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MEGAHUBS DECODED

The OAG Megahubs Index 2019 reveals the 50 most internationally connected airports in the world and the 25 most domestically connected airports in the U.S. The index is generated by comparing the number of scheduled connections to and from international flights with the number of destinations served from the airport. The Megahubs Index harnesses the world's most comprehensive schedules database to dynamically build connections through a dedicated analytics platform, Connections Analyser, and is further enhanced by OAG's MCT Exception Table.

In an increasingly competitive landscape, providing measures to enable comparison between leading international airports is key. The OAG Megahubs Index measures the effectiveness of the world's leading international hubs as connecting points, globally and regionally, and provides a platform for comparison for these international airports.

The OAG Megahubs Index 2019 presents connectivity data as a series of tables based on regional location and airline type. The index includes the dominant carrier at each hub and the share of flights operated by that carrier.

Methodology

OAG has calculated the total number of all possible connections between inbound and outbound flights within a six-hour window, where either the inbound, outbound, or both flights are international, at the largest 200 airports in the world (based on total scheduled seats in July 2019) and at the largest 200 international airports (based on total international scheduled seats in July 2019) on the busiest day for global aviation over the 12 months to July 2019.

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 international* connections only to/from the chosen airports;
- Maximum circuity of 150;
- Minimum Connection Time (MCT) varies by individual airport. OAG holds the MCT information for every commercial airport in operation;
- Maximum connection window of six hours;

The US Domestic index uses the same methodology but has different criteria as follows:

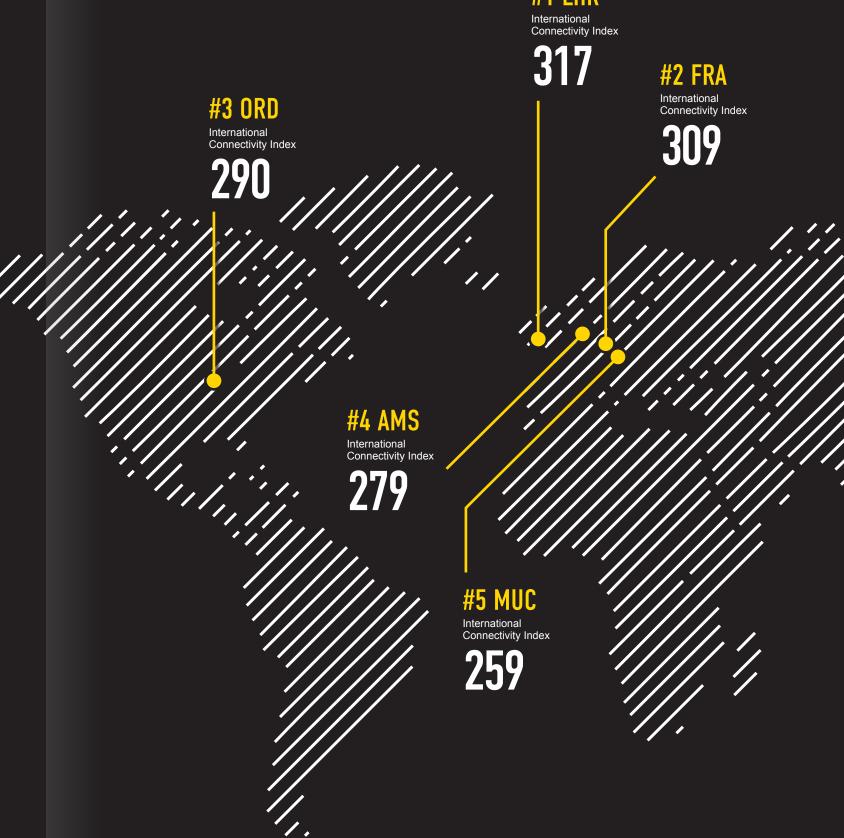
- Single domestic connections only to/from the chosen airports
- Maximum circuity of 120
- Maximum Connection Window of three hours

*international connections include domestic to international, international to domestic and international to international connections

TOP 50 GLOBAL MEGAHUBS

Key highlights:

