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**Type-P Descriptor Monitoring in Two-Way Active Measurement Protocol  
(TWAMP)  
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**Abstract**

This document specifies how optional monitoring of Type-P Descriptor can be negotiated and performed by TWAMP [[RFC5357](#)] Control and Test protocols.

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## Table of Contents

<a href="#">1.</a>	Introduction . . . . .	<a href="#">3</a>
<a href="#">1.1.</a>	Conventions used in this document . . . . .	<a href="#">3</a>
<a href="#">1.1.1.</a>	Terminology . . . . .	<a href="#">3</a>
<a href="#">1.1.2.</a>	Requirements Language . . . . .	<a href="#">3</a>
<a href="#">2.</a>	TWAMP Extensions . . . . .	<a href="#">3</a>
<a href="#">2.1.</a>	Setting Up Connection to Monitor Type-P Descriptor . . . . .	<a href="#">4</a>
<a href="#">2.2.</a>	TWAMP-Test Extension . . . . .	<a href="#">4</a>
	2.2.1. Session-Reflector Packet Format for Type-P Descriptor Monitoring . . . . .	<a href="#">4</a>
	2.2.2. Type-P Descriptor Monitoring with <a href="#">RFC 6038</a> extensions . . . . .	<a href="#">6</a>
<a href="#">3.</a>	IANA Considerations . . . . .	<a href="#">7</a>
<a href="#">4.</a>	Security Considerations . . . . .	<a href="#">8</a>
<a href="#">5.</a>	Acknowledgements . . . . .	<a href="#">8</a>
<a href="#">6.</a>	References . . . . .	<a href="#">8</a>
<a href="#">6.1.</a>	Normative References . . . . .	<a href="#">8</a>
<a href="#">6.2.</a>	Informative References . . . . .	<a href="#">9</a>
	Authors' Addresses . . . . .	<a href="#">9</a>



## **1. Introduction**

Re-marking of Type-P Descriptor, i.e. change in value, might be demonstration of intentional or erroneous behavior. Monitoring of Type-P Descriptor can provide valuable information for network operators. One-Way Active Measurement Protocol [[RFC4656](#)] and Two-Way Active Measurement Protocol [[RFC5357](#)] define negotiation of TypeP Descriptor value that must be used by Session-Sender and Session-Reflector. But there's not means for Session-Sender to know whether Type-P Descriptor was received by Session-Reflector unchanged. Opional monitoring of Type-P Descriptor between Session-Sender and Session-Reflector requires extensions to TWAMP [[RFC5357](#)] that are described in this document.

### **1.1. Conventions used in this document**

#### **1.1.1. Terminology**

DSCP: Differentiated Service Codepoint

IPPM: IP Performance Measurement

TWAMP: Two-Way Active Measuremnt Protocol

OWAMP: One-Way Active Measurement Protocol

PHD: Per Hop Behavior

PHB ID: PHB Identification Code

#### **1.1.2. Requirements Language**

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC2119](#)].

## **2. TWAMP Extensions**

TWAMP connection establishment follows the procedure defined in [Section 3.1 of \[RFC4656\]](#) and [Section 3.1 of \[RFC5357\]](#) where the Modes field been used to identify and select specific communication capabilities. At the same time the Modes field been recognized and used as extension mechanism [[RFC6038](#)]. The new feature requires new bit position to identify the ability of a Session-Reflector to return value of received Type-P Descriptor back to a Session-Sender, and to support the new Session-Reflector packet format in the TWAMP-Test



protocol. See the [Section 3](#) for details on the assigned value and bit position.

### **[2.1.](#) Setting Up Connection to Monitor Type-P Descriptor**

The Server sets Type-P Descriptor Monitoring flag in Modes field of the Server Greeting message to indicate its capabilities and willingness to monitor Type-P. If the Control-Client agrees to monitor Type-P Descriptor on some or all test sessions invoked with this control connection, it MUST set the Type-P Descriptor Monitoring flag in Modes field in the Setup Response message.

### **[2.2.](#) TWAMP-Test Extension**

Monitoring of Type-P Descriptor requires support by Session-Reflector and changes format of its test packet format both in unauthenticated, authenticated and encrypted modes. Monitoring of Type-P Descriptor does not alter Session-Sender test packet format but certain considerations must be taken when and if this mode is accepted in combination with Symmetrical Size mode[RFC6038].

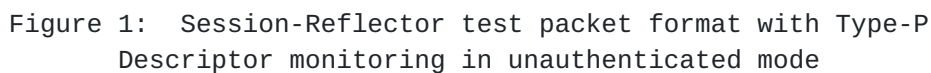
#### **[2.2.1.](#) Session-Reflector Packet Format for Type-P Descriptor Monitoring**

When Session-Reflector supports Type-P Descriptor Monitoring in MUST construct Sender Type-P Descriptor for each test packet it sends to Session-Sender according to the following procedure:

- first two bits MUST be the same as two first bits of Type-P Descriptor field Request-Session control packet;
- remaining bits MUST be copied from received Session-Sender test packet according to two first bits:
  - if first two bits are 00, then value of Differentiated Services Codepoint (DSCP), as defined in [[RFC2474](#)], copied into subsequent six bits;
  - if first two bits are 01, then value of PHB Identification Code (PHB ID), as defined in [[RFC2836](#)], copied into subsequent 16 bits.

