

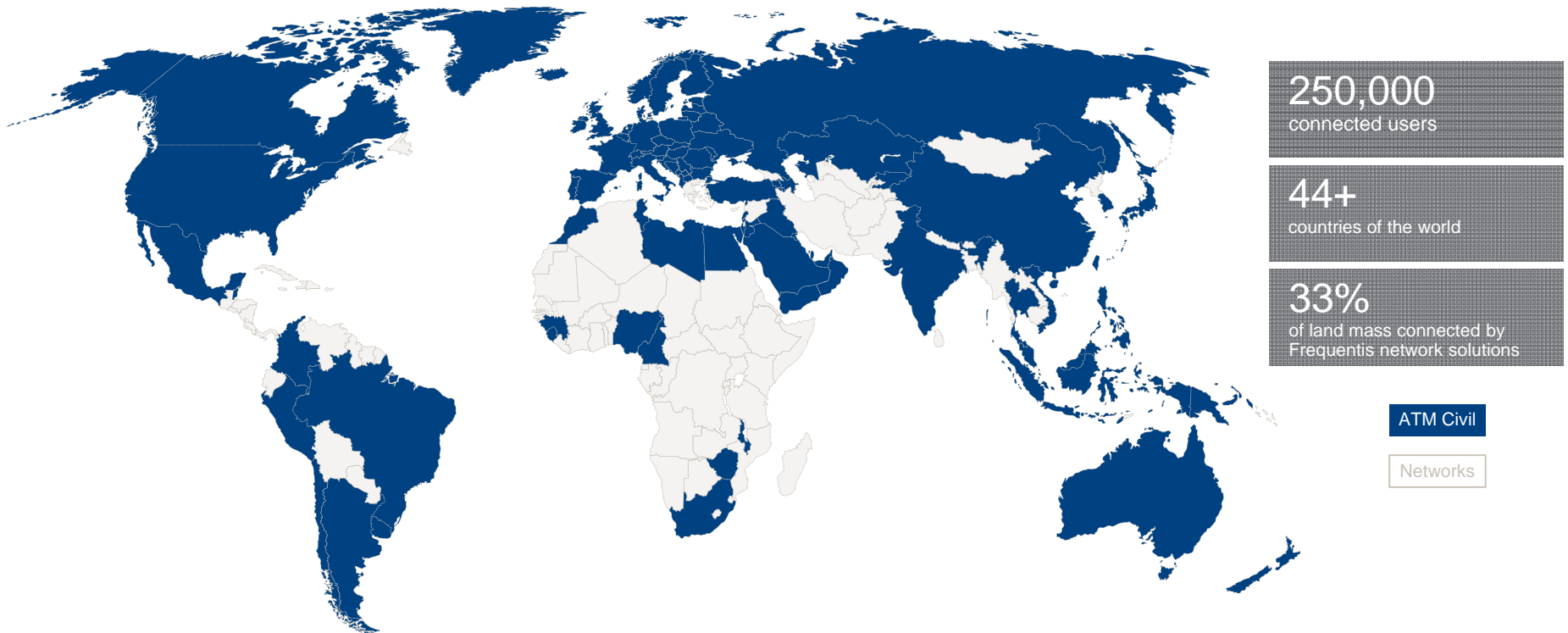
FREQUENTIS
FOR A SAFER WORLD

vitalsphere

ATM-grade network references

High performance, safety and security

ATM civil references



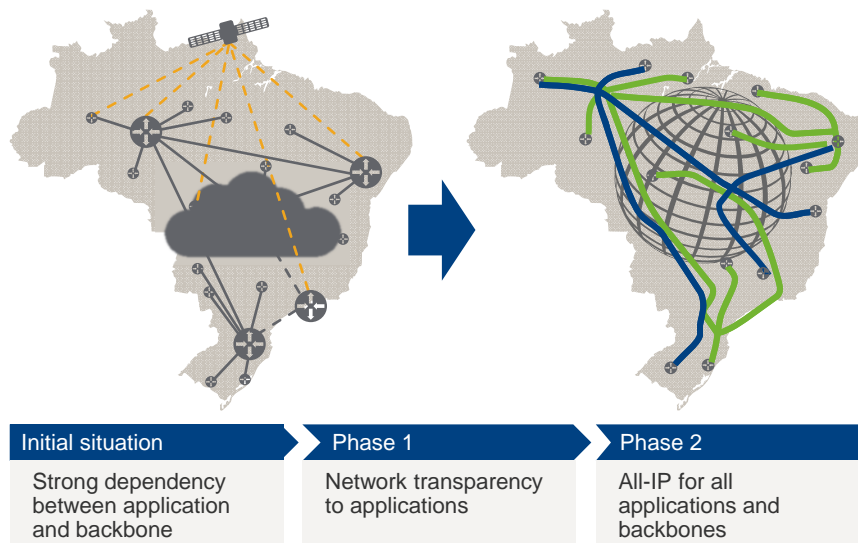
High performance, safety and security

Networks



ATN-Brazil – NextGeneration converged & hybrid ATN Network

Migrate to ED-137 compliant solution to increase the efficiency, reliability and security of ATM



voice and data service delivery points
converged network serving operational and administrative applications
hybrid network integrating satellite and terrestrial TDM- and IP WANs
umbrella network management including network simulation

