

Network Working Group  
Internet Draft  
<[draft-ietf-calsch-csct-00.txt](#)>  
Expires June 1997

Frank Dawson  
IBM Corporation  
November 26, 1996

## **MIME Calendaring and Scheduling Content Type**

### Status of this Memo

This document is an Internet-Draft. Internet-Drafts are working documents of the Internet Engineering Task Force (IETF), its areas, and its working groups. Note that other groups may also distribute working documents as Internet-Drafts.

Internet-Drafts are draft documents valid for a maximum of six months. Internet-Drafts may be updated, replaced, or made obsolete by other documents at any time. It is not appropriate to use Internet-Drafts as reference material or to cite them other than as a "working draft" or "work in progress".

To learn the current status of any Internet-Draft, please check the `1id-abstracts.txt` listing contained in the Internet-Drafts Shadow Directories on `ds.internic.net` (US East Coast), `nic.nordu.net` (Europe), `ftp.isi.edu` (US West Coast), or `munnari.oz.au` (Pacific Rim).

Distribution of this document is unlimited.

### Abstract

There is a clear need to provide and deploy interoperable calendaring and scheduling services for the Internet. Current group scheduling and Personal Information Management (PIM) products are being extended for use across the Internet, today, in proprietary ways. This document has been defined to provide the a definition of a MIME message format for openly exchanging calendaring and scheduling information across the Internet.

This memo is meant to serve as the basis for registration of such a MIME media type per [[RFC1521](#)]. The proposed media type value is "TEXT/CALENDAR". This string would label a media type containing calendaring and scheduling information encoded as text characters formatted in a manner outlined below.

This MIME media type provides a standard content type for capturing calendar event and todo information. It also can be used to convey free/busy time information. The content type is suitable as a MIME message entity that can be transferred over MIME based email systems or using HTTP. In addition, the content type is useful as an object

for interactions between desktop applications using the operating system clipboard, drag/drop or file systems capabilities.

It is expected that additional documents will be created for this content type that define usage profiles for specific sets of

Dawson

1

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

calendaring and scheduling capabilities. The format for these profile documents is also defined by this document.

The document is also intended to serve as a standard for message profiles that will provide an interoperability method for exchanging over the Internet event-requests, reply to event-requests, modification notices for event requests, cancellation notices for event-requests, todo-requests, reply to todo-requests, modification notices for todo requests, cancellation notices for todo-requests, requesting free/busy time and replying to free/busy time requests between different calendaring and scheduling products. This is the subject of another Internet Draft.

## Table of Contents

<a href="#">1. Introduction.....</a>	<a href="#">4</a>
<a href="#">2. TEXT/CALENDAR Registration Information.....</a>	<a href="#">5</a>
<a href="#">3. Intended Use.....</a>	<a href="#">6</a>
<a href="#">3.1 Published specification .....</a>	<a href="#">6</a>
<a href="#">3.1.1 Existing Message Header Fields .....</a>	<a href="#">6</a>
<a href="#">3.1.1.1 Content-Type Header Field .....</a>	<a href="#">6</a>
<a href="#">3.1.1.1.1 CHARSET Header Field Parameter .....</a>	<a href="#">6</a>
<a href="#">3.1.1.1.2 Content-ID Header Field .....</a>	<a href="#">7</a>
<a href="#">3.1.1.1.3 Content-Language .....</a>	<a href="#">7</a>
<a href="#">3.1.1.1.4 Message-ID Header Field .....</a>	<a href="#">7</a>
<a href="#">3.1.1.1.5 Transfer-Encoding Header Field .....</a>	<a href="#">7</a>
<a href="#">3.1.2 Additional Content Type Parameter .....</a>	<a href="#">7</a>
<a href="#">3.1.2.1 Profile .....</a>	<a href="#">7</a>
<a href="#">3.1.3 Content Syntax Considerations .....</a>	<a href="#">8</a>
<a href="#">3.1.3.1 Property .....</a>	<a href="#">8</a>
<a href="#">3.1.3.2 Delimiters .....</a>	<a href="#">9</a>
<a href="#">3.1.3.3 Property Value Transfer Encoding .....</a>	<a href="#">10</a>
<a href="#">3.1.3.4 Property Value Character Set .....</a>	<a href="#">10</a>
<a href="#">3.1.3.5 Property Value Language .....</a>	<a href="#">11</a>
<a href="#">3.1.3.6 Property Value Data Type .....</a>	<a href="#">11</a>
<a href="#">3.1.3.7 Date and Time .....</a>	<a href="#">14</a>
<a href="#">3.1.3.8 Time Duration .....</a>	<a href="#">15</a>
<a href="#">3.1.3.9 Value Location .....</a>	<a href="#">16</a>

<a href="#">3.1.3.10</a>	Binary Property Values .....	<a href="#">17</a>
<a href="#">3.1.3.11</a>	Recurrence Rule Grammar .....	<a href="#">17</a>
<a href="#">3.1.4</a>	Body Delimiter Properties .....	<a href="#">17</a>
<a href="#">3.1.4.1</a>	Calendar Object .....	<a href="#">17</a>
<a href="#">3.1.4.2</a>	Event Component .....	<a href="#">18</a>
<a href="#">3.1.4.3</a>	Todo Component .....	<a href="#">18</a>
<a href="#">3.1.5</a>	Calendar Object Properties .....	<a href="#">19</a>
<a href="#">3.1.5.1</a>	Calendar Content Profile .....	<a href="#">19</a>
<a href="#">3.1.5.2</a>	Daylight Savings Rule .....	<a href="#">21</a>
<a href="#">3.1.5.3</a>	Geographic Position .....	<a href="#">22</a>
<a href="#">3.1.5.4</a>	Product Identifier .....	<a href="#">22</a>
<a href="#">3.1.5.5</a>	Time Zone .....	<a href="#">23</a>
<a href="#">3.1.5.6</a>	Version .....	<a href="#">23</a>
<a href="#">3.1.6</a>	Event and Todo Component Properties .....	<a href="#">23</a>
<a href="#">3.1.6.1</a>	Attachment .....	<a href="#">23</a>
<a href="#">3.1.6.2</a>	Attendee .....	<a href="#">24</a>

Dawson

2

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

<a href="#">3.1.6.3</a>	Audio Reminder .....	<a href="#">28</a>
<a href="#">3.1.6.4</a>	Categories .....	<a href="#">30</a>
<a href="#">3.1.6.5</a>	Classification .....	<a href="#">31</a>
<a href="#">3.1.6.6</a>	Date/Time Created .....	<a href="#">32</a>
<a href="#">3.1.6.7</a>	Date/Time Completed .....	<a href="#">32</a>
<a href="#">3.1.6.8</a>	Description .....	<a href="#">32</a>
<a href="#">3.1.6.9</a>	Display Reminder .....	<a href="#">33</a>
<a href="#">3.1.6.10</a>	Due Date/Time .....	<a href="#">33</a>
<a href="#">3.1.6.11</a>	Duration .....	<a href="#">33</a>
<a href="#">3.1.6.12</a>	End Date/Time .....	<a href="#">34</a>
<a href="#">3.1.6.13</a>	Exception Date/Times .....	<a href="#">34</a>
<a href="#">3.1.6.14</a>	Exception Rule .....	<a href="#">34</a>
<a href="#">3.1.6.15</a>	Last Modified .....	<a href="#">35</a>
<a href="#">3.1.6.16</a>	Location .....	<a href="#">35</a>
<a href="#">3.1.6.17</a>	Mail Reminder .....	<a href="#">35</a>
<a href="#">3.1.6.18</a>	Number Recurrences .....	<a href="#">36</a>
<a href="#">3.1.6.19</a>	Priority .....	<a href="#">36</a>
<a href="#">3.1.6.20</a>	Procedure Reminder .....	<a href="#">36</a>
<a href="#">3.1.6.21</a>	Related To .....	<a href="#">37</a>
<a href="#">3.1.6.22</a>	Recurrence Date/Times .....	<a href="#">38</a>
<a href="#">3.1.6.23</a>	Recurrence Rule .....	<a href="#">38</a>
<a href="#">3.1.6.24</a>	Resources .....	<a href="#">38</a>
<a href="#">3.1.6.25</a>	Response Sequence Number .....	<a href="#">39</a>
<a href="#">3.1.6.26</a>	Sequence Number .....	<a href="#">40</a>
<a href="#">3.1.6.27</a>	Start Date/Time .....	<a href="#">40</a>
<a href="#">3.1.6.28</a>	Status .....	<a href="#">40</a>

<a href="#">3.1.6.29</a>	Summary .....	<a href="#">42</a>
<a href="#">3.1.6.30</a>	Time Transparency .....	<a href="#">42</a>
<a href="#">3.1.6.31</a>	Uniform Resource Locator .....	<a href="#">42</a>
<a href="#">3.1.6.32</a>	Unique Identifier .....	<a href="#">42</a>
<a href="#">3.1.6.33</a>	Non-standard Properties .....	<a href="#">43</a>
<a href="#">3.2</a>	Formal Definition .....	<a href="#">43</a>
<a href="#">3.3</a>	Basic Recurrence Rule Grammar .....	<a href="#">49</a>
<a href="#">3.3.1</a>	Daily Rule .....	<a href="#">49</a>
<a href="#">3.3.2</a>	Weekly Rule .....	<a href="#">50</a>
<a href="#">3.3.3</a>	Monthly Rule .....	<a href="#">50</a>
<a href="#">3.3.4</a>	Yearly Rule .....	<a href="#">51</a>
<a href="#">3.3.5</a>	Grammar .....	<a href="#">52</a>
<a href="#">3.3.6</a>	Grammar Glossary .....	<a href="#">53</a>
<a href="#">3.3.7</a>	Policies .....	<a href="#">54</a>
<a href="#">4.</a>	Registration of Content Type Profiles.....	<a href="#">55</a>
<a href="#">4.1</a>	Define the profile .....	<a href="#">55</a>
<a href="#">4.2</a>	Post the profile definition .....	<a href="#">56</a>
<a href="#">4.3</a>	Allow a comment period .....	<a href="#">56</a>
<a href="#">4.4</a>	Submit the profile for approval .....	<a href="#">56</a>
<a href="#">4.5</a>	Profile Change Control .....	<a href="#">56</a>
<a href="#">4.6</a>	Registration of New Content Type Properties .....	<a href="#">57</a>
<a href="#">4.6.1</a>	Define the property .....	<a href="#">57</a>
<a href="#">4.6.2</a>	Post the Property definition .....	<a href="#">58</a>
<a href="#">4.6.3</a>	Allow a comment period .....	<a href="#">58</a>
<a href="#">4.6.4</a>	Submit the property for approval .....	<a href="#">58</a>
<a href="#">4.7</a>	Content Type Property Change Control .....	<a href="#">58</a>
<a href="#">5.</a>	File extension.....	<a href="#">59</a>
<a href="#">6.</a>	Macintosh File Type Code.....	<a href="#">59</a>

Dawson

3

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

<a href="#">7.</a>	Bibliography.....	<a href="#">59</a>
<a href="#">8.</a>	Acknowledgments.....	<a href="#">60</a>
<a href="#">9.</a>	Author's Address.....	<a href="#">60</a>
<a href="#">10.</a>	Examples.....	<a href="#">61</a>
<a href="#">11.</a>	Extended Recurrence Grammar.....	<a href="#">62</a>
<a href="#">11.1</a>	Rule Introduction .....	<a href="#">62</a>
<a href="#">11.2</a>	Grammar .....	<a href="#">64</a>
<a href="#">11.3</a>	Glossary .....	<a href="#">65</a>
<a href="#">11.4</a>	Policies .....	<a href="#">66</a>
<a href="#">11.5</a>	Examples .....	<a href="#">68</a>

## [1.](#) Introduction

The use of mail enabled applications such as calendaring and scheduling has grown considerably in the last decade. Enterprise and inter-enterprise business has become dependent on rapid scheduling of events and actions using this information technology. The store-and-forward characteristic of electronic messaging technologies has been shown to be complementary to the asynchronous nature of group communications. However, the longer term growth of mail enabled applications, such as calendaring and scheduling, is currently limited by the lack of Internet standards for the message content types that are central to these groupware applications. This specification is intended to progress the level of interoperability possible between dissimilar calendaring and scheduling applications that communicate using an SMTP or MIME transport.

This specification defines a MIME content type for exchanging electronic calendaring and scheduling information. The MIME Calendaring and Scheduling Content Type allows for the capture and exchange of information normally stored within a calendaring and scheduling application; such as a Personal Information Manager or a Group Scheduling product.

The format is suitable as an exchange format between applications or systems. The format is defined in terms of a MIME content type. The primary transport for this exchange is expected to be a MIME electronic messaging system. However, other transports such as HTTP, a file system, desktop interactive protocols such as the use of a memory-based clipboard or drag/drop interactions, point-to-point asynchronous communication, wired-network transport, or some form of unwired transport such as infrared might also be used.

The specification also provides for the definition of usage profiles that will map this content type to a set of messages for supporting calendaring and scheduling operations such as requesting, replying to, modifying, and canceling meetings or appointments and todos. The usage profiles can be used to define other calendaring and scheduling operations such as requesting for and replying with free/busy time data.

Dawson

4

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

The specification also includes a formal grammar for the content type to aid in the implementation of parsers and to serve as the definitive reference when ambiguities or questions arise in interpreting the descriptive prose definition of the specification.

## 2. TEXT/CALENDAR Registration Information

To: ietf-types@uninett.no

Subject: Registration of MIME content type text/calendar.

MIME media type name: text

MIME subtype name: calendar

Required parameters: PROFILE

Optional parameters: CHARSET

Additional required content header fields: CONTENT-ID, MESSAGE-ID

Optional content header fields: CONTENT-LANGUAGE, TRANSFER-ENCODING

Encoding considerations: This MIME content type does not introduce any new encoding considerations beyond those defined in [[RFC 1521](#)].

Security considerations: The calendaring and scheduling information based on this MIME content type may include references to Uniform Resource Locators that may be programmed resources. In addition, this information may contain direct references to executable programs intended to be used as program-based alarms for an event or todo. Implementers and users of this specification should be aware of the network security implications of accepting and parsing such information.

Interoperability considerations: This MIME content type is intended to provide interoperability between calendaring and scheduling products. It is heavily based on the prior [[VCAL](#)] specification in order to assure interoperability with implementations conforming to this industry specification.

Intended Usage: COMMON

Published specification: This document.

