WebDAV: User Notifications
draft-pot-webdav-notifications-00

Abstract

   This specification defines an extension to WebDAV that allows the
   server to provide notifications to users.

Status of This Memo

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

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   This Internet-Draft will expire on June 18, 2015.

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1. Introduction

   It is often useful for servers to communicate arbitrary information
   to the end-users for a WebDAV system, such as a system status,
   message of the day or to notify users of changes that were made to
   shared resources by other users.

   This specification defines a generic "notification" mechanism that
   allows a server to do that. Whilst primarily aimed at CalDAV
   [RFC4791] and CardDAV [RFC6352] this mechanism has been designed to
   be adaptable to other applications of WebDAV [RFC4918].

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].

   When XML element types in the namespaces "DAV:" is referenced in this
   document outside of the context of an XML fragment, the string "DAV:"
   will be prefixed to the element type name.

3. Requirements Overview

To add support for WebDAV notifications, a server MUST at least have
support for WebDAV Class 3 [RFC4918].

WebDAV notifications also defines new properties on principal
resources, which are defined in RFC3744 [RFC3744].

4. Notifications

When this feature is available, a DAV:notification-URL
(Section 4.2.1) property appears on principal resources for those
principals who are able to receive notifications. That property
specifies a single DAV:href element whose content refers to a WebDAV
collection resource. Notification "messages" are deposited into this
collection and can be retrieved by clients and acted on accordingly.

The notification collection referenced by the DAV:notification-URL
(Section 4.2.1) property MUST have a DAV:resourcetype property with
DAV:collection and DAV:notifications (Section 4.4.1) child elements.

Notification "messages" are XML documents stored as resources in the
notification collection. Each XML document contains a
DAV:notification (Section 4.4.2) element as its root. The root
element contains a DAV:dtstamp element, and one additional element
which represents the type of notification being conveyed in the
message. That child element will typically contain additional
content that describes the notification.

Each notification resource has a DAV:notificationtype (Section 4.3.1)
property which contains as its single child element an empty element
that matches the child element of the notification resource XML
document root. Any attributes on the child element in the XML
document are also present in the property child element.

Notifications are automatically generated by the server with an
appropriate resource stored in the notifications collection of the
user to whom the notification is targeted. Clients SHOULD monitor
the notification collection looking for new notification resources.
When doing so, clients SHOULD look at the DAV:notificationtype
(Section 4.3.1) property to ensure that the notification is of a type
that the client can handle. Once a client has handled the
notification in whatever way is appropriate it SHOULD delete the
notification resource. Clients SHOULD remove notifications being
displayed to a user when the notification resource is removed from
the notification collection, to enable the user to dismiss a
notification on one device and have it automatically removed from
others. Clients MUST ignore all notifications for types they do not

recognize. Servers MAY delete notification resources on their own if
they determine that the notifications are no longer relevant or
valid. Servers MAY coalesce notifications as appropriate.

Servers MUST prevent clients from adding resources in the
notification collection.

4.1. Mime type

The "application/davnotification+xml" MIME media type MUST be used
for transfer of WebDAV notifications.

This is an example of a Content-Type header:

Content-Type: application/davnotification+xml

HTTP GET requests that expect to receive a WebDAV notification
resource, SHOULD include an "Accept" header that includes
"application/davnotification+xml".

Requests that do not include this header, SHOULD be rejected with a
HTTP 406 status code.

4.2. Additional Principal Properties

This section defines new properties for WebDAV principal resources as
defined in RFC3744 [RFC3744]. These properties are likely to be
protected but the server MAY allow them to be written by appropriate
users.

4.2.1. DAV:notification-URL Property

Name: notification-URL

Namespace: DAV:

Purpose: Identify the URL of the notification collection owned by
   the associated principal resource.

Protected: This property SHOULD be protected.

PROPFIND behavior: This property SHOULD NOT be returned by a
   PROPFIND allprop request (as defined in Section 14.2 of
   [RFC4918]).

COPY/MOVE behavior: This property value SHOULD be preserved in COPY
   and MOVE operations.

   Description: This property is needed for a client to determine where
      the notification collection of the current user is located so that
      processing of notification messages can occur. If not present,
      then the associated principal is not enabled for notification
      messages on the server.

   Definition:

   <!ELEMENT notification-URL (DAV:href)>

4.3. Properties on Notification Resources

   The following new WebDAV properties are defined for notification
   resources.

4.3.1. DAV:notificationtype Property

   Name: notificationtype

   Namespace: DAV:

   Purpose: Identify the type of notification of the corresponding
      resource.

   Protected: This property MUST be protected.

   PROPFIND behavior: This property SHOULD NOT be returned by a
      PROPFIND allprop request (as defined in Section 14.2 of
      [RFC4918]).

   COPY/MOVE behavior: This property value MUST be preserved in COPY
      and MOVE operations.

   Description: This property allows a client, via a PROPFIND Depth:1
      request, to quickly find notification messages that the client can
      handle in a notification collection. The single child element is
      the notification resource root element's child defining the
      notification itself. This element MUST be empty, though any
      attributes on the element in the notification resource MUST be
      present in the property element.

   Definition:

   <!ELEMENT notificationtype ANY>
   <!-- Child elements are empty but will have appropriate attributes.
        Any valid notification message child element can appear.-->

[4.4](#). **XML Element Definitions**

[4.4.1](#). **DAV:notifications**

   Name: notifications

   Namespace: DAV:

   Purpose: Indicates a notification collection.

   Description: This XML element is used in a DAV:resourcetype element
      to indicate that the corresponding resource is a notification
      collection.

