



INFLIGHT CONNECTIVITY 101:

A Comprehensive Guide





Table of contents

1. Introduction
2. The value of inflight connectivity
3. Inflight connectivity: the basics
4. Choosing your perfect inflight connectivity
5. The future of inflight connectivity
6. The Gogo advantage
7. Conclusion



1

INTRODUCTION

In today's fast-moving world, staying connected isn't a luxury – it's an expectation.

Whether you're a pilot managing critical flight data, a business traveler trying to stay productive, or a passenger streaming your favorite show, inflight connectivity has rapidly evolved from a nice-to-have feature into an essential part of modern air travel.

This eBook, Inflight Connectivity 101, is your guide to understanding the fundamentals of how connectivity works in the air, why it matters, and how different technologies – like air-to-ground and satellite – power our ability to connect above 40,000 feet.

We'll break down the basics, explain key terminology, compare available technologies, and explore the real-world benefits of staying online in flight – from safety and operational efficiency to passenger

experience and competitive advantage.

Whether you're a curious jet owner, aviation professional, or just want to demystify the tech behind your inflight Wi-Fi, this guide will help you navigate the connected skies with confidence.





2

THE VALUE OF INFLIGHT CONNECTIVITY

Travelers no longer view air travel as merely a means of transportation; it has become an integral part of their professional and personal lives.

With thousands of passengers engaged in work-related tasks at 40,000 feet, seamless connectivity allows them to communicate, attend virtual meetings, and stay updated on global events.

However, inflight connectivity is more than business at 40,000 feet

– it's a powerful tool that enhances safety, streamlines operations, and creates a more productive and enjoyable flight experience. For aircraft owners, operators, and pilots, investing in reliable connectivity brings tangible value across several dimensions.



“

Inflight connectivity has transitioned from a luxury to a necessity”

- Andrew Morales, CEO and President of Skyline Group MC

1. Enhanced Operational Efficiency

Connectivity enables real-time communication with ground operations, access to live weather updates, digital flight plans, and automated aircraft health monitoring.

This results in more informed decision-making, reduced delays, and greater situational awareness. It also supports electronic flight bags (EFBs), which replace bulky paper charts and manuals with dynamic digital data – making operations more streamlined and up-to-date.

“

Even for lighter aircraft, inflight connectivity provides a value you may not realize. Consider the cost of your time along with having access to external data to support your flight and flight operations. The value of staying connected to your teams, your family, your business may become obvious. With inflight Wi-Fi, you can stay accountable and responsible, even when you fly.”

**- Jason Talley, Citation Jet 3+
Pilot and Owner**

2. Increased Safety

Pilots can use inflight connectivity to receive the latest NOTAMs (Notices to Airmen), weather advisories, and airspace updates.

They can also consult with dispatch or maintenance teams during flight if needed. This immediate access to information can improve flight path optimization and early problem resolution, leading to safer outcomes.

3. Passenger Productivity and Satisfaction

For business travelers and jet owners, inflight Wi-Fi turns travel time into productive time.

Being able to join video calls, send documents, or collaborate with teams while en route means no downtime between destinations. For leisure passengers, entertainment options like streaming, social media, and messaging can significantly improve the onboard experience.



4. Competitive Advantage for Operators

In a highly competitive market, offering reliable inflight Wi-Fi can be a key differentiator for charter operators or fractional ownership programs.

Connectivity has become a baseline expectation – particularly among high-net-worth individuals and corporate clients. Providing a seamless experience can translate directly into customer loyalty and repeat business.

Inflight connectivity is not a one-size-fits-all solution, but when implemented thoughtfully, it delivers exceptional value. From cockpit to cabin, it empowers everyone on board to fly safer and more connected than ever before.

5. Future-Ready Infrastructure

As the aviation industry continues to digitize, connectivity is becoming the backbone of future innovations – like predictive maintenance, advanced cockpit applications, and even real-time aircraft performance analytics.

Equipping your aircraft now sets the foundation for leveraging emerging technologies down the line.



