The debate over the need for an aircraft larger than a 747 continues. The solution lies in whether high-density markets will use frequency or larger aircraft to accommodate growth. The degree of market fragmentation and frequency growth will determine the required aircraft size.

Where and when the A3XX?

The heated discussion, rumour, counter-rumour, accusation and denial prior to an aircraft launch are akin to the diplomacy tactics of politicians dealing with a major crisis. Firm statements are only made when it is safe to do so.

The arguments for and against an aircraft the size of the A3XX have been expressed by Airbus and Boeing for about five years now. So how can one assess the need for an aircraft larger than the 747-400?

What size?

Boeing's position is that only about 80 aircraft larger than the 747 or than 400 seats will be needed over the next 10 years – about 360 aircraft over 20 years. Boeing's belief is that growth will be accommodated mainly by increases in frequency and the opening up of new routes. Like the trans-Atlantic market, Boeing expects the busiest trans-Pacific and intra-Asian markets to fragment. This will obviate the need for a 500-seat plus aircraft. Instead, market demands will be met by intermediate sized and long-range aircraft, such as the 777-200, 777-300 and further developments of the 747.

The 747 can be stretched to accommodate up to about 480 seats and its range can be increased relatively easily. This strategy will delay the approximately $12 billion outlay for an all-new aircraft of 500-plus seats.

Airbus says that because of airport and airspace congestion about 1,300 aircraft larger than 400 seats will be needed over the next 20 years, starting with smaller models and increasing to larger ones. This supports the need to start developing the 480- to 660-seat A3XX family now. Airbus has a target service entry date for the A3XX of mid- to late-2003. Although it has yet to launch the project, it hopes to have authority to start offering it to airlines. Airbus cannot allow the 747 to have a monopoly much longer and the A3XX's launch will finish this. So which manufacturer is right?

"We have been supporting a large aircraft since 1991 and wanted a 500–600 seater," says Rod Muddle, general manager fleet planning at British Airways. "We wanted to build a long-haul network with cost-effective larger aircraft that could deal with growth and congestion. We have recently reworked our strategy because of competitive routes and yield considerations. We are trying to understand what is the real demand for aircraft larger than a 747. We do not want to see overcapacity in the market because of too large an aircraft, since this would affect the industry overall. Yields have been declining in real terms at the rate of 2% per year for several years now.

"We would do better using a smaller aircraft, because of competition and the need to offer more frequencies," explains Muddle. "This explains why we have a large number of 777s on order, especially for the trans-Atlantic market."

Traffic growth

The basis of future aircraft demand is an average annual growth in traffic of about 5% for the next 20 years. This

Boeing's strategy for dealing with growth in traffic is that an increase in frequencies and a fragmentation of high-density markets will be enough to prevent the requirement for an aircraft larger than a stretch of the 747-400. Boeing cancelled projects for 500-seat plus developments of the 747 and all-new aircraft in the past three years.

