



## **DanteExport v1.0 Manual**

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## 1 About

DanteExport (DE) is an application that allows users to easily select part of the Dutch Motorway network for a certain time period and then download this data to the user's own computer. The exported data can then be viewed and edited in Matlab without any restrictions. In order to use DE, a login and password are required which can be requested via [www.dantesoftware.com](http://www.dantesoftware.com).

The data in DE is built from three main building blocks: elements, connections and properties. Elements define the geometric shape and validity in time, e.g a "link" is defined as a series of points from start to end which is for example valid from January 1<sup>st</sup> 2008 and later. A connection defines a relation between elements, e.g. a loop detector is a child of a link. Properties contain all other data that is applicable to the element, e.g. the "speed limit" is a property of a link.

### 1.1 *System Requirements*

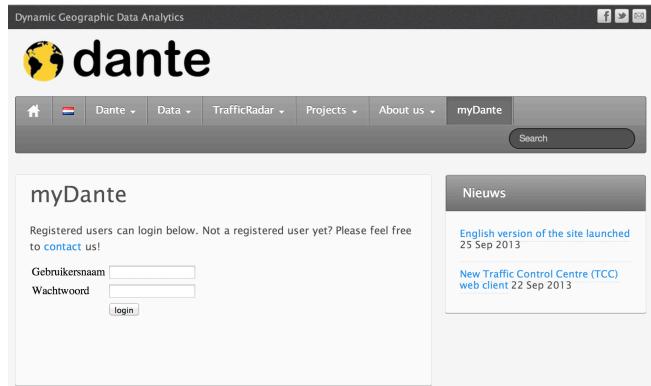
In order to run DE, the following system requirements are specified:

- At least 2GB of memory,
- Java v1.6 or higher

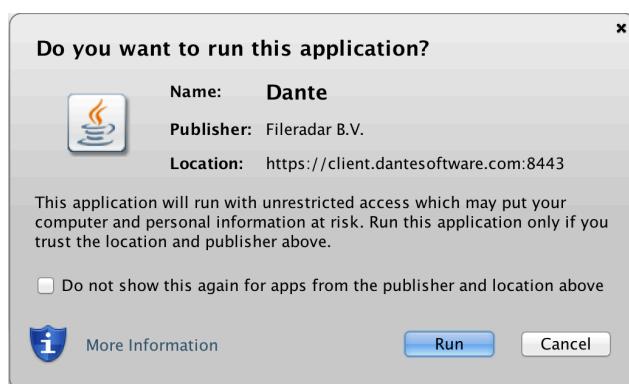
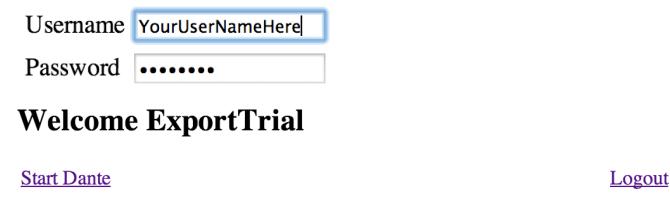
The tool has been tested under Mac OSX (10.9) and Windows 7. If you have experiences (either positive or negative) of DE under other operating systems we invite you to let us know.

## 2 Starting DanteExport

1. Go to  
[www.dantesoftware.com](http://www.dantesoftware.com) and select the menu ‘myDante’



2. Login with your credentials
3. On successful login, click the link dante. This will trigger the download of a small ‘.jnlp’ file
4. When downloaded open this file to start DE (some browsers will open it automatically)
5. Depending on the system security settings, a popup will be shown asking your permission to start the trusted application Dante

