Monthly Network Operations Report

Analysis – September 2017
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NOTICE

Traffic and Delay Comparisons
All traffic and delay comparisons are between report month and equivalent month of previous year, unless otherwise stated.

Graphics
All graphs in chapter 3 and chapter 4 are in average minutes of ATFM delay per day, unless otherwise stated.

NM Area
All figures presented in this report are for the geographical area that is within Network Manager’s responsibility (NM area). For further information on the NM Area go to the Reporting Assumptions and Descriptions document available on the EUROCONTROL website at http://www.eurocontrol.int/articles/network-operations-monitoring-and-reporting.

Regulation Reason Groupings
The table below shows the colour coding used in the report charts.

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<th>EN-ROUTE CAPACITY (ATC)</th>
<th>AIRPORT CAPACITY (ATC)</th>
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<tr>
<td>EN-ROUTE STAFFING (ATC)</td>
<td>AIRPORT STAFFING (ATC)</td>
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<td>EN-ROUTE WEATHER</td>
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For further information on the regulation reason groupings, go to the Reporting Assumptions and Descriptions document available on the EUROCONTROL website at http://www.eurocontrol.int/articles/network-operations-monitoring-and-reporting.
1. TOTAL TRAFFIC

Traffic increased by 4.5% in September 2017.

Twelve states added each more than 50 daily flights to the network for a combined total of 1,515 additional daily flights for the month. With 240 extra daily flights, Spain (excl. Canary Islands) was the top contributor owing primarily to its flows to/from Northern Europe: UK (+61 flts/day), Germany (+25 flts/day) and the Netherlands (+16 flts/day). Turkey was next with 233 additional flights per day owing to the continuing recovery of its flows to/from Eastern Europe : Russian Federation (+169 flts/day), Ukraine (+16 flts/day), Poland (+7 flts/day), Czech Republic, Serbia & Montenegro, Slovak Republic (+12 flts/day) and also Turkey’s flow to/from the Middle-East (+36 flts/day). On the downside, Turkey’s flow to/from Western Europe remained weak and saw 50 fewer daily flights on average. The following states completed the list of top five network adders: UK (+174 flts/day), Germany (+137 flts/day) and Italy (+131 flts/day), Portugal (excl. Azores) and Poland added 128 and 117 daily flights respectively and saw their arrival/depature/internal flow increasing by 12.8% and 11.4% respectively. The remaining five countries added altogether 355 daily flights to the network: Greece (+106 flts), Ukraine (+85 flts), Canary Islands (+57 flts), France (+56 flts) and Romania (+51 flts).

The charter and all-cargo segments continued to be the fastest contributors to growth with an increase of 15.3% and 10.1% respectively on September last year. The charter segment recorded an overall increase of 10% during the summer months (May-September) when it saw a 15.8% decrease during the same period last year. The traffic recovery was due mainly to the resumption of flights between Turkey and the Russian Federation (ban on charter flights lifted in August 2016). With a growth rate of 6%, the low-cost segment remained the main driver of growth (+599 flights/day) and was followed by the business aviation and traditional scheduled segment which grew 5.9% and 2.4% respectively.

The top three external partners (for average daily flights on flows in both directions) were the United States with 1,137 flights (+5.3%), the Russian Federation with 1,089 flights (+28.2%) and the United Arab Emirates with 329 flights (+1%).

Traffic flows between Europe and North African countries were up 50.4% to 210 flights per day for Egypt and up 18.8% to 161 flights per day for Tunisia but were still not back to 2010 levels.

The aircraft operators which added the most flights to the network on a daily basis were Ryanair (+159 flights), easyJet UK (+90 flights), Wizz Air (+86 flights), LOT Polish Airlines (+80 flights) and Turkish Airlines (+72 flights).

For more information on EUROCONTROL Forecasts, go to http://www.eurocontrol.int/statfor/sid
Nine of the top ten airports had positive traffic growth. Overall, the largest traffic increases in September 2017 were at Antalya, Warsaw, Tel Aviv/Ben Gurion, Lisbon, London/Stansted and Prague airports. The largest traffic decreases were at Rome/Fiumicino, Istanbul/Sabiha Gökçen, Copenhagen and Stuttgart airports. Antalya traffic increase is due to the comparison with September 2016 when there was a clear drop in tourism due to the unstable political situation. Tel Aviv/Ben Gurion traffic increase was due to increased tourism and the integration of Israel in IFPS.

