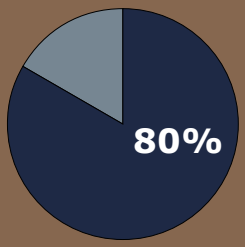
The Inflight Connectivity **Buyers Guide**

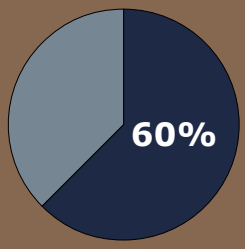
Key questions you should ask when evaluating connectivity networks to ensure a superior passenger experience

TELESAT™

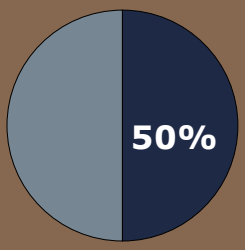
Whether it is for work on the go, or just the need to feel at home, more and more airline passengers consider inflight connectivity a must when traveling for business or pleasure. In fact, studies continue to show the evolving importance of high-quality inflight connectivity (IFC) when it comes to passenger airline choice and overall airline experience.



Over 80% of passengers use inflight connectivity



Over 60% consider inflight Wi-Fi to be more important than inflight entertainment



Nearly 50% of passengers state inflight connectivity is one of the top determining factors in airline choice

Whether sending and receiving messages or emails, browsing the internet, using social media applications or streaming video, connected passengers no longer consider high-quality inflight connectivity to be a luxury – they consider it a necessity. That is why it is important to ask the right questions when evaluating IFC connectivity networks and avoid the pitfalls that many airlines are facing today:

- Inability to support passenger's bandwidth-intensive applications
- Inconsistent Wi-Fi experience from gate-to-gate and flight-to-flight
- Inflexible networks make it cumbersome to accommodate route changes

Choosing a Satellite Solution for Optimal Inflight Connectivity

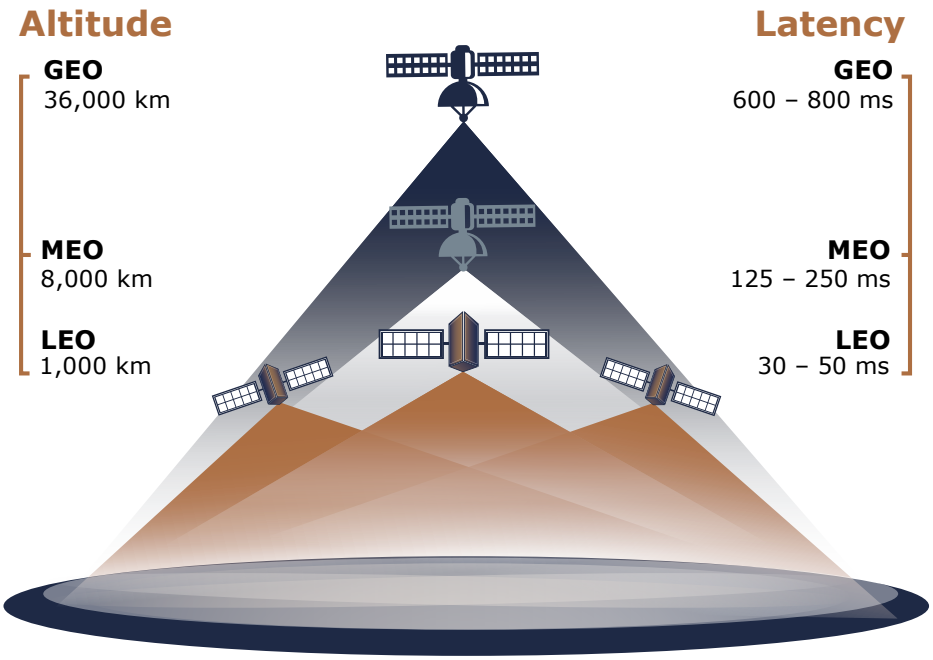
In this IFC Buyer's Guide, you will find key questions you should ask when evaluating satellite solutions for inflight connectivity, and explanations on how each will impact the passenger experience.

1. Does it matter if the IFC solution is connected over a GEO, MEO, or LEO satellite network when it comes to passenger experience?

Many passengers perceive that satellite-delivered Internet is slow and expensive, based on their experiences with Geostationary (GEO) satellites that orbit 36,000 km above Earth. GEO satellites are so high above the planet that it takes almost a full second for the data to go from the passenger to the satellite, be sent back down to Earth to connect to the internet backbone, and then reverse the path back to the passenger. Satellites in Low Earth Orbit (LEO) are 35 times closer to Earth than GEO, so the round trip time for data is less than 50 milliseconds, which is on par with most fibre networks today. This time delay is referred to as latency.

