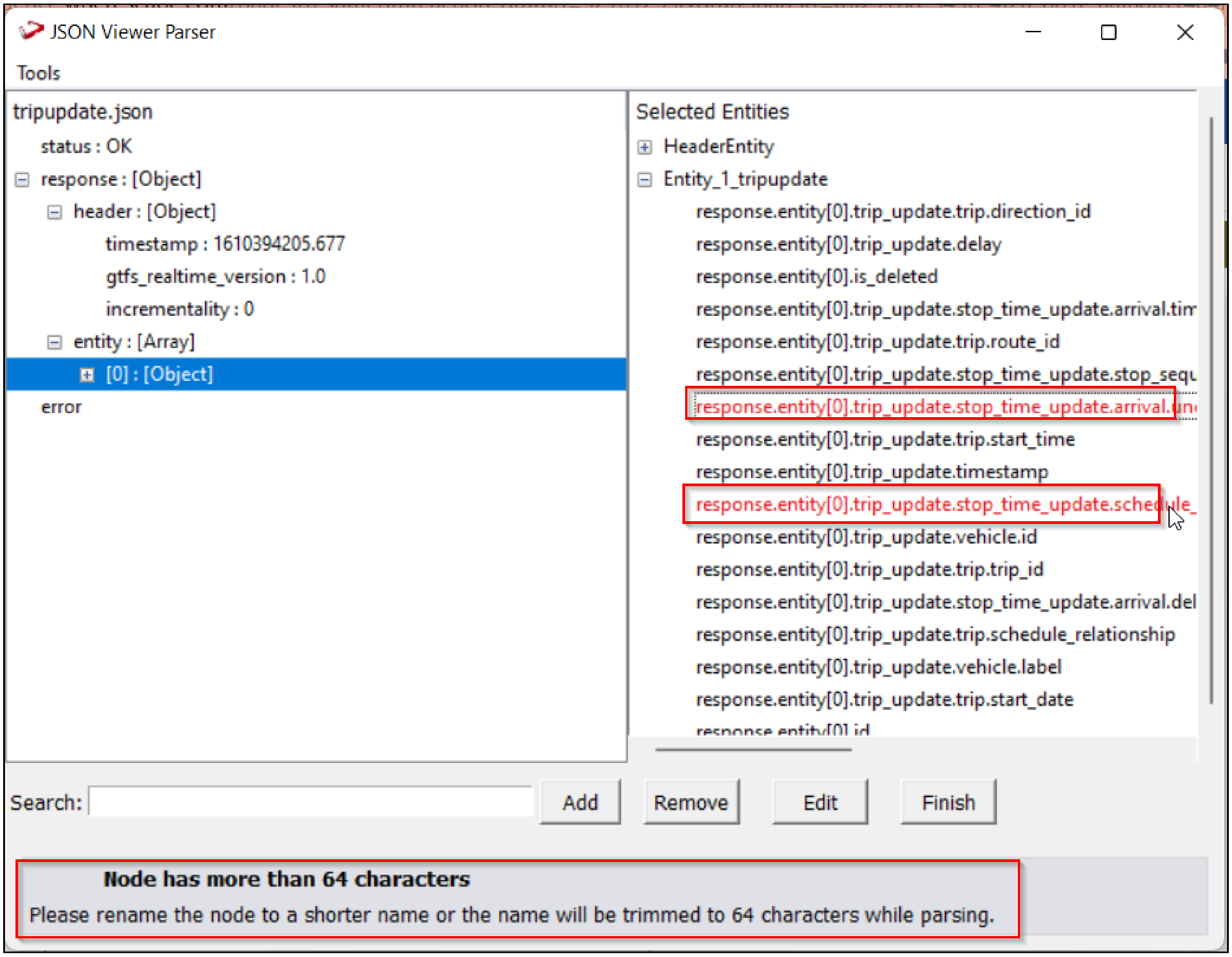
To edit name of Entity, Select the entity and press the "Edit" button to change the name. This will open a window with a text box where you may type in the new name for that object and then click "Ok."



Create or Add Entities

Select a node from the treeview and press 'Add' to add it to the list of entities.