50 BUSIEST WORLD ROUTES BI-DIRECTIONAL CAPACITY DATA FOR 1998

Route	Annual return flight frequency	Annual ASKs (millions)	Scheduled seats	Average aircraft size
NRT-SIN	2,546	10,535	1,964,170	386
BKK-NRT	2,826	9,749	2,094,784	371
BKK-SYD	1,391	8,464	1,124,020	404
CTS-HND	13,355	8,328	10,127,534	379
HKG-NRT	3,346	7,741	2,643,056	395
SIN-HKG	4,243	7,685	2,965,952	350
BKK-HKG	5,912	6,816	3,939,770	333
TPE-HKG	10,854	5,765	7,193,064	331
BKK-SIN	5,866	4,860	3,393,392	289
BKK-TPE	2,807	4,279	1,693,674	302
PEK-SHA	6,237	3,700	3,473,078	278
CAN-PEK	3,644	3,655	1,924,818	264
CGK-SIN	8,324	3,447	3,908,660	235
KHH-TSA	33,137	3,279	10,666,230	161
PUS-SEL	16,440	2,718	8,320,356	253
LAX-NRT	3,645	25,371	2,898,598	398
HNL-NRT	3,205	16,821	2,741, 298	428
TPE-LAX	1,947	16,359	1,501,078	385
JFK-NRT	1,722	15,941	1,472,750	428
SYD-LAX	1,446	14,264	1,183,540	409
LAX-KIX	1,551	11,992	1,301,396	420
NRT-SFO	1,681	11,761	1,429,914	425
ORD-NRT	1,456	11,876	1,179,372	405
LAX-SEL	1,561	10,390	1,084,158	347
HKG-YVR	1,375	10,365	1,011,910	368
TPE-SFO	1,303	9,577	923,918	355
HKG-LAX	954	8,855	761,026	399
KIX-HNL	1,563	8,652	1,309,638	419
SFO-HKG	820	7,289	656,792	400
SFO-SEL	964	5,936	656,424	340
MNL-LAX	301	3,100	264,278	439
JFK-SEL	356	3,025	273,408	384
NRT-MSP	365	2,788	292,000	400
NRT-LHR	1,911	14,300	1,492,366	390
LHR-HKG	1,765	12,428	1,289,700	365
CDG-NRT	1,416	11,543	1,190,140	420
KUL-LHR	1,187	10,095	955,692	403
BKK-LHR	1,281	9,402	984,726	384
FRA-BKK	1,409	8,976	1,000,666	355
FRA-SIN	1,166	8,652	842,798	361
FRA-NRT	971	7,510	802,668	413
FRA-HKG	726	5,149	561,924	387
LHR-JFK	6,907	20,175	3,643,264	264
LHR-LAX	2,635	15,810	1,805,924	343
LHR-SFO	1,727	10,427	1,210,806	351
ORD-LHR	2,883	10,119	1,596,302	277
YYZ-LHR	2,336	7,302	1,280,336	274
JNB-LHR	1,631	10,003	1,102,080	338
JFK-TLV	1,143	8,045	882,928	386
CPT-JNB	11,480	4,807	3,790,950	165

Source: OAG/BACK Information Services

exponential rise in traffic is agreed not only by manufacturers, but also by most analysts and airlines. However, disagreement lies in how this growth will be accommodated.

Traffic growth results in further RPKs. On just one route a rise in RPKs means more available seats will be occupied, raising load factor. Eventually more ASKs will have to be provided by increasing seats, either through more flight frequency or by larger aircraft.

It is this issue that leads to differences in the predicted size of aircraft required on the busiest routes. If the majority of growth is accommodated by flight frequency then average aircraft size has to increase by only a small amount.

A rise in ASKs does not have to be met with a proportionate rise in RPKs. Passenger load factors and aircraft utilisations can also rise.

Higher load factors will be made possible by the increased sophistication of computer reservation systems (CRSs) which will be able to avoid overbookings and passenger spill in the process. Airbus predicts passenger load factor will increase by three percentage points over 20 years.

An increase in aircraft speed is doubtful. Higher speed is only possible with reduced congestion. Congestion will increase, however, as flight frequencies grow, although it can be partially offset by improvements in air traffic control (ATC) technology.

Airbus predicts aircraft utilisation will increase by about 200 flight hours (FH) per year. Young long-haul aircraft would currently be expected to achieve about 4,500 FH a year. This would then rise to about 4,700 FH. Increased aircraft utilisation would lead to more frequencies across the network and so moderate the need to increase average aircraft size.

Further to flight frequency, route length and aircraft productivity, the only remaining way of catering for increased traffic is with larger aircraft.

