

FAQ on Regulation (EC) No. 29/2009 – the Data Link Services Implementing Rule (DLS IR)

INTRODUCTION

This document represents a snapshot of work in progress to develop a list of Frequently Asked Questions relating to the DLS implementing rule. As such, it will form part of a package of guidance material available to interested parties.

The questions and answers are structured as follows.

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1 General

1.1 How can I obtain a copy of the DLS implementing rule?

The DLS IR is published in the Official Journal of the European Union as Regulation (EC) No. 29/2009 of 16 January 2009 laying down requirements on data link services for the single European sky. It can be downloaded from:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:013:0003:0019:EN:PDF>

1.2 How does the DLS implementing rule relate to the SES Regulations?

The SES interoperability Regulation (552/2004) specifies that implementing rules are to be developed where necessary in order to refine and complement the Essential Requirements described in Annex II of that Regulation, but not all of these requirements are reflected in the DLS IR.

The IR on data link services is needed in order to ensure interoperability by complementing and refining the Essential Requirements in the areas of seamless operation, support for new concepts of operation and safety.

1.3 Which data link services must be implemented?

The scope of the IR applies to the four data link services defined in Annex II of Regulation 29/2009, namely DLIC, ACM, ACL and AMC. Annex II gives a high level definition of each service and points to further detailed specifications in EUROCAE document ED-120.

Note: This approach avoids full definition of each data link service in the body of the IR. If necessary, new services might be added in Annex II in the future without complete redrafting of the IR. These services are defined independently from the underlying technology supporting data exchanges.

Any obligation of the IR that must be interpreted in the context of these four data link services includes a contextual reference in the form of "...the data link services defined in Annex II".

1.4 Which organisations or stakeholders are affected?

Obligations specified in the main body of the DLS IR are allocated to the following stakeholders:

- Member States of the European Union.
- Air Navigation Service Providers (see definitions 4 and 5 in Article 2 of the framework Regulation 549/2004). ANSPs include certified organisations for the provision of air traffic services, communication, navigation, surveillance services, meteorological services for air navigation, and aeronautical information services. Certified providers of air – ground communication services are considered as ANSPs, although these latter organisations are not designated by National Supervisory Authorities. These organisations provide commercial services in accordance with their own business development policy; they can decide when and where to implement these services. The IR refers to both non-certified and certified providers of air – ground communication services as "organisations providing air – ground communication services". The IR refers to non-certified air – ground communication services only as "entities providing air – ground communication services".

- Air Traffic Service Providers. ATSPs are designated and certified organisations for the provision of air traffic services only.
- Operators are those responsible for aircraft operations.

1.5 How are end to end communications ensured?

1. Everywhere in the SES data link airspace, there must be air – ground communications services based on ATN and VDL-2 made available on the ground side.

Note: This obligation is assigned to Member States because ANSPs or other entities providing air – ground communication services are not designated and are free to organise their provision of services in terms of geographic coverage for example. In case air – ground communications services based on ATN and VDL-2 are not ensured by “non-designated” ANSPs or other entities in the airspace under the responsibility of a Member State, this Member State must take an appropriate decision to ensure the availability of such services; for example by requiring from the designated ATSP the provision of air – ground communications services based on ATN and VDL-2.

2. Operators have the choice to equip their aircraft with data link equipment compliant with ATN and VDL-2, or with other communication protocols, provided such communication protocols ensure end-to-end interoperability and meet safety and performance requirements of data link services, as well as further conditions such as no harmful effect upon ATN and VDL-2 compliant installation. Operators fitting their aircraft with data link equipment not compliant with ATN and VDL-2 must ensure that their equipment has the capability to interoperate with appropriate ground data link systems, ensuring that data exchanges are available between their aircraft and the ATS units which may control their flights. In this case, it is likely that operators will turn to their provider of air – ground communication services to determine whether this level of interoperability is effective.

Note: The IR provides a path for new technology but at the same time tries to avoid fragmentation of air – ground communications that would lead to islands of interoperability.

3. ANSPs or other entities providing air – ground communication services have the choice to support air – ground communications based on ATN and VDL-2, or on other communication protocols, provided these alternative communication protocols ensure end-to-end interoperability and meet safety and performance requirements of data link services and further conditions, such as appropriate geographic coverage and no harmful effect upon ATN and VDL-2 compliant installation. As indicated above, Member States have to take the necessary measures to ensure that, as a minimum, air – ground communication services based on ATN and VDL-2 are available in the airspace under their responsibility.

