MetroCount®
Traffic Data Specialists

Getting Started with Data Analysis

MTE User Manual

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Overview

MCReport is the data analysis component of MTE. The power of MCReport lies in the time-stamped raw data produced by MetroCount RSUs. MCReport takes the raw sensor-hit stream stored in MetroCount data files, also known as **datasets,** and interprets the data to produce almost any conceivable report.

This section introduces the process of generating a report using the **Report Wizard.**

New User Options

Starting MCReport

MCReport has a huge array of options relating to classification, binning and filtering of vehicles, and to the formatting of reports. Most options have generic default values, however the default units of measurement and default classification scheme are highly region-specific. MCReport also requires a location to create folders for working files, such as data files, Profiles and saved reports. The first time MCReport is run after a new installation, two dialog boxes will be displayed, providing an opportunity to set these options.

To start MCReport

1. Run MCReport from the **Start Menu** by locating the **MetroCount v3xx** folder, and selecting **MCReport.** If this is the first time MCReport or MCSetup have been run, the **New User File Setup** dialog box will be displayed.
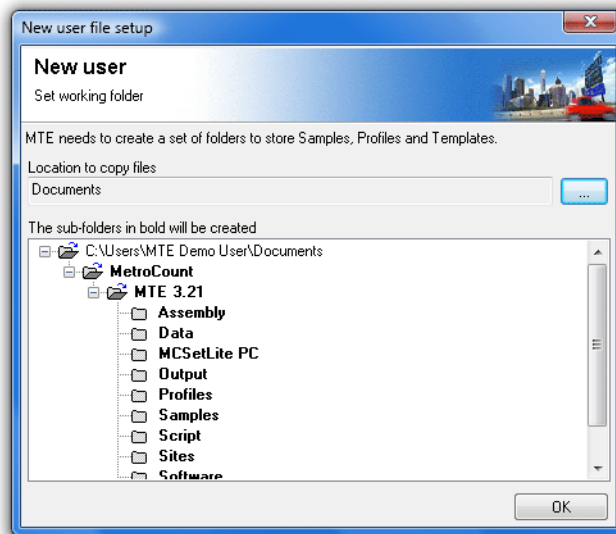
Setting a working folder location

2. MTE needs a folder location to store working files, such as MetroCount data, Profiles and templates. The default working folder location will be the current user's **Documents** folder. This is highly recommended as it is guaranteed to be accessible under all versions of Windows. To select a different folder, click the **…** button.

   Click the **OK** button, and MCReport will create the list of folders shown in the sub-folders tree, and copy a set of default working files. When copying is complete, the **New User Options** dialog box will be displayed.
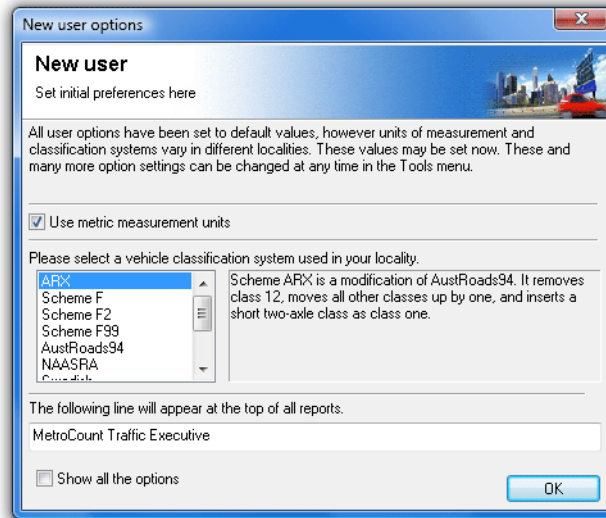
MCReport's New User Options

3. Leave the **Use metric measurement units** option checked for metric **(km/h)**, or uncheck it for non-metric **(mph).**

   This only affects the values in reports - MCReport always performs calculations using SI units.

4. Select a Classification Scheme from the list provided.

   The list of schemes is MCReport's built-in OEM classification schemes. A range of user-editable External Schemes can be selected from later.

5. The final option is the Header Page text, which appears at the top of every report. A company, council or county name may be appropriate.

6. The **Show all the options** check box at the bottom will display the Default Profile after the **OK** button is clicked. Again, this can be easily accessed later.