A woman with long dark hair, wearing a dark blue blazer over a light-colored top, is seated in an airplane cabin. She is looking down at a red smartphone in her hands. A silver laptop is open on the table in front of her. The airplane windows and interior panels are visible in the background.

3

INFLIGHT CONNECTIVITY: THE BASICS

Inflight connectivity comes with its own set of technical jargon.

Whether you're exploring your first connectivity solution or simply trying to make sense of the options, understanding the basic terms can go a long way. This section breaks down the most common and important terms in simple language.

To meet the growing demand of passengers and crew, there are many IFC solutions, but not one-size fits all aircraft, mission type, nor data demands. When choosing an inflight connectivity network aircraft owners and operators can choose from Air-to-Ground, Satellite networks, or a hybrid approach.

ATG (AIR-TO-GROUND)

Utilizes terrestrial cellular towers and ground-based infrastructure to provide inflight connectivity; offers low latency and high capacity but limited to aircraft flying throughout N. America.

GEO (GEOSTATIONARY EARTH ORBIT)

Satellites orbit at approximately 35,786 km above the Earth, remaining fixed over a specific location; provides wide coverage and consistent connectivity but can suffer from higher latency due to the distance.

LEO (LOW EARTH ORBIT)

Satellites orbit at altitudes between 160 km and 2,000 km; offer low latency and high bandwidth, making them optimal for real-time data transmission; require a constellation of satellites for continuous coverage, often used for global internet services.

MEO (MEDIUM EARTH ORBIT):

Satellites operate at altitudes between 2,000 km and 35,786 km; balance between GEO and LEO in latency and coverage; commonly used for navigation, communication, and some internet services, providing moderate latency and coverage area.

Comparing the Benefits of Different Orbits

	GEO	LEO	MEO
Position	Fixed position	Constantly moving	Constantly moving
Number of satellites in a constellation	3-4 satellites	300-3,000 satellites	15-20 satellites
Altitude	36,000 Km	500-1,200 Km	5,000-20,000 Km
Lifespan	15–20 years	5 years	7–10 year lifespan
Coverage	Global coverage, limited in the polar regions	Global coverage, including polar regions, limited over oceans	Global coverage, including polar regions, limited over oceans
Latency	500-600 milliseconds	Less than 100 milliseconds	200-400 milliseconds

In addition to learning about the different networks and the pros and cons of each, there's fundamental terminology when discussing inflight connectivity that can help you make an informed decision for your aircraft.

Bandwidth

The amount of data that can be transmitted over a network in a given time. More bandwidth generally means faster speeds and better performance, especially when multiple devices are connected.

Latency

The time it takes for data to travel from the aircraft to its destination and back. Lower latency means faster response times – important for things like video calls and real-time applications.

Throughput Simplified

Think about driving, bandwidth is the highway, and cars are the data. The more cars on the highway, the more traffic. This traffic and the speed in which the cars are moving is “throughput”.

If you're on a video call, you might notice the quality degrade as someone begins streaming a movie. As different applications and services require different amounts of data, performance may vary as well. Essentially, throughput is the actual amount of data that is successfully transferred from one point to another in a given amount of time.

A Key Comparison: Internet Speed vs. Bandwidth

Internet speed and bandwidth are related but are different measurements of connection quality. These terms seem synonymous but are often confused. Speed refers to the maximum rate you can transmit data, typically measured as megabits per second (Mbps).

Bandwidth refers to the maximum amount of data your connection can handle at any moment, also measured as Mbps. A true measure of internet performance has to do with throughput.

Modem/Router

The onboard hardware that connects the aircraft to the inflight network. It functions like your home Wi-Fi router, managing the flow of data between devices and the outside world.

Antenna

Mounted on the exterior of the aircraft, the antenna enables communication with ground towers (ATG) or satellites. Different systems use different antenna types, which can affect installation, performance, and coverage. For example, Gogo offers both fuselage and tail mount antenna options.

