CalWSSOAP - SOAP Web service protocol for calendaring

Version 1.0

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Related Work:
This specification is related to:

- https://datatracker.ietf.org/idtracker/draft-daboo-et-al-icalendar-in-xml

Declared XML Namespace(s):
http://docs.oasis-open.org/ns/wscal/calws-soap

Declared Properties and Relations Namespaces
Properties and extended relation types are prefixed with the URL"

http://docs.oasis-open.org/ns/wscal/calwsrel

Abstract:

This document describes a SOAP web service for calendar access and update.

Status:

This document was last revised or approved by the [TC name | membership of OASIS] on the above date. The level of approval is also listed above. Check the "Latest Version" or "Latest Approved Version" location noted above for possible later revisions of this document.

Technical Committee members should send comments on this specification to the Technical Committee's email list. Others should send comments to the Technical Committee by using the "Send A Comment" button on the Technical Committee's web page at http://www.oasis-open.org/committeees/[specific location]/.

For information on whether any patents have been disclosed that may be essential to implementing this specification, and any offers of patent licensing terms, please refer to the Intellectual Property Rights section of the Technical Committee web page (http://www.oasis-open.org/committees/[specific location]/ipr.php.

The non-normative errata page for this specification is located at http://www.oasis-open.org/committees/[specific location]/.

49 **Notices**

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1 Introduction

The CalWS protocol is built upon and makes the same assumptions about structure as the CalDAV protocol defined in [RFC 4791] and related specifications. It does NOT require nor assume the WebDAV nor CalDAV protocol.

Calendar resources, for example events and tasks are stored as named resources (files) inside special collections (folders) known as "**Calendar Collections**".

This specification can be looked upon as a layer built on top of CalDAV and defines the basic operations which allow creation, retrieval, update and deletion. In addition, query and freebusy operations are defined to allow efficient, partial retrieval of calendar data.

This does not mean that a CalWS service must be built on CalDAV, merely that a degree of conformity is established such that services built in that manner do not have a significant mismatch. It is assumed that some CalWS services will be built without any CalDAV support.

1.1 Terminology

The keywords "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this specification are to be interpreted as described in IETF RFC 2119 [RFC 2119].

1.2 Normative References

[RFC 2119]   S. Bradner. *Key words for use in RFCs to Indicate Requirement Levels*. IETF RFC 2119, March 1997. http://www.ietf.org/rfc/rfc2119.txt.

[RFC 2616]   Fielding, et al, *Hypertext Transfer Protocol -- HTTP/1.1*
http://tools.ietf.org/html/rfc2616

[RFC 3339]   Klyne g., Newman C., *Date and Time on the Internet: Timestamps*
http://tools.ietf.org/html/rfc3339

[RFC 4790]   Newman, et al. *Internet Application Protocol Collation Registry.*
http://www.ietf.org/rfc/rfc4790.txt.

[RFC 4791]   Daboo, et al. *Calendaring Extensions to WebDAV (CalDAV).*
http://www.ietf.org/rfc/rfc4791.txt.

[draft caldav-sched]   Desruisseaux, et al. *CalDAV Scheduling extensions to WebDAV*
http://tools.ietf.org/html/draft-desruisseaux-caldav-sched-08

[RFC 4918]   L. Dusseault, *HTTP Extensions for Web Distributed Authoring and Versioning (WebDAV)*
http://tools.ietf.org/html/rfc4918

[RFC 5545]   B. Desruisseaux, *Internet Calendaring and Scheduling Core Object Specification (iCalendar)*
http://tools.ietf.org/html/rfc5545

[RFC 5546]   C. Daboo. *iCalendar Transport-Independent Interoperability Protocol (iTIP)*
http://tools.ietf.org/html/rfc5546

[draft-xcal]   C. Daboo, M. Douglass, S. Lees *xCal: The XML format for iCalendar*
https://datatracker.ietf.org/idtracker/draft-daboo-et-al-icalendar-in-xml

[draft-timezones]   C. Daboo, M. Douglass*: Timzone Service Protocol*
http://tools.ietf.org/html/draft-douglass-timezone-service

[FreeBusy Read URL]	E York. *Freebusy read URL*	
	http://www.calconnect.org/pubdocs/CD0903%20Freebusy%20Read%20URL%20V1.0.pdf	
[SOAP11]	Simple Object Access Protocol (SOAP) 1.1, 8 May 2000	
	http://www.w3.org/TR/2000/NOTE-SOAP-20000508/	
[Web-Linking]	M. Nottingham *Web linking*	
	http://tools.ietf.org/html/draft-nottingham-http-link-header	
[WS-Addr]	W3C Recommendation,Web Services Addressing 1.0 - Core, and Web Services Addressing 1.0 - SOAP Binding, 9 May 2006	
	http://www.w3.org/2002/ws/addr/	
[WT-I-Basic]	Basic Profile Version 1.1, 10 April 2006	
	http://www.ws-i.org/Profiles/BasicProfile-1.1-2006-04-10.html	
[WS-I-Bind]	Web Services-Interoperability Organization (WS-I) Simple SOAP Binding Profile Version 1.0, 24 August 2004	
	http://www.ws-i.org/Profiles/SimpleSoapBindingProfile-1.0-2004-08-24.html	
[WSDL11]	Web Services Description Language (WSDL) 1.1, 15 March 2001	
	http://www.w3.org/TR/2001/NOTE-wsdl-20010315	
[XRD-1.0]	E. Hammer, W. Norris, *Extensible Resource Descriptor (XRD) Version 1.0*	
	http://docs.oasis-open.org/xri/xrd/v1.0/xrd-1.0.html	

1.3 Non-normative References

[Reference]   [reference citation]

[Reference]   [reference citation]

NOTE: The proper format for a citation to an OASIS Technical Committee's work (whether Normative or Non-Normative) is:

OASIS
Stage (Committee Draft 01, Committee Draft 02, Committee
Specification 01, etc. or Standard)
Title (italicized or in quotation marks)
Approval Date (Month YYYY)
URI of the actual Authoritative Specification (namespace is not
acceptable as the content changes over time)

For example:

[EDXL-HAVE] OASIS Standard, "Emergency Data Exchange Language (EDXL) Hospital AVailability Exchange (HAVE) Version 1.0", November 2008.
http://docs.oasis-open.org/emergency/edxl-have/os/emergency_edxl_have-1.0-spec-os.doc

2 Issues not addressed by this specification.

A number of issues are not addressed by this version of the specification, either because they should be addressed elsewhere or will be addressed at some later date.

2.1 Access Control

It is assumed that the targeted server will set an appropriate level of access based on authentication. This specification will not attempt to address the issues of sharing or ACLs.

2.2 Provisioning

The protocol will not provide any explicit provisioning operations. If it is possible to authenticate or address a principals calendar resources then they MUST be automatically created if necessary or appropriate

2.3 Copy/Move

These operations are not yet defined for this version of the CalWS protocol. Both operations raise a number of issues. In particular implementing a move operation through a series of retrievals, insertions and deletions may cause undesirable side-effects. Both these operations will be defined in a later version of this specification.

2.4 Creating Collections

We will not address the issue of creating collections within the address space. The initial set is created by provisioning.

2.5 Retrieving collections

This operation is currently undefined.

2.6 Setting service and resource properties.

These operations are not defined in this version of the specification. In the future it will be possible to define or set the properties for the service or resources within the service.

3 CalWS Glossary

3.1 Calendar Object Resource

A calendar object resource is an event, meeting or a task. Attachments are resources but NOT calendar object resources. An event or task with overrides is a single calendar resource entity.

3.2 Uid

The UID of an event is defined in [RFC 5545] as a "persistent, globally unique identifier for the calendar component". It is in fact, slightly more complicated in that all overrides to a recurring event have the same UID as the master event. Copies of a meeting invitation sent to attendees must also have the same UID.

In this protocol the UID is the key by which we locate calendar object resources (see above) and any associated overrides within a calendar collection (see below).

3.3 Collections

A collection is a set of resources which may be entities or other collections. In file systems a collection is commonly referred to as a folder. Collections are referred to by a collection id which is specific to a service and may take any form. For many systems they will be path-like.

3.4 Calendar Collection

A collection only allowed to contain calendar object resources. The UIDs for components within a calendar collection must be unique. The combination of a calendar collection id and the UID MUST be a unique key within a set of resources made available through this service.

3.5 Scheduling Calendar Collection

A folder only allowed to contain calendar resources which is also used for scheduling operations. Scheduling events placed in such a collection will trigger implicit scheduling activity on the server.

3.6 Principal Home

The collection under which all the resources for a given principal are stored. For example, for principal "fred" the principal home might be "/user/fred/"

3.7 Change token

This is an opaque token returned to identify the current change status of an entity. Whenever an entity is changed the token will take on a new value. An unchanged token value DOES NOT imply byte-for-byte equality with the stored entity. The service may choose to modify properties under its control, for example last-modification times. However, an entity with an unchanged token can be safely updated by a client holding that token.

4 Overview of the CalWS protocol

CalWs operations and data elements are defined in this specification. Many of the operations result in the transmission of data as defined in [RFC 5545].

SOAP 1.1 messages consist of three elements: an envelope, header data, and a message body. CalWs request-response elements MUST be enclosed within the SOAP message body. CalWs SOAP messages MUST conform to [WT-I-Basic] and [WS-I-Bind]. A single CalWs SOAP message MUST contain only one service request or a single service response).

The basic process for using SOAP for CalWs operations is:

A system entity acting as a CalWs requester transmits a CalWs request element within the body of a SOAP message to a system entity acting as a CalWs responder. The CalWs requester MUST NOT include more than one CalWs request per SOAP message or include any additional XML elements in the SOAP body (though see Section 14for multiple messages packaged in one request).

