

**JMAP for Sieve Scripts**  
**draft-ietf-jmap-sieve-02**

Abstract

This document specifies a data model for managing Sieve scripts on a server using JMAP.

Open Issues

- o Should we introduce an "isIncluded" or "isInUse" filter/sort condition for the /query method to locate scripts which are included by others?
- o Do we need any (rate) limits for /test?
- o Should ":fcc" and associated arguments (e.g., ":flags", ":create:", etc) reported in the /test response be in their own "fcc" sub-object rather than listed inline with the rest of the arguments for the action?

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## Table of Contents

<a href="#">1.</a>	<a href="#">Introduction</a>	<a href="#">3</a>
<a href="#">1.1.</a>	<a href="#">Notational Conventions</a>	<a href="#">3</a>
<a href="#">1.2.</a>	<a href="#">Terminology</a>	<a href="#">3</a>
<a href="#">1.3.</a>	<a href="#">Addition to the Capabilities Object</a>	<a href="#">4</a>
<a href="#">1.3.1.</a>	<a href="#">urn:ietf:params:jmap:sieve</a>	<a href="#">4</a>
<a href="#">2.</a>	<a href="#">Sieve Scripts</a>	<a href="#">5</a>
<a href="#">2.1.</a>	<a href="#">SieveScript/get</a>	<a href="#">6</a>
<a href="#">2.2.</a>	<a href="#">SieveScript/set</a>	<a href="#">6</a>
<a href="#">2.2.1.</a>	<a href="#">Examples</a>	<a href="#">8</a>
<a href="#">2.3.</a>	<a href="#">SieveScript/query</a>	<a href="#">14</a>
<a href="#">2.4.</a>	<a href="#">SieveScript/validate</a>	<a href="#">14</a>
<a href="#">2.5.</a>	<a href="#">SieveScript/test</a>	<a href="#">15</a>
<a href="#">2.5.1.</a>	<a href="#">Example</a>	<a href="#">18</a>
<a href="#">3.</a>	<a href="#">Security Considerations</a>	<a href="#">21</a>
<a href="#">4.</a>	<a href="#">IANA Considerations</a>	<a href="#">21</a>
<a href="#">4.1.</a>	<a href="#">JMAP Capability Registration for "sieve"</a>	<a href="#">21</a>
<a href="#">4.2.</a>	<a href="#">JMAP Error Codes Registry</a>	<a href="#">21</a>
<a href="#">4.2.1.</a>	<a href="#">invalidScript</a>	<a href="#">21</a>
<a href="#">4.2.2.</a>	<a href="#">scriptIsActive</a>	<a href="#">21</a>
<a href="#">5.</a>	<a href="#">Acknowledgments</a>	<a href="#">22</a>
<a href="#">6.</a>	<a href="#">References</a>	<a href="#">22</a>
<a href="#">6.1.</a>	<a href="#">Normative References</a>	<a href="#">22</a>
<a href="#">6.2.</a>	<a href="#">Informative References</a>	<a href="#">23</a>
<a href="#">Appendix A.</a>	<a href="#">Change History (To be removed by RFC Editor before publication)</a>	<a href="#">23</a>
	<a href="#">Author's Address</a>	<a href="#">25</a>



## **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, however the functionality offered over the two protocols may differ.

### **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 \[RFC8620\]](#). Data types defined in the core specification are also used in this document.

Servers MUST support all properties specified for the new data type defined in this document.

For compatibility with publishing requirements, line breaks have been inserted inside long JSON strings, with the following continuation lines indented. To form the valid JSON example, any line breaks inside a string must be replaced with a space and any other white space after the line break removed.

### **1.2. Terminology**

The same terminology is used in this document as in the core JMAP specification, see [\[RFC8620\], Section 1.6](#).

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.



### **1.3. 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.

#### **1.3.1. urn:ietf:params:jmap:sieve**

This represents support for the SieveScript data type and associated API methods. The value of this property in the JMAP Session capabilities property is an empty object.

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

- o \*supportsTest\*: "Boolean"

If true, the server supports the SieveScript/test ([Section 2.5](#)) method.