4. IR Articles 5, 6 and 7(1) contain the minimum set of requirements specifying the above obligations to ensure interoperability of data link communications. The organisation of the air – ground communication network is outside the scope of the IR.

1.6 How is seamless operation of air traffic services supported by data link communications achieved?

1. The same set of standardised data link services must be deployed in a coordinated fashion in the SES data link airspace.

2. Air and ground systems supporting data link services must comply with the safety and performance requirements of data link services specified in EUROCAE document ED-120.

3. Airworthiness certification of airborne data link equipment must be conducted against requirements ensuring end to end interoperability with ground-based communication systems used in the SES data link airspace.

4. Aircraft operators and controllers must apply common standardised operational procedures when using data link services and when filing ICAO flight plans with information relating to data link capability. Refer to ICAO Doc 4444 (PANS-ATM).

2 Timescales

2.1 What are the key milestones for the deployment of data link services?

Deployment of data link services in the EATMN and SES data link airspace is as follows.

1. 'Core area' EC member states must support data link services in their area of responsibility from 07 February 2013.

Note: Article 1(3a) and Annex I Part A of Regulation 29/2009 give the definition of the first airspace area where data link services will be operational. The start date for this first area is specified in Article 15.

2. The remaining EC member states must support data link services from 05 February 2015.

Note: Article 1(3b) and Annex I Part B give the definition and the start date for this extension.

3. All non-exempted aircraft with an initial individual airworthiness certificate issued:

- from 01 January 2011 onwards, must be equipped when entering into service;
- before 01 January 2011, must be equipped before 05 February 2015 (retrofit case).

2.2 What are the dates by which aircraft must be data link equipped?

The date for forward fit is 1st January 2011; as stated in IR Article 3(2). All aircraft with an individual CoA first issued on or after this date must have the capability to operate the defined data link services when flying in the specified airspace. (This is the "Forward Fit" date).

In IR Article 15 the "Entry into force" date of 7th February 2013 refers to the date of availability of the end to end Service, which includes the ground capability. This date does not change the applicability of the aircraft forward fit date of 1st January 2011.

The date for retro fit is 5th February 2015; as stated in IR Article 3(3). All aircraft with an individual CoA first issued before 1st January 2011 must have been retro-fitted with the capability to operate the defined data link services when flying in the specified airspace by 5th February 2015. (This is the "Retrofit" date).

3 Ground Systems

3.1 In which SES airspace are data link services required to be operated?

Maximum benefits and seamless coverage are achieved when as wide an area as possible is covered. It is essential to avoid "holes" in the coverage, even if deployment of data link services is not cost-beneficial on an individual basis.

Specification of airspace is made at the level of upper airspace of currently defined continental FIRs/UIRs.

The deployment of data link services is a two-step process. ATS units providing services to IFR/GAT flights above FL285 are required to roll out data link support as follows:

1. The first step is to deploy the specified data link services in the high density traffic area defined by the list of FIRs and UIRs above FL285 given in the IR Annex I Part A. Data link services must be in place in this first area by 7 February 2013 (AIRAC date). Therefore, all related ground systems must be verified (EC Declaration) in respect of the DLS IR and be operational by that date.
2. Considering that data link is seen as a key enabler for further capacity increase of the European ATM system, the second step is to deploy these data link services in the rest of the SES airspace above FL285 by 05 February 2015 (AIRAC date). Therefore, all ground systems supporting data link services in this second area must be verified (EC Declaration) in respect of the DLS IR and be operational by that date.

3.2 What is the impact on flight plan handling?

Article 4(6) of Regulation 29/2009 requires the application of “*common standardised procedures consistent with relevant ICAO provisions for ... the filing of flight plans regarding information pertaining to data link capability.*”

Operational hazard analysis has identified the need for two independent sources of the 24-bit aircraft identification used for correlation. To achieve this, it is necessary to correlate the 24-bit aircraft address in a received air-ground message with the 24-bit address as filed in the system flight plan. For operators of CPDLC equipped aircraft, this optional field will become mandatory for all flights that intend to use CPDLC. Detailed requirements are included in the ICAO Doc. 7030 (ref. Serial No. EUR/NAT-S 08/1 – EUR).

