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Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 3; Service Independent requirements definition; Transport Plane

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Technical Report

Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 3; Service Independent requirements definition; Transport Plane

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Foreword

This Technical Report (TR) has been produced by ETSI Project Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON).

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1 Scope

The present document describes the requirements for TIPHON Transport Plane capabilities as identified in [1].

2 References

For the purposes of this Technical Report (TR) the following references apply:

- [1] ETSI TR 101 877: "Telecommunications and Internet Protocol Requirements Definition Study; Scope and Requirements for a Simple call".
 - [2] ETSI TR 101 835: "Telecommunications and Internet Protocol Harmonization over Networks (TIPHON); Project method definition".
 - [3] ETSI TS 101 329-4: "Telecommunications and Internet protocol Harmonization Over Networks (TIPHON) Release 4; Functional Entities, Reference Points and Information Flows Definition; Part 4: Quality of Service Management".
 - [4] ITU-T Recommendation Y.1310: "Transport of IP over ATM in public networks".
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3 Definitions and abbreviations

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3.1 Definitions

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

administrative domain: bounded entity within which all encompassed constituent elements are under common ownership, operation and management

domain: result of the application of specific policies to a specific network technology

signalling entity: element capable of sending signalling information

For instance terminal, router, service element.

transport domain: implementation of the transport plane functionality

Transport Abstraction Layer: provides a set of domain independent capabilities derived from the underlying Network Abstraction Layer in response to the transport and connectivity requirements of the Service Abstraction Layer

3.2 Abbreviations

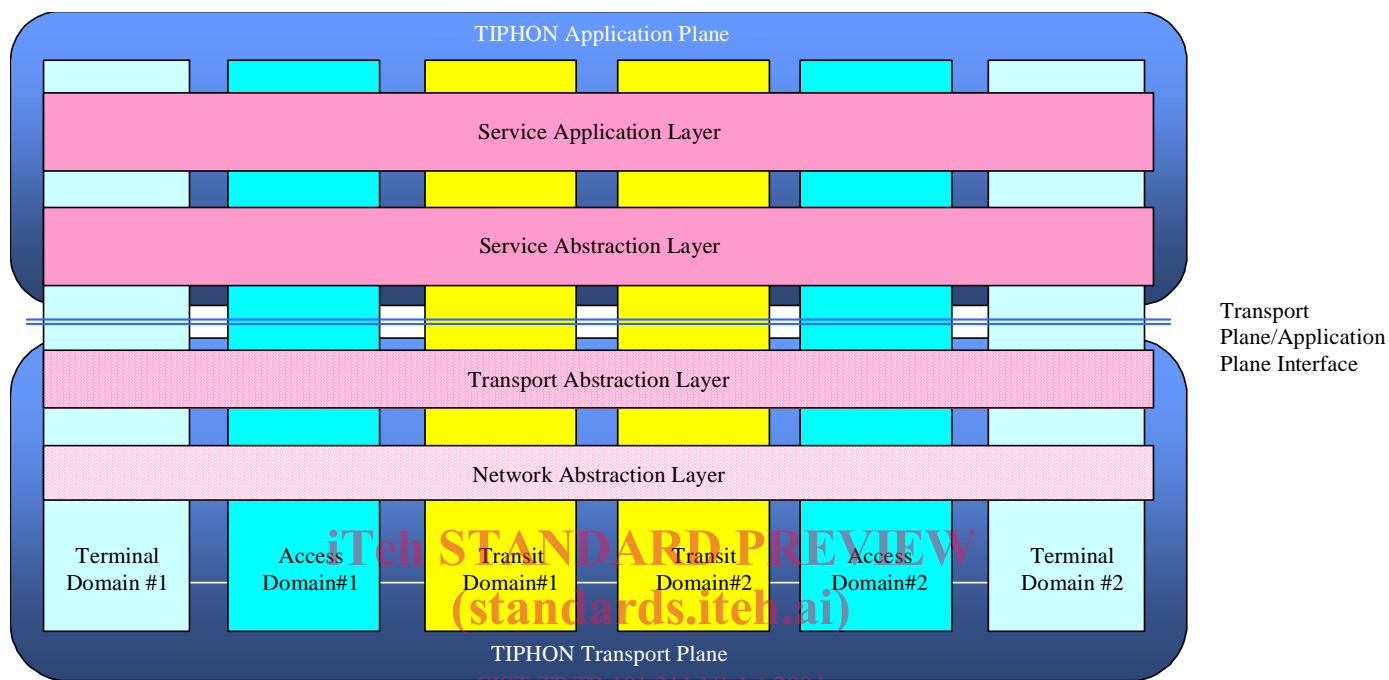
For the purposes of the present document, the following abbreviations apply:

IP	Internet Protocol
MLPS	Multi Protocol Label Switching
QoS	Quality of Service
SCTP	Secure TRansport Control Protocol
SLA	Service Level Agreement
TCP	Transport Control Protocol
UDP	User Datagram Protocol

4 Introduction to the TIPHON transport plane

The TIPHON environment addresses the case where multiple networks, possibly employing differing network technologies, inter-work to provide end-to-end communications services as shown in figure 1.

