The NSA (No Secrecy Afforded) Certificate Extension

Abstract

This document defines the NSA (No Secrecy Afforded) certificate extension appropriate for use in certain PKIX (X.509 Public Key Certificates) digital certificates. Historically, clients and servers strove to maintain the privacy of their keys; however, the secrecy of their private keys cannot always be maintained. In certain circumstances, a client or a server might feel that they will be compelled in the future to share their keys with a third party. Some clients and servers also have been compelled to share their keys and wish to indicate to relying parties upon certificate renewal that their keys have in fact been shared with a third party.

Status of This Memo

This document is not an Internet Standards Track specification; it is published for informational purposes.

This is a contribution to the RFC Series, independently of any other RFC stream. The RFC Editor has chosen to publish this document at its discretion and makes no statement about its value for implementation or deployment. Documents approved for publication by the RFC Editor are not a candidate for any level of Internet Standard; see Section 2 of RFC 5741.

Information about the current status of this document, any errata, and how to provide feedback on it may be obtained at http://www.rfc-editor.org/info/rfc7169.

Copyright Notice

Copyright (c) 2014 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 (http://trustee.ietf.org/license-info) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document.
1. Introduction

Insecurity abounds when clients and servers are unable to keep their private keys private. Situations exist nonetheless where client and servers have shared their private keys with a third party. An example of over-sharing might be lawful intercept.

Just because the private key has been shared does not mean that the private key holder wants to conceal the fact they have shared their private key with a third party. Overly indicating that the private key may be or has been shared with a third party is the best way to indicate to relying parties that this sharing has occurred. Knowledge is power, after all. Extensions for certificates [RFC5280] offer an excellent mechanism to indicate that the entities key(s) have been shared, and this document specifies one such certificate extension for use by entities that have shared their private key: the NSA (No Secrecy Afforded) certificate extension.

2. The NSA Certificate Extension

In order to allow entities that have shared their keys with a third party, the NSA certificate extension is defined herein. ASN.1 [X.680] for the extension follows:

```
ext-KeyUsage EXTENSION ::= { SYNTAX
    BOOLEAN  IDENTIFIED BY id-pe-nsa }

id-pe-nsa OBJECT IDENTIFIER ::=  { id-pe 23 }
```

Making the boolean TRUE indicates that the key has been shared with a third party, and making the extension FALSE indicates that the key may have also been shared with a third party but the signer does not want to overtly indicate that the key has been shared. This extension is always marked critical.

3. Security Considerations

Having to disclose keys is sometimes unavoidable. Explicitly indicating that the keys have been shared is one way to mitigate the risk that the relying party might be unaware of this over share. Whatever the case for having shared the keys, the certificate signer needs to careful consider whether to include this extension.

Any key with this extension must be trusted with care. Lengthy deliberations about whether to trust the keys is necessary. Rushing a security analysis is never a good thing. Ultimately, the keys need not be trusted. Secrecy is hard.
4. Normative References


Author’s Address

Sean Turner
IECA, Inc.
3057 Nutley Street, Suite 106
Fairfax, VA 22031
USA

EMail: turners@ieca.com
XMPP: sean.turner@jabber.psg.com