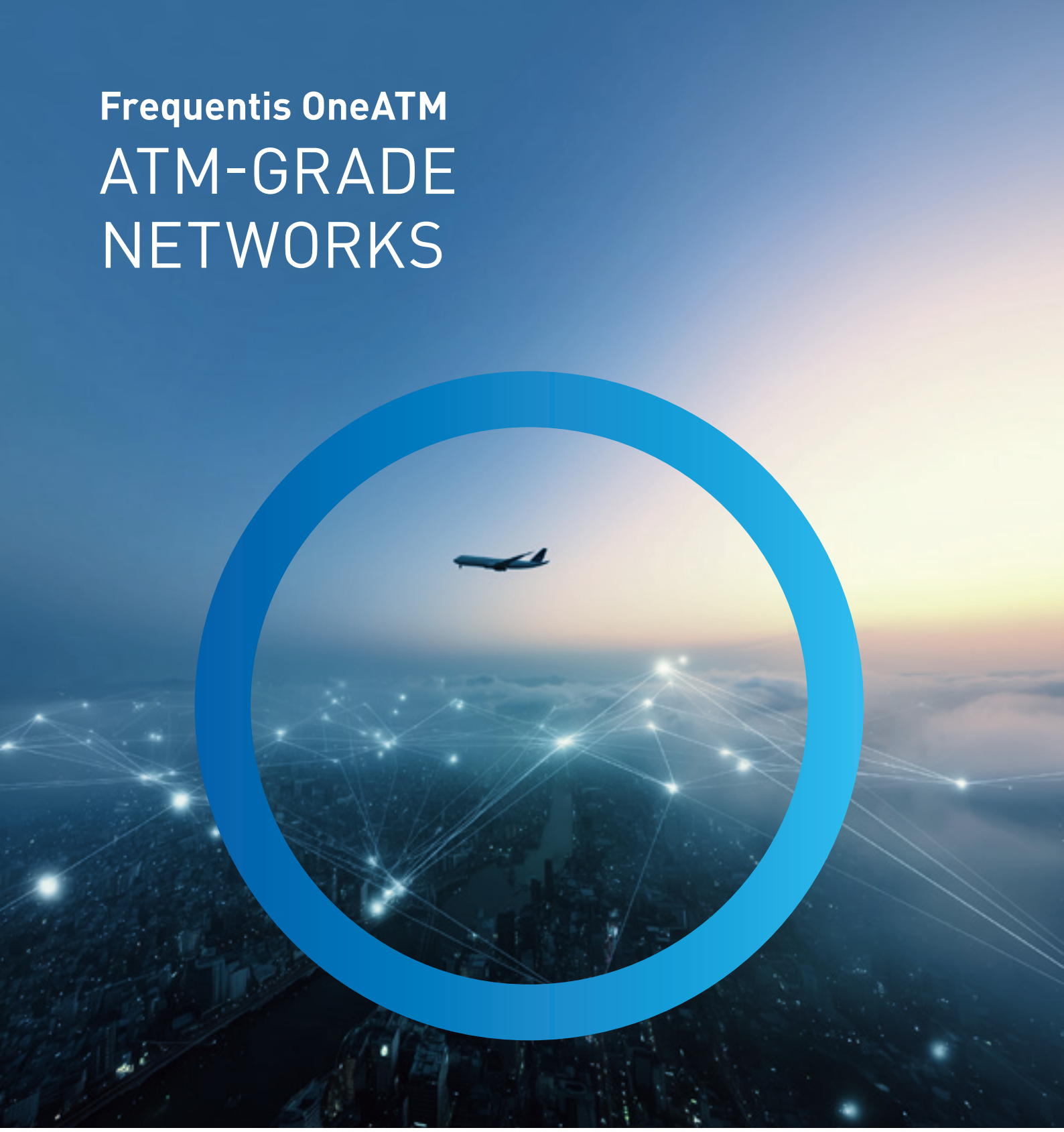
Frequentis OneATM

ATM-GRADE NETWORKS



Leading the way towards the digital sky

FREQUENTIS

FOR A SAFER WORLD

Seamless air traffic operations through intelligent network infrastructure

ATM relies on secure, reliable, and timely communications to ensure safe air traffic operations. The Frequentis ATM-Grade Networks provide high performance, resilient, and intelligent network management, ensuring seamless integration of voice, data, and surveillance applications across diverse infrastructures.

