Custom Travel Times

The Custom Travel Times API calculates statistics for a defined route between an origin and a destination, optionally via waypoints. This API is **asynchronous**. There are two endpoints consuming two types of requests. The first one is only for ordering jobs with POST requests. In its response the user receives a jobId, which should be used in the second endpoint with GET request to the check job's status. When job is successfully finished user in response will receive links to download results.

There are some important notes about using this API:

* The latitude and longitude coordinates are in [EPSG4326 / WGS84](http://spatialreference.org/ref/epsg/4326/) format for both input and output. Other coordinate systems are not supported.
* All averages are calculated arithmetically unless otherwise stated (example JSON field: harmonicAverageSpeed is calculated harmonically).
* The current API version is 1.
* The maximum route length is 200 kilometers. Routes longer than this will be rejected.
* The maximum number of routes is 20.
* The maximum number of date ranges is 24.
* The maximum number of time sets is 24.
* When you define a route you should consider to use via points. Without via points there is no guarantee that the route the Online Routing engine is using is the route you want to measure.
* As the service is asynchronous it can take a while before results are available, depending on how busy the service is. Do not repost your request multiple times if you do not get feedback within seconds, we will ensure that the results are delivered.
* At the same time you can have only 5 jobs in progress per each developer key. In progress job means one in NEW, MAPMATCHING, MAPMATCHED, READING\_GEOBASE, CALCULATIONS status. When you reach this limit, API response is going to present you a validation message with list of all jobs that you currently have in progress. You may create next job when one of currently running jobs is done.

Request

Format

https://<baseURL>/traffic/trafficstats/ctt/<versionNumber>?key=<apiKey>

**Required POST Headers**

Content-Type: application/json

Parameters

The table below describes all of the parameters that can be used in a request. Required parameters *must* be used or the call will fail. Optional parameters*may* be used.

| **Parameter** | **Description** | **Req'd?** | **Type / Values** | **Default Value** |
| --- | --- | --- | --- | --- |
| **baseURL** | Base URL for calling the API. | Yes | api.tomtom.com | — |
| **versionNumber** | Service version number. The current value is 1. | Yes | 1 | — |
| **apiKey** | Authorization key for access to the API. | Yes | API Key | — |

JSON request parameters

Below JSON parameters refer to POST request.

| **Parameter** | **Description** | **Req'd?** | **Type / Values** | **Default Value** |
| --- | --- | --- | --- | --- |
| **jobName** | Job name which will be used in the process and output. Given for user's convenience. | Yes | String | — |
| **distanceUnit** | Base unit used for distance and speed values. | Yes | * KILOMETERS
* MILES
 | — |
| **averageSampleSizeThreshold** | If average sample size for any combination of route, date range and time set will be lower than given value then output will not be generated, job will be moved into [REJECTED](https://developer.tomtom.com/traffic-stats/traffic-stats-apis/custom-travel-times#status) state and user will not be charged for such report. If not specified output will be always generated no matter how many samples were available. | No | Integer | — |
| **routes** | Routes for calculations. See structure [here](https://developer.tomtom.com/traffic-stats/traffic-stats-apis/custom-travel-times#routes). | Yes | List | — |
| **dateRanges** | Ranges of dates for calculations. Limit the date range to maximum one year in order to restrict the processing time. See structure [here](https://developer.tomtom.com/traffic-stats/traffic-stats-apis/custom-travel-times#dataRanges). | Yes | List | — |
| **timeSets** | Time sets for calculations. The first time set is a "Base Set" and every other time set will be compared to it in the output (example JSON field: travelTimeRatio). See structure [here](https://developer.tomtom.com/traffic-stats/traffic-stats-apis/custom-travel-times#timeSets). | Yes | List | — |

