

KITTEN WG
Internet-Draft
Updates: [rfc2743](#)
(if approved)
Intended status: Standards Track
Expires: October 8, 2009

N. Williams
Sun
April 6, 2009

Clarifications and Extensions to the GSS-API for the Use of Channel
Bindings
draft-ietf-kitten-gssapi-channel-bindings-07.txt

Status of this Memo

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

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/lid-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 8, 2009.

Copyright Notice

Copyright (c) 2009 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 in effect on the date of publication of this document (<http://trustee.ietf.org/license-info>). Please review these documents carefully, as they describe your rights and restrictions with respect to this document.

Internet-Draft

GSS-API Channel Bindings

April 2009

Abstract

This document clarifies and generalizes the Generic Security Services Application Programming Interface (GSS-API) "channel bindings" facility, and imposes requirements on future GSS-API mechanisms and programming language bindings of the GSS-API.

Table of Contents

1.	Conventions used in this document	3
2.	Introduction	4
3.	New Requirements for GSS-API Mechanisms	5
4.	Generic Structure for GSS-API Channel Bindings	6
5.	IANA Considerations	8
6.	Security Considerations	9
7.	References	10
7.1.	Normative References	10
7.2.	Informative References	10
	Author's Address	11

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 [[RFC2119](#)].

[2.](#) Introduction

The base GSS-API v2, update 1 specification [[RFC2743](#)] provides a facility for channel binding (see also [[RFC5056](#)]), but its treatment was incomplete. The C-bindings of the GSS-API [[RFC2744](#)] expanded a little on this facility in what should have been a generic way, but was a C-specific way, and still, the treatment of this facility was incomplete.

This document clarifies the GSS-API's channel binding facility and generalizes the parts of it that are specified in the C-bindings document but which should have been generic from the first.

3. New Requirements for GSS-API Mechanisms

Given the publication of [RFC5056](#) we now assert that all new GSS-API mechanisms that support channel binding MUST conform to [\[RFC5056\]](#).

4. Generic Structure for GSS-API Channel Bindings

The base GSS-API v2, update 1 specification [[RFC2743](#)] provides a facility for channel binding. It models channel bindings as an OCTET STRING and leaves it to the GSS-API v2, update 1 C-Bindings specification to specify the structure of the contents of the channel bindings OCTET STRINGS. The C-Bindings specification [[RFC2744](#)] then defines, in terms of C, what should have been a generic structure for channel bindings. The Kerberos V GSS mechanism [[RFC4121](#)] also defines a method for encoding GSS channel bindings in a way that is independent of the C-Bindings -- otherwise the mechanism's channel binding facility would not be useable with other language bindings.

In other words, the structure of GSS channel bindings given in [[RFC2744](#)] is actually generic, rather than specific to the C

programming language.

We generalize it as shown below, using the same pseudo-ASN.1 as is used in [RFC2743](#). Although the figure below is, indeed, a valid ASN.1 [[CCITT.X680.2002](#)] type, we do not provide a full ASN.1 module as none is needed because no standard encoding of this structure is needed -- the definition below is part of an abstract API, not part of a protocol defining bits on the wire. GSS-API mechanisms do need to encode the contents of this structure, but that encoding will be mechanism specific (see below).

```
GSS-CHANNEL-BINDINGS ::= SEQUENCE {
    initiator-address-type  INTEGER,      -- See RFC2744
    initiator-address       OCTET STRING, -- See RFC2744
    acceptor-address-type  INTEGER,      -- See RFC2744
    acceptor-address       OCTET STRING, -- See RFC2744
    application-data       OCTET STRING -- See RFC5056
}
```

Abstract GSS-API channel bindings structure

The values for the address fields are described in [[RFC2744](#)].

New language-specific bindings of the GSS-API SHOULD specify a language-specific formulation of this structure.

Where a language binding of the GSS-API models channel bindings as OCTET STRINGS (or the language's equivalent), then the implementation MUST assume that the given bindings correspond only to the application-data field of GSS-CHANNEL-BINDINGS as shown above, rather than some encoding of GSS-CHANNEL-BINDINGS.

As mentioned above, [[RFC4121](#)] describes an encoding of the above GSS-

CHANNEL-BINDINGS structure, and then hashes that encoding. Other GSS-API mechanisms are free to use that encoding.

[5.](#) IANA Considerations

There are no IANA considerations in this document.

6. Security Considerations

For general security considerations relating to channel bindings see [\[RFC5056\]](#).

Language bindings that use OCTET STRING (or equivalent) for channel bindings will not support the use of network addresses as channel bindings. This should not cause any security problems, as the use of network addresses as channel bindings is not generally secure. However, it is important that "end-point channel bindings" not be modelled as network addresses, otherwise such channel bindings may not be useable with all language bindings of the GSS-API.

[7.](#) References

[7.1.](#) Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2743] Linn, J., "Generic Security Service Application Program Interface Version 2, Update 1", [RFC 2743](#), January 2000.
- [RFC2744] Wray, J., "Generic Security Service API Version 2 : C-bindings", [RFC 2744](#), January 2000.
- [RFC4121] Zhu, L., Jaganathan, K., and S. Hartman, "The Kerberos Version 5 Generic Security Service Application Program Interface (GSS-API) Mechanism: Version 2", [RFC 4121](#), July 2005.
- [RFC5056] Williams, N., "On the Use of Channel Bindings to Secure Channels", [RFC 5056](#), November 2007.

[7.2.](#) Informative References

- [CCITT.X680.2002]
International International Telephone and Telegraph Consultative Committee, "Abstract Syntax Notation One (ASN.1): Specification of basic notation", CCITT Recommendation X.680, July 2002.

Williams

Expires October 8, 2009

[Page 10]

Internet-Draft

GSS-API Channel Bindings

April 2009

Author's Address

Nicolas Williams
Sun Microsystems
5300 Riata Trace Ct
Austin, TX 78727
US

Email: Nicolas.Williams@sun.com

Williams

Expires October 8, 2009

[Page 11]