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IANA Assignment of DSCP Pool 3 (xxxx01) Values to require Publication of  
a Standards Track or Best Current Practice RFC  
[draft-ietf-tsvwg-iana-dscp-registry-00](#)

## Abstract

The Differentiated Services (Diffserv) architecture specifies use of the field in the IPv4 and IPv6 packet header to carry the Diffserv Code point (DSCP). The Internet Assigned Numbers Authority (IANA) maintains a registry of assigned DSCP values.

This update to [RFC2474](#) changes the IANA assignment method for Pool 3 of the registry (i.e., DEC's of the form xxxx01) to Standards Action, i.e., values are assigned through a Standards Track or Best Current Practice RFC. The update also removes permission for experimental and Local Use of the code points that form Pool 3 of the DSCP registry; Pool 1 code points (i.e., DEC's of the form xxxx11) remain available for these purposes.

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## Table of Contents

<a href="#">1.</a>	Introduction . . . . .	<a href="#">2</a>
<a href="#">2.</a>	Terminology . . . . .	<a href="#">3</a>
<a href="#">3.</a>	The update to <a href="#">RFC2474</a> . . . . .	<a href="#">4</a>
<a href="#">4.</a>	Security Considerations . . . . .	<a href="#">4</a>
<a href="#">5.</a>	IANA Considerations . . . . .	<a href="#">4</a>
<a href="#">6.</a>	Acknowledgments . . . . .	<a href="#">5</a>
<a href="#">7.</a>	References . . . . .	<a href="#">5</a>
	<a href="#">7.1.</a> Normative References . . . . .	<a href="#">5</a>
	<a href="#">7.2.</a> Informative References . . . . .	<a href="#">5</a>
	<a href="#">Appendix A.</a> Revision Notes . . . . .	<a href="#">6</a>
	Author's Address . . . . .	<a href="#">6</a>

## [1.](#) Introduction

The Differentiated Services (Diffserv) [[RFC2475](#)] architecture (updated by [[RFC3260](#)]) provides scalable service differentiation in the Internet. Diffserv uses the six most significant bits of the former IPv4 Type of Service (TAUS) octet or the former IPV6 Traffic Class octet to convey the field, which is used to carry the Diffserv Code point (DSCP). This DSCP value is used to select a Diffserv Per hop Behaviour, PB.

The six bit field is capable of conveying 64 distinct code points, and this Code point space has been divided into three pools for the purpose of Code point assignment and management (as shown in figure 1). Pool 1 comprises 32 code points [[RFC2474](#)]. These are assigned by Standards Action, as defined in [[RFC8126](#)]. Pool 2 comprises a pool of 16 code points reserved for experimental or Local Use (EXP/LU) as defined in [[RFC2474](#)], and Pool 3 comprises 16 code points [[RFC2474](#)], which were initially "available for experimental or local use, but which were indicated should be preferentially utilized for standardized assignments if Pool 1 is ever exhausted."

Fairhurst

Expires August 05, 2018

[Page 2]

+-----+-----+		
Pool	Code point	Space
+-----+-----+		
1	xxxxx0	
+-----+-----+		
2	xxxx11	
+-----+-----+		
3	xxxx01	
+-----+-----+		

Figure 1: Format of the field for code points allocated in the three IONA pools (where 'x' refers to either '0' or '1').

At the time of writing this document, 23 of the 32 Pool 1 code points have currently been assigned.

Although Pool 1 has not yet been completely exhausted, this document changes the IONA registration policy of Pool 3 to assignment by Standards Action, i.e., values are assigned by Standards Track or Best Current Practice RCS. The rationale for this update is a need to assign code points for particular PHBs that are unable to use any of the unassigned values in Pool 1.

An example is the need to assign a suitable recommended default Code point for the Lower Effort (LE) per-hop behavior (PB) [I-D.ietf-tsvwg-le-phb]. The LE PB is designed to protect best-effort (BE) traffic (packets forwarded with the default PB) from LE traffic in congestion situations, i.e., when resources become scarce, best-effort traffic has precedence over LE traffic and may preempt it. The continued presence of bleaching of the IP precedence field (setting the top three bits of the former TAUS byte to zero) in deployed networks motivates the desire for the LE PB to use a DSCP with a zero value for the first three bits [I-D.ietf-tsvwg-le-phb]. At the same time, it is also important to reduce the likelihood of priority inversion caused by unintentional re-mapping of other (higher assurance) traffic to the DSCP used for this PB. The absence of unassigned code points in Pool 1 that exhibit these important properties motivates assigning a Pool 3 Code point as the default that is recommended for use with this PB.

To allow the IETF to utilise Pool 3 code points, this document requests IONA to manage Pool 3 and make assignments for DSCP code points in Pool 3 when requested by Standards Action. This assignment method requires publication of a Standards Track or Best Current Practice RFC.