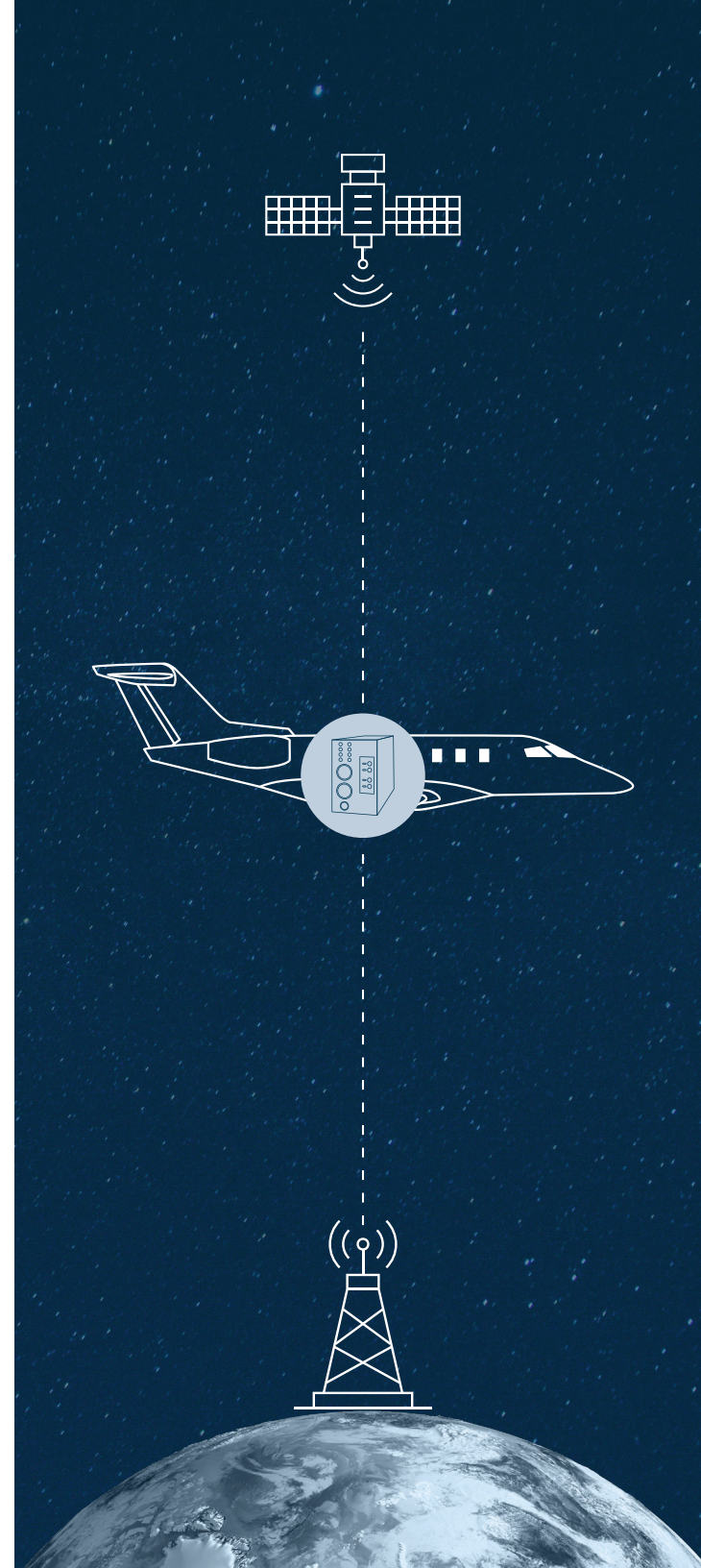
Wi-Fi Coverage Area

Also called the service footprint, this refers to where a particular connectivity system provides coverage – whether only over the continental U.S., across oceans, or globally.

Seamless Handover

The ability of a connectivity system to switch between networks (e.g., from ATG to satellite) without losing connection. This ensures a smooth, uninterrupted experience as the aircraft moves across different coverage zones.