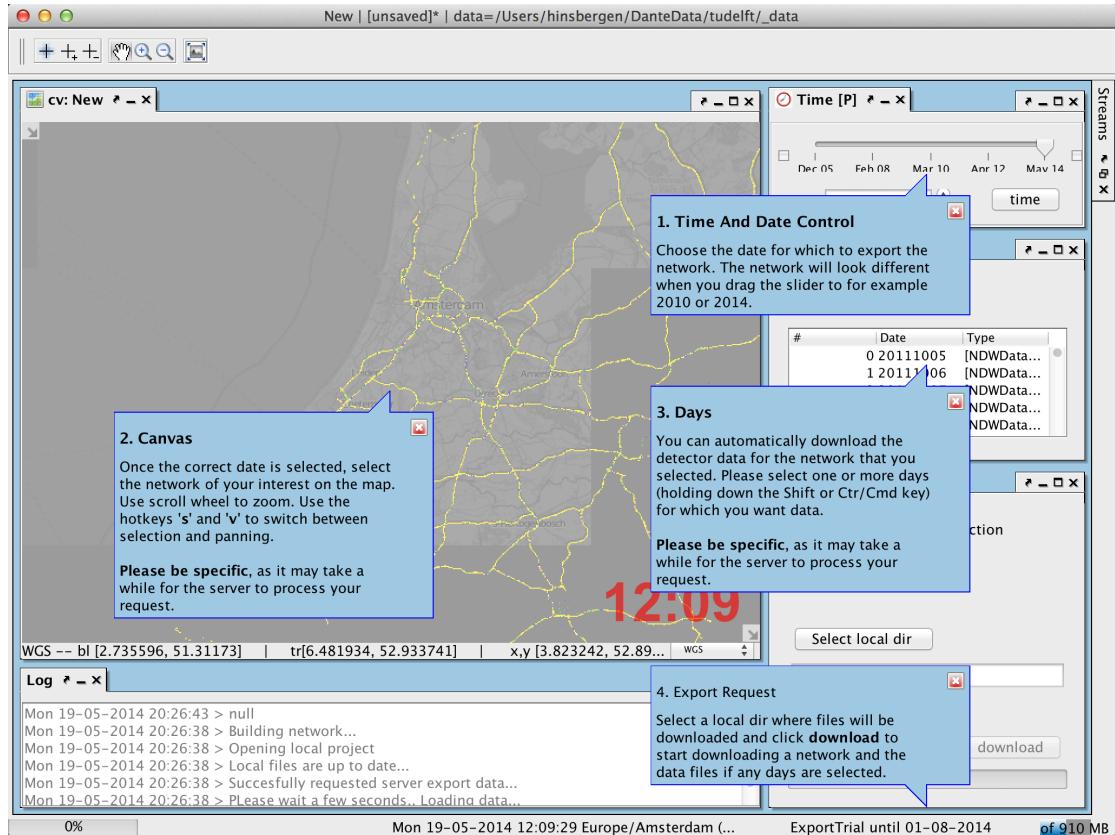


6. Dante will now start



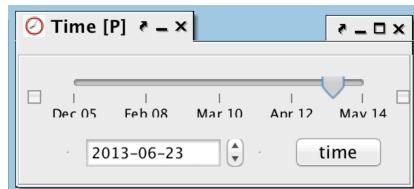
### 3 Using the tool to download data

Once the application is started, at the bottom left corner of the screen a progress bar is shown. When launching for the first time it may take a few minutes to download and unpack all data required to show the export network. Once everything is loaded, your screen will look like below.



Exporting data is performed in 4 simple steps, each of which have a blue balloon tip with a brief explanation. You can safely click these away using the red cross in the right top corner.

#### 3.1 Select the date



Use the slider or text box to change the date. You will notice that the network that is visualized on the map changes as you change the date. The map will always display the roads as they were on the date that you select.

### 3.2 Select the network of interest

In the top left corner you can find several buttons that change the mouse mode:

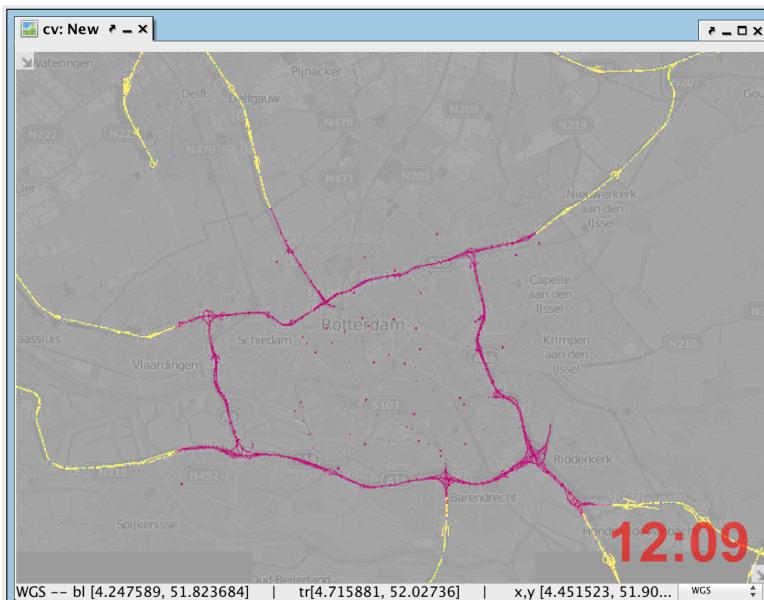


These buttons are, from left to right: Select, Add to selection, Subtract from selection, Pan, Zoom in, Zoom out, Zoom to entire network.