1st

SDN Air Traffic Management network

>90%

bandwidth reduction

Act before failure

real-time NW performance measurements

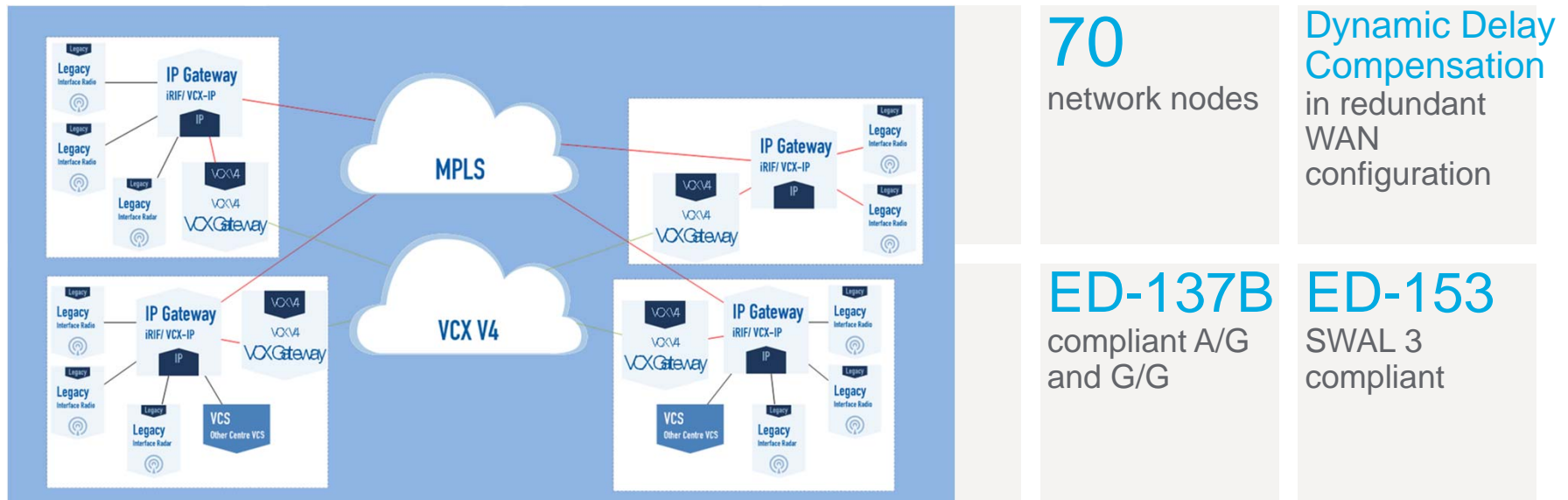
99,9997%

end-to-end availability

» This ATM-grade network solution provides DECEA a high level of operational flexibility and scalability for future Brazil ATM demands

Mexico

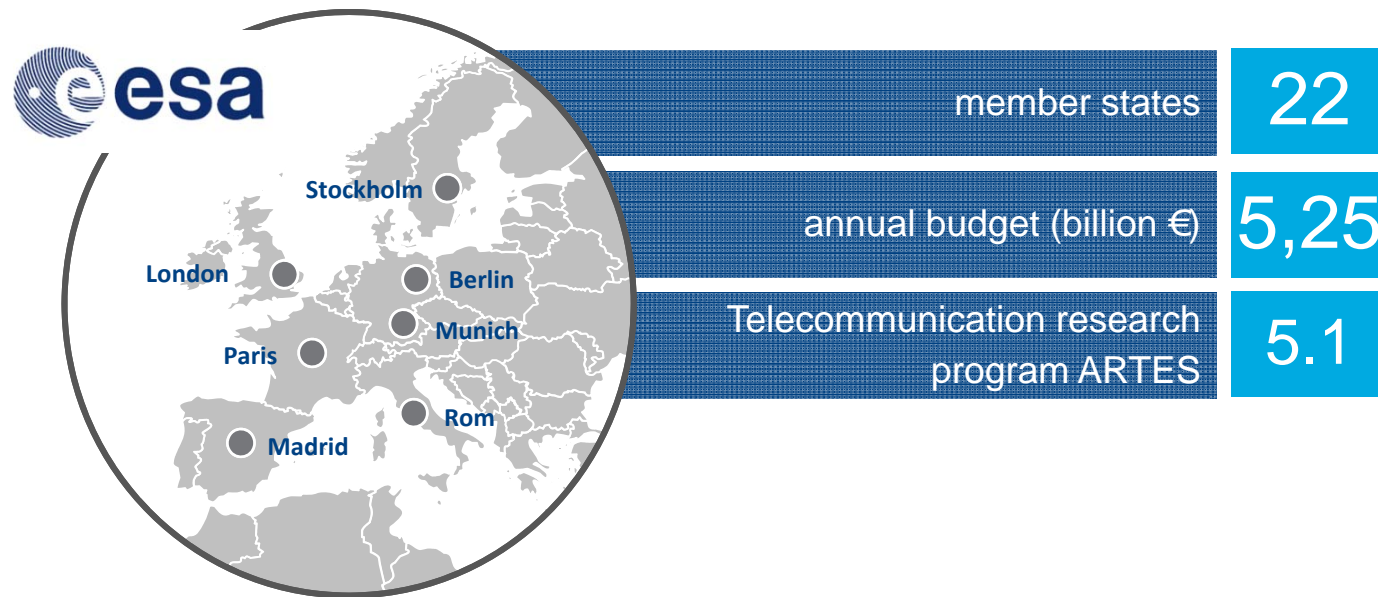
Seamless migration to integrated voice&data IP wide area network