   Definition:

   <!ELEMENT notifications EMPTY>

[4.4.2](#). **DAV:notification**

   Name: notification

   Namespace: DAV:

   Purpose: Notification message root element.

   Description: The root element used in notification resources.

   Definition:

   <!ELEMENT notification (dtstamp, XXX) >
   <!-- Any notification type element can appear after
      DAV:dtstamp -->

[4.4.3](#). **DAV:dtstamp**

   Name: dtstamp

   Namespace: DAV:

   Purpose: Date-time stamp.

   Description: DAV:dtstamp is an element whose content MUST conform to
      the "date-time" production in [RFC3339]. In addition, an
      uppercase "T" character MUST be used to separate date and time,
      and an uppercase "Z" character MUST be present.

   Definition:

```
<!ELEMENT dtstamp (#PCDATA)>
<!-- Value is a date-time in UTZ as per [RFC3339] -->
```

5. Notification Definitions

This section defines a set of common notification types.

5.1. System Status Notification

The system status notification is used to convey an URI and/or textual description to the user. The assumption is that the URI points to a webpage where the current system status is described in detail, with the provided description being a summary of that. A "type" attribute on the element is used to indicate the importance of the current status notification, and has the values "low", "medium" and "high", representing the increasing level of importance of the message respectively.

Servers might have knowledge of an agent's language preferences, in which case it MAY localise the DAV:description value as appropriate based on the calendar user accessing the notification, but if it does, it SHOULD include an xml:lang attribute on the DAV:description element to indicate what language is being used.

5.1.1. DAV:systemstatus Element Definition

Name: systemstatus

Namespace: DAV:

Purpose: Indicates a system status notification.

Description: This XML element is used in a DAV:notification element
   to describe a system status notification.

Definition:

```
<!ELEMENT systemstatus (DAV:href?, DAV:description?)>
<!ATTLIST systemstatus type (low | medium | high) "low">
<!-- One of DAV:href or DAV:description MUST be present -->
```

Example: This is an example of the body of a notification resource
   for an emergency system outage:

```
<?xml version="1.0" encoding="UTF-8"?>
<D:notification xmlns:D="DAV:">
  <D:dtstamp>2011-12-09T06:12:53Z</D:dtstamp>
  <D:systemstatus type="high">
    <D:href>http://example.com/emergency_shutdown.html</D:href>
    <D:description xml:lang='en_US'>
        Emergency shutdown now
    </D:description>
  </D:systemstatus>
</D:notification>
```

Example: This is an example of the WebDAV property on the example
   notification resource above:

```
<?xml version="1.0" encoding="UTF-8"?>
<D:notificationtype xmlns:D="DAV:">
  <D:systemstatus type="high" />
</D:notificationtype>
```

[6]. Security Considerations

TBD: More?

[7]. IANA Considerations

This document defines a MIME media type for use of WebDAV
notifications in an XML format. This media type SHOULD be used for
the transfer of WebDAV notifications.

Type name: application

Subtype name: davnotification+xml

Required parameters: none

Optional parameters: none

Encoding considerations: Identical to those of "application/xml" as
   described in RFC7303 [RFC7303].

Security considerations: See Section 6.

Interoperability considerations: There are no known interoperability
   issues.

Published specification: This specification.

Applications that use this media type: No known applications
   currently use this media type.

Fragment identifier considerations: N/A.

Additional information

Deprecated alias names for this type N/A.

Magic number(s) N/A.

File extension(s) xml

Macintosh file type code(s) TEXT

Person & email address to contact for further information:
   me@evertpot.com

Intended usage COMMON

Restrictions on usage There are no restrictions on where this media

Author See the "Authors' Addresses" section of this document.

Change Controller IETF

8. Acknowledgments

This specification is the result of discussions between the various
Apple calendar server and client teams.

9. References

9.1. Normative References

[RFC2119]   Bradner, S., "Key words for use in RFCs to Indicate
            Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC3339]   Klyne, G., Ed. and C. Newman, "Date and Time on the
            Internet: Timestamps", RFC 3339, July 2002.

[RFC4918]   Dusseault, L., "HTTP Extensions for Web Distributed
            Authoring and Versioning (WebDAV)", RFC 4918, June 2007.

[RFC6352]   Daboo, C., "CardDAV: vCard Extensions to Web Distributed
            Authoring and Versioning (WebDAV)", RFC 6352, August 2011.

   [RFC7303]   Thompson, H. and C. Lilley, "XML Media Types", RFC 7303,
               July 2014.

9.2. Informative References

   [RFC3744]   Clemm, G., Reschke, J., Sedlar, E., and J. Whitehead, "Web
               Distributed Authoring and Versioning (WebDAV)
               Access Control Protocol", RFC 3744, May 2004.

   [RFC4791]   Daboo, C., Desruisseaux, B., and L. Dusseault,
               "Calendaring Extensions to WebDAV (CalDAV)", RFC 4791,
               March 2007.

Appendix A. Backwards-compatibility with earlier drafts

   An earlier draft of this specification is already widely deployed
   among both servers and clients.

   This specification, informally known as 'caldav-notifications'
   largely uses the same structure as this specification, but where the
   "DAV:" xml namespace is used in this specification, the earlier draft
   uses "http://calendarserver.org/ns/".

   It is possible to conform to both that draft and this specification
   by either creating two different collections, as identified by
   "notification-URL" in each respective namespace. Alternatively it's
   possible to use the same resource for both, but use content-
   negotation using the Accept header to ask the server for a specific
   representation of a notification.

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