

ICS 49.140
CCS V 75



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 42649-2023

**Space data and information transfer systems - Licklider
transmission protocol(LTP)
(English Translation)**

Issued on: May 23, 2023

Implemented on: September 1, 2023

Issued by: State Administration for Market Regulation

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Reference

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules for Standardization Documents" drafting:

This document refers to "ISO 21080:2016" Licklider transmission protocol for CCSDS in spatial data and information transmission system (LTP) "" drafted, the degree of consistency is non-equivalent:

Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents:

Introduction

To achieve interoperable communications in extreme and performance-challenged environments where continuous end-to-end connectivity cannot be achieved, the Internet Research Task Force Responsible for the research and design of network architecture and protocols: For space links with extremely long round-trip delays and frequent interruptions, Experimental Proposal": RFC5326 is the main protocol specification document of the LTP protocol:

The Advisory Committee on Space Data Systems (CCSDS) formulated on the basis of RFC5326 in combination with the characteristics and requirements of space mission communications:

ISO 21080:2016 "Licklider Transport Protocol (LTP Protocol) for CCSDS in Spatial Data and Information Transmission System": The standard the standards only focus on the technical adjustments and supplementary provisions of RFC5326: The LTP protocol cooperates with ISO 21323:2016 "Spatial Data Together with the bundle protocol in the Information Transmission System CCSDS Bundle Protocol Specification, it forms the core protocol of the space delay tolerant network:

In order to ensure the integrity of the technical content, this document adopts non-equivalent adoption of ISO 21080:2016, focusing on reference and adding the content of the protocol specification in RFC5326 and RFC5327 improves the integrity of the technical content of the LTP protocol:

Space Data and Information Transmission System Licklider Transport Protocol (LTP Protocol)

1 Scope

This document specifies the data unit format, protocol flow, business description, etc: of the Licklider Transport Protocol (hereinafter referred to as the LTP protocol):

It provides supplementary regulations on the application of the LTP protocol in the space data and information transmission system, mainly including the lower layer communication protocol and business adaptation:

Configuration, domain value range, business data aggregation, and protocol management information content, etc:

This document is applicable to provide optional reliable data transmission over space links that are extended during communication and may be frequently interrupted:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references for documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document:

GB/T 2900.54 Electrotechnical term radiocommunication: transmitter, receiver, network and operation
GB/T 17967 Information Technology Open System Interconnection Basic Reference Model OSI Service Definition Convention
GB/T 42041-2022 Aerospace Terminology Space Data and Information Transmission

3 Terms and Definitions

The following terms and definitions defined in GB/T 2900.54, GB/T 17967 and GB/T 42041-2022 apply to this document:

Entity

An active element within a subsystem that is the embodiment that defines a set of capabilities (excluding any additional capabilities in use) for a particular object:

Protocol data unit; PDU the data structure specified by the protocol:

Note: Contains protocol control information domain and user data domain:

[Source: GB/T 42041-2022, 3:1:27] 3.3 Service data unit; SDU the user data field in the data structure specified by the protocol:

[Source: GB/T 42041-2022, 3:1:28] 3.4 engine identifier engineID an integer that uniquely identifies a specific LTP protocol engine that belongs to a group of communicating LTP protocol engines:

a closed set:

Note: When the LTP protocol runs under the Delay Tolerant Network (DTN) bundle protocol (BP protocol), the distribution layer adapter between the BP protocol and the LTP protocol will be responsible (in an implementation-specific manner) for converting between DTN endpoint identifiers (EIDs) and LTP protocol engine identifiers: