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2016 OAG analytics Megahubs Index

The World's Most Connected Airports

Contents

About OAG Megahubs Index 2016

The OAG Megahubs Index 2016 reveals the 50 most connected airports in the world as measured by the ratio of scheduled seat capacity to the number of destinations served by the airport – a Connectivity Index. It harnesses the world's most comprehensive schedules database to dynamically build connections through a dedicated analytics platform, Connections Analyser.

Enabling common comparison between leading airports; the Megahubs Index measures an airport's effectiveness as a connecting point on a global and regional basis to highlight the evolving nature of the Megahub model.

The OAG Megahubs Index 2016 presents connectivity data as a series of tables based on regional location and airline type.

Methodology

OAG has calculated the total number of all possible connections between inbound and outbound flights within a six-hour window at the **largest 100 airports in the world (based on departing scheduled seat capacity for the 12 months to September 2016)** based on the busiest day for global aviation in 2016.

For the purposes of this analysis, in addition to the in-built business rules within OAG Connections Analyser, the following customisable criteria were chosen for all operating flights:

- Single connections only to/from the chosen airports;
- Maximum circuity of 150*;
- Minimum Connection Time (MCT) varies by individual airport as OAG holds MCT information for every commercial airport in operation;
- Maximum Connection Window of 6 hours*

Analysis has been further enhanced by including OAG's MCT Exceptions Table within our Connections Analyser tool. At any one time, there are typically around 120,000 exceptions globally. These are typically less than the published MCTs and it is the responsibility of the airlines involved to ensure that the connection time remains viable for passengers to make the connection.

* 2015 criteria was based on maximum circuity of 180 and maximum connection window of 8 hours

Top 50 Megahubs

The Top 50 Megahubs are those airports with the highest ratio of possible scheduled connections to the number of destinations served by the airport.

Online and interline connections are included and utilising the power of Connections Analyser, low-cost carriers' (LCC) connections are also included.

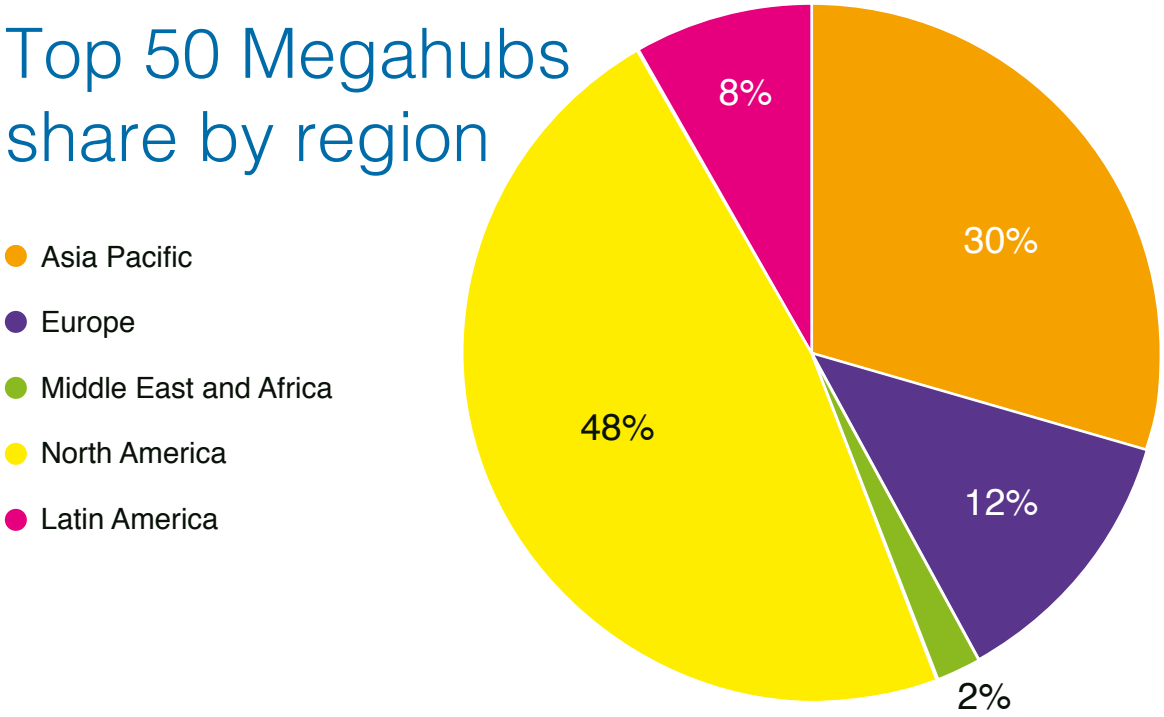
Rank	Airport	Country	Connectivity Index
1	ORD	USA	1204
2	ATL	USA	997
3	DFW	USA	709
4	DEN	USA	633
5	CLT	USA	588
6	LAX	USA	580
7	CGK	Indonesia	566
8	SEA	USA	470
9	SFO	USA	449
10	PHX	USA	431
11	HND	Japan	418
12	MSP	USA	414
13	IAH	USA	409
14	DTW	USA	398
15	LHR	UK	397
16	SYD	Australia	389
17	BOS	USA	366
18	PHL	USA	352
19	YYZ	Canada	328
20	FRA	Germany	301
21	AMS	Netherlands	296
22	DEL	India	286
23	CGH	Brazil	285
24	LAS	USA	282
25	MEX	Mexico	279

