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Deprecating RC4 in Secure Shell (SSH)  
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## Abstract

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

## Status of This Memo

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

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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](#)] [[RFC8429](#)], 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](#)][RFC 8174](#) [[RFC8174](#)] when, and only when, they appear in all capitals, as shown here.

[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 [\[RFC7465\]](#) [\[RFC8429\]](#), 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>>.

[RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in [RFC 2119](#) Key Words", [BCP 14](#), [RFC 8174](#), DOI 10.17487/RFC8174, May 2017, <<https://www.rfc-editor.org/info/rfc8174>>.

##### 6.2. Informative References

[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](#),

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<<https://www.rfc-editor.org/info/rfc7465>>.

[RFC8429] Kaduk, B. and M. Short, "Deprecate Triple-DES (3DES) and RC4 in Kerberos", [BCP 218](#), [RFC 8429](#), DOI 10.17487/RFC8429, October 2018, <<https://www.rfc-editor.org/info/rfc8429>>.

[SCHNEIER]

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

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