

Optibus OnSchedule™

User Manual

Version 1.0.000

Notice

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Getting Started

Chapter 1: About this User Manual

Manual Structure

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Typographical Conventions

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Viewing and Printing

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Notifications

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Concepts and Terminology

Most of the terminology in this manual is industry standard, however Optibus OnSchedule™ introduces some application specific concepts. This section provides a description of these concepts and how they tie into standard terminology.

For our purposes, an **Operator** operates a fleet of road vehicles to provide public transportation services. The Operator carries out scheduling based on the following standard data sources:

- » **Trips list**
- » **Stops list**
- » **Vehicle types list**
- » **Deadheads catalog**

We introduce here, the notion of a **Dataset**. A Dataset is a database that takes in these four standard data files. An Operator may this way, have several Datasets for different purposes. Optibus OnSchedule™ creates the Datasets from the four files, which the Operator supplies in conjunction with Optibus. They may be supplied in a variety of formats including Excel spreadsheet, CSV and JSON. The content and layout of these files is described in TBD.

Basic terms such as **Deadhead**, **Depot**, **Pull in**, **Pull out**, **Split**, **Changeover** are standard.

A **Route** is a very specific: It is specified by a **Sign**, an **Alternative** (often abbreviated to **Alt**) and a **Direction**.

Similarly, a **Service trip** is also defined in a very specific way: It includes route information, eligible vehicle types and start-end times. After scheduling, it will be assigned a driver duty and a vehicle.

You can open a schedule from a Dataset in one of three ways:

- » You may choose one of list of existing schedules
- » Import a schedule from a source spreadsheet
- » Create a new schedule Using the Preferences and Optimization

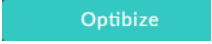
The way in which the Optibus OnSchedule™ vehicle and driver displays are produced is largely dependent upon on the way in which the schedule was opened.

The vehicles are displayed in a **Vehicle Gantt** in which each **row** or **block** shows the trips allocated to a vehicle for a day's work.

A **vehicle block** does not relate to a specific physical vehicle. It shows the trips allocated for example, to vehicle 35 for the day. In that sense, vehicle ID 35 is an abstraction: It is a set of vehicle attributes that may be matched by one or more physical vehicles. Although Optibus OnSchedule™ takes into account fleet size, vehicle types and their attributes, the allocation of a specific physical vehicle to the a vehicle ID is outside the scope of the system.

The drivers are shown in a **Driver Gantt** in which each row shows the trips allocatted to a specific driver for the day.

Drivers and Duties: In reality, Optibus OnSchedule™ deals with duties rather than with real drivers - personnel. The assignment of drivers to duties (dispatching) is outside the scope of Optibus OnSchedule™. Popular usage requires us to refer for example, to Vehicle Gantts and Driver Gantts rather than Duty Gantts.

First **optimization** is carried out by simply pressing the  button. The processing time depends on the size of the schedule but is generally of the order of minutes.

Preferences for optimization: Optibus OnSchedule™ provides an extensive array of user preferences split into vehicle related, driver (duty) related, depotrelated and a miscellaneous section for everything else. The preferences reflect the diverse requirements of the industry, worldwide. New preferences are added from time to time in the wake of new customer requirements. These preferences affect the optimization outcome in a direct and visible way. Changing a preference generally requires re-optimizing

Strict and Flexible Preferences: A preference parameter can be entered as a **constraint**, being a fixed value or a fixed range of values. Optibus OnSchedule™ introduces something new: **Flexible preferences**. A value or range of values is still chosen but they are "elastic". However, there is a financial **penalty** for violating them. This leads to a more realistic optimization. Flexible preferences may be available for items not governed by legislation or regulation.

Chapter 2: Introduction

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Welcome

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Key Features

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Major Benefits

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Prerequisites

OptibusOnSchedule™ is a cloud hosted web service. It has no components installed on your computer. It is presently designed to run on the **Google Chrome** web browser.

Subsequent references to "browser" in this Manual, mean the Google Chrome browser unless otherwise stipulated. You can download the Google Chrome browser from the [Google Chrome download site](#).

Other requirements are:

- » Any operating system that can host the Google Chrome web browser (for example Windows, Linux, Unix, Mac TBD)
- » Adequate memory - 4Gb recommended
- » Fast processor - TBD
- » Graphics accelerator card - TBD
- » A large monitor: For production, at least 24". If possible, configure it as a secondary monitor dedicated to running OnSchedule™ in full screen mode.
- » Laptop users: Use best power mode possible - do not use power saving.

Chapter 3: A Quick Tour of Optibus OnSchedule™

Objectives of this Tour

To use Optibus OnSchedule™ effectively, you must understand the work-flow for setting up and optimizing a schedule. This chapter takes you through the procedure without getting in to the profusion of available options and preferences along the way. These details are covered in [Choosing a Work Schedule](#) in the Technical Reference section.

The Tour has two objectives:

1. To introduce the main Optibus OnSchedule™ concepts and work-flow
2. To do an interface walk-through demonstrating the work-flow

The procedure has five main steps, covered in turn in the following sections:

1. Open your browser and log in to the Optibus OnSchedule™ web site
2. Create a new Dataset from the Trips Excel files
3. Open a schedule from the Dataset
4. Run the Optimizer for the first time to generate a Vehicle and Driver Gantt
5. Use basic Preferences to complete the Gantts

The Tour is based on a weekly schedule. The demonstration below, starts with the optimization of a single day - Sunday.

Having completed this Tour, you will have the background necessary to proceed to the more advanced optimization techniques using the full Preferences facilities.

Logging in to Optibus OnSchedule™

The Web address (URL) of the OnSchedule™ demonstration is supplied by Optibus together with a user name and password. Open up your browser and navigate to it. You will see the log-in window:

A login screen with a dark background. It features two input fields: 'User name' with a person icon and 'Password' with a lock icon. Below these fields is a teal 'Sign In' button.

Enter your user name and password and click on Sign In. An invalid user name or password will result in an appropriate error message.

Choosing a Dataset and Schedule

After you have logged in, you are presented a Dataset window:

The 'Open' window displays a list of datasets. On the left, there are buttons for 'Import Dataset' and 'Back'. The main area shows a table of datasets with columns: Name, Created By, Created At, and Description. A search bar is at the top of the table.

Name	Created By	Created At	Description
Good Town Demo dataset	dilogsys@inter.ne...	07/17/2016, 8:42:00 am	
TW_Test_002		06/20/2016, 2:24:52 pm	
TW_Test_001		06/20/2016, 11:49:10 am	

Figure 3-1: Choosing a Dataset

Click the Good Town Demo Dataset item in **Figure 3-1**. The Schedule selection window opens:

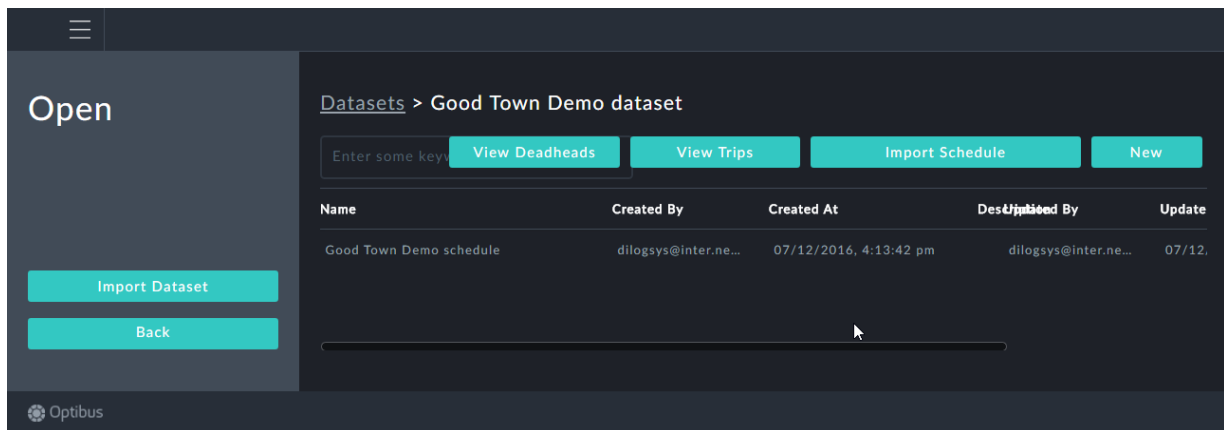


Figure 3-2: Choosing a Schedule



Note: The Dataset and Schedule are imported from data supplied by the Operator. The methods for doing this are explained in [Preparing the Source Files for a Schedule](#).

Click the Good Town Demo schedule item. After a few moments, the following window appears:



Figure 3-3: The Vehicle Gantt

A Quick Look at the Vehicle Gantt

In **Figure 3-3**, the shaded column rulers represents time and the rows represents vehicles (blocks).

The colors reflect the sign numbers. The coloring makes it very easy to get high level view of schedule quality, based on trip colors and gaps.

You can view detailed trip information by clicking a trip icon:

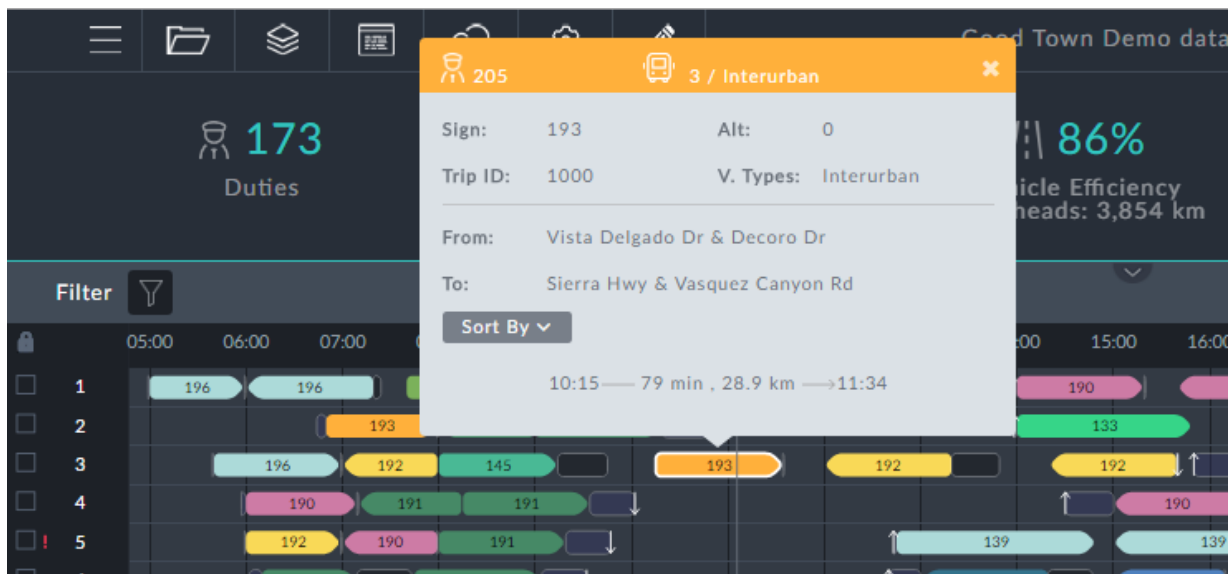
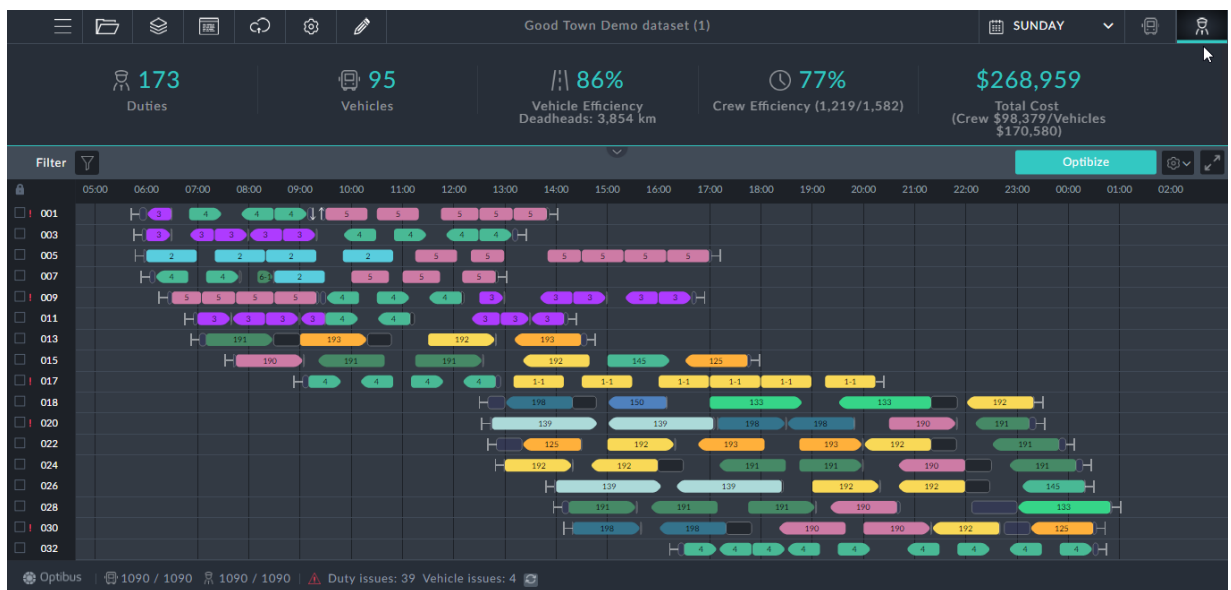


Figure 3-4: An example of trip details

In **Figure 3-4** we clicked the fourth trip (sign 193) for vehicle 3.

The Driver (Duties) Gantt

Click the driver button in the top right hand corner to see the Driver (Duties) Gantt:



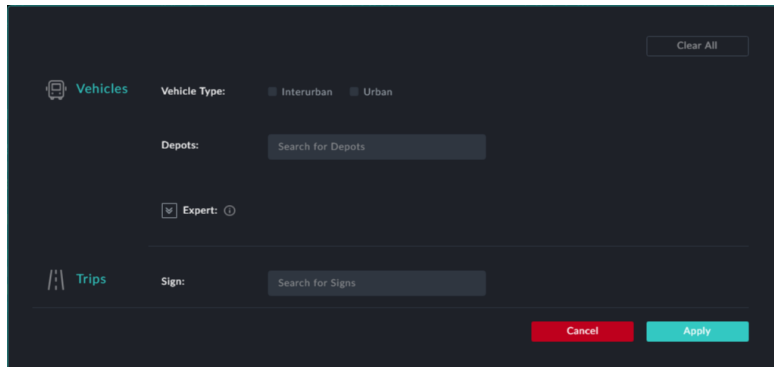
As for the Vehicle Gantt, in , the shaded column rulers represents time and the rows represents drivers (duties).

Figure 3-5: The Driver Gantt

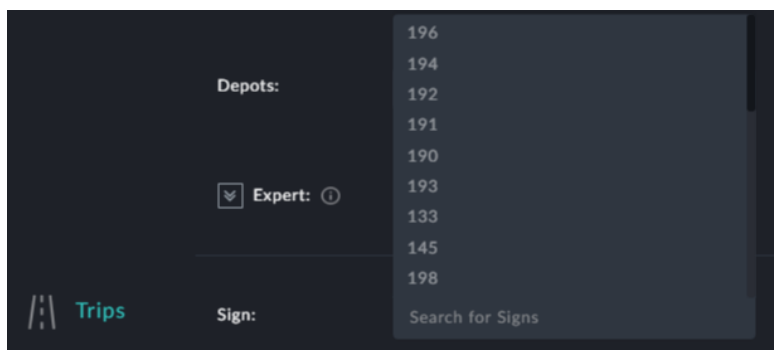
Again, the colors reflect the sign numbers.

Filtering the Gantt Views

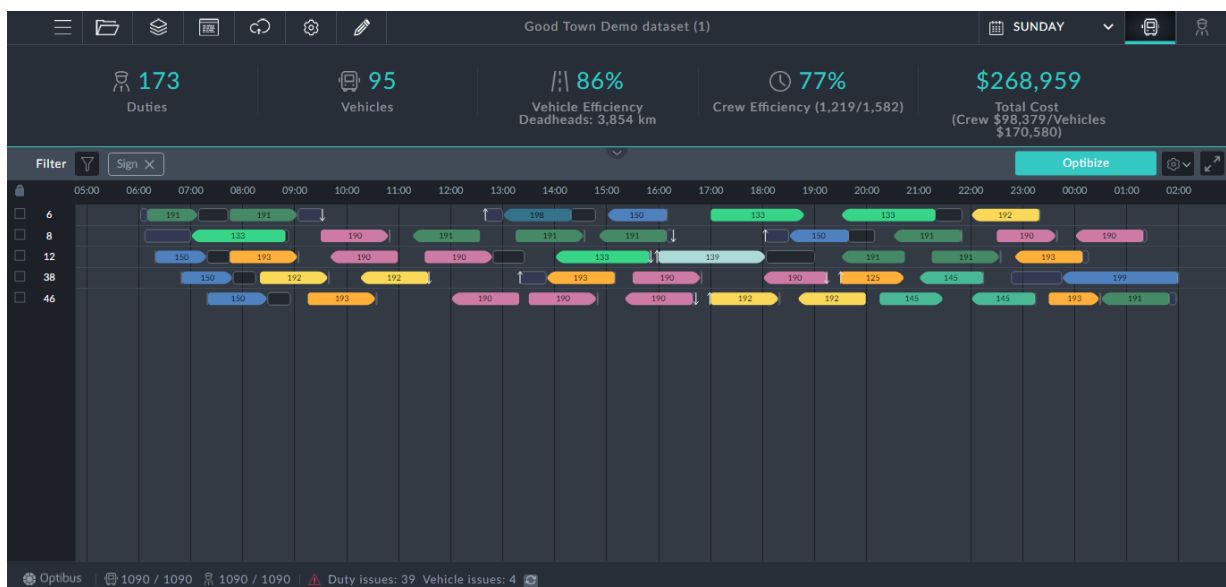
The two Gantts show an immense amount of information. You can use the Filter button to limit the view. Suppose for example, that we want to see blocks for sign 150. On the Vehicle Gantt, open the Filter:



In the Trips **Sign** field, click over the **Search for Signs** area. You are offered a list of available signs:

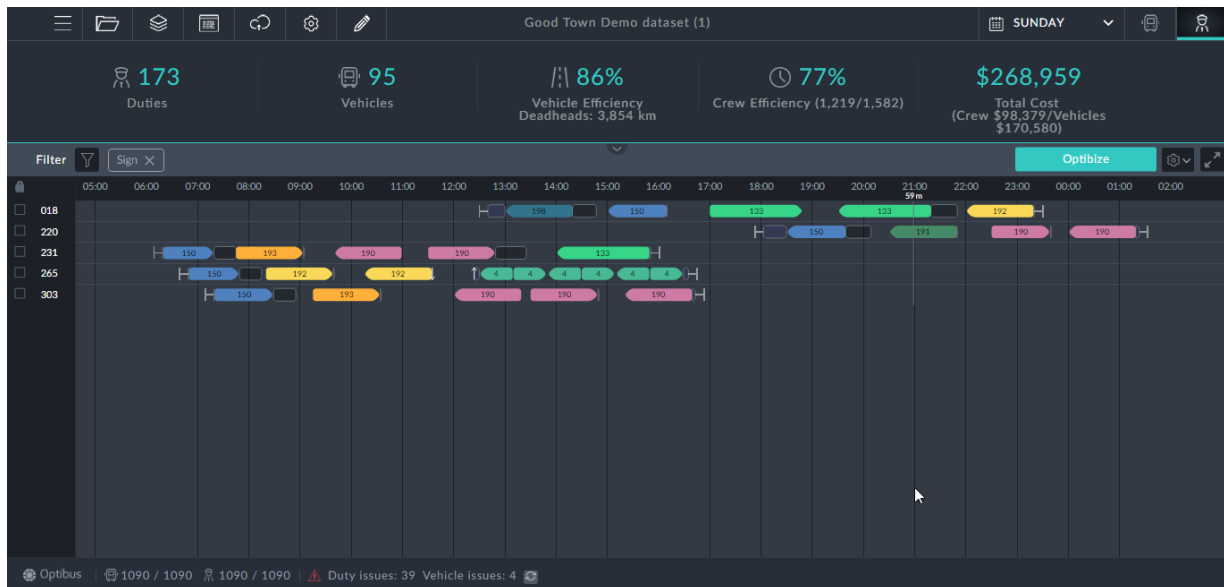


You may choose as many as you like (use the scroll bar to see more). We will choose sign 150 and click **Apply**. Here is the result:



The filter extracted all blocks including sign 150.

The choice of filters for the Driver Gantt is much more extensive, and we won't show the details here. However, if you again filter on sign 150, here is the result:



The filter extracted all drivers (duties) including sign 150 during the working day.

Key Performance Indicators (KPIs)


The top part of the display in **Figure 3-3** shows some of the KPIs. You can see all of them by clicking the  button:



Figure 3-6: Full KPIs before optimization

The KPIs are based on the active schedule. They provide objective measures of performance for the schedule. They will change, when for example, you:

- » Optimize the schedule
- » Make manual changes and re-optimize

We will illustrate each of these cases in the following sections.

First Optimization

The first optimization is very simple: On the main window, click the

Optimize button, and wait! The most obvious changes will be in the KPIs.