Using the **selection** mouse modes, mark the network of your interest. Anything that you select will be drawn purple. Notice that the selection behavior is different when you drag upwards or downwards (like in AutoCAD).



*Make sure to be as specific as possible, as downloading large quantities of data may take a long time and because you may block other users until your request is done.*



### 3.3 Select days (if any)

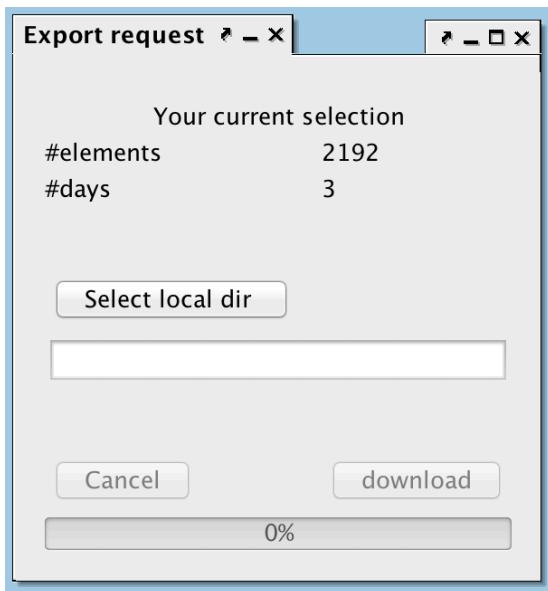
Available days		
#	Date	Type
603	20131213	[NDWData...]
604	20131214	[NDWData...]
605	20131215	[NDWData...]
606	20131216	[NDWData...]
607	20131217	[NDWData...]

If you are only interested in the network description, you can safely skip this step. In case you are interested in the traffic data of the detectors in the area of your interest, so can use this table to select one or more days. Use the Shift and/or the Ctrl or Cmd buttons to make up your selection.



*Make sure to be as specific as possible, as downloading large quantities of data may take a long time and because you may block other users until your request is done.*

### 3.4 Review your request and start downloading



Now that you have selected the network and possibly the days for which you want data, you need to select a local directory where the data will be downloaded.



*Existing files or previous exports are overwritten and old files may cause confusion.  
You are advised to specify a new directory for each export*

Once you have selected a directory, press the **download** button to start downloading the data. Information about the progress is shown in the progress bar below the download button and in the Log window below the map. Once the download is finished, the progress bars will stop moving and the following message is shown in the Log window:



## 4 Using the data in Matlab

Once the download has finished, several files will have been downloaded to the specified directory. These are:

- The *.dpnz* files contain the network, connections, properties and any daily data
- *DanteExport.jar* is a Java library that you need in Matlab
- A selection of *.m* files from the DanteExport Github
- *Request.xml* contains a summary of your export request

### 4.1 Github repository

The Matlab scripts are open source. You can check out the latest version and contribute at <https://github.com/dantesoftware/DanteExport>.



