

Secure Shell Working Group
Internet-Draft
Expires: October 4, 2004

J. Galbraith
VanDyke Software
R. Thayer
The Tillerman Group
April 5, 2004

SSH Public Key File Format
draft-ietf-secsh-publickeyfile-05.txt

Status of this Memo

This document is an Internet-Draft and is in full conformance with all provisions of [Section 10 of RFC2026](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF), its areas, and its working groups. Note that other groups may also distribute working documents as Internet-Drafts.

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."

The list of current Internet-Drafts can be accessed at <http://www.ietf.org/ietf/1id-abstracts.txt>.

The list of Internet-Draft Shadow Directories can be accessed at <http://www.ietf.org/shadow.html>.

This Internet-Draft will expire on October 4, 2004.

Copyright Notice

Copyright (C) The Internet Society (2004). All Rights Reserved.

Abstract

This document formally documents the existing public key file format in use for exchanging public keys between different SSH implementations.

Table of Contents

1.	Conventions used in this document	3
2.	Introduction	4
3.	Key File Format	5
3.1	Line termination Characters	5
3.2	Begin and end markers	5
3.3	Key File Header	5
3.3.1	Subject Header	6
3.3.2	Comment Header	6
3.4	Public Key File Body	6
3.5	Examples	7
4.	Security Considerations	8
5.	Normative References	8
	Authors' Addresses	9
	Intellectual Property and Copyright Statements	10

1. Conventions used in this document

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 [\[4\]](#).

2. Introduction

In order to use public key authentication, public keys must be exchanged between client and server. This document formally describes the existing public key file format, with few exceptions.

Where this document departs from current practice, it also suggests a mechanism for backwards compatibility.

3. Key File Format

SSH implementations must share public key files between the client and the server in order to interoperate.

A key file is a text file, containing a sequence of lines. Each line in the file MUST NOT be longer than 72 bytes.

3.1 Line termination Characters

In order to achieve the goal of being able to exchange public key files between servers, implementations are REQUIRED to read files using any of the common line termination sequence, <CR>, <LF> or <CR><LF>.

Implementations may generate files using which ever line termination convention is most convenient

3.2 Begin and end markers

The first line of a conforming key file MUST be a begin marker, which is the literal text:

```
---- BEGIN SSH2 PUBLIC KEY ----
```

The last line of a conforming key file MUST be a end marker, which is the literal text:

```
---- END SSH2 PUBLIC KEY ----
```

3.3 Key File Header

The key file header section consists of multiple [RFC822](#) - style header fields. Each field is a line of the following format:

```
Header-tag ':' ' ' Header-value
```

The Header-tag MUST NOT be more than 64 bytes. The Header-value MUST NOT be more than 1024 bytes. Each line in the header MUST NOT be more than 72 bytes.

A line is continued if the last character in the line is a '\\'. If the last character of a line is a '\\', then the logical contents of the line is formed by removing the '\\' and appending the contents of the next line.

The Header-tag MUST be US-ASCII. The Header-value MUST be encoded in UTF-8. [[2](#)]

A line that is not a continuation line that has no ':' in it is assumed to be the first line of the base 64 encoded body ([Section 8](#))

Compliant implementations MUST ignore unrecognized header fields. Implementations SHOULD preserve unrecognized header fields when manipulating the key file.

Existing implementations may not correctly handle unrecognized fields. During a transition period, implementations SHOULD generate key file headers that contain only a Subject field followed by a Comment field.

[3.3.1](#) Subject Header

This field currently is used to store the login-name that the key was generated under. For example:

Subject: user

[3.3.2](#) Comment Header

Contain a user specified comment which will be displayed when using the key.

It is suggested that this field default to user@hostname for the user and machine used to generate the key. For example:

Comment: user@mycompany.com

Currently, common practice is to quote the Header-value of the Comment, and some existing implementations fail if these quotes are omitted.

Compliant implementations MUST function correctly if the quotes are omitted.

During an interim period implementations MAY include the quotes. If the first and last characters of the Header-value are matching quotes, implementations SHOULD remove them before using the value.

[3.4](#) Public Key File Body

The body of a public key file consists of the public key blob as described in the SSH transport draft [\[1\]](#), section 4.6, "Public Key Algorithms", encoded in base 64 as specified in [RFC-2045, section 6.8](#), "Base64 Content-Transfer-Encoding". [\[5\]](#)

As with all other lines, each line in the body MUST NOT be longer

than 72 characters.

