

HEURES USER MANUAL

# Cartography V2

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# Heurès

## REVISIONS

VERSION	PAGES	CHAPTER	REVISION OBJECT
A		-	Creation

## VALIDATION

VERSION	DATE	REDACTION	VERIFICATION	APPROBATION
A				

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# INTRODUCTION

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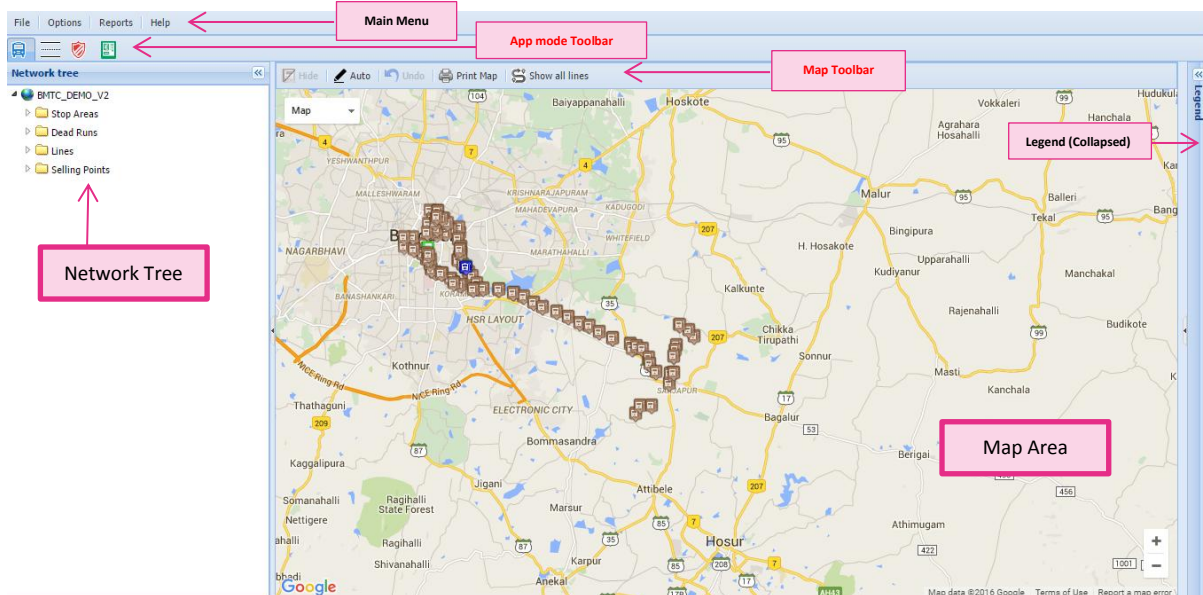
This document presents the cartography module of Heures software for version 8.5.

 **V8.5**

Version 8.5 of Heures is a transitional version.

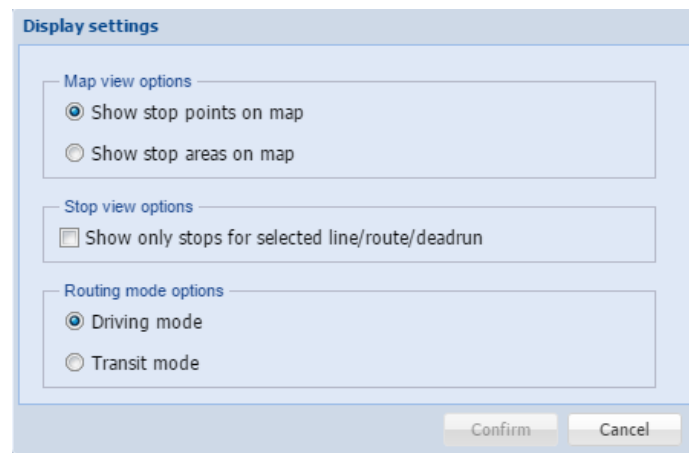
The new functionalities of version 8.5 are presented with the following pictogram:

# PRINCIPLES

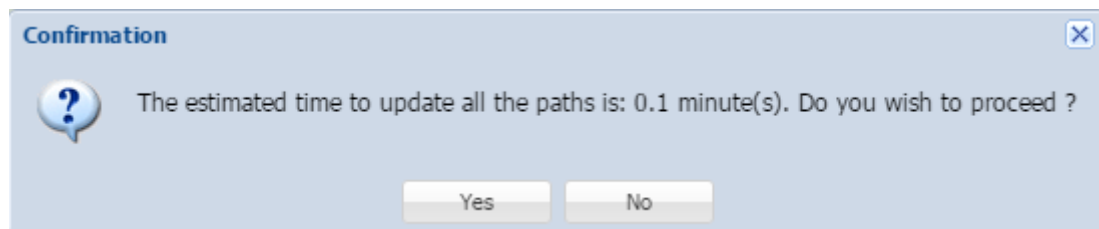


## 2.1 Main Menu

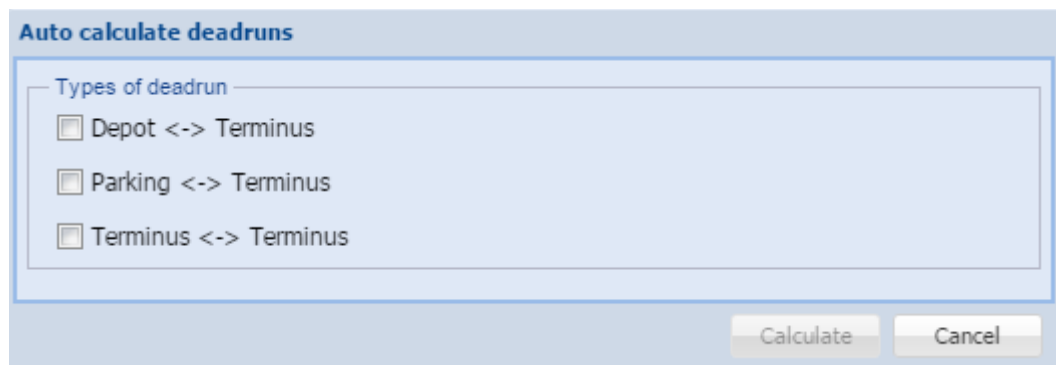
- **File**
  - Open : Opens a new season (see Opening a Season)
  - Save : Saves modification (see Saving modifications)
  - Quit : Closes the application (see Quitting the application)
- **Options**
  - Map Setting: show map related setting as shown in image below



Calculate distance path: calculates the distances of all the paths on map automatically (Using Google map). A conformation message will pop up as shown below.



- Auto calculate dead runs : Calculates dead runs automatically for selected options as shown below



**V8.5**

- Export lines as KML : exports line information for selected lines as shown below





## V8.5

- **Reports**
  - Stop area report
  - Stop point report
  - Town report
  - Selling point report
  - Distance report
  - Dead run report
  - Line report
  - Comparison of seasons
  - Anomalies report
- **Help**
  - User Guide
  - About Carto

## 2.2 Toolbar

- The application mode can be set using the App Mode Toolbar.
- Accessing a node in Network Tree also changes the mode automatically.

- Clicking on Stop Areas tree root or its descendant changes the mode to Stop Mode.
- Clicking on Dead Runs tree root or its descendant changes the mode to Dead Runs Mode.
- Clicking on Lines tree root or its descendant changes the mode to Lines Mode.
- Clicking on Selling point tree root or its descendant changes the mode to Selling point Mode.

**V8.5**

There are 4 types of modes in Carto V2 as follows.

- **Stop Mode**
- **Dead Run Mode**
- **Line Mode**
- **Selling point Mode**

**V8.5**

- Stop Mode
  - This mode allows user to create and manage stop points and distances between them. It also displays distances between stop points.
- Dead Run Mode
  - This mode allows user to create and manages dead runs between stop points.
- Line Mode
  - This mode allows user to create and manage lines, routes and stop point in routes.

**V8.5**

- Selling Point Mode
  - This mode allows the user to create and manage selling points and associate and dissociate them from stop areas. In this mode, only selling points and stop area markers are displayed on the map. The stop point markers are not shown.

## 2.3 Network Tree

The Network Tree represents the network topology of the loaded season in tree format. If a node in the tree has child nodes, then an expand icon on the left allows display of the child nodes.

The Network Tree has the following three major sub-trees:

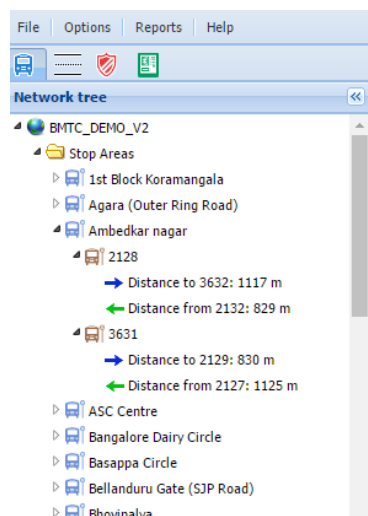
- **Stop Areas**
- **Dead Runs**
- **Lines**
- **Selling Points**

**V8.5**

Later sections indicate how a user can access network entities in the tree to view them on map or edit them.

- **Stop Areas Tree**

The Stop Areas tree contains all the stop areas in the loaded season. Each stop area contains the associated stop points, and each stop point contains leaving and arriving distances.



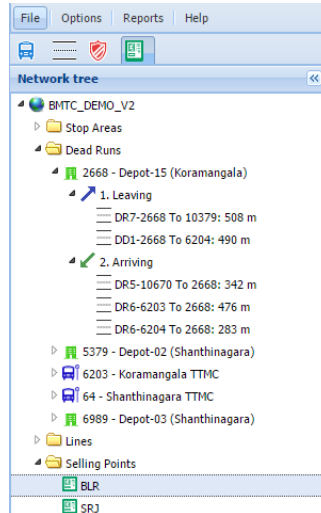
- **Dead Runs Tree**

The Dead Runs tree contains all the stop areas from where dead runs leave or arrive. Each stop area contains leaving and arriving dead runs.

## V8.5

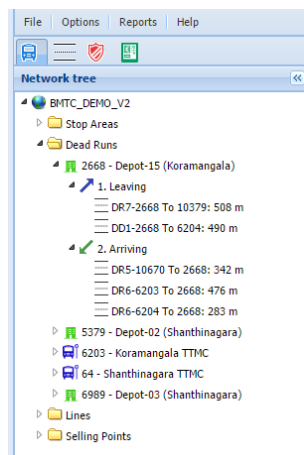
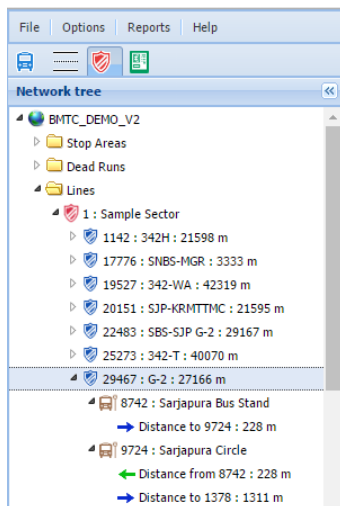
### • Selling Points Tree

The selling points tree contains all the selling points of the loaded season and site. Each selling point node contains its associated stop areas as child nodes.



