JMAP for Sieve Scripts
draft-ietf-jmap-sieve-22

Abstract

   This document specifies a data model for managing Sieve scripts on a
   server using the JSON Meta Application Protocol (JMAP). Clients can
   use this protocol to efficiently search, access, organize, and
   validate Sieve scripts.

Status of This Memo

   This Internet-Draft is submitted in full conformance with the
   provisions of BCP 78 and BCP 79.

   Internet-Drafts are working documents of the Internet Engineering
   Task Force (IETF). Note that other groups may also distribute
   working documents as Internet-Drafts. The list of current Internet-
   Drafts is at https://datatracker.ietf.org/drafts/current/.

   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."

   This Internet-Draft will expire on 6 October 2024.

Copyright Notice

Table of Contents

1. Introduction

   JMAP [RFC8620] (JSON Meta Application Protocol) is a generic protocol
   for synchronizing data, such as mail, calendars or contacts, between
   a client and a server. It is optimized for mobile and web
   environments, and aims to provide a consistent interface to different
   data types.

   This specification defines a data model for managing Sieve [RFC5228]
   scripts on a server using JMAP. The data model is designed to allow
   a server to provide consistent access to the same scripts via
   ManageSieve [RFC5804] as well as JMAP.

1.1. Notational Conventions

   The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
   "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and
   "OPTIONAL" in this document are to be interpreted as described in BCP
   14 [RFC2119] [RFC8174] when, and only when, they appear in all
   capitals, as shown here.

   Type signatures, examples, and property descriptions in this document
   follow the conventions established in Section 1.1 of [RFC8620]. This
   document also uses data types and terminology established in Sections
   1.2-1.6 of [RFC8620].

   The term SieveScript (with this specific capitalization) is used to
   refer to the data type defined in this document and instances of
   those data types. Servers MUST support all properties specified for
   the data type defined in this document.

   For brevity, JMAP API (see Section 3 of [RFC8620]) examples only show
   the "methodCalls" property of the Request object, and the
   "methodResponses" property of the Response object. All other
   examples are shown using the HTTP 1.1 [RFC9112] protocol.

1.2. Addition to the Capabilities Object

   The capabilities object is returned as part of the JMAP Session
   object; see [RFC8620], Section 2. This document defines one
   additional capability URI.

1.2.1. urn:ietf:params:jmap:sieve

   The urn:ietf:params:jmap:sieve URI represents support for the
   SieveScript data type and associated API methods. The value of this
   property in the JMAP Session capabilities property is an object that
   MUST contain the following information on server capabilities:

   * *implementation*: String

      The name and version of the Sieve implementation.

   The value of this property in an account's accountCapabilities
   property is an object that MUST contain the following information on
   per-account server capabilities:

   * *maxSizeScriptName*: UnsignedInt

The maximum length, in octets, allowed for the name of a
SieveScript. For compatibility with ManageSieve, this MUST be at
least 512 (up to 128 Unicode characters).

* *maxSizeScript*: UnsignedInt|null

The maximum size (in octets) of a Sieve script the server is
willing to store for the user, or null for no limit.

* *maxNumberScripts*: UnsignedInt|null

The maximum number of Sieve scripts the server is willing to store
for the user, or null for no limit.

* *maxNumberRedirects*: UnsignedInt|null

The maximum number of Sieve "redirect" actions a script can
perform during a single evaluation or null for no limit. Note
that this is different from the total number of "redirect" actions
a script can contain.

* *sieveExtensions*: String[]

A list of case-sensitive Sieve capability strings (as listed in
Sieve "require" action; see [RFC5228], Section 3.2) indicating the
extensions supported by the Sieve engine.

* *notificationMethods*: String[]|null

A list of URI schema parts [RFC3986] for notification methods
supported by the Sieve "enotify" [RFC5435] extension, or null if
the extension is not supported by the Sieve engine.

* *externalLists*: String[]|null

A list of URI schema parts [RFC3986] for externally stored list
types supported by the Sieve "extlists" [RFC6134] extension, or
null if the extension is not supported by the Sieve engine.

