

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Industrial communication networks – Fieldbus specifications –
Part 3-11: Data-link layer service definition – Type 11 elements

Réseaux de communication industriels – Spécifications des bus de terrain –
Partie 3-11: Définition du service de la couche de liaison de données –
Éléments de Type 11

STANDARD PREVIEW
(standards.iteh.ai)

IEC 61158-3-11:2007

<https://standards.iteh.ai/catalog/standards/sist/15147689-9c0d-49a7-88b9-fd4237ba5e19/iec-61158-3-11-2007>





THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2007 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.

If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

Useful links:

IEC publications search - www.iec.ch/searchpub

The advanced search enables you to find IEC publications by a variety of criteria (reference number, text, technical committee,...).

It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available on-line and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Liens utiles:

Recherche de publications CEI - www.iec.ch/searchpub

La recherche avancée vous permet de trouver des publications CEI en utilisant différents critères (numéro de référence, texte, comité d'études,...).

Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

Just Published CEI - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications de la CEI. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (VEI) en ligne.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.



IEC 61158-3-11

Edition 1.0 2007-12

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Industrial communication networks – Fieldbus specifications –
Part 3-11: Data-link layer service definition – Type 11 elements**

**Réseaux de communication industriels – Spécifications des bus de terrain –
Partie 3-11: Définition du service de la couche de liaison de données –
Éléments de Type 11**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX



ICS 25.040.40; 35.100.20

ISBN 978-2-8322-0983-7

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

| | |
|---|----|
| FOREWORD..... | 4 |
| INTRODUCTION..... | 6 |
| 1 Scope..... | 7 |
| 1.1 Overview..... | 7 |
| 1.2 Specifications..... | 7 |
| 1.3 Conformance..... | 7 |
| 2 Normative references..... | 8 |
| 3 Terms, definitions, symbols, abbreviations and conventions..... | 8 |
| 3.1 Reference model terms and definitions..... | 8 |
| 3.2 Service convention terms and definitions..... | 10 |
| 3.3 Data-link service terms and definitions..... | 10 |
| 3.4 Symbols and abbreviations..... | 13 |
| 3.5 Common conventions..... | 14 |
| 4 Data-link service and concept..... | 15 |
| 4.1 Overview..... | 15 |
| 4.2 General description of services..... | 16 |
| 4.3 TCC data service..... | 20 |
| 4.4 Detail description of the sporadic message data service..... | 24 |
| 5 DL- management services..... | 26 |
| 5.1 General..... | 26 |
| 5.2 Facilities of the DL-management service..... | 26 |
| 5.3 Service of the DL-management..... | 26 |
| 5.4 Overview of interactions..... | 27 |
| 5.5 Detail specification of service and interactions..... | 29 |
| Bibliography..... | 35 |
| Figure 1 – Relationships of DLSAPs, DLSAP-addresses and group DL-addresses..... | 11 |
| Figure 2 – Overall flow of data frames during one minimum cycle period (high-speed transmission period)..... | 17 |
| Figure 3 – Overall flow of cyclic data frames over one maximum cycle period (low-speed transmission period)..... | 18 |
| Figure 4 – Sequence diagram of TCC data service..... | 19 |
| Figure 5 – Sequence diagram of sporadic message service..... | 19 |
| Figure 6 – Relationship of DLSAP, DLCEP and DLCEP-address..... | 20 |
| Figure 7 – Sequence diagram of Reset, Set-value, Get-value, Set-publisher-configuration, Get-publisher-configuration, Activate-TCC-data and Deactivate-TCC-data service primitives..... | 28 |
| Figure 8 – Sequence diagram of sporadic message service..... | 28 |
| Table 1 – Primitives and parameters used on the time-critical cyclic data service..... | 21 |
| Table 2 – Data request primitives and the parameters..... | 21 |
| Table 3 – Put buffer primitives and parameters..... | 22 |
| Table 4 – Get buffer primitives and parameters..... | 23 |
| Table 5 – Notify buffer received primitives and parameters..... | 23 |

