INTERNATIONAL STANDARD

ISO 19626-2

First edition
2021-02

Processes, data elements and documents in commerce, industry and administration — Trusted communication platform for electronic documents —

Part 2: Applications

Reference number
ISO 19626-2:2021(E)

© ISO 2021



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Relational architecture of TCP ... **2**
4.1 Overview ... 2
4.2 TCP relational architecture ... 3
4.3 Functionalities of TCP components ... 4
4.3.1 TTP identity directory ... 4
4.3.2 TCP communication server ... 5
4.3.3 TCP communication client ... 8
4.3.4 TCE repository ... 9
5 TCP processes ... **10**
5.1 Overview of main processes ... 10
5.2 Description of each process ... 11
5.2.1 PR1 (communication server registration process) ... 11
5.2.2 PR2 (e-identity registration process) ... 12
5.2.3 PR3 (communication authentication process) ... 14
5.2.4 PR4 (e-document transmitting process) ... 15
5.2.5 PR5 (perusal confirmation process) ... 19
5.2.6 PR6 (TCE preservation process) ... 20
5.2.7 PR7 (communication verification process) ... 21
5.2.8 PR8 (spam message handling process) ... 22
6 TCP APIs ... **23**
6.1 General ... 23
6.2 Network requirements for APIs ... 23
6.2.1 General ... 23
6.2.2 Security requirements ... 23
6.2.3 Common requirements for protocol ... 26
6.3 Requirements for service interface ... 29
6.3.1 APIs of TTP identity directory ... 29
6.3.2 APIs of communication server ... 30
6.3.3 APIs of TCE repository ... 32
Annex A (informative) **Structure of TCE** ... **33**
Annex B (informative) **Structure of message header** ... **37**
Annex C (informative) **Detailed description for APIs** ... **39**
Bibliography ... **66**

© ISO 2021 – All rights reserved

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 154, *Processes, data elements and documents in commerce, industry and administration*.

A list of all parts in the ISO 19626 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

© ISO 2021 – All rights reserved

Introduction

This document presents the TCP (trusted communication platform) system for trusted communication in the open and distributed ICT (information communication technology) environment, as a connected standard of ISO 19626-1.

The TCP system is a kind of middleware for connecting trusted communication in IoT (internet of things) or cloud environments, that delivers the information between humans, organizations, and devices by exchanging the e-documents via the TCP system components and stores the evidence of executed communication.

This document specifies the functionalities of processes and APIs (application programming interfaces) between TCP system components.

It intends to be described in the technology-neutral way in order that a TCP system can be implemented by applying various wire-wireless applied services and communication protocols used in the real world.

The key points that are implicated to this document are as follows.

a) The communication protocol used for inter-connection between TCP components is a core function of the application service layer in the distributed environment of wire and wireless communication.

The basic function of sending or receiving messages between the TCP system components compose the common communication interface to deliver message(s) in a distributed computing system of wire and wireless environment.

b) TCE (trusted communication evidence) can prove trusted communication in a TCP.

The TCP communication server executes reliable communication transactions, and create and store TCE as the proof in a way of non-repudiation between the communication participants.

c) A TCP system can be adequately ported to various kinds of business communication systems.

A TCP system is connected as a transmit or receive module between the e-business systems connected to be distributed with various work systems of B2B, e-government, and e-trade as well as the simple electronic communication systems to transmit contents directly using the address of sender or receiver (URLs, IP, address) such as the e-mail system as a related application system.

© ISO 2021 – All rights reserved

Processes, data elements and documents in commerce, industry and administration — Trusted communication platform for electronic documents —

Part 2: Applications

1 Scope

As a connected standard of ISO 19626-1, this document defines the communication interactions between TCP system components and specifies their detailed interfaces — the processes and the APIs of the TCP system components.

It provides the common communication interface for deployment and implementation of the system components, and their functions in a specific technology-neutral way to those who consider applying and establishing a TCP system.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 19626-1, *Processes, data elements and documents in commerce, industry and administration — Trusted communication platforms for electronic documents — Part 1: Fundamentals*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 19626-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
blacklist
list of *e-identities* (3.3) of the originators who are proved having 'malicious intent'

Note 1 to entry: If a message is confirmed as *spam* (3.5), an e-identity who sent the spam is classified as a sender having 'malicious intent'.