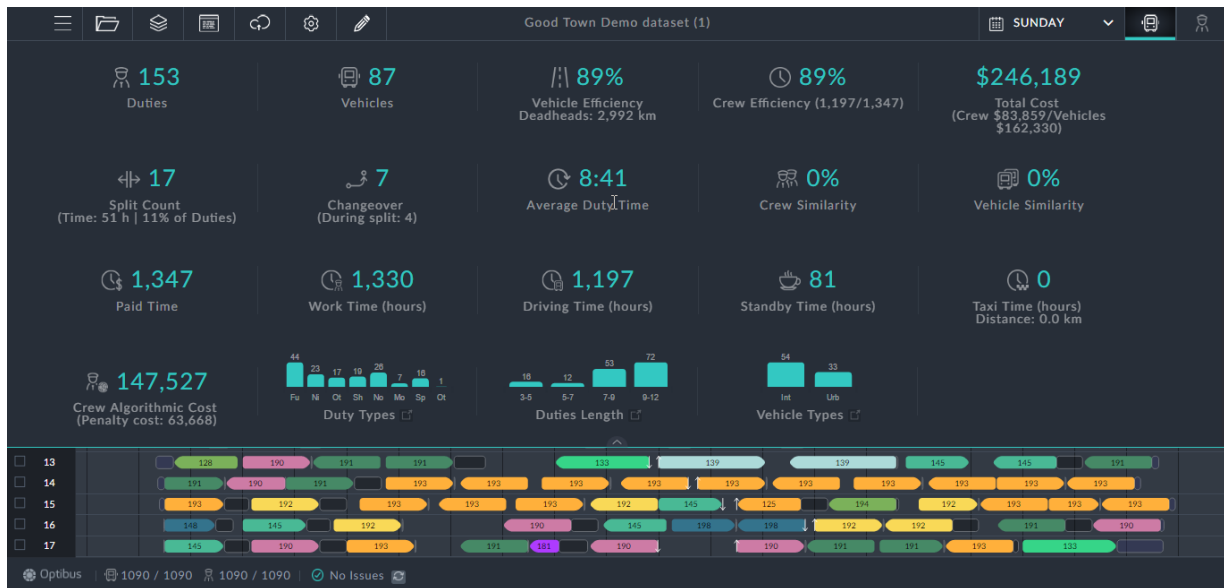


Figure 3-7: Full KPIs after optimization

Here is a convenient summary:

Table 3-1: KPI Partial Comparison - pre and post optimization

KPI	Pre Optimization	Post Optimization	Improvement
Duties	173	153	Down 20
Vehicles	95	87	Down 8
Vehicle Efficiency	86%	89%	Up 3%
Crew Efficiency	77%	89%	Up 12%
Total Cost	\$268,959	\$246,189	\$22,770
Split Count	18	17	Down 1
Changeover	16	7	Down 9
Average Duty Time	9hr 2min	8hr 41min	Down 21min

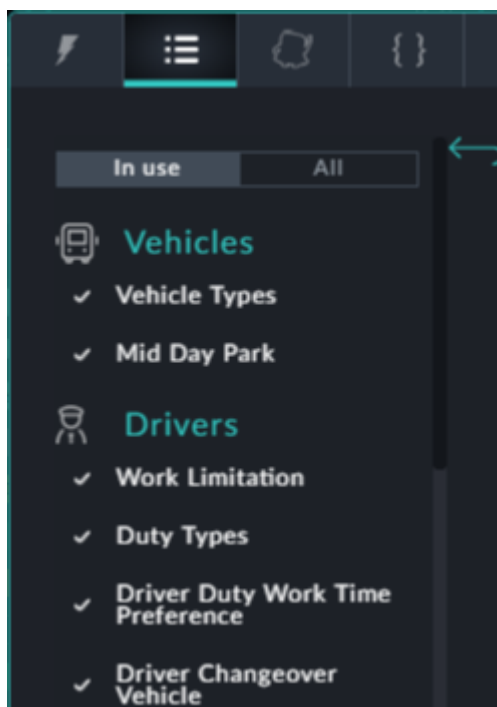
KPI	Pre Optimization	Post Optimization	Improvement
Paid Time	1582	1347	Down 235
Work Time	1564	1330	Down 234
Driving Time	1219	1197	Down 22
Standby Time	288	81	Down 207

Using Preferences to Complete the Gantts

Driver Work Limitations

We will evaluate the cost and other implications of changing driver break conditions.

In the main window, click  to open Preferences.



Under **Drivers**, open **Work Limitation**. Turn on the Breaks preference and add as an example, 1 hour of break time for every 5 work hours, as shown:

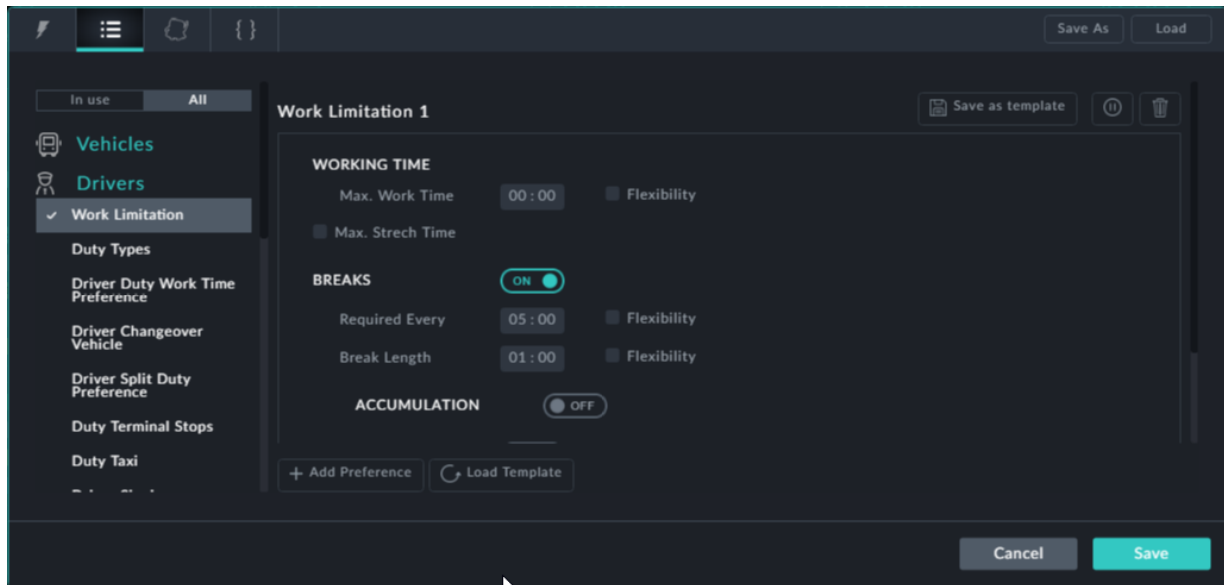


Figure 3-8: Preferences: Work Limitation

Click **Save**, and then **Optimize**. The main differences are, the number of Duties has risen from 153 to 159 and the Total Cost has gone up from \$22,770 to \$255,023.

Further, look at the Drivers Gantt, a segment of which is shown in **Figure 3-9** below:



Figure 3-9: Driver Gantt optimized with Work Limitations

Observe that:

- » Each duty has a 1 hour break after 5 hours
- » No duty is over 12 hours

We can add flexibility to this strict arrangement by allowing violation of these rules subject to penalties. Again, open **Preferences** and **Work Limitation** (**Figure 3-8**). In the Max. Work Time row, check box next to Flexibility. Change the Flexibility time to 30 min and the penalty to 20 as shown:

WORKING TIME

Max. Work Time ☒ Flexibility Penalty

Again, **Save** and then **Optimize**. To see the effect of our change, go to the Driver Gantt, open the Filter and choose Duties. Set **Duty Type** to Long as shown:

Duties Duty Type:

Duty Includes: ☐ Changeovers ☐ No ☐ Yes ☐ Splits ☐ No ☐ Yes

Now inspect the Driver Gantt again:

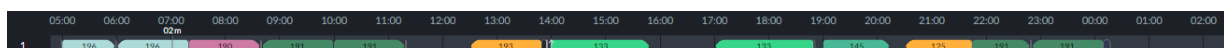


Opening any duty information box shows that the Long duties are all between 12 and 12.5 hours.

Block Homogeneity

We next consider the cost of maintaining a homogeneous vehicle schedule.

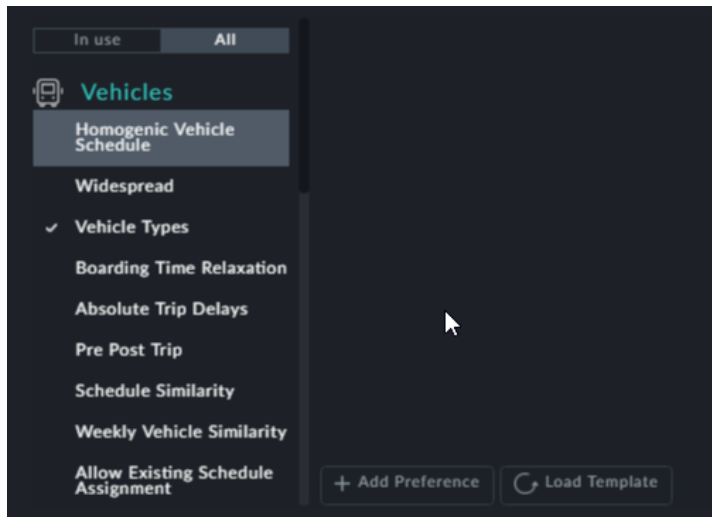
Looking at the optimized Vehicle Gantt, you can see that vehicle 1 for example, has a variety of routes:



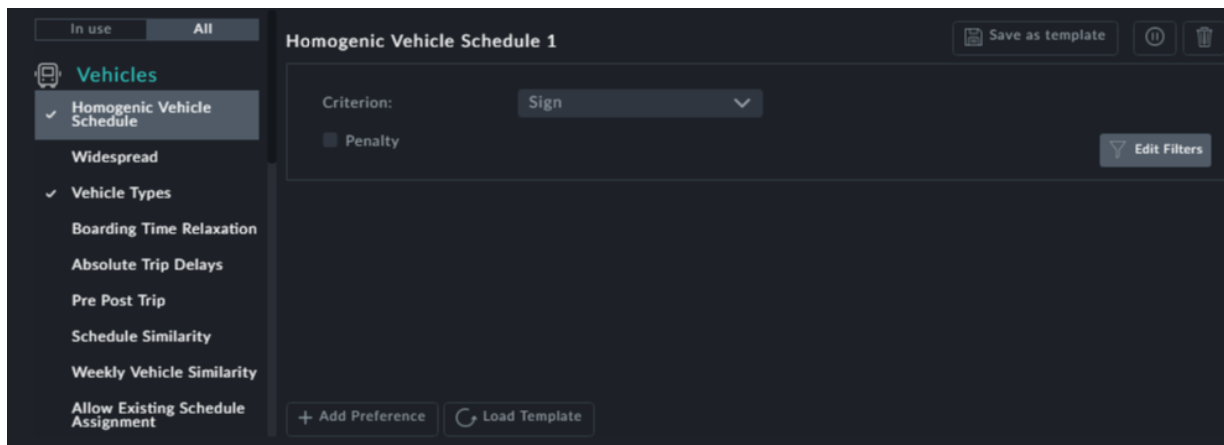
This presents problems for drivers, it is a cause of delays and is generally difficult to operate. How much does it cost to make the Vehicle schedule homogeneous?

We use the Preferences again to try a "What if?" exercise. What is the effect of making urban trips sign homogeneous?

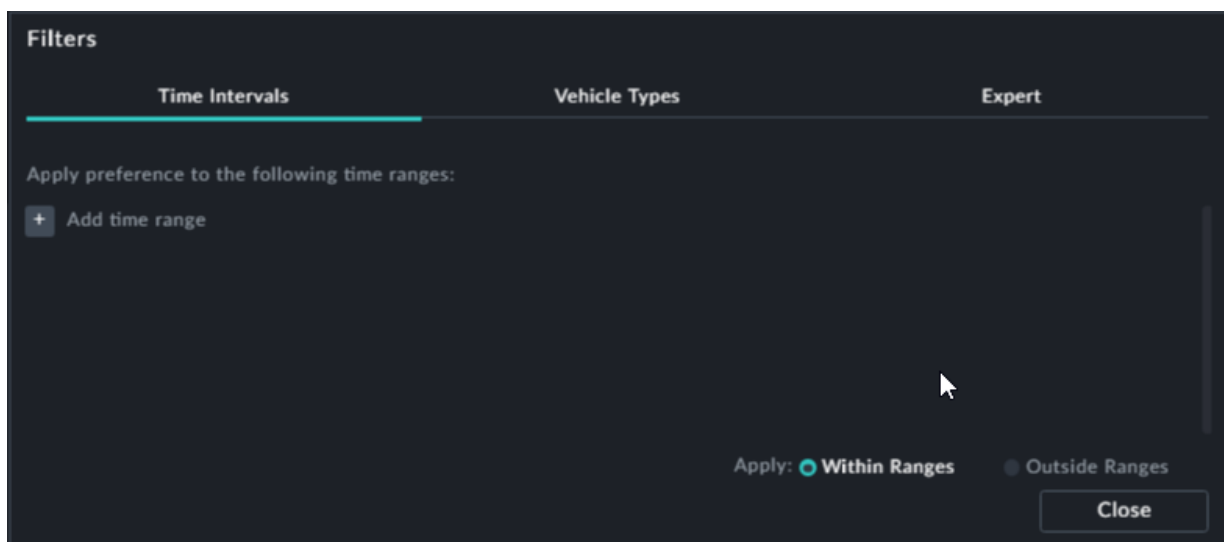
Starting with the original first-optimized schedules, we open Preferences, choose the **All** view and then **Homogenic Vehicle Schedule**. The following is displayed:



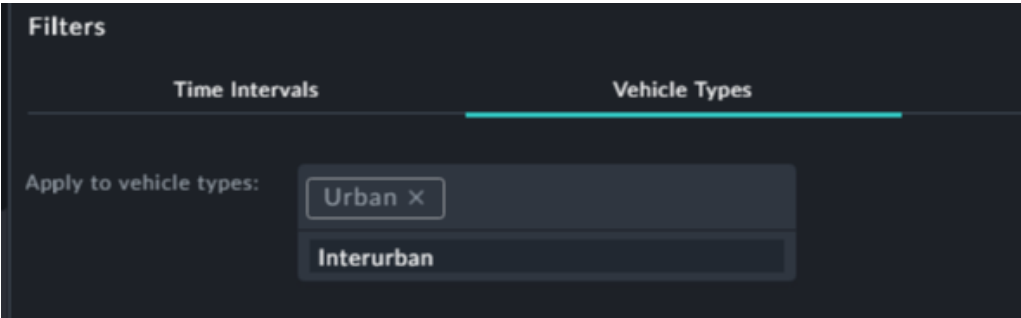
Click **Add Preference**. The following is displayed:



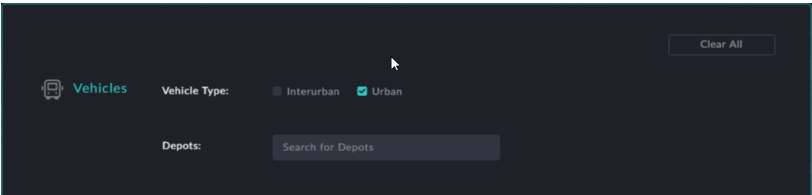
Leave the **Criterion** as Sign and click the **Edit Filters** button. The center part of the display changes as follows:



You can apply the preference to within a time range or outside it and you can restrict it to one or more vehicle types. You can also use **Expert** mode to create a custom filter. For our purposes, click Vehicle Type and chose **Urban**.



Click the **Close** button, and then click the **Save** button at the bottom right of the Preference window. Click . Filter the Vehicle Gantt for Urban vehicles:





We see that the Urban vehicles are sign-homogenic:

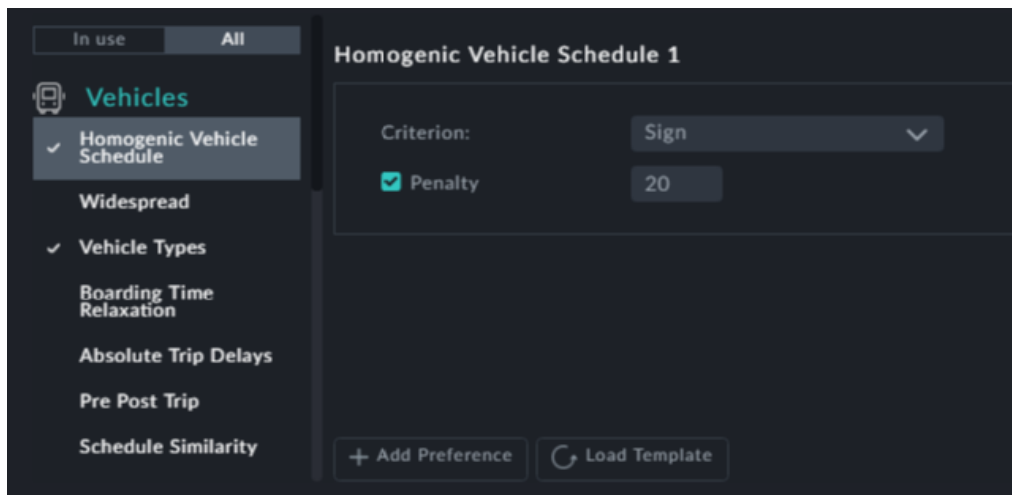


It is instructive to compare some of the KPIs before and after the change:

Table 3-1: KPI Partial Comparison - pre and post optimization

KPI	Pre Optimization	Post Optimization
Duties	153	152
Vehicles	87	91
Total Cost	\$246,189	\$248,802

Let us next try a near-homogenic schedule: We can arrange that not all drivers will e one sign per day and some may have two  using a penalty of 20 instead of a constraint:




Here is part of the Vehicle Gantt: 



Finally notice the changes in the KPIs:

Table 3-2: KPI Partial Comparison - pre and post optimization

KPI	Pre Optimization	Post Optimization - Strict Homogeneity	Post Optimization - Flexible Homogeneity
Duties	153	152	152
Vehicles	87	91	87
Total Cost	\$246,189	\$248,802	\$246,285

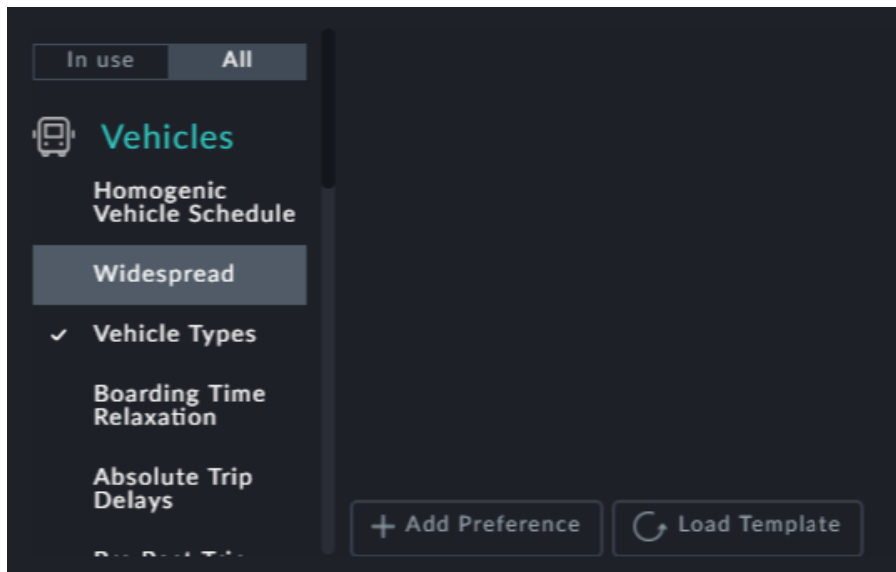
The number of Duties and the Total Cost have dropped slightly from the non-homogenic case. The Total Cost has also dropped marginally. The outcome is considerably better than strict homogeneity. 

Widespread

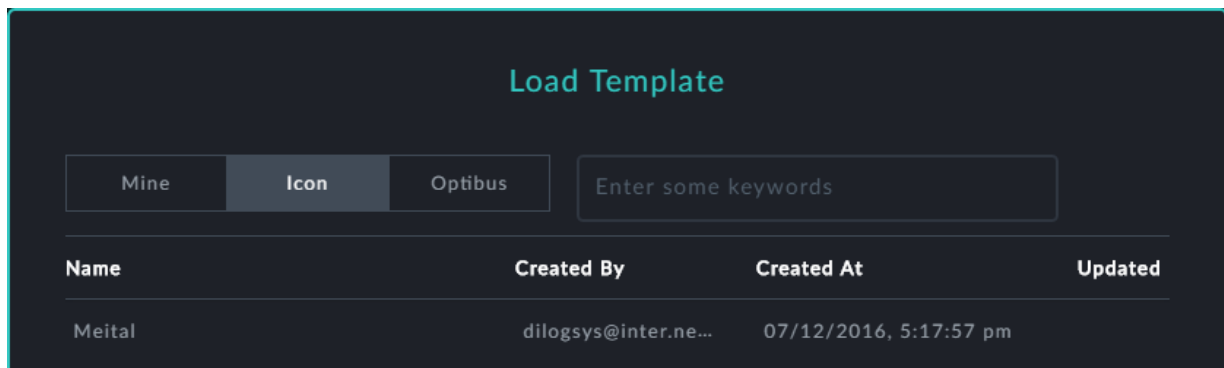
What if we generate breaks between trips, and how much will it cost?

First, observe that in our basic Driver Gantt of **Figure 3-5** the break between trips are very short. We will add a widespread of 15 minutes.