- o \*maxSizeScriptName\*: "UnsignedInt"

The maximum length, in (UTF-8) octets, allowed for the name of a SieveScript. For compatibility with ManageSieve, this MUST be at least 512 (up to 128 Unicode characters).

- o \*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.

- o \*maxNumberScripts\*: "UnsignedInt|null"

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

- o \*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.

- o `*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.

- o `*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.

- o `*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.

## **2. Sieve Scripts**

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

A `*SieveScript*` object has the following properties:

- o `*id*`: "Id" (immutable; server-set)

The id of the script.

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

User-visible name for the SieveScript. 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 control





characters. Servers MAY reject names that violate server policy (e.g., names containing slash (/)). The name MUST be unique among all SieveScripts within an account.

- o `*content*`: "String"

The raw octets of the script.

This MUST be a UTF-8 [[RFC3629](#)] string of at least 1 character in length, subject to the syntax of Sieve [[RFC5228](#)]. The script MUST NOT contain any "require" statement(s) mentioning Sieve capability strings not present in the capability ([Section 1.3.1](#)) 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.

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

A user may have multiple SieveScripts on the server, yet only one script may be used for filtering of incoming messages. This is the active script. Users may have zero or one active script. The SieveScript/set ([Section 2.2](#)) method is used for changing the active script or disabling Sieve processing.

## **[2.1.](#) SieveScript/get**

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

This method provides similar functionality to the GETSCRIPT and LISTSCRIPTS commands in [[RFC5804](#)].

## **[2.2.](#) SieveScript/set**

This is a standard "/set" method as described in [[RFC8620](#)], [Section 5.3](#) but with the following additional request argument, which may be omitted:

- o `*onSuccessActivateScript*`: "Id|null" (optional)

If "null", the currently active SieveScript (if any) will be deactivated if and only if all of the creations, modifications,



and destructions (if any) succeed. Otherwise, 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 "#".) If this argument is not present in the request, 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. The id of any deactivated SieveScript MUST be reported in the "updated" argument in the response.

This method provides similar functionality to the PUTSCRIPT, DELETEScript, RENAMEScript, and SETACTIVE commands in [\[RFC5804\]](#).

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 Sieve Script can not be created because it would exceed the "maxNumberScripts" 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":

- o \*invalidScript\*:

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":

- o \*scriptIsActive\*:

The SieveScript is active.

### [2.2.1.](#) Examples

Request (and response) to create and activate a script using the Imap4Flags [[RFC5232](#)] Extension:

```
{
  "using": [ "urn:ietf:params:jmap:core",
             "urn:ietf:params:jmap:sieve" ],
  "methodCalls": [
    ["SieveScript/set", {
      "accountId": "ken",
      "create": { "A": {
        "name": null,
        "content": "require \"imapflags\";\r\n\r\n
                    if address :is [\"To\", \"Cc\"] \"jmap@ietf.org\" {
                      setflag \"\\\\\\\\\\\\Flagged\"; }\\r\\n"
        }
      },
      "onSuccessActivateScript": "#A"
    }, "1"]
  ]
}

{
  "methodResponses": [
    [
      "SieveScript/set",
      {
        "oldState": "1603741717.50737918-4096",
        "newState": "1603741751.227268529-4096",
        "created": {
          "A": {
            "id": "dd1b164f-8cdc-448c-9f54-60210b5f14ae",
            "isActive": true
          }
        },
        "updated": null,
        "destroyed": null,
        "notCreated": null,
        "notUpdated": null,
        "notDestroyed": null,
        "accountId": "ken"
      },
      "1"
    ]
  ]
}
```