3.3 What are the requirements for ground coordination?

The intent is for an aircraft to perform a “single logon” for the whole of the applicable airspace. Therefore ground-ground coordination is necessary to communicate the aircraft’s logon information between ATS units as the aircraft transits between them.

Regulation (EC) 1032/2006 is concerned with Coordination and Transfer (COTR) processes between ATS units. It specifies “*requirements for automatic systems for the exchange of flight data for the purpose of notification, coordination and transfer of flights between ATC units.*” The LOF and NAN messages are defined in the OLDI Specification, which is recognised as a Community specification for the COTR IR.

DLS IR Article 5(5) specifies the FDPS requirements for log on forward and next authority notification processes.

4 Aircraft Equipage

4.1 Which aircraft must be equipped with data link capability?

All aircraft operating GAT/IFR in the SES data link airspace must apply either the forward-fit conditions or the retrofit conditions for data link equipage unless they fall under exemption cases specified in the IR.

IR Article 3, paragraphs 2 and 3 specify the forward-fit and retro-fit conditions for civil aircraft operators, while Article 3, paragraph 5 specifies conditions for State aircraft to operate data link services.

Note: To simplify administration and avoid unintentional exclusion of modern aircraft categories such as VLJs, all aircraft flying as IFR/GAT in applicable airspace are included by default, unless explicitly exempted. UAVs are outside the scope of the IR; they are not explicitly exempted, but are not considered IFR.

4.2 Are there specific exemption cases for aircraft?

Yes, the exemption cases cover:

- FANS aircraft up to 1 January 2014
- aircraft that will cease operations by 2017
- aircraft operating flights for testing, delivery and maintenance purposes
- State aircraft
- Specific exemption cases that can be proposed for aircraft types reaching the end of their production life and being produced in limited numbers and aircraft types for which re-engineering costs would be disproportionate due to old design

Exemption cases have been specified to ease the implementation of DLS on the air side. Airlines and associations have given a positive opinion about the DLS IR. ANSPs have planned their investment to comply with the DLS IR with minimal exemptions. Airspace users and all other concerned parties are expected to fulfil their obligations in a timely manner. Any abuse of the exemption clauses of the DLS IR may give rise to appropriate further regulatory corrective actions.

IR Article 3, paragraph 4 specifies exemption cases.

See [Exemptions](#) for more details.

4.3 Will the forward-fit date apply to “used” aircraft being registered with an EU State for the first time after 1st Jan 2011?

1. Article 3 applies to all flights operated above FL 285 in the airspace defined in Annex I of the Implementing Rule, irrespective of the State of Registry of aircraft (EU States and non EU States).

2. The fact that the State of Registry of an aircraft will change (non EU State to an EU State for example) does not exempt these aircraft from complying with the IR. So "used aircraft" registered in non EU States are not exempted unless they meet conditions specified in Article 3(4). Consequently, these aircraft must be retrofitted before February 2015.

4.4 Is VDL Mode 2 multi-frequency capability required?

Revision 5 of ARINC Specification 361 was recently ratified, and this includes details of multi-frequency autotune functionality.

Although not a direct requirement of Regulation 29/2009, if ATN CPDLC were to be implemented without VDL-2 multi-frequency support, the overall system would become unusable, i.e. message delays would be unacceptable and not compliant with the DLS IR Performance requirements. One could imagine a system where there would be a number of aircraft without the multi-frequency capability, but these would add much complication to the overall system management when multi-frequency is employed on the ground.

Multi-frequency functionality is expected to be available on the ground (operational) sometime in 2013-2014. This is according to the VDL-2 capacity analysis through simulations performed by EUROCONTROL, whose results are that multiple VDL-2 frequencies are required some 2 years after the forward-fit deadline.

5 Exemptions

5.1 FANS

5.1.1 What are “FANS aircraft”?

The IR does not use the term “FANS aircraft” but instead refers in Article 3(4a) to “*aircraft fitted with data link equipment certified against the requirements of one of the Eurocae documents specified in point 10 of Annex III.*” The EUROCAE documents in question are ED-100 and ED-100A “Interoperability Requirements for ATS Applications using ARINC 622 Data Communications.”

