

It's Time To Share: Calendar Data Interchange

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O'Reilly Open Source Convention
August 4, 2005

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Learn how to use the LAMP toolset to publish calendar interchange data in a variety of formats such as iCalendar, vCalendar, Palm Date Book Archive and Outlook CSV. The speakers will also share practical advice about how to avoid application-specific quirks such as time-zone differences and the representation of all-day (untimed) events.



What you'll learn today

1. iCalendar (RFC 2445) is the One True interchange format
2. Conforming to the iCalendar spec is easier said than done
3. LAMP is the ideal tool to generate dynamic iCalendar data
4. Time Zones: can't live with 'em, can't live without 'em



Thirty Days Hath September



<http://www.tondering.dk/clus/calpic/feb1712.html>

The picture below shows two pages from a Swedish almanac from 1712. In the top left corner you see the word "Februarius", and at the bottom of the right page, the 30th day of that month is mentioned.

The two words to the right of the number "30" are:

* "Tillökad", that is, "added".

* "Snöö", that is, "snow". It was customary to include weather forecasts for the entire year in almanacs. Very convenient!



Calendar Software



Apple
iCal



Palm
Desktop



Mozilla
Sunbird



OSAF
Chandler



Lotus
Notes






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Other less-popular apps that understand iCalendar:

- Mac: Mulberry
- Windows: Microsoft Works (Version 8 or higher), WinDates, EventSherpa
- Linux: Novell Evolution, KOrganizer, Kronolith



Supported Import Formats

| App | iCalendar | vCal | Other |
|---|-----------|------|-----------|
|  | yes | yes | CSV |
|  | yes | yes | |
|  | sorta | yes | DBA |
|  | yes | yes | html, rtf |
|  | yes | | |



iCalendar: the *De Facto* Standard

```
BEGIN:VCALENDAR
PROID:-//Acme Software\, Inc./ExampleCalApp 1.2.3//EN
VERSION:2.0
CALSCALE:GREGORIAN
BEGIN:VEVENT
SUMMARY:HTTP Caching and Cache-busting
DTSTART;TZID=US/Pacific:20050804T172000
DURATION:PT45M
END:VEVENT
BEGIN:VEVENT
SUMMARY:Tax Day
DTSTART;VALUE=DATE:20060415
DTEND;VALUE=DATE:20060416
END:VEVENT
END:VCALENDAR
```

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This is a little bit simplified. iCalendar requires UID for each VEVENT. Typically there's other info in each event, such as DTSTAMP and SEQUENCE.

Generating Calendar Data with LAMP

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cal.sql

- Schema for table to hold event data



Event.php

- Classes to generate iCalendar output



config.php

- Basic app/DB configuration



calendar.php

- Generate iCalendar output



list.php

- Display human-readable (but ugly) event summary for debugging



add.php

- Add a new event

iCalendar: TIMTOWTRI

There Is More Than One Way To
Represent It

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iCalendar Event (Start + End)

BEGIN:VEVENT

SUMMARY:Ice Cream Social

LOCATION:Exhibit Hall

DTSTART;TZID=US/Pacific:20050804T152000

DTEND;TZID=US/Pacific:20050804T163000

UID:5FFB146A-8F4A-480E-B0B9-EC302B5DD8B6

END:VEVENT

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An actual event happening this afternoon. Don't forget to get your ice cream!



iCalendar Event (Start + Duration)

BEGIN:VEVENT

SUMMARY:Ice Cream Social

LOCATION:Exhibit Hall

DTSTART;TZID=US/Pacific:20050804T152000

DURATION:PT1H10M

UID:5FFB146A-8F4A-480E-B0B9-EC302B5DD8B6

END:VEVENT

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The same event, but using a DURATION instead of an explicit DTEND.



iCalendar Event (GMT)

BEGIN:VEVENT

SUMMARY:Ice Cream Social

LOCATION:Exhibit Hall

DTSTART:20050804T222000Z

DURATION:PT1H10M

UID:5FFB146A-8F4A-480E-B0B9-EC302B5DD8B6

END:VEVENT

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The same event again. The “Z” at the end of the DTSTART indicates Greenwich Mean Time. The correct time regardless of where the user is, but without the need to specify a VTIMEZONE.



iCalendar Event (Floating Time)

```
BEGIN:VEVENT
SUMMARY:Ice Cream Social
LOCATION:Exhibit Hall
DTSTART:20050804T152000
DURATION:PT1H10M
UID:5FFB146A-8F4A-480E-B0B9-EC302B5DD8B6
END:VEVENT
```

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The same event again, but without any timezone information at all. The absence of a TZID or a “Z” indicates that this event happens at 15:20, but we don’t specify which timezone it’s in. It is left to the client application to interpret what time this event should happen. Typically means the current configuration, whatever that may be.