Person & email address to contact for further information:

Frank Dawson  
IBM Corporation  
3039 Cornwallis Road  
RTP, NC 27709  
919-254-5861 (Telephone)  
919-543-6822 (Facsimile)  
fdawson@raleigh.ibm.com (Internet Mail)

Internet Draft

MIME C&amp;S Content Type

November 26, 1996

### **3. Intended Use**

This memo is meant to serve as the basis for registration of a MIME content type per [\[RFC1521\]](#). It is defined using the MIME content type registration from [\[MIME-REG\]](#). The proposed content type value is "TEXT/CALENDAR". This string would label a media type containing calendaring and scheduling information encoded primarily as text characters formatted in a manner outlined below.

A subtype of the standard MIME `_TEXT_` media type was chosen as the form for this content type because it provides a known and reasonable fallback for legacy systems that are required in an enterprise that also includes MIME based user agents that support this content type. Legacy systems that do not understand the `_TEXT/CALENDAR_` content type will render these MIME entities as they would `_TEXT/PLAIN_` content type. This will provide a minimal level of support for calendaring and scheduling information in legacy systems (i.e., the ability to display the text tagged calendaring and scheduling content information). This is a vital requirement for any mail enabled, enterprise application; as there are still over 7 million existing legacy electronic mail user agents at this time.

The calendaring and scheduling media type is specified as an independent content type in order that it can be conveyed as a single MIME message entity or as one MIME entity in a multi-part MIME message. Additionally, the calendaring and scheduling information may be defined in a multi-part message containing references to other MIME body parts holding additional data related to the event, todo, or free/busy time information.

#### **3.1 Published specification**

The following characteristics are specific to this MIME content type.

##### **3.1.1 Existing Message Header Fields**

The MIME Calendar Content Type may utilize any of the message header fields defined by [\[RFC 822\]](#), [\[RFC 1521\]](#), and [\[RFC 1766\]](#). A number of these message header fields are especially useful to the MIME Calendaring and Scheduling Content Type. These include the following header fields defined in either [\[RFC 822\]](#), [\[RFC 1521\]](#), and [\[RFC 1766\]](#).

##### **3.1.1.1 Content-Type Header Field**

The [\[RFC 1521\]](#) Content-Type header field is used to identify the MIME Calendaring and Scheduling Content Type. The value of this property must be `_text/calendar_` in order to correspond to the media type defined by this document. This header field is required for MIME entities conforming to this content type.

#### **[3.1.1.1.1](#) CHARSET Header Field Parameter**

Dawson 6 Expires June 1997

Internet Draft MIME C&S Content Type November 26, 1996

The [\[RFC 1521\]](#) CHARSET Content-Type header field parameter is used to identify an alternate character set to the default US-ASCII used by the MIME Calendaring and Scheduling Content Type. This header field parameter is optional for MIME entities conforming to this content type.

#### **[3.1.1.1.2](#) Content-ID Header Field**

The [\[RFC 1521\]](#) Content-ID header field is used to provide a persistent, globally unique identifier for a MIME Calendar Object within a MIME message entity. This header field is required for MIME entities conforming to this content type.

#### **[3.1.1.1.3](#) Content-Language**

The [\[RFC 1766\]](#) Content-Language header field is used to provide an alternate default language for the MIME Calendar Object. The default language is `_en-US_`. This header field is optional for MIME entities conforming to this content type.

#### **[3.1.1.1.4](#) Message-ID Header Field**

The [\[RFC 1521\]](#) Message-ID header field is used to provide a persistent, globally unique identifier for a MIME message containing a single body part consisting of a MIME Calendaring and Scheduling Content Type. This header field is required for a single body part MIME message conforming to this content type.

#### **[3.1.1.1.5](#) Transfer-Encoding Header Field**

The [\[RFC 1521\]](#) Transfer-Encoding header field is used to provide an alternate transfer encoding for the MIME Calendaring and Scheduling Content Type. The default transfer encoding is `_7BIT_`. This header field is optional for a MIME entity conforming to this content type.



### **3.1.2 Additional Content Type Parameter**

In addition to the existing content type parameters defined by [RFC 1521] and [[RFC 1766](#)], this document defines an additional content type parameter to be used by the MIME Calendaring and Scheduling Content Type.

#### **3.1.2.1 Profile**

The MIME Calendar Object defines the Profile content type parameter. This parameter is used to specify a usage profile for the MIME Calendaring and Scheduling Content Type. The value of this parameter consists of a type and a subtype value pair. The type value is used to specify either a EVENT, TODO, or FREE-BUSY type of MIME Calendar Object profile. The subtype value is used to specify the scheduling operation being conveyed by the profile type. The EVENT and TODO type values may have a subtype value of REQUEST, to convey an event or todo request message, REPLY, to convey an event or todo reply message, MODIFY, to convey an event or todo modification message,

Dawson 7 Expires June 1997

Internet Draft MIME C&S Content Type November 26, 1996

CANCEL, to convey an event or todo cancellation message, DELEGATE, to convey an event or todo delegation message. The BUSY-FREE type value may have a subtype value of REQUEST, to convey a free-busy time request message , or REPLY, to convey a free-busy time data message. The parameter value is defined by the following BNF:

```
profile := ((_EVENT /
            _TODO ) _/_ type1) / (_FREE-BUSY_ _/_ type2)

type1 :=  _REQUEST_ / _REPLY_ / _MODIFY_ / _CANCEL_ / _DELEGATE_

type2 :=  _REQUEST_ / _REPLY_
```

The following is an example of this content type parameter for specifying an event request message, such as in a request for a meeting or appointment:

```
CONTENT-TYPE:TEXT/CALENDAR;PROFILE=EVENT/REQUEST
```

The following is an example of this content type parameter for specifying a todo delegation message, such as delegating a task to another individual:

CONTENT-TYPE:TEXT/CALENDAR;TODO/DELEGATE

The following is an example of this content type parameter for specifying a free-busy time request, such as when searching for a free time for a meeting:

CONTENT-TYPE:TEXT/CALENDAR;PROFILE=FREE-BUSY/REQUEST

This content type parameter is required for MIME entities conforming to this content type.

### **3.1.3 Content Syntax Considerations**

The following general considerations are specific to the syntax used to format the text of the body information for this content type.

#### **3.1.3.1 Property**

A property is the definition of an individual attribute describing an event or a todo associated with the MIME Calendar Object. A property takes the following form:

property :=           propname \*(\_;\_ propparm) \_:\_ propvalue

as shown in the following example:

DTSTART:19960415T083000

A property takes the form of one or more lines of text. The specification of property names and property parameters is case insensitive. The property name can be one of a set of pre-defined or non-standard strings. The property name must appear as the first

Dawson	8	Expires June 1997
--------	---	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

characters on a line. In the previous example, `_DTSTART_` is the name of the Start Date/Time property. Property values are specified as strings. In the previous example, `_19960415T083000_` is the ISO 8601 formatted value for the Start Date/Time property.

The property parameter expressions are specified as either a `name=value` or a value string. The parameter value string can be specified alone in those cases where the value is unambiguous. For example a complete property parameter specification might be:

DESCRIPTION;ENCODING=QUOTED-PRINTABLE:Don't forget to order Girl=

Scout cookies from Stacey today!

A valid short version of the same property parameter specification might be:

```
DESCRIPTION;QUOTED-PRINTABLE:Don't forget to order Girl=
  Scout cookies from Stacey today!
```

### **3.1.3.2 Delimiters**

Individual lines within the MIME Calendaring and Scheduling Content Type body are delimited by the [\[RFC 822\]](#) line break, which is a CRLF sequence (ASCII decimal 13, followed by ASCII decimal 10). Long lines of text can be split into a multiple-line representation using the [RFC 822](#) \_folding\_ technique. That is, wherever there may be linear white space (NOT simply LWSP-chars), a CRLF immediately followed by at least one LWSP-char may instead be inserted. For example the line:

```
DESCRIPTION:This is a long description that exists on a long line.
```

Can be represented as:

```
DESCRIPTION:This is a long description
  that exists on a long line.
```

The process of moving from this folded multiple-line representation of a property definition to its single line representation is called \_unfolding\_. Unfolding is accomplished by regarding CRLF immediately followed by a LWSP-char as equivalent to the LWSP-char.

It is recommended that folding be limited to higher-level syntactic breaks in structured components of the property definition.

A formatted text line break in a property value, must also be specified by a ([RFC 822](#)) line break, which is a CRLF sequence. However, since the CRLF sequence is used to delimit a line, property values with formatted line breaks (i.e., multiple lines) must be encoded using an alternate encoding of either Quoted-Printable or Base64, as defined in [[RFC 1521](#)].

For example, in the Quoted-Printable encoding the multiple lines of formatted text are separated with a Quoted-Printable CRLF sequence of \_=0D\_ followed by \_=0A\_ followed by a Quoted-Printable soft line

break sequence of `_=_`. Quoted-Printable lines of text must also be limited to less than 76 characters. The 76 characters does not include the CRLF [[RFC 822](#)] line break sequence. For example a multiple line DESCRIPTION value of:

```
Project XYZ Final Review
Conference Room - 3B
Come Prepared.
```

Would be represented in a Quoted-Printable encoding as:

```
DESCRIPTION; QUOTED-PRINTABLE:Project XYZ Final Review=0D=0A=
Conference Room - 3B=0D=0A=
Come Prepared.
```

Property parameter sub-strings are delimited by a field delimiter, specified by the Semi-colon character (ASCII decimal 59). A Semi-colon character in a property parameter value must be escaped with a Backslash character (ASCII decimal 92).

Compound property values are delimited by a field delimiter, specified by the Semi-colon character (ASCII decimal 59). A Semi-colon character in a component of a compound property value must be escaped with a Backslash character (ASCII decimal 92).

#### **[3.1.3.3](#) Property Value Transfer Encoding**

The default transfer encoding for the MIME Calendaring and Scheduling Content Type is `_7BIT_`. The default transfer encoding can be overridden for an individual property value by using the `_ENCODING_` property parameter. This parameter value can be either `_7BIT_`, `_BASE64_`, `_QUOTED-PRINTABLE_`, or `_8BIT_`. This parameter may be used on any property.

The MIME TRANSFER-ENCODING header field can be used to specify a default transfer encoding other than 7BIT (e.g., 8BIT).

#### **[3.1.3.4](#) Property Value Character Set**

The default character set for a MIME Calendaring and Scheduling Content Type is ASCII. The default character set can be overridden for an individual property value by using the `_CHARSET_` property parameter. This property parameter may be used on any property. However, the use of this parameter on some properties may not make sense.

Any character set registered with the Internet Assigned Numbers Authority (IANA) can be specified by this property parameter. For example, ISO 8859-8 or the Latin/Hebrew character set is specified by:

```
DESCRIPTION;CHARSET=ISO-8859-8:...
```

Internet Draft

MIME C&amp;S Content Type

November 26, 1996

The MIME CHARSET parameter on the CONTENT-TYPE header field can be used to specify a default character set other than ASCII (e.g., UTF-8).

#### **3.1.3.5 Property Value Language**

The default language for a MIME Calendaring and Scheduling Content Type is `_en-US_` (US English). The default language can be overridden for an individual property value by using the `_LANGUAGE_` property parameter. The values for this property are a string consistent with [RFC 1766](#), Tags for the Identification of Languages. This property parameter may be used on any property. However, the use of this parameter on some properties, such as PHOTO, LOGO, SOUND, TEL, may not make sense. Canadian French would be specified by this property parameter by the following:

```
SUMMARY;LANGUAGE=fr-CA:...
```

The MIME LANGUAGE parameter on the CONTENT-TYPE header field can be used to specify a default language other than US English (e.g., fr-CA).

#### **3.1.3.6 Property Value Data Type**

In order to more fully specify the semantics of this content type and to facilitate its automated processing, the specification of each property defined by the MIME Calendaring and Scheduling Content Type identifies the valid data types and the default data type for the property value. In addition, within an instance of this content type a property may explicitly convey the data type information through the DATATYPE property parameter. The STRING data type for the DESCRIPTION property would be specified by the following:

```
DESCRIPTION;DATATYPE=STRING:Weekly Staff Meeting
```

If the DATATYPE property parameter is not specified on a property, then the default data type for that property is assumed. Usage profiles for this content type that introduce new properties must specify the default data type for each newly defined property. The data types used within this content type definition include the following:

Description	Property Data Type
-------------	--------------------

Indicates an audio alarm value, as specified by this document.
--

AALARM
--------

Dawson

11

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

Indicates a Boolean value string of either TRUE or FALSE.
---

BOOLEAN
---------

Indicates a string identifier value for the content identifier of another MIME entity within the current
--

CID
-----

message.
----------

Indicates a display alarm value, as specified by this document.
---

DALARM
--------

Indicates an ISO 8601 formatted date/time
---

DATE-TIME
-----------

string value.

Indicates a  
daylight saving  
time rule value  
as specified in  
this document.

DST-RULE

Indicates a  
list of ISO  
8601 formatted  
date/time  
string values.

D-T-LIST

Indicates an  
ISO 8601  
formatted  
duration or  
period of time  
value.

DURATION

Indicates a  
string  
representation  
of a floating  
point value.

FLOAT

Dawson

12

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

Indicates a  
list of string  
representations  
of floating  
point values.

FLOAT-LIST

Indicates a  
numeric string  
representation  
of an integer  
value.

INTEGER

Indicates a  
list of numeric  
string  
representations

INTEGER-LIST

of an integer  
value.

Indicates a mail alarm value, as specified by this document.	MALARM
--	--------

Indicates a string identifier value for an external message.	MID
---	-----

Indicates a procedure alarm value, as specified by this document.	PALARM
---	--------

Indicates a RFC 822 formatted address specification string value.	<a href="#">RFC822</a> - ADDRESS
---	-------------------------------------

Indicates a recurrence rule grammar string value as specified in this document.	RRULE
--	-------

Indicates a text string	STRING
----------------------------	--------

Dawson

13

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

value in the  
current  
character set.

Indicates a  
list of text



string values in the current	STRING-LIST
character set.	
Indicates an ISO 8601 formatted time offset value	TIME-OFFSET
Indicates a RFC 1738 formatted Uniform Resource Locator string.	URL

The property values consisting of lists of a particular data type (i.e., STRING-LIST) are semi-colon separated string of list items.

### **3.1.3.7 Date and Time**

The date and time values for all MIME Calendaring and Scheduling Content Type properties are formatted as a string consistent with the ISO 8601 representation for combinations of dates and times. Either the basic or extended format is allowed. The use of UTC, rather than local time, should be used when ever possible in order to avoid time zone ambiguities. Where local time is specified, the inclusion of the UTC offset should also be included to avoid time zone ambiguities. The format for the complete, representation of a date and time value is represented by the following ABNF:

```

date-time =      1*(date / time / (date time))

date =          year month day
year =          <four digits representing the century and year>
month =         [_-_] <digits representing the month in the year>
day =           [_-_] <digits representing the day of the month>

time =          hour minute second [fraction] (utc-sign / utc-offset)
hour =          <digits representing a period of time of 60 minutes>
minute =        [_:] <digits representing a period of time of 60
seconds>
second =        [_:] <digits representing a basic measurement unit
of time in the International System of Units as defined
in ISO 31-1>
fraction =      _,_ <digits representing fraction of a second>

```

```
utc-sign = _Z_  
utc-offset = [_+_ / _-_] hour [_:_] minute  
            ;_+_ if offset is after UTC and _-_ if offset is before UTC
```

The basic complete representation does not include the \_-\_ date separator nor the \_:\_ time separator. The extended complete representation does include the separators.

For example, 8:30 AM on April 15, 1996 local time EST would be written as:

```
19960415T083000-05:00
```

And the same time in UTC based time would be written as:

```
19960415T133000Z
```

The same date and time represented in the extended completed representation would be written as:

```
1996-04-15T08:30:00-05:00
```

And the same time in UTC based time would be written as:

```
1996-04-15T13:30:00Z
```

Where a value needs to specify a sequence of date and time values, then the property value is a string made up of a list of date and time values, separated by the field separator, a Semi-Colon (ASCII decimal 59). For example:

```
19960101T090000Z;19960201T090000Z;19960301T090000Z;...
```

#### **3.1.3.8 Time Duration**

The values for time duration or periods of time for all MIME Calendaring and Scheduling Content Type properties are formatted as a string consistent with the ISO 8601 representation for duration of time. A given duration of a period of time is represented by a character string consisting of the designator \_P\_, optionally including the number of years followed by the designator \_Y\_, optionally including the number of months followed by the designator \_M\_, optionally including the number of weeks followed by the designator \_W\_, optionally including the number of days followed by the designator \_D\_. The sequence can also contain a time component preceded by the designator \_T\_, optionally including the number of

hours followed by the designator `_H_`, optionally including the number of minutes followed by the designator `_M_`, optionally including the number of seconds followed by the designator `_S_`. The following ABNF describes the representation of ISO 8601 periods of time:

```
duration = _P_ (yr-period / tm-period / (yr-period tm-period))
          ;Duration needs to include at least one component of year or
          ;time periods
```

Dawson

15

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

```
yr-period =      [yr-param] [mo-param] / wk-param
yr-param =      _Y_ <digits representing the number of years>
mo-param =      _M_ <digits representing the number of months>
wk-param =      _W_ <digits representing the number of weeks>

tm-period =      _T_ [hr-param] [mn-param] [sc-param]
hr-param =      _H_ <digits representing the number of hours>
mn-param =      _M_ <digits representing the number of minutes>
sc-param =      _S_ <digits representing the number of seconds>
```

For example:

P6W

represents a period of six weeks;

PT15M

represents a period of 15 minutes;

PT1H30M

represents a period of 1 hour and thirty minutes; or

P2Y10M15DT10H30M20S

represents a period of 2 years, 10 months, 15 days, 10 hours, 30 minutes, and 20 seconds.

#### **3.1.3.9 Value Location**

The default location of the property values is inline with the property. However, for some properties, such as those that specify multimedia values, it is more efficient in a MIME message to organize the property value as a separate MIME entity. The property parameter

`_VALUE_` can be specified to override the `_INLINE_` location of the property value. In the case of the MIME Calendaring and Scheduling Content Type being transported within a MIME email message, the property value can be specified as being located in a separate MIME entity with the `_CONTENT-ID_` value; or `_CID_` for shorthand. In this case, the property value is the Content-ID for the MIME entity within the multi-part message that contains the property value. The value can also be specified as being contained within an another, external message using the `_MESSAGE-ID_` value, or `_MID_` for shorthand. In addition, the property value can be specified as being located out on the Internet using the `_URL_` value. In this case, the property value is the Uniform Resource Locator for the Internet resource containing the property value. This property parameter may be used on any property. However, the use of this parameter on some properties may not make sense; for example the Version, Time Zone, Status, Priority, Mail Reminder, etc. properties.

The following specifies a value located out on the Internet:

Dawson

16

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

ATTACH;VALUE=URL:http://www.abc.com/dir\_photos/my\_photo.gif

The following specifies a value located out in the content of another message:

ATTACH;VALUE=MID:<960120.aaCB@host1.com>

### **3.1.3.10 Binary Property Values**

The MIME Calendaring and Scheduling Content Type supports inclusion of binary information, such as computer graphic images (e.g., IMAGE/JPEG), digital audio (e.g., AUDIO/BASIC), or video graphic images (e.g., VIDEO/MPEG). As specified above the binary information can be referenced with a Uniform Reference Locator (URL), referenced within an external MIME message, referenced within a particular MIME message body part, or placed. Inline binary information is included as a property value after being binary encoded using Base 64 (default) or Quoted-Printable transfer encoding.

### **3.1.3.11 Recurrence Rule Grammar**

Recurring events within the MIME Calendaring and Scheduling Content Type may be specified as either a list of discrete date and time values or as a recurrence rule using a grammar. The basic recurrence

rule grammar used by this specification is defined in a separate section of this specification. The grammar defines a recurrence rule that is based on the prior work of the X.400 API Association's Calendaring and Scheduling Subcommittee. It is also based on prior work of the IETF Chronos Working Group. Refer to [section 3.3](#).

#### **[3.1.4](#) Body Delimiter Properties**

The body information of a MIME Calendaring and Scheduling Content Type is defined by a series of body fields or properties. This section defines the properties that can be used in MIME entities conforming to this content type.

##### **[3.1.4.1](#) Calendar Object**

The body of the MIME Calendaring and Scheduling Content Type is identified within the body of a MIME entity by the appearance of the Begin Calendar Object Delimiter:

```
BEGIN:VCALENDAR
```

The sentinel string must appear as the first characters in the body of the MIME entity and as the first characters on a line.

The body information of the MIME Calendaring and Scheduling Content Type is terminated by the appearance of the End Calendar Object Delimiter as the first characters on a line:

```
END:VCALENDAR
```

Dawson	17	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

The MIME Calendaring and Scheduling Content Type is a container for calendar components. These can include either event or todo components. The body of a MIME Calendaring and Scheduling Content Type will generally contain a single calendar event or todo component. However, the body may include multiple event or todo components. This is the case for free-busy time reply messages that contain multiple free time intervals in individual calendar components.

The Begin and End Calendar Object Delimiter properties are required in a MIME entity conforming to this content type. The default data type for these properties is a STRING.

#### **3.1.4.2 Event Component**

An Event Component is a grouping of calendaring and scheduling properties that defines a component that represents a scheduled amount of time on a calendar. For example, it may be an activity; such as a one-hour, department meeting from 8 AM to 9 AM, tomorrow or a free/busy time interval.

An individual Event Component is identified within a MIME Calendaring and Scheduling Content Type by the appearance of the delimiter:

```
BEGIN:VEVENT
```

The sentinel string must appear as the first characters on a line.

The Event Component is terminated with the appearance of the following delimiter string as the first characters on a line

```
END:VEVENT
```

The Event Component can not be nested within another Event or Todo Component. If Event components need to be related to each other or to a Todo Component, they can specify a relationship with the RELATED-TO property.

The Begin and End Event Component Delimiter properties are required for a MIME entity containing an event component and conforming to this content type. The default data type for these properties is a STRING.

#### **3.1.4.3 Todo Component**

A Todo Component is a grouping of calendaring and scheduling properties that define a component that represents an action-item or assignment. For example, it may be an item of work assigned to an individual; such as \_turn in travel expense today\_.

An individual Todo Component is identified within a MIME Calendaring and Scheduling Content Type by the appearance of the delimiter:

```
BEGIN:VTODO
```

Dawson	18	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

The sentinel string must appear as the first characters on a line.

The Todo Component is terminated with the appearance of the following delimiter string as the first characters on a line

END:VTODO

The Todo Component can not be nested within another Todo or Event Component. If Todo components need to be related to each other or to an Event Component, they can specify a relationship with the RELATED-TO property.

The Begin and End Todo Component Delimiter properties are required for a MIME entity containing a todo component and conforming to this content type. The default data type for these properties is a STRING.

### **3.1.5 Calendar Object Properties**

The following properties may appear between the Begin Calendar Object Delimiter and either the Begin Event Component Delimiter or the Begin Todo Component Delimiter. These properties define body field values that apply to the complete calendar object.

#### **3.1.5.1 Calendar Content Profile**

This property is identified by the property name PROFILE. This property defines the usage profile associated with the calendar object. When used included in a MIME message entity, the value of this property MUST be the same as the Content-Type profile parameter value.

The calendar property value may include the following usage profile values:

Profile Parameter Type/Subtype Value	Description
EVENT/REQUEST	Make a request for an event
EVENT/REPLY	Reply to an event request
EVENT/COUNTER	Make a counter proposal to the event request
EVENT/DECLINE-COUNTER	Decline the counter proposal to the event

Internet Draft

MIME C&amp;S Content Type

November 26, 1996

request

EVENT/MODIFY	Modify a subset of the details of an existing event request
EVENT/REPLACE	Replace the current event request with a complete set of information
EVENT/CANCEL	Cancel an existing event request
EVENT/DELEGATE	Delegate an existing event request
EVENT/RESEND	Request a duplicate of the current event request information
TODO/REQUEST	Assign a todo
TODO/REPLY	Reply to a todo assignment
TODO/COUNTER	Make a counter proposal for the todo request
TODO/DECLINE-COUNTER	Decline a counter proposal for the todo request



TODO/MODIFY	Modify a subset of the details of an existing todo assignment
-------------	---

TODO/REPLACE	Replace the current todo request with a complete set of information
--------------	---

Dawson	20	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

TODO/CANCEL	Cancel an existing todo
-------------	-------------------------

TODO/DELEGATE	Delegate an existing todo
---------------	---------------------------

TODO/RESEND	Request a duplicate of the current todo request information
-------------	---

FREE-BUSY/REQUEST	Free/busy time request
-------------------	------------------------

FREE-BUSY/REPLY	Reply to an existing free/busy time request with free/busy time data
-----------------	--

Other values may be defined by other usage profiles of this content type.

This property is optional for MIME entities conforming to this content type. In the event that this property is not specified, the recipient of a MIME Calendaring and Scheduling Content Type should assume the calendar object is for an `_event/request_`. The default data type for this property is `STRING`.

### **3.1.5.2 Daylight Savings Rule**

This property is identified by the property name DAYLIGHT. This property defines the daylight savings time rule observed by the \_home\_ calendar system that created the MIME calendar object.

Many locations adjust their standard time forward or backward by one hour, in order to accommodate seasonal changes in number of daylight hours. Some locations adjust their time by a fraction of an hour. Standard time is also known as Winter Time. Daylight savings time is also known as Advanced Time, Summer Time, or Legal Time in certain countries.

The property value consists of a sequence of components that define a rule for the observance of daylight savings time. The value consists of the daylight savings time flag, followed by the daylight savings time offset, followed by the date and time that the daylight savings time begins, followed by the date and time that the daylight savings time ends, followed by the standard time designation, followed by the daylight savings time designation. The daylight savings time flag is

Dawson	21	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

TRUE if daylight savings time is observed, otherwise it is FALSE and no other components are specified. The daylight savings time offset value is specified in a manner consistent with ISO 8601. The property value is a signed numeric indicating the number of hours and possibly minutes from UTC. The date and time that the daylight savings time begins and ends is specified in a manner consistent with ISO 8601 date and time format. The standard time and daylight savings time designations correspond to the customary character designations.

The following are examples of this property:

DAYLIGHT:TRUE;-06;19960407T025959;19961027T010000;EST;EDT

DAYLIGHT:FALSE

DAYLIGHT:TRUE;-09;19960407T115959;19961027T100000;PST;PDT

This property is optional for MIME entities conforming to this content type. In the event that this property is not specified, the recipient of a MIME Calendaring and Scheduling Content Type should assume the same daylight savings time rule as the recipient location. The default data type for this property is DST-RULE.

### **3.1.5.3 Geographic Position**

This property is identified by the property name GEO. This property specifies information related to the global position of the \_home\_ system that created the MIME calendar object. The property value specifies longitude and latitude. The longitude represents the location east and west of the prime meridian as a positive or negative real number, respectively. The latitude represents the location north and south of the equator as a positive or negative real number, respectively. The following is an example of this property:

GEO:37.24,-17.87

This property is optional for MIME entities conforming to this content type. The default data type for this property is FLOAT-LIST.

### **3.1.5.4 Product Identifier**

This property is identified by the property name PRODID. This property specifies the identifier for the product that created the MIME calendar object. The vendor of the implementation should assure that this is a globally unique identifier; using some technique such as an ISO 9070 FPI value. The following is an example of this property:

PRODID:-//ABC Corporation//NONSGML My Product//EN

This property is required for MIME entities conforming to this content type. The default data type for this property is STRING.

Dawson	22	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

### **3.1.5.5 Time Zone**

This property is identified by the property name TZ. This property specifies the standard time zone of the \_home\_ system that created the MIME calendar object. The property value is specified in a manner consistent with ISO 8601. The property value is a signed numeric indicating the number of hours and possibly minutes from UTC. Time zones east of UTC are positive numbers. Time zones west of UTC are negative numbers. The following are examples of this property:

TZ:-0500

TZ:+05:30

This property is optional for MIME entities conforming to this content type. If this property is missing, the recipient should assume all local times are relative to the recipients time zone. The default data type for this property is TIME-OFFSET.

#### **3.1.5.6 Version**

This property specifies the identifier corresponding to the highest version number of the MIME Calendaring and Scheduling Content Type specification supported by the implementation that created the MIME calendar object. The value of this property must be 1.0 to correspond to this specification..

This property is identified by the property name VERSION. The following is an example of this property:

VERSION:1.0

This property is required for MIME entities conforming to this content type. This property must appear within the MIME calendar object. The default data type for this property is FLOAT.

#### **3.1.6 Event and Todo Component Properties**

The following properties apply to either an event or todo calendar object component.

##### **3.1.6.1 Attachment**

This property is identified by the property name ATTACH. The property defines an attached object to the MIME calendar object. For example, a document to be reviewed at a scheduled event or the process steps for a todo. The property value can be a text string, a reference to another message body part or a reference to a URL corresponding to a document.

Multiple attachments may be specified by including multiple ATTACH properties within the MIME calendaring entity.