The CalWs responder MUST return either a CalWs response element within the body of another SOAP message or generate a SOAP fault. The CalWs responder MUST NOT include more than one CalWs response per SOAP message or include any additional XML elements in the SOAP body. If a CalWs responder cannot, for some reason, process a CalWs request, it MUST generate a SOAP fault. (SOAP 1.1 faults and fault codes are discussed in [SOAP11] section 5.1.)

4.1 Discovery

CalWs implementers (service providers) MUST provide a WSDL WSDL11 to describe their implementations. This WSDL MAY or may not be made public via a standard discovery mechanism (such as UDDI) or other method.

In addition, it is REQUIRED that the CalWs implementation include the Properties operation to provide dynamic information regarding CalWs capabilities, options, etc. that are supported.

4.2 Properties

A service or resource will have a number of properties which describe the current state of that service or resource. These properties are accessed through the execution of a properties operation specifying the target resource. See Retrieving Collection and Service Properties below

4.3 Operations

The following operations are defined by this specification:
- Retrieval and update of service and resource properties
- Creation of a calendar object
- Retrieval of a single calendar object
- Multiget of one or more calendar objects
- Update of a calendar object
- Deletion of a calendar object
- Query
- Free-busy query
- Multiple operations

4.4 Calendar Object Resources

The same restrictions apply to Calendar Object Resources as specified in CalDAV [RFC 4791] section 4.2. An additional constraint for CalWS is that no timezone specifications are transferred with the data.

4.5 Timezone information

It is assumed that the client and server each have access to a full set of up to date timezone information. Timezones will be referenced by a timezone identifier from the full set of Olson data together with a set of well-known aliases. CalWS services may advertise a timezone service (which may be the same service acting as a timezone server) through the server properties object. The timezone service operations are defined in [draft-timezones]. The service can provide a list of timezone identifiers and aliases.

4.6 Error conditions

Each operation on the calendar system has a number of pre-conditions and post-conditions that apply. If any of these are violated the response message will have a status code indicating an error occurred and will contain an error response element providing details.

A "precondition" for a method describes the state of the server that must be true for that method to be performed. A "postcondition" of a method describes the state of the server that must be true after that method has been completed. Any violation of these conditions will result in an error response in the message.

Each method specification defines the preconditions that must be satisfied before the method can succeed. A number of postconditions are generally specified which define the state that must exist after the execution of the operation. Preconditions and postconditions are defined as error elements in the CalWS XML namespace.

Example: error with CalDAV error condition

```
<?xml version="1.0" encoding="utf-8"
     xmlns:CW="http://docs.oasis-open.org/ns/wscal/calws-soap"
     xmlns:C="urn:ietf:params:xml:ns:caldav" ?>
<CW:error>
  <C:supported-filter>
    <C:prop-filter name="X-ABC-GUID"/>
  </C:supported-filter>
  <CW:description>Unknown property </CW:description>
</CW:error>
```

368 5 CalWs-SOAP Messages.

369 This section describes the common elements and structure of CalWs-SOAP messages. The conventions
370 followed are shown in Table 1

Header	Description	Values	Meaning
Field	Name of the field.		Prefixed with / to indicate a child-relationship
			Prefixed with # to indicate an attribute
Type	XML schema type		
#	Cardinality of the field	1	One occurrence
		0..1	Zero or one occurrence
		0..*	Zero or more occurrences
		1..*	One or more occurrences
?	Presence	Y	Always required
		N	Optional
		C	Conditional - dependent on the message or other conditions
Description	A short description		

371 *Table 1: Field column descriptions*

372 5.1 Common Elements and types

373 The following tables define the base types for requests and responses. All CalWs-SOAP messages and
374 responses are based on these types.

375 All requests must include an href which specifies the target for the request. There is also an id attribute
376 which will be copied into the response to help identify it.

Field	Type	#	?	Description
href	string	1	Y	Required in each request to identify the target of the message.
#id	int	1	N	Useful for tying responses to requests.

377 *Table 2: BaseRequestType elements*

378 A response may include an error response element of type ErrorResponseType. This element will be
379 returned in response messages when some form of processing error occurs and provides further
380 information on the error beyond the basic status code.

Field	Type	#	?	Description
?	ErrorCodeType	1	Y	One of the error code elements defined below
description	string	0..1	N	Optional descriptive message

381 *Table 3: ErrorResponseType elements*

382 ErrorCodeType

383   The following table defines the error codes that may be returned as an element of ErrorCodeType.

Field	Type	Description
forbidden	ForbiddenType	Attempted to carry out a forbidden operation.
targetExists	TargetExistsType	
targetDoesNotExist	TargetDoesNotExistType	The supplied href does not reference an existing resource.
targetNotEntity	TargetNotEntityType	The supplied href does not target an entity. For example a fetch item was attempted against a collection.
notCalendarData	NotCalendarDataType	The supplied entity is not calendar data.
invalidCalendarData	InvalidCalendarDataType	The supplied entity does not represent valid calendar data.
invalidCalendarObjectResource	InvalidCalendarObjectResourceType	The supplied entity does not represent valid calendar data.
unsupportedCalendarComponent	UnsupportedCalendarComponentType	Indicates that the calendar collection does not accept components of the type the client is attempting to store. The accepted component types can be determined by examining the calendar collection properties.
invalidCalendarCollectionLocation	InvalidCalendarCollectionLocationType	Error indicating at least one of two conditions: 1. The server does not allow the creation of calendar collections at the given location in its namespace, or 2. The parent collection of the Request-URI exists but cannot accept members
exceedsMaxResourceSize	ExceedsMaxResourceSizeType	Error indicating that the total size of the event or task is too large. The maximum size is set by the target system and can be determined from the properties.
beforeMinDateTime	BeforeMinDateTimeType	Error indicating that the start or end of an event or task is too far into the past. The minimum date is set by the target system and can be determined from the properties.
afterMaxDateTime	AfterMaxDateTimeType	Error indicating that the start or end of an event or task is too far into the future. The maximum date is set by the target system and can be determined from the properties.
tooManyInstances	TooManyInstancesType	Error indicating that a recurring event has too many instances. The maximum number is set by the target system and can be determined from the properties.
tooManyAttendeesPerInstance	TooManyAttendeesPerInstanceType	Error indicating that a scheduling message has too many attendees. The maximum number is set by the target system and can be determined from the properties.
partialSuccess	PartialSuccessType	Indicates that a MultiOpType operation was partially successful. Returned when the operation is marked as non-atomic and one or more sub-operations failed. The entire response needs to be examined to determine failing operations.

Field	Type	Description
missingChangeToken	MissingChangeTokenType	An operation was attempted which required a change token but none was supplied. Note that it appears that the marshalling or demarshalling should handle this as the token is required. It doesn't.
mismatchedChangeToken	MismatchedChangeTokenType	An update operation was attempted with a change token value which does not match that held by the service. The client must refetch the entity to refresh its cached value and token. Note that matching of tokens is a server responsibility. The token is opaque to the client but probably structured to the server. Certain non-conflicting updates may be allowed even if the token has changed.
invalidFilter	InvalidFilterType	
uidConflict	UidConflictType	An attempt was made to store an entity which would result in more than one entity having equal uids. The entity uid must be unique within a collection. Recurring event or task overrides have the same uid and are considered part of a single entity.

384   *Table 4: ErrorCodeType definitions*

BaseResponseType

Field	Type	#	?	Description
#id	int	1	N	Copied over from the request
status	StatusType	1	Y	Give the overall status of the response
message	string	0..1	N	Optional explanatory message
errorResponse	ErrorCodeType	0..1	N	Required for a status of Error.

386   *Table 5: BaseResponseType elements*

6 Properties and link relations

6.1 Property and relation-type URIs

In the XRD entity returned properties and related services and entities are defined by absolute URIs which correspond to the extended relation type defined in [Web-Linking] Section 4.2. These URIs do NOT correspond to any real entity on the server and clients should not attempt to retrieve any data at that target.

Certain of these property URIs correspond to CalDAV preconditions. Each URL is prefixed by the CalWS relations and properties namespace http://docs.oasis-open.org/ns/wscal/calws. Those properties which correspond to CalDAV properties have the additional path element "**caldav/**", for example

```
http://docs.oasis-open.org/ns/wscal/calws/caldav/supported-calendar-data
```

corresponds to

```
CalDAV:supported-calendar-data
```

In addition to those CalDAV properties, the CalWS specification defines a number of other properties and link relations with the URI prefix of http://docs.oasis-open.org/ns/wscal/calws**.**

6.2 supported-features property.

> http://docs.oasis-open.org/ns/wscal/calws/supported-features

This property defines the features supported by the target. All resources contained and managed by the service should return this property. The value is a comma separated list containing one or more of the following

- calendar-access - the service supports all MUST requirements in this specification

```
<Property type="http://docs.oasis-open.org/ns/wscal/calws/supported-features"
          >calendar-access</Property>
```

6.3 max-attendees-per-instance

> http://docs.oasis-open.org/ns/wscal/calws/max-attendees-per-instance

An integer value defining the maximum number of attendees allowed per event or task.

6.4 max-date-time

> http://docs.oasis-open.org/ns/wscal/calws/max-date-time

Defines the maximum date/time allowed on an event or task

6.5 max-instances

> http://docs.oasis-open.org/ns/wscal/calws/max-instances

An integer value defining the maximum number of instances allowed per event or task

6.6 max-resource-size

> http://docs.oasis-open.org/ns/wscal/calws/max-resource-size

420 An integer value defining the maximum size of a resource in octets that the server is willing to accept
421 when a calendar object resource is stored in a calendar collection.

6.7 min-date-time

423   http://docs.oasis-open.org/ns/wscal/calws/min-date-time

424 Provides a DATE-TIME value indicating the earliest date and time (in UTC) that the server is willing to
425 accept for any DATE or DATE-TIME value in a calendar object resource stored in a calendar collection.

6.8 description

427   http://docs.oasis-open.org/ns/wscal/calws/description

428 Provides some descriptive text for the targeted collection.

6.9 timezone-service relation.