Developed specifically for safety-critical environments, ATM-Grade Networks deliver unmatched reliability, low latency, and continuous availability. The architecture ensures the resilience essential for air traffic management.

Our solutions ensure >99.999% availability through dynamic path selection and automatic failover. Legacy TDM and modern IP-based systems can be integrated, allowing ANSPs to migrate at their own pace without disrupting continuity. This hybrid approach supports mixed environments and smoother migration across national and international airspaces.

Flexibility reduces risk and enables progressive transformation, while compatibility with evolving standards such as IPv6 and SDN secures long-term adaptability and investment in critical infrastructure.

Continuous transformation:

Separating networks and application lifecycle

Situational awareness:

Providing quality monitoring on application level

Boosting service availability

Uplifting commercial networks to meet ICAO-defined policies

Voice optimisation:

Delay compensation, best signal selection, and real-time voice processing

Surveillance optimisation:

Converting, filtering and distributing surveillance data in real time

IP data distribution:

Intelligent stream aggregation to reduce bandwidth consumption

Where resilience meets intelligence

ATM-Grade Networks are more than infrastructure, they are the enabler of safe and seamless air traffic operations. Their unique capabilities safeguard communications, optimise performance, and prepare systems for the future, ensuring continuity where safety matters most.

Continuous transformation – decoupling of network and application lifecycle

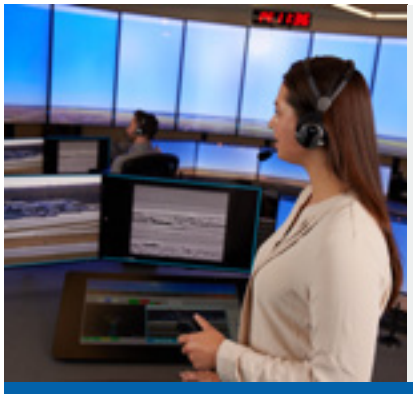
Continuous transformation decouples applications from network technology, enabling step-by-step modernisation without service interruption. ANSPs can migrate from TDM to IP and later from IPv4 to IPv6 at their own pace. Modular integration reduces risk and cost, preserves mixed environments during transition, and keeps ATM services available while adopting new capabilities aligned with evolving standards. This approach avoids lock-in and extends asset life.

Situational awareness – centralised monitoring

Situational awareness in ATM-Grade Networks extends beyond technical monitoring, focusing on the impact of network performance on critical services. Application-level monitoring visualises real-time effects on controller workstations, enabling faster decisions and proactive management. By correlating network data with service outcomes, ANSPs gain full visibility, quickly mitigate risks, and ensure service continuity in safety-critical operations.

Boosting service availability – duplication and SLA-based routing

ATM environments demand five-nines availability (99.999%), far beyond enterprise standards. Frequentis NetBroker's SmartRouting and Duplicator technologies ensure continuous service by routing traffic across independent networks and duplicating streams. Even during failures or degradation, communications remain uninterrupted, meeting ICAO's stringent requirements for latency, resilience, and reliability in safety-critical voice and data services.



Voice optimisation

Clear voice communication is vital for safe operations, even over high-latency satellite links. ATM-Grade Networks apply ED-137 delay compensation and echo elimination to maintain intelligibility. By integrating real-time network performance data, they ensure reliable, high-quality voice transmission across demanding environments, keeping controller–pilot communication effective where clarity and responsiveness are most critical.

Surveillance optimisation

Accurate surveillance ASTERIX data is essential for air traffic control. SDDS-NG safely transports ADS-B, MLAT, and UAV data from the source to the destination. Dynamic filtering reduces congestion by transmitting only relevant data, while real-time conversion secures quality and timeliness. This ensures seamless integration of legacy and next-generation systems, delivering reliable situational awareness across complex, evolving network environments.