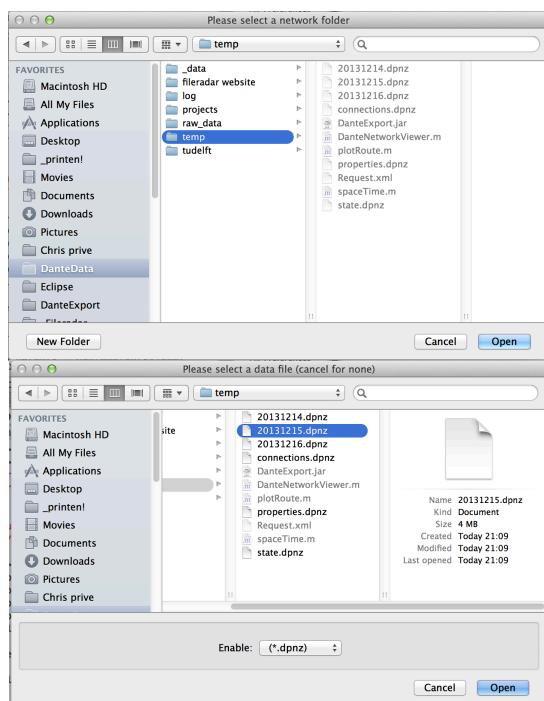
*Feel free to contribute!*

### 4.2 Opening the network viewer

The first step is to change the directory to the location where all data was stored. Next, a series of Matlab commands is run to load the data into Matlab.

```
>> javaaddpath('DanteExport.jar')

>> network = DanteNetworkViewer
```



```
>> network = DanteNetworkViewer
Loaded /Users/hinsbergen/DanteData/temp/state.dpnz 43 kb. took 29 ms
Loaded /Users/hinsbergen/DanteData/temp/connections.dpnz 59 kb. took 11 ms
Loaded /Users/hinsbergen/DanteData/temp/properties.dpnz 489 kb. took 594 ms
Loaded /Users/hinsbergen/DanteData/temp/20131215.dpnz 3914 kb
Plotting all elements, this may take a little while.
```

The Java library is loaded that contains essential functionality to deal with the data.

Next, the Dante Network Viewer is opened.

You will now get two dialogs.

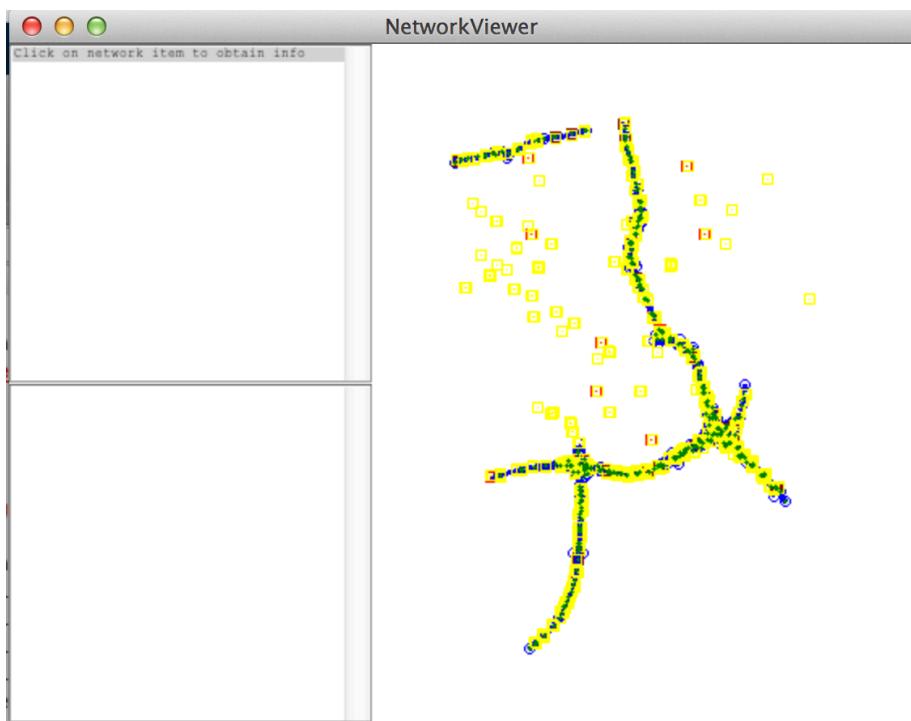
The first will ask you where to find the data (the directory that contains the 'dpnz' files).

In case you have selected one or more days with traffic data (see section 3.3) you have the possibility to load the data into the network immediately. You can always load the daily data later.

