



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.

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 1st 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

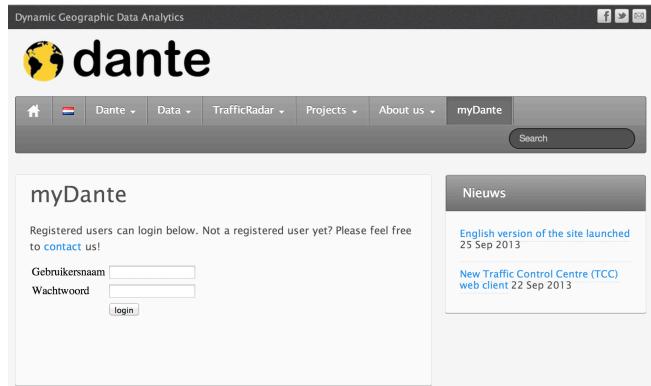
In order to run DE, the following system requirements are specified:

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

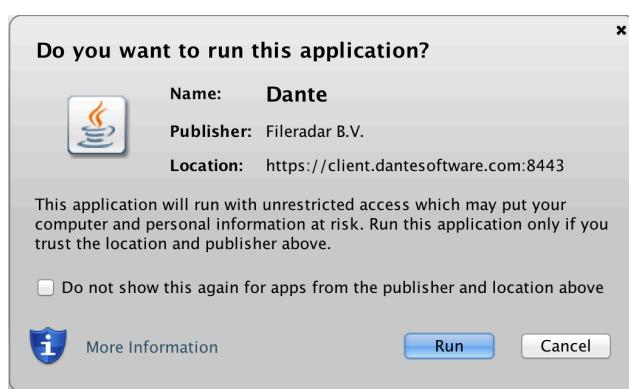
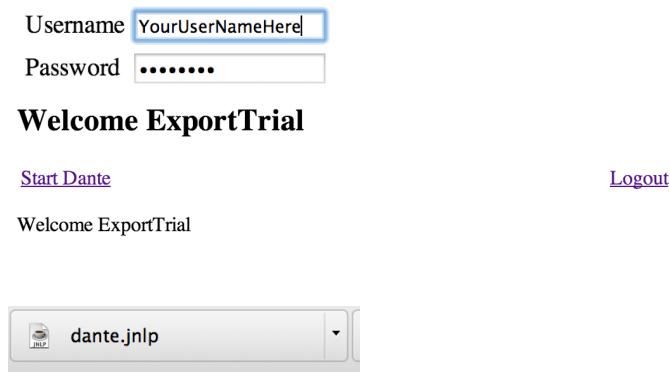
The tool has been tested under Mac OSX (10.9) and Windows 7. If you have experiences (either positive or negative) of DE under other operating systems we invite you to let us know.

