# CrewBuild User Manual

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| Modified By | Date | Version | Changes |
|---|---|---|---|
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| | | | |
|---|---|---|---|
| | | | Updated GUI screenshot and text<br><br>Overhaul |
| Bea Tabuñar | 11 July 2018 | 8.1.0 | Updated colour definitions for Activity Panel > Flights tab |
| Cy De Guzman | 11 July 2018 | 8.1.0 | Updated colour definitions for Activity Panel > Pairings tab |

DISCLAIMER:

This user guide is for training purposes only. The information contained in this user guide is current at the time of publication. It can be used to reference and may be subject to change.

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# What are merlot's applications?

The merlot.aero suite is a complete organizational management solution offering all aspects of airline resource planning and control to ensure the safety, efficiency and quality of your crew and operational environment.

merlot.aero is a comprehensive suite of applications covering all aspects of your airline needs. It has been developed with the entire business process in mind, including the customer process from the moment ticket sales are planned until the point the passenger reaches their destination.

For your convenience, merlot applications are divided into two main categories:

- Aircraft Applications
- Crew Applications

There are a number of applications under these two main categories.

Aircraft applications include:

- AircraftSchedule
- AircraftFollow
- AircraftPortal
- AircraftMobile

Crew applications include:

- CrewPlan
- CrewBuild
- CrewRoster
- CrewPortal
- CrewMonitor
- CrewFollow
- CrewPayroll
- CrewMobile

# FrameWork Applications

The merlot.aero suite of applications eliminates the use of text commands by employing a Graphical User Interface (GUI). You are presented with the following options available in all applications across the merlot.aero suite.

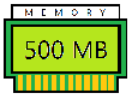
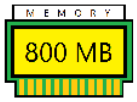
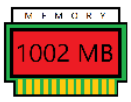
These are Framework Applications that will follow you throughout the merlot suite.

This icon is the Job Engine . If red, this means the job engine has stopped. If green, the job engine is running.

This icon is the signal strength of your connection to the Internet.

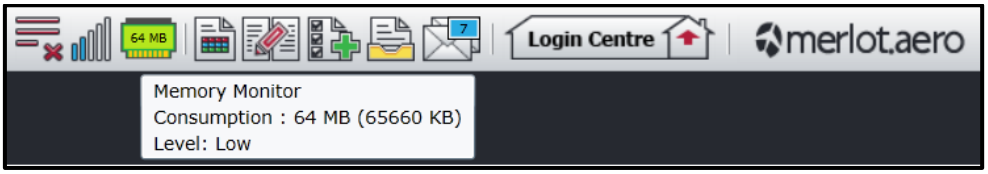
The Memory Monitoring tool displays memory utilization for merlot applications in real time.

Memory utilization is displayed in three different levels:

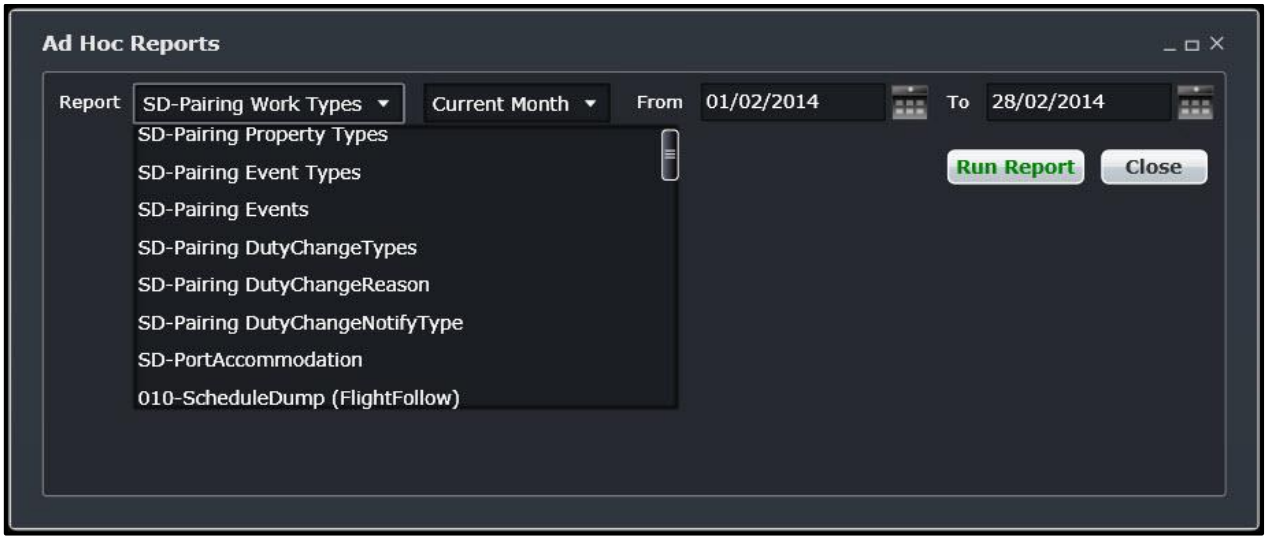
| Icon | Level | Range |
|---|---|---|
|   | Low (Green) | 0MB-700MB |
|   | Moderate (Yellow) | 701MB - 1000MB |
|   | High (Red) | 1001MB and above |

Hovering the mouse over the tool icon displays the following information:

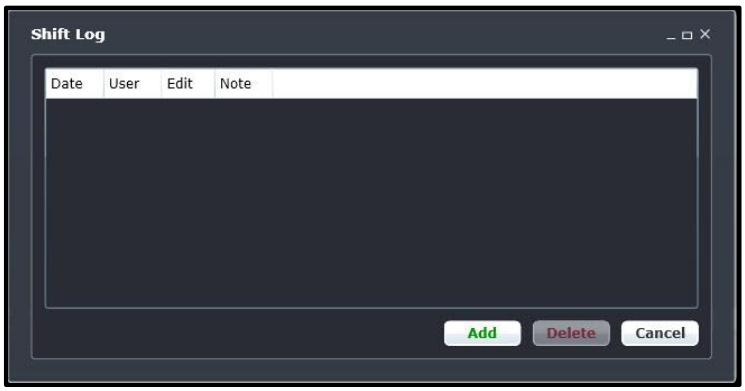
- Icon label - Memory Monitor
- Memory consumption in MB with KB conversion e.g. 64 MB (65660 KB)
- Level of memory consumption e.g. Low



This icon is Ad Hoc Reports . Ad hoc reports are available in all the applications and modules across the merlot.aero suite while specific application reports are available in the Reports dropdown menu.

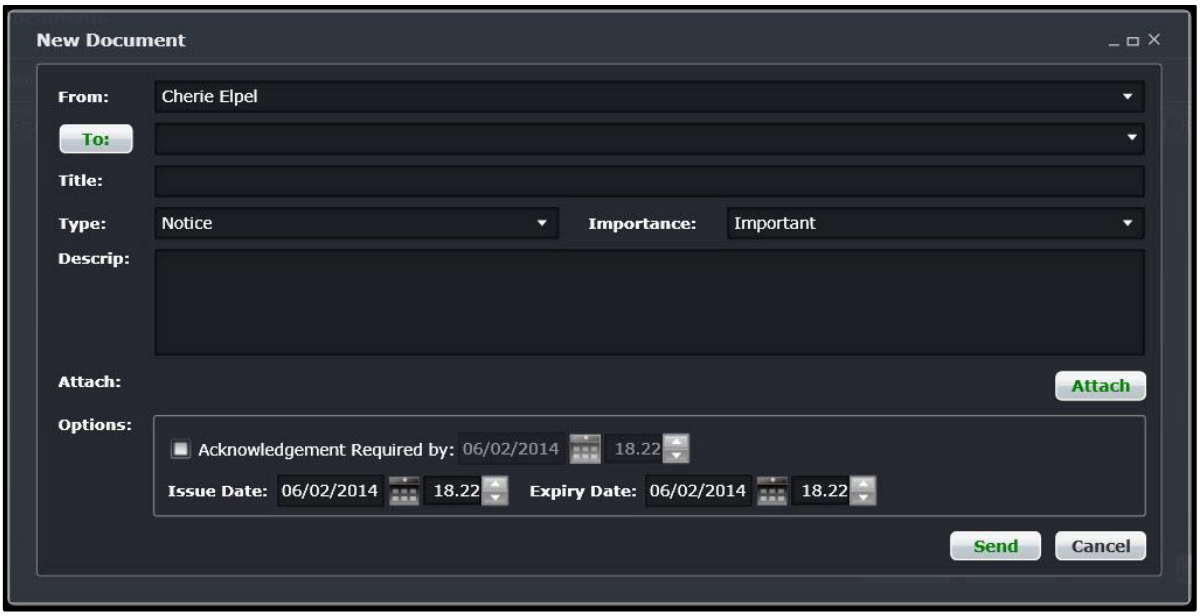



This icon is the Shift Log . You can add notes to the Shift Log for any system user to view.



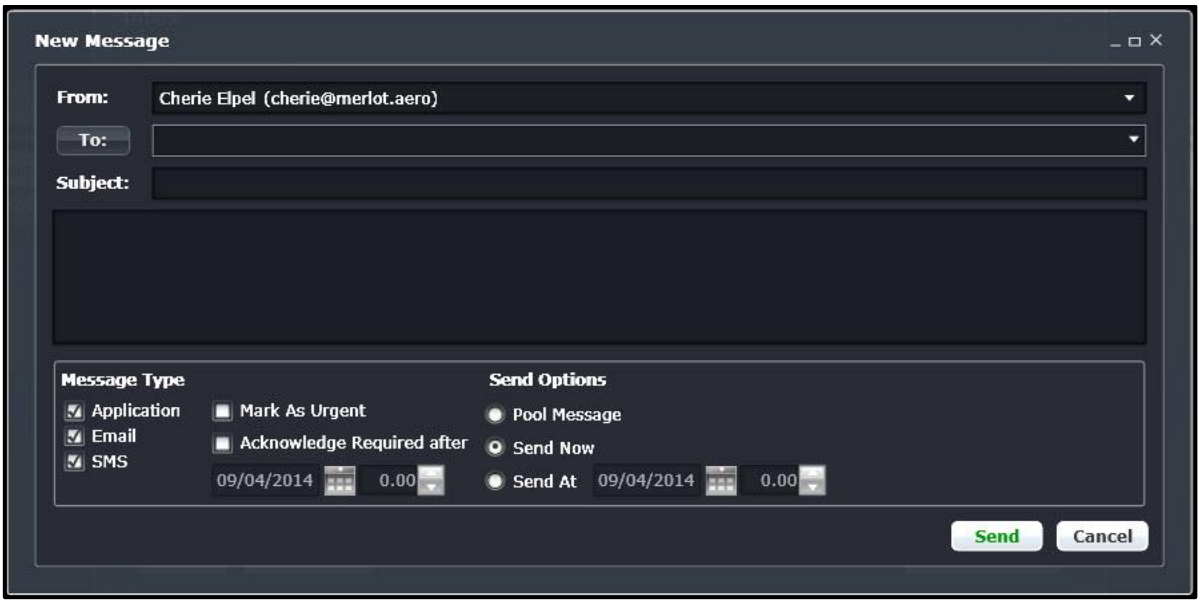

This icon is to Add Task . Set a daily or one-time reminder for everyday activities (i.e.: Accommodation Check).

This is the send documents icon. Send a document to a crew member or to a fellow merlot.aero user.



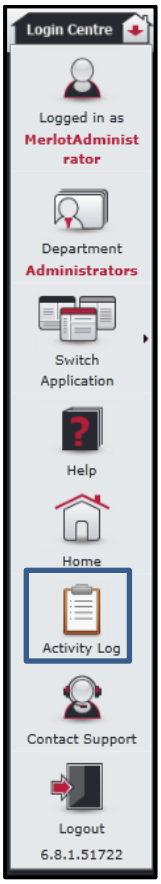

This is the mail

icon. Send messages to crew or co-workers via SMS, email or directly within the merlot.aero suite.

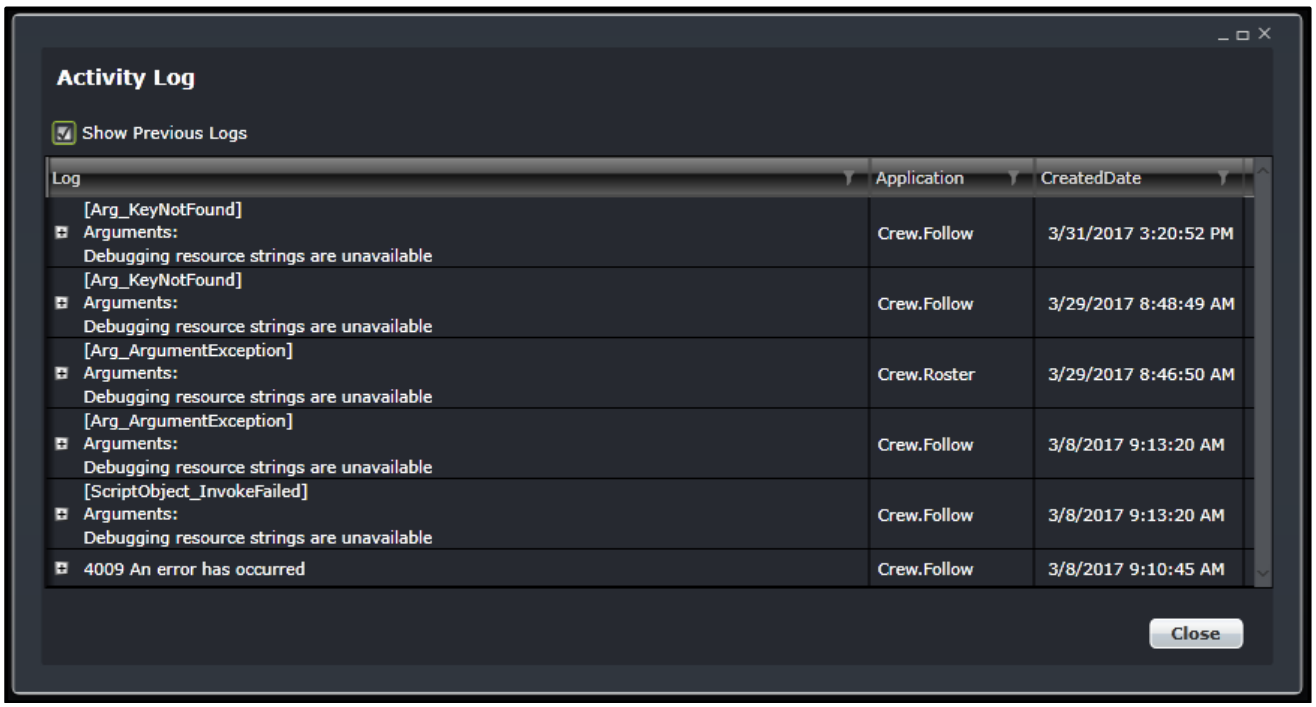



This icon allows you to navigate through the entire merlot.aero suite.

When the application setting *UseUIDebug* is set to True, the New Activity Log menu will be visible under the **Login Centre** and available for use. All incoming Merlot UI Error Logs will not be displayed in the existing error log in the application nor trigger the alert unless the error is related to *Insert/ Add/ Delete rows*.

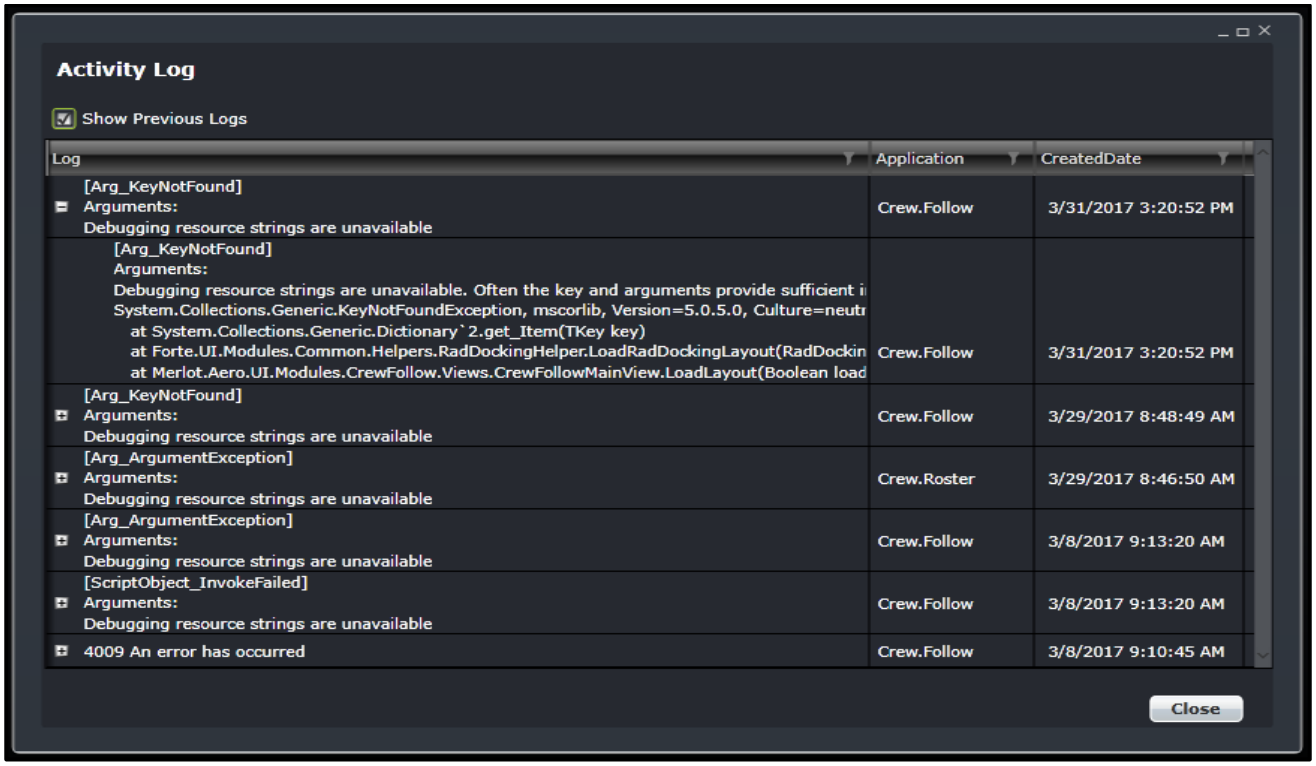



Example of a collapsed Activity Log form:



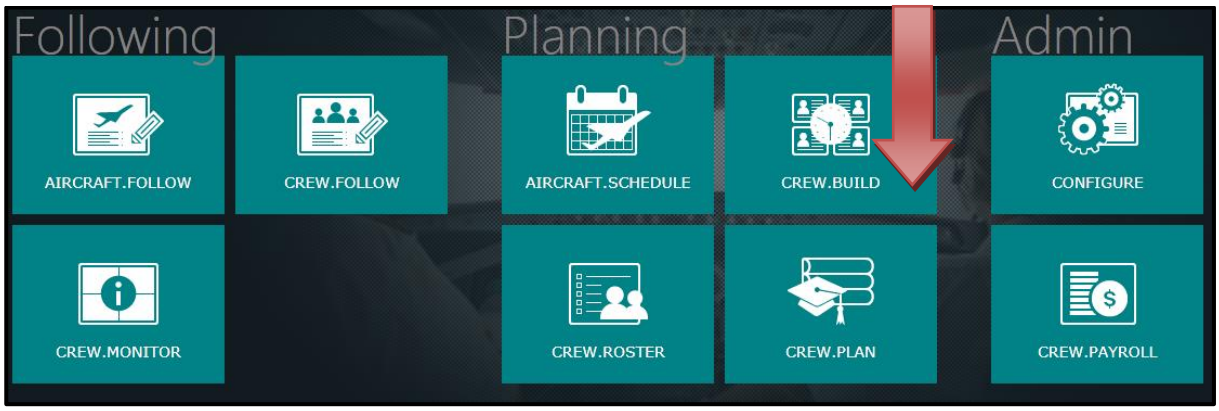

When a user expands the log value, the complete details of the selected UI error log will be displayed.

Example of an expanded Activity Log form:



# Logging into CrewBuild

With your merlot.aero credentials simply log in and select CrewBuild.



# What is CrewBuild?

The CrewBuild application, along with CrewRoster, is used to develop efficient crew pairings and rosters that achieve business goals while meeting the needs of crew and managing changes that arise after the roster is published.

The CrewBuild application enables the user to build pairings which are then assigned to crew member rosters in the CrewRoster application.

Pairings are a generic unit of work and non-work that can be assigned to a crew member. A pairing is comprised of none, one or more flights and/or activities grouped together into one or more Duties. A pairing may span multiple days.

## CrewBuild Prerequisites

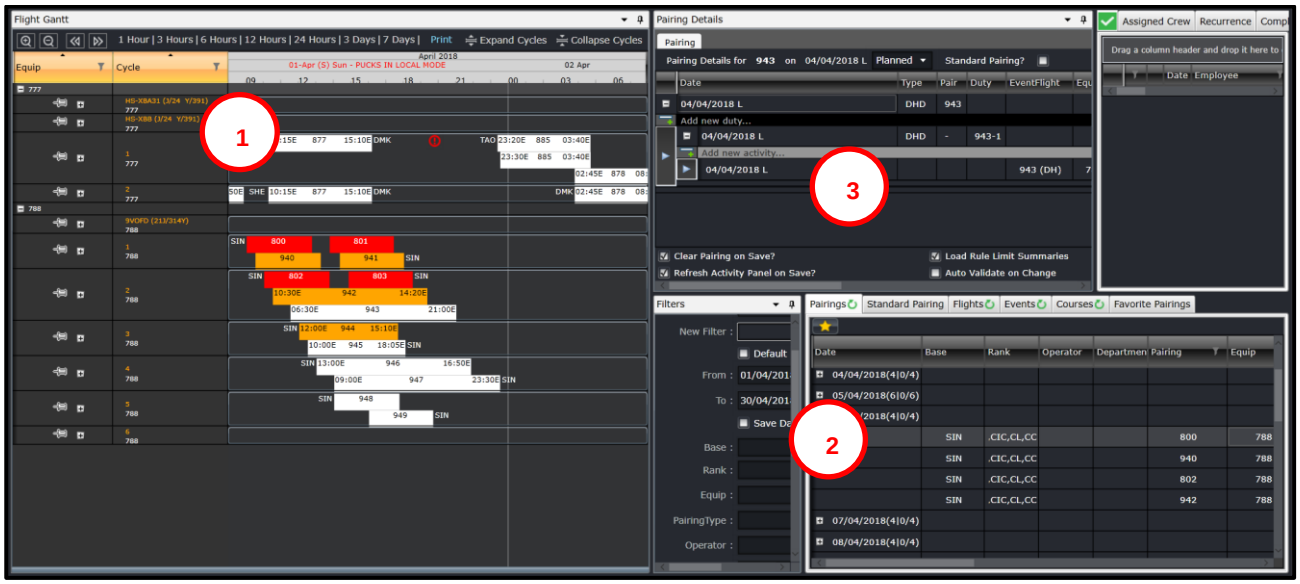
Prior to undertaking tasks in CrewBuild, it is first necessary to define roster periods in the Configure application. In the Configure application, you will name your roster period, determine the duration of the roster and select the department. In addition, you will select the rank or rank groups for the roster period. See the Configure User Manual for more detail on this process.

Tasks in AircraftSchedule take place before action in CrewBuild. The user imports a Standard Schedules Information Manual (SSIM) or creates a new schedule. Once all the flights are in the schedule, the schedule is marked active. See the AircraftSchedule User Manual for more information.

In the CrewFollow application, ad-hoc flights can also be created prior to action in CrewBuild. See the CrewFollow User Manual for more detail on this process.

## The Graphical User Interface (GUI)

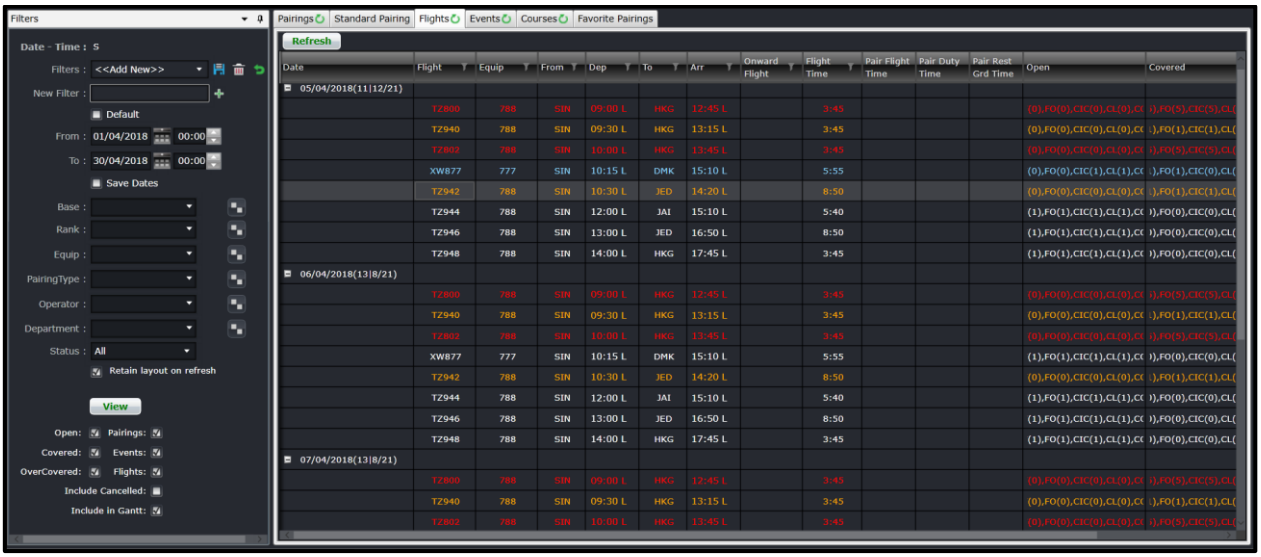
The merlot.aero suite of applications eliminates the use of text commands by employing a Graphical User Interface (GUI). Let's explore the CrewBuild GUI:




1. **Flight Gantt:** Displays flight information graphically in a bar chart format.
2. **Activity Panel:** List Pairings, Flights and Activities that can be allocated to the crew.
3. **Pairing Details Panel:** View and modify the details of the pairings.