While a second doesn't sound like much, the Internet works via a series of 'handshakes.' You send a little data; that gets acknowledged. You send a little more; that gets acknowledged. That second of latency delay is multiplied over and over, just to load a single webpage. While high latency makes internet browsing slow and frustrating, VPN connections, encrypted emails, and cloud-based applications often time out due to the high delay on the link.

In short, the orbital location does make a noticeable difference in passenger connectivity. LEO satellites provide a fiber-quality internet experience with web pages that load 2x faster than MEO and 6-8x faster than GEO satellites, and a seamless experience with encrypted traffic.



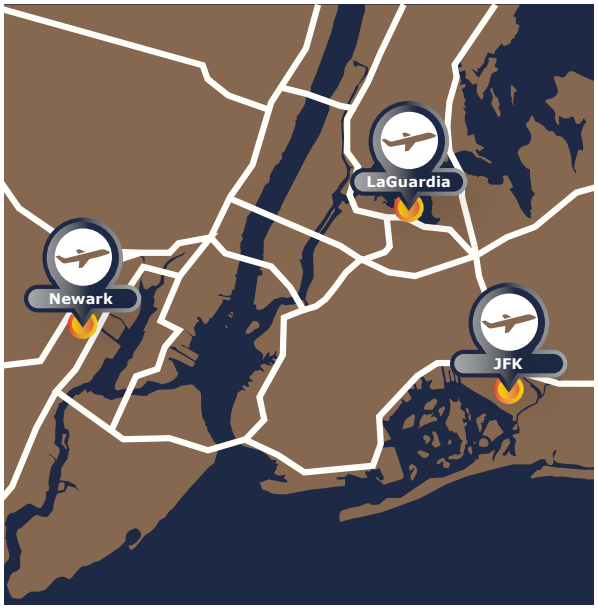
LEO satellites are 35X closer to Earth than traditional satellites, delivering fibre-like performance

2. Does the IFC solution provide enough bandwidth to offer a full internet experience for hundreds of individual passengers without breaking the bank?

To ensure a consistent passenger connectivity experience throughout the aircraft, the ideal IFC satellite solution must provide enough bandwidth to support an at-home or at-work experience for every passenger, regardless of the number of passengers connecting, even if logging in at the same time. Yet passengers expect connectivity to be low cost, or free. It is important to ensure that the satellite capacity is not cost-prohibitive when increasing throughput per plane to meet higher demands.

With the right LEO satellite-enabled IFC service, enough bandwidth can be provided to enable downlink speeds fast enough for streaming to every seat, and uplink speeds fast enough for any passenger wanting to send documents by email or upload to the cloud, or even post vacation photos to social media. New satellite networks are offering different economic models to maintain cost per aircraft while drastically increasing bandwidth allocated.

3. How much capacity can you deliver within a 50km radius of an airport hub, ensuring passenger experience is not throttled at the start or end of the flight?



Passenger IFC experience should be consistent from gate to gate, regardless of the number of connected aircraft approaching or sitting at an airport's many gates, especially in high traffic cities with multiple airports, such as London or New York City.

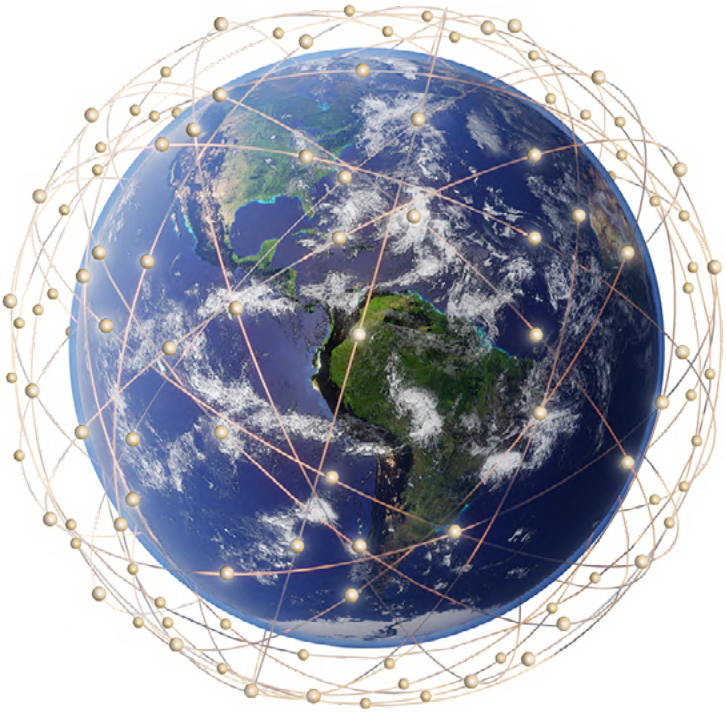
With the right LEO-based IFC solution, enough bandwidth is available to connect every aircraft at an airport gate, plus all that are approaching and departing. Make sure your LEO connectivity network can support at least 200 Mbps per plane within a 50 km radius.