430   http://docs.oasis-open.org/ns/wscal/calws/timezone-service

431 The location of a timezone service used to retrieve timezone information and specifications. This may be
432 an absolute URL referencing some other service or a relative URL if the current server also provides a
433 timezone service.

```
434    <Link rel="http://docs.oasis-open.org/ns/wscal/calws/calws/timezone-service"
435            href="http://example.com/tz" />
```

6.10 principal-home relation.

437   http://docs.oasis-open.org/ns/wscal/calws/principal-home

438 Provides the URL to the user home for the currently authenticated principal.

```
439    <Link rel="http://docs.oasis-open.org/ns/wscal/calws/principal-home"
440            href="http://example.com/user/fred" />
```

6.11 current-principal-freebusy relation.

442   http://docs.oasis-open.org/ns/wscal/calws/current-principal-freebusy

443 Provides the URL to use as a target for freebusy requests for the current authenticated principal.

```
444    <Link rel="http://docs.oasis-open.org/ns/wscal/calws/current-principal-freebusy"
445            href="http://example.com/freebusy/user/fred" />
```

6.12 principal-freebusy relation.

447   http://docs.oasis-open.org/ns/wscal/calws/principal-freebusy

448 Provides the URL to use as a target for freebusy requests for a different principal.

```
449    <Link rel="http://docs.oasis-open.org/ns/wscal/calws/principal-freebusy"
450            href="http://example.com/freebusy" />
```

6.13 child-collection relation.

452   http://docs.oasis-open.org/ns/wscal/calws/child-collection

453 Provides information about a child collections for the target. The href attribute gives the URI of the
454 collection. The element should only have CalWS child elements giving the type of the collection, that is
455 the CalWS:collection link property and the CalWS-calendar-collection link property. This allows clients to
456 determine the structure of a hierarchical system by targeting each of the child collections in turn.

457 The xrd:title child element of the link element provides a description for the child-collection.

```
458     <Link rel="http://http://docs.oasis-open.org/ns/wscal/calws/child-collection"
459           href="http://example.com/calws/user/fred/calendar">
460       <Title xml:lang="en">Calendar</Title>
461       <Property type="http://docs.oasis-open.org/ns/wscal/calws/collection"
462                 xsi:nil="true" />
463       <Property type="http://docs.oasis-open.org/ns/wscal/calws/calendar-collection"
464                 xsi:nil="true" />
465     </Link>
```

6.14 created link property

467 http://docs.oasis-open.org/ns/wscal/calws/created

468 Appears within a link relation describing collections or entities. The value is a date-time as defined in
469 [RFC 3339] Section 5.6

```
470     <Property type="http://docs.oasis-open.org/ns/wscal/calws/created"
471               >1985-04-12T23:20:50.52Z</Property>
```

6.15 last-modified property

473 http://docs.oasis-open.org/ns/wscal/calws/last-modified

474 Appears within an xrd object describing collections or entities. The value is the same format as would
475 appear in the Last-Modified header and is defined in [RFC 2616] Section 3.3.1

```
476     <Property type="http://docs.oasis-open.org/ns/wscal/calws/last-modified"
477               >Mon, 12 Jan 1998 09:25:56 GMT</Property>
```

6.16 displayname property

479 http://docs.oasis-open.org/ns/wscal/calws/displayname

480 Appears within an xrd object describing collections or entities. The value is a localized name for the entity
481 or collection.

```
482     <Property type="http://docs.oasis-open.org/ns/wscal/calws/displayname"
483               >My Calendar</Property>
```

6.17 timezone property

485 http://docs.oasis-open.org/ns/wscal/calws/timezone

486 Appears within an xrd object describing collections. The value is a text timezone identifier.

```
487     <Property type="http://docs.oasis-open.org/ns/wscal/calws/timezone"
488               >America/New_York</Property>
```

6.18 owner property

490 http://docs.oasis-open.org/ns/wscal/calws/owner

491 Appears within an xrd object describing collections or entities. The value is a server specific uri.

```
492     <Property type="http://docs.oasis-open.org/ns/wscal/calws/owner"
493               >/principals/users/mike</Property>
```

6.19 collection link property

http://docs.oasis-open.org/ns/wscal/calws/collection

Appears within a link relation describing collections or entities. The property takes no value and indicates that this child element is a collection.

```
<Property type="http://docs.oasis-open.org/ns/wscal/calws/collection"
          xsi:nil="true" />
```

6.20 calendar-collection link property

http://docs.oasis-open.org/ns/wscal/calws/calendar-collection

Appears within a link relation describing collections or entities. The property takes no value and indicates that this child element is a calendar collection.

```
<Property type="http://docs.oasis-open.org/ns/wscal/calws/calendar-collection"
          xsi:nil="true" />
```

6.21 CalWS:privilege-set XML element

http://docs.oasis-open.org/ns/wscal/calws:privilege-set

Appears within a link relation describing collections or entities and specifies the set of privileges allowed to the current authenticated principal for that collection or entity.

```
<!ELEMENT calws:privilege-set (calws:privilege*)>
<!ELEMENT calws:privilege ANY>
```

Each privilege element defines a privilege or access right. The following set is currently defined

- CalWS: Read - current principal has read access
- CalWS: Write - current principal has write access

```
<calWS:privilege-set>
  <calWS:privilege><calWS:read></calWS:privilege>
  <calWS:privilege><calWS:write></calWS:privilege>
</calWS:privilege-set>
```

6.22 CalWS:supported-calendar-component-set XML element

http://docs.oasis-open.org/ns/wscal/calws:supported-calendar-component-set

Appears within a link relation and specifies the set of component types allowed in the targeted collection.

The elements within the returned supported-calendar-component-set element are any component element from the xcal:IcalendarType specification.

525 7 Retrieving Collection and Service Properties

526 Properties, related services and locations are obtained from the service or from service resources in the
527 form of an XRD document as defined by [XRD-1.0].

528 The CalWs-SOAP getProperties request is used to fetch properties. The href can target the service with a
529 path of "/" or any entity within the service.

530 The service properties define the global limits and defaults. Any properties defined on collections within
531 the service hierarchy override those service defaults. The service may choose to prevent such overriding
532 of defaults and limits when appropriate. The tables below show the fiedls for request and response.

Field	Type	#	?	Description
href	string	1	Y	Identify the target of the request. "/" for the service.

533 *Table 6: GetPropertiesType fields*

Field	Type	#	?	Description
XRD	XRD	0..1	C	Returned fro an OK response. Type is an XRD object populated with properties and references defined in Section ?

534 *Table 7: GetPropertiesResponseType fields*

535 7.1 Example - retrieving server properties:

```
536    >>Request
537
538    <?xml version="1.0" encoding="UTF-8"?>
539    <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
540      <SOAP-ENV:Header/>
541      <SOAP-ENV:Body>
542        <ns2:getProperties xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
543            xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
544            xmlns:ns4="urn:ietf:params:xml:ns:caldav"
545            xmlns:ns5="http://docs.oasis-open.org/ns/xri/xrd-1.0">
546          <ns2:href>/</ns2:href>
547        </ns2:getProperties>
548      </SOAP-ENV:Body>
549    </SOAP-ENV:Envelope>
550
551    >>Response
552
553    <?xml version="1.0" encoding="UTF-8"?>
554    <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
555      <SOAP-ENV:Header/>
556      <SOAP-ENV:Body>
557        <ns2:getPropertiesResponse
558              xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
559              xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
560              xmlns:ns4="urn:ietf:params:xml:ns:caldav"
561            xmlns:ns5="http://docs.oasis-open.org/ns/xri/xrd-1.0">
562          <ns5:XRD>
563            <ns5:Subject>/ucaldav/</ns5:Subject>
564            <ns5:Property
565                type="http://docs.oasis-open.org/ns/wscal/calws/last-modified"
566                    >Tue, 29 Mar 2011 17:47:25 +0000</ns5:Property>
567            <ns5:Property
568                type="http://docs.oasis-open.org/ns/wscal/calws/owner"
569                    >/ucaldav/principals/users/public-user/</ns5:Property>
570            <ns5:Property
571                type="http://docs.oasis-open.org/ns/wscal/calws/max-resource-size"
```

```
572                        >100000</ns5:Property>
573               <ns5:Property type="http://docs.oasis-open.org/ns/wscal/calws/collection"/>
574               <ns5:Property
575                   type="http://docs.oasis-open.org/ns/wscal/calws/max-instances"
576                       >1000</ns5:Property>
577               <ns5:Property
578                   type="http://docs.oasis-open.org/ns/wscal/calws/principal-home"
579                       >/ucaldav/user/douglm/</ns5:Property>
580            </ns5:XRD>
581          </ns2:getPropertiesResponse>
582        </SOAP-ENV:Body>
583      </SOAP-ENV:Envelope>
584
585
```

8 Creating Calendar Object Resources

Creating calendar object resources is carried out by using a CalWs-SOAP addItem request targeted at the parent collection and containing the resource to be created. The response will contain the href of the newly created object.

The icalendar entity in the request MUST contain only a single calendaring entity with any related overrides.

Field	Type	#	?	Description
href	string	1	Y	Identify the target of the request.
icalendar	xcal:IcalendarType	1	Y	The entity to be created

Table 8: AddItemType fields

The service will respond with an AddItemResponseType giving either the href and change token of the new entity or an error response.