» This solution offers a step-wise migration of all safety critical operational radio and voice services to the new MPLS/IP infrastructure without impacting on-going operations.

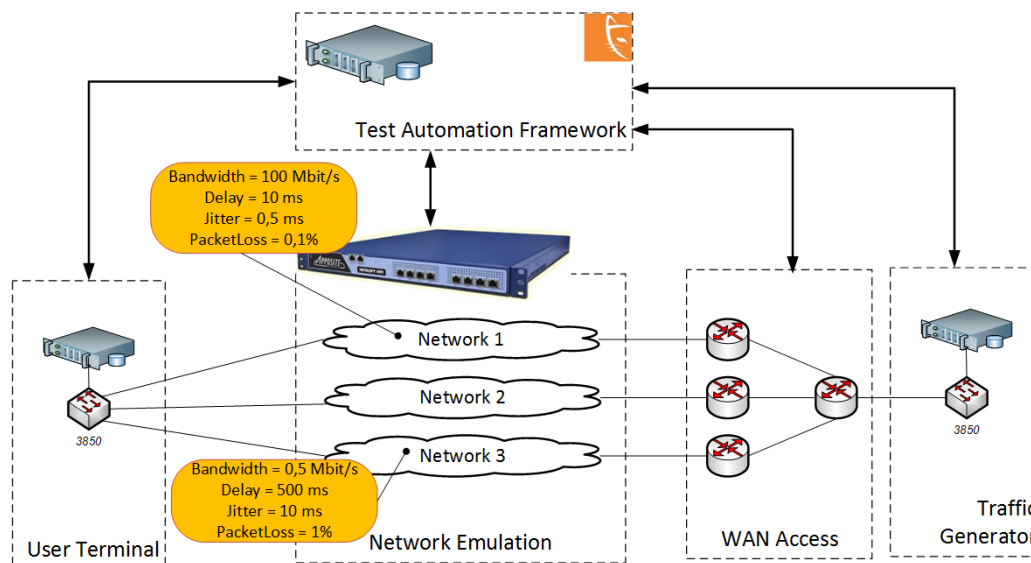
European Space Agency (ESA)

Defining the future of the role of converged IP networks for safety critical applications



European Space Agency (ESA)

Simulating the interaction of different networks to automatically verify the behaviour of ATM applications on IP networks