Rank	Airport	Country	Connectivity Index
26	EWR	USA	268
27	SIN	Singapore	262
28	BOM	India	260
29	CDG	France	257
30	YVR	Canada	254
31	JFK	USA	252
32	DCA	USA	249
33	HKG	Hong Kong	244
34	MEL	Australia	237
35	MIA	USA	236
36	KUL	Malaysia	234
37	IST	Turkey	233
38	MDW	USA	232
39	BOG	Colombia	228
40	PEK	China	226
41	GRU	Brazil	223
42	SLC	USA	220
43	BKK	Thailand	210
44	PVG	China	208
45	CAN	China	201
46	MUC	Germany	200
47	BWI	USA	199
48	DXB	UAE	194
49	ICN	South Korea	188
50	SUB	Indonesia	186

Key Highlights

- **Chicago O'Hare International Airport (ORD)** is the largest Megahub in the world. On a single day in August, there were over 270,000 possible connections between flights arriving at ORD and flights departing within a six-hour window.
- US airports continue to lead the world when it comes to making large airports work as Megahubs. Nine of the Top 10 Megahubs are located in the US, one more than in 2015. Overall, there are 22 US airports among the Top 50 Megahubs.
- The highest ranking Megahub outside of the US is Jakarta's **Soekarno–Hatta International Airport (CGK)** in Indonesia, which is ranked in 7th place. On the busiest day there were over 40,000 potential connections between flights within six hours, connecting passengers between 71 destinations.
- **London Heathrow Airport (LHR)** is the highest-ranked Megahub in Europe, ranked 15th overall. Last year it was placed well ahead of other European rivals but the gap appears to be closing with **Frankfurt (FRA)** ranked 20th and **Amsterdam (AMS)** ranked 21st.
- **Sao Paulo Congonhas Airport (CGH)** is the largest Megahub in Latin America but its ranking has fallen since the 2015 edition, from 7th place to 23rd.