Five of the top ten aircraft operators had more traffic compared to September 2016. The operators with the highest traffic growth were Eurowings, FlyNiki, Norwegian Air International, Olympic and LOT-Polish airlines. Air Berlin, Germanwings, Aegean, Norwegian Air Shuttle and Wideroe recorded the highest traffic decrease.

Norwegian Air International traffic variation comes from a change in fleet size following new aircraft deliveries, as well as aircraft moving from using NAX to the IBK callsign. The traffic variation of Olympic and Aegean is due to Aegean flights operated with Olympic callsign. The traffic variation of Eurowings follows the continued integration of Germanwings and some Lufthansa routes into the Eurowings operation.

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Top 50 Departure Airports with average daily traffic and percentage compared to same period of previous year

Top 50 Air Operators with average daily traffic and percentage compared to same period of previous year

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<tr>
<th>No.</th>
<th>ICAO</th>
<th>AIR OPERATOR</th>
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<td>1</td>
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Average daily traffic and percentage compared to same period of previous year for all flights where Air Operators can't be identified
The Lisbon, Santa Maria, Madrid, Casablanca and Canarias ACCs variation is due to increased traffic in the South/West axis. However, the highest relative traffic increases in September 2017 were in Yerevan, Odessa, Kiev, L'viv and Tbilisi ACCs. Reykjavik ACC traffic variation is due to an increase usage of northern routes between US and Europe. Tel Aviv ACC variation is due to increase of domestic flights and integration of Israel in IFPS. Vienna ACC variation is partially due to an increase of traffic of Eurowings from/to Germany.
2. ATFM DELAY AND ATTRIBUTIONS

Total ATFM delays increased by 68.9% in September 2017.

The rolling 12-month trend shows that ATFM delay was 0.9% lower during the period October 2016 – September 2017 compared to October 2015 – September 2016.

En-route ATFM delays increased by 83.3% and airport ATFM delays increased by 49.6%.

En-route ATC capacity (30.5%), airport weather (17.9%) and airport capacity (13.7%) were the main causes of ATFM delays in September 2017.

These are the top 20 delay generating locations for the reporting month with respect to total ATFM delays. Figures are the average daily delays in minutes for the individual locations.

- French ATC industrial action from 11 to 13 September and on 21 September resulted in disruption delays for Marseille, Brest and Reims ACCs;
- En-route ATC capacity issues in Karlsruhe, Marseille, Maastricht, Brest, Reims, Nicosia and Langen ACCs;
- En-route ATC staffing issues in Karlsruhe and Nicosia ACCs;
- Capacity issues at both Istanbul airports, London/Gatwick, Amsterdam/Schiphol and Barcelona airports;
- Seasonal weather impacted Amsterdam/Schiphol, London/Gatwick, Barcelona, London/Heathrow and Palma de Mallorca airports;
- New VCS system trials in Maastricht ACC generated en-route events delays;
- Technical issues with ILS at Paris/Le Bourget airport generated delays throughout the month.
3. EN-ROUTE ATFM DELAYS

EN-ROUTE ATFM DELAY PER LOCATION

These are the top 20 en-route ATFM delay generating locations for the reporting month with respect to total ATFM delays. Figures are the average daily delays in minutes for the individual locations.

The top 20 en-route ATFM delay locations generated 56.7% of the monthly total (network) ATFM delay. The top 5 en-route ATFM delay locations generated 39.9% of the monthly total (network) ATFM delay.

More detailed information available in the Monthly per ACC Summary Report via the NM ATFCM Statistics website.
En-route ATFM delays accounted for 62.1% of all ATFM delays. Most of this delay was caused by en-route ATC capacity, en-route ATC staffing and en-route weather as explained in detail below. The other causes were:

**En-route ATC disruptions:** French ATC industrial action from 11 to 13 September generated significant delays in Bordeaux, Brest, Marseille, Paris and Reims ACCs; A second French ATC industrial action on 21 September resulted in disruptions for Marseille and Reims ACCs;

**En-route events:** ATM system trials (iCAS) in Karlsruhe UAC; New VCS system trials in Maastricht UAC;

**En-route capacity:** Military activities in Karlsruhe, Langen, Maastricht, Marseille, Reims and Brest ACCs;

**En-route disruptions:** Maastricht and Madrid ACCs generated delays due to the application of ATFM protective measures during the French ATC industrial action.