Request (and response) to update script content:

```
{
  "using": [ "urn:ietf:params:jmap:core",
             "urn:ietf:params:jmap:sieve" ],
  "methodCalls": [
    ["SieveScript/set", {
      "accountId": "ken",
      "update": { "dd1b164f-8cdc-448c-9f54-60210b5f14ae": {
        "content": "redirect \"ken@example.com\"\\r\\n;"
      }
    }
  ], "2"]
]
}

{
  "methodResponses": [
    [
      "SieveScript/set",
      {
        "oldState": "1603741751.227268529-4096",
        "newState": "1603742603.309607868-4096",
        "created": null,
        "updated": {
          "dd1b164f-8cdc-448c-9f54-60210b5f14ae": null
        },
        "destroyed": null,
        "notCreated": null,
        "notUpdated": null,
        "notDestroyed": null,
        "accountId": "ken"
      },
      "2"
    ]
  ]
}
```



Request (and response) to update script name and deactivate:

```
{
  "using": [ "urn:ietf:params:jmap:core",
             "urn:ietf:params:jmap:sieve" ],
  "methodCalls": [
    ["SieveScript/set", {
      "accountId": "ken",
      "update": { "dd1b164f-8cdc-448c-9f54-60210b5f14ae": {
        "name": "myscript"
      }
    },
    "onSuccessActivateScript": null
  ], "3"]
]
}

{
  "methodResponses": [
    [
      "SieveScript/set",
      {
        "oldState": "1603742603.309607868-4096",
        "newState": "1603742967.852315428-4096",
        "created": null,
        "updated": {
          "dd1b164f-8cdc-448c-9f54-60210b5f14ae": {
            "isActive": false
          }
        },
        "destroyed": null,
        "notCreated": null,
        "notUpdated": null,
        "notDestroyed": null,
        "accountId": "ken"
      },
      "3"
    ]
  ]
}
```



Request (and response) to activate a script:

```
{
  "using": [ "urn:ietf:params:jmap:core",
             "urn:ietf:params:jmap:sieve" ],
  "methodCalls": [
    ["SieveScript/set", {
      "accountId": "ken",
      "onSuccessActivateScript": "dd1b164f-8cdc-448c-9f54-60210b5f14ae"
    }, "4"]
  ]
}

{
  "methodResponses": [
    [
      "SieveScript/set",
      {
        "oldState": "1603742967.852315428-4096",
        "newState": "1603744460.316617118-4096",
        "created": null,
        "updated": {
          "dd1b164f-8cdc-448c-9f54-60210b5f14ae": {
            "isActive": true
          }
        },
        "destroyed": null,
        "notCreated": null,
        "notUpdated": null,
        "notDestroyed": null,
        "accountId": "ken"
      },
      "4"
    ]
  ]
}
```

Requests (and responses) to deactivate and destroy the active script:

```
{
  "using": [ "urn:ietf:params:jmap:core",
             "urn:ietf:params:jmap:sieve" ],
  "methodCalls": [
    ["SieveScript/set", {
      "accountId": "ken",
      "onSuccessActivateScript": null
    }, "5"],
    ["SieveScript/set", {
```



```
    "accountId": "ken",
    "destroy": [ "dd1b164f-8cdc-448c-9f54-60210b5f14ae" ]
  }, "6"]
]
}

{
  "methodResponses": [
    [
      "SieveScript/set",
      {
        "oldState": "1603744460.316617118-4096",
        "newState": "1603744637.575375572-4096",
        "created": null,
        "updated": null,
        "updated": {
          "dd1b164f-8cdc-448c-9f54-60210b5f14ae": {
            "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-9f54-60210b5f14ae"
        ],
        "notCreated": null,
        "notUpdated": null,
        "notDestroyed": null,
        "accountId": "ken"
      },
      "6"
    ]
  ]
}
```





### **2.3. 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:

- o `*name*`: "String"

The SieveScript "name" property contains the given string.

- o `*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:

- o `*name*`

- o `*isActive*`

### **2.4. SieveScript/validate**

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

The method provides similar functionality to the CHECKSCRIPT command in [\[RFC5804\]](#).

The `*SieveScript/validate*` method takes the following arguments:

- o `*accountId*`: "Id"

The id of the account to use.

- o `*content*`: "String"

The raw octets of the script to validate, subject to the same requirements in [Section 2](#).



The response has the following arguments:

- o `*accountId*`: "Id"

The id of the account used for this call.

- o `*error*`: "SetError|null"

A SetError object if the request or the script content is invalid, or "null" if the script content is valid.