Functionality

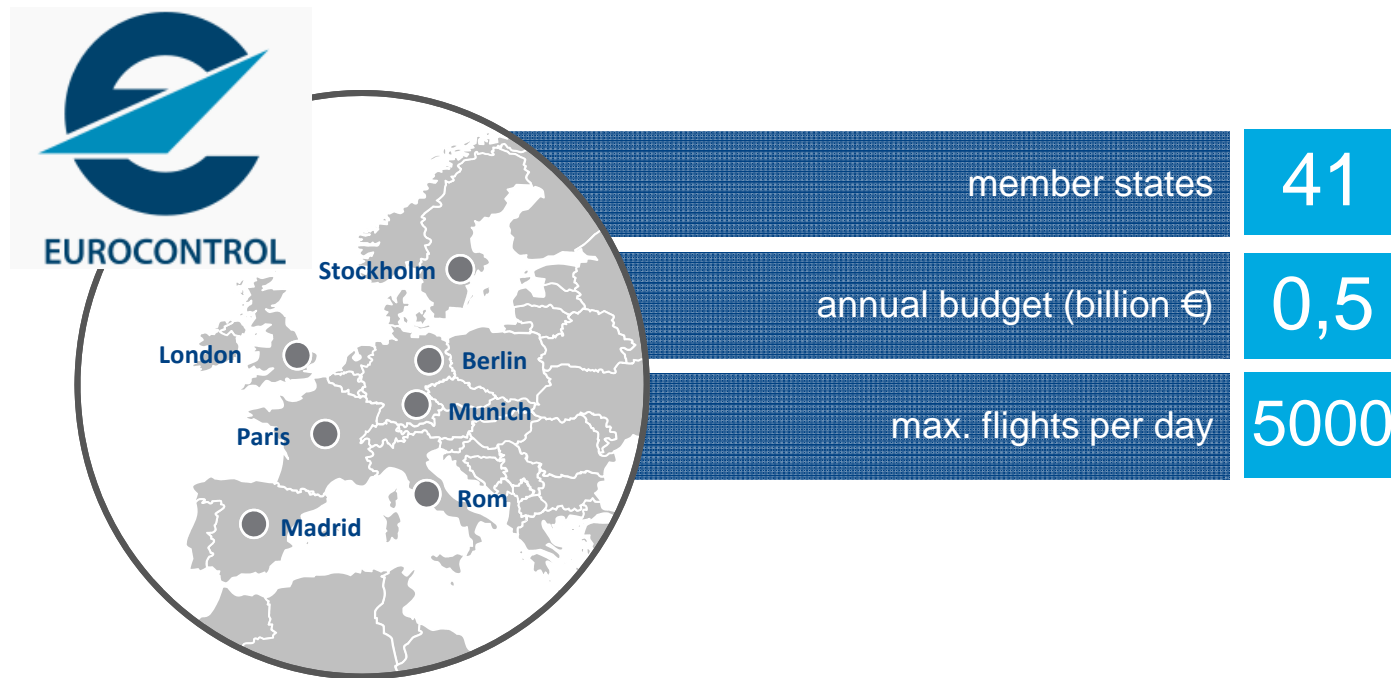
- Integration of multiple parallel networks
- Automated simulation of different network scenarios
- Simulation of Link and Cross Layer information generation
- Routing Management in Hybrid networks

Characteristics

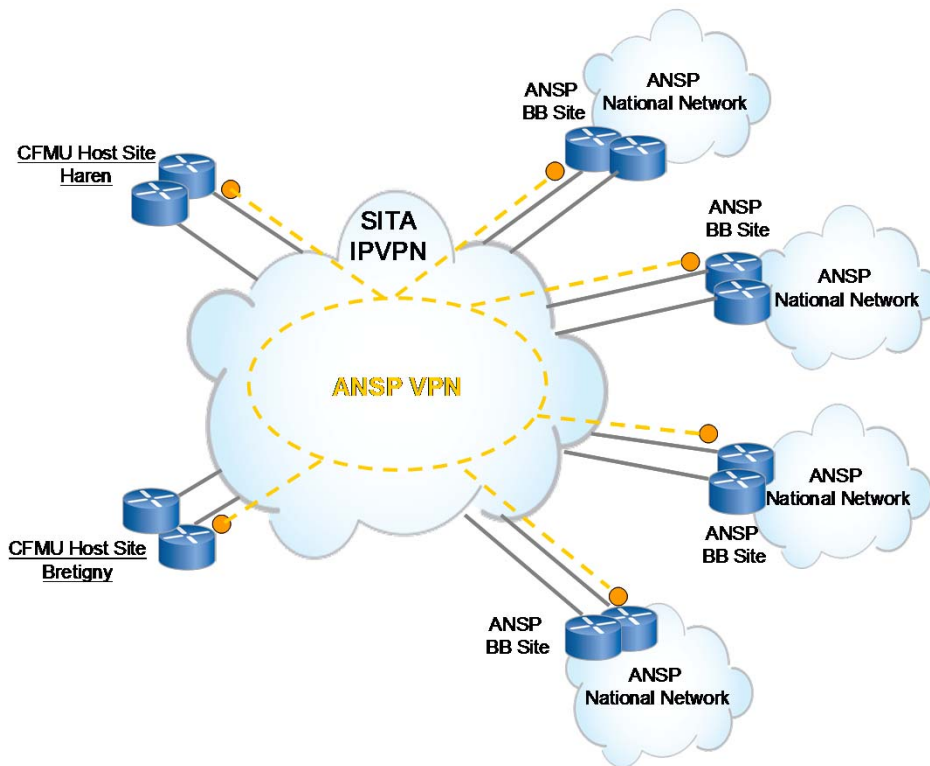
- State of the art testbed to simulate up to three parallel networks
- Support of different network types: VSAT, MPLS etc.
- end-to-end QoS management
- cross-layer interaction