Understanding these terms will help you speak the language of inflight connectivity – and more importantly, make informed decisions when evaluating systems, service plans, or upgrades.





4

CHOOSING YOUR PERFECT INFIGHT CONNECTIVITY

Not all inflight connectivity solutions are created equal – and the “right” one depends on your specific aircraft, mission profile, and priorities.

Whether you’re outfitting a new jet or upgrading an existing system, here are the most important factors to consider when evaluating connectivity options.

Flight Profile

Your typical flight routes play a big role in determining the best connectivity solution.

- Mostly North America flights? Air-to-Ground (ATG) systems may provide reliable coverage and lower latency.
- International or transoceanic flights? You’ll need a satellite-based system that offers global or oceanic coverage.

Understanding where you fly – and how often – helps narrow down your options.

Coverage and Availability

Not all networks offer true global coverage. Make sure the provider’s service footprint aligns with your travel routes. Some satellite networks may have regional limitations or require line-of-sight to specific satellites. Ask about blackout zones, seamless handovers between networks, and redundancy in case of outages.



Connectivity from the sky is not just about technology. You also need reliability, coverage, and service responsiveness from your provider. It’s not just a question of functionality, but also dependability, support and relationships.”

**– Todd Duncan, Chairman,
Duncan Aviation**



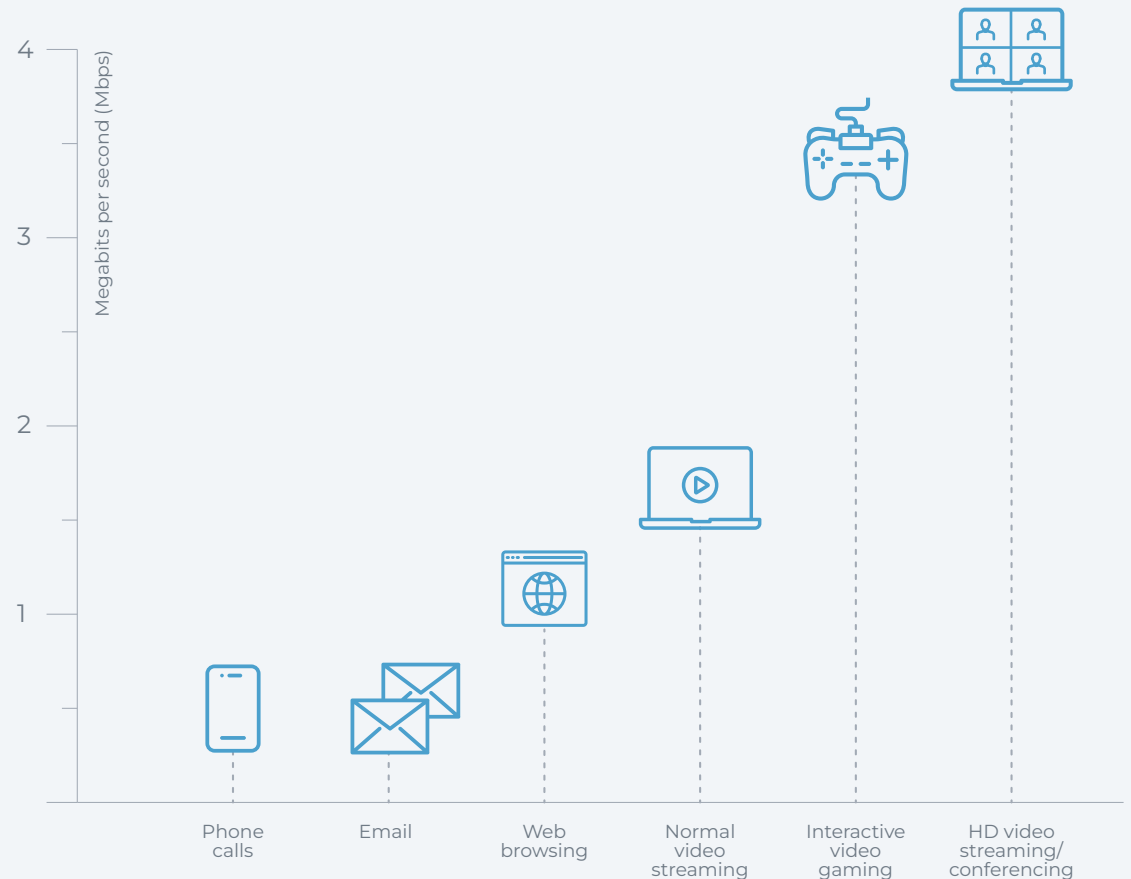
Speed and Performance Needs

Consider how you (and your passengers) intend to use the service.

- Light email and messaging? Lower bandwidth may be sufficient.
- Video conferencing, cloud apps, or streaming? You'll need a higher-bandwidth solution with lower latency.

Evaluate typical onboard usage to ensure you get the performance level that matches expectations.

Speed requirements for common tasks





Cabin Size and Device Load

The number of passengers and connected devices can affect performance. A system that works well for a two-passenger flight might struggle with a full cabin of business travelers using multiple devices. Ensure your solution scales with demand.

Aircraft Compatibility and Installation

Every aircraft has its own technical and structural considerations.

- Does the antenna size fit your aircraft type?
 - Worth noting: Gogo's HDX antenna connecting to the Gogo Galileo LEO network is the only antenna in aviation fitting any size aircraft.
- How invasive is the installation process?
- Will downtime be required during installation or upgrades?