This model supports the different business roles found within the heterogeneous communications environment envisaged by TIPHON (see annex A of [1]) and commonly found in modern public communications networks.



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Figure 1: The TIPHON network and service environment model.

The TIPHON network and service environment model is separated into two planes that exist across the various network domains encountered in the end-to-end communications path. These two planes connect with a Management Plane, shown in figure 2, which exists outside of the TIPHON network and service environment.

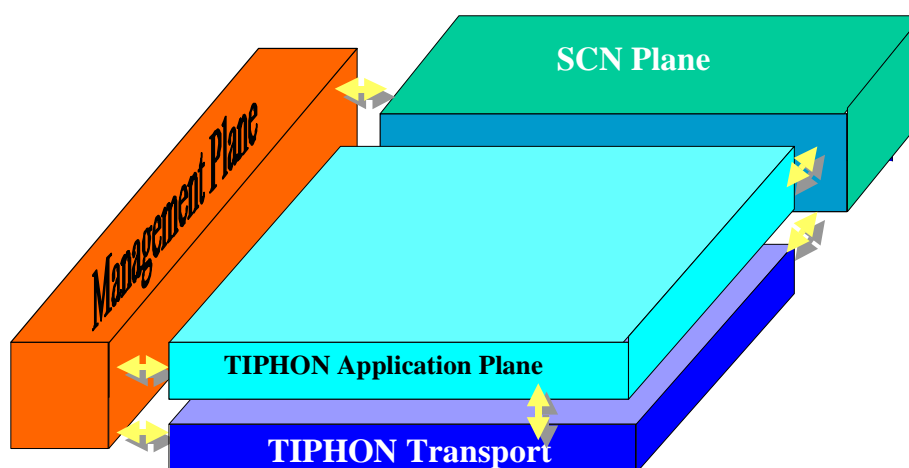


Figure 2: TIPHON planes

As shown, the upper plane comprises the Service Application and Service Abstraction Layers and is termed the TIPHON Application Plane. This plane addresses the implementation of end-to-end communications applications. The lower plane includes the Transport and Network Abstraction Layers and is termed the TIPHON Transport Plane. The TIPHON Transport Plane provides domain independent communications capabilities to the TIPHON Application Plane. Requirements placed upon the TIPHON Transport Plane by the TIPHON Application Plane are expressed in Service Independent Requirements documents in accordance with the TIPHON project method [2].

The present document describes sets of Service Independent Requirements that specify the required behaviour of the TIPHON Transport Plane. The TIPHON Application Plane is expressed in terms of Service Applications and Service Capabilities that are described elsewhere.

4.1 Functionality in the transport plane

The TIPHON transport plane supports the TIPHON Application Plane by providing transport for signalling and media streams to multiple applications. Each type of stream has its own requirements on the transport capabilities provided by the TIPHON Transport Plane. The TIPHON Transport Plane provides generic transport functionality and hence includes protocol layers up to and including ISO Layer 4. For IP-based transport this includes protocols such as TCP, UDP and SCTP. This means that functionality such as security is also within the scope of the TIPHON Transport Plane.

The Transport Plane contains the functionality that is necessary for its own performance, like QoS and routing protocols.

4.2 Assumed business models

The TIPHON telephony application is intended for commercial deployment. The functionality in the transport plane service capability shall support the business requirements of the operators of the network equipment to meet their business and regulatory constraints. A TIPHON Transport Domain:

- may allow non-TIPHON data applications to share the same transport infrastructure;
- should provide a Quality of Service capability independently of the application requesting it;
- may serve multiple TIPHON application domains.

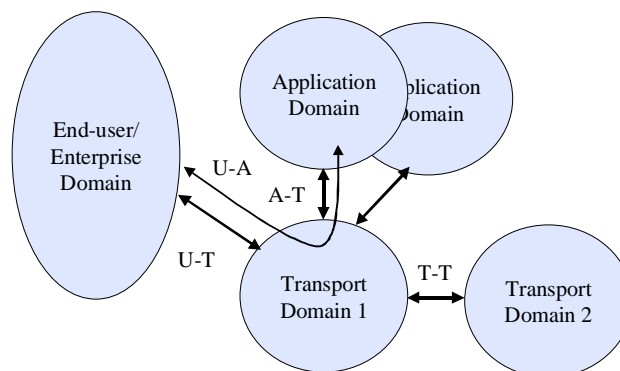


Figure 3: Transport Plane context

There are three kinds of users of the transport plane functionality, each of those impose differing requirements as follows:

- **end-users & enterprises:** will require communication with application domains to access the applications and transport domains to get the bandwidth they need;
- **application domains:** will need to communicate with users and enterprises, other application domains and transport domains to signal for their service and to establish bandwidth for signalling and media;