Eurocontrol

Managing and driving innovation in the European airspace



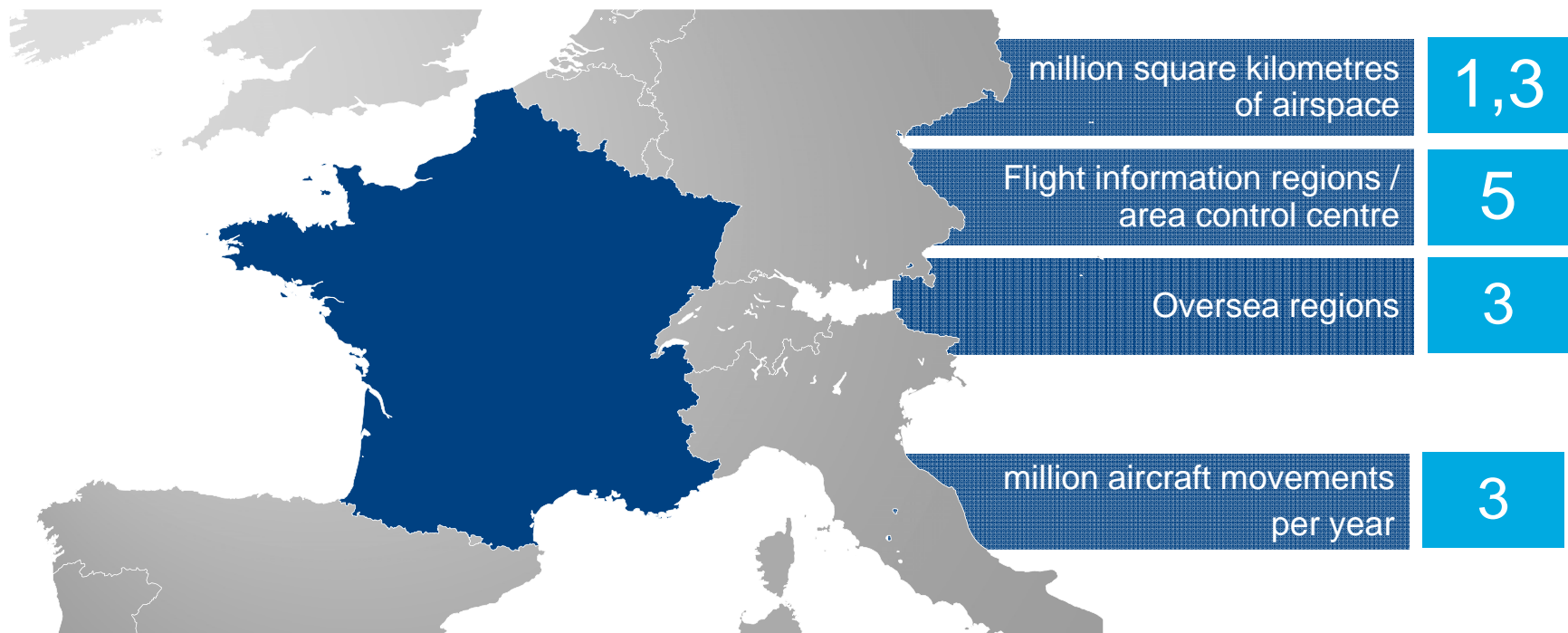
Implementation of operational VoIP for CFMU in course of PENS Service Provision



- Step-by-step migration of ANSP infrastructure possible
- The PENS network with VCX gateways supports legacy VCS equipment
- It may also support EUROCAE WG 67 compliant IP based VCS interfaces (ED-137)
- Frequentis gateways support redundant access

France

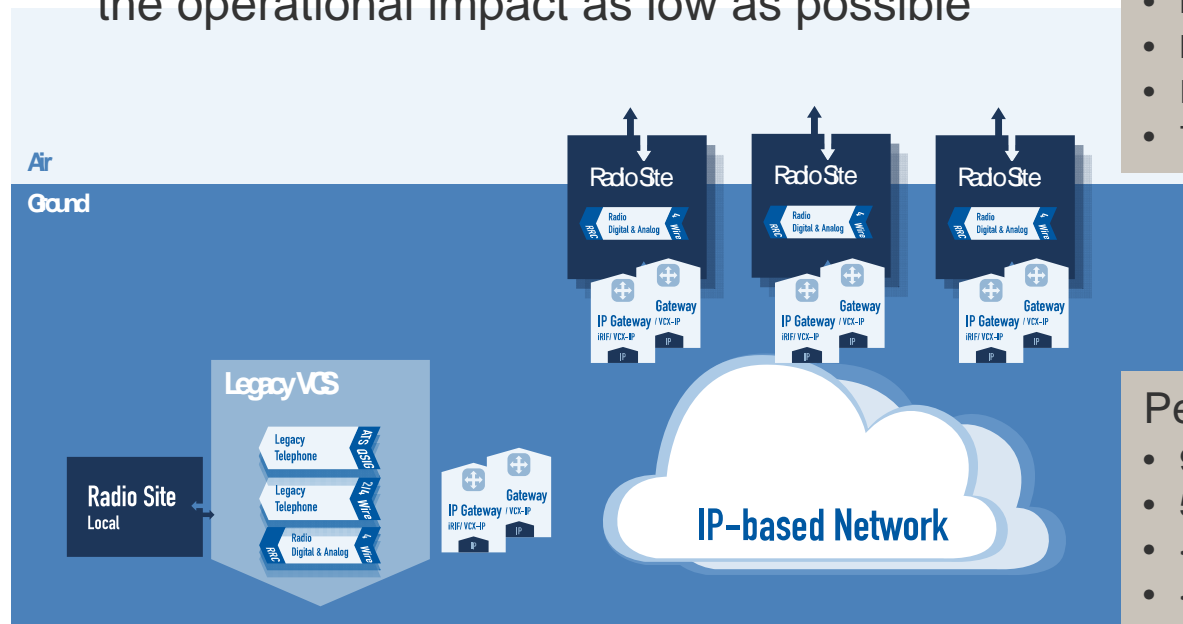
DSNA decided to migrate to a converged IP-based backbone network, which is used by all different ATM applications including safety-critical air-ground communication.