1.2.2. Example

A JMAP Session object showing a user that has access to their own
Sieve scripts with support for a few Sieve extensions:

```
  {
    "capabilities": {
      "urn:ietf:params:jmap:core": {
        ...
      },
      "urn:ietf:params:jmap:mail": {},
      "urn:ietf:params:jmap:quota": {},
      "urn:ietf:params:jmap:blob": {},
      "urn:ietf:params:jmap:sieve": {
        "implementation": "ACME Email Filtering"
      },
      "urn:ietf:params:jmap:vacationresponse": {},
      ...
    },
    "accounts": {
      "ken": {
        "name": "ken@example.com",
        "isPersonal": true,
        "isReadOnly": false,
        "accountCapabilities": {
          "urn:ietf:params:jmap:core": {},
          "urn:ietf:params:jmap:quota": {},
          "urn:ietf:params:jmap:mail": {
            ...
          },
          "urn:ietf:params:jmap:blob": {
            "supportedTypeNames": [
              "Email"
              "SieveScript",
              ...
            ],
            ...
          },
          "urn:ietf:params:jmap:sieve": {
            "maxSizeScriptName": 512,
            "maxSizeScript": 65536,
            "maxNumberScripts": 5,
            "maxNumberRedirects": null,
            "sieveExtensions": [
              "fileinto",
              "imap4flags",
              "enotify",
              ...
            ],
            "notificationMethods": [
              "mailto"
            ],
            "externalLists": null,
```

```
        },
        "urn:ietf:params:jmap:vacationresponse": {},
        ...
      },
      ...
    }
  },
  "primaryAccounts": {
    "urn:ietf:params:jmap:mail": "ken",
    "urn:ietf:params:jmap:sieve": "ken",
    "urn:ietf:params:jmap:vacationresponse": "ken",
    ...
  },
  "username": "ken@example.com",
  "apiUrl": "/jmap/",
  "downloadUrl":
    "/jmap/download/{accountId}/{blobId}/{name}?accept={type}",
  "uploadUrl": "/jmap/upload/{accountId}/",
  ...
}
```

2. Sieve Scripts

   A *SieveScript* object represents a single Sieve [RFC5228] script for
   filtering email messages at time of final delivery.

2.1. Sieve Script Properties

   A *SieveScript* object has the following properties:

   * *id*: Id (immutable; server-set)

      The id of the script.

   * *name*: String|null (optional; default is server-dependent)

      User-visible name for the SieveScript. If non-null, this MUST be
      a Net-Unicode [RFC5198] string of at least 1 character in length,
      subject to the maximum size given in the capability object.

      For compatibility with ManageSieve, servers MUST reject names that
      contain any of the following Unicode characters: U+0000 - U+001F,
      U+007F - U+009F, U+2028, U+2029.

      Servers MAY reject names that violate server policy (e.g., names
      containing slash (/)).

      The name MUST be unique among all SieveScripts within an account.

*   *blobId*: Id

    The id of the blob containing the raw octets of the script.

*   *isActive*: Boolean (server-set; default: false)

    Indicator that the SieveScript is actively filtering incoming
    messages.

    A user may have at most one active script. The SieveScript/set
    (Section 2.4) method is used for changing the active script or
    disabling Sieve processing.

2.2. Sieve Script Content

A script MUST be UTF-8 [RFC3629] content of at least 1 character in
length, subject to the syntax of Sieve [RFC5228]. A script MUST NOT
contain any "require" statement(s) mentioning Sieve capability
strings not present in the capability (Section 1.2.1) object. Note
that if the Sieve "ihave" [RFC5463] capability string is present in
the capability object, the script MAY mention unrecognized/
unsupported extensions in the "ihave" test.

Script content is treated as a binary blob and uploaded/downloaded
via the mechanisms in [RFC8620] Sections 6.1/6.2 respectively and/or
via the JMAP Blob management methods in [RFC9404] Sections 4.1/4.2
respectively.

Downloading script content via the JMAP downloadUrl or the Blob/get
method provides equivalent functionality to the GETSCRIPT command in
[RFC5804].

