iCalendar in XML Format (xCal-Basic)
draft-royer-calsch-xcal-03

Status of this Memo

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Abstract

   The mailing list for discussion of this memo is "xCal@
   INET-Consulting.com" and signup page at
   "http://INET-Conusulting.com/mailman/listinfo/xcal. This is a
   rerelease of an expired draft with updates and a much more simplivied
   approach. This approach uses an exact 1 to 1 mapping between
   iCalendar and xml objects.

   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 [KEYWORDS].

Table of Contents

[1](#). **Introduction**

   xCal is a representation of iCalendar objects in XML. xCal is not an
   alternative or next generation of iCalendar. This memo defines how
   to use XML to represent iCalendar objects in XML. These XML object
   can be embedded into other XML documents using the XML syntax here.
   xCal does represent iCalendar componnts, properties, and parameters
   as defined in iCalendar. As iCalendar evolves the one to one mapping
   of iCalendar objects into xCal will continue to work as this memo
   describes the mapping of iCalendar objects.. Within this memo the
   term "xCal" will mean the XML namespace usage as described in this
   memo.

   This format was selected to ease its translation back to the
   iCalendar format using an XSLT transform. (See project iCalendar on
   SourceForge.com - http://sourceforge.net/projects/icalendar/)

   NOTE: That [iCAL] is the definitive reference for the definition of
   iCalendar semantics. This memo only provides an alternative, XML
   representation for the standard syntax defined in [iCAL]. This memo
   does not introduce any semantics not already defined by [iCAL].

[2](#). **Using XML For Representating iCalendar**

   In iCalendar names can be in upper case, lower case, or mixed case.
   In xCal the predefined iCaledars names will be represented in lower
   case only as XML element and attribute names are case sensitive.
   Values to properties and parameters that are user specified may be in
   upper, lower, or mixed case.

   All iCalendar component names will be represented in xCal as XML
   element names in lower case. The "BEGIN:" iCalendar component are
   represen in xCal as the component name it self in lower case.
   (BEGIN:VEVENT becomes <vevent>).

   All iCalendar property names will be represented in xCal as XML
   element names in lower case.

   All iCalendar parameter names will be represented in xCal as XML
   attribute names in lower case.

   All iCalendar property and parameter values will be represented in
   xCal unchanged.

```
BEGIN:VCALENDAR
VERSION:2.0
PRODID:-//hacksw/handcal//NONSGML v1.0//EN
BEGIN:VEVENT
DTSTART:19970714T170000Z
DTEND:19970715T035959Z
SUMMARY;LANGUAGE="en_US":Bastille Day Party
END:VEVENT
END:VCALENDAR
```

   Is represented in xCal as:

```
<?xml version="1.0" TODO_NAMESPACE="foo"?>
<iCalendar xmlns:xCal="urn:ietf:params:xml:ns:xcal">
<vcalendar>
<version>2.0</version>
<prodid>-//hacksw/handcal//NONSGML v1.0//EN</prodid>
<vevent>
<dtstart>19970714T170000Z</dtstart>
<dtendt>19970715T035959Z</dtend>
<summary xml:lang="en_US">Bastille Day Party</summary>
</vevent>
</vcaledar>
</iCalendar>
```

2.1 XML Dependencies

This memo specifies the XML representation for the standard iCalendar
format defined by [iCAL]. There are no XML dependencies other than
the [XML] and the [XMLNS] recommendations.

2.2 Working With Standard and XML iCalendar Representations

This memo defines an alternative, XML representation for the standard
iCalendar format defined in [iCAL]. This alternative representation
provides the same semantics as that defined in the standard format.
It is the goal of this memo to allow all [iCAL] extensions and
modifications to be translated into and from this XML format.

2.2.1 Conversion

The standard format can be converted to and from this XML format
without loss of any calendaring information. When the XML
representation was defined, every attempt was made to use existing
component, property and parameter naming conventions. This greatly
facilitates transformations between the two representations.

2.2.2 Mixed Use of Both Representations

As previously indicated, conversion between the standard and XML
representations of iCalendar is a straightforward process. In
addition, mixed use of both representations is also possible using
MIME objects.

With the use of the MIME multipart content-types, compound MIME
entities containing a mix of the standard and XML representations can
be specified. This capability is useful in applications where both
representations might be encountered. In addition, this capability
demonstrates the isomeric nature of the two representations. XML
applications conforming to this specification MUST be able to
properly parse and process a MIME multipart entity containing the
MIME type associated with this iCalendar XML document type.