Generating a Report

The Report Wizard

Generating a report with the **Report Wizard** is an incredibly simple process, illustrated by the following diagram.
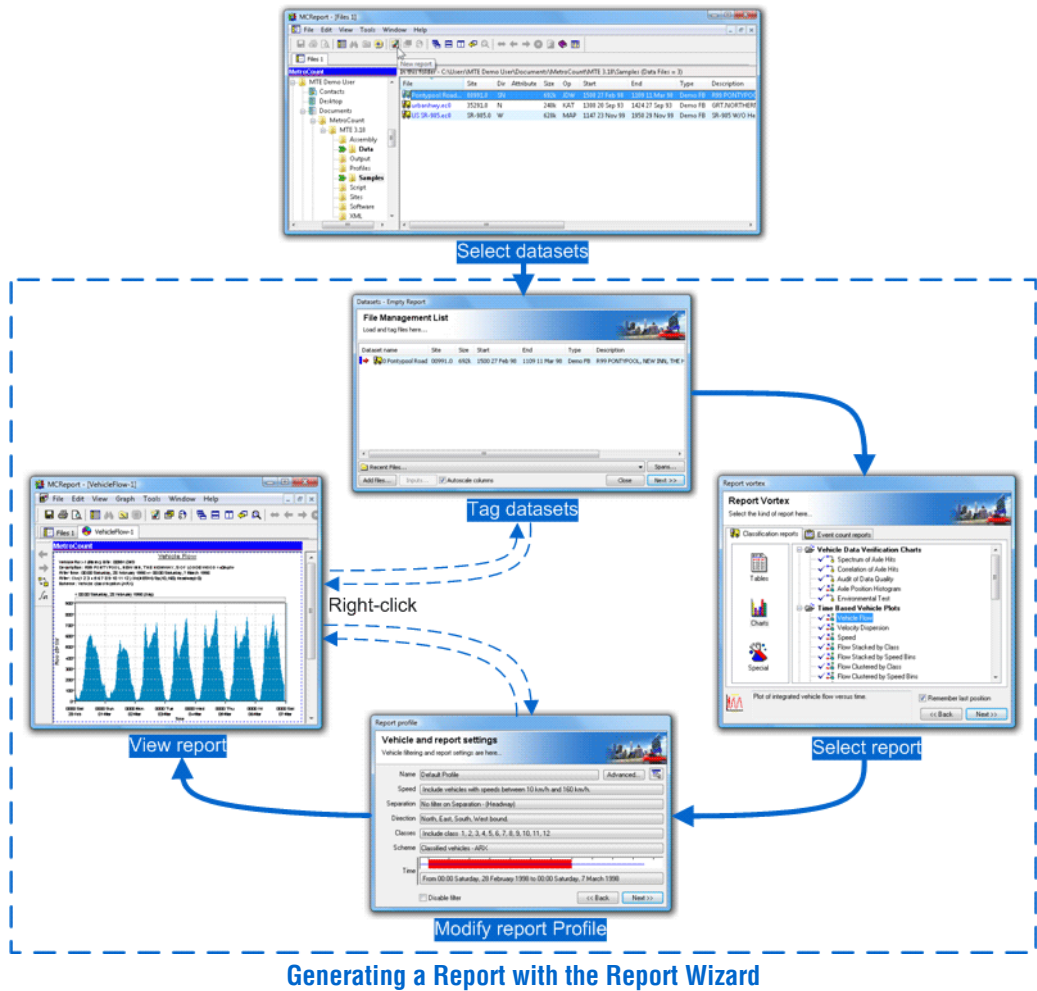
Generating a Report with the Report Wizard

The **File Management List** is a temporary list of datasets that have been loaded, ready for analysis. Datasets can be loaded into the File Management List via MCReport's **File Tree** window, or from a list of recently used datasets. Datasets can then be selectively **tagged** for inclusion in the report being generated.

The **Report Vortex** contains the list of available reports, firstly grouped by their mode of analysis (Classification or Event Count) and then by the format of the report (Tables, Charts or Special).

A **Profile** in MCReport encompasses the set of vehicle filter, classification, statistical and formatting options for each report. When a new report is generated, a copy of MCReport's **Default Profile** is attached to the report and is referred to as the report's **Local Profile.** This is displayed as part of the

Report Wizard, with the most frequently used vehicle filter settings easily accessible.

The end result is an automatically formatted report, that can be printed or saved. Note that the Local Profile, or list of tagged datasets can be easily accessed via the report's right-click menu, without repeating the entire Report Wizard. Many reports also have interactive tools for examining detail.

To generate a report

1. Start MCReport, and if necessary set the New User options as described in the previous section.

2. Click the **New Report** button on MCReport's main toolbar.
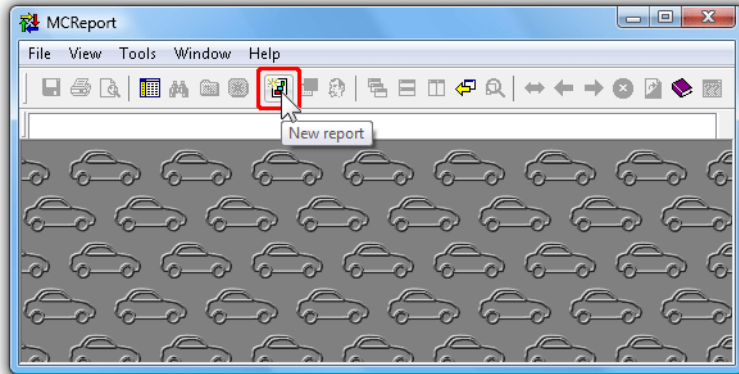

Starting the Report Wizard

3. For this simple example, load the **urbanhwy.ec0** sample dataset that is always available in the **Recent Files** drop-down list at the bottom. Loading files using the **File Tree** is covered in the next section.

   Once the file is loaded, note the red arrow next to the dataset, indicating it is **tagged** for this report. Click the **Next** button to continue.
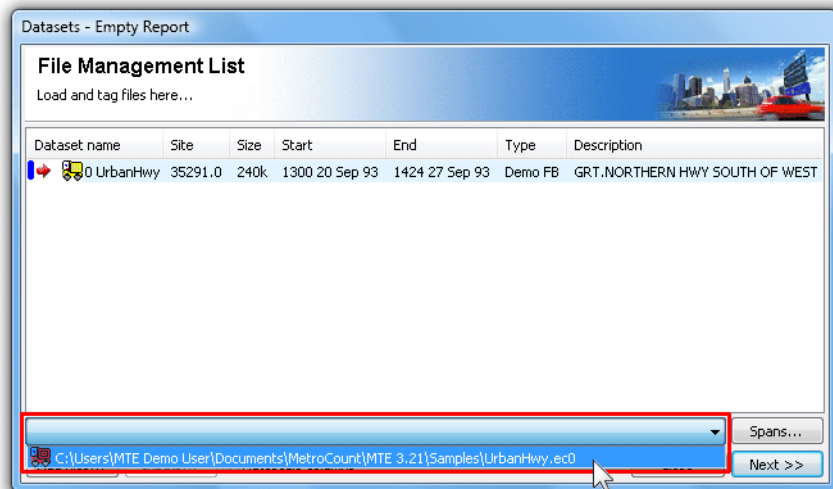
Load a dataset

