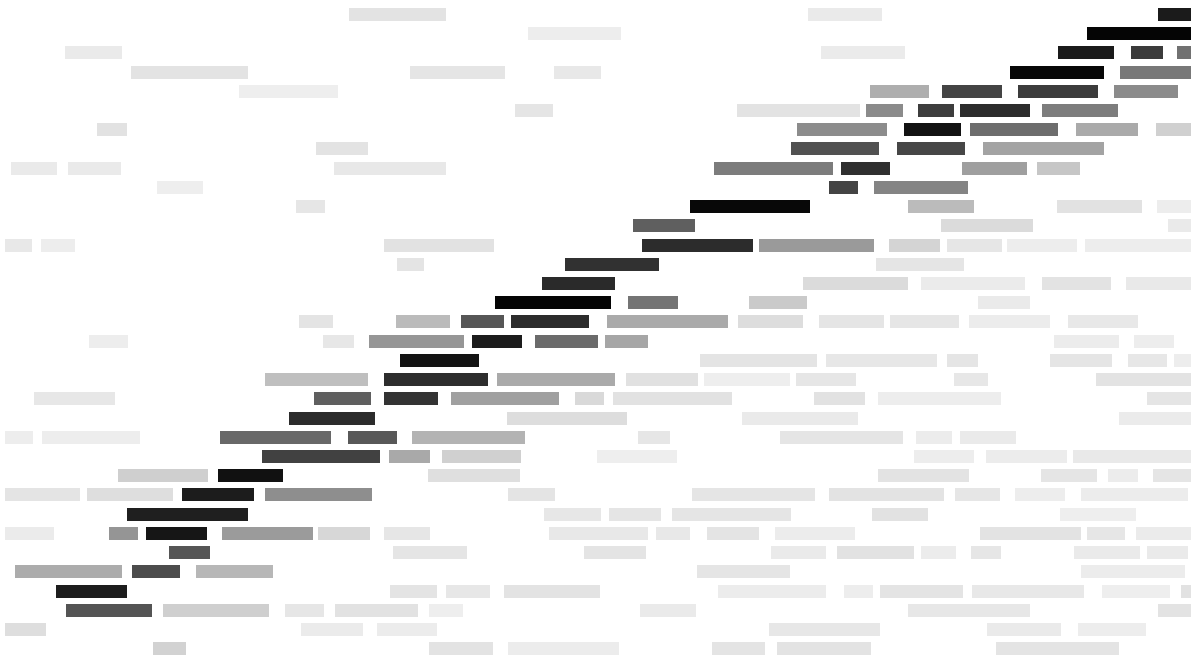
CAPITAL ALLOCATION
TECHNOLOGY SYSTEMS

Flight Dispatch 98

User Manual

For airline operations on Windows, Mac OS and Linux



Flight Dispatch 98 User Manual

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The latest edition of this manual is published at www.flightdispatch98.com, and inside the software under **Help** (Alt+H).

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Contents

About This Manual 7

1 Getting Started 9
1. Open a route 9
2. Lease an aircraft 9
3. Schedule flights 9
4. Request slots 10
Saving 10

2 Leasing 11
Dry lease 11
Wet lease (ACMI) 11
Delivery 11
Where it can go 12

3 Airport Slots 13
How slots work 13
Planning slots for a route 13
Staging and confirming 14

4 Maintenance 15
The checks 15
Engines 16
Who books what 16
Grounding 16
Maintenance control 16

5 Crew 19
Your starting team 19
The roster 19
Flight 20
Standby 20
Engineers 21
The hangar 21

People . . . 21
Candidates . . . 22
Contract engineers . . . 22
Costs . . . 22

6 Which Aircraft Flies What . . . 23
How flights are shared out . . . 23
When there aren't enough aircraft . . . 23
Aircraft in the wrong place . . . 24
Positioning flights . . . 24
Tail swaps . . . 25
Unpinning . . . 25
Freeing an aircraft for maintenance . . . 25

7 Flights and Passengers . . . 27
What it shows . . . 27
Bookings . . . 28
Delaying a flight . . . 28
Delay codes . . . 28
Cancelling a flight . . . 29

8 The Map . . . 31
What it shows . . . 31
Known position . . . 32
Overdue . . . 32
Picking an aircraft . . . 33
Moving around . . . 33

9 The Operating Report . . . 35
The figures . . . 35
Each aircraft . . . 36

10 Faxes and Briefs . . . 37
The filing . . . 37
Licences and subscriptions . . . 38
Weather advisories . . . 38
Briefs . . . 38

11 Aircraft Types . . . 41
Manufacturers' websites . . . 41

12 Cabin Classes . . . 43
Cabin plans . . . 43
Sub-fleets . . . 44

13 Airfields 45
Airport codes 45
Aerodrome reference code 46
Runway 46
Steep approach 46

14 Times 47
UTC and local time 47
Block time 47
Late flights on the schedule 47
Turnaround 48

15 The Weather Map 49
Surface 49
SIGWX 50
Moving around 50
The weather reference 51

16 Weather Reports and Forecasts 53
Reading a METAR 53
TREND 55
TAF 55
North American reports 56
When a SPECI is issued 57

17 Glossary 59
Delay measures 59
Punctuality measures 60
Terms 60
Movement messages 61
Aircraft datalink 62
Airport Collaborative Decision Making 63
Standard IATA delay codes 64
IATA delay sub-codes 70
Flow regulations and IATA codes 74

18 Movement Messages 77
Departure 77
Revised estimate 78
At the stand 78
Target times 79
Delay 79
Arrival 80
From the aircraft 80

Schedule changes . . . 81

19 The Terminal . . . 83

Alerts . . . 83
Messages . . . 84
Commands . . . 84

20 Keyboard Shortcuts . . . 89

Windows and tabs . . . 89
In every table . . . 90
In dialogs . . . 90
In a flight's panel . . . 91
In an airport code field . . . 91
In the fleet . . . 91
In the market . . . 92
In the route manager . . . 92
In the slots . . . 93
In maintenance control . . . 93
In crew control . . . 93
The schedule . . . 94
The clock . . . 94

About This Manual

This manual explains how to set up and run an airline's operation in Flight Dispatch 98. If you're new to the software, start with Chapter 1, "Getting Started" (page 9), which takes you from an empty company to a schedule of flights.

The same pages are inside the software: choose **Help**, or press Alt+H, at any time.

Conventions

Enter	A key to press. Keys joined by a plus sign, such as Alt+S, are pressed together.
`SCHEDULE`	Something to type exactly as shown, such as a command at the console.
Routes	A tab, menu, button or window on the screen.
(page 12)	Where to find out more.

This manual shows the keys for Windows and Linux. On a Mac, press ⌘ where it says Ctrl, and Option where it says Alt.

> **NOTE**
> All times in Flight Dispatch 98 are in UTC unless the screen says otherwise. See Chapter 14, "Times" (page 47).

CHAPTER

1 Getting Started

Setting up your first route, aircraft and flights.

When Flight Dispatch 98 is first set up, it knows your company's base and nothing else: no routes, aircraft or flights. These four steps enter them. The clock runs as you work; press P to pause it.

While you find your way around, the **View** menu can add **Helpful Hints** about which keys do what, and underline terms and airport codes you can point at to explain.

1. Open a route

Go to the **Routes** tab (Alt+R) and press N. Your base is filled in: type the other airport's code, such as `CDG` or `LFPG` (see Airfields (page 45)), and press Enter.

2. Lease an aircraft

With the route selected, press L. The market lists only aircraft that can fly it. Pick one with ↑ and ↓, press Enter, then Y to send the lease request. It's delivered to your base in a day or two: see Leasing (page 11). If you'll maintain it yourself, crews and engineers rated on it join your base: see Crew (page 19).

3. Schedule flights

Back on the **Routes** tab, press S. Choose the aircraft type with ← and →, the direction with D, and type the departure time in UTC (`0715`); L shows the times in each airport's local time instead. It flies daily unless you

Tab to the days and choose others. The return is filled in, leaving after your preferred turnaround; Tab moves to it, or to either flight number, to type over them. Press Enter to add both flights.

4. Request slots

At slot-coordinated airports, each departure and arrival needs a slot. If a flight needs one, the dialog says so: press S to go to the **Slots** tab, stage the flight and its return, press C to request their slots, then schedule the flights: back in the dialog, ↑ and ↓ step through the times that use the slots you hold. See Airport slots (page 13).

Your flights are now on the **Schedule** tab (Alt+S), and the Alerts report each departure and arrival.

Saving

Your company is saved as soon as it's made and every few minutes. When you close it (Ctrl+W) or quit, you're asked whether to save it first. Press Ctrl+S to save it there and then. Next time, the welcome window offers to **Continue** with it, or **Load Company…** for another. The console comes back as you left it, so you can scroll up to see what was going on.

CHAPTER

2 Leasing

Dry and wet leases, and delivery.

Your aircraft are leased from lessors, who list what they have on the aircraft market. A lease runs for a fixed term at a monthly rate, quoted in US dollars as the industry prices it.

Dry lease

A **dry lease** is the aircraft alone. Your own crews fly it, your engineers maintain it, and you insure it. Dry leases are cheaper by the month and run for years: typically two to eight.

Wet lease (ACMI)

A **wet lease** comes with **A**ircraft, **C**rew, **M**aintenance and **I**nsurance from the lessor. It costs about twice as much a month, but needs nothing from you, and terms are short: one to six months. Wet leases suit covering a gap, such as a busy season or an aircraft away for maintenance, or trying out a route before committing an aircraft to it.

Delivery

Once the request is sent, the lessor prepares the aircraft (paperwork and technical acceptance), then ferries it to your base, with fuel stops if it's far away. It joins your fleet at once: it shows on the **Fleet** tab, where you can follow the delivery, and has its own row on the schedule, with the ferry flight on it, and you can schedule flights for it straight away. It flies them once it has landed at your base and been turned round.

Where it can go

An aircraft can only be based at, and fly to, airports that can take it: long enough runways, room for its wingspan, and steep-approach certification where needed. The market shows what each one can't use. See Airfields (page 45).

CHAPTER

3 Airport Slots

Flying to the busiest airports.

The busiest airports are *slot coordinated*: there are only so many departures and arrivals each hour, and most are held by other airlines. To fly there you need a slot for each one: a departure slot to leave, and an arrival slot to land.

Only a few airports are slot coordinated, and the Slots tab shows which. Everywhere else, fly whenever you like.

How slots work

- A slot covers one hour, in UTC, **every day**: for example, a departure between 07:00 and 08:00Z. Each daily flight uses one.
- Slots are yours to keep. Taking a flight off the timetable frees its slot for another flight in the same hour.
- Busy hours have fewer slots free, by the airport's own time of day: mornings and early evenings are the peak.
- A free slot is yours for the asking.