France

DSNA operates first EUROCAE compliant VOIP network

goal: migrate to IP backbone while keeping the operational impact as low as possible



Architecture

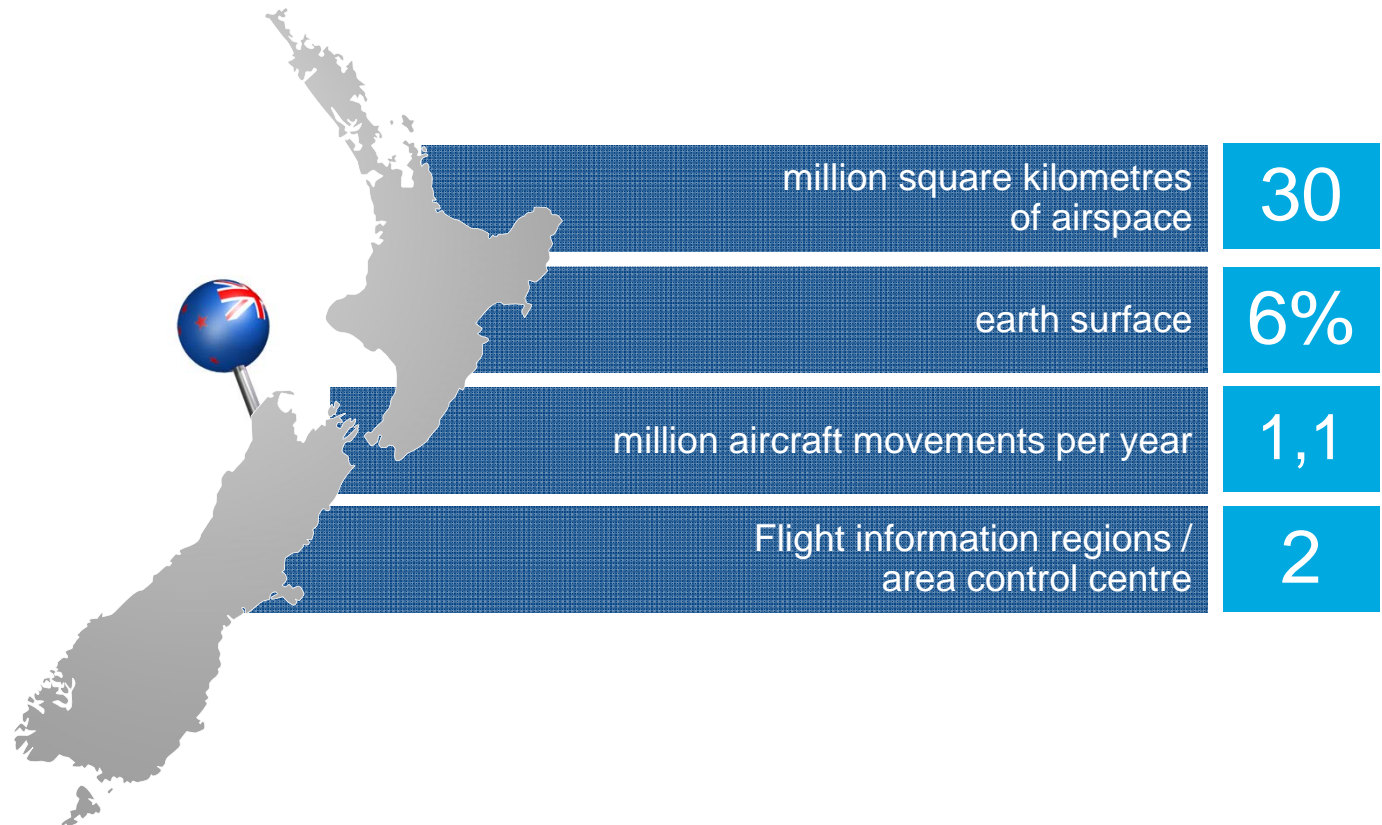
- MPLS/IP
- Multicast
- IPv6
- 700 routers