# Activity Panel

The Activity Panel defines all the work. It contains lists of created pairings and lists of all the flights and activities that have been or can be incorporated into the pairings. The Activity Panel is used to view open, covered, and over-covered pairings and flights, to create new events and to assist in creating and amending pairings.

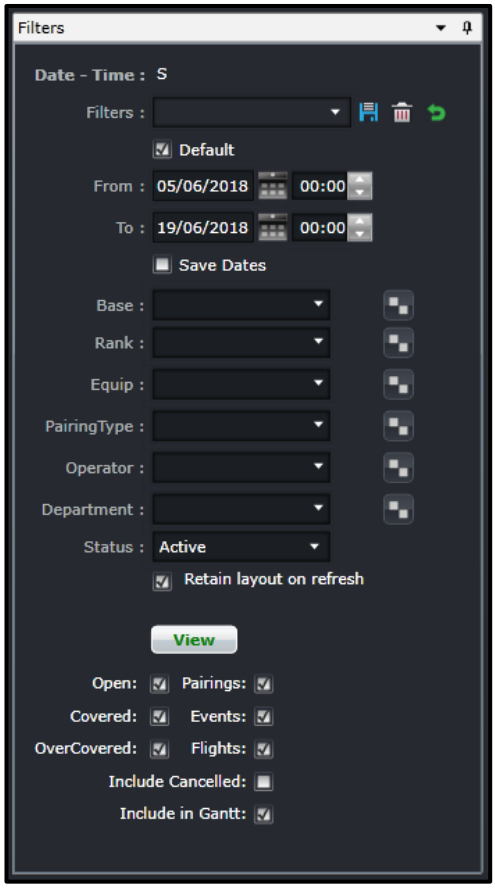



To assign work to crew members, individual work activities should be grouped together into meaningful units of work and a list of available work then needs to be generated. This information is provided by the Activity Panel, which lists the work activities in the Flights and Events tabs, and then lists the created work in the Pairings and Standard Pairing tabs.

Any changes made in the Activity Panel will require a re-filter to view them. To do this, simply click **View**.

## Filtering

The Activity Panel has an associated filter, which can be used to limit the activity information displayed to that which matches the filter criteria. To aid the user in determining how much work is required to be created and allocated, the Activity Panel contains filters that are applied to the data on the tabs. These filters allow the user to focus on particular sets of data and to view the data that has been created or allocated, and/or work still requiring creation or allocation.




The Filter for the Activity Panel can be divided in the following sub-sections:

- Date and Time Filter
- Save a Filter or re-use existing Saved Filter
- Set Default Filter
- Criteria for Filter
- View the Data

### Date and Time

In order to view crew data in the Activity Panel, users must load the data for a specified date range by entering a date range into the date control. A dropdown calendar is provided to select the date.

- **From** - A date field. The start value of the date range
- **To** - A date field. The end value of the date range
- **Save Dates** - The selected date range will be the default date for the saved filter

**Note:** *The date controls throughout the merlot suite have built-in short-cuts. These shortcuts allow users to instantly select different date targets, such as the current day (T), or the start of a month (M), a quarter (Q) or a year (Y).*

### Save Filter or Re-use an Existing Filter

To allow users to specify and save filters, the Filter Section has a Filters field and associated Save, Delete and Reset icon buttons as well as a Save Dates checkbox.

The Filters field is a combination of a dropdown lists that displays the previously saved filters, as defined by the user, along with template filters that apply to all users. There is also the ability to enter a new filter name in the New Filter field and to click the plus (**+**) icon to add the new filter.

The Save Dates check box allows the user to control whether a filter they define is set to a specific date time range or if the selected filter inherits the current date time range in the Monitoring Panel.

## Set as a Default Filter

Part of the process when opening the Activity Panel, is to apply a default filter. This is to facilitate rapid filtering of displayed data to the data that the user refers to most frequently.

To allow the user to set a default filter, the filter section contains a Default check box. When this button is clicked, the currently selected filter is saved as the default filter for the application.

When the Activity Panel is opened, it determines the current user and the application context and defaults to the relevant filter.

## Criteria for Filter

The Filter section contains the following criteria which are used to determine which data is displayed in tabs on the Activity Panel:

| Field | Description |
|---|---|
| *Base* | A dropdown field that displays the active crew bases |
| *Rank* | A dropdown field that displays active ranks and / or rank groups |
| *Equip* | A dropdown field that displays the active aircraft or equipment types or groups that crew operate |
| *Pairing Type* | A dropdown field that displays the kinds of pairings to be displayed |
| *Operator* | The Operator dropdown menu filters the grid to show information based on selected airline operators |
| *Department* | A dropdown field that displays active departments. It is an area within an airline or company that is tasked with providing particular services of a similar type. For example, Flight Operations (i.e. the manning and operating of aircraft), Maintenance (ensure the aircraft are able to operate safely), Ramp (the parking and coordination of aircraft resupply between flights). |
| *Status* | Pairing status dropdown menu which includes All, Planned, Active, Provisionally Active options |
| *Retain layout on refresh* | This checkbox prevents the grid from returning to the default values. |
| *Open* | This checkbox indicates that the displayed data must include all open pairings or flights. Resulting pairings and flights are colored in white (no assignments yet) or light blue (partially covered) |

| | |
|---|---|
| *Covered* | This checkbox indicates that the displayed data must include all covered pairings or flights. Resulting flights and pairings are colored in orange |
| *Over-covered* | This checkbox displays pairings and flights that are over-covered or have more crew members on the pairing than the crew complement requires. Resulting flights and pairings are colored in red |
| *Pairings* | This checkbox indicates if pairings will be loaded or not |
| *Events* | This checkbox indicates if events will be loaded or not |
| *Flights* | This checkbox indicates if flights will be loaded or not |
| *Include Cancelled* | This checkbox indicates if cancelled flights will be loaded or not |
| *Include in Gantt* | Displays filtered flight pucks in the Flight Gantt. |

**Note:** *By leaving a field Blank in any filter panel, you are asking for all options in that field to be included.*

There is an option to use exclude a criterion. For example, to load all activities except for FPG pairing type, select FPG and then Ctrl+ Click FPG. This will turn the selection red and the results will not include FPG.

## Applying the Filter

A **View** button is included as part of the Filter section to give the user control over when filter criteria are applied to the data they are viewing in the Activity Panel tabs. This allows them to make multiple modifications to filter criteria and then have these modifications applied to displayed data at the same time.

Any changes made in the Activity Panel will require a re-filter to view them. To do this click on the **View** button, or to refresh the view of an individual tab, click on the green circular arrow on the tab.

***Retain Layout on Refresh***

Filtering either on Pairings > Grid or Flights > Grid, with the *Retain layout on refresh* checkbox on, will keep the following data after a refresh:

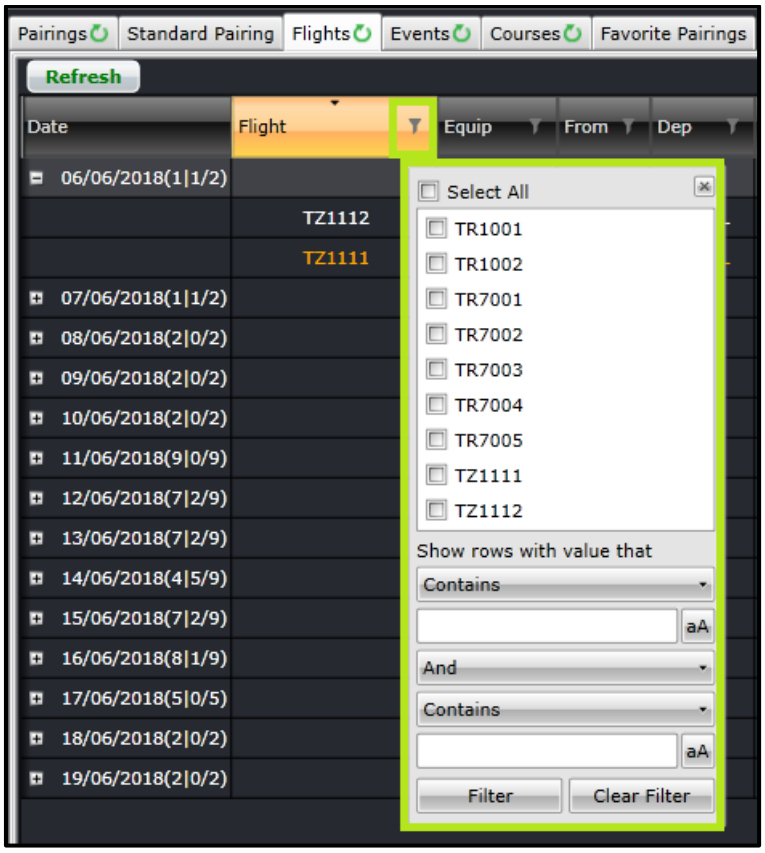
- Expanded dates;
- Filtered values in a column; and
- Order of data sorted in a column.

When new dates are added to the filter and previously filtered dates are still included, all the previously loaded data will still be displayed with the new set of data. However, if the previously loaded dates are no longer included in the new filter, the previously loaded data will not be included in the display.

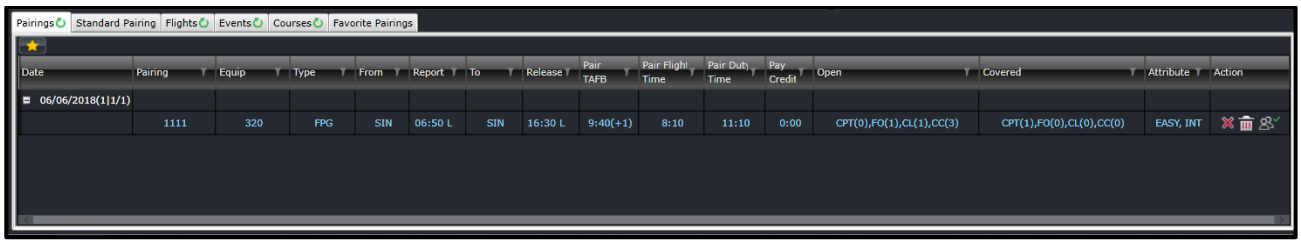
Data loaded within the two grids will be retained if the checkbox is selected, even if one of the grids is hidden.

## Tab Filters

Within a filtered set of data, a user may need to be filter through the results. A **Search Filter** is available at the top of most columns, which enables the user to narrow down the filter even further. For example, if you want to view certain flights, or equipment type, or a particular departure port, then you could click on the filter as shown in the red square below. You can use one of the commands on this added filter to narrow your filter results.



## Pairings




The Pairings tab displays the data associated with previously created and defined pairings. By default, pairings are grouped by date. Beside the date is a set of numbers that determine the number of open and actual pairings for the day.

**06/16/2018(1|1/1)**

In the example above, 1 is the number of open pairings. 1 is the number of partially or fully covered pairings. 1 is the number of pairings for the day.

The columns in the Grid tab are detailed below:

| Column | Description |
|---|---|
| *Date* | Date of the pairing |
| *Pairing* | Name of the pairing, or the pairing label |
| *Equip* | The required equipment type/s for the flights in the pairing |
| *Type* | Pairing type |
| *From* | Port where the pairing begins. This is where crew needs to report from |
| *Report* | Report time for the pairing |
| *To* | Port where the pairing ends. This is where crew will be released from |
| *Release* | Release time for the pairing |
| *Pair TAFB* | Time away from base (TAFB). This is calculated as the difference between release time of the last duty in the pairing and the report time of the first duty in the pairing |
| *Pair Flight Time* | Total flight time within the pairing |
| *Pair Duty Time* | Total duty time within the pairing |
| *Pay Credit* | Total pay credit for the pairing |
| *Open* | Displays the number of crew required for the pairing. The numbers are broken down per rank. |
| *Covered* | Displays the number of crew that are already assigned to the pairing. The numbers are broken down per rank. |

| | |
|---|---|
| *Attribute* | Displays an attribute or a set of attributes assigned to the pairing. Attributes determine a specific description of the pairing such as Easy/Hard, Domestic/International, etc. These are set up in Configure. |
| *Action* | Set of action buttons:<br><br> **Delete Pairing** – click this button to delete a pairing<br> **Cancel Pairing** – click this to delete a pairing on initial publish or active state. This icon is replaced by the **Reinstate Pairing** icon after a pairing is cancelled.<br><br> **Allow Personal Swaps** – determines if this pairing can be swapped or traded with another crewmember |

The different colours used for each flight are:

- White signifies an open flight, or none of the operating seats have been assigned to a pairing.
- Light blue signifies a partially covered flight, or some of the operating seats have been assigned to a pairing.
- Orange signifies a fully covered flight, or all operating seats in the flight have been assigned to a pairing.
- Red signifies an over-covered pairing, or there are pairings associated with one or more operational seats.
- Grey signifies a cancelled flight. The cancelled flight icon also appears beside the flight number.

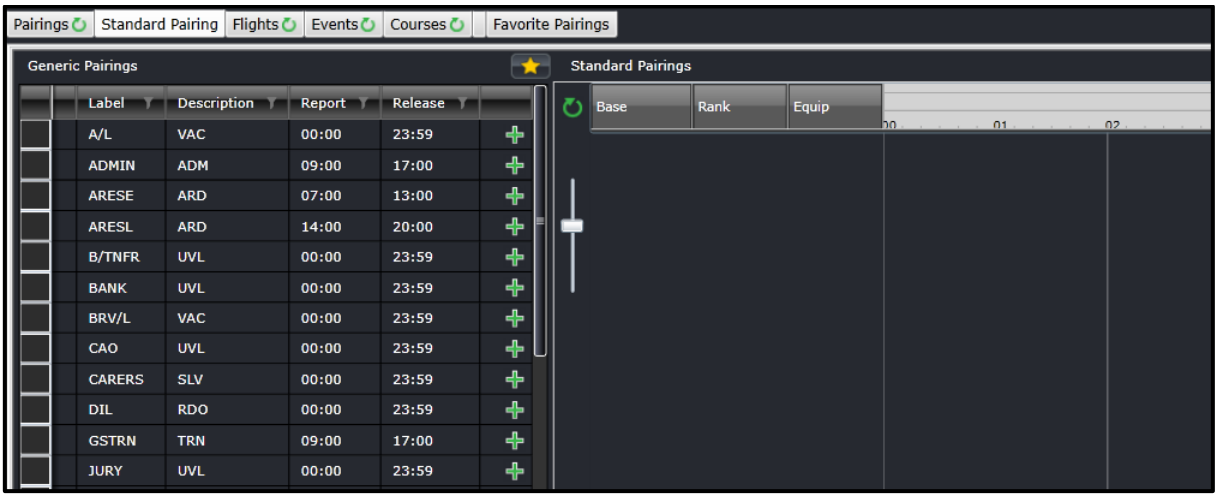
The Gantt tab is intended to display the flights in a Gantt view. It will be available in the future.

The flight designator can be displayed or hidden by setting the user preference *ShowDesignator* to True or False, respectively, in the Configure application. Also, the IATA code for the designator is displayed by default. If the airline requires ICAO codes throughout the application, please contact Customer Support.

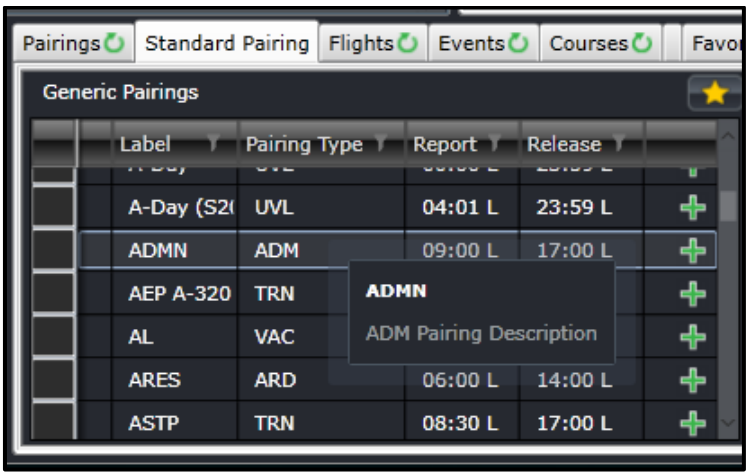
## Standard Pairing

Standard Pairings are the predefined non-flight pairings that can be allocated to crew and can be assigned on any day. These can be assigned to any crewmember regardless of rank and equipment type.

The Generic Pairings are built in the Standard Pairing tab of the Activity Panel, so you do not need to build a new pairing every time you need one. These have been predefined in Configure. These Generic Pairings can be inserted into a Flying Pairing (FPG) or assigned directly to crew in CrewPlan, CrewRoster and CrewFollow.




Each pairing can be configured to display a longer description when the mouse hovers on it. This makes it easier for users to know what each standard pairing is for.




The Standard Pairings are displayed so that they can be allocated to employees in the Activity Panel, or incorporated into other pairings created in the Pairing Panel. It does not require the filter for pairings. All generic pairings set up in Configure are displayed. The pair types under the Description column are listed below.

| Pair Type | Definition |
|---|---|
| *ADM* | Administration. Used for employees who will perform administrative duties in an office. Time spent is included in the employee's duty time unless specified otherwise. |
| *ARD* | Airport reserve or standby. Standby time spent in the airport. Crew may be required to sign on at the airport. Time spent is included in the employee's duty time whether called out or not, unless specified otherwise. |
| *AVL* | Available day. A placeholder in a crew's roster that indicates that the crew is not required to work on this day but can be assigned work later. Time spent in this pairing may be included in the employee's duty time unless specified otherwise. |
| *CFP* | Course Flight Placeholder (for Optimiser use only). This is used as a placeholder for potential course or training assignments. |

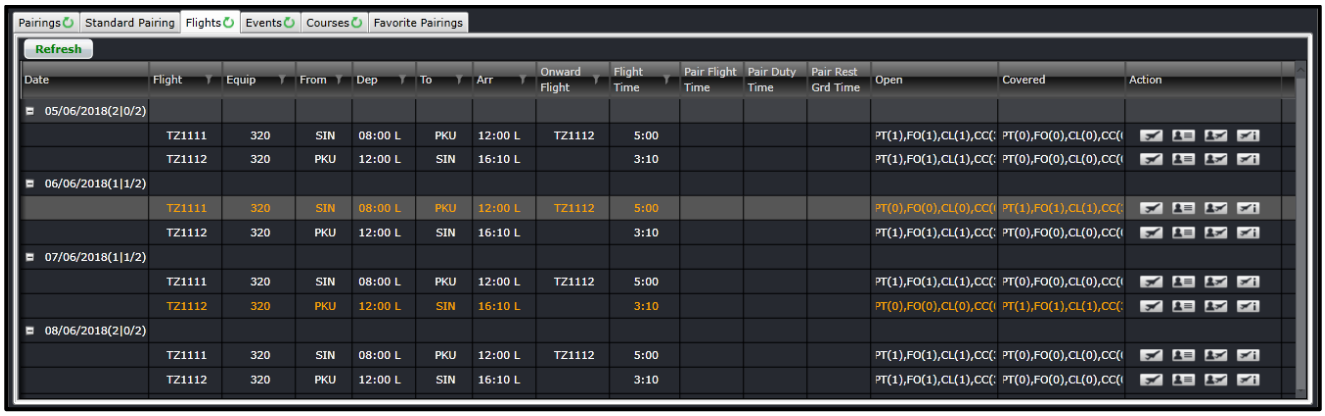
| | |
|---|---|
| *DHD* | Deadhead. This is used for duties that have deadhead or deadhead other events only. Time spent in this pairing may be included in the employee's duty time unless specified otherwise. |
| *FPG* | Flight pairing. This is the default option for pairings that have at least one operating flight. |
| *GRD* | Ground activity. Similar to administration pairings, this pairing is used for work in the airport, i.e. doing engine tests. Time spent is counted against duty time. |
| *HOL* | Public holiday. This is a non-work pairing and does not add any duty or flight time against the crew. |
| *OPD* | *Obligation to Perform*. OPDs is similar to an Available day (AVL) with reference to validating rules and utilization of preferences. Pairings such as ROE and ADD are categorized under this pairing type. |
| *RDO* | Rostered day off. This is a non-work pairing and does not add any duty or flight time against the crew. For days off rules, this is the primary pair type considered by the rule when validating the roster. |
| *RES* | Home reserve or standby. Standby time spent at home or in a suitable accommodation. This may or may not be included in the duty time of the crew, depending on the regulatory rule requirements. |
| *SIM* | Simulator training. This is a work pairing used to identify training or instruction in a simulator. Time spent is counted as duty time. |
| *SLV* | Sick leave. This is assigned to crew who call in sick or have planned medical appointments. |
| *SOC* | Subject to Operational Clearance. This is a placeholder for crew who were previously considered illegal or not fit to fly. Crew will only be allowed to operate once they are cleared by the airline. |
| *TRN* | Ground training. This is a work-pairing signifying training on ground (does not require any flying). Time spent is considered as duty time. |
| *UVL* | Unavailable day. This is a non-work pairing used as a placeholder for crew who are not available to work on the day. This is not considered as a day off, unless specified otherwise. |
| *VAC* | Vacation. This is a non-work pairing that represents a crew's vacation or personal holiday. |

## Flights

The *Flights* tab displays the data associated with flights from the published flight schedules. By default, flights are grouped by date. Beside the date is a set of numbers that determine the number of open and covered flights for the day.

**05/06/2018(2|0/2)**

In the example above, 2 is the number of open flights. 0 is the number of partially or fully covered flights. 2 is the number of flights for the day.




The columns are detailed below:

| Column | Description |
|---|---|
| *Date* | Date of the flight |
| *Flight* | Designator and flight number |
| *Equip* | Equipment type of the flight |
| *From* | Departure port |
| *Dep* | Departure time |
| *To* | Arrival port |
| *Arr* | Arrival time |
| *Onward Flight* | Displays succeeding flights numbers |
| *Flight time* | Difference between on chocks and off chocks |
| *Pair Flight Time* | Total flight time within the pairing |
| *Pair Duty Time* | Total duty time within the pairing |
| *Pair Rest Grd Time* | Total pay credit for the pairing |
| *Open* | Displays the number of crew required for the flight. The numbers are broken down per rank. |
| *Covered* | Displays the number of crew that are already assigned to the flight. The numbers are broken down per rank. |
| *Action* | Set of action buttons:<br><br> **Flight Follow Complement Delta** – Displays the complement for the selected flight.<br><br> **Crew Assigned to Flight** – Displays the operating and deadheading crew in the selected flight. |

| | |
|---|---|
| | **Pairings covering the flight** – Displays the pairings that has the selected flight included.<br><br> **Flight information** – Displays detailed information on the selected flight, similar to AircraftFollow's Flight Information Window. |

The different colours used for each flight are:

- White signifies an open flight, or none of the operating seats have been assigned to a pairing.
- Light blue signifies a partially covered flight, or some of the operating seats have been assigned to a pairing.
- Orange signifies a fully covered flight, or all operating seats in the flight have been assigned to a pairing.
- Red signifies an over-covered pairing, or there are pairings associated with one or more operational seats.
- Grey signifies a cancelled flight. The cancelled flight icon also appears beside the flight number.