2.3. SieveScript/get

This is a standard "/get" method as described in [RFC8620],
Section 5.1. The _ids_ argument may be null to fetch all scripts at
once.

This method provides equivalent functionality to the LISTSCRIPTS
command in [RFC5804].

2.3.1. Examples

List all scripts:

```
   [
     ["SieveScript/get", {
       "accountId": "ken"
     }, "0"]
   ]

   [
     [
       "SieveScript/get",
       {
         "state": "1634915373.240633104-120",
         "list": [
           {
             "id": "2d647053-dded-418d-917a-63eda3ac8f7b",
             "name": "test1",
             "isActive": true,
             "blobId": "S7"
           }
         ],
         "notFound": [],
         "accountId": "ken"
       },
       "0"
     ]
   ]
```

Download the script content via the JMAP downloadUrl as advertised in
Section 1.2.2:

```
GET /jmap/download/ken/S7/test1.siv?accept=application/sieve HTTP/1.1
Host: jmap.example.com
Authorization: Basic a2VuOnBhc3N3b3Jk

HTTP/1.1 200 OK
Date: Fri, 22 Oct 2021 15:27:38 GMT
Content-Type: application/sieve; charset=utf-8
Content-Disposition: attachment; filename="test1.siv"
Content-Length: 49

require ["fileinto"];
fileinto "INBOX.target";
```

Fetch script properties and content in a single JMAP API request
using the JMAP Blob management extension [RFC9404]:

```
   [
     ["SieveScript/get", {
       "accountId": "ken",
       "ids": [ "2d647053-dded-418d-917a-63eda3ac8f7b" ]
     }, "0"],
     ["Blob/get", {
       "accountId": "ken",
       "#ids": {
         "resultOf": "0",
         "name": "SieveScript/get",
         "path": "/list/*/blobId"
       }
     }, "1"]
   ]

   [
     [
       "SieveScript/get",
       {
         "state": "1634915373.240633104-120",
         "list": [
           {
             "id": "2d647053-dded-418d-917a-63eda3ac8f7b",
             "name": "test1",
             "isActive": true,
             "blobId": "S7"
           }
         ],
         "notFound": [],
         "accountId": "ken"
       },
       "0"
     ],
     [
       "Blob/get",
       {
         "list": [
           {
             "id": "S7",
             "data:asText":
      "require [\"fileinto\"];\\r\\nfileinto \"INBOX.target\";\\r\\n",
             "size": 49
           }
         ],
         "notFound": [],
         "accountId": "ken"
       },
       "1"
```

```
      ]
    ]
```

2.4. SieveScript/set

   This is a standard "/set" method as described in [RFC8620],
   Section 5.3 but with the following additional optional request
   arguments:

   * *onSuccessActivateScript*: Id

      The id of the SieveScript to activate if and only if all of the
      creations, modifications, and destructions (if any) succeed. (For
      references to SieveScript creations, this is equivalent to a
      creation-reference, so the id will be the creation id prefixed
      with a "#".) The currently active SieveScript (if any) will be
      deactivated before activating the specified SieveScript.

      If omitted, or if the id is either invalid or nonexistent, it MUST
      be ignored and the currently active SieveScript (if any) will
      remain as such.

      The id of any activated SieveScript MUST be reported in either the
      "created" or "updated" argument in the response as appropriate,
      including a value of "true" for the "isActive" property. The id
      of any deactivated SieveScript MUST be reported in the "updated"
      argument in the response, including a value of "false" for the
      "isActive" property.

   * *onSuccessDeactivateScript*: Boolean

      If true, the currently active SieveScript (if any) will be
      deactivated if and only if all of the creations, modifications,
      and destructions (if any) succeed. If false or omitted, the
      currently active SieveScript (if any) will remain as such.

      The id of any deactivated SieveScript MUST be reported in the
      "updated" argument in the response, including a value of "false"
      for the "isActive" property.

   If both the *onSuccessActivateScript* and *onSuccessDeactivateScript*
   arguments are present in the request, then
   onSuccessDeactivateScript MUST be processed first. If neither
   argument is present in the request, the currently active SieveScript
   (if any) will remain as such.