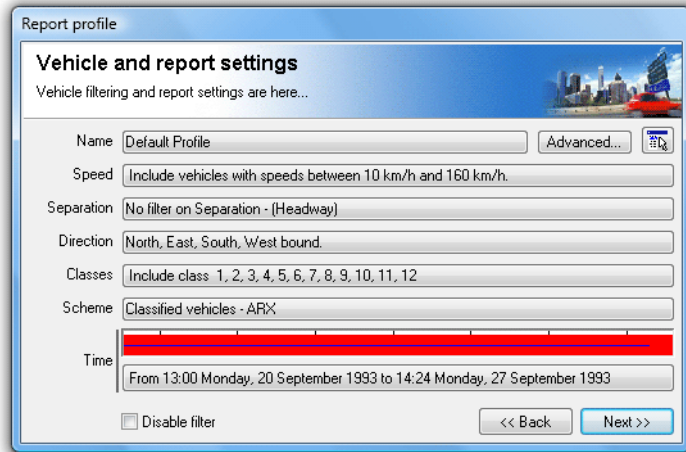4. Select a report, such as **Weekly Vehicle Counts,** and click the **Next** button.
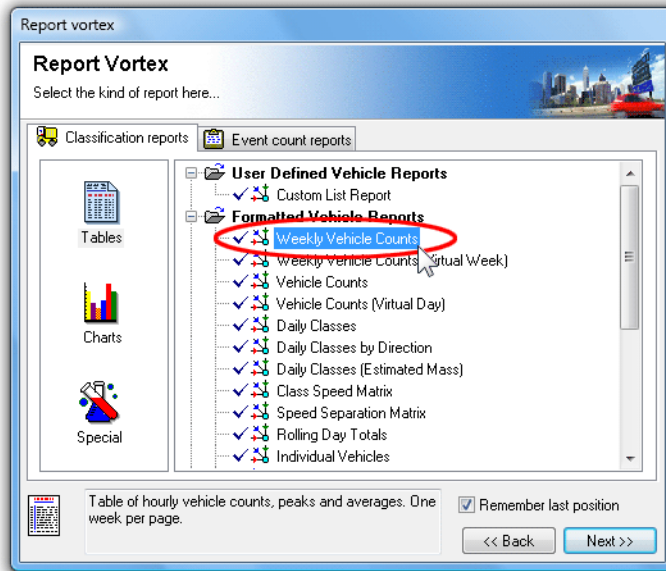
Select a report

5. The report's **Local Profile** is now displayed. Notice that each setting is a button, which will open another dialog box for editing that setting. Also note the **Advanced** button at the top, which leads to numerous, but infrequently accessed options.

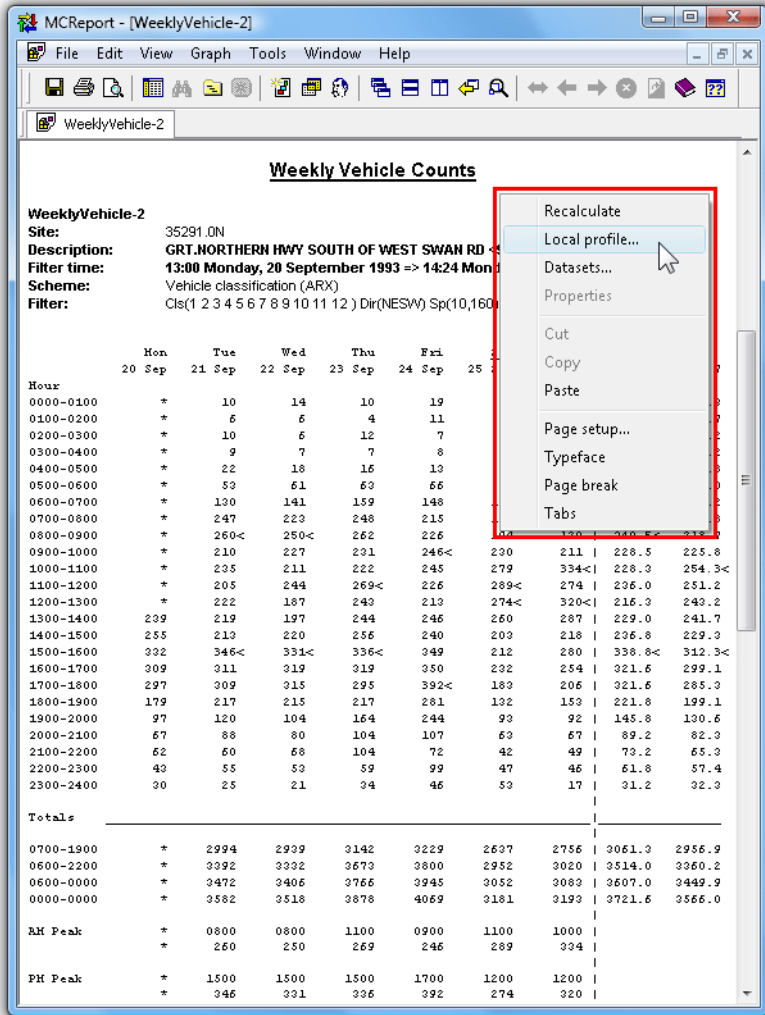   For this example, simply accept the defaults by clicking the **Next** button.

**View Local Profile**

6. The selected report is now generated and displayed, ready to be printed or saved.

    Try right-clicking anywhere within the report, and note the options in the pop-up menu. **Local Profile** will display the report's current Profile, then recalculate. **Datasets** will display the **File Management List,** where the tagged datasets can be changed and the report regenerated.