The following are examples of this property:

Dawson	23	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

ATTACH;VALUE=CONTENT-ID:<jsmith.part3.960817T083000.

xyzMail@host1.com>

ATTACH;VALUE=URL:file:///xyzCorp.com/pub/reports/r-960812.ps

This property is optional for MIME entities conforming to this content type. The default data type for this property is MID. The data type may alternatively be specified to be CID, URL, or STRING value.

#### **3.1.6.2 Attendee**

This property is identified by the property name ATTENDEE. The property defines an attendee to a group event or todo. The default property value is an ([RFC 822](#)) address. The property may include property parameters TYPE, for the type of attendee, ROLE, for the role of the attendee in the event or todo; STATUS, for the status of the attendee's participation in the event or todo, RSVP, for indicating whether the favor of a reply is requested, EXPECT, to indicate the expectation of the attendee's participation by the originator, and MEMBER, to indicate the group that the attendee belongs to..

Multiple attendees may be specified by including multiple ATTENDEE properties within the MIME calendaring entity.

The property value may reference a vCard object. This provides a useful mechanism to allow more than just the address of the attendee to be referenced.

The TYPE property parameter for each attendee can have the following values:

Dawson

24

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

Description	Property Value
Indicates attendee is an individual.	INDIVIDUAL
Indicates attendee is a group of individuals.	GROUP
Indicates attendee is a resource.	RESOURCE
Indicates attendee type is unknown.	UNKNOWN

The ROLE property parameter for each attendee can have the following values:

Description	Property Value
Indicates an attendee at the event or todo	ATTENDEE
Indicates organizer of the event, but not owner	ORGANIZER

Indicates owner  
of the event or  
todo.

OWNER

Indicates a  
delegate of  
another  
attendee.

DELEGATE

Dawson

25

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

The default value for this property parameter is ATTENDEE.

The STATUS property parameter for each attendee can have the  
following values:

Description

Property  
Value

Indicates todo  
was accepted by  
attendee

ACCEPTED

Indicates event  
or todo  
requires action  
by attendee

NEEDS ACTION

Indicates event  
or todo was  
sent out to  
attendee

SENT

Indicates event  
is tentatively  
accepted by  
attendee

TENTATIVE

Indicates

CONFIRMED

attendee has  
confirmed their  
attendance at  
the event

Indicates event  
or todo has  
been rejected  
by attendee

DECLINED

Indicates todo  
has been  
completed by  
attendee

COMPLETED

Indicates event  
or todo has  
been delegated  
by the attendee  
to another

DELEGATED

Dawson

26

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

Indicates the  
event or todo  
has been  
canceled and/or  
this attendee  
has been  
removed from  
the list of  
attendees.

CANCELED

The default value for this property parameter is NEEDS ACTION.

The RSVP property parameter for each attendee can have the following values:

Description

Property



	Value
Indicates a reply is requested	YES
Indicates a reply is not requested.	NO

The default value for this property parameter is NO.

The EXPECT property parameter for each attendee can have the following values:

Description	Property Value
Indicates request is for your information.	FYI

Dawson	27	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

Indicates presence is definitely required.	REQUIRE
Indicates presence is being requested	REQUEST
Indicates an immediate	IMMEDIATE

response  
needed.

The default value for this property parameter is FYI.

The MEMBER property parameter value is an ([RFC 822](#)) address that represents the group or distribution list.

The following is an example of this property's use for a todo:

```
ATTENDEE;ROLE=OWNER;STATUS=COMPLETED:jsmith@host1.com
```

The following is an example of this property used for specifying multiple attendees to an event:

```
ATTENDEE;ROLE=OWNER;STATUS=CONFIRMED:John Smith <jsmith@host1.com>  
ATTENDEE;ROLE=ATTENDEE;STATUS=TENTATIVE:Henry Cabot  
<hcabot@host2.com>  
ATTENDEE;ROLE=DELEGATE;STATUS=CONFIRMED:Jane Doe <jdoe@host1.com>
```

The following is an example of this property with the value specified as an URL reference to a vCard that contains the information about the attendee:

```
ATTENDEE;ROLE=ATTENDEE;STATUS=CONFIRMED;VALUE=URL:  
http://www.xyz.com/~myvcard.vcf
```

This property is optional for MIME entities conforming to this content type. The default data type for this property is [RFC822](#)-ADDRESS.

#### **[3.1.6.3](#) Audio Reminder**

This property is identified by the property name AALARM. The property defines an audio reminder for the MIME calendar object. An audio reminder is an alarm that is sounded for a calendar component..

The value for the audio reminder consists of the Run Time, or the date and time that the reminder is to be executed; Snooze Time, or

Dawson

28

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

the duration of time after the Run Time that the reminder is to be dormant prior to being repeated; Repeat Count, or the number of times

that the reminder is to be repeated; and the Audio Content, or the digital sound to be played when the reminder is executed.

The following are some examples of this property:

```
AALARM;TYPE=WAVE;VALUE=URL:19960415T235959; ; ;  
file:///mmedia/taps.wav
```

```
AALARM;TYPE=WAVE;VALUE=CONTENT-  
ID:19960903T060000;PT15M;4;<jsmith.part2.=  
960901T083000.xyzMail@host1.com>
```

The property has the following additional property parameters:

Description	Property Parameter Values
TYPE	
Indicates the MIME basic audio content type.	BASIC
Indicates the WAVE format for audio content.	WAVE
Indicates the AIFF format for audio content.	AIFF

The Reminder properties are primarily provided as a means for allowing the capture of alarm information when accessing a calendar system. It may not be an appropriate property to send in an event or todo request.

This property is optional for MIME entities conforming to this content type. The default data type for this property is AALARM. The data type may alternatively be specified to be CID, MID, or URL.

Internet Draft

MIME C&amp;S Content Type

November 26, 1996

#### **3.1.6.4 Categories**

This property is identified by the property name CATEGORIES. This property defines the categories for the MIME calendar component. More than one category may be specified as a list of categories separated by the Semi-Colon character (ASCII decimal 59).

The following are some examples of this property:

CATEGORIES:APPOINTMENT;EDUCATION

CATEGORIES:MEETING

Some of the possible values for this property might include the following:

Some Possible

Property Values

APPOINTMENT

BUSINESS

EDUCATION

HOLIDAY

MEETING

MISCELLANEOUS

NON-WORKING-HOURS

NOT-IN-OFFICE

PERSONAL

PHONE CALL

SICK DAY

SPECIAL OCCASION

TRAVEL

VACATION

Dawson

30

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

This property is optional for MIME entities conforming to this content type. The default data type for this property is STRING-LIST.

#### **3.1.6.5 Classification**

This property is identified by the property name CLASS. This property defines the access classification for the MIME calendar component.

A calendar event/todo access classification is only one component of the general security system within a calendar application. It provides a method of capturing the scope of the access the calendar owner intends for information within an individual calendar entry. The access classification of an individual MIME calendaring entity is useful when measured along with the other security components of a calendar system (e.g., user authorization, access rights, access role, etc.). Hence, the semantics of the individual access classifications can not be completely defined by this specification. Additionally, due to the `_blind_` nature of most exchange processes using this specification, these entity classifications can not serve as an enforcement statement for a system receiving a MIME calendar object. Rather, they provide a method for capturing the intention of the calendar owner for the access to the MIME calendar object component.

The following is an example of this property:

CLASS:PUBLIC

The property can have the following values:

Description	Property Value
-------------	----------------

Indicates general, public access.	PUBLIC
Indicates restricted, private access.	PRIVATE
Indicates very restricted, confidential access.	CONFIDENTIAL

The default value for this property is PUBLIC.

Dawson	31	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

This property is optional for MIME entities conforming to this content type. The default data type for this property is STRING.

#### **3.1.6.6 Date/Time Created**

This property is identified by the property name DCREATED. This property specifies the date and time that the MIME calendar component was created within the originating calendar system. This is not necessarily the same date and time that the MIME calendar object was created. The date and time value is the local or UTC based time expressed in the complete representation, basic or extended format as specified in ISO 8601. The following is an example of this property:

```
DCREATED:19960329T083000-0500
```

This property is optional for MIME entities conforming to this content type. The default data type for this property is DATE-TIME.

#### **3.1.6.7 Date/Time Completed**

This property is identified by the property name COMPLETED. This property defines the date and time that the todo was actually completed. The date and time value is expressed in the complete representation, basic or extended format as specified in ISO 8601. The time can either be in local or UTC based time. The following is

an example of this property:

```
COMPLETED:19960401T235959Z
```

This property is optional for MIME entities conforming to this content type. The default data type for this property is DATE-TIME.

#### **3.1.6.8 Description**

This property is identified by the property name DESCRIPTION. This property provides a more complete description of the MIME calendar component, than that provided by the SUMMARY property. The following is an examples of the property with formatted line breaks in the property value:

```
DESCRIPTION;ENCODING=QUOTED-PRINTABLE:Meeting to provide technical=
review for _Phoenix_ design.=0D=0A=
Happy Face Conference Room. Phoenix design team=
must attend this meeting. RSVP to team leader.
```

The following is an examples of the property with folding of long lines:

```
DESCRIPTION:Last draft of the new novel is to be completed
for the editor's proof today.
```

This property is required for MIME entities conforming to this content type. The default data type for this property is STRING.

Dawson	32	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

#### **3.1.6.9 Display Reminder**

This property is identified by the property name DALARM. The property defines a display reminder for the MIME calendar component. A display reminder is an alarm that is popped up into the user interface or otherwise visually displayed for a calendar component.

The value for the display reminder consists of the Run Time, or the date and time that the reminder is to be executed; Snooze Time, or the duration of time after the Run Time that the reminder is to be dormant prior to being repeated; Repeat Count, or the number of times that the reminder is to be repeated; and the Display String, or the text to be displayed when the reminder is executed.

The following is an example of this property:

```
DALARM:19960415T235000-0800;PT5M;2;Your Taxes Are Due !!!
```

The Reminder properties are primarily provided as a means for allowing the capture of alarm information when accessing a calendar system. It may not be an appropriate property to send in an event or todo request.

This property is optional for MIME entities conforming to this content type. The default data type for this property is DALARM. The data type may alternatively be specified to be CID, MID, or URL.

#### **3.1.6.10 Due Date/Time**

This property is identified by the property name DUE. This property defines the date and time that the todo is due to be completed. The date and time value is expressed in the complete representation, basic or extended format as specified in ISO 8601. The time can either be in local or UTC based time. Alternatively, the value may be a duration of time, expressed in the ISO 8601 format as specified in [section 3.1.3.8](#). In this case, the end is relative to the start of the MIME calendar component. The following is an example of this property:

```
DUE:19960401T235959Z
```

This property is required for MIME entities consisting of a todo calendar component that conforms to this content type. The default data type for this property is DATE-TIME. The data type may alternatively be specified as a DURATION.

#### **3.1.6.11 Duration**

This property is identified by the property name DURATION. The property specifies an interval or duration of time. The following is an example of this property that specifies an interval of time of 1 hour and zero minutes and zero seconds:

```
DURATION:P1H0M0S
```

Dawson	33	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

The following is an example of this property that specifies an interval of time of 24 hours.



DURATION: P24H

This property is optional for MIME entities conforming to this content type. The default data type for this property is DURATION.

### 3.1.6.12 End Date/Time

This property is identified by the property name DTEND. This property defines the date and time that the event component will end. The date and time value is expressed in the complete representation, basic or extended format as specified in ISO 8601. The time can either be in local or UTC based time. Alternatively, the value may be a duration of time, expressed in the ISO 8601 format as specified in [section 3.1.3.8](#). In this case, the end is relative to the start of the MIME calendar component. Events may have an end date/time but no start date/time. In that case, the event does not take up any time. The following is an example of this property:

DTEND:19960401T235959Z

This property is required for MIME entities conforming to this content type. The default data type for this property is DATE-TIME. The data type may alternatively be specified as a DURATION.

### 3.1.6.13 Exception Date/Times

This property is identified by the property name EXDATE. This property defines the list of date/time exceptions for a recurring MIME calendar component. The date and time values is expressed in the complete representation, basic format as specified in ISO 8601. The times can either be in local or UTC based time. The following is an example of this property:

EXDATE:19960402T010000Z;19960403T010000Z;19960404T010000Z

This property is optional for MIME entities conforming to this content type. The default data type for this property is D-T-LIST.

### 3.1.6.14 Exception Rule

This property is identified by the property name EXRULE. This property defines a rule or repeating pattern for an exception to a recurring MIME calendaring entity, based on the Basic Recurrence Rule Grammar of the [XAPIA]. The value for the property is a pattern specification for the recurrence exception. The following are some examples of this property:

[illegible]

```
EXRULE:D1 #10 // Except daily for 10 occurrences
```

Internet Draft

MIME C&amp;S Content Type

November 26, 1996

```
EXRULE:YM1 6 7 #8           // Except yearly in June and July for 8
                             // occurrences
```

This property is optional for MIME entities conforming to this content type. The default data type for this property is RRULE.

#### **3.1.6.15 Last Modified**

This property is identified by the property name LAST-MODIFIED. The property specifies the date and time that the MIME calendar component was last revised. The following is an example of this property:

```
LAST-MODIFIED:19960817T133000Z
```

This property is optional for MIME entities conforming to this content type. The default data type for this property is DATE-TIME.

#### **3.1.6.16 Location**

This property is identified by the property name LOCATION. The property defines the intended location for the MIME calendar component.

The property value may reference a vCard object. This provides a useful mechanism to specify a location in terms of its electronic business card.

The following are some examples of this property:

```
LOCATION:Conference Room - F123, Bldg. 002           // or
```

```
LOCATION;VALUE=URL:http://www.xyzcorp.com/~jsmith.vcf
```

This property is optional for MIME entities conforming to this content type. The default data type for this property is STRING. The data type may alternatively be specified to be CID, MID, or URL.

#### **3.1.6.17 Mail Reminder**

This property is identified by the property name MAIL-ALARM. The property defines an email address that is to be sent a reminder for the MIME calendar component. A mail reminder is an electronic mail address that will be sent a display string as an alarm for a calendar component.

The value for the procedure reminder consists of the Run Time, or the date and time that the reminder is to be executed; Snooze Time, or the duration of time after the Run Time that the reminder is to be dormant prior to being repeated; Repeat Count, or the number of times that the reminder is to be repeated; Email Address, or the ([RFC 822](#)) email address that is to be sent the reminder, Subject, or the textual subject of the note, and the Note, or the textual reminder string that is to be sent to the email address.

Dawson

35

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

The following is an example of this property:

```
MALARM:19960416T000000-0500;PT1H;24;IRS@us.gov;My Payment;  
The Check Is In The Mail!
```

The Reminder properties are primarily provided as a means for allowing the capture of alarm information when accessing a calendar system. It may not be an appropriate property to send in an event or todo request.