- London Heathrow Airport (LHR) continues to lead the world as the most internationally connected airport making it the Number 1 Megahub once again. OAG's Megahubs Index calculates LHR's score as 317, somewhat below where it was a year ago but still well ahead of its nearest rival. On the busiest day in 2019 the airport will have made possible a massive 65,294 potential scheduled international connections between arriving and departing flights within a six-hour window.
- 7 Frankfurt International Airport (FRA) rose to second place, inching ahead of Chicago O'Hare Airport (ORD) which was ranked second last year, and giving European airports both the number one and number two spots in the International Megahubs Index. While FRA had more potential international connections than LHR, the Index also takes into account the total number of destinations and at FRA the connections were spread across a larger number of destinations.
- Chicago O'Hare Airport (ORD) is ranked third, one of 15 North American airports listed among the Top 50 International Megahubs. At ORD, United Airlines operates 46% of all flights but another four of the US International Megahubs Atlanta Airport (ATL), Dallas/Ft. Worth Airport (DFW), Miami Airport (MIA) and Houston Airport (IAH) operate with the dominant airline having a 75% share, or more, of all scheduled flight operations.
- Munich (MUC) has made a significant move up the Megahubs Index, achieving a 22-point increase in the Connectivity Index and rising from 11th place last year to fifth place this year. This means that both the US and Germany each have two airports featuring among the Top 10 Megahubs globally.
- Meanwhile, Atlanta (ATL), ranked eighth, saw its Connectivity Index fall by 38 points from 257 to 219 although the share of flights operated by Delta Air Lines has remained the same at 79%.
- In Asia Pacific the highest ranked airports are Singapore Airport (SIN) and Hong Kong Airport (HKG), ranked ninth and 10th, respectively. While SIN has dropped one place from 2018, HKG has risen up the rankings from 13th place as a result of a 1.5% increase in international connections achieved (within a six-hour window on the busiest day). This is expected to continue following Cathay Pacific's acquisition of Air Hong Kong. The Hong Kong Connectivity Index is 234.
- In China, the highest ranked airport is Shanghai Pudong Airport (PVG) which was ranked 25th with a Connectivity Index of 163.
- Both the major Indian airports have seen a marked drop in their international connectivity this year. **Delhi Airport (DEL)** has moved down from 25th to 35th place but the dominant carrier continues to be IndiGo with just over a quarter of all flight operations. At **Mumbai Airport (BOM)**, the demise of Jet Airways has seen IndiGo become the dominant airline with a 32% share of flights while its ranking has moved from 38th to 50th.
- Another airport noticeable for its year-on-year change is **Dubai Airport (DXB)**. DXB has moved down the ranking from 18th to 24th as a result of a reduction in busiest day international connections from 42,603 to 37,206 a 13% fall in connectivity. Given that the total number of destinations served from Dubai has remained similar, the Connectivity Index has fallen to 168 from 194.
- Auckland Airport (AKL) in New Zealand, Oslo Airport (OSL) in Norway and Don Mueang Airport (DMK) in Thailand all enter the Top 50 whilst three airports from the Americas drop out.



TOP 50 GLOBAL MEGAHUBS

Rank	Airport	Country	International Connectivity Index	Dominant Carrier	Share of Flights
1	LHR	United Kingdom	317	British Airways	51%
2	FRA	Germany	309	Lufthansa German Airlines	63%
3	ORD	USA	290	United Airlines	46%
4	AMS	Netherlands	279	KLM-Royal Dutch Airlines	52%
5	MUC	Germany	259	Lufthansa German Airlines	59%
6	YYZ	Canada	251	Air Canada	59%
7	CDG	France	250	Air France	50%
8	ATL	USA	247	Delta Air Lines	79%
9	SIN	Singapore	240	Singapore Airlines	24%
10	HKG	Hong Kong (sar) China	234	Cathay Pacific Airways	26%
11	ICN	Korea Republic of	233	Korean Air	23%
12	KUL	Malaysia	229	AirAsia	41%
13	LAX	USA	219	American Airlines	22%
14	ВКК	Thailand	214	Thai Airways International	20%
15	MEX*	Mexico	191	Aeromexico	43%
16	CGK*	Indonesia	191	Garuda Indonesia	26%
17	IST	Turkey	187	Turkish Airlines	79%
18	JFK	USA	186	Delta Air Lines	37%
19	DFW	USA	185	American Airlines	85%
20	MIA	USA	184	American Airlines	75%
21	IAH	USA	179	United Airlines	81%
22	HND	Japan	178	All Nippon Airways	37%
23	EWR	USA	169	United Airlines	70%
24	DXB	United Arab Emirates	168	Emirates	49%
25	PVG	China	163	China Eastern Airlines	28%

Source: OAG

The top 50 International Megahubs are those airports with the highest ratio of possible scheduled international 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.