“FANS aircraft” here designates aircraft with operational data link equipment certified against the requirements of EUROCAE ED-100 and ED-100A documents, or their RTCA equivalents DO-258(A).

5.1.2 Must aircraft equipped for FANS data link comply with the Regulation?

FANS aircraft with an initial individual airworthiness certificate issued before 1 January 2014 are exempted from the provisions of the DLS IR for their whole lifetime.

FANS aircraft with an initial individual airworthiness certificate issued after 1 January 2014 can not be exempted on the grounds of FANS-equipage, they must equip in compliance with the IR unless an exemption case is managed in accordance with Additional Exemption Cases, Article 14 of DLS IR.

Note 1: The exemption for FANS equipped aircraft in DLS IR Article 3.4(a) states that the requirements for aircraft operators to ensure that their aircraft have the capability to operate data link services do not apply in the case of:

“aircraft with an individual certificate of airworthiness first issued before 1 January 2014 and fitted with data link equipment certified against the requirements of [EUROCAE Document ED-100 or ED-100A]”

Note 2: The referenced EUROCAE Documents specify the “Interoperability Requirements for ATS Applications using ARINC 622 Data Communications” i.e. ACARS-based communications.

5.1.3 What happens after 1 January 2014?

The exclusion of existing aircraft was extended for new aircraft until 1 January 2014 in order to give time to the manufacturers to develop FANS/DLS equipment. From 1 January 2014, all new aircraft have to be equipped with data link capability as defined in the DLS IR (i.e. ATN / CPDLC).

The IR anticipates that the ongoing work on convergence of FANS and ATN technology should emerge with technical solutions by the beginning of 2014. An alternative option would be double-stack equipage, as envisaged for some new aircraft types.

5.1.4 Do FANS-equipped aircraft have to actually use the FANS data link services?

In other words, do the aircraft falling into this category have to have the FANS activated (i.e. have operational approval), or it is sufficient if the aircraft is just equipped for FANS , not

activated on board, and not able to be used operationally in oceanic and other airspaces accommodating FANS?

For airframes built before the January 2014 FANS exemption expires, for aircraft based in Europe and flying predominantly within Europe:

1. Aircraft entering service before 1 January 2014 that are FANS equipped and have operational approval, and use it when operating in oceanic airspace, are exempt for their whole lifetime.
2. Aircraft entering service before 1 January 2014 that are FANS equipped but do not have operational approval for the use of FANS are not exempted from DLS IR equipage requirements.

Note: In accordance with DLS IR Recital (10), the intention of Article 3(4a) is to exclude existing FANS aircraft equipped "... mainly for long haul oceanic operations..."

For this reason, FANS equipped aircraft before 1 January 2014 do not need to be DLS equipped if the FANS equipment is activated and approved mainly for long haul oceanic operations.

If a FANS equipped aircraft did not have the FANS equipment activated (having operational approval), it would be very difficult / impossible to be considered intended to be used "... mainly for long haul oceanic operations..."

5.1.5 Will ANSPs provide ATC data link services to the FANS-equipped aircraft or will it be voice only in domestic airspace?

ANSPs which decide to accommodate FANS (like Maastricht UACC) could decide to provide ATC data link services (FANS) or continue to control the aircraft via voice R/T communication.

5.1.6 Do aircraft currently equipped with SATCOM and/or HF Data Link meet the requirements, or must VDL Mode 2 capable VHF radios be installed?

Article 3(3) of Regulation 29/2009 requires aircraft with an individual certificate of airworthiness first issued before 1 January 2011 to have the capability to operate the data link services defined in Annex II as from 5 February 2015. If an aircraft (such as Boeing 747-400) is equipped with SATCOM Data Link and/or HF Data Link does this meet the requirements or does the operator need to upgrade the aircraft and install VDL Mode 2 capable VHF radios?

If currently operational aircraft are approved for FANS data link operations, then they are exempt for their entire life.

If currently operational aircraft are not FANS capable then from 5 Feb 2015 they have to be capable to operate the selected data link services. Practically speaking they will have to be equipped for CPDLC over ATN and VDL2.

So 747-400 aircraft that are SATCOM, FANS, CPDLC equipped are exempt for the lifetime of the airframes and will be either controlled by voice R/T or data link (FANS) - in the airspace where ground system accommodates FANS.