Planning slots for a route

Go to the **Slots** tab (Alt+L, or type `SLOTS`), and choose a route on the left (Tab moves between the routes and the grid). The grid shows the day hour by hour, with the outbound flight on the left and its return on the right. Each side shows the departure and arrival times and, at a busy airport, the

slot each needs: `3 free`, `held` if you have a spare one, or `full`. A dot means the airport needs no slot.

- The outbound leaves at the top of its hour. Block times are for the aircraft type shown at the top; A changes it, and D swaps the direction.
- The **Turn** column shows how long the aircraft would be on the ground between the outbound on the selected row and a return leaving in each hour. The return leaves as soon in its hour as your **turnaround** allows. Set the turnaround you like with T; it's 40 minutes to start with, and the route manager uses it to time return flights too. The arrow ◂ marks the hour that gives it.
- Turns shorter than yours are in orange; anything under the 25 minute minimum can't be flown.

Staging and confirming

Press Enter on an outbound hour to stage it: the cursor moves to the return hour that gives your turnaround, and Enter stages that too. Stage as many legs as you like, on any routes; they're listed at the bottom. Enter or Del on a staged leg takes it off.

Press C to confirm: the coordinator is asked for every slot the staged legs need, all at once. Slots you already hold and don't use count first. If any slot can't be had, none are granted.

Then schedule the flights in the route manager (Alt+R). From its schedule dialog, S comes back here, on that route and hour.

CHAPTER

4 Maintenance

Checks, engine overhauls and grounding.

Every aircraft you dry-lease is yours to maintain. Its **maintenance programme** is a set of checks, each due after so many flight hours, flights (*cycles*) or days since it was last done, whichever comes first. Each engine has its own hours and cycles, and needs an **overhaul** in an engine shop after so many of either. Wet-leased aircraft are maintained by their lessors, out of your sight.

The checks

A check
: A few hundred flight hours or a few months apart. Eight to twelve hours in a hangar, overnight at your base.

B check
: On some older types: every six to eight months, about a day in the hangar. Newer types fold its tasks into their A checks.

C check
: Every eighteen months to three years. One to three weeks out of service, in a heavy maintenance bay.

D check
: The *heavy maintenance visit*: every six to eight years the aircraft is all but taken apart. One to three months out of service, and a million dollars or more.

A heavier check includes the lighter ones: a C check also does the A check, and resets its count. A check that takes a day or less is *line work*, done at your base. Heavy checks can be done in your own hangar (one heavy bay) or flown to a contracted maintenance organisation, each with its own price

and pace, and some only for certain types. The CATS Industry Report, in the **Bookmarks** menu, reviews them.

Work in your own hangar also needs enough engineers (page 19) holding the rating.

Engines

Each engine has a serial number (ESN) and keeps its own log wherever it's fitted. When one nears its overhaul it comes off at your base in an engine change (about ten hours, overnight) and is shipped to an engine shop. A spare goes on in its place: one of your own if you have one, or else one leased from the engine pool, which takes a couple of days to arrive and costs by the day. The overhauled engine comes back to your base as a spare, and within the week it's swapped back in for the pool engine, which goes back.

Who books what

The planner books each visit ahead: line checks and engine changes about ten days to three weeks before they're due, heavy checks two months ahead. It picks the quietest time of day for the aircraft's sub-fleet, and for a heavy check the cheapest place with a bay free in time. Other aircraft of the sub-fleet take over its flights; if there aren't enough, some are cancelled. If an aircraft flies more than expected, the planner brings its visit forward.

A visit away from your base is reached on an empty **positioning flight** from wherever the aircraft is, and it flies back to the base when the work is done. Heavy checks sometimes find more to do than planned, and take longer.

Grounding

An aircraft may run a little past a limit, by up to 10%. Beyond that it's **grounded**: it won't fly passengers until the work is done, though it can fly to the hangar. Its flights go to other aircraft, or are cancelled.

Maintenance control

The **Maintenance** tab (Alt+T, or type `MAINT`) lists everything coming due across the fleet, soonest first: when it's due at the rate the aircraft flies,

what's left on the limit that runs out first, and the visit booked for it. Below are the selected aircraft's checks, engines and the spares for them.

- ← → move the selected visit a day earlier or later, and Shift+← → an hour. P sends it somewhere else.
- Changes are staged, in orange, until Enter books them; Esc undoes them.
- A visit you've moved is *pinned*: the planner leaves it where you put it, even if that's after it's due.

Visits show on the schedule in purple, and positioning flights in blue. The Fleet tab shows each aircraft's hours and its next maintenance; the market shows a used aircraft's log and what it has coming up, worth knowing before you lease one that's nearly due a C check.

CHAPTER

5 Crew

The roster, pilots, engineers, hiring and training.

The **Crew** tab (Alt+W, or type CREW) is where you manage the people who work for your airline: the **pilots** who fly your flights and the **engineers** who work in your own hangar. Press Tab to move between its views.

Your starting team

When the first aircraft you maintain yourself is leased, four flight crews rated on it join, with a team of engineers rated on that aircraft and its engines, large enough for its line checks and an engine change. Wet-leased aircraft come with their own crew and maintenance, and need nobody. After that, who you hire is up to you.

The roster

A flight needs a full crew to leave: a captain and a first officer on most types. The roster chains each aircraft's flights into **duties**, ending back at your base where it can, and gives them to the pilots who can legally fly them, those who have flown least first. It looks up to six days ahead, and leaves a duty alone from the day before.

It follows European flight time limits: the longest flight duty depends on when it starts and how many sectors it has, and there are limits on duty and flight hours over rolling periods, and rest between duties. A person's record shows them against each limit.

Crew control acts on what it's told. An ASM retiming or cancelling a flight has the roster look at that day again; an MVT saying a flight has landed tells it when the crew are free for their next flight.

A crew whose duty starts away from base with nobody there travels on another airline at its fare. A duty ending away from your base means a hotel. With no crew to be found, Crew Control warns you the day before. A flight still without one two hours after its time is cancelled.

Crew control follows each duty through the stations' estimates. A crew who would go past their flight duty limit come off the flight that would take them over it, and those after it, and Crew Control reports them **out of hours** on the Alerts. A duty running late can also leave a crew without the rest they need before their next one, and they come off that.

From the day before, the roster is published. A duty that loses someone then is filled by a crew whose own duty at that time was cancelled, or by calling out someone on **standby**, and by nobody else.

Flight

The **Flight** view shows each pilot rating by rank: how many the next week's hours need, how many are on the books, on duty, on standby, joining and training, and how many duties to come are short.

Standby

The **Standby** view is the standby plan: each line has so many pilots of a rank and rating on standby every day, from a time (UTC) for so many hours. N sets a new line, moving between its fields with Tab and changing each with ↑ and ↓; Enter on a line changes how many, and none takes it off. Or type `STANDBY V40 CPT HOME 0500 12 2`. A change takes effect from the day after, as the roster is published by then.

Airport

At the airport, ready to go at once. It counts in full as duty. A flight duty from airport standby is shortened by the standby beyond four hours, and the two together can't be more than 16 hours.

Home

At home, at most 16 hours, and called in with time to get to the airport. A quarter of it counts as duty. A flight duty from it is shortened by the standby beyond six hours, not counting the night before the call, and the two together keep within the hours someone can be awake.

The roster puts people on standby after it has crewed the flights, those who have flown least first. **Next** shows how many of the next day's have someone on them, and **Called 28D** how many were called out in the last 28 days.

Engineers

Engineers hold **type ratings**: an airframe rating for the aircraft's checks, and an engine rating to change its engines. Engineers rated on the same family can work on all of it.

Needed
: The most this rating's work takes at once: the heaviest line job, or what's booked in the hangar if that's more.

On books, At work
: Rated engineers working for you, and those of them not away training.

Joining, Training
: Rated engineers hired who haven't started yet, and those on type training for this rating.

Contract
: How many of those on the books or joining are from an agency.

The hangar

A check's man-hours say how many engineers it takes, each working one shift a day. Work in your own hangar needs that many engineers holding the rating, free for the whole visit, as well as a bay. Without them the planner books the work later, or sends a heavy check to a maintenance organisation. Line checks can only be done at your base: if there aren't the engineers for one, Maintenance Control says so on the Alerts, once. See Maintenance (page 15).

People

The **People** view lists everyone. Enter opens a person's record: their ratings, when their next recurrent check comes round, and their training. From the record, T sends them on type training for a new rating, which takes weeks and has a price, and they're away until it's done. L lets them go,

with notice pay if they've started. Neither can be done while they're on a duty.

Recurrent checks come round every year for engineers. They're booked automatically, and take the person away for a couple of days. One that comes round during a duty starts when it ends, and they come off any duties it then clashes with.

Candidates

People looking for work come and go day by day, and each is listed until they go elsewhere. Some are already rated; most would need training. Enter offers to hire the one selected, or type `HIRE C0012`. They start after their notice period.

Contract engineers

On the **Engineers** view, C orders engineers holding the selected rating from an agency, or type `CONTRACT V70 12`. ↑ and ↓ change how many. They start within days, stay for a fixed term and cost well over a staff engineer. Their agency sees to their training and checks. Standing one down early from their record ends the contract, with nothing more to pay.

Costs

Pilots also earn flight pay for each hour flown. A base salary is paid from the day someone starts until they leave, whatever they're doing. It counts in the operating report (page 35) with training and notice pay, and the report shows what it comes to for each block hour flown. Contract engineers count in the crew cost too, but not in that hourly figure.

CHAPTER

6 Which Aircraft Flies What

Sharing flights out, and moving them.

You don't schedule flights on a particular aircraft. You schedule them on a **sub-fleet**: aircraft of the same type with the same cabin, such as *V402 Y180*. Passengers can't tell those aircraft apart, so any of them can fly the flight. Each day's flights are shared out among them automatically, about a week ahead.

How flights are shared out

- Flights are taken in order of departure, and each goes to an aircraft that's free then and can fly the route.
- An aircraft that will already be at the right airport is preferred, so outbound and return flights tend to stay together.
- When something changes, such as a new flight or a new aircraft, the plan is worked out again. Flights leaving within the hour keep their aircraft.

When there aren't enough aircraft

If more flights are scheduled at once than you have aircraft, the extra ones appear in the **Unassigned** row at the top of the Schedule tab. A flight still without an aircraft when it's due is **cancelled**, and its passengers choose a later flight where there's room, another airline or a refund (see Flights and passengers (page 27)). The schedule dialog warns you when a new flight would need more aircraft than you have.

Aircraft in the wrong place

A flight with an orange corner is flown by an aircraft that will be at another airport when it's due to leave. Point at the flight to see where. It flies anyway, from wherever the aircraft is.

Once such a flight is due within a day, Ops Control also puts it on the Alerts, to be acknowledged, unless you've just been told when moving it there.