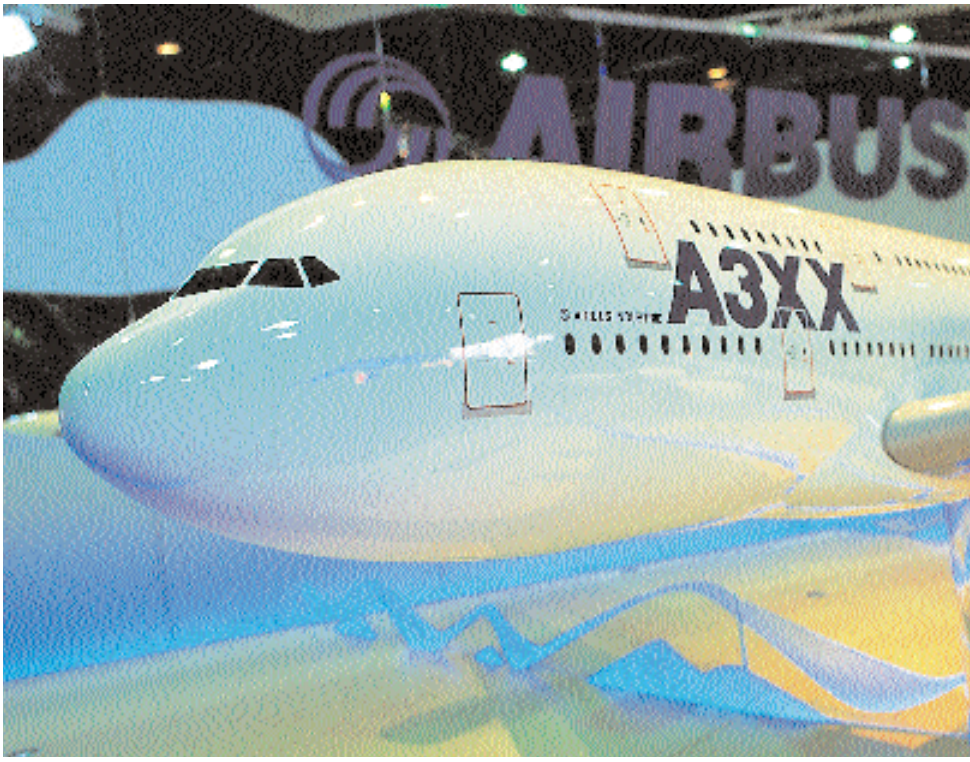
Very large aircraft

To assess the requirement for aircraft larger than the 747 or 400 seats the world's busiest routes should be analysed individually.

The important information about these dense airport-pairs will be the airlines operating them, the aircraft types used, the ASKs per year, average aircraft size used on the route and the number of flights per day.

Assessing which are the world's busiest routes is not straightforward. Selecting ASKs used as a criteria for density can be misleading. Japanese domestic routes, for example, use a high frequency of 747s configured with high

Major airlines agree that there will be the need for an aircraft the size of the proposed A3XX, but are unsure when and how many will be required.



density seating. The number of seats provided per year would be a better gauge of density for these sort of routes.

The world's 50 busiest routes in terms of ASKs have been analysed. Their average aircraft size, number of annual flights and number of ASKs supplied each year are listed *(see table, page 32)*. These routes have been split into groups of trans-Asian, trans-Pacific, European-Asian, trans-Atlantic and other.

Top 50 routes

The majority of the 50 routes analysed have an average aircraft size close to 400 seats and are operated almost entirely by 747s. A smaller number operate at high frequency and so use smaller aircraft.

These 50 routes operate between just 35 of the world's major airports. This includes London Heathrow, Paris Charles de Gaulle and Frankfurt Main in Europe. The US airports included are New York JFK, Los Angeles, San Francisco as well as Vancouver and Toronto in Canada.

Apart from Tel Aviv and Johannesburg, the remainder of the airports served by these routes are in the Asia-Pacific region.

While these 50 airport-pairs are concentrated on just 35 airports, the majority of capacity is provided by the major airlines based in these regions. This includes British Airways, Air France, Lufthansa, United Airlines, Delta, American, Northwest and Air Canada in north America and Europe. In the Asia-Pacific region the major airlines include Singapore Airlines (SIA), Malaysian, Qantas, Japan Airlines (JAL) and All Nippon Airways (ANA).

Only eight of the 50 routes do not involve an airport in the Asia-Pacific region. The 42 routes involving an Asia-Pacific airport are both long-haul routes from Europe and north America and intra-Asian sectors.

Most short trans-Asian routes have high flight frequencies. As a consequence average aircraft size is smaller than a 747. Nevertheless, some have frequencies of 20 or more flights per day and still require aircraft with 300 or more seats.