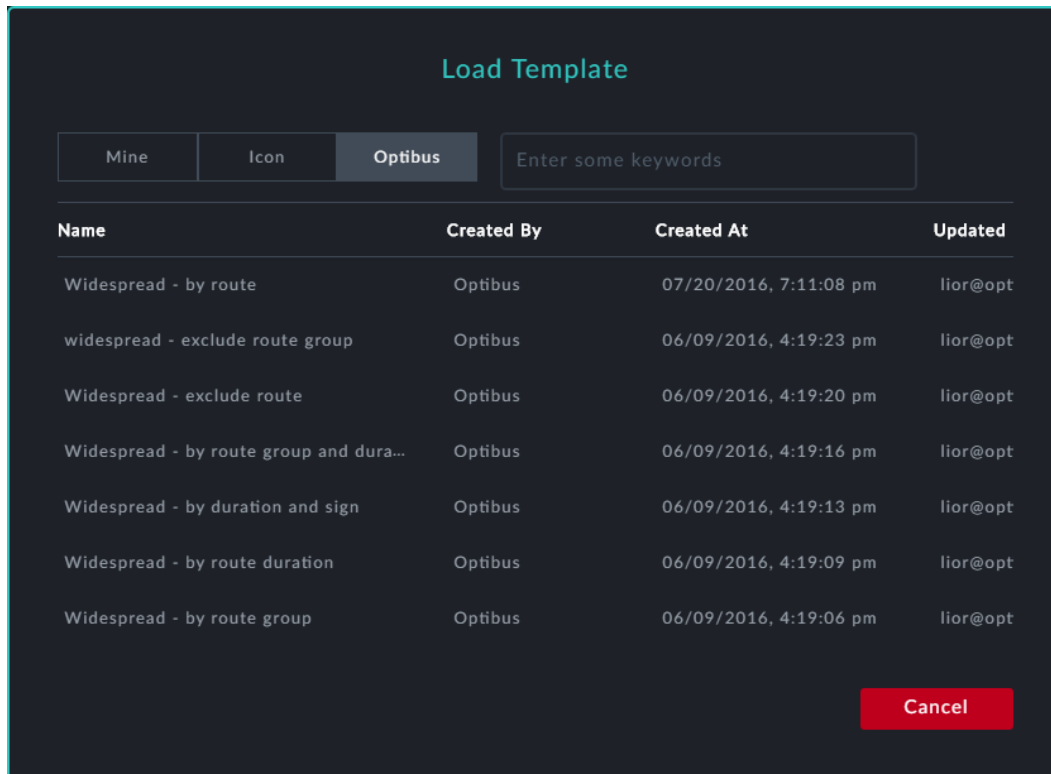
In Preferences, set **All**, go to **Vehicles** and choose **Widespread**:



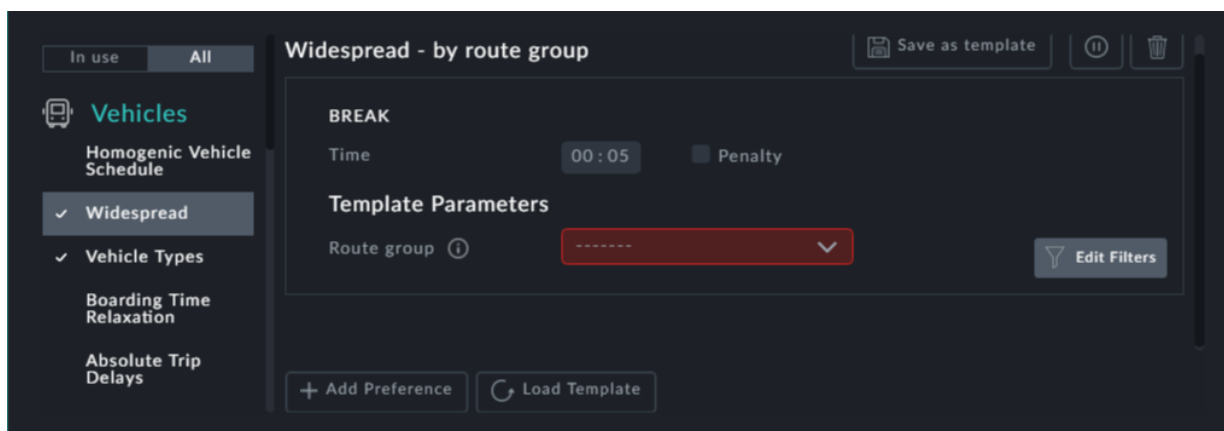
We will use a presupplied Template. Click **Load Template**:



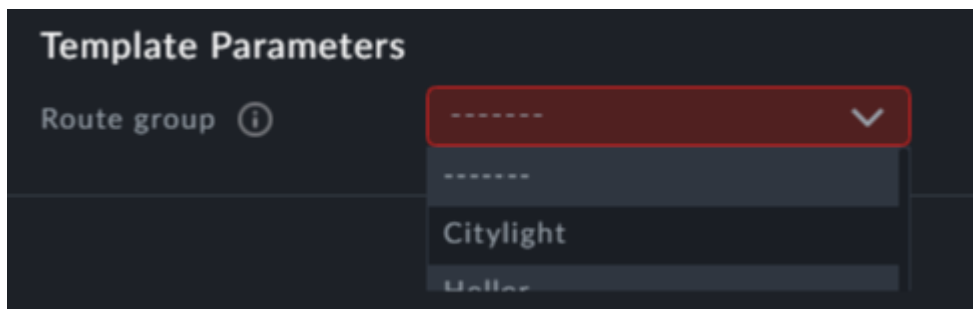
We will use an Optibus supplied template. Click the Optibus button:



Choose **Widespread by route group**:

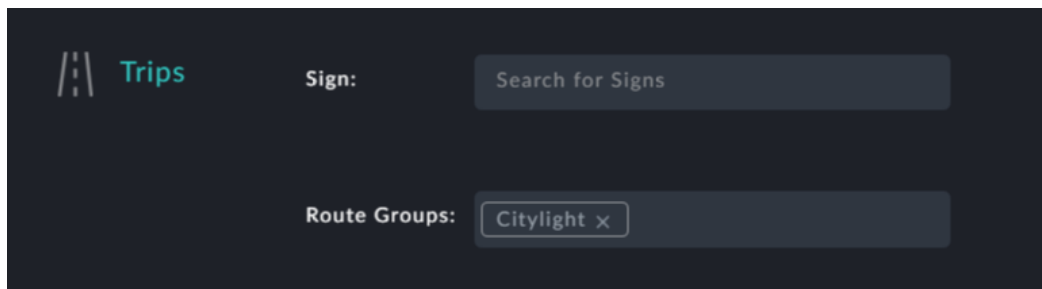


Click Route group and choose **Citylight** as shown:

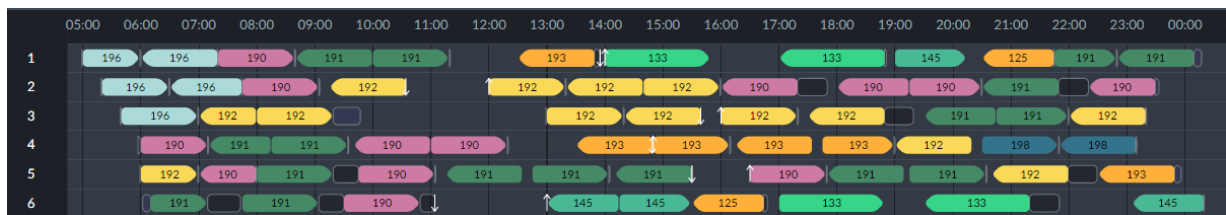


As usual, save and optimize.

The Citylight route group contains signs 2 and 5. Now, filter the Vehicle Gantt to the Citylight route group:



Click **Apply**. Here is the outcome:



Notice that blocks 2 and 5 have a widespread of 5 minutes. 

Finally, here are the changes to the KPIs:

Table 3-3: KPI Partial Comparison - pre and post optimization

KPI	Pre Optimization	Post Optimization - Wide-spread
Duties	153	155
Vehicles	87	89
Total Cost	\$246,189	\$248,921

Depots

We next examine the financial effect of adding another depot.

You can change a depot or add a new depot. You can also define a global vehicle capacity or capacity per vehicle type. We will reduce the capacity of the one existin depot and add a new depot.

In Preferences, set **All** and choose **Depots** and **Depot Capacity**.

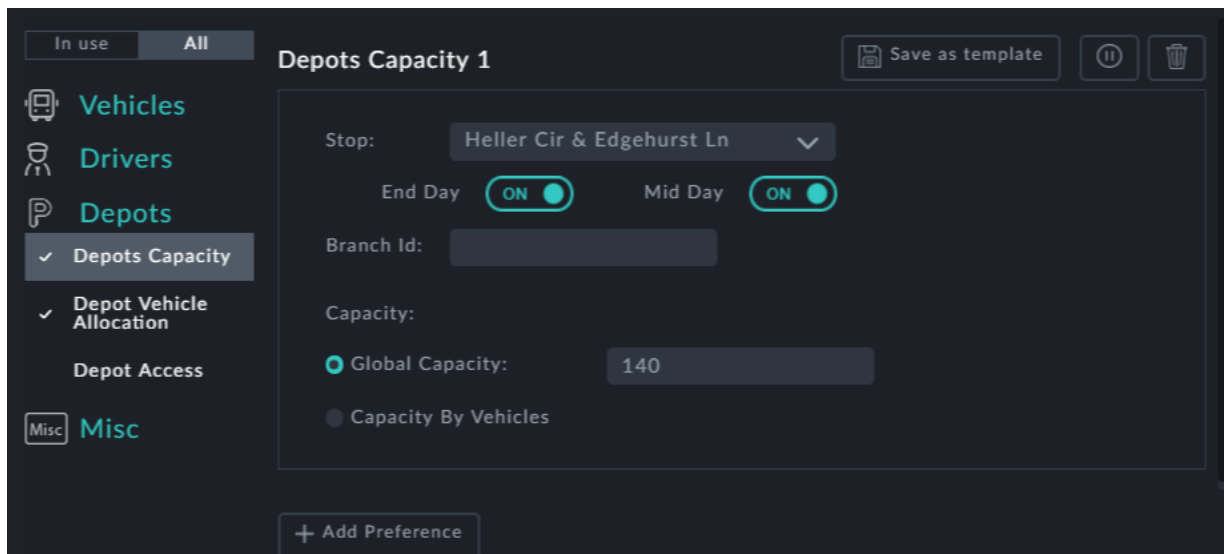
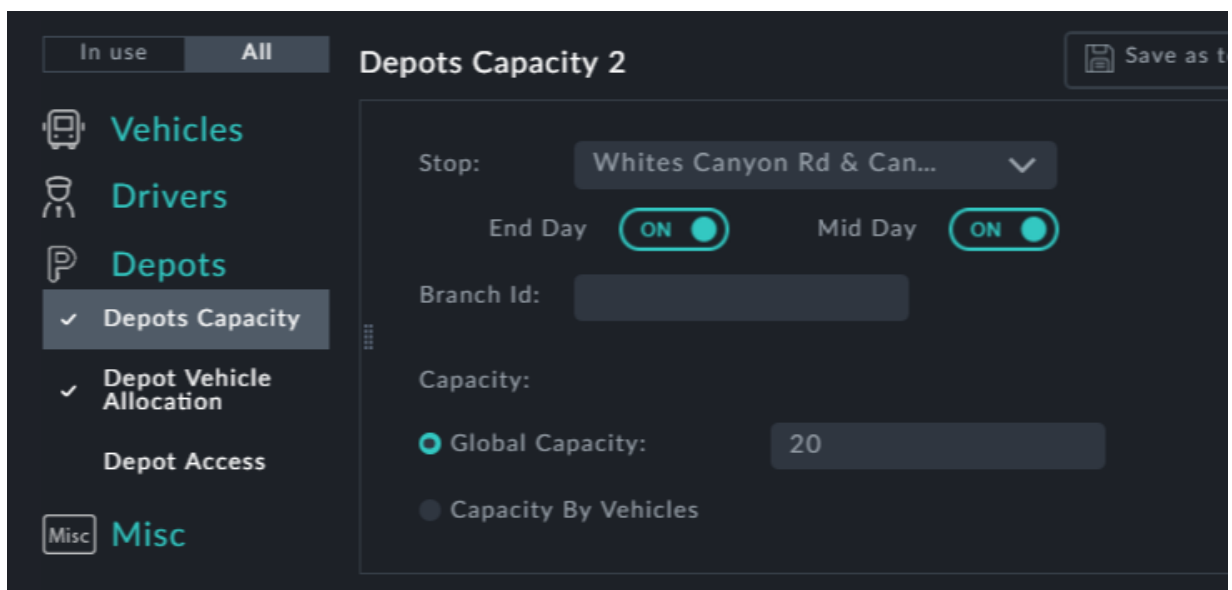
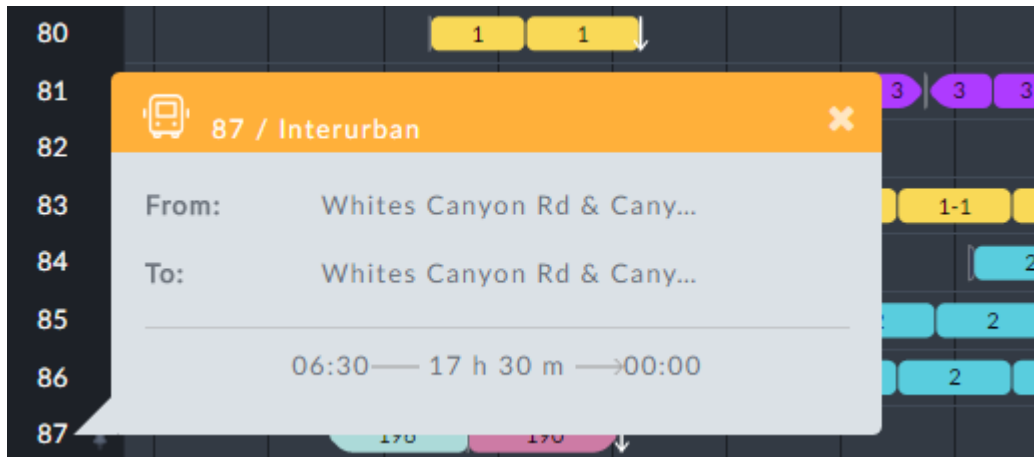


Figure 3-10: The original single depot

Change the Global Capacity from 140 to 100 and click **Add Preference**. Change the **Stop** to the last stop in the drop down list as shown, and change the Global Capacity to 20:



Save and optimize. In the Vehicle Gantt, we see that only the last vehicle uses the new depot. You can check that all of the blocks up to and including 86, terminate at the original depot shown in **Figure 3-10**. Block 87 terminates at the new depot:



Here are the changes to the KPIs:

Table 3-4: KPI Partial Comparison - pre and post optimization


KPI	Pre Optimization	Post Optimization - New Depot
Duties	153	154
Vehicles	87	87
Total Cost	\$246,189	\$243,439



Caution: This item should be treated with care: The saving of \$2,730 reflects operating expenses for running the vehicles and the cost of the drivers. Setting up a new depot is a major capital outlay. To obtain a more realistic picture, you would have to take into account the weekly amortized depot capital expense or rent.



Adding Pre Trip and Post trip Elements

The Gantts of **Figure 3-3** and **Figure 3-5** are lacking  there is no provision for Pre trip and Post trip activity. We can add them using the Preferences.

Open the Preferences, set All. Under Vehicles, choose Pre Post Trip and Load Template. Under Optibus choose, Pre\Post trip - General.

Load Template			
Mine	Icon	Optibus	Enter some keywords
Name	Created By	Created At	Updated By
Pre\Post trip - General	Optibus	07/13/2016, 5:36:02 pm	
Post trip - General	Optibus	07/07/2016, 6:10:25 pm	
Pre trip - General	Optibus	07/07/2016, 6:08:19 pm	

The template data entry form is displayed:

The screenshot shows a 'Load Template' data entry form. On the left is a sidebar with a list of categories: 'vehicle types', 'Boarding Time Relaxation', 'Absolute Trip Delays', 'Pre Post Trip' (which is selected and highlighted), 'Schedule Similarity', 'Weekly Vehicle Similarity', and 'Allow Existing Schedule Assignment'. The main content area displays settings for the selected 'Pre Post Trip' category. It includes input fields for 'Pre trip time' and 'Post trip time', both currently set to '00:00'. Below these are toggle switches for 'Can pre trip during deadheads', 'Can post trip during deadheads', and 'Applies to mid day parking', all of which are currently set to 'No'. At the bottom of the main area are buttons for '+ Add Preference' and 'Load Template'. On the right side of the main area is an 'Edit Filters' button. At the very bottom of the form are 'Cancel' and 'Save' buttons.

Set the Pre trip time to 10 minutes, the Post trip time to 7 minutes and leave all of the other items as is.

Template Parameters

Pre trip time ⓘ 00:10


Can pre trip during deadheads ⓘ ☒ No ☐ Yes

Post trip time ⓘ 00:07

Can post trip during deadheads ⓘ ☒ No ☐ Yes

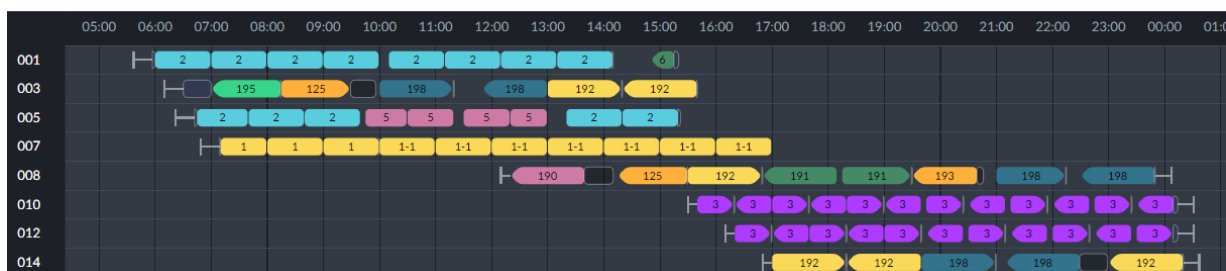
Applies to mid day ☒ No ☐ Yes

[+ Add Preference](#) [↻ Load Template](#)

(You may need to scroll up or down to see all of the options)  Save and optimize. Here for example is part of the Vehicle Gantt:



Here is part of the Driver Gantt:



TBD - Replace, this is buggy. 

Here are the changes in the KPIs:

Table 3-5: KPI Partial Comparison - pre and post optimization

KPI	Pre Optimization	Post Optimization - Add Pre/Post Trip
Duties	153	156
Vehicles	87	87
Total Cost	\$246,189	\$247,922



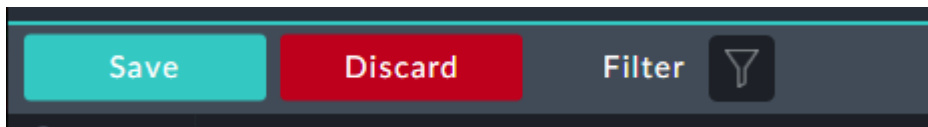
Manual Editing

Schedule changes occur during the work day. Keeping the schedule up to date is essential to maintain its quality and cost effectiveness. To accomplish this, Optibus OnSchedule™ provides a manual editing facility. In addition, the manual editing facility enables you to fine-tune the schedule.

Here is a demonstration of what you can achieve using manual editing.




Tip: In all of the previous example, you will have noticed that there is an option to save or discard your changes.



The same applies to manual editing. Until you feel comfortable using manual editing, we suggest that you start by backing up your existing schedule using

Save As from the  Context Menu.