Field	Type	#	?	Description
href	string	0..1	N	Href of the new entity for a successful request.
changeToken	string	0..1	N	Change token for the new entity

Table 9: AddItemResponseType additional fields

8.1 Preconditions for Calendar Object Creation

- **CalWS:target-exists**: The entity already exists.
- **CalWS:not-calendar-data:** The resource submitted MUST be a supported media type (i.e., iCalendar) for calendar object resources;
- **CalWS:invalid-calendar-data:** The resource submitted MUST be valid data for the media type being specified (i.e., MUST contain valid iCalendar data);
- **CalWS:invalid-calendar-object-resource:** The resource submitted in the request MUST obey all restrictions specified in Calendar Object Resources (e.g., calendar object resources MUST NOT contain more than one type of calendar component, calendar object resources MUST NOT specify the iCalendar METHOD property, etc.);
- **CalWS:unsupported-calendar-component:** The resource submitted in the request MUST contain a type of calendar component that is supported in the targeted calendar collection;
- **CalWS:uid-conflict:** The resource submitted in the request MUST NOT specify an iCalendar UID property value already in use in the targeted calendar collection or overwrite an existing calendar object resource with one that has a different UID property value. Servers SHOULD report the URL of the resource that is already making use of the same UID property value in the CalWS:href element
    <!ELEMENT uid-conflict (CalWS:href)>
- **CalWS:exceeds-max-resource-size:** The resource submitted in the request MUST have an octet size less than or equal to the value of the CalDAV:max-resource-size property value on the calendar collection where the resource will be stored;
- **CalWS:before-min-date-time:** The resource submitted in the request MUST have all of its iCalendar DATE or DATE-TIME property values (for each recurring instance) greater than or equal to the value of the CalDAV:min- date-time property value on the calendar collection where the resource will be stored;
- **CalWS:after-max-date-time:** The resource submitted in the request MUST have all of its iCalendar DATE or DATE-TIME property values (for each recurring instance) less than the value of the CalDAV:max-date-time property value on the calendar collection where the resource will be stored;

624   • **CalWS:too-many-instances:** The resource submitted in the request MUST generate a number of
625   recurring instances less than or equal to the value of the CalDAV: max-instances property value on
626   the calendar collection where the resource will be stored;
627   • **CalWS:too-many-attendees-per-instance:** The resource submitted in the request MUST have a
628   number of ATTENDEE properties on any one instance less than or equal to the value of the
629   CalDAV:max-attendees-per-instance property value on the calendar collection where the resource
630   will be stored;

8.2 Example - successful addItem:

```
632    >>Request
633
634    <?xml version="1.0" encoding="UTF-8"?>
635    <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
636      <SOAP-ENV:Header/>
637      <SOAP-ENV:Body>
638        <ns2:addItem xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
639                     xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
640                     xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0">
641          <ns2:href>/user/douglm/calendar</ns2:href>
642          <ns3:icalendar>
643            <ns3:vcalendar>
644              <ns3:components>
645                <ns3:vevent>
646                  <ns3:properties>
647                    <ns3:uid>
648                      <ns3:text>1302064354993</ns3:text>
649                    </ns3:uid>
650                    <ns3:summary>
651                      <ns3:text>try this</ns3:text>
652                    </ns3:summary>
653                    <ns3:dtstart>
654                      <ns3:date-time>20110406T150000Z</ns3:date-time>
655                    </ns3:dtstart>
656                    <ns3:dtend>
657                      <ns3:date-time>20110406T160000Z</ns3:date-time>
658                    </ns3:dtend>
659                  </ns3:properties>
660                </ns3:vevent>
661              </ns3:components>
662            </ns3:vcalendar>
663          </ns3:icalendar>
664        </ns2:addItem>
665      </SOAP-ENV:Body>
666    </SOAP-ENV:Envelope>
667
668    >>Response
669
670    <?xml version="1.0" encoding="UTF-8"?>
671    <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
672      <SOAP-ENV:Header/>
673      <SOAP-ENV:Body>
674        <ns2:addItemResponse xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
675                             xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
676                             xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0">
677          <ns2:status>OK</ns2:status>
678          <ns2:href>/user/douglm/calendar/1302064354993.ics</ns2:href>
679          <ns2:changeToken>"20110406T155741Z-0"</ns2:changeToken>
680        </ns2:addItemResponse>
681      </SOAP-ENV:Body>
682    </SOAP-ENV:Envelope>
```

8.3 Example - unsuccessful addItem:

```
684        TBD
```

9 Retrieving resources

Fetching calendar object resources is carried out by using a CalWs-SOAP fetchItem request with an href specifying the entity to be fetched. The response will contain the calendaring entity with any related overrides.

Field	Type	#	?	Description
href	string	1	Y	Identify the target of the request.

Table 10: FetchItemType fields

The service will respond with a FetchItemResponseType containing either the change token, its href and the entity or an error response.

Field	Type	#	?	Description
changeToken	string	0..1	N	The change token for the fetched entity
href	string	1	Y	Identify the entity.
icalendar	xcal:IcalendarType	0..1	N	The fetched entity

Table 11: FetchItemResponseType additional fields

9.1 Example - successful fetchItem:

```
>>Request

<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
  <SOAP-ENV:Header/>
  <SOAP-ENV:Body>
    <ns2:fetchItem xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
                   xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
                   xmlns:ns5="http://docs.oasis-open.org/ns/xri/xrd-1.0">
      <ns2:href>/user/douglm/calendar/1302105461170.ics</ns2:href>
    </ns2:fetchItem>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>


>>Response

<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
  <SOAP-ENV:Header/>
  <SOAP-ENV:Body>
    <ns2:fetchItemResponse xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
                           xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
                           xmlns:ns5="http://docs.oasis-open.org/ns/xri/xrd-1.0">
      <ns2:status>OK</ns2:status>
      <ns2:changeToken>"20110406T155741Z-0"</ns2:changeToken>
      <ns2:href>/user/douglm/calendar/1302105461170.ics</ns2:href>
      <ns2:icalendar>
        <ns3:vcalendar>
          <ns3:properties>
            <ns3:prodid>
              <ns3:text>//Bedework.org//BedeWork V3.7//EN</ns3:text>
            </ns3:prodid>
            <ns3:version>
              <ns3:text>2.0</ns3:text>
            </ns3:version>
          </ns3:properties>
          <ns3:components>
```

```
731                        <ns3:vevent>
732                          <ns3:properties>
733                            <ns3:created>
734                              <ns3:utc-date-time>20110406T155741Z</ns3:utc-date-time>
735                            </ns3:created>
736                            <ns3:dtend>
737                              <ns3:date-time>20110406T160000Z</ns3:date-time>
738                            </ns3:dtend>
739                            <ns3:dtstamp>
740                              <ns3:utc-date-time>20110406T155741Z</ns3:utc-date-time>
741                            </ns3:dtstamp>
742                            <ns3:dtstart>
743                              <ns3:date-time>20110406T150000Z</ns3:date-time>
744                            </ns3:dtstart>
745                            <ns3:last-modified>
746                              <ns3:utc-date-time>20110406T155741Z</ns3:utc-date-time>
747                            </ns3:last-modified>
748                            <ns3:summary>
749                              <ns3:text>try this</ns3:text>
750                            </ns3:summary>
751                            <ns3:uid>
752                              <ns3:text>1302105461170</ns3:text>
753                            </ns3:uid>
754                          </ns3:properties>
755                        </ns3:vevent>
756                      </ns3:components>
757                    </ns3:vcalendar>
758                  </ns3:icalendar>
759                </ns2:fetchItemResponse>
760              </SOAP-ENV:Body>
761          </SOAP-ENV:Envelope>
```

9.2 Example - unsuccessful fetchItem:

```
763    >>Request
764
765    <?xml version="1.0" encoding="UTF-8"?>
766    <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
767      <SOAP-ENV:Header/>
768      <SOAP-ENV:Body>
769        <ns2:fetchItem xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
770                       xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
771                       xmlns:ns5="http://docs.oasis-open.org/ns/xri/xrd-1.0">
772          <ns2:href>/user/douglm/calendar/nosuchevent.ics</ns2:href>
773        </ns2:fetchItem>
774      </SOAP-ENV:Body>
775    </SOAP-ENV:Envelope>
776
777    >>Response
778
779    <?xml version="1.0" encoding="UTF-8"?>
780    <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
781      <SOAP-ENV:Header/>
782      <SOAP-ENV:Body>
783        <ns2:fetchItemResponse xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
784                               xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
785                               xmlns:ns5="http://docs.oasis-open.org/ns/xri/xrd-1.0">
786          <ns2:status>Error</ns2:status>
787          <ns2:errorResponse>
788            <ns2:targetDoesNotExist/>
789          </ns2:errorResponse>
790        </ns2:fetchItemResponse>
791      </SOAP-ENV:Body>
792    </SOAP-ENV:Envelope>
```

793 10 Updating resources

794 Calendar entity updates apply changes to a data model which has the form:

- 795 • An iCalendar element contains...
- 796 • a single vCalendar element which contains...
- 797 • one or more calendaring components, event, task etc each of which contain...
- 798 • zero or more components, alarms etc or one or more properties each of which contains...
- 799 • zero or more parameters and one or more values.

800 Thus we have a nested structure which does recurse to a limited extent and looks like

```
801        <icalendar>
802          <vcalendar>
803            <components>
804              <vevent>
805                <properties>
806                  <uid>
807                    <text>1302064354993-a</text>
808                  </uid>
809                  <summary>
810                    <text>try this</text>
811                  </summary>
812                  <dtstart>
813                    <date-time>2011-07-18T15:00:00Z</date-time>
814                  </dtstart>
815                  <dtend>
816                    <date-time>2011-07-18T16:00:00Z</date-time>
817                  </dtend>
818                </properties>
819              </vevent>
820            </components>
821          </vcalendar>
822        </icalendar>
```

823 The update approach described here only allows for updating a single calendar entity, though that entity
824 may consist of more than one component, for example an override to a repeating event.

825 Resources are updated with the CalWs-SOAP updateItem request. The request contains the href of the
826 entity to be updated, the current change token for that entity and the updates. The updates take the form
827 of nested selections of an element from the current level in the data. The outermost selection is always
828 for a vcalendar element - we ignore the icalendar element. Nested within that outer selection is one for
829 the components element followed by selections on the entity, event, task etc and so on.