Trans-pacific routes and sectors from Europe to the Asia-Pacific are generally low frequency, with the number of daily return flights being up to about five per day, and only reaching 10 per day in the exceptional case of Los Angeles-Tokyo. Virtually all of them have an average aircraft size that is equal to a 747.

The trans-Pacific market uses the largest aircraft and the European-Asian group of routes the second largest.

Some trans-Atlantic routes have frequencies of about four or five per day because of market fragmentation and so some have an average aircraft size smaller than a 747. This market has the ability provide a lot more capacity with both frequency and an increase in aircraft size to the equivalent of a 747 before needing something even larger.

Aircraft & fleet size

Average aircraft size can be determined by dividing the frequencies and route length into ASKs.

As can be seen from the table *(this page)*, 29 of the 50 routes use aircraft with at least 360 seats. This is the same as a typical three-class configuration of a 747.

Several other routes have average aircraft sizes of more than 300 seats, and so require aircraft, such as the A340 and 777.

Besides average aircraft size, the number of aircraft of average size required to operate each route can also be relatively easy to calculate.

Assuming an average block speed of 833 km per hour, the flight time on the Los Angeles-Tokyo route will be just under 11 hours. Taking into account the number of annual return flights, if aircraft achieve an annual FH utilisation of 4,500 then a fleet of 17 398-seat aircraft will be required to service the route.

This process of fleet size calculation, using calculated average aircraft size and annual utilisations of 3,000 FH for intra-Asian and 4,500 FH for long-haul routes aircraft, is repeated for all routes. This basic analysis gives the required fleet of 357 aircraft to service these 50 routes for 1998 capacity.

5, 10 AND 20 YEAR PROJECTED GROWTH FACTORS IN ASKS WITH 3% RISE IN PASSENGER LOAD FACTOR FOR DIFFERENT GLOBAL REGIONS

Global region	ASKs year 1	Annual growth rate %	ASK growth factor 5 years	ASK growth factor 10 years	ASK growth factor 20 years
Intra-Asia	1.00	6.3%	1.302	1.761	3.245
Trans-Pacific	1.00	7.0%	1.340	1.886	3.704
Europe-Asia	1.00	6.3%	1.302	1.761	3.245
Trans-Atlantic	1.00	4.5%	1.196	1.484	2.307
World	1.00	5.0%	1.225	1.560	2.536

50 BUSIEST WORLD ROUTES CAPACITY REQUIREMENTS AFTER 20 YEARS OF GROWTH

Route	Annual ASKs (millions)	Frequencies to absorb all growth	Aircraft size to absorb all growth	Aircraft size with 75% increase in frequencies	Aircraft size with 100% increase in frequencies
NRT-SIN	34,817	8,262	1,252	715	626
BKK-NRT	31,637	9,170	1,203	687	601
BKK-SYD	27,465	4,514	1,311	749	656
CTS-HND	27,026	43,337	1,230	703	615
HKG-NRT	25,121	10,858	1,282	732	641
SIN-HKG	24,937	13,769	1,134	648	567
BKK-HKG	22,117	19,184	1,081	618	541
TPE-HKG	18,707	35,221	1,075	614	538
BKK-SIN	15,772	19,035	939	536	469
BKK-TPE	13,886	9,109	979	559	489
PEK-SHA	12,007	20,239	903	516	452
CAN-PEK	11,861	11,825	857	490	429
CGK-SIN	11,185	27,011	762	435	381
KHH-TSA	10,839	107,530	522	298	261
PUS-SEL	8,820	53,348	821	469	411
LAX-NRT	93,976	13,501	1,473	842	736
HNL-NRT	62,306	11,871	1,584	905	792
TPE-LAX	60,594	7,212	1,428	816	714
JFK-NRT	59,046	6,378	1,584	905	792
SYD-LAX	52,834	5,356	1,516	866	758
LAX-KIX	44,419	5,745	1,554	888	777
NRT-SFO	43,564	6,226	1,575	900	788
ORD-NRT	43,987	5,393	1,500	857	750
LAX-SEL	38,484	5,782	1,286	735	643
HKG-YVR	38,393	5,093	1,363	779	681
TPE-SFO	35,473	4,826	1,313	750	657
HKG-LAX	32,798	3,534	1,477	844	739
KIX-HNL	32,046	5,789	1,552	887	776
SFO-HKG	26,998	3,037	1,483	848	742
SFO-SEL	21,986	3,571	1,261	721	631
MNL-LAX	11,484	1,319	1,422	929	813
JFK-SEL	11,204	1,319	1,422	813	711
NRT-MSP	10,327	1,352	1,482	847	741
LHR-NRT	46,402	6,201	1,267	724	634
LHR-HKG	40,329	5,727	1,186	677	593
CDG-NRT	37,459	4,595	1,364	779	682
KUL-LHR	32,760	3,852	1,306	746	653
BKK-LHR	30,510	4,157	1,247	713	624
FRA-BKK	29,128	4,572	1,152	658	576
FRA-SIN	28,076	3,784	1,173	670	586
FRA-NRT	24,370	3,151	1,341	766	671
FRA-HKG	16,709	2,356	1,256	718	628
LHR-JFK	46,546	15,934	608	348	304
LHR-LAX	36,474	6,079	791	452	395
LHR-SFO	24,054	3,984	809	462	404
ORD-LHR	23,345	6,651	639	365	319
YYZ-LHR	16,846	5,389	632	361	316
JNB-LHR	25,368	4,136	857	490	428
JFK-TLV	20,402	2,898	979	560	490
CPT-JNB	12,192	29,113	419	239	209

