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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Satellite Earth Stations and Systems (SES).

1 Scope

The present document specifies the Return Link Encapsulation (RLE) Protocol, which is used to encapsulate and if necessary fragment network layer packets such as for example IP datagrams to allow their transmission over the return link of an interactive satellite network.

RLE has been derived from the Generic Stream Encapsulation (GSE) protocol [1], used in the forward links of interactive and broadcasting satellite networks, which are normally characterised by continuous transmission, limited variability in the size of network layer packets, and large physical layer frames typically capable of carrying more than one network layer packet. RLE was designed to maximise the system efficiency on the return channel, which is in turn characterised by bursty traffic, highly variable size of network layer packets, smaller physical layer bursts, and multiple access constraints.

The RLE protocol is designed to provide three main functionalities which are fully specified in the present document, namely:

- encapsulation
- fragmentation
- frame packing

RLE is today used in DVB-RCS2 [2] as well as in the S-MIM [3] standards.

2 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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2.1 Normative references

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

[1] ETSI TS 102 606: "Digital Video Broadcasting (DVB); Generic Stream Encapsulation (GSE) Protocol".

[2] ETSI EN 301 545-2: "Digital Video Broadcasting (DVB); Second Generation DVB Interactive Satellite System (DVB-RCS2); Part 2: Lower Layers for Satellite standard".

[3] ETSI TS 102 721-5: "Satellite Earth Stations and Systems; Air Interface for S-band Mobile Interactive Multimedia (S-MIM); Part 5: Protocol Specifications, Link Layer".

[4] IETF RFC 4326: "Unidirectional Lightweight Encapsulation (ULE) for Transmission of IP Datagrams over an MPEG-2 Transport Stream (TS)".

[5] IEEE 802.3- 2012: IEEE Standard for 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".

[6] IETF RFC 4944: "Transmission of IPv6 Packets over IEEE 802.15.4 Networks".