Karlsruhe, Marseille and to a lesser extent, Brest and Maastricht ACCs were the biggest generators of en-route ATC capacity delays in September.

60% of ATFM delays due to staff shortage were generated in Karlsruhe UAC.

Thunderstorms generated delays in several ACCs. London TMA was the most impacted throughout the month.

The average daily flights with an en-route ATFM delay of at least 15 minutes increased from 574 flights/day in September 2016 to 1,051 flights/day in September 2017.
These are the top 20 average en-route ATFM delay per flight generating locations for the reporting month. Figures are the average en-route ATFM delay per flight in minutes for the individual locations.

Marseille, Brest, Reims and Paris ACCs en-route ATFM delay/flight increased from August 2017 to September 2017 due to the French ATC industrial action.

Nicosia ACC en-route ATFM delay/flight decreased from 1.87 min/flight in August 2017 to 1.19 min/flight in September 2017.

Maastricht ACC en-route ATFM delay/flight decreased from 1.13 min/flight in August 2017 to 0.92 min/flight in September 2017.

Barcelona ACC en-route ATFM delay/flight decreased from 0.97 min/flight in August 2017 to 0.43 min/flight in September 2017.
EN-ROUTE ATFM DELAY YEAR-TO-DATE

Top 20 delay locations for year-to-date en-route ATFM delays

These are the top 20 en-route delay locations for 2017 with respect to the total ATFM delay. Figures are the average daily en-route delay in minutes for the individual locations.

The top 20 en-route delay locations generated 55.1% of the total ATFM (network) delay.

The top 5 en-route delay locations generated 36.2% of the total ATFM (network) delay.

Top 20 delay locations for year-to-date en-route delays

These are the top 20 average en-route ATFM delay per flight generating locations for 2017. Figures are the average daily en-route delay in minutes per flight for the individual locations.

Reporting month: The average en-route ATFM delay per flight in the NM area in September was 1.33 min/flt, which is double the corresponding monthly guideline value of 0.55 min/flt.

Year To Date: The average YTD en-route ATFM delay per flight in 2017 in the NM area is 1.00 min/flt which is above the corresponding guideline value of 0.56 min/flt.

An average of 703 flights/day had an en-route ATFM delay of at least 15 minutes for year-to-date in September 2017. The corresponding figure in 2016 was 684 flights/day.
4. AIRPORT/TMA ATFM DELAYS

AIRPORT/TMA ATFM DELAY PER LOCATION

Airports accounted for 37.9% of all ATFM delays in September 2017, mainly due to airport weather, aerodrome capacity and ATC capacity.

Adverse seasonal weather impacted operations strongly at Amsterdam/Schiphol and, to a lesser extent, London/Heathrow, Barcelona and London/Gatwick airports.

Capacity issues at both Istanbul airports, Amsterdam/Schiphol and London/Gatwick airports due to high demand.

Greek island airports still generated delays due to high demand relative to their capacity, but delays started to decrease due to the slowdown of traffic after the summer period.
AIRPORT/TMA ATFM DELAY PER FLIGHT

Average airport/TMA delay per flight increased from 0.57 min/flt in September 2016 to 0.81 min/flt in September 2017.

AIRPORT/TMA ATFM DELAY YEAR-TO-DATE

The top 20 Airport/TMA delay locations have generated 28.8% of the total ATFM (network) delay in 2017. The top 5 Airport/TMA delay locations have generated 17.2% of the total ATFM (network) delay in 2017.