Internet applications conforming to this memo MUST only send the
iCalendar XML document in a "multipart/alternative" MIME entity that
also contains an equivalent iCalendar object in the standard format
defined by [iCAL]. This restriction will guarantee that the
iCalendar object can also be processed by Internet applications that
only support the standard iCalendar representation.

2.3 Including Multiple iCalendar Objects

The iCalendar format has the capability for including multiple,

individual iCalendar objects in a single data stream, as can be
needed by [iTIP]. The XML representation can support this also.
Individual iCalendar objects are specified by the "vcalendar" element
type. One or more "vcalendar" element types are permitted within the
parent element type, called "iCalendar". For example:

```
    <iCalendar xmlns:xCal="urn:ietf:params:xml:ns:xcal">
       <vcalendar>
       <version>2.0</version>
            <!-- remainder of the first vcalendar object -->
       </vcalendar>
       <vcalendar>
       <version>2.0</version>
            <!-- remainder of the second vcalendar object -->
       </vcalendar>>
  </iCalendar>
```

2.4 Mapping Property Parameters to XML

The property parameters defined in the standard iCalendar format are
represented in the XML representation as an attribute on element
types. The following table specifies some of the attribute name
corresponding to each property parameter. This is true for all
iCalendar object parameters defined in any iCalendar specification.
The property and paramater names will be all lower case. Here are
some iCalendar parameter names and how they are mapped to their lower
case xCal names.

NOTE: that the iCalendar "language" parameter is converted to the
"xml:lang" attribute as an exception to the one to one mapping.

```
+----------------+----------------+
| Property       | Attribute      |
| Parameter Name | Name           |
+----------------+----------------+
| ALTREP         | altrep         |
| CN             | cn             |
| CUTYPE         | cutype         |
| DELEGATED-FROM | delegated-from |
| DELEGATED-TO   | delegated-to   |
| DIR            | dir            |
| FMTTYPE        | fmttype        |
| FBTYPE         | fbtype         |
| LANGUAGE       | xml:lang       |
| MEMBER         | member         |
| PARTSTAT       | partstat       |
| RANGE          | range          |
| RELATED        | related        |
| RELTYPE        | reltype        |
| ROLE           | role           |
| RSVP           | rsvp           |
| SENT-BY        | sent-by        |
| TZID           | tzid           |
| VALUE          | value          |
| X-...          | x-...          |
| .....          | .....          |
+----------------+----------------+
```

2.5 Mapping VCALENDAR object Properties to XML

   Calendar properties defined in the standard iCalendar format provide
   information about an iCalendar object, as a whole. The calendar
   properties are represented in the XML representation as element types
   as shown in lower case. Here is a list of some iCalendar properties
   and them mapped to xCal lower case names:

```
+------------------+------------------+
| Calendar         | Tag              |
| Property Name    | Name             |
+------------------+------------------+
| ACTION           | action           |
| ATTACH           | attach           |
| ATTENDEE         | attendee         |
| CALSCALE         | calscale         |
| CATEGORIES       | categories       |
| CLASS            | class            |
| COMMENT          | comment          |
| COMPLETED        | completed        |
```

```
         | CONTACT          | contact          |
         | CREATED          | created          |
         | DESCRIPTION      | description      |
         | DTEND            | dtend            |
         | DTSTART          | dtstart          |
         | DTSTAMP          | dtstamp          |
         | DUE              | due              |
         | DURATION         | duration         |
         | EXDATE           | exdate           |
         | EXRULE           | exrule           |
         | FREEBUSY         | freebusy         |
         | GEO              | geo              |
         | LAST-MODIFIED    | last-modified    |
         | LOCATION         | location         |
         | METHOD           | method           |
         | ORGANIZER        | organizer        |
         | PERCENT-COMPLETE | percent-complete |
         | PRIORITY         | priority         |
         | PRODID           | prodid           |
         | RECURRENCE-ID    | recrrence-id     |
         | RDATE            | rdate            |
         | RELATED-TO       | related-to       |
         | REPEAT           | repeat           |
         | RESORCES         | resources        |
         | RRULE            | rrule            |
         | SEQUENCE         | sequence         |
         | STATUS           | status           |
         | SUMMARY          | summary          |
         | TRANSP           | transp           |
         | TRIGGER          | trigger          |
         | TZID             | tzid             |
         | TZNAME           | tzname           |
         | TZOFFSETTO       | tzoffsetto       |
         | TZOFFSETFROM     | tzoffsetfrom     |
         | TZURL            | tzurl            |
         | URL              | url              |
         | UID              | uid              |
         | VERSION          | version          |
         | X-...            | x-...            |
         | ...              | ...              |
         +------------------+------------------+
```

The semantics for these are as specified for the corresponding
calendar property in [iCAL].