Display the Driver Gantt. To enter Manual Editing mode, click the  Manual Edit button in the top toolbar. An editing area called the **Stack**, opens above the regular Gantt:

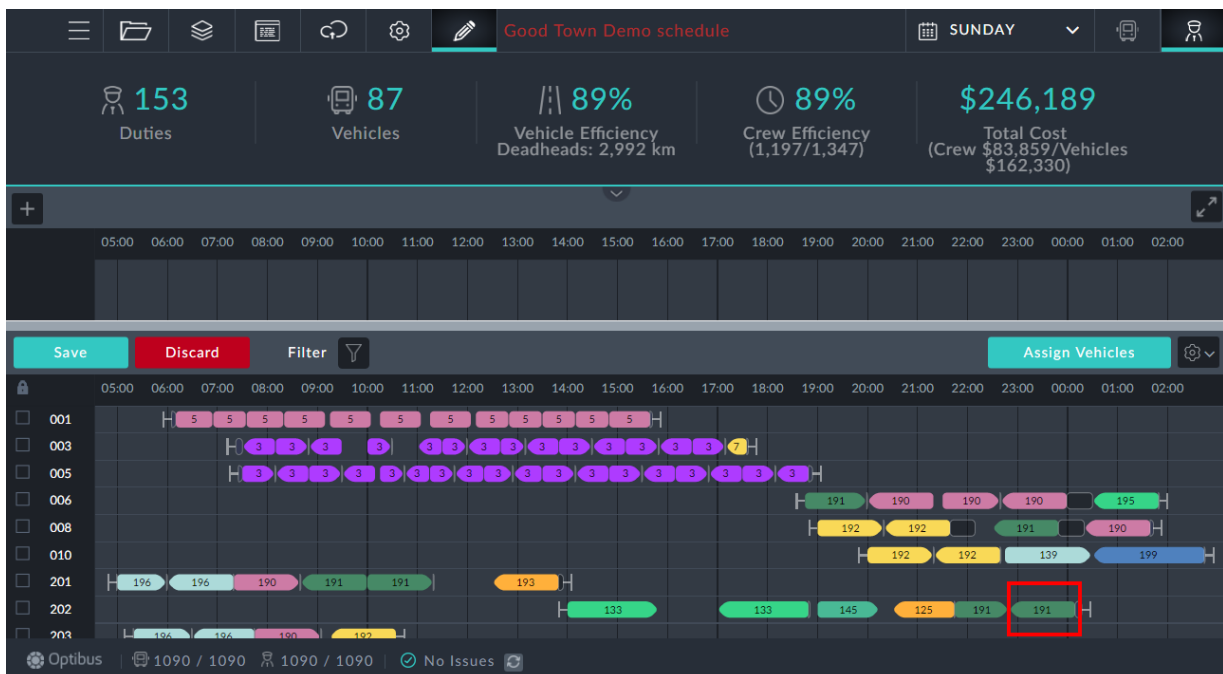
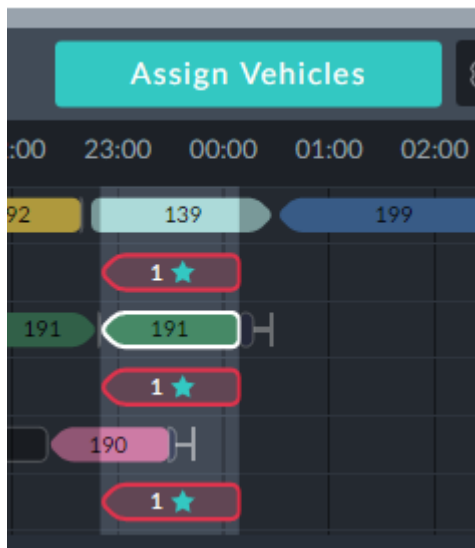


Figure 3-11: Choosing a trip for editing

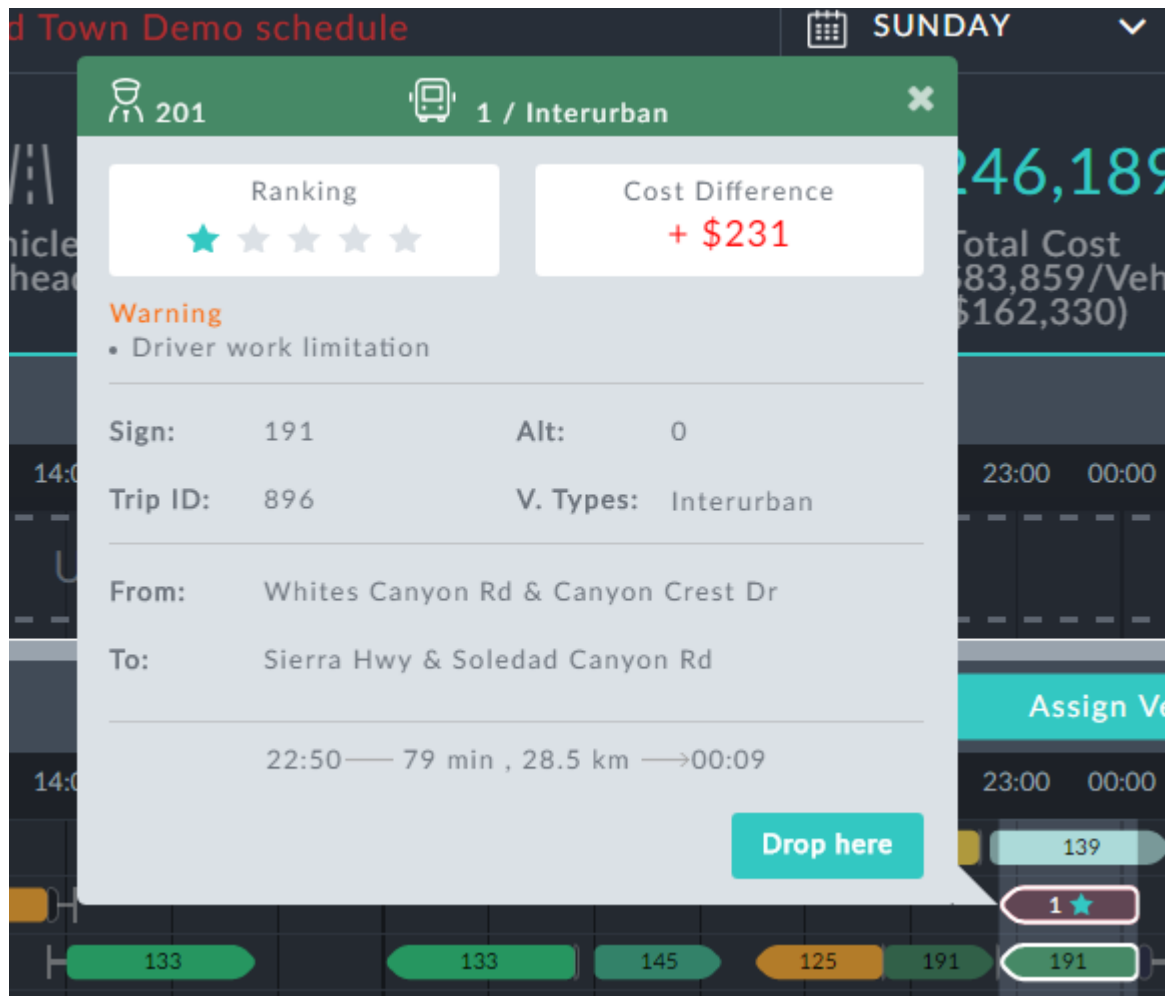
Double click on the last trip of duty 201 (in the red rectangle). The area above and below the selected trip changes:




The system automatically recommends a number of options for relocation of the trip. There are two indications for each option:

A red frame indicates a violation of preferences. A blue frame does not. Inside the frame is a quality rating: 1 to 5 stars.

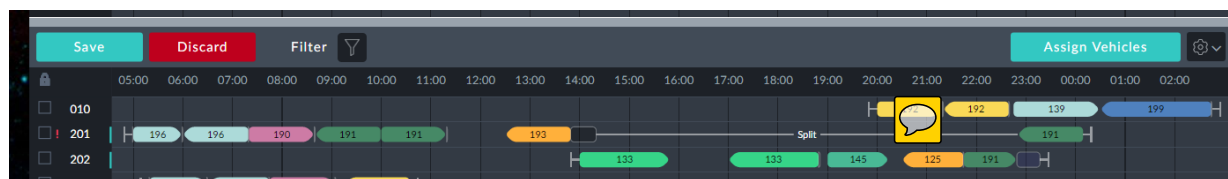
Click the red option above the current trip. A detailed information box opens:



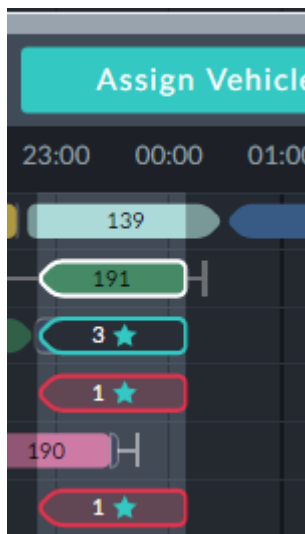
We see that moving the trip to this location violates a Driver work limitation. The information box also displays the stars ranking and the  difference due to the change.

Click **Drop here** anyway.

Notice that a Split and a Deadhead were automatically added:



Now reverse the process: Double click the moved trip:

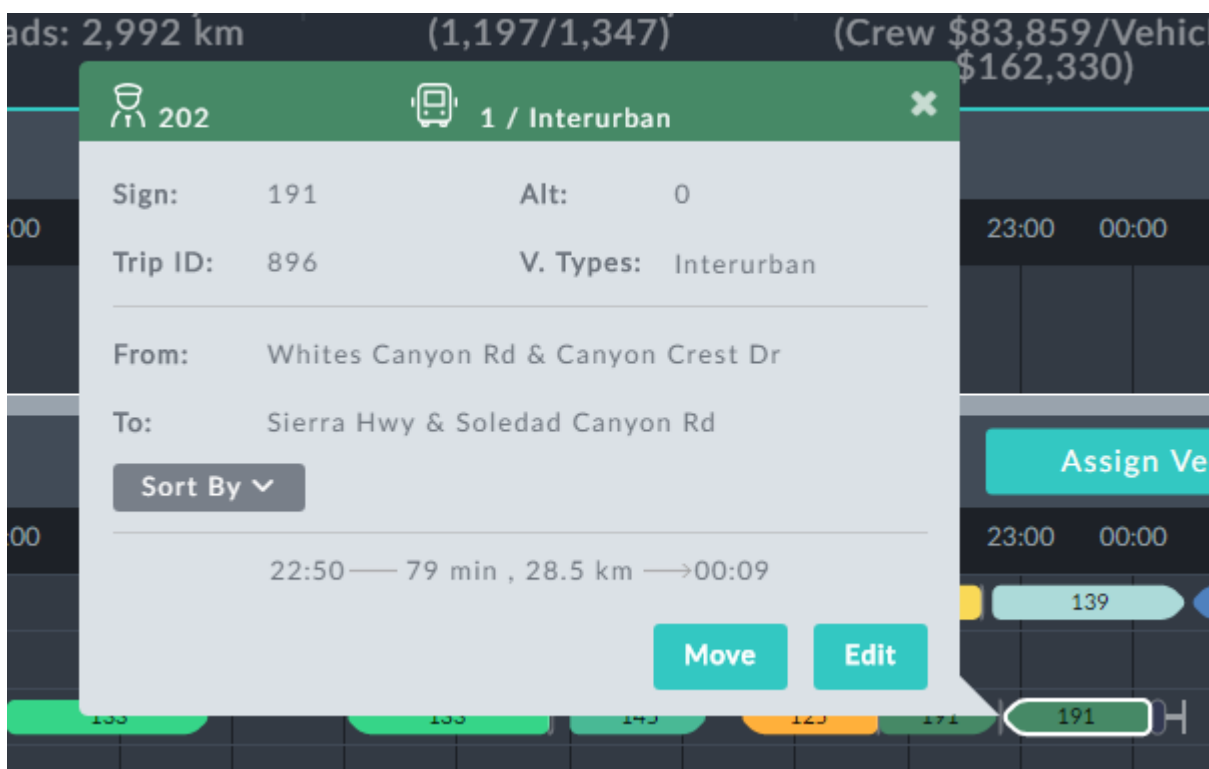


Notice that the original position, the original position has a blue border (no violations) and three stars. Double click it and accept **Drop here** in the information box.

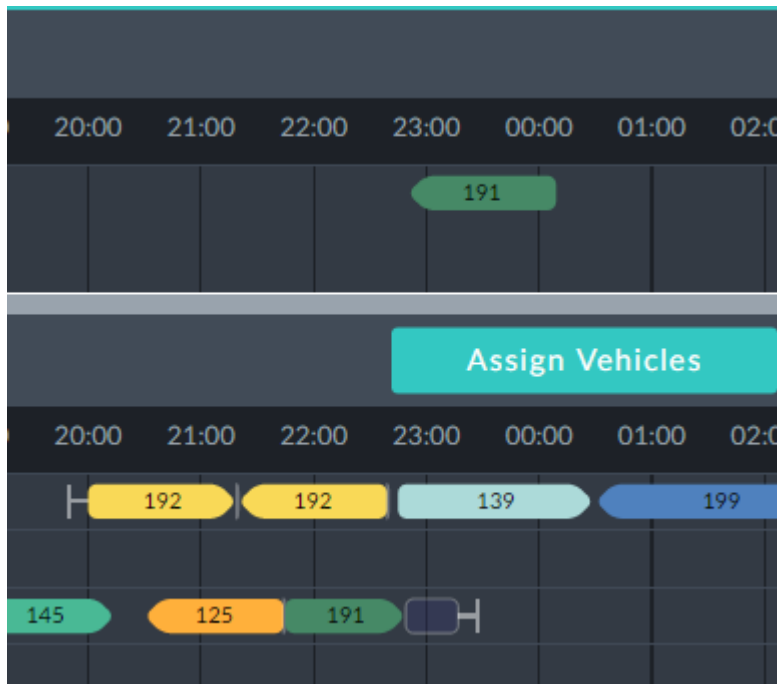


To move around multiple trips, you can use the **Stack**.

Left- click (once only this time) the squared item in **Figure 3-11** above:

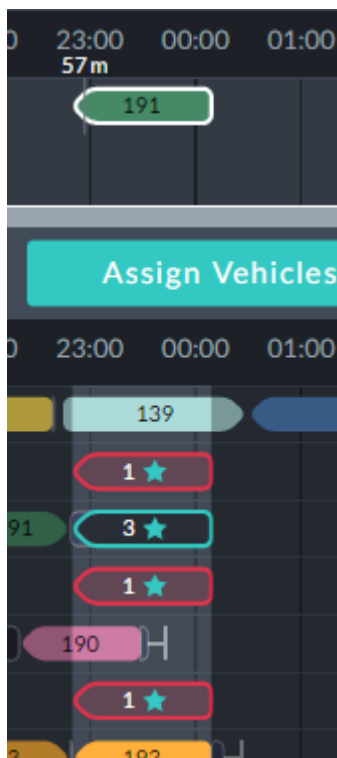


In the information box, click **Move** and then click anywhere over the **Stack**:



Notice that the trip is kept in its original time frame in the stack.

Double click on the trip in the stack:



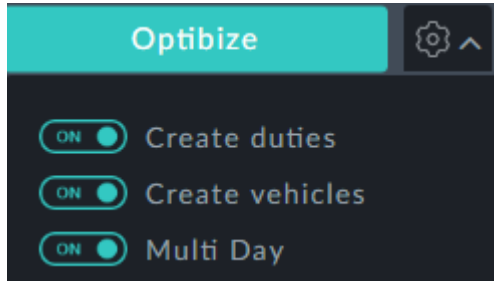
Once again, move it to the first option by double click or by clicking **Drop here**.

As in our pervious method, a split and a deadhead trip were automatically added.

Generating a Weekly Schedule

Clicking on any day, will show the Gantt for that day if it exists or generate it. We will use the Homogeneous schedule from the first part of the **Block Homogeneity** example.

Open up the Optimize preference button and switch on **Multi Day**:



Running optimization produces an optimized weekly schedule with optimization between days. A multi day optimization typically takes longer to run than the single day optimizations that we have seen so far.

A quick examination of the Vehicle Gantts for each day of the week, shows that they are each sign-homogeneous.

Technical Reference

Chapter 4: Preparing the Source Files for a Schedule

Files Required to Prepare a Schedule

When a completely new schedule is to be created, Optibus OnSchedule™ must import four data files to create a Dataset:

- » Trips - a complete specification of each trip
- » Stops - bus stops
- » Vehicle Types catalog
- » Idle Trips - the Deadheads catalog

In addition, a schedule may also be available for import.

The Operator in conjunction with Optibus supplies these files in the formats shown in [Source File Layouts](#).

Source File Formats

General

Optibus OnSchedule™ supports a variety of import formats including Excel, CSV and JSON. It also supports several proprietary integration formats. In what follows below, we will use Excel formatted examples.

Importing Excel Files

When importing Excel files, the four items above appear in one file with four labeled sheets. It is the basis for the imported Dataset and is frequently referred to as a Dataset in its own right. The Deadheads may be in a separate Excel file. The schedule, if available, is also in a separate spreadsheet. The precise structure of these files is set out in [Source File Layouts](#) below.



Note: The Dataset, Deadheads and Schedule source files may be supplied in different formats.

Locating the Source Files

We continue with Excel files. Ensure that you know the names of the source files and their locations. We will use the files shown here:

▼ e:\Optibus\UM_Demo_Dataset*.*		
Name	Ext	Size
↑ [..]		<DIR>
📁 [Exports]		<DIR>
📄 Good Town Demo dataset	xlsx	193,379
📄 Good Town Demo shcedule	xlsx	309,102

Figure 4-1: Locating the Dataset Excel file



Note: In practice, you may not always have a schedule. Optibus OnSchedule™ can generate a schedule for you during the first optimization based on default preferences or preferences of your choice. See TBD.

Source File Layouts

TBD - heavy stuff from Meital &c

Chapter 5: Choosing a Work Schedule

Overview

Choosing a Work Schedule is basically a two stage procedure: After logging in to the Optibus OnSchedule™ website, you first choose a Dataset from those available (**Figure 5-1**). You then choose a Schedule from the Dataset (**Figure 5-3**).

Along the way there are many options and variations, which are the subject of this section.



Note: Importing a Dataset and Schedule, or creating a new Schedule for a Dataset are covered in **Creating a Dataset and Schedule**.

Logging in to Optibus OnSchedule™

The Web address (URL) of your OnSchedule™ installation is supplied by Optibus and is customer dependent. In addition, you should have ready, a user name and password. Open up your browser and navigate to it. You will see the log-in window:

Enter your user name and password and click on Sign In. An invalid user name or password will result in an appropriate error message.



Tip: Bookmark the supplied URL for future use.

The opening Dataset Window

After you have logged in, you are presented a Dataset window:

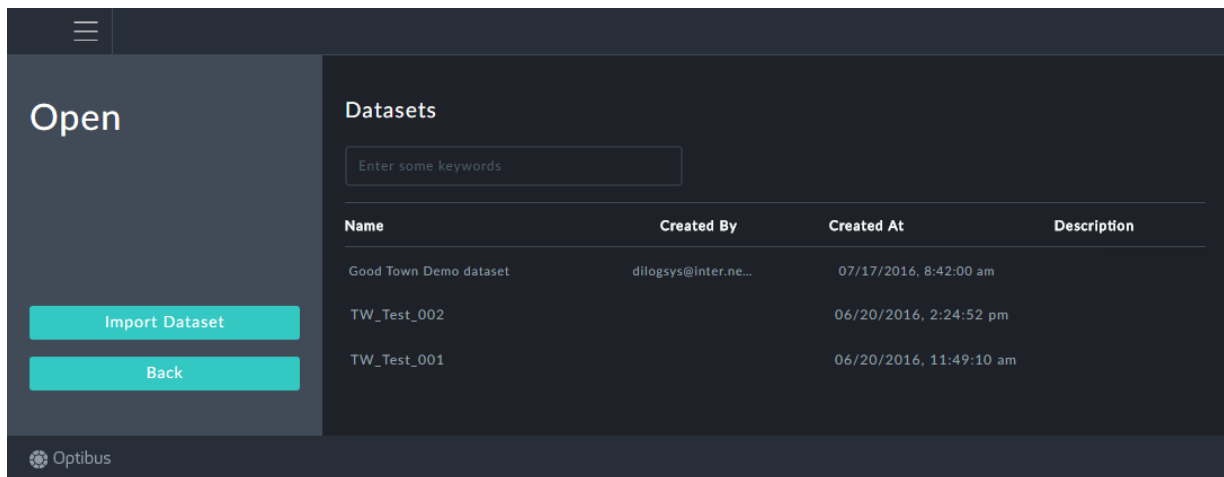
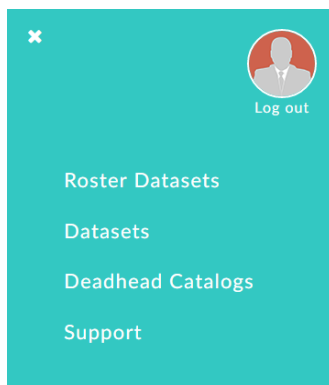


Figure 5-1: Choosing a Dataset

Use the left hand Import Dataset button to import a Dataset in the prescribed format (see [Importing a Dataset](#)). It will be added to the Dataset list.

The top left context menu button  offers the following menu:



The context menu opens from the left. Clicking the small white x at the top left corner dismisses the menu. Clicking Log out logs you out of the system.

The entries are a subset of the Gantt page context menu described in detail in [The Context Menu](#).

For immediate use, **Datasets** always drops you back to the Dataset display from where ever you are. **Support** opens a Chat with an Optibus Professional Services Engineer.



Note: **Roster Datasets** are covered in [Roster Datasets](#). The **Deadhead Catalogs** item enables you to choose or import a Deadhead Catalog. It is one of the options described in [The Schedule Display Tool Bar](#) below.



Note: Any import choice you make or any new item that you create in this section, is loaded using default preferences.

To choose a Dataset, just click it. Notice that if you mouse-over a Dataset it is highlighted, and two action buttons become available:




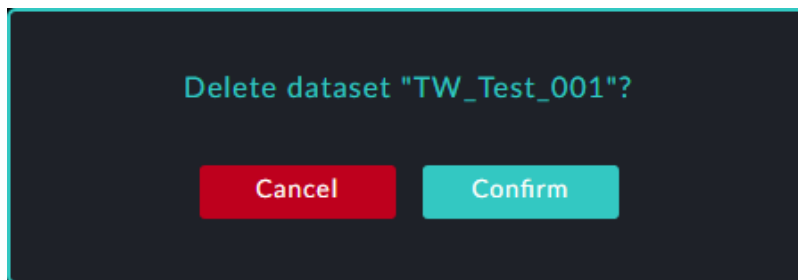

Name	Created By	Created At	Description
smallweekly		06/21/2016, 10:40:02 am	
TW_Test_002		06/20/2016, 2:24:52 pm	
TW_Test_001		06/20/2016, 11:49:10 am	 

Figure 5-2: Choosing a Dataset

The  button allows you to discard the Dataset:



The  button allows you to edit the Dataset name and description.

 A dark-themed form titled "Edit Dataset" in teal. It contains two input fields: the first is labeled "TW_Test_001" and the second is labeled "Dataset Description". At the bottom right, there are two buttons: a red "Cancel" button and a teal "Save" button.