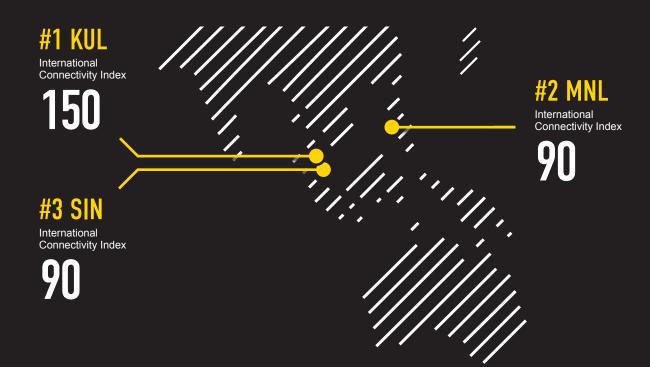
Rank	Airport	Country	International Connectivity Index	Dominant Carrier	Share of Flights
26	SYD	Australia	158	Qantas Airways	36%
27	YVR	Canada	155	Air Canada	47%
28	MAD	Spain	154	Iberia	46%
29	MNL	Philippines	153	Cebu Pacific Air	32%
30	SVO	Russian Federation	150	Aeroflot Russian Airlines	80%
31	SFO	USA	146	United Airlines	49%
32	BOG*	Colombia	142	Avianca	58%
33	CAN*	China	142	China Southern Airlines	49%
34	FCO	Italy	139	Alitalia - Societa Aerea Italiana S.p.A	43%
35	DEL*	India	137	IndiGo	32%
36	PEK*	China	137	Air China	40%
37	SEA	USA	133	Alaska Airlines	50%
38	JNB*	South Africa	128	South African Airways	44%
39	NRT*	Japan	128	All Nippon Airways	17%
40	ZRH	Switzerland	114	SWISS	54%
41	YUL	Canada	112	Air Canada	58%
42	VIE	Austria	109	Austrian Airlines AG	50%
43	SGN	Viet Nam	108	Vietnam Airlines	37%
44	BOS	USA	107	JetBlue Airways Corporation	27%
45	BCN	Spain	102	Vueling Airlines	42%
46	GRU	Brazil	101	LATAM Airlines Group	41%
47	AKL	New Zealand	99	Air New Zealand	65%
48	OSL*	Norway	98	SAS Scandinavian Airlines	37%
49	DMK*	Thailand	98	Thai AirAsia	45%
50	ВОМ	India	97	IndiGo	32%

*Where two airports have the same connectivity index score, we have listed them in order when the index is taken to two decimal places.

TOP 25 LOW-COST MEGAHUBS

Key LCC highlights:

- Once again, Kuala Lumpur Airport (KUL) retains its position as the most internationally connected LCC Megahubs in the world. With over 20,500 potential LCC connections in a 6 hour window, the airport has an LCC connectivity index of 150, considerably higher than the rest of the Top 25. Low-cost carrier AirAsia is the largest airline with 41% of all flights.
- Incheon (ICN) moves up from seventh place to fourth this year with an increase in both destinations and potential connections. Manila (MNL) moves up into second place from fourth last year, whilst Singapore (SIN) remains in third place.
- San Diego (SAN) enters the Top 25 LCC Megahubs for the first time in fifth place, making it the highest ranked non Asian airport on the list and the highest placed airport in the Americas. SAN has seen above average growth in the last year and Southwest is the dominant carrier with 39% of seats.
- → Chicago Midway (MDW) climbs into the Top 25 in 18th place from 96th last year. Southwest dominates at MDW operating 89% of seats.
- 12 of the Top 25 airports have a dominant LCC carrier, showing that the remaining airports with dominant legacy carriers, including Singapore (SIN), Incheon (ICN), Jakarta (CGK) and Mexico City (MEX) can still succeed in having LCC Megahub status.



With airports and airlines themselves facilitating international connections more and more between low-cost flights, we have compiled the top 25 Megahubs for low-cost connections which include the same or different low-cost carriers.