On the Palm this is called “No Time Zone”, on Apple iCal.app it’s called “Floating”.

The other 3 events would be 100% identical to each other, but this one is actually different. If you travel from NYC to PDX and then adjust the clock on your laptop, Floating events will not shift.

iCalendar Interop Hurdle

All-day Untimed Events

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*How many different ways can you express an event like Mom's Birthday?
Which exact incantation is interpreted consistently by all major apps?*



All-day Untimed Event



BEGIN:VEVENT

SUMMARY:Mom's Birthday

DTSTART:20050507T000000

DTEND:20050507T235959

RRULE:FREQ=YEARLY

UID:15369079-4F9A-4D0A-9ABF-EC5F2F5F1C7F

END:VEVENT



All-day Untimed Event



BEGIN:VEVENT

SUMMARY:Mom's Birthday

DTSTART:20050507T000000

DTEND:20050508T000000

RRULE:FREQ=YEARLY

UID:15369079-4F9A-4D0A-9ABF-EC5F2F5F1C7F

END:VEVENT



All-day Untimed Event



BEGIN:VEVENT

SUMMARY:Mom's Birthday

DTSTART;VALUE=DATE:20050507

RRULE:FREQ=YEARLY

UID:15369079-4F9A-4D0A-9ABF-EC5F2F5F1C7F

END:VEVENT



All-day Untimed Event



BEGIN:VEVENT

SUMMARY:Mom's Birthday

DTSTART;VALUE=DATE:20050507

DURATION:P1D

RRULE:FREQ=YEARLY

UID:15369079-4F9A-4D0A-9ABF-EC5F2F5F1C7F

END:VEVENT



All-day Untimed Event



BEGIN:VEVENT

SUMMARY:Mom's Birthday

DTSTART;VALUE=DATE:20050507

DTEND;VALUE=DATE:20050507

RRULE:FREQ=YEARLY

UID:15369079-4F9A-4D0A-9ABF-EC5F2F5F1C7F

END:VEVENT



All-day Untimed Event



BEGIN:VEVENT

SUMMARY:Mom's Birthday

DTSTART;VALUE=DATE:20050507

DTEND;VALUE=DATE:20050508

RRULE:FREQ=YEARLY

UID:15369079-4F9A-4D0A-9ABF-EC5F2F5F1C7F

END:VEVENT

Calendar Scheduling Protocols

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iCalendar Interchange Protocols

| | | |
|-----------------------|---|---|
| iCalendar RFC 2445 | Internet Calendaring and Scheduling Core Object Specification | The <i>de facto</i> standard |
| iTIP RFC 2446 | iCalendar Transport-Independent Interoperability Protocol | Adds METHOD: PUBLISH, REQUEST, REPLY, etc. to iCalendar |
| iMIP RFC 2447 | iCalendar Message-Based Interoperability Protocol | iTIP over email |
| CAP | Calendar Access Protocol | Declared dead by the IETF in Sept. 2004 |
| CalDAV | Calendaring Extensions to WebDAV | Internet-Draft, still a work-in-progress |

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iMIP: Scheduling via Email

```
BEGIN:VCALENDAR
METHOD:REQUEST
BEGIN:VEVENT
SUMMARY:PHP 7 Planning and Pub Crawl
DTSTART;TZID=US/Pacific:20050804T193000
DTEND;TZID=US/Pacific:20050805T020000
ORGANIZER;CN="Michael Radwin":MAILTO:michael@radwin.org
ATTENDEE;CN="Rasmus Lerdorf";PARTSTAT=NEEDS-ACTION;ROLE=REQ-
PARTICIPANT;RSVP=TRUE:mailto:rasmus@php.net
ATTENDEE;CN="David Sklar";PARTSTAT=NEEDS-ACTION;ROLE=REQ-
PARTICIPANT;RSVP=TRUE:mailto:sklar@sklar.com
ATTENDEE;CN="Adam T'berg";PARTSTAT=NEEDS-ACTION;ROLE=REQ-
PARTICIPANT;RSVP=TRUE:mailto:adam@trachtenberg.com
DTSTAMP:20050530T010553Z
END:VEVENT
END:VCALENDAR
```

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ROLE could be CHAIR, REQ-PARTICIPANT, OPT-PARTICIPANT, NON-PARTICIPANT

RSVP=TRUE indicates that we want a reply from the user. It does not indicate that they are coming.