If aircraft have HF Data Link but not SATCOM installed, they are exempt in accordance with Article 3(4a) only if they comply with ED-100 or ED-100A.

5.1.7 In what areas will FANS be accommodated?

There is anecdotal evidence that some Member States will not continue to support FANS 1/A.

There is no obligation on ANSPs to accommodate FANS aircraft. Furthermore, FANS accommodation in the future will be limited to FANS 1/A+ (safety case requirement).

Some ANSPs will continue to support FANS. Others have not made definite plans or they see no case in accommodating FANS (due to low number of FANS aircraft in their airspace, for example).

5.2 How does the IR impact State aircraft?

A distinction is made between "transport type" State aircraft and other State aircraft.

Transport type State aircraft are those designed for the purpose of transporting persons and/or cargo (including aircraft used for missions such as air-to-air refuelling, early warning/command and control). These represent the largest category of State aircraft operating as GAT in the applicable airspace.

For new transport type State aircraft (in service after 1 January 2014) which Member States choose to equip with data link capability based on standards not specific to military requirements, these aircraft will have to comply with the requirements of the IR.

For all other State aircraft, the IR does not prescribe equipage with data link capability.

State aircraft not equipped for data link services will be accommodated, provided they can be safely handled, with voice VHF (or UHF) radio when operating as GAT within the SES data link airspace. Hence, freedom of access to the airspace and use of the ATM network is guaranteed to enable State aircraft operations, including military operations and exercises. Nevertheless, the Civil-Military CNS/ATM Interoperability Roadmap (http://www.eurocontrol.int/mil/gallery/content/public/milgallery/documents/CM%20CNS%20RM%201_0.pdf) clearly underlines the need of military airframes for automated ATC support with the same level of service offered to general traffic and with the need for provisions/room for future growth in the area of (civil) data link capabilities.

The exemption of Regulation 29/2009 for State aircraft is applicable to all State aircraft including those of third countries. Whether an aircraft is considered as a State aircraft depends on the use of the aircraft in the EU. The key element is the declaration by the authorities of a country that it is a "flight of a State aircraft" (and not the registration of the aircraft).

As the number of IFR/GAT flights made by State aircraft is low compared to the total number of flights, these exemptions should not have an adverse impact on the realisation of the business case benefits of data link services for civil ATM productivity and cost-effectiveness.

5.3 Which older aircraft types are exempted?

Aircraft with an individual certificate of airworthiness first issued before 1998 and which will cease operation in the identified airspace by the end of 2017 are exempted from the IR. The objective of the exemption in Article 3(4b) is to avoid costly equipage for aircraft having a short remaining lifetime. If an aircraft is at least 20 years old and is planned to be put out of service in the SES data link airspace before the end of 2017, this aircraft can be exempted.

Such an approach, even if familiar to airspace users, might raise practical difficulties in a Community legal context, notably regarding the guarantees that might be offered to ensure that the aircraft concerned will be genuinely put out of service by the requested date.

This will affect for example a Boeing 747 Classic fleet that will probably cease operation by 2017. If an older Classic 747 were to be operated in the identified airspace areas after 2017, the aircraft would have to be retro-fitted with compliant data link equipment – unless, exceptionally, an exemption case is granted as described in Additional Exemption Cases.

5.4 Additional Exemption Cases

Aircraft operating flights for testing, delivery and maintenance purposes are exempted from having to comply with the IR (Article 3(4d)). These are occasional flights flying in the SES data link airspace. These flights are granted an exemption of equipage with data link capability. Nevertheless, if these aircraft are also used for routine flights in the SES data link airspace, they must equip with data link capability.

IR Article 14 allows additional exemption cases to be made for aircraft types based on specific criteria, namely aircraft types reaching the end of their production life and being produced in limited numbers and aircraft types for which re-engineering costs would be disproportionate due to old design.

When such circumstances prevent aircraft of specific types from complying with the requirements of the IR, the Member States concerned are required to submit detailed exemption justifications before the end of 2012. The European Commission, based on a formal opinion of the Single Sky Committee, will then decide whether to grant the exemption, using the decision-making process referred to in Article 5 (3) of the SES framework Regulation (549/2004).