830 Only 3 kinds of update may be applied at any point:

- 831 • Remove - components, properties or parameters
- 832 • Add - components, properties or parameters
- 833 • Change - property or parameter values

834 Removals MUST be processed ahead of additions

835 Preconditions as specified in Preconditions for Calendar Object Creation are applicable. The response
836 will indicate success or failure of the update. If the change token value does not match that held by the
837 service a mismatchedChangeToken error status will be returned. The client should re-fetch the entity to
838 refresh its cache and then retry the update based on the new entity values and change token.

Field	Type	#	?	Description
href	string	1	Y	Identify the target of the request.
changeToken	string	1	Y	The change token held by the client for that entity
select	ComponentSelectionType	1..*	Y	Must select vcalendar

839　*Table 12: UpdateItemType fields*

840　The ComponentsSelectionType contains three repeating child elements. The first allows for selection of
841　nested components which can then be updated. The next allows addition of entire components and the
842　last allows for the removal of components.

Field	Type	#	?	Description
component	ComponentSelectionType	0..1	N	Used to match against a component in the target
remove	ComponentReferenceType	0..1	N	Supplies components to remove
add	ComponentReferenceType	0..1	N	Species components to add

843　*Table 13: ComponentsSelectionType fields*

844　The PropertiesSelectionType follows the same pattern, selecting properties to update, add or remove.

Field	Type	#	?	Description
property	PropertySelectionType	0..1	N	Used to match against a property in the target
remove	PropertyReferenceType	0..1	N	Supplies properties to remove
add	PropertyReferenceType	0..1	N	Species properties to add

845　*Table 14: PropertiesSelectionType fields*

846　To complete that pattern there is also a ParametersSelectionType used to select property parameters for
847　update or removal and to supply new parameters.

Field	Type	#	?	Description
parameter	ParameterSelectionType	0..1	N	Used to match against a parameter in the target
remove	ParameterReferenceType	0..1	N	Supplies parameters to remove
add	ParameterReferenceType	0..1	N	Species parameters to add

848　*Table 15: ParametersSelectionType fields*

849　Each of these refers to a reference type. These either provide a complete entity for addition or identify
850　the entity for removal. The three reference types are:

Field	Type	#	?	Description
Any valid iCalendar component name	xcal:BaseComponentType	1	Y	Either a complete component or sufficient to identify it.

851　*Table 16: ComponentReferenceType fields*

Field	Type	#	?	Description
Any valid iCalendar property name	xcal:BasePropertyType	1	Y	Either a complete property or sufficient to identify it or provide a new value, depending on usage.

Table 17: PropertyReferenceType fields

Field	Type	#	?	Description
Any valid iCalendar parameter name	xcal:BaseParameterType	1	Y	Either a complete parameter or sufficient to identify it or provide a new value, depending on usage.

Table 18: ParameterReferenceType fields

To complete the picture we have three selection types for component, property and parameter. Each of these identifies the entity to be updated, possible selections of the sub-elements and a possible change to values.

ComponentSelectionType contains three child elements. The first is any valid icalendar component element which is to be matched at the current level.

The optional properties selection allows selection and possible updates to the properties of the component. An iCalendar properties element cannot take a value so the only updates possible are addition and removal of properties. Nested properties may be selected for updates.

The optional components selection allows selection and possible updates to the nested icalendar components element of the component. An iCalendar components element cannot take a value so the only updates possible are addition and removal of components. Nested components may be selected for updates.

Field	Type	#	?	Description
Any valid iCalendar component name	xcal:VcalendarType xcal:BaseComponentType	1	Y	Used to match against an element in the target
properties	PropertiesSelectionType	0..1	N	To match the properties element
components	ComponentsSelectionType	0..1	N	To match the components element

Table 19: ComponentSelectionType fields

PropertySelectionType contains three child elements. The first is any valid icalendar property element which is to be matched at the current level.

The optional parameters selection allows selection and possible updates to the parameters of the property.

The optional change element allows a change to the value of the property. The new value is specified by supplying an iCalendar property with the desired value(s). Any parameters will be ignored.

Field	Type	#	?	Description
Any valid iCalendar property name	xcal:BasePropertyType	1	Y	Used to match against an element in the target
parameters	ParametersSelectionType	0..1	N	To match the parameters element
change	PropertyReferenceType	0..1	N	To provide a new value

Table 20: PropertySelectionType fields

874 Lastly, there is the ParameterSelectionType which contains two child elements. The first is any valid
875 icalendar parameter element which is to be matched at the current level.

876 The optional change element allows a change to the value of the parameter. The new value is specified
877 by supplying an iCalendar parameter with the desired value(s).

Field	Type	#	?	Description
Any valid iCalendar parameter name	xcal:BaseParameter Type	1	Y	Used to match against an element in the target
change	ParameterReferenceType	0..1	N	To provide a new value

878 *Table 21: ParameterSelectionType fields*

879 For a successful update the service will respond with a UpdateItemResponseType containing the status
880 and the new change token.

Field	Type	#	?	Description
changeToken	string	0..1	N	The new change token for the updated entity

881 Table 22: UpdateItemResponseType additional fields

882 The change token value should be used to replace the value held by the client.

883 10.1 Change tokens and concurrent updates

884 The change token is used to allow a service to determine whether or not it is safe to carry out an update
885 requested by the client. The change token should be opaque to the client but will probably in fact be a
886 structured value. Calendaring transactions have some special characteristics which make it desirable to
887 allow certain non-conflicting updates to take place while other changes are taking place. For example,
888 meeting requests with a large number of attendees can be frequently updated by the server as a result of
889 attendee participation status changes. If we use an unstructured change token to represent all changes
890 this can make it very difficult to update an event while those participation status changes are being made.

891 If, on the other hand, the token has a section indicating that only participation status changes have been
892 made, then other changes can take place. For a reference on implementing such a token see "Avoiding
893 Conflicts when Updating Scheduling Object Resources" in [draft caldav-sched]. This describes the use of
894 a schedule-tag.

895 10.2 Example - successful update:

896 The event to be updated is represented by the following XML.

```
897            <ns3:icalendar>
898              <ns3:vcalendar>
899                <ns3:components>
900                  <ns3:vevent>
901                    <ns3:properties>
902                      <ns3:uid>
903                        <ns3:text>1302064354993-a</ns3:text>
904                      </ns3:uid>
905                      <ns3:summary>
906                        <ns3:text>try this</ns3:text>
907                      </ns3:summary>
908                      <ns3:dtstart>
909                        <ns3:date-time>2011-07-18T15:00:00Z</ns3:date-time>
910                      </ns3:dtstart>
911                      <ns3:dtend>
912                        <ns3:date-time>2011-07-18T16:00:00Z</ns3:date-time>
913                      </ns3:dtend>
```

```
914                     </ns3:properties>
915                   </ns3:vevent>
916                 </ns3:components>
917               </ns3:vcalendar>
918             </ns3:icalendar>
```

In the following example we make the following changes to the above event:

- Change the summary
- Change the dtstart - add a tzid and change the value to local time
- Add some categories

We first select an event by specifying the uid value and then, from that event, we select the properties, then select and change the appropriate properties.

```
925       >>Request
926
927       <?xml version="1.0" encoding="UTF-8"?>
928       <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
929         <SOAP-ENV:Header/>
930         <SOAP-ENV:Body>
931           <ns2:updateItem xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
932                           xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
933                           xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0">
934             <ns2:href>/user/douglm/calendar/1302064354993-a.ics</ns2:href>
935             <ns2:changeToken>"20110802T032608Z-0"  null</ns2:changeToken>
936             <ns2:select>
937               <ns3:vcalendar/>
938               <ns2:components>
939                 <ns2:component>
940                   <ns3:vevent>
941                     <ns3:properties>
942                       <ns3:uid>
943                         <ns3:text>1302064354993-a</ns3:text>
944                       </ns3:uid>
945                     </ns3:properties>
946                   </ns3:vevent>
947                   <ns2:properties>
948                     <ns2:property>
949                       <ns3:dtstart>
950                         <ns3:date-time>2011-07-18T15:00:00Z</ns3:date-time>
951                       </ns3:dtstart>
952                       <ns2:parameters>
953                         <ns2:add>
954                           <ns3:tzid>
955                             <ns3:text>America/New_York</ns3:text>
956                           </ns3:tzid>
957                         </ns2:add>
958                       </ns2:parameters>
959                       <ns2:change>
960                         <ns3:dtstart>
961                           <ns3:date-time>2011-07-18T11:00:00</ns3:date-time>
962                         </ns3:dtstart>
963                       </ns2:change>
964                     </ns2:property>
965                     <ns2:property>
966                       <ns3:summary>
967                         <ns3:text>try this</ns3:text>
968                       </ns3:summary>
969                       <ns2:change>
970                         <ns3:summary>
971                           <ns3:text>A changed summary - again and again and again</ns3:text>
972                         </ns3:summary>
973                       </ns2:change>
974                     </ns2:property>
975                     <ns2:add>
976                       <ns3:categories>
977                         <ns3:text>newcategory-2</ns3:text>
978                         <ns3:text>resources</ns3:text>
979                         <ns3:text>paper</ns3:text>
980                       </ns3:categories>
```

```
981                          </ns2:add>
982                        </ns2:properties>
983                      </ns2:component>
984                    </ns2:components>
985                  </ns2:select>
986                </ns2:updateItem>
987            </SOAP-ENV:Body>
988          </SOAP-ENV:Envelope>
989
990          >>Response
991
992          <?xml version="1.0" encoding="UTF-8"?>
993          <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
994            <SOAP-ENV:Header/>
995            <SOAP-ENV:Body>
996              <ns2:updateItemResponse xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
997                                      xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
998                                      xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0"
999                                      id="0">
1000               <ns2:status>OK</ns2:status>
1001             </ns2:updateItemResponse>
1002           </SOAP-ENV:Body>
1003         </SOAP-ENV:Envelope>
```

10.3 Other updates:

Based on the example above we present some XML fragments for different kinds of update. These include:

- Addition of properties
- Removal of properties
- Addition of parameters to properties
- Removal of parameters from properties
- Changing parameter values.