Right-click the flight to put that right: if a positioning flight can get the aircraft there in time, the menu offers one, leaving as soon as the aircraft is free.

Positioning flights

A **positioning flight** moves an empty aircraft to another airport, without passengers. Right-click an aircraft's row on the Schedule tab and choose **Position to**, then the airport. Click on the timeline ahead of now and it leaves at that time; click on the aircraft's name and it leaves as soon as it can. In the console:

```
POSITION G-ABCD CDG
POSITION G-ABCD CDG 1400
POSITION G-ABCD CDG 09JAN 1400
```

- It flies from wherever the aircraft will be at that time, and needs at least half an hour's notice.
- It's pinned to the aircraft. Flights the aircraft had at that time go back to the planner; pinned flights, or maintenance, stop it.
- It's numbered in the 9000s, such as UE9001, and shown in blue on the schedule.
- To call it off before it leaves, right-click it and choose **Cancel Positioning Flight**, or type `CANCEL UE9001`.

Maintenance orders its own positioning flights to hangars away from your base; those go with their visit. See Maintenance (page 15).

Tail swaps

A **tail swap** moves a flight to another aircraft. Drag a flight on the Schedule tab onto another aircraft's row. The row turns green for an aircraft of the same sub-fleet, and red for one that can't take it. Or right-click the flight and choose **Tail Swap**, then the aircraft. You can also type the command in the console:

```
SWAP UE101 G-ABCD
SWAP UE101 09JAN G-ABCD
```

The first moves the next UE101; the second picks the day. Drag it along the timeline as well to delay it at the same time (see Flights and passengers (page 27)). Either way:

- The flight is **pinned** to that aircraft, shown by a pin at the top of the flight. The automatic planner never moves it again.
- If the aircraft had another flight then that you hadn't moved, that flight goes back to the planner to find another aircraft.
- Flights can only move within their sub-fleet, and not once they've left.

Unpinning

To hand a pinned flight back to the planner, right-click it and choose **Unpin**, or type `UNPIN UE101` (add the day, `UNPIN UE101 09JAN`, to pick one). The planner may then give it to another aircraft. To unpin every flight an aircraft has still to fly, right-click its row and choose **Unpin All Flights**, or type `UNPIN G-ABCD`.

Freeing an aircraft for maintenance

A maintenance visit can't be moved to a time when its aircraft has a pinned flight. To free the aircraft, unpin its flights, or move them to another aircraft of the sub-fleet, such as one just delivered. Then move the visit on the Maintenance tab. The planner gives the aircraft's other flights at that time to the rest of the sub-fleet.

CHAPTER

7

Flights and Passengers

A flight's details, and delaying or cancelling it.

On the Schedule tab, click the small window icon on a flight under the pointer, double-click the flight, or right-click it and choose **Flight Details…**, to open it in a panel under the schedule. Or type `FLIGHT UE101` in the console, adding the day for another day's: `FLIGHT UE101 09JAN`. The panel stays open as the clock runs; close it with Esc. On a screen at least 1920 wide, two flights open side by side, and Tab moves between them; a third replaces the one opened first. The panel your keys go to has **FLIGHT** in a solid block at the top and a double-line frame; the others have a single line.

What it shows

Status and aircraft

Whether it's scheduled, boarding, closed up ready to go, in the air, landed or cancelled; the aircraft flying it, and whether you've pinned it there; and the service it's flown from.

At stand

When boarding started and the doors closed, as the station has said. On the Schedule, a flight boarding has a yellow band of diagonal stripes across its top, cross-hatched once its doors are closed.

Times

Off-blocks and on-blocks, scheduled against actual, with how late or early. While it's in the air, the arrival shown with ≈ is expected. Point at a time to see it in local time.

Passengers

Each cabin class's seats, the passengers booked, those moved onto it from a cancelled flight, and the seats still free.

Costs

Once it has landed, its fuel and landing fees, as counted in the operating report (page 35).

Bookings

Passengers book each flight as it goes on sale, about a week ahead. Economy fills fuller than the premium cabins. A new service takes a week to sell up, so its first flights carry fewer passengers; cancelling one of those costs less.

Delaying a flight

Press D in the flight's panel, right-click it and choose **Delay…**, or type `DELAY UE101`. Type the new off-blocks time, in UTC, or press ↑ and ↓ to change it five minutes at a time; the dialog shows when it will be on blocks and how late that is. ← and → choose the aircraft: whichever is free, or one you pick, which moves the flight there and pins it. Enter delays it.

On the Schedule tab, drag a flight along the timeline to delay it, and onto another aircraft's row as well to tail swap it too. Or type it in the console:

```
DELAY UE101 1030
DELAY UE101 +45
DELAY UE101 09JAN 1030 G-ABCD
```

The timetable time stays as passengers booked it, and the flight counts as late from it. It can be delayed by up to 12 hours, and put back to its timetable time with **Back to** on its menu. Its passengers keep their seats. A flight that isn't pinned goes back to the planner at its new time, which may give it another aircraft.

Delay codes

When a flight leaves late, the Alerts, its panel and the schedule say what held it up, with the minutes each cause added and its standard airline delay code. A flight can also leave a few minutes before its time, most often at smaller airports, unless it has been retimed.

How long a problem on the ground holds a flight depends on the problem: cabin cleaning runs over by less than fuelling can. Any of them holds a flight by at most 30% of its scheduled block time.

15 (PH)
Boarding.

18 (PB)
Baggage.

35 (GC)
Cabin cleaning.

36 (GF)
Fuelling.

37 (GB)
Catering.

42 (TM)
Aircraft late from maintenance.

89 (AM) Z
Runway queue at the airport of departure: ATC capacity.

93 (RA)
Aircraft late in from its previous flight. With a sub-code when it came in behind schedule, by what cost that flight the most time: **Z** a departure delay at the previous station, **Y** an en-route delay, **W** high demand at the destination station, **U** technical reasons. Without one, it came in on time and the time on the ground was too short.

96 (RO)
Retimed by dispatch.

99 (MX)
Aircraft not yet in service.

The full list is in the Glossary (page 59).

Cancelling a flight

Press C in the flight's panel, right-click it and choose **Cancel Flight…**, or type `CANCEL UE101`, then press Enter to confirm, or Esc to keep it.

Its passengers are told, and over the next three hours each chooses for themselves:

- **A later flight** of yours on the same route, leaving at least 45 minutes after they choose and no more than a day after the cancelled one: the soonest with a seat free in their class. Most passengers would rather have this. It costs nothing, but fills seats, and those who choose first get the sooner flights.
- **Another airline**: a seat bought for them on the day, at one and a half times the fare. Most of those who find your later flights full go this way.
- **A refund** of their fare.

A cancelled flight stays on its aircraft's row in red for a day. Its panel shows how many have chosen each way, how many are still deciding, and what it has cost so far. When everyone has chosen, the Alerts say where they went. Refunds and other airlines' seats count in the operating report's costs, under *passengers*, when each passenger chooses.

A flight still without an aircraft when it's due is cancelled for you, as are the flights of a service taken off the timetable; their passengers choose in the same way.

Fares go by distance and class. Compensation, meals and hotels for stranded passengers, and passengers lost to the airline, are on the way.

CHAPTER

8 The Map

Where each aircraft was last known to be, and asking one for a report.

The **Map** tab (Alt+M, or type `MAP`) shows the fleet as an air traffic control display would: coastlines on a dark scope, every airport in your schedule, and every aircraft in your fleet, each where it was **last known** to be.

What it shows

- **Day and night**: the scope is lighter where it's daytime and darker where it's night, fading through twilight between them. The line sweeps west as the day goes on.
- **Airports** in the schedule are small rings with a dot inside, with their IATA code and local time, e.g. `1405L`; your base has a second ring. Point at one for its name and both codes, and how far its clocks are from UTC.
- **Aircraft on the ground** are listed under the airport they were last reported at, by registration.
- **Aircraft in the air** are solid diamonds with a data block: the registration, then the flight number and where it's going.
- **Aircraft on order** are dimmer, in brackets at the lessor's airport until they're delivered. A delivery flight is the lessor's, and isn't tracked.
- Zoomed in, the world's other large airports show as faint dots, and further in the smaller ones as small crosses, so you can see what's around.
- **FIRs**, flight information regions: the airspace each area control centre looks after, with dashed boundaries and their ICAO codes, e.g. `EGTT` for London. The **FIRs** button along the top turns them off and on.
- **Coverage**: the edge of radar and VHF coverage, as a dotted line, and the latitudes beyond which there's no SATCOM. The **Coverage** button along the top turns it on and off.

- **Range rings** round your base, dotted, at 50, 100 and 200 nautical miles, to see at a glance what's coming in. At 50 NM an arrival is in the terminal area, around a quarter of an hour from landing; 100 NM is near where it starts its descent; and by 200 NM, half an hour or so out, its crew are about to call the company to say they're in range.

Point at an aircraft to see what it's doing, and for one in the air, how long ago it was where it's drawn and what said so.

The **key** in the bottom right corner says what each symbol and line is. The **Key** button along the top shows or hides it.

The world a company was started with holds its FIRs as well as its airports, so a world of your own (**Worlds and Manufacturers…** on the welcome window) can change them.

Known position

The map shows what Ops Control has been told, not where an aircraft is at this instant.

- **On the ground**, an aircraft is at the airport its last movement message put it at.
- **In radar cover**, it's where the radar last swept it. It steps on every few seconds.
- **Out of radar cover**, it's where its last position report said, and stays there until the next report is in. Over an ocean that's a jump every quarter of an hour or so.

Aircraft move at most four times a second, however fast the clock is running, and jump from one known position to the next.

Overdue

An aircraft in the air whose position nothing has given for longer than its reporting interval and five minutes is **overdue**. It's drawn as the outline of a diamond, in grey, with `OVERDUE` in its data block, and Ops Control raises a **Position report overdue** Alert, which needs no acknowledging. When a report arrives the aircraft is drawn as usual again; the Alert stays in the list as a record. An aircraft on the ground is never overdue.

What to do about one is in Aircraft position reporting, in the CATS Training Materials.

Picking an aircraft

Click an aircraft to pick it. It gets a frame round it, the flight it's on is drawn, solid from where it left to its last known position and dashed on to where it's going, and a small box opens beside it and follows it:

- its flight;
- **Link**: the datalink its last message came by, VHF, SATCOM or HF datalink;
- **Report**: its last position report: when it was sent, the position, the flight level and its estimate of touchdown;
- **Since**: how long ago that was.

Request Report in the box asks the aircraft for a position report now, as typing `POSREQ` and its registration does. The request goes up on whichever link the aircraft is using, and the request and its answer are both in Messages (page 77). Over HF datalink either may take some minutes, or not arrive.

Click the aircraft again, click elsewhere or press Esc to close the box.