PARTSTAT shows whether they'll be participating or not (see next slide)



iMIP: Reply

```
BEGIN:VCALENDAR
METHOD:REPLY
BEGIN:VEVENT
SUMMARY:PHP 7 Planning and Pub Crawl
DTSTART;TZID=US/Pacific:20050804T193000
DTEND;TZID=US/Pacific:20050805T020000
ORGANIZER;CN="Michael Radwin":MAILTO:michael@radwin.org
ATTENDEE;CN="Rasmus Lerdorf";PARTSTAT=ACCEPTED;ROLE=REQ-
PARTICIPANT;RSVP=TRUE:mailto:rasmus@php.net
DTSTAMP:20050705T052030Z
END:VEVENT
END:VCALENDAR
```

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PARTSTAT could also be NEEDS-ACTION (the default), DECLINED, TENTATIVE, or DELEGATED.



Scheduling with CalDAV

- CalDAV is the future
- iMIP still valid for async scheduling

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CalDAV home page <http://ietf.webdav.org/caldav>

“What is CalDAV?”

CalDAV is a protocol allowing calendar access via WebDAV. CalDAV models calendar events as HTTP resources in iCalendar format, and models calendars containing events as WebDAV collections. This allows users to publish and subscribe to calendars, share them collaboratively, synchronize between multiple users and synchronize between multiple devices.”

Time Zones

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How Many Time Zones in the USA?



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What Time is it in Oregon?



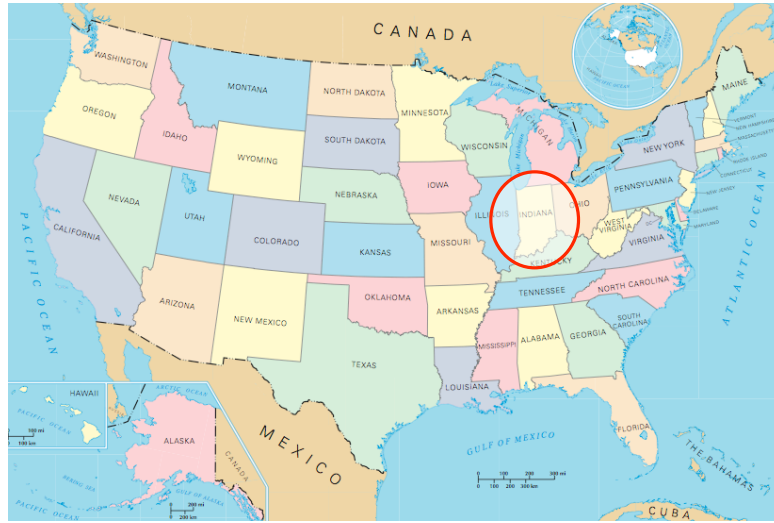


What Time is it in Oregon?



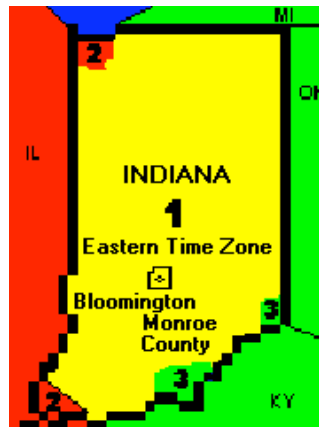


What Time is it in Indiana?





What Time is it in Indiana?