2 Starting DanteExport

1. Go to
www.dantesoftware.com and select the menu ‘myDante’

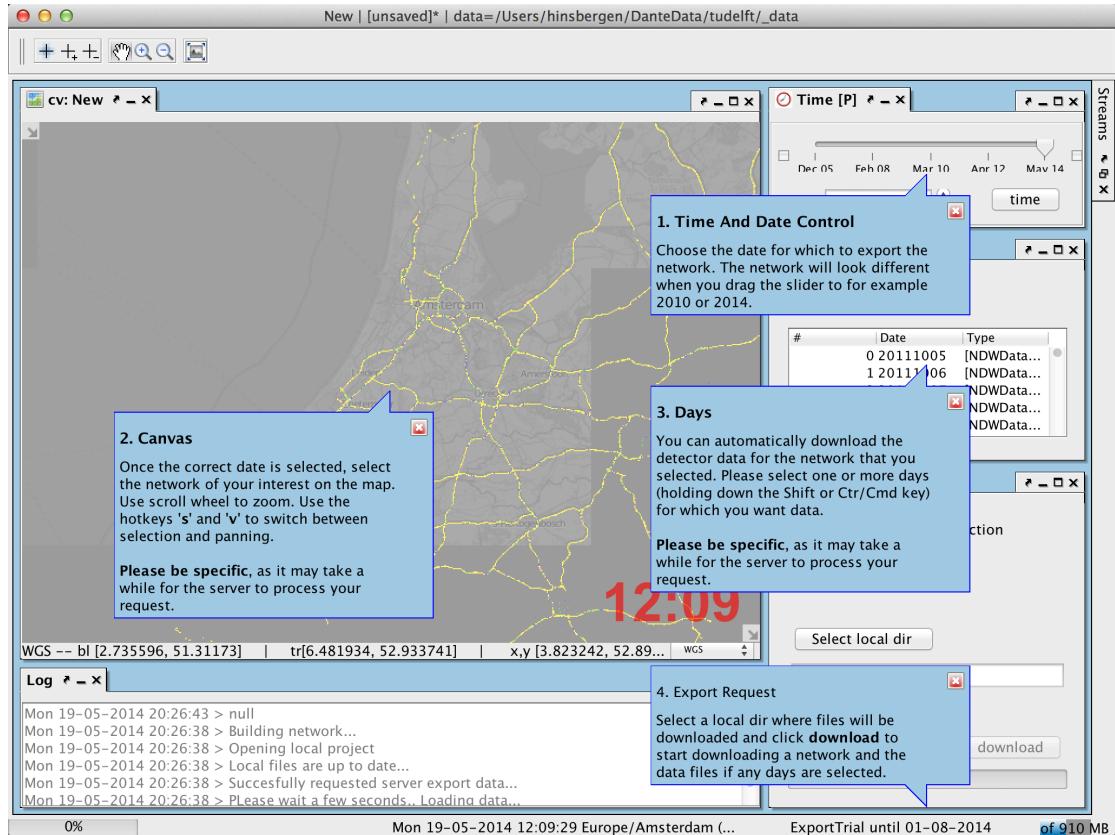


2. Login with your credentials
3. On successful login, click the link dante. This will trigger the download of a small ‘.jnlp’ file
4. When downloaded open this file to start DE (some browsers will open it automatically)
5. Depending on the system security settings, a popup will be shown asking your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



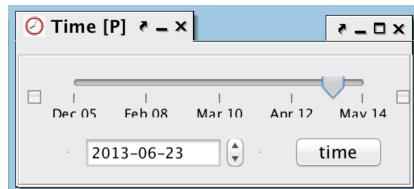
3 Using the tool to download data

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:

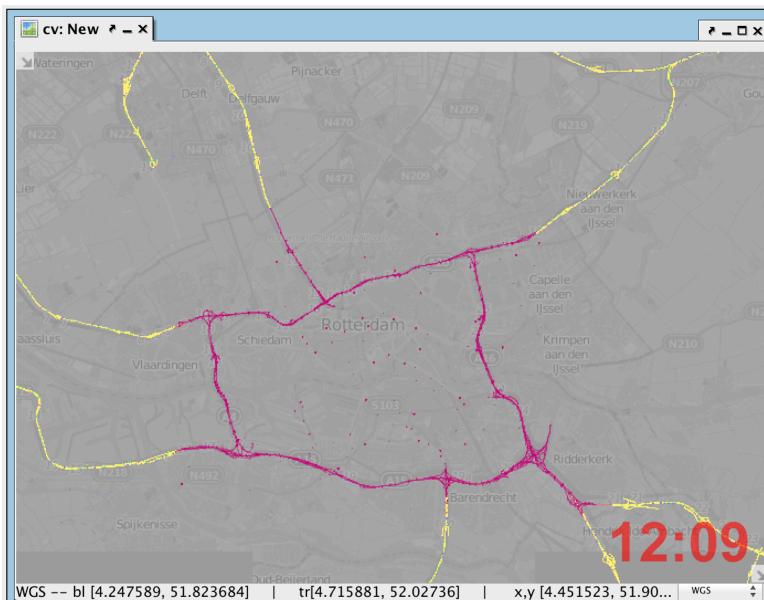


These buttons are, from left to right: Select, Add to selection, Subtract from selection, Pan, Zoom in, Zoom out, Zoom to entire network.

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)

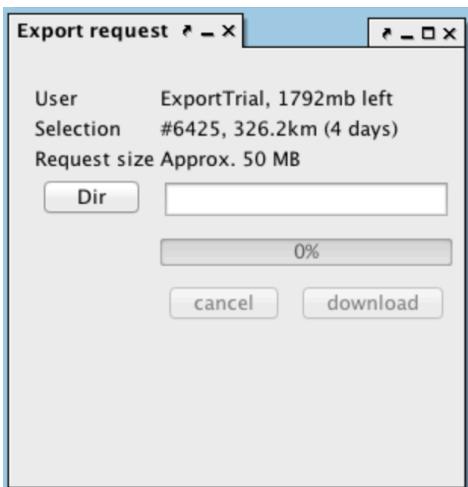
Available days		
#	Date	Type
643	20140122	[NDWDataO...]
644	20140123	[NDWDataO...]
645	20140124	[NDWDataO...]
646	20140125	[NDWDataO...]
647	20140126	[NDWDataO...]