Top 50 Megahubs share by region

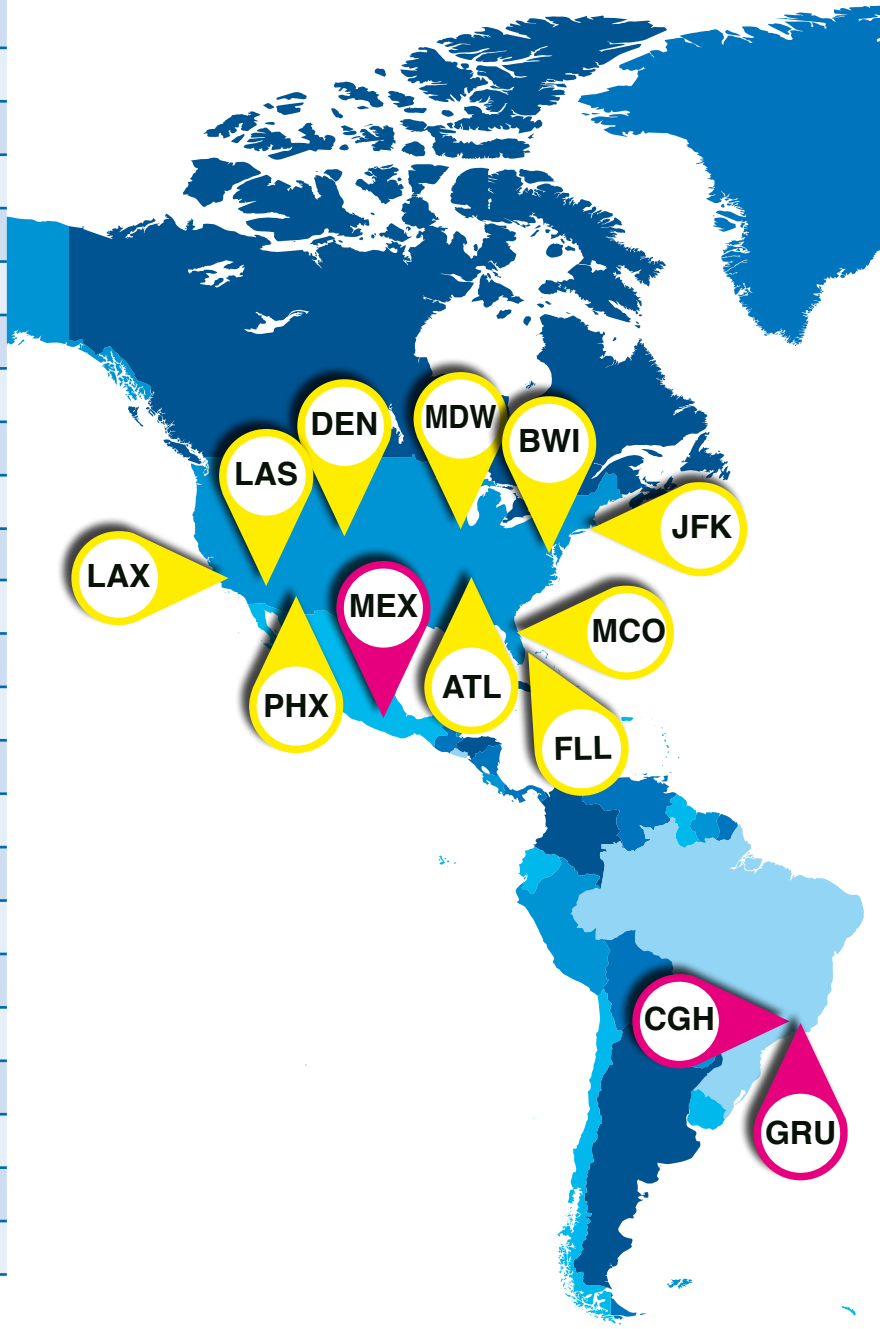


Top 25 Low-Cost Megahubs

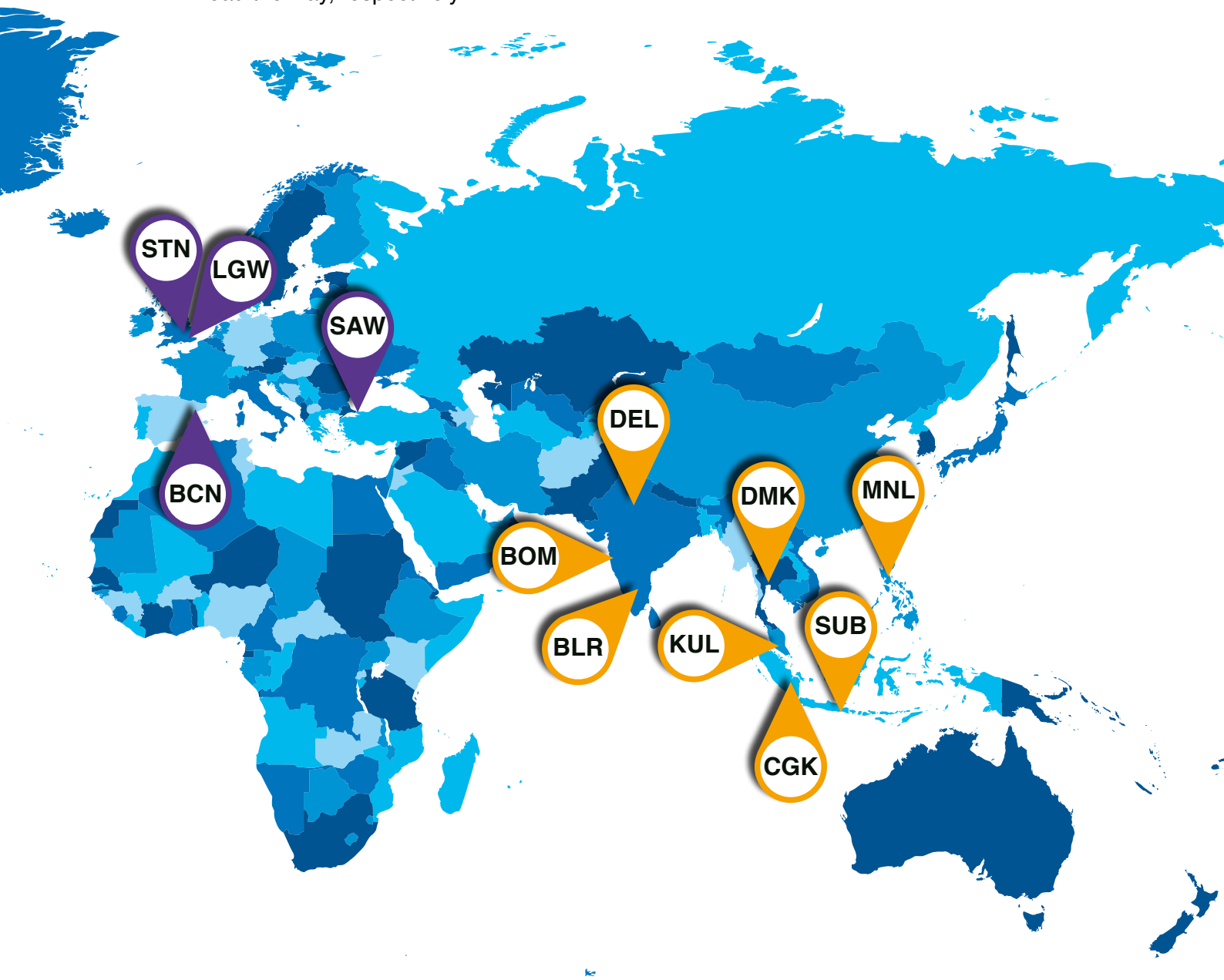
While traditionally connections have been made between IATA airlines, increasingly passengers are self-connecting between low-cost carriers. Airports and the airlines themselves are beginning to facilitate connections between low-cost flights.

OAG has therefore included in this year's Megahubs Index the Top 25 airports for online connections (i.e. connections between the same carrier) for low-cost airlines.

