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M. Douglass
Bedework
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Serverside Subscriptions
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Abstract

This specification provides a mechanism whereby subscriptions to external resources can be handled by the server.

This specification updates RFC4791 to add new properties for the MKCOL request.

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1. Introduction

The motivation for this specification was initially to handle external subscriptions to calendar data. However, any resource which allows subscriptions might make use of this specification.

Currently subscriptions to calendar feeds are handled by calendar clients. There are a number of disadvantages to this approach: users have to subscribe from multiple devices and the subscription cannot affect scheduling handled by the server.

This specification defines a mechanism whereby the server will subscribe to the feed and make it visible in the user's home.

The advantages are popular feeds can be cached by the server and the user only has to make a single subscription.

1.1. Conventions Used in This Document

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 [RFC2119].

2. CalDAV Subscriptions

2.1. Request

A client will subscribe to a URL by performing a MKCOL request with resource type elements of at least DAV:collection and DAV:subscription. For a calendar subscription there will also be a caldav calendar element.

This is an example of the MKCOL request and response from a server that supports extended MKCOL.

>> Request <<

```
POST /caldav/user/mike/calendars/parrots HTTP/1.1
Host: example.com
Content-Type: text/calendar; component=VEVENT; method=REQUEST
Content-Length: xxxx
```

```
<?xml version="1.0" encoding="utf-8" ?>
<D:mkcol xmlns:D="DAV:"
          xmlns:C="urn:ietf:params:xml:ns:caldav">
  <D:set>
    <D:prop>
      <D:resourcetype>
        <D:collection/>
        <C:calendar/>
        <D:subscription/>
      </D:resourcetype>
      <D:displayname>Parrot Events</D:displayname>
      <D:subscription-href
        >http://example.org/parrot-events.ics<
        /D:subscription-href>
      <D:subscription-deletions-suppressed
        >true</D:subscription-deletions-suppressed>
      <D:subscription-suggested-refresh-interval
        >PT1H</D:subscription-suggested-refresh-interval>
    </D:prop>
  </D:set>
</D:mkcol>
```

>> Response <<

```
HTTP/1.1 200 OK
```

3. New DAV and CALDAV properties

3.1. DAV:subscription

Name: subscription

Namespace: DAV

Purpose: To indicate that the resource is a subscription to an external resource which is managed by the server.

Conformance: When this is specified the request MUST also contain at least a DAV:subscription-href element as defined in this specification.

Description: The DAV:specification resource type element is used to indicate a collection that is a subscription. A subscription MUST report the DAV:subscription XML element in the value of the DAV:resourcetype property.

Definition:

```
<!ELEMENT subscription empty>
```

3.2. DAV:subscription-href

Name: subscription-href

Namespace: DAV

Purpose: Provides the url for the external subscription.

Conformance: This property MUST be defined on any collection which has a resource-type containing a DAV:subscription element.

Definition:

```
<!ELEMENT vpoll-max-items (#PCDATA)>  
PCDATA value: a url
```

Example:

```
<D:subscription-href xmlns:D="DAV"  
>https://example.com/events.ics</D:subscription-href>
```

3.3. DAV:subscription-deletions-suppressed

Name: subscription-deletions-suppressed

Namespace: DAV

Purpose: To indicate that resources that no longer appear in the feed should be retained by the server.

Conformance: This property MAY be defined on any subscription.

Description: Many feeds provide only the current active set of resources. For example, a calendar feed may only contain events from the current date onwards - while many subscribers would like to retain a copy of all events received over time.

This property indicates that the server SHOULD retain resources that disappear from the feed. Services MAY define some mechanism to indicate that a particular resource SHOULD be removed. For example this specification suggests setting a status of DELETED on a calendar event.

Definition:

```
<!ELEMENT subscription-deletions-suppressed empty>
```

3.4. DAV:subscription-disabled

Name: subscription-disabled

Namespace: DAV

Purpose: To indicate that subscription has been disabled.

Conformance: This property MUST be reported for any disabled subscription.

Description: A server MAY choose to disable a subscription if there is an excessive number of errors when attempting to synchronize with the target. This property indicates to the client that the subscription has been disabled.

There is no explicit action that can be taken to reenabling a subscription. However, on subsequent requests a client may indicate a refresh is desired which MAY have the effect of reenabling the subscription.