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. Press the 'clear' button to unselect all selected days.



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:

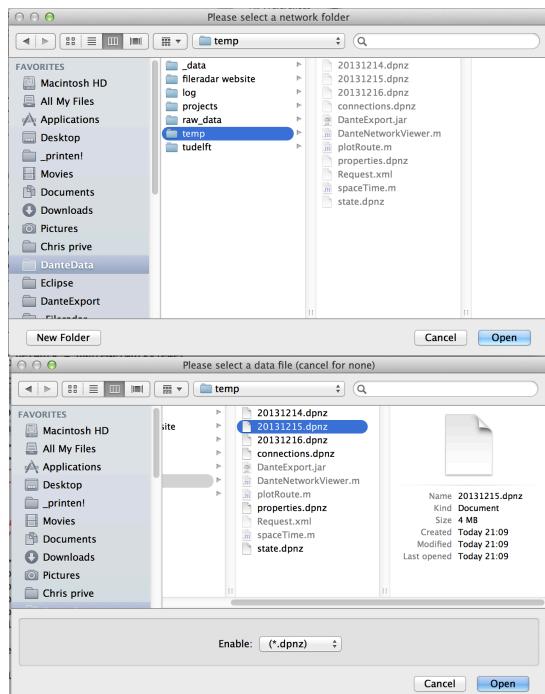
- The *.dpnz* files contain the network, connections, properties and any daily data
- *DanteExport.jar* is a Java library that you need in Matlab
- A selection of *.m* files
- *Request.xml* contains a summary of your export request