Rank	Airport	Country	International Connectivity Index	Dominant Carrier	Share of Flights
1	KUL	Malaysia	150	AirAsia	41%
2	MNL*	Philippines	90	Cebu Pacific Air	32%
3	SIN*	Singapore	90	Singapore Airlines	24%
4	ICN	Korea Republic of	87	Korean Air	23%
5	SAN	USA	83	Southwest Airlines	39%
6	DEL	India	82	IndiGo	32%
7	DMK	Thailand	81	Thai AirAsia	45%
8	CGK	Indonesia	78	Garuda Indonesia	26%
9	MEX	Mexico	77	Aeromexico	43%
10	BCN	Spain	74	Vueling Airlines	42%
11	вом	India	68	IndiGo	32%
12	JFK	USA	64	Delta Air Lines	37%
13	FLL	USA	63	JetBlue Airways Corporation	28%
14	LAX	USA	60	American Airlines	22%
15	MCO	USA	59	Southwest Airlines	25%
16	SAW	Turkey	56	Pegasus Airlines	59%
17	YYZ*	Canada	54	Air Canada	59%
18	MDW*	USA	54	Southwest Airlines	89%
19	DXB	United Arab Emirates	53	Emirates	49%
20	SGN	Viet Nam	51	Vietnam Airlines	37%
21	AMS	Netherlands	50	KLM-Royal Dutch Airlines	52%
22	SJU	Puerto Rico	44	JetBlue Airways Corporation	34%
23	GRU	Brazil	42	LATAM Airlines Group	41%
24	NRT	Japan	41	All Nippon Airways	17%
25	FUK	Japan	40	All Nippon Airways	25%

*Where two airports have the same connectivity index score, we have listed them in order when the index is taken to two decimal places.

Source: OAG

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TOP 25 US DOMESTIC MEGAHUBS

Key US Domestic highlights:

- Chicago O'Hare Airport (ORD) retains its place as the largest US Domestic Megahub in 2019. With a Connectivity Index score of 459, the airport ranks well ahead of other US airports for connectivity. On the busiest day this year a total of 83,580 possible connections were possible between domestic scheduled flights within a three hour time window at ORD, 2% more than last year. United Airlines operates 48% of flights, down slightly from 50% in 2018.
- Ranked second is Atlanta Airport (ATL) where passengers could make any one of a possible 63,466 domestic connections on the busiest day in 2019. Delta Air Lines' dominance of flight operations at ATL continues with the airline operating 79% of all flights.
- Dallas/Ft. Worth (DFW) has risen to third place in the US Domestic Megahubs Index, pushing Charlotte (CLT) into fourth place with a Connectivity Index score of 250, up from 228 last year.
- Overall, connectivity declined slightly with the Top 25 US Domestic Megahubs achieving an average Connectivity Index score of 123 compared to 128 in 2019. While individual airports moved up and down the ranking, the Top 25 airports remain the same Top 25 as last year.
- Those moving up the rankings, though not necessarily improving their Connectivity Index score, include Houston Airport (IAH), Seattle Airport (SEA), Boston Airport (BOS), Dallas Love Field Airport (DAL), Dulles Airport (IAD) and Newark Airport (EWR).
- 7 The largest declines in ranking position were experienced by Phoenix Airport (PHX) and Honolulu Airport (HNL).
- In the 2019 US Domestic Megahubs Index two airports share the top spot for having the highest share of flights operated by a single airline. Southwest Airlines operates 92% of all scheduled operations at both Dallas Love Field Airport (DAL) and Chicago Midway Airport (MDW), ranked 17th and 18th, respectively.
- → At the other end of the spectrum Los Angeles Airport (LAX) and Boston Airport (BOS) operate with the dominant airline having less than a third of flights, demonstrating that high connectivity does not depend on the presence of a major single committed carrier. At LAX the largest operator is American Airlines with 26% of domestic flights and at BOS JetBlue operates 29% of flights.

As the largest domestic aviation market in the world, we include a US domestic Top 25 Megahubs. These airports are those with the highest ratio of possible scheduled connections to the number of destinations served by that airport.