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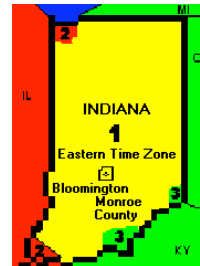
<http://www.mccsc.edu/time.html>

1. 77 counties (including state capital Indianapolis) are in the Eastern Time Zone but do not change to Daylight time in April; instead they remain on Standard Time all year long; [yellow on map and chart]
2. 10 counties -- five near Chicago, IL, and five near Evansville, IN, are in the Central Time Zone and use both Central Standard and Central Daylight; [red on map and chart] and
3. five other counties -- two near Cincinnati, OH, and three near Louisville, KY -- are in the Eastern Time Zone but use both Eastern Standard and Eastern Daylight. [green on map and chart]



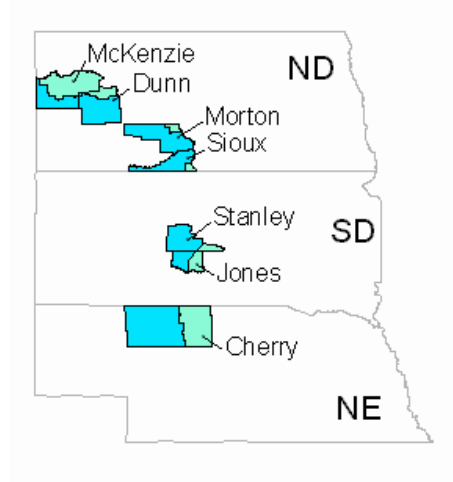
What Time is it in Indiana in 2006?

- Indiana will observe DST next year
- Will *spring ahead* @ 2am on April 2 '06
- 77 yellow counties





Dakotas and Nebraska





Florida





Texas





Don't Worry, It's Not That Bad

- Luckily, you can get free data from the National Weather Service
 - OST/SEC GIS Map Group
 - Time Zones for 3200 counties
- Join with ZIP Code data
 - 43,000 ZIPs from Census Bureau



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<http://www.nws.noaa.gov/geodata/catalog/county/html/county.htm>

Download c_DDmmYY.zip file from that page, unpack.

Inside, you'll find a c_DDmmYY.dbf file. Fifth column is timezone.

Import into Microsoft Excel, then export as CSV.

To get TZ data down to zipcode level, download 1999 ZIP Codes file from US Census Bureau

<http://www.census.gov/geo/www/gazetteer/places2k.html>

Part of TIGER (Topologically Integrated Geographic Encoding and Referencing system) project

Other Calendar Formats

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vCalendar 1.0

- “The Electronic Calendaring and Scheduling Exchange Format”
 - Published Sep. 1996
 - versit Consortium, later Internet Mail Consortium
- File extension: .vcs
- Why bother?
 - Ancestor of iCalendar
 - Still used by legacy apps

```
BEGIN:VCALENDAR
VERSION:1.0
BEGIN:VEVENT
CATEGORIES:MEETING
STATUS:TENTATIVE
DTSTART:19960401T033000Z
DTEND:19960401T043000Z
SUMMARY:Your Proposal Review
DESCRIPTION:Steve and John
            to review newest proposal
            material
CLASS:PRIVATE
END:VEVENT
END:VCALENDAR
```

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<http://www.imc.org/pdi/vcal-10.txt>



Comma Separated Values

- Microsoft proprietary schema for calendar data
- File extension: .csv
- Why bother?
 - High-fidelity interchange with Outlook
- Why avoid?
 - No timezone concept
 - Does 6/2/2005 represent June 2nd or February 6th?

```
"Subject", "Start Date",  
"Start Time", "End  
Date", "End Time", "All day  
event", "Description", "Show  
time as", "Location"
```

```
"Project XYZ Review",  
"11/16/1998", "4:30 PM",  
"11/16/1998", "7:00 PM",  
"false", "", "4", "Conference  
Room 23A"
```

```
"Bastille Day", "7/14/2006",  
, , , "true", "", "3", ""
```

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http://en.wikipedia.org/wiki/Comma-separated_values