## **2.5. SieveScript/test**

This method is used by the client to ask the Sieve interpreter to evaluate a Sieve script against a set of emails and report what actions would be performed for each.

When calling this method the "using" property of the Request object MUST contain the capabilities "urn:ietf:params:jmap:sieve" and "urn:ietf:params:jmap:mail". The latter is required due to the use of blob ids which may reference Email objects and the use of the Envelope object, as described below.

The `*SieveScript/test*` method takes the following arguments:

- o `*accountId*`: "Id"

The id of the account to use.

- o `*scriptContent*`: "String"

The raw octets of the script to test, subject to the same requirements in [Section 2](#).

- o `*scriptId*`: "Id"

The id of the SieveScript to test.



- o `*emailBlobIds*: "Id[]"`

The ids representing the raw octets of the [\[RFC5322\]](#) messages to test against.

- o `*envelope*: "Envelope|null"`

Information that the Sieve interpreter should assume was present in the SMTP transaction that delivered the message when evaluating "envelope" tests. If "null", all "envelope" tests MUST evaluate to false. See [Section 7 of \[RFC8621\]](#) for the contents of the Envelope object.

- o `*lastVacationResponse*: "UTCDate|null"`

The UTC date-time at which the Sieve interpreter should assume that it last auto-replied to the sender of the message, or "null" if the Sieve interpreter should assume that it has not auto-replied to the sender.

A client MUST include either a `_scriptContent_` or a `_scriptId_` property. A request that includes neither or both properties MUST be rejected with an "invalidArguments" SetError.

The response has the following arguments:

- o `*accountId*: "Id"`

The id of the account used for this call.

- o `*completed*: "Id[Action[]]|null"`

A map of the blob id to a set of `_Action_` types for each message successfully processed by the script, or "null" if none. The `_Action_` data type is a tuple, represented as a JSON array containing two elements:

1. A "String" `*name*` of the Sieve action (e.g., "keep").



2. A "String[\*]" object containing named *\*arguments\** for that action (e.g., "flags" or "mailbox").

- o *\*notCompleted\**: "Id[SetError]|null"

A map of the blob id to a SetError object for each message that was not successfully processed by the script, or "null" if none. A "serverFail" SetError (see [Section 3.6.2 of \[RFC8620\]](#)) MUST be used to indicate a Sieve interpreter run-time error.

The following additional errors may be returned instead of the "SieveScript/test" response:

- o "notFound": The script referenced by the id could not be found.
- o "invalidScript": The script content is invalid (see [Section 2.2](#)).
- o "serverFail": The script failed preparation to be executed for some other reason.

The name to use for each action argument in the response is a direct mapping of the argument names as given in the specification of each action. Tagged and optional arguments MUST use the name of the tag, minus the leading ":". Positional arguments MUST use the name of the argument inside of the angle brackets ("<" and ">") in the "Usage" line in the specification for the action.

The JSON data type to use for each argument value is a direct mapping from its Sieve data type, per the following table:

Sieve Type	JSON Type
Number	Number
String	String
String List	String[]
no value	Boolean (true)

Recommendations for constructing the list of arguments are as follows:





- o Optional arguments in which the value is supplied by the Sieve interpreter SHOULD be included (e.g., ":from" and ":subject" arguments to the "vacation" [RFC5230] action).
- o Optional arguments in which the value is implicitly supplied by a Sieve variable SHOULD be included (e.g., "keep" or "fileinto" actions without an explicit ":flags" argument, but "imap4flags" [RFC5232] have been set on the internal variable).
- o Optional arguments in which the value is the specified default MAY be omitted.
- o Tagged arguments that are only used to determine whether the action will be executed and have no impact on the result of the action MAY be omitted (e.g., ":days" and ":addresses" arguments to the vacation action).