| | |
|--|----|
| Table 6 – Primitives and parameters used on sporadic message data service..... | 24 |
| Table 7 – Submit sporadic message primitives and parameters | 25 |
| Table 8 – Summary of DL-management primitives and parameters | 28 |
| Table 9 – DLM-Reset primitives and parameters | 29 |
| Table 10 – DLM-Set-value primitives and parameters | 29 |
| Table 11 – DLM-Get-value primitives and parameters | 30 |
| Table 12 – Event primitives and parameters | 31 |
| Table 13 – Set-publisher-configuration primitives and parameters | 31 |
| Table 14 – DLM-Get-publisher-configuration primitives and parameters..... | 32 |
| Table 15 – DLM-Activate-TCC primitives and the parameters | 33 |
| Table 16 – DLM-Deactivate-TCC primitives and the parameters | 33 |

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[IEC 61158-3-11:2007](#)

<https://standards.iteh.ai/catalog/standards/sist/15147689-9c6d-49a7-88b9-fd4237ba5e19/iec-61158-3-11-2007>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INDUSTRIAL COMMUNICATION NETWORKS –
FIELDBUS SPECIFICATIONS –**
Part 3-11: Data-link layer service definition – Type 11 elements

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

NOTE Use of some of the associated protocol types is restricted by their intellectual-property-right holders. In all cases, the commitment to limited release of intellectual-property-rights made by the holders of those rights permits a particular data-link layer protocol type to be used with physical layer and application layer protocols in type combinations as specified explicitly in the IEC 61784 series. Use of the various protocol types in other combinations may require permission of their respective intellectual-property-right holders.

International Standard IEC 61158-3-11 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

This first edition and its companion parts of the IEC 61158-3 subseries cancel and replace IEC 61158-3:2003. This edition of this part constitutes a technical addition. This part and its Type 11 companion parts also replaces IEC/PAS 62406, published in 2005.

This edition includes the following significant changes with respect to the previous edition:

- a) deletion of the former Type 6 fieldbus, and the placeholder for a Type 5 fieldbus data-link layer, for lack of market relevance;
- b) addition of new types of fieldbuses;
- c) division of this part into multiple parts numbered 3-1, 3-2, ..., 3-19.

This bilingual version (2013-07) corresponds to the monolingual English version, published in 2007-12.

The text of this standard is based on the following documents:

| | |
|--------------|------------------|
| FDIS | Report on voting |
| 65C/473/FDIS | 65C/484/RVD |

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

The French version of this standard has not been voted upon.

This publication has been drafted in accordance with ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under <http://webstore.iec.ch> in the data related to the specific publication. At this date, the publication will be:

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or [IEC 61158-3-11:2007](#)
- amended. <https://standards.iteh.ai/catalog/standards/sist/15147689-9c6d-49a7-88b9-fb237e5162e6/iec-61158-3-11-2007>

NOTE The revision of this standard will be synchronized with the other parts of the IEC 61158 series.

The list of all the parts of the IEC 61158 series, under the general title *Industrial communication networks – Fieldbus specifications*, can be found on the IEC web site.

INTRODUCTION

This part of IEC 61158 is one of a series produced to facilitate the interconnection of automation system components. It is related to other standards in the set as defined by the “three-layer” fieldbus reference model described in IEC/TR 61158-1.

Throughout the set of fieldbus standards, the term “service” refers to the abstract capability provided by one layer of the OSI Basic Reference Model to the layer immediately above. Thus, the data-link layer service defined in this standard is a conceptual architectural service, independent of administrative and implementation divisions.

iTeh STANDARD PREVIEW **(standards.iteh.ai)**

[IEC 61158-3-11:2007](https://standards.iteh.ai/catalog/standards/sist/15147689-9c6d-49a7-88b9-fd4237ba5e19/iec-61158-3-11-2007)

<https://standards.iteh.ai/catalog/standards/sist/15147689-9c6d-49a7-88b9-fd4237ba5e19/iec-61158-3-11-2007>

INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 3-11: Data-link layer service definition – Type 11 elements

1 Scope

1.1 Overview

This part of IEC 61158 provides common elements for basic time-critical messaging communications between devices in an automation environment. The term “time-critical” is used to represent the presence of a time-window, within which one or more specified actions are required to be completed with some defined level of certainty. Failure to complete specified actions within the time window risks failure of the applications requesting the actions, with attendant risk to equipment, plant and possibly human life.