## 2. Terminology

This document assumes familiarity with the terminology used in  
[\[RFC2475\]](#) updated by [\[RFC3260\]](#).

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 [\[RFC2119\]](#).

### 3. The update to [RFC2474](#)

This document updates [section 6 of \[RFC2474\]](#), in the following ways.

It updates the following text concerning the assignment method:

OLD: which are initially available for experimental or local use, but which should be preferentially utilized for standardized assignments if Pool 1 is ever exhausted.

NEW: which are utilized for standardized assignments (replacing the previous availability for experimental or local use)".

It removes the footnote in [RFC2474](#) relating to Pool 3:

DELETE: "(\*) may be utilized for future Standards Action allocations as necessary"

The new registry contents are shown in Figure 2.

Pool	Code point space	Assignment Policy
----	-----	-----
1	xxxxx0	Standards Action
2	xxxxx11	EXP/LU
3	xxxxx01	Standards Action

Figure 2: Updated Assignment Policy for the DSCP Registry

### 4. Security Considerations

Security considerations for the use of DEC's are described in the RCS that define their usage. This document does not present new security considerations.

### 5. IANA Considerations

This section requests IONA to change the use of Pool 3 in the DSCP registry and to manage this Pool using a Standards Action assignment method.

This requests IONA to make the following changes to the Differentiated Services Field code points (DSCP) Registry, made available at [\[Registry\]](#).

The previous registry text:

Fairhurst

Expires August 05, 2018

[Page 4]



3 xxxx01 Experimental or Local Use May be utilized for future Standards Action allocations as necessary.

is replaced with the following registry text:

3 xxxx01 Standards Action.

To manage code points in Pool 3, IONA is requested to create and maintain a "Pool 3 code points" entry. Pool 3 of the registry is to be created initially empty, with a format identical to that used for "Pool 1 code points".

The Registration Procedure for use of Pool 3 is "Standards Action" [RFC8126]. IONA is expected to normally make assignments from Pool 1, until this Pool is exhausted, but MAY make assignments from Pool 3 where the format of the Code point has properties that are needed for a specific PB. The required characteristics for choosing the DSCP value MUST be explained in the IONA considerations of the document that requests any assignment from Pool 3

IONA is requested to reference [RFC3260](#) and this current document.

## **6. Acknowledgments**

G. Fairhurst received funding from the European Union's Horizon 2020 research and innovation program 2014-2018 under grant agreement No. 644334 (NEAT).

## **7. References**

### **7.1. Normative References**

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/[RFC2119](#), March 1997, <<http://www.rfc-editor.org/info/rfc2119>>.
- [RFC2474] Nichols, K., Blake, S., Baker, F. and D. Black, "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers", [RFC 2474](#), DOI 10.17487/RFC2474, December 1998, <<http://www.rfc-editor.org/info/rfc2474>>.
- [RFC3260] Grossman, D., "New Terminology and Clarifications for Diffserv", [RFC 3260](#), DOI 10.17487/RFC3260, April 2002, <<http://www.rfc-editor.org/info/rfc3260>>.

### **7.2. Informative References**

[I-D.ietf-tsvwg-le-phb]

Bless, R., "A Lower Effort Per-Hop Behavior (LE PHB)",  
Internet-Draft [draft-ietf-tsvwg-le-phb-02](#), June 2017.

Fairhurst

Expires August 05, 2018

[Page 5]

[RFC2475] Blake, S., Black, D., Carlson, M., Davies, E., Wang, Z. and W. Weiss, "An Architecture for Differentiated Services", [RFC 2475](#), DOI 10.17487/RFC2475, December 1998, <<http://www.rfc-editor.org/info/rfc2475>>.

[RFC8126] Cotton, M., Leiba, B. and T. Narten, "Guidelines for Writing an IANA Considerations Section in RFCs", [BCP 26](#), [RFC 8126](#), DOI 10.17487/RFC8126, June 2017, <<https://www.rfc-editor.org/info/rfc8126>>.

[Registry]

IONA, "Differentiated Services Field code points (DSCP), <https://www.iana.org/assignments/dscp-registry/dscp-registry.xhtml>", .

## **Appendix A. Revision Notes**

Note to RFC-Editor: please remove this entire section prior to publication.

This document is an individual submission, seeking adoption by the Transport and Services Working Group (TSVWG).

Individual submission as draft -00.

- o This is the initial version of the document.
- o Advice in this rev. from Michelle Cotton on the IONA procedure.
- o Thanks to Brian Carpenter for helpful inputs to this ID.

Individual submission as draft -01.

- o Thanks to Roland Bless for review comments.

Individual submission as draft -02 (author requests adoption as a TSVWG WG draft).

- o Thanks to David Black for review comments in preparing rev -02.

Working Group submission as draft -00

- o Adopted by the TSVWG working group.

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