Working with an experienced connectivity provider like Gogo and our expansive dealer network ensures the system is properly matched to your airframe.

Budget and Long-Term Costs

Costs include more than just the hardware. Be sure to account for:

- Upfront equipment and installation
- Monthly service plans (based on region, bandwidth, and usage)
- Maintenance and support

Some solutions offer tiered pricing or pooled data plans to fit a range of budgets. Providers like Gogo offer solutions like SkyTicket which enables charter operators to control passenger-facing connectivity pricing to either off-set service costs or drive new revenue streams.

Security and Compliance

Cybersecurity is increasingly important in aviation. Look for providers that offer:

- Encrypted data transmission
- Support for VPNs or secure enterprise applications
- Compliance with aviation and government data security standards

Futureproofing

Technology evolves quickly. Choose a solution that's adaptable to future upgrades, such as emerging satellite constellations, faster modems, or new network standards. This protects your investment and ensures long-term value.

Choosing the right inflight connectivity solution isn't just about speed – it's about aligning technology with your mission, expectations, and operations. By weighing these factors carefully, you can make a smart, strategic decision that delivers lasting benefits both in the cockpit and in the cabin.

Find your perfect inflight connectivity solution. Use our online tool and answer a few questions about your aircraft and mission, get a personalized connectivity recommendation.

[FIND YOUR SOLUTION](#)

A satellite with a gold-colored body and blue solar panels is in orbit above the Earth. A solid red vertical bar is positioned to the left of the satellite.

5

THE FUTURE OF CONNECTIVITY

IFC continues to evolve, expanding the realm of what's possible and expected in the air.

We'll soon see IFC match the speed and ease we experience from our ground-based connection globally with Gogo Galileo and Plane Simple, and in North America with Gogo 5G.

Gogo is committed to delivering future-proof connectivity solutions that meet the needs of the aviation industry. By adopting a layered approach and embracing technological advancements, we aim to provide seamless, secured, high-performance airborne connectivity for years to come.

Here's a breakdown of some of the changes coming soon to hardware, software, and networks.



Step onto the platform

In any rapidly changing market, adaptability and scalability are crucial.

Inflight connectivity is no different and one of the vital challenges for providers is to show their ability to improve, add-to and support their technology solutions without being disruptive to consumers.