MCReport - [WeeklyVehicle-2]

File Edit View Graph Tools Window Help

WeeklyVehicle-2

Weekly Vehicle Counts

WeeklyVehicle-2
Site: 35291.0N
Description: GRT.NORTHERN HWY SOUTH OF WEST SWAN RD <
Filter time: 13:00 Monday, 20 September 1993 => 14:24 Mon
Scheme: Vehicle classification (ARX)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160

	Mon 20 Sep	Tue 21 Sep	Wed 22 Sep	Thu 23 Sep	Fri 24 Sep	25			
Hour									
0000-0100	*	10	14	10	19				
0100-0200	*	6	6	4	11				
0200-0300	*	10	6	12	7				
0300-0400	*	9	7	7	8				
0400-0500	*	22	18	16	13				
0500-0600	*	53	51	63	66				
0600-0700	*	130	141	159	148				
0700-0800	*	247	223	248	215				
0800-0900	*	260<	250<	262	226		130	240.5<	218
0900-1000	*	210	227	231	246<	230	211 |	228.5	225.8
1000-1100	*	235	211	222	245	279	334<|	228.3	254.3<
1100-1200	*	205	244	269<	226	289<	274 |	235.0	251.2
1200-1300	*	222	187	243	213	274<	320<|	216.3	243.2
1300-1400	239	219	197	244	246	250	287 |	229.0	241.7
1400-1500	255	213	220	256	240	203	218 |	235.8	229.3
1500-1600	332	346<	331<	336<	349	212	280 |	338.8<	312.3<
1600-1700	309	311	319	319	350	232	254 |	321.6	299.1
1700-1800	297	309	315	295	392<	183	206 |	321.6	285.3
1800-1900	179	217	215	217	281	132	153 |	221.8	199.1
1900-2000	97	120	104	164	244	93	92 |	145.8	130.6
2000-2100	57	88	80	104	107	63	57 |	89.2	82.3
2100-2200	62	60	68	104	72	42	49 |	73.2	65.3
2200-2300	43	55	53	59	99	47	46 |	61.8	57.4
2300-2400	30	25	21	34	46	53	17 |	31.2	32.3
Totals							|		
0700-1900	*	2994	2939	3142	3229	2637	2755 |	3061.3	2956.9
0600-2200	*	3392	3332	3673	3800	2952	3020 |	3514.0	3360.2
0600-0000	*	3472	3405	3766	3945	3052	3083 |	3607.0	3449.9
0000-0000	*	3582	3518	3878	4059	3181	3193 |	3721.6	3556.0
AM Peak	*	0800	0800	1100	0900	1100	1000 |		
	*	250	250	269	246	289	334 |		
PM Peak	*	1500	1500	1500	1700	1200	1200 |		
	*	346	331	336	392	274	320 |		

Recalculate
Local profile...
Datasets...
Properties

Cut
Copy
Paste

Page setup...
Typeface
Page break
Tabs

The generated report, showing right-click menu

File Tree Basics

MCReport's File Tree window is the primary tool for browsing, searching and auditing MetroCount datasets. Files are listed, and sortable, by their key header details, rather than their physical file attributes. Folders containing MetroCount datasets are marked with a special green icon in the folder tree for easy identification. The File Tree is also the best method for loading datasets into the File Management List.
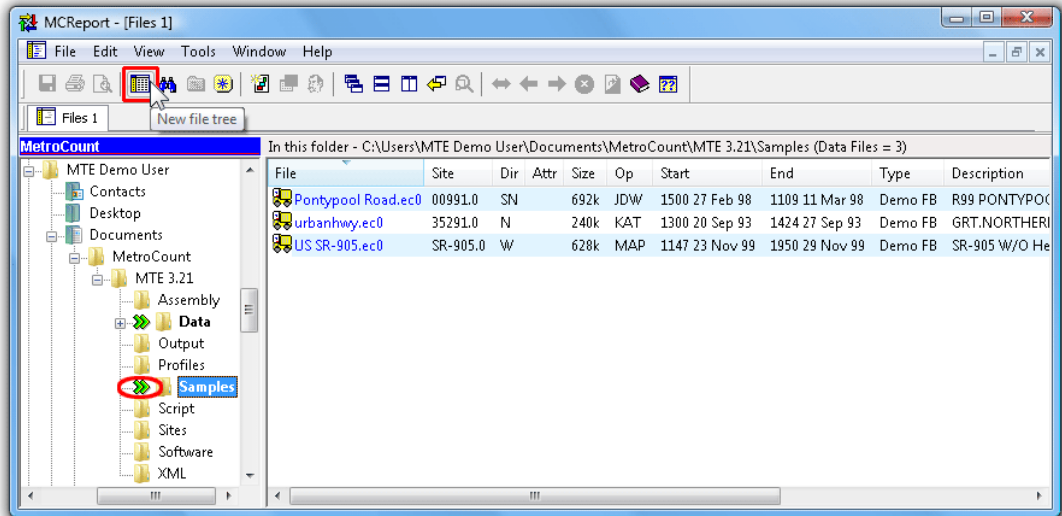
File Tree Window

Double-clicking a dataset in the File Tree displays the dataset's header details and properties, grouped into several pages. The **Hits** page is extremely useful for rapidly assessing basic data quality.
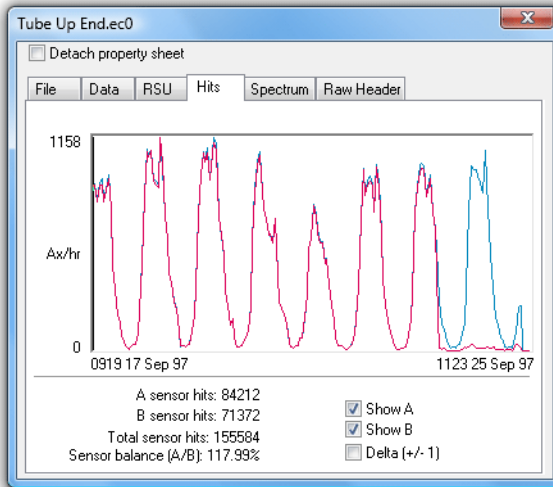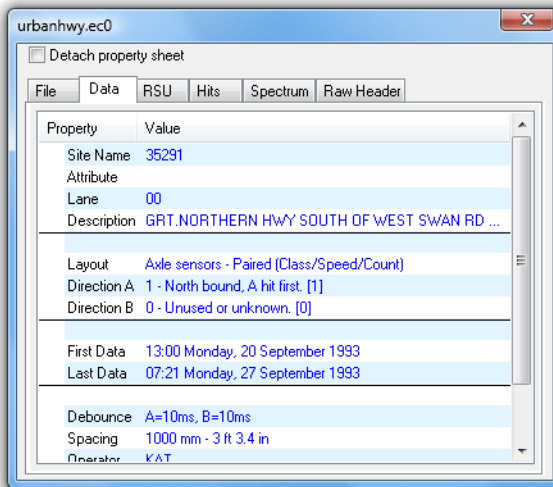
Dataset Properties