Palm Date Book Archive

- Palm binary format
 - Palm Desktop for Windows only
 - Stores dates as POSIX time (seconds since midnight Jan 1 1970 UTC)
- File extension: .dba
- Why bother?
 - Lossless interchange with PalmOS via Windows

```

0001 4244 1064 6566 6175 6c74 5f75 7365 ..BD.default_use
722e 6462 6100 0800 0000 0000 0000 3600 r.dba.....6.
0000 0f00 0000 0000 0000 0100 0000 0200 .....
0000 0f00 0100 0100 0100 0300 0100 0500 .....
0100 0500 0600 0600 0100 0600 0100 0100 .....
0800 f000 0000 0100 0000 0000 0000 0100 .....
0000 0100 0000 0100 0000 ffff ff7f 0300 .....
0000 0c26 f442 0100 0000 442a f442 0500 ...&.B...D*.B..
0000 0000 0000 1b43 616e 646c 6520 6c69 .....Project X
6768 7469 6e67 2028 5061 6c6f 2041 6c74 YZ Review (Rm 23
6f29 0100 0000 0000 0000 0500 0000 0000 A).....
0000 0006 0000 0000 0000 0006 0000 0000 .....
0000 0001 0000 0001 0000 0006 0000 0000 .....
0000 0001 0000 00ff ffff ff01 0000 0000 .....
0000 0008 0000 0000 0000 0001 0000 0000 .....
0000 0001 0000 0001 0000 0001 0000 00ff .....
ffff 7f03 0000 00b0 08f5 4201 0000 00b0 .....B.....
08f5 4205 0000 0000 0000 000e 5061 7261 ..B.....Bast
7368 6174 204d 6173 6569 0100 0000 0000 ille Day.....
0000 0500 0000 0000 0000 0006 0000 0001 .....

```

http://www.geocities.com/helphand1/datebook_dat.htm

JPilot for Linux also seems to support DBA



xCal - iCalendar DTD Document

- iCalendar expressed as XML
 - First proposed Aug. 2001
 - Internet-Draft expired in Jan. 2003
- File extension: .xcs
- Why bother?
 - Use XSLT to transform into standard iCalendar
 - No loss of data

```
<iCalendar>
<vcalendar method="PUBLISH" version="2.0"
  prodid="//Acme Corp//Example v1.0//EN">
<vevent>
  <uid>15369079-4F9A-4D0A-9ABF-
    EC5F2F5F1C7F</uid>
  <dtstamp>19981116T145958Z</dtstamp>
  <summary>Project XYZ Review</summary>
  <location>Conference Room
    23A</location>
  <dtstart>19981116T163000Z</dtstart>
  <dtend>19981116T190000Z</dtend>
</vevent>
</vcalendar>
</iCalendar>
```

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<http://www.calsch.org/ietf/archives/draft-ietf-calsch-many-xcal-02.txt>



RDFiCal, RdfCalendar

- “An RDF vocabulary (ontology) for describing calendar events based on the iCalendar”
 - First conceived Oct. 2000 by Tim B-L
 - Dan Connolly, Libby Miller still evolving spec
- File extension: .rdf
- Why bother?
 - Integration with the Semantic Web, FOAF

```
<rdf:RDF>
  <Vcalendar>
    <version>2.0</version>
    <prodid>...</prodid>
    <component> <Vevent
      rdf:about="http://www.w3.org/uid/A0831EE4-
73D1-11D9-B5C3-000393CD78B4">
      <summary>Project XYZ Review</summary>
      <dtstart rdf:parseType="Resource">
        <dateTime>2005-01-
27T09:00:00</dateTime>
      </dtstart>
      <duration rdf:parseType="Resource">
        <duration>PT1H30M</duration>
      </duration>
    </Vevent> </component>
  </Vcalendar>
</rdf:RDF>
```

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<http://www.w3.org/2002/12/cal/>



hCalendar

- “A 1:1 representation of iCalendar in XHTML”
 - First conceived Sep. 2004 by Tantek Çelik (Technorati)
- File extension: .html
- Why bother?
 - HTML makes it easy for bloggers to discuss events on their blogs
 - Use XSLT to transform into standard iCalendar

```
<span class="vcalendar">  
<span class="vevent" id="15369079-4F9A-4D0A-9ABF-EC5F2F5F1C7F">  
  <span class="summary">Annual  
  Employee Review</span>  
  <abbr title="dtstamp"  
  class="19970901T130000Z"></abbr>  
  <abbr title="dtstart"  
  class="19970903T163000">September  
  3rd, 4:30pm</abbr>-  
  <abbr title="dtend"  
  class="19970903T190000">7:00pm  
  </abbr>  
</span>  
</span>
```

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<http://developers.technorati.com/wiki/hCalendar>



Calendar Format Recommendations

- Use *bona fide* iCalendar (RFC 2445)
 - Don't choose a “wrapper” format
 - Usually unable to express complex iCalendar fields (i.e. RRULE)
- Comma Separated Values (CSV) a valid choice
 - Batch export to Microsoft Office Outlook
 - Outlook only interprets first VEVENT in .ics file

Thank you

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