To address this need, Gogo created two future-proof paths: modular architecture for hardware and soft-centric design for the LRUs. The modular architecture allows hardware upgrades to the aircraft without major disruption nor rewiring; whereas, the software upgrades can be rapidly delivered over the air– similar to smartphone updates. When you need to make a change or an addition, you can update easily without ripping and

replacing with an entirely new system.

This represents a new connectivity model that reassures consumers because it means their equipment won't become obsolete. Also, it's sensible for Gogo because it gives us a “home base” for our solutions – a familiar and secure technical ecosystem to grow and develop.



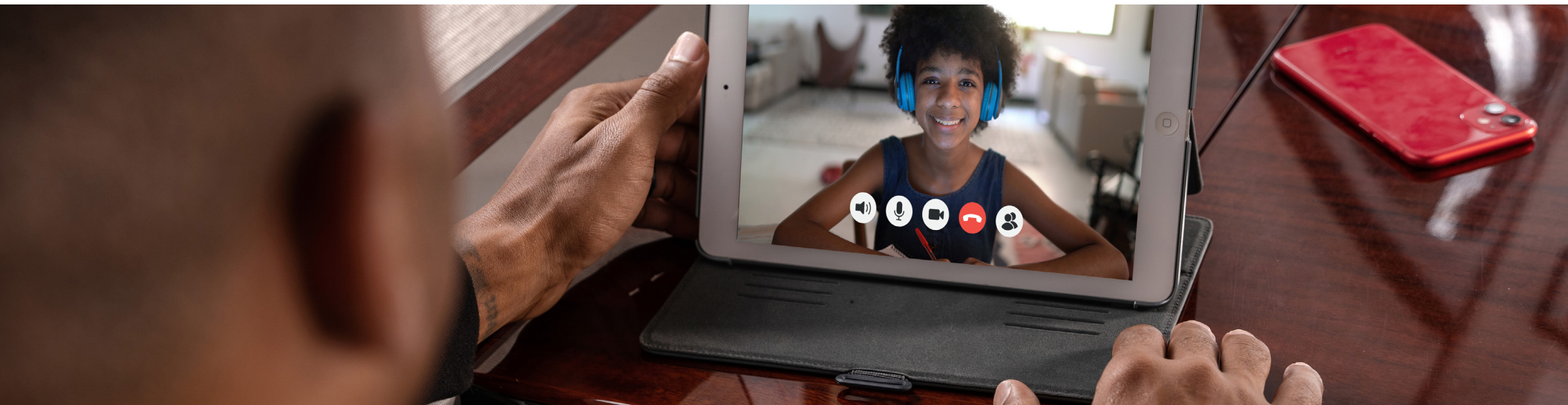
A matter of degree

For consumers, the most apparent changes coming to inflight connectivity will be in the scale of performance improvement, as well as some of the equipment.

Bandwidth and speeds will dramatically improve with new technologies like 5G and those enabled by the evolving LEO and GEO satellite networks. Additionally, the electronically steered antennas used for Gogo Galileo are small and light enough to fit on any size business aircraft, and they don't require a lot of power, all factors that are enabling the service.

In the very near future, we will see more aircraft taking advantage of multi-orbit, multi-band inflight connectivity for redundancy and truly global coverage.

With the increased speed, low latency, and near-100% uptime of Gogo's connectivity solutions today, connected aircraft are becoming some of the most important business enablers available – by a degree unforeseen even five years ago.