4.1 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.
```

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

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

Next, the Dante Network Viewer is opened.

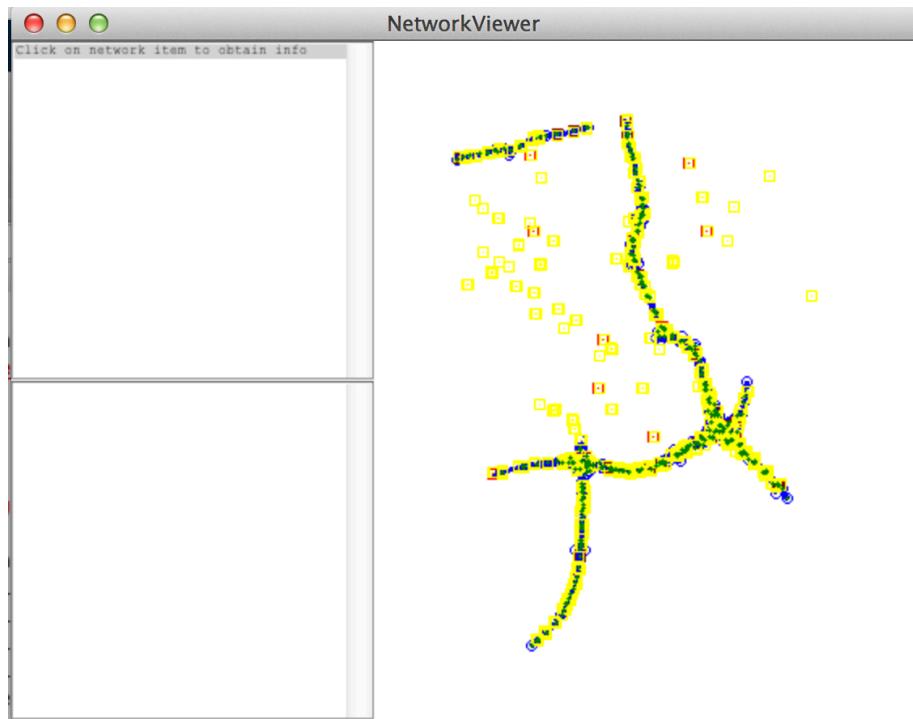
You will now get two dialogs.

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

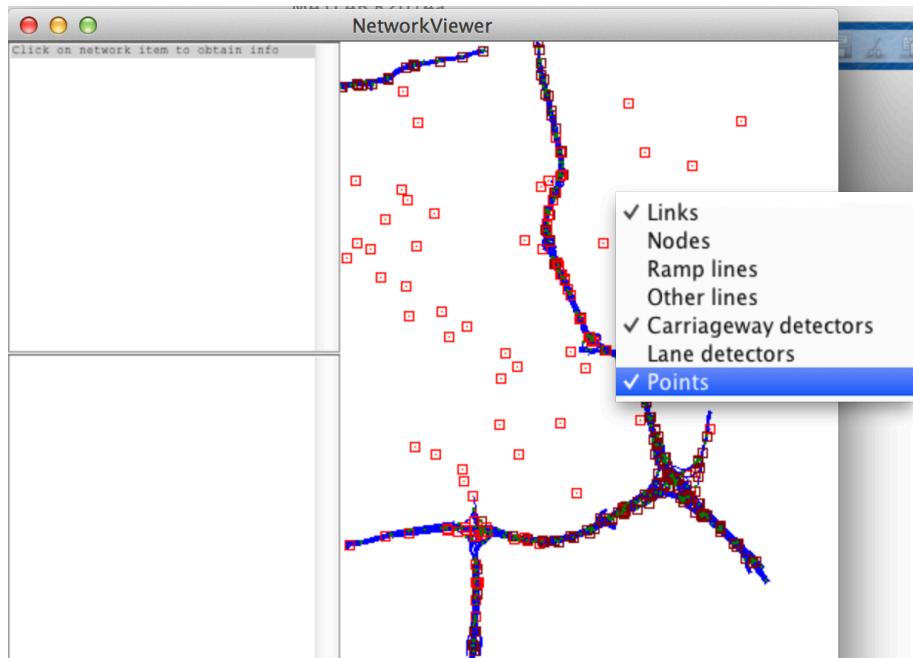
In case you have selected one or more days with traffic data (see section 3.3) you have the possibility to load the data into the network immediately. You can always load the daily data later.

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

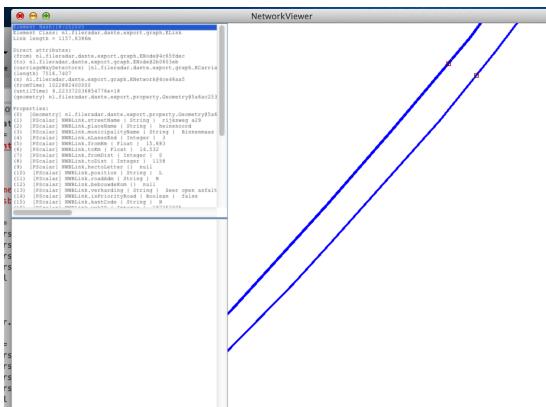
You will see progress. Plotting all elements will take up to a few minutes depending on your computer and the size of the network.



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.



4.2 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.



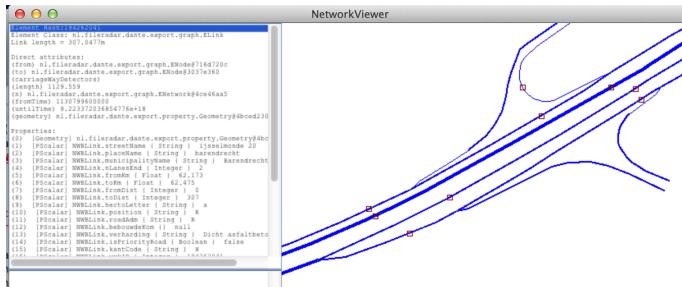
```

Element Hash:197264029
>>

```

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.

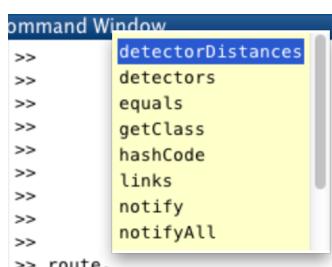
TIP: double click the row to 'mark' the row in the Matlab command window.



```

Element Hash:197264029
Element Hash:193281035
>> route = network.computeRoute('197264029','193281035');
Route found, total length is 13074.254m, #links=10, #segments=15, #detectors=32

```



```

>> plotRoute(route)

```

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).

Compute the shortest route between two links. Type 'route.' and press the TAB button to inspect what types of data is contained in the route structure. The 4 interesting ones are:
route.links
route.segments
route.detectors
route.detectorDistances
Use this command to visualize the route in the NetworkViewer. The route will show in green.

4.3 Extracting data from the route