Flights are drawn as the crow flies, along the great circle: the shortest way between two points on the Earth. On the map's projection (Mercator) great circles bow towards the pole, so a flight from London to New York heads out north-west over Ireland. Real flights follow airways, which Flight Dispatch doesn't plan yet.

Moving around

- Drag the map to move it.
- Zoom with the scroll wheel, on the point under the pointer; with + and − or the buttons along the top; or by pinching.
- Ctrl+0, or the button between − and +, shows everything in the schedule and the fleet. Until you move the map, it does this by itself as the schedule changes.

The scale bar at the bottom left is in nautical miles, measured at the middle of the map.

CHAPTER

9 The Operating Report

Utilisation, idle time and costs.

The **Reports** tab (Alt+P, or type REPORT) shows how efficiently your operation runs: what it costs against the work it does. In Flight Dispatch you don't have a bank balance to spend; the airline judges its duty manager by these figures. Keep every aircraft flying, the most expensive ones above all.

Choose the period with ← and →: the last 24 hours, 7 days or 28 days, or everything since the company started. Money is in US dollars.

The figures

Utilisation

Block hours a day on scheduled services, for each aircraft in service: the figure airlines watch most. A short-haul aircraft working hard flies 10 to 12; a long-haul one, 14 or more.

Time

An aircraft's time in service goes to flying, to the hangar, or to sitting idle on the ground with nothing to do. Turnarounds count as idle, so short ones help. Idle over half is shown in orange.

Costs

The **lease** runs from signing to its end, flying or not. Each flight's **fuel** comes from the type's fuel burn, the engine fitted and the block time. **Fees** are landing fees, higher at big airports, for big aircraft, and in the morning and evening peaks and at night, by the airport's local time. **Maintenance** is the hangar visits and engine overhauls finished. **Passengers**, when flights have been cancelled, is the fares refunded and the seats bought on other airlines: see Flights and passengers (page 27). It

includes base salaries, training and notice pay for your people (page 19), and the block hour line shows what they come to for each hour flown.

Per block hour

Everything, against the hours of scheduled service flown. Positioning flights cost fuel and fees but count as no work.

Idle time cost

The part of the lease that paid for time on the ground with nothing to do.

Brief

How Network Planning's brief stands: the airports the timetable serves as it asks, and when it first served them all. See Faxes and briefs (page 37).

Each aircraft

The table gives the same figures for each aircraft; ↑ ↓ choose one, and its flights landed in the period are listed below with what each cost. Wider than the screen, Alt ← → scroll the columns.

There's no target to meet yet: for now the figures are there to improve on. Reviews from the airline are on the way.

CHAPTER

10

Faxes and Briefs

The fax filing, and what Network Planning asks for.

The airline's other departments write to ops control by fax. The **Fax** tab (Alt+X, or type FAX) runs **Paperless Fax**, from Kittiwake Software, which files each fax as it arrives, so nothing is printed. It takes a moment to start the first time it's opened.

The filing

Every fax goes in the **Inbox**, newest first, and in the folder of the department that sent it, beneath the Inbox. Faxes not read yet are in bold with a dot, and each folder counts them, as does the tab. Click a fax, or use ↑ and ↓, to read it below the list as it came off the line; reading it marks it read, and **Unread** marks it unread again. The **Outbox** holds faxes waiting to go: sending them isn't built yet.

Each department has an extension on the company's own exchange, so its fax number is four digits, with no country or area code:

Operations Control	2200	The duty manager's own line
Dispatch	2240	Flight plans and fuel, in the ops room
Network Planning	4410	Part of Commercial: the network to fly, and loading it for sale
Managing Director	1000	The head of the company

Firms outside the airline fax ops control on the public network, so their numbers have a country and area code. Each has a folder of its own beneath the departments'.

Licences and subscriptions

On the day a company starts, **CATS**, the publisher of Flight Dispatch 98, confirms by fax what it's licensed for: the system itself, the weather services from Skerryvore Meteorological Services, the integrated licence for Paperless Fax, and the CATS Industry Report, with the company's customer number. For anything about the licence, fax CATS Customer Licensing on the number it gives.

Weather advisories

The airline's meteorological provider, **Skerryvore Meteorological Services**, faxes an **aviation weather advisory** ahead of weather severe enough, over enough airports, to disrupt an operation: a tropical cyclone (about three days ahead), a winter storm or severe gale (a day and a half), prolonged fog (half a day) or severe thunderstorms (some hours). It gives the phenomenon, when it was issued, the period, the area, what's forecast and the aerodromes affected, largest first; for a tropical cyclone, its number, its position and its forecast position each day. Advisories are numbered through the year. They cover the whole world, whether or not the airline flies there, and the provider sends only the most significant, a few a year. The Alerts report each as it arrives. For the detail at an airport, see its TAF (page 53); for the picture, the Weather Map (page 49).

Briefs

Network Planning, in Commercial, sends ops control a **brief**: the network the airline wants flown. How to fly it, with which aircraft, at what times and with which slots, is up to the duty manager. Every new company starts with the same brief, a launch network, waiting in the Inbox:

Two airports

Airports sized Medium, Large or Major. Opening a route, [/] finds airports, and its **Size** filter shows which they are.

Short-haul

Under 1,500 km from the base as the crow flies, as Eurocontrol counts short-haul.

Daily

A flight out from the base and one back on every day of the week. Several services count together, so one on weekdays and another at weekends make a daily one.

Narrow-body

An aircraft with one aisle.

The brief names a few airports that fit, by their IATA and ICAO codes, spread from 300 to 700 nm from the base. Any airport that fits counts, not only those.

The **Brief** line of the operating report (page 35) shows how many of the airports the timetable serves as asked, and when it first served them all. Network Planning watch the timetable too, and fax as soon as a brief's flights are in it and loaded for sale. A brief met stays met if its flights later come off, though the report then counts fewer airports served.

More briefs, and briefs that change with the seasons, are on the way.

CHAPTER

11 Aircraft Types

The facts about each type, and the manufacturers' websites.

Press I in the fleet or the market for the facts about the selected aircraft's type, as the manufacturer publishes them:

- who builds it, and where
- its wingspan and aerodrome code (page 45), the runway it needs, whether it's certified for steep approaches, and its cruising speed
- the engines, cabins and fuel tanks it can be built with, the range each tank gives, and what each adds to the lease. ▸ marks the ones the selected aircraft has.
- its maintenance programme: each check, when it's due, and its downtime, man-hours and cost in your own hangar. See Maintenance (page 15).

Esc goes back.

Manufacturers' websites

For an independent view of each type, and of the airports and maintenance organisations, see the CATS Industry Report.

Each manufacturer's website is in the browser's **Bookmarks** menu, with its product pages, typical cabins and ranges. From the facts about a type, W opens its manufacturer's site. These help pages are on the Flight Dispatch 98 site, at the top of the Bookmarks menu; the house button comes back to their contents.

CHAPTER

12 Cabin Classes

F, J, W and Y, and how a cabin is written.

An aircraft's cabin is divided into classes of travel, each with its own seats and service. The programs write a cabin front to back as each class's letter and its seats: `J12 Y138` is 12 business seats, then 138 economy.

`F` **First**
: The most space a seat takes: about three economy seats' floor area.

`J` **Business**
: About two economy seats' floor area.

`W` **Premium economy**
: A wider seat with more legroom than economy.

`Y` **Economy**
: The standard seat.

Cabin plans

Press C in the fleet or the market for a plan of the selected aircraft's cabin, nose at the top. Each row shows its seat letters with its number in the aisle, and a line marks where each class starts. Doors are named by side and number from the front (`L1`, `R1`; `UL1` on an upper deck), and overwing exits are marked `EXIT` beside the rows they open onto. Galleys, lavatories and closets stand across the cabin, and ◊ is a cabin crew seat.

Seats are lettered ABC DEF across a cabin with one aisle, and ABC DEFG HJK with two; there is no I. A wider seat takes the letters of the places it stands over, so a business row of four in a single-aisle cabin is AC DF.

The plan also gives the minimum cabin crew: one for every 50 passenger seats, or part of 50.

Sub-fleets

Aircraft of one type with the same cabin, such as *V402 Y180*, form a **sub-fleet**. Passengers can't tell them apart, so daily services are scheduled on a sub-fleet, not one aircraft. See Which aircraft flies what (page 23).

CHAPTER

13 Airfields

Airport codes, aerodrome reference codes and steep approaches.

Not every aircraft can use every airport. The route manager shows what each airfield takes, and the market what each aircraft can't use.

Airport codes

Airports have two codes. The three-letter **IATA** code, such as LHR, is the one timetables, tickets, bag tags and movement messages use, and the one Flight Dispatch shows for flights, routes, the Schedule, slots, messages and the fleet. The four-letter **ICAO** code, such as EGLL, is the one flight plans, air traffic control and weather reports use; its first one or two letters give the country or region: EG the United Kingdom, LF France, ED Germany, K the United States. An airfield with no IATA code goes by its ICAO code. Where there's room, both are shown, IATA first: LHR/EGLL.

Type either code into any airport field or command. When you leave the field, it shows the airport's IATA code. After four letters a field moves on by itself; after three, press Tab.

View ▸ Visual Airport Codes Guide underlines codes in the programs; point at one for the airport's name and both its codes. In the market's filters and when opening a route, press / in a code field to find an airport by name, code, country and size. **Find…** does the same for the home base of a new airline.

Aerodrome reference code

A letter from A to F for the size of aircraft, by wingspan:

- A: under 15 m
- B: under 24 m
- C: under 36 m
- D: under 52 m
- E: under 65 m
- F: under 80 m

An airfield takes aircraft up to its letter: one that takes *up to code C* can't take a code D aircraft. The facts about each type (I in the fleet or the market) give its letter.

Runway

Each aircraft type needs a length of runway to take off and land; an airfield's longest runway must be at least that long.

Steep approach

Some airports need a steeper glide path than usual over the buildings around them. Only aircraft certified for a steep approach at that angle or steeper can land there.

CHAPTER

14 Times

UTC and local time, block time and turnaround.

UTC and local time

Every time in the programs and on the schedule is in UTC, also called *Zulu*, written as four digits and a `Z`: `0715Z` is a quarter past seven UTC. Times local to an airport end in `L`, as in `0815L`.

On the schedule, a time on a later or earlier date than the flight's departure in UTC carries `+1` or `–1`.

Block time

The time from pushing back at the gate to arriving on stand at the other end. It's worked out from the distance and the aircraft type's cruising speed, so a slower type has longer block times, plus the time taxiing between the gate and the runway at each end. Taxiing takes longer at bigger airports: a few minutes at a small field, and a quarter of an hour or more at the biggest hubs. Pointing at a block time in the route manager shows the taxi times it includes.

Late flights on the schedule

A flight due off that hasn't left yet has a striped start. Once it's late, a striped tail runs out to when it's now expected in, with that time (`≈1509Z`). After it lands, its block moves to the times it actually flew, over a faint outline of where it was planned.