IP data distribution

Growing data demands in ATM require efficient use of bandwidth. Frequentis solutions aggregate RTP streams, compress data, and monitor performance in real time. This ensures critical voice and surveillance information is transmitted reliably, without loss or delay. By reducing network load and securing seamless delivery, ATM-Grade Networks optimise resources while guaranteeing service quality in safety-critical operations.

Security

Security is an integral element of ATM-Grade Networks. Frequentis, ISO 27001 certified since 2011, safeguards VoIP with Session Border Controllers and 2FA. Vulnerability scans and IEC 62443 compliance ensure risks are mitigated. A dedicated Security Incident Response Team and system information and event management (SIEM) monitoring provide real-time protection, keeping critical infrastructures resilient, compliant, and secure against evolving cyber threats.

Security sits at the heart of ATM-Grade Networks, where availability and integrity are paramount. Frequentis, ISO 27001 certified since 2011, applies a layered strategy to protect safety-critical services. Voice over IP (VoIP) traffic is safeguarded by Session Border Controllers (SBCs), encryption, and multi-factor authentication to prevent interception and unauthorised access.

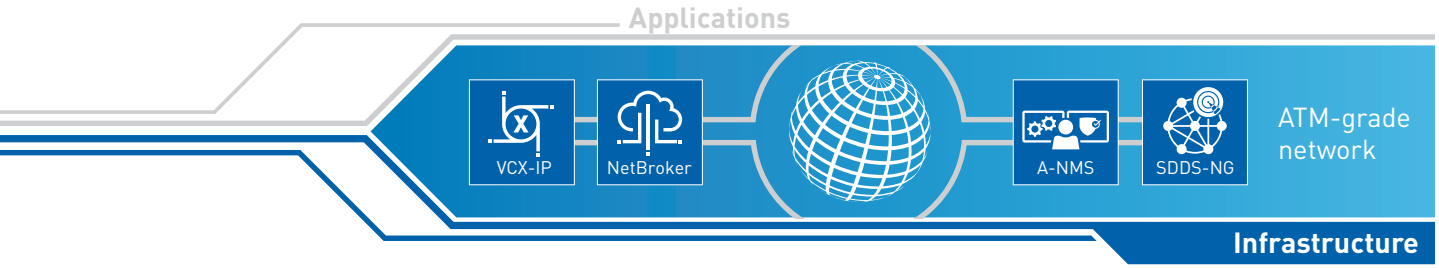
System hardening and regular vulnerability scans ensure that emerging risks are identified early. Compliance with IEC 62443 supports secure system development, configuration management, and continuous lifecycle protection. Security functions are embedded directly into network elements such as VCX-IP and NetBroker, ensuring resilience even under degraded conditions.

Real-time threat visibility is achieved through SIEM integration, providing log correlation, anomaly detection, and automated alerts. A dedicated Security Incident Response Team (SIRT) coordinates mitigation, containment, and forensic analysis in line with aviation regulatory requirements.

By combining standards compliance, automated monitoring, and incident response, Frequentis ensures that ATM-Grade Networks maintain operational continuity under cyber threat conditions, providing a secure foundation for critical voice, data, and surveillance communications.

The components that power ATM-Grade Networks

ATM-Grade Networks rely on specialised modules to deliver resilience, efficiency, and continuity. Each component fulfils a vital role, from voice and surveillance to monitoring and redundancy, creating the strong, intelligent foundation for safe and seamless air traffic operations.



VCX-IP

Enhances voice communication with advanced jitter buffering and delay compensation, ensuring clear transmission even in high-latency environments.

A-NMS

Centralised monitoring and automated fault resolution, ensuring consistent network performance and operational stability.

NetBroker

Provides seamless redundancy and loss-free handover, maintaining service continuity even during network degradation.

SDDS-NG

Enables seamless integration and distribution of surveillance data, enhancing situational awareness and data accuracy.

Further information

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