The examples all start with the selection of the vevent properties element. First we have the XML for the addition of a tzid to the start date/time. Here we select the dtstart, then the parameters element then add a tzid parameter and change the value of the date and time

```
1015                  <ns2:properties>
1016                    <ns2:property>
1017                      <ns3:dtstart>
1018                        <ns3:date-time>2011-07-18T15:00:00Z</ns3:date-time>
1019                      </ns3:dtstart>
1020                      <ns2:parameters>
1021                        <ns2:add>
1022                          <ns3:tzid>
1023                            <ns3:text>America/New_York</ns3:text>
1024                          </ns3:tzid>
1025                        </ns2:add>
1026                      </ns2:parameters>
1027                      <ns2:change>
1028                        <ns3:dtstart>
1029                          <ns3:date-time>2011-07-18T11:00:00</ns3:date-time>
1030                        </ns3:dtstart>
1031                      </ns2:change>
1032                    </ns2:property>
1033                  </ns2:properties>
```

In this example we add two categories to the event.

```
1035                  <ns2:properties>
1036                    <ns2:add>
1037                      <ns3:categories>
1038                        <ns3:text>paper</ns3:text>
1039                      </ns3:categories>
1040                    </ns2:add>
1041                    <ns2:add>
1042                      <ns3:categories>
```

```
1043                        <ns3:text>resources</ns3:text>
1044                      </ns3:categories>
1045                    </ns2:add>
1046                  </ns2:properties>
```

1047   In this example we add a duration and remove the dtend.

```
1048                  <ns2:properties>
1049                    <ns2:remove>
1050                      <ns3:dtend>
1051                        <ns3:date-time>2011-07-18T16:00:00Z</ns3:date-time>
1052                      </ns3:dtend>
1053                    </ns2:remove>
1054                    <ns2:add>
1055                      <ns3:duration>
1056                        <ns3:duration>PT1H</ns3:duration>
1057                      </ns3:duration>
1058                    </ns2:add>
1059                  </ns2:properties>
```

1060   In this example we change the dtstart timezone identifier.

```
1061                  <ns2:properties>
1062                    <ns2:property>
1063                      <ns3:dtstart>
1064                        <ns3:parameters>
1065                          <ns3:tzid>
1066                            <ns3:text>America/New_York</ns3:text>
1067                          </ns3:tzid>
1068                        </ns3:parameters>
1069                        <ns3:date-time>2011-07-18T11:00:00</ns3:date-time>
1070                      </ns3:dtstart>
1071                      <ns2:parameters>
1072                        <ns2:parameter>
1073                          <ns3:tzid>
1074                            <ns3:text>America/New_York</ns3:text>
1075                          </ns3:tzid>
1076                          <ns2:change>
1077                            <ns3:tzid>
1078                              <ns3:text>America/Montreal</ns3:text>
1079                            </ns3:tzid>
1080                          </ns2:change>
1081                        </ns2:parameter>
1082                      </ns2:parameters>
1083                    </ns2:property>
1084                  </ns2:properties>
```

1085

1086 10.4 Creating an update message.

1087   The update can be created in many ways but the most common approach is to build the update while
1088   modifications take place or to create one as the result of comparing old and new versions. It appears that
1089   comparing XML for differences is difficult. However, we can take advantage of the structure of
1090   calendaring entities to simplify the process. There are implementations available which take the diff
1091   approach to producing an update stream.

1092   There are some special cases to consider when comparing. Some properties are multi-valued and may
1093   themselves appear more than once. There is no semantic information implied by any grouping though
1094   parameters may need to be taken into account. These properties need to be normalized before
1095   comparison and when updating them we produce a change which treats each value as a single property.

1096   These properties are

1097   • categories
1098   • exdate
1099   • freebusy
1100   • rdate

1101   This normalization can take place before comparison.

1102   Some properties are multi-valued and may only appear once. At the moment the only standard property
1103   is resource which may take a comma separated list. This should be treated as a single multi-valued
1104   property when comparing. The order is unimportant. Sorting the values may help.

1105   Some properties may appear multiple times, for example comment. Comparison should take account of
1106   parameters. Ordering all properties appropriately allows for relatively simple comparison.

1107 11 Deletion of resources

1108 Deletion of calendar object resources is carried out by using a CalWs-SOAP deleteItem request with an
1109 href specifying the entity to be deleted. The deleteItem request is not valid when the href specifies a
1110 collection.

Field	Type	#	?	Description
href	string	1	Y	Identify the target of the request.

1111 *Table 23: DeleteItemType fields*

1112 The service will respond with a DeleteItemResponseType containing the status and a possible error
1113 response. There are no additional elements.

1114 11.1 Example - successful deleteItem:

```
1115    >>Request
1116
1117    <?xml version="1.0" encoding="UTF-8"?>
1118    <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
1119      <SOAP-ENV:Header/>
1120      <SOAP-ENV:Body>
1121        <ns2:deleteItem xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
1122                        xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
1123                        xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0">
1124          <ns2:href>/user/douglm/calendar/1302620814655.ics</ns2:href>
1125        </ns2:deleteItem>
1126      </SOAP-ENV:Body>
1127    </SOAP-ENV:Envelope>
1128
1129    >>Response
1130
1131    <?xml version="1.0" encoding="UTF-8"?>
1132    <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
1133      <SOAP-ENV:Header/>
1134      <SOAP-ENV:Body>
1135        <ns2:deleteItemResponse xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
1136                                xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
1137                                xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0">
1138          <ns2:status>OK</ns2:status>
1139        </ns2:deleteItemResponse>
1140      </SOAP-ENV:Body>
1141    </SOAP-ENV:Envelope>
```

1142 11.2 Example - unsuccessful deleteItem:

```
1143    >>Request
1144
1145    <?xml version="1.0" encoding="UTF-8"?>
1146    <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
1147      <SOAP-ENV:Header/>
1148      <SOAP-ENV:Body>
1149        <ns2:deleteItem xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
1150                        xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
1151                        xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0">
1152          <ns2:href>/user/douglm/calendar/nosuchevent.ics</ns2:href>
1153        </ns2:deleteItem>
1154      </SOAP-ENV:Body>
1155    </SOAP-ENV:Envelope>
1156
1157    >>Response
1158
1159    <?xml version="1.0" encoding="UTF-8"?>
```

```
1160        <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
1161          <SOAP-ENV:Header/>
1162          <SOAP-ENV:Body>
1163            <ns2:deleteItemResponse xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
1164                                    xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
1165                                    xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0">
1166              <ns2:status>Error</ns2:status>
1167              <ns2:errorResponse>
1168                <ns2:targetDoesNotExist/>
1169              </ns2:errorResponse>
1170            </ns2:deleteItemResponse>
1171          </SOAP-ENV:Body>
1172        </SOAP-ENV:Envelope>
```

1173 12 Querying calendar resources

1174 Querying provides a mechanism by which information can be obtained from the service through possibly
1175 complex queries. A skeleton icalendar entity can be provided to limit the amount of information returned
1176 to the client. A query takes the parts

1177 • Limitations on the data returned
1178 • Selection of the data
1179 • Optional timezone id for floating time calculations.

1180 12.1 Calendar Query common types

1181 The UTCTimeRangeType is used in a number of places to define a time range within which components
1182 must appear or property values must lie. The values are UTC time-date, the start is inclusive and the end
1183 is exclusive.

Field	Type	#	?	Description
start	UTC date-time	1	Y	UTC inclusive start
end	UTC date-time	1	Y	UTC exclusive end

1184 *Table 24: UTCTimeRangeType elements*

1185 The TextMatchType is used to match text values in properties and parameters. The collation attribute
1186 species a collation as defined in [RFC 4790].

1187 Servers are REQUIRED to support the "i;ascii-casemap" and "i;octet" collations which provide a basic
1188 case insensitive and case sensitive match respectively.

1189 Elements of this type take a string value which is matched according to the attributes.

Field	Type	#	?	Description
#collation	String	0..1	N	Collation name from [RFC 4790]. "
#negate-condition	boolean	0..1	N	if "true" negates the condition

1190 *Table 25: TextMatchType attributes*

1191 12.2 CompFilterType

1192 This type defines a search query for the calendar query operation. It specifies the component types to
1193 return, absence tests or basic matching operations on properties and time ranges.

1194 The top level comp-filter element (which must match a vcalendar component may contain zero or more
1195 comp-filter elements to match events, tasks or other contained components. These in turn may contain
1196 further nested comp-filter elements to match further levels of nested components.

1197 Each may also contain prop-filter elements to test for the absence of properties or to match values.

1198 Only logical conjunctions are supported, that is, all elements of a comp-filter must match for the
1199 expression to match.

Field	Type	#	?	Description
anyComp	AnyCompType	0..1	C	One of anyComp, vcalendar or a BaseComponentType must be supplied. anyComp indicates that any component will match.
xcal:vcalendar	xcal:VcalendarType	0..1	C	Matches vcalendar at the top level. Must be provided
xcal:baseComponent	xcal:BaseComponentType	0..1	C	May be vevent or vtodo for example.
#test	String	0..1	N	"anyof" is a logical OR of the child elements. "allof" is a logical AND of the child elements.
is-not-defined	empty	0..1	N	Only this element or one or more of time-range, prop-filter or comp-filter may be present
time-range	UTCTimeRangeType	0..1	N	
comp-filter	CompFilterType	1	Y	Match against contained components
prop-filter	PropFilterType	0..n	N	Match against component properties

1200   *Table 26: CompFilterType elements*

1201   **12.3 PropFilterType**

1202   The prop-filter element may test for the absence of a property or match values or specify zero or more
1203   ParamFilterType elements to match against parameters.