Rank	Airport	Country	Domestic Connectivity Index	Dominant Carrier	Share of Flights
1	ORD	Chicago O'Hare International	459	United Airlines	48%
2	ATL	Atlanta Hartsfield-jackson Intl	394	Delta Air Lines	79%
3	DFW	Dallas Dallas/Fort Worth Intl	250	American Airlines	86%
4	CLT	Charlotte	232	American Airlines	89%
5	DEN	Denver Intl	194	United Airlines	53%
6	DTW	Detroit Metropolitan Wayne County	125	Delta Air Lines	77%
7	MSP	Minneapolis/St Paul International	117	Delta Air Lines	74%
8	LAX	Los Angeles International	113	American Airlines	26%
9	IAH	Houston George Bush Intercont.	102	United Airlines	82%
10	SEA	Seattle-Tacoma International	94	Alaska Airlines	53%
11	PHL	Philadelphia International	93	American Airlines	76%
12	PHX	Phoenix Sky Harbor Intl	86	American Airlines	50%
13	SLC	Salt Lake City	85	Delta Air Lines	73%
14	LGA	New York LaGuardia	76	Delta Air Lines	48%
15	BOS	Boston Edward L Logan Intl	75	JetBlue Airways	29%
16	SFO	San Francisco	75	United Airlines	52%
17	DAL	Dallas Love Field	69	Southwest Airlines	92%
18	MDW	Chicago Midway Intl	63	Southwest Airlines	92%
19	HNL	Honolulu	62	Hawaiian Airlines	58%
20	IAD	Washington Dulles International	61	United Airlines	83%
21	LAS	Las Vegas McCarran International	57	Southwest Airlines	41%
22	DCA	Washington Ronald Reagan National	55	American Airlines	58%
23	EWR	Newark Liberty International	49	United Airlines	74%
24	ogg	Kahului	42	Hawaiian Airlines	38%
25	BWI	Baltimore Washington International	42	Southwest Airlines	63%

Source: OAG

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TOP 10 MEGAHUBS BY REGION

The Top 10 European Megahubs achieve the highest average international connectivity index of any region with a score of 216. This reflects the maturity of the air travel market, the size of the airports and the intensity of air travel within the region. North America has the next highest average Connectivity Index for the Top 10 airports, followed by Asia Pacific. Despite the high profile of a few Middle Eastern hub airports, OAG Megahubs Index 2019 shows these to be the exception rather than the rule.

ASIA PACIFIC

Rank	Airport	Country	International Connectivity Index	Dominant Carrier	Share of Flights
1	SIN	Singapore	240	Singapore Airlines	24%
2	HKG	Hong Kong (sar) China	234	Cathay Pacific Airways	26%
3	ICN	Korea Republic of	233	Korean Air	23%
4	KUL	Malaysia	229	AirAsia	41%
5	BKK	Thailand	214	Thai Airways International	20%
6	CGK	Indonesia	191	Garuda Indonesia	26%
7	HND	Japan	178	All Nippon Airways	37%
8	PVG	China	163	China Eastern Airlines	28%
9	SYD	Australia	158	Qantas Airways	36%
10	MNL	Philippines	153	Cebu Pacific Air	32%

Source: OAG

EUROPE

Rank	Airport	Country	International Connectivity Index	Dominant Carrier	Share of Flights
1	LHR	United Kingdom	317	British Airways	51%
2	FRA	Germany	309	Lufthansa German Airlines	63%
3	AMS	Netherlands	279	KLM-Royal Dutch Airlines	52%
4	MUC	Germany	259	Lufthansa German Airlines	59%
5	CDG	France	250	Air France	50%
6	IST	Turkey	187	Turkish Airlines	79%
7	MAD	Spain	154	Iberia	46%
8	svo	Russian Federation	150	Aeroflot Russian Airlines	80%
9	FCO	Italy	139	Alitalia-Societa Aerea Italiana S.p.A	43%
10	ZRH	Switzerland	114	swiss	54%

MIDDLE EAST AND AFRICA

Rank	Airport	Country	International Connectivity Index	Dominant Carrier	Share of Flights
1	DXB	United Arab Emirates	168	Emirates	49%
2	JNB	South Africa	128	South African Airways	44%
3	DOH	Qatar	95	Qatar Airways	85%
4	RUH	Saudi Arabia	66	Saudi Arabian Airlines	51%
5	ADD*	Ethiopia	56	Ethiopian Airlines	93%
6	JED*	Saudi Arabia	56	Saudi Arabian Airlines	50%
7	AUH	United Arab Emirates	54	Etihad Airways	78%
8	CAI*	Egypt	50	Egyptair	52%
9	MCT*	Oman	50	Oman Air	60%
10	KWI	Kuwait	43	Kuwait Airways	27%