To load files into the File Management List

1. Open a File Tree window by clicking the **New File Tree** button on MCReport's main toolbar.
2. To locate some sample datasets, click the **Favourites** button, and select **MTE Samples.** This automatically selects the **Samples** folder in MTE's working folder location.
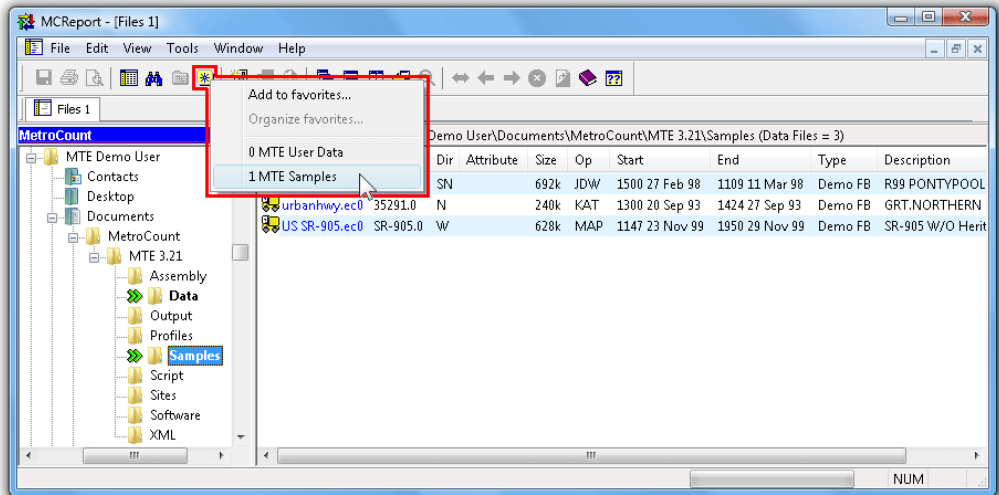
Locating the Samples folder

3. Select a couple of the sample files (hold down the **Ctrl** or **Shift** key to select multiple files), and click the **New report** button.
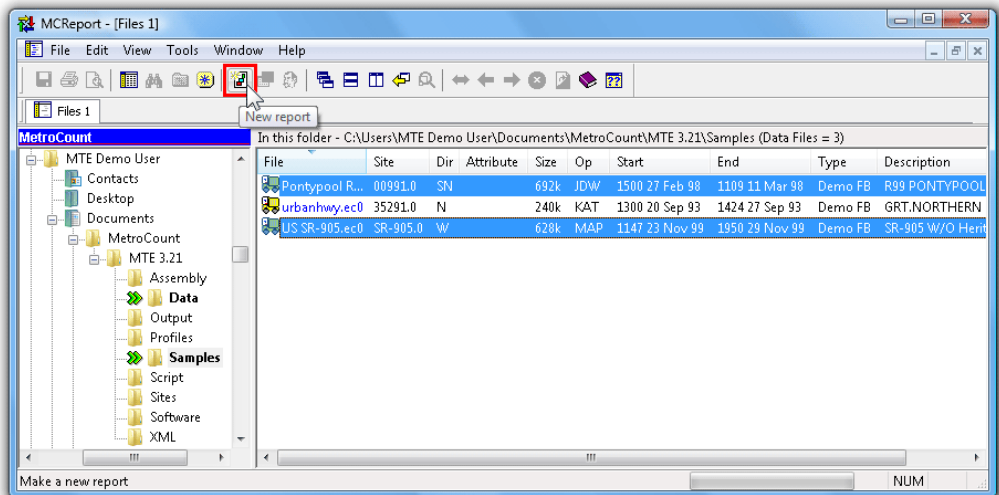
Loading the selected files

4. Click the **Yes** button to load the files.

5. The Report Wizard is now started, with the selected datasets loaded. Notice files are not tagged by default. Simply double-click them to tag for the next report.
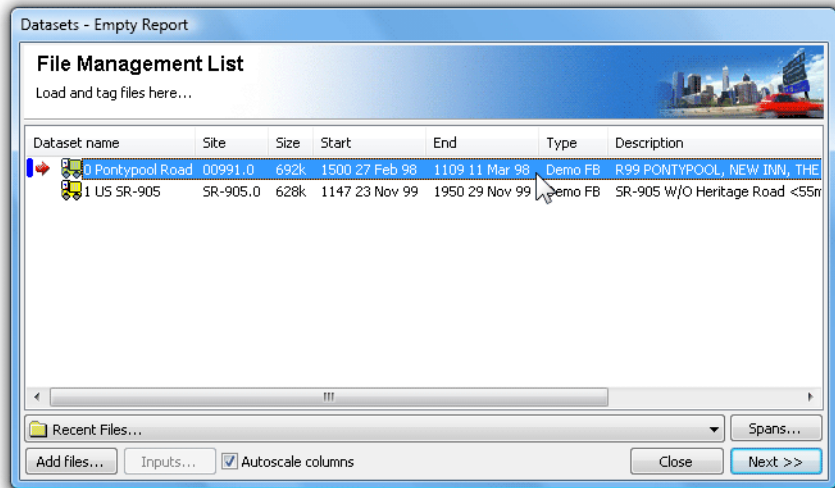
Tag files and continue the Report Wizard

File Management List

Overview

The File Management List contains a list of datasets that have been loaded into memory, ready for analysis. Datasets are *tagged* for inclusion in a report, as indicated by the red arrow icon. The File Management List is displayed as part of the Report Wizard when generating a new report, or when swapping datasets on an existing report.

