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Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 5: Transport Protocols; Sub-part 1: Basic Transport Protocol

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Foreword

This European Standard (EN) has been produced by ETSI Technical Committee Intelligent Transport Systems (ITS).

The present document is part 5, sub-part 1 of a multi-part deliverable. Full details of the entire series can be found in part 1 [2].

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Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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Introduction

The Basic Transport Protocol (BTP) provides an end-to-end, connection-less transport service in the ITS ad hoc network. Its main purpose is the multiplexing of messages from different processes at the ITS facilities layer, e.g. CAM and DENM from the cooperative awareness basic service and the distributed environmental notification basic service, for the transmission of packets via the GeoNetworking protocol as well as the de-multiplexing at the destination. BTP enables protocol entities at the ITS facilities layer to access services of the GeoNetworking protocol and to pass protocol control information between the ITS facilities layer and the GeoNetworking protocol.

Message multiplexing/demultiplexing is based on ports, an ITS station-internal 16 bit address. A port represents a communication endpoint that identifies the ITS station protocol entity at the source (source port) or the destination (destination port). The usage of ports is similar to the two-stage packet transport in the IP protocol suite, where the IP provides the routing of packets from source to destination and the transport protocol, such as UDP, multiplexes/demultiplexes messages from/to application processes. In the case of BTP, the GeoNetworking protocol transports the packets among the ITS stations and the BTP protocol delivers the packets to the entities at the ITS facilities layer. BTP also adopts the concept of "well-known ports" from the IP protocol suite that assigns fixed ports to specific ITS facilities layer protocols. The definition of the ports, however, is beyond the scope of the present document.

BTP is a lightweight protocol: it has a 4-byte protocol header and requires minimal processing. It provides an unreliable transport of packets, i.e. packets can arrive out-of-order, appear duplicated or can be lost. The design of BTP assumes that entities using the protocol are either tolerant against the unreliable packet transport or provide appropriate mechanisms for reliable communication in their protocols.

1 Scope

The present document specifies the Basic Transport Protocol (BTP) for the transport of packets among ITS stations. It resides on top of the GeoNetworking protocol specified in ETSI EN 302 636-4-1 [5] and below the ITS-S facilities layer. It provides an end-to-end, connection-less and unreliable transport service.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are necessary for the application of the present document.

- [1] ETSI EN 302 665: "Intelligent Transport Systems (ITS); Communications Architecture".
- [2] ETSI EN 302 636-1: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 1: Requirements".
- [3] ETSI EN 302 636-2: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 2: Scenarios".
- [4] ETSI EN 302 636-3: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 3: Network architecture".
- [5] ETSI EN 302 636-4-1: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 4: Geographical addressing and forwarding for point-to-point and point-to-multipoint communications; Sub-part 1: Media-Independent Functionality".
- [6] ETSI TS 103 248: "Intelligent Transport Systems (ITS); GeoNetworking; Port Numbers for the Basic Transport Protocol (BTP)".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] Void.
- [i.2] Void.
- [i.3] ETSI EN 302 637-2: "Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 2: Specification of Cooperative Awareness Basic Service".

- [i.4] ETSI EN 302 637-3: "Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 3: Specifications of Decentralized Environmental Notification Basic Service".
- [i.5] IETF RFC 768: "User Datagram Protocol".
- [i.6] Void.

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