



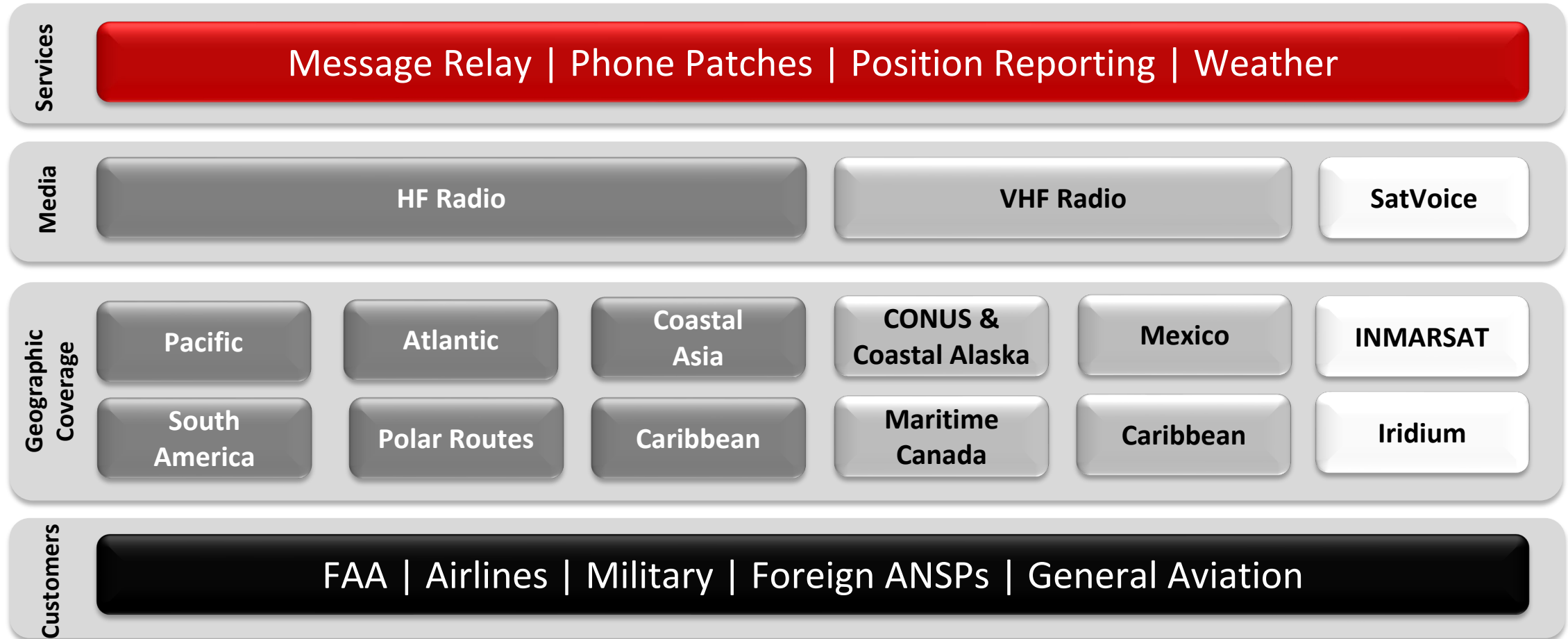
# COLLINS AEROSPACE

## SATVOICE IMPLEMENTATION

*Prepared for ISPACG 4-6 June 2024*

# AVIATION VOICE SERVICES

AMCS + AGIR + AGDR + ANSP SERVICES



Delivering communications services to the air transport industry across all media to support Air Traffic Control and Aeronautical Operational Control  
Ensuring aircraft safety through the reliable delivery of over 1,750,000 messages per year.