Rank	Airport	Country	Connectivity Index
1	MDW	USA	120
2	BWI	USA	76
3	LAS	USA	67
4	PHX	USA	43
5	DEN	USA	35
6	CGH	Brazil	32
7	DMK	Thailand	25
8	CGK	Indonesia	22
9	SAW	Turkey	21
10	KUL	Malaysia	16
11	SUB	Indonesia	15
12	MEX	Mexico	14
13	MCO	USA	14
14	LAX	USA	13
15	DEL	India	13
16	BCN	Spain	12
17	ATL	USA	12
18	GRU	Brazil	11
19	BOM	India	10
20	STN	UK	10
21	BLR	India	9
22	JFK	USA	9
23	MNL	Philippines	8
24	LGW	UK	8
25	FLL	USA	7



- US airports top the rankings for Low-Cost Megahubs, holding the top five places. The top three are each airports that are dominated by Southwest Airlines, the original low-cost carrier. **Phoenix Sky Harbor International Airport (PHX)** in 4th, is dominated by American Airlines and **Denver International Airport (DEN)** in 5th, is dominated by United Airlines; however Southwest is the no.2 carrier at each airport by some distance.
- **Chicago Midway Airport (MDW)** is ranked number 1 for the second year in a row, with Southwest operating nearly 90% of the flights in August 2016.
- Outside the US, Gol has created the best Low-Cost Megahub at **Sao Paulo Congonhas Airport (CGH)**.
- In Thailand, **Don Mueang Airport (DMK)** in Bangkok is the highest-ranked Low-Cost Megahub outside the Americas, with carriers within the AirAsia group representing almost half of the scheduled flights in August.
- Istanbul's **Sabiha Gokcen Airport (SAW)** is the largest European Low-Cost Megahub.
- New to the Top 25 Low-Cost Megahubs this year are **Bengaluru International Airport (BLR)** in India and **Fort Lauderdale Airport (FLL)** in the US, where IndiGo and JetBlue lead the way, respectively.



Top Megahubs by Region

Asia Pacific

Rank	Airport	Country	Connectivity Index
1	CGK	Indonesia	566
2	HND	Japan	418
3	SYD	Australia	389
4	DEL	India	286
5	SIN	Singapore	262
6	BOM	India	260
7	HKG	Hong Kong	244
8	MEL	Australia	237
9	KUL	Malaysia	234
10	PEK	China	226

Europe

Rank	Airport	Country	Connectivity Index
1	LHR	UK	397
2	FRA	Germany	301
3	AMS	Netherlands	296
4	CDG	France	257
5	IST	Turkey	233
6	MUC	Germany	200
7	FCO	Italy	167
8	MAD	Spain	155
9	ZRH	Switzerland	122
10	SVO	Russian Federation	120

Latin America

Rank	Airport	Country	Connectivity Index
1	CGH	Brazil	285
2	MEX	Mexico	279
3	BOG	Colombia	228
4	GRU	Brazil	223