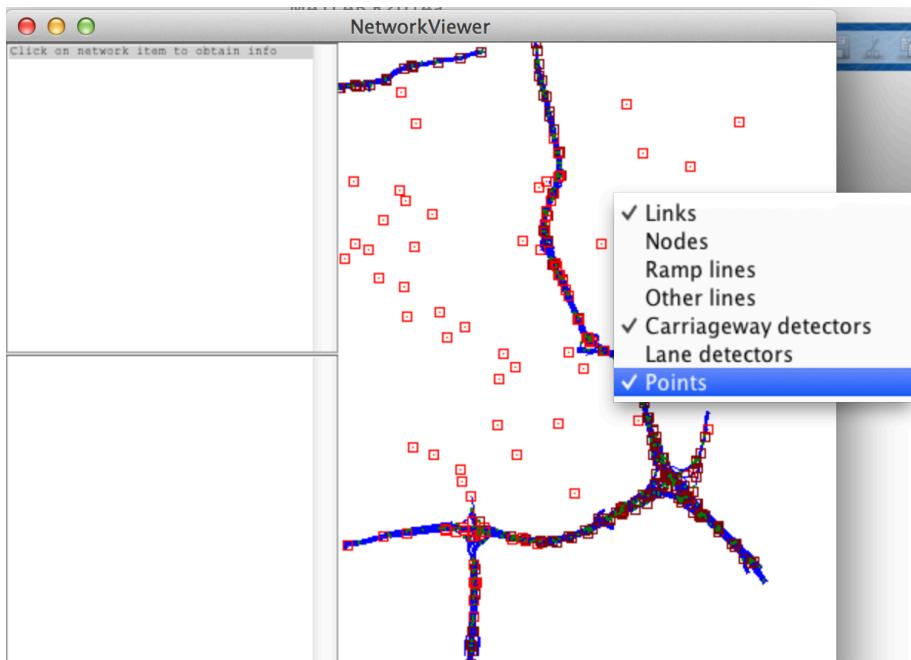
In case you only have a network and no daily data files you can safely press 'Cancel'.

You will see progress. Plotting all elements will take up to a few minutes depending on your computer and the size of the network.

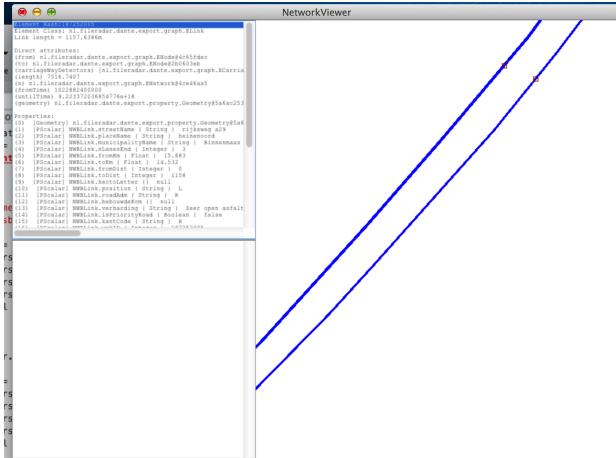
You will now see a screen that shows the data that was downloaded, like the image below.



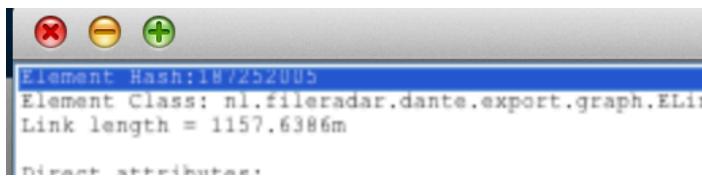
The information density in this plot is quite high. You can reduce the amount of information by pressing the right mouse button anywhere in the network view. Switch off some of the layers to get a clearer picture of the data.



### 4.3 Defining a route

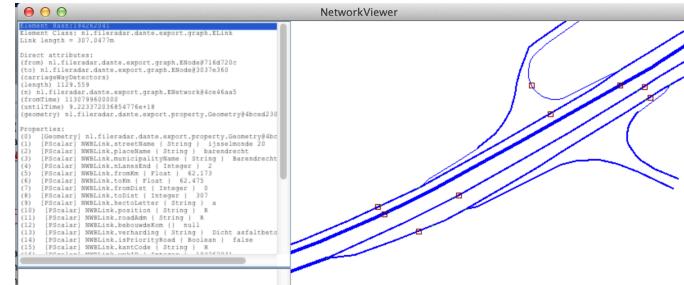


Zoom in to the starting link of your route and left click it. Information about the link will appear in the left top screen.



Each link in the network has a unique 'Hash'. You will need to remember the Hash of the starting link. It is displayed as the first line of the left top screen.

```
Element Hash:187252005
>> |
```



TIP: double click the row to 'mark' the row in the Matlab command window.

Go back to the NetworkViewer window and zoom / pan to the end link of your route. Left click it and mark the Hash of the link (double click the first line to copy it to the command window).

```
Element Hash:187252005
Element Hash:194262041
>> route = network.computeRoute('187252005','194262041')
```

```
route =
nl.fileradar.dante.export.graph.EDiscretizationSegment[]
[nl.fileradar.dante.export.graph.EDiscretizationSegment]
```

```
>> plotRoute(route)
```

Compute the shortest route between the two links.