5. DAILY EVOLUTION

All but 7 days in September 2017 had an average ATFM delay/flt exceeding 1.5 min/flt. These were the most significant days:
02 September: En-route ATC capacity in Marseille, Brest, Maastricht, Palma and Barcelona ACCs; Thunderstorms impacted Beograd, Marseille and Zagreb ACCs; Airport weather issues at Manchester, Frankfurt and Zurich airports; En-route ATC staffing delays in Karlsruhe, Maastricht and Vienna ACCs; En-route ATC capacity delays in Maastricht, Marseille, Karlsruhe and Langen ACCs; Airport ATC capacity issues at both Istanbul airports and London/Gatwick; Airport ATC capacity issues at both Istanbul airports and London/Gatwick; Weather impacted operations at Frankfurt, London/Heathrow, London/Gatwick and Barcelona airports; En-route ATC staffing issues in Karlsruhe ACC; Strong winds and thunderstorms impacted operations at Frankfurt, London/Heathrow, London/Gatwick and Barcelona airports;
09 September: En-route ATC capacity issues especially in Brest and Marseille ACCs; Weather impacted operations strongly in Marseille, and to a lesser extent, Barcelona and Beograd ACCs; Thunderstorms generated delays at Nice, Barcelona, Palma de Mallorca and Amsterdam/Schiphol airports; En-route ATC staffing issues in Karlsruhe ACC; Airport capacity delays at both Istanbul airports and London/Gatwick; Airport ATC capacity issues at Greek island airports; 12 September: En-route ATC disruptions delay in Marseille, Brest, Reims, Paris and Bordeaux ACCs due to the French ATC industrial action, with additional delays in Maastricht and Madrid ACC; Airports as Paris/Orly and Paris/Le Bourget were also impacted by the strike; En-route ATC capacity issues in Marseille, Karlsruhe, Barcelona and Zagreb ACCs; Aerodrome capacity issues at both Istanbul airports and Paris/Orly; En-route staffing issues in Karlsruhe ACC; Strong winds and thunderstorms impacted operations at Frankfurt, London/Heathrow, London/Gatwick and Barcelona airports; 21 September: French ATC industrial actions generated delays in Marseille and Reims ACCs; En-route ATC capacity delays in Maastricht, Marseille, Karlsruhe and Langen ACCs; En-route ATC staffing issues in Marseille, Karlsruhe, Vienna and London ACCs; Aerodrome capacity delays at both Istanbul airports and London/Gatwick; Weather impacted operations at Istanbul/Ataturk and Frankfurt airports.
6. ALL AIR TRANSPORT DELAYS (SOURCE: CODA)

This section presents the all air transport delay situation as seen from the airlines by using the data collected by Central Office for Delay Analysis (CODA) from airlines. Data coverage is 60% of the commercial flights in the ECAC region for August 2017. ATFM delays reported by airlines may be lower than the NM calculated ATFM delays due to difference in methods: ATFM delays of NM are the (flight) planned “delays”; the airlines report the “actual” experienced ATFM delay on departure. For instance, a flight with an ATFM delay may also have a handling delay absorbed within the ATFM delay. For the airline, a part of this delay is the ATFM delay and the remaining amount is the handling delay.

Based on airline data, the average departure delay per flight from ‘All-Causes’ was 14.71 minutes per flight, an increase in comparison to August 2016 where the average delay was 11.76 minutes per flight. Primary delays counted for 56% (or 8.17 min/flt ), with reactionary delays representing the smaller remaining share of 44% at (6.53 min/flt).

Further analysis of the past 12 months shows that the average ‘All-Causes’ en-route ATFM delay reported by airlines was 1.47 minutes per flight. This lower when compared to the NM reported average en-route ATFM delay of 1.66 minutes per flight in August 2017.

The percentage of flights delayed from ‘All-Causes’ increased with (those exceeding 15 minutes) increasing by 5.3 percentage points to 27.0%. Those (exceeding 30 minutes) also increased, these by 3.4 percentage points with 13.7% of flights being delayed in August 2017.
7. ATFM SLOT ADHERENCE

The percentage of early departures for September 2017 is 4.3% of regulated flights, which is a decrease of 1.0 percentage points compared to September 2016.

The percentage of late departures for September 2017 is 5.0% of regulated flights, which is a decrease of 0.2 percentage points compared to September 2016.

The chart below shows the airports that have more than 300 regulated flights during the month with their average daily number and proportion of regulated flights that departed outside of the Slot Tolerance Window (STW). Any airport above the red line is non-compliant with the threshold (20%). Those airports with a number of departures outside the slot tolerance window can reduce network predictability.

8. SIGNIFICANT EVENTS AND ISSUES

PLANNED EVENTS

ACC

MAJOR AIRSPACE OR ATM SYSTEM IMPROVEMENT PROJECTS

PLANNED EVENTS

Karlsruhe ACC performed two Operational Weekends with new iCAS ATM system, 01-04 and 22-25 September, generating 8,833 minutes of ATFM delay. The delays were generated on 02 and 23 September, fully in accordance with the plan. A capacity reduction between 10-15%, with maximum configurations for both events had been planned. This amount of delay presented 2.7% of total delay, 328,848 min, generated by Karlsruhe during the month.