2.6 Mapping All Components to XML

All components in xCal are mapped to their component name without the

BEGIN tag. This example show how many component names are mapped to
xCal lower case names:

```
+---------------+------------+-----------------------------+
| Component     | Element    | Example                     |
+---------------+------------+-----------------------------+
| VEVENT        | vevent     | <vevent> ... </vevent>      |
| VTODO         | vtodo      | <vtoto> ... </vtodo>        |
| VJOURNAL      | vjournal   | <vjournal> ... </vjournal>  |
| VTIMEZONE     | vtimezone  | <vtimezone> ... </vtimezone> |
| STANDARD      | standard   | <standard> ... </standard>  |
| DAYLIGHT      | daylight   | <daylight> ... </daylight>  |
| X-...         | x-...      | <x-...> ... </x-...>        |
| ...           | ...        | ...                         |
+---------------+------------+-----------------------------
```

2.7 Mapping All Values to XML

The [iCAL] specification specifies that the equivalent component
properties to the "comment", "description", "location", "summary" and
"contact" element types can contain formatted content, such as is
specified by multiple lines of text. In such cases, the formatted
text should be specified using standard XML escaping.

Values MUST NOT be mapped to lower case. iCalendar property values
and iCalendar parameter values are used without lower case
conversion.

Vaues that have characters forbidden by XML MUST be encoded using
standard XML escaping mechanisms.

Values that containe XML tags like in this example:

```
        DESCRIPTION:How to map xml DESCRIPTION into
         an XML <description> element.
```

Would be encoded using standard XML encoding as shown here:

```
        <description>How to map xml DESCRIPTION into
         an XML &lt;description&gt; element.</description>
```

2.8 **Emailing the iCalendar XML Representation**

   It is expected that iCalendar XML documents will need to be sent over
   SMTP/MIME email. The "text/xml" and "application/xml" content-types
   have been registered for XML documents. However, use of these
   content-type definitions present some problems for XML applications
   such as calendaring and scheduling.

   The "text/xml" and "application/xml" content-type definitions do not
   provide for any header field parameters to identify the type of XML
   document contained in the MIME entity. This means that a recipient
   mail user agent must (MUA) open up each "text/xml" or "application/
   xml" content in order to determine what object handler is needed to
   process the information. To a MUA, all XML documents look like just
   plain "text/xml" or "application/xml" content.

   Additionally, it is accepted practice for a MUA to provide iconic
   feedback to the user for individual content-types that are supported
   by the MUA. For example, not only would feedback be provided for a
   calendaring and scheduling content. Some further unique
   identification would also be provided for each different scheduling
   message; such as a meeting invitation, response to an invitation,
   reschedule notice, cancellation notice, etc. In such cases,
   acceptable performance by the MUA is dependent on the existence of
   header field information, such as it provided in the definition of
   the "text/calendar" content-type by [iCAL].

   Internet application conforming to this memo MUST identify iCalendar
   XML documents with the experimental content-type "application/
   calendar+xml".

      content-type:application/calendar+xml

   The content-type can also include the "optinfo" parameter to specify
   any other optional iCalendar information. The semantics of these
   content-type parameters is as defined in [iCAL].

   Internet applications conforming to this memo MUST only send the
   iCalendar XML document in a "multipart/alternative" MIME entity that
   also contains an equivalent iCalendar object in the standard format
   defined by [iCAL]. This restrict will guarantee that the iCalendar
   object can also be processed by internet applications that only
   support the standard iCalendar format.

   An XML application supporting the iCalendar XML document type MUST be
   able to receive and properly process the "application/calendar+xml"
   document contained within a "multipart" message content-type.

2.9 iCalendar XML Representation and File Systems

The iCalendar XML documents will be stored in file systems. The
accepted practice for file extensions for XML documents is the text
"XML". However, in order to uniquely identify iCalendar XML
documents for file association with applications that can directly
process this document type, it is RECOMMENDED that the file extension
be the text "XCS".