3.5 Examples

The following are some example public key files that are compliant:

```
----- BEGIN SSH2 PUBLIC KEY -----
Comment: "1024-bit RSA, converted from OpenSSH by galb@test1"
AAAAB3NzaC1yc2EAAAABIwAAAIEA1on8gxCGJJWSRT4u0rR13mUaUk0hRf4RzxSZ1zRbYY
Fw8pfGesIFoEuVth4HKyF8k1y4mRUUnYHP1XNMNMJl1JcEArC2asV8sHf6zSPVffozZ5TT4
SfsUu/iKy9lUcCfXzwre4WWZSXXcPff+EhtWshahu3WzBdnGxm5Xoi89zcE=
----- END SSH2 PUBLIC KEY -----
```

```
----- BEGIN SSH2 PUBLIC KEY -----
Comment: DSA Public Key for use with MyIsp
AAAAB3NzaC1kc3MAAACBAPY8Z0HY2yFSJA6XYC9HRwNHxaehvx5w0J0rzZdzoS0XxbETW6
ToHv8D1UJ/z+zHo9Fiko5XybZnDIaBDHtblQ+Yp7StxyltHnXF1YLfKD1G4T6JYrdHYI14
Om1eg9e4NnCRleaqqZPF3UGfZia6bXrGTQf3gJq2e7Yisk/gF+1VAAAAFQDb8D5cvWHWTZ
DPfX0D2s9Rd7NBvQAAAIEA1N92+Bb7D4KLYk3IwRbXblwXdkPggA4pfdtw9vGfJ0/RHd+N
jB4eo1D+0dix6tXwYGN7PKS5R/FXPNwxHPapcj9uL1Jn2AWQ2dsknf+i/FAAvioUPkmdMc
0zuWoS0EsSNhVDtX3WdvVcGcBq9cetzrt0KW0ocJmJ80qadxTRHtUAAACBAN7CY+KKv1gH
pRzFwdQm7HK9bb1LAo2KwaoXnadFgeptNBQeSXG1v0+JsvphVMBJc9HSn24VYtYtsMu74q
XviYjziVucWKjjKEb11juqnF0GD1B3VVMxHLMxnAz643WK42Z7dLM5sY29ouezv4Xz2PuM
ch5VGPP+CDqzCM4loWgV
----- END SSH2 PUBLIC KEY -----
```

```
----- BEGIN SSH2 PUBLIC KEY -----
Subject: galb
Comment: 1024-bit rsa, created by galb@shimi Mon Jan 15 08:31:24 2001
AAAAB3NzaC1yc2EAAAABJQAAAIEAiPwX6WM4lhHNedGfBpPJNPPZ7yKu+dnn1SJejgt459
6k6YjzGGpH2TUxwKzxcDKKKezwpfnxPkSMkuEspGRt/aZZ9wa++0i7Qkr8prgHc4sow6
NUlfDzpvZK2H5E7eQaSeP3SAwGmQKUFHCddNaP0L+hM7zhFNzjFvpaMgJw0=
----- END SSH2 PUBLIC KEY -----
```


4. Security Considerations

The file format described by this document provides no mechanism to verify the integrity or otherwise detect tampering with the data stored in such files. Given the potential of an adversarial tampering with this data, system-specific measures (e.g. Access Control Lists, UNIX permissions, other Discretionary and/or Mandatory Access Controls) SHOULD be used to protect these files. Also, if the contents of these files are transferred it SHOULD be done over a trusted channel.

The header data allowed by this file format could contain an unlimited range of information. While in many environments the information conveyed by this header data may be considered innocuous public information, it may constitute a channel through which information about a user, a key or its use may be disclosed intentionally or otherwise (e.g "Comment: Mary E. Jones, 123 Main St, Home Phone:..."). The presence and use of this header data SHOULD be reviewed by sites that deploy this file format.

5 Normative References

- [1] Rinne, T., Ylonen, T., Kivinen, T., Saarinen, M. and S. Lehtinen, "SSH Protocol Transport Protocol", September 2002.
- [2] Yergeau, F., "UTF-8, a Transformation Format of Unicode and ISO 10646", October 1996.
- [3] Bradner, S., "The Internet Standards Process -- Revision 3", October 1996.
- [4] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", March 1997.
- [5] Freed and Borenstein, "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies", November 1996.

Authors' Addresses

Joseph Galbraith
VanDyke Software
4848 Tramway Ridge Blvd
Suite 101
Albuquerque, NM 87111
US

Phone: +1 505 332 5700
EMail: galb-list@vandyke.com

Rodney Thayer
The Tillerman Group
370 Altair Way, PMB 321
Sunnyvale, CA 94086

Phone: +1 408 757 9693
EMail: rodney@tillerman.to

Intellectual Property Statement

The IETF takes no position regarding the validity or scope of any intellectual property or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; neither does it represent that it has made any effort to identify any such rights. Information on the IETF's procedures with respect to rights in standards-track and standards-related documentation can be found in [BCP-11](#). Copies of claims of rights made available for publication and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementors or users of this specification can be obtained from the IETF Secretariat.

The IETF invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights which may cover technology that may be required to practice this standard. Please address the information to the IETF Executive Director.

Full Copyright Statement

Copyright (C) The Internet Society (2004). All Rights Reserved.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this paragraph are included on all such copies and derivative works. However, this document itself may not be modified in any way, such as by removing the copyright notice or references to the Internet Society or other Internet organizations, except as needed for the purpose of developing Internet standards in which case the procedures for copyrights defined in the Internet Standards process must be followed, or as required to translate it into languages other than English.

The limited permissions granted above are perpetual and will not be revoked by the Internet Society or its successors or assignees.

This document and the information contained herein is provided on an "AS IS" basis and THE INTERNET SOCIETY AND THE INTERNET ENGINEERING TASK FORCE DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION

HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF
MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Acknowledgment

Funding for the RFC Editor function is currently provided by the
Internet Society.