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VALARM Extensions for iCalendar
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Abstract

This document defines a set of extensions to the iCalendar VALARM component to enhance use of alarms and improve interoperability between clients and servers.

This document updates RFC5545.

Status of This Memo

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1. Introduction

The iCalendar [RFC5545] specification defines a set of components used to describe calendar data. One of those is the "VALARM" component which appears as a sub-component of "VEVENT" and "VTODO" components. The "VALARM" component is used to specify a reminder for an event or task. Different alarm actions are possible, as are different ways to specify how the alarm is triggered.

As iCalendar has become more widely used and as client-server protocols such as CalDAV [RFC4791] have become more prevalent, several issues with "VALARM" components have arisen. Most of these relate to the need to extend the existing "VALARM" component with new properties and behaviors to allow clients and servers to accomplish specific tasks in an interoperable manner. For example, clients typically need a way to specify that an alarm has been dismissed by a calendar user, or has been "snoozed" by a set amount of time. To date, this has been done through the use of custom "X-" properties specific to each client implementation, leading to poor interoperability.

This specification defines a set of extensions to "VALARM" components to cover common requirements for alarms not currently addressed in iCalendar. Each extension is defined in a separate section below. For the most part, each extension can be supported independently of the others, though in some cases one extension will require another. In addition, this specification describes mechanisms by which clients can interoperably implement common features such as "snoozing".

2. 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 BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

When XML element types in the namespaces "DAV:" and "urn:ietf:params:xml:ns:caldav" are referenced in this document outside of the context of an XML fragment, the string "DAV:" and "CALDAV:" will be prefixed to the element type names respectively.

3. Extensible syntax for VALARM

Section 3.6.6 of [RFC5545] defines the syntax for "VALARM" components and properties within them. However, as written, it is hard to extend this by adding, e.g., a new property common to all types of alarm. Since many of the extensions defined in this document need to extend the base syntax, an alternative form for the base syntax is defined here, with the goal of simplifying specification of the extensions while augmenting the existing functionality defined in [RFC5545] to allow for nested sub-components (as required by proximity alarm triggers (Section 8)).

A "VALARM" calendar component is re-defined by the following notation:

```
alarmcext  = "BEGIN" ":" "VALARM" CRLF
             *alarmprop *alarm-subcomp
             "END" ":" "VALARM" CRLF

alarmprop  = (

             ; the following are REQUIRED,
             ; but MUST NOT occur more than once

             action / trigger /

             ; one set of action properties MUST be
             ; present and MUST match the action specified
             ; in the ACTION property

             actionprops /

             ; the following are OPTIONAL,
             ; and MAY occur more than once

             x-prop / iana-prop

             )

actionprops = *audiopropext / *disppropext / *emailpropext

audiopropext  = (

                ; ’duration’ and ’repeat’ are both OPTIONAL,
                ; and MUST NOT occur more than once each,
                ; but if one occurs, so MUST the other

                duration / repeat /

                ; the following is OPTIONAL,
                ; but MUST NOT occur more than once

                attach

                )

disppropext = (

              ; the following are REQUIRED,
              ; but MUST NOT occur more than once

              description /

              ; ’duration’ and ’repeat’ are both OPTIONAL,
              ; and MUST NOT occur more than once each,
              ; but if one occurs, so MUST the other

              duration / repeat

              )
emailpropext = (

               ; the following are all REQUIRED,
               ; but MUST NOT occur more than once

               description / summary /

               ; the following is REQUIRED,
               ; and MAY occur more than once

               attendee /

               ; 'duration' and 'repeat' are both OPTIONAL,
               ; and MUST NOT occur more than once each,
               ; but if one occurs, so MUST the other

               duration / repeat

               ; the following is OPTIONAL,
               ; and MAY occur more than once

               attach

               )

alarm-subcomp = (

                ; the following are OPTIONAL,
                ; and MAY occur more than once

                x-comp / iana-comp

                )
```

4. Alarm Unique Identifier

This extension adds a "UID" property to "VALARM" components to allow a unique identifier to be specified. The value of this property can then be used to refer uniquely to the "VALARM" component.

The "UID" property defined here follows the definition in Section 3.8.4.7 of [RFC5545] with the security and privacy updates in Section 5.3 of [RFC7986]. In particular it MUST be a globally unique identifier that does not contain any security- or privacy-sensitive information.