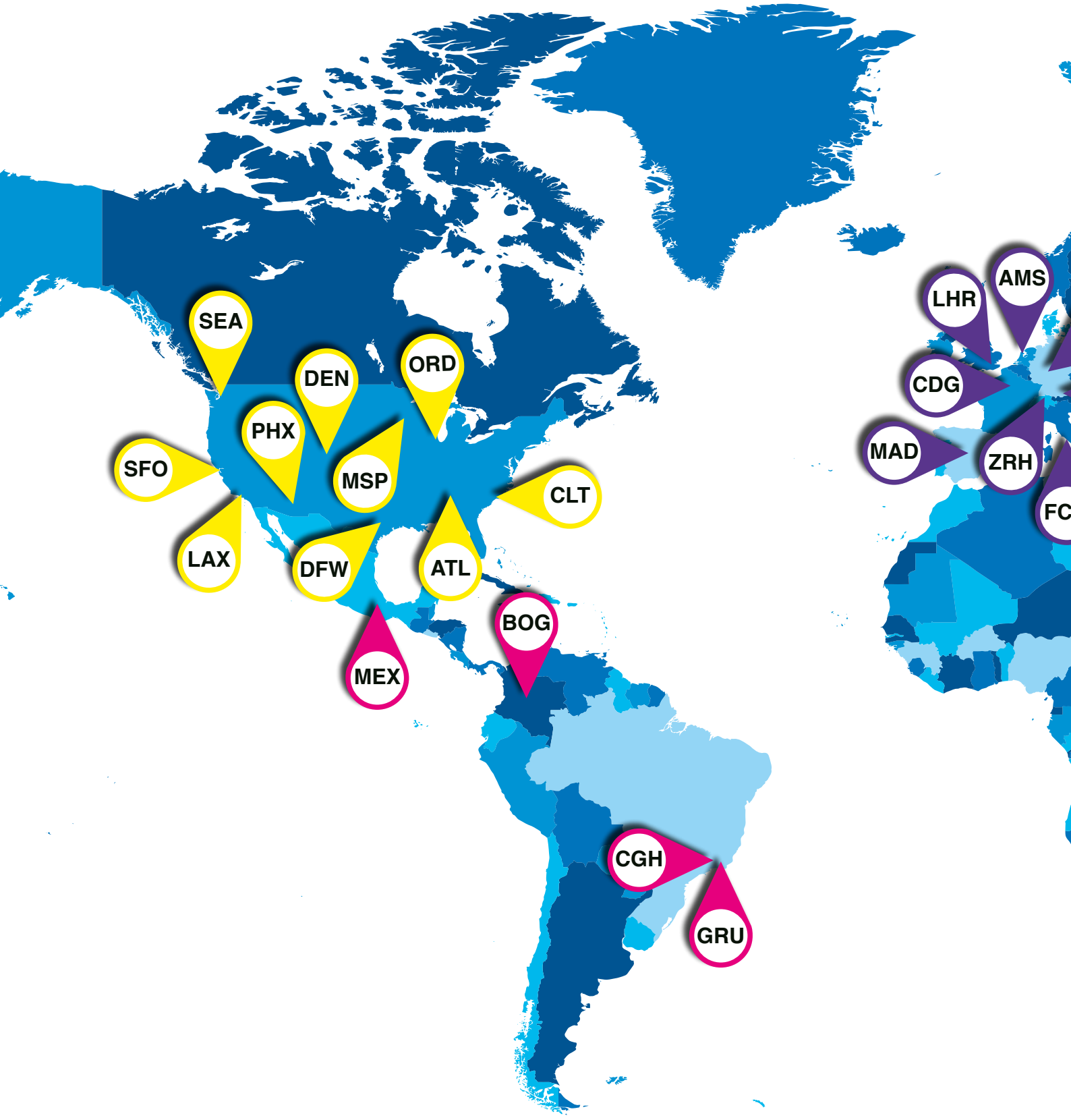
Middle East and Africa

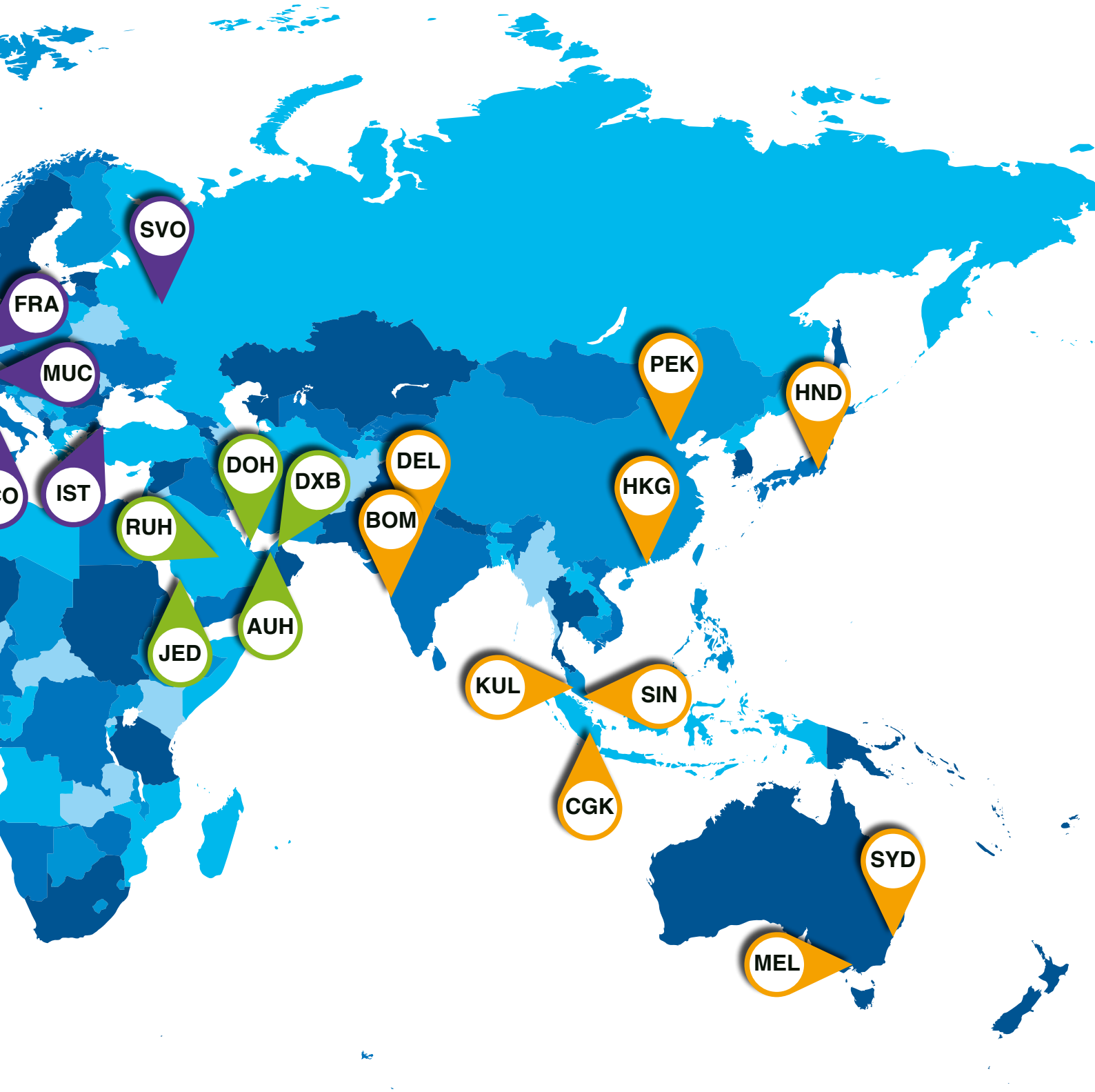
Rank	Airport	Country	Connectivity Index
1	DXB	UAE	194
2	DOH	Qatar	123
3	AUH	UAE	76
4	RUH	Saudi Arabia	60
5	JED	Saudi Arabia	45