[3](#). **Example Usage**

   The following sections provide various examples of iCalendar XML
   documents.

[3.1](#) **A well-formed and valid iCalendar XML document**

   The following is a simple example of a iCalendar XML document. This
   document is both a well-formed and valid XML document. The iCalendar
   object specifies an appointment.

```
   <?xml version="1.0" encoding="UTF-8"?>
     <iCalendar xmlns:xCal="urn:ietf:params:xml:ns:xcal">
   <vcalendar>
    <method>PUBLISH</method>
    <version>2.0</version>
    <prodid>-//HandGen//NONSGML vGen v1.0//EN</prodid>
    <vevent>
     <uid>19981116T150000@cal10.host.com</uid>
     <dtstamp>19981116T145958Z</dtstamp>
     <summary>Project XYZ Review</summary>
     <location>Conference Room 23A</location>
     <dtstart>19981116T163000Z</dtstart>
     <dtend>19981116T190000Z</dtend>
     <x-foo-cust-code>1998-ABC Corp-1234</x-foo-cust-code>
     <categories>Appointment,Work</categories>
    </vevent>
   </vcalendar>
   </iCalendar>
```

[3.2](#) **Including binary content in attachments**

   The following is an example of a valid iCalendar XML document that
   also includes an external reference to an attachment. The iCalendar
   object specifies a meeting invitation with an attachment.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE iCalendar PUBLIC "-//IETF//DTD XCAL/iCalendar XML//EN"
"http://www.ietf.org/internet-drafts/draft-royer-calsch-xcal-02.txt"

  <iCalendar xmlns:xCal="urn:ietf:params:xml:ns:xcal">
 <vcalendar>
  <method>REQUEST</method>
  <version>2.0</version>
  <prodid>-//HandGen//NONSGML vGen v1.0//EN</prodid>
  <vevent>
   <uid>19981211T133000@cal1.host.com</uid>
   <dtstamp>19981211T132928Z</dtstamp>
   <organizer>cap://host.com/jim</organizer>
   <dtstart>19981212T150000Z</dtstart>
   <dtend>19981212T160000Z</dtend>
   <summary>Department Meeting</summary>
   <location>Conference Room 23A</location>
   <attendee role="CHAIR">jim@host.com</attendee>
   <attendee role="REQ-PART"
            rsvp="TRUE">MAILTO:joe@host.com</attendee>
   <attendee role="REQ-PART"
            rsvp="TRUE">MAILTO:steve@host.com</attendee>
   <attach>http://host.com/pub/photos/holiday.jpg</attach>
  </vevent>
 </vcalendar>
</iCalendar>
```

The following is an example of a well-formed and valid iCalendar XML
document that includes an attachment as inline binary content. The
iCalendar object specifies a meeting invitation with an attachment.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE iCalendar PUBLIC "-//IETF//DTD XCAL/iCalendar XML//EN"
"http://www.ietf.org/internet-drafts/draft-royer-calsch-xcal-02.txt">

  <iCalendar xmlns:xCal="urn:ietf:params:xml:ns:xcal">
<vcalendar>
 <method>REQUEST</method>
 <version>2.0</version>
 <prodid>-//HandGen//NONSGML vGen v1.0//EN</prodid>
 <vevent>
  <uid>19981211T133000@cal1.host.com</uid>
  <dtstamp>19981211T132928Z</dtstamp>
  <organizer>MAILTO:jim@host.com</organizer>
  <dtstart>19981212T150000Z</dtstart>
  <dtend>19981212T160000Z</dtend>
  <summary>Department Meeting</summary>
  <location>Conference Room 23A</location>
  <attendee role="CHAIR">MAILTO:jim@host.com</attendee>
  <attendee role="REQ-PART"
            rsvp="TRUE">MAILTO:joe@host.com</attendee>
  <attendee role="REQ-PART"
            rsvp="TRUE">MAILTO:steve@host.com</attendee>
  <attach fmttype="IMAGE/JPEG">MIICajCCAdOgAwIBAgI
  CBEUwDQEEBQAwdzELMAkGA1UEBhMCVVMxLDAqBgNVBAoTI05ldHNjYXB
  lIEjYXRpb25z...and so on...IENvcnBvc==</attach>
 </vevent>
 </vevent>
</iCalendar>
```