4. Does it provide true pole-to-pole global coverage ensuring all flight routes receive a consistent, high-throughput connection?

Many satellite solutions for IFC service claim global coverage, but this most often does not include coverage above the 60° parallel. That is why it is important to evaluate a satellite-enabled IFC solution based on true pole-to-pole global coverage, ensuring every route receives a consistently high throughput connection everywhere.

With the right LEO-based IFC service, busy international routes that fly over the North Atlantic stay covered by the same service for the entire flight. Even polar routes are covered offering passengers the same experience flying from North America to Asia or from Australia to South America.

Utilizing a single LEO network that offers truly global coverage eliminates today's practice of patching together disparate networks with varying performance levels.



5. Can it connect an airline's entire fleet of planes, including regional jets?

When a passenger steps off their long-haul flight onto the regional aircraft for the last leg of their journey, you want to be confident they will have access to the same applications and consistent brand experience.

The right LEO-based solution for IFC can provide excellent performance to smaller antennas, ensuring regional jets, narrow-body, and wide-body aircraft can be connected to the same network, creating a passenger experience that is consistent across every aircraft in the fleet, on every route.

Providing IFC service to passengers using different satellite networks (often with different altitudes and satellite bands) will likely result in an inconsistent passenger Wi-Fi experience. By utilizing a single LEO network solution with truly global coverage, airlines can provide a superior IFC experience across their entire fleet, for every route, from gate to gate. And a superior, consistent experience with the airline will positively impact customer loyalty.

And with a single LEO network serving the entire fleet, airlines realize the benefits of economies of scale and lower operating costs.

6. Can an airline flexibly expand its offering, increase throughput per aircraft, and add new routes quickly?

Air travel is a dynamic business, from fluctuations in passenger volume per flight to shifting demands for inflight Wi-Fi access, to additions and subtractions of flight destinations. That is why a satellite-enabled IFC solution must be flexible enough to respond to the changing needs of the airline.

For this reason, selecting the right long-term LEO-based solution for IFC service is important. With the right LEO solution, airlines have the flexibility to respond to changing needs when they happen. Whether in response to seasonal trends or differing connectivity demands based on the day of the week, whatever the need, the right LEO-based service is flexible enough to expand IFC offerings as needed, increase throughput per aircraft when needed, and add new routes quickly.

7. With the rapid pace of innovation in IFC, how can I future-proof my decisions today?

Now that inflight connectivity is expected by passengers and the absence of it negatively impacts customer satisfaction and loyalty, airlines are understandably concerned about the decisions they must make today.

Some emerging LEO satellite networks are designed to eliminate the slow, congested, expensive solutions that cannot meet passenger expectations. Early LEO networks may meet some passenger expectations in the short term, but LEO networks that are designed for consumer broadband connectivity will struggle to meet the bandwidth requirements of a full commercial plane and quickly become congested -similar to GEO networks today.

For IFC installations required in the short term, it is important to understand if the aero antenna for today's GEO/MEO networks has an 'overnight upgrade' capability that doesn't require an antenna rip-and-replace to be compatible with the upcoming, advanced LEO networks.

Inflight Connectivity that *Really* Flies!

As one of the world's most innovative, global GEO satellite operators for over 50 years, Telesat works collaboratively with its customers to build and operate advanced network architectures that shape our customers' offerings and accelerate their growth.

It is through this collaboration that we designed the world's first enterprise-grade LEO network that will eliminate the obstacles airlines face when offering inflight connectivity. With an enterprise-grade LEO network, airlines can expect:

- guaranteed SLAs, not contended, best-effort data rates
- the ability to dynamically access over 15 Gbps of capacity in demand hot spots like airport hubs or busy flight routes
- the highest performance uplink data rates of any satellite network in the world, ensuring passengers can upload data files, and experience lightning-fast browsing, online gaming and more
- truly global coverage, with every point across the globe covered
- a highly resilient, secure network, with multiple satellites always in view and diverse paths to connect passenger data to the internet backbone

To learn how Telesat Lightspeed can transform your inflight connectivity and passenger experience, visit https://www.telesat.com/inflight-connectivity