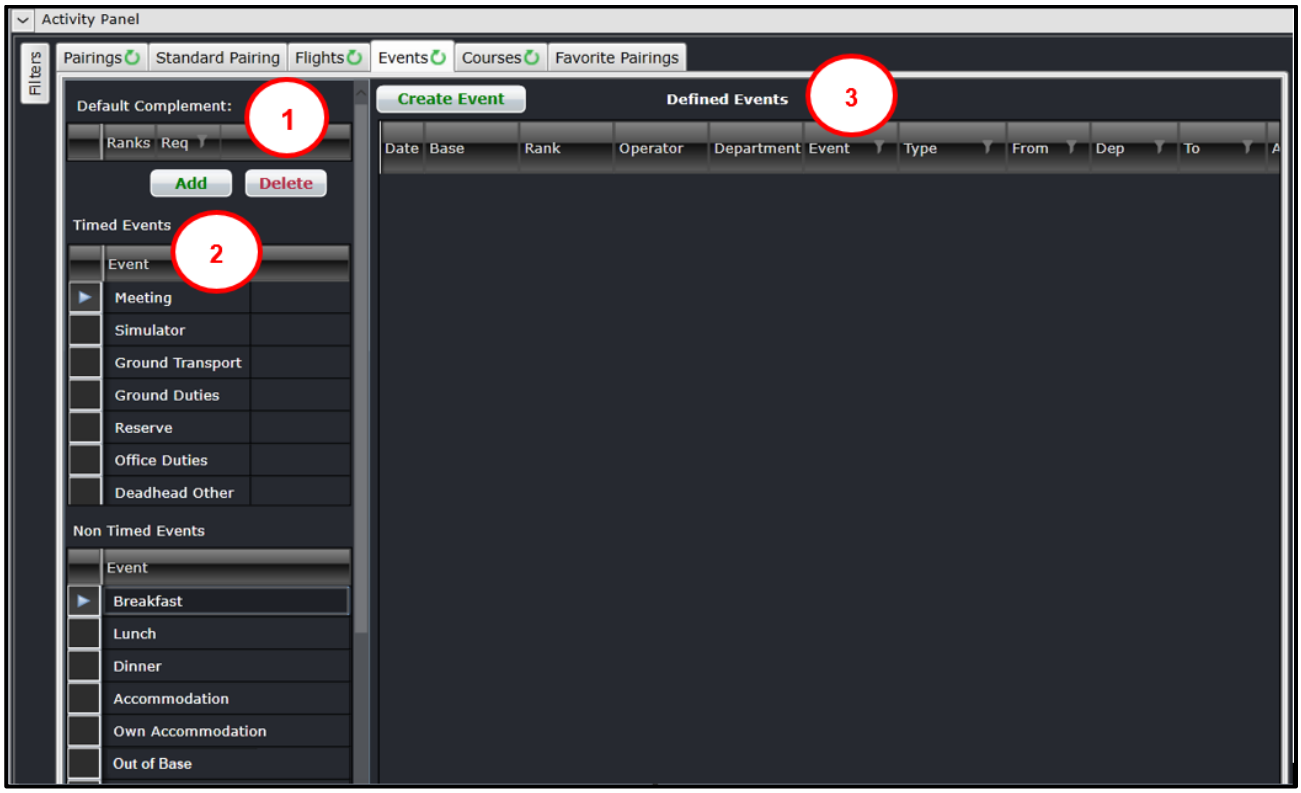
The Gantt tab is intended to display the flights in a Gantt view. It will be available in the future.

The flight designator can be displayed or hidden by setting the user preference *ShowDesignator* to True or False, respectively, in the Configure application. Also, the IATA code for the designator is displayed by default. If the airline requires ICAO codes throughout the application, please contact Customer Support.

## Events

An event is an activity within a pairing and is not an active flight.

The Events tab contains the list of previously created existing timed events which can be inserted into pairings in a similar way to flights. It also contains lists of the configured generic types of both timed and non-timed events that can be added into pairings. The Events tab also provides the functionality to allow timed events to be created that can later be inserted into pairings, as well as the ability to modify and delete existing timed events (for the rest of this section unless otherwise specified, the term event will be used to refer to existing created timed events).

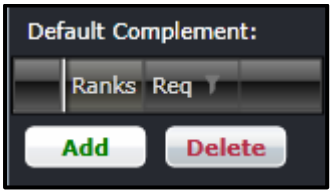



The Events tab contains 3 main screen components or sections:

1. **Default Complement Grid -** Defines the default complement for newly created events
2. **Generic Event Lists -** Two simple scrollable lists containing timed and non-timed events
3. **Defined Events -** Where the data matching the filter criteria is displayed

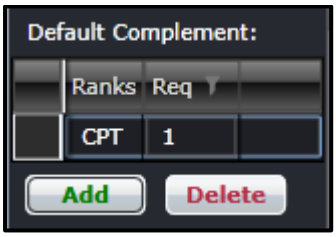
## Default Complement Grid

This section allows the user to define the complement for any events that are created directly from this instance of the Activity Panel. By default when the Activity Panel is open the Default Complement Grid will default to empty.

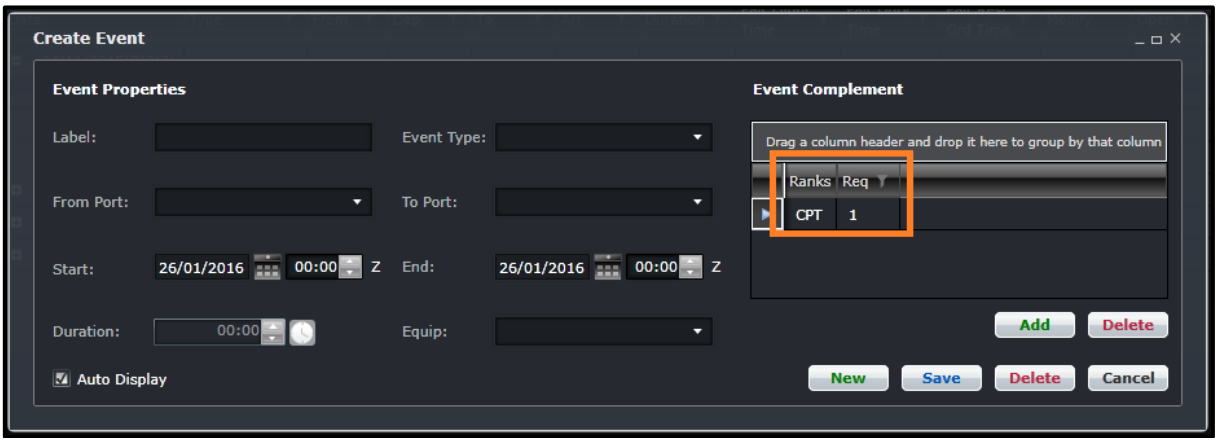



**To add a complement:**

1. Click **Add**.
2. Select a rank from the dropdown field in the Ranks column.
3. Enter the number of crew required for the selected rank under the Req column. The changes are automatically saved.

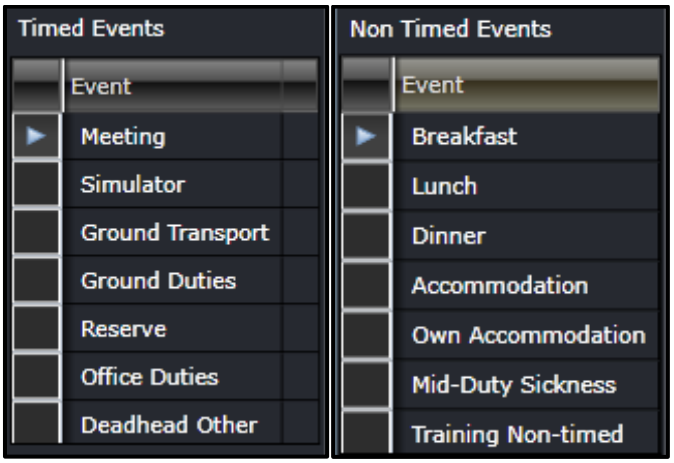



The complement will be automatically added when a new event is created. Details of which will be discussed in the next sections.




## Generic Event Lists

The Generic Event lists consist of two lists. The first list has all the configured timed events and the second list has all the configured non-timed event types within the merlot system. These events can be added into any pairing to indicate non-flying activities that crew need to accomplish. In doing so, the user is prompted to enter any necessary information required to include an event of that type within the pairing.



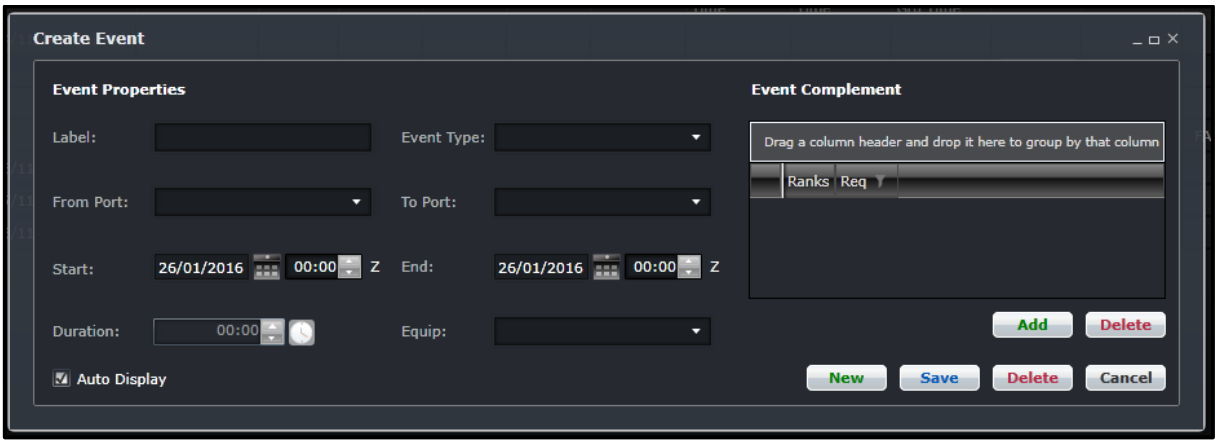
## Defined Events

This is a very simple text-based grid presentation of the events that match the applied filter criteria. The columns are described below:

| Column | Description |
|---|---|
| *Date* | Date of the flight |
| *Type* | Event type, as described in the list of timed and non-timed events |
| *From* | Departure port |
| *Dep* | Departure time |
| *To* | Arrival port |
| *Arr* | Arrival time |
| *Duration* | Length of time for the event |
| *Pair Flight Time* | Total flight time within the pairing |
| *Pair Duty Time* | Total duty time within the pairing |
| *Pair Rest Grd Time* | Total pay credit for the pairing |
| *Modify* | A button that allows users to modify details of the event |
| *Open* | Displays the number of crew required for the event. The numbers are broken down per rank. |
| *Covered* | Displays the number of crew that are already assigned to the event. The numbers are broken down per rank. |

## Creating and Modifying Events

In addition to allowing the creation of new events, a Create Event button is included. If the user has the Create security privilege granted to the Activity Panel – the Create Event button icon will be enabled. When a new timed event is created, the Create Event form is displayed to allow the entry of the information required to define a timed event.




The Event Form is comprised of two sections:

- **Event Properties** - This section located on the left side of the form contains all of the specific fields required to detail the characteristics of the event.
- **Event Complement** - This section in a grid on the right side of the form defines the number of each rank of crew member required for the event. If the Default Complement is set in the Events tab, it will be applied here.

This form is also has Save and Cancel buttons. When **Save** is clicked the information entered in the form is saved into the event table either as new record, or as an updated existing record. Then the form is closed.

When the **Cancel** button is clicked, the form is closed with the information entered in the form not being saved. If the Cancel button is clicked in the midst of dragging / inserting the timed event into a pairing, then that insertion will also be cancelled.

When an event is being modified, the form will be populated with information about the timed event. This same event form is used to modify existing created timed events. To modify an event, click on the **Yellow Folder** under the Modify column. If you want to include an event into a pairing, drag it to the Pairing Panel as if you were adding a flight.

The fields of the Create Event and Edit Event forms are described below:

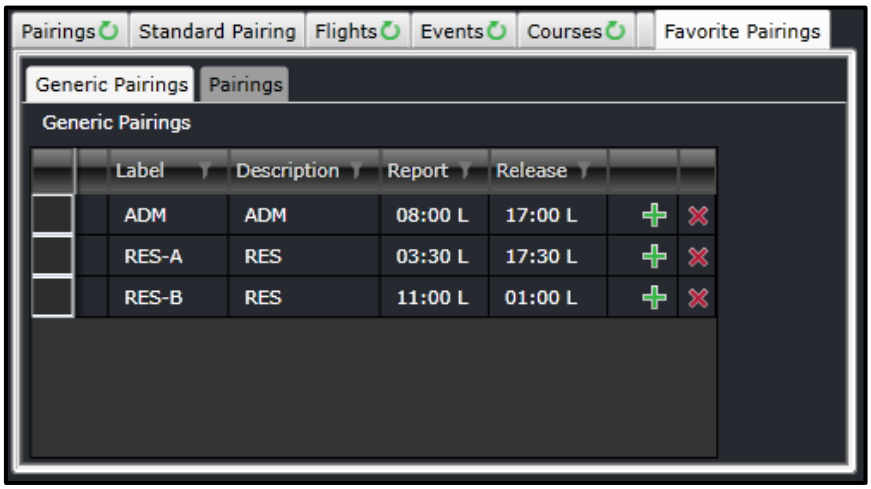
| Column | Description |
|---|---|
| *Label* | Name of the event |
| *Event Type* | Event type, as described in the list of timed and non-timed events |
| *From Port* | Departure port |
| *To Port* | Arrival port |
| *Start* | Departure time |
| *End* | Arrival time |
| *Duration* | Length of time for the event |
| *Equip* | Equipment type if the event occurs in an aircraft (deadhead other, simulator) |

## Courses

The Courses tab is intended to display the course instances that occur on the selected filter date range. This will be available in the future.

## Favorite Pairings

The Favorite Pairings tab holds a list of pairings from the Pairings and Standard Pairings tabs marked as favorite.




**To include a pairing in the Favorites tab:**

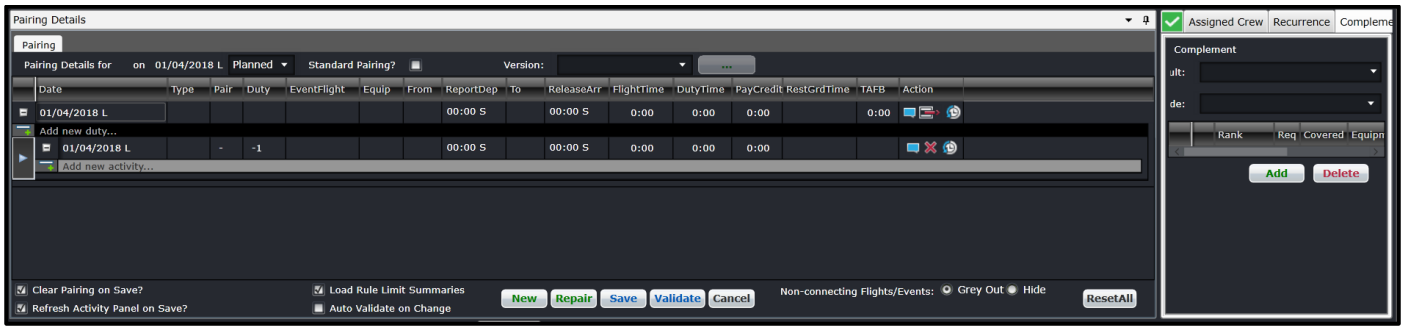
1. Select a pairing from the Pairings or Standard Pairing tab.
2. Click .
   The pairing will be listed under the Favorite Pairings tab.

# Pairing Details Panel

The Pairing Details Panel is a core component of the merlot crew application as it is the only functionality that is used to create and modify pairings. Pairings are the key definitions of work which are assigned to crew members.

There are two primary purposes that the Pairing Panel can be used for:

- Creation of pairings by inserting groupings of flights and events together within a pairing
- Modification of existing pairings by changing the duties, flights, events and complements that comprise a pairing




To be able to assign work to crew members, the individual work activities need to be grouped together into meaningful units of work. It is the Pairing Panel that provides the functionality to group flights and events together into duties, which then comprise a pairing. These pairings are the units of work that can be assigned to crew members.

The Pairing Panel displays the data associated with a pairing that is in the process of being created, or an existing pairing. To display the information about a pairing in a logical and focused manner, the Pairing Panel contains the following main screen components or sections:

- **Pairing Details** - Lists the duties, flights and events that comprise the pairing, and when they commence
- **Exceptions (Tick/Cross)** - Green-tick or red-cross to display pass/fail information of rules applied to the pairing
- **Assigned Crew** - Contains the list of crew members who have been assigned to the pairing
- **Recurrence** - The period and frequencies of the recurrence of the current pairing
- **Complement** -The number and types of crew members who are required to be assigned to the pairing
- **Attributes** - Additional ways to classify pairings

## Pairing Panel and Grid

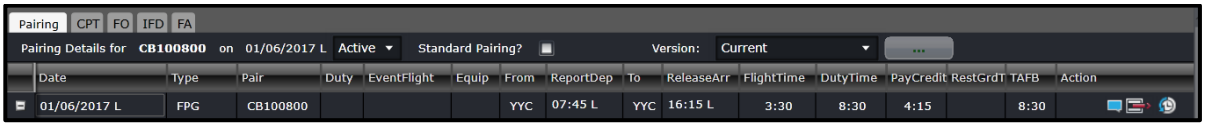
This section contains details of the duties and the flights and events that when combined, define the work involved within the pairing. It also identifies the status of a pairing, whether a pairing is a Standard Pairing or not, and the pairing version.

## Pairing Details Panel

Surrounding the Pairing Grid are fields and controls that provide general and configuration associated information about the pairing.

The pairing, duty and flight/event information is displayed to the user via a scrollable grid containing three different levels of data. These three levels are:

- **Pairing**: The information displayed in the grid columns relate to the whole pairing. There will only be one pairing level row in the grid. The pairing level row will always be the first data row in the grid.




- **Duty**: The information displayed in the grid columns relate to the duty within the pairing. The duty is comprised of the flight and/or events on the subsequent grid rows up until the next duty row, or to the end of the row in the grid. Each duty represents the work required for one day, thus there can be one or more duty rows. For ease of managing the data within a pairing and allowing the user to focus on single duties at a time, the duty level is collapsible and expandable.

- **Activities consisting of Fights and Events**: The information displayed in the grid columns relate to the individual flights or events within a duty.

The columns are described below:

| Column | Description |
|---|---|
| *Date* | Date of the pairing/duty/event |
| *Type* | Pairing or duty type |
| *Pair* | Name of the pairing, or pair label |
| *Duty* | Name of the duty, or duty label |
| *EventFlight* | Flight number or name of the event |
| *Equip* | Equipment type of the flight. This is blank if the event does not involve a flight |
| *From* | Departure port of the flight, or the location of the event |
| *ReportDep* | Report time of the duty, or the start time of the event |
| *To* | Arrival port of the flight, or the location of the event |
| *ReleaseArr* | Release time of the duty, or the end time of the event |
| *FlightTime* | If it is an operating flight, this holds the time from departure to arrival time. If credit flight time is required, it is applied in this field. The total flight time is displayed in the Duty and Pairing levels. |
| *DutyTime* | Duty time for each event. If credit duty time is required, it is applied in this field. The total duty time is displayed in the Duty and Pairing levels. |
| *PayCredit* | If pay credits are granted for the event, the value will be displayed. If you hover on the field, the pay credit, calculated credit and rig credit will be displayed. Pay credits are calculated and saved for all versions of an active pairing. |
| *RestGrdTime* | Amount of time spent on the ground when not in flight. |
| *TAFB* | Time away from base. This is the total time from report time of the first duty to the release time of the last duty in the pairing. |
| *Action* | These action buttons are discussed in the *Pairing Actions* section. |

***Additional note for PayCredit:*** Trip rig credit rules can be applied to the Pay Credit column. If the pairing pay credit value is higher than the sum of the duties' pay credit, the difference, referred to as X, will be used. If the pairing on the last day of the date range finishes on the last day, the whole pay credit value is used. Otherwise, if the last pairing ends outside of the date range, X will not be counted for the part of the pairing within and outside of the date range.

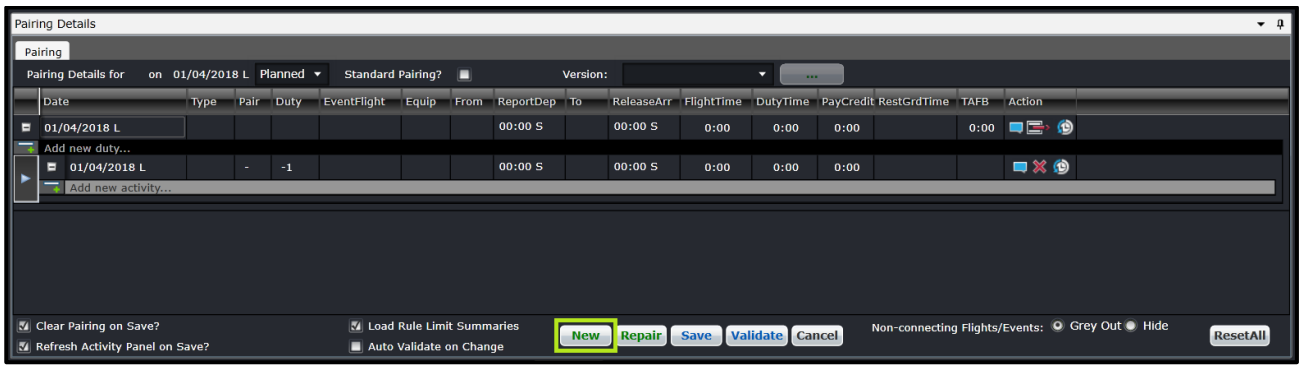
For example, the date range is 01-30 June and the pairing on June 30 ends on 01 July with rig pay credit of 4:00 and sum of duty pay credit is 2:30. The difference, or X, is 1:30 or 1.5. For the date range, X will not be considered since the latest duty (01 July) is outside of the date range. If the date range for processing is 01 June to 31 July, X will be considered. The total pairing pay credits will be displayed in the Pay Credit total column.

***Pairing Creation***

The first step in creating a new pairing is to have a blank or empty Pairing Panel.

Click the **New** button at the bottom right of the pairing panel. This will clear the Pairing Panel of the previously displayed pairing information and will display:

- A single blank grid row at the pairing level in the pairing grid, and
- A single blank grid row at the duty/flight/event level in the pairing grid.

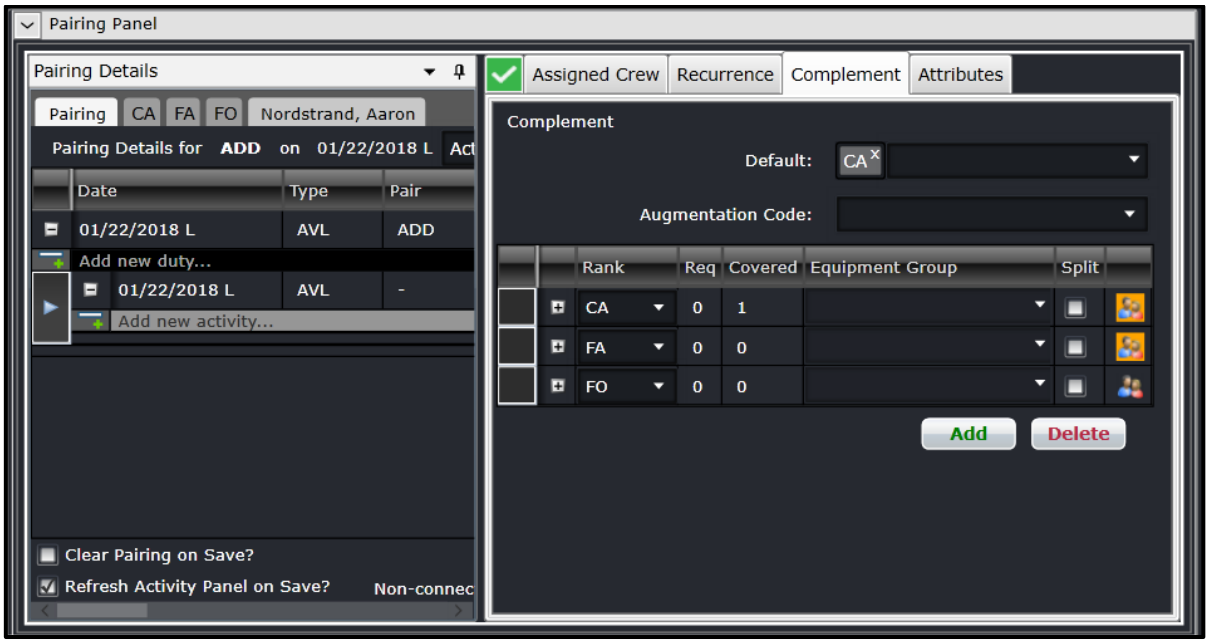



The date of the pairing you are building will initially be set at the first date defined by your Activity Filter. This can be amended as required to the correct date. Adding flights and events to the pairing will also adjust the date of the pairing, as needed.

The second step is to define what is required to occur as part of the pairing. There are two different and broad types of pairings, each with different purposes:

1. Pairings without flights/events: A definition of a period of work or non-work without any detail of what work is going to occur within that period. Most of the pairings of this type are Standard Pairings, for example Days Off, Vacation and General Administration Days.
2. Pairings with flights/events: Pairings in which duties are defined containing the specific flights and/or events that determine what work is to occur during the pairing.

The third step is to ensure you have the complement defined for the pairing you are building. This is discussed further in the next section.