Although this calculation is theoretical, it uses realistic criteria and provides a basis for estimating future requirements.

Capacity requirements

Taking the current traffic criteria of these routes and applying an annual rate of growth appropriate for the global region, the required ASKs in 20 years can be calculated. While global traffic is expected to grow by an annual average rate of 5% per year, intra-Asian traffic has a forecast rate of 6.3%, trans-Pacific 7.0%, European-Asian 6.3% and trans-Atlantic 4.3%.

The resulting growth factors in ASKs for the five regions over five, 10 and 20 years are summarised *(see table, page 33)*. This takes into consideration a load factor increase of three percentage points from the current situation. The new ASK capacity requirements after 20 years are also shown *(see table this page)*.

Assessing how this increase in ASKs will be catered for is subjective. While more ASKs can be provided by increased aircraft speed and utilisation over a network, airlines only have a choice of frequency and aircraft size on individual routes.

"The world seems to be polarising into frequency growth and aircraft capacity growth," says Muddle. "The world will change over time, however, due to fragmentation. We are not going to go for growth at any price. To justify a new large aircraft we need a 15–20% reduction in seat-mile costs.

"The airlines that require very large aircraft are basically Asia-Pacific carriers, but the Asia-Pacific crisis has held back the potential launch customers."

If all increases in capacity were to be met purely by growth in frequencies then the current frequency on each of the 50 routes listed would have to be multiplied by the appropriate growth factor for the global region. For example, the Los Angeles-Tokyo sector would have to increase from 3,645 to 13,500 flights per year, or to 37 per day.

Some routes will be able to accommodate more frequency growth than others. The Los Angeles-Tokyo example is an extreme case. Others, such as Minneapolis-Tokyo, would have flights increased from just one to about four per day, a normal average.

If aircraft size increase caters for all growth then frequencies and fleet size of 357 aircraft will not need to change.

The result of these two extremes of just frequency and average aircraft size accompany the required ASKs *(see table this page)*.

These two extremes, however, do not reflect a true likelihood of what will occur. Capacity growth will come from a

Boeing predicts that the intra-Asian and trans-Pacific markets will fragment and experience high growth in flight frequencies. If this occurs then aircraft, such as the 777, will be in high demand.

combination of more flights and larger aircraft. While there will certainly be some increase in frequencies and opening of new routes, the issue is how much they can grow in 20 years. This will then determine what aircraft sizes will be needed on the busier routes and when they will be needed.

"We have been involved in the very large aircraft process with Boeing and the A3XX working group with Airbus," says Ingo Wuggetzer, senior manager corporate strategy at Lufthansa. "We have been analysing how we might use such an aircraft in the long term. While we can see it will be required, we cannot decide when we might require it."