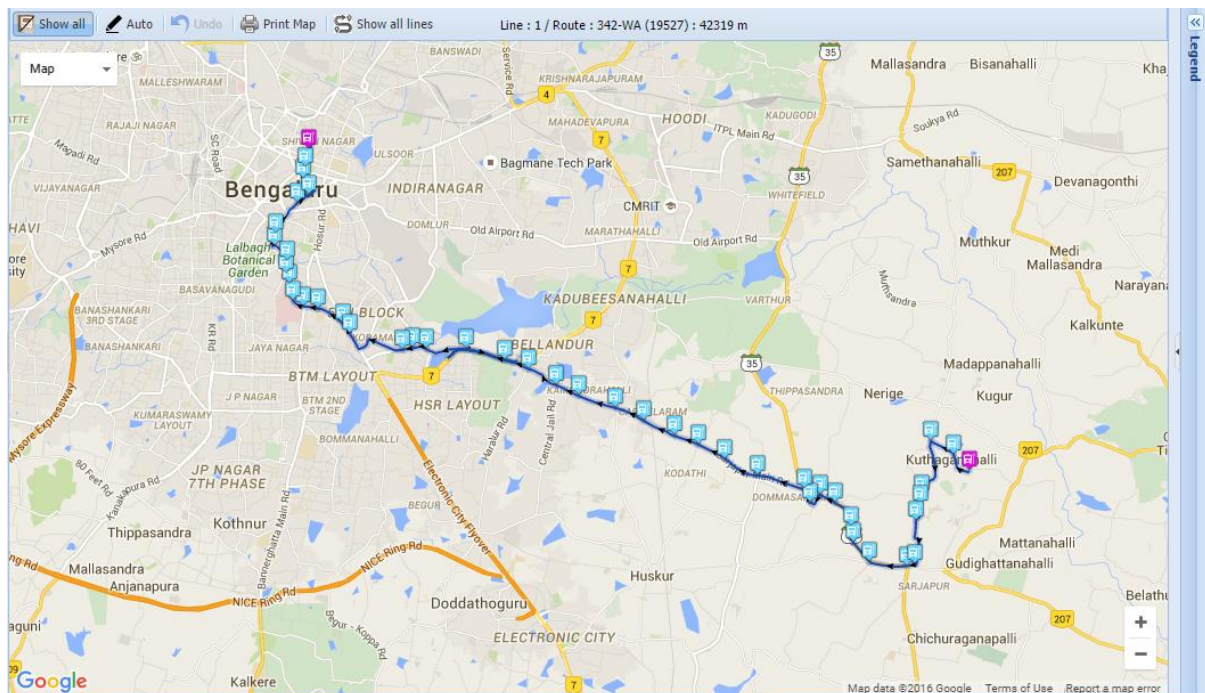
### • Lines Tree

The Lines tree contains all the lines in the loaded season and site. Each line contains the associated routes, each route contains the stop points in the route ordered according to their sequential positions in the route, and each stop point in route contains leaving and arriving distances.



## 2.4 Map

The Map component shows the loaded network topology in a map. After loading a season, the map shows all the stop points in the network (having valid latitude and longitude coordinates) by default. Based on the application's mode it shows other entities such as distances, dead runs, routes etc. It also allows creation of some network entities. Standard operations such as zoom-in/zoom-out and direction navigation are also supported. Below is map view in Carto.

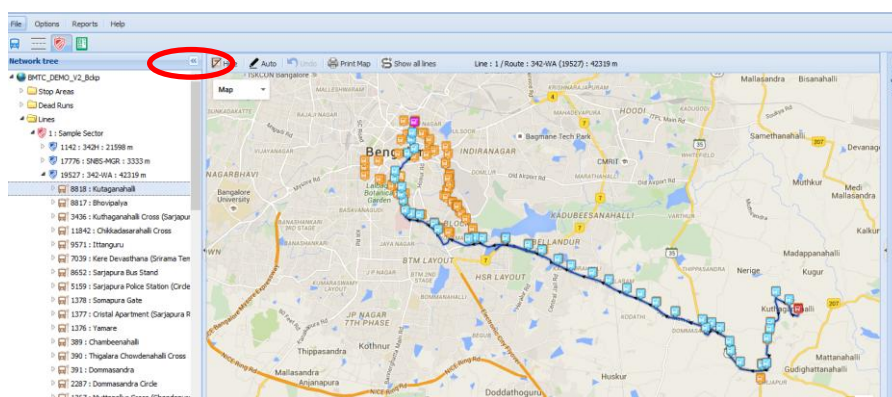


V8.5

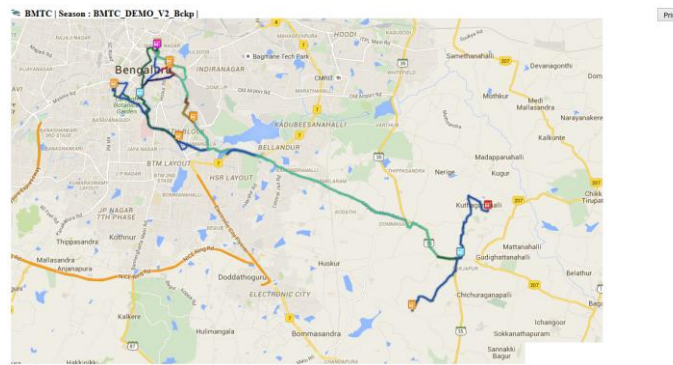
### 2.4.1 Print map

It is possible now in Cartography to print the map directly.

- To print the map, go to map toolbar and click on "Print Map".



- A printable map will open in a new browser window as shown below.
- A button “Print” at the Right-top corner will initiate command to printer.

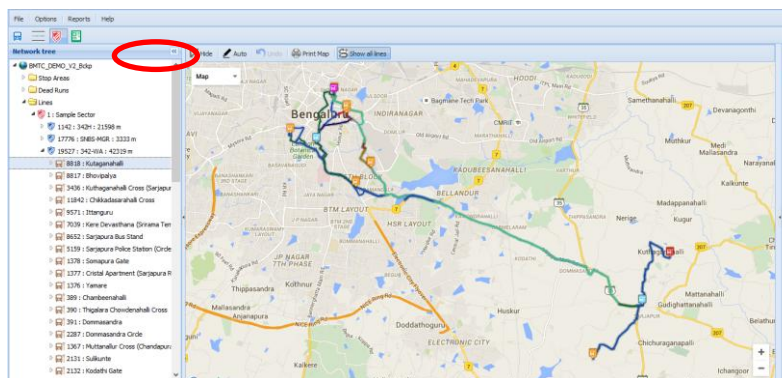


## V8.5

### 2.4.2 Show All Lines

To view all the lines on the map, click on “Show all lines” from the map toolbar.

Once the option is activated, the user can see all the lines present in that season. A sample view is shown below.

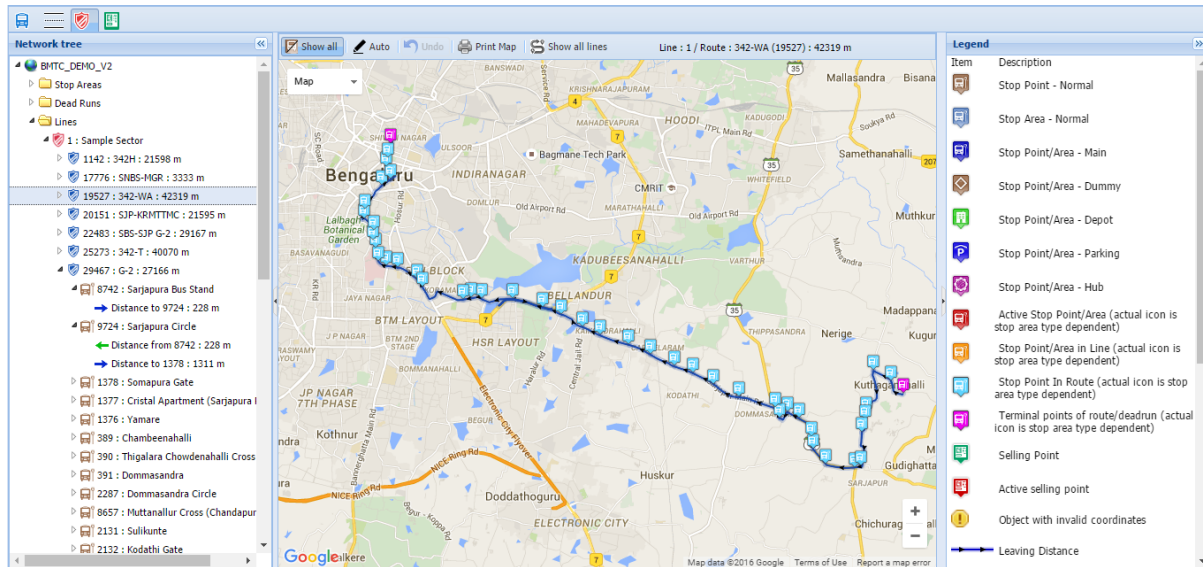


## 2.5 Legend

A legend (on right of the map) which is collapsed by default provides information on the visual aids, icons and colour-coding used for representing network components on map.

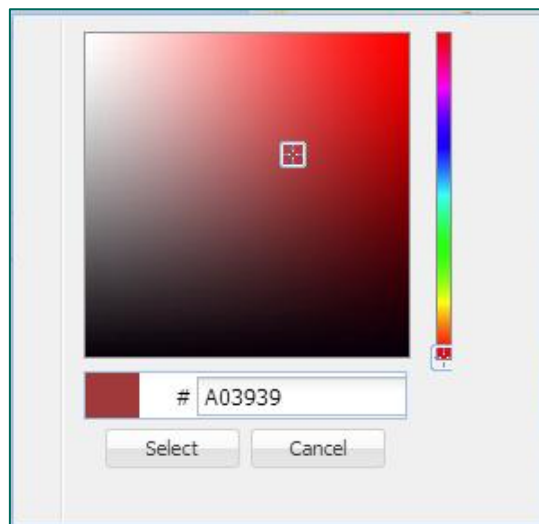
To access the legend expand the far right panel named ‘Legend’.





## 2.6 Colour Picker

Colour Picker is a component that is used to pick a colour in an intuitive manner. The figure below shows the Colour Picker component. The colours are based on HTML RGB colour range.



The Colour Picker has the following components:

- Hue scale (vertical bar)
- Hue picker (square component with a crosshair)

- Saturation value container component (large square container with the selected hue's background colour)
- Saturation-value picker component (small square component with a crosshair)
- A RGB colour field that displays the selected RGB colour in hex.
- A container that shows the current colour chosen.
- Buttons to select the colour or cancel.

The colour can be chosen using the steps below:

- To change hue, place the mouse pointer at the required hue on the hue scale and click. The crosshair will move to the clicked location and background colour of the saturation-value container and the hex value in the RGB colour field will change.
- To change the saturation-value, place the mouse pointer at the required location and click. The crosshair will move to the clicked location and the hex value in the RGB colour field will change.
- To change the colour directly by entering the RGB hex value, enter the value in the colour field and press 'Enter' key. The hue and saturation-value selector crosshair location change based on the colour entered.

To confirm the colour selection, click the 'Select' button.

