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
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

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

<table>
<thead>
<tr>
<th>App</th>
<th>iCalendar</th>
<th>vCal</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>📅</td>
<td>yes</td>
<td>yes</td>
<td>CSV</td>
</tr>
<tr>
<td>📅📅</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>💡📅</td>
<td>sorta</td>
<td>yes</td>
<td>DBA</td>
</tr>
<tr>
<td>🌎📅</td>
<td>yes</td>
<td>yes</td>
<td>html, rtf</td>
</tr>
<tr>
<td>🐾📅</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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
• 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
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

A n 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

The same event, but using a DURATION instead of an explicit DTEND.
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.
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.
How many different ways can you express an event like Mom’s Birthday? Which exact incantation is interpreted consistently by all major apps?
BEGIN:VEVENT
SUMMARY:Mom’s Birthday
DTSTART:20050507T000000
DTEND:20050507T235959
RRULE:FREQ=YEARLY
UID:15369079-4F9A-4D0A-9ABF-EC5F2F5F1C7F
END:VEVENT
BEGIN:VEVENT
SUMMARY:