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Deprecating RC4 in Secure Shell (SSH) draft-ietf-curdle-rc4-die-die-die-10

Abstract

This document deprecates RC4 in Secure Shell (SSH). Therefore, this document updates [[RFC4253](#)], and formally obsoletes and moves to Historic [[RFC4345](#)].

Status of This Memo

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[1.](#) Introduction

The usage of RC4 suites (also designated as arcfour) for SSH are specified in [\[RFC4253\]](#) and [\[RFC4345\]](#). [\[RFC4253\]](#) specifies the allocation of the "arcfour" cipher for SSH. [\[RFC4345\]](#) specifies and allocates the the "arcfour-128" and "arcfour-256" ciphers for SSH. RC4 encryption is steadily weakening in cryptographic strength [\[RFC7465\]](#) [\[I-D.ietf-curdle-des-des-des-die-die-die\]](#), and the deprecation process should be begun for their use in Secure Shell (SSH) [\[RFC4253\]](#). Accordingly, [\[RFC4253\]](#) is updated to note the deprecation of the RC4 ciphers and [\[RFC4345\]](#) is moved to Historic as all ciphers it specifies MUST NOT be used.

[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.](#) Updates to [RFC 4253](#)

[\[RFC4253\]](#) is updated to prohibit arcfour's use in SSH. [\[RFC4253\]](#) allocates the "arcfour" cipher in [Section 6.3](#) by defining a list of defined ciphers where the "arcfour" cipher appears as optional as mentioned below:

+-----+	+-----+	+-----+	+-----+
arcfour	OPTIONAL	the ARCFOUR stream cipher with	
		a 128-bit key	
+-----+	+-----+	+-----+	+-----+

The current document updates the status of the "arcfour" ciphers in the list of [\[RFC4253\]](#) [Section 6.3](#) by moving it from OPTIONAL to MUST NOT.


```

+-----+-----+-----+
| arcfour | MUST NOT | the ARCFOUR stream cipher with a 128-bit |
|         |         | key                                     |
+-----+-----+-----+

```

[RFC4253] defines the "arcfour" ciphers with the text mentioned below:

The "arcfour" cipher is the Arcfour stream cipher with 128-bit keys. The Arcfour cipher is believed to be compatible with the RC4 cipher [[SCHNEIER](#)]. Arcfour (and RC4) has problems with weak keys, and should be used with caution.

The current document updates [[RFC4253](#)] [Section 6.3](#) by replacing the text above with the following text:

The "arcfour" cipher is the Arcfour stream cipher with 128-bit keys. The Arcfour cipher is believed to be compatible with the RC4 cipher [[SCHNEIER](#)]. Arcfour (and RC4) is steadily weakening in cryptographic strength [[RFC7465](#)] [[I-D.ietf-curdle-des-des-des-die-die-die](#)], and MUST NOT be used.

[3. IANA Considerations](#)

The IANA is requested to update the Encryption Algorithm Name Registry of the Secure Shell (SSH) Protocol Parameters [IANA]. The Registration procedure is IETF Review which is achieved by this document. The registry should be updated as follows:

```

+-----+-----+-----+
| Encryption | Algorithm Name | Reference | Note |
+-----+-----+-----+
| arcfour    | [RFC-TBD]      |           |      |
| arcfour128 | [RFC-TBD]      |           |      |
| arcfour256 | [RFC-TBD]      |           |      |
+-----+-----+-----+

```

Where TBD is the RFC number assigned to the document.

All drafts are required to have an IANA considerations section (see Guidelines for Writing an IANA Considerations Section in RFCs [[RFC5226](#)] for a guide). If the draft does not require IANA to do anything, the section contains an explicit statement that this is the case (as above). If there are no requirements for IANA, the section will be removed during conversion into an RFC by the RFC Editor.

4. Acknowledgements

The authors would like to thank Daniel Migault and Rich Salz.

5. Security Considerations

This document only prohibits the use of RC4 in SSH, and introduces no new security considerations.

6. References

6.1. 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, <<https://www.rfc-editor.org/info/rfc2119>>.

[SCHNEIER] Schneier, B., "Applied Cryptography Second Edition: protocols algorithms and source in code in C", , 1996, <SCHNEIER>.

6.2. Informative References

- [I-D.ietf-curdle-des-des-des-die-die-die] Kaduk, B. and M. Short, "Deprecate 3DES and RC4 in Kerberos", [draft-ietf-curdle-des-des-des-die-die-die-05](#) (work in progress), September 2017.
- [RFC4253] Ylonen, T. and C. Lonvick, Ed., "The Secure Shell (SSH) Transport Layer Protocol", [RFC 4253](#), DOI 10.17487/RFC4253, January 2006, <<https://www.rfc-editor.org/info/rfc4253>>.
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- [RFC5226] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", [RFC 5226](#), DOI 10.17487/RFC5226, May 2008, <<https://www.rfc-editor.org/info/rfc5226>>.
- [RFC7465] Popov, A., "Prohibiting RC4 Cipher Suites", [RFC 7465](#), DOI 10.17487/RFC7465, February 2015, <<https://www.rfc-editor.org/info/rfc7465>>.

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