This property is optional for MIME entities conforming to this content type. The default data type for this property is MALARM. The data type may alternatively be specified to be CID, MID, or URL.

#### **3.1.6.18 Number Recurrences**

This property is identified by the property name RNUM. The property defines the number of times the calendar entry will reoccur. The value is equal to the number of recurrences that are specified by the union of the Recurrence Dates, Recurrence Rule, Exception Dates, and Exception Rule property values. The following is an example of this property:

```
RNUM:3
```

In the event that this value does not match the computed number of recurrences, it will be ignored and the computer number of recurrences will be used.

This property is optional for MIME entities conforming to this content type. The default data type for this property is INTEGER.

#### **3.1.6.19 Priority**

This property is identified by the property name `PRIORITY`. The property defines the priority for the MIME calendar component. The value is an alphanumeric. A value of zero (ASCII decimal 48) specifies an undefined priority. A value of one (ASCII decimal 49) is the highest priority. A value of two (ASCII decimal 50) is the second highest priority. Subsequent numbers specify a decreasing ordinal priority. The following is an example of this property:

```
PRIORITY:2
```

This property is optional for MIME entities conforming to this content type. The default data type for this property is `STRING`. The data type may alternatively be specified to be `INTEGER`.

#### **3.1.6.20 Procedure Reminder**

This property is identified by the property name `PALARM`. The property defines a procedure reminder for the MIME calendar component. A procedure reminder is a procedure, or application executable that will be run as an alarm for a calendar component.

Dawson

36

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

While this property has many useful purposes, implementers should be aware of the security implications of sending a MIME calendaring entity containing this property. The security implications are similar to those associated with active messages within electronic mail.

The value for the procedure reminder consists of the Run Time, or the date and time that the reminder is to be executed; Snooze Time, or the duration of time after the Run Time that the reminder is to be dormant prior to being repeated; Repeat Count, or the number of times that the reminder is to be repeated; and the Procedure Name, or the path to the procedure to be run when the reminder is executed. Parameters are passed to the procedure by concatenating to the Procedure Name value a Question-Mark (ASCII decimal 63) followed by a string representation of the parameters.

The following is an example of this property:

```
PALARM;VALUE=URL:19960415T235000-0500;PT5M;2;file:///myapps/  
shockme.exe?HARD
```

The Reminder properties are primarily provided as a means for allowing the capture of alarm information when accessing a calendar

system. It may not be an appropriate property to send in an event or todo request.

This property is optional for MIME entities conforming to this content type. The default data type for this property is PALARM. The data type may alternatively be specified to be CID, MID, or URL.

#### **3.1.6.21 Related To**

This property is identified by the property name RELATED-TO. The property is used to represent relationships or references between this MIME calendar component and another. The property value consists of the persistent, globally unique identifier of another MIME calendar component. This value would be represented in a MIME calendar component by the UID property.

A linked relationship can be specified by a series of components that each, in turn, refer to their parent component. A group relationship can be specified by a number of components that all refer to one common parent component.

Changes to a calendar component referenced by this property may impact the related calendar component. For example, if a group event changes its start or end date or time, then the related, dependent events will need to have their start and end dates changed in a corresponding way. This property is intended only to provide information on the relationship of calendar components. It is up to the target calendar system to maintain this relationship.

The following is an example of this property:

Dawson	37	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

RELATED-TO:<jsmith.part7.19960817T083000.xyzMail@host3.com>

RELATED-TO:19960401-080045-4000F192713-0052

This property is optional for MIME entities conforming to this content type. The default data type for this property is STRING. The data type may alternatively be specified to be CID, MID, or URL.

#### **3.1.6.22 Recurrence Date/Times**

This property is identified by the property name RDATE. This property defines the list of date/times for a recurring MIME calendar

component. The date and time values is expressed in the complete representation, basic format as specified in ISO 8601. The times can either be in local or UTC based time. The number of recurring date/times is specified by the Number Recurrences property. The following is an example of this property:

```
RDATE:19960402T010000Z;19960403T010000Z;19960404T010000Z
```

This property is optional for MIME entities conforming to this content type. The default data type for this property is D-T-LIST.

#### **3.1.6.23 Recurrence Rule**

This property is identified by the property name RRULE. This property defines a rule or repeating pattern for a recurring MIME calendar component, based on the Basic Recurrence Rule Grammar of [[XAPIA](#)]. The value for the property is a pattern specification for the recurrence. The following is an example of this property:

```
RRULE:W2 TU TH                      // Every other week, on Tuesday
                                      // and Thursday

RRULE:D1 #10                         // Daily for 10 occurrences

RRULE:YM1 6 7 #8                    // Yearly in June and July for 8
                                      // occurrences
```

This property is optional for MIME entities conforming to this content type. The default data type for this property is RRULE.

#### **3.1.6.24 Resources**

This property is identified by the property name RESOURCES. This property defines the equipment or resources needed in the MIME calendar component.

Some of the values that the property may have include the following:

Dawson	38	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

Some Possible

Property Values

CATERING

CHAIRS

COMPUTER PROJECTOR

EASEL

OVERHEAD PROJECTOR

SPEAKER PHONE

TABLE

TV

VCR

VIDEO PHONE

VEHICLE

The following is an example of this property:

```
RESOURCES:EASEL;PROJECTOR;VCR
```

This property is optional for MIME entities conforming to this content type. The default data type for this property is STRING-LIST. The data type may alternatively be specified to be STRING.

#### **3.1.6.25 Response Sequence Number**

This property is identified by the property name RESPONSE-SEQUENCE. This property defines the instance of the MIME calendar component in a revision sequence of responses. This property is needed to properly handle the receipt and processing of a sequence of MIME calendar components that have been delivered out of order. Such is the case for store-and-forward based transports. When a response to an original MIME calendaring entity is created its sequence number is zero (ASCII decimal 48). It is incremented each time it is revised. The following is an example of this property:

```
RESPONSE-SEQUENCE:1
```

Internet Draft

MIME C&amp;S Content Type

November 26, 1996

This property is optional for MIME entities conforming to this content type. The default data type for this property is INTEGER.

#### **3.1.6.26 Sequence Number**

This property is identified by the property name SEQUENCE. This property defines the instance of the MIME calendar component in a sequence of revisions. This property is needed to properly handle the receipt and processing of a sequence of MIME calendar components that have been delivered out of order. Such is the case for store-and-forward based transports. When a MIME calendaring entity is created its sequence number is zero (ASCII decimal 48). It is incremented each time it is revised by the OWNER and/or ORGANIZER. The following is an example of this property:

```
SEQUENCE:1
```

This property is optional for MIME entities conforming to this content type. The default data type for this property is INTEGER.

#### **3.1.6.27 Start Date/Time**

This property is identified by the property name DTSTART. This property defines the date and time that the calendar component will start. The date and time value is expressed in the complete representation, basic format as specified in ISO 8601. The time can either be in local or UTC based time. Alternatively, the value may be a duration of time, expressed in the ISO 8601 format as specified in [section 3.1.3.8](#). In this case, the start is relative to another MIME calendar component specified by the RELATED-TO property. Events may have a start date/time but no end date/time. In that case, the event does not take up any time. The following is an example of this property:

```
DTSTART:19960401T235959-0600
```

This property is optional for MIME entities conforming to this content type. The default data type for this property is DATE-TIME. The data type may alternatively be specified to be DURATION.

#### **3.1.6.28 Status**

This property is identified by the property name STATUS. This property defines the status associated with the MIME calendar



component. This property can also be used when the ATTENDEE property is either not supported or not needed. The following is an example of this property:

STATUS:TENTATIVE

The property can have the following values:

Dawson 40 Expires June rming to  
this

content type. The default data type for this property is STRING.

#### **3.1.6.30 Time Transparency**

This property is identified by the property name TRANSP. This property defines whether the event is transparent to free time searches. The value of this property is a number. A value of zero (ASCII decimal 48) guarantees that the entry will blocks time and will be factored into a free time search. A value of one (ASCII decimal 49) specifies that the entry will not block time and will not be factored into a free time search. Any values greater than `_1_` will provide implementation specific transparency semantics. Some implementations may treat values greater than one as non-blocking or transparent events. Other implementations may use the numeric value to provide a layering of levels of transparency. The default value is zero (ASCII decimal 48), the event is not transparent and will block free time searches. The following is an example of this property:

TRANSP:0

This property is optional for MIME entities conforming to this content type. The default data type for this property is INTEGER.

#### **3.1.6.31 Uniform Resource Locator**

This property is identified by the property name URL. This property defines a Uniform Resource Locator for an Internet location that can be used to obtain real-time information associated with the MIME calendar component. Valid values for this property are a string conforming to [IETF [RFC 1738](#)]. The following is an example of this property:

URL:http://abc.com/pub/calendars/jsmith/mytime.or3

This property is optional for MIME entities conforming to this content type. The default data type for this property is URL.

#### **3.1.6.32 Unique Identifier**

This property is identified by the property name UID. This property defines a persistent, globally unique identifier associated with the MIME calendar component. Some examples of forms of unique identifiers

Dawson

42

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

would include ISO 9070 formal public identifiers (FPI), X.500 distinguished names, machine-generated `_random_` numbers with a statistically high likelihood of being globally unique and Uniform Resource Locators (URL). If an URL is specified, it is suggested that the URL reference a service which can provide an updated version of the MIME calendar component. The following is an example of this property:

UID:19960401-080045-4000F192713-0052

This property is an important method for group scheduling applications to match calendar entities with later modification or deletion requests. Calendaring and scheduling applications that do not generate this property in MIME calendar components may be limiting their interoperability with other group scheduling applications.

This property is optional for MIME entities conforming to this content type. The default data type for this property is STRING. The data type may alternatively be specified to be CID, MID, or URL.

#### **3.1.6.33 Non-standard Properties**

The MIME Calendaring and Scheduling Content Type provides a `_standard mechanism for doing non-standard things_`. This extension support is provided for implementers to `_push the envelope_` on the existing version of the specification. Extension properties are specified by property and/or property parameter names that have the initial sub-string of X- (the two character sequence: Capital X character followed by the Dash character). It is recommended that vendors concatenate onto this sentinel an added short sub-string to identify the vendor. This will facilitate readability of the extensions and minimize possible collision of names between different vendors. User agents that support this content type are expected to be able to parse the extension properties and property parameters but may ignore them. The following might be the ABC vendor's extension for an audio-clip form of subject property:

X-ABC-MMSUBJ;TYPE=WAVE; VALUE=URL: <http://load.noise.org/mysubj.wav>

At present, there is no registration authority for names of extension properties and property parameters. The default data type for this property is STRING.

### 3.2 Formal Definition

The following modified Backus-Naur Notation (BNF) is provided to assist developers in building parsers for the properties of this MIME content type..

This syntax is written according to the form described in [RFC 822](#), but it references just this small subset of [RFC 822](#) literals:

CR = <ASCII CR, carriage return> ; ( 15, 13.)

Dawson 43 Expires June 1997

Internet Draft MIME C&S Content Type November 26, 1996

LF = <ASCII LF, linefeed> ; ( 12, 10.)

CRLF = CR LF

SPACE = <ASCII SP, space> ; ( 40, 32.)

HTAB = <ASCII HT, horizontal-tab> ; ( 11, 9.)

All literal property names are valid as upper, lower, or mixed case.

ws = 1\*(SPACE / HTAB)

; \_whitespace,\_ one or more spaces or tabs

wsls = 1\*(SPACE / HTAB / CRLF)

; whitespace with line separators

value = 7bit / 8bit / quoted-printable / base64

; The value must be in the encoding type specified for the  
; property value.

7bit = <7bit us-ascii printable chars, excluding CR LF>

8bit = <MIME [RFC 1521](#) 8-bit text>

quoted-printable = <MIME [RFC 1521](#) quoted-printable text>

base64 = <MIME [RFC 1521](#) base64 text>

; the end of the text is marked with two CRLF sequences

; this results in one blank line before the start of the next

; property

word = <any printable 7bit us-ascii except []=:., >

vcal\_file = [ws] vcal [ws]

vcal = \_BEGIN\_ [ws] \_:\_ [ws] \_VCALENDAR\_ [ws]  
1\*CRLF

calprop calentities [ws] \*CRLF

\_END\_ [ws] \_:\_ [ws] \_VCALENDAR\_ [ws] 1\*CRLF

calentities = calentities \*CRLF calentity

/ calentity

calentity = evententity

Dawson

44

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

/ todoentity

evententity = \_BEGIN\_ [ws] \_:\_ [ws] \_VEVENT\_ [ws] 1\*CRLF

entprops [ws] \*CRLF

\_END\_ [ws] \_:\_ [ws] \_VEVENT\_ [ws] 1\*CRLF

todoentity = \_  
BEGIN [ws] \_:\_ [ws] \_VTOD0\_ [ws] 1\*CRLF

entprops [ws] \*CRLF

\_END\_ [ws] \_:\_ [ws] \_VTOD0\_ [ws] 1\*CRLF

calprops = calprops \*CRLF calprop

/ calprop

```

calprop      = _PROFILE_

                [params] _:_ value CRLF

            / _DAYLIGHT_

                [params] _:_ value CRLF

            / _GEO_

                [params] _:_ value CRLF

            / _PRODID_

                [params] _:_ value CRLF

            / _TZ_

                [params] _:_ value CRLF

            / _VERSION_ _:_ _1.0_ CRLF

```

; The VERSION calendar property MUST appear in the MIME Calendar  
; Object.

```

entprops     = entprops *CRLF entprop

            / entprop

entprop       = [ws] simprop

                [params] _:_ value CRLF

            / [ws] _AALARM_

                [params] _:_ aalarmparts CRLF

```

Dawson

45

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

```

            / [ws] _CATEGORIES_

                [params] _:_ 1*catvals CRLF

            / [ws] _CLASS_

                [params] _:_ classvals CRLF

```

```

/ [ws] _DALARM_

[params] _:_ dalarmparts CRLF

/ [ws] _EXDATE_

[params] _:_ xdatevals CRLF

/ [ws] _MALARM_

[params] _:_ malarmparts CRLF

/ [ws] _PALARM_

[params] _:_ palarmparts CRLF

/ [ws] _RDATE_

[params] _:_ rdatevals CRLF

/ [ws] _RESOURCES_

[params] _:_ 1*resvals CRLF

/ [ws] _STATUS_

[params] _:_ statvals CRLF

simprop    = _ATTACH_ / _ATTENDEE_ / _DCREATED_ / _COMPLETED_

/ _DESCRIPTION_ / _DTSTART_ / _DUE_ / _DTEND_ / _EXRULE_

/ _LAST-MODIFIED_ / _LOCATION_ / _RNUM_ / _PRIORITY_

/ _RELATED-TO_ / _RESPONSE-SEQUENCE_ / _RRULE_

/ _SEQUENCE_ / _SUMMARY_ / _TRANSP_ / _URL_ / _UID_

/ _X-_ word

aalarmparts      = 0*3(strnosemi _;_) strnosemi

; runTime, snoozeTime, repeatCount, audioContent

catvals    = _APPOINTMENT_ / _
              BUSINESS _EDUCATION_ / _HOLIDAY_