This standard defines in an abstract way the externally visible service provided by the Type 11 fieldbus data-link layer in terms of

- a) the primitive actions and events of the service;
- b) the parameters associated with each primitive action and event, and the form which they take; and
- c) the interrelationship between these actions and events, and their valid sequences.

The purpose of this standard is to define the services provided to

- the Type 11 fieldbus application layer at the boundary between the application and data-link layers of the fieldbus reference model, and
- systems management at the boundary between the data-link layer and systems management of the fieldbus reference model.

1.2 Specifications

The principal objective of this standard is to specify the characteristics of conceptual data-link layer services suitable for time-critical communications, and thus supplement the OSI Basic Reference Model in guiding the development of data-link protocols for time-critical communications. A secondary objective is to provide migration paths from previously-existing industrial communications protocols.

This specification may be used as the basis for formal DL-Programming-Interfaces. Nevertheless, it is not a formal programming interface, and any such interface will need to address implementation issues not covered by this specification, including

- a) the sizes and octet ordering of various multi-octet service parameters, and
- b) the correlation of paired request and confirm, or indication and response, primitives.

1.3 Conformance

This standard do not specify individual implementations or products, nor do they constrain the implementations of data-link entities within industrial automation systems.

There is no conformance of equipment to this data-link layer service definition standard. Instead, conformance is achieved through implementation of the corresponding data-link protocol that fulfills the Type 11 data-link layer services defined in this standard.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61158-4-11, *Industrial communication networks – Fieldbus specifications – Part 4-11: Data-link layer protocol specification – Type 11 elements*

ISO/IEC 7498-1, *Information technology – Open Systems Interconnection – Basic Reference Model: The Basic Model*

ISO/IEC 7498-3, *Information technology – Open Systems Interconnection – Basic Reference Model: Naming and addressing*

ISO/IEC 8802-3, *Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications*

ISO/IEC 10731, *Information technology – Open Systems Interconnection – Basic Reference Model – Conventions for the definition of OSI services*

ISO/TR 13283, *Industrial automation – Time-critical communications architectures – User requirements and network management for time-critical communications systems*

iTeh STANDARD PREVIEW

3 Terms, definitions, symbols, abbreviations and conventions

For the purposes of this document, the following terms, definitions, symbols, abbreviations and conventions apply.

<https://standards.iteh.ai/catalog/standards/sist/15147689-9c6d-49a7-88b9-fd4237ba5e19/iec-61158-3-11-2007>

3.1 Reference model terms and definitions

This standard is based in part on the concepts developed in ISO/IEC 7498-1 and ISO/IEC 7498-3, and makes use of the following terms defined therein.

| | |
|---|----------|
| 3.1.1 DL-address | [7498-3] |
| 3.1.2 DL-address-mapping | [7498-1] |
| 3.1.3 called-DL-address | [7498-3] |
| 3.1.4 calling-DL-address | [7498-3] |
| 3.1.5 centralized multi-end-point-connection | [7498-1] |
| 3.1.6 DL-connection | [7498-1] |
| 3.1.7 DL-connection-end-point | [7498-1] |
| 3.1.8 DL-connection-end-point-identifier | [7498-1] |
| 3.1.9 DL-connection-mode transmission | [7498-1] |
| 3.1.10 DL-connectionless-mode transmission | [7498-1] |
| 3.1.11 correspondent (N)-entities | [7498-1] |
| correspondent DL-entities (N=2) | |
| correspondent Ph-entities (N=1) | |

