

# ETSI TS 101 332 V4.1.1 (2002-06)

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*Technical Specification*

**Telecommunications and Internet Protocol Harmonization  
Over Networks (TIPHON) Release 4;  
Interface Protocol Requirements Definition;  
TIPHON Extended H.248/MEGACO  
Package (EMP) Specification;  
ICF Control over Reference Point**

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Reference

DTS/TIPHON-03027R4

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## Foreword

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

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## Introduction

The purpose of this H.248/MEGACO package is to extend the currently available standard packages to allow control of Quality of Service and Media Firewall functions using the H.248/MEGACO protocol. It complements the Release 4 H.248/MEGACO Technology Mapping for Reference Point N (see TS 101 885 [1]).

# 1 Scope

The present document is applicable to TIPHON reference point I3 and provides a H.248/MEGACO Package for use in implementing the relevant interface.

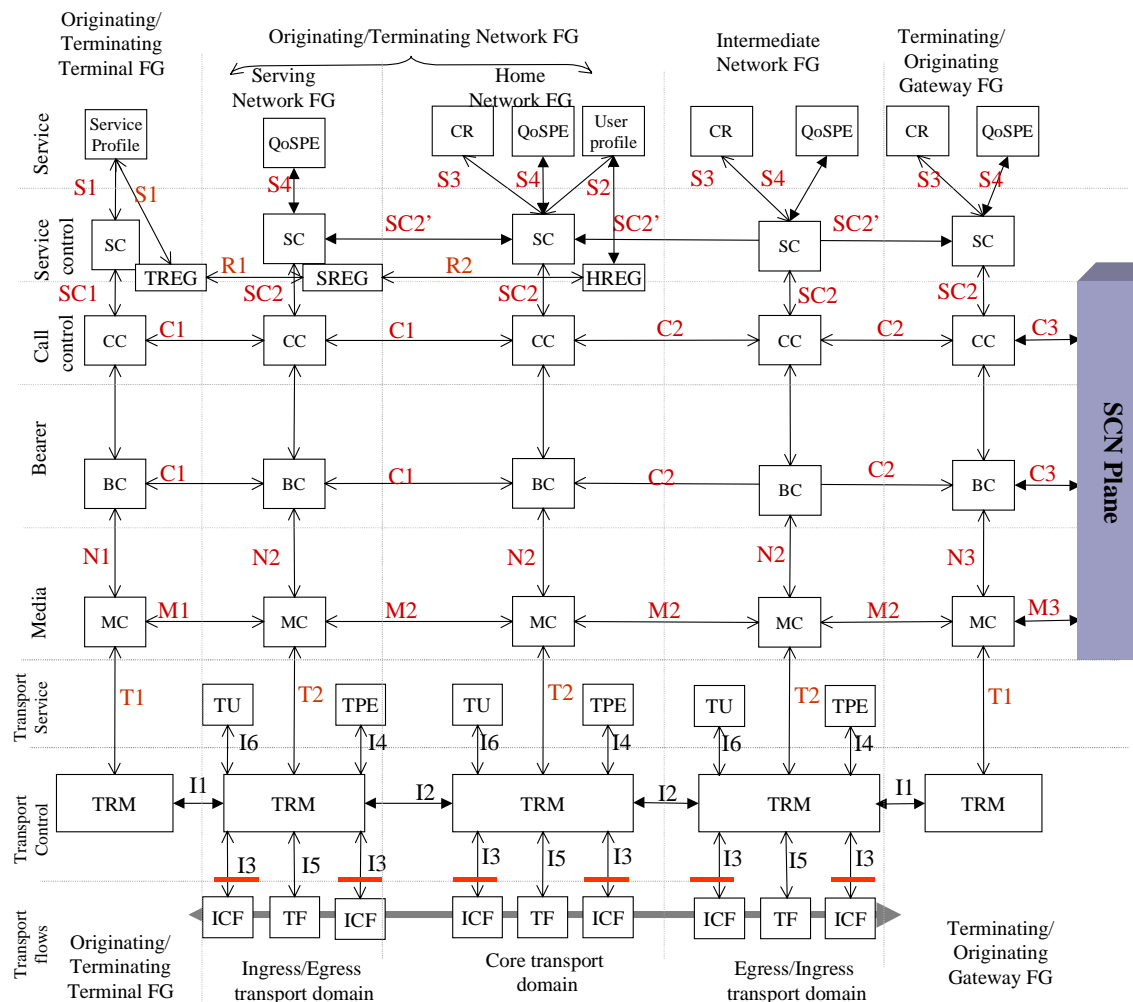


Figure 1: Entities involved in control over the reference point

# 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 101 885: "Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 3; Technology Mapping; Technology Mapping of TIPHON reference point N to H.248/MEGACO protocol".

[2] IETF RFC 2234 (1997): "Augmented BNF for Syntax Specifications: ABNF".

- [3] IETF RFC 3015 (2000): "Megaco Protocol Version 1.0".
- [4] IETF RFC 2216: "Network Element Service Specification Template".