## 2.7 Managing distance paths

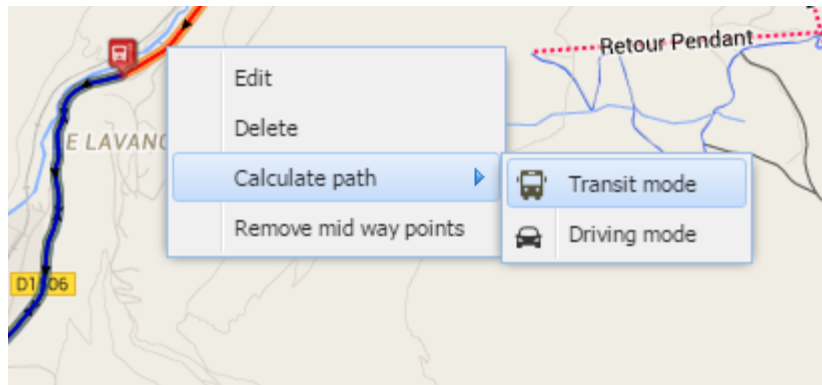
There are different approaches for calculating the distance path between two stop points.

- **Calculate distance paths automatically:** which will automatically calculate all the distances present in the season. The module is under the tab "option" from the main menu.
- **Calculate distance for a particular path only:** It is possible now in Carto to calculate the distance **by preference of Transit mode or Driving Mode** for a single path as shown in figure. For calculating distance for single path, follow the below steps:
  - Select the stop point which consists the distance.
  - Right click on the path and click on "Calculate path".
  - **Path preference can be selected as Transit or Driving.**

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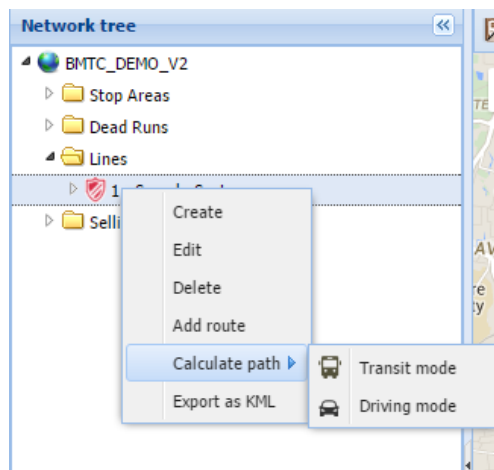
V8.5



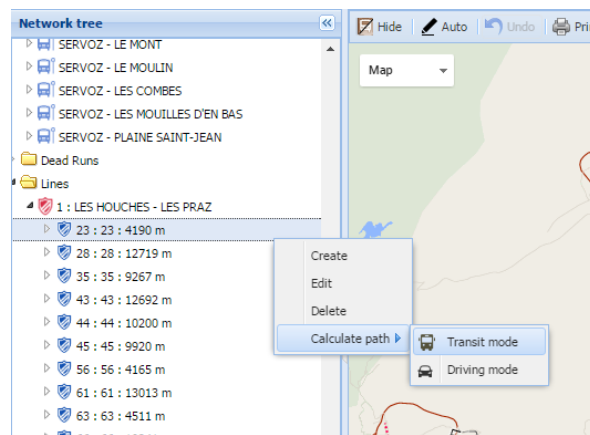


## V8.5

- **Calculate distance path for a Line:** User can calculate all the distances of a particular Line. Steps for this are as below:
  - In Network tree, Right click on “Lines”.
  - Click calculate path.
  - User can select either transit mode or driving mode as a path preference.



- **Calculate distance path for a route:** User can calculate all the distances of a particular route. Steps for this are as below:
  - In Network tree, click and expand drop down of “Lines”.
  - Expand by clicking left arrow of desired Line.
  - Right click on a route and click calculate path.
  - User can select either transit mode or driving mode as a path preference.



- **Change the path manually:** It is now possible in Carto V2 to change the path manually. The auto calculated path can be rerouted as per required.

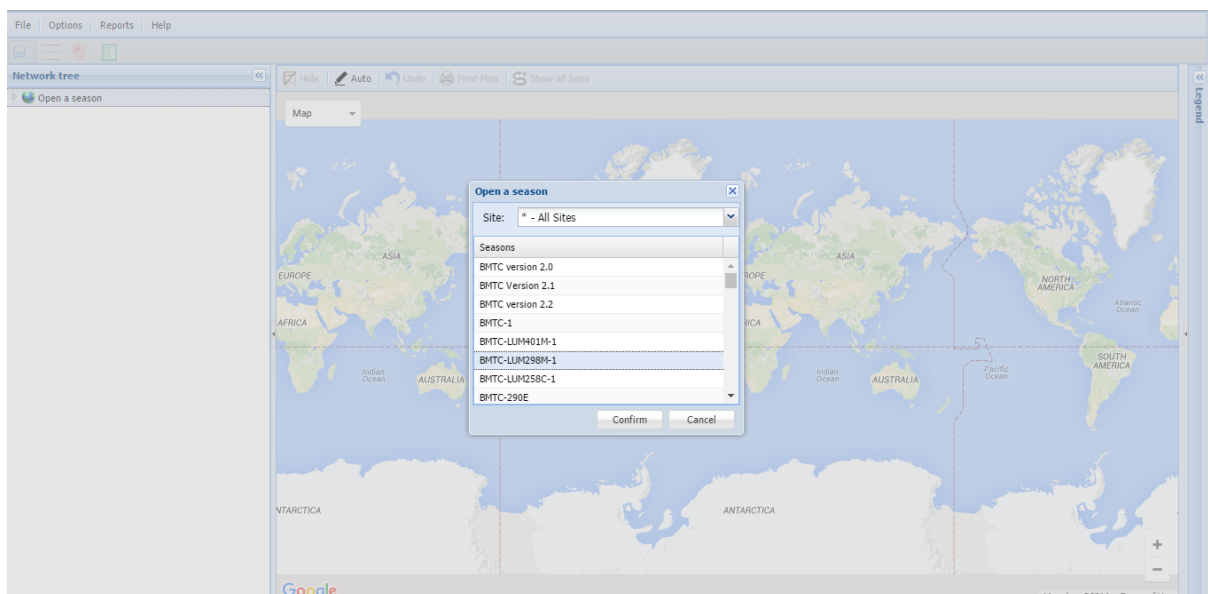
Refer to “[Modifying path of a distance](#)” from “Managing Distances”.


# GENERAL RULES

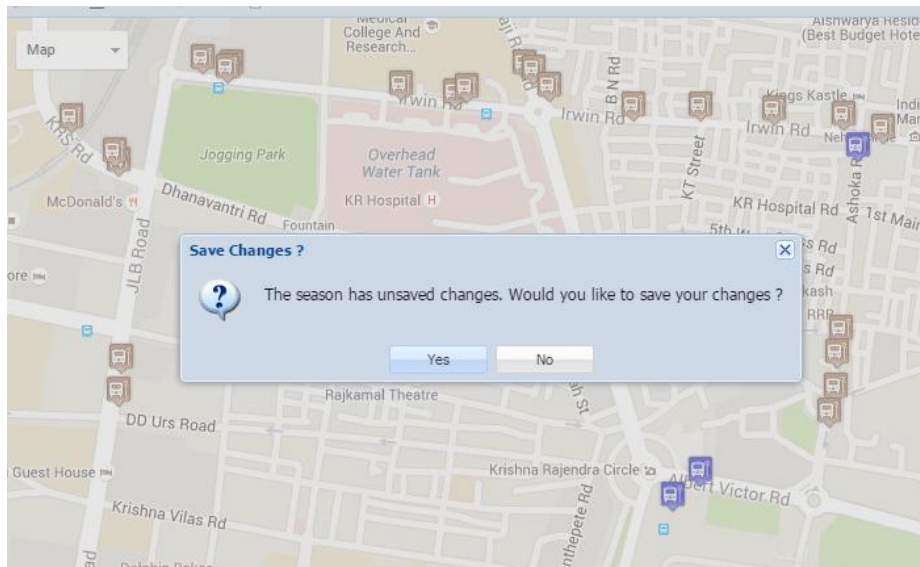
## 3.1 Opening a Season

A season can be opened using the File Menu or by accessing the root node in Network Tree.

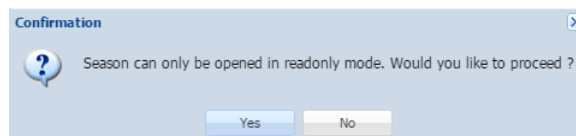
- Open the 'Open a season' window using any one of the following methods:
  - Go to File Menu and click 'Open' menu item.
  - If a season is not already open, then click on 'Open a season' node in tree.
  - If a season is open, then right-click on the tree's root node (that contains the season's name) to display a context menu and click on 'Open a season' menu item.



- If a season is already open and contains unsaved changes, then a 'Save Changes' confirmation message is displayed. Click 'Yes' to save and 'No' for not to save changes.
- Cancel (cross)  button will deny the request of function and return to previous screen.



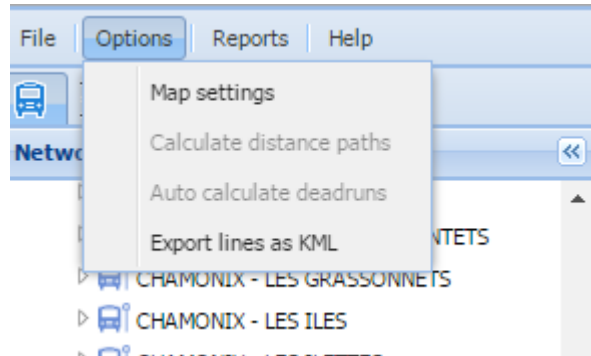
- Select the desired season **as well as site** and then click 'Confirm' to close the window and load the season. **By default, "All Sites" gets selected.**
- If the season along **with that site** is already opened by another user, then a message window will be displayed to confirm if the season should be opened in read-only mode. Click 'Yes' to confirm and 'No' to cancel.



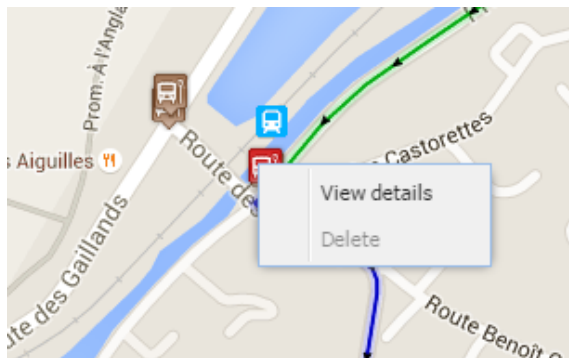
- Wait until the 'Loading season data' message is displayed.

## 3.2 Read Only Mode

- When the application is launched in or a season is opened in read-only mode, all operations that can modify the network data are disabled. In particular, the following mechanisms are used to avoid modification:



- All items in network entity context menu that can modify data are disabled. For example, items 'Create', 'Edit' and 'Delete' are removed from context menus. The figure below illustrates this for a stop point ('View details' instead of 'Edit' in menu and 'Delete' is disabled).
- When an entity form such as 'Stop Point Properties' form is displayed, its fields are made read-only.



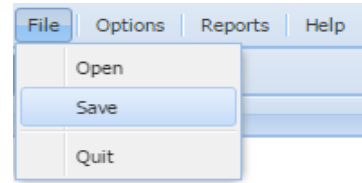
- Actions that result in modifications in writable mode have no impact. For example, an action that creates distance between two stop points in writable mode has no impact in read-only mode.

## 3.3 Saving modifications

Modifications done to the network are not immediately saved to database. All the modified be saved explicitly to the database.

To permanently save all modifications to the database, perform the steps below:

- Go to [File Menu](#).
- Click on 'Save'.



must

## 3.4 Quitting the application

To quit the application, perform the steps below:

- Go to [File Menu](#).
- Click on 'Quit'.
- If the season has unsaved modifications, then a 'Save Changes' window will be displayed. Click 'Yes' to save before quitting and 'No' to quit without saving.