Your route consists of a series of discrete segments of about 1km long. Each segment can contain dynamic data like speeds or flows.

Use this command to visualize the route in the NetworkViewer. The route will show in green.

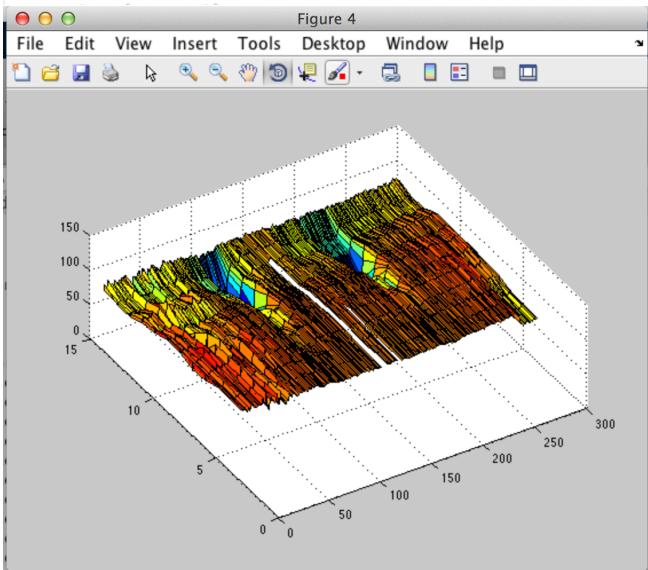
## 4.4 Extracting data from the route

```
>> network.loadData([pwd,filesep,'20131216.dpnz'])
Loaded /Users/hinsbergen/DanteData/temp/20131216.dpnz 3980 kb
```

```
>> speed = spaceTime(route, 'ASM Speed');
>> flow = spaceTime(route, 'ASM Flow');
```

```
>> size(speed)
ans =
15    288
```

```
>> figure; surf(speed);
```



```
>> speed
speed =
Columns 1 through 9
NaN    NaN    NaN    NaN    NaN    NaN    NaN    NaN    NaN
NaN    NaN    NaN    NaN    NaN    NaN    NaN    NaN    NaN
103.1856 102.8850 104.3037 105.3549 101.7673 98.8181 105.3333 99.9428 101.4058
102.6690 103.5835 104.4016 104.1295 103.1182 97.8644 106.5452 101.6345 99.4776
104.9118 102.1591 103.6610 103.6391 103.3028 97.6414 108.2655 102.9065 99.4763
105.0338 94.4910 99.2143 100.8245 103.0412 100.7546 107.7563 100.2116 102.4200
105.3756 92.6949 98.0882 100.3049 103.1971 101.8529 107.5538 99.3366 103.6755
107.8997 99.6634 101.7981 99.1777 104.9045 98.5410 98.0655 97.0847 99.3325
107.6025 100.8468 102.1551 98.9741 104.4306 97.0945 95.2329 96.4434 98.1876
100.1789 94.0339 98.3667 95.1275 95.4922 90.5850 89.5575 93.5549 90.1960
97.3436 90.6889 101.0646 96.2390 97.4877 92.1965 86.4148 100.1066 92.5669
87.8586 82.7885 88.7329 84.9251 89.1333 83.0113 80.7268 86.3688 86.0286
86.7695 82.8586 86.2698 83.1411 88.4508 81.9003 80.3008 84.8597 85.6514
88.1220 94.4480 88.9647 84.9719 99.0527 90.2609 88.6171 88.5872 92.4171
NaN    NaN    NaN    NaN    NaN    NaN    NaN    NaN    NaN
```

In case you haven't selected a data file when initializing the NetworkViewer (see section 4.2), or in case you want to load a different day.

A matrix is extracted from the route that contains the ASM-interpolated speeds or flows over space and time.

The matrix's size is the number of segments (15 in this case) times the number of time intervals (288, i.e. 5-minute intervals).

Visualize the speeds in 3D.

The matrix may contain NaN's. These are segments for which there is no data because there is no detector in or near the segment or because the detectors are broken.

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## 5 Troubleshooting and known issues

### 5.1 *Communication exceptions*

DE requires communication via http over port 8081, this port should be opened in the firewall. Contact your system administrator in case you encounter connection problems.