Frequency

The first option for increasing frequency is to open new airport-pairs. Airbus points out that about half new routes close. It predicts there will be a net 1.5% annual growth in new airport-pairs over the next 20 years, equal to a 34% increase over 20 years. Only 5% will be longer than 4,500nm.

The second option is through increased runway capacity. Although IATA-declared capacities indicate that Europe's top 20 airports are congested, their runway slot capacities have risen over the past 10 years. This must, however, mean their capacity is now close to maximum potential.

The capacity of Asia's top 10 airports are to be doubled within the next 10 years and China is to upgrade its top 41 airports in the next five years.

Revised bilateral air service agreements also increase frequencies. Frequency growth has been high in the past, with the number of flights increasing by a factor of 3.7 between Europe and Asia in the past 10 years. One example given by Boeing is the revising of the US-Japanese bilateral which will open routes to a lot more Japanese cities from the US.

Boeing points out that a similar affect of deregulation has already happened on the trans-Atlantic market and the average aircraft size on major airport-pairs has decreased.

Boeing's forecast for a small requirement for aircraft larger than the 747 is based on its expectation that the next market to experience the effects of deregulation will be routes feeding into the Asia-Pacific region. It argues that passengers demand direct flights and more frequencies. The trans-Pacific network into Japan has been left highly protected by governments. Two-thirds of US-Asia traffic does not go to Japan, although 80% of the traffic has to transit via Tokyo. Boeing says this will have to change otherwise passengers will avoid Japan and fly to other destinations on a range of new routes in a fragmented market.

Boeing expects that this false channelling of traffic through Tokyo will end once the US-Japan bilateral has been renegotiated and direct services into Japan and the rest of Asia from the US are possible. This growth in airport-pairs will take away the need for 400-seat plus aircraft and fuel demand for aircraft in the 777 size bracket.

Airbus' counter argument to this expected fragmentation of the trans-Pacific market is that airlines will still want to channel traffic through Tokyo on account of yields from Tokyo into Asia being higher than trans-Pacific yields. This will limit the degree to which the trans-Pacific and intra-Asian markets fragment, leaving an increase in aircraft size to cater for traffic growth.

More flights still leaves the issue of airspace congestion. New ATC technology will increase airspace capacity, but programmes are consistently behind schedule.

Raising frequencies is not just an issue of runway and airspace congestion. The window of opportunity for departure and arrival times is highly dependent on differences between time zones. Since many of the 50 routes studied here are long distance, they experience problems with scheduling flights when attractive departure and arrival times and airport curfews.

"As an example we have two flights from Heathrow to Hong Kong which land within 15 minutes of each other," says Muddle. "This is because of the tight scheduling window due to the curfews at London and Hong Kong. Increasing frequency on this route will be difficult because the slots available during our window of opportunity at each end are required for other flights. This points to the need to increase aircraft size on this route."

Even long sectors which cross few times zones have scheduling problems, because of the long flight times. An example is London-Johannesburg, where flights have to scheduled to depart and arrive at either end of the day.

Overall, Airbus forecasts that the number of flights systemwide will increase by 95%; very close to a doubling of today's flights. This takes into account the opening up of new routes and airport-pairs. With a predicted 34% increase in the number of routes and a 95% rise in frequencies, the average number of frequencies on each route would then have to increase by 45% over the next 20 years.

Although Boeing does not say what it expects the systemwide increase in flights to be over 20 years, it forecasts that the number of trans-Pacific and Europe-Asia airport-pairs will double from 65 to 130 in each over the same period. This is three times the rate Airbus predicts. Boeing argues that this degree of fragmentation will lead to demand for aircraft the size of the 777 and A340 – and not the A3XX.

The routes serving the Asian markets are the highest density. The level of frequency growth and route fragmentation on these sectors will be the largest deciding factor in the need for an aircraft larger than the 747.

Aircraft capacity

Countering the affect of increased airport capacity and market fragmentation is the influence that major airline alliances will have on consolidating services and capacity. The four major airline alliances now account for nearly 60% of world traffic. One main design of airline alliances is to channel traffic. The affects of airline strategy are the most difficult to predict.

