



# AIRCOM<sup>®</sup> DATALINK VDL AND ATN SERVICES

**WE IMPLEMENT AIR/GROUND DATALINK COMMUNICATION SERVICES COMPLYING WITH ICAO STANDARDS FOR VHF DIGITAL LINK (VDL) MODE 2 AND THE AERONAUTICAL TELECOMMUNICATIONS NETWORK (ATN).**

## SIGNIFICANT CAPACITY INCREASE FOR AIR/GROUND DATALINK COMMUNICATIONS

The new VHF Digital Link Mode 2 system uses digital radios to improve the performance of VHF analog datalink in the current VHF AIRCOM<sup>®</sup> service. VDL Mode 2 provides a data rate of 31.5 kbit/second using a radio channel that is the same width as the channel used by the VHF analog datalink system, providing a data rate of only 2.4 kbit/second.

Aircraft can be equipped with VDL Mode 2 to obtain increased speed and capacity for the existing ACARS applications supporting Flight Operations and Maintenance functions.

The airline industry datalink standards body defined an architecture for this, called ACARS Over AVLC (AOA), where the term AVLC refers to "Aviation VHF Link Control" – the protocol used over the VHF link in the VDL Mode 2 system. SITA, through its domain of expertise SITA, supports aircraft use of VDL for ACARS through the VDL AIRCOM<sup>®</sup> service – handled by our ACARS processor – making VDL usage fully transparent to the ground systems of aircraft operators or Air Navigation Service Providers (ANSPs).

This enables aircraft operators to install avionics that allow aircraft to send ACARS over VDL, progressively across their fleet, without needing to upgrade their ground systems.

## VDL SUPPORT FOR ATN COMMUNICATIONS

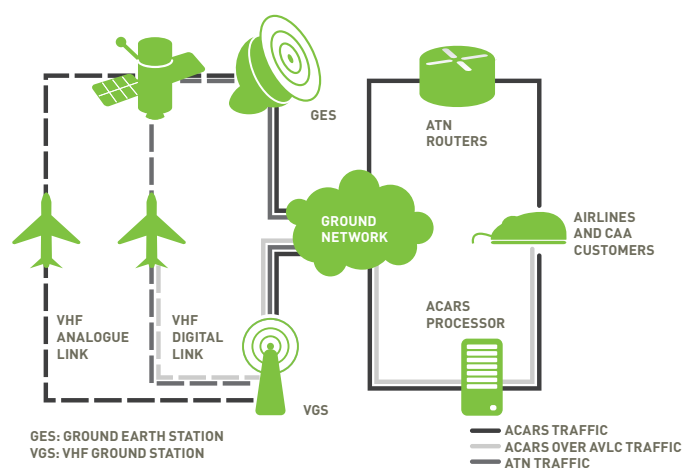
ICAO's original purpose in defining VDL Mode 2 was to define a new air/ground messaging protocol within its standard for the Aeronautical Telecommunications Network (ATN).

The ATN messaging service was designed to provide the integrity and reliability needed to introduce Controller Pilot Datalink Communications (CPDLC) in densely occupied airspace.

## IMPROVING ATC SYSTEM EFFICIENCY

The ACARS system was designed in the 1970s, and was based on text messaging services. By comparison, the VDL Mode 2 and ATN systems are based on bit-oriented protocols, giving a more efficient way of transporting computer data than ACARS.

Aircraft operators are installing ICAO standard CPDLC and ATN avionics to communicate with corresponding ground systems. ATN/VDLm2 is primarily used by European Air Navigation Service Providers, under the Commission Regulations (EC) No. 29/2009, No. 30/2009 and No. 310/2015 – the Datalink Services Implementing Rule (DLS IR) and its successive amendments. The use of CPDLC is identified as a supplementary means of communication, improving the efficiency of the ATC system and increasing the number of aircraft that can be handled.



AIRCOM Datalink system architecture



# AIRCOM® DATALINK VDL AND ATN SERVICES

## AIRBORNE EQUIPMENT

To access the AIRCOM® VDL service, aircraft must be fitted with a Communications Management Unit (CMU) equipped with a digital connection to a VHF Digital Radio (VDR) transceiver. The CMU processes the airline's ACARS applications and can be upgraded to integrate VDL and ATN functionality. The CMU automatically switches between AOA and POA according to service availability.

As an alternative to the CMU, Airbus aircraft will require an Air Traffic Services Unit (ATSU) to be implemented or upgraded to support its 'FANS' package.

## SITA VDL SERVICE COVERAGE

We are deploying a VDL Mode 2 service by providing a new generation of VHF Ground Stations (VGS) that offers the new service and takes over the existing VHF analog datalink service.

These new stations use digital radios and advanced network management software to optimize performance to customers.