   This method provides equivalent functionality to the PUTSCRIPT,
   DELETESCRIPT, RENAMESCRIPT, and SETACTIVE commands in [RFC5804].

Script content must first be uploaded as per Section 2.2 prior to referencing it in a SieveScript/set call.

If the SieveScript can not be created or updated because it would result in two SieveScripts with the same name, the server MUST reject the request with an "alreadyExists" SetError. An "existingId" property of type "Id" MUST be included on the SetError object with the id of the existing SieveScript.

If the SieveScript can not be created or updated because its size exceeds the "maxSizeScript" limit, the server MUST reject the request with a "tooLarge" SetError.

If the SieveScript can not be created because it would exceed the "maxNumberScripts" limit or would exceed a server-imposed storage limit, the server MUST reject the request with an "overQuota" SetError.

The active SieveScript MUST NOT be destroyed unless it is first deactivated in a separate SieveScript/set method call.

The following extra SetError types are defined:

For "create" and "update":

*   *invalidSieve*:

    The SieveScript content violates the Sieve [RFC5228] grammar and/
    or one or more extensions mentioned in the script's "require"
    statement(s) are not supported by the Sieve interpreter. The
    description property on the SetError object SHOULD contain a
    specific error message giving at least the line number of the
    first error.

For "destroy":

*   *sieveIsActive*:

    The SieveScript is active.

2.4.1. Examples

Upload a script requiring the Imap4Flags [RFC5232] Extension using the JMAP uploadUrl as advertised in Section 1.2.2:

```
POST /jmap/upload/ken/ HTTP/1.1
Host: jmap.example.com
Authorization: Basic a2VuOnBhc3N3b3Jk
Content-Type: application/sieve
Content-Length: 98

require "imapflags";

if address :is ["To", "Cc"] "jmap@ietf.org" {
  setflag "\\Flagged";
}


HTTP/1.1 201 Created
Date: Thu, 10 Dec 2020 17:14:31 GMT
Content-Type: application/json; charset=utf-8
Content-Length: 171

{
  "accountId": "ken",
  "blobId": "Gabcc83e44a6e19991c4568d0b94e1767c83dd123",
  "type": "application/sieve"
  "size": 98
}
```

Create and activate a script using the uploaded blob. Note that the
response shows that an existing active script has been deactivated in
lieu of the newly created script being activated.

```
[
  ["SieveScript/set", {
    "accountId": "ken",
    "create": {
      "A": {
        "name": null,
        "blobId": "Gabcc83e44a6e19991c4568d0b94e1767c83dd123"
      }
    },
    "onSuccessActivateScript": "#A"
  }, "0"]
]

[
  [
    "SieveScript/set",
    {
      "oldState": "1603741717.50737918-4096",
      "newState": "1603741751.227268529-4096",
      "created": {
        "A": {
          "id": "dd1b164f-8cdc-448c-9f54",
          "name": "ken-20201210T171432-0",
          "blobId": "Sdd1b164f-8cdc-448c-9f54",
          "isActive": true
        }
      },
      "updated": {
        "8abd6f4a-bcb4d-87650-3fcd": {
          "isActive": false
        }
      },
      "destroyed": null,
      "notCreated": null,
      "notUpdated": null,
      "notDestroyed": null,
      "accountId": "ken"
    },
    "0"
  ]
]
```