## v8.5 3.5 Managing routing modes

Google direction services enable various travel modes or routing modes. Two of those modes have been used in the application for the routing, namely,

- Driving mode
- Transit mode

Each society has a default routing mode which will be used for calculating the paths of distances and dead runs. However, the user can modify the routing mode and this modification will hold for the current session. In order to do that, the following steps have to be followed:

- Go to [Options Menu](#).
- Click on "Map settings" which then opens a popup window showing "Display settings".
- In "Routing mode options" section, the radio button with the current routing mode remains selected.
- Choose the appropriate option by selecting its corresponding radio button.
- Click "Confirm" button.

**Display settings**

Map view options

☒ Show stop points on map  
☐ Show stop areas on map

Stop view options

☐ Show only stops for selected line/route/deadrunk

Routing mode options

☒ Driving mode  
☐ Transit mode

Confirm

Cancel

# MANAGING STOP POINTS

Cartography allows creation, modification and deletion of stop points.

## 4.1 Creating a stop point

To create a new stop point, perform the steps below:

- Make sure the [Application Mode](#) is Stop Mode (see [Setting Application Mode](#))
- Press 'Ctrl' key and click on the map at the location where the stop point is to be created.
- The Stop Point Properties form similar to the one below will be opened:

Stop Point Properties

Code:

Name:

Town: Bengal - Bengaluru

**Stop Area** | Address | Coordinates

☒ Nearest: Wipro Park Koramangala (7171) - 117 m

☐ Maharaja Signal (5167) - 587 m

☐ Koramangala 1st Block (5311) - 603 m

☐ 1st Block Koramangala (3639) - 619 m

☐ New stop area

Create Cancel

- Enter the code (mandatory and unique) and name of the stop point.
- Select the associated stop area from the four nearest stop areas or select 'New Stop Area' and enter the stop area's code (mandatory and unique), name and the type. (See below figure)



- The address fields in 'Address' tab is automatically populated. Review and edit the address if necessary.
- The 'Coordinates' tab contains the latitude and longitude fields which are automatically populated. Review and edit if necessary.
- Click 'Create' to create the stop point and close the window.
- The stop point will be created and activated on the map and the tree. If 'New Stop Area' was selected, then a new stop area will also be created.
- Comments related to the stop point can be added while creating a stop point.
- Other system interfaces also can be attached to the stop points. For example, LED display, etc.

V8.5

## 4.2 Activating a stop point

After loading a season, stop points can be accessed from both the Network Tree as well as the Map.

To access a stop point from Network Tree, simply locate its stop area node, expand it, and then click the stop point node under it. Clicking the stop point node makes it active and highlights it in red colour.

To activate a stop point on Map, simply locate the stop point marker on map and click on it.

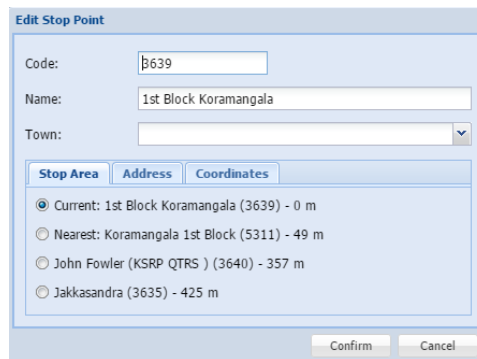
## 4.3 Editing a stop point

To edit an existing stop point, perform the steps below:

- Open the 'Edit Stop Point' form by either of the following methods:

- Right-click the stop point node in the tree to display the context menu, and click on 'Edit'.
- Double-click the stop point node in the tree.
- Right-click the stop point marker on map to display the context menu, and click on 'Edit'.

The below form will be opened:



- Make the required changes (see [creating a stop point](#) for meanings of stop point fields).
- Click 'Confirm' to confirm the changes and close the window.

## 4.4 Deleting a stop point

Deleting a stop point deletes all its distances, dead runs, stop point assignments to routes and lines associated to it.

To delete a stop point perform the steps below:

- Open the stop point context menu using one of the following methods:
  - Right-click the stop point node in the tree.
  - Right-click the stop point marker on the map.
- Click 'Delete' on context menu.
- Select 'Yes' to confirm deletion and 'No' to cancel.

## 4.5 Changing stop point location

**WARNING:** Changing a stop point location results in recalculation of all distances (except locked) and dead runs associated to it.

The location of a stop point can be changed by dragging its marker on map (preferred method) or by changing the coordinates in 'Edit Stop Point' form (see [editing a stop point](#)).

To change the stop point location directly on map, perform the steps below:

- Select the stop point on map or tree.
- Press 'Ctrl' key, drag the stop point using mouse and drop it to the new location.

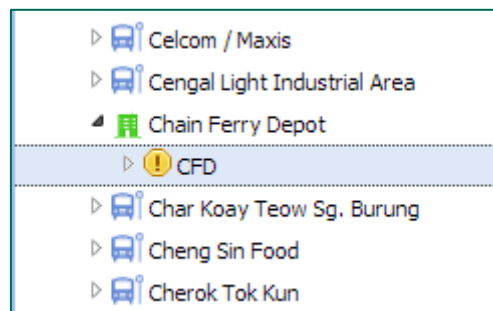
Note that changing the stop point location does not automatically change the address to that of the new location. If required, the address must be updated manually by opening the 'Edit Stop Point' form.

## 4.6 Initializing location of stop point without coordinates

Stop points that don't have their coordinates set cannot be viewed on the map. For example, stop points created in Heures software that don't have coordinates can be seen in the tree, but not on the map. A useful method is provided to initialize the location of such stop points.

To initialize the location of a stop point with no coordinates, perform the steps below:

- Locate the stop point in tree and click on it to select it. The stop point node will have warning (exclamation) icon as shown below:

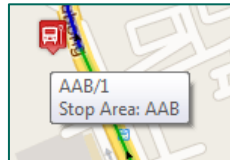


- Right-click on the map where the stop point is to be placed to display a context menu, and click 'Put this stop point on map'. The stop point will be added on the map and the stop point icon in tree will change.

## 4.7 Stop point tooltip

---

A tooltip is displayed when the mouse is placed over a stop point marker for a few seconds. The tooltip includes the stop point and the associated stop area code to clearly identify the stop point.



# MANAGING STOP AREAS

Stop area is a collection of collocated stop points. For example, stop points on the opposite sides of a 2-way road may belong to one stop area.

## 5.1 Displaying stop areas on map

By default the map displays stop points in the network. To display stop areas, perform the below steps:

- Go to 'Options' menu in [Menu Bar](#).
- Click 'Map settings' to open a form as shown below.

**Display settings**

**Map view options**

☒ Show stop points on map

☐ Show stop areas on map

**Stop view options**

☐ Show only stops for selected line/route/deadrun

**Routing mode options**

☒ Driving mode

☐ Transit mode

Confirm Cancel

- Select 'Show stop areas on map' under 'Map view options'.
- Click 'Confirm'.

## 5.2 Creating a stop area

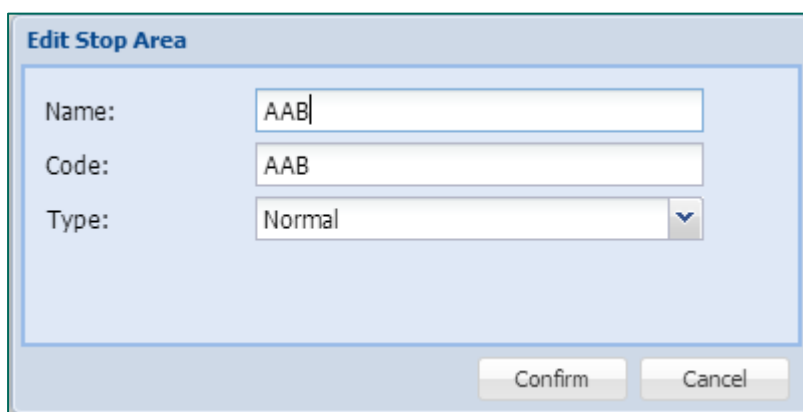
A user may create a stop area when creating a new stop point. See [creating a stop point](#) section to know how to create a new stop area.

## 5.3 Editing a stop area

---

To edit a stop point, perform the steps below:

- Open the 'Edit Stop Area' form using any one of the following methods:
  - Right-click the stop area node in tree to open a context menu and click 'Edit'.
  - Double-click the stop point node in tree.
  - If in stop area display mode, right-click the stop area marker on map (see [Displaying stop areas on map](#), and click 'Edit'.



- Make the required changes to the following fields:
  - Name (mandatory)
  - Code (mandatory and unique)
  - Type
- Click 'Confirm' to confirm the changes and close the window.

## 5.4 Deleting a stop area

---

Deleting a stop area deletes all stop points associated to it as well as the distances and dead runs from its stop points, and the stop point assignments to lines and routes.

To delete a stop area perform the steps below:

- Open the stop area context menu using one of the following methods:
  - Right-click the stop point node in the tree.
  - Right-click the stop point marker on the map (should be in stop area display mode; see [Displaying stop areas on map](#)).
- Click 'Delete' on the context menu.

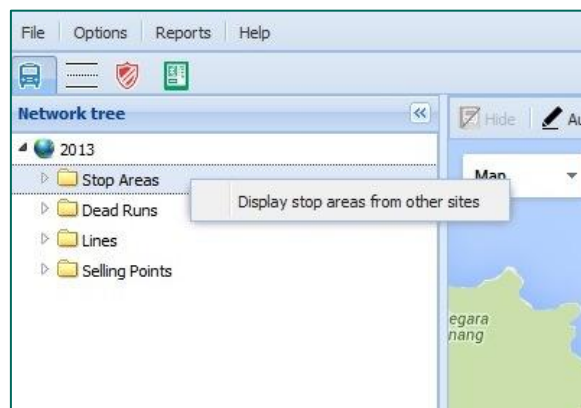
- Click 'Yes' to confirm deletion and 'No' to cancel.

## 5.5 Stop area tooltip

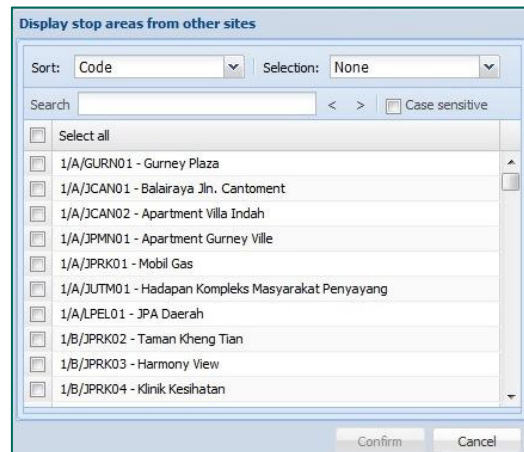
A tooltip is displayed when the mouse is placed over a stop area marker for a few seconds. The tooltip includes the stop area name to clearly identify the stop area.

## v8.5 5.6 Display stop areas from other sites

Carto application allows a user to access the stop areas from other sites so that those stop areas can be affected to the current site. The stop areas root node contains a context menu that lists all the stop areas from other sites.



On clicking the context menu, a grid opens up. This grid displays the list of all the stop areas from other sites. User has the opportunity to select one or more of those stop areas in order to affect them to the current site.