"Synergies in airline alliances could make aircraft like the A3XX work," claims Wuggetzer. "For example, in the Star Alliance we could share one frequency to Bangkok, rather than have ourselves and Thai each operating a flight. This way we could get an economical volume of passengers to fill the aircraft."

If the expected traffic growth occurs on the 50 routes studied, then the required aircraft size in 20 years with a doubling of frequencies is shown *(see table, page 34)*. Doubling frequencies could be a realistic scenario. This does take into account the effect that opening new routes will have on drawing traffic away from current ones.

By doubling frequencies the required fleet to service this network would have to grow from the current calculated 357 aircraft to 697.

Ignoring the effect of opening new routes, average aircraft size would have to grow. Aircraft sizes on 38 of the 50 routes would have to increase to an average larger than 480 seats, or at least the size of the A3XX-50.

Many would require seat capacities in the 550 and 660 range; the equivalent of the A3XX-100 and -200. The fleet to support these 38 routes would be 500 aircraft.

All except one of the 38 routes with a theoretical requirement for an aircraft the size of the A3XX are in the intra-Asia, trans-Pacific and Europe-Asia markets. This reflects Airbus' prediction that 60% of aircraft larger than the 747 will come from airlines based in the Asia-Pacific region.

In 16 cases aircraft size is well above the 660 seats of the A3XX-200 and so frequencies would have to increase by two and a half or three times, or the airlines would have to use alternate airports.

This analysis has not considered other high density routes. There would doubtless be others which also required A3XX sized aircraft. Applying the theoretical doubling of frequencies over a 20-year period would appear to support Airbus' theories that up to 1,300 aircraft larger than a 747 would be required in 20 years' time.

Applying a proportionate increase in frequencies in 10 years to the theoretical doubling of frequencies over 20 years reveals some interesting figures.

A 50% rise in flights after 10 years shows the need for some trans-Pacific sectors requiring aircraft similar in capacity to the A3XX-100. Again, this ignores the effect of opening new routes. It does, however, reflect Boeing's analysis that few 400-seat plus aircraft will be needed in the first 10 years of growth. This would support the argument that development of an all-new aircraft could be delayed for several years.

New routes

Taking the opening of new routes into consideration gives an indication as to how aircraft larger than 500 seats might not be required. For example, the growth factor of about 3.2 over 20 years for the Europe-Asia market would be halved to 1.6 on each sector if the number of routes doubled, as is predicted by Boeing. This would only have to increase on average by about 80% for aircraft size to remain the same. It is easy to see how current aircraft size would only have to increase moderately if Boeing is right about the magnitude of the fragmentation. Airbus, however, only expects frequencies to increase on average by 45%, spurring the need for the A3XX.

The biggest potential for larger aircraft is on trans-Pacific routes and then Europe-Asia sectors. Singapore Airlines says it is not actively evaluating new large aircraft at the moment, but a small number of 600-seat aircraft may be considered on high-density routes early next century.

All Nippon Airways (ANA) also says it has no plans to introduce the A3XX at this time, but plans instead to reduce its debt.

"The problem is that an airline needs a minimum fleet of at least 10 to make it work. This requires enough high-density routes for there to be sufficient traffic," says Wuggetzer.

ANA, however, says it is looking at possible use of the A3XX in the future on high-density domestic Japanese routes if slots are redistributed following the liberalisation of the Japanese domestic market. A fleet of 48 747s configured with an average of 568 seats serves the market now at high frequencies. With continued growth Airbus argues this could grow to be a fleet of 48 1,000-seat aircraft in 20 years.

Summary

The issue of the A3XX comes down to the degree of fragmentation in the Asian markets.

Even if frequencies can increase enough to prevent the need for large aircraft, airlines may still choose to operate the A3XX to preserve slots for other services or consolidate capacity.

"Besides capacity requirements, there is also the matter of costs," explains Wuggetzer. "Airbus has aggressive cost targets, and if these were achieved it would make the A3XX a very attractive aircraft." AC