# COLLINS AEROSPACE COMMUNICATION CENTERS

## NEW YORK COMMUNICATIONS CENTER



**Management**  
4 Leaders  
5 Shift Managers



**HF Frequencies**  
32 Frequencies in 8  
Radio Groups



**Radio Operators**  
48 Radio Operators



**VHF Radio Sites**  
20 Sites in  
2 Simulcast Nets



**Maintenance**  
4 NYC Technicians



**Radio Contacts**  
85,000 Radio Contacts  
per Month

## SAN FRANCISCO COMMUNICATIONS CENTER



**Management**  
4 Leaders  
5 Shift Managers



**HF Frequencies**  
44 Frequencies in 15  
Radio Groups



**Radio Operators**  
55 Radio Operators



**VHF Radio Sites**  
120 Sites in  
8 Simulcast Nets



**Maintenance**  
4 SFO Technicians  
2 Hawaii Technicians



**Radio Contacts**  
60,000 Radio Contacts  
per Month

# AIR GROUND INTERNATIONAL RADIO

AIR TRAFFIC CONTROL COMMUNICATIONS



# TWO-STAGE SATVOICE DIALING



## Two-Stage dialing over PSTN

- PSTN access to Inmarsat and Iridium aircraft terminals
- International number dialed by person or PBX/Voice Switch speed dial using DTMF tones
- Ground-to-Air (GtA) calling can take 20+ seconds even with pre-programmed speed-dials
- Air-to-Ground (AtG) Caller Line Identifier (CLI - Caller ID) is unreliable particularly across international boundaries
- Without reliable CLI, cannot process Emergency calls

+ CC - ### - ### - #### - wait for call answer - ##### - wait for authentication - #####

International phone number                      User ID and PIN                      Aircraft ID and Priority