In the selected entities pane, nodes in entities with more than 64 characters are colored "red." In WhereScape RED, the names of these "red" colored nodes are trimmed.



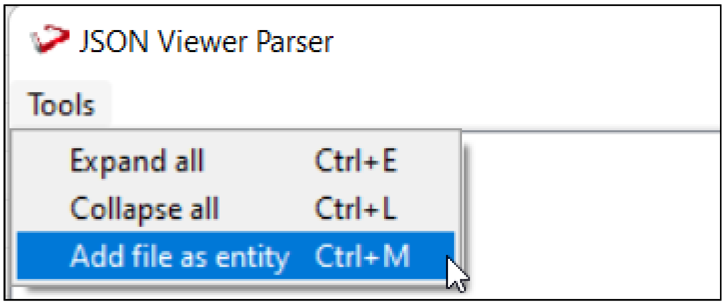
tripupdate.json
status : OK
response : [Object]
header : [Object]
timestamp : 1610394205.677
gtfs_realtime_version : 1.0
incrementality : 0
entity : [Array]
[0] : [Object]
error

HeaderEntity
Entity_1_tripupdate
response.entity[0].trip_update.trip.direction_id
response.entity[0].trip_update.delay
response.entity[0].is_deleted
response.entity[0].trip_update.stop_time_update.arrival.tim
response.entity[0].trip_update.trip.route_id
response.entity[0].trip_update.stop_time_update.stop_sequ
response.entity[0].trip_update.stop_time_update.arrival.un
response.entity[0].trip_update.trip.start_time
response.entity[0].trip_update.timestamp
response.entity[0].trip_update.stop_time_update.schedule_
response.entity[0].trip_update.vehicle.id
response.entity[0].trip_update.trip.trip_id
response.entity[0].trip_update.stop_time_update.arrival.del
response.entity[0].trip_update.trip.schedule_relationship
response.entity[0].trip_update.vehicle.label
response.entity[0].trip_update.trip.start_date
response.entity[0].id

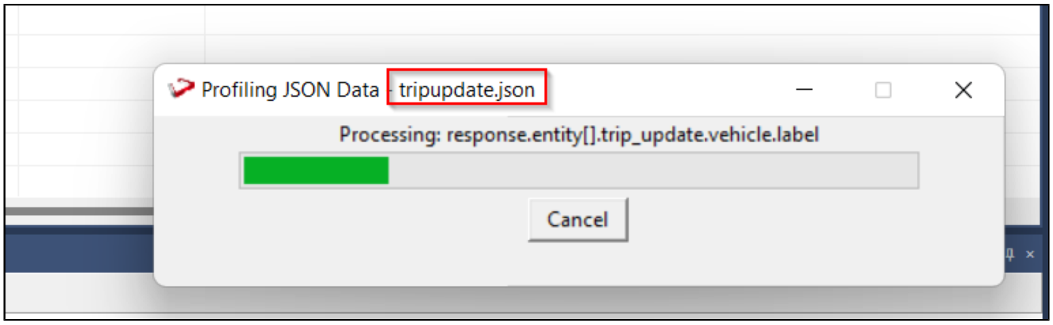
Node has more than 64 characters

Please rename the node to a shorter name or the name will be trimmed to 64 characters while parsing.

To add complete file for profiling select below option from Tools Menu



After selecting all the entities and files options,progress of the profiling will appear with the progress bar and can be canceled at any point.



Processing: response.entity[].trip_update.vehicle.label

The working for XML parser is similar to JSON parser explained above.

Troubleshooting and Tips

Run As Administrator

Press the Windows Key on your keyboard and start typing cmd.exe, when the cmd.exe icon shows up in the search list right click it to bring up the context menu, select "Run As Administrator"

Now you have an admin prompt navigate to to the folder where you have unpacked your WhereScape Source Enablement Pack to using the 'cd' command:

```
C:\Windows\system32> cd <full path to the unpacked folder>
```

Run Powershell (.ps1) scripts from the administrator prompt by typing the Powershell run script command, for example:

```
C:\temp\EnablementPack>Powershell -ExecutionPolicy Bypass -File .\install_New_RED_Repository.ps1
```

Notes: In the event you can not bypass the Powershell execution policy due to group policies you can instead try "-ExecutionPolicy RemoteSigned" which should allow unsigned local scripts.