The File Management List is a temporary list. Loaded datasets remain in the list for the current session of MCReport, or until they are explicitly removed. The list may contain up to 16 datasets.

Most reports support tagging of multiple datasets. This may be required for combined, multi-lane analysis where a single RSU was used per lane, and for time-contiguous datasets for a single site.
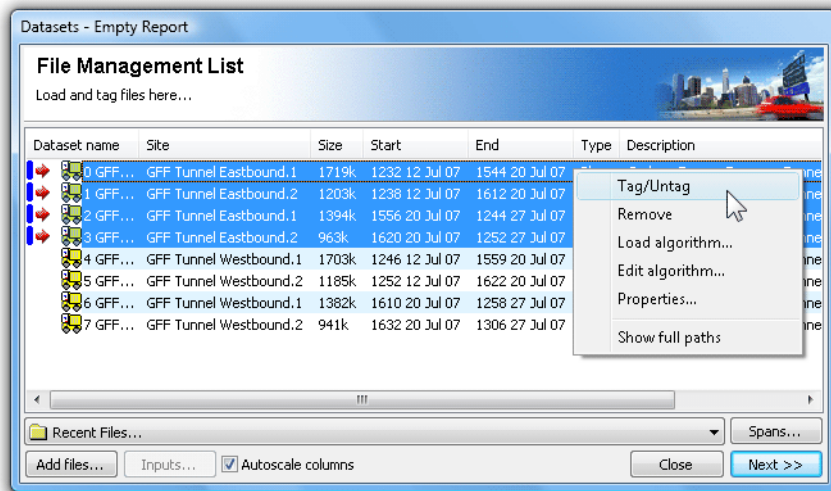
File Management List, with right-click menu

Adding Datasets

There are several methods for loading datasets into the File Management List:

- via the File Tree,
- using the **Recent Files** list, or
- drag-and-drop.

The File Tree is the recommended method. Selecting files in a File Tree window, then clicking the **New Report** button will load them into the File Management List, up to a maximum of 16 datasets.

The **Recent Files** list, located at the bottom of the File Management List, contains the 10 most-recently loaded datasets.

Dragging files from another application is also supported. Files must be dropped on the title bar of MCReport's main window.

Tagging Datasets

Tagged datasets are indicated by the red arrow icon next to their file name. At least one dataset must be tagged to generate a report.

To toggle the tagged status of a dataset, simply double-click it. To toggle a group of datasets, select them, and then select **Tag/Untag** from the right-click menu.

Note that some reports do not support multiple datasets. Selecting one of these reports in the Report Vortex will display a warning, and return to the File Management List.

Removing Datasets

Manually removing datasets from the File Management List is only required if the list is full. Simply select at least one dataset, right-click and select **Remove.**

A dataset can not be removed if it is tagged, or it is in use by an open report (indicated by the blue bar icon). To remove, firstly close any reports using that dataset.

Dataset Spans

The **Spans** button in the File Management List displays a chart of the relative time-spans for the loaded datasets. The chart is scaled from the earliest start time to the last finish time, with each dataset represented by a red bar. Each dataset's blue line represents the time between the first and last sensor hits.
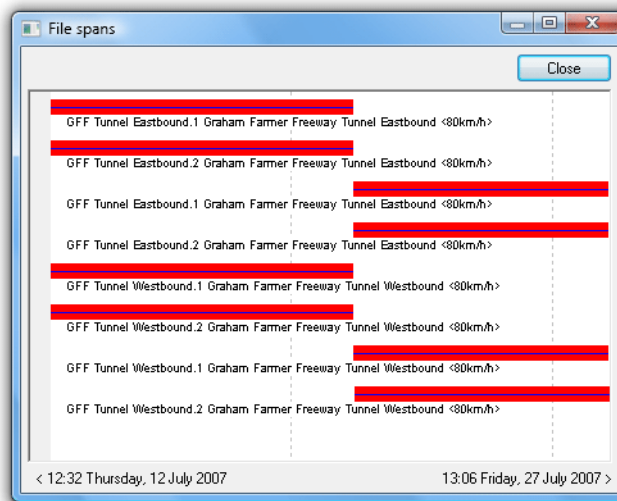
**Time-spans of datasets in the File Management List**

Report Types

Overview

The **Report Vortex** is the report selection stage of the Report Wizard. Reports are primarily grouped by their mode of analysis, **Classification** or **Event Count**, represented by the two pages at the top. Reports are then sub-grouped by output format:

- **Tables** - pre-formatted, paginated text reports, and continuous text reports with user-definable columns and export options.
- **Charts** - graphical reports, such as pie charts, time-based plots, dispersion plots and data-audit charts.
- **Special** - generic and "standard" report formats.
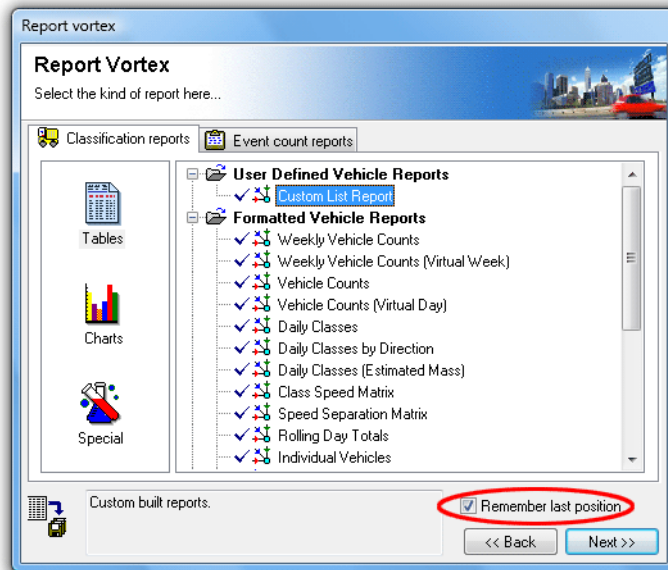
Selecting a report

*Note: The **Remember last position** option automatically selects the last report that was generated - useful when generating several of the same report.*

Classification versus Event Count Reports

Classification Analysis

Classification analysis requires datasets collected using a Classifier Layout, where the A and B axle sensors are placed in parallel and a known distance apart. From this, MCReport derives **vehicles.**

Firstly, MCReport performs the complex task of examining the raw data and partitioning groups of sensor hits into likely vehicles. This is based on a number of time and distance parameters determined by MCReport.