For convenience, some more options are given to the user to easily find out the stop areas needed.

### 5.6.1Sort

The stop areas may be sorted by either of the following:

- Stop Area code (default)
- Towns
- Lines

### 5.6.2Select

The stop areas may be selected in groups. The following selections are allowed:

- None (deselect all)
- All (select all)
- Reverse (select all the deselected ones and deselect the selected ones)
- Search (select only the stop areas which match the search clause)

### 5.6.3Search

User can search for stop areas by typing in the search box. Search may be case-sensitive as well.



# v8.5 MANAGING SELLING POINTS

Cartography allows creation, modification and deletion of selling points.

## 6.1 Creating a selling point

To create a new selling point, perform the steps below:

- Go to Selling Point Mode.
- Press 'Ctrl' key and click on the map at the location where the selling point is to be created.
- The Selling Point Properties form similar to the one below will be opened:

**Edit Selling Point**

Name: SLP4

Town: Bukit - Bukit Mertajam

**Address** | Coordinates | Comment

Number:

Street Type:

Street Name: Jalan Kolam

Address:

Create Cancel

- Enter the name of the selling point.
- The address fields in 'Address' tab is automatically populated. Review and edit the address if necessary.
- The 'Coordinates' tab contains the latitude and longitude fields which are automatically populated. Review and edit if necessary.
- Click 'Create' to create the selling point and close the window.
- The selling point will be created and activated on the map and the tree.

## 6.2 Activating a selling point

After loading a season, selling points can be accessed from both the Network Tree as well as the Map.

To access a selling point from Network Tree, locate the selling point node in the Selling Points Tree.

To activate a selling point on Map, simply locate the selling point marker on map and click on it.

## 6.3 Editing a selling point

To edit an existing stop point, perform the steps below:

- Open the 'Edit Selling Point' form by either of the following methods:
  - Right-click the selling point node in the tree to display the context menu, and click on 'Edit'.
  - Right-click the selling point marker on map to display the context menu, and click on 'Edit'.

The below form will be opened:

**Edit Selling Point**

Name: SellingPoint1

Town: Bukit - Bukit Mertajam

**Address** | Coordinates | Comment

Number: 18

Street Type:

Street Name: Lorong Perda Barat 6

Address:

Confirm Cancel

- Make the required changes (see [creating a selling point](#) for meanings of selling point fields).
- Click 'Confirm' to confirm the changes and close the window.

## 6.4 Deleting a selling point

---

Deleting a selling point removes its associations to stop areas as well.

To delete a selling point perform the steps below:

- Open the selling point context menu using one of the following methods:
  - Right-click the selling point node in the tree.
  - Right-click the selling point marker on the map.
- Click 'Delete' on context menu.
- Select 'Yes' to confirm deletion and 'No' to cancel.

## 6.5 Changing selling point location

---

The location of a selling point can be changed by dragging its marker on map (preferred method) or by changing the coordinates in 'Edit Selling Point' form (see [editing a selling point](#)).

To change the selling point location directly on map, perform the steps below:

- Select the selling point on map or tree.
- Press 'Ctrl' key, drag the selling point using mouse and drop it to the new location.

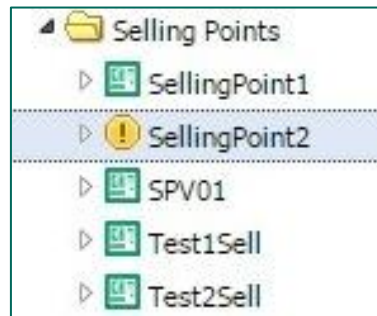
## 6.6 Initializing location of selling point without coordinates

---

Selling points that don't have their coordinates set cannot be viewed on the map. For example, selling points created in Heurès software that don't have coordinates can be seen in the tree, but not on the map. A useful method is provided to initialize the location of such selling points.

To initialize the location of a selling point with no coordinates, perform the steps below:

- Locate the selling point in tree and click on it to select it. The selling point node will have warning (exclamation) icon as shown below:



- Right-click on the map where the selling point is to be placed to display a context menu, and click 'Put this selling point on map'. The selling point will be added on the map and the selling point icon in tree will change.

## 6.7 Selling point tooltip

A tooltip is displayed when the mouse is placed over a selling point marker for a few seconds. The tooltip includes the selling point and the associated town id.



## 6.8 Selling point association and dissociation with stop area

Selling points may be associated with stop areas. While a selling point is activated, if a stop area marker is ctrl + clicked, that stop area gets associated to the activated selling point. On the other hand, while a selling point is activated, if the marker of an already associated stop area is ctrl + clicked, that stop area gets dissociated from the activated selling point.

When a selling point is activated, the markers of all its associated stop areas are displayed in a different colour on the map. These associated stop areas are also added to the selling points tree as child nodes of the activated selling point.



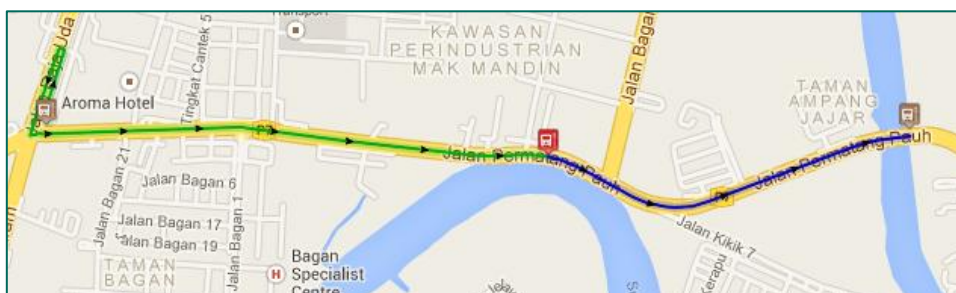
# MANAGING DISTANCES

A distance between two stop points represents a path and the actual distance value (in meters) between them. A distance entity may not contain a path if it was not created from Heurès Cartography. The routing mode for the paths created from Carto will be the one chosen by the user from “Options” menu (See [Managing routing modes](#)).

## 7.1 Displaying distances on map

[Activating a stop point](#) in Stop Mode or Line Mode displays the distances leaving and arriving at that stop point. If the distance has a path, then the map shows it. Otherwise, the path is shown as straight line.

A distance can also be displayed by locating and selecting a distance node in the [Stop Areas tree](#).



## 7.2 Creating a distance

To create a distance between two stop points, perform the steps below:

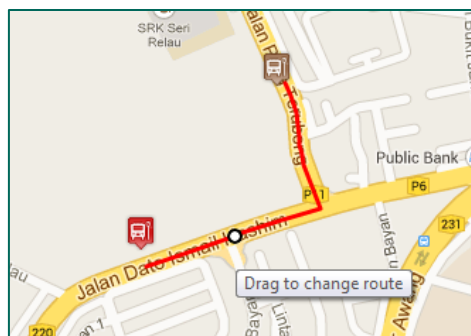
- Make sure the [application mode](#) is set to Stop Mode or Line Mode.
- Optionally, select the [Auto/Manual](#) Path Edit Mode depending on how the distance's path is to be modified.
- Select the starting stop point from which the distance is to be created.
- Press the Ctrl key and while the key is down, click on the ending stop point on map.
- If a distance does not already exist from the starting to the ending stop point, then a distance is created.
- If a distance already exists, then a confirmation message is shown to recreate the path. Click 'Yes' to recreate and 'No' to cancel.

## 7.3 Modifying path of a distance

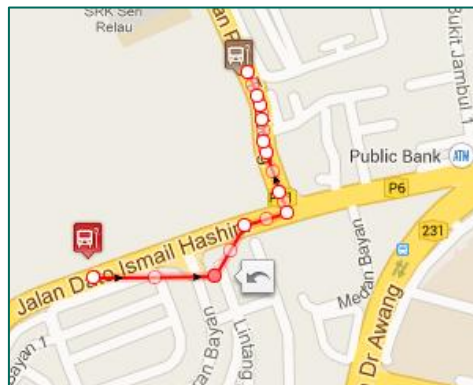
Modifying the path of a distance also modifies its 'calculated distance' value. There are two ways in which the path can be modified – Auto Mode and Manual Mode. In Auto Mode, the path is suggested by the map component and can only take a valid course on ground; whereas in Manual Mode the path can be explicitly modified to take any course, even the one that is not possible on ground.

To modify the path of a distance, perform the steps below:

- Make sure the distance is displayed on map (See [Displaying distances on map](#))
- Press the Ctrl key and while the key is down click on a distance on map.
- If the Path Edit mode is set [Auto Mode](#), then the distance will appear as follows. Drag the bubble to modify the distance.



- If the Path Edit mode is set to [Manual Mode](#), then the distance will appear as shown below. Drag the bubbles or remove the bubbles by clicking on them to modify the distance. Modifying the path in this mode also set's locks it from modification (see [locking a Distance](#)).

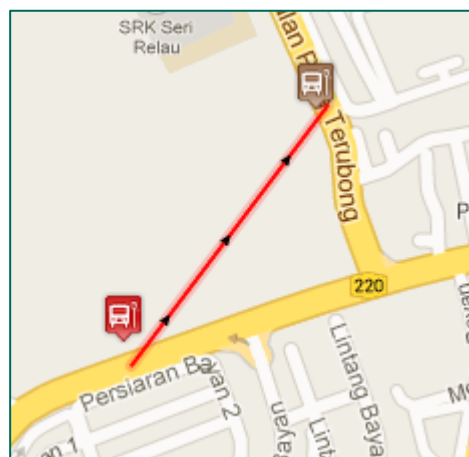


- Exit the path edit operation by clicking anywhere on the map.

## 7.4 Removing intermediate points of a distance

The path of a distance has one or more intermediate points. To remove all the intermediate points of the path of a distance, perform the steps below:

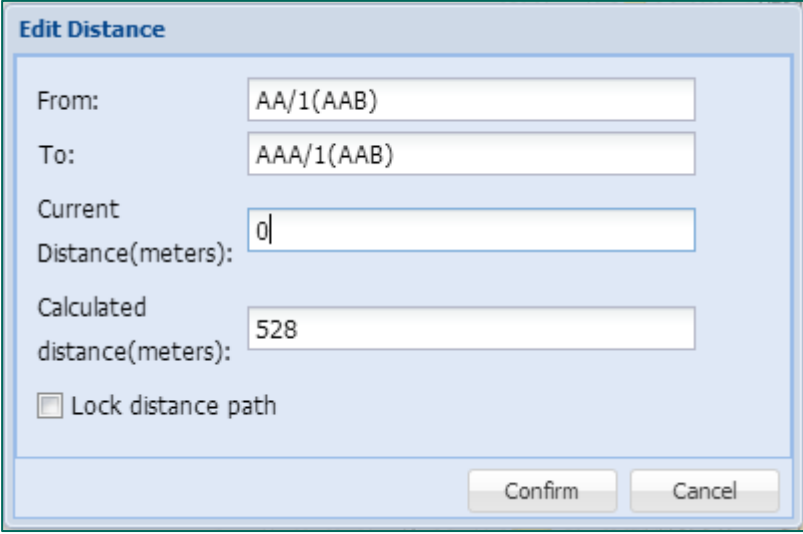
- Make sure the distance is displayed on map (See [Displaying distances on map](#))
- Right-click on the distance to display a distance context menu, and then click 'Remove mid-way points'. All the intermediate points will be removed and the path will change to a straight line between its start and end stop points (see figure below).