Note 2 to entry: An addressee receiving a message from the originator in the blacklist can reject receiving the message.

3.2
characteristic information
unique identifying information to identify the entity in the offline (real) world such as a resident registration number, social security number, or identification number of an IoT device

© ISO 2021 – All rights reserved

3.3
e-identity
sole object to identify the entity who is the actual subject of communication activity under a TCP system

Note 1 to entry: In a TCP, it is the object which expresses the entity who is the actual subject of all activities including transmission, reception, and perusal (viewing or reading), etc. of e-documents after the electronic verification of identity.

3.4
e-identity ID
name that refers to an *e-identity* (3.3) identifying a value an e-identity gives itself for identification

Note 1 to entry: With the ID, the e-identity expresses itself and distinguishes itself from other e-identities.

3.5
spam
unsolicited email, which can carry malicious contents and/or scam messages

[SOURCE: ISO/IEC 27033-1:2015, 3.37, modified — "unsolicited emails" has been replaced with "unsolicited email".]

3.6
whitelist
list of trusted communication servers in a TCP

Note 1 to entry: If a communication server is proved that the one is secure technically and politically and complies with a standard and policy of the TCP, then TTP (trusted third party) directory server adds the one to its whitelist.

4 Relational architecture of TCP

4.1 Overview

ISO 19626-1 presents 2 types of 'TCP main' and 'TCP client' in system architecture. As a connected standard, this document enhances its relational architecture at the view of the interface.

As shown in Figure 1, once a transmitting entity (i.e. a sender) makes a delivery request to a receiving entity (i.e. a receiver), each of the components can be linked to one another through linkage interfaces, and the communication server is enabled to form an entrusted chain with a relying party. The pair-linked communication servers implement communication that can be entrusted, and through their interactions, generate TCE and can possess evidence in the TCE repository.

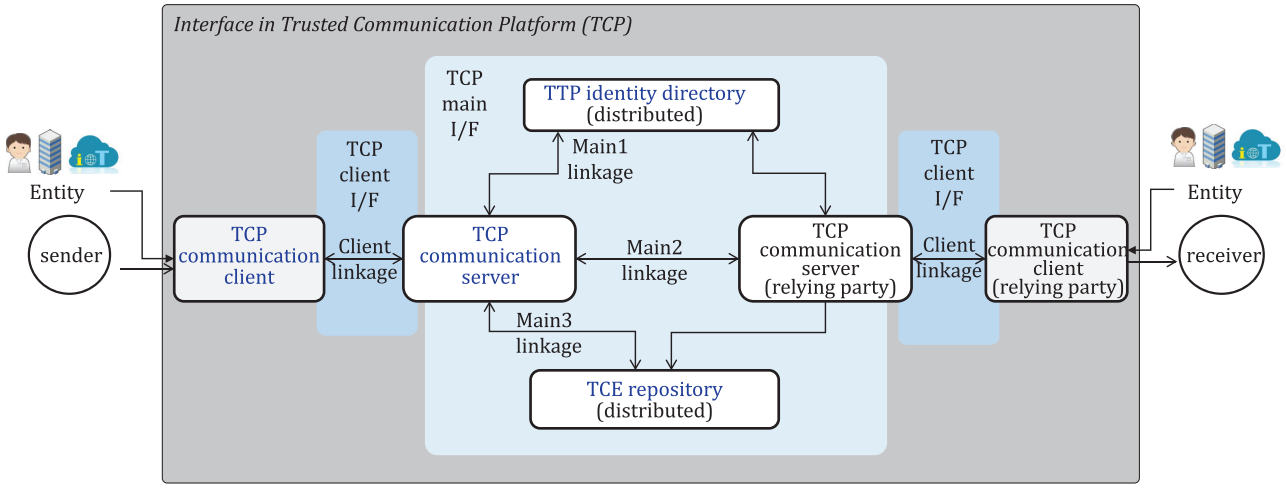


Figure 1 — TCP relational architecture

© ISO 2021 – All rights reserved