Turnaround

The time on the ground between arriving and leaving again, to unload, clean, refuel and board. An aircraft needs at least 25 minutes; your preferred turnaround is set in the slots program.

CHAPTER

15

The Weather Map

The surface chart and the significant weather chart.

The **WX** tab (Alt+E, or type `WXMAP`, or **View ▸ Weather Map**) shows the weather over the region round your base, on the same projection as the Map tab. It has two charts, picked with the **Chart** buttons along the top. Both are drawn again every ten minutes.

Surface

The surface analysis with precipitation and cloud, in colour.

- **Precipitation** is in bands by its rate, in millimetres an hour: from dark green for 0.3 mm, through green, yellow and orange, to red for 10 mm and magenta for 20 mm or more. Snow is pale blue, and nearly white where it's heavy.
- **Cloud** is grey, the thicker the lighter, over the land and sea it covers.
- **The coast** is the black line, drawn over the precipitation and cloud so the land can be made out beneath them.
- **Isobars** are the white lines, every 4 hPa, with their pressures on them. The closer together, the stronger the wind.
- **H** and **L** mark the centres of highs and lows, with the pressure there. **TC** is a tropical cyclone.
- **Fronts** have their symbols on the side they're moving towards: blue triangles for a cold front, red half-discs for a warm front, and purple for an occlusion, with both. A front with triangles on one side and half-discs on the other is hardly moving.

- **Airports** are discs coloured by flight category, from their latest report: green for VFR (ceiling above 3,000 ft and visibility above 5 miles), blue for MVFR (1,000 to 3,000 ft, or 3 to 5 miles), red for IFR (500 to 1,000 ft, or 1 to 3 miles) and magenta for LIFR (below those). The larger airports are shown; zoomed right out, only the largest.

The key is at the bottom left. If the colours are hard to tell apart, tick **Patterns and shapes on the weather map** under **Weather** in Settings: each band of precipitation then has a texture of its own, and each flight category a shape of its own (a disc, a square, a triangle and a diamond, from VFR to LIFR).

SIGWX

The significant weather chart for FL100 to FL600, as it comes off the fax: cumulonimbus in scalloped lines, jet streams as heavy arrows, fronts in black, tropical cyclones, and the weather at the larger airports. Every symbol on it, and how to read its labels, is in Reading the SIGWX chart, in the CATS Training Materials.

The line across the top is the sending machine's: when it was sent, and the provider's fax number.

Moving around

- Drag the map, or use the arrow keys, to move it. While you drag, a dotted outline with a cross at its middle shows where the map will be; it's drawn again where you let go, and **REDRAWING** shows until the new picture is ready.
- + and −, Ctrl++ and Ctrl+−, or the buttons along the top, zoom in and out, from the region round an airport to the whole world.
- Home or Ctrl+0, or the button between − and +, goes back to the region round your base.
- **Go To**, along the top, moves the map to an airport: type its IATA or ICAO code and press Enter, or pick one of the airports on your routes from the list beside it.

The weather reference

Press the company's name in the status bar, along the bottom of the window, for the company's details: among them its **weather reference**, pattern and world, as given when the company was started. Two companies started with the same three have exactly the same weather, hour by hour, on any computer: give someone the reference to compare notes on the same storms. It can be selected and copied.

For one airport's weather in full, see Weather reports and forecasts (page 53).

CHAPTER

16

Weather Reports and Forecasts

Reading a METAR, SPECI or TAF, and each country's form of them.

A METAR is an airport's routine weather report, issued every half hour or hour at its own minutes past the hour. A SPECI is a special report issued between two of them, when conditions change significantly. Type `WX` and an airport code in the console for the latest, or look at the route manager. Point at any group to read it.

Each country reports in its own way. Flight Dispatch shows every report and forecast as it was sent.

Reading a METAR

```
METAR EGLL 141020Z 24012G24KT 210V270 6000 -RA FEW008 BKN030 SCT045CB
14/12 Q1018 NOSIG
```

`METAR EGLL 141020Z`

A routine report from Heathrow, observed on the 14th at 1020Z. `SPECI` is a special report, `COR` a correction to one sent earlier, and `AUTO` after the time one made by instruments alone.

`24012G24KT 210V270`

Wind from 240° true at 12 knots, gusting 24, its direction varying between 210° and 270°. A gust is given when it is 10 knots or more over the mean. `00000KT` is calm, `VRB` a light wind with no direction to speak of, and `MPS` metres per second.

`6000`

Prevailing visibility 6,000 m. `9999` is 10 km or more. A second group with a direction, `1200NE`, is the lowest visibility where one direction is much worse.

`R27R/0600D`

Runway visual range, given when visibility is under 1,500 m: 600 m on runway 27R and falling. `U` is improving, `N` steady; `P2000` more than 2,000 m and `M0050` less than 50 m.

`-RA`

Light rain. `-` is light, `+` heavy, and no sign moderate. See the weather codes below.

`FEW008 BKN030 SCT045CB`

A few clouds at 800 ft, broken cloud at 3,000 ft and scattered cumulonimbus at 4,500 ft, all above the airfield. `FEW` is 1 to 2 eighths of the sky, `SCT` 3 to 4, `BKN` 5 to 7 and `OVC` all of it. `CB` is cumulonimbus and `TCU` towering cumulus. `NSC` is no significant cloud, and `VV002` a sky hidden by fog or snow, with 200 ft of vertical visibility.

`CAVOK`

In place of the visibility, weather and cloud: 10 km or more, no cloud below 5,000 ft, no cumulonimbus or towering cumulus, and no significant weather.

`14/12`

Temperature 14°C, dew point 12°C. `M` is minus: `M02/M05`.

`Q1018`

QNH 1018 hPa, rounded down.

`RERA`, `WS R27R`

After the pressure: recent weather (rain, since the last report but not now), and wind shear reported on a runway (`WS ALL RWY` for all of them).

Weather codes

`DZ RA SN SG PL GR GS`

Drizzle, rain, snow, snow grains, ice pellets, hail and small hail. Two together are both falling, the heavier first: `RASN`.

`FG BR HZ`

Fog (visibility under 1,000 m), mist (1,000 to 5,000 m) and haze.

`SH TS FZ`
: Before what falls: showers, thunderstorm, freezing. `+TSRAGR` is a thunderstorm with heavy rain and hail; `FZFG` freezing fog; `TS` alone a thunderstorm with nothing falling.

`MI BC PR`
: Before fog: shallow, in patches, over part of the airfield.

Automatic stations

After `AUTO`, instruments report what they can. `NDV` after the visibility means no direction can be told. `///` after a cloud layer means its type can't be told, and `NCD` that no cloud was detected. Slashes in place of a whole group (`/////KT`, `////`, `Q////`) mean that sensor is out of service.

TREND

Larger airports end a report with a forecast for the next two hours.

`NOSIG`
: No significant change expected.

`BECMG FM1100 TL1200 3000 RA BKN008`
: Becoming, between 1100Z and 1200Z, visibility 3,000 m in rain with broken cloud at 800 ft, and staying so. `AT` gives a single time.

`TEMPO TL1230 30020G35KT`
: At times until 1230Z, wind 300° at 20 knots gusting 35, for under an hour at a time.

`NSW`
: No significant weather: what there was is expected to end.

TAF

A TAF is the forecast for an airport: 30 hours ahead at the largest, 24 at most, and 9 at small ones, issued every six hours (every three for a 9-hour TAF), an hour before its period starts. It gives the wind, visibility, weather and cloud expected to prevail, in the same groups as a METAR, then what's expected to change.

```
TAF EGLL 141100Z 1412/1518 24012KT 9999 SCT030
      BECMG 1418/1420 28015G25KT
      TEMPO 1420/1502 4000 SHRA BKN012 SCT020CB
      PROB30 TEMPO 1504/1508 0500 FG VV002
      FM150900 31008KT CAVOK
```

`141100Z 1412/1518`
: Issued on the 14th at 1100Z, for 1200Z on the 14th to 1800Z on the 15th. The end of a day is written as hour 24: `1500/1524`.

`BECMG 1418/1420`
: Becoming, between 1800Z and 2000Z: a lasting change, given with only what changes.

`TEMPO 1420/1502`
: At times between 2000Z and 0200Z, for under an hour at a time and less than half the period in all.

`PROB30`, `PROB40`
: A 30% or 40% chance, alone or with `TEMPO`. Less likely than that isn't forecast, and more likely is given as `TEMPO` or `BECMG`.

`FM150900`
: From 0900Z on the 15th, conditions change to those that follow, all given afresh.

`TAF AMD`
: An amended forecast, replacing the one in force for the rest of its period. One is issued when what's observed has gone outside what the forecast allowed for.

North American TAFs give visibility in statute miles, with `P6SM` for more than six, use `FM` for every lasting change and never `BECMG`, and of the probabilities only `PROB30`.

North American reports

```
METAR KJFK 141051Z 26012G22KT 1 1/2SM R04L/2400FT +TSRA BR FEW008
BKN025CB OVC075 22/21 A2993 RMK AO2 SLP139 T02220211
```

`1 1/2SM`
: Visibility in statute miles. `10SM` is 10 miles or more; `M1/4SM` less than a quarter.

`R04L/2400FT`
: Runway visual range in feet.

`CLR`, `SKC`
: No cloud below 12,000 ft, from instruments; sky clear, from an observer. `CAVOK` isn't used. Every layer is reported, not only those below 5,000 ft.

`A2993`
: Altimeter setting 29.93 inches of mercury.

`RMK AO2 SLP139 T02220211`
: Remarks. `AO2`: an automated station that can tell rain from snow. `SLP139`: sea-level pressure 1013.9 hPa. `T02220211`: temperature 22.2°C and dew point 21.1°C; a 1 in place of the first 0 of either is minus. Canada gives each layer's cloud type and eighths instead, `SC4AC2`.

Reports are hourly, a few minutes before the hour in the United States and on the hour in Canada, with SPECIs between them.

When a SPECI is issued

Stations that report hourly issue a SPECI when, since their last report:

- the wind changes direction by 60° or more with 10 knots or more, or its speed changes by 10 knots;
- visibility passes 800, 1,500, 3,000 or 5,000 m, or runway visual range 175, 300, 550 or 800 m;
- a thunderstorm, hail, fog, freezing precipitation, or moderate or heavy precipitation begins or ends;
- the lowest broken or overcast layer passes 100, 200, 500, 1,000 or 1,500 ft.

A change for the worse is reported at once, and one for the better when it has lasted ten minutes. Stations that report every half hour mostly issue none.

CHAPTER

17 Glossary

The industry's delay codes and abbreviations.

The airline industry's own terms and codes, as used in delay reporting. Flight Dispatch 98 uses only some of them; see Flights and passengers (page 27) for the delay codes that appear on your flights.