1204   Only logical conjunctions are supported, that is, all elements must match for the full expression to match.

Field	Type	#	?	Description
xcal:baseProperty	xcal:BasePropertyType	1	Y	Specifies the property to be matched.
#test	String	0..1	N	"anyof" is a logical OR of the child elements. "allof" is a logical AND of the child elements.
is-not-defined	empty	0..1	N	Only this element or optionally one of time-range or text-match followed by param-filter
time-range	UTCTimeRangeType	0..1	N	
text-match	TextMatchtype	0..1	N	
param-filter	ParamFilterType	0..n	N	Match against property parameters

1205   *Table 27: PropFilterType elements*

1206   **12.4 ParamFilterType**

1207   The ParamFilterType element may test for the absence of a parameter or match a value.

Field	Type	#	?	Description
xcal:baseParameter	xcal:BaseParameterType	1	Y	Specifies the parameter to be matched.
is-not-defined	empty	0..1	N	Only this element or text-match
text-match	TextMatchtype	0..1	N	

1208   *Table 28: ParamFilterType elements*

12.5 CalendarQueryType elements

1209

Field	Type	#	?	Description
href	string	1	Y	Identify the target of the request. "/" for the service.
allprop	empty	0..1	N	If present specifies all properties should be returned One or none of allprop or icalendar
xcal:icalendar	xcal:IcalendarType	0..1	N	If present is a valueless icalendar skeleton entity defining which components and properties should be returned. If present allprop must NOT be present.
expand	ExpandType	0..1	N	A subclass of UTCTimeRangeType. Either expand or limitRecurrenceSet may be specified but not both. If specified recurring events are expanded and limited to the supplied time-range. All events times are converted to UTC. This option allows for simplified event handling for certain classes of client.
limitRecurrenceSet	LimitRecurrenceSetType	0..1	N	A subclass of UTCTimeRangeType. Either expand or limitRecurrenceSet may be specified but not both. If specified only overrides that fall within the specified time-range are returned. This helps to limit the size of the result-set when there are many overrides.
depth	String	0..1	N	Species depth for query. "1" => just targeted collection, "infinity" => query targeted and all sub-collections.
filter	FilterType	1	Y	Defines the search filter
/comp-filter	CompFilterType	1	Y	Defines the top-level component

1210   *Table 29: CalendarQueryType elements*

12.6 Specifying data to be returned

This is achieved by specifying one of the following

- allprop: return all properties and calendar data. (some properties are specified as not being part of the allprop set so are not returned)
- Set the icalendar element. This is an icalendar valueless pattern entity which provides a map of the components and properties to be returned. Neither the pattern nor the returned result need to be valid icalendar entities in that required properties may be absent if unselected.

12.7 Pre/postconditions for calendar queries

The preconditions as defined in [RFC 4791] Section 7.8 apply here. CalDav errors may be reported by the service when preconditions or postconditions are violated.

12.8 Time range limited queries.

Time-range limited retrieval has some special characteristics. The simplest case is a single event or task which overlaps the requested time-period. Recurring items and other components such as alarms complicate the picture.

12.9 Example: time range limited retrieval

This example shows the time-range limited retrieval from a calendar which results in 2 events, one a recurring event and one a simple non-recurring event.

```
>> Request <<

<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
  <SOAP-ENV:Header/>
  <SOAP-ENV:Body>
    <ns2:calendarQuery xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
                       xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
                       xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0">
      <ns2:href>/user/douglm/calendar</ns2:href>
      <ns3:icalendar>
        <ns3:vcalendar>
          <ns3:components>
            <ns3:vevent>
              <ns3:properties>
                <ns3:summary/>
                <ns3:dtstart/>
                <ns3:dtend/>
                <ns3:duration/>
                <ns3:uid/>
                <ns3:recurrence-id/>
                <ns3:rrule/>
                <ns3:rdate/>
                <ns3:exdate/>
              </ns3:properties>
            </ns3:vevent>
          </ns3:components>
        </ns3:vcalendar>
      </ns3:icalendar>
      <ns2:filter>
        <ns2:compFilter test="anyof">
          <ns3:vcalendar />
          <ns2:compFilter>
            <ns3:vevent />
            <ns2:time-range end="20110430T040000Z" start="20110401T040000Z"/>
          </ns2:compFilter>
        </ns2:filter>
```

```
1265              </ns2:calendarQuery>
1266            </SOAP-ENV:Body>
1267          </SOAP-ENV:Envelope>
1268
1269          >> Response <<
1270
1271          <?xml version="1.0" encoding="UTF-8"?>
1272          <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
1273            <SOAP-ENV:Header/>
1274            <SOAP-ENV:Body>
1275              <ns2:calendarQueryResponse
1276                            xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
1277                            xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
1278                            xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0">
1279                <ns2:status>OK</ns2:status>
1280                <ns2:response>
1281                  <ns2:href>/user/douglm/calendar/1302105461170.ics</ns2:href>
1282                  <ns2:changeToken>"20110406T155741Z-0"</ns2:changeToken>
1283                  <ns2:propstat>
1284                    <ns2:prop>
1285                      <ns2:calendar-data content-type="application/xml+calendar" version="2.0">
1286                        <ns3:icalendar>
1287                          <ns3:vcalendar>
1288                            <ns3:properties>
1289                              <ns3:prodid>
1290                                <ns3:text>//Bedework.org//BedeWork V3.7//EN</ns3:text>
1291                              </ns3:prodid>
1292                              <ns3:version>
1293                                <ns3:text>2.0</ns3:text>
1294                              </ns3:version>
1295                            </ns3:properties>
1296                            <ns3:components>
1297                              <ns3:vevent>
1298                                <ns3:properties>
1299                                  <ns3:dtend>
1300                                    <ns3:date-time>20110406T160000Z</ns3:date-time>
1301                                  </ns3:dtend>
1302                                  <ns3:dtstart>
1303                                    <ns3:date-time>20110406T150000Z</ns3:date-time>
1304                                  </ns3:dtstart>
1305                                  <ns3:summary>
1306                                    <ns3:text>try this</ns3:text>
1307                                  </ns3:summary>
1308                                  <ns3:uid>
1309                                    <ns3:text>1302105461170</ns3:text>
1310                                  </ns3:uid>
1311                                </ns3:properties>
1312                              </ns3:vevent>
1313                            </ns3:components>
1314                          </ns3:vcalendar>
1315                        </ns3:icalendar>
1316                      </ns2:calendar-data>
1317                    </ns2:prop>
1318                    <ns2:status>OK</ns2:status>
1319                  </ns2:propstat>
1320                </ns2:response>
1321                <ns2:response>
1322                  <ns2:href>/user/douglm/calendar/CAL-00f1fc61-2f021bca-012f-022947f8-
1323          00000006.ics</ns2:href>
1324                  <ns2:changeToken>"20110405T140920Z-0"</ns2:changeToken>
1325                  <ns2:propstat>
1326                    <ns2:prop>
1327                      <ns2:calendar-data content-type="application/xml+calendar" version="2.0">
1328                        <ns3:icalendar>
1329                          <ns3:vcalendar>
1330                            <ns3:properties>
1331                              <ns3:prodid>
1332                                <ns3:text>//Bedework.org//BedeWork V3.7//EN</ns3:text>
1333                              </ns3:prodid>
1334                              <ns3:version>
```

```
1335                              <ns3:text>2.0</ns3:text>
1336                           </ns3:version>
1337                        </ns3:properties>
1338                        <ns3:components>
1339                          <ns3:vevent>
1340                            <ns3:properties>
1341                              <ns3:duration>
1342                                <ns3:duration>PT1H</ns3:duration>
1343                              </ns3:duration>
1344                              <ns3:dtstart>
1345                                <ns3:parameters>
1346                                  <ns3:tzid>
1347                                    <ns3:text>America/New_York</ns3:text>
1348                                  </ns3:tzid>
1349                                </ns3:parameters>
1350                                <ns3:date-time>20110412T110000</ns3:date-time>
1351                              </ns3:dtstart>
1352                              <ns3:summary>
1353                                <ns3:text>Test recurring event</ns3:text>
1354                              </ns3:summary>
1355                              <ns3:uid>
1356                                <ns3:text>CAL-00f1fc61-2f021bca-012f-022947f8-
1357      00000006demobedework@mysite.edu</ns3:text>
1358                              </ns3:uid>
1359                              <ns3:rrule>
1360                                <ns3:recur>
1361                                  <ns3:freq>WEEKLY</ns3:freq>
1362                                  <ns3:count>2</ns3:count>
1363                                  <ns3:interval>1</ns3:interval>
1364                                </ns3:recur>
1365                              </ns3:rrule>
1366                            </ns3:properties>
1367                          </ns3:vevent>
1368                          <ns3:vevent>
1369                            <ns3:properties>
1370                              <ns3:recurrence-id>
1371                                <ns3:parameters>
1372                                  <ns3:tzid>
1373                                    <ns3:text>America/New_York</ns3:text>
1374                                  </ns3:tzid>
1375                                </ns3:parameters>
1376                                <ns3:date-time>20110419T150000Z</ns3:date-time>
1377                              </ns3:recurrence-id>
1378                              <ns3:duration>
1379                                <ns3:duration>PT1H</ns3:duration>
1380                              </ns3:duration>
1381                              <ns3:dtstart>
1382                                <ns3:parameters>
1383                                  <ns3:tzid>
1384                                    <ns3:text>America/New_York</ns3:text>
1385                                  </ns3:tzid>
1386                                </ns3:parameters>
1387                                <ns3:date-time>20110419T120000</ns3:date-time>
1388                              </ns3:dtstart>
1389                              <ns3:summary>
1390                                <ns3:text>Test recurring event</ns3:text>
1391                              </ns3:summary>
1392                              <ns3:uid>
1393                                <ns3:text>CAL-00f1fc61-2f021bca-012f-022947f8-
1394      00000006demobedework@mysite.edu</ns3:text>
1395                              </ns3:uid>
1396                            </ns3:properties>
1397                          </ns3:vevent>
1398                        </ns3:components>
1399                      </ns3:vcalendar>
1400                    </ns3:icalendar>
1401                  </ns2:calendar-data>
1402                </ns2:prop>
1403                <ns2:status>OK</ns2:status>
1404              </ns2:propstat>
```

```
1405              </ns2:response>
1406            </ns2:calendarQueryResponse>
1407          </SOAP-ENV:Body>
1408        </SOAP-ENV:Envelope>
1409
```

13 Free-busy queries

Freebusy queries are used to obtain freebusy information for a principal. The result contains information only for events to which the current principal has sufficient access and may be affected by components and rules available only to the server (for instance office hours availability).