Note: These three buttons are ubiquitous throughout the OnSchedule™ system and mean the much same thing:



is the context menu for whatever window in which it appears



is used to delete the object upon which it appears



is used to rename or edit the object upon which it appears

Choosing a Schedule

We continue, using our choice of Dataset in **Figure 5-2**. The next display allows you to select a Schedule:

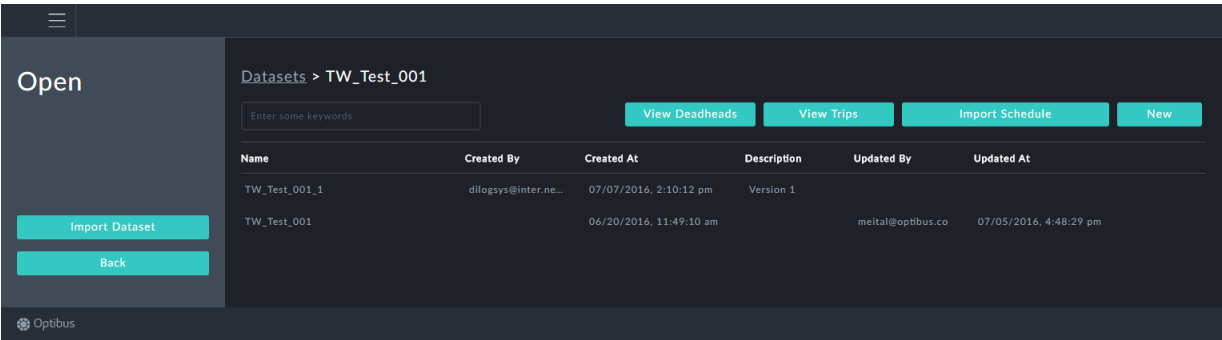


Figure 5-3: Schedule list

Note: For general navigation purposes, you are shown where you are in the system on the top left hand side of the current display page. for example, in **Figure 5-3** above, you are here:

Datasets > TW_Test_001

Following modern Web usage, you can click any item in this Web page chain to go to it.

Mouse-over to second item, which is highlighted:

Name	Created By	Created At	Description	Updated By	Updated At
TW_Test_001_1	dilogsys@inter.ne...	07/07/2016, 2:10:12 pm	Version 1		
TW_Test_001		06/20/2016, 11:49:10 am		meital@optibus.co	07/05/2016, 4:48:29 pm

Notice the four buttons on the right that become active. The edit and delete buttons work as previously described. There are two additional buttons:

The button converts a multi-day schedule to a weekly format. See TBD.

The button opens the **Revision** window for the highlighted item.

Revisions of a Schedule

Here is the Revisions window:

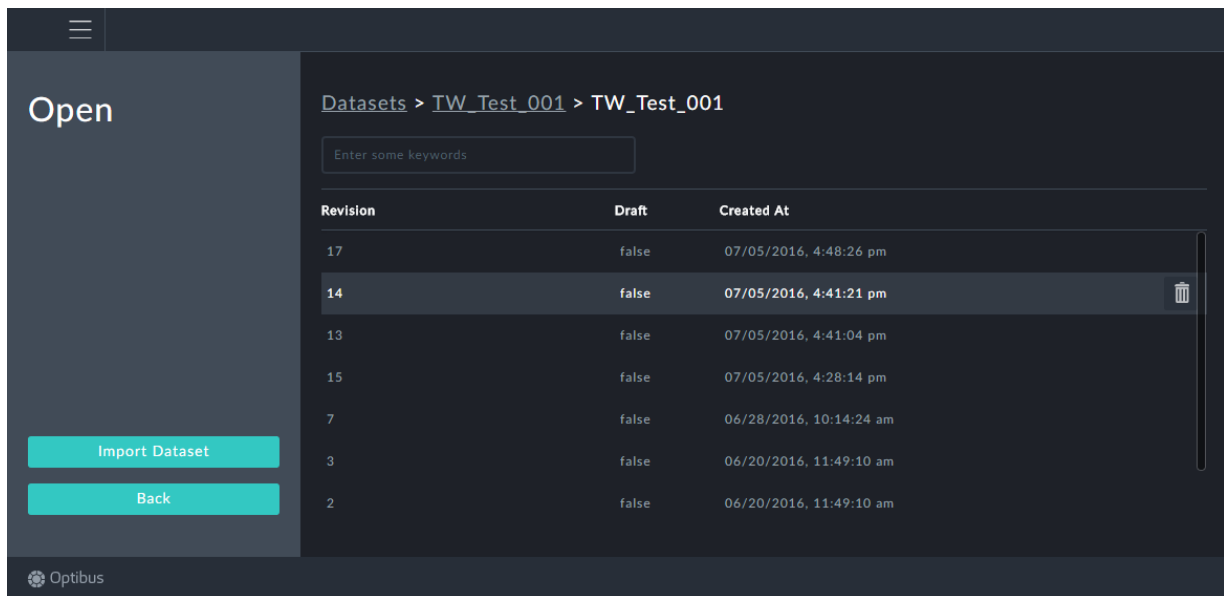


Figure 5-4: Revisions of a Schedule

A **Revision** is an automatic backup created every time you save the working Schedule. The highest numbered Revision is the latest, which you can confirm by looking at the dates.



Caution: If you select a lower Revision, make some changes to it and save it, it will acquire the highest Revision number and become current.

If in **Figure 5-4** you work on Revision 14 and save it, it becomes 19:

Revision	Draft	Created At
19	false	07/08/2016, 10:08:05 am
17	false	07/05/2016, 4:48:26 pm
14	false	07/05/2016, 4:41:21 pm
13	false	07/05/2016, 4:41:04 pm

The new Revision number is higher than the last highest but not guaranteed to be the next number (18 here).

The Schedule Display Tool Bar

The Schedule display of **Figure 5-4** has a tool bar:



Figure 5-5: Schedule display tool bar

View Deadheads opens up a Deadhead catalog summary:



Download downloads a zip file containing an Excel Deadhead catalog for the Dataset you chose in **Figure 5-2**. The **Update** button enables you to upload a Deadhead catalog. It is used to update the current Schedule after optimization or manual editing. See TBD for further information about the Deadhead catalogs.

Returning to the tool bar of **Figure 5-5**

The **View Trips** button opens a display of the Excel Trips list. See TBD for further information about the Trips list.

The **Import Schedule** button opens a standard Windows Open File dialog. See TBD for the content and formatting details for a Schedule for import.

The **New** button opens a new empty schedule and displays an empty Vehicle Gantt.

Context Menu Quick Summary

Table 5-1: Context Menu Summary

Menu Item	Function	Reference
Roster Datasets	Opens the Roster Datasets selection window ¹	
Datasets	Open the Datasets selection window	

¹This option is only available to customers using the Rostering module

Menu Item	Function	Reference
Deadhead Catalogs	Import, download and update Dead-head catalogs	
Support	Open Chat with an Optibus Professional Services engineer	

Chapter 6: OnSchedule™ Main Window

The OnSchedule™ main window is shown in **Figure 6-1** below:



Figure 6-1: OnSchedule™ Main window

The main window is divided into four panes:











- The top pane contains a tool bar of functions to set up and control the scheduling process
- The second pane contains key performance indicators (KPIs). It is updated dynamically as schedules are added and optimized.
- The large third pane contains the vehicle or driver Gantt charts. You can view them in turn.
- The bottom pane is a status bar

Top Pane Tool Bar

The top pane provides the management functions for the application:

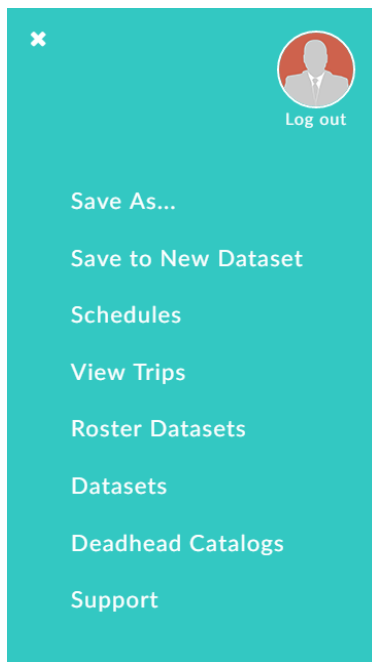


Table 6-1: Top pane tool bar

Icon	Purpose	Reference
	Opens up a pull-out context menu on the left with various save options	The Context Menu
	Returns you to the schedule Schedule selection window, one level back.	Choosing a Work Schedule
	Schedule updates	Schedule Updates
	Export schedules	Export Schedules
	Import schedules	Import Schedules
	Preferences	Setting Preferences
	Manual scheduling	Manual Scheduling
	Select a day within the current week	Select a Day Within Current Week
	Enter the vehicle scheduler (default)	Switch between Vehicle and Driver Gantt
	Enter the driver scheduler	

The Context Menu

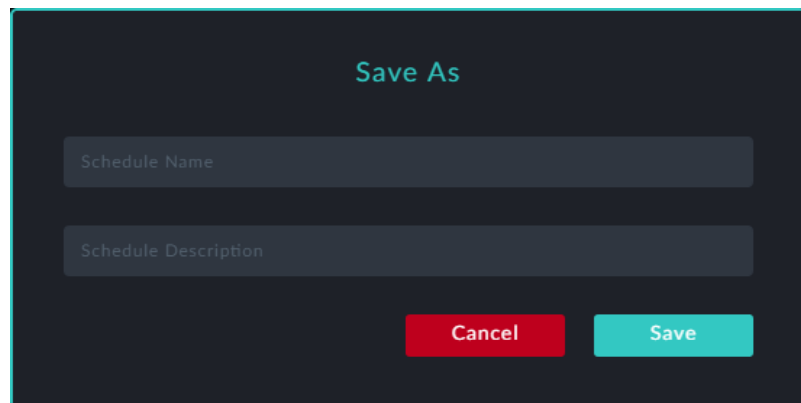
Using the Context Menu



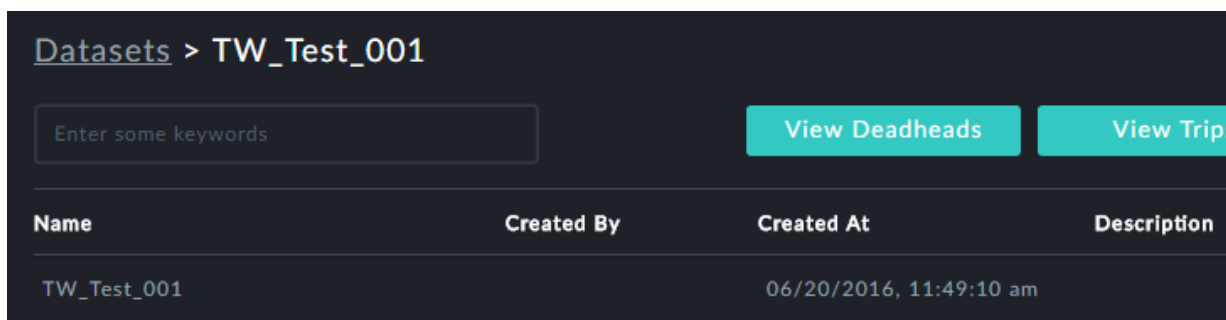
The context menu opens from the left. Clicking the small white x at the top left corner dismisses the menu. Clicking Log out logs you out of the system.

Datasets always drops you back to the Dataset display from where ever you are. **Support** opens a Chat with an Optibus Professional Services Engineer.

Save As ... opens the follows window:

A dark-themed 'Save As' dialog window is shown. It has a title bar with the text 'Save As' in teal. Below the title bar are two text input fields: 'Schedule Name' and 'Schedule Description'. At the bottom right are two buttons: a red 'Cancel' button and a teal 'Save' button.

It creates a new copy of the current open Schedule with the entered schedule name. For example, our case has one Schedule:

A screenshot of the 'Datasets > TW_Test_001' page. At the top, there is a teal breadcrumb 'Datasets > TW_Test_001'. Below it is a search bar with the placeholder text 'Enter some keywords'. To the right of the search bar are two teal buttons: 'View Deadheads' and 'View Trips'. Below these is a table with the following data:

Name	Created By	Created At	Description
TW_Test_001		06/20/2016, 11:49:10 am	

If we enter a schedule name and description, **TW_Test_001_1** and **Version 1** respectively, the saved schedule opens. The previous display becomes:

[Datasets](#) > TW_Test_001

Enter some keywords View Deadheads View Trips

Name	Created By	Created At	Description
TW_Test_001_1	dilogsys@inter.ne...	07/07/2016, 2:10:12 pm	Version 1
TW_Test_001		06/20/2016, 11:49:10 am	

You can always see the Schedules of the current Dataset by using the **Schedules** option.

Save as ... should be distinguished from the **Save to a New Dataset** option:

Save to a New Dataset opens a similar window to **Save As ...** :

Save To New DataSet

Dataset Name

Dataset Description

Cancel Save

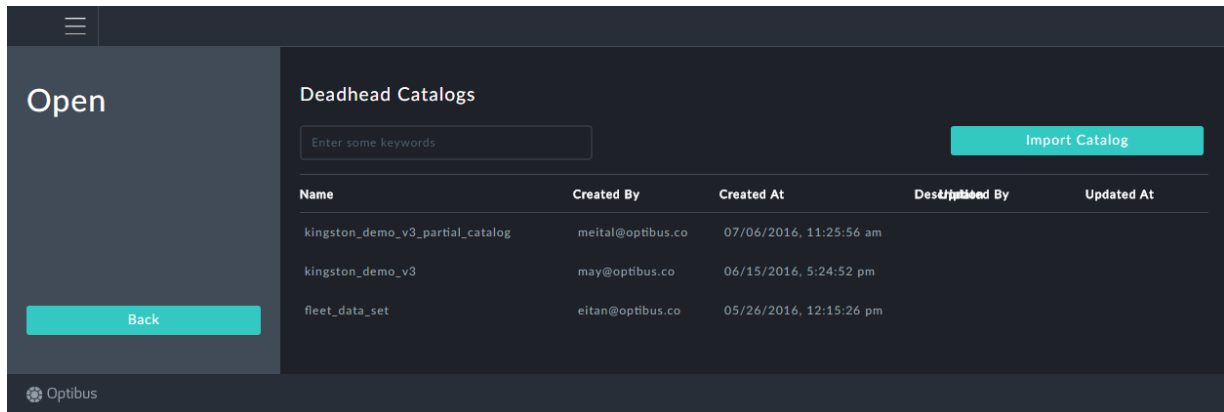
It creates a completely new Dataset, which you will see if you revert to the Datasets window. It adds your current open schedule.

The **Schedules** button takes you back to the Schedules display, [Choosing a Schedule](#)

The **View Trips** button opens a display of the Excel Trips catalog. See TBD for further information about the Trips catalog.

The **Roster Datasets** are an optional feature. If available, the button opens up a list of available roster Datasets. See [Roster Datasets](#).

The **Deadhead Catalogs** button opens a list of Deadhead catalogs for all of the available Datasets:



Choosing any one of them opens up a Deadhead summary in the same manner as we saw in [View Deadheads](#).

Context Menu Quick Summary



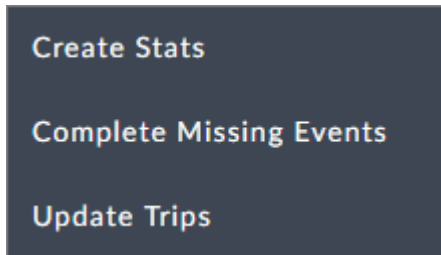
Note: Any import choice you make or any new item that you create when a Schedule is loaded, is based on user preferences.

Table 6-1: Context Menu Summary

Menu Item	Function	Reference
Save As ...	Save open Schedule with a new name	
Save to New Dataset	Creates a new Dataset and saves the open Schedule to it	
Schedules	Open the Schedules selection window	
View Trips	View Trips Excel file	
Roster Datasets	Opens the Roster Datasets selection window	
Datasets	Open the Datasets selection window	
Deadhead Catalogs	Import, download and update Dead-head catalogs	
Support	Open Chat with an Optibus Professional Services engineer	

Schedule Updates

This button opens a sub-menu of its own:

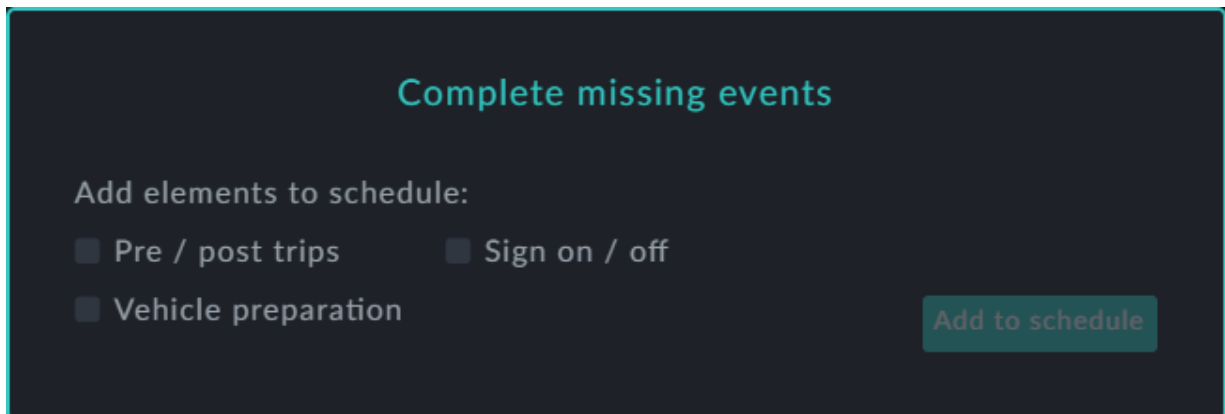


Create Stats

TBD - example before and after.

Complete Missing Events

This item opens up a choice dialog:



Check the elements required. If missing, they are auto-generated and added to the open schedule.

TBD - example before and after.

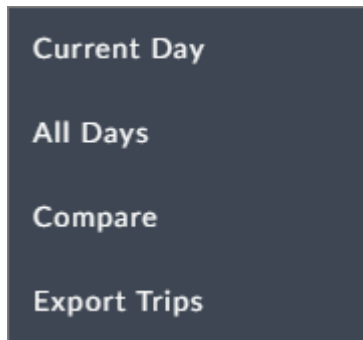
Update Trips

This item opens a standard Windows Open File dialog. (See TBD for the content and formatting details for a Trips catalog.) It applies the update to the open schedule.

TBD - example before and after.

Export Schedules

This button opens a sub-menu of its own:



Current Day

This downloads the current day schedule to a zip file.

TBD - Same format as Export?

All Days

This downloads the current week schedule to a zip file.

TBD - Same format as Export?

Compare

The Compare feature provides an extensive comparison between the currently open Schedule and any other of your choice.

TBD - Need a session!

Export Trips

A single trips Excel file is generated. It contains three pages, Trips, Places and Stops in the same format as the Operator's trip file required to create the Vehicles Gantt. See TBD for further details about the trips file.

Import Schedules

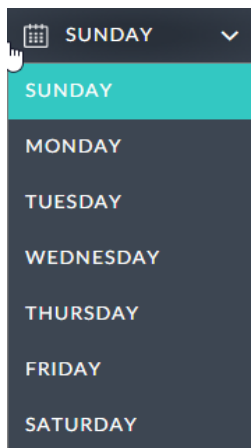
This button open a standard Windows Open File dialog.

TBD - What happens next?

Manual Scheduling

TBD - Requires a session!

Select a Day Within Current Week



This drops down a day of week choice menu. Selecting a day will load its Schedule. If there is no Schedule defined for the day, an empty Schedule will open showing an empty Vehicle Gantt.

Optimization Tool Bar

The tool bar above the vehicle and driver Gantts is used for optimization and saving results:



Following any editing change or optimization run, the tool bar changes to this:

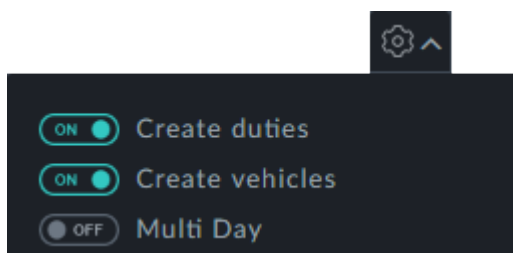


The **Save** button applies your changes or the optimization to the Schedule. The **Discard** button throws them away.

The **Filter** buttonTBD

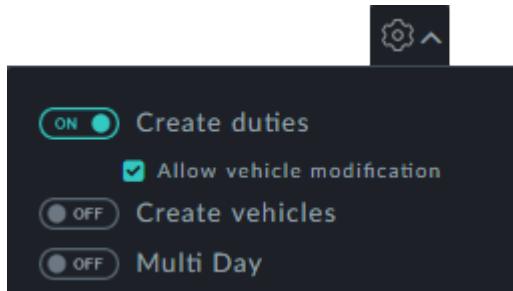
The **Optimize** button initiates an optimization run for the Schedule. The processing time depends on the size of the schedule but is generally of the order of minutes.

The  button opens a drop-down choice list associated with the Optimize button:






By default, the optimization will use the two checked items. If your schedule has more than one day in it, then switch on Multi day to optimize them all. See TBD about multi day and full week optimization.

Under certain circumstances it is appropriate to optimize in two stages: First, to create the vehicle schedule, and then to create the duties (driver schedule). In this case, you will see this:




The duties schedule can be created with or without modifying the vehicle schedule. The difference between the two can be substantial as can be seen on the Vehicle Gantt in either case. A detailed discussion of the optimization process is covered in [Optimizing a Schedule](#).

Click the  button to dismiss the menu.

The  button expands the Gantt area over the KPI area. It changes form to the  collapse button, which reverts to the normal part KPI and Gantt view.

