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L. Zhu
K. Jaganathan
Microsoft Corporation
N. Williams
Sun Microsystems
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OCSP Support for PKINIT
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Abstract

This document defines a mechanism to enable in-band transmission of Online Certificate Status Protocol (OCSP) responses in the Kerberos network authentication protocol. These responses are used to verify the validity of the certificates used in PKINIT - the Kerberos Version 5 extension that provides for the use of public key

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cryptography.

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1. Introduction

Online Certificate Status Protocol (OCSP) [[RFC2560](#)] enables applications to obtain timely information regarding the revocation status of a certificate. Because OCSP responses are well-bounded and small in size, constrained clients may wish to use OCSP to check the validity of the certificates for Kerberos Key Distribution Center (KDC) in order to avoid transmission of large Certificate Revocation Lists (CRLs) and therefore save bandwidth on constrained networks [[OCSP-PROFILE](#)].

This document defines a pre-authentication type [[CLARIFICATIONS](#)], where the client and the KDC MAY piggyback OCSP responses for certificates used in authentication exchanges, as defined in [[PKINIT](#)].

By using this OPTIONAL extension, PKINIT clients and the KDC can maximize the reuse of cached OCSP responses.

2. 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](#)].

3. Message Definition

A pre-authentication type identifier is defined for this mechanism:

PA-PK-OCSP-RESPONSE 16

The corresponding padata-value field [[CLARIFICATIONS](#)] contains the DER [X60] encoding of the following ASN.1 type:

```
PKOcspData ::= SEQUENCE OF OcspResponse
```

```
OcspResponse ::= OCTET STRING
```

```
-- contains a complete OCSP response,
```

```
-- defined in [RFC2560]
```

The client MAY send OCSP responses for certificates used in PA-PK-AS-REQ [[PKINIT](#)] via a PA-PK-OCSP-RESPONSE.

The KDC that receives a PA-PK-OCSP-RESPONSE then SHOULD send a PA-PK-OCSP-RESPONSE containing OCSP responses for certificates used in the KDC's PA-PK-AS-REP. The client can request a

PA-PK-OCSP-RESPONSE by using a PKOcspData containing an empty sequence.

The KDC MAY send a PA-PK-OCSP-RESPONSE when it does not receive a PA-PK-OCSP-RESPONSE from the client.

The PA-PK-OCSP-RESPONSE sent by the KDC contains OCSP responses for certificates used in PA-PK-AS-REP [[PKINIT](#)].

Note the lack of integrity protection for the empty or missing OCSP response; lack of an expected OCSP response from the KDC for the KDC's certificates SHOULD be treated as an error by the client, unless it is configured otherwise.

When using OCSP, the response is signed by the OCSP server, which is trusted by the receiver. Depending on local policy, further verification of the validity of the OCSP servers may be needed

The client and the KDC SHOULD ignore invalid OCSP responses received via this mechanism, and they MAY implement CRL processing logic as a fall-back position, if the OCSP responses received via this mechanism alone are not sufficient for the verification of certificate validity. The client and/or the KDC MAY ignore a valid OCSP response and perform their own revocation status verification independently.

[4.](#) Security Considerations

The pre-authentication data in this document do not actually authenticate any principals, and it is designed to be used in conjunction with PKINIT.

There is a downgrade attack against clients which want OCSP responses from the KDC for the KDC's certificates. The clients, however, can treat the absence of valid OCSP responses as an error, based on their local configuration.

[5.](#) IANA Considerations

No IANA actions are required for this document.

6. Acknowledgements

This document was based on conversations among the authors, Jeffrey Altman, Sam Hartman, Martin Rex and other members of the Kerberos working group.

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[7.](#) References

[7.1](#) Normative References

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Authors' Addresses

Larry Zhu
Microsoft Corporation
One Microsoft Way
Redmond, WA 98052
US

E-Mail: lzhu@microsoft.com

Karthik Jaganathan
Microsoft Corporation
One Microsoft Way
Redmond, WA 98052
US

EMail: karthikj@microsoft.com

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

EMail: Nicolas.Williams@sun.com

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