The "VALARM" component defined in Section 3 is extended here as:

```
   alarmprop  =/ (

                 ; the following is OPTIONAL,
                 ; but MUST NOT occur more than once

                 uid

                 )
```

5. Alarm Related To

It is often convenient to relate one or more "VALARM" components to other "VALARM" components (e.g., see Section 7). This can be accomplished if the "VALARM" components each have their own "UID" property (as per Section 4).

This specification updates the usage of the "RELATED-TO" property defined in Section 3.8.4.5 of [RFC5545] to enable its use with "VALARM" components. Specific types of relationships between "VALARM" components can be identified by registering new values for the "RELTYPE" property parameter defined in Section 3.2.15 of [RFC5545].

The "VALARM" component defined in Section 3 is extended here as:

```
   alarmprop  =/ (

                 ; the following is OPTIONAL,
                 ; and MAY occur more than once

                 related

                 )
```

6. Alarm Acknowledgement

There is currently no way for a "VALARM" component to indicate whether it has been triggered and acknowledged. With the advent of a standard client/server protocol for calendaring and scheduling data ([RFC4791]) it is quite possible for an event with an alarm to exist on multiple clients in addition to the server. If each of those is responsible for performing the action when an alarm triggers, then multiple "alerts" are generated by different devices. In such a situation, a calendar user would like to be able to "dismiss" the alarm on one device and have it automatically dismissed on the others too.

Also, with recurring events that have alarms, it is important to know when the last alarm in the recurring set was acknowledged, so that the client can determine whether past alarms have been missed.

To address these needs, this specification adds an "ACKNOWLEDGED" property to "VALARM" components to indicate when the alarm was last acknowledged (or sent, if acknowledgement is not possible). This is defined by the syntax below.

```
alarmprop       =/ (

                   ; the following is OPTIONAL,
                   ; but MUST NOT occur more than once

                   acknowledged

                   )
```

6.1. Acknowledged Property

Property Name: ACKNOWLEDGED

Purpose: This property specifies the UTC date and time at which the corresponding alarm was last sent or acknowledged.

Value Type: DATE-TIME

Property Parameters: IANA and non-standard property parameters can be specified on this property.

Conformance: This property can be specified within "VALARM" calendar components.

Description: This property is used to specify when an alarm was last sent or acknowledged. This allows clients to determine when a pending alarm has been acknowledged by a calendar user so that any alerts can be dismissed across multiple devices. It also allows clients to track repeating alarms or alarms on recurring events or to-dos to ensure that the right number of missed alarms can be tracked.

Clients SHOULD set this property to the current date-time value in UTC when a calendar user acknowledges a pending alarm. Certain kinds of alarms, such as email-based alerts, might not provide feedback as to when the calendar user sees them. For those kinds of alarms, the client SHOULD set this property when the alarm is triggered and the action successfully carried out.

When an alarm is triggered on a client, clients can check to see if an "ACKNOWLEDGED" property is present. If it is, and the value of that property is greater than or equal to the computed trigger time for the alarm, then the client SHOULD NOT trigger the alarm. Similarly, if an alarm has been triggered and an "alert" presented to a calendar user, clients can monitor the iCalendar data to determine whether an "ACKNOWLEDGED" property is added or changed in the alarm component. If the value of any "ACKNOWLEDGED" property in the alarm changes and is greater than or equal to the trigger time of the alarm, then clients SHOULD dismiss or cancel any "alert" presented to the calendar user.

Format Definition: This property is defined by the following notation:

```
acknowledged = "ACKNOWLEDGED" *acknowledgedparam ":" datetime CRLF

acknowledgedparam  = (

                     ; the following is OPTIONAL,
                     ; and MAY occur more than once

                     (";" other-param)

                     )
```

Example: The following is an example of this property:

```
ACKNOWLEDGED:20090604T084500Z
```

7. Snoozing Alarms

Users often want to "snooze" an alarm, and this specification defines a standard approach to accomplish that.

To "snooze" an alarm that has been triggered, clients MUST do the following:

1. Set the "ACKNOWLEDGED" property (see Section 6.1) on the triggered alarm.

2. Create a new "VALARM" component (the "snooze" alarm) within the parent component of the triggered alarm (i.e., as a "sibling" component of the triggered alarm).

A. The new "snooze" alarm MUST be set to trigger at the user's chosen "snooze" interval after the original alarm triggered. Clients SHOULD use an absolute "TRIGGER" property with a "DATE-TIME" value specified in UTC.