The Key Performance indicators (KPI) Window

KPI Window Overview

In the main window (**Figure 6-1**), click the expand icon, . The full KPI area opens:

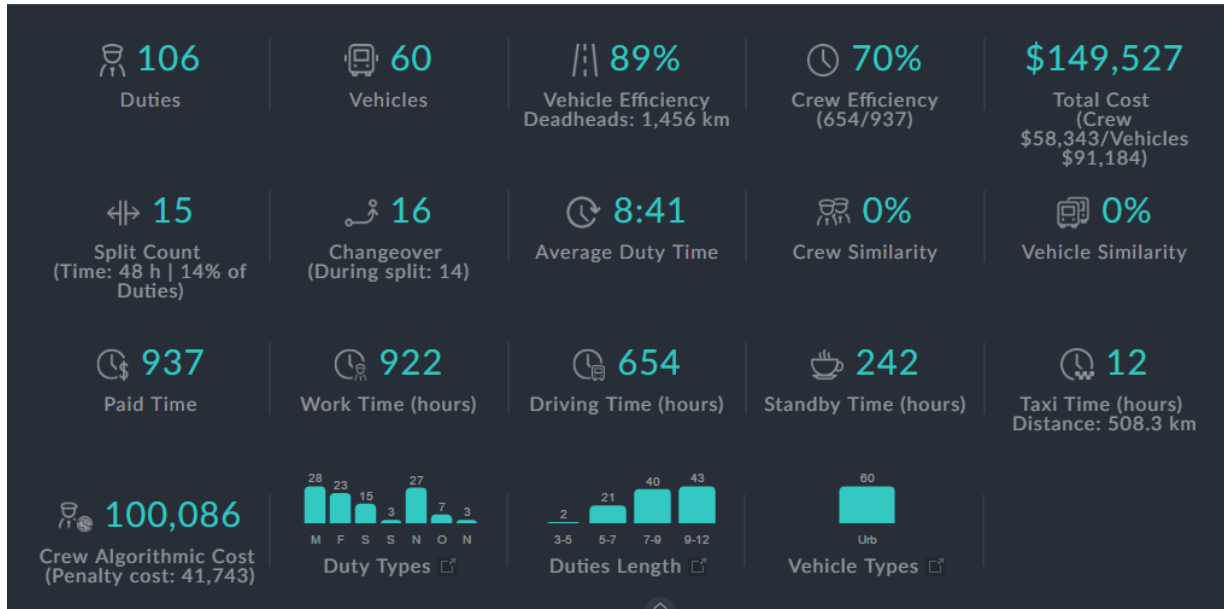


Figure 6-2: The KPI window

Clicking the  icon at the bottom of the window, reverts it.

These indicators provide a projected performance summary for the schedule. It will of course change under manual editing and optimization.

Indicator Details

Table 6-1: KPI details



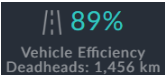
Item #	Indicator	Description
1.		Total number of driver duties
2.		Total number of vehicles
3.		Vehicle efficiency: Ratio of total service trip distance to aggregate traveled distance for the day. The difference is the deadhead distance shown on the last line. The latter distance also includes Pull ins and Pull outs.

Table 6-1: KPI details















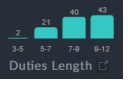
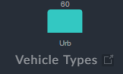
Item #	Indicator	Description
4.	 70% Crew Efficiency (654/937)	Crew efficiency: Ratio of driving time (item 13) to paid time (item 10).
5.	 \$149,527 Total Cost (Crew \$58,343/Vehicles \$91,184)	Total cost for the day: Crew cost + vehicle costs (based on running cost and an overhead contribution. See TBD.)
6.	 15 Split Count (Time: 48 h 14% of Duties)	This item shows the number of split duties, split time and the ratio of the number of split duties to the total number of duties
7.	 16 Changeover (During split: 14)	Total number of driver changeovers and the total number of driver changeovers during a split
8.	 8:41 Average Duty Time	Average driver duty time: Total work time (item 12) divided by the number of duties (item 1) in hours:minutes
9.	 0% Crew Similarity	Crew similarity: A measure of similarity between the current changed duties schedule to the previous one. See Preferences TBD.
10.	 0% Vehicle Similarity	Vehicle similarity: A measure of similarity between the current changed vehicles schedule to the previous one. See Preferences TBD.
11.	 937 Paid Time	Paid time consists of components defined by the Operator. It typically includes driving time and paid breaks and other paid elements.
12.	 922 Work Time (hours)	Actual work time usually consists of paid time and unpaid elements but not including split time.
13.	 654 Driving Time (hours)	Driving time consists of all driving events, such as service trips, deadheads, pull ins and pull out.
14.	 242 Standby Time (hours)	Standby time consists of any time not occupied by an element in the Driver Gantt. (Split time is not included.)
15.	 12 Taxi Time (hours) Distance: 508.3 km	Taxi time and distance. Recall that When a driver completes a trip, he may be required to go to a different location for his next trip or even to take a break. To get there, he may require transport such as a taxi , a shuttle or perhaps walk.

Table 6-1: KPI details

Item #	Indicator	Description
16.	 100,086 Crew Algorithmic Cost (Penalty cost: 41,743)	This is a hypothetical costing using theoretical "penalties" associated with Preferences. It provides an expert planner with a tool for assessing his choices.
17.		Distribution of driver duties by duty type. See Figure 6-3 below.
18.		Distribution of driver duties by duty paid time. See Figure 6-4 below.
19.		Distribution of driver duties across vehicle type. See Figure 6-5 below.

Driver Duty Histograms

The last three items in **Table 6-1** above expand into histograms. To see them, click the appropriate item in **Figure 6-2**.



Note: You can move between the histograms by clicking the < and > buttons on the sides of the displays.

The following three examples are drawn from several unrelated Datasets, purely for illustrative purposes:

Distribution of Driver Duties by Duty Type

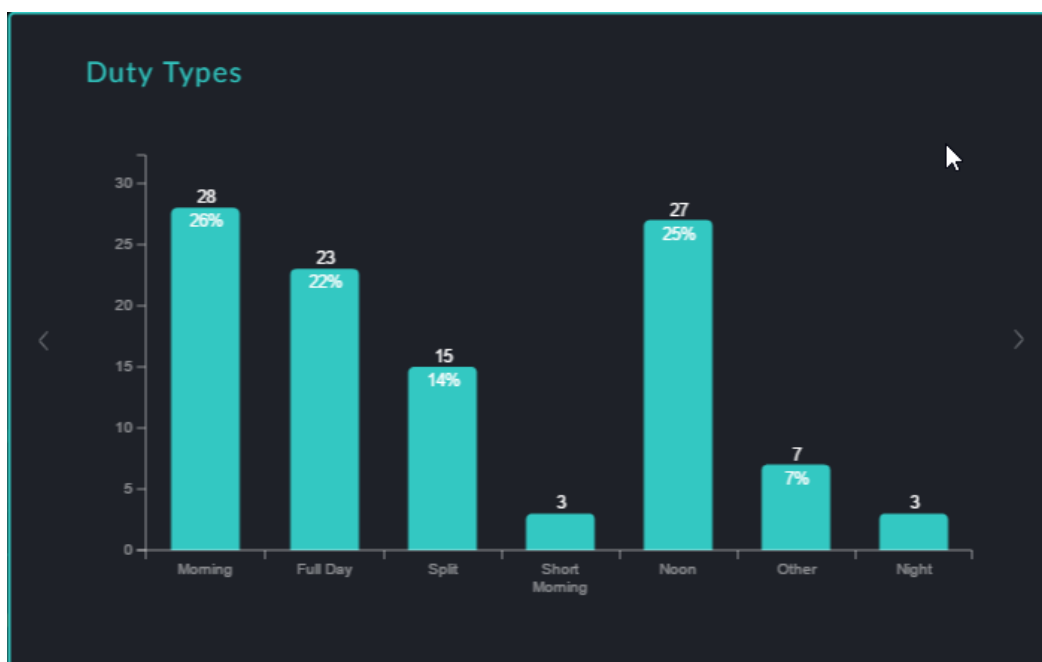


Figure 6-3: Duty by Duty Type

Recall that the Duty Type is defined by the Operator. The chart shown the number of duties and the percentage of duties per Duty Type.

Distribution of Driver Duties by Duty Paid Time

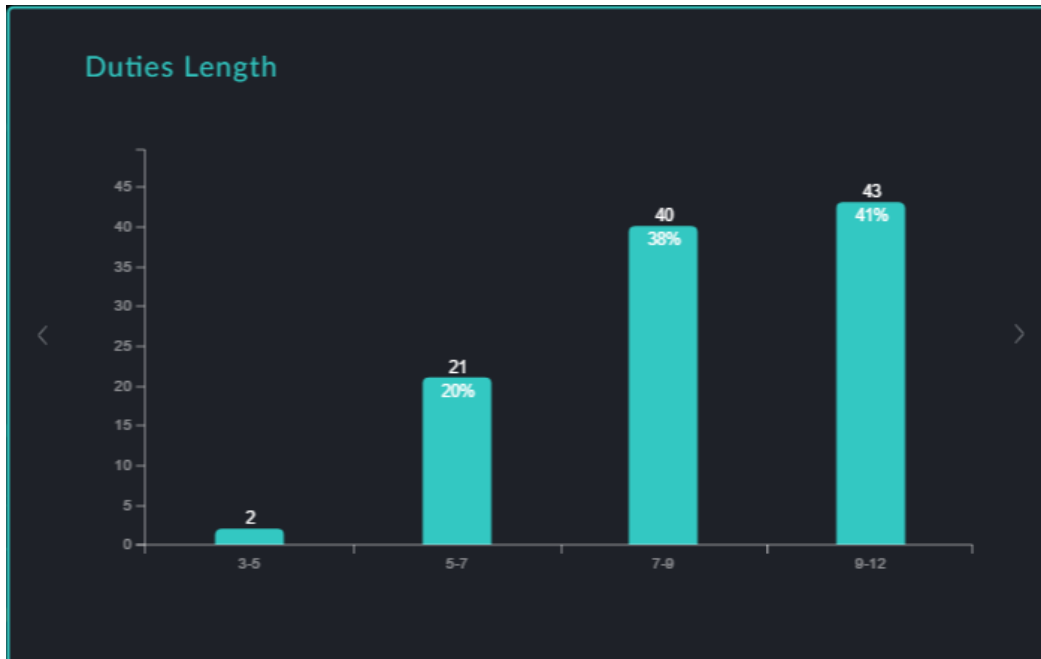


Figure 6-4: Duty by Duty Paid Time

The duty paid time intervals for this histogram are grouped by the Operator. Again, the number of duties in each interval and the percentage are shown.

Distribution of Driver Duties Across Vehicle Type

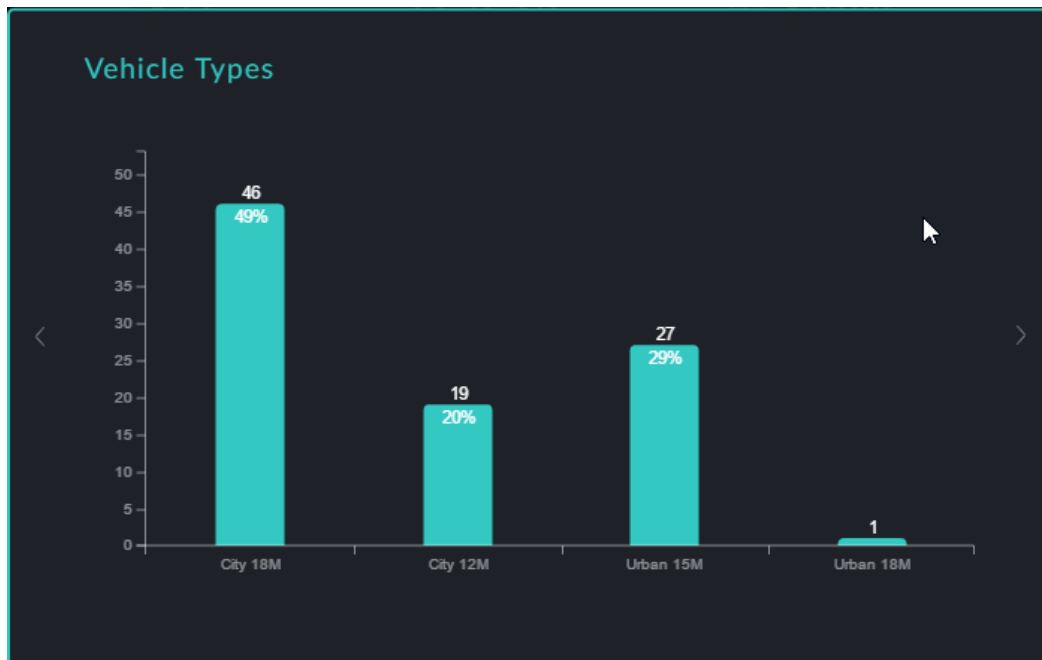


Figure 6-5: Duty by Vehicle Type


The number of vehicles and the vehicle percentages are shown by vehicle type. Vehicle types are defined by the Operator.

Vehicle Gantt

Vehicle Gantt Overview

The Vehicle Gantt is opened by default. You can always return to it from the Driver Gantt by clicking the vehicle icon in the Options tool bar.



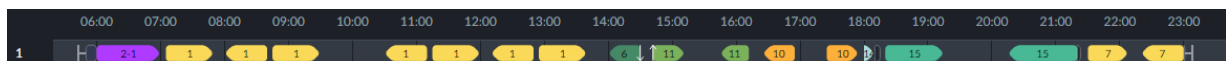
Note: If you need more space on your screen, you can hide the KPI by clicking the  button. To restore the KPI, just click it again.

The window contains a vast amount of detail, but nevertheless, it is very easy to follow. For example:

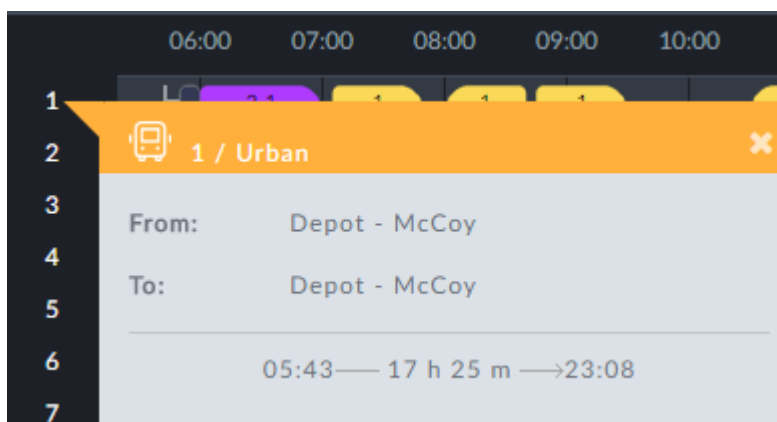


Figure 6-6: A typical Vehicle Gantt

Each numbered row on the Gantt shows the day's itinerary of one vehicle. Take for example, row 1:



First, you can see a quick row overview by left-clicking the row number:



The start and end times relate to the day's work for the vehicle. The duration is also displayed.

Let us return to the Gantt itself:

The graphic shapes are called **elements**.

Each colored bullet shaped element represents a **service trip**.

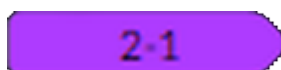
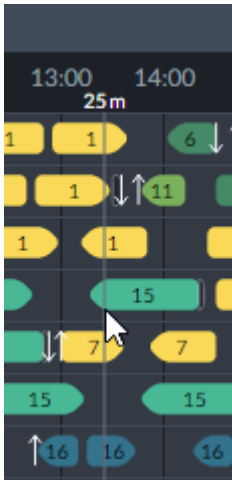


Figure 6-7: Service trip element



Note: A service trip is a revenue-earning vehicle journey.



The number is the route **sign**. In the left hand example , the route as seen by a passenger, is 2-1. The difference between a simple number and a hyphenated number such as 2-1 will be explained shortly. Looking at the Gantt, It's **row number** is the **vehicle ID**. The position of the left end of the element is the time of the beginning of the trip and the position of right end is the time of completion. You can see the times precisely by moving the mouse horizontally along the row. A vertical cursor line indicates the time. Observe the vertical cursor line at 13:25 at the mouse position.



Note: The service trip coloring is determined by the system to make the display easy to understand. **Each sign has its own color.**

From the transport operator's perspective, a route has three parameters. Referring to **Figure 6-7** above, they are:

- A sign defining the service trip terminus points - in the example it is 2
- A direction - at which terminus the trip starts and which terminus the trip finishes determines the direction on the Gantt of the bullet shape
- An alternate number indicating a route variant. A route variant for example may add or skip stops in the base route. In the example it is 1 and the passenger sees 2-1 as shown.

Further information may be obtained by left-clicking an element. Let us take another example, left-clicking the third service trip element in row 1. An information box pops up:

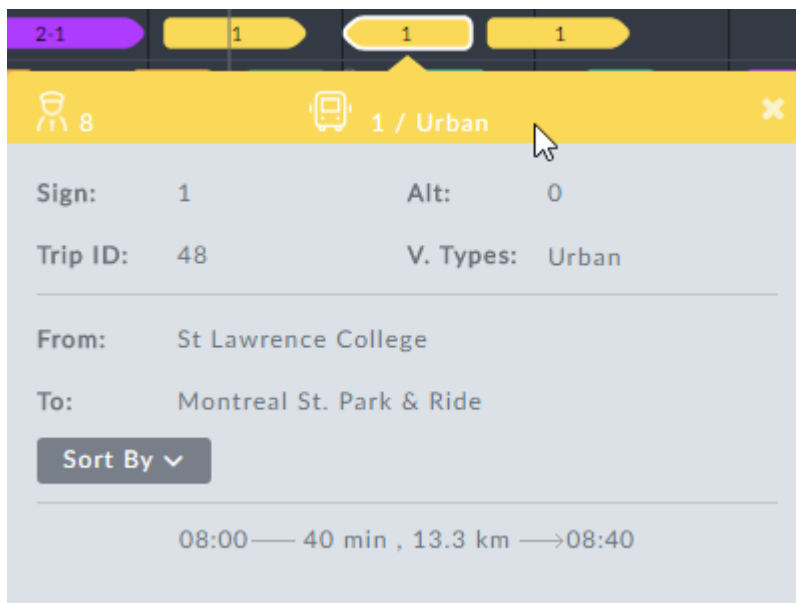


Figure 6-8: Element information box

Notice the **From: ... To: ...** locations. If you left click-the fourth item following, you will see that the **From: ... To: ...** locations are reversed - the vehicle is scheduled for a return trip.



Note: Left-clicking any active element in the display will open an information box describing it in detail. In most cases, the chosen element has a white border as seen in **Figure 6-8**.

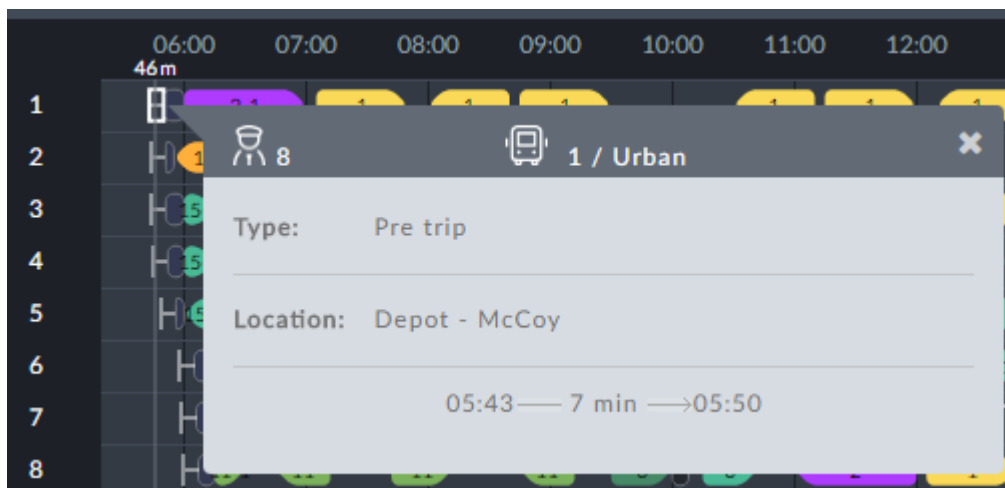
We will return to the information box in detail below.




Note: Sometimes a trip icon may be an oblong shape instead of a bullet shape. It indicates a round-trip that starts and finishes at the same terminus.

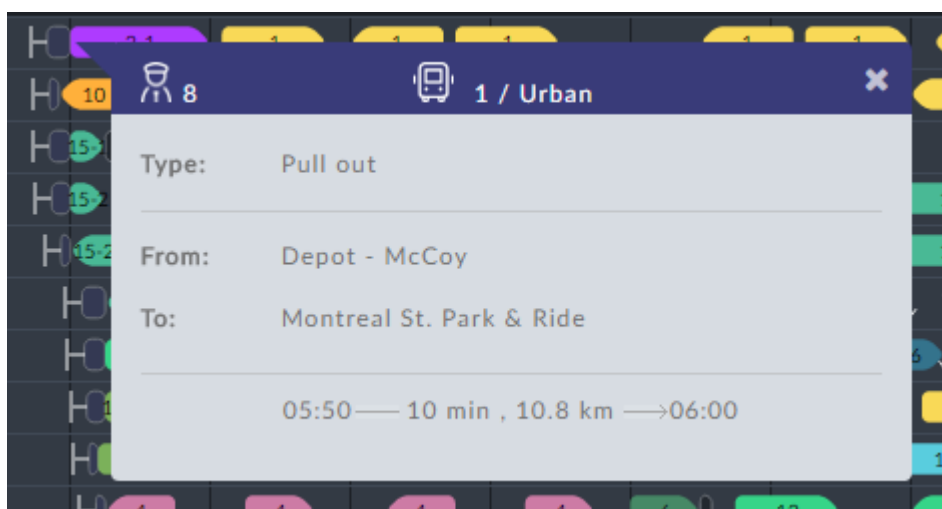
To complete your understanding of the example, we will look at several other elements appearing on row 1.

The row commences with the symbol . Left clicking it opens an information box:



The  symbol represents pre-trip activity. It may also show as **Vehicle Preparation**. This is an Operator choice.