Pairing Panel
Pairing Details
Pairing
CA
FA
FO
Nordstrand, Aaron
Pairing Details for ADD on 01/22/2018 L
Date
Type
Pair
01/22/2018 L
AVL
ADD
Add new duty...
01/22/2018 L
AVL
-
Add new activity...
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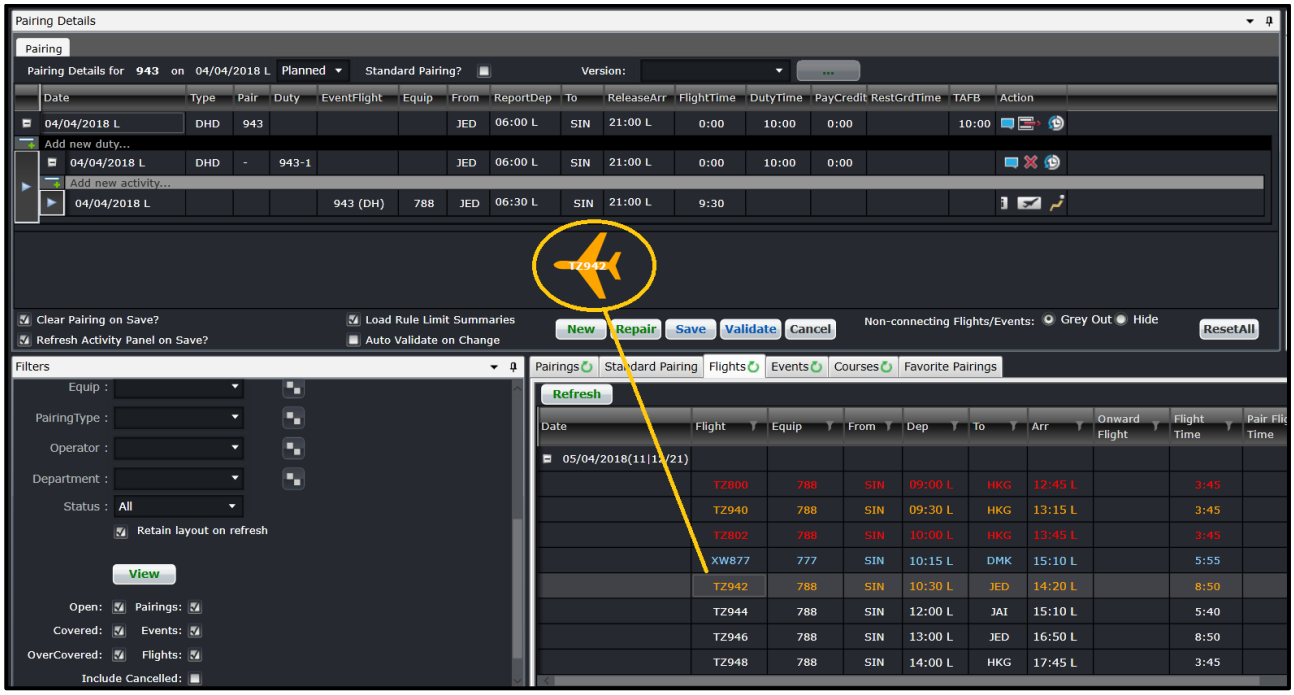
Refresh Activity Panel on Save?
Non-connec
Assigned Crew
Recurrence
Complement
Attributes
Complement
Default:
CA
Augmentation Code:
Rank
Req
Covered
Equipment Group
Split
CA
0
1
FA
0
0
FO
0
0
Add
Delete

***Pairing Build***

There are a number of different methods available that will insert flights and/or events into a pairing. These different methods are provided to give flexibility in terms of how users create pairings and allow for quicker creation of pairings by users who are familiar with the airlines flight schedule. The methods to insert flights and/or events into a pairing are the following:

1. Select/Drag/Drop flights from the Flights or Events tab of the Activity Panel
2. Manually enter a date and flight number
3. Manually enter a date and event name




The above image shows dragging a flight from the Flight tab of the Activity Panel to the Pairing Panel.

### *Repair Pairings*

When pairings are being created or modified, they will be validated against the rules that apply to ranks included in the pairing. Further changes to flights or events may cause a variety of issues to be introduced into existing pairings which require them to be modified in order to be legal. The Repair button will essentially update the report and release times, flight and duty times, rest ground time, time away from base (TAFB), credit times, pay credits and the sequence of events. Accommodation events will also be added if an overnight is required. These updates are necessary if a flight or event is retimed, delayed, added or removed.

Click **Save**.

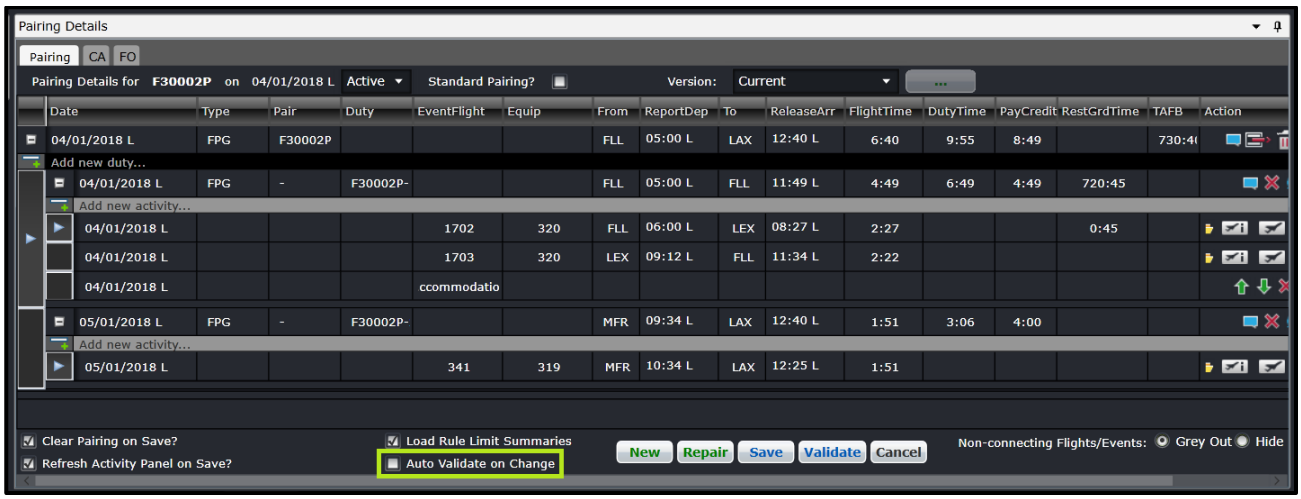
### *Save Pairings*

The user can save a pairing by:

- Clicking **Save**; or
- Choose the **File > Save** menu item.

### *Validate Pairings*

The **Validate** button validates changes as needed when creating a pairing. This is useful when the **Auto Validate on Change** checkbox is not selected.




### *Modify Pairings*

An existing pairing can be changed by inserting or deleting flights and/or events from the pairing. The pairing can be loaded to the Pairing Panel by double clicking or dragging the pairing from the Pairing tab in the Activities panel. Flights and events can be added by double clicking or dragging the pairing from the Flights or Events tab, respectively. The user must click Save to commit the changes.

Events can be modified within the pairing by clicking on the action button. Clicking this will bring out the Edit Event form.

Flights cannot be modified in CrewBuild. Users must modify flight information in AircraftFollow or AircraftSchedule.

Cancelled flights that are still contained in a pairing are grayed out and have the cancelled flight icon beside the flight number. These flights can be removed from the pairing. See the next section for instructions.

### *Cancel Pairings*

Pairings with initial publish or active state can be cancelled. This can be done by clicking **Cancel** . Pairings with crew assigned cannot be cancelled. Users are prompted to deallocate crew from a pairing first before proceeding to cancel. Cancelled pairings cannot be modified or assigned.

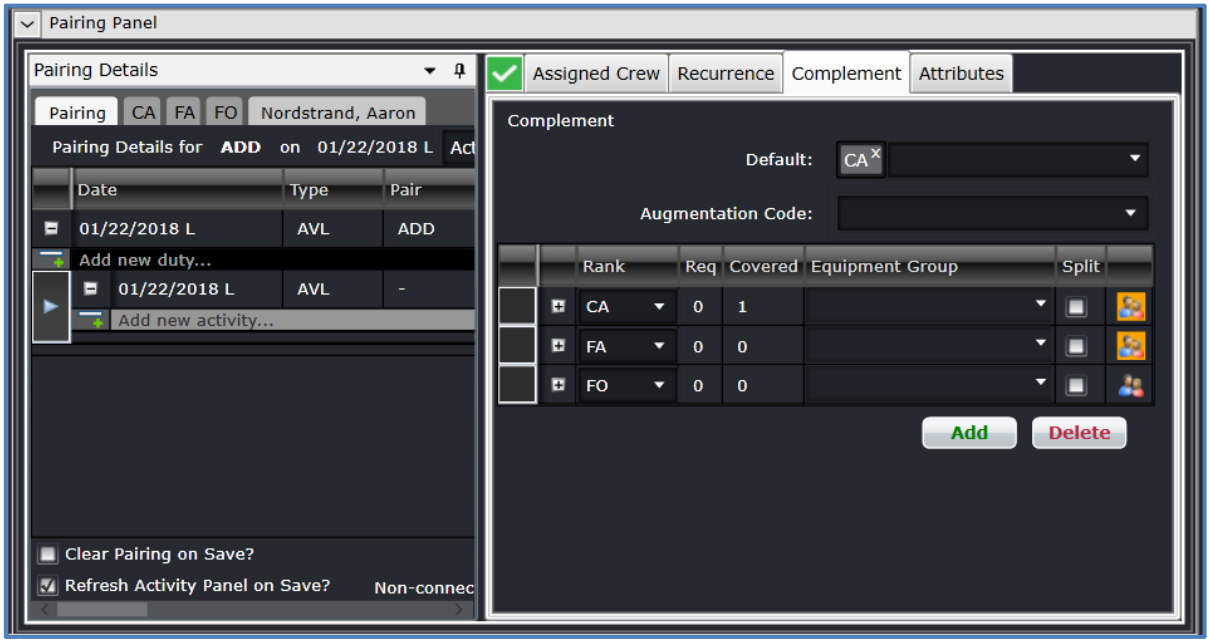
The cancellation of a pairing is reflected in the pairing version.

To reinstate a cancelled pairing, click **Reinstate** .

### *Split Pairings*

The split functionality is used when a crew is required to perform an activity other than his assigned duty.

The *Split* column in the *Assigned Crew* and *Complement* tabs allows splitting of duties and ranks. Splitting of duties with one assigned crew and rank complement with no assigned crew are also allowed.




When splitting a complement from a pairing with no crew, the following will apply:

- The selected complement will be in a separate pairing and will have the same required complement value
- If a new complement is added after the split, and another split was done, the newly added complement will be in a separate pairing
- When splitting all ranks, nothing will change, as it is a requirement that at least one complement remains with the original pairing
- When splitting both in the *Complement* and *Assigned Crew* tabs, all the selected complements will be considered
- No change will be applied when splitting a pairing with only one complement

If there are crew assigned to a rank, the following will apply after applying a split:

- The selected rank will be added to a pairing containing the same rank
- All crew assigned to a rank will be moved to a new pairing
- Split is not allowed if there is only one rank in the *Complement* tab
- When splitting all ranks, nothing will change as it is a requirement that at least one complement will remain with the original pairing

**Split Pairing Functionality Applied to Actual Scenarios**

1. When splitting a pairing with an FO crew assigned, and there are other open rank complements i.e. CA and FA, the following will apply:
    a. The FO rank complement and the FO crew will be in a separate new pairing;
    b. The original pairing will drop the FO tab and the FO crew, given that they are already included in a new pairing; and

c. Changes such as adding more flights, or a deadhead assignment to the original or the new pairing will be allowed without affecting each other.

2. When splitting a CA rank complement from a pairing with no crew assigned to it, and only open rank complements i.e. 1 FO 3 FA, the following will apply:
   a. The CA rank complement will be assigned to a separate new pairing with the correct number of required complements;
   b. The original pairing will drop the CA rank complement and will retain the FO and FA rank complements;
   c. Changes such as adding more flights, or a deadhead assignment to the original or the new pairing will be allowed without affecting each other.

All split activities done in the *Assigned Crew* and *Complement* tabs will be reflected in the Activity Panel.

### *Delete Events and Pairings*

**To remove a flight or event from a pairing:**

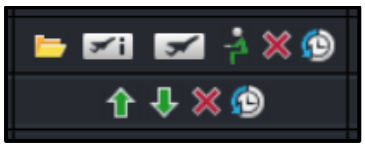
1. Go to the Pairing tab. (This cannot be done on a rank tab or a crew tab).
2. Click on the action button on the row of the flight/event to be removed.
3. Click **Save**.

**There are two ways to delete a pairing:**

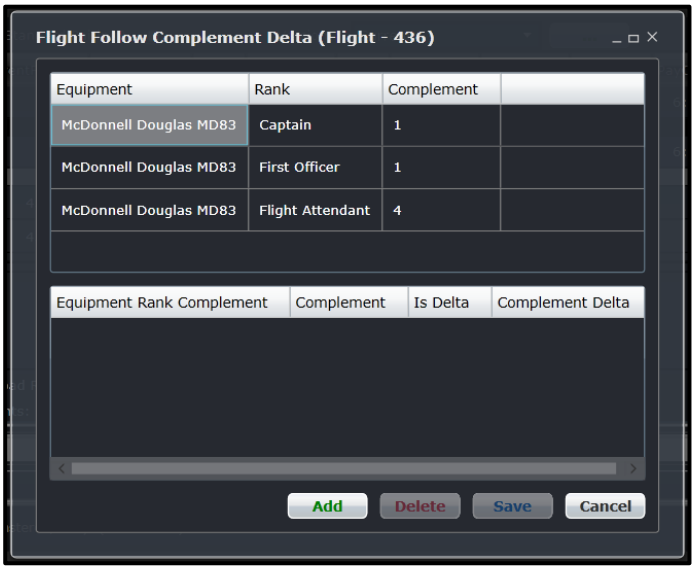
1. From the Pairing Panel, click the action button on the pairing level; or
2. From the Activities Panel, click the action button on the row of the pairing.

### *Pairing Actions*

Each of the rows within the Pairing Details grid has different actions that can be performed on them dependent of the rows data level. The pairing action icons are as follows:

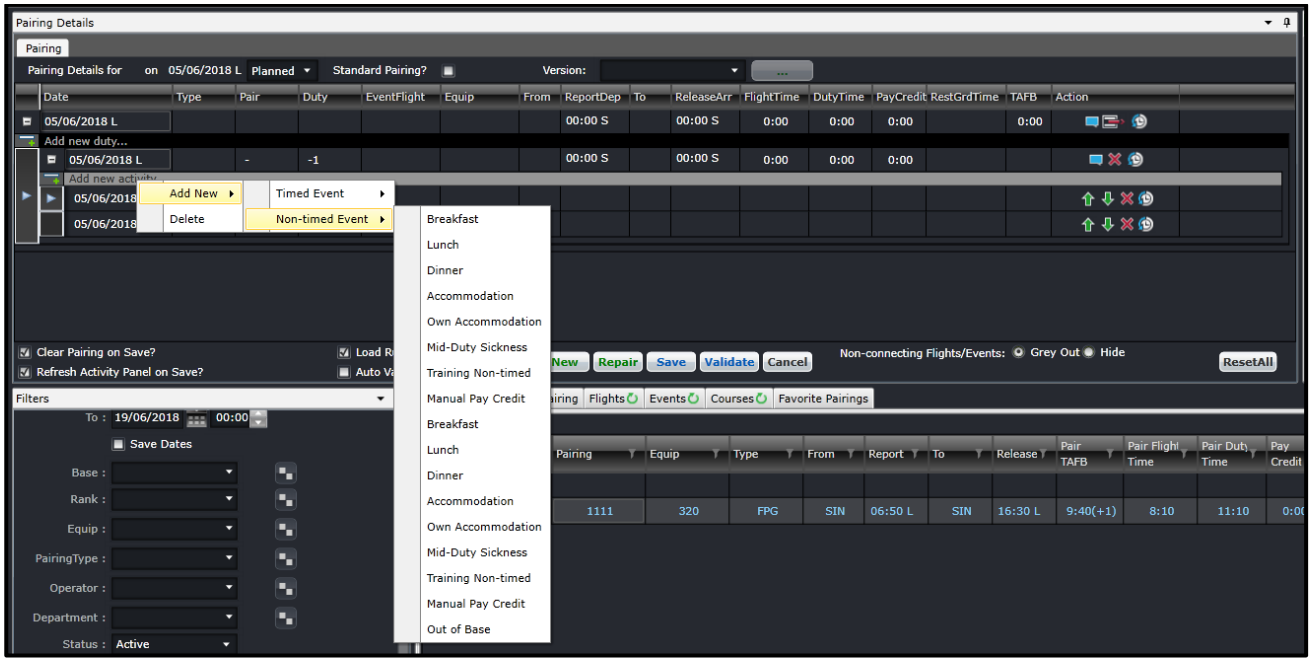


| Action Button | Description |
|---|---|
| | Edit. This can be used with timed events only. |
| | Flight Information. Opens the Flight Information Window that displays flight details |
| | Flight Complement Delta – Displays the complement for the selected flight. The number of crew required can be adjusted from this form. Users can also apply pairing complement changes to flight complements in Pairing Details > Pairing tab. |

| | |
|---|---|
| | **Flight Follow Complement Delta Form**<br><br>The *Flight Follow Complement Delta* form displays and allows users to view, add, delete, save or cancel flight complement changes.<br><br>  <br><br><br>A popup message confirming flight complement update displays when a user saves an update for the following:<br><br>• Changing the *Req* value<br>• Selecting an *Augmentation Code*<br>• Adding a new rank complement<br>• Removing a rank complement |
| | Toggle Operational/Non-operational State. Either of these icons are displayed on flights only. If crew is set to operate for the flight, the green icon is displayed. If crew is set to deadhead on the flight, the yellow icon is displayed. Click on the icon to switch between either options. |
| | Delete event. Removes the flight or event from the pairing. |
| | View History. Displays the historical changes on the event, duty or pairing. |
| | Move Up/Down. Moves an untimed event up or down. |

### *Right Click Features*

Additional features are available to the user in the grid view, by right clicking on a selected row.



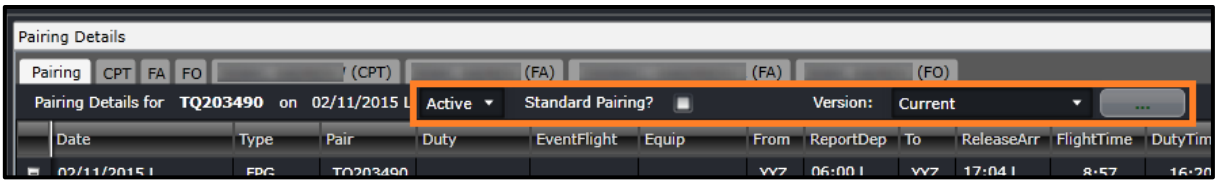

The following options are available from the right click menu:

| Option | Description |
|---|---|
| *Add New* | Allows users to add a Timed or a Non-timed event. |
| *Delete* | Deletes an event. |

### *Other Pairing Panel Options*

There are more controls around the pairing grid that are essential to roster planning.

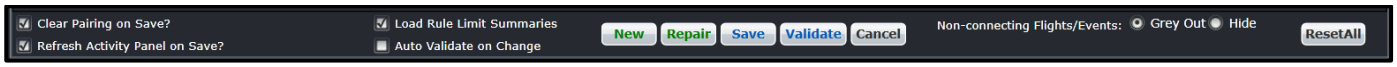
These are the options at the top of the Pairing Details panel.




- **Status** – This dropdown list has the options Planned and Active. Planned pairings are not yet available for crew viewing while active pairings have been published for operations and crew. Publishing a roster automatically changes the status to active.
- **Standard pairing selector** – selecting the tick box turns the pairing to a standard pairing.

- **Version** – This dropdown list has the versions of the pairing since it was published. To view a previous version of the pairing, select the version and click on the […] button beside it. A prompt will appear asking if that version will be loaded. This is available only for pairings published from CrewRoster.

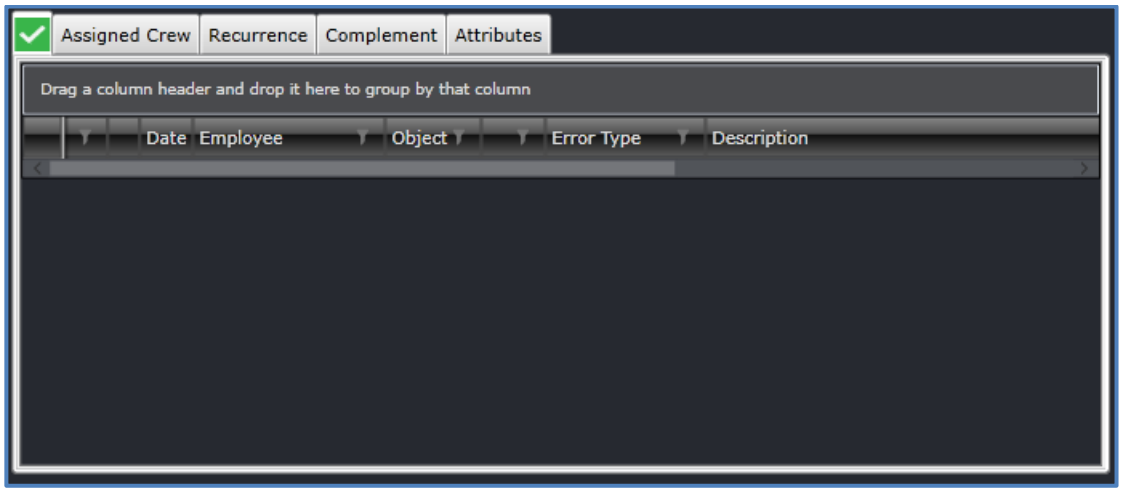
These are the options at the bottom of the Pairing Details Panel.




- **Clear Pairing on Save?** – When selected, this option clears the Pairing Details Panel after the Save button is clicked.
- **Refresh Activity Panel on Save?** – When selected, this option refreshes all the loaded tabs of the Activity Panel after the Save button is clicked.
- **Load Rule Limit Summaries** – When selected, automatically updates the Rule Limit Summaries whenever the pairing is loaded, refreshed or saved.
- **Auto Validate on Change** – Automatically validates changes within a pairing. If unselected, no rule validation will apply when applying changes to a pairing
- **Non-connecting Flights/Events** – When there are flights or events that do not match the previous arrival port or the next departure port, that event can be greyed out or hidden.
- **Reset All** – this sets the options above to the default values.

## Pairing Exceptions

The Pairing Exceptions tab displays the results of rule validation for a selected pairing. It displays both pass and fail results for each rule.




When a pairing is created or loaded, the icon on the tab changes to reflect the status of rule validation. These are described below:

| Action Button | Description |
|---|---|
| | All rules have been satisfied. No rules have been breached. |
| | Pairings are currently being validated. |
| | There is at least one rule breach. |
| | There is at least one ignorable violation. |

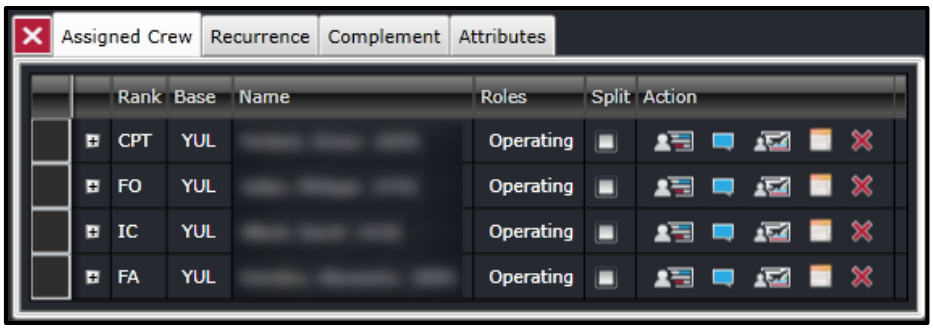
Having the green icon for all pairings is ideal. If the red icon appears, it is best to address the issue as soon as possible to avoid legality issues on the day of operations. Depending on the severity and behavior of the rules that are set in Configure, the changes to pairings can be saved despite existing violations.

| Violation Icon | Description |
|---|---|
| | Critical. The violation is causing the crew to operate illegally. It needs to be addressed immediately. |
| | Ignorable. This serves as a warning to the user. The crew is not yet operating illegally. |

| | |
|---|---|
| | Critical – Override. The violation is critical but can be overridden by a supervisor or under captain's discretion. |

## Assigned Crew

The Assigned Crew section of the Pairing Panel displays the crew who are allocated to the selected pairing. The allocated crew are displayed within a simple grid that is view only apart from the Action buttons.