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## 3 Definitions

For the purposes of the present document, the following term and definition applies:

**middlebox:** physical implementation of an InterConnect Function (ICF)

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## 4 Middlebox Package

**Package ID:** EMP (0x????).

**Version :** 1.

**Extends:** None.

This package defines a property to enable the MGC to act as a MIDCOM Agent and control a "gateway" acting as a Middlebox.

### 4.1 Properties

#### 1) Interface ID

- **Description:** a MB can have a number of logical interfaces, each of which is associated with an IP addressing space/range external to the MB. This property enables the controller to explicitly identify the logical interface that is applicable to the related ephemeral termination.
- **Property ID:** iface (0x0001).
- **Type:** integer.
- **Possible Values:** any.
- **Defined in:** termination state descriptor.
- **Characteristics:** read/write.

#### 2) Token Rate

- **Description:** denotes the continually sustainable data rate (in Kbytes/second) against an ephemeral termination. In addition, the Middlebox requires a "bucket size" to be specified so that it can provide a Token Bucket in accordance with RFC 2216 [4]. It is assumed that the "bucket size" is specified external to this package (e.g. via management). Any packets that exceed the token bucket ((Token Rate x T) + (Bucket Size)) over a time period T shall be silently discarded by the Middlebox. However, the Middlebox shall report the number of discarded octets/packets - see Statistics. This parameter would typically be set against an external/untrusted ephemeral. Absence of this parameter means that no rate checking is performed against the ephemeral termination.
- **Property ID:** tokenrate (0x0002).
- **Type:** Integer.
- **Possible Values:** 0-65535.
- **Defined in:** termination state descriptor.
- **Characteristics:** read/write.

### 3) Pin-Hole Time To Live

- **Description:** denotes the TTL of the pin-hole (in seconds). If absent, an infinite TTL shall be assumed.
- **Property ID:** phttl (0x0003).
- **Type:** 32bit Integer.
- **Possible Values:** any.
- **Defined in:** local control descriptor.
- **Characteristics:** read/write.

NOTE: It can be derived from SDP as well. SDP allows the use of send and receive only flows which provides the means to give a choose on the addresses on the middlebox.

## 4.2 Events

### 1) Pin-Hole Timer Expired

- **Event ID:** phtoexp (0x000A).
- **Event Description Parameters:** None.
- **Observed Event Description Parameters:** None.

## 4.3 Signals

None.

## 4.4 Statistics

### 1) Packets Discarded

- **Statistic ID:** pd (x0001).
- **Description:** Denotes the number of packets (against the ephemeral termination) silently discarded by the Middlebox. The packets may have been discarded either due to failing a source address/port check or if the flow rate exceeds the pre-determined Bandwidth Context.
- **Type:** UINT64.
- **Possible Values:** Any.

### 2) Octets Discarded

- **Statistic ID:** od (x0002).
- **Description:** Denotes the number of octets silently discarded (against the ephemeral termination) by the Middlebox.
- **Type:** UINT64.
- **Possible Values:** Any.

It should also be noted that it is assumed that statistics relating to transmitted packets and octets is obtained (inter alia) via the existing NETWORK and RTP Package statistics.

## 4.5 Procedures

The InterConnect Function (ICF) may be viewed as an IP-IP Packet-Packet GW. The ICF shall support a number of logical interfaces (typically 2) - each interface being associated with a given IP address range. The IP ranges may be any mixture of public and private addressing ranges. Domains with overlapping address ranges may be supported.

A flow is a bi-directional connection between two logical channels, normally RTP in one direction and RTCP in the other direction. To enable a flow through the ICF, the controller must request the creation of two ephemeral terminations, specifying the logical interface in each case. On receipt of such a request the ICF shall select IP addresses from the ranges appropriate to each logical interface and inform the controller accordingly. The token rate for a flow is set up against an ephemeral termination and represents the bandwidth available to the sum of all flows on that termination. Each flow is represented by an H.248 stream. As is customary for H.248, the source and destination addresses of a flow are held in the local descriptor and remote descriptor of the termination that acts as the source or sink for the flow.

On a per flow basis, filtering of packets may be enabled/disabled by appropriate wildcarding of the IP addresses in the local descriptor. When address translation is used, the ICF shall for a termination that sources the flow overwrite the source/sink address of IP packets with those assigned to the remote descriptor. When packets from a sinked flow do not match the source and sink addresses as specified in the local descriptor the packet shall be silently discarded.

A flow may be stopped by:

- 1) setting the remote descriptor to zero within a stream and setting reservegroup and reservevalue to "false";
- 2) changing the mode property of the localcontrol descriptor to "inactive".

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## 5 Formal syntax

As in RFC 3015 [3], the package described in this draft may be encoded as ASN.1 or augmented Backus-Naur Form (BNF) (see RFC 2234 [2]).



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## Annex A (informative): Bibliography

- Internet Draft draft-ietf-midcom-framework-07.txt: "Middlebox Communication Architecture and framework".

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## History

<b>Document history</b>		
V4.1.1	June 2002	Publication