```

```

    / _MEETING_ / _MISCELLANEOUS_ / _NOT-IN-OFFICE_

    / _NON-WORKING-HOURS_ / _PERSONAL_ / _PHONE CALL_

    / _SICK DAY_ / _SPECIAL OCCASION_ / _TRAVEL_

    / _VACATION_ / _X-_ word / value

classvals = _PUBLIC_ / _PRIVATE_ / _CONFIDENTIAL_ / _X-_ word

    / value

dalarmparts      = 0*3(strnosemi _;_) strnosemi

    ; runTime, snoozeTime, repeatCount, displayString

malarmparts      = 0*5(strnosemi _;_) strnosemi

    ; runTime, snoozeTime, repeatCount, addressString,
    ; subjectstring, noteString

palarmparts      = 0*3(strnosemi _;_) strnosemi

    ; runTime, snoozeTime, repeatCount, procedureName

rdatevals = 1*value

    ; One or more date/time values

resvals = _CATERING_ / _CHAIRS_ / _EASEL_ / _PROJECTOR_ / _VCR_

    / _VEHICLE_ / _X-_ word / value

statvals = _ACCEPTED_ / _NEEDS ACTION_ / _SENT_ / _TENTATIVE_

    / _CONFIRMED_ _
    / _DECLINED_ / _COMPLETED_ / _DELEGATED_

    / _X-_ word / value

params = _;_ [ws] paramlist

paramlist = paramlist [ws] _;_ [ws] param

    / param

param = _TYPE_ [ws] _=_ [ws] ptypeval

    / [_VALUE_ [ws] _=_ [ws]] pvalueval

```

/ [\_ENCODING\_ [ws] \_=\_ [ws]] pencodingval

/ \_CHARSET\_ [ws] \_=\_ [ws] charsetval

/ \_DATATYPE\_ [ws] \_=\_ [ws] dtypeval

Dawson

47

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

/ \_LANGUAGE\_ [ws] \_=\_ [ws] langval

/ \_MEMBER\_ [ws] \_=\_ [ws] <[RFC 822](#) address specification>

/ \_ROLE\_ [ws] \_=\_ [ws] roleval

/ \_STATUS\_ [ws] \_=\_ [ws] statval

/ \_X-\_ word [ws] \_=\_ [ws] word

/ knowntype

pvalueval = knowntype / attendtype / \_X-\_ word

knowntype = \_BASIC\_ / \_WAVE\_ / \_X-\_ word / value

attendtype = \_INDIVIDUAL\_ / \_GROUP\_ / \_RESOURCE\_ / \_UNKNOWN\_

pvalueval = \_INLINE\_ / \_URL\_ / \_CONTENT-ID\_ / \_CID\_ /

/ \_MESSAGE-ID\_ / \_MID\_ / \_X-\_ word

pencodingval = \_7BIT\_ / \_8BIT\_ / \_QUOTED-PRINTABLE\_ / \_BASE64\_

/ \_X-\_ word

charsetval = <a character set string as defined in [Section 7.1 of RFC 1521](#)>

dtypeval = \_AALARM\_ / \_BOOLEAN\_ / \_CID\_ / \_DALARM\_ / \_DATE-TIME\_

/ \_DST-RULE /

\_ \_D-T-LIST\_ / \_DURATION\_ / \_FLOAT\_

/ \_FLOAT-LIST\_ / INTEGER

\_ \_ / \_INTEGER-LIST\_ / \_MALARM\_

/ \_MID\_ \_

/ \_PALARM\_ / \_RFC822-ADDRESS\_ / \_RRULE\_



```

        / _STRING_ / _STRING-LIST_ / _TIME-OFFSET_ / _URL_

        / _X-_ word

langval    = <a language string as defined in RFC 1766>

roleval    = _ATTENDEE_ / _ORGANIZER_ / _OWNER_ / _X-_ word

statusval  = _
              ACCEPTED / _NEEDS ACTION_ / _SENT_ / _TENTATIVE_

              / _CONFIRMED_ / _DECLINED_ / _COMPLETED_ / _DELEGATED_

              / _X-_ word

strnosemi  = *(*nonsemi (_\;_ / _\ CRLF)) *nonsemi

            ; To include a semicolon in this string, it must be escaped

```

Dawson 48 Expires June 1997

Internet Draft MIME C&S Content Type November 26, 1996

; with a \_\ character.

nonsemi = <any non-control ASCII except \_\;\_>

### **[3.3 Basic Recurrence Rule Grammar](#)**

The specification of recurring events can be simplified by the use of a grammar or rule notation. This specification makes use of the Base Recurrence Rule Grammar from the [[XAPIA](#)].

A recurrence rule is a string or clear-text encoding of a recurrence specification. A recurrence rule is composed of several components. A rule begins with a frequency which describes the type of repeating event (e.g., daily, weekly, etc.). This is followed by an interval which indicates how often the frequency repeats (i.e., daily, every third day, etc.). This can be followed by optional frequency modifier information and either an end date or a duration.

Below is the form of a typical rule. This example causes events to be generated every other week on Tuesday and Thursday, for 8 occurrences:

W2 TU TH #4

Where, W is the Frequency, 2 is the Interval, TU and TH are the

optional Frequency Modifiers, and #4 is the Duration.

The basic recurrence rule grammar supports six types of repetition. The six types follow the same form with only the frequency name and optional modifier information changing from one type of frequency to the next.

### **3.3.1 Daily Rule**

The daily rule is used for specifying repeating events based on an interval of a day or more. These can range from every day to every 200th day and beyond. The daily rule begins with the letter D followed by an interval (representing days) and an optional duration or end date.

Some examples follow:

Daily for 10 occurrences:

D1 #10

Daily until 12/24/94:

D1 19941224T000000Z

Every other day - forever:

D2 #0

Every 10 days, 5 occurrences:

D10 #5

Dawson	49	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

### **3.3.2 Weekly Rule**

The weekly rule is used for specifying repeating events based on an interval of a week or more. The basic weekly rule has the same form as the daily rule except that the rule begins with a W and can contain an optional list of weekdays the events are generated on. For weekly rules, the interval represents weeks. Some examples follow:

Weekly for 10 occurrences:

W1 #10

Weekly until 12/24/94:

W1 19941224T000000Z

Every other week - forever:

W2 #0

Weekly on Tuesday and

Thursday for 5 weeks:

W1 TU TH #5

Every other week on Monday Wednesday and Friday until 12/24/94:

W2 MO WE FR 19941224T000000Z

### **3.3.3 Monthly Rule**

The monthly rule is used for specifying repeating events base on an interval of a month or more. There are two types of monthly recurrence rules. One for by-position and one for by-day. The by-position rule allows weekdays in the month to be specified in relation to their occurrence in the month. An example would be to specify the third Sunday of the month or the last Friday of the month. An occurrence specifier may be used in monthly by-position rules. The occurrence specifiers control which occurrence of a weekday in a month an event occurs on:

1+, 2+, ... 5+ for the first occurrence, second, ...fifth occurrence of the month.

1-, 2-, ... 5- for the last occurrence, second to last occurrence, etc.

A 2+ FR SA would indicate the second occurrence of Friday and Saturday in the month. A 1- MO would indicate the first occurrence of Monday working from the end of the month backwards (i.e., the last occurrence). A 2- MO would be the second to the last Monday of the month.

A by-day rule allows actual day numbers to be specified such as the 12th day or 29th day.

The by-position rule begins with a MP and the by-day rule begins with a MD. The interval in monthly rules represents months. Some examples follow:

Dawson

50

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

Monthly on the 1st Friday for ten occurrences:

MP1 1+ FR #10

Monthly on the 1st Friday until 12/24/94:

MP1 1+ FR 19941224T000000Z

Every other month on the 1st and last  
Sunday of the month for 10 occurrences:

MP2 1+ SU 1- SU #10

Every six months on the 2nd Monday  
thru Friday for 10 occurrences:

MP6 2+ MO TU WE TH FR #10

Monthly on the second last Monday of the month for 6 months:

MP1 2- MO #6

Monthly on the third to the last day of the month, forever:

MD1 3- #0

Monthly on the 2nd and 15th of the month for 10 occurrences:

MD1 2 15 #10

In the next example LD refers to `_LastDay_` in a monthly recurrence  
rule. Monthly on the 1st and last day of the month for 10  
occurrences:

MD1 1 LD #10 or MD1 1 1- #10

Every 18 months on the 10th thru 15th of the month for 10  
occurrences:

MD18 10 11 12 13 14 15 #10

Monthly on the second to the last day for 5 months. So, if the  
start date is August 1996, the event would repeat on 8/30/96,  
9/29/96, 10/30/96, 11/29/96, and 12/30/96:

MD1 2- #5

#### **3.3.4 Yearly Rule**

The yearly rule is used for specifying repeating events based on an interval of a year or more. There are two types of yearly recurrence rules. One for by-month and one for by-day. The by-month rule allows specific months out of the year to be specified. The by-day allows specific days to be specified. In the by-month rule, the day in the month the rule is to occur on is determined from the initial appointment.

The by-month rule begins with a YM and the by-day rule begins with a YD. The interval in yearly rules represents years. Some examples follow:

Internet Draft

MIME C&amp;S Content Type

November 26, 1996

Yearly in June and July for 10 occurrences:

YM1 6 7 #10

Every other year on January, Feb, and March for 10 occurrences:

YM2 1 2 3 #10

Every 3rd year on the 1st, 100th and 200th day for 10 occurrences:

YD3 1 100 200 #10

### [3.3.5](#) Grammar

{ }            0 or more

[ ]            0 or 1

start        ::= <daily> [<enddate>] |  
              <weekly> [<enddate>] |  
              <monthlybypos> [<enddate>] |  
              <monthlybyday> [<enddate>] |  
              <yearlybymonth> [<enddate>] |  
              <yearlybyday> [<enddate>]

digit ::= <0|1|2|3|4|5|6|7|8|9>

digits ::= <digit> {<digits>}

enddate      ::= ISO 8601\_date\_time value(e.g., 19940712T101530Z)

interval     ::= <digits>

duration     ::= #<digits>

lastday      ::= LD

plus           ::= +

minus        ::= -

daynumber    ::= <1-31> [<plus>|<minus>]| <lastday>

daynumberlist ::= daynumber {<daynumberlist>}  
 month ::= <1-12>  
 monthlist ::= <month> {<monthlist>}  
 day ::= <1-366>  
 daylist ::= <day> {<daylist>}

Dawson 52 Expires June 1997

Internet Draft MIME C&S Content Type November 26, 1996

occurrence ::= <1-5><plus> | <1-5><minus>  
 occurrencelist ::= <occurrence> {<occurrencelist>}  
 weekday ::= <SU|MO|TU|WE|TH|FR|SA>  
 weekdaylist ::= <weekday> {<weekdaylist>}  
 daily ::= D<interval> [<duration>]  
 weekly ::= W<interval> [<weekdaylist>] [<duration>]  
 monthlybypos ::= MP<interval> [<occurrencelist>  
 <weekdaylist>] [<duration>]  
 monthlybyday ::= MD<interval> [<daynumberlist>] [<duration>]  
 yearlybymonth ::= YM<interval> [<monthlist>] [<duration>]  
 yearlybyday ::= YD<interval> [<daylist>] [<duration>]

### 3.3.6 Grammar Glossary

enddate Controls when a repeating event terminates. The enddate is the last time an event can occur.  
 Interval Defines the frequency in which a rule repeats.  
 duration Controls the number of events a rule generates.  
 Lastday Can be used as a replacement to daynumber to indicate the last day of the month.  
 daynumber A number representing a day of the month.



#2.

5.

A duration of #0 means repeat this event forever.

6.

Using the occurrence specifier 5+ (e.g. 5th Friday) or 5- (e.g. 5th from last Friday) in a month that does not contain 5 weeks does not generate an event and thus does not count against the duration. The same applies to providing a day of the month that does not occur in the month. For example the 30th or 31st .

7.

The start time and date of an entry must be synchronized with one of the repeating events defined by its recurrence rule. The following is not allowed:

Initial Appt Date: 7/1/94 (Friday)  
Recurrence Rule: W1 MO TH #5

The following is acceptable:

Initial Appt Date: 7/1/94 (Friday)  
Recurrence Rule: W1 MO FR #5 or W1 #5

8.

If the optional <occurrencelist> and <weekdaylist> information is missing from a <monthlybypos> occurrence the information is derived from the entry attributes. The <occurrence> used in the recurring event is a count from the beginning of the month to the entry date and the <weekday> used is the day of the week the entry is scheduled to occur on.

9.

If the <monthlybypos> occurrence or <monthlybyday> occurrence does not list a week day (e.g., SU or day 10) in the rule, the week day is established from the entry attribute information. As an example the rule MP1 #3 used in an entry with a start date of 7/20/94

Dawson

54

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

(which is the third Wednesday of the month) repeats on 8/17/94  
which is the third Wednesday of the month.

#### [4. Registration of Content Type Profiles](#)



This section defines procedures by which usage profiles for the MIME Calendaring and Scheduling Content Type are registered with the IANA and made available to the Internet community. Note that non-IANA profiles may be used by bilateral agreement, provided the associated profile names follow the "X-" convention defined above in [Section 3.1.6.33](#).

The procedures defined here are designed to allow public comment and review of new profiles, while posing only a small impediment to the definition of new profiles.

Registration of a new profile is accomplished by the following steps.

#### **[4.1](#) Define the profile**

A profile is defined by completing the following template.

To: ietf-calendar@imc.org

Subject: Registration of text/calendar MIME profile XXX

Profile name:

Profile purpose:

Profile type/subtype:

Profile special notes (optional):

Intended usage: (one of COMMON, LIMITED USE or OBSOLETE)

The explanation of what goes in each field in the template follows.

Profile name: The name of the profile as it will be generally referred to in public. This name is required in the profile.

Profile purpose: The purpose of the profile (e.g., to schedule document management updates, etc.). Give a short but clear description. This description is required in the profile.