Performance

- 99,99999% availability
- 500ms convergence
- <50ms round trip delays
- <2ms jitter
- <0,2% packet drop rate

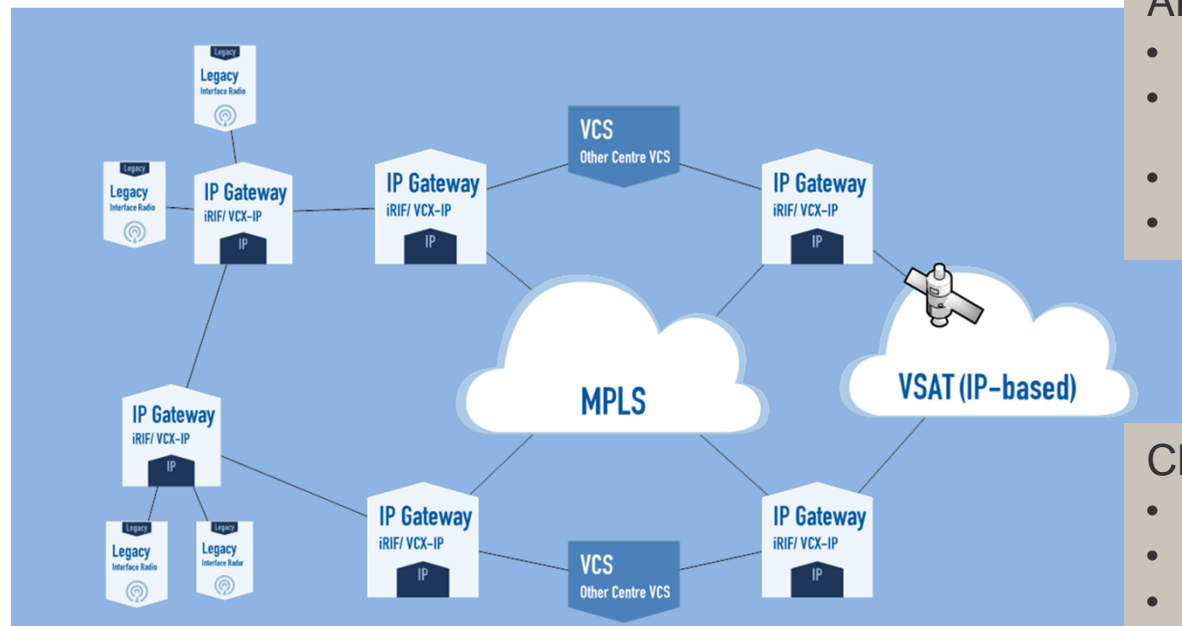
New Zealand

Airways New Zealand upgrade ATM network to IP technology



New Zealand

The goal was a state-of-the-art high-availability MPLS backbone that meets the expectations required for mission critical applications in Air Traffic Management.



Architecture

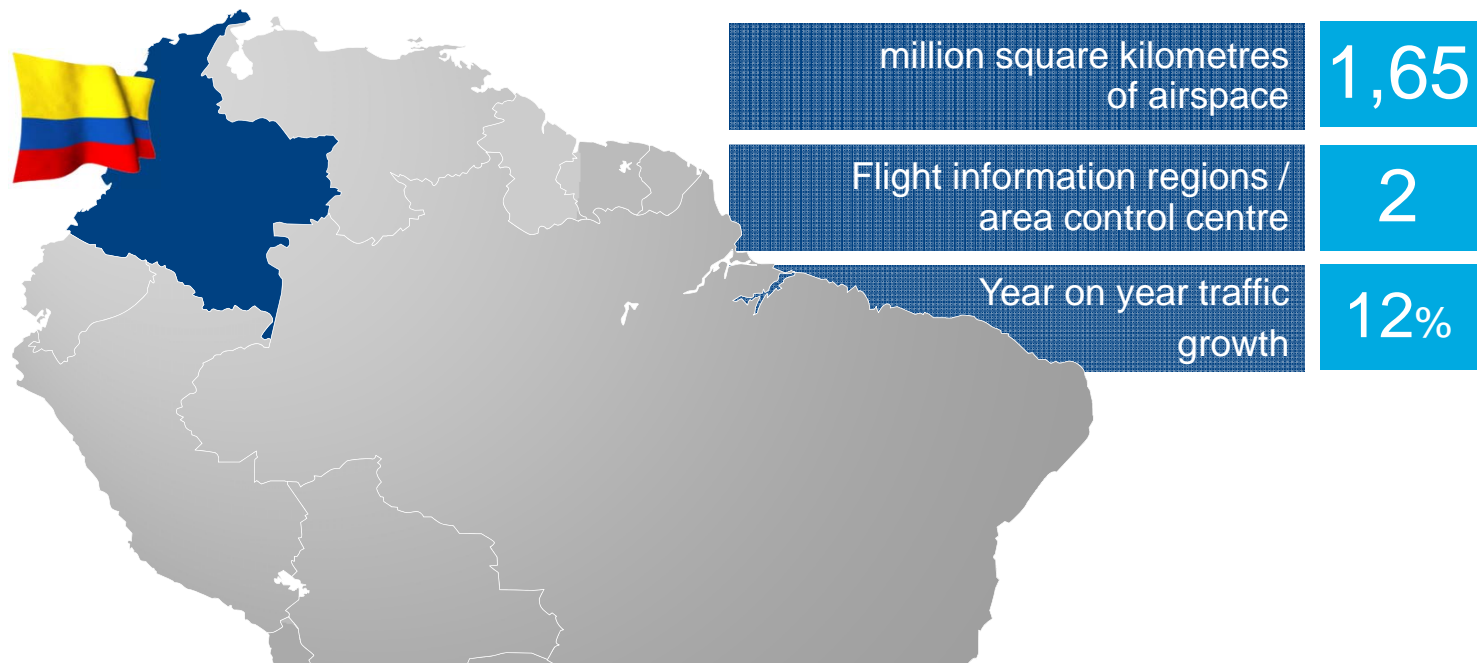
- Fully redundant system
- Integrated radio, phone and data network
- Country-wide network
- More than 200 network nodes