Delay measures

TTF
Total flights.

TRF
Total regulated flights.

TDF
Total delayed flights.

PRF
Percentage of regulated flights.

PDF
Percentage of delayed flights.

TDM
Total delay in minutes.

ADM
Average delay per movement.

ADR
Average delay per regulated flight.

ADD
Average delay per delayed flight.

Punctuality measures

Departure usually means off-blocks: the moment the aircraft starts moving from the stand, not take-off. An ops board shows A15 as well, and often D0 for just the first wave of the day: if the first wave leaves on time, the rest of the day tends to hold together.

D0

Departure zero: the percentage of flights that leave at or before their scheduled time, with no delay allowed. The strictest on-time measure, and the one ops managers tend to watch most closely, because a late first departure knocks on to everything after it.

D15

The percentage that leave less than 15 minutes late: the industry's usual definition of on time.

A0, A15 (sometimes A14)

The same for arrivals, which is what passengers and published league tables care about.

Terms

ACC

Area Control Centre.

AEA

Association of European Airlines.

AHM

Airport Handling Manual.

ATFM

Air Traffic Flow Management (used by IATA in the standard delay codes).

ATFCM

Air Traffic Flow and Capacity Management (used by the Network Manager as a fuller name for the function).

ATS

Air Traffic Services.

BTO
Block Time Overshoot.

CODA
Central Office for Delay Analysis.

DCS
Departure Control System: the station's system for check-in, boarding and closing a flight.

DDI-F
Delay Difference Indicator, Flight.

DNM
Directorate Network Management.

ECAC
European Civil Aviation Conference.

FDPS
Flight Data Processing System.

FMP
Flow Management Position.

IACA
International Air Carrier Association.

IATA
International Air Transport Association.

NMOC
Network Manager Operations Centre.

Movement messages

From OAG's guide to IATA's Airport Handling Manual formats. See Movement messages (page 77).

MVT
Aircraft movement message.

AD
Actual departure: off-block, then airborne.

AA
Actual arrival: touchdown, then on-block.

EA

Estimated touchdown, and the airport. On its own in a later message, a revised estimate.

In range

The crew's radio call to the airport they're coming to, shortly before landing, with when they'll land.

ED

Estimated departure.

NI

Next information: when more word will be given.

SI

Supplementary information.

ASM

Ad hoc schedule message: a change to a flight on one date.

TIM

In an ASM, a change of time.

CNL

In an ASM, a cancellation.

DL

Delay codes and their durations.

EDL

Extra delay codes.

DLA

Delay sub-codes.

PX

Passengers on board.

MVA

The same messages, sent by the aircraft itself over its datalink.

Aircraft datalink

ACARS

Aircraft Communications Addressing and Reporting System: short messages between an aircraft and the ground, sent by the aircraft's own avionics.

OOOI

Out, Off, On, In: the four movement events an aircraft reports itself. Out of the gate, off the ground, on the ground, in at the gate.

Downlink, uplink

A message from the aircraft to the ground, and one from the ground to the aircraft.

VHF

Very high frequency radio: line of sight, so within about 200 nautical miles of a ground station for an aircraft at cruise.

SATCOM

Satellite communications: wherever the satellites over the equator can be seen, which is not near the poles.

HF

High frequency radio: reaches anywhere, by way of the upper atmosphere, but slowly and not always.

POS

Position report: where the aircraft is, its flight level, fuel on board and estimate of touchdown.

RQP

Request for a position report.

FOB

Fuel on board.

Airport Collaborative Decision Making

From IATA's A-CDM recommendations (2018) and airports' A-CDM guides. See Movement messages (page 77).

A-CDM

Airport Collaborative Decision Making: the airport, airlines, handlers and air traffic control sharing one set of times for each flight.

TOBT

Target Off-Block Time: the time an aircraft operator or ground handler estimates that an aircraft will be ready, all doors closed, boarding bridge removed, pushback vehicle available, and ready to start up or push back immediately on receipt of ATC clearance. Owned by the airline.

TSAT

Target Start-up Approval Time: the time provided by ATC at which an aircraft can expect start-up or pushback approval, from the tower's pre-departure sequence.

TTOT

Target Take-Off Time: the forecast take-off time, from the TSAT plus the taxi time.

EXOT

Estimated Taxi-Out Time.

Standard IATA delay codes

Others

00-05

Airline internal codes.

06 (OA)

No gate or stand available because of the airline's own activity.

09 (SG)

Scheduled ground time less than the declared minimum ground time.

Passenger and baggage

11 (PD)

Late check-in, acceptance after the deadline.

12 (PL)

Late check-in, congestion in the check-in area.

13 (PE)

Check-in error, passenger and baggage.

14 (PO)

Oversales, booking errors.

15 (PH)

Boarding, discrepancies and paging, missing checked-in passenger.

16 (PS)

Commercial publicity or passenger convenience, VIP, press, ground meals and missing personal items.

17 (PC)

Catering order, late or incorrect order given to the supplier.

18 (PB)

Baggage processing, sorting and so on.

19 (PW)

Reduced mobility, boarding or deboarding of passengers with reduced mobility.

Cargo and mail

21 (CD)

Documentation, errors and so on.

22 (CP)

Late positioning.

23 (CC)

Late acceptance.

24 (CI)

Inadequate packing.

25 (CO)

Oversales, booking errors.

26 (CU)

Late preparation in the warehouse.

27 (CE)

Documentation, packing and so on (mail only).

28 (CL)

Late positioning (mail only).

29 (CA)

Late acceptance (mail only).

Aircraft and ramp handling

31 (GD)

Aircraft documentation late or inaccurate: weight and balance, general declaration, passenger manifest and so on.

32 (GL)

Loading or unloading: bulky or special load, cabin load, lack of loading staff.

33 (GE)

Loading equipment, lack of or breakdown, such as a container pallet loader; lack of staff.

34 (GS)

Servicing equipment, lack of or breakdown, such as steps; lack of staff.

35 (GC)

Aircraft cleaning.

36 (GF)

Fuelling or defuelling, fuel supplier.

37 (GB)

Catering, late delivery or loading.

38 (GU)

ULD (unit load devices), lack of or serviceability.

39 (GT)

Technical equipment, lack of or breakdown, such as pushback; lack of staff.

Technical and aircraft equipment

41 (TD)

Aircraft defects.

42 (TM)

Scheduled maintenance, late release.

43 (TN)

Non-scheduled maintenance, special checks or additional work beyond the normal maintenance schedule.

44 (TS)

Spares and maintenance equipment, lack of or breakdown.

45 (TA)

AOG spares, to be carried to another station.

46 (TC)

Aircraft change, for technical reasons.

47 (TL)

Stand-by aircraft, lack of a planned stand-by aircraft for technical reasons.

48 (TV)

Scheduled cabin configuration or version adjustments.

Damage to aircraft and automated equipment failure

51 (DF)

Damage during flight operations: bird or lightning strike, turbulence, heavy or overweight landing, collision during taxiing.

52 (DG)

Damage during ground operations: collisions other than during taxiing, loading or off-loading damage, contamination, towing, extreme weather.

55 (ED)

Departure control.

56 (EC)

Cargo preparation or documentation.

57 (EF)

Flight plans.

58 (EO)

Other automated system.

Flight operations and crewing

61 (FP)

Flight plan, late completion or change of flight documentation.

62 (FF)

Operational requirements, fuel, load alteration.

63 (FT)

Late crew boarding or departure procedures, other than connection and standby (flight deck or entire crew).

64 (FS)

Flight deck crew shortage: sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents and so on.

65 (FR)

Flight deck crew special request, not within operational requirements.

66 (FL)

Late cabin crew boarding or departure procedures, other than connection and standby.

67 (FC)

Cabin crew shortage: sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents and so on.

68 (FA)

Cabin crew error or special request, not within operational requirements.

69 (FB)

Captain's request for an extraordinary security check.

Weather

71 (WO)

Departure station.

72 (WT)

Destination station.

73 (WR)

En route or alternate.

75 (WI)

De-icing of aircraft, removal of ice or snow, frost prevention, excluding unserviceable equipment.

76 (WS)

Removal of snow, ice, water and sand from the airport.

77 (WG)

Ground handling impaired by adverse weather.

Air traffic flow management restrictions

81 (AT)

ATFM due to ATC en-route demand or capacity, standard demand and capacity problems.

82 (AX)

ATFM due to ATC staff or equipment en route: reduced capacity from industrial action, staff shortage, equipment failure, military exercise or extraordinary demand because capacity is reduced in a neighbouring area.

83 (AE)

ATFM due to restriction at the destination airport: airport or runway closed by obstruction, industrial action, staff shortage, political unrest, noise abatement, night curfew, special flights.

84 (AW)

ATFM due to weather at the destination.

Airport and governmental authorities

85 (AS)

Mandatory security.

86 (AG)

Immigration, customs, health.

87 (AF)

Airport facilities: parking stands, ramp congestion, lighting, buildings, gate limitations and so on.

88 (AD)

Restrictions at the airport of destination: airport or runway closed by obstruction, industrial action, staff shortage, political unrest, noise abatement, night curfew, special flights.

89 (AM)

Restrictions at the airport of departure, with or without ATFM restrictions: air traffic services, start-up and pushback, airport or runway closed by obstruction or weather (weather only under an ATFM regulation, otherwise code 71), industrial action, staff shortage, political unrest, noise abatement, night curfew, special flights.

Reactionary

91 (RL)

Load connection, awaiting load from another flight.

92 (RT)

Through check-in error, passenger and baggage.

93 (RA)

Aircraft rotation, late arrival of the aircraft from another flight or previous sector.

94 (RS)

Cabin crew rotation, awaiting cabin crew from another flight.

95 (RC)

Crew rotation, awaiting crew from another flight (flight deck or entire crew).

96 (RO)

Operations control: re-routing, diversion, consolidation, aircraft change for reasons other than technical.

Miscellaneous

97 (MI)

Industrial action within the airline.

98 (MO)

Industrial action outside the airline, excluding air traffic services.

99 (MX)

Other reason, not matching any code above.

IATA delay sub-codes

A letter after a code gives more detail.

73 (WR) Weather: en route or alternate

Z

Outside aircraft limits.

Y

Outside crew limits.

X

ETOPS.

81 (AT) ATFM due to ATC en-route demand or capacity

Z

ATC routeings.

Y

High demand or capacity.

82 (AX) ATFM due to ATC staff or equipment en route

Z

Industrial action.

Y

Equipment failure.

X

Staff shortage.

W

Military activity.

V

Special event.

83 (AE) ATFM due to restriction at the destination airport

Z

High demand or ATC capacity.

Y

Industrial action.

X

Equipment failure.

W

Staff shortage.

V

Accident or incident.

U

Military activity.

T

Special event.

S

Noise abatement or night curfew.

R

Other.