Source: OAG

NORTH AMERICA

Rank	Airport	Country	International Connectivity Index	Dominant Carrier	Share of Flights
1	ORD	USA	290	United Airlines	46%
2	YYZ	Canada	251	Air Canada	59%
3	ATL	USA	247	Delta Air Lines	79%
4	LAX	USA	219	American Airlines	22%
5	JFK	USA	186	Delta Air Lines	37%
6	DFW	USA	185	American Airlines	85%
7	MIA	USA	184	American Airlines	75%
8	IAH	USA	179	United Airlines	81%
9	EWR	USA	169	United Airlines	70%
10	YVR	Canada	155	Air Canada	47%

Source: OAG

LATIN AMERICA

Rank	Airport	Country	International Connectivity Index	Dominant Carrier	Share of Flights
1	MEX	Mexico	191	Aeromexico	43%
2	BOG	Colombia	142	Avianca	58%
3	GRU	Brazil	101	LATAM Airlines Group	41%
4	PTY	Panama	97	Copa Airlines	89%
5	LIM	Peru	93	LATAM Airlines Group	53%

Source: OAG

GLOSSARY OF CODES

Code	Name	Country
AKL	Auckland International	New Zealand
AMS	Amsterdam	Netherlands
ATL	Atlanta Hartsfield-jackson International	USA
BCN	Barcelona	Spain
ВКК	Bangkok Suvarnabhumi International	Thailand
BOG	Bogota	Colombia
вом	Mumbai	India
BOS	Boston Edward L Logan International	USA
BWI	Baltimore Washington International	USA
CAN	Guangzhou	China
CDG	Paris Charles de Gaulle	France
CGK	Jakarta Soekarno-Hatta	Indonesia
CLT	Charlotte	USA
DAL	Dallas Love Field	USA
DCA	Washington Ronald Reagan National	USA
DEL	Delhi	India
DEN	Denver Intl	USA
DFW	Dallas Dallas/Fort Worth International	USA
DMK	Bangkok Don Mueang International	Thailand
DTW	Detroit Metropolitan Wayne County	USA
DXB	Dubai International	United Arab Emirates
EWR	Newark Liberty International	USA
FCO	Rome Fiumicino	Italy
FLL	Fort Lauderdale/Hollywood International	USA
FRA	Frankfurt International	Germany
FUK	Fukuoka	Japan
GRU	Sao Paulo Guarulhos International	Brazil
HKG	Hong Kong International	Hong Kong (sar) China
HND	Tokyo Intl (Haneda)	Japan
HNL	Honolulu	USA
HYD	Hyderabad Rajiv Gandhi International	India
IAD	Washington Dulles International	USA

Code	Name	Country
IAH	Houston George Bush Intercontinental	USA
ICN	Seoul Incheon International	Korea Republic of
IST	Istanbul Airport	Turkey
JFK	New York J F Kennedy International	USA
JNB	Johannesburg O.r. Tambo International	South Africa
KUL	Kuala Lumpur International	Malaysia
LAS	Las Vegas McCarran International	USA
LAX	Los Angeles International	USA
LGA	New York LaGuardia	USA
LGW	London Gatwick	United Kingdom
LHR	London Heathrow	United Kingdom
MAD	Madrid Adolfo Suarez-Barajas	Spain
мсо	Orlando International	USA
MDW	Chicago Midway International	USA
MEX	Mexico City Juarez International	Mexico
MIA	Miami International	USA
MNL	Manila Ninoy Aquino International	Philippines
MSP	Minneapolis/St Paul International	USA
MUC	Munich International	Germany
NRT	Tokyo Narita International	Japan
OGG	Kahului	USA
ORD	Chicago O'Hare International	USA
OSL	Oslo Gardermoen	Norway
PEK	Beijing Capital International	China
PHL	Philadelphia International	USA
PHX	Phoenix Sky Harbor International	USA
PVG	Shanghai Pudong International	China
SAN	San Diego International	USA
SAW	Istanbul Sabiha Gokcen	Turkey
SEA	Seattle-Tacoma International	USA
SFO	San Francisco	USA
SGN	Ho Chi Minh City	Viet Nam
SIN	Singapore Changi	Singapore
SJU	San Juan Luis Munoz Marin International	Puerto Rico
SLC	Salt Lake City	USA
svo	Moscow Sheremetyevo International	Russian Federation
SYD	Sydney Kingsford Smith	Australia
VIE	Vienna International	Austria
YUL	Montreal Pierre Elliott Trudeau International	Canada
YVR	Vancouver International	Canada
YYZ	Toronto Lester B Pearson International	Canada
ZRH	Zurich	Switzerland

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