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Technical Specification

**Broadband Radio Access Networks (BRAN);
HIPERACCESS;
Packet based Convergence Layer;
Part 2: Ethernet Service Specific
Convergence Sublayer**

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Foreword

This Technical Specification (TS) has been produced by ETSI Project Broadband Radio Access Networks (BRAN).

It defines the functionality required for the support of packet services over HIPERACCESS [2]. Separate ETSI documents provide details on the system overview, data link control layer, Radio Link Control (RLC) sublayer, other convergence sublayers and conformance testing requirements for HIPERACCESS.

The Packet based Convergence Layer is split into two parts, a Common Part and a Service Specific Part. The Common Part describes the functionality for adapting variable length packets/frames to the fixed size data units used at the Data Link Control (DLC) layer while the Service Specific Part describes the functionality required to support a certain protocol, e.g. Ethernet or IP. It is envisioned that several, independent, Service Specific Convergence Sublayers (SSCS) will be defined in the future as market requirements develop. The SSCSs all use the services of the Common Part and the DLC.

Further SSCSs will be added in the future.

The present document is part 2 of a multi-part deliverable. Full details of the entire series can be found in part 1 [4].

1 Scope

The present document is applicable to HIPERACCESS equipment supporting Ethernet packet services.

The present document does only address the functionality required to transfer variable length packets/frames over the radio interface between an HIPERACCESS Access Point (AP) and Access Terminal (AT). It does not address the requirements and technical characteristics for wired network interfaces at the Access Point and at the Access Terminal.

The Packet based Convergence Layer stack consists of a Common Part, and Service Specific Parts that are defined in separate documents (this document defines the part for Ethernet packets). The Service Specific Convergence Sublayers all use the services provided by the Common Part and the HIPERACCESS Data Link Control (DLC) layer.

The task of the Common Part of the Packet based Convergence Layer is to adapt variable length packets/frames to the fixed data unit size used in the HIPERACCESS DLC layer.

The present document does not address the requirements and technical characteristics for conformance testing. These are covered by separate documents.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies.

[1] ETSI TS 102 000: "Broadband Radio Access Networks (BRAN); HIPERACCESS; DLC protocol specification".

[2] ETSI TR 101 177: "Broadband Radio Access Networks (BRAN); Requirements and architectures for broadband fixed radio access networks (HIPERACCESS)".

[3] IETF RFC 2684: "Multiprotocol Encapsulation over ATM Adaptation Layer 5".

[4] ETSI TS 102 117-1: "Broadband Radio Access Networks (BRAN); HIPERACCESS; Packet based Convergence Layer; Part 1: Common Part".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

Protocol Data Unit (PDU): data unit exchanged between entities at the same ISO layer

Service Data Unit (SDU): data unit exchanged between adjacent ISO layers

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AAL   ATM Adaptation Layer
AP   Access Point

ATM   Asynchronous Transfer Mode
CL   Convergence Layer
DLC   Data Link Control
IP   Internet Protocol
PDU   Protocol Data Unit
RLC   Radio Link Control
SDU   Service Data Unit
SSCS   Service Specific Convergence Sublayer

4   Convergence Layer architecture

4.1   General

The Packet Based Convergence Layer (CL) resides on top of the Data Link Control (DLC) layer. The task of this
Convergence Layer is to adapt the service requirements of Packet Based applications to the services offered by the
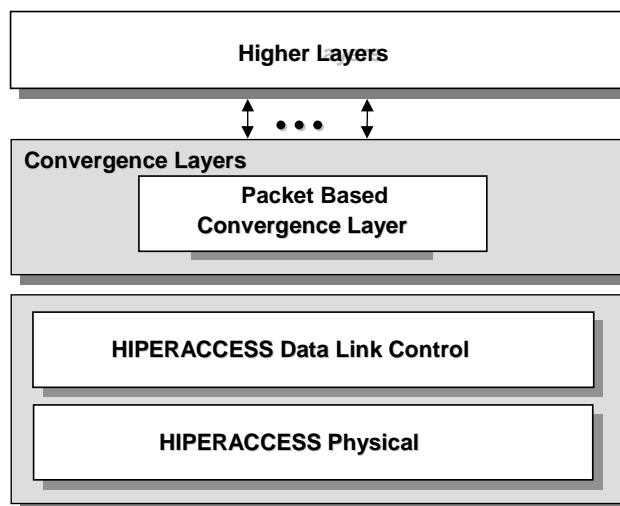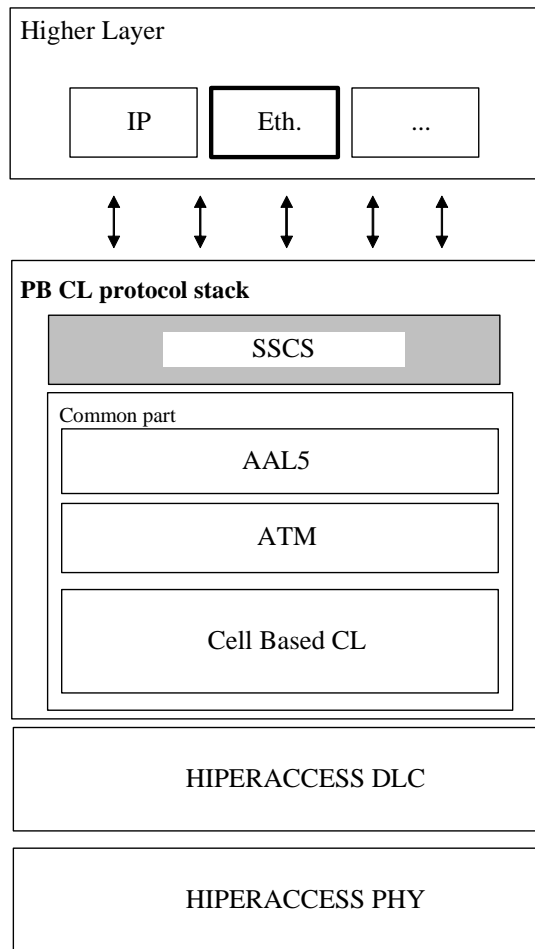HIPERACCESS DLC layer.

Figure 1: HIPERACCESS Convergence Layers

4.2 Ethernet Service Specific Convergence Sublayer architecture

Figure 2 shows the protocol stack for handling Ethernet packet within HIPERACCESS.

Figure 2: Packet based CL protocol stack

The Service Specific Convergence Sublayer, for Ethernet packets, shall handle the packets according to RFC 2684 [3].

The implementation of RFC 2684 [3] shall be according to the following:

- Bridge protocols shall be supported;
  - VC multiplexing shall be supported as described in clause 5.2 of [3];
  - LLC Encapsulation shall be supported as described in clause 6.2 of [3];

NOTE: Routed protocol modality (as described in clauses 5.1 and 6.1 of [3]) is out of the scope of this SSCS, since the present specification refers only to Ethernet.

4.3 Parameters

The multiplexing modality (VC-multiplexing or LLC encapsulation) shall be exchanged during connection set-up, since the receiver side shall know in advance which modality is used to encapsulate Ethernet packets. The choice of the modality is done with the `multiplexingMethod` parameter that is inserted into `connectionClParameters` field within `RlcConnectionAdditionInit` and `RlcConnectionAdditionSetup` messages as specified in TS 102 000 [1].

The encoding of this parameter is as follow (in ASN.1 format):

Table 1: multiplexingMethod format

```
multiplexingMethod ::= ENUMERATED {      -- 1 bit

llcEncapsulation       (0),

vcMultiplexing         (1)

}
```

History

Document history		
V1.1.1	October 2002	Publication