3.3 iCalendar XML document with multiple iCalendar objects

The following is an example of a well-formed and valid iCalendar XML
document that includes more than one iCalendar object.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE iCalendar PUBLIC "-//IETF//DTD XCAL/iCalendar XML//EN"
"http://www.ietf.org/rfc/rfcXXXX.txt">

  <iCalendar xmlns:xCal="urn:ietf:params:xml:ns:xcal">
<vcalendar>
 <method>PUBLISH</method>
 <version>2.0</version>
 <prodid>-//HandGen//NONSGML vGen v1.0//EN</prodid>
</vcalendar>
<vcalendar>
 <version>2.0</version>
 <prodid>-//HandGen//NONSGML vGen v1.0//EN</prodid>
 <method>PUBLISH</method>
 <vevent>
  <uid>19981009T233010@cal1.host.com</uid>
  <dtstamp>19981009T233000Z</dtstamp>
  <dtstart>19981120T133000Z</dtstart>
  <dtend>19981122T183000Z</dtend>
  <summary>IT Conference</summary>
  <location>Downtowner Hotel</location>
 </vevent>
</vcalendar>
</iCalendar>
```

3.4 Using the iCalendar namespace

   The following is an example of a snippet of a XML document that
   includes elements from the iCalendar name-space.

```
<x xmlns:xCal="urn:ietf:params:xml:ns:xcal">
  xmlns:pdi="http://pdi.org/schema">
<xCal:dtstart>19981123T133000Z</xCal:dtstart>
<xCal:dtend>19981123T203000Z</xCal:dtend>
<pdi:idnum>1234567</pdi:idnum>
<pdi:usage>999.99</pdi:usage>
</x>
```

3.5 Publish meeting information

   The following is a snippet of an iCalendar XML document that
   publishes information about a meeting.

```
        <iCalendar xmlns:xCal="urn:ietf:params:xml:ns:xcal">
       <vcalendar>
        <version>2.0</version>
        <prodid>-//hacksw/handcal//NONSGML 1.0//EN</prodid>
        <method>PUBLISH</method>
        <vevent>
         <uid>19970901T130000Z-123401@host.com</uid>
         <dtstamp>19970901T130000Z</dtstamp>
         <dtstart>19970903T163000Z</dtstart>
         <dtend>19970903T190000Z</dtend>
         <summary>Annual Employee Review</summary>
         <class>PRIVATE</class>
         <categories>Business,Human Resources</categories>
        </vevent>
       </vcalendar>
      </iCalendar>
```

3.6 Publish transparent annual event

The following is a snippet of an iCalendar XML document that
publishes information about an annually repeating event that is
transparent to busy time searches.

```
        <iCalendar xmlns:xCal="urn:ietf:params:xml:ns:xcal">
       <vcalendar>
        <version>2.0</version>
        <prodid-//hacksw/handcal//NONSGML 1.0//EN</prodid>
        <method>PUBLISH</publish>
        <vevent>
         <uid>19990101T125957Z-123403@host.com</uid>
         <dtstamp>19990101T130000Z</dtstamp>
         <dtstart value="DATE">19991102</dtstart>
         <summary>Our Blissful Anniversary</summary>
         <class>CONFIDENTIAL</class>
         <transp>TRANSPARENT</transp>
         <categories>Anniversary,Personal,Special Occasion</categories>
         <rrule>FREQ=YEARLY</rrule>
        </vevent>
       </vcalendar>
      </iCalendar>
```

3.7 Meeting invitation

The following is a snippet of an iCalendar XML document that
specifies an invitation for a meeting. The meeting occurs on the
first Monday of each year for five years.

```
      <iCalendar xmlns:xCal="urn:ietf:params:xml:ns:xcal">
     <vcalendar>
     <method>REQUEST</method>
     <version>2.0</version>
     <prodid>-//hacksw/handcal//NONSGML 1.0//EN</prodid>
     <vevent>
      <uid>19981220T130000Z-123403@host.com</uid>
      <dtstamp>19981220T130050Z</dtstamp>
      <organizer>MAILTO:corprel@host.com</organizer>
      <dtstart>19990104T140000Z</dtstart>
      <dtend>19990104T220000Z</dtend>
      <summary>Annual Stockholders Meeting</summary>
      <location>One Corporate Drive, Wilmington, DL</location>
      <attendee role="CHAIR">MAILTO:mrbig@host.com</attendee>
      <attendee cutype="GROUP"
                rsvp="TRUE">CAP:host.com/stockholders</attendee>
      <categories>Business,Meeting,Special Occasion</categories>
      <rrule>FREQ=YEARLY;COUNT=5;BYDAY=1MO</rrule>
      </vevent>
     </vcalendar>
    </iCalendar>
```

3.8 Publish busy time

   The following is an iCalendar XML document that publishes busy time
   information. The default value for the "method" attribute is
   "PUBLISH" and does not need to be specified in this example.

