

Internet Engineering Task Force

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**Deprecating RC4 in Secure Shell (SSH)  
draft-ietf-curdle-rc4-die-die-die-15**

Abstract

This document deprecates RC4 in Secure Shell (SSH). Therefore, this document 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 "arcfour-128" and "arcfour-256" ciphers for SSH. RC4 encryption has known weaknesses [\[RFC7465\]](#) [\[I-D.ietf-curdle-des-des-des-die-die-die\]](#), 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 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 compatible with the RC4 cipher [SCHNEIER]. Arcfour (and RC4) has known weaknesses [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.

### 4. Acknowledgements

The authors would like to thank Eric Rescorla, 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>>.

### **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.
- [IANA] "Secure Shell (SSH) Protocol Parameters: Encryption Algorithm Names", <<https://www.iana.org/assignments/ssh-parameters/ssh-parameters.xhtml#ssh-parameters-17>>.
- [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>>.
- [RFC4345] Harris, B., "Improved Arcfour Modes for the Secure Shell (SSH) Transport Layer Protocol", [RFC 4345](#), DOI 10.17487/RFC4345, January 2006, <<https://www.rfc-editor.org/info/rfc4345>>.
- [RFC7465] Popov, A., "Prohibiting RC4 Cipher Suites", [RFC 7465](#), DOI 10.17487/RFC7465, February 2015, <<https://www.rfc-editor.org/info/rfc7465>>.
- [SCHNEIER] Schneier, B., "Applied Cryptography Second Edition: protocols algorithms and source in code in C", , 1996, <SCHNEIER>.

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