## 7.5 Modifying distance attributes

To modify distance attributes other than path, perform the steps below:

- Make sure the [application mode](#) is set to Stop Mode or Line Mode.
- Open the 'Edit Distance' window using any one of the following methods:
  - Locate the distance node in the tree and double-click on it.
  - Locate the distance node in the tree and right-click on it to display a context menu and click 'Edit' on the context menu.
  - Right-click on a distance on the map to display a context menu and click 'Edit' on the context menu.



**Edit Distance**

From: AA/1(AAB)

To: AAA/1(AAB)

Current Distance(meters): 0

Calculated distance(meters): 528

☐ Lock distance path

Confirm Cancel

- Modify the attributes of the distance as required. Only the following attributes are modifiable:
  - Current distance
  - Lock distance path (See [Locking a distance](#))
- Click 'Confirm' to confirm the modification and close the window, or 'No' to cancel.

## 7.6 Locking a distance

When the location of a stop point of a distance is changed, it causes its associated distances to be recalculated automatically. This may or may not be desirable depending on the user needs.

A distance can be 'locked' if the user does not want it to be recalculated. The distance is automatically locked when [modifying the path of a distance](#) in Manual Mode.

The distance could also be locked explicitly if required. Refer [Modifying distance attributes](#) section to do so.



## 7.7 Deleting a distance

---

To delete a distance, perform the steps below:

- Open the distance context menu using any one of the following methods:
  - Locate the distance node in the tree and double-click on it.
  - Right-click on a distance on the map.
- Click 'Delete' on the context menu.
- A confirmation message will be displayed. Click 'Yes' to confirm and 'No' to cancel.

## 7.8 Recalculating path of a distance

---

Recalculating the path of a distance also modifies its 'Calculated Distance' value.

The path of a distance can be recalculated as follows:

- Make sure the distance is displayed on map (see [Displaying distances on map](#))
- Right-click the path of the distance to display the distance context menu and then bring the mouse over 'Calculate path'. **Then click on Transit mode or driving mode according to the requirement.**
- Click 'Yes' to confirm. Refer to ["Managing distance " from "Principles"](#)

## 7.9 Automatically calculating path of distances

---

Distance entities created in Heures do not have their paths. Heures Cartography module allows the paths of such distances to be created automatically to save time. The generated paths can then be reviewed individually and modified if needed.

To calculate the paths of distances that do not already have paths automatically, perform the steps below:

- Go to 'Options' menu and click 'Calculate distance paths'.
- A confirmation window will be shown with the estimated duration to complete the operation. Click 'Yes' to proceed and 'No' to cancel.

- A progress bar will be displayed to show the progress of the operation. To cancel the operation at any stage, click 'Cancel'. All paths generated before the cancel operation will be retained.

**NOTE:** This method calculates the paths of only those distances that do not have paths – i.e. distances that are shown as straight black lines on map .The paths will be calculated in the same routing mode as chosen from “Options” menu (See [Managing routing modes](#)).

# MANAGING DEAD RUNS

---

## 8.1 Displaying dead runs on map

---

To display dead runs on map, make sure the [application mode](#) is set to Dead Run Mode, and perform any of the following steps:

- [Activate a stop point](#) on map to display dead runs leaving from the stop point.
- Locate the dead run under Dead Runs tree and click it.

The paths for dead runs will get generated in the same routing mode as chosen from the “Options” menu (See [Managing routing modes](#)).

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## 8.2 Dead run type

---

Dead runs can be of different types like bus, conductor, etc. In dead run mode, a drop down list is displayed in the Carto toolbar. Here, whatever type is selected, only those dead runs will get displayed in the tree and map.

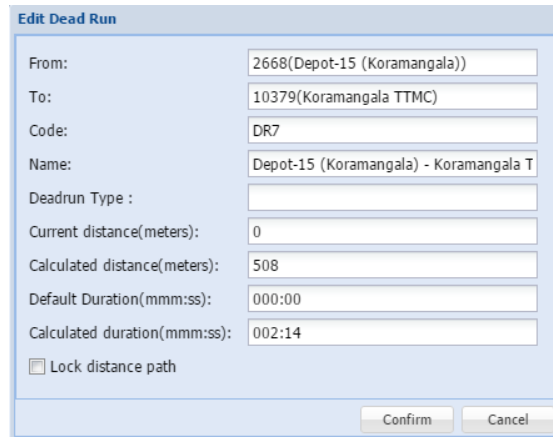
## 8.3 Creating a dead run

---

To create a dead run between two stop points, perform the steps below:

- Make sure the [application mode](#) is set to Dead Run Mode.
- Optionally, select the [Auto/Manual](#) Path Edit Mode depending on how the dead run’s path is to be modified.
- Select the starting stop point from which the dead run is to be created.
- Press the Ctrl key and while the key is down, click on the ending stop point on map.
- If a dead run does not already exist from the starting to the ending stop point, then an ‘Edit Dead Run’ window is opened.
- If a dead run already exists, then a confirmation message is shown to recreate it. Click ‘Yes’ to recreate and open the ‘Edit Dead Run’ window, and ‘No’ to cancel.

- Enter the [attributes of the dead run](#), and click 'Confirm' to confirm the modifications and close the window.



The newly created dead run will be shown on map and its entries will be added under relevant stop areas in the Dead Runs tree.

## 8.4 Attributes of a dead run

The following attributes of a dead run are displayed in the 'Edit Dead Run' form:

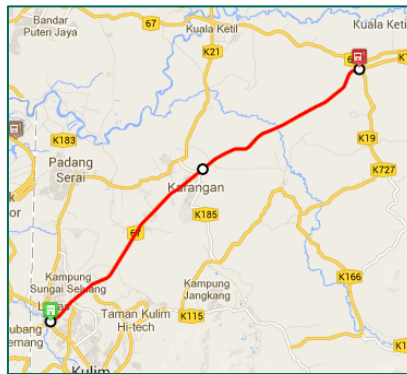
- From: Leaving stop point (*non-modifiable*)
- To: Arriving stop point (*non-modifiable*)
- Code: Code of the dead run
- Name: Name of the dead run
- **Dead run Type: The type of dead run (Bus, conductor, etc.)**
- Current Distance: The actual distance of dead run
- Calculated Distance: The distance calculated by Cartography map (*non-modifiable*)
- Default Duration: The actual duration of dead run
- Calculated Duration: The duration calculated by Cartography map (*non-modifiable*)

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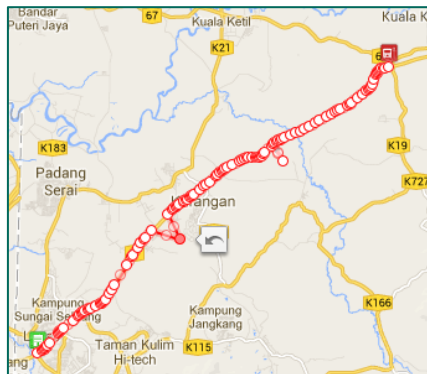
## 8.5 Modifying path of a dead run

Modifying the path of a dead run also modifies its calculated distance and calculated duration values. To modify the path of a dead run, perform the steps below:

- Make sure the dead run is displayed on map. (See [Displaying dead runs on map](#))
- Press the Ctrl key and while the key is down click on a dead run on map.
- If the Path Edit mode is set [Auto Mode](#), then the dead run will appear as follows. Drag the bubble to modify the path.



- If the Path Edit mode is set to [Manual Mode](#), then the dead run will appear as shown below. Drag the bubbles or remove the bubbles by clicking on them to modify the path. Modifying the path of a dead run in this mode sets its 'Calculated Duration' attribute to 0.

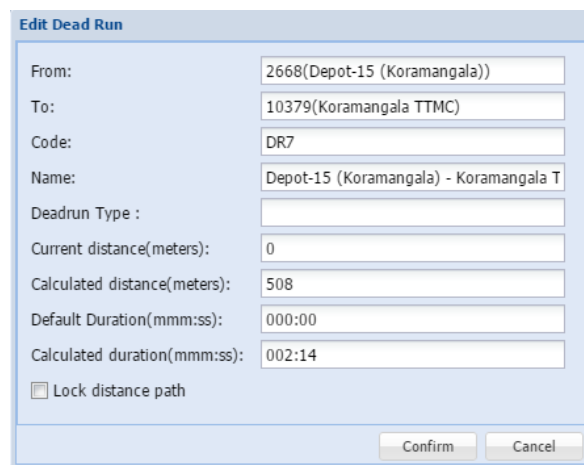


- Exit the path edit operation by clicking anywhere on the map.

## 8.6 Modifying dead run attributes

To modify attributes (other than path) of a dead run, perform the steps below:

- Open the 'Edit Dead Run' window using any one of the following methods:
  - Locate the dead run under [Dead Runs Tree](#) and double-click it.
  - Locate the dead run under [Dead Runs Tree](#), right-click it to display the context menu and then click 'Edit'.
  - If a dead run is displayed on map (see [Displaying dead runs on map](#)), right-click it to display the context menu and then click 'Edit'.



- Modify the [attributes of the dead run](#) in the 'Edit Dead Run' window, and then click 'Confirm' to confirm the modification and close the window.

## v8.5 8.7 Recalculating path of a dead run

The path of a dead run can be recalculated as follows:

- Make sure the dead run is displayed on map (see [Displaying dead runs on map](#))
- Right-click the path of the dead run to display the dead run context menu and then bring the mouse over 'Calculate path'. Then click "Transit mode" or Driving mode" depending on the requirement.
- Click 'Yes' to confirm.

## 8.8 Automatically creating dead runs

Dead runs can be automatically calculated, listed and created to save time. The application suggests the possible dead runs, allowing the user to choose those that are actually needed.

Automatic creation of dead runs is done in two stages – the [calculating and listing dead runs](#) stage and [creating auto calculated dead runs](#) stage.

### 8.8.1 Calculating and listing dead runs

In this stage the system calculates and lists the possible dead runs based on input parameters. To automatically list the possible dead runs, perform the steps below:

- Go to 'Options' menu and click 'Auto calculate dead runs'.
- If sites are managed, then select the site in which to create dead runs.
- Select the types of dead runs needed.

**Auto calculate deadruns**

Site:

Types of deadrun

- ☐ Depot <-> Terminus
- ☐ Parking <-> Terminus
- ☐ Terminus <-> Terminus

- Click on 'Calculate'.
- A confirmation message with the estimated time for calculation will be displayed. Click 'Yes' to proceed.
- A progress bar shows the progress of the operation. Wait until the operation is in progress.
- Once the calculation completes, a grid similar to the one shown below will be displayed containing all the dead runs possible.

