

Internet Engineering Task Force
Internet-Draft
Intended status: Standards Track
Expires: September 11, 2017

L. Velvindron, Ed.
Hackers Mauritius
March 10, 2017

**Increase minimum recommended modulus size to 2048 bits
draft-lvelvindron-dh-group-exchange-00**

Abstract

The Diffie-Hellman Group Exchange for the Secure Shell (SSH) Transport layer Protocol specifies that servers and clients should support groups with a modulus length of k bits, where the recommended minimum value is 1024 bits. Recent security research has shown that a minimum value of 1024 bits is insufficient against state-sponsored actors. As such, this document formally updates [RFC 4419](#) [[RFC4419](#)] such that the minimum recommended value for k is 2048 bits and the group size is 2048 bits at minimum.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <http://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on September 11, 2017.

Copyright Notice

Copyright (c) 2017 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<http://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must

include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

1.	Introduction	2
1.1.	Requirements Language	2
2.	2048 bits Diffie-Hellman Group	2
3.	Security Considerations	3
4.	References	3
4.1.	Normative References	3
4.2.	Informative References	3
4.3.	URIs	3
	Author's Address	3

[1.](#) Introduction

[RFC4419](#) [[RFC4419](#)] specifies a recommended minimum size of 1024 for k , which is the modulus length of the Diffie-Hellman Group. It also suggests that in all cases, the size of the group needs be at least 1024 bits. This document updates [RFC 4419](#) [[RFC4419](#)] so that the minimum recommended size be 2048 bits

[1.1.](#) Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

[2.](#) 2048 bits Diffie-Hellman Group

Recent research [LOGJAM] [[1](#)] strongly suggests that DH groups that are 1024 bits can be broken by state actors, and possibly an organization with enough computing resources. The authors show how they are able to break 768 bits DH group and extrapolate the attack to 1024 bits DH groups. In their analysis, they show that breaking 1024 bits can be done with enough computing resources. This document updates [section 3](#) Paragraph 9 : Servers and clients SHOULD support groups with a modulus length of k bits where $2048 \leq k \leq 8192$. The recommended minimum values for min and max are 2048 and 8192, respectively. This document also updates [Section 3](#) Paragraph 11: In all cases, the size of the group SHOULD be at least 2048 bits.

3. Security Considerations

This document discusses security issues of DH groups that are 1024 bits in size, and formally updates the minimum size of DH groups to be 2048 bits.

4. References

4.1. 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>>.

4.2. Informative References

[RFC4419] Friedl, M., Provos, N., and W. Simpson, "Diffie-Hellman Group Exchange for the Secure Shell (SSH) Transport Layer Protocol", [RFC 4419](#), DOI 10.17487/RFC4419, March 2006, <<http://www.rfc-editor.org/info/rfc4419>>.

4.3. URIs

[1] <https://weakdh.org/imperfect-forward-secrecy-ccs15.pdf>

Author's Address

Loganaden Velvindron (editor)
Hackers Mauritius
88, Avenue De Plevitz
Roches Brunes
MU

Phone: +230 59762817
Email: logan@hackers.mu