6

THE GOGO ADVANTAGE

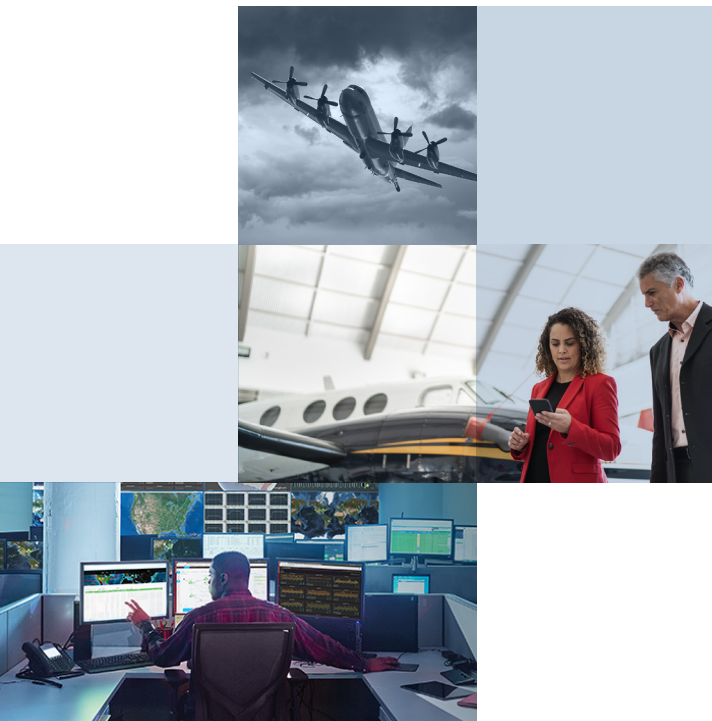
When it comes to inflight connectivity, not all providers deliver the same level of performance, support, or aviation expertise.

For business aviation operators, pilots, and jet owners looking for dependable, high-performing solutions, Gogo stands out as the industry leader. Here's why.

Aviation Expertise

In the world of inflight connectivity, aviation expertise makes all the difference. Gogo isn't just a tech company offering internet in the sky – it's an aviation-first organization with decades of experience serving the unique demands of business and mil/gov aircraft.

From navigating STC approvals to ensuring seamless integration with onboard systems, Gogo's solutions are engineered to perform reliably at altitude – minimizing downtime and maximizing value for pilots, operators, and owners.



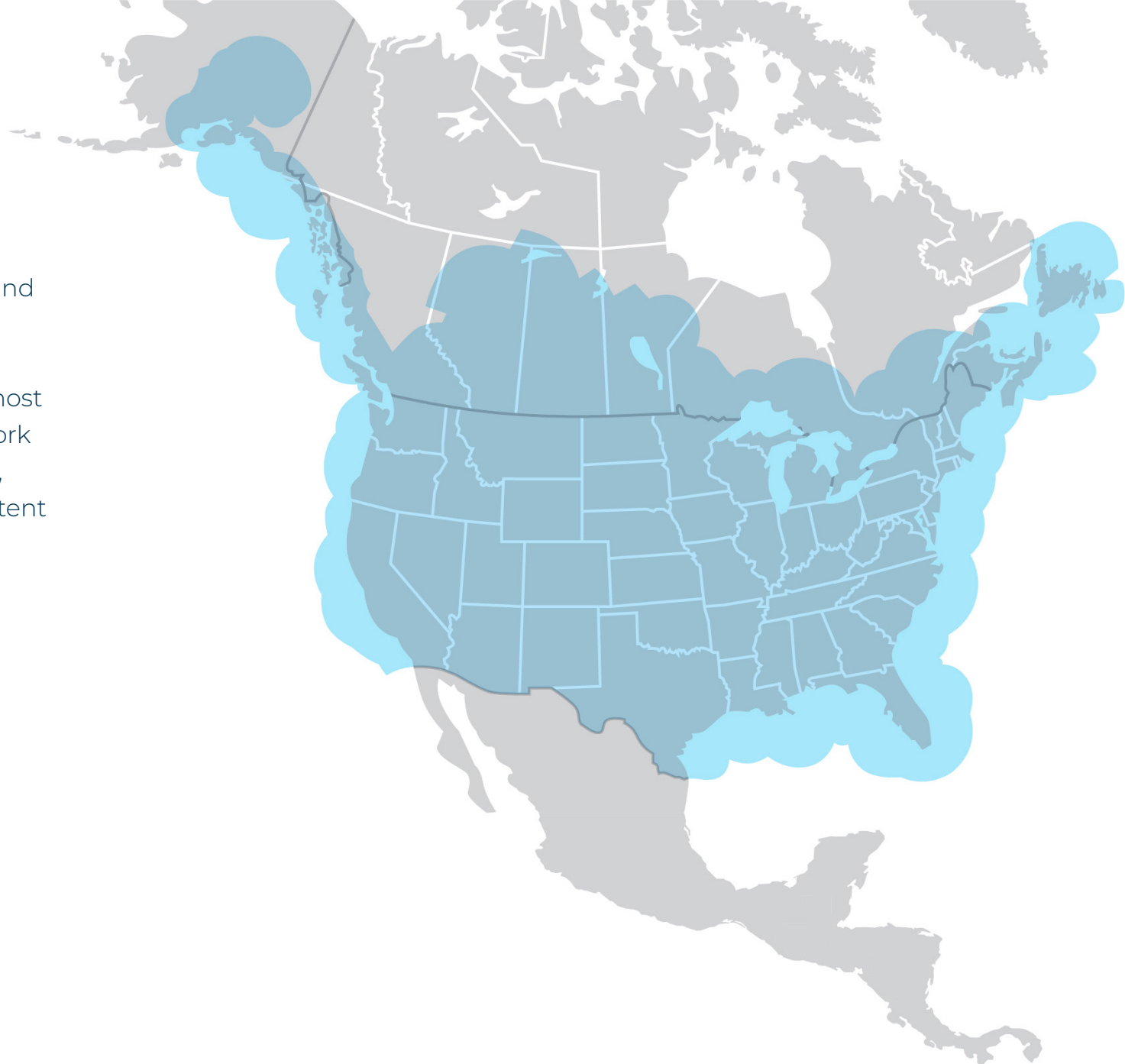
The Most Proven Network in North America