Windows Powershell Script Execution

On some systems Windows Powershell script execution is disabled by default. There are a number of workarounds for this which can be found by searching the term "Powershell Execution Policy".

Here is the most common workaround which WhereScape suggests, which does not permanently change the execution rights:

Start a Windows CMD prompt as Administrator, change directory to your script directory and run the WhereScape Powershell scripts with this command:

- cmd:>Powershell -ExecutionPolicy Bypass -File .\<script_file_name.ps1>

Restarting failed scripts

Some of the setup scripts will track each step and output the step number when there is a failure. To restart from the failed step (or to skip the step) provide the parameter "-startAtStep <step number>" to the script.

Example:

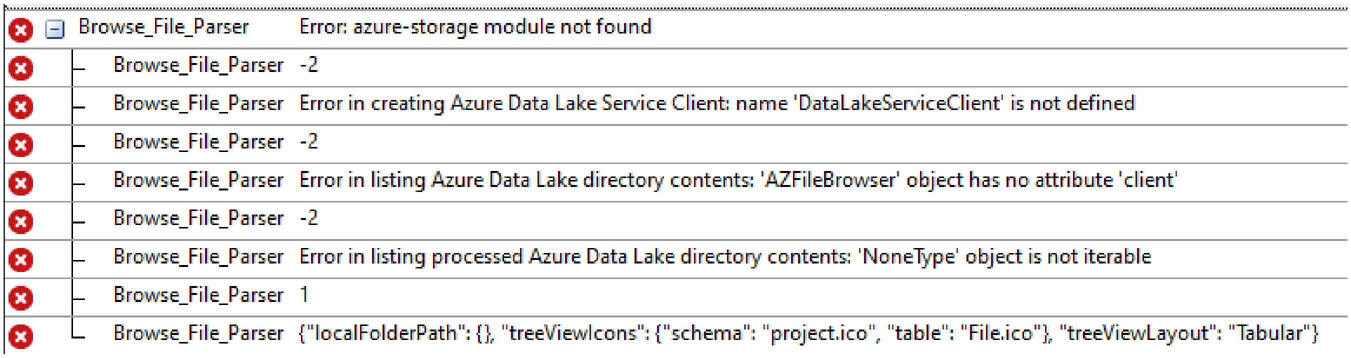
Powershell -ExecutionPolicy Bypass -File .\<script_file_name.ps1> -startAtStep 123

Tip: to avoid having to provide all the parameters again you can copy the full command line with parameters from the first "INFO" message from the beginning of the console output.

If a valid RED installation can not be found

If you have Red 8.6.6.1 or higher installed but the script install_New_RED_Repository.ps1 fails to find it on you system then you are most likely running PowerShell (x86) version which does not show installed 64 bit apps by default. Please open a 64 bit version of PowerShell instead and re-run the script

Azure-storage module not found error



```
⊟ Browse_File_Parser    Error: azure-storage module not found
  ├ Browse_File_Parser  -2
  ├ Browse_File_Parser  Error in creating Azure Data Lake Service Client: name 'DataLakeServiceClient' is not defined
  ├ Browse_File_Parser  -2
  ├ Browse_File_Parser  Error in listing Azure Data Lake directory contents: 'AZFileBrowser' object has no attribute 'client'
  ├ Browse_File_Parser  -2
  ├ Browse_File_Parser  Error in listing processed Azure Data Lake directory contents: 'NoneType' object is not iterable
  ├ Browse_File_Parser  1
  └ Browse_File_Parser  {"localFolderPath": {}, "treeViewIcons": {"schema": "project.ico", "table": "File.ico"}, "treeViewLayout": "Tabular"}
```

For **Error: azure-storage module not found** error while browsing Azure Data Lake File Browser Connection.

Follow the below steps:

1) pip uninstall azure-storage -y

2) pip uninstall azure-storage-file-datalake -y

3) pip uninstall azure-common azure-core azure-nspkg -y

4) pip uninstall azure-storage-blob -y

5) Run uninstall_WslPython_Modules.bat

6) Run install_WslPython_Modules.bat