Structure of routes

| **Parameter** | **Description** | **Req'd?** | **Type / Values** | **Default Value** |
| --- | --- | --- | --- | --- |
| **name** | Name of the route. Given for user's convenience. | Yes | String | — |
| **start** | Point where the route starts* **latitude** - Latitude of start point (required)
* **longitude** - Longitude of start point (required)
 | Yes | Longitude & latitude | — |
| **via** | List of points through which the route should go* **latitude** - Latitude of start point (required)
* **longitude** - Longitude of start point (required)
 | No | List of pairs: longitude & latitude | — |
| **end** | Point where the route ends* **latitude** - Latitude of end point (required)
* **longitude** - Longitude of end point (required)
 | Yes | Longitude & latitude | — |
| **fullTraversal** | When you only want vehicles that traversed the full route taken into account you need to use this parameter. | Yes | Boolean | — |
| **zoneId** | In which time zone all times are given. | Yes | Time zone like: "Europe/Amsterdam" or "UTC" | — |
| **probeSource** | Determines from what devices data will be used.Possible values:* PASSENGER - Passenger Vehicles
* TELEMATICS - Fleet Management Vehicles
* ALL - All Vehicles (Passenger and Fleet combined)
 | No | StringALL, PASSENGER, TELEMATICS | PASSENGER |

Structure of dataRanges

| **Parameter** | **Description** | **Req'd?** | **Type / Values** | **Default Value** |
| --- | --- | --- | --- | --- |
| **name** | Date range name. Given for user's convenience. | Yes | String | — |
| **from** | Date from. | Yes | Date in format: YYYY-MM-DD | — |
| **to** | Date to. | Yes | Date in format: YYYY-MM-DD | — |
| **exclusions** | List of days excluded from date range. | No | List of dates in format: YYYY-MM-DD | — |

Structure of timeSets

| **Parameter** | **Description** | **Req'd?** | **Type / Values** | **Default Value** |
| --- | --- | --- | --- | --- |
| **name** | Time set name. Given for user's convenience. | Yes | String | — |
| **timeGroups** | Time groups in time set* **days** - Days of week for time group (required)

list of values:* + *MON*
	+ *TUE*
	+ *WED*
	+ *THU*
	+ *FRI*
	+ *SAT*
	+ *SUN*
* **times** - Time ranges for time group, list of values in format: HH:mm-HH:mm (required)
 | Yes | List | — |

JSON example request

{

 "jobName":"Test job",

  "distanceUnit":"KILOMETERS",

 "routes":[

 {

 "name":"Some Route",

 "start":{

 "latitude":51.7822,

 "longitude":4.61689

 },

 "via":[

 {

 "latitude":51.78153,

 "longitude":4.60559

 }

 ],

 "end":{

 "latitude":51.78555,

 "longitude":4.61076

 },

 "fullTraversal":false,

 "zoneId":"Europe/Amsterdam",

 "probeSource":"ALL"

  }

 ],

 "dateRanges":[

 {

 "name":"Last working week of April",

 "from":"2015-04-24",

 "to":"2015-04-30",

 "exclusions":[

 "2015-04-25",

 "2015-04-26"

 ]

 }

 ],

 "timeSets":[

 {

 "name":"Monday morning hour",

 "timeGroups":[

 {

 "days":[

 "MON"

 ],

 "times":[

 "7:00-8:00"

 ]

 }

 ]

 }

 ]

}

Response

In response to the request a jobId is provided, which is required for further communication about the query. A JSON response content example:

{"jobId":"678","responseStatus":"OK","messages":["Job created. Processing started."]}

Check job status

When a job has been initiated via the API request it is possible to check the status.