```
      <iCalendar xmlns:xCal="urn:ietf:params:xml:ns:xcal">
     <vcalendar>
      <version>2.0</version>
      <prodid>-//hacksw/handcal//NONSGML 1.0//EN</prodid>
      <vfreebusy>
       <uid>19980313T133000@ical1.host.com</uid>
       <dtstamp>19990104T133010Z</dtstamp>
       <organizer>CAP:host.com/jsmith</organizer>
       <dtstart>19980313T141711Z</dtstart>
       <dtend>19980410T141711Z</dtend>
       <url>jsmith.ifb</url>
       <freebusy>19980314T233000Z/19980315T003000Z</freebusy>
       <freebusy>19980316T153000Z/19980316T163000Z</freebusy>
       <freebusy>19980318T030000Z/19980318T040000Z</freebusy>
      </vfreebusy>
     </vcalendar>
    </iCalendar>
```

3.9 Request busy time

   The following is a snippet of an iCalendar XML document that requests
   a calendar user's busy time information.

```
      <iCalendar xmlns:xCal="urn:ietf:params:xml:ns:xcal">
    <vcalendar>
     <method>REQUEST</method>
     <version>2.0</version>
     <prodid>-//hacksw/handcal//NONSGML 1.0//EN</prodid>
     <vfreebusy>
      <uid>19970901T083000@ical1.host.com</uid>
      <dtstamp>19970901T083000Z</dtstamp>
      <organizer>MAILTO:jane_doe@host1.com</organizer>
      <dtstart>19971015T050000Z</dtstart>
      <dtend>19971016T050000Z</dtend>
      <attendee>MAILTO:john_public@host2.com</attendee>
     </vfreebusy>
    </vcalendar>
   </iCalendar>
```

3.10 Issue a CAP command

   The following is a snippet of an iCalendar XML document that issues a
   CAP command to delete a UID.

```
      <iCalendar xmlns:xCal="urn:ietf:params:xml:ns:xcal">
    <vcalendar>
     <version>2.0</version>
     <prodid>-//hacksw/handcal//NONSGML 1.0//EN</prodid>
     <target>relcalid-22</target>
     <cmd id="random but unique per CUA">DELETE</cmd>
     <vquery>
      <query>SELECT VEVENT FROM VAGENDA WHERE UID = 'abcd12345'</query>
     </vquery>
     </vcalendar>
    </iCalendar>
```

[4](#). Acknowledgments

The following have participated in the drafting and discussion of
this memo:

Greg FitzPatrick, Charles Goldfarb, Paul Hoffman, Lisa Lippert,
Thomas Rowe.

5. IANA Considerations

   TODO - registration if application/calendar+xml

[6](#). **Security Considerations**

   CDATA Sections - - A XML iCalendar document may contain CDATA
   sections to represent content for specific element types. The CDATA
   section specifies arbitrary character data that is not meant to be
   interpretted. It is not scanned by the XML parser for markup. While
   this memo restricts that any CDATA section MUST NOT contain markup or
   other such alternate representation for the property value, in
   general, CDATA section from a non-conformant implementation can
   contain content such as HTML markup. HTML text can be used to invoke
   programs. Implementors should be aware that this may leave an
   implementation open to malicious attack that might occur as a result
   of executing the markup in the CDATA section.

   PROCEDURAL ALARMS - - A XML iCalendar document can be created that
   contains a "VEVENT" calendar component with "VALARM" calendar
   components. The "VALARM" calendar component can be of type PROCEDURE
   and can have an attachment containing some sort of executable
   program. Implementations that incorporate these types of alarms are
   subject to any virus or malicious attack that might occur as a result
   of executing the attachment.

   ATTACHMENTS - - A XML iCalendar document can include references to
   Uniform Resource Locators that can be programmed resources.
   Implementers and users of this memo should be aware of the network
   security implications of accepting and parsing such information.

   In addition, the security considerations observed by implementations
   of electronic mail systems should be followed for this memo.

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