

Network Working Group
Internet-Draft
Intended status: Informational
Expires: September 5, 2018

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March 4, 2018

Extensions to Automatic Certificate Management Environment for end user
S/MIME certificates
[draft-ietf-acme-email-smime-02](#)

Abstract

This document specifies identifiers and challenges required to enable the Automated Certificate Management Environment (ACME) to issue certificates for use by email users that want to use S/MIME.

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[1.](#) Introduction

[I-D.ietf-acme-acme] is a mechanism for automating certificate management on the Internet. It enables administrative entities to prove effective control over resources like domain names, and automates the process of generating and issuing certificates.

This document describes an extension to ACME for use by S/MIME. [Section 3](#) defines extensions for issuing end user S/MIME [[RFC5751](#)] certificates.

[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.](#) Use of ACME for issuing end user S/MIME certificates

[I-D.ietf-acme-acme] defines "dns" Identifier Type that is used to verify that a particular entity has control over a domain or specific service associated with the domain. In order to be able to issue end-user S/MIME certificates, ACME needs a new Identifier Type that proves ownership of an email address.

This document defines a new Identifier Type "email" which corresponds to an (all ASCII) email address [[RFC5321](#)] or Internationalized Email addresses [[RFC6531](#)]. This can be used with S/MIME or other similar service that requires possession of a certificate tied to an email address.

A new challenge type "email-reply-00" is used with "email" Identifier Type, which provides proof that an ACME client has control over an email address:

- 1. ACME server generates a "challenge" email message with the subject "ACME: <token-part1>", where <token-part1> is the

base64url encoded first part of the token, which contains at least 64 bit of entropy. The challenge email message MUST have a single text/plain MIME body part [RFC2045]. The second part of the token (token-part2, which also contains at least 64 bit of entropy) is returned over HTTPS to the ACME client. ACME client concatenates "token-part1" and "token-part2" to create "token", calculates key-authz (as per Section 8.1 of [I-D.ietf-acme-acme]), then includes the base64url encoded SHA-256 digest [FIPS180-4] of the key authorization in the body of a response email message containing a single text/plain MIME body part [RFC2045].

4. Open Issues

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1. Do we need to handle text/html or multipart/alternative in email challenge? Simplicity suggests "no".

5. IANA Considerations

IANA is requested to register a new Identifier Type "email" which corresponds to an (all ASCII) email address [RFC5321].

And finally, IANA is requested to register the following ACME challenge types that are used with Identifier Type "email": "email-reply". The reference for it is this document.

6. Security Considerations

TBD.

7. Normative References

[FIPS180-4]

National Institute of Standards and Technology, "Secure Hash Standard (SHS)", FIPS PUB 180-4, August 2015, <<https://csrc.nist.gov/publications/detail/fips/180/4/final>>.

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