Update the script content using the JMAP Blob management extension
[RFC9404]:

```
    {
    [
      ["Blob/upload", {
        "accountId": "ken",
        "create": {
          "B": {
            "data": [ {
              "data:asText":
                "redirect \"ken@example.com\"\r\n;"
            } ],
            "type": "application/sieve"
          }
        }
      }, "1"],
      ["SieveScript/set", {
        "accountId": "ken",
        "update": { "dd1b164f-8cdc-448c-9f54": {
          "blobId": "#B"
        }
      }
    }, "2"]
  ]

  [
    [
      "Blob/upload",
      {
        "oldState": null,
        "newState": "1603741700.309607123-0128",
        "created": {
          "B": {
            "id": "G969c83e44a6e10871c4568d0b94e1767c83ddeae",
            "blobId": "G969c83e44a6e10871c4568d0b94e1767c83ddeae",
            "type": "application/sieve",
            "size": 29
          }
        },
        "notCreated": null,
        "accountId": "ken"
      },
      "1"
    ],
    [
      "SieveScript/set",
      {
        "oldState": "1603741751.227268529-4096",
        "newState": "1603742603.309607868-4096",
        "created": null,
```

```
      "updated": {
        "dd1b164f-8cdc-448c-9f54": null
      },
      "destroyed": null,
      "notCreated": null,
      "notUpdated": null,
      "notDestroyed": null,
      "accountId": "ken"
    },
    "2"
  ]
]
```

Update the script name and deactivate it:

```
[
  ["SieveScript/set", {
    "accountId": "ken",
    "update": { "dd1b164f-8cdc-448c-9f54": {
      "name": "myscript"
      }
    },
    "onSuccessDeactivateScript": true
  }, "3"]
]

[
  [
    "SieveScript/set",
    {
      "oldState": "1603742603.309607868-4096",
      "newState": "1603742967.852315428-4096",
      "created": null,
      "updated": {
        "dd1b164f-8cdc-448c-9f54": {
          "isActive": false
        }
      },
      "destroyed": null,
      "notCreated": null,
      "notUpdated": null,
      "notDestroyed": null,
      "accountId": "ken"
    },
    "3"
  ]
]
```

Reactivate the script:

```
[
  ["SieveScript/set", {
    "accountId": "ken",
    "onSuccessActivateScript": "dd1b164f-8cdc-448c-9f54"
  }, "4"]
]

[
  [
    "SieveScript/set",
    {
      "oldState": "1603742967.852315428-4096",
      "newState": "1603744460.316617118-4096",
      "created": null,
      "updated": {
        "dd1b164f-8cdc-448c-9f54": {
          "isActive": true
        }
      },
      "destroyed": null,
      "notCreated": null,
      "notUpdated": null,
      "notDestroyed": null,
      "accountId": "ken"
    },
    "4"
  ]
]
```

Deactivate and destroy the active script:

```
[
  ["SieveScript/set", {
    "accountId": "ken",
    "onSuccessDeactivateScript": true
  }, "5"],
  ["SieveScript/set", {
    "accountId": "ken",
    "destroy": [ "dd1b164f-8cdc-448c-9f54" ]
  }, "6"]
]

[
  [
    "SieveScript/set",
    {
```

```
        "oldState": "1603744460.316617118-4096",
        "newState": "1603744637.575375572-4096",
        "created": null,
        "updated": {
          "dd1b164f-8cdc-448c-9f54": {
            "isActive": false
          }
        },
        "destroyed": null,
        "notCreated": null,
        "notUpdated": null,
        "notDestroyed": null,
        "accountId": "ken"
      },
      "5"
    ],
    [
      "SieveScript/set",
      {
        "oldState": "1603744637.575375572-4096",
        "newState": "1603744637.854390875-4096",
        "created": null,
        "updated": null,
        "destroyed": [
          "dd1b164f-8cdc-448c-9f54"
        ],
        "notCreated": null,
        "notUpdated": null,
        "notDestroyed": null,
        "accountId": "ken"
      },
      "6"
    ]
  ]
```

2.5. SieveScript/query

   This is a standard "/query" method as described in [RFC8620],
   Section 5.5. A _FilterCondition_ object has the following
   properties, either of which may be omitted:

   * *name*: String

      The SieveScript "name" property contains the given string.

   * *isActive*: Boolean

   The "isActive" property of the SieveScript must be identical to
   the value given to match the condition.

The following SieveScript properties MUST be supported for sorting:

* *name*

* *isActive*

2.6. SieveScript/validate

This method is used by the client to verify Sieve script validity
without storing the script on the server.

The method takes the following arguments:

* *accountId*: Id

   The id of the account to use.

* *blobId*: Id

   The id of the blob containing the raw octets of the script to
   validate, subject to the same requirements in Section 2.