B. The new "snooze" alarm MUST have a "RELATED-TO" property (see Section 5) with a value set to the "UID" property value of the original "VALARM" component that was triggered. If the triggered "VALARM" component does not already have a "UID" property, the client MUST add one. The "RELATED-TO" property added to the new "snooze" alarm MUST include a "RELTYPE" property parameter with a value set to "SNOOZE" (see Section 7.1).

3. When the "snooze" alarm is triggered, the client MUST do the following:

A. Update the "ACKNOWLEDGED" property on the original related alarm.

B. If the "snooze" alarm is itself "snoozed", the client MUST remove the "snooze" alarm component, and return to step 2.

Otherwise, if the "snooze" alarm is dismissed, the client MUST do one of the following:

- Set the "ACKNOWLEDGED" property on the "snooze" alarm.

- Remove the "snooze" alarm component.

Note that regardless of the final disposition of the "snooze" alarm when triggered, the original "VALARM" component is left unchanged other than updating its "ACKNOWLEDGED" property.

7.1. Relationship Type Property Parameter

This specification adds the "SNOOZE" relationship type for use with the "RELTYPE" property defined in Section 3.2.15 of [RFC5545]. This is used when relating a "snoozed" "VALARM" component to the original alarm that the "snooze" was generated for.

7.2. Example

The following example shows the snoozing, re-snoozing, and dismissal of an alarm. Note that the encompassing VCALENDAR component has been omitted for brevity and that the line-breaks surrounding the VALARM components are for clarity only and would not be present in the actual iCalendar data.

Assume that we have the following event with an alarm set to trigger 15 minutes before the meeting:

```
BEGIN:VEVENT
CREATED:20210302T151004Z
UID:AC67C078-CED3-4BF5-9726-832C3749F627
DTSTAMP:20210302T151004Z
DTSTART;TZID=America/New_York:20210302T103000
DTEND;TZID=America/New_York:20210302T113000
SUMMARY:Meeting

BEGIN:VALARM
UID:8297C37D-BA2D-4476-91AE-C1EAA364F8E1
TRIGGER:-PT15M
DESCRIPTION:Event reminder
ACTION:DISPLAY
END:VALARM

END:VEVENT
```

When the alarm is triggered, the user decides to snooze it for 5 minutes. The client acknowledges the original alarm and creates a new "snooze" alarm as a sibling of, and relates it to, the original alarm (note that both VALARMs reside within the same "parent" VEVENT):

```
BEGIN:VEVENT
CREATED:20210302T151004Z
UID:AC67C078-CED3-4BF5-9726-832C3749F627
DTSTAMP:20210302T151516Z
DTSTART;TZID=America/New_York:20210302T103000
DTEND;TZID=America/New_York:20210302T113000
SUMMARY:Meeting

BEGIN:VALARM
UID:8297C37D-BA2D-4476-91AE-C1EAA364F8E1
TRIGGER:-PT15M
DESCRIPTION:Event reminder
ACTION:DISPLAY
ACKNOWLEDGED:20210302T151514Z
END:VALARM

BEGIN:VALARM
UID:DE7B5C34-83FF-47FE-BE9E-FF41AE6DD097
TRIGGER;VALUE=DATE-TIME:20210302T152000Z
RELATED-TO;RELTYPE=SNOOZE:8297C37D-BA2D-4476-91AE-C1EAA364F8E1
DESCRIPTION:Event reminder
ACTION:DISPLAY
END:VALARM

END:VEVENT
```

When the "snooze" alarm is triggered, the user decides to snooze it again for an additional 5 minutes. The client once again acknowledges the original alarm, removes the triggered "snooze" alarm, and creates another new "snooze" alarm as a sibling of, and relates it to, the original alarm (note the different UID for the new snooze alarm):

```
   BEGIN:VEVENT
   CREATED:20210302T151004Z
   UID:AC67C078-CED3-4BF5-9726-832C3749F627
   DTSTAMP:20210302T152026Z
   DTSTART;TZID=America/New_York:20210302T103000
   DTEND;TZID=America/New_York:20210302T113000
   SUMMARY:Meeting

   BEGIN:VALARM
   UID:8297C37D-BA2D-4476-91AE-C1EAA364F8E1
   TRIGGER:-PT15M
   DESCRIPTION:Event reminder
   ACTION:DISPLAY
   ACKNOWLEDGED:20210302T152024Z
   END:VALARM

   BEGIN:VALARM
   UID:87D690A7-B5E8-4EB4-8500-491F50AFE394
   TRIGGER;VALUE=DATE-TIME:20210302T152500Z
   RELATED-TO;RELTYPE=SNOOZE:8297C37D-BA2D-4476-91AE-C1EAA364F8E1
   DESCRIPTION:Event reminder
   ACTION:DISPLAY
   END:VALARM

   END:VEVENT
```

