Building the First Nationwide 5G Network for Aviation

Gogo and Cisco: A partnership with a proven history

Customer summary

Customer name
Gogo, Inc.

Industry
Technology, aviation, and telecommunications

Locations
Chicago, IL (Gogo, Inc.); Broomfield, CO (Gogo Business Aviation)

Number of employees
1,128 (Gogo, Inc.)

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CISCO

Business challenge

- Sought to create a leading inflight Wi-Fi experience with faster service and greater bandwidth
- Needed the network to be scalable and future-proof for expanded capacity and emerging technologies
- Required reliability through redundancy with the company's existing 3G/4G network

Network solution

- Integrates Cisco 5G core systems
- Leverages existing Gogo tower infrastructure which consists of more than 250 towers
- Incorporates network components and on-board equipment that is 5G capable
- Takes advantage of both licensed and unlicensed spectrum to provide more bandwidth to aircraft

Business results

- Designed a solution that is minimally invasive and convenient to install
- Leveraged existing infrastructure and incorporated scalability so Gogo can add more frequencies and capacity to the network without forcing customers to swap out hardware
- Delivered higher performance in the network without the need to build an entirely new network, while aggregating existing 3G/4G networks to strengthen overall channel signal

Deploying 5G in the air is complicated

As ground carriers begin to deploy 5G connectivity, inflight connectivity provider Gogo wanted to offer the same to its users. With a goal of reducing the gap between airborne and ground connectivity, the company announced plans to build the first 5G network dedicated specifically to aviation. However, creating and operating a network is complicated, especially one that communicates with systems onboard an aircraft traveling at more than 500 miles per hour at an altitude of 35,000 feet and higher. With a history of building and operating airborne networks, Gogo knew it needed a strong network of partners and vendors to help turn its 5G dreams into reality. The company partnered with Cisco to create Gogo 5G, which it intends to be significantly better than other available inflight Wi-Fi networks, offering reliable connectivity to North America business aviation customers at a lower price point and with lower latency than satellite networks. The goal is to provide faster service and greater bandwidth, in addition to offering reliability through redundancy with the company's existing 3G/4G network.

Some ground-based wireless telecom providers can make it sound like deploying 5G is simple, straightforward, and easily delivered; however, 5G in the air isn't the same as 5G on the ground. Building, deploying, and servicing a network from scratch without the experience of a partnership such as the one Gogo and Cisco have would be risky.

> "Deploying and operating a North American ground-based network is challenging; the scale and support can be overwhelming. Together, Gogo and Cisco have created solutions for success where competition has failed."