Auto created possible deadruns								
Create?	From stop point	From stop area	To stop point	To stop area	Code	Name	Distance(m)	Duration(mmm:ss)
No	6/A/JGGR10	Pejabat Pos Tsk G...	6/A/JTWR12	Taman Air Tawar ...		Pejabat Pos Tsk Gelugor -> T...	14411	018:43
No	6/A/JKLM09	Kuala Muda	6/A/JTWR12	Taman Air Tawar ...		Kuala Muda -> Taman Air Ta...	11377	013:40
No	6/A/JKSL06	SMK Kg. Selamat	6/A/JTWR12	Taman Air Tawar ...		SMK Kg. Selamat -> Taman A...	18926	024:36
No	6/A/JTWR12	Taman Air Tawar ...	D/A/DTGB01	Tg. Bungah Depot		Taman Air Tawar Indah -> T...	45659	049:19
No	6/A/JTWR12	Taman Air Tawar ...	D/A/DBPL00	Depoh Balik Pulau		Taman Air Tawar Indah -> D...	47317	050:04
No	6/A/JTWR12	Taman Air Tawar ...	D/A/DBPL00	Depoh Balik Pulau		Taman Air Tawar Indah -> D...	47542	050:49
No	6/A/JTWR12	Taman Air Tawar ...	H/B/HKB01	Hub Bukit Jambul		Taman Air Tawar Indah -> H...	35149	034:46
No	6/A/JTWR12	Taman Air Tawar ...	T/A/PGST00	Penang Sentral		Taman Air Tawar Indah -> P...	11718	017:32
No	6/A/JTWR12	Taman Air Tawar ...	H/A/SUBM00	BM Summit		Taman Air Tawar Indah -> B...	25390	027:15
No	6/A/JTWR12	Taman Air Tawar ...	6/A/JGGR10	Pejabat Pos Tsk G...		Taman Air Tawar Indah -> P...	14387	018:10
No	6/A/JTWR12	Taman Air Tawar ...	H/A/DSMR00	Hub Desa Murni		Taman Air Tawar Indah -> H...	12955	015:14
No	6/A/JTWR12	Taman Air Tawar ...	7/A/TK201	Pasaraya Billion		Taman Air Tawar Indah -> P...	16968	018:51
No	6/A/JTWR12	Taman Air Tawar ...	H/A/TECO1	Tesco 2		Taman Air Tawar Indah -> T...	16918	019:03
No	6/A/JTWR12	Taman Air Tawar ...	H/B/KBEK00	Taman Kuala Bekah		Taman Air Tawar Indah -> T...	4357	004:48
No	6/A/JTWR12	Taman Air Tawar ...	6/A/JKSL06	SMK Kg. Selamat		Taman Air Tawar Indah -> S...	18900	024:02
No	6/A/JTWR12	Taman Air Tawar ...	6/A/JKLM09	Kuala Muda		Taman Air Tawar Indah -> K...	11377	012:42
No	6/A/JTWR12	Taman Air Tawar ...	6/A/PGT02	Sek Keb Pinang T...		Taman Air Tawar Indah -> S...	18440	021:45

Total : 32, selected: 0

Clear filters Select all Deselect all Create Cancel

### 8.8.2 Creating auto calculated dead runs

In this stage the dead runs listed in grid may be sorted, filtered and finally marked for creation. To create the dead runs, perform the steps below:

- If required, sort the columns to easily view the information displayed.
- The 'Duration' and 'Distance' columns also allow filtration. Select '<', '>' or '= ' filter, if required. To clear filters, click on 'Clear filters'.
- Modify the 'Code', 'Name', 'Distance' and 'Duration' fields (if needed) for the dead runs required and click on 'Create?' field to change its value to 'Yes'. A status bar at the bottom shows the number of dead runs selected for creation.
- After the required dead runs are marked for creation, click 'Create'.
- The selected dead runs will be created and added under relevant stop areas in the Dead Runs tree.

**NOTE:** The paths will be calculated in the same routing mode as chosen from "Options" menu (See [Managing routing modes](#)).



## v8.5 8.9 Locking path of a dead run

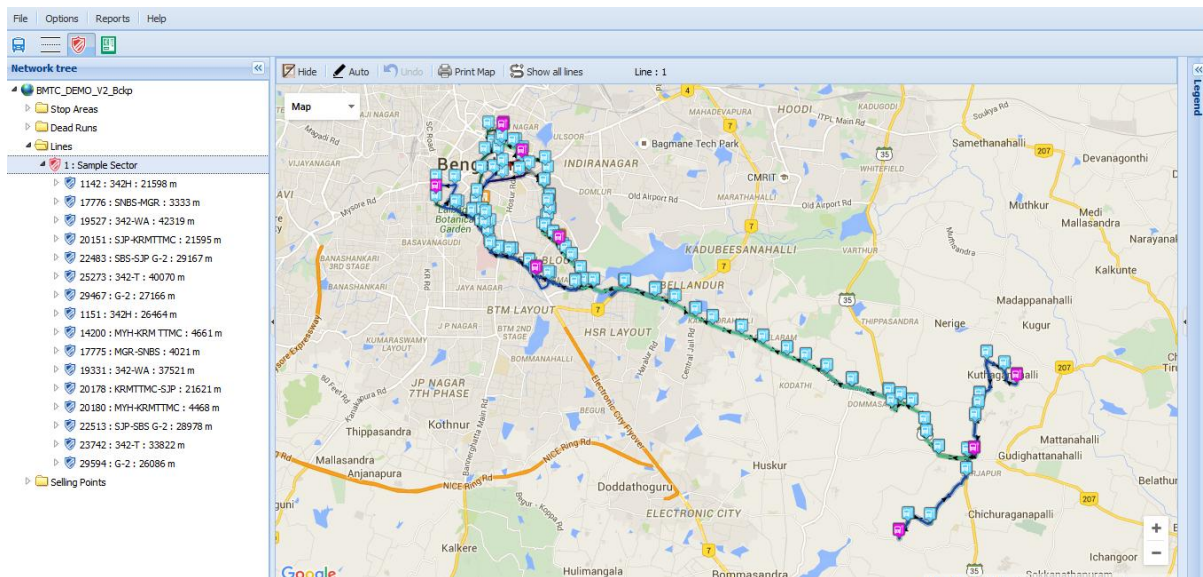
When the location of a stop point of a dead run is changed, it causes its associated dead runs to be recalculated automatically. This may or may not be desirable depending on the user needs.

A dead run can be 'locked' if the user does not want it to be recalculated. The dead run is automatically locked when modifying the path of a dead run in Manual Mode.

Edit Dead Run	
From:	2668(Depot-15 (Koramangala))
To:	10379(Koramangala TTMC)
Code:	DR7
Name:	Depot-15 (Koramangala) - Koramangala T
Deadrun Type :	
Current distance(meters):	0
Calculated distance(meters):	508
Default Duration(mmm:ss):	000:00
Calculated duration(mmm:ss):	002:14
<input type="checkbox"/> Lock distance path	
<div>Confirm Cancel</div>	

# MANAGING LINES

The system allows viewing, creating, modifying and deleting [lines](#).



## 9.1 Creating a line

To create a line, perform the steps below:

- Make sure the [application mode](#) is set to Line Mode.
- Open the Create Line window using any one of the following methods:
  - Locate 'Lines' root node in the tree, right-click on it and click 'Add line' on the context menu.
  - Right-click on an existing line and click 'Create' on the context menu.
- Modify the attributes of the line in the displayed window.
  - **Number:** The line number (mandatory field)
  - **Type:** The type of the line (used for display options in Heurès)
  - **Colour:** Colour used to display the line (see [Colour Picker](#))
  - **Name:** Name of the line

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- **Depots:** One or more depots the line is associated to. Press Ctrl key and select one or more (mandatory field)
- **Comment:** Any comment on the line

**Edit Line**

Number:

Type:

Color:

Name:

**Depots** **Comment**

Depot-02 (Shanthinagara)

Depot-03 (Shanthinagara)

Depot-15 (Koramangala)

- Click 'Confirm' to confirm creation, and 'No' to cancel.
- The newly created line will be listed under the Lines tree.

## 9.2 Modifying a line

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To modify attributes of a line, perform the steps below:

- Locate the line in Lines tree.
- Right-click on it and click 'Edit' on the line context menu to display the 'Edit Line' window
- Perform steps step 3 and 4 in [Creating a line](#) section.

## 9.3 Deleting a line

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Deleting a line deletes all its routes, stop points in routes, and the stop point and stop area assignments to the line. The operation is only allowed if the line does not contain any Journey Patterns and Sections.

To delete a line, perform the steps below:

- Locate the line in the Lines tree.
- Right-click on it and click 'Delete' on the line context menu.
- Click 'Yes' on the confirmation window to confirm deletion.
- If the operation succeeds the line is deleted and its entry is removed from Lines tree. Otherwise, an error message is displayed. Click 'Yes'. Export a line as KML

## v8.5 9.4 Export Line in KML

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A line can be exported in KML format in two ways as discussed below.

- Option 1
  - Locate the line in the Lines tree.
  - Right-click on it and click 'Export as KML' on the line context menu.
- Option 2
  - Locate the line in the Lines tree.
  - Right-click on it and click 'Edit' on the line context menu.
  - Click on the button "Export as KML".

This feature remains active even if the season is opened in read-only mode.

## 9.5 Export multiple lines as KML

The user can export multiple lines as a single KML file. This can be achieved by following the steps as discussed below:

- Open “Options” menu.
- Click on the menu “Export lines as KML”.
- A grid opens which let the user to select one or more lines from the currently opened season and site.
- After the selection, on clicking the “Confirm” button, the selected lines get exported as a single KML file.

This feature is active even if the season is opened in read-only mode.



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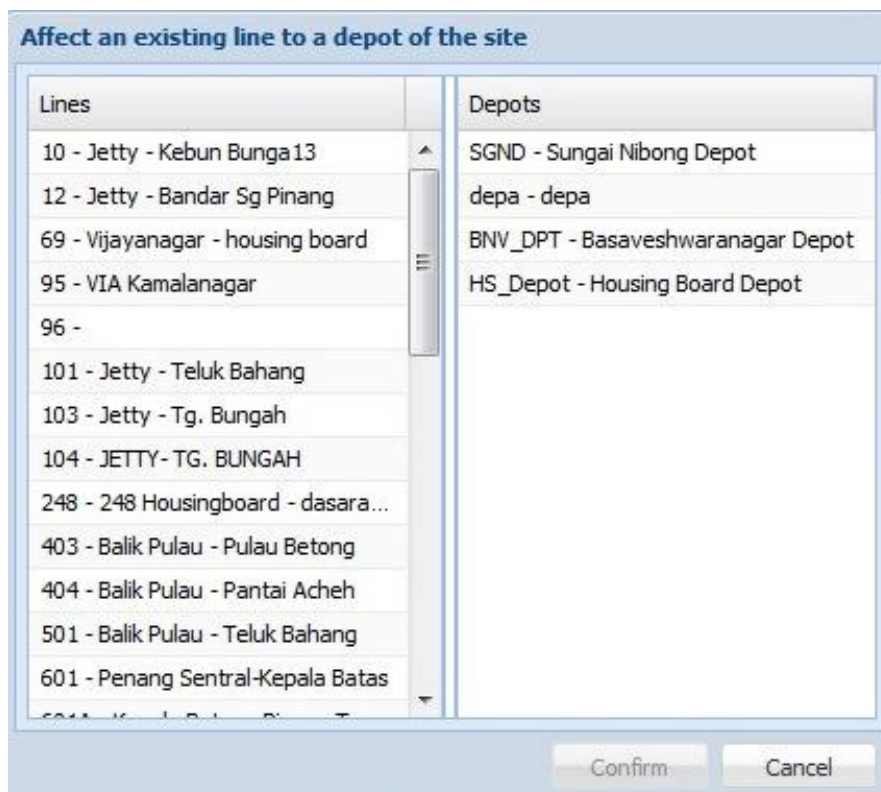
## 9.6 Affect an existing line to a depot of the site

Carto allows a user to affect lines from other sites to a depot of the current site. A context menu exists in the 'Lines' root node with the name "Affect an existing line to a depot of the site".