Profile type/subtype: The type/subtypes of the profile as they will appear in the text/calendar MIME Content-Type Profile parameter. This list of type/subtype values is required in the profile.

Profile properties: The list of MIME Calendaring and Scheduling Content Type properties associated with the profile. This list of properties that are included in the profile. If a property is required by the profile, it should be noted in this section. Other types not mentioned in the profile definition may also be present. Note

that any new properties referenced by the profile must be defined separately as described in [Section 4.6](#).

Profile special notes: Any special notes about the profile, how it is to be used, etc. This section is not required in the profile.

#### **[4.2](#) Post the profile definition**

The profile description must be posted to the IETF Calendaring and Scheduling Working Group discussion list, [ietf-calendar@imc.org](mailto:ietf-calendar@imc.org).

#### **[4.3](#) Allow a comment period**

Discussion on the new profile must be allowed to take place on the list for a minimum of two weeks. Consensus must be reached on the profile before submitting the profile for approval.

#### **[4.4](#) Submit the profile for approval**

Once the two-week comment period has elapsed, and the proposer is convinced consensus has been reached on the profile, the registration application should be submitted to the Profile Reviewer for approval.

The Profile Reviewer is appointed to the Application Area Directors and may either accept or reject the profile registration. An accepted registration should be passed on by the Profile Reviewer to the IANA for inclusion in the official IANA profile registry. The registration may be rejected for any of the following reasons. 1) Insufficient comment period; 2) Consensus not reached; 3) Technical deficiencies raised on the list or elsewhere have not been addressed. The Profile Reviewer's decision to reject a profile may be appealed by the proposer to the IESG, or the objections raised can be addressed by the proposer and the profile resubmitted.

#### **[4.5](#) Profile Change Control**

Existing profiles may be changed using the same process by which they were registered.

1.  
    Define the change
2.  
    Post the change
- 3.

Allow a comment period

4.

Submit the profile for approval

Note that the original author or any other interested party may propose a change to an existing profile, but that such changes should only be proposed when there are serious omissions or errors in the published specification. The Profile Reviewer may object to a change if it is not backwards compatible, but is not required to do so.

Dawson

56

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

Profile definitions can never be deleted from the IANA registry, but profiles which are no longer believed to be useful can be declared OBSOLETE by a change to their "intended use" field.

#### **4.6 Registration of New Content Type Properties**

This section defines procedures by which new properties for the MIME Calendaring and Scheduling Content Type are registered with the IANA. Note that non-IANA properties may be used by bilateral agreement, provided the associated properties names follow the "X-" convention defined above in [Section 3.1.6.33](#).

The procedures defined here are designed to allow public comment and review of new properties, while posing only a small impediment to the definition of new properties.

Registration of a new property is accomplished by the following steps.

##### **4.6.1 Define the property**

A property is defined by completing the following template.

To: ietf-calendar@imc.org

Subject: Registration of text/calendar MIME property XXX

Property name:

Property purpose:

Property data type(s):

Property encoding:

Property special notes (optional):

Intended usage: (one of COMMON, LIMITED USE or OBSOLETE)

The meaning of each field in the template is as follows.

Property name: The name of the property, as it will appear in the body of an text/calendar MIME Content-Type "property: value" line to the left of the colon ":".

Property purpose: The purpose of the property (e.g., to indicate a delegate for the event or todo, etc.). Give a short but clear description.

Property data type(s): Any of the valid data types for the property value needs to be specified. The default data type also needs to be specified. If a new data type is specified, it needs to be declared in this section.

Dawson

57

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

Property encoding: The encodings permitted for the property value. This description must be precise and must not violate the general encoding rules defined in [section 3.1.3.3](#) of this document.

Property special notes: Any special notes about the property, how it is to be used, etc.

#### **[4.6.2](#) Post the Property definition**

The property description must be posted to the new property discussion list, [ietf-calendar@imc.org](mailto:ietf-calendar@imc.org).

#### **[4.6.3](#) Allow a comment period**

Discussion on the new property must be allowed to take place on the list for a minimum of two weeks. Consensus must be reached on the property before proceeding to step 4.

#### **[4.6.4](#) Submit the property for approval**

Once the two-week comment period has elapsed, and the proposer is convinced consensus has been reached on the property, the

registration application should be submitted to the Profile Reviewer for approval. The Profile Reviewer is appointed to the Application Area Directors and may either accept or reject the property registration. An accepted registration should be passed on by the Profile Reviewer to the IANA for inclusion in the official IANA profile registry. The registration may be rejected for any of the following reasons. 1) Insufficient comment period; 2) Consensus not reached; 3) Technical deficiencies raised on the list or elsewhere have not been addressed. The Profile Reviewer's decision to

reject a property may be appealed by the proposer to the IESG, or the objections raised can be addressed by the proposer and the property resubmitted.

#### **4.7 Content Type Property Change Control**

Existing properties may be changed using the same process by which they were registered.

1.  
Define the change
2.  
Post the change
3.  
Allow a comment period
4.  
Submit the property for approval

Note that the original author or any other interested party may propose a change to an existing property, but that such changes should only be proposed when there are serious omissions or errors in the published specification. The Profile Reviewer may object to a

Dawson	58	Expires June 1997
--------	----	-------------------

Internet Draft	MIME C&S Content Type	November 26, 1996
----------------	-----------------------	-------------------

change if it is not backwards compatible, but is not required to do so.

Property definitions can never be deleted from the IANA registry, but properties which are no longer believed to be useful can be declared OBSOLETE by a change to their "intended use" field.

## 5. File extension

The file extension of `_vcs_` is to be used to designate a file containing calendaring and scheduling information consistent with this MIME content type.

## 6. Macintosh File Type Code

The file type code of `_vcal_` is to be used in Apple MacIntosh operating system environments to designate a file containing calendaring and scheduling information consistent with this MIME media type.

## 7. Bibliography

The following document are referred to within this document.

[ISO 630] ISO 639, Code for The Representation of names of languages, International Organization for Standardization, April, 1988.

[ISO 3166] ISO 3166, Codes for The Representation of names of countries, International Organization for Standardization, December, 1993.

[ISO 8601] ISO 8601, Data elements and interchange formats\_Information interchange\_Representation of dates and times, International Organization for Standardization, June, 1988.

[ISO 8601 CORR] ISO 8601, Technical Corrigendum 1, Data elements and interchange formats\_Information interchange\_Representation of dates and times, International Organization for Standardization, May, 1991.

[ISO 8859-1] ISO 8859-1, Information Processing\_8-Bit single-byte coded graphic character sets\_Part 1: Latin Alphabet No. 1, International Organization for Standardization, February, 1987.

[ISO 9070] ISO/IEC 9070, Information Technology\_SGML Support Facilities\_Registration Procedures for Public Text Owner Identifiers, Second Edition, International Organization for Standardization, April, 1991.

[MIME-REG] Freed, N., Postel, J., "Multipurpose Internet Mail Extensions (MIME) - Part Four: Registration Procedures", Internet-Draft [draft-ietf-822ext-mime-reg-02.txt](#), December 1995.

[RFC 1521] N. Borenstein and N. Freed, "MIME (Multipurpose Internet Mail Extensions) Part One: Mechanisms for Internet Draft UTF-825 July

1996 Specifying and Describing the Format of Internet Message Bodies", [RFC 1521](#), Bellcore, Innosoft, September 1993.

[RFC 1738] T. Berners-Lee and L. Masinter , \_Universal Resource Locator\_, [RFC 1738](#), Xerox Corporation, University of Minnesota, December 1994.

[RFC 1766] H. Alvestrand, \_Tags for the Identification of Languages\_, UNINETT, [RFC 1766](#), March 1995.

[UNICODE] The Unicode Consortium, "The Unicode Standard --Worldwide Character Encoding -- Version 1.0", Addison-Wesley, Volume 1, 1991, Volume 2, 1992. UTF-8 is described in Unicode Technical Report #4.

[US-ASCII] Coded Character Set--7-bit American Standard Code for Information Interchange, ANSI X3.4-1986.

[VCAL] MIME calendaring entity - Calendaring and Scheduling Exchange Format, Versit Consortium, September 18, 1996.

[XAPIA] XAPIA CSA, Calendaring and Scheduling Application Programming Interface (CSA) Version 1.0, X.400 API Association, November 15, 1994.

## **8. Acknowledgments**

A hearty thanks to the IETF Calendaring and Scheduling Working Group and also the following individuals who have participated in the drafting, review and discussion of this memo:

Roland Alden, Harald T. Alvestrand, Denis Bigorgne, John Binici, Bill Bliss, Andre Courtemanche, Dave Crocker, Alec Dun, Ross Finlayson, Randell Flink, Ned Freed, Patrik Falstrom, Anik Ganguly, Chuck Grandgent, Mark Handley, Steve Hanna, Paul B. Hill, Mark Horton, Bruce Kahn, C. Harald Koch, Theodore Lorek, Keith Moore, Cecil Rhodes, Chris Newman, Ralph Patterson, Pete Resnick, Keith Rhodes, Robert Ripberger, Andras Salamar, Vinod Seraphin, Ken Shan, Andrew Shuman, William P. Spencer, Mark Towfiq, Robert Visnov, James L. Weiner, Mike Weston, William Wyatt.

## **9. Author's Address**

The following address information is provided in a MIME-VCARD, Electronic Business Card, format.

```
BEGIN:VCARD
FN:Frank Dawson
ORG:IBM Corporation
```

ADR;WORK;POSTAL;PARCEL:;APNA/CC-303/Bldg. 002;3039 Cornwallis Rd;  
Research Triangle Park;NC;27709;USA  
TEL;WORK;MSG:+1-919-254-5861  
TEL;WORK;FAX:+1-919-543-6822  
EMAIL;INTERNET,PREF:fdawson@raleigh.ibm.com  
EMAIL;INTERNET:fdawson@earthlink.net

Dawson

60

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

URL:http://home.earthlink.net/~fdawson  
END:VCARD

## **10. Examples**

The following examples are provided as an informational source of illustrative MIME entities containing data consistent with this MIME content type.

The following is an example of a MIME message with a single entity consisting of a text/calendar content type.

TO:jsmith@host1.com  
FROM:jdoe@host1.com  
MIME-VERSION:1.0  
MESSAGE-ID:<19960704 08:30:00 EDT xyz@host1.com>  
CONTENT-TYPE:text/calendar;PROFILE=request/event  
  
BEGIN:VCALENDAR  
PROFILE:event/request  
VERSION:1.0  
BEGIN:VEVENT  
DTSTART:19960918T143000Z  
DTEND:19960920T220000Z  
CATEGORIES:CONFERENCE;PROJECT  
SUMMARY:Networld+Interop Conference  
DESCRIPTION;ENCODING=QUOTED-PRINTABLE:Networld+Interop Conference=  
and Exhibit=0D=0A=  
Atlanta World Congress Center=0D=0A=  
Atlanta, Georgia  
END:VEVENT  
END:VCALENDAR

The following example message segment issues an event/request that does not require any reply. The message is sent as a singular \_text/calendar\_ content type, body part.



From: jsmith@host1.com  
To: ietf-calendar@imc.org  
Subject: First IETF-Calendar Working Group Meeting  
MIME-Version: 1.0  
Message-ID: <id1@host1.com>  
Content-Type: text/calendar;Profile=event/request

BEGIN:VCALENDAR  
PROFILE:event/request  
DAYLIGHT:TRUE;-06:00;19960407T025959;19961027T010000;EST;EDT  
PRODID:-//RDU Software//NONSGML HandCal//EN  
TZ:-05:00  
VERSION:1.0  
BEGIN:VEVENT  
ATTENDEE;EXPECT=REQUEST:ietf-calendar@imc.org  
DESCRIPTION:First IETF-Calendar and Scheduling Working Group  
Meeting

Dawson

61

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

CATEGORIES:MEETING  
CLASS:PUBLIC  
DCREATED:19961022T083000  
SUMMARY:IETF Calendar and Scheduling Working Group Meeting  
DTSTART:19961210T210000Z  
DTEND:19961210T220000Z  
LOCATION:San Jose, CA - Fairmont Hotel  
UID:guid-1.host1.com  
END:VEVENT  
END:VCALENDAR

## **11. Extended Recurrence Grammar**

The material in this section is provided as an informational reference. It is copied, with permission of the XAPIA, from the [\[XAPIA\]](#). This section defines an extended recurrence rule grammar that may be useful to implementations wishing to extend the capability of the basic recurrence rule grammar defined by this specification. The material is equally applicable to extended support of the exception rules for repeating events.

### **11.1 Rule Introduction**

A recurrence rule is made up of one or more recurrence frequencies. The frequencies express the granularity of the repeating event. The smallest granularity is based on minutes, the largest is based on

years. Each frequency is immediately followed by an interval. The interval helps to define how often the frequency repeats (daily, every third day, etc.):

D2

Where, where D is the Frequency and 2 is the Interval.

M5 Repeat every five minutes

D1 Repeat daily

D2 Repeat every other day

D3 Repeat every third day

W1 Repeat weekly

W2 Repeat every other week

W3 Repeat every third week

The meaning of the interval depends on the frequency. As an example, the 5 in M5 is in minutes while the 3 in D3 is in days.

A rule can end with the duration symbol, #, followed by a number. This defines the number of times the repetition occurs (including the first time).

Dawson

62

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

D2 #5

Where, #5 is the Duration. In this example, the event occurs every other day and the duration indicates it occur 5 times.

There may be other information between the frequency and the duration that supplements the meaning of the rule:

D2 1200 1600 #5

In this example, the event occurs every other day at 1200 and 1600 for a total of 10 occurrences. The duration controls the number of times the rule occurs. In this case the rule defines two occurrences (1200 and 1600) so a total of 10 (2 x 5) occurrences are generated.

A rule can be made up of several recurrence rules:

MP6 1+ MO #5 D2 1200 1600 #5 M5 #3

This recurrence rule is made up of three recurrence rules. Every time the first rule executes (every 6 months) it executes the next rule to the right. If there is not a rule to the right an event is generated. In this case there is a daily frequency rule to the right of the monthly frequency rule. It executes twice a day; starting on the first Monday of the month. The daily frequency rule executes a total of ten times. Since there is a rule following the daily rule it executes it each time the daily frequency rule executes. The minute frequency rule is executed three times, every time the daily frequency rule executes, for a total of six times a day. The above rules generate a total of 150 ( $5 * (2 * 5) * 3$ ) occurrences. An occurrence specifier may be used in some rules. The occurrence specifier controls which occurrence of a weekday in a month an event occurs on:

1+, 2+, ... 5+ for the first occurrence, second, ...fifth occurrence of the month.