The next graphic element looks like this:  Left clicking it shows a **Pull out** information box:

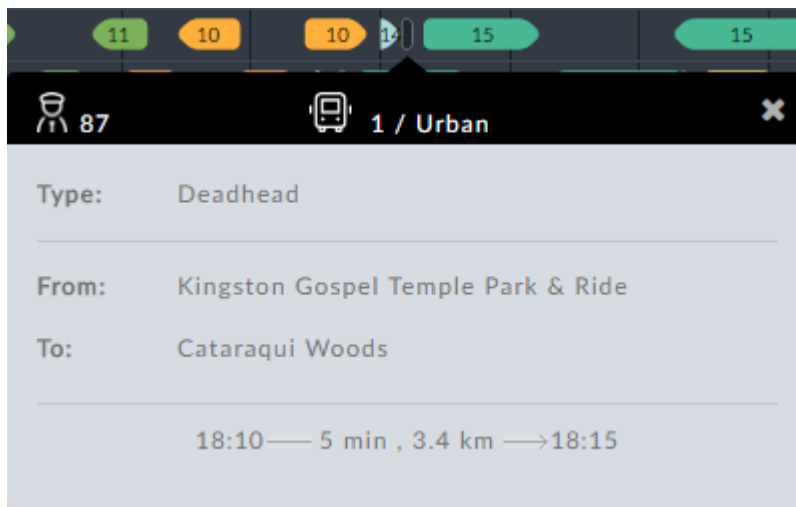


The length of the Pull out graphic reflects the time required. The same graphic at the end of a trip or at the end of a day denotes a **Pull in**.



Note: Pull out and Pull in: Moving a vehicle from a depot to the first stop of a service trip is called a Pull out. What is considered to be a "Depot" here, is determined by the Operator. In the opposite direction, a Pull in is moving a vehicle from the last terminus of a service trip back to the depot.

Once again, on the top row at about 18:13, there is a similar graphic with a black background, . Left-clicking it shows **Deadhead** information:




Again, the length of the graphic reflects the time required for the deadhead trip.

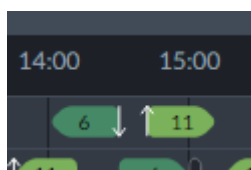


Note: A deadhead is any non-revenue earning vehicle movement other than pull out and pull in.




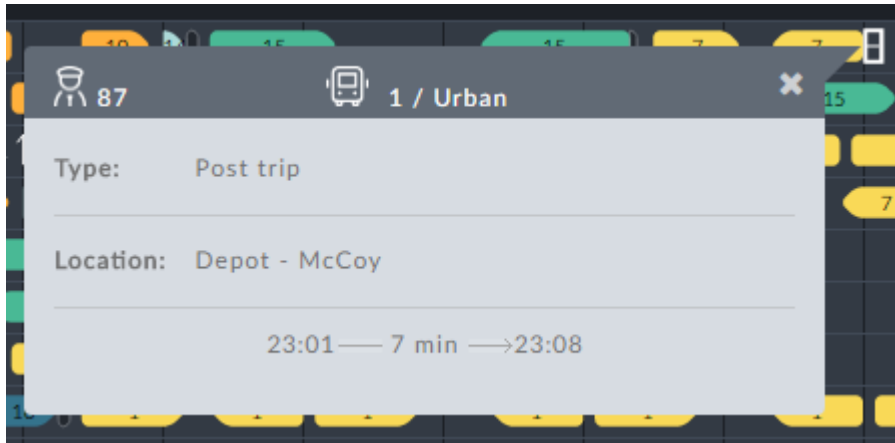
Note: Deadhead, pull out or pull in icons with a white dot in the center, for example like this,  are auto-generated by the system. You can edit them in your Deadhead Catalog (see TBD).

Look now, at the period between 14:00 and 15:15:



The down arrow to the right of sign 6 indicates that the driver has left the vehicle (for example going off-duty or taking a break). The up arrow following indicates that a **different** driver has taken the vehicle.

Finally, at the end of row 1 is a post-trip symbol, . Left clicking it, displays post-trip activity:



The Vehicle Gantt in Detail

In this section we look at the information boxes in detail.



Note: The Vehicle Gantt information boxes become active data entry panels during Manual Vehicle-only Scheduling. See TBD.



Note: An open information box may be dismissed in three ways:

- Clicking the x in the top right corner of the box
- Opening another box
- Clicking an unused area on the display

Workday Overview for a Vehicle

Left-clicking a row number pops up a work day overview for the vehicle:

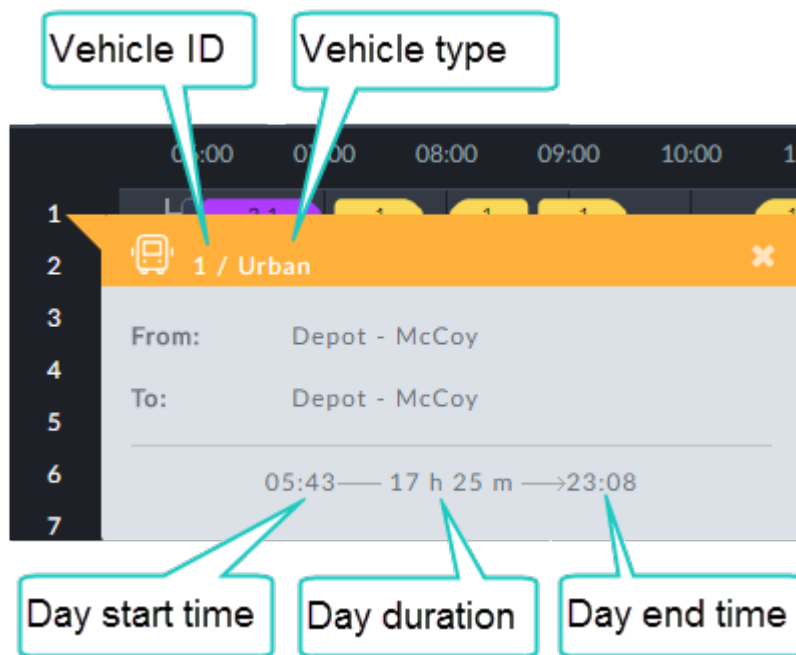
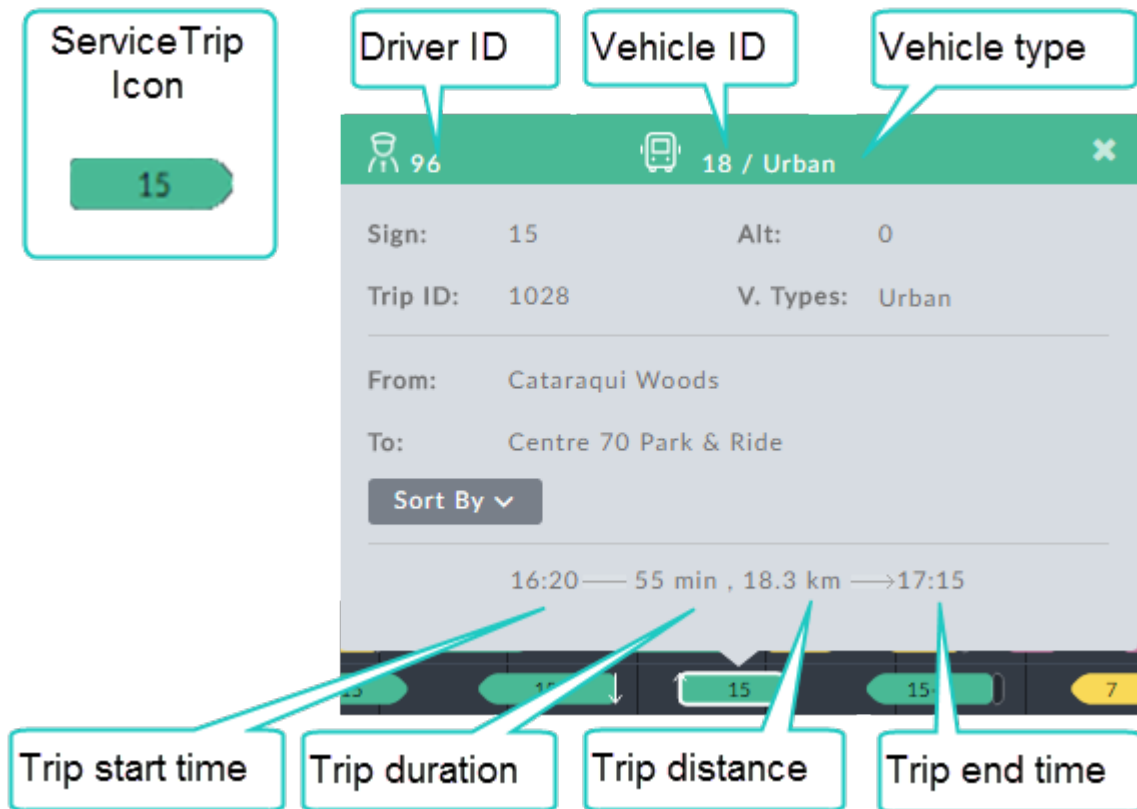


Table 6-1: Row overview information box

Information Box Item	Description
From:	Start location at the beginning of the work day
To:	The final location of the vehicle at the end of the work day

Service trip



The remaining items inside the gray area are described in **Table 6-2** below:

Table 6-2: Service trip information box

Information Box Item	Description
Sign	Route number as seen by the passengers
Alt	Alternative route: Used for route variations. A variation for example, may skip or add some stops. An Alt is one of the following: 0 or # - indicates the base route Anything else indicates an alternate route
Trip ID	Operator's trip ID. Every trip has its own unique ID
V. Types	Eligible vehicle types for this trip. Several types may be displayed.
From:	Service trip origin

Information Box Item	Description
To:	Service trip destination
Sorted by	See section Sorting the Vehicle Gantt below.



Note: *About direction:* The Operator distinguishes route direction for a service trip using the **From:/To:** fields. Visually, they determine the direction of the bullet shape on the Gantt. To show the opposite direction, you swap the **From:/To:** locations and the resulting bullet shape points in the opposite direction.

Deadhead

Deadhead Icon

Driver ID

Vehicle ID

Vehicle type

Type: Deadhead

From: Kingston Gospel Temple Park & Ride

To: Cataraqui Woods

Trip start time

Trip duration

Trip distance

Trip end time

Table 6-3: Deadhead information box

Information Box Item	Description
Type	Information box type - Deadhead
From:	Deadhead start - typically the end point of a service trip
To:	Deadhead end - typically the start point of a service trip

Pull out

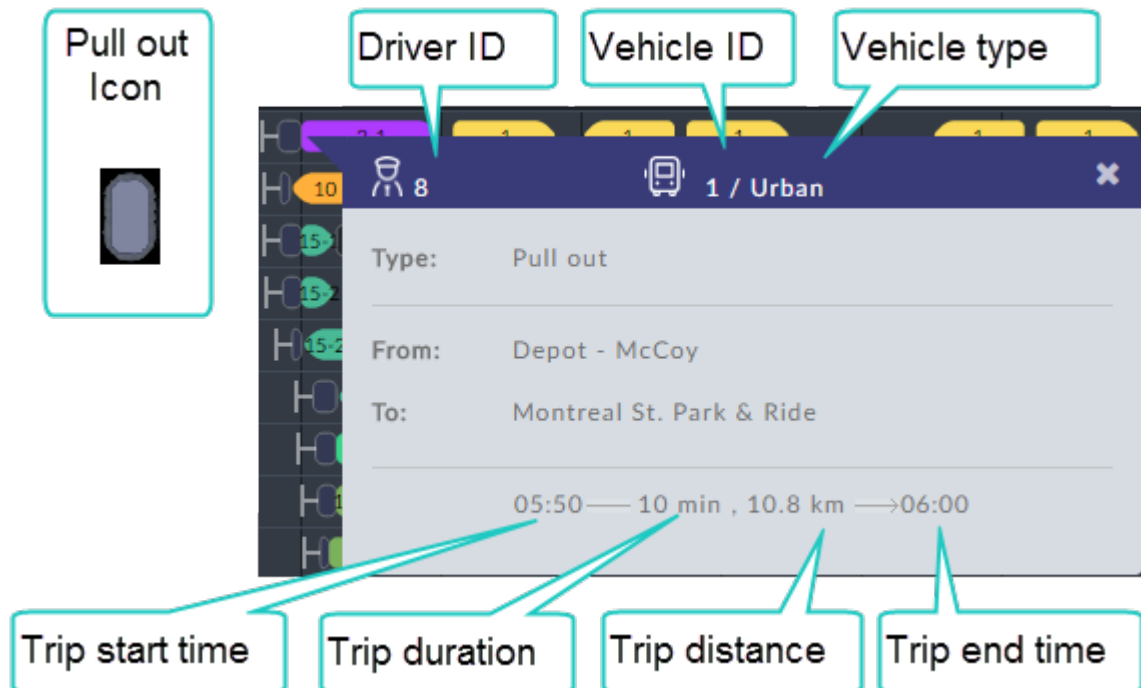


Table 6-4: Pull out information box

Information Box Item	Description
Type	Information box type - Pull out
From:	Pull out location - typically a depot
To:	Origin of first service trip

Pull in

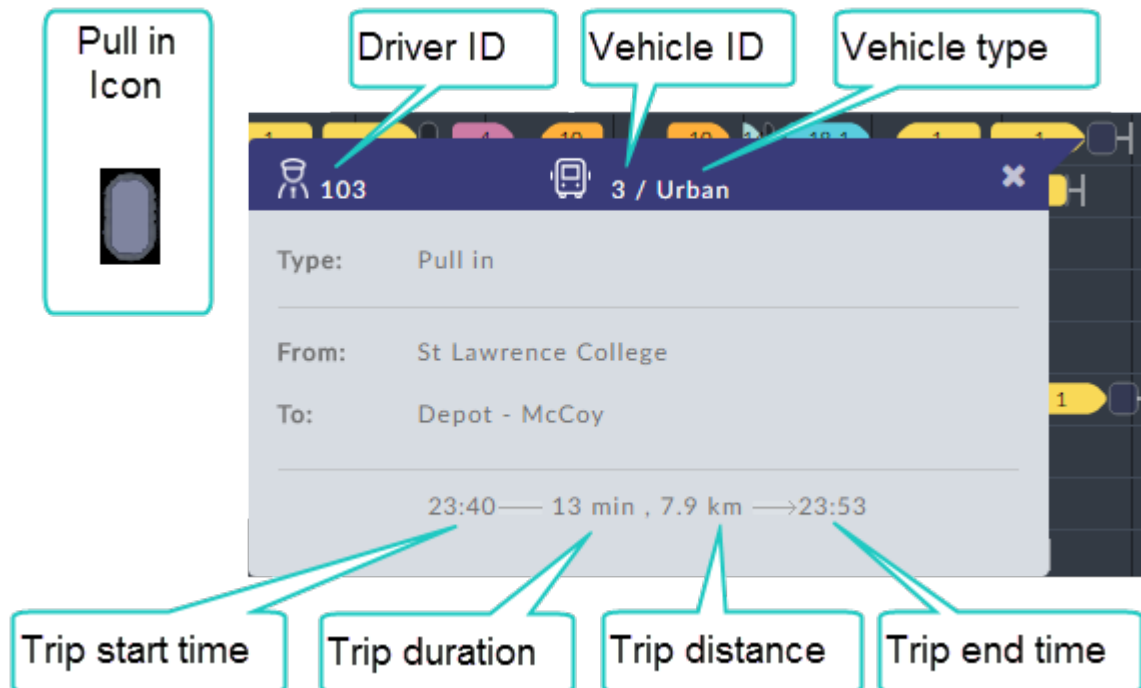


Table 6-5: Pull in information box

Information Box Item	Description
Type	Information box type - Pull in
From:	Pull in location - typically the end point of a service trip
To:	The final location of the vehicle at the end of the day, typically a depot.

Pre-trip

The Pre-trip element only appears at the beginning of a vehicle work day. It provides for all required vehicle preparation by the driver before he moves the vehicle.

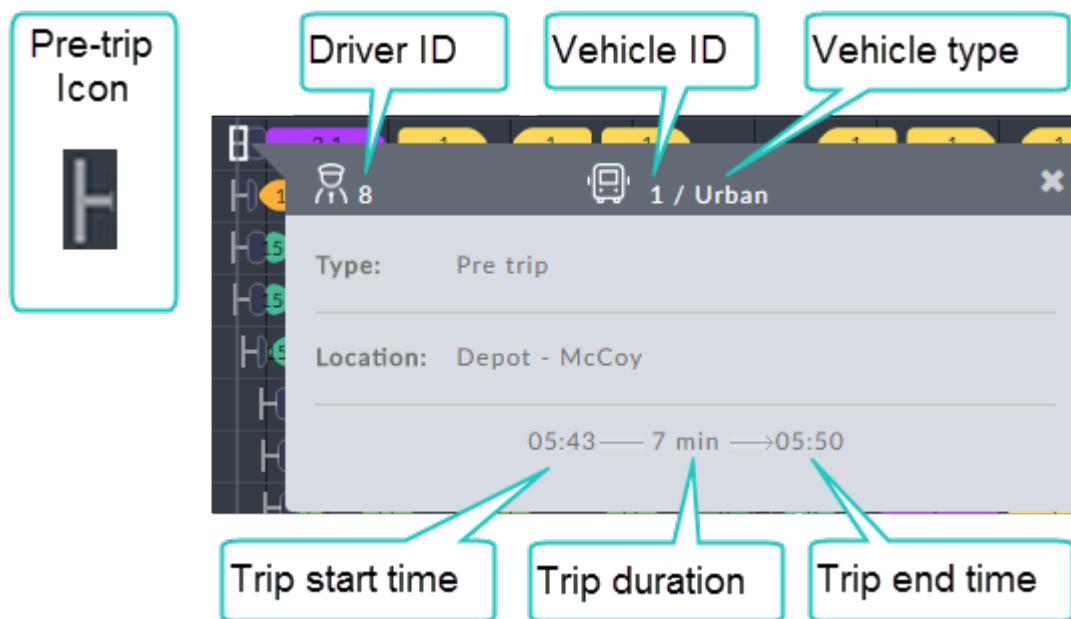


Table 6-6: Pre-trip information box

Information Box Item	Description
Type	Information box type - Pre trip
Location	Work day departure point, typically a depot

Post-trip

The Post-trip element appears at the end of a vehicle work day. It provides for all required vehicle activities by the driver after parking the vehicle and before going off-duty.

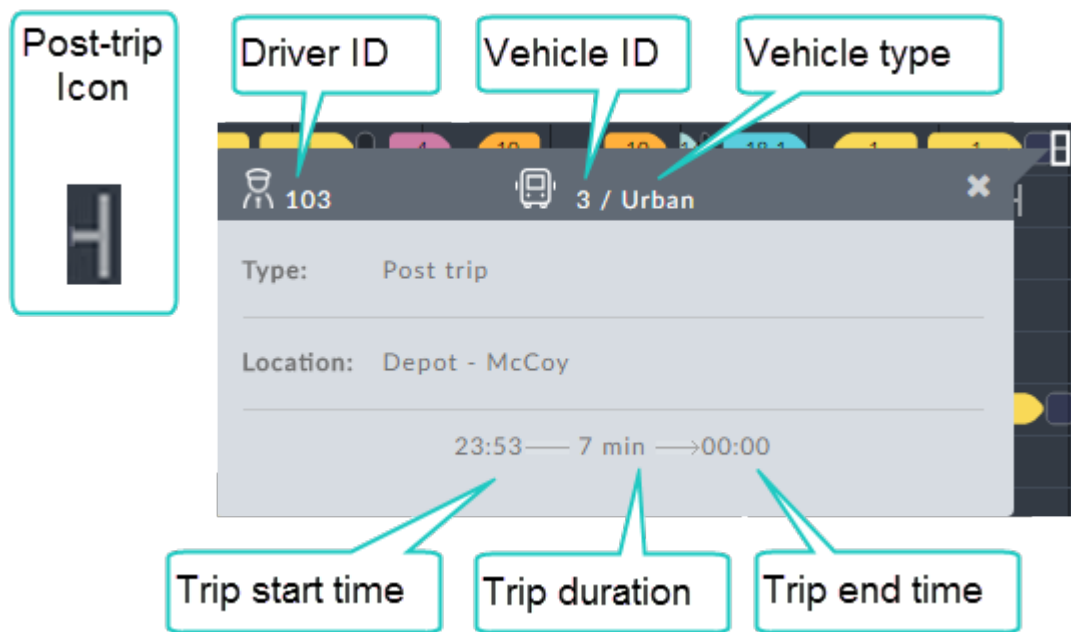
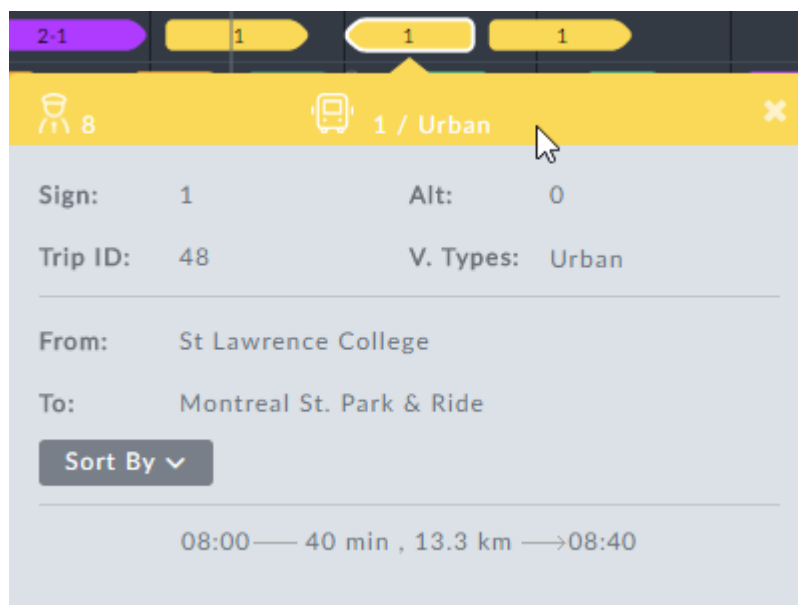


Table 6-7: Post-trip information box

Information Box Item	Description
Type	Information box type - Post trip
Location	Work day termination point, typically a depot

Sorting the Vehicle Gantt

Recall the service trip information box:



Clicking the **Sorted By** button opens the following pick list:

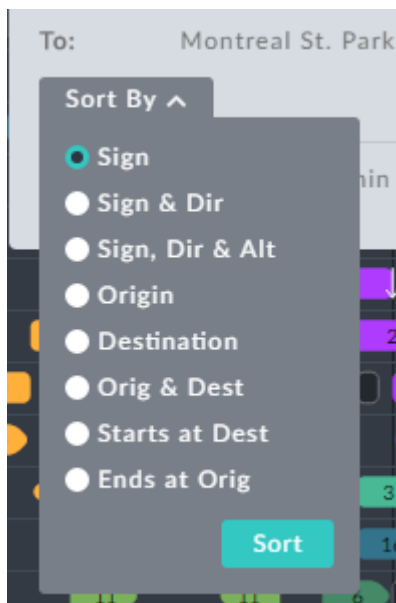


Figure 6-9: Display sort options

Explanation ...TBD

Driver Gantt

Driver Gantt Overview

Like the Vehicle Gantt, the Driver Gantt also contains a vast amount of information. We start with an example:



Figure 6-10: A typical Driver Gantt

For the Driver Gantt, the left hand numbering is for drivers. Thus, each numbered row on the Gantt shows the work day for one driver. otherwise the graphic elements are very

similar to those used in the Vehicle Gantt. The emphasis in this section will be on the element specific to the Driver Gantt or elements having a different meaning.