On clicking that menu item, a pop up window opens with two grids. The grids contain the following:

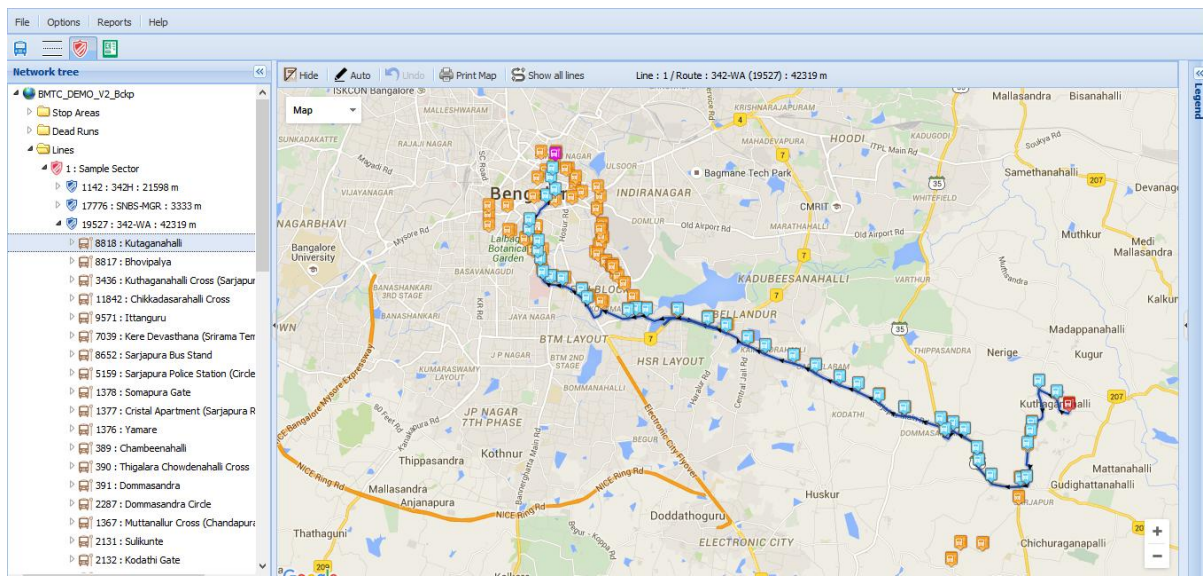
- Lines from other sites
- Depots of the current site

The user is allowed to select one depot and one line. On clicking "Confirm", that line with all its sub-entities get affected to the selected depot and the network tree gets updated accordingly.



# MANAGING ROUTES

A route exists as an immediate child node to a line in the Carto tree.



## 10.1 Displaying a route

The route can be viewed both on the tree as well as the map. In tree, the stop points in the route are ordered according to their sequence position in the route.

To display a route, perform the steps below:

- Locate the route under the Lines tree.
- Click on the route to display it on the map.
- To view the stop points in route in tree, expand the route.

## 10.2 Creating a route

To create a route, perform the steps below:

- Locate the line in the tree under which to create the route.
- Open the Create Route window using any one of the following methods:
  - Right-click on the line, and then click 'Add route' in the context menu.
  - Right-click on an existing route and then click 'Create' on the context menu.
- Modify the [attributes of the route](#) in the displayed window.
- Click 'Confirm' to confirm creation and close the window.
- The route created will be listed under its corresponding line in the tree.

## 10.3 Modifying a route

- Make sure the [application mode](#) is set to Line Mode.
- Locate the route under a line in the Lines tree and right-click on it to display the route context menu.
- Click 'Edit' on the context menu.
- Perform steps 3 and 4 in [Creating a route](#).

**Edit Route**

From: xyz/1 (xyz)

To: ghi/1 (ghi)

Code: R800/1

Name: Route 800 OB

Direction: Outbound

Color: [Red Color Picker]

Confirm Cancel

## 10.4 Attributes of a route

The attributes of a route include the following:

- **Code:** code of the route
- **Name:** name of the route
- **Direction:** direction can be Inbound or Outbound
- **Colour:** colour of the route used to display the route on map (see [Colour Picker](#))



## 10.5 Adding stop points to a route

---

To add stop points to a route, perform the steps below:

- Make sure the [application mode](#) is set to Line Mode.
- Select the route in the Lines tree in which adding the stop point.
- Select in the route (in tree or map), the stop point after which adding the stop point.
- Press Ctrl key and while it's down, select on the map the stop point to add **after** the selected stop point on the route:
  - The stop point is added after the selected one on the route and before the next one on the route if the selected stop point on the route is not the last
  - if distances exist between the stop points on the route and the added one, they are used
  - if distances don't exist, they are created
  -
- To add a stop point on a route **before** an existing one:
  - Select first the stop point to add
  - Press and hold the Ctrl key down and select a stop point on the route on map or the tree.
- Adding a stop point to a route automatically creates required distances (if they don't already exist) and links the stop point to the line of the route.

## 10.6 Removing stop points from a route

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- Locate the stop point to remove from the route (on tree or map) in Lines tree.
- Right-click the stop point (on tree or map) and click 'Remove from the route'.
- If a distance already exists between previous and next stop points, it is used. Otherwise, a new distance is created between them.

## 10.7 Adding and assigning new stop points to route

---

If a route is selected, then stop points can be created and assigned to the route on-the-fly. Creating a stop point in this manner also automatically creates the distance from the previous stop point, if it does not already exist. To create a stop point and automatically assign it to the selected route, perform the steps below:

- Locate the route in Lines tree in which adding the new stop point.

- Select in the route (in tree or map), the stop point after which adding the new stop point.
- Press Ctrl key and while it is down, click the location on map where the new stop point is needed to open a 'Stop Point Properties' window.
- Update the stop point fields per section [Creating a stop point](#).
- The newly created stop point will be automatically added to the route after the previously selected stop point, and a distance will be created if it does not already exist.

## 10.8 Deleting a route

---

Deleting a route deletes the route entity and all the stop point assignments to the route. A route can be deleted only if no journey patterns are associated to it.

To delete a route, perform the steps below:

- Locate the route in Lines tree.
- Right-click the route to display the route context menu and click 'Delete' on the menu.
- Click 'Yes' on the confirmation message window to confirm deletion. The route will be deleted if there are no associated journey patterns. If there are associated journey patterns, then a failure message is shown.

## 10.9 Calculate path of route

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A route has multiple stop points associated to it in sequence. Between each consecutive stop points, there is a distance object. Calculating path of route involves calculation of path of each distance object if it does not already have geometry. In case between two consecutive stop points, no distance object exists, it gets created and then its path gets calculated. The calculation of path is done using Google's direction service.

In the context menu of the route node in the carto tree, one menu item is "Calculate path". On bringing the mouse over that, it generates two sub-menus namely, "Transit mode" and "Driving mode". On clicking the appropriate option, the paths of the entire route gets calculated in that selected routing mode.

# v8.5 **MANAGING REPORTS**

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A report may be generated for each entity with respect to the currently opened season. The following reports may be generated:

## **11.1 Stop Area Report**

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This report includes the following information:

- Total number of stop areas (stations).
- For each stop area in the season:
  - Name of stop area
  - Code
  - Type
  - Selling point / Site
  - Codes of stop points belonging to the stop area

## **11.2 Stop Point Report**

---

This report includes the following information:

- Total number of stop points.
- For each stop area in the season:
  - Name of stop area
  - Stop area Code
  - Code of the stop points belonging to the stop area
  - Names of the stop points belonging to the stop area
  - Addresses of the stop points belonging to the stop area
  - Section
  - Equipment
  - Coordinates of the stop points belonging to the stop area
  - Lines belonging to the stop points for the stop area

## 11.3 Town Report

---

This report includes the following information:

- The name and code for each town.
- For each town :
  - Stop points
  - Stop areas for the stop points
  - Address of the stop points
  - Equipment for the stop points
  - Total distance in Kilometres

## 11.4 Selling Point Report

---

This report includes the following information:

- The number of selling points
- For each selling point:
  - Name
  - Address
  - Town name
  - Stop area associated to it

## 11.5 Distance Report

---

This report includes the following information:

- The number of distances
- For each distance:
  - Name of first stop area
  - Code of first stop point
  - Name of second stop area
  - Code of second stop point
  - Initial distance
  - Calculated distance
  - Single Track data

## 11.6 Dead run Report

---

This report includes the following information:

- The number of dead runs
- Total kilometres of dead run in the season
- For each dead run:
  - Code of the dead run
  - Departure of the dead run
  - Arrival of the dead run
  - Distance of the dead run
  - Duration of the dead run

## 11.7 Line Report

---

This report includes the following information for each line in the season:

- Line departure
- Line arrival
- Incorporated depots
- Total distance in kilometres
- Stop points with total count
- Stop areas with total count
- Towns with total count
- Equipment

## 11.8 Season Comparison Report

---

At first, the user has to choose the season with which the current season is to be compared. The entities for comparison, also needs to be selected. The entities may be one or more of the following:

- Stations (stop areas)
- Stops (stop points)
- Lines
- Distances
- Dead mileages (Dead runs)
- Selling points

Report data for each entity have been discussed as follows:

### **11.8.1 Stations**

The station (stop area) data contains the following information:

- Count of stations in the two seasons.
- Stations present in current season and not in selected season.
- Stations present in selected season and not in current season.
- Differences in the characteristics of the two seasons. Characteristics include
  - Name
  - Code (abbreviation)
  - Type
  - Selling points
  - Stop point
  - Address
  - Equipment
  - Lines
- Differences in the lines of stations of the two seasons.

### **11.8.2 Stops**

The stop (stop point) data contains the following information:

- Count of stops in the two seasons.
- Stops present in current season and not in selected season.
- Stops present in selected season and not in current season.
- Differences in the characteristics of the stops in the two seasons. Characteristics include:
  - Stop code
  - Address
  - Equipment
  - Station
  - Lines
- Differences in the lines of the stops in the two seasons.

### **11.8.3 Lines**

The line data contains the following information:

- Count of lines in the two seasons.
- Lines present in current season but not in selected season.
- Lines present in selected season but not in current season.
- Differences in the characteristics of the lines of the two seasons. Characteristics include:
  - Type
  - Line departure
  - Line arrival
  - Position 1
  - Position 2
- Differences in the line stations of the two seasons.
- Differences in the line stops of the two stations.

- Differences in the distances covered by the lines in the two seasons.

#### **11.8.4Distances**

The distance data contains the following information:

- Count of the distances of the two seasons.
- Distances present in current season but not in selected season.
- Distances present in selected season but not in current season.
- Differences in the characteristics of the distances of the two seasons. Characteristics only include the distance in metres.

#### **11.8.5Dead mileages**

The dead mileage (dead run) data contains the following information:

- Count of the number of dead runs in the two seasons.
- Dead runs present in the current season but not in the selected season.
- Dead runs present in the selected season but not in the current season.
- Differences in the dead run characteristics of the two seasons.

#### **11.8.6Selling points**

The selling points data contain the following information:

- Count of the selling points of the two seasons.
- Selling points present in the current season but not in the selected season.
- Selling points present in the selected season but not in the current season.
- Differences in the characteristics of the selling points of the two seasons.
- Differences in the selling point's stations in the two seasons.

## **11.9 Anomalies Report**

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It first allows the user to enter the validity parameters related to distances. Upon confirmation, the report gets generated which contains the following information:

- Stops without geographic coordinates.
- Stops with outlier geographic coordinates.
- Distances inconsistent with the distance calculated by the GIS module.
- Distances inconsistent with the straight line.
- Dead run inconsistent with the straight line.