The response has the following arguments:

* *accountId*: Id

   The id of the account used for this call.

* *error*: SetError|null

   An "invalidSieve" SetError object if the script content is invalid
   (see Section 2.4), or null if the script content is valid.

This method provides equivalent functionality to the CHECKSCRIPT
command in [RFC5804].

Script content must first be uploaded as per Section 2.2 prior to
referencing it in a SieveScript/validate call.

3. Quotas

   Servers SHOULD impose quotas on Sieve scripts to prevent malicious
   users from exceeding available storage. Administration of such
   quotas is outside of the scope of this specification, however
   [RFC9425] defines a data model for users to obtain quota details over
   JMAP.

   The mechanism for handling SieveScript requests that would place a
   user over a quota setting is discussed in Section 2.4.

4. Compatibility with JMAP Vacation Response

   Section 8 of [RFC8621] defines a VacationResponse object to represent
   an autoresponder to incoming email messages. Servers that implement
   the VacationResponse as a Sieve script that resides amongst other
   user scripts are subject to the following requirements:

   * MUST allow the VacationResponse Sieve script to be fetched by the
      SieveScript/get (Section 2.3) method.

   * MUST allow the VacationResponse Sieve script to be [de]activated
      via the "onSuccessActivateScript" argument to the SieveScript/set
      (Section 2.4) method.

   * MUST NOT allow the VacationResponse Sieve script to be destroyed
      or have its content updated by the SieveScript/set (Section 2.4)
      method. Any such request MUST be rejected with a "forbidden"
      SetError. A "description" property MAY be present with an
      explanation that the script can only be modified by a
      VacationResponse/set method.

5. Security Considerations

   All security considerations of JMAP [RFC8620] and Sieve [RFC5228]
   apply to this specification.

   Additionally, implementations MUST treat Sieve script content as
   untrusted data. As such, script parsers MUST fail gracefully in the
   face of syntactically invalid or malicious content and MUST be
   prepared to deal with resource exhaustion (E.g., allocation of
   enormous strings, lists, or command blocks).

6. IANA Considerations

6.1. JMAP Capability Registration for "sieve"

   IANA will register the "sieve" JMAP Capability as follows:

   Capability Name: urn:ietf:params:jmap:sieve

   Specification document: this document

   Intended use: common

   Change Controller: IETF

   Security and privacy considerations: this document, Section 5

6.2. JMAP Data Type Registration for "SieveScript"

   IANA will register the "SieveScript" JMAP Data Type as follows:

   Type Name: SieveScript

   Can Reference Blobs: yes

   Can Use for State Change: yes

   Capability: urn:ietf:params:jmap:sieve

   Specification document: this document

6.3. JMAP Error Codes Registry

   The following sub-sections register two new error codes in the JMAP
   Error Codes registry, as defined in [RFC8620].

6.3.1. invalidSieve

   JMAP Error Code: invalidSieve

   Intended use: common

   Change controller: IETF

   Reference: This document, Section 2.4

   Description: The SieveScript violates the Sieve grammar [RFC5228]
   and/or one or more extensions mentioned in the script's "require"
   statement(s) are not supported by the Sieve interpreter.

6.3.2. sieveIsActive

   JMAP Error Code: sieveIsActive

   Intended use: common

   Change controller: IETF

   Reference: This document, Section 2.4

   Description: The client tried to destroy the active SieveScript.

7. Acknowledgments

   The concepts in this document are based largely on those in
   [RFC5804]. The author would like to thank the authors of that
   document for providing both inspiration and some borrowed text for
   this document.

   The author would also like to thank the following individuals for
   contributing their ideas and support for writing this specification:
   Joris Baum, Mauro De Gennaro, Bron Gondwana, Neil Jenkins, Alexey
   Melnikov, and Ricardo Signes.

8. References

8.1. Normative References

   [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate
              Requirement Levels", BCP 14, RFC 2119,
              DOI 10.17487/RFC2119, March 1997,
              <https://www.rfc-editor.org/info/rfc2119>.

