Cybersecurity program & best practices

How Gogo Business Aviation secures its airborne networks and inflight internet systems

Live Webinar
Thursday, September 28, 2017
Welcome & housekeeping notes

• Webinar covering how we secure our airborne networks and inflight internet systems

• Want to ask a question?
  • All phones are muted during the webinar
  • To ask a question, use the chat function on the lower left side of your screen
  • Q & A at end of the webinar
Today’s presenters

Brett Bradshaw
VP & Chief Information Security Officer
Gogo Corporate

Doug Young
VP, Software Architecture
Gogo Business Aviation

Matt Kocsis
Software Engineering Manager
Gogo Business Aviation
IMPORTANCE OF CYBERSECURITY TO BUSINESS AVIATION
Ensuring Cybersecurity drives Shareholder Value

Being secure enhances Gogo’s brand reputation by preventing information breaches

Providing security protects customers and puts them first

Building security proactively instead of reactively allows Gogo to stay ahead

Cybersecurity direction is provided by the Board of Directors and Senior Leadership

Being serious about cyber before events occur ensures Gogo is prepared

Cybersecurity and the aviation industry
Gogo Business Aviation and its airborne network

• Clear standards at all stages of development and delivery
• Leverage state-of-the-art enterprise networking design
• Continuous monitoring and analysis to identify potential risks
• Partner with FAA and other aviation stakeholders to lead in defining best practices
OUR NETWORK COMPARED TO OTHER PUBLIC WI-FI NETWORKS
Connecting at home, work or other network
Connecting to Gogo airborne network
SECURED AIRBORNE NETWORK
Air-to-Ground (ATG) network secured through Gogo cybersecurity practices and policies.

Satellite network(s) secured by trusted third-party providers.

Gogo Network Operations Center (NOC)

Gogo Data Center
Includes multiple data centers for redundancy and failover.

Gogo Biz® Network

Internet

Securely shop, bank, share, and send messages online.

Your personal life

Your work life

Securely send emails, presentations, spreadsheets, and conduct video conferences. Supports access to VPN.
On-board aircraft equipment isolation

• Open 802.11 and secure 802.11 wireless standards via WPA2
• Gogo-supplied router prevents aircraft system intrusion
• Set up for listen only mode to aircraft broadcasts
• Other aircraft system components not accessible through Wi-Fi clients
Onboard inflight connectivity domains

- Three domains:
  - Aircraft control, airline information services, and passenger information services

- Airborne router:
  - Only passenger and flight crew devices (EFB, mobile, telephony) connect directly to router
  - Read only access to aircraft DCU
Secured air-to-ground network communications

Data transfer between aircraft, ground stations and Gogo data center

• Use of licensed spectrum with proprietary link encapsulation

• Sound network design:
  • Linux firewall protection
  • Terrestrial network with two stateful firewalls, plus security measures
  • Multiple data centers
CYBERSECURITY BEST PRACTICES
Gogo Network Operations Center (NOC)

Continuous monitoring and support of airborne network:

- 24/7/365 Tier 1 & Tier 2 support
- Staff of data systems, wireless and IP support analysts
- Access-controlled environment for assured security
- Ability to quickly identify and respond to potential threats
Gogo cybersecurity best practices

• Monthly system vulnerability assessments
• Routine penetration tests and firewall analysis
• Firewall audits
• Awareness training: general security and secure coding
• FAA cybersecurity guidelines

• Compliance certifications
• Security policies
• Event log monitoring
• Endpoint security
• Privileged user access reviews
• Risk assessments
ONLINE BEHAVIOR BEST PRACTICES
When you connect in flight:

Use:
- VPN when connected to the network
- Adblocker to protect from malicious ads
- An endpoint protection service
- Two factor authentication
- A password manager to store passwords
- A privacy screen

Other considerations:
- Refrain from accessing sensitive sites or materials
WHAT’S NEXT?
Future cybersecurity initiatives

• Cybersecurity is a journey, not a destination

• Pioneer comprehensive security posture across business aviation

• Continue to work closely with FAA and other aviation stakeholders
Our mission

Give our customers the security and knowledge they need to trust Gogo Business Aviation with their personal and business lives online and in the air.
Available resource:

business.gogoair.com/airborne-security-summary
Thanks for attending!

Q & A