Mike Schnepf, Sr Director of Network Engineering at Gogo

Working together on a solution

Over the past decade, Gogo and Cisco have worked together to revolutionize the inflight connectivity market. Since 2007, Gogo has connected thousands of aircraft and millions of users globally using network technology and solutions from Cisco. The Gogo 5G solution uses core 5G technology from Cisco, which will enable the combined Gogo-Cisco solution a competitive advantage that would be difficult to replicate. The 5G service builds on the successful deployment of the Gogo 4G network, which includes data center support from Cisco.
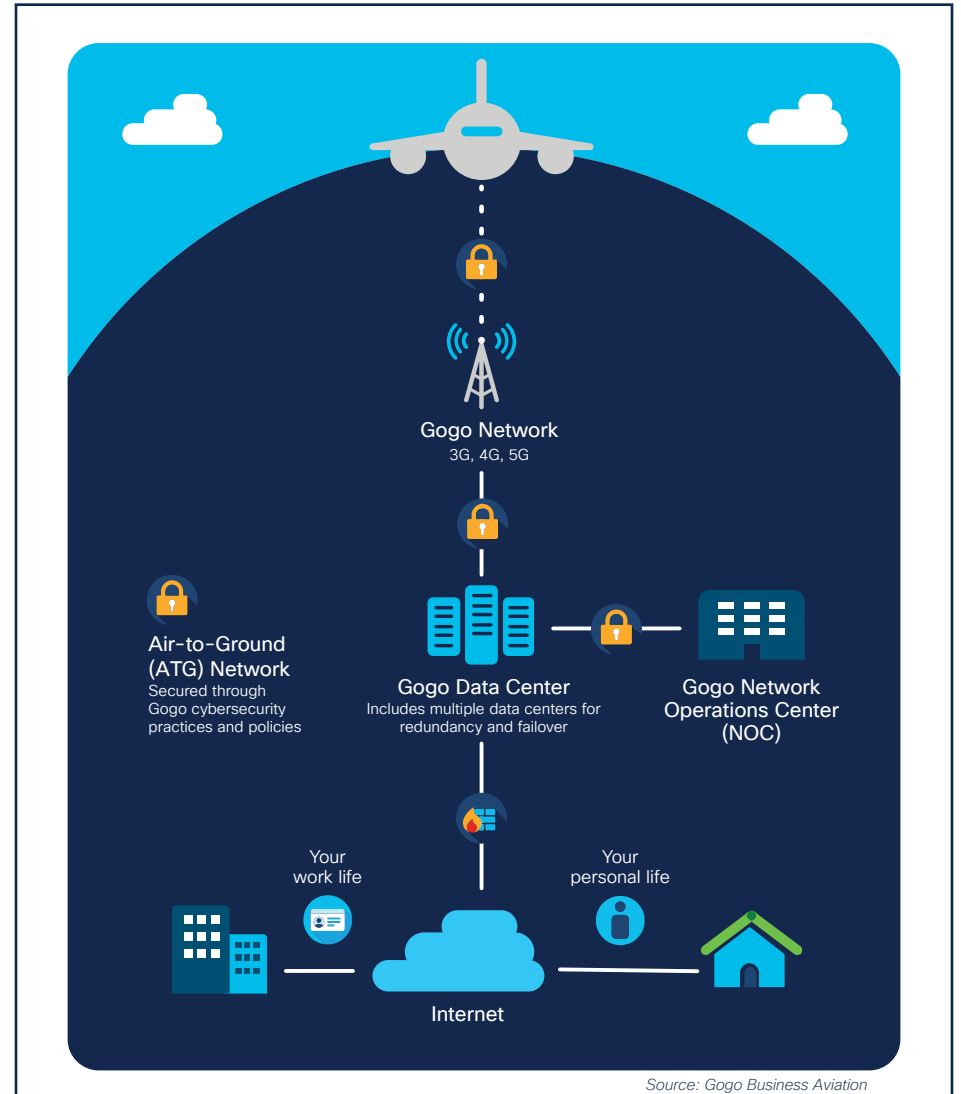
Gogo 5G service is expected to roll out soon in North America (at launch, Gogo 5G will be a nationwide network across the contiguous United States). Expanded coverage to Canada and additional capacity is expected to be added in 2022. The dedicated network serves only aviation and leverages an existing tower infrastructure of more than 250 towers. Enabling 5G requires that all the network components to be 5G capable as well as the on-board equipment. The Gogo 5G network will incorporate the same 5G technology systems, components, and infrastructure that ground-based wireless carriers will use. It also will have the benefit of channel bonding with the Gogo 3G/4G network using licensed and unlicensed spectrum to provide more bandwidth to the aircraft. Using unlicensed spectrum in 2.4GHz band for air-to-ground allows an order of magnitude increase to existing licensed band ATG system capacity.

Unprecedented inflight Internet

The Gogo 5G solution is being designed to be as minimally invasive and convenient to install as possible and also will help Gogo take advantage of technological advances as they become available. The network will support all spectrum types (licensed, shared, unlicensed) and bands (mid, high, low). For users, the 5G system will provide an unprecedented inflight Internet experience for travelers across a range of missions, flight paths, use cases, and aircraft types. With 5G, better streaming capabilities become available along with other advanced capabilities.

The network is scalable so that Gogo can add more frequencies with an easier upgrade path including minimal hardware impact. Gogo also is able

to deliver higher performance in the network without the need to build an entirely new network. The move to 5G is a natural progression because many of the same Gogo network professionals who built their prior networks are still with the company.

Gogo Network
3G, 4G, 5G

Air-to-Ground
(ATG) Network
Secured through
Gogo cybersecurity
practices and policies

Gogo Data Center
Includes multiple data centers for
redundancy and failover

Gogo Network
Operations Center
(NOC)

Your
work life

Your
personal life

Internet

Source: Gogo Business Aviation

Innovation for the future

A significant differentiator is that Gogo directly manages almost all of its network infrastructure and designs and builds most of its onboard systems. This level of ownership and coordination is unique to Gogo, and it allows the company to maintain dependability and service excellence.

Even after the 5G network is deployed, Gogo's 3G/4G network will remain operational. The 5G network adds capacity without sacrificing any of the capabilities of the existing network. With its immediate benefits, 5G also puts Gogo in the position to innovate more quickly and bring new services to market faster so it can provide the latest connectivity solutions to business aviation clients well into the future.

Learn more

- Cisco 5G Solutions
- Cisco Core Product Portfolio

Product list

The Gogo 5G Network will consist of:

- Gogo - AVANCE L5 System; X3 (5G LRU); tower infrastructure
- Cisco - Ultra 5G Cloud Core and Data Center Support
- Airspan - Air5G product line including base station technology; Massive MIMO antenna arrays
- FIRST RF - Fuselage-mounted blade style multiband aircraft antennas