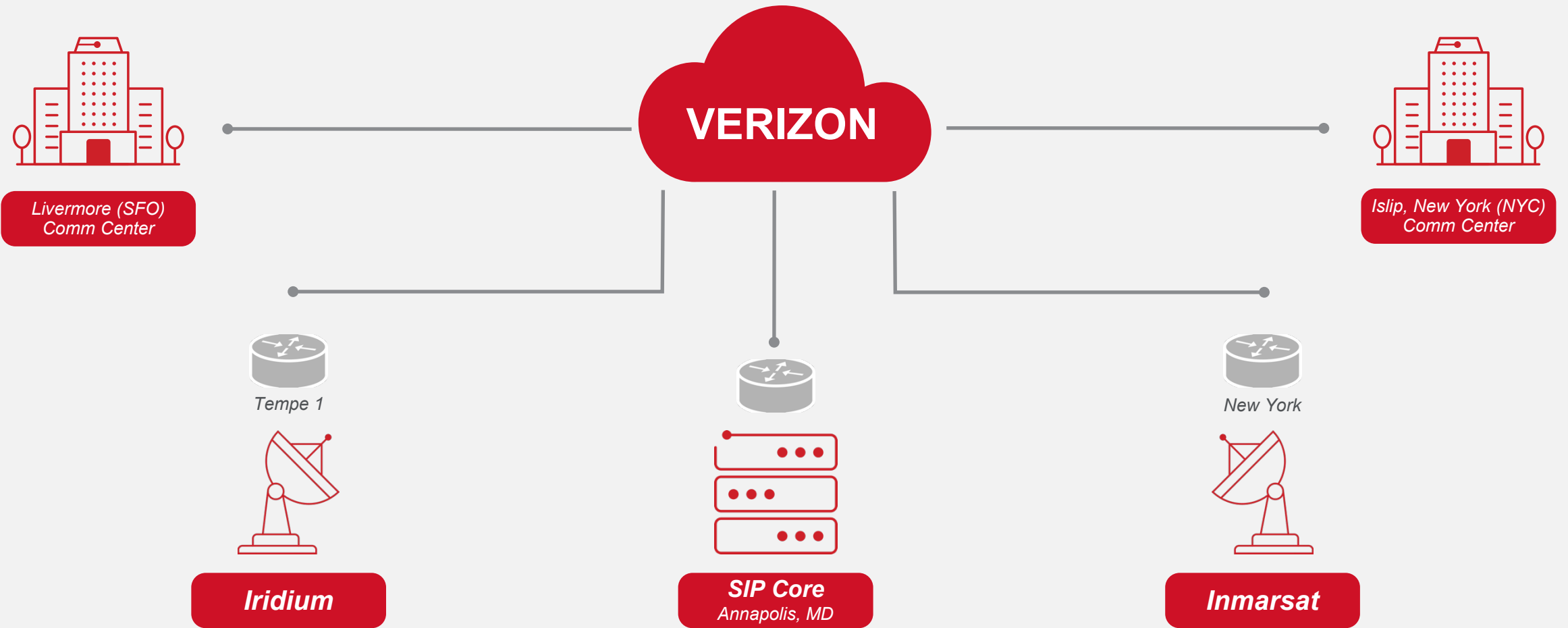
# ONE-STAGE SATVOICE

## Private VoIP WAN dedicated to SatVoice enables

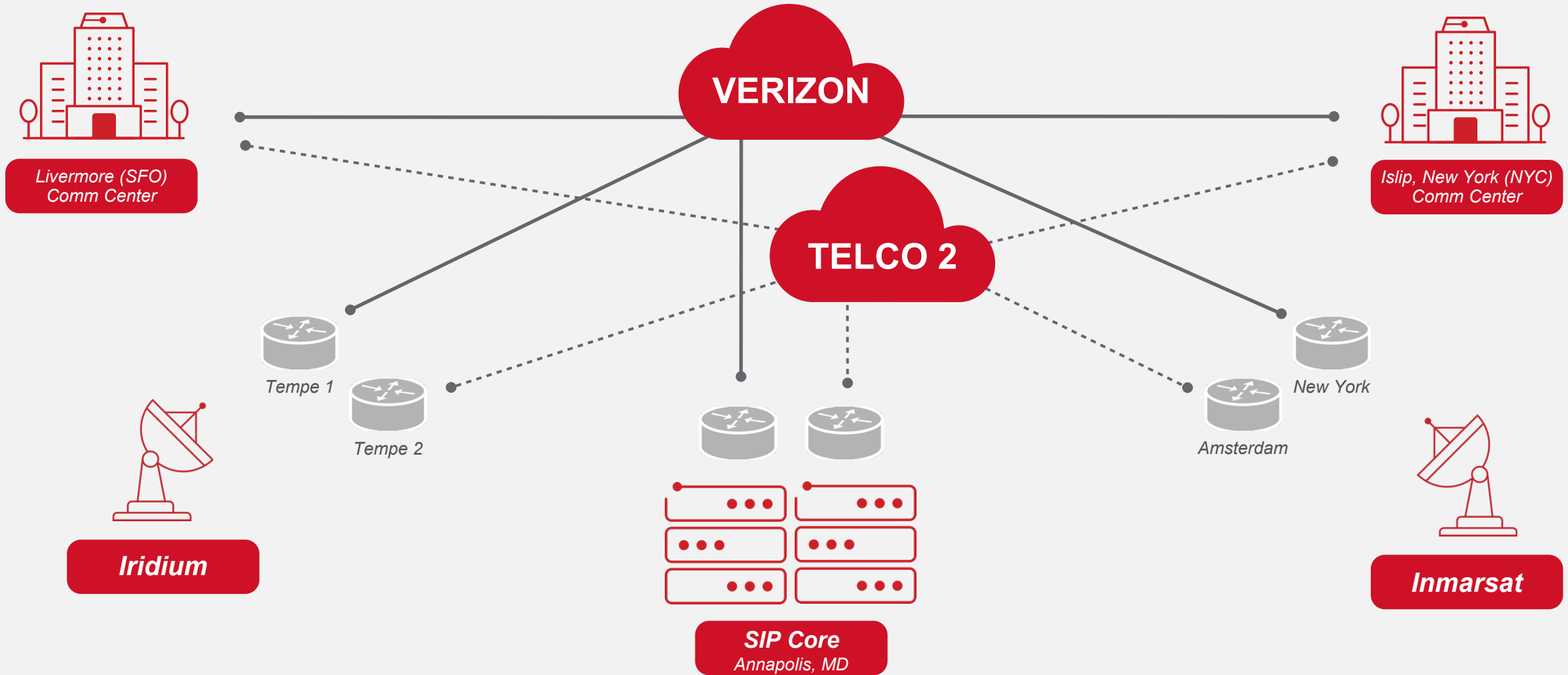
- Closed loop VoIP network dedicate to SatVoice call management
- Call setup (ground segment) with the transmission of an IP message in less than 1 sec
- Structured data elements that include aircraft octal and call priority
  - Allows special routing for Emergency calls
  - Call routing based on aircraft octal



# ONE STAGE DIALING - CURRENT STATE



# ONE STAGE DIALING - FUTURE STATE





# LAB TESTING RECAP

- **Inmarsat Call** testing performed between **Collins Communications Center** and test bench avionics prior to flight trials
  - Burum and Paumalu (Classic Aero)
  - Cobham test bench (SBS v1)
  - Q12 (Flight Safety) priority only
  - Q15 (Emergency) performance validated by internal Collins test
- **Iridium** calls tested between a mobile handset equipped with aircraft SIM
  - With Iridium Testbed
  - With NYC Radio and SFO Radio
  - Aircraft trials coming shortly