1-, 2-...5- for the last occurrence, second to last occurrence, etc.

MP2 1+ 2- FR #3

Where, 1+ and 2- are Occurrence Specifiers.

This rule defines an event which happens every other month on the first Friday and second to the last Friday of the month. It generates a total of six occurrences. The end marker symbol \$ can be used to terminate a rule early:

W1 0100\$ 0200 0300 #4

The above rule generates occurrences weekly for 4 weeks at 0100, 0200 and 0300. On the last (fourth week) an event is generated at 0100 only.

Dawson

63

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

Recurrence rules are written from largest granularity to smallest.

## [11.2](#) Grammar

The following grammar defines the extended recurrence rule syntax.

{}            0 or more  
 []            0 or 1  
 start            ::= <minuteop> [<enddate>] |  
                  <daily> [<enddate>] |  
                  <weekly> [<enddate>] |  
                  <monthlybypos> [<enddate>] |  
                  <monthlybyday> [<enddate>] |  
                  <yearlybymonth> [<enddate>] |  
                  <yearlybyday> [<enddate>]  
 digit ::= <0|1|2|3|4|5|6|7|8|9>  
 digits ::= <digit> {<digits>}  
 endmarker ::= \$  
 enddate        ::= ISO 8601 (clause 5.4.1) string(e.g.  
                  19940712T101530Z) in UTC  
 interval       ::= <digits>  
 duration       ::= #<digits>  
 lastday        ::= LD  
 plus            ::= +  
 minus           ::= -  
 daynumber      ::= <1-31>[<plus>|<minus>][<endmarker>] | <lastday>  
 daynumberlist   ::= daynumber {<daynumber>}  
 month                ::= <1-12>[<endmarker>]  
 monthlist        ::= <month> {<monthlist>}  
 day                ::= <1-366>[<endmarker>]  
 daylist          ::= <day> {<daylist>}

```

occurrence ::= <1-5><plus>[<endmarker>] | <1-5><minus>[<endmarker>]

occurrencelist ::= <occurrence> {<occurrencelist>}

weekday ::= <SU|MO|TU|WE|TH|FR|SA>[<endmarker>]

weekdaylist ::= <weekday> {<weekdaylist>}

time ::= <hhmm>[<endmarker>]

timelist ::= <time> {<timelist>}

daytime ::= <weekday> {<timelist>} {<daytime>}

weekdaytime ::= <occurrencelist> <weekdaylist> {<timelist>}
               {<weekdaytime>}

minuteop ::= M<interval> [<duration>]

daily ::= D<interval> [<timelist>] [<duration>] [<minuteop>]

weekly ::= W<interval> <daytime> [<duration>] [<minuteop>]

monthlybypos ::= MP<interval> [<weekdaytime>]
               [<duration>][<weekly> | <daily> | <minuteop>]

monthlybyday ::= MD<interval> [<daynumberlist>] [<duration>]
               [<weekly> | <daily> | <minuteop>]

yearlybymonth ::= YM<interval> [<monthlist>] [<duration>]
               [<monthlybyday> | <monthlybypos> | <weekly>
               | <daily> | <minuteop>]

yearlybyday ::= YD<interval> [<daylist>] [<duration>]
               [<monthlybyday> | <monthlybypos> | <weekly>
               | <daily> | <minuteop>]

```

### [11.3](#) Glossary

enddate	Controls when a repeating event terminates. The enddate is the last time an event can occur.
enddate	Controls when a repeating event terminates.
interval	Defines the frequency in which a rule repeats.
duration	Controls the number of occurrences a rule generates.

lastday	Can be used as a replacement to daynumber to indicate the last day of the month.
daynumber	A number representing a day of the month.
month	A number representing a month of the year.

Dawson 65 Expires June 1997

Internet Draft MIME C&S Content Type November 26, 1996

day	A number representing a day of the year.
occurrence	Controls which week of the month a particular weekday event occurs.
weekday	A symbol representing a day of the week.
time	The time in hours and minutes using a 24 hour clock.
daytime	Controls which days (and hours) of the week a weekly event occurs.
weekdaytime	Used in monthly occurrences to specify which weeks and days an event occurs.
minuteop	Defines a rule that repeats on a particular minute interval.
daily	Defines a rule that repeats on a daily basis.
weekly	Defines a rule that repeats on a weekly basis.
monthlybypos	Defines a rule that repeats on a monthly basis on a relative day and week.
monthlybyday	Defines a rule that repeats on a monthly basis on an absolute day.
yearlybymonth	Defines a rule that repeats on specific months of the year.
yearlybyday	Defines a rule that repeats on specific days of the year.

#### **11.4 Policies**

1. The duration portion of a rule defines the total number of

occurrences the rule generates, including the first event. As an example, the rule MP1 #3 W1 #3 starting on 1/1/94 would generate occurrences on 1/1/94, 1/8, 1/15, 2/5/94, 2/12, 2/19, 3/5/94, 3/12, 3/19.

2.

The duration granularity is defined by the recurrence frequency immediately preceding the duration portion of the rule. For example, D1 #5 M15 #4 establishes a repeating event which happens for five days, four times per day.

3.

Information, not contained in the rule, necessary to determine the next event time and date is derived from the event start time.

4.

If no specific time is indicated in the recurrence rule it is taken from the event.

Dawson

66

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

5.

If an end date and a duration for the first rule in a nested rule are specified in the rule, then the recurring event ceases when the end date is reached or the number of occurrences indicated in the duration occur; whichever comes first.

6.

If the duration or and end date is not established in the rule (e.g. ``D2'') the event occurs twice. That is D2 is equivalent to D2 #2.

7.

If an end-mark is used in a second or later rule of a nested rule, then the end-mark is applied each time that rule is executed by the previous rule. YM1 1 6 #1 MD1 7\$ 14 generates occurrences on 1/7 1/14 2/7 6/7 6/14 7/7.

8.

If an end-mark is used on a day of the week which is followed by several times (TU\$ 1200 1300) or an end-mark is used on a week occurrence that is followed by several weekdays (1+\$ TU WE) the repeating event stops after the last time or week day in the list is executed.

9.

If a rule has an ambiguity with respect to whether it will repeat on a specific day (12th of the month) versus on a relative day (2nd Friday of the month), the specific day takes precedence. The only exception to this policy is policy 14.

10.

A duration of #0 means repeat this event forever.

11.

Nested rules can not have a duration of 0. These are not allowed:

```
YM1 6 #10 MP1 1+ SA #0
D5 0600 0800 #5 M5 #0
```

12.

Using the occurrence specifier 5+ (e.g. 5th Friday) or 5- (e.g. 5th from last Friday) in a month that does not contain 5 weeks does not generate an event and thus does not count against the duration. The same applies to providing a day of the month that does not occur in the month: 31st.

13.

The start time and date of an event must be in-sync with one of the event slots defined by its occurrence rule. The following are not allowed:

```
Initial Appt Time:    1300
Recurrence Rule:      D1 1400 #5
Initial Appt Date:     7/1/94 (Friday)
Recurrence Rule:      W1 M0 TH #5
```

The following are acceptable:

```
Initial Appt Time:    1300
Recurrence Rule:      D1 #5 or D1 1300 #5
Initial Appt Date:     7/1/94 (Friday)
Recurrence Rule:      W1 M0 FR #5 or W1 #5
```

Dawson

67

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

14.

If the optional <weekdaytime> information is missing from a <monthlybypos> frequency, the information is derived from the



initial event. The <occurrence> used in the recurring event is a count from the beginning of the month to the event date and the <weekday> used is the day of the week the initial event is scheduled to occur on. If the <monthlybypos> frequency does not list a week day (e.g. SU) in the rule, then the week day is established from the initial event information. As an example, the rule MP1 #3 used in an event with a start date of 7/20/94 (which is the third Wed of the month) will repeat on 8/17/94 which is the third Wed of the month.

15.

The next event of a higher order rule does not execute until all the occurrences of a sub-rule are generated. If the next event of a higher order rule comes earlier in time than the last event of a sub-rule then the missed occurrences are not generated. In other words, sub-rules can not interleave occurrences with other sub-rules. The following results in indeterminate results because the minute sub-rule which begins to execute at 0630 generates occurrences beyond 0700 which is when the daily sub-rule begins executing again:

```
D1 0630 0700 #4 M45 #5
```

Another incorrect rule:

```
MP1 1+ 1- #3 W2 TU TH #5
```

### **11.5 Examples**

Hourly for 12 hours (12:00, 1:00,...10:00, 11:00):

```
M60 #12
```

Every 5 minutes for 1 hour (1:00, 1:05, 1:10,...1:50, 1:55):

```
M5 #12
```

Daily, for 5 days:

```
D1 #5
```

Daily, for 5 days repeating at 10 minute intervals for 1 hour. e.g. 6/1 at 12:00, 12:10, 12:20, ... 12:50; 6/2 at 12:00, 12:10, ...

```
D1 #5 M10 #6
```

Every other day, two times:

```
D2
```

Every other day at 6AM, 12noon and 3PM for a duration of two occurrences (span of three days). e.g. 6/1/94 at 6, 12 and 3PM and

6/3/94 at 6, 12 and 3PM.

Dawson

68

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

D2 0600 1200 1500 #2

Every other day at 6AM, 12noon and 3PM for a duration of three occurrences (a span of 5 days) stopping at noon on the fifth day. e.g. 6/1/94 at 6, 12, and 3, 6/3/94 at 6, 12 and 3 and 6/5/94 at 6 and 12.

D2 0600 1200\$ 1500 #3

Weekly at 6 AM (repeat every 15 minutes for an hour) for five weeks. e.g. 6:00, 6:15, 6:30, 6:45 on 6/1, 6/8, 6/15, 6/22 and 6/29.

D7 0600 #5 M15 #4

Weekly at 6 AM (repeat every 15 minutes for an hour) for four weeks stopping at 6AM on the last event day. e.g. 6:00, 6:15, 6:30, 6:45 on 6/1, 6/8, 6/15 and 6:00 on 6/22.

D7 0600\$ #4 M15 #4

Weekly at 6 AM (repeat every 15 minutes for an hour) for 1 week stopping at 6:45AM. e.g. 6:00, 6:15, 6:30, 6:45 on 6/1.

D7 0600 #1 M15 #4 or

D7 #1 M15 #4 /\* start time defined in appt entry \*/ or

M15 #4 /\* start time defined in appt entry \*/

Weekly for four weeks:

W1 #4

Biweekly on Monday and Tuesday for 2 occurrences ending on a Monday:

W2 M0\$ TU #2

Weekly on Tuesday and Thursday at the time specified in the appt and repeated at time + 5 minutes:

W1 TU TH #3 M5 #2

Weekly on Tuesday at 1200 and 1230 and Thursday at 1130 and 1200 for

10 weeks:

W1 TU 1200 TH 1130 #10 M30 or

W1 TU 1200 1230 TH 1130 1200 #10

Weekly on Tuesday at 1200 and 1230 and Thursday at 1130 and 1200 for  
10 weeks stopping on the last TU at 1230:

W1 TU\$ 1200 TH 1130 #10 M30 or

Dawson

69

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

W1 TU\$ 1200 1230 TH 1130 1200 #10

Weekly on Tuesday at 1200 and 1230 and Thursday at 1130 and 1200 for  
10 weeks stopping on the last Tuesday at 1200:

W1 TU 1200\$ 1230 TH 1130 1200 #10

Monthly for 1 year:

MP1 #12

Every other month on the first and last Friday of the month for 5  
months:

MP2 1+ 1- FR #3

Monthly on the second to the last day of the month for 5 months:

MD1 2- #5

Monthly on the second to the last Monday of the month for 6 months:

MP1 2- MO #6

Monthly on the third to the last day of the month for forever:

MD1 3- #0

Monthly on the seventh to the last day of the month for 12 months:

MD1 7- #12

Every other month on the first and last Friday of the month for 5

months stopping on the first Friday in the fifth month:

MP2 1+\$ 1- FR #3

Every six months on the first Monday of the month (repeat for 5 days)  
for 24 months:

MP6 1+ MO #5 D1 #5

Every six months on the first Monday of the month (repeat every other  
day at 0600, 1200 and 1500 for 20 days) for 24 months:

MP6 1+ MO #5 D2 0600 1200 1500 #10

Every six months on the first Monday of the month (repeat every other  
day at 0600, 1200 and 1500 for 20 days (repeat every 5 minutes for 3  
times)) for 24 months:

MP6 1+ MO #5 D2 0600 1200 1500 #10 M5 #3

Dawson

70

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

Every six months on the first Monday of the month and the second to  
last Thursday of the month (repeat five minutes later) for 24 months:

MP6 1+ MO 2- TH #5 M5 #2

Every six months on the first SU and MO at Noon, the second TU and WE  
at 1:00PM and the third TH and FR at 2:00PM:

MP6 1+ SU MO 1200 2+ TU WE 1300 3+ TH FR 1400 #4

Every month on the 7th for 12 months:

MD1 7 #12

Every month on the 7th, 14th, 21st, 28th for 12 months

MD1 7 14 21 28 #12

Every month on the 10th and 20th for 24 months - daily for 5 days at  
0600, 1200 and 1600 - every 15 minutes for an hour:

MD1 10 20 #24 D1 0600 1200 1600 #5 M15 #4

Yearly on the 1st, 6th and 12 month on the first Monday and last Friday of the month:

YM1 1 6 12 #5 MP1 1+ M0 1- FR

Every other year on the 6th month (on the 12th day) for 5 years.

YM2 6 #3 MD1 12

Yearly on the 7th 14th 21st and 28th of the 1st 3rd and 8th month and on the 7th and 14th of the 2nd, 4th and 9th months ending on the 4th month, 14th day of the 5th year:

YM1 1 3\$ 8 #5 MD1 7 14\$ 21 28

Yearly on the 6th, 9th and 10th month on all weekends of the month:

YM1 6 9 10 #10 MP1 1+ 2+ 3+ 4+ 1- SA SU #1

Yearly on the 6th month for 10 years, weekly on Tuesday and Thursday at 1100 and 1300 for 4 weeks:

YM1 6 #10 W1 TU TH 1100 1300 #4

Yearly on the 1st, 100th, 200th and 300th day for 4 years:

YD1 1 100 200 300 #4

Yearly on the 1st - 5th days and 100th - 104th days:

YD1 1 100 #5 D1 #5

Dawson

71

Expires June 1997

Internet Draft

MIME C&S Content Type

November 26, 1996

Yearly on the 1st - 5th days and 100th - 104th days stopping on 1/2/99:

YD1 1 100 D1 #5 19990102T000000Z

Dawson

72

Expires June 1997