Gogo's nationwide Air-to-Ground network has been refined over decades and now supports thousands of aircraft. It's the most trusted and widely used network of its kind, offering low latency, seamless handoffs, and consistent performance.

**GOGO'S ATG NETWORK
CONNECTS OVER**

6,500

AIRCRAFT



A satellite network is depicted over a dark, cloud-covered Earth. Numerous bright, glowing nodes representing satellites are connected by thin, curved lines, illustrating global connectivity. The background shows the Earth's surface with some landmasses and city lights visible.

Truly Global Satellite Options

For operators flying internationally or over oceanic and polar routes, Gogo partners with leading satellite providers to deliver high-speed global connectivity for any size aircraft. This gives customers the flexibility to choose the right solution – whether it's LEO, GEO or a hybrid of both.



Smart, Scalable Technology

Gogo systems are built to evolve. From modular hardware to over-the-air software updates, Gogo's platforms are designed for long-term value. They integrate seamlessly with cabin systems, cockpit applications, and future enhancements – so your aircraft stays connected and competitive.



Unmatched Customer Support

Connectivity is only as good as the support behind it – and Gogo delivers.

- 24/7 technical support from aviation experts
- Extensive dealer network for installation and service
- Remote diagnostics and monitoring to proactively resolve issues
- Training and tools for flight departments and operators

Whether you're installing your first system or managing a fleet, Gogo's support team is a trusted partner every step of the way.





7

CONCLUSION

Inflight connectivity now serves as a cornerstone of the travel experience, enhancing productivity and personal connections for various users onboard.

With a myriad of options available and the technological landscape continuously evolving, it is crucial to prioritize and choose the right system based on specific needs.

Investing in a reliable connectivity solution not only meets current demands but also prepares users for the advancements just around the corner. Gogo's approach, now

and in the future, is to deliver connectivity solutions that meet the needs of the aviation industry. Our future-proof portfolio of multi-band, multi-orbit and ATG connectivity solutions provide a seamless, secured, high-performance inflight experience. Gogo is committed to you and a superior customer experience.





Ready to connect your fleet?

Get in touch with a
Gogo connectivity
expert today.

CONNECT