JSON request

https://<baseURL>/traffic/trafficstats/status/<versionNumber>/<job\_id>?key=<apiKey>

Parameters

The table below describes all of the parameters that can be used in a request. Required parameters *must* be used or the call will fail. Optional parameters*may* be used.

| **Parameter** | **Description** | **Req'd?** | **Type / Values** | **Default Value** |
| --- | --- | --- | --- | --- |
| **baseURL** | Base URL for calling the API. | Yes | api.tomtom.com | — |
| **versionNumber** | Service version number. The current value is 1. | Yes | 1 | — |
| **apiKey** | Authorization key for access to the API. | Yes | API Key | — |

JSON response

{"jobId":"<job\_id>","jobState":"<job\_status>","responseStatus":"OK"}

Job status flow

During the process there are different stages applicable. Via the get state request you can see what the state of your job is. Below you find the different stages of the process.

|  |  |
| --- | --- |
| **Status** | **Description** |
| **NEW** | The job is waiting for mapmatching to start. |
| **MAPMATCHING** | Mapmatching is in progress. |
| **MAPMATCHED** | Mapmatching is done and the job is waiting for Geobase reading.  |
| **READING\_GEOBASE** | Geobase reading is in progress. |
| **CALCULATIONS** | Calculations are in progress. |
| **DONE** | Calculations are done. The results are waiting to be downloaded. |
| **ERROR** | The job stopped due to the fact that something went wrong. This can occur at any place in the flow.  |
| **REJECTED** | The job is rejected. During processing it turned out that job exceeds set limits, at least one of routes cannot be processed (route between points cannot be generated or is on area which is not supported) or there is less samples then required (see [averageSampleSizeThreshold](https://developer.tomtom.com/traffic-stats/traffic-stats-apis/custom-travel-times%22%20%5Cl%20%22averageSampleSizeThreshold)). This can occur at any place in the flow. |
| **EXPIRED** | The job is older than 90 days and all data has been removed. |

Response and Results

Final DONE response

{"jobId":"<job\_id>","responseStatus":"OK","urls":["<url\_for\_xls\_result\_file>","<url\_for\_json\_result\_file>","<url\_for\_kmz\_result\_file>","<url\_for\_shape\_result\_file>"]}

Results

Output of Custom Travel Times is available in [XLS](http://d221h2fa9j1k6s.cloudfront.net/docs/trafficstats/CTT-report.xls), [JSON](http://d221h2fa9j1k6s.cloudfront.net/docs/trafficstats/CTT-result.json), [KMZ](http://d221h2fa9j1k6s.cloudfront.net/docs/trafficstats/CTT-result.kmz) and [SHAPE](http://d221h2fa9j1k6s.cloudfront.net/docs/trafficstats/CTT-report.zip) format. JSON results are provided in a gzip compressed format. If you want to get an example of these files please click on the applicable names.

JSON result description

| **Field(s)** | **Description** | **Type / Values** |
| --- | --- | --- |
| **jobName** | *(from request)* | *(as in request)* |
| **creationTime** | Job creation time. | Timestamp in format: yyyy-MM-ddTHH:mm:ss.SSSZ |
| **userPreference** | Requested preference* distanceUnit - (as in request)
 | Object |
| **dateRanges** | *(from request)** **@id** - Helper reference for further use(in routes.segmentResults.segmentTimeResults)
* **name, from, to, exclusions** - (as in request)
 | List |
| **timeSets** | *(from request)*See structure [here](https://developer.tomtom.com/traffic-stats/traffic-stats-apis/custom-travel-times#timeSetsResponse). | List |
| **routes** | Data for each requested segment. See structure [here](https://developer.tomtom.com/traffic-stats/traffic-stats-apis/custom-travel-times#routesResponse). | List |

Structure of timeSets

| **Field(s)** | **Description** | **Type / Values** |
| --- | --- | --- |
| **@id** | Helper reference for further use (in routes.segmentResults.segmentTimeResults). | Integer |
| **name** | *(from request)* | *(as in request)* |
| **dayToTimeRanges** | Time ranges from request grouped per day of week:* **dayOfWeek** - Day of week for time group, value from: MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY, SATURDAY, SUNDAY
* **timeRanges** - Time ranges for time group, list of values in format: HH:mm-HH:mm
 | List |