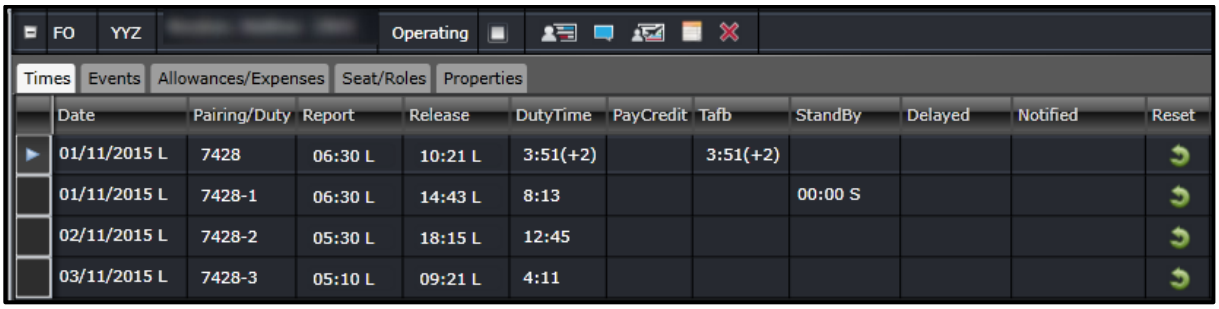

The Assigned Crew grid consists of the following columns:

| Column | Description |
|---|---|
| *Rank* | The rank of the crewmember. If the crewmember is rated for two or more ranks, the rank can be set for that pairing from this field. |
| *Base* | Home base of the crewmember |
| *Name* | Name of the crewmember |
| *Roles* | Roles of the crewmember for the pairing, which can include Operating, Non-Operating, Student and Instructor |
| *Split* | The split functionality is used when a crew is required to perform an activity other than his assigned duty.<br><br>The *Split* column in the *Assigned Crew* allows splitting of duties. For example, a crew needs to deadhead from YYZ to YUL before he can operate on the first flight which departs from YUL.<br><br>Splitting of duties with one assigned crew is also allowed.<br><br>To split a pairing, click on the tick box on the selected crew member's row, then click **Save**. |
| *Action* | Set of action buttons:<br><br> **View Pairing Allocations** – opens the crewmember's roster in the Allocation Gantt. This can be used in CrewPlan, CrewRoster and CrewFollow only. |

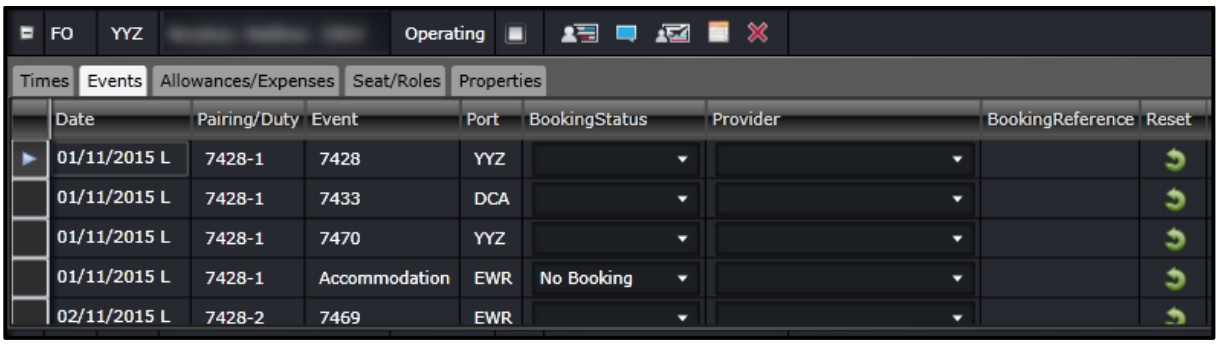
| | |
|---|---|
| | **View Comments** – opens the Comments form where public and private comments can be added to pairings. Public comments can be seen by crew in the employee reports and by users in the crew applications, while private comments can only be seen by users in the crew applications.<br><br> **View Employee Pairing Details** – Switches to the crewmember's tab in the Pairing Panel<br><br> **Pairing Properties –** Opens the Properties tab for the crew's pairing. This is displayed in the expansion below the crewmember line<br><br> **Deallocate Pairing** – Removes the pairing from the crewmember |

The (+) button to the left of the crewmember name displays more tabs that provide more information on the crew's pairing.

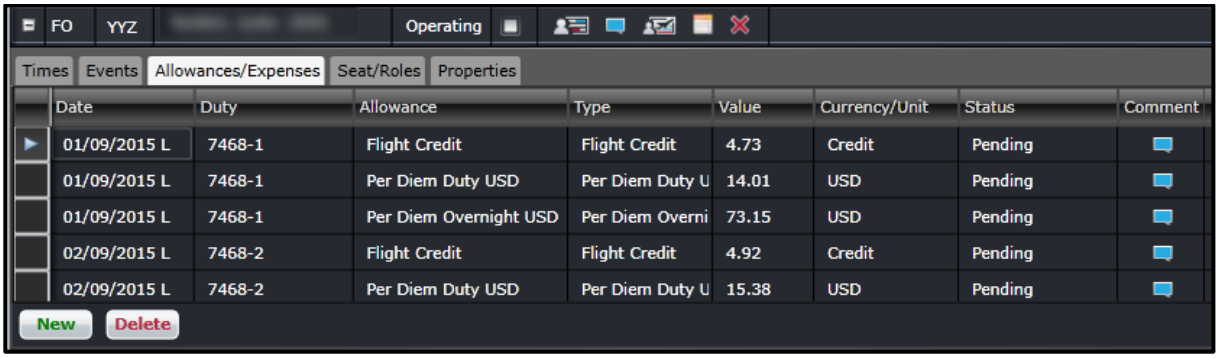
- **Times** – displays the report, release and duty times of the whole pairing (first row) and each duty (succeeding rows). It also displays any pay credits applied to the pairing or duty, the time away from base, standby time (if the crewmember was called out from standby), delay time, notified time for corresponding duty changes. All the fields in this tab can be modified except for Date, Pairing/Duty, DutyTime and Tafb. The Reset button will revert all changes back to the original values.



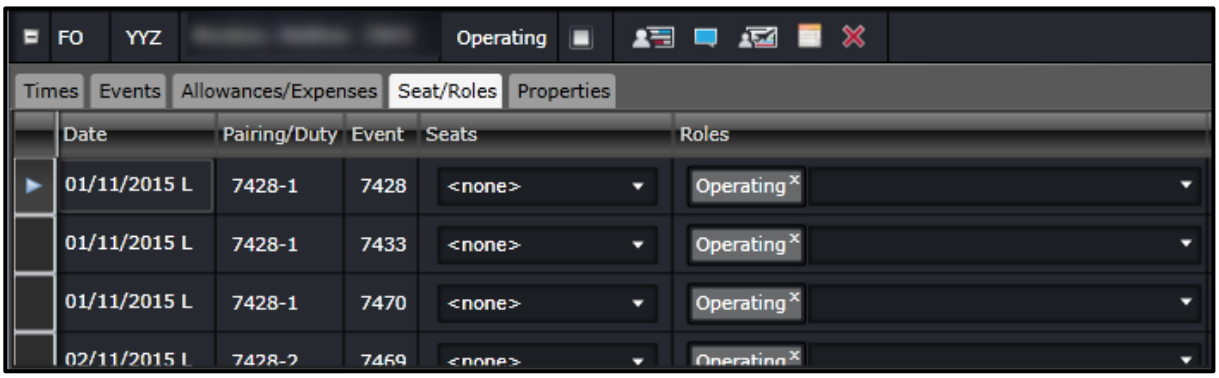

- **Events –** Lists down all the events included in the pairing. This allows bookings to be associated to accommodation, deadhead and transport events. Users can declare the booking status, provider of the booking and the reference. This information will be relayed to the crew through the employee reports.



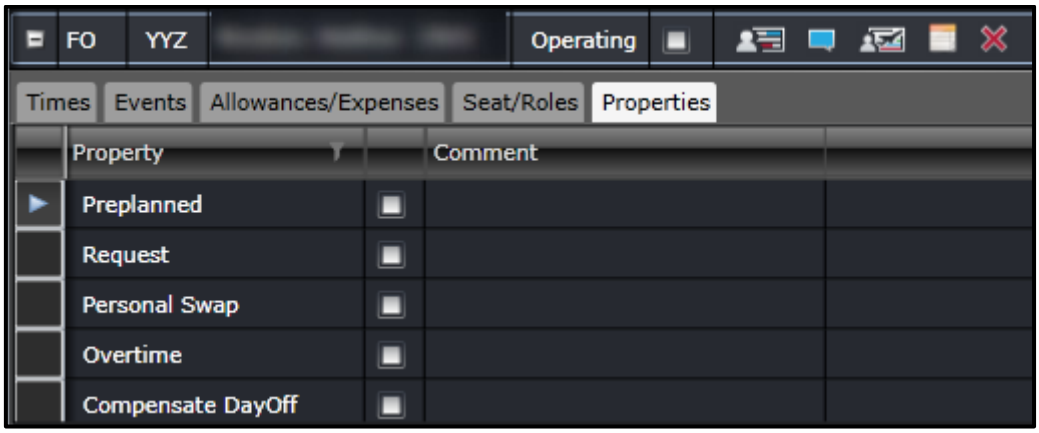
- **Allowances/Expenses** – Displays allowances and expenses recorded against the pairing. Manual allowances can be added by clicking on the New button. The allowances are added to the pairing once allowances are generated in CrewPayroll.




- **Seat/Roles** – allows users to assign the seat and role of the crewmember for each event in the pairing. Seats and roles are set up in Configure.

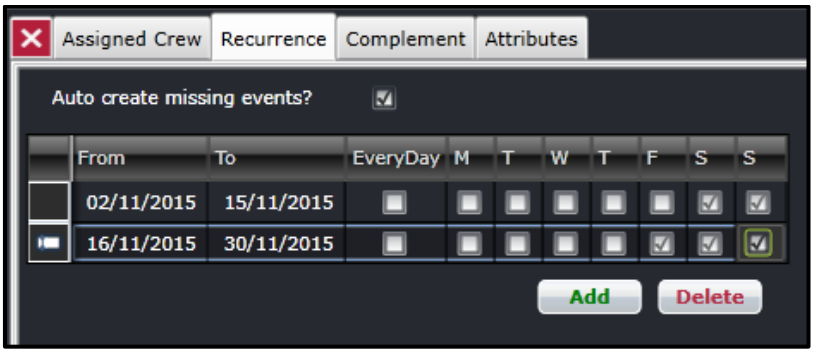



- **Properties** – allows users to assign Properties, which are characteristics of a pairing that require considerations on reassignment, payroll, and other operational consequences.



## Pairing Recurrence

The *Recurrence* tab allows users to create identical pairings based on a repeating pattern over a specified date range.




This tab has a simple grid that allows users to specify the date range and the days of the week for the recurrence. To apply recurrence throughout the week, select the *EveryDay* checkbox.

The following columns in the tab are described below:

- **From** - The start date of the recurrence.
- **To** - The end date of the recurrence.
- **EveryDay** - Automatically applies the recurrence on all the days of the week.
- **M, T, W, T, F, S, S** - The days of the week.

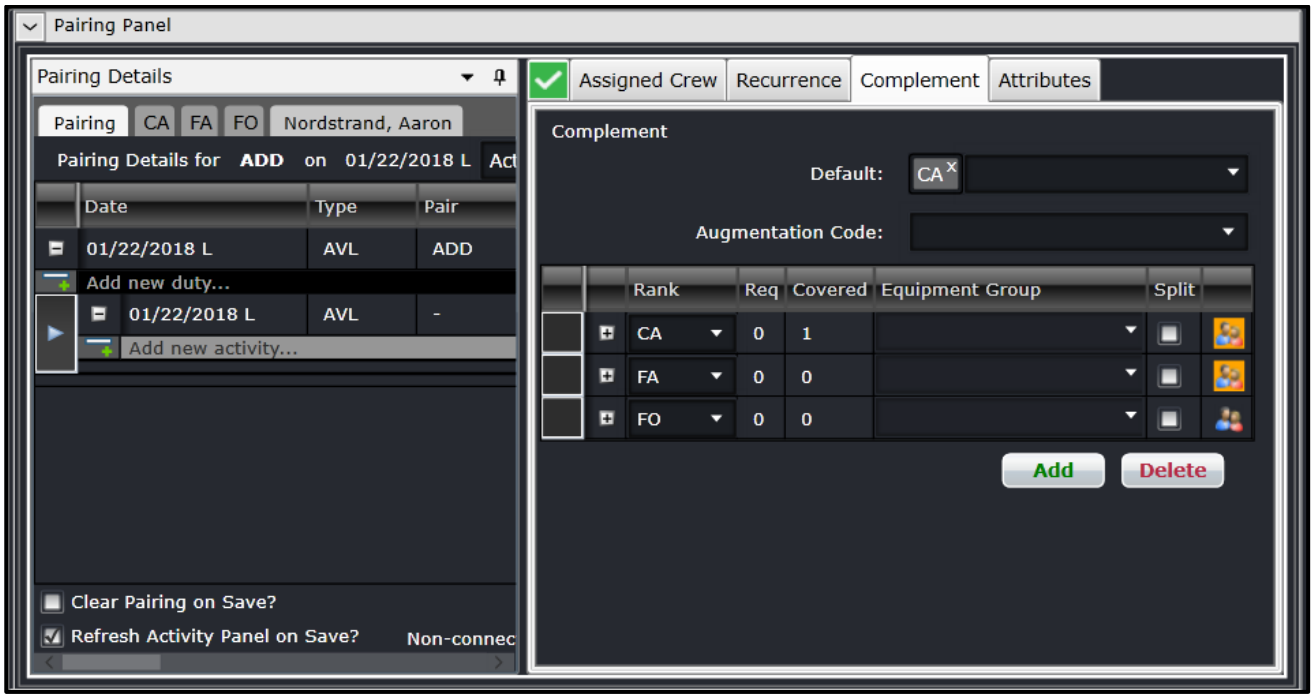
To add a new recurrence definition to a new or existing pairing, click **Add**.

To remove recurrence, select one or multiple rows then click **Delete**.

Click **Save** in the Pairing panel to apply changes.

## Complement

A pairing complement is the number of crew from different ranks required to operate a pairing. By default, the pairing complement follows the complement of the flights in the pairing. The complement can be modified as needed.



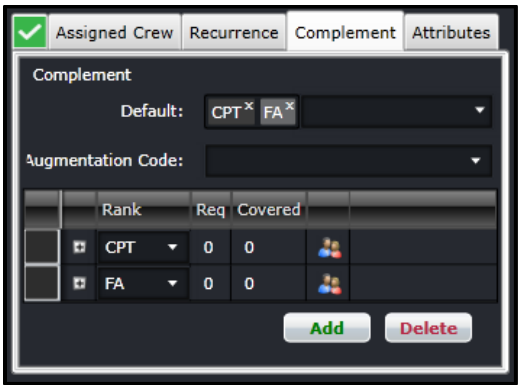

The Complement Grid is where the actual required complement of the pairing is defined. This grid consists of the following columns:

- **Rank** - The employee rank from which this pairing needs a certain number of employees allocated. This column will always be non-editable.
- **Req** - The required number of the employees of the associated rank that are needed to operate the pairing. This column is always editable
- **Covered** - The number of employees of the associated rank that have been allocated to this pairing. This column will always be non-editable
- **Equipment Group** – The type of equipment group associated with the rank.
- **Split** – The split functionality is used when a crew is required to perform an activity other than his assigned duty. The Split column in the *Complement* tab allows splitting of complement ranks. Splitting of ranks with no assigned crew are also allowed.

Clicking the (+) at the left of the rank expands the rank with more details similar to the Assigned Crew tab.

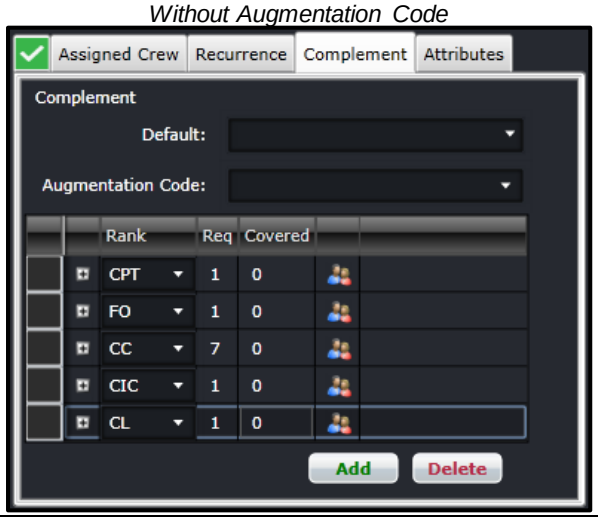
The other elements in this tab include:

- **Default** - This dropdown field contains active ranks where multiple selections can be done. If at least one rank is selected, all newly created pairings will have the selected ranks added with 0 Req.

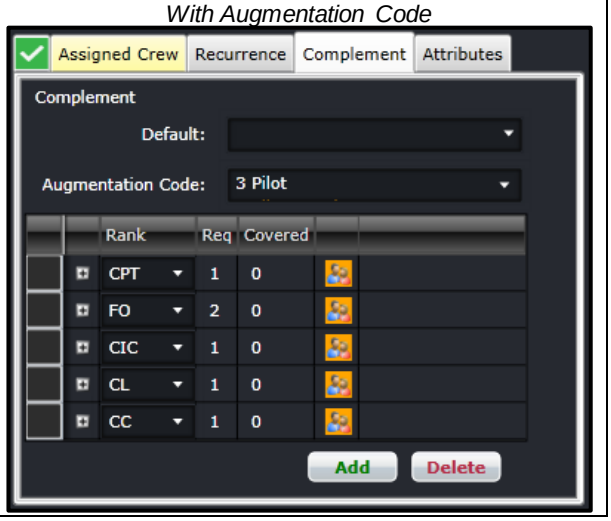



- **Augmentation Code** - This dropdown field provides preset complements that are variations of the default equipment complement. These are needed for operations that require more crew. The options are set up in Configure.

*Without Augmentation Code*




*With Augmentation Code*




- **Add -** Adds another row.
- **Delete** - Removes the selected row.

Changes to the Complement tab need to be saved by clicking on the Save button in the Pairing Panel.

Even though there is a defined Default Complement associated with the Pairing Panel, and requirements are calculated from the availability of Flights / Events within the Pairing, there are a number of occasions when the user will need to modify the complement to something other than the default. The user can manually set or change the required value in the rows in the Complement Grid. To add a requirement for a particular rank that is not displayed in the Complement Grid, the user clicks the **Add** button, and selects an additional rank to be inserted into the Grid.

## Pairing Attributes

Attributes are additional ways to classify pairings. These are described and used the same as the attributes for employees or equipment types. Attributes are also used in payroll generation, rule validation and roster optimization.

Multiple attributes can be assigned for each duty in a pairing by selecting the option/s from the Attributes dropdown list, then clicking on the Save button in the Pairing Panel. Attributes are set up in Configure.

In the example below, duty C2-1-1 has the attributes LATESTART (Late Start), NACC (Non acclimatized), LAY (Layover pairing), FATG (Fatigue-inducing), EASY and INT (International).

Pairing attributes are set up in Configure.

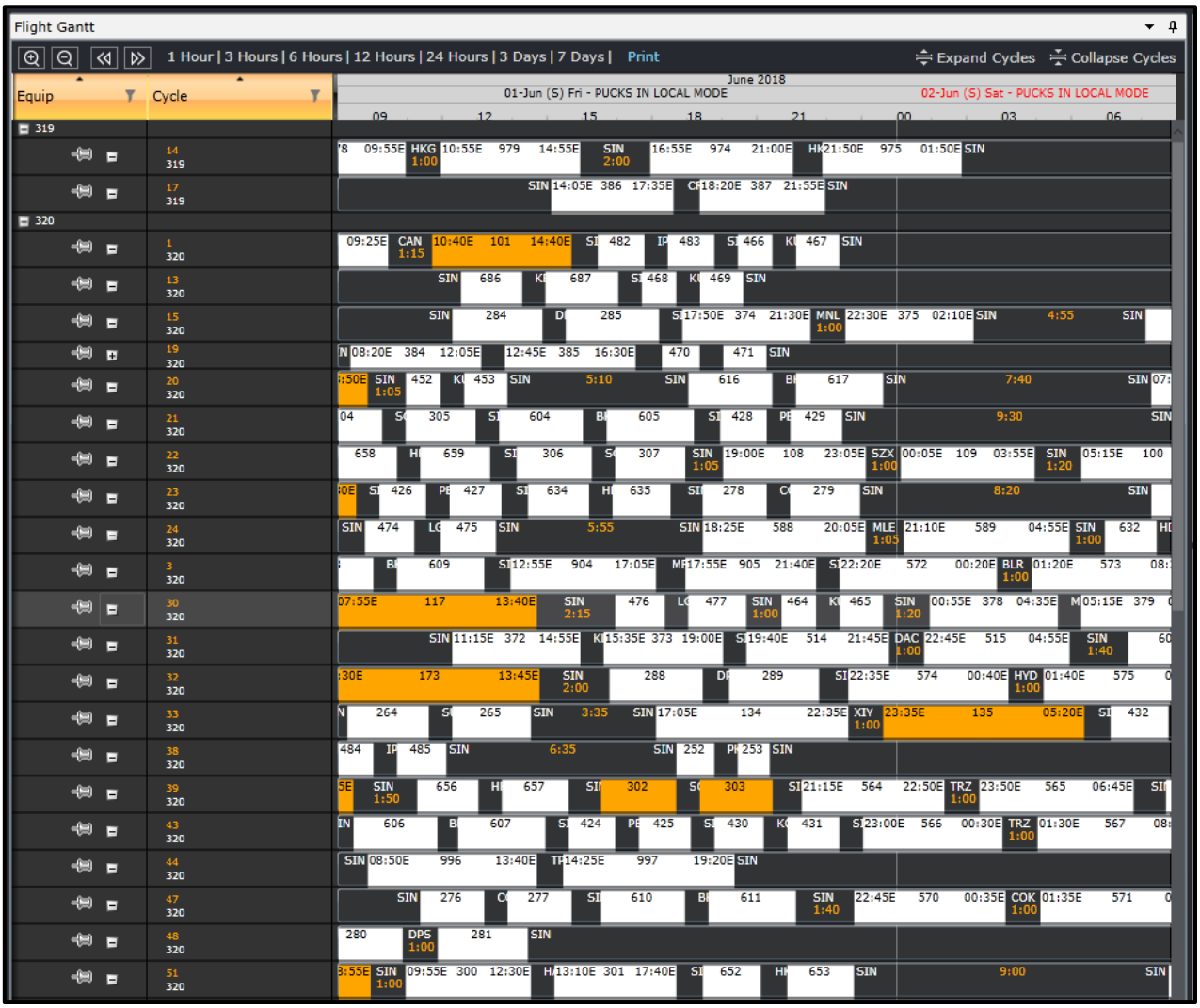
# Flight Gantt

The Flight Gantt presents flight information graphically in a bar chart format.

Flights are displayed as rectangular objects, or pucks, which are aligned along a horizontal axis called the cycle line. Users can easily point-and-click on flights when creating or modifying pairings.

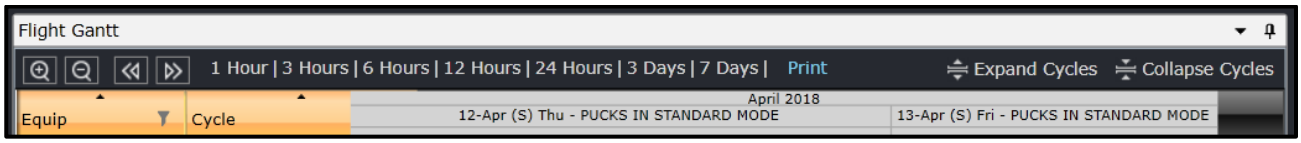
The Flight Gantt has the following sections:

- Zoom and expansion
- Equipment and Cycle
- Gantt chart

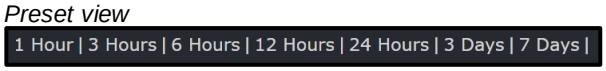
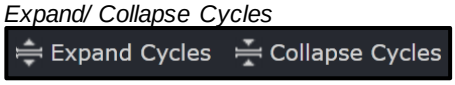


## Zoom and Expansion

The Zoom and Expansion section allows users to modify the view of the Flight Gantt.