VGS can simultaneously support:

- VHF AIRCOM – Plain Old ACARS (POA)
- VDL AIRCOM – ACARS Over AVLC (AOA)
- ATN AIRCOM – VDL Mode 2 sub-network service

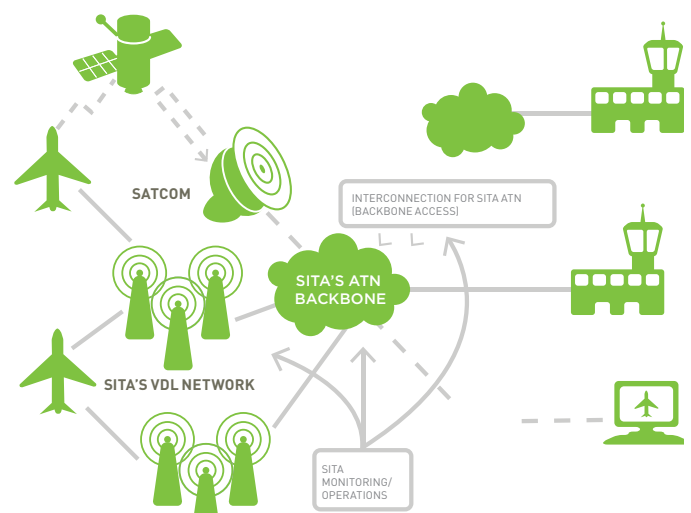
Our SITA experts are continuously deploying stations providing VDL in airports with the highest traffic, where extra capacity is needed to maintain performance levels. VGS deployment is performed in a way that satisfies the requirements of the European Mandate on ATN/VDLm2. The VGS network is permanently evolving to cope with growing traffic levels.

The deployment of ground stations providing the VDL service must be coordinated with local ANSPs, and SITA experts are working with them to accelerate VDL deployment, according to their needs, to introduce ATN CPDLC services.

## AIRCOM® ATN SERVICE DESCRIPTION

Our AIRCOM® ATN Service fulfils the EC No. 29/2009 DLS IR requirements for a validated, global, and reliable air-ground communication infrastructure. The AIRCOM® ATN Service has been selected by a number of European ANSPs wishing to provide an ATN/CPDLC datalink service to their airline users. We have developed a set of products and services designed to support ANSPs in complying with the applicable elements of the rule. A comprehensive ground-based infrastructure of VDLm2 radio stations, fully compliant to the EUROCONTROL Link 2000+ baseline, has already been deployed, along with a fully operational air/ground ATN routing facility that supports the exchange of CPDLC messages between suitably equipped aircraft and ground-based ATC centres.

The SITA AIRCOM ATN Service architecture is indicated below:



We are able to provide a complete ATN backbone service in Europe. Access to the backbone service for ground partners and customers will be done through IP. It should be noted that SITA's AIRCOM® ATN service uses the IP SNDCF protocol for all new Ground/Ground connections.

A number of SITA AIRCOM® systems and tools have been deployed to allow the AIRCOM® ATN Service to be fully operational with ANSPs requesting access to our AIRCOM® ATN service and ATN Backbone.

Under this deployment, we have also launched an ATN Test Service which can be accessed by all SITA customers on a case-by-case basis, according to requirements.

The ATN test service replicates our ATN Service, using elements and systems within the Operational environment.



# AIRCOM® DATALINK VDL AND ATN SERVICES

## ATN TEST SERVICES AT YOUR PREMISES

Following the introduction of the ATN Test Service, we have enhanced our offering by providing a Mobile ATN Verification and Qualification (VAQ) service.

This mobile ATN test service allows our SITA technical team to visit customers and conduct a detailed ATN VAQ at their premises, provided the customer has access to a VDLm2 Ground station with the appropriate connectivity to our ATN Backbone.

This service addresses a significant increase in the demand for ATN Testing by ANSPs, Original Equipment Manufacturers (OEMs) and avionics manufacturers, especially those of avionics used by the Business Jet community. We have provided the necessary technical expertise to assist them in developing and enhancing their systems to cater for the needs and requirements of the EC No. 29/2009 DLS IR.

### Related SITA products

- AIRCOM® Datalink ACARS Services:  
VHF AIRCOM® SATELLITE AIRCOM
- FANS and Pre-FANS Services
- Data Link Front End Processor (DL-FEP)

## SERVICE MONITORING AND CUSTOMER SUPPORT

Our staff are continuously monitoring to maintain the highest quality service to airlines and ANSPs. The AIRCOM® Service Help Desk is available around-the-clock to assist with service queries such as configuration issues.

A second level of support is also provided by AIRCOM® Customer Support – a team of technical experts dedicated to improving airline and ANSP satisfaction.

### ABOUT SITA

SITA is the IT provider for the air transport industry, delivering solutions for airlines, airports, aircraft and governments. Our technology powers more seamless, safe and sustainable air travel.

Today, SITA's solutions drive operational efficiencies at more than 1,000 airports while delivering the promise of the connected aircraft to more than 400 customers on 18,000 aircraft globally. SITA also provides the technology solutions that help more than 40 governments strike the balance of secure borders and seamless travel. Our communications network connects every corner of the globe and bridges 60% of the air transport community's data exchange.

SITA is 100% owned by the industry and driven by its needs. It is one of the most internationally diverse companies, with a presence in 200 countries and territories. SITA's subsidiaries and joint ventures include SITA, branded SITA, CHAMP Cargosystems and Aviareto.

**SITA** around the world: Atlanta - Brussels - Dubai - Geneva - London - Montreal - Paris - Rio de Janeiro - Singapore

**Want to find out more?** Visit [sita.aero/aircraft](https://sita.aero/aircraft)