The following graphic elements are the same as those for the Vehicle Gantt:

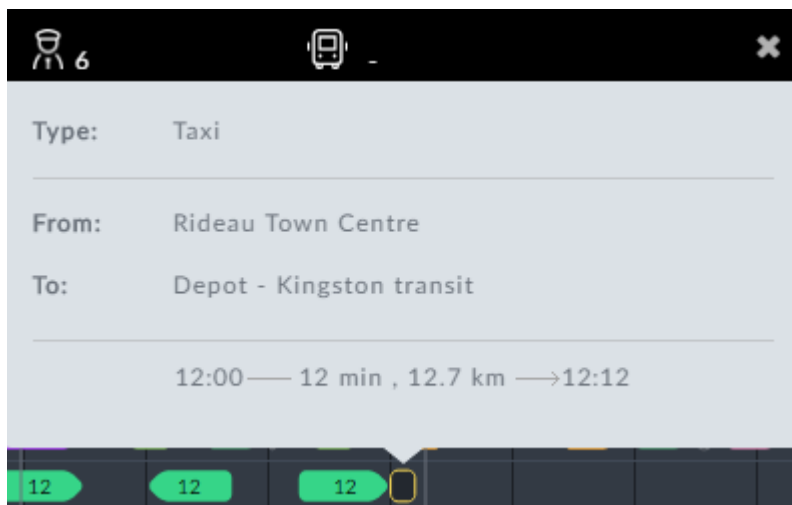
- Service trip
- Pre-trip and Post-trip
- Pull out and Pull in
- Deadhead

Up and down arrows have a different meaning in the Driver Gantt: Here they indicate a **vehicle changeover** for the same driver. The changeover may be separated by other events, as we will see below.

There are two additional elements:

When a driver completes a service trip, he may be required to leave his vehicle and then go to a different location for his next trip or even to take a break. To get there, he may require transport such as a taxi or a shuttle.

The **Taxi** icon  denotes the driver movement. It looks similar to a Deadhead icon but it has a thin yellow frame. Left clicking it opens its information box:



The box indicates that a taxi or a shuttle is required.



Note: The use or otherwise, of Taxi icons is determined in the Preferences. See TBD.

The second additional graphic describes a **Split**:

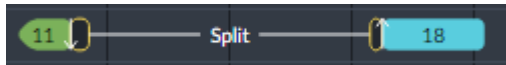


Figure 6-11: Split example



Note: The part of the driver's duty before a split is called his **first stretch** and the duty following the split, his **second stretch**.

To follow the narrative of **Figure 6-11**, we need to open the information box of each constituent element in order from left to right:

The image shows a detailed information box for a service trip, overlaid on a timeline. The box has a green header with a person icon and the number 60, a bus icon and the text "60 / Urban", and a close button (X). The main content area is light blue and contains the following information:

- Sign: 11
- Alt: 0
- Trip ID: 743
- V. Types: Urban
- From: Kingston Centre
- To: Cataraqui Centre
- Sort By (dropdown menu)
- 12:15 — 27 min , 9.0 km —> 12:42

The box is positioned over a timeline at the bottom of the screen. The timeline shows a sequence of yellow circles, each containing the number 1, followed by a green circle containing the number 11, a horizontal line labeled "Split", and finally a blue circle containing the number 18.

Figure 6-12: Last service trip of first stretch completed prior to split

The driver with ID as shown, has completed the service trip of **Figure 6-12**. In **Figure 6-11**, following the service trip element there is a down arrow. The driver has left the vehicle as first part of a changeover. The next element is a Taxi icon showing that the driver requires transport as shown in **Figure 6-13**:

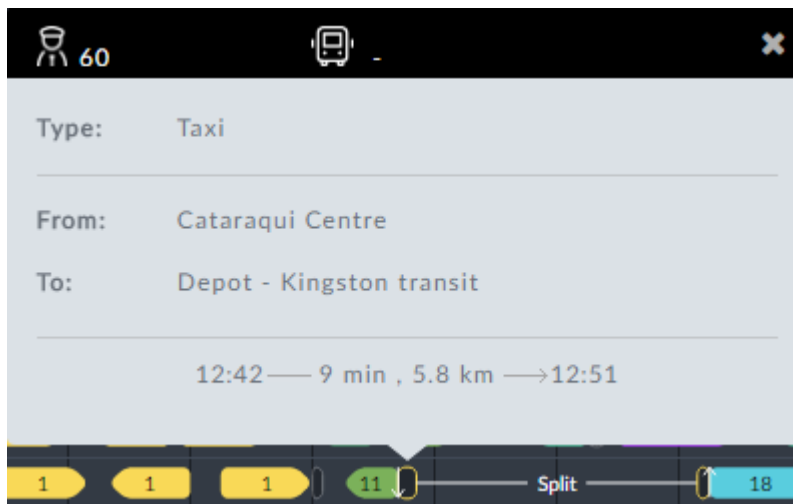


Figure 6-13: Taxi taken before split

Having arrived at the **To:** location, the driver goes off duty as shown in the split break. The driver's split break details are shown in the split break information box:

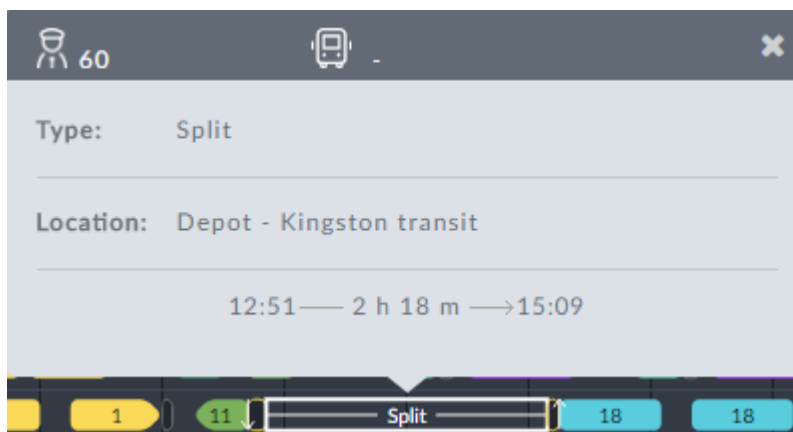


Figure 6-14: Split break information box

At the end of the break shown at the bottom of **Figure 6-14**, another Taxi icon is displayed indicating a requirement for transport to take the driver to his next duty trip. An up arrow shows the driver taking over the vehicle for the next service trip, the second part of his changeover. At this point, the procedure flow should be evident and we will not show all of the information boxes.

As for the Vehicle Gantt, each row number in the Driver Gantt has an information box. For drivers there is a difference. Left-clicking row 1 shows the following information box:

1
2 1 / Morning

3 From: Depot - Kingston transit

4 To: Depot - Kingston transit

5

6 05:32 — 8 h 33 m —> 14:05

7

8 No Splits

9

The only new item is the No Splits indicator, showing that the duty in the line above is continuous.



Note: The **Duty Type** shown is Operator defined.

If we left-click row 3, which has a split, the information box is different:

3
4 3 / Split

5 From: Depot - Kingston transit

6 To: Depot - Kingston transit

7

8 05:37 — 8 h —> 18:16

9

10 Split from: Depot - McCoy

11 Split to: Depot - McCoy

12

13 09:39 — 4 h 39 m —> 14:18

14

We have already encountered the contents of this box in the split narrative above: The driver comes on duty at the **From:** location and finishes his day at the **To:** location (often the same), starting and finishing as shown:

05:37 — 8 h —> 18:16

The worked hours shown in the middle are total worked hours less the split hours.

The lower **Split from: / Split to:** section shows the split break period only:

09:39 — 4 h 39 m —> 14:18

At this point, it is quite straight forward to follow the work day on the Driver Gantt for any driver.

The Driver Gantt in Detail

In this section we look at the driver specific information boxes in detail.

Workday Overview for a Driver

Left-clicking a row number pops up a work day overview for the driver:

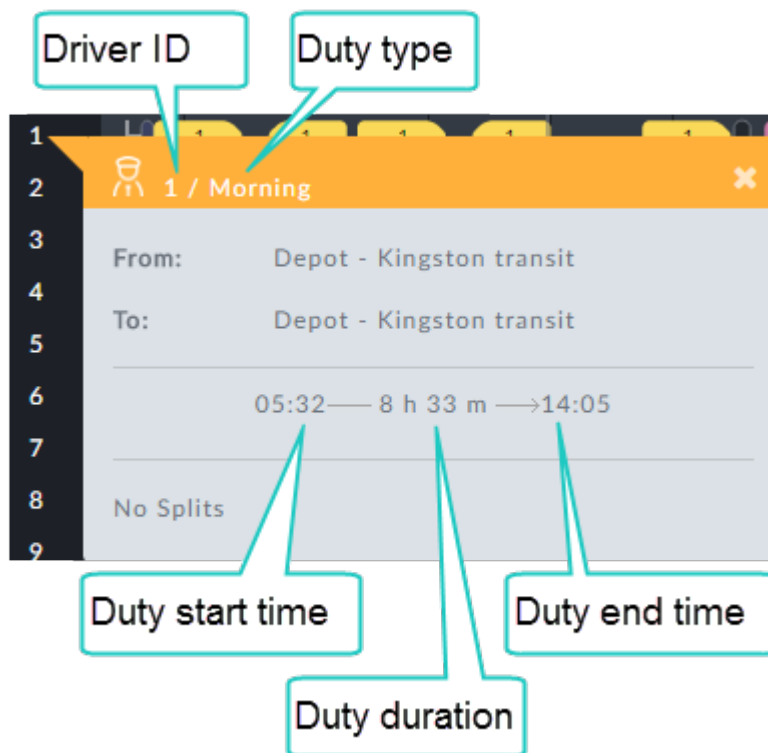


Figure 6-15: Workday Overview - no splits



Note: The **Duty Type** is Operator defined.

If the day's work is split by a rest period, the information box has extra details:

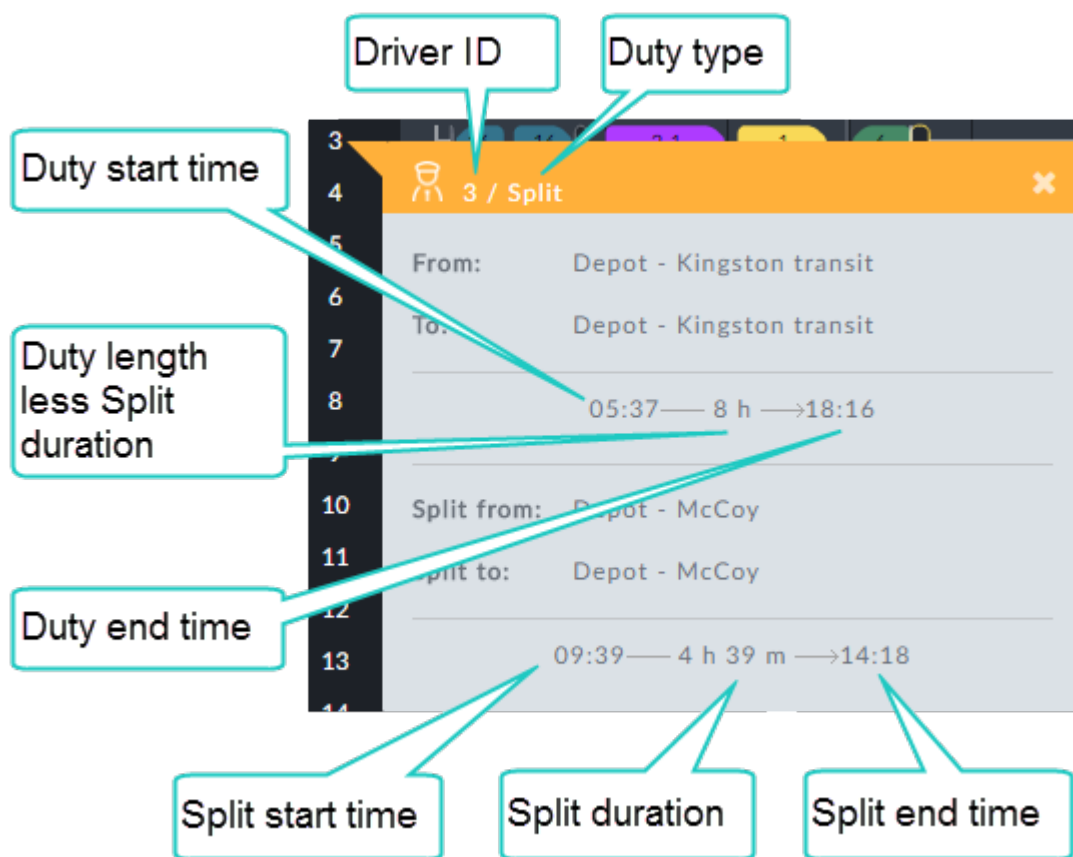


Figure 6-16: Split workday Overview

Table 6-1: Row overview information box

Information Box Item	Description
From:	Start location of the driver at the beginning of the work day
To:	The final location of the driver at the end of the work day
Split from:	Split start location
Split to:	Split end location

Split Information Box

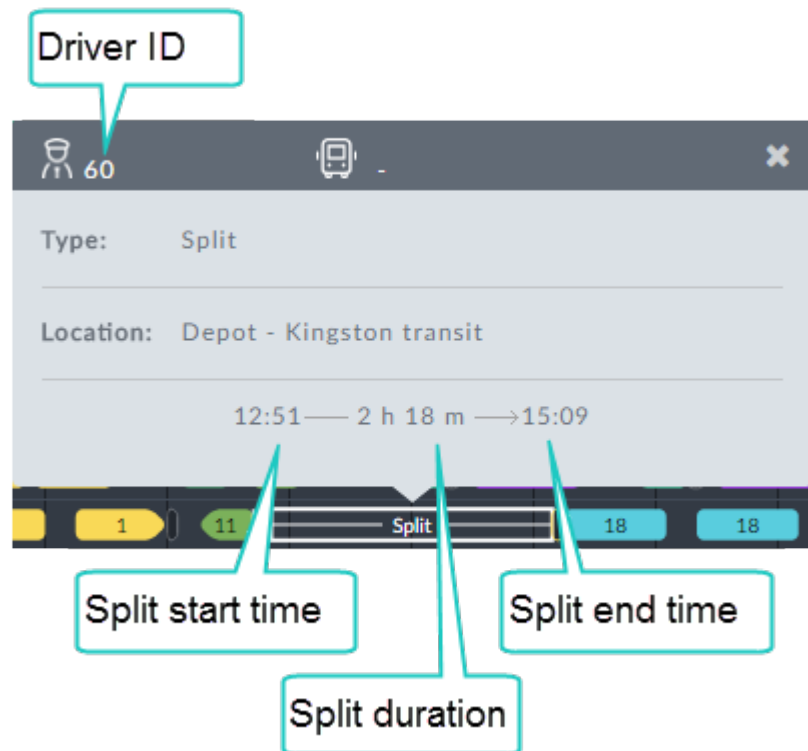


Table 6-2: Split information box

Information Box Item	Description
Type	Information box type
Location:	Split location - typically break location

Taxi

Recall that, when a driver completes a service trip, he may be required to leave his vehicle and then go to a different location for his next trip or even to take a break. To get there, he may require transport such as a taxi or a shuttle.

The taxi icon is used to represent this driver movement.

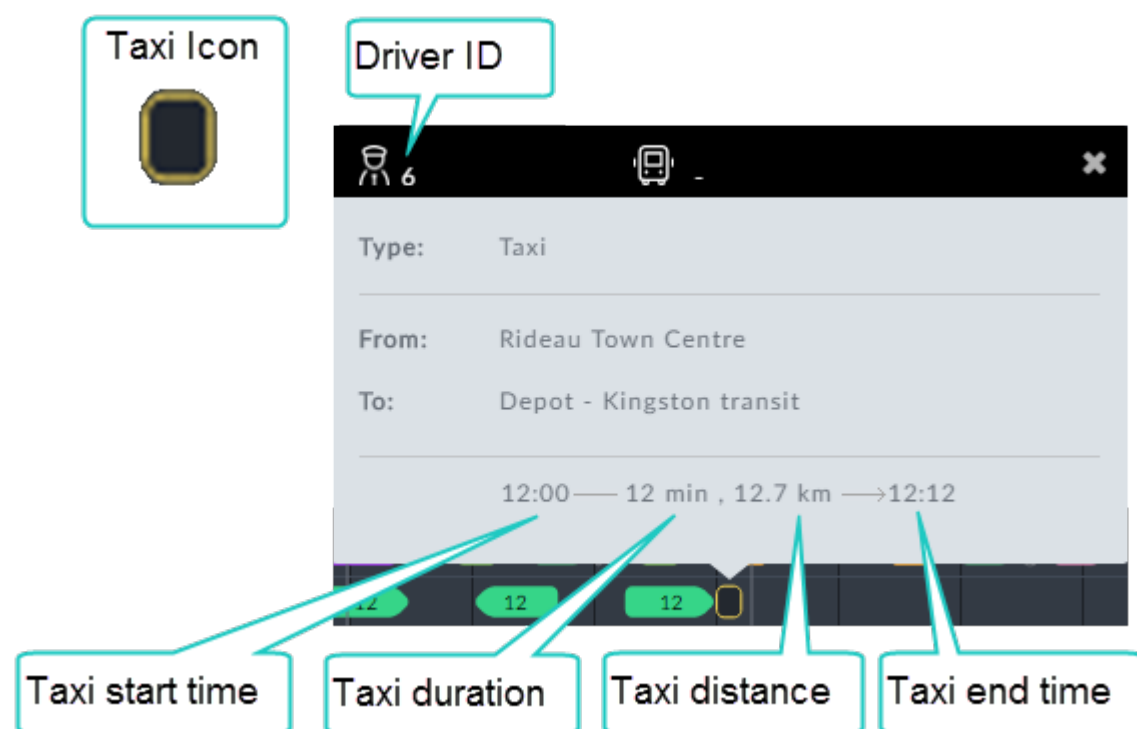


Table 6-3: Taxi information box

Information Box Item	Description
Type	Information box type -Taxi
From:	Taxi start location
To:	Taxi end location

Chapter 7: Preferences Window

Delete this text and replace it with your own content.

Vehicles

Delete this text and replace it with your own content.

Drivers

Delete this text and replace it with your own content.

Depots

Delete this text and replace it with your own content.

Miscellaneous Settings

Delete this text and replace it with your own content.

Chapter 8: Interactive Scheduling

Delete this text and replace it with your own content.

Chapter 9: Roster Datasets

Delete this text and replace it with your own content.

Chapter 10: Input Data Formats

Delete this text and replace it with your own content.

Chapter 11: Creating a Dataset and Schedule

Scope of this Chapter

There are several ways of importing files required to create a Dataset. Schedules may be imported or created using the Optimizer against an existing Dataset.

Importing a Dataset

Delete this text and replace it with your own content.

Importing a Schedule

Delete this text and replace it with your own content.

Creating a Schedule Using the Optimizer

Delete this text and replace it with your own content.

Glossary

C

Changeover

Driver changing vehicles between trips.

D

Dataset

Consists of the following catalogs:Trips, Stations, Vehicle Types, Deadheads,

Deadhead

Non-revenue earning trip

Duty

P

Post trip

Pre trip

Pull in

Trip from end point of a Service Trip to a Depot

Pull out

Trip from a Depot to start point of a Service Trip.

R

Revision

Saved schedules are stored with a revision number instead of simply being over-written.

Roster

TBD

S

Schedule

Inherits the parent Dataset catalogs and add Vehicle and Driver Gantt

Split

T

Trip

Movement of a vehicle ...

V

Vehicle

Index

Customer Response

Delete this text and replace it with your own content.

End Page

Delete this text and replace it with your own content.