North America

Rank	Airport	Country	Connectivity Index
1	ORD	USA	1204
2	ATL	USA	997
3	DFW	USA	709
4	DEN	USA	633
5	CLT	USA	588
6	LAX	USA	580
7	SEA	USA	470
8	SFO	USA	449
9	PHX	USA	431
10	MSP	USA	414

Top Megahubs by Region




SVO
FRA
MUC
IST
DOH
DXB
RUH
AUH
JED
DEL
BOM
PEK
HND
HKG
KUL
SIN
CGK
SYD
MEL

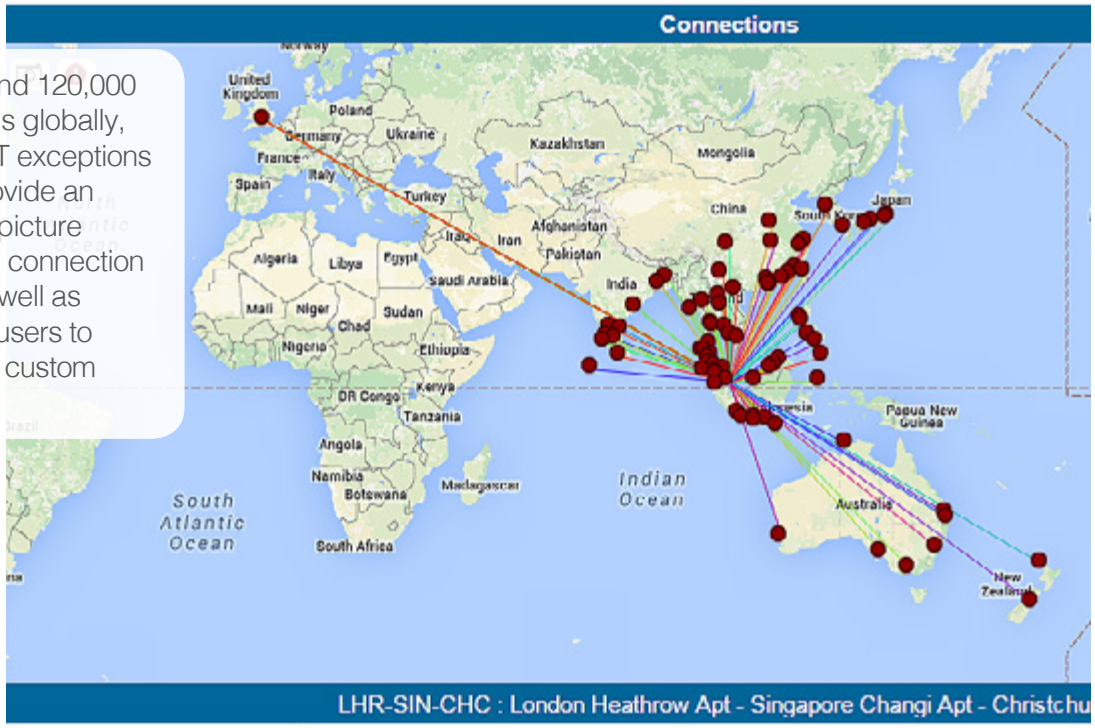
OAG®
connections analyser

Unique connections insight

Using global flight schedules and MCT exception tables, Connections Analyser dynamically builds all possible global airline connections for all carriers or a selection of carriers as they occur in real time and plots these on a map to highlight key routes and hubs.

Understand your connectivity reality

With around 120,000 exceptions globally, OAG MCT exceptions tables provide an accurate picture using real connection times, as well as enabling users to configure custom MCTs.