When the second "snooze" alarm is triggered, the user decides to dismiss it. The client acknowledges both the original alarm and the second "snooze" alarm:

```
   BEGIN:VEVENT
   CREATED:20210302T151004Z
   UID:AC67C078-CED3-4BF5-9726-832C3749F627
   DTSTAMP:20210302T152508Z
   DTSTART;TZID=America/New_York:20210302T103000
   DTEND;TZID=America/New_York:20210302T113000
   SUMMARY:Meeting

   BEGIN:VALARM
   UID:8297C37D-BA2D-4476-91AE-C1EAA364F8E1
   TRIGGER:-PT15M
   DESCRIPTION:Event reminder
   ACTION:DISPLAY
   ACKNOWLEDGED:20210302T152507Z
   END:VALARM

   BEGIN:VALARM
   UID:87D690A7-B5E8-4EB4-8500-491F50AFE394
   TRIGGER;VALUE=DATE-TIME:20210302T152500Z
   RELATED-TO;RELTYPE=SNOOZE:8297C37D-BA2D-4476-91AE-C1EAA364F8E1
   DESCRIPTION:Event reminder
   ACTION:DISPLAY
   ACKNOWLEDGED:20210302T152507Z
   END:VALARM

   END:VEVENT
```

8. Alarm Proximity Trigger

VALARMs are currently triggered when a specific date-time is reached. It is also desirable to be able to trigger alarms based on location, e.g. when arriving at or departing from a particular location.

This specification adds the following elements to "VALARM" components to indicate when an alarm can be triggered based on location.

> "PROXIMITY" property - indicates that a location based trigger is to be used and which action is used for the trigger

> "VLOCATION" component(s) [I-D.ietf-calext-eventpub-extensions] - used to indicate the actual location(s) to trigger off of, specified with a URL property containing a geo: URI [RFC5870] which allows for two or three coordinate values with an optional uncertainty

```
   alarmprop       =/ (

                      ; the following is OPTIONAL,
                      ; but MUST NOT occur more than once

                      proximity /

                      )

   alarm-subcomp   =/ (

                      ; the following is OPTIONAL,
                      ; and MAY occur more than once, but only
                      ; when a PROXIMITY property is also present

                      locationc

                      )
```

Typically, when a "PROXIMITY" property is used there is no need to specify a time-based trigger using the "TRIGGER" property. However, since "TRIGGER" is defined as a required property for a "VALARM" component, for backwards compatibility it has to be present, but ignored. To indicate a "TRIGGER" that is to be ignored, clients SHOULD use a value a long time in the past. A value of "19760401T005545Z" has been commonly used for this purpose.

8.1. Proximity Property

Property Name: PROXIMITY

Purpose: This property indicates that a location based trigger is applied to an alarm.

Value Type: TEXT

Property Parameters: IANA and non-standard property parameters can be specified on this property.

Conformance: This property can be specified within "VALARM" calendar components.

Description: This property is used to indicate that an alarm has a location-based trigger. Its value identifies the action that will trigger the alarm.

When the property value is set to "ARRIVE", the alarm is triggered when the calendar user agent arrives in the vicinity of one or more locations. When set to "DEPART", the alarm is triggered when the calendar user agent departs from the vicinity of one or more locations. Each location which MUST be specified with a "VLOCATION" component. Note that the meaning of "vicinity" in this context is implementation defined.

When the property value is set to "CONNECT", the alarm is triggered when the calendar user agent connects to a automobile to which is has been paired via Bluetooth(R) [BTcore]. When set to "DISCONNECT", the alarm is triggered when the calendar user agent disconnects from a automobile to which it has been paired via Bluetooth(R). Note that neither current implementations of proximty alarms nor this document have a mechanism to target a particular automobile. Such a mechanism may be specified in a future extension.