The next step is to determine the axle configuration of each vehicle. The first A and B hit pair in the group determines the direction of the vehicle, and the speed of the vehicle, based on the sensor spacing. From the speed, the time between the remaining hit pairs determines the spacing between axles.

The final step is to apply a classification scheme, based on the axle spacings in the vehicle. MCReport offers a choice of standard and special-purpose classification schemes, called **OEM Schemes.** Other classification schemes can be added to MCReport using user-definable **External Schemes.**

From here, the set of vehicles can be filtered, and formatted into a vast array of reports.

Event Count Analysis

Event Count analysis treats the raw A and B sensor hits as user-selectable events - usually counts. MCReport refers to the definition of an event as the **Count Method,** which may be one of the following:

- raw counts,
- counts divided by 2,
- counts divided by a custom factor,
- gaps above a certain length (in seconds), or
- following gaps, defined as a starting gap and a following gap.

Datasets collected using a Count Layout should only be analysed using Event Count reports. Attempting to analyse this type of data as vehicles will produce meaningless results.

Classifier Layout datasets can be optionally analysed with Event Count reports. These may be useful for obtaining approximate counts for periods where one sensor has failed, or for gap analysis.

Multi-file Reports

Most reports support inclusion of multiple datasets in a single report. This may be necessary for combining results from multi-lane sites with one RSU per lane, and for time periods spanning multiple datasets.

There is an icon next to each report in the Report Vortex, indicating multi-file support as shown in the following table.

Icon	Description
⁺🔒	Report supports single dataset only
⁺🔒	Report supports multiple datasets

Dataset Signatures

MetroCount datasets contain a digital Signature, which controls access to reports in the Report Vortex. A dataset's Signature *type* is inherited from the RSU that created it, such as **Plus** and **Regular.** The Signature type is one of the columns in both the File Tree and the File Management List.

Icon	Description
✓	Report available
🔒	Report unavailable due to incompatible dataset Signature type

Reports that are unavailable due to an incompatible Signature type are indicated by a lock icon next to the report name. Selecting one of these reports and clicking the **Next** button will display a message indicating the required Signature type to use that report.


Signature type incompatible

When tagging multiple datasets, report availability will be determined by the lowest Signature type.

Profiles

Overview

A Profile in MCReport is the set of vehicle filter, classification, statistical and formatting options common to all reports. Each report has its own **Local Profile,** which is copied from the **Default Profile** when the report is generated. A report's Local Profile is presented as part of the Report Wizard, and can be accessed at any time via the report's right-click menu.
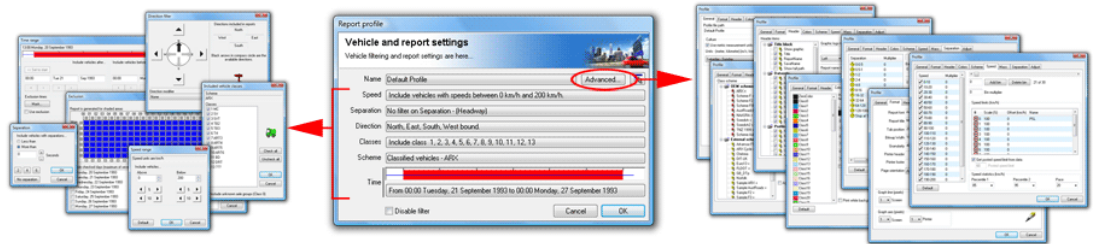

Report Profile

Profiles are designed to be only as complex as they need to be. There is an enormous amount of information that can be derived from time-stamped raw data, which means a lot of options. MCReport logically groups these options into the more frequently accessed **vehicle filter** settings on the primary page, with other options categorised under the **Advanced** options. The Advanced options tend to be those that will be set once in the Default Profile, then rarely modified.

MCReport uses a reasonable set of values for the Default Profile after a new installation. These settings are based on the classification scheme and units of measurement selected in the **New user options** when MCReport is run for the first time.