Definition:

```
<!ELEMENT subscription-enabled empty>
```

3.5. DAV:subscription-next-refresh-interval

Name: subscription-next-refresh-interval

Namespace: DAV

Purpose: To indicate the time interval till the next refresh of a subscription.

Conformance: This property MUST be reported for any active subscription.

Description: This provides a time period to the next refresh. It uses the period format defined in [RFC3339].

Definition:

```
<!ELEMENT subscription-next-refresh-interval (#PCDATA)>  
PCDATA value: a duration value
```

Example:

```
<D:subscription-next-refresh-interval xmlns:D="DAV"
>PT30M</D:subscription-next-refresh-interval>
```

4. DAV:subscription-suggested-refresh-interval

Name: subscription-suggested-refresh-interval

Namespace: DAV

Purpose: To indicate the desired time interval between refreshes of a subscription.

Conformance: This property MUST be reported for any active subscription.

Description: This provides a suggested time period between refresh. It uses the period format defined in [RFC3339].

Definition:

```
<!ELEMENT subscription-suggested-refresh-interval (#PCDATA)>
PCDATA value: a duration value
```

Example:

```
<D:subscription-suggested-refresh-interval xmlns:D="DAV"
>PT30M</D:subscription-suggested-refresh-interval>
```

5. Refreshing and Reenabling the subscription

When creating the subscription the client may indicate to the server a desired refresh interval using the a refresh of the data is desired by using the PROPPATCH method to set the subscription-next-refresh-interval to 0, e.g. "PT0S".

The client may indicate to the server that a refresh of the data is desired by using the PROPPATCH method to set the subscription-next-refresh-interval to 0, e.g. "PT0S".

A server MAY choose to always ignore the attempted refresh or to ignore the patch if it appears too often.

If the server decides to initiate a refresh it MAY choose to respond with a 102 HTTP status indicating that it is still waiting for the data or a 202 HTTP status to indicate the request was accepted.

6. Response Delays

Implementations of this feature may have an outboard or background process handling the actual synchronization of the data. The target may be hosted on a slow service or the data may be very large

All these factors may lead to a significant delay in having data ready for delivery to the client.

The following approaches are more or less appropriate for handling requests:

Return with available data: This is the normal behavior. The subscription looks like a regular collection so the server can respond to the normal requests with whatever data is available.

Wait for completion: If the synchronization process is active the server may just choose to wait. This risks a request timeout if the data synchronization takes a significant amount of time.

Return 102 status(es): The server may choose to wait but periodically send a 102 response to keep the connection alive.

Return 202 status: This is probably the best response. There is no need to indicate where the client should go to retrieve the data. All it needs to do is retry the operation after an appropriate delay.

7. CalDAV service Considerations

As mentioned above, this feature is particularly useful for CalDAV servers and clients. There are some specific considerations.

7.1. Deleted events

If `subscription-deletions-suppressed` is specified then the server SHOULD retain all events. However, the server MAY choose to remove old events once they become older than the `CALDAV:min-date-time` property as specified in [RFC4791] section 5.2.6.

7.2. CalDAV restrictions

A server SHOULD apply all appropriate restrictions on events obtained from a subscription. In particular the `CALDAV:min-date-time` and `CALDAV:max-date-time` properties as specified in [RFC4791] sections 5.2.6 and 5.2.7 SHOULD be applied.

Additionally the CALDAV:max-resource-size property restricts the size of events and the CALDAV:max-instances property the number of instances.

7.3. Invitations in Subscriptions

Any reason not to allow them?

8. Security Considerations

Servers implementing this feature need to be aware of the risks entailed in using the URIs provided as values to subscription-href. See [RFC3986] for a discussion of the security considerations relating to URIs.

9. Privacy Considerations

Properties with a "URI" value type can expose their users to privacy leaks as any network access of the URI data can be tracked. Clients SHOULD NOT automatically download data referenced by the URI without explicit instruction from users. This specification does not introduce any additional privacy concerns beyond those described in [RFC5545].

10. IANA Considerations

11. Acknowledgements

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...

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Appendix A. Open issues

invitations: Any reason not to allow them?

Appendix B. Change log

v00 2018-06-26 MD

* First pass

Author's Address

Michael Douglass
Bedework
226 3rd Street
Troy, NY 12180
United States of America
Email: mdouglass@bedework.com
URI: <http://bedework.com>