For unauthenticated mode:



[illegible]





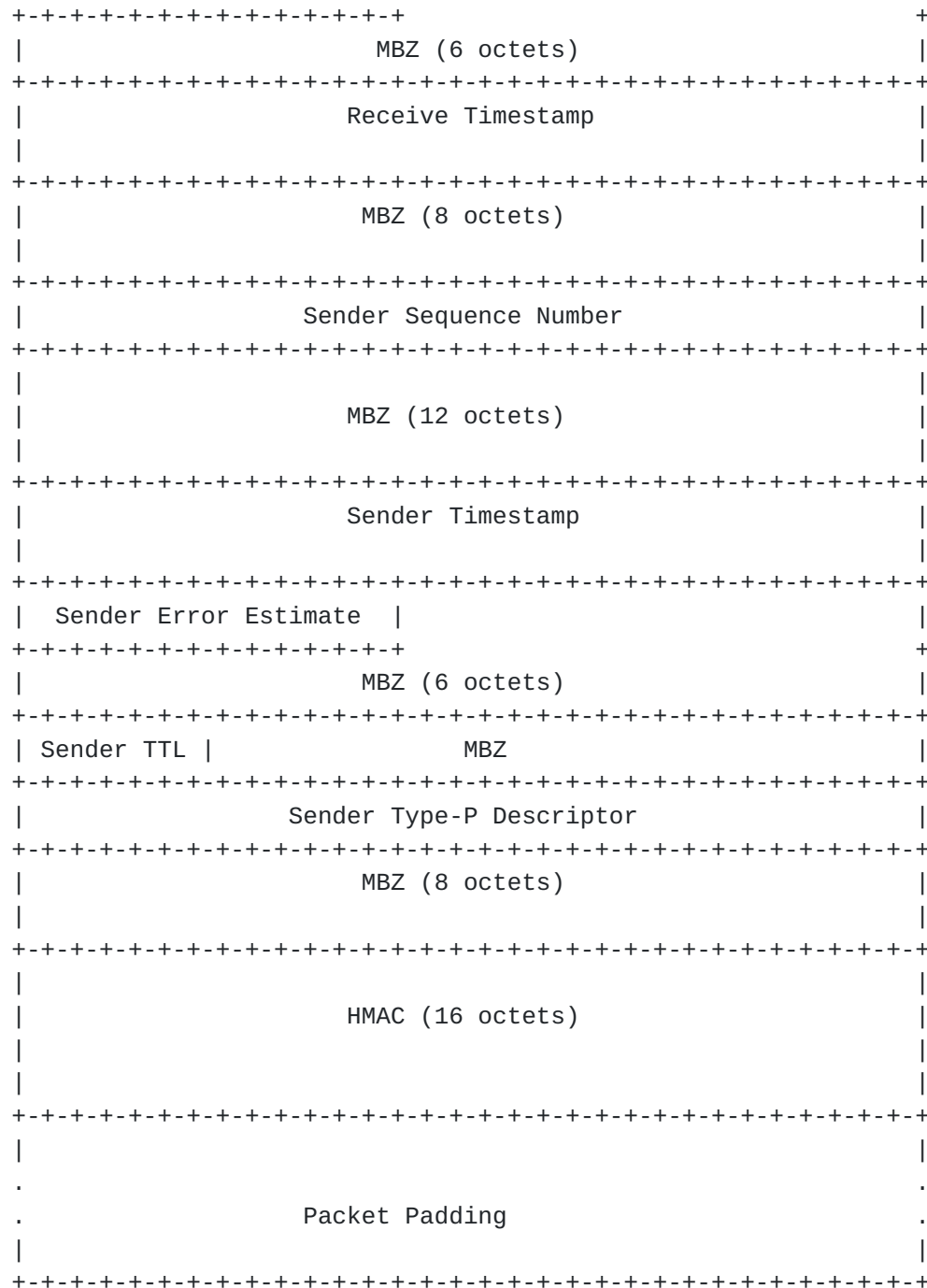


Figure 2: Session-Reflector test packet format with Type-P Descriptor monitoring in authenticated or encrypted modes

### 2.2.2. Type-P Descriptor Monitoring with [RFC 6038](#) extensions

[RFC6038] defined two extensions to TWAMP. First, to ensure that Session-Sender and Session-Reflector exchange TWAMP-Test packets of equal size. Second, to specify number of octets to be reflected by







Value	Description	Semantics	Reference
X (proposed 128)	Type-P Descriptor Monitoring Capability	bit position Y (proposed 7)	This document

Table 1: New Type-P Descriptor Monitoring Capability

#### 4. Security Considerations

Monitoring of Type-P Descriptor does not appear to introduce any additional security threat to hosts that communicate with TWAMP as defined in [RFC5357], and existing extensions [RFC6038]. The security considerations that apply to any active measurement of live networks are relevant here as well. See the Security Considerations sections in [RFC4656] and [RFC5357].

#### 5. Acknowledgements

TBD

#### 6. References

##### 6.1. Normative References

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- [RFC6038] Morton, A. and L. Ciavattone, "Two-Way Active Measurement Protocol (TWAMP) Reflect Octets and Symmetrical Size Features", [RFC 6038](#), October 2010.

## **[6.2.](#) Informative References**

- [RFC2629] Rose, M., "Writing I-Ds and RFCs using XML", [RFC 2629](#), June 1999.
- [RFC5226] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", [BCP 26](#), [RFC 5226](#), May 2008.

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