87 (AF) Airport facilities

Z

Lack of parking stands.

Y

Ramp congestion.

X

Lighting or buildings.

W

Gate limitation or no gate available.

V

Baggage sorting system down or slow.

U

No pushback clearance because of infrastructure.

T

Jet bridge inoperative.

S

Lack of check-in counters.

R

Electrical system failure.

P

Passenger transport system failure.

N

Public address or flight information display failure.

M

Insufficient fire cover.

L

Ground communication system failure.

K

No pushback clearance because of construction.

J

Breakdown of the airport fuelling system.

H

Late or lack of follow-me for pushback.

G

Any of the above at the destination airport.

89 (AM) Restrictions at the airport of departure

Z

ATC capacity.

Y

ATC industrial action.

X

ATC staffing.

W

ATC equipment.

V

ATC accident or incident.

U

ATC due to de-icing.

T

ATC special event.

S

ATC weather.

R

ATC restrictions due to curfew.

P

ATC political unrest.

N

ATC environmental.

M

Airport closure.

L

Runway closure.

K

Start-up or pushback clearance delay (local ATC).

J

Flight plan lost by ATC.

H

Construction work or maintenance.

G

Other.

93 (RA) Aircraft rotation

Z

Late arrival from a departure delay at the previous station.

Y

Late arrival from an en-route delay.

X

Late arrival from a delay after landing.

W

Late arrival from high demand at the destination station.

V

Late arrival from weather at the destination.

U

Late arrival for technical reasons.

Flow regulations and IATA codes

The reason an air traffic flow regulation gives, and the IATA code it counts as, by where it applies.

C: ATC capacity

at departure 89, en route 81, at arrival 83. For example: Demand exceeds the capacity.

I: ATC industrial action

at departure 89, en route 82, at arrival 83. For example: Controllers' strike.

R: ATC routeings

en route 81. For example: Phasing in of new procedures.

S: ATC staffing

at departure 89, en route 82, at arrival 83. For example: Illness, traffic delays on the highway.

T: ATC equipment

at departure 89, en route 82, at arrival 83. For example: Radar failure, RTF failure.

A: Accident or incident

at departure 89, at arrival 83. For example: Runway 23 closed by an accident.

G: Aerodrome capacity

at departure 87, at arrival 87. For example: Lack of parking, taxiway closure, areas closed for maintenance; demand exceeds the declared airport capacity.

D: De-icing

at departure 89. For example: De-icing.

E: Equipment, non-ATC

at departure 87, at arrival 87. For example: Runway or taxiway lighting failure.

N: Industrial action, non-ATC

at departure 98, at arrival 98. For example: Firemen's strike.

M: Military activity

at departure 89, en route 82, at arrival 83. For example: Exercises such as Brilliant Invader or ODAX.

P: Special event

at departure 89, at arrival 83. For example: European football cup, heads of government meetings.

W: Weather

at departure 89, en route 73, at arrival 84. For example: Thunderstorm, low visibility, crosswinds.

V: Environmental issues

at departure 89, at arrival 83. For example: Noise.

O: Other

at departure 89, en route 81, at arrival 83. For example: Security alert.

From EUROCONTROL's CODA Digest, Delays to Air Transport in Europe, September 2012, which takes its delay codes from IATA's Airport Handling Manual (AHM 730 and 731).

CHAPTER

18 Movement Messages

Reading an MVT or ASM, and the aircraft's own messages.

Stations report each flight's movements to Ops Control by teletype, in the format of IATA's Airport Handling Manual. The departure and arrival entries on the Alerts are raised from these, and the Schedule and a flight's panel show what they've said, so a flight stays due off until its departure message is in. The **Messages** tab (Alt+G) has the last two days', text as sent, newest first; press F to find a flight, station, registration or message type. Aircraft send messages of their own too (see From the aircraft, below). Their routine position reports are left out of the list until you press P to show them.

Departure

Sent at pushback, with the off-block time alone (`AD1245`), and again once the aircraft is airborne, with both times.

```
MVT
UE101/05.GUEAA.LHR
AD1245/1253 EA1559 JFK
DL93/15/0020/0005
DLA93Z
PX112
```

`UE101/05.GUEAA.LHR`
: Flight, day of the month of its scheduled departure, registration, and the airport of movement. Airports without an IATA code go by their ICAO code.

`AD`
: Actual departure: off-block, then airborne.

`EA`
: Estimated touchdown, and the destination.

`DL`
: Delay codes and how long each held the flight, as hours and minutes. Up to two; `EDL` carries two more. If there were more than four causes, the rest are put down to the largest.

`DLA`
: Delay sub-codes.

`PX`
: Passengers on board.

All times are UTC. The codes are in the Glossary (page 59).

Revised estimate

When the crew's in-range call puts landing 5 minutes or more from the estimate the station last had, from the departure message or from the aircraft itself, the station they're coming to sends a new one. The airport on the second line is that station.

```
MVT
UE101/05.GUEAA.JFK
EA1612
```

At the stand

At every airport, the station's departure control system says when boarding starts, and when the flight is closed, doors shut and ready to go. A positioning flight, with no one to board, is only closed. Neither raises an Alert: the flight's panel and the Schedule show them.

```
DCS
UE101/05.GUEAA.LHR
BOARDING1225
```

```
DCS
UE101/05.GUEAA.LHR
CLOSED1245
```

Target times

At an airport running A-CDM, the station gives the tower the flight's TOBT from 40 minutes before it's due, and again when it changes. The tower replies with its place in the departure sequence, and the aircraft pushes back no earlier than its TSAT: ready early, it waits at the stand with its doors closed. When a flight pushes back, the tower fits the ones still waiting round it again, and gives any whose TSAT moves a new one. The times are on the flight's panel. With no time to give (no crew, hangar work overrunning, or next information instead of an estimate) the TOBT is withdrawn (`TOBT NIL`), and after a tail swap the times are given again for the new aircraft. Airports without A-CDM give no target times: aircraft push back when ready and queue for the runway.

```
CDM
UE101/05.GUEAA.LHR
TOBT1245
```

```
CDM
UE101/05.GUEAA.LHR
TOBT1245 TSAT1247 TTOT1304
```

`TOBT`
: Target off-block time: when the aircraft is expected to be ready.

`TSAT`
: Target start-up approval time, from the departure sequence.

`TTOT`
: Target take-off time: the TSAT and the taxi out.

Delay

Sent when a flight will leave late, and again when that changes. A station knows of a late aircraft when it hears the aircraft has left for it, of a problem on the ground shortly before departure, and of hangar work running on when it does.

```
MVT
UE101/05.GUEAA.LHR
ED051315
DL93/0025
```

`ED`
: Estimated departure: day of the month and time.

`NI`
: Next information: when there'll be more word, given in place of `ED` when there's no estimate.

`SI`
: Supplementary information, in words.

Arrival

Sent as the aircraft touches down, with the touchdown time alone (`AA1555`), and again once it's on blocks, with both times. Only the second raises an Alert.

```
MVT
UE101/05.GUEAA.JFK
AA1555/1603
```

`AA`
: Actual arrival: touchdown, then on-block.

From the aircraft

Each aircraft reports its own movements over its datalink, as `MVA`: the same message, sent by the aircraft. There are four, known as OOOI: Out of the gate, Off the ground, On the ground and In at the gate. They update the Schedule and the flight's panel, which says the flight has landed and is taxiing in from On, and raise no Alert. Where a station's message and the aircraft's differ, Ops Control goes by whichever was sent later, however long it took to arrive.

```
MVA
UE101/05.GUEAA.LHR
AD1245/1253 EA1602 JFK
```

```
MVA
UE101/05.GUEAA.JFK
AA1555
```

In the air it sends a position report at a set interval, and one whenever it's asked (POSREQ, or **Request Report** on the map (page 31)):

```
POS
UE101/05.GUEAA
5132N00027W 0712 F350
EA1602 JFK FOB12400
```

```
RQP
UE101/05.GUEAA
```

POS
: Position report: the position in degrees and minutes, the time it was sent, the flight level; then the aircraft's estimate of touchdown, the destination and the fuel on board in kilograms.

RQP
: Ops Control's request for a position report.

Over HF datalink a message arrives some minutes after it was sent, and may not arrive at all. The time above each message in the list is when Ops Control had it.

Schedule changes

Ops Control sends an ad hoc schedule message (ASM), in the format of IATA's Standard Schedules Information Manual, when a flight is retimed or cancelled. Estimates already given for that flight no longer stand once it's received.

```
ASM
UTC
TIM
UE101/05JAN
LHR0730 JFK1030
```

`TIM`

A change of time: the flight, its date, then the leg with its new times. A time on another day has its day in front.

`CNL`

A cancellation: the flight and its date.

CHAPTER

19 The Terminal

Typing commands at the console.

The **console**, in the terminal on the right of the screen, opens every program and answers commands, such as the weather at an airport. What the operation reports is on the Alerts above it. Type a command at the > prompt and press Enter. Commands can be typed in capitals or not. Leasing, scheduling, slots and booking maintenance are done in the programs the commands open.

The menus at the top of the screen type these commands for you, so you can see what they are.

Alerts

The **Alerts**, above the terminal's tabs, list everything the operation reports, with the time and the desk that reported it: Ops Control (OPS), Maintenance Control (MX), Dispatch (DISP) or Passenger Services (PAX). What needs acknowledging stays at the top of the list, and the rest follow, newest first. **ALERT** is an aircraft grounded or a flight with no aircraft cancelled. **WARN** is a departure an hour or more late, beyond any retiming, or an aircraft leaving from somewhere it isn't. Both stay until they're acknowledged. **NOTE** is a movement 15 minutes or more late, or a flight you've cancelled. The rest are routine: departures and arrivals, hangar visits, engines and deliveries. A long report takes two lines; point at it to read all of it.

Alt+A
: Gives the Alerts the keyboard, bringing the terminal back if it's minimised.

↑ ↓
: Pick one.

Enter
: The whole report.

O
: Opens the flight or aircraft it's about (**Open flight** or **Open aircraft** when the key bar has room).

A
: Acknowledges a WARN or ALERT.

Esc
: Back.

Messages

The **Messages** tab (Alt+G) is the teletype traffic, as sent. See Movement messages (page 77).

Commands

`WX EGLL`
: The weather report (METAR) at an airport, by either code (`WX LHR` works too); the report names it by its ICAO code. Point at any part of the report to see what it means. `METAR` does the same.

`TAF EGLL`
: The aerodrome forecast (TAF) in force at an airport, by either code. Point at any part of it to see what it means.

`SCHEDULE`
: Shows the flight schedule.

`FLEET`
: Shows your fleet, including aircraft on order.

`MARKET`
: Opens the aircraft market, to lease aircraft for your fleet.

`ROUTES`
: Opens the route manager, to open and close routes between airports and schedule their daily flights.