| | |
|---|----------|
| 3.1.12 DL-duplex-transmission | [7498-1] |
| 3.1.13 (N)-entity | [7498-1] |
| DL-entity (N=2) | |
| Ph-entity (N=1) | |
| 3.1.14 DL-facility | [7498-1] |
| 3.1.15 flow control | [7498-1] |
| 3.1.16 (N)-layer | [7498-1] |
| DL-layer (N=2) | |
| Ph-layer (N=1) | |
| 3.1.17 layer-management | [7498-1] |
| 3.1.18 DL-local-view | [7498-3] |
| 3.1.19 DL-name | [7498-3] |
| 3.1.20 naming-(addressing)-domain | [7498-3] |
| 3.1.21 peer-entities | [7498-1] |
| 3.1.22 primitive name | [7498-3] |
| 3.1.23 DL-protocol | [7498-1] |
| 3.1.24 DL-protocol-connection-identifier | [7498-1] |
| 3.1.25 DL-protocol-data-unit | [7498-1] |
| 3.1.26 DL-relay | [7498-1] |
| 3.1.27 reset | [7498-1] |
| 3.1.28 responding-DL-address | [7498-3] |
| 3.1.29 routing | [7498-1] |
| 3.1.30 segmenting | [7498-1] |
| 3.1.31 (N)-service | [7498-1] |
| DL-service (N=2) | |
| Ph-service (N=1) | |
| 3.1.32 (N)-service-access-point | [7498-1] |
| DL-service-access-point (N=2) | |
| Ph-service-access-point (N=1) | |
| 3.1.33 DL-service-access-point-address | [7498-3] |
| 3.1.34 DL-service-connection-identifier | [7498-1] |
| 3.1.35 DL-service-data-unit | [7498-1] |
| 3.1.36 DL-simplex-transmission | [7498-1] |
| 3.1.37 DL-subsystem | [7498-1] |
| 3.1.38 systems-management | [7498-1] |
| 3.1.39 DLS-user-data | [7498-1] |

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[IEC 61158-3-11:2007](https://standards.iteh.ai/catalog/standards/sist/15147689-9c6d-49a7-88b9-fd4237ba5e19/iec-61158-3-11-2007)

<https://standards.iteh.ai/catalog/standards/sist/15147689-9c6d-49a7-88b9-fd4237ba5e19/iec-61158-3-11-2007>

3.2 Service convention terms and definitions

This standard also makes use of the following terms defined in ISO/IEC 10731 as they apply to the data-link layer:

3.2.1 acceptor

3.2.2 asymmetrical service

**3.2.3 confirm (primitive);
requestor.deliver (primitive)**

3.2.4 deliver (primitive)

3.2.5 DL-confirmed-facility

3.2.6 DL-facility

3.2.7 DL-local-view

3.2.8 DL-mandatory-facility

3.2.9 DL-non-confirmed-facility

3.2.10 DL-provider-initiated-facility

3.2.11 DL-provider-optional-facility

**3.2.12 DL-service-primitive;
primitive**

3.2.13 DL-service-provider

3.2.14 DL-service-user

3.2.15 DLS-user-optional-facility

**3.2.16 indication (primitive);
acceptor.deliver (primitive)** [IEC 61158-3-11:2007](#)

3.2.17 multi-peer <https://standards.iteh.ai/catalog/standards/sist/15147689-9c6d-49a7-88b9-fd4237ba5e19/iec-61158-3-11-2007>

**3.2.18 request (primitive);
requestor.submit (primitive)**

3.2.19 requestor

**3.2.20 response (primitive);
acceptor.submit (primitive)**

3.2.21 submit (primitive)

3.2.22 symmetrical service

3.3 Data-link service terms and definitions

3.3.1

common memory

virtual common memory over the Type 11 fieldbus, which is shared by the nodes participating in the Type 11 fieldbus and is primarily used for the real-time communications by the TCC data service

3.3.2

DL-segment, link, local link

single DL-subnetwork in which any of the connected DLEs may communicate directly, without any intervening DL-relaying, whenever all of those DLEs that are participating in an instance of communication are simultaneously attentive to the DL-subnetwork during the period(s) of attempted communication