   [RFC3629] Yergeau, F., "UTF-8, a transformation format of ISO
              10646", STD 63, RFC 3629, DOI 10.17487/RFC3629, November
              2003, <https://www.rfc-editor.org/info/rfc3629>.

   [RFC3986] Berners-Lee, T., Fielding, R., and L. Masinter, "Uniform
              Resource Identifier (URI): Generic Syntax", STD 66,
              RFC 3986, DOI 10.17487/RFC3986, January 2005,
              <https://www.rfc-editor.org/info/rfc3986>.

   [RFC5198] Klensin, J. and M. Padlipsky, "Unicode Format for Network
              Interchange", RFC 5198, DOI 10.17487/RFC5198, March 2008,
              <https://www.rfc-editor.org/info/rfc5198>.

   [RFC5228] Guenther, P., Ed. and T. Showalter, Ed., "Sieve: An Email
              Filtering Language", RFC 5228, DOI 10.17487/RFC5228,
              January 2008, <https://www.rfc-editor.org/info/rfc5228>.

   [RFC5435] Melnikov, A., Ed., Leiba, B., Ed., Segmuller, W., and T.
              Martin, "Sieve Email Filtering: Extension for
              Notifications", RFC 5435, DOI 10.17487/RFC5435, January
              2009, <https://www.rfc-editor.org/info/rfc5435>.

   [RFC6134] Melnikov, A. and B. Leiba, "Sieve Extension: Externally
              Stored Lists", RFC 6134, DOI 10.17487/RFC6134, July 2011,
              <https://www.rfc-editor.org/info/rfc6134>.

   [RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC
              2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174,
              May 2017, <https://www.rfc-editor.org/info/rfc8174>.

   [RFC8620] Jenkins, N. and C. Newman, "The JSON Meta Application
              Protocol (JMAP)", RFC 8620, DOI 10.17487/RFC8620, July
              2019, <https://www.rfc-editor.org/info/rfc8620>.

   [RFC8621] Jenkins, N. and C. Newman, "The JSON Meta Application
              Protocol (JMAP) for Mail", RFC 8621, DOI 10.17487/RFC8621,
              August 2019, <https://www.rfc-editor.org/info/rfc8621>.

8.2. Informative References

   [RFC5232] Melnikov, A., "Sieve Email Filtering: Imap4flags
              Extension", RFC 5232, DOI 10.17487/RFC5232, January 2008,
              <https://www.rfc-editor.org/info/rfc5232>.

   [RFC5463] Freed, N., "Sieve Email Filtering: Ihave Extension",
              RFC 5463, DOI 10.17487/RFC5463, March 2009,
              <https://www.rfc-editor.org/info/rfc5463>.

   [RFC5804] Melnikov, A., Ed. and T. Martin, "A Protocol for Remotely
              Managing Sieve Scripts", RFC 5804, DOI 10.17487/RFC5804,
              July 2010, <https://www.rfc-editor.org/info/rfc5804>.

   [RFC9112] Fielding, R., Ed., Nottingham, M., Ed., and J. Reschke,
              Ed., "HTTP/1.1", STD 99, RFC 9112, DOI 10.17487/RFC9112,
              June 2022, <https://www.rfc-editor.org/info/rfc9112>.

   [RFC9404] Gondwana, B., Ed., "JSON Meta Application Protocol (JMAP)
              Blob Management Extension", RFC 9404,
              DOI 10.17487/RFC9404, August 2023,
              <https://www.rfc-editor.org/info/rfc9404>.

   [RFC9425] Cordier, R., Ed., "JSON Meta Application Protocol (JMAP)
              for Quotas", RFC 9425, DOI 10.17487/RFC9425, June 2023,
              <https://www.rfc-editor.org/info/rfc9425>.

Appendix A. Change History (To be removed by RFC Editor before
             publication)

   Changes since ietf-21:

   * Rearranged and tweaked some /validate text.

   Changes since ietf-20:

   * Listed Unicode characters prohibited in script names.

   * Cleaned up the language of the optional /set arguments.

   * Added security considerations about parsing Sieve script content.

   * Miscellaneous editorial changes.