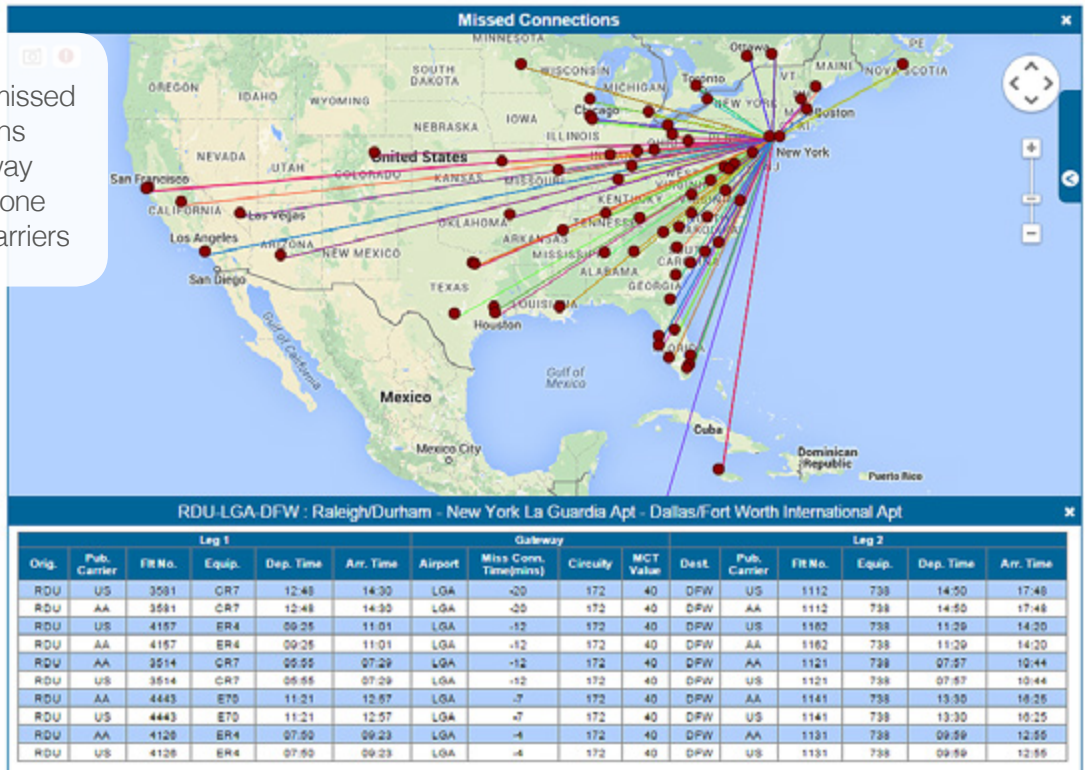


				Leg 1					Leg 2					
Itinerary	Type	Num Ops	Total Time	Carrier	Flt No	Equip	Dept Time	Arr Time	Carrier	Flt No	Equip	Dept Time	Arr Time	C
LHR-SIN-CHC	S	1	1465	SQ	321	388	22:05:00	17:55:00	SQ	297	772	19:45:00	09:30:00	
LHR-SIN-CHC	S	1	1590	BA	11	388	20.00.00	10.00.00	SQ	297	772	19.45.00	09.30.00	
LHR-SIN-CHC	S	1	1495	BA	15	777	21:35:00	17:40:00	SQ	297	772	19:45:00	09:30:00	
LHR-SIN-CHC	S	1	1540	SQ	319	77W	20.50.00	10.55.00	SQ	297	772	19.45.00	09.30.00	

* table refers to one connecting market only rather than the full picture graphic

Review missed connectivity opportunities

Evaluate potential missed connections at a gateway airport by one or more carriers

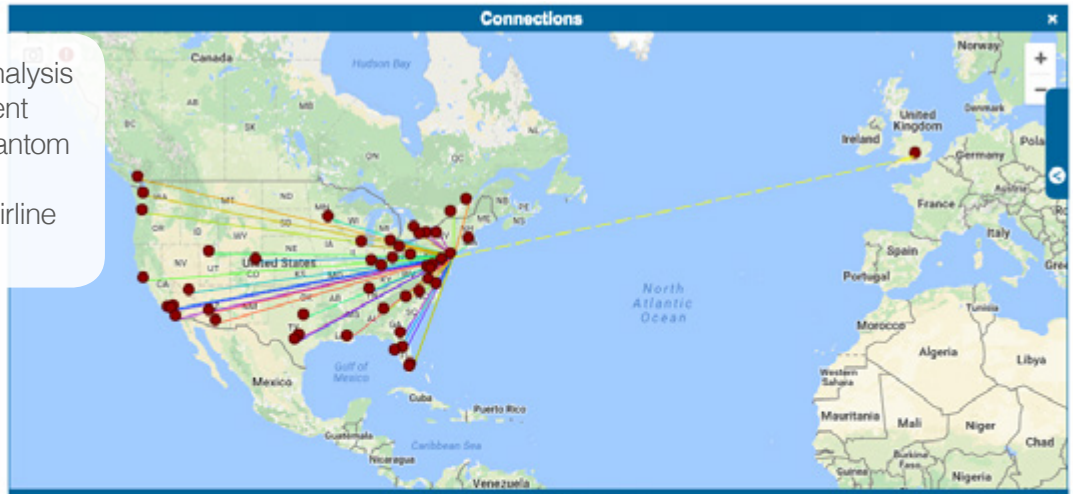


Leg 1						Gateway				Leg 2					
Orig.	Pub. Carrier	Flt No.	Equip.	Dep. Time	Arr. Time	Airport	Miss Conn. Time(mins)	Circuity	MCT Value	Dest.	Pub. Carrier	Flt No.	Equip.	Dep. Time	Arr. Time
RDU	US	3581	CR7	12:48	14:30	LGA	-20	172	40	DFW	US	1112	738	14:50	17:48
RDU	AA	3581	CR7	12:48	14:30	LGA	-20	172	40	DFW	AA	1112	738	14:50	17:48
RDU	US	4157	ER4	09:25	11:01	LGA	-12	172	40	DFW	US	1162	738	11:29	14:20
RDU	AA	4157	ER4	09:25	11:01	LGA	-12	172	40	DFW	AA	1162	738	11:29	14:20
RDU	AA	3514	CR7	05:55	07:29	LGA	-12	172	40	DFW	AA	1121	738	07:57	10:44
RDU	US	3514	CR7	05:55	07:29	LGA	-12	172	40	DFW	US	1121	738	07:57	10:44
RDU	AA	4443	E70	11:21	12:57	LGA	-7	172	40	DFW	AA	1141	738	13:30	16:25
RDU	US	4443	E70	11:21	12:57	LGA	-7	172	40	DFW	US	1141	738	13:30	16:25
RDU	AA	4126	ER4	07:50	09:23	LGA	-4	172	40	DFW	AA	1131	738	09:59	12:55
RDU	US	4126	ER4	07:50	09:23	LGA	-4	172	40	DFW	US	1131	738	09:59	12:55