```

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

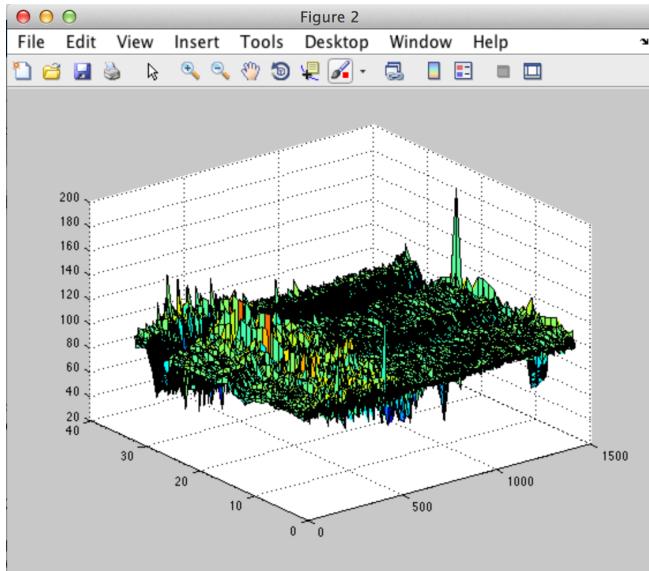
>> speed = spaceTime(route,'detector speed');
>> size(speed)

ans =
32      1440

>> flow = spaceTime(route,'detector flow');
>> size(flow)

ans =
32      1440
>> figure; surf(speed);

```



```

>> speedASM = spaceTime(route, 'asm speed');
>> size(speedASM)

ans =
15    288

>> flowASM = spaceTime(route, 'asm flow');
>> size(flowASM)

ans =
15    288

```

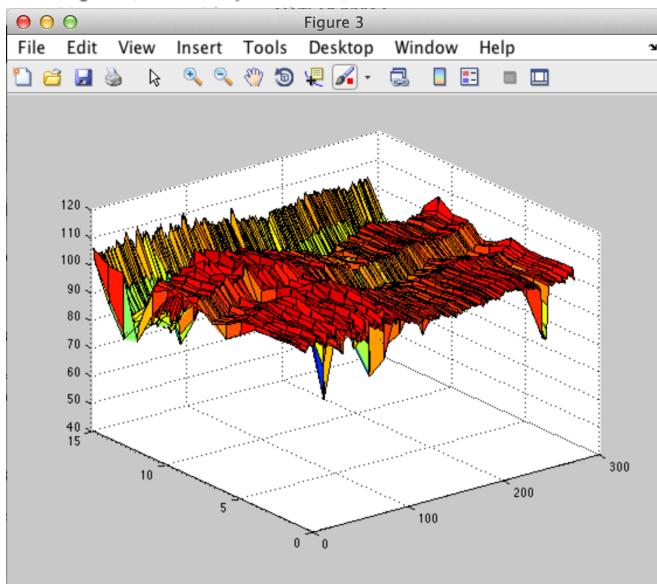
In case you haven't selected a data file when initializing the NetworkViewer (see section 4.1), or in case you want to load a different day, manually load a data file.

You can extract detector data directly from all detectors on the route. The matrix contains 1-minute total carriage way flows or average carriage way speeds for each detector on the route.

As a simple example to visualize the data, this plot shows the 'raw' detector data for all detectors on the route, in this case 32 of them. Note that the spacing between the detectors is incorrect in this plot, and would need to be corrected using route.detectorDistances.

You can also extract interpolated speeds and flows. For each segment the speed or flow is interpolated with data from surrounding detectors using the 'ASM' filter. Currently the interval of this method is 5 minutes.

```
>> figure; surf(speedASM);
```



Visualize the interpolated speeds in 3D. Notice how much smoother the picture is in relation to the raw detector data.

```
>> speed(1,:)
ans =
Columns 1 through 9
NaN | NaN      NaN      NaN      NaN 106.6104 101.7704 103.4265 106.1370
Columns 10 through 18
100.2607 98.2205 101.7930 103.8448 107.7943 104.1126 101.0024 101.5448 108.4383
Columns 19 through 27
101.3558 101.8243 102.0437 102.3658 101.8718 99.7422 100.3775 101.3855 109.3060
Columns 28 through 36
102.0632 101.5077 97.2711 105.2218 98.3515      NaN 101.2648 101.3631 104.8468
Columns 37 through 45
```

The detector data or the ASM data may contain NaN's. These are minutes or segments for which there is no reliable data on the detector(s).

5 Troubleshooting and known issues

Currently there are no known issues. Please contact info@dantesoftware.com in case you encounter any!