`SLOTS`
: Opens the airport slots, to plan the slots a route needs at busy airports.

`CREW`

Go to the Crew tab: pilots and engineers by rating, the standby plan, the people, and candidates.

`HIRE`, `HIRE C0012`

List the candidates, or hire one. See Crew (page 19).

`CONTRACT V70 12`

Order engineers holding a rating from an agency. See Crew (page 19).

`STANDBY`, `STANDBY V40 CPT HOME 0500 12 2`

Show the standby plan, or set a line of it: rating, `CPT` or `FO`, `HOME` or `AIRPORT`, the start (UTC), the hours, and how many every day. None takes the line off. See Crew (page 19).

`MAINT`

Opens maintenance control: every check and engine overhaul coming due, and the visits booked for them. See Maintenance (page 15).

`MAP`

Shows the map: where every aircraft in the fleet is, and the airports in the schedule. See The map (page 31).

`WXMAP`

The weather map, and the significant weather chart. See The weather map (page 49).

`SWAP UE101 G-ABCD`

Tail swaps the next UE101 to aircraft G-ABCD, and pins it there. Add the day to pick another one: `SWAP UE101 09JAN G-ABCD`. See Which aircraft flies what (page 23).

`POSREQ G-ABCD`

Asks an aircraft in flight for a position report now, as the **Request Report** button on the map (page 31) does. The request and the answer are both in Messages.

`POSITION G-ABCD CDG 1400`

Orders a positioning flight, moving G-ABCD empty to CDG (either code will do), leaving at the next 14:00Z. Leave out the time to send it as soon as it can go, or add the day: `POSITION G-ABCD CDG 09JAN 1400`. `FERRY` does the same. See Which aircraft flies what (page 23).

`UNPIN UE101`

Hands the next pinned UE101 back to the planner (add the day to pick another). `UNPIN G-ABCD` unpins every flight G-ABCD has still to fly.

`FLIGHT UE101`

Opens the flight's details: the one in the air, or else the next to leave (add the day to pick another, `FLIGHT UE101 09JAN`). `FLT` does the same. See Flights and passengers (page 27).

`DELAY UE101 1030`

Delays the next UE101 to leave at 10:30Z; `DELAY UE101 +45` 45 minutes after its timetable time. Add an aircraft to move it there too: `DELAY UE101 1030 G-ABCD`. Without a time, it opens the flight's Delay dialog. `DLY` does the same. See Flights and passengers (page 27).

`SAVE`

Saves the company, as Ctrl+S does. It's saved on its own every few minutes too.

`CANCEL UE101`

Opens the next UE101, asking to confirm cancelling it. `CANCEL UE9001` calls off a positioning flight before it leaves.

`REPORT`

Opens the operating report: utilisation, idle time and costs. See The operating report (page 35).

`FAX`

Opens the fax filing, with the briefs and faxes from the other departments. See Faxes and briefs (page 37).

`REGISTER G-ABCD G-UEAA`

Gives aircraft G-ABCD the new registration G-UEAA, as R on the Fleet tab does. Its earlier registrations stay in its history; one another aircraft has had can't be used again.

`NOW`

Takes the schedule back to now, as Space does. `NOW 1/5`, `NOW 1/3` or `NOW 1/2` puts the now line that far in.

`TERMS ON`, `TERMS OFF`

Turns the visual terms guide on or off, as **View ▸ Visual Terms Guide** does: airline terms in the programs that you can point at are underlined with a wavy line. Those linked to the User Manual open it when clicked. `TERMS` alone switches it over.

`AIRPORTS ON`, `AIRPORTS OFF`

Turns the airport codes guide on or off, as **View ▸ Visual Airport Codes Guide** does: airport codes in the programs are underlined, and pointing at one shows the airport's name. `AIRPORTS` alone switches it over.

`HINTS ON`, `HINTS OFF`

Turns helpful hints on or off, as **View ▸ Helpful Hints** does: prompts in the programs and on the schedule about which keys do what, and what can be dragged. `HINTS` alone switches it over.

`HELP`

Lists the commands in the console.

Press ↑ and ↓ at the prompt to bring back earlier commands, and Esc to leave the prompt. See also Keyboard shortcuts (page 89).

CHAPTER

20 Keyboard Shortcuts

The keys shown are your computer's: Ctrl and Alt on Windows, ⌘ and Option on a Mac.

Keys go to the window whose title bar has stripes, the Manager or the Terminal; the other's title is plain and grey. Click in a window, or on its title bar, to give it the keys.

Windows and tabs

Alt+S Schedule, Alt+F Fleet, Alt+K Market, Alt+R Routes, Alt+L Slots, Alt+T Maintenance, Alt+W Crew, Alt+M Map, Alt+E WX (the weather map), Alt+P Reports, Alt+X Fax

Go to a tab. The letters stay the same wherever the tab is. Each tab shows its own.

Alt+/

The console, with the cursor at the prompt.

Alt+A

The Alerts, to pick from with ↑ ↓, read with Enter, open with O and acknowledge with A.

Alt+H

These help pages.

Alt+G

The teletype messages, to scroll with ↑ ↓ and search with F.

Ctrl+

Minimise the terminal to its tabs along the right-hand edge, giving the schedule the width, and bring it back. Clicking any tab, Alt+/ or Alt+H also brings it back. While it's minimised, the Console tab counts the lines you haven't seen.

The ◂ box at the end of the Manager's tabs

On a screen wider than 1980, pin the tab you're on to a window on the left, beside the Manager. One tab at a time: pinning another sends the first back. The window's close box puts it back in the Manager.

Ctrl+,

Settings.

Ctrl+S

Save the company. It's saved on its own every few minutes too.

Ctrl+W

Close the company and go back to the welcome window, after asking: save it first, or don't.

Ctrl+Q

Quit to the desktop, after asking: save the company first, or don't.

Esc

In a cabin plan, back to where it was opened.

In every table

↑ ↓, PgUp PgDn, Home End

Choose a row.

Alt ← →

When there are more columns than fit, ◄ and ► show at the ends of the headings. These scroll the columns sideways one at a time; the first columns, which say which row it is, stay put. Alt Home and Alt End go to either end. A sideways swipe on a trackpad, Shift and the scroll wheel, or clicking ◄ and ► do the same.

In dialogs

← → or Tab

Choose a button, then Enter or Space to press it. Where ← and → do something else in a dialog, such as choosing an aircraft type, use Tab.

In a flight's panel

D

Delay the flight: type the new time, or ↑ ↓ for five minutes either way, and ← → to choose its aircraft.

C

Cancel the flight, after confirming with Enter; its passengers then re-book or take a refund. See Flights and passengers (page 27).

Esc

Close the panel. Clicking the window icon on a flight on the schedule opens it.

Tab

With two flights open, move to the other.

In an airport code field

/

Find an airport by name, code, country and size, and put its code in the field.

In the fleet

M

Switch to the Market tab (Alt+K); Alt+F comes back to the fleet.

T

Open the market on aircraft of the selected aircraft's type.

C

Show the selected aircraft's cabin plan. ↑ ↓ and the scroll wheel move along it.

I

About the selected aircraft's type: see Aircraft types (page 41). W there opens the manufacturer's website.

R

Give the selected aircraft a new registration. Its earlier ones are listed beneath it, as *Formerly*. A wet-leased aircraft keeps its lessor's registration.

In the market

Enter
Lease the selected aircraft: Y then sends the request to the lessor.

C
Show the selected aircraft's cabin plan.

I
About the selected aircraft's type.

F, A
Show only aircraft that can fly a route (type its two airports; ↑ ↓ pick one of yours), or that can use an airport.

W
Show all leases, dry leases only, or wet leases only.

X
Clear the filters.

S, R
Change what the list is sorted by; reverse it. Clicking a heading sorts by it.

In the route manager

N
Open a new route.

S
Schedule a service and its return on the selected route. In the dialog, ← → choose the aircraft, D reverses the direction, Tab moves between the days, flight numbers and times (on the days, 1–7 turn Monday to Sunday on and off, and A makes it daily), L switches the times between UTC and each airport's local time, T takes a turn in minutes and times the return from it, ↑ ↓ step through times that use slots you hold, and S opens the slots. Type over a flight number to choose your own. Backspace on the return's time leaves the return out. Enter adds both flights and closes the dialog.

L
Lease an aircraft that can fly the selected route.

Tab

Move between the routes and the selected route's daily services.

Del

Close the selected route, or remove the selected service from the timetable.

In the slots

↑ ↓, ← →

Choose the hour, and the outbound or the return. Tab moves to the list of routes.

Enter

Stage the selected leg, or take it off if it's staged.

C

Request the slots for every staged leg at once.

T

Set your preferred turnaround.

A, D

Change the aircraft type the times are for; reverse the direction.

In maintenance control

← →, Shift ← →

Move the selected visit a day, or an hour, earlier or later.

P

Send the selected visit to another place that can do the work.

Enter, Esc

Book the change, or undo it. See Maintenance (page 15).

In crew control

Tab

Move between flight crew, engineers, people and candidates.

Enter

Open the selected person's record, or offer to hire the selected candidate.

C

On the engineers: order contract engineers for the rating selected.

T, L

On a record: send them on type training, or let them go. See Crew (page 19).

The schedule

Alt ← →

Look back and ahead. The schedule stays where it is and the now line moves across it as time passes; off the edge, its time waits at that side with an arrow. With **Scroll with the mouse wheel** ticked in the Schedule tab of Settings, a sideways swipe on a trackpad, or Shift and the scroll wheel, does the same, and the scroll wheel scrolls the aircraft. It's unticked at first.

Space

Back to now, following the clock again. Already there, the now line flashes. This works from the console's prompt too, while nothing is typed there.

Space held, and drag

Hold Space and drag the schedule with the mouse to move it: sideways back and ahead in time, and up and down the fleet. Let go of Space without dragging and it goes back to now instead. The scroll bars beside and under the schedule do the same. While the schedule isn't following the clock, the now line is amber.

View ▸ Now Line

Put the now line a fifth, a third or half of the way in. The console's `NOW 1/5`, `NOW 1/3` and `NOW 1/2` do the same.

The clock

P or 0

Pause and resume. P does so unless the program open uses P itself.

1 to 8

Clock speed, from real time (*1 s/s*) through 15 seconds (*15 s/s*) to 3 hours (*3 h/s*) a second.

F

Fast-forward at 3 h/s until five minutes before the next flight leaves or lands, then back to the speed before, as the ▸▸ button after the speeds does. F again, or choosing a speed, stops it.

Ctrl + and Ctrl –, or + and – outside a typing field

Zoom the schedule, or the map while it's shown, in and out, as the buttons along its top do. Ctrl and the scroll wheel do the same.

Ctrl+0

Back to the schedule's actual size, as the magnifying glass between – and + does. On the map, show everything in the schedule and the fleet again.

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