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The Unencrypted Form Of Kerberos 5 KRB-CRED Message
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Abstract

The Kerberos 5 KRB-CRED message is used to transfer Kerberos credentials between applications. When used with a secure transport the unencrypted form of the KRB-CRED message may be desirable. This document describes the unencrypted form of the KRB-CRED message.

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1. Introduction

There are applications which need to transfer Kerberos credentials between them without having a prior relationship with established Kerberos keys. When tranferred over a transport that provides confidentiality and integrity the unencrypted form of the KRB-CRED message MAY be used. One application employing this method is the

[Security Assertion Markup Language \(SAML\) 2.0](#) [OASIS.saml-core-2.0-os] attribute transport.

In the SAML application, the Identity Provider (IdP) somehow obtains a Kerberos service ticket from the Kerberos Key Distribution Center (KDC) when required by the SAML system and transfers the credential to a Service Provider (SP) within an attribute statement. The SP can then use the credential to access a Kerberos protected service.

The Kerberos 5 specification as described in [\[RFC4120\]](#) mentions the non-standard legacy use of unencrypted KRB-CRED with Generic Security Services Application Programming Interface (GSS-API) [\[RFC1964\]](#) by the MIT, Heimdal, and Microsoft Kerberos implementations. This document provides a formal specification of the unencrypted form of the KRB-CRED message.

[2. Requirements notation](#)

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 [\[RFC2119\]](#).

[3. The Unencrypted Form Of The KRB-CRED](#)

The unencrypted form of the KRB-CRED contains EncryptedData as defined in Section 5.2.9 [\[RFC4120\]](#). The encryption type (etype) MUST BE specified as 0. The optional key version number (kvno) SHOULD NOT be present. The cipher text (cipher) is a copy of the EncKrbCredPart as defined in Section 5.8.1 [\[RFC4120\]](#) which is in clear text.

[4. Security Considerations](#)

The KRB-CRED message contains sensitive information related to Kerberos credentials being transferred, such as their secret session keys, client and server principal names, and validity period. Possession of this information, along with the ticket itself, would allow an attacker to impersonate the client named in the ticket. The possibility of modification of the KRB-CRED enables the substitution of a credential by the attacker which can result in the recipients use the credentials of a client which was not intended. As a result, the KRB-CRED message must be carefully safeguarded.

The use of an unencrypted form of the KRB-CRED message MUST only be used with a transport where sender and recipient identities can be established and known to each other and provides confidentiality and integrity. Examples of transports which MAY be securely used to transport an unencrypted KRB-CRED message would include Transport Layer Security (TLS) [\[RFC5246\]](#) where mutual authentication has been established and those encoded within encrypted and signed SAML [Security Assertion Markup Language \(SAML\) 2.0](#) [OASIS.saml-core-2.0-os] statement.

[5. Acknowledgements](#)

The following individuals have contributed to the development of this specification.

Thomas HardJono, Massachusetts Institute of Technology

Josh Howlett, Individual

Jeffrey Hutzelman, Carnegie Mellon University

[6. IANA Considerations](#)

This memo includes no request to IANA.

[7. References](#)

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[RFC1964]	Linn, J., "The Kerberos Version 5 GSS-API Mechanism" , RFC 1964, June 1996.
[RFC4120]	Neuman, C., Yu, T., Hartman, S. and K. Raeburn, "The Kerberos Network Authentication Service (V5)" , RFC 4120, July 2005.
[RFC5246]	Dierks, T. and E. Rescorla, "The Transport Layer Security (TLS) Protocol Version 1.2" , RFC 5246, August 2008.
[OASIS.saml-core-2.0-os]	Cantor, S., Kemp, J., Philpott, R. and E. Maler, "Assertions and Protocol for the OASIS Security Assertion Markup Language (SAML) V2.0", OASIS Standard saml-core-2.0-os, March 2005.

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