* table refers to one connecting market only rather than the full picture graphic

Evaluate connectivity potential

'What if' analysis with different MCTs, phantom flights and potential airline partners



Itinerary	Type	Num. Ops	Total Time	Leg 1					Leg 2					Leg 3				
				Carrier	Flt No.	Equip.	Dept. Time	Arr. Time	Carrier	Flt. No.	Equip.	Dept. Time	Arr.Time	Carrier	Flt. No.	Equip.	Dept. Time	Arr. Time
LHR-JFK-MIA	S	1	840	BA	8888	744	10:00:00	12:50:00	AA	65	763	15:40:00	19:00:00					
LHR-JFK-MIA	S	1	921	BA	8888	744	10:00:00	12:50:00	AA	235	738	17:00:00	20:21:00					
LHR-JFK-MIA	S	1	1021	BA	8888	744	10:00:00	12:50:00	DL	205	717	18:40:00	22:01:00					
LHR-JFK-MIA	S	1	930	BA	117	744	08:30:00	11:05:00	AA	65	763	15:40:00	19:00:00					
LHR-JFK-MIA	S	1	1011	BA	117	744	08:30:00	11:05:00	AA	235	738	17:00:00	20:21:00					
LHR-JFK-MIA	S	1	1111	BA	117	744	08:30:00	11:05:00	DL	205	717	18:40:00	22:01:00					
LHR-JFK-MIA	S	1	1040	BA	117	744	08:30:00	11:05:00	AA	3443	ER4	15:40:00	20:50:00					
LHR-JFK-MIA	S	1	841	BA	173	744	11:20:00	13:55:00	AA	235	738	17:00:00	20:21:00					
LHR-JFK-MIA	S	1	941	BA	173	744	11:20:00	13:55:00	DL	205	717	18:40:00	22:01:00					
LHR-JFK-MIA	S	1	1054	BA	183	744	20:05:00	22:45:00	AA	947	738	05:35:00	08:39:00					

Contact **www.oag.com/connections**

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Glossary of Codes

Code		Country
AMS	Amsterdam	Netherlands
ATL	Atlanta Hartsfield-Jackson Intl	USA
BCN	Barcelona	Spain
BKK	Bangkok Suvarnabhumi International	Thailand
BLR	Bengaluru	India
BOG	Bogota	Colombia
BOM	Mumbai	India
BOS	Boston Edward L Logan Intl	USA
BWI	Baltimore Washington International	USA
CAN	Guangzhou	China
CDG	Paris Charles de Gaulle	France
CGH	Sao Paulo Congonhas	Brazil
CGK	Jakarta Soekarno-Hatta	Indonesia
CLT	Charlotte	USA
DCA	Washington Ronald Reagan National	USA
DEL	Delhi	India
DEN	Denver Intl	USA
DFW	Dallas Dallas/Fort Worth Intl	USA
DMK	Bangkok Don Mueang International	Thailand
DTW	Detroit Metropolitan Wayne County	USA
DXB	Dubai International	UAE
EWR	Newark Liberty International	USA
FLL	Fort Lauderdale/Hollywood Intl	USA
FRA	Frankfurt International	Germany
GRU	Sao Paulo Guarulhos Intl	Brazil
HKG	Hong Kong International	Hong Kong
HND	Tokyo Intl (Haneda)	Japan
IAH	Houston George Bush Intercont.	USA
ICN	Seoul Incheon International	South Korea
IST	Istanbul Ataturk	Turkey

Code		Country
JFK	New York J F Kennedy International	USA
KUL	Kuala Lumpur International	Malaysia
LAS	Las Vegas McCarran International	USA
LAX	Los Angeles International	USA
LGW	London Gatwick	UK
LHR	London Heathrow	UK
MCO	Orlando International	USA
MDW	Chicago Midway Intl	USA
MEL	Melbourne Airport	Australia
MEX	Mexico City Juarez Intl	Mexico
MIA	Miami International	USA
MNL	Manila Ninoy Aquino International	Philippines
MSP	Minneapolis/St Paul International	USA
MUC	Munich International	Germany
ORD	Chicago O'Hare International	USA
PEK	Beijing Capital Intl	China
PHL	Philadelphia International	USA
PHX	Phoenix Sky Harbor Intl	USA
PVG	Shanghai Pudong International	China
SAW	Istanbul Sabiha Gokcen	Turkey
SEA	Seattle-Tacoma International	USA
SFO	San Francisco	USA
SIN	Singapore Changi	Singapore
SLC	Salt Lake City	USA
STN	London Stansted	UK
SUB	Surabaya	Indonesia
SYD	Sydney Kingsford Smith	Australia
YVR	Vancouver International	Canada
YYZ	Toronto Lester B Pearson Intl	Canada
SUB	Surabaya Juanda	Indonesia
SYD	Sydney Kingsford Smith	Australia
YVR	Vancouver International	Canada
YYZ	Toronto Lester B Pearson Intl	Canada

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For more information, contact:

Media Enquiries

Worldwide

Hannah Lock / Lucy Figiel
+44 (0)118 909 0909
oag@berkeley.global

USA

Gil Haylon
1 (617) 969-9191
ghaylon@corporateink.com

General Enquiries

Caroline Mather
OAG
caroline.mather@oag.com