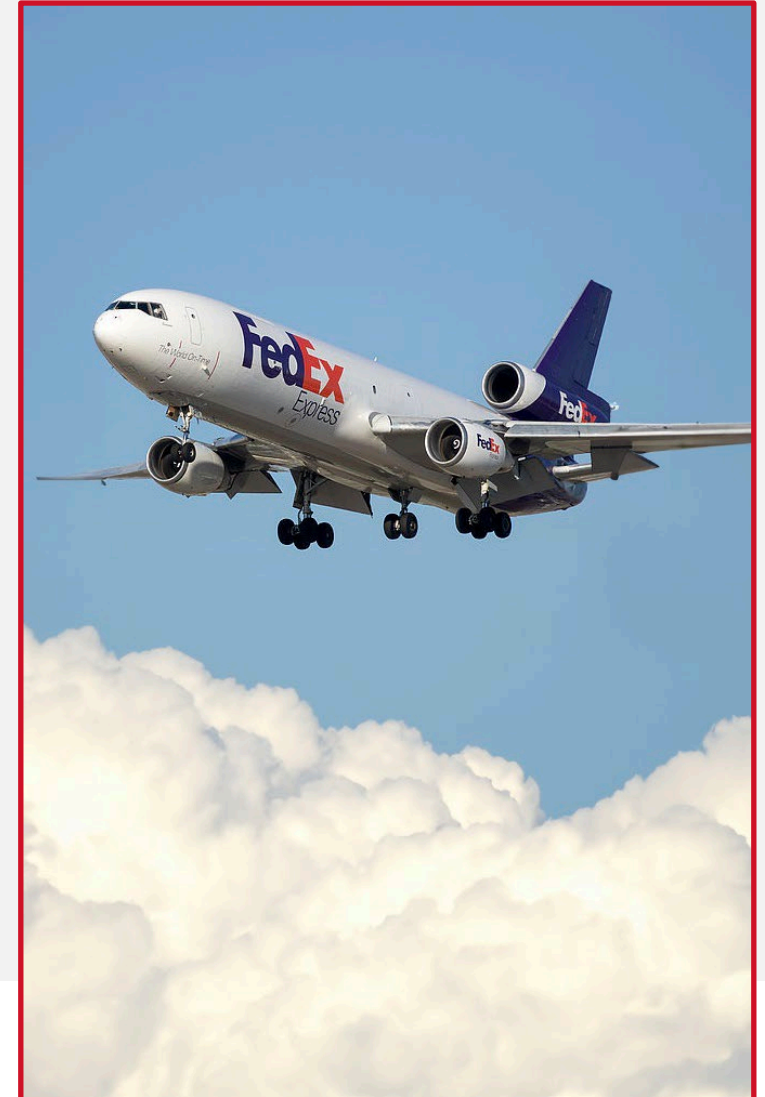


# INMARSAT CALLBACK CHECKS WITH FEDEX

- Effort ran from 21 Feb – 22 Jul
- 670 “Reverse” callback checks
- Some in conjunction with SELCAL check, others in Gander airspace were “cold called”

## Observations:

- Good audio quality, faster call setup time
- Failures were due to calling a/c not logged on, ring no answer, or Collins operator using the dialing GUI improperly
- No unresolved defects within the one-stage dialing system



# NEXT STEPS – IRIDIUM CALLBACK CHECKS



Iridium-Collins  
integration testing  
concluded in February



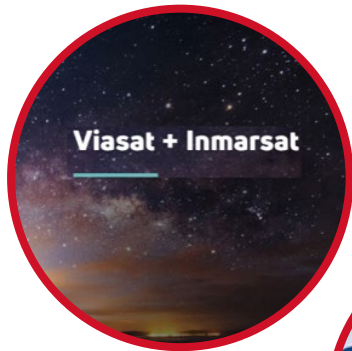
**Planning for Iridium  
callback checks is  
underway**

- Reverse callback checks
- Will involve several US Airlines
- NYC and SFO Radio and several airline participants
- No ATC communications



FAA, Collins, Airlines,  
PARC/CWG to revisit  
Safety Management Panel  
actions, gather/validate  
operational requirements,  
define objectives/scope for  
operational trials

# NEXT STEPS



*Continue to work with Regulators, Constellation Partners, and Airlines customers to foster the approval of SatVoice as a Long Range Communication System.*



*Collins is seeking additional ANSP trial users and airline participants to add to the effort.*



# QUESTIONS?