ADDITIONAL INFORMATION

Maastricht UAC performed trials on the New VCS generating 39,409 minutes of ATFM delay, which presented 25% of total delay by MUAC during September.
AIRPORTS

Local Plans in September
A number of airports undertook infrastructure and technical system improvement works during September. These improvements as well as some special events had at most a minor impact on local airport operations, unless otherwise stated.

Special Events
- Red Bull Air Race in Porto between 02 and 03 September with minor impact on operations at Porto airport;
- Runway race at Malmö airport on 12 September;
- Malta International Airshow between 22 and 29 September with minor impact on operations at Malta/Luqa airport.

Completed
- Gran Canaria and Malaga airports became fully operational Advanced ATC Towers on 05 September;
- Runway maintenance at Hamburg, London/Gatwick (2,851 minutes of ATFM delay) and Warsaw airports;
- Taxiways and/or aprons improvements at Bologna airport.

Ongoing
- Runway maintenance at Amsterdam/Schiphol, Chisinau, Cologne (2,426 minutes of ATFM delay generated in total), Copenhagen, Dublin, Gran Canaria, Hannover, Krakow, Manchester, Tallinn, Tel Aviv/Ben Gurion (10,907 minutes of ATFM delay - in combination with airport capacity constraints), Thessaloniki and Venice airports;
- Taxiways and/or aprons improvements at Amsterdam/Schiphol, Berlin/Schönefeld, Bologna, Catania (1,241 minutes of ATFM delay), Copenhagen, Dublin, Frankfurt/Main, Hamburg, Lisbon, Paris/Charles de Gaulle, Stuttgart, Tallinn, Tenerife/Sur, Thessaloniki and Zurich airports;
- Terminal building improvements/works at Barcelona, Belgrade, Budapest, Frankfurt/Main, Istanbul/Sabiha Gökcen, Malta and Oslo/Gardermoen airports.

DISRUPTIONS

Industrial action
- French ATC industrial action from 11 September to 13 September generated 106,891 minutes of en-route ATFM delay in France; Neighbouring states generated 17,457 minutes due to ATFM protective measures; Paris/Orly was the most impacted airport with 3,945 minutes of ATFM delay due to the action; NM estimates there were 300 fewer flights during the action;
- French ATC industrial action on 21 September generated 15,902 minutes of en-route ATFM delay in France. No delays were generated by the neighbouring states; NM estimates there were few cancellations and re-routeings associated with the ATC industrial action.

Technical
- ILS and DME maintenance and technical issues at Paris Le Bourget during generated on average 2,100 minutes of ATFM delay per day for 20 days;
- Non-availability of VOR equipment at Iraklion/Nikos Kazantzakis airport during 06 days generated 7,029 minutes of ATFM delay;
- ILS calibration at Barcelona airport on 12 and 18 September generated 1,096 minutes of ATFM delay.

Other
- Military activity in the vicinity of the Lisbon airport on 10 September generated 1,027 minutes of ATFM delay;
- Runway surface damage at Aberdeen airport on 10 September lead to a zero-rate, approximately 6 flights diverted.
9. NM ADDED VALUE

**FLIGHTS WITH DELAY > 30’**

The number of flights with more than 30 minutes of ATFM delay increased between September 2016 and September 2017.

55.1% of flights with more than 30 minutes of ATFM delay in September 2017 were en-route and 44.9% were airport.

**RRP DIRECT DELAY SAVINGS**

On average 9 RRPs/day were executed saving 768min/day, accounting for 1.1% of ATFM delays.

This graph shows the actual daily averages for the previous 13 months’ period.

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Contact Us
Operational Analysis & Reporting,
Performance, Forecasts and Relations (PFR) Unit,
Network Manager Directorate (NMD),
EUROCONTROL,
96 Rue de la Fusée,
B - 1130 Brussels

e-mail:nm.ops.perf@eurocontrol.int
http://www.eurocontrol.int/articles/network-operations-monitoring-and-reporting

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i See Notice on page 2 for more information on traffic and delay comparison.
ii See Notice on page 2 for more information on NM Area.
iii NM’s calculation that provides the guideline en-route delay (min) requirements to achieve the annual target (0.5 min/flight).
iv NM has revised the delay saving method. Where flights are subject to scenarios, delay savings from RRPs are considered when the RRP is sent 3 hours (or less) in advance of the EOBT.