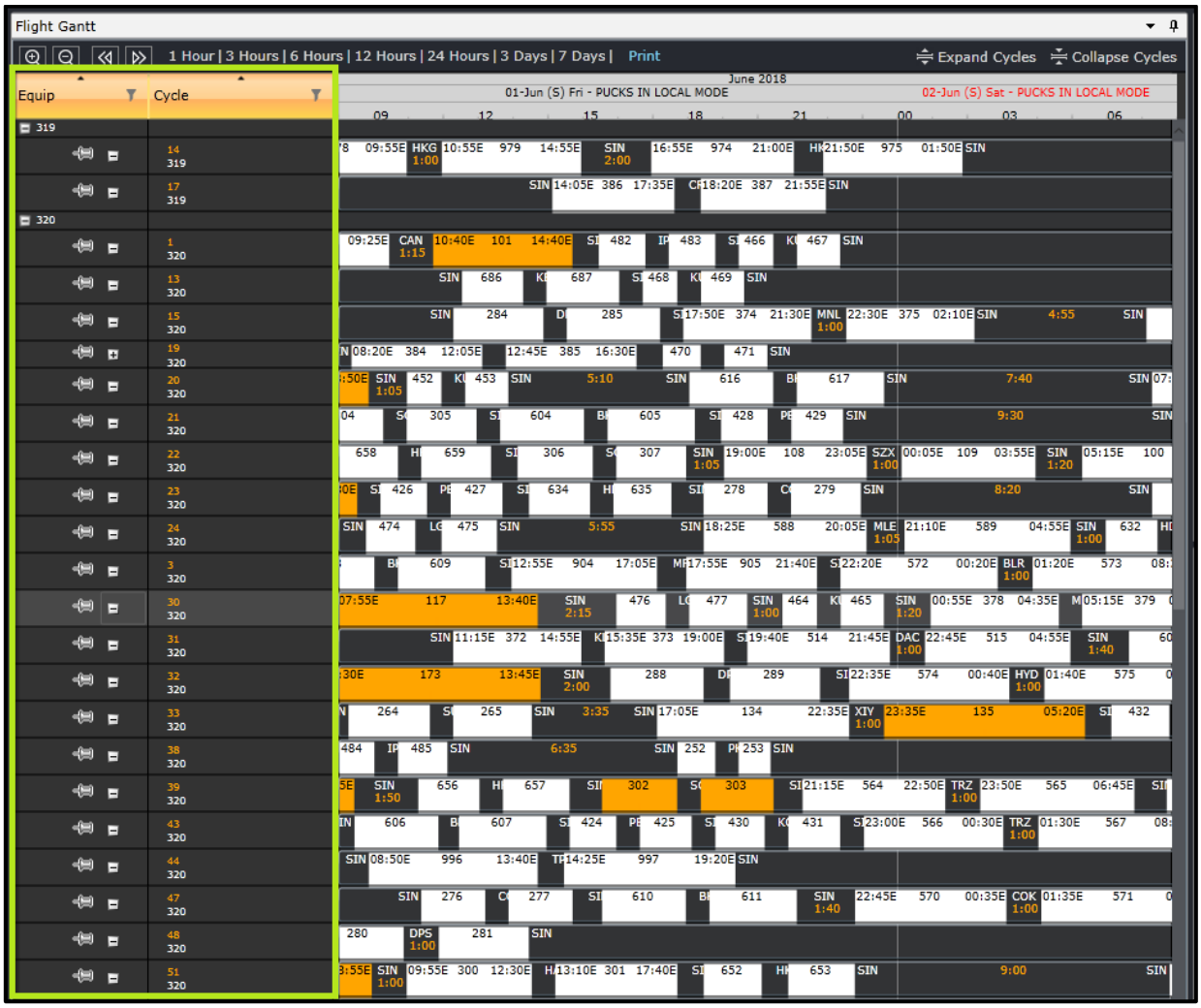



The buttons and links are described below:

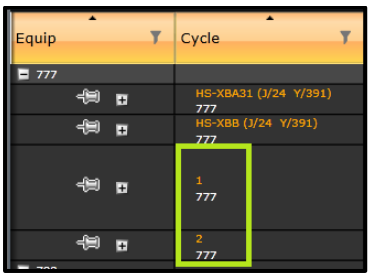
| Button | Description |
|---|---|
| *Zoom in and Zoom out* | **Zoom in** extends the Gantt chart to a wider view. **Zoom out** condenses the Gantt chart to a narrower view. |
| *Scroll left and Scroll right* | Moves the Gantt chart left or right, depending on the clicked button. |
| *Preset view*   | Clicking any of these links sets the view to display flights within the selected range.<br><br>For example, if **6 Hours** is selected and the current view starts at 08:00, flights from 08:00 to 14:00 are displayed. |
| *Print* | Prints out the current Gantt view. |
| *Expand/ Collapse Cycles*   | Expands or collapses all the cycles in the Gantt view to display or hide information on each flight. Expanded cycles reveal a middle row for a flight puck, which is discussed in a later section. Alternatively, click the **[+]** beside the equipment type of a cycle to expand it, and click **[-]** to collapse. |

## Equip and Cycle Columns

Aircraft registrations displayed within the Equip and Cycle columns are read-only.



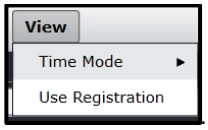

The cycle number is displayed in orange text for flights that do not have aircraft registration assignments.

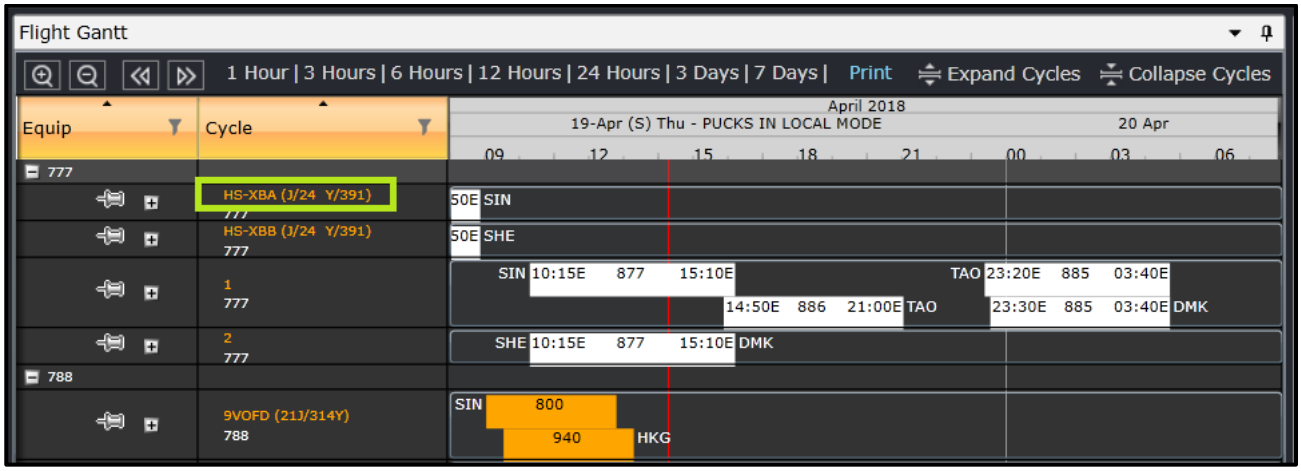



Flights are sorted by equipment, then aircraft registration, then cycle. Results are displayed in the ascending order.

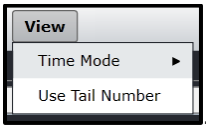
Users can select either to display the aircraft registration or the tail number in the **Cycle** column using the menu option below. This setting is dependent on the user preference *ShowTailNumber*.

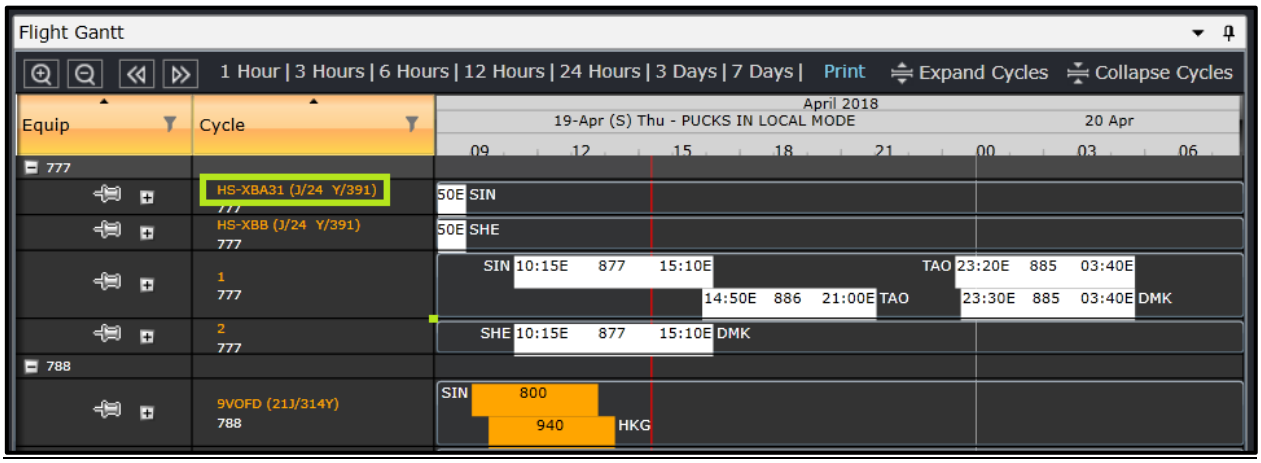
To view flights using aircraft registrations, click **View** then select **Use Registration**



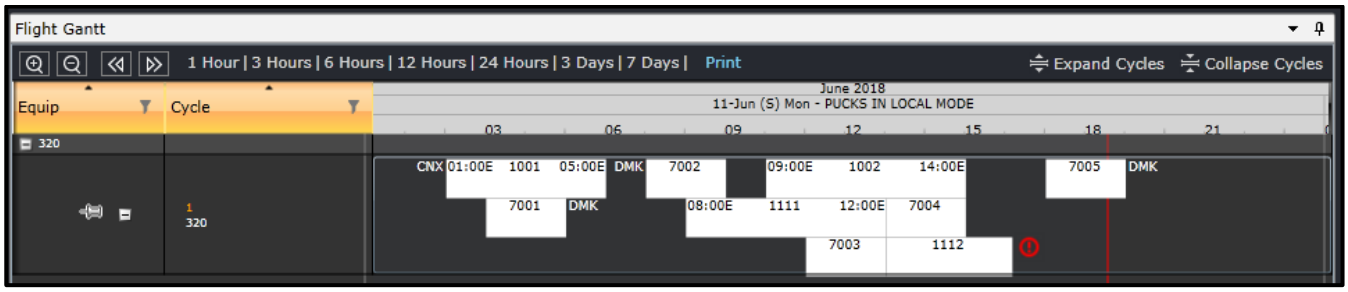

To view flights using tail numbers, click **View** then select **Use Tail Number**



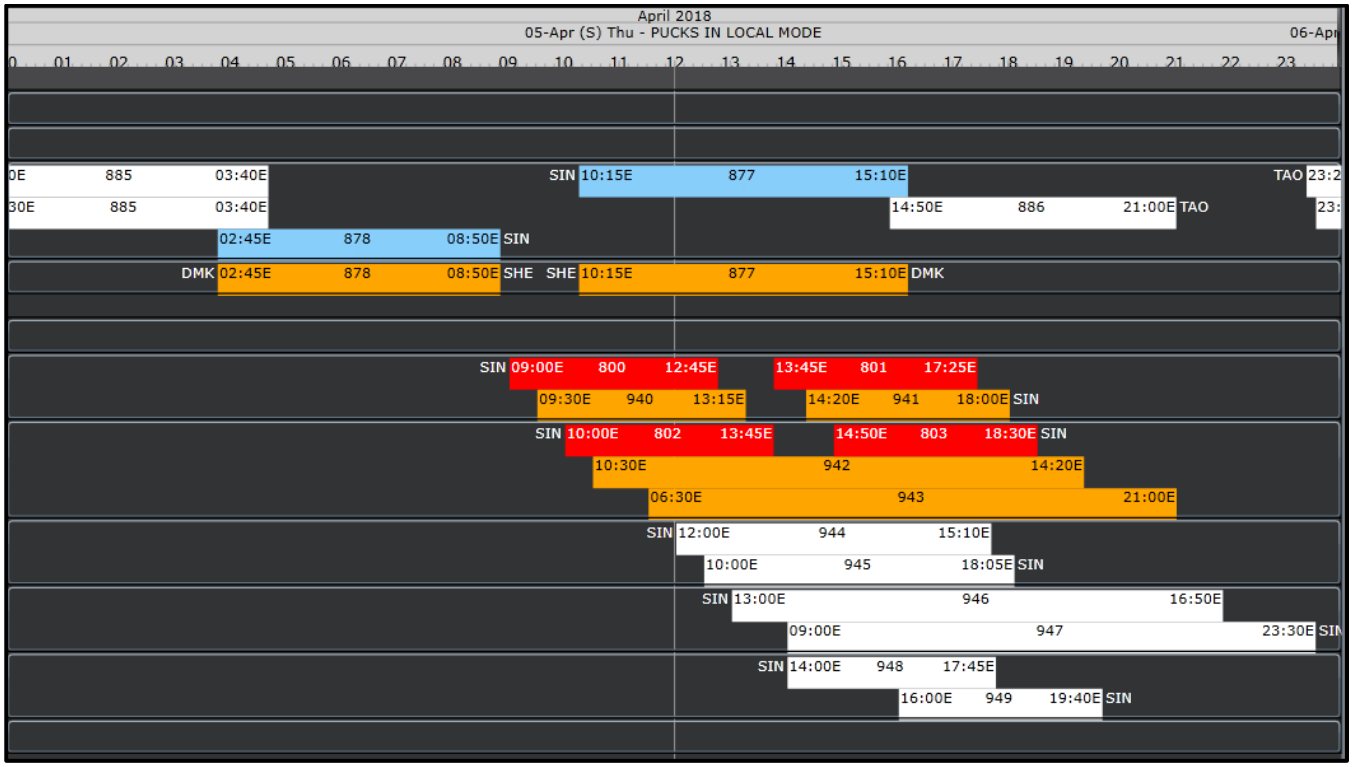



## Gantt Chart

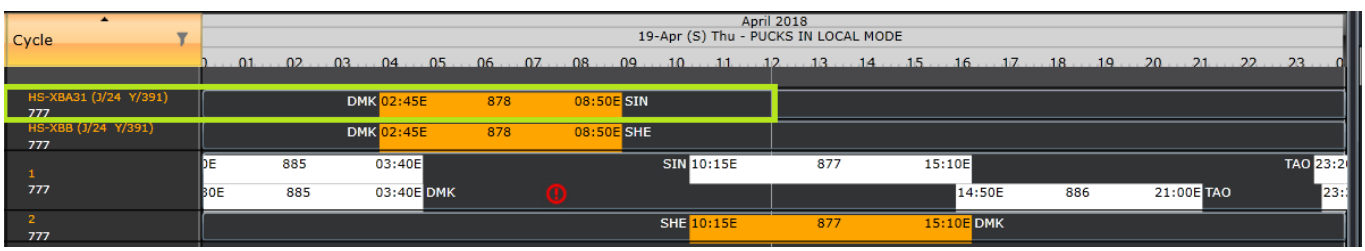
The Gantt chart displays filtered flights. All flights follow the timeline at the top. Each time the timeline moves, the flights move along with it. A red line that crosses from the timeline to the application footer shows the current time.




The flight, also known as a sector, leg or puck, contains summarized details along with a number of graphical elements designed to provide users with useful information at a glance.

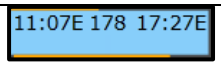



The cycle line on which the flight sits also contains a collection of data and graphical elements which relate to the flight sequence rather than the specific sectors on the line.



## Flight Colour Classification

Flight colours change depending on the flight's pairing coverage.

| Flight Colour | Description |
|---|---|
| *White* | Flight is open for coverage. |
| *Orange* | Covered flight for all ranks and complements. |
| *Blue*   | Partially covered flight for some ranks and complements. |
| *Red* | Flight is over-complemented. |

## Highlighted Pairings

Pairings are highlighted in the Flight Gantt when:

- Double-clicking a pairing from the Activity Panel > **Pairings** tab
- Dragging a flight from the Activity Panel > **Flights** tab to a pairing
- Clicking a flight in the **Pairing Details** panel

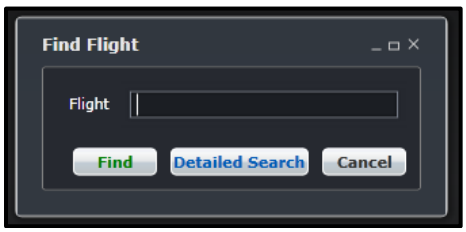
The Flight Gantt view adjusts to the highlighted pairing date accordingly.

***Note:*** *Removing a flight from a highlighted pairing removes the highlight from the pairing.*

## Find Flight

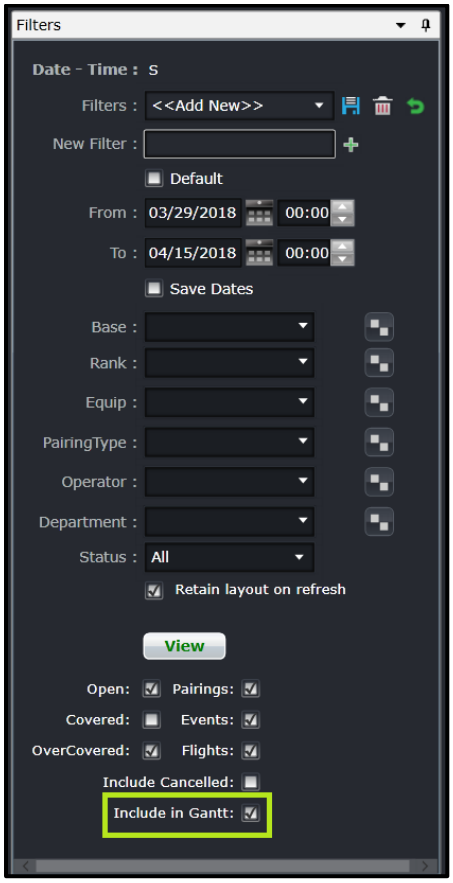
Users can quickly find flights using the **Find Flight** feature.

To find flights, press **CTRL+F**.




## Filtering Flights in the Flight Gantt

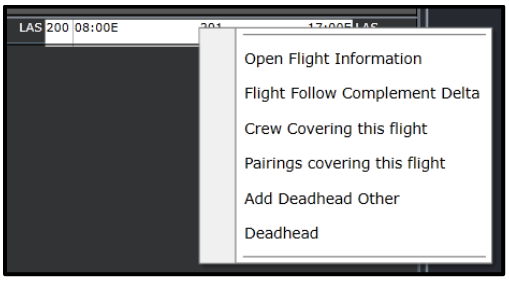
The **Include in Gantt** checkbox displays filtered flight pucks in the Flight Gantt.



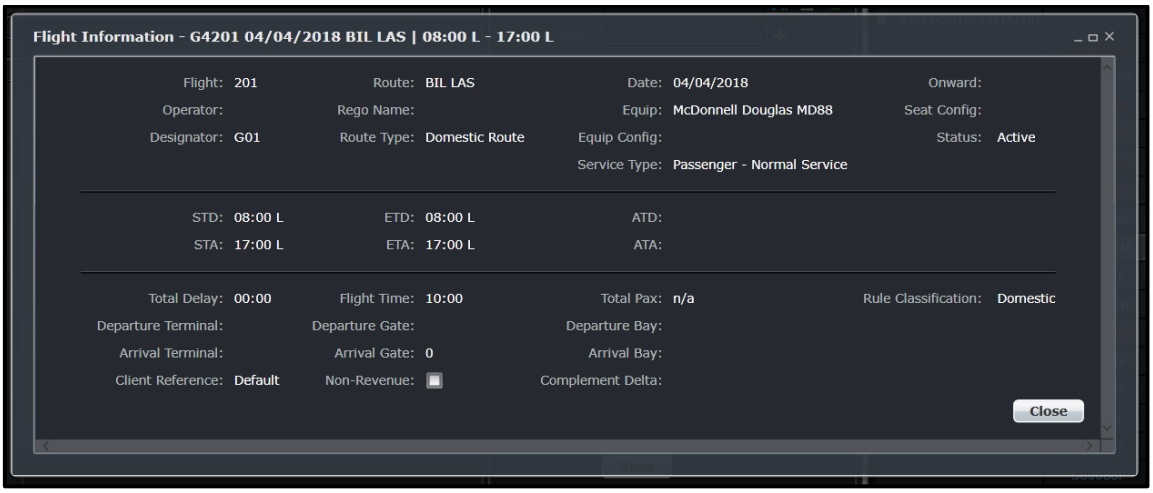

**Note:** *This feature is optional. Pairings can still be created and modified using the Pairing Panel and Activity Panel.*

## Utilising the Right-Click Menu in the Flight Gantt

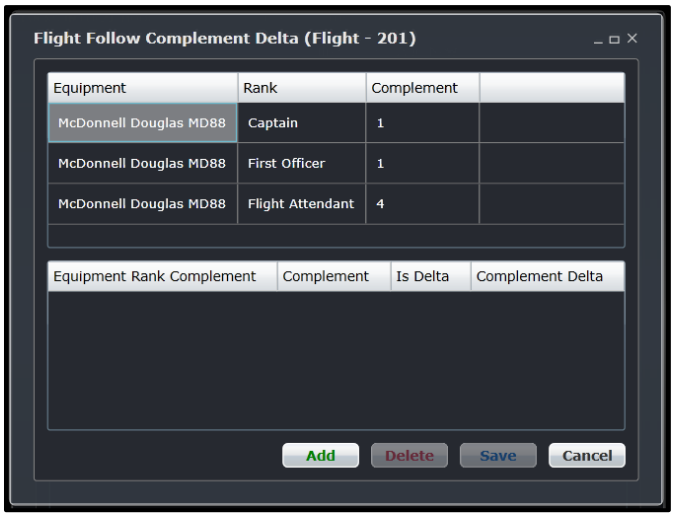
The following options will be displayed when accessing the right-click menu by clicking on a flight:



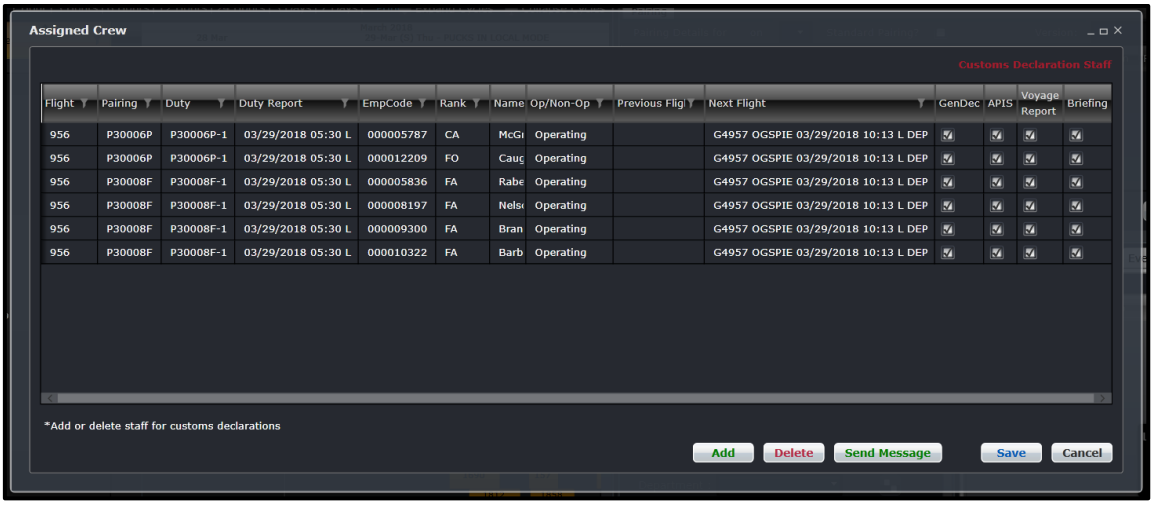

- **Open Flight Information** – Displays a read-only **Flight Information** form.



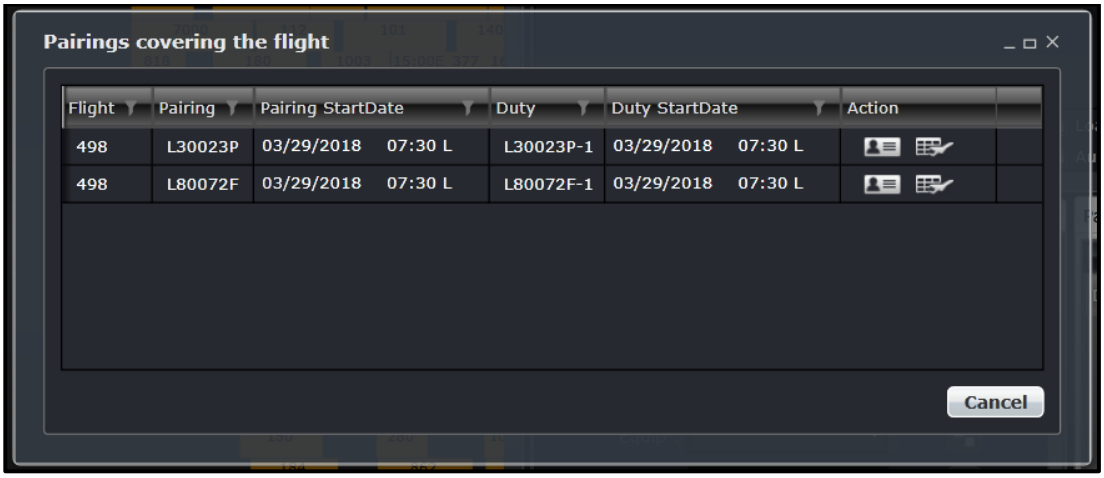

- **Flight Follow Complement Delta** – Displays the **Flight Follow Complement Delta** form. Planners can modify information within the form.




- **Crew covering this flight** – Displays the **Assigned Crew** form. Planners can also modify information within this form.

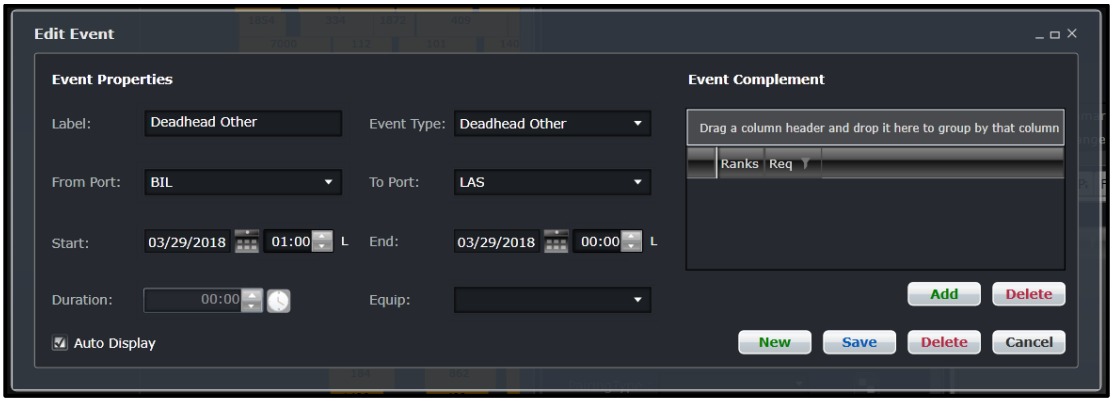


- **Pairings covering this flight** – Displays the **Pairings covering this flight** form.




