

INTERNET-DRAFT  
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#### Extended IP Versions

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#### Abstract

The current four bit Internet Protocol (IP) Version field provides for such a limited number of versions that very tight control must be exercised on their allocation as documented in [[RFC 2780](#)].

Provisions are specified whereby one value of that field is extended to provide more easily allocated values.

## Table of Contents

Status of This Document.....	<a href="#">1</a>
Copyright Notice.....	<a href="#">1</a>
Abstract.....	<a href="#">1</a>
Table of Contents.....	<a href="#">2</a>
<a href="#">1</a> . Introduction.....	<a href="#">3</a>
<a href="#">2</a> . Extended IP Versions.....	<a href="#">3</a>
<a href="#">3</a> . IANA Considerations.....	<a href="#">4</a>
<a href="#">4</a> . Security Considerations.....	<a href="#">4</a>
References.....	<a href="#">5</a>
Authors Addresses.....	<a href="#">5</a>
Full Copyright Statement.....	<a href="#">6</a>
Expiration and File Name.....	<a href="#">6</a>

## 1. Introduction

Since the begining of the Internet Protocol (IP), it has had a four bit version field. This was entirely adequate in the early days when the Internet engineering community was tiny and went fairly rapidly through version 1, 2, and 3, before stabilizing on version 4 (IPv4) under which the Internet has prospered [[RFC 791](#)].

A few years ago, when a need was felt for specification of a new version, the remaining version number space was barely adequate to assign versions to the main contenders, leading to the selection of IPv6 as the main path [[RFC 2460](#)]. Furthermore, the Internet engineering community has grown by over two orders of magnitude since the specification of IP, with IETF attendance going from 15 to 3000 potentially increasing demand for experimental parameter values.

To continue the successful tradition of simple free availability of parameter values, IP version numbers should be extended. How beneficial this will be in this particular case is unclear. But if the prospering of Internet Technology has taught us anything, it is that simple free availability of parameter values can lead to surprising creativity and vigor. Perhaps this mechanism will do that or perhaps it will turn out to be little, like the DNS Class mechanism. But the cost is small and the potential benefit hard to bound.

An equivalent 4 bit IP version number can be allocated for any extended IP version, when warranted, under the IP version allocation procedure specified in [[RFC 2780](#)].

## 2. Extended IP Versions

The Internet Protocol packet format is defined to begin with a four bit Version as follows:

```

0
0 1 2 3 4 5
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|Version|  ...
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
```

To extend this versioning mechanism, this document specifies that the version number (TBD (suggest 1)) is followed by a twelve bit extension as shown below.

```

0                      1                      2                      3
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| (TBD) |   x   |           y           | ...
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
```

The version number is considered an unsigned integer equal to  $x \times 256 + y$ . This produces version numbers in the range 0 to 4095 but the first sixteen values, 0 through 15, are reserved for future definition and to avoid conflict with non-extended version numbers. This structure causes the remainder of the IP packet to be 16 bit aligned.

## 3. IANA Considerations

IP Version number nibble value (TBD (suggest 1)) is allocated for extended IP Versions as documnted herein.

Extended IP versions 0 through 15 are reserved and required a "Standards Action" as defined in [RFC 2434](#) for allocation.

Extended IP version 16 through 4095 are to be allocated in sequential order based on "Specification Required" as defined in [RFC 2434](#).

#### [4](#). Security Considerations

Firwalls or other software which wishes to pass only packets they understand should block all packets with extended IP versions.

#### References

[RFC 791] - "Internet Protocol", J. Postel, September 1981.

[RFC 2434] - "Guidelines for Writing an IANA Considerations Section in RFCs", T. Narten, H. Alvestrand, October 1998.

[RFC 2460] - "Internet Protocol, Version 6 (IPv6) Specification", Deering, S. and R. Hinden, December 1998.

[RFC 2780] - "IANA Allocation Guidelines For Values In the Internet Protocol and Related Headers", S. Bradner, V. Paxson, March 2000.

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#### Expiration and File Name

This draft expires October 2001.

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