3.3.3

DLCEP-address

DL-address which designates either

a) one peer DL-connection-end-point, or

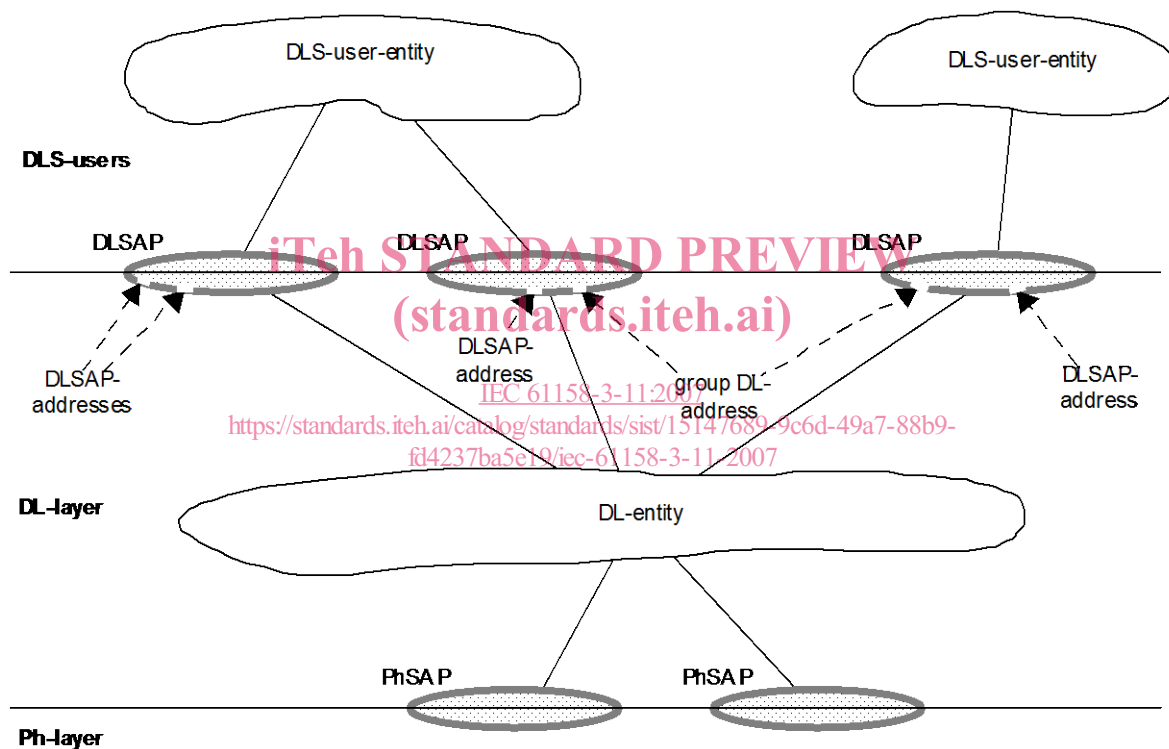
b) one multi-peer publisher DL-connection-end-point and implicitly the corresponding set of subscriber DL-connection-end-points where each DL-connection-end-point exists within a distinct DLSAP and is associated with a corresponding distinct DLSAP-address

3.3.4

DLSAP

distinctive point at which DL-services are provided by a single DL-entity to a single higher-layer entity

NOTE This definition, derived from ISO/IEC 7498-1, is repeated here to facilitate understanding of the critical distinction between DLSAPs and their DL-addresses.



NOTE 1 DLSAPs and PhSAPs are depicted as ovals spanning the boundary between two adjacent layers.

NOTE 2 DL-addresses are depicted as designating small gaps (points of access) in the DLL portion of a DLSAP.

NOTE 3 A single DL-entity may have multiple DLSAP-addresses and group DL-addresses associated with a single DLSAP.

Figure 1 – Relationships of DLSAPs, DLSAP-addresses and group DL-addresses

3.3.5

DL(SAP)-address

either an individual DLSAP-address, designating a single DLSAP of a single DLS-user, or a group DL-address potentially designating multiple DLSAPs, each of a single DLS-user

NOTE This terminology is chosen because ISO/IEC 7498-3 does not permit the use of the term DLSAP-address to designate more than a single DLSAP at a single DLS-user.