- **Add Deadhead Other** – Displays the **Edit Event** form.

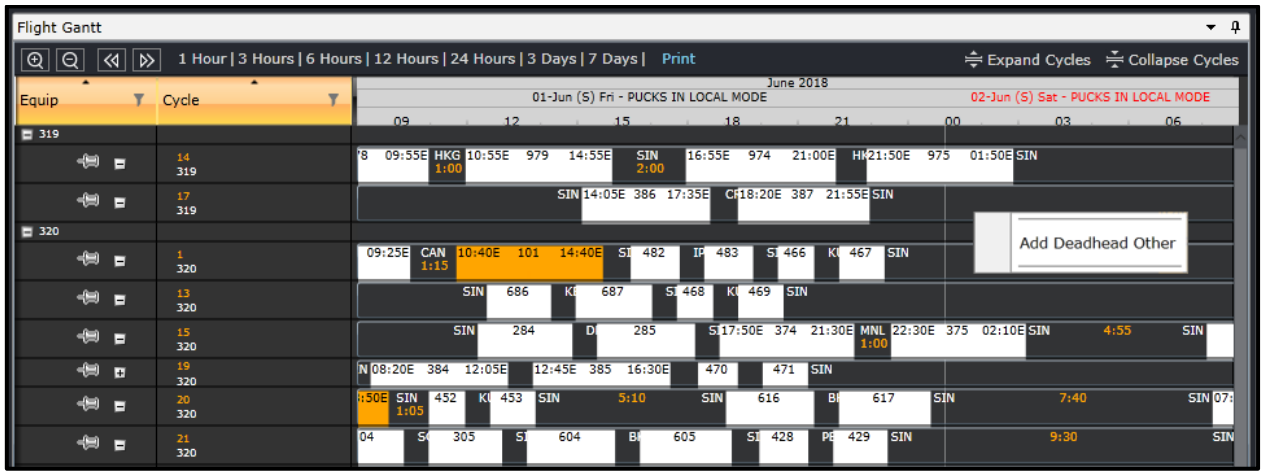
  Selecting this option from a pairing with previously assigned events will display the following:




  Flights must be loaded in the Flight Gantt when adding and modifying deadhead pairings.

- **Deadhead** – In addition to the existing behaviour when tagging a flight as deadhead, the following activities also tags a pairing as deadhead:
  - Adding a flight which is already covered by another pairing to another pairing.
  - Selecting Deadhead from the right-click menu, when adding a flight to another pairing which is not covered by another pairing.
  - Right-clicking directly on a flight and selecting Deadhead.
  - Selecting **Yes**, when a prompt is displayed when opening an existing pairing and left-clicking on a flight.

Right-clicking on a space within the Gantt will only display the Add Deadhead Other option.




Pairings must be loaded in the Flight Gantt when adding and modifying deadhead other pairings.

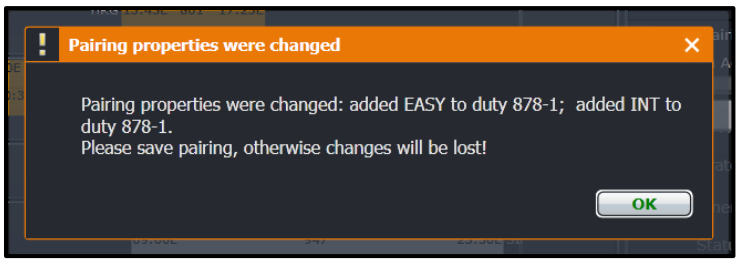
Users need to consider the following when creating or modifying pairings in the Flight Gantt:

- To create or modify pairings, flights must be loaded first in the Flight Gantt. This is applicable to Deadhead Others only.
- To create a pairing, the **New** button in the **Pairing Details** form must be clicked first
- To modify a pairing, double-click on the existing pairing
- Users can create or modify a pairing in the Flight Gantt as well in the Activity Panel

## Creating Pairings Using the Flight Gantt

**To create a single-day pairing in the Flight Gantt:**

1. When filtering flights in the Activity Panel, select the **Include in Gantt** checkbox to load flights in the Flight Gantt.
2. Click **New** in the Pairing Details tab**.**
3. Select a flight from the Flight Gantt.
   The **Pairing properties were changed** prompt will be displayed.



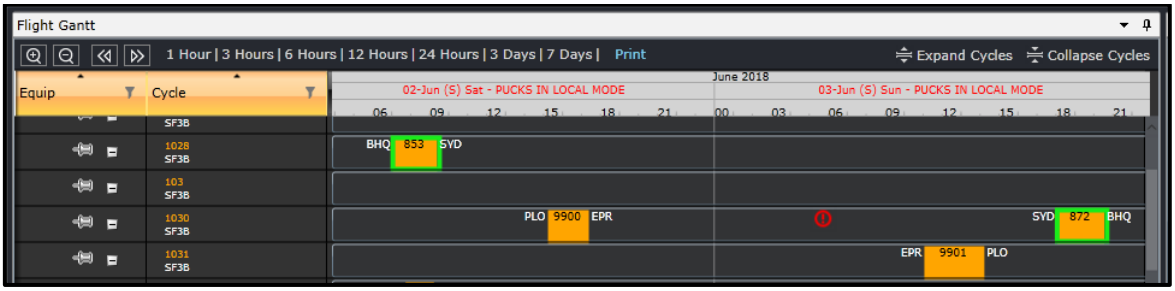

4. Click **OK**.
5. Proceed by doing the following:
   a. If the **Auto Validate on Change** checkbox is not selected, click **Validate** to validate the change; or
   b. If the **Auto Validate on Change** checkbox has been selected, click **Save.**

   Flight colours displayed in the Flight Gantt will update accordingly.

**Note:** *If the selected flight results to a fully complemented pairing, the pairing will be tagged as an operating flight. If the selected flight results to an over complemented pairing, the pairing will be tagged as a deadhead flight. The same process and results apply when creating a single-day pairing in the Activity Panel > Flights tab.*

**To create a multi-day pairing in the Flight Gantt:**

1. Click **New** in the Pairing Details tab**.**
2. Select flights from the Flight Gantt.




In the example above, the user selected flight 853 for June 2 and flight 872 for June 3.

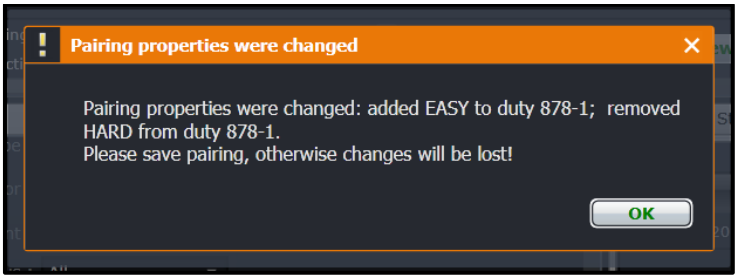
The **Pairing properties were changed** prompt will be displayed.

3. Click **OK**.
4. Proceed by doing the following:
    a. If the **Auto Validate on Change** checkbox is not selected, click **Validate** to validate the change; or
    b. If the **Auto Validate on Change** checkbox has been selected, click **Save.**

Flight colours displayed in the Flight Gantt will update accordingly.

## Removing Flights from a Pairing Using the Flight Gantt

To remove a previously assigned flight from a pairing, load the pairing in the Pairing Panel then click on the flight and the **Pairing properties were changed** prompt will be displayed.

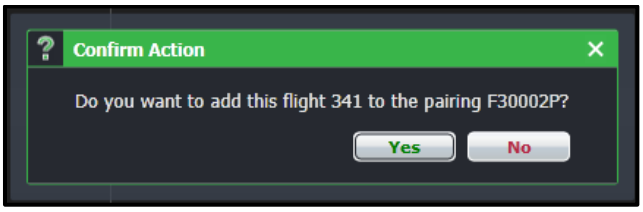



Select **Yes** and the flight will be removed from the Pairing Details tab and will no longer be highlighted.

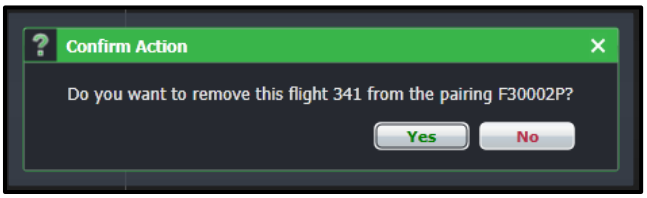
## Modifying Existing Pairings Using the Flight Gantt

When modifying a pairing, load the pairing in the Pairing Panel then click on the flight. The following prompts will be displayed, depending on the action applied to the flight.

Adding A Flight




Removing a Flight



# CrewBuild Specific Tasks

CrewBuild tasks focus on building pairings, the units of work or non-work that are assigned to crew members. Eventually, the completed pairings are formally published in CrewRoster as the official crew roster.

CrewBuild tasks and workflow are outlined as follows:

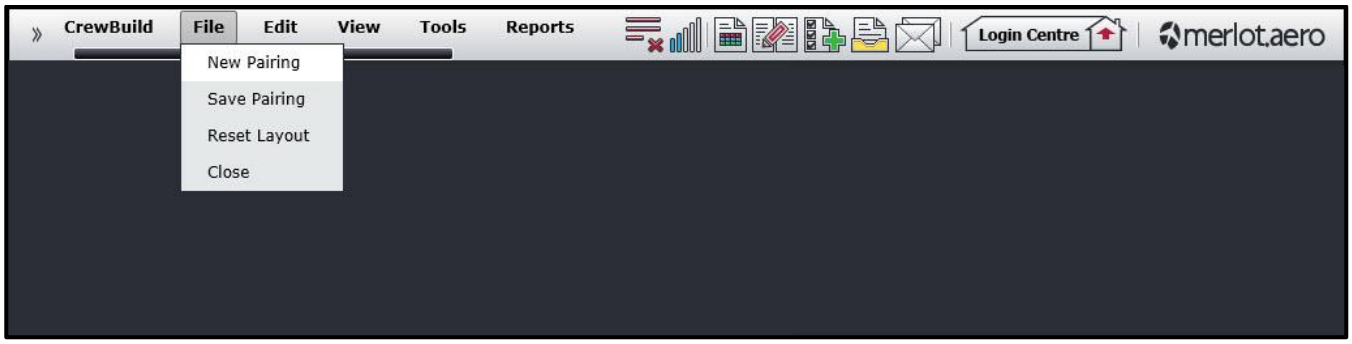
1. Filter for flights that you would like to create pairings for
2. Group work activities (flights and events) in the Flights and Events tab in the Activity Panel and define the groupings.
3. Group flights and events together into Duties in the Pairing Panel.
4. Assign Generic and Standard Pairings to the newly created pairings in the Pairing Panel.
5. Filter for specific flights and assign flights to the newly created pairings.
6. Make sure the pairings are compliant by checking that the rules have passed as indicated by a green tick.
7. Insert new events into the pairings.
8. Set up recurring pairings as necessary.
9. Modify pairings as necessary in the Pairing Panel.
10. Repair pairings to ensure legality as changes are made
11. Save pairings

The next section will review the menu options in CrewBuild.

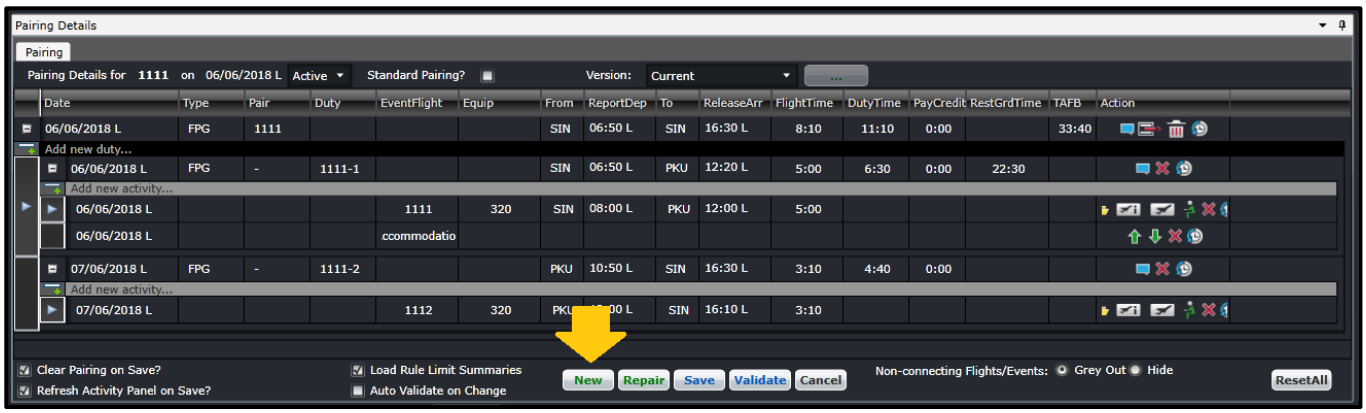
# Menu Options

## File Menu

The CrewBuild File menu enables users to create new pairings and to save the pairings.




To create a new pairing select the File tab and click **New Pairing** from the drop-down menu. Alternatively, users can click on the **New** button from inside the Pairing Panel to start the same process. Any old information in the Pairing Panel will be cleared.




See the Pairing Panel section of this manual for the next steps on building pairings.

To Save the new pairing, either select **Save Pairing** from the File menu, or click on the **Save** button in the Pairing Panel.

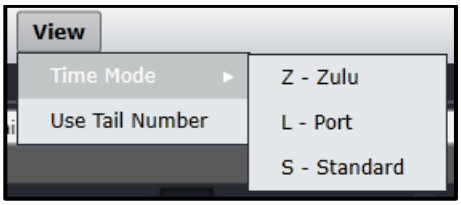
To display all panels in their default sizes, click on the **Reset Layout** option from the File menu.

To remove the panels from view, click on **Close** from the File menu.

## View Menu

The View menu options include:

- Time Mode



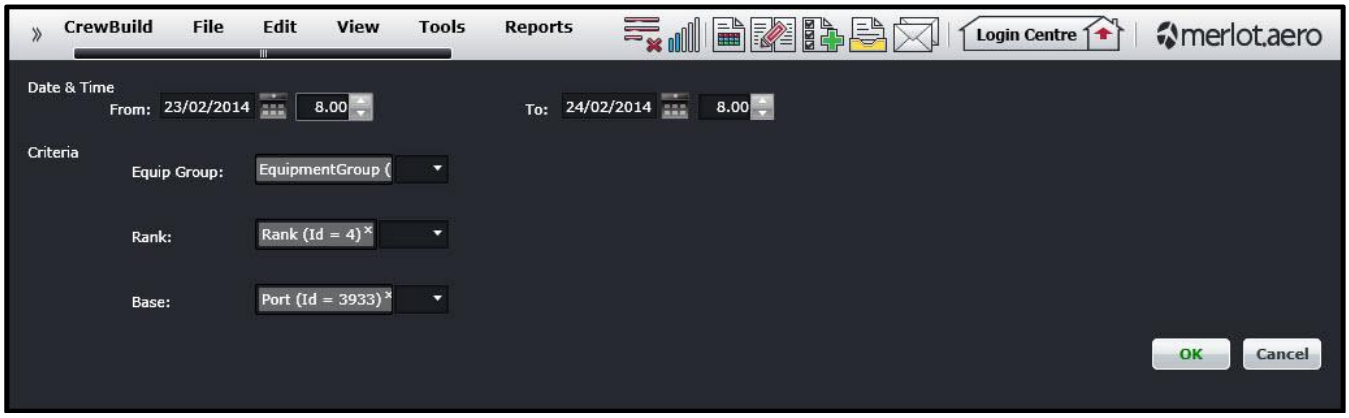

- **Zulu** (Z) - Zulu time is known as Greenwich Mean Time (GMT)
- **Port** (L) - Port time is local time in the departure or arrival port of the flight
- **Standard** (S) - Standard time is local time at your company headquarters

## Tools Menu

Important pairing related functions in CrewBuild can be accessed from the Tools menu.

### Delete Pairing

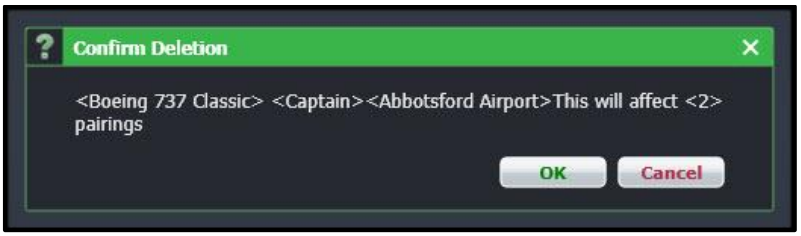
To access the Delete Pairing form, select Delete Pairing from the Tools drop-down menu in CrewBuild.




**The steps to complete the Delete Pairing form are as follows:**

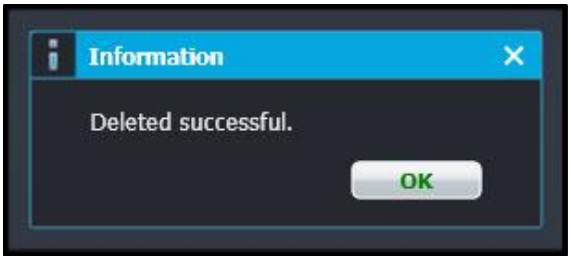
1. Select the From and To Date Time Range of the desired Pairing
2. Select applicable Criteria (Equip Group, Rank, Base)
3. Click **OK** to delete the pairing or **Cancel** to close the form without generating action.

   A Confirm Deletion message will display. Note the two affected pairings.




4. Click **OK** to delete the pairing or **Cancel** to close the form without generating action.

   A message will appear that the delete was successful.




## Repair Pairing

The Repair Pairing feature is part of future development in CrewBuild. There is an existing Repair Pairing feature available in the Pairing Panel.

## Validate Pairing

The Validate Pairing feature is part of future development in CrewBuild. Currently this function is a behind the scenes function in CrewBuild.

## Batch Validate

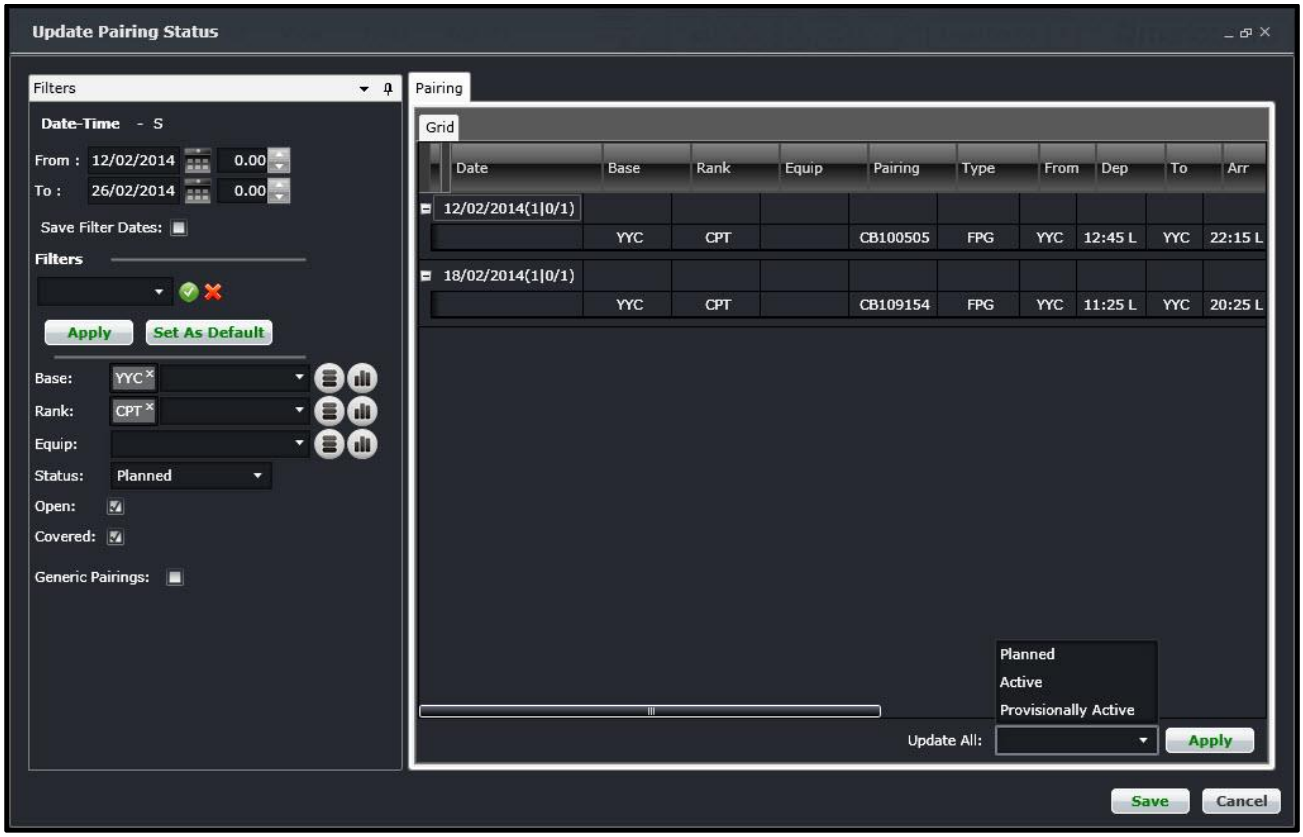
The Batch Validate feature is part of future development in CrewBuild.

## Batch Repair

The Batch Repair feature is part of future development in CrewBuild.

## Update Pairing Status

To access the Update Pairing Status form, select Update Pairing Status from the Tools menu. It is used to activate pairings created in CrewBuild. Pairings created in CrewBuild are by default, planned pairings.




The Update Pairing Status form uses filters to locate the pairings and options within the Pairing Grid to activate the Pairings.

**The steps to complete the Update Pairing Status form are as follows:**

1. Select the From and To Date Time Range of the desired Pairing
2. Select the Save Filter Dates check box to save the filter Date Time data
   Alternatively, select an existing filter from the Filters drop down menu

3. Select applicable Criteria (Base, Rank, Equip)
4. Select All, Planned, Active or Provisionally Active from the Status drop down menu
5. Click **Apply** to filter selected criteria
   The Pairing Grid on the right hand side will display the filtered results

6. Select the desired Pairing type (Planned, Active or Provisionally Active) from the Update All drop down menu located in the bottom right of the Pairing Grid.
7. Click the **Apply** button to activate the desired Pairings
8. Click **Save** to save the activated Pairings or **Cancel** to close the form without generating action

**Planned, Provisional and Active Pairing Status**

Planned is the default status of a pairing when you create a pairing in the period prior to publication. Planned pairings are visible only to users in CrewBuild, CrewRoster and CrewPlan.

Provisionally active pairings consist of pairings or rosters that have been pre-published. These are published to the system as active and are viewable by all system users; however, crewmembers cannot view them in CrewPortal or CrewMobile.

Active status refers to published pairings that system users and crew members can view in the system as live pairings or events.

## Transaction Mode

Transaction Mode provides undo or "what if" capability in making a change to crew duty. If you don't like the changes you just made, you can simply cancel it and the duty will return to its original state.

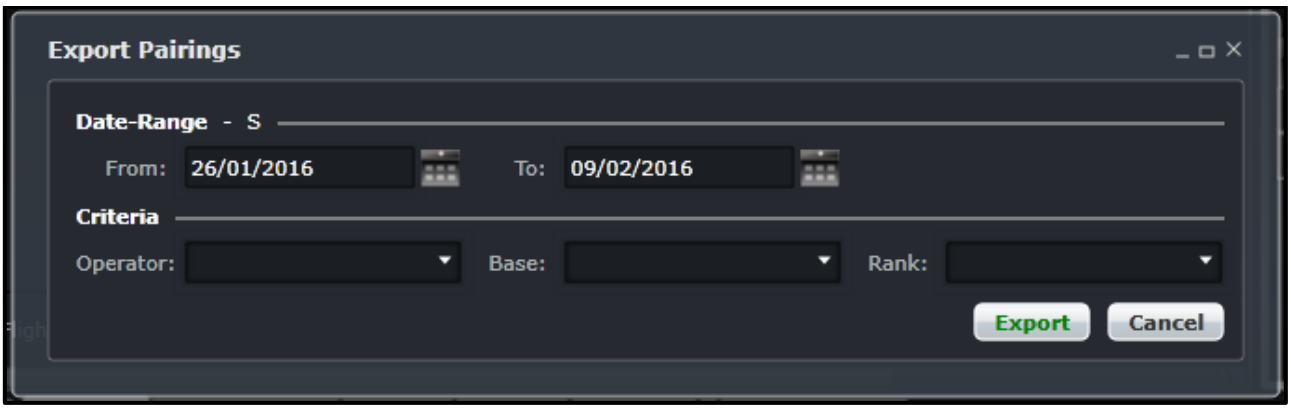
1. To start Transaction Mode, go to Tools menu and choose Transaction Mode.
2. Once selected, you will notice TRANSACTION MODE will appear in red color on the title bar, meaning you're in the Transaction Mode.
3. Once you are in Transaction Mode, you can make changes without risk to commit to these changes. When you are finished you can choose to Save it or Cancel these changes.