   Changes since ietf-19:

   * Tweaked the example captions.

   Changes since ietf-18:

   * Edited JMAP API examples for brevity to match other JMAP specs,
      and added explanatory text to 1.1.

   * Updated <xref> elements to to use "section" and "sectionFormat"
      attributes.

   Changes since ietf-17:

   * Several editorial changes resulting from IESG review comments.

   * Added a section discussuing quotas.

   Changes since ietf-16:

   * Renamed the "invalidScript" and "scriptIsActive" SetErrors to
      "invalidSieve" and "sieveIsActive" respectively.

   Changes since ietf-15:

   * Added registration for SieveScript JMAP Data Type.

* Miscellaneous editorial changes.

Changes since ietf-14:

* Updated reference for JMAP Blobs.

Changes since ietf-13:

* Added implementation argument to capabilities.

* Miscellaneous editorial changes.

Changes since ietf-12:

* Added onSuccessDeactivateScipt argument to /set method.

* Clarified that the "isActive" property must be included in the
   created/uodated/destroyed arguments in a response of the active
   script is changed and/or deactivated.

* Miscellaneous editorial changes.

Changes since ietf-11:

* Fixed examples to be proper JSON and JMAP.

Changes since ietf-10:

* Fixed SieveScript/set response deactivating script example.

* Fixed line line nit in Blob/get request.

* Removed unused references.

Changes since ietf-09:

* Fixed Blob/upload request in example.

Changes since ietf-08:

* Fixed Blob/upload response in example.

* Removed SieveScript/test method (to be written as an extension
   document).

Changes since ietf-07:

* Updated example to use Blob/upload rather than Blob/set.

Changes since ietf-06:

*   None (refreshed to avoid expiration).

Changes since ietf-05:

*   Converted source from xml2rfc v2 to v3.

*   Added examples for SieveScript/get.

*   Miscellaneous editorial changes.

Changes since ietf-04:

*   SieveScript/test: Switched from using a JSON array for each
    completed action and its args to a JSON object.

*   Switched to referencing draft-ietf-jmap-blob.

*   Miscellaneous editorial changes.

Changes since ietf-03:

*   SieveScript/test: Moved positional arguments into their own array
    (because the specfications don't use a consistent method for
    defining the action syntax or naming of positional arguments).

Changes since ietf-02:

*   Removed open issues.

*   Reverted back to using only blob ids for script content.

*   Added "rateLimit" and "requestTooLarge" to the list of possible
    error codes for /set method.

*   Added Compatibility with JMAP Vacation Response section.

*   Added RFC5228 to Security Considerations.

*   Miscellaneous editorial changes.

Changes since ietf-01:

*   Removed normative references to ManageSieve (RFC 5804).

*   Added the 'maxSizeScriptName' capability.

   * Made the 'name' property in the SieveScript object optional.

   * Added requirements for the 'name' property in the SieveScript
      object.

   * Removed the 'blobId' property from the SieveScript object.

   * Removed the 'replaceOnCreate' argument from the /set method.

   * Removed the 'blobId' argument from the /validate method.

   * Removed the 'scriptBlobId' argument from, and added the
      'scriptContent' argument to, the /test method.

   * Editorial fixes from Neil Jenkins and Ricardo Signes.

   * Other miscellaneous text reorganization and editorial fixes.

   Changes since ietf-00:

   * Specified that changes made by onSuccessActivateScript MUST be
      reported in the /set response as created and/or updated as
      appropriate.

   * Reworked and specified more of the /test response based on
      implementation experience.

   Changes since murchison-01:

   * Explicitly stated that Sieve capability strings are case-
      sensitive.

   * errorDescription is now String|null.

   * Added /query method.

   * Added /test method.

   Changes since murchison-00:

   * Added IANA registration for "scriptIsActive" JMAP error code.

   * Added open issue about /set{create} with an existing script name.

Author's Address

   Kenneth Murchison
   Fastmail US LLC
   1429 Walnut Street - Suite 1201
   Philadelphia, PA 19102
   United States of America
   Email: murch@fastmailteam.com