Characteristics

- ED-137B radio and phone capabilities
- ED153 SWAL3 compliance
- Future-proof design

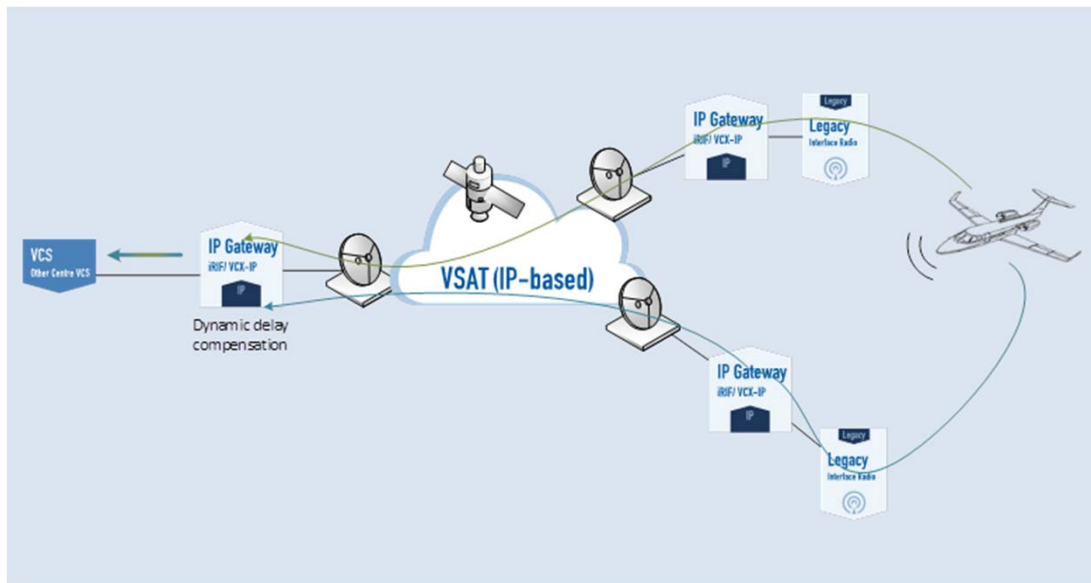
Colombia

Aeronáutica Civil de Colombia set their goal to further increase operational safety and capacity of airspace to meet future demands.



Colombia

Aeronáutica Civil de Colombia upgraded the VSAT network in 2015. The goal was an increased quality and safety level.



Architecture

- Country-wide integrated ATM-grade network for voice, radar and data
- Highest availability through redundancy concept
- VCX-IP for 39 sites

Characteristics

- G.729 voice compression
- Compliance with ED-137B regulations
- Highest end-to-end performance
- Several radio and phone legacy interfaces

vitalsphere: ATM-grade network performance

Intelligent
routing

vitalsphere | Safety & security
Highest performance
TCO

99,9999%
Highest service
availability

Scalable
networking
Multi-vendor and
technology

Situational
awareness
Network
management

20ms

Act before failure
End-to-end application performance
monitoring (brown-out detection)



Path diversity
Determine the optimal and most secure
route through your hybrid network –
based on active backbone performance
measurements

Up to
90% bandwidth savings
Optimizing bandwidth utilisation and
operational cost





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FOR A SAFER WORLD

Air Traffic
Management

Defence

Maritime

Public
Transport

Public
Safety