3.3.6

(individual) DLSAP-address

DL-address that designates only one DLSAP within the extended link

NOTE A single DL-entity may have multiple DLSAP-addresses associated with a single DLSAP.

**3.3.7
extended link**

DL-subnetwork, consisting of the maximal set of links interconnected by DL-relays, sharing a single DL-name (DL-address) space, in which any of the connected DL-entities may communicate, one with another, either directly or with the assistance of one or more of those intervening DL-relay entities

NOTE An extended link may be composed of just a single link.

**3.3.8
frame**

denigrated synonym for DLPDU

**3.3.9
group DL-address**

DL-address that potentially designates more than one DLSAP within the extended link. A single DL-entity may have multiple group DL-addresses associated with a single DLSAP. A single DL-entity also may have a single group DL-address associated with more than one DLSAP

**3.3.10
high-speed cyclic data**

RTE data conveyed by means of the high-speed cyclic data transmission

iTeh STANDARD PREVIEW

**3.3.11
high-speed cyclic data transmission**

one of three levels of the TCC data service with the highest priority level

<https://standards.iteh.ai/catalog/standards/sist/15147689-9c6d-49a7-88b9-f4237ba5e19/iec-61158-3-11-2007>

**3.3.12
low-speed cyclic data**

RTE data conveyed by means of the low-speed cyclic data transmission

**3.3.13
low-speed cyclic data transmission**

one of three levels of the TCC data service with the lowest priority level

**3.3.14
medium-speed cyclic data**

RTE data conveyed by means of the medium-speed cyclic data transmission

**3.3.15
medium-speed cyclic data transmission**

one of three levels of the TCC data service with the second priority level

**3.3.16
multipoint connection**

connection from one node to many nodes. Multipoint connection allows data transfer from a single publisher to many subscriber nodes

**3.3.17
multi-peer DLC**

centralized multi-end-point DL-connection offering DL-duplex-transmission between a single distinguished DLS-user known as the publisher or publishing DLS-user, and a set of peer but undistinguished DLS-users known collectively as the subscribers or subscribing DLS-users, where the publishing DLS-user can send to the subscribing DLS-users as a group (but not

individually), and the subscribing DLS-users can send to the publishing DLS-user (but not to each other).

3.3.18

node

single DL-entity as it appears on one local link

3.3.19

node-id

two-octet primary identifier for the DLE on the local link, whose values are constrained

NOTE A permissible value is from 1 to 255. A value 0 is specifically used for the SYN node, which emits the SYN frame.

3.3.20

receiving DLS-user

DL-service user that acts as a recipient of DLS-user-data

NOTE A DL-service user can be concurrently both a sending and receiving DLS-user.

3.3.21

sending DLS-user

DL-service user that acts as a source of DLS-user-data

3.3.22

SYN node

node transmitting the SYN frame

3.3.23

sporadic message data service

aperiodic message transfer which sporadically occurs upon DLS-user requesting one or more message to transfer, and regular ISO/IEC 8802-3 Ethernet message frame is transferred by means of this message transfer

3.3.24

TCC data service

cyclic data transfer with three levels of the data transmission at the same time, of which each data transmission level is according to the data priority and the data transmission period for real-time delivery, and of which the data transmission period and the total data volume for each level can be specified in designing phase and on application needs

3.4 Symbols and abbreviations

| | | |
|-------|--------------|--|
| 3.4.1 | CM | Common memory |
| 3.4.2 | DL- | Data-link layer (as a prefix) |
| 3.4.3 | DLC | DL-connection |
| 3.4.4 | DLCEP | DL-connection-end-point |
| 3.4.5 | DLE | DL-entity (the local active instance of the data-link layer) |
| 3.4.6 | DLL | DL-layer |
| 3.4.7 | DLPCI | DL-protocol-control-information |
| 3.4.8 | DLPDU | DL-protocol-data-unit |
| 3.4.9 | DLM | DL-management |