Format Definition: This property is defined by the following notation:

```
proximity = "PROXIMITY" *proximityparam ":" proximityvalue CRLF

proximityparam  = (

                  ; the following is OPTIONAL,
                  ; and MAY occur more than once

                  (";" other-param)

                  )

proximityvalue  = "ARRIVE" / "DEPART" /
                  "CONNECT" / "DISCONNECT" / iana-token / x-name
```

8.2. Example

The following example shows a VALARM component with a proximity trigger set to trigger when the device running the calendar user agent leaves the vicinity defined by the URL property in the VLOCATION component. Note use of the "u=" parameter with the "geo" URI to define the uncertainty of the location determination.

```
   BEGIN:VALARM
   UID:77D80D14-906B-4257-963F-85B1E734DBB6
   ACTION:DISPLAY
   TRIGGER;VALUE=DATE-TIME:19760401T005545Z
   DESCRIPTION:Remember to buy milk
   PROXIMITY:DEPART
   BEGIN:VLOCATION
   UID:123456-abcdef-98765432
   NAME:Office
   URL:geo:40.443,-79.945;u=10
   END:VLOCATION
   END:VALARM
```

9. Security Considerations

In addition to the security properties of iCalendar (see Section 7 of [RFC5545]), VALARMs, if not monitored properly, can be used to disturb users and/or leak personal information. For instance, an undesirable audio alert could cause embarassment. An unwanted display alert could be considered an annoyance. Or an email alert could be used to leak a user's location to a third party or to send unsolicited email to multiple users. Therefore, CalDAV clients and servers that accept iCalendar data from a third party (e.g. via iTIP [RFC5546], a subscription feed, or a shared calendar) SHOULD remove all VALARMs from the data prior to storing in their calendar system.

Security considerations related to unique identifiers for VALARMs are discussed in Section 4.

10. Privacy Considerations

Proximity VALARMs, if not used carefully, can leak a user's past, present, or future location. For instance, storing an iCalendar resource containing proxmity VALARMs to a shared calendar on CalDAV server can expose to anyone that has access to that calendar the user's intent to leave from or arrive at a particular location at some future time. Furthermore, if a CalDAV client updates the shared iCalendar resource with an ACKNOWLEDGED property when the alarm is triggered, will leak the exact date and time that the user left from or arrived at the location. Therefore, CalDAV clients that implement proximity alarms SHOULD give users the option of storing and/or acknowledging the alarms on the local device only and not storing the alarm and/or acknowledgment on a remote server.

Privacy considerations related to unique identifiers for VALARMs are discussed in Section 4.

11. IANA Considerations

11.1. Property Registrations

This document defines the following new iCalendar properties to be added to the registry defined in Section 8.2.3 of [RFC5545] and located here: <https://www.iana.org/assignments/icalendar#properties>

Property	Status	Reference
ACKNOWLEDGED	Current	RFCXXXX, Section 6.1
PROXIMITY	Current	RFCXXXX, Section 8.1

11.2. Relationship Types Registry

This document defines the following new iCalendar relationship type to be added to the registry defined in Section 8.3.8 of [RFC5545] and located here: <https://www.iana.org/assignments/icalendar#relationship-types>

Relationship Type	Status	Reference
SNOOZE	Current	RFCXXXX, Section 7.1

11.3. Proximity Value Registry

This document creates a new iCalendar registry for values of the "PROXIMITY" property located here: <https://www.iana.org/assignments/icalendar#proximity-values>

Additional values MAY be used, provided the process described in Section 8.2.1 of [RFC5545] is used to register them, using the template in Section 8.2.6 of [RFC5545].

The following table has been used to initialize the Proximity Value Registry.

Value	Status	Reference
ARRIVE	Current	RFCXXXX, Section 8.1
DEPART	Current	RFCXXXX, Section 8.1
CONNECT	Current	RFCXXXX, Section 8.1
DISCONNECT	Current	RFCXXXX, Section 8.1

12. Acknowledgments

This specification came about via discussions at the Calendaring and Scheduling Consortium. Also, thanks to the following for providing feedback: Bernard Desruisseaux, Mike Douglass, Jacob Farkas, Jeffrey Harris, Ciny Joy, Barry Leiba, and Daniel Migault.

13. References

13.1. Normative References

[I-D.ietf-calext-eventpub-extensions]
Douglass, M., "Event Publishing Extensions to iCalendar", draft-ietf-calext-eventpub-extensions-18 (work in progress), January 2021.

[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>.

[RFC5545] Desruisseaux, B., Ed., "Internet Calendaring and Scheduling Core Object Specification (iCalendar)", RFC 5545, DOI 10.17487/RFC5545, September 2009, <https://www.rfc-editor.org/info/rfc5545>.