Structure of routes

| **Field(s)** | **Description** | **Type / Values** |
| --- | --- | --- |
| **routeName, zoneId, fullTraversal, probeSource** | *(from request)* | *(as in request)* |
| **mapsVersions** | Version of maps used for map matching. | String |
| **segmentResults** | Data for each segment in given route. See structure [here](https://developer.tomtom.com/traffic-stats/traffic-stats-apis/custom-travel-times#segmentResultsResponse). | List |
| **summaries** | Summary reports for each calculated date range-time set pair for the whole route. See structure [here](https://developer.tomtom.com/traffic-stats/traffic-stats-apis/custom-travel-times#summariesResponse). | List |

Structure of segmentResults

| **Field(s)** | **Description** | **Type / Values** |
| --- | --- | --- |
| **segmentId** | Segment id. | Integer |
| **newSegmentId** | New segment id. | String |
| **speedLimit** | Speed limit (in kmph or mph according to userPreference). | Integer |
| **frc** | Functional Road Class. | Integer (0-8) |
| **streetName** | Street name. | String |
| **distance** | Length of segment (in meters or feet according to userPreference). | Float |
| **shape** | Geometrical shape of segment. | List of pairs: longitude & latitude |
| **segmentTimeResults** | Calculated time data for given segment. See structure [here](https://developer.tomtom.com/traffic-stats/traffic-stats-apis/custom-travel-times#segmentTimeResultsResponse). | List |

Structure of segmentTimeResults

| **Field(s)** | **Description** | **Type / Values** |
| --- | --- | --- |
| **timeSet** | Reference to TimeSet in which calculations were made. | Integer |
| **dateRange** | Reference to DateRange in which calculations were made. | Integer |
| **medianSpeed** | Median speed (in kmph or mph according to userPreference). | Float |
| **sampleSize** | Number of probes used for calculations. | Integer |
| **averageTravelTime** | Average travel time (in seconds). | Float |
| **medianTravelTime** | Median travel time (in seconds). | Float |
| **travelTimeStandardDeviation** | Travel time standard deviation (in seconds). | Float |
| **travelTimeRatio** | Ratio of travel time in current TimeSet to travel time in Base Set (first TimeSet and same DateRange). | Float |
| **speedPercentiles** | Percentile speeds in ascending order: 5th, 10th, ... 90th, 95th. | List of 19 Integers |
| **averageSpeed** | Average speed (in kmph or mph according to userPreference). | Float |
| **harmonicAverageSpeed** | Harmonic average speed (in kmph or mph according to userPreference). | Float |
| **standardDeviationSpeed** | Standard deviation speed (in kmph or mph according to userPreference). | Float |

Structure of summaries

| **Field(s)** | **Description** | **Type / Values** |
| --- | --- | --- |
| **dateRange** | Reference to TimeSet in which calculations were made. | Integer |
| **timeSet** | Reference to DateRange in which calculations were made. | Integer |
| **distance** | Length of whole route (in meters or feet according to userPreference). | Float |
| **coveredDistance** | Summary length of segments covered with data (as above). | Float |
| **averageSampleSize** | Average number of probes used for calculations in each segment. | Float |
| **harmonicAverageSpeed** | Harmonic average speedfor the complete route. | Float |
| **averageTravelTime** | Average travel time for the complete route. | Float |
| **medianTravelTime** | Median travel time for the complete route. | Float |
| **averageTravelTimeRatio** | Ratio of average travel time in current TimeSet to average travel time in Base Set (first TimeSet and same DateRange). | Float |
| **planningTimeIndex** | Ratio of 95th travel time percentile in current TimeSet to average travel time in Base Set (first TimeSet and same DateRange). | Float |
| **travelTimePercentiles** | Percentile travel time in ascending order: 5th, 10th, ... 90th, 95th. | List of 19 Floats |
| **speedPercentiles** | Percentile speeds in ascending order: 5th, 10th, ... 90th, 95th. | List of 19 Floats |