Working with Profiles

Profiles can be saved to create a library of commonly used filters and options. Profiles can also be easily copied amongst open reports to ensure a consistent set of vehicles are included. These features are accessed via a Profile's menu button in the top right-hand corner.
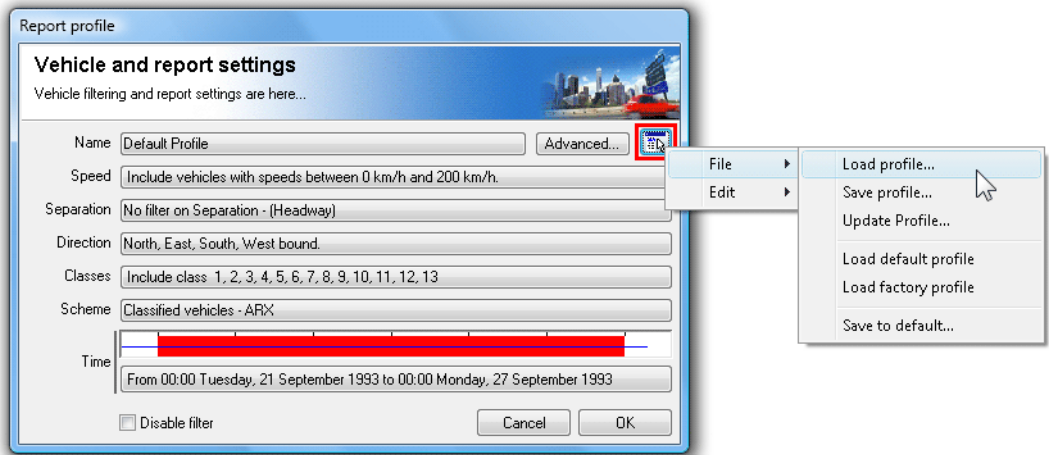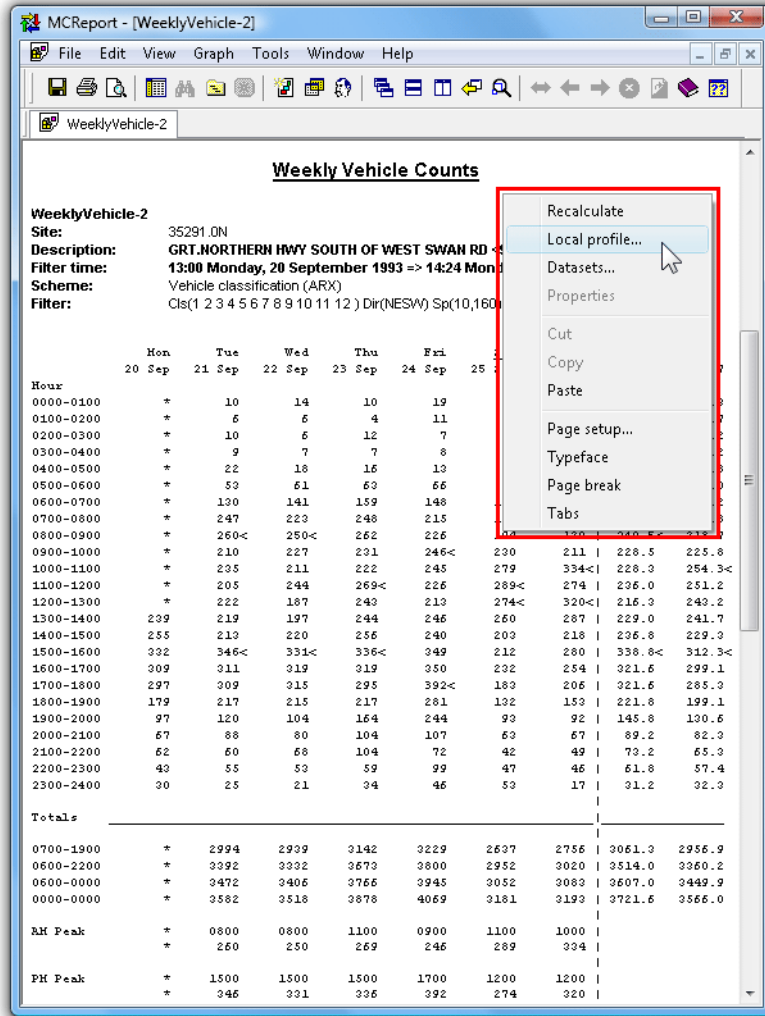
Profile menu

Saved Profiles are stored in files with a **.ini** extension, and located in the **Profiles** folder under MTE's working folder location. When a Profile is saved, all of the options are written to the file. When loading a Profile, different groups of option can be selectively loaded.

To modify a report's Local Profile

1. Right-click on a report and select **Local Profile** from the pop-up menu.


The generated report, showing right-click menu

2. Modify the Profile as required, and click the **OK** button. The report will be automatically regenerated.

    Note: Regenerating a report, such as by editing the Local Profile, will lose any manual text editing.

To set a Profile as the Default Profile

1. Edit a report's Profile, and select **File » Save to default** from the Profile's menu button.
2. To make the current Profile the permanent default, click the **Yes** button. Clicking **No** will change the Default Profile only for the current session of MCReport.
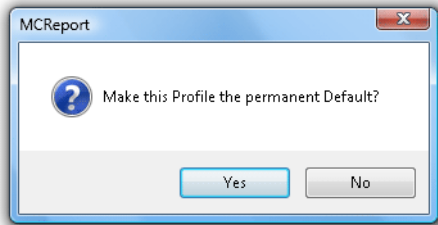
Permanently save changes

To save a Profile

1. Edit a report's Profile.
2. Select **File » Save Profile** from the Profile's menu button.
3. Enter a descriptive file name for the Profile (the name of a Profile can optionally be displayed in the header of a report), and click the **Save** button.

To load a Profile

1. Edit a report's Profile, and select **File » Load Profile** from the Profile's menu button.
2. Select a Profile, and click the **Load** button.
3. The **Merge Profile** dialog box lists the groups of options that can be selectively loaded.

   The default is to include all options, except the time range. This is because the start and finish times in the saved Profile are from the datasets that were tagged when the Profile was originally saved, and usually need to be ignored.

   Click the **Load** button to apply the selected options.
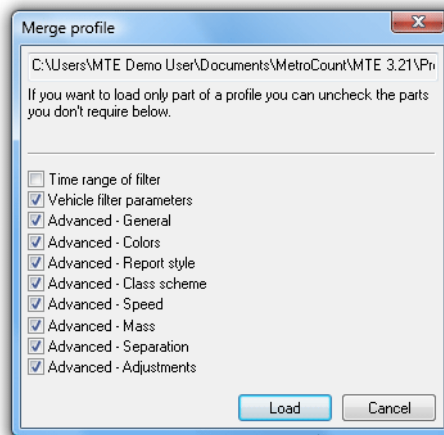
Selectively loading parts of a Profile

To copy a Profile

1. Edit the source report's Profile, and select **Edit » Copy** from the Profile's menu button.
2. Exit the Profile by clicking the **Cancel** button.
3. Edit the target report's Profile, and select **Edit » Paste** from the Profile's menu button.

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