These three menu commands are related to each other:

- **Transaction Mode/Immediate Save Mode** – Switches between Transaction Mode and back to Immediate Save Mode. Immediate Save Mode is the regular and default mode of the application.
- **Save/Commit Transaction** – Saves the changes made in transaction mode
- **Cancel Transaction** – Discards all modifications made in transaction mode

## Export Pairing Files

This option allows users to export pairings into an XML file that can be used by a third party program.




**To export pairings:**

1. Select the date range by entering it in the From and To fields.
2. Select the required operator. Keeping this field blank will export pairings for all active operators. Multiple operators can be selected.

3. Select the required base. Keeping this field blank will export pairings for all active bases. Multiple bases can be selected.
4. Select the required rank. Keeping this field blank will export pairings for all active ranks. Multiple ranks can be selected.
5. Click the Export button.

The export file will be placed at the location configured in the *OptimisationXMLExportJob*.

## Import Pairing Files

The Import Pairing files form allows the user to import a pairing XML file produced by the merlot.aero Optimiser Suite.

**To import a pairing file:**

1. Provide a name for the solution in the **Name** field. For example, JUL2015 CPT.
2. Select the file by clicking on the **Browse** button. Once the file is selected, click the **Open** button.
3. Click the **Import** button to import the XML file or the **Cancel** button to close the form without generating action
4. Click **Yes** on the Confirm action dialog box, after confirming the requested information is correct, or click **No** to cancel the request and close the dialog box without action
5. You will receive a message once the file has been imported. From this point, pairings can be filtered in the Activities Panel.

## Delete Pairing Recurrence

The Delete Pairing Recurrence form is used to delete recurred pairings. This is commonly used when the flight schedule changes after pairings have been created.

**To complete the Delete Pairing Recurrences form:**

1. Select From and To dates of the recurred pairings.

2. Click **OK** to delete pairing recurrences or **Cancel** to close the form without generating action

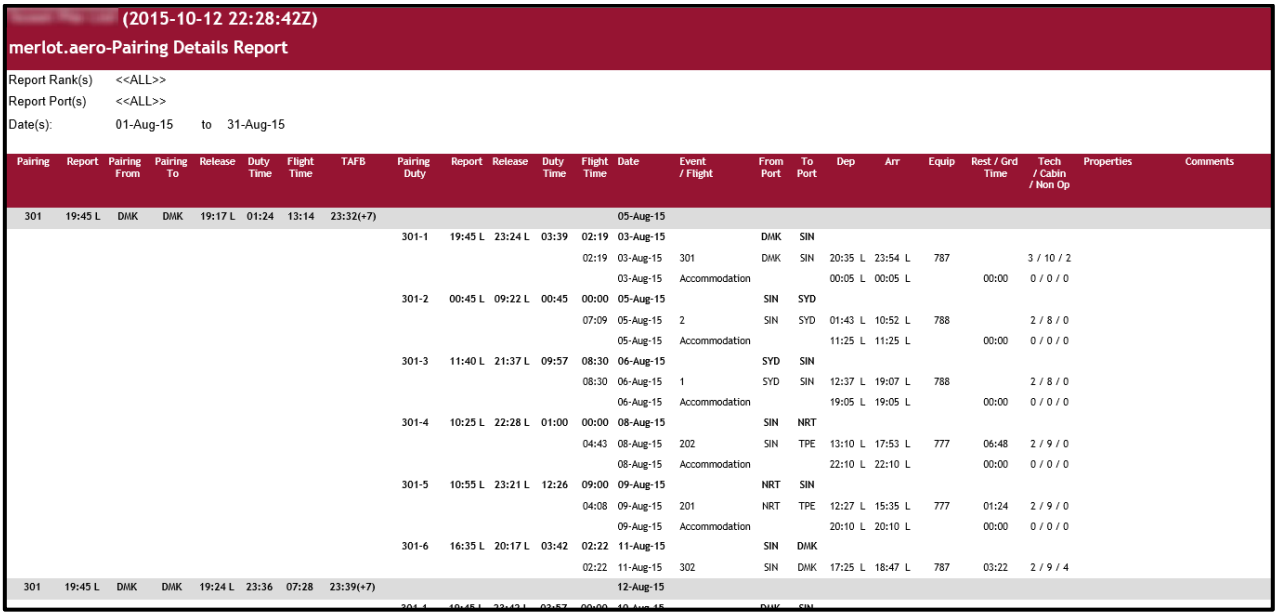
A message will indicate that pairings for the specified date range have been successfully deleted.

In terms of best practices, pairing recurrences that are no longer needed, should be deleted prior to roster publishing.

# Reports

To view Reports within CrewBuild, select the Reports Tab and choose a report from the drop-down menu.

## Pairing Details Report



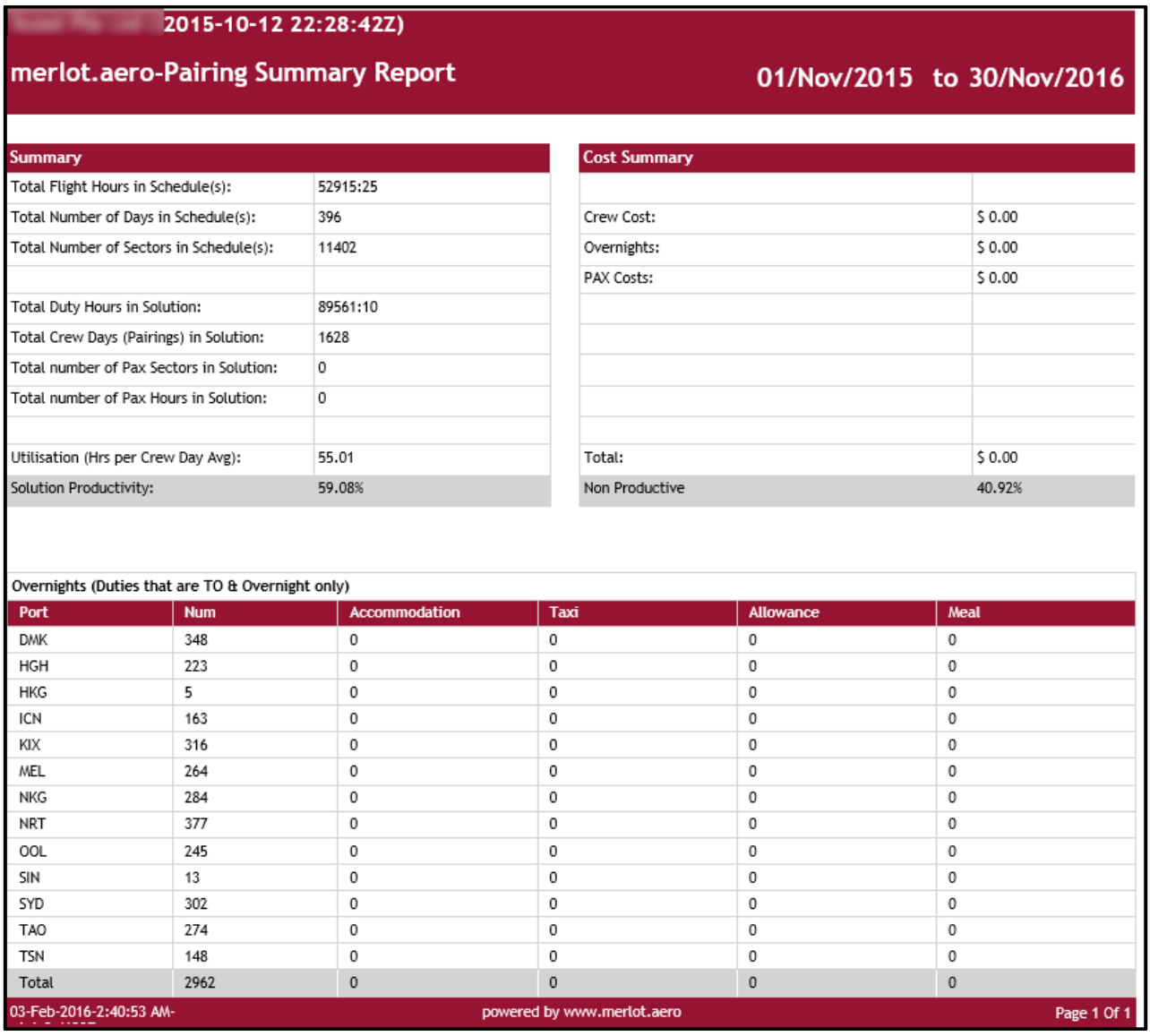
[redacted] (2015-10-12 22:28:42Z)

merlot.aero-Pairing Details Report

Report Rank(s) <<ALL>>
Report Port(s) <<ALL>>
Date(s): 01-Aug-15 to 31-Aug-15

| Pairing | Report | Pairing From | Pairing To | Release | Duty Time | Flight Time | TAFB | Pairing Duty | Report | Release | Duty Time | Flight Time | Date | Event / Flight | From Port | To Port | Dep | Arr | Equip | Rest / Grd Time | Tech / Cabin / Non Op | Properties | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 301 | 19:45 L | DMK | DMK | 19:17 L | 01:24 | 13:14 | 23:32(+7) | | | | | | 05-Aug-15 | | | | | | | | | | |
| | | | | | | | | 301-1 | 19:45 L | 23:24 L | 03:39 | 02:19 | 03-Aug-15 | | DMK | SIN | | | | | | | |
| | | | | | | | | | | | | 02:19 | 03-Aug-15 | 301 | DMK | SIN | 20:35 L | 23:54 L | 787 | | 3 / 10 / 2 | | |
| | | | | | | | | | | | | | 03-Aug-15 | Accommodation | | | 00:05 L | 00:05 L | | 00:00 | 0 / 0 / 0 | | |
| | | | | | | | | 301-2 | 00:45 L | 09:22 L | 00:45 | 00:00 | 05-Aug-15 | | SIN | SYD | | | | | | | |
| | | | | | | | | | | | | 07:09 | 05-Aug-15 | 2 | SIN | SYD | 01:43 L | 10:52 L | 788 | | 2 / 8 / 0 | | |
| | | | | | | | | | | | | | 05-Aug-15 | Accommodation | | | 11:25 L | 11:25 L | | 00:00 | 0 / 0 / 0 | | |
| | | | | | | | | 301-3 | 11:40 L | 21:37 L | 09:57 | 08:30 | 06-Aug-15 | | SYD | SIN | | | | | | | |
| | | | | | | | | | | | | 08:30 | 06-Aug-15 | 1 | SYD | SIN | 12:37 L | 19:07 L | 788 | | 2 / 8 / 0 | | |
| | | | | | | | | | | | | | 06-Aug-15 | Accommodation | | | 19:05 L | 19:05 L | | 00:00 | 0 / 0 / 0 | | |
| | | | | | | | | 301-4 | 10:25 L | 22:28 L | 01:00 | 00:00 | 08-Aug-15 | | SIN | NRT | | | | | | | |
| | | | | | | | | | | | | 04:43 | 08-Aug-15 | 202 | SIN | TPE | 13:10 L | 17:53 L | 777 | 06:48 | 2 / 9 / 0 | | |
| | | | | | | | | | | | | | 08-Aug-15 | Accommodation | | | 22:10 L | 22:10 L | | 00:00 | 0 / 0 / 0 | | |
| | | | | | | | | 301-5 | 10:55 L | 23:21 L | 12:26 | 09:00 | 09-Aug-15 | | NRT | SIN | | | | | | | |
| | | | | | | | | | | | | 04:08 | 09-Aug-15 | 201 | NRT | TPE | 12:27 L | 15:35 L | 777 | 01:24 | 2 / 9 / 0 | | |
| | | | | | | | | | | | | | 09-Aug-15 | Accommodation | | | 20:10 L | 20:10 L | | 00:00 | 0 / 0 / 0 | | |
| | | | | | | | | 301-6 | 16:35 L | 20:17 L | 03:42 | 02:22 | 11-Aug-15 | | SIN | DMK | | | | | | | |
| | | | | | | | | | | | | 02:22 | 11-Aug-15 | 302 | SIN | DMK | 17:25 L | 18:47 L | 787 | 03:22 | 2 / 9 / 4 | | |
| 301 | 19:45 L | DMK | DMK | 19:24 L | 23:36 | 07:28 | 23:39(+7) | | | | | | 12-Aug-15 | | | | | | | | | | |

## Pairing Summary Report



2015-10-12 22:28:42Z)

merlot.aero-Pairing Summary Report 01/Nov/2015 to 30/Nov/2016

| Summary | |
|---|---|
| Total Flight Hours in Schedule(s): | 52915:25 |
| Total Number of Days in Schedule(s): | 396 |
| Total Number of Sectors in Schedule(s): | 11402 |
| | |
| Total Duty Hours in Solution: | 89561:10 |
| Total Crew Days (Pairings) in Solution: | 1628 |
| Total number of Pax Sectors in Solution: | 0 |
| Total number of Pax Hours in Solution: | 0 |
| | |
| Utilisation (Hrs per Crew Day Avg): | 55.01 |
| Solution Productivity: | 59.08% |

| Cost Summary | |
|---|---|
| | |
| Crew Cost: | $ 0.00 |
| Overnights: | $ 0.00 |
| PAX Costs: | $ 0.00 |
| | |
| | |
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| | |
| Total: | $ 0.00 |
| Non Productive | 40.92% |

Overnights (Duties that are TO & Overnight only)

| Port | Num | Accommodation | Taxi | Allowance | Meal |
|---|---|---|---|---|---|
| DMK | 348 | 0 | 0 | 0 | 0 |
| HGH | 223 | 0 | 0 | 0 | 0 |
| HKG | 5 | 0 | 0 | 0 | 0 |
| ICN | 163 | 0 | 0 | 0 | 0 |
| KIX | 316 | 0 | 0 | 0 | 0 |
| MEL | 264 | 0 | 0 | 0 | 0 |
| NKG | 284 | 0 | 0 | 0 | 0 |
| NRT | 377 | 0 | 0 | 0 | 0 |
| OOL | 245 | 0 | 0 | 0 | 0 |
| SIN | 13 | 0 | 0 | 0 | 0 |
| SYD | 302 | 0 | 0 | 0 | 0 |
| TAO | 274 | 0 | 0 | 0 | 0 |
| TSN | 148 | 0 | 0 | 0 | 0 |
| Total | 2962 | 0 | 0 | 0 | 0 |

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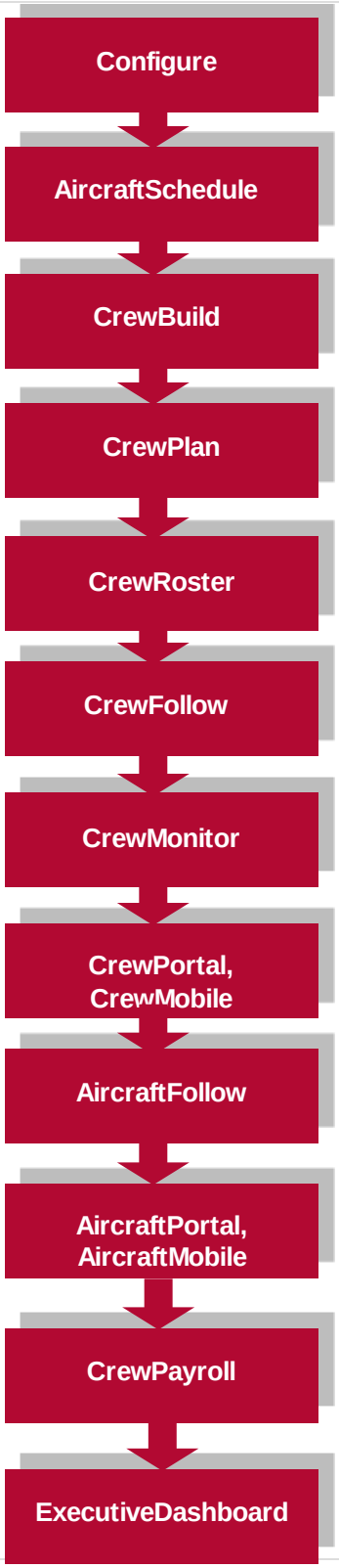
These reports can be customized to meet specific customer requirements.

# Application Flow Diagram

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|---|---|
| Configure | Configure application is a central place where all crew and aircraft configuration information can be accessed. The application defines the core set of configuration requirements that are the building blocks that allow merlot applications to be used in the way required by your airline. |
| AircraftSchedule | AircraftSchedule improves the development of flight schedules while ensuring operational integrity and meeting the needs of airlines for increased efficiency in scheduling. The application includes a maintenance planning capability. |
| CrewBuild | CrewBuild develops efficient crew pairings that achieve business goals while meeting the needs of crew and managing changes that arise after the roster is published. |
| CrewPlan | CrewPlan plans and monitors all revalidation and qualification checks, medicals, license renewals, annual leave and administrative needs. Crew shortfalls or surplus information is accurately calculated by fleet, rank or base and can be aggregated at daily, weekly or monthly levels. This extends to future establishment planning. |
| CrewRoster | The CrewRoster application allows the user to develop efficient crew rosters that achieve business goals while meeting the needs of crew. |
| CrewFollow | CrewFollow provides airlines with the best information to act on in response to crew disruptions resulting from (amongst other things) sickness, no-shows and crew-related disruptions on the day. |
| CrewMonitor | CrewMonitor identifies and monitors changes within merlot for disruptions that will impact pairings and pairing allocations to crew members. |
| CrewPortal, CrewMobile | CrewPortal and CrewMobile provide airline crew with the ability to view the latest crew related information on a computer or mobile device such as phones or tablets. It enables airline operations employees to securely distribute timely and relevant information to crew members including duty assignments, duty changes and messages. |
| AircraftFollow | AircraftFollow provides a real time graphical representation of your airline's live status for the day. AircraftFollow allows the user to manage incoming and outgoing aircraft and related operational tasks on a day-to-day basis. The application provides accurate and timely information to improve the decision support process. |
| AircraftPortal, AircraftMobile | AircraftPortal and AircraftMobile provide outstations with the ability to view the latest schedules and fight-related information on a computer or mobile device. Updates to departure and arrival times, terminals, gates and bays can be done from here. These also allow management a quick look at the day's operations. |
| CrewPayroll | CrewPayroll manages complex pay and allowance calculations for crew. |
| ExecutiveDashboard | The ExecutiveDashboard provides executive level reporting including key performance indicator (KPI) data to help airlines gauge operational and employee success. |

# CrewBuild Glossary

| Duty | Term |
|---|---|
| AOC | *Air Operator's Certificate*<br>*Also referred to as Operator or Operator Code*<br><br>The AOC is the approval granted by a national aviation authority (NAA) to an aircraft operator to allow it to use aircraft for commercial purposes. This requires the operator to have personnel, assets and system in place to ensure the safety of its employees and the general public. |
| Base | The port to which crewmembers are expected to commence and finish their tasks / activities. |
| Block Hour | *Also called block time, blocks or flight hours*<br><br>The time from the moment the aircraft door closes at departure of a flight until the moment the aircraft door opens at the arrival gate following its landing. Block hours are the industry standard measure of aircraft utilization. Many airlines consider a block hour to be from the time the chocks are removed from the wheels of a departing aircraft, after doors have been closed, until the time the chocks are put in place at the wheels after arrival at the airport gate before the doors are opened. |
| Broken Pairing | A pairing that has any of the following characteristics:<br>• does not return to its start location;<br>• has events that conflict with the previous or next event's port; or<br>• has overlapping events within it.<br><br>Note that there are other types of exceptions that indicate problem pairings, but these are broken in terms of structure rather than rule limits. |
| Company Pairing | *Also called Generic Pairing, Ground Pairing, Non-flight Pairing, Standard Pairing*<br><br>These are pre-defined non-flight pairings that can be allocated to crew. Examples of these are: Administration Days, Days Off, Annual Leave and Sick Leave. Also known as Standard Pairing or Generic Pairing. |
| Company Time | This refers to the time at which the pairing or event is occurring converted to the company's base or headquarters location |
| Covered Pairing | A pairing that has all complements filled. |
| Crew | A specific type of employee required for flight operations. This term is interchangeable with *employee*. |
| Crew Complement | The number and types of crew required for a pairing. |
| Crew Flow | The sequence of flights and events contained within a crew's duty. This may or may not be aligned to aircraft sequence. |
| Department | The areas within an airline or company that are tasked with providing particular services of a similar type. For example, in an airline there are Flight Operations (i.e. the manning and operating of aircraft), Maintenance (ensure the aircraft were able to operate safely), and Ramp (the parking and coordination of aircraft resupply between flights). |
| Designator | Unique alphanumeric code given to distinguish each airline, or operations within an airline |
| Duty | A grouping of flights and / or activities that can be performed legally by a crew member during one work period. One or more duties combined together define a pairing. |
| Employee | The generic term for people who are trained to perform specific tasks/activities. Within Flight Operations, the employees are generally referred to as crew or crewmembers; and within Maintenance, the employees are generally referred to as engineers, mechanics, avionic technicians etc. |

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| Equip Config | Each equipment type can have more than one configuration for seats and cargo. This will affect the assignment of flights to aircraft rego/tails. |
| Equipment Group | The grouping of a similar set of equipment types. For example, a 737 which could be comprised of 733 and 734 equipment types.<br><br>This can also be used as a reference to indicate the equipment types that a crewmember is legal to operate on as part of his rating. |
| Equipment Type | *Also called aircraft type.*<br><br>Model of the aircraft. A specific type of aircraft that has distinct characteristics, for example a 733 or 734.<br><br>This can also be used as a reference to indicate the equipment types that a crewmember is legal to operate on as part of his rating. |
| Flight | *Also called sector*<br><br>The transport taken from a departure point to an arrival point. |
| Flight Complement | The number and types of crew required to operate a flight. |
| Flight instance | A specific flight on a specific date. This term is used for flights that are recurred through a specified period. |
| Flight Pairing | A pairing that contains at least one operating flight. |
| GMT | *Greenwich Mean Time*<br>*Also called Zulu time*<br><br>The time at location at which the pairing or event is occurring converted to Greenwich Mean Time (GMT) value. |
| Ground Pairing | A pairing that contains only ground activities. No operating or deadheading flights are included. |
| Local Time | The time at the location at which the pairing or event is occurring. If the location is the same or in the same time zone as the company base or headquarters location this time will be the same as the company value. |
| Open Pairing | A pairing that has at least one complement still requiring a crew member to be assigned. |
| Open Sector | *Also called unpaired flight*<br><br>A flight that has not been assigned to a pairing. |
| Paired Flight | A flight that has been added or assigned to a pairing. |
| Pairing | The generic unit of work and non-work that can be assigned to a crew member. A pairing is comprised of none, one or more flights and/or activities grouped together into one or more duties. A pairing may span over multiple days. One or more duties combined together define a pairing.<br><br>A pairing is from home base to home base so it can encompass a number of duties each with individual report and release times. In this way pairings can span a single or multiple days. Pairings are usually built for all crew that carry out identical work. For instance the Captain, the First Officer and the Flight Attendants, who all stay together, will be on the same pairing. To ensure consistency and simplicity of allocation a Pairing will be the only unit of activity that can be assigned to a crew member. There are some exceptions to this but in general this concept applies across the suite of applications. |
| Pairing Complement | The required number of employees of each rank that are needed to fully operate that pairing. |
| Port | An airport or station |
| Rank | The core qualification that an employee holds which defines the level/type of tasks and activities they can perform. For example Captain, First Officer, Flight Attendant. |

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| Rating (or Type Rating) | Defines the combination of equipment and position that personnel can legally operate. In merlot, the characteristics that define a rating are: Rank, and Equipment Group. |
| RDO | *Rostered Day Off*<br><br>A day in a roster period that an employee doesn't have to work. An employee's day off can be paid or unpaid, depending on how RDOs are set out in an award or registered agreement. |
| Recurrent flight | A flight that operates the same flight number, route and timings on more than one day |
| Roster | A roster is simply a defined period of time within which the crew member's work and non-work assignments are defined. |
| Turnaround | *Also called Actual Turnaround, Scheduled Turnaround, Turnaround Time*<br><br>Amount of time between the arrival of a flight and its departure from a port. This is also the time taken to unload passengers, baggage, cargo, etc. upon arrival and to board passengers and load baggage, cargo, etc. before departure |
| Violation Behavior | This determines what can be done to a violation once it is flagged. This works in conjunction with violation severity.<br>• Inviolate - does not allow the assignment to push through no matter what<br>• Override - if the user has the appropriate security rights, he can override the violation<br>• Override Disrupt - if the user has the appropriate security rights, he can override the violation only if the flight is in disrupt<br>• Track - the user can proceed with the roster changes but the violation is retained for tracking purposes. The violation will not have a pop up, but will be visible in the Violation Panel.<br>• Ignore - the violations are retained in the Violation Panel |
| Violation Override | This determines how a violation should be overridden<br>• Management - the credentials of a management-level user must supply his credentials when overriding the violation<br>• Supervisor - a supervisor must supply his credentials when overriding the violation<br>• Extension - a user with override rights must supply his credentials when overriding the violation which consequentially allows an extension to the flight hours, duty hours and/or flight duty period<br>• Discretion - signifies that the violation will be overridden based on the captain's discretion |
| Violation Severity | This determines how a violation is presented<br>• Critical - the violation must be addressed. Otherwise, the crew is illegal to fly<br>• Ignorable - the violation can be addressed later and will not prevent the crew from reporting for a duty<br>• Informational - the rule breach is for informational purposes only<br>• Passed - the rule is not breached and nothing has to be done |

Notes