[RFC5870] Mayrhofer, A. and C. Spanring, "A Uniform Resource Identifier for Geographic Locations ('geo' URI)", RFC 5870, DOI 10.17487/RFC5870, June 2010, <https://www.rfc-editor.org/info/rfc5870>.

[RFC7986] Daboo, C., "New Properties for iCalendar", RFC 7986, DOI 10.17487/RFC7986, October 2016, <https://www.rfc-editor.org/info/rfc7986>.

[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>.

13.2. Informative References

[BTcore] Bluetooth Special Interest Group, "Bluetooth Core Specification Version 5.0", December 2016, <https://www.bluetooth.com/specifications/bluetooth-core-specification>.

[RFC4791] Daboo, C., Desruisseaux, B., and L. Dusseault, "Calendaring Extensions to WebDAV (CalDAV)", RFC 4791, DOI 10.17487/RFC4791, March 2007, <https://www.rfc-editor.org/info/rfc4791>.

[RFC5546] Daboo, C., Ed., "iCalendar Transport-Independent Interoperability Protocol (iTIP)", RFC 5546, DOI 10.17487/RFC5546, December 2009, <https://www.rfc-editor.org/info/rfc5546>.

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

Changes in ietf-06:

1. Corrected timestamps in snooze example.

2. Editorial changes from Benjamim Kaduk.

Changes in ietf-05:

1. Updated to use VLOCATION components rather than (deprecated) STRUCTURED-LOCATION properties for proximity alarms.

2. Reorganized and clarified the process of snoozing an alarm and added an example.

3. Noted that there is currently no mechanism for specifying a particular automobile for CONNECT/DISCONNECT proximity alarms.

4. Replaced the term "spam" with new wording in Security Considerations.

5. Addressed IESG comments from Benjamim Kaduk.

6. Addressed IESG comments from Robert Wilton.

7. Addressed IESG comments Alissa Cooper.

Changes in ietf-04:

1. Addressed security review comments from Valery Smyslov.

2. Addressed Genart review comments from Roni Even.

3. Added text addressing management of Proximity Value Registry.

Changes in ietf-03:

1. Fixed ABNF to be properly extended.

2. Addressed AD review comments from Barry Leiba.

Changes in ietf-02:

1. Addressed some WGLC comments from Daniel Migault.

Changes in ietf-01:

1. Reintroduced the RELATED-TO property for VALARMs and the SNOOZE value for the RELTYPE property parameter.

2. Add Privacy Considerations section.

Changes in ietf-00:

1. Submitted as CALEXT draft.

Changes in daboo-05:

1. Added Murchison as editor.

2. Updated keywords boilerplate.

3. Added reference to UID security/privacy recommendations.

4. Removed default alarms.

5. Removed ALARM-AGENT property.

6. Added text about using TRIGGER value in the past in addition to ACTION:NONE to have a default alarm be ignored.

7. Removed text about related alarms.

8. Removed URL alarm action.

9. Added reference to draft-ietf-calext-eventpub-extensions for STRUCTURED-LOCATION.

10. Added CONNECT and DISCONNECT PROXIMITY property values.

11. Added Security Considerations.

12. Editorial fixes.

Changes in daboo-04:

1. Changed "ID" to "AGENT-ID".

2. Add more text on using "ACKNOWLEDGED" property.

3. Add "RELATED-TO" as a valid property for VALARMs.

4. Add "SNOOZE" relationship type for use with VALARMs.

5. State that "TRIGGER" is typically ignored in proximity alarms.

6. Added "PROXIMITY" value registry.

7. Added a lot more detail on default alarms including new action and property.

Changes in daboo-03: none - resubmission of -02

Changes in daboo-02:

1. Updated to 5545 reference.

2. Clarified use of absolute trigger in UTC in snooze alarms

3. Snooze alarms should be removed when completed

4. Removed status and replaced last-triggered by acknowledged property

5. Added location-based trigger

6. IANA registry tables added

Changes in daboo-01:

1. Removed DESCRIPTION as an allowed property in the URI alarm.

2. Added statement about what to do when ALARM-AGENT is not present.

3. Allow multiple ALARM-AGENT properties to be present.

4. Removed SNOOZE-UNTIL - snoozing now accomplished by creating a new VALARM.

5. Remove VALARM by reference section.

6. Added more detail to CalDAV default alarms.

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