These queries are carried out by using a CalWs-SOAP freebusyReport request with an href specifying a principal. The freebusyReport request is not valid when the href specifies any entity other than a principal.

The query follows the specification defined in [FreeBusy Read URL] with certain limitations. As an authenticated user to the CalWS service scheduling read-freebusy privileges must have been granted. As an unauthenticated user equivalent access must have been granted to unauthenticated users.

Freebusy information is returned by default as xcalendar vfreebusy components, as defined by [draft-xcal]. Such a component is not meant to conform to the requirements of VFREEBUSY components in [RFC 5546]. The VFREEBUSY component SHOULD conform to section "4.6.4 Free/Busy Component" of [RFC 5545]. A client SHOULD ignore the ORGANIZER field.

Since a Freebusy query can only refer to a single user, a client will already know how to match the result component to a user. A server MUST only return a single vfreebusy component.

13.1 Element values

Three values are provided: href; start; end. Only the hre is required. The start and end are in XML UTC date/time format and are interpreted as follows:

start

Default: If omitted the default value is left up to the server. It may be the current day, start of the current month, etc.

Description: Specifies the start date for the Freebusy data. The server is free to ignore this value and return data in any time range. The client must check the data for the returned time range.

Format: An XML UTC date-time

Example:

```
2011-12-01T10:15:00Z
```

Notes: Specifying only a start date/time without specifying an end-date/time or period should be interpreted as in [RFC 5545]. The effective period should cover the remainder of that day.

end

Default: Same as start

Description: Specifies the end date for the Freebusy data. The server is free to ignore this value.

Format: Same as start

Example: Same as start

The server is free to ignore the start, end and period parameters. It is recommended that the server return at least 6 weeks of data from the current day.

A client MUST check the time range in the response as a server may return a different time range than the requested range.

1447 13.2 Examples

1448 The following is an unsuccessful request targeting an invalid resource.

```
1449        >> Request <<
1450
1451        <?xml version="1.0" encoding="UTF-8"?>
1452        <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
1453          <SOAP-ENV:Header/>
1454          <SOAP-ENV:Body>
1455            <ns2:freebusyReport
1456                    xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
1457                    xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
1458                    xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0">
1459              <ns2:href>/user/douglm/calendar</ns2:href>
1460              <ns2:time-range>
1461                <ns2:start>2011-04-01T04:00:00Z</ns2:start>
1462                <ns2:end>2011-04-30T04:00:00Z</ns2:end>
1463              </ns2:time-range>
1464            </ns2:freebusyReport>
1465          </SOAP-ENV:Body>
1466        </SOAP-ENV:Envelope>
1467
1468        >> Response <<
1469
1470        <?xml version="1.0" encoding="UTF-8"?>
1471        <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
1472          <SOAP-ENV:Header/>
1473          <SOAP-ENV:Body>
1474            <ns2:freebusyReportResponse
1475                    xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
1476                    xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
1477                    xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0">
1478              <ns2:status>Error</ns2:status>
1479              <ns2:message>Only principal href supported</ns2:message>
1480            </ns2:freebusyReportResponse>
1481          </SOAP-ENV:Body>
1482        </SOAP-ENV:Envelope>
```

1483 The following is an example of a request to retrieve Freebusy data for a user:

```
1484        >> Request <<
1485
1486        <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
1487          <SOAP-ENV:Header/>
1488          <SOAP-ENV:Body>
1489            <ns2:freebusyReport
1490                    xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
1491                    xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
1492                    xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0">
1493              <ns2:href>/principals/users/douglm</ns2:href>
1494              <ns2:time-range>
1495                <ns2:start>2011-04-01T04:00:00Z</ns2:start>
1496                <ns2:end>2011-04-30T04:00:00Z</ns2:end>
1497              </ns2:time-range>
1498            </ns2:freebusyReport>
1499          </SOAP-ENV:Body>
1500        </SOAP-ENV:Envelope>
1501
1502        >> Response <<
1503
1504        <?xml version="1.0" encoding="UTF-8"?>
1505        <SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
1506          <SOAP-ENV:Header/>
1507          <SOAP-ENV:Body>
1508            <ns2:freebusyReportResponse
1509                    xmlns:ns2="http://docs.oasis-open.org/ns/wscal/calws-soap"
1510                    xmlns:ns3="urn:ietf:params:xml:ns:icalendar-2.0"
1511                    xmlns:ns4="http://docs.oasis-open.org/ns/xri/xrd-1.0">
1512              <ns2:status>OK</ns2:status>
```

```
1513              <ns3:icalendar>
1514                <ns3:vcalendar>
1515                  <ns3:properties>
1516                    <ns3:prodid>
1517                      <ns3:text>//Bedework.org//BedeWork V3.7//EN</ns3:text>
1518                    </ns3:prodid>
1519                    <ns3:version>
1520                      <ns3:text>2.0</ns3:text>
1521                    </ns3:version>
1522                  </ns3:properties>
1523                  <ns3:components>
1524                    <ns3:vfreebusy>
1525                      <ns3:properties>
1526                        <ns3:attendee>
1527                          <ns3:parameters>
1528                            <ns3:partstat>
1529                              <ns3:text>NEEDS-ACTION</ns3:text>
1530                            </ns3:partstat>
1531                          </ns3:parameters>
1532                          <ns3:cal-address>mailto:douglm@mysite.edu</ns3:cal-address>
1533                        </ns3:attendee>
1534                        <ns3:created>
1535                          <ns3:utc-date-time>2011-06-30T15:45:56Z</ns3:utc-date-time>
1536                        </ns3:created>
1537                        <ns3:dtend>
1538                          <ns3:date-time>2011-04-30T00:00:00Z</ns3:date-time>
1539                        </ns3:dtend>
1540                        <ns3:dtstamp>
1541                          <ns3:utc-date-time>2011-06-30T15:45:56Z</ns3:utc-date-time>
1542                        </ns3:dtstamp>
1543                        <ns3:dtstart>
1544                          <ns3:date-time>2011-04-01T00:00:00Z</ns3:date-time>
1545                        </ns3:dtstart>
1546                        <ns3:freebusy>
1547                          <ns3:parameters>
1548                            <ns3:fbtype>
1549                              <ns3:text>BUSY</ns3:text>
1550                            </ns3:fbtype>
1551                          </ns3:parameters>
1552                          <ns3:period>
1553                            <ns3:start>2011-04-06T15:00:00Z</ns3:start>
1554                            <ns3:end>2011-04-06T16:00:00Z</ns3:end>
1555                          </ns3:period>
1556                        </ns3:freebusy>
1557                        <ns3:last-modified>
1558                          <ns3:utc-date-time>2011-06-30T15:45:56Z</ns3:utc-date-time>
1559                        </ns3:last-modified>
1560                        <ns3:organizer>
1561                          <ns3:parameters/>
1562                          <ns3:cal-address>mailto:douglm@mysite.edu</ns3:cal-address>
1563                        </ns3:organizer>
1564                        <ns3:uid>
1565                          <ns3:text>2UTDVPZ9H0EQL9QISI44SP5IFPC4N75</ns3:text>
1566                        </ns3:uid>
1567                      </ns3:properties>
1568                    </ns3:vfreebusy>
1569                  </ns3:components>
1570                </ns3:vcalendar>
1571              </ns3:icalendar>
1572          </ns2:freebusyReportResponse>
1573        </SOAP-ENV:Body>
1574      </SOAP-ENV:Envelope>
1575
```

14 Multiple operations

Each of the previously described operations acts upon a single entity or resource only. Frequently we have the need to update an interconnected set of entities so that we maintain the consistency of the structure. This requires an atomic operation which can successfully update all the entities or roll back the operation on failure.

The MultiOpType operation provides such a feature. It is essentially a wrapper around any of the other operations which guarantees the success of the entire set or a roll back. Using the id attribute for requests, each individual response can be located in the result.

The MultiOpType request takes the following elements

Field	Type	#	?	Description
operations	Sequence of BaseOperationType	1	Y	Contains one or more operations

Table 30: MultiOpType elements

The response type is also simple containing a single element containing all the responses.

Field	Type	#	?	Description
responses	Sequence of BaseResponseType	1	Y	Contains zero or more responses

Table 31: MultiOpResponseType elements

Conformance

The last numbered section in the specification must be the Conformance section. Conformance Statements/Clauses go here.

Appendix A. Acknowledgments

The following individuals have participated in the creation of this specification and are gratefully acknowledged

Participants:

- Cyrus Daboo, Apple

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1603 Appendix B. Non-Normative Text

1604

Appendix C. Revision History

Revision	Date	Editor	Changes
04	November 11 2011	M. Douglass	Updated calendar query to use xcal types instead of names. Assumes a later version of the xcalendar schema to make this possible Change references to "etoken" to "changeToken" Update the error codes with descriptions and a type per error. Added some new errors.
03	September 7 2011	M. Douglass	Add test attribute to calendar query elements.
02		M. Douglass	Added href to fetch response. Change propstat to be extension of BaseResponseType
01	July 15 2011	M. Douglass	Added etoken to ensure consistent updates. Added a multi op which allows the atomic processing of multiple operations in one request Added an id attribute to requests and responses.
Initial	Mar 15 2011	M. Douglass	Initial publication - a first pass at a rewrite from CalWS-REST

1606