### **2.5.1. Example**

Assume that the following script has been created and assigned id "S123".

```
require [ "imapflags", "editheader", "vacation", "fcc" ];
setflag "$SieveFiltered";
addheader :last "X-Sieve-Filtered" "yes";
vacation :days 3 :fcc "INBOX.Sent" :flags "\\Answered" text:
Gone fishing.
.
;
```

Assume that the following email has been uploaded and assigned blob id "B456".

```
From: "Some Example Sender" <example@example.net>
To: ken@example.com
Subject: test email
Date: Wed, 23 Sep 2020 12:11:11 -0500
Content-Type: text/plain; charset="UTF-8"
MIME-Version: 1.0
```

This is a test email.



The following request executes the script against the email and provides envelope information for use by the "vacation" action.

```
{
  "using": [
    "urn:ietf:params:jmap:core",
    "urn:ietf:params:jmap:sieve",
    "urn:ietf:params:jmap:mail"
  ],
  "methodCalls": [
    [
      "SieveScript/test",
      {
        "accountId": "ken",
        "scriptId": "S123",
        "emailBlobIds": [
          "B456"
        ],
        "envelope": {
          "mailFrom": {
            "email": "example@example.net",
            "parameters": null
          },
          "rcptTo": [
            {
              "email": "ken@example.com",
              "parameters": null
            }
          ]
        },
        "lastVacationResponse": null
      },
      "R1"
    ]
  ]
}
```



The following response lists the actions that would be performed by the script.

```
{
  "methodResponses": [
    [
      "SieveScript/test",
      {
        "completed": {
          "B456": [
            [
              "addheader",
              {
                "last": true,
                "field-name": "X-Sieve-Filtered",
                "value": "yes"
              }
            ],
            [
              "vacation",
              {
                "fcc": "INBOX.Sent",
                "flags": [
                  "\\answered"
                ],
                "subject": "Auto: test email",
                "from": "ken@example.com",
                "reason": "Gone fishing."
              }
            ],
            [
              "keep",
              {
                "flags": [
                  "$SieveFiltered"
                ]
              }
            ]
          ],
          "notCompleted": null,
          "accountId": "ken",
        },
        "R1"
      ]
    ]
  ]
}
```



### **3. Security Considerations**

All security considerations of JMAP [[RFC8620](#)] apply to this specification.

### **4. IANA Considerations**

#### **4.1. 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 3](#)

#### **4.2. JMAP Error Codes Registry**

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

##### **4.2.1. invalidScript**

JMAP Error Code: invalidScript

Intended use: common

Change controller: IETF

Reference: This document, [Section 2.2](#)

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.

##### **4.2.2. scriptIsActive**

JMAP Error Code: scriptIsActive

Intended use: common

Change controller: IETF





Reference: This document, [Section 2.2](#)

Description: The client tried to destroy the active SieveScript.

## 5. 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: Bron Gondwana, Neil Jenkins, Alexey Melnikov, and Ricardo Signes.

## 6. References

### 6.1. Normative References

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## **[6.2.](#) Informative References**

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## **[Appendix A.](#) Change History (To be removed by RFC Editor before publication)**

Changes since ietf-01:

- o Removed normative references to ManageSieve ([RFC 5804](#)).
- o Added the 'maxSizeScriptName' capability.



- o Made the 'name' property in the SieveScript object optional.
- o Added requirements for the 'name' property in the SieveScript object.
- o Removed the 'blobId' property from the SieveScript object.
- o Removed the 'replaceOnCreate' argument from the /set method.
- o Removed the 'blobId' argument from the /validate method.
- o Removed the 'scriptBlobId' argument from, and added the 'scriptContent' argument to, the /test method.
- o Editorial fixes from Neil Jenkins and Ricardo Signes.
- o Other miscellaneous text reorganization and editorial fixes.

Changes since ietf-00:

- o Specified that changes made by onSuccessActivateScript MUST be reported in the /set response as created and/or updated as appropriate.
- o Reworked and specified more of the /test response based on implementation experience.

Changes since murchison-01:

- o Explicitly stated that Sieve capability strings are case-sensitive.
- o errorDescription is now String|null.
- o Added /query method.
- o Added /test method.

Changes since murchison-00:

- o Added IANA registration for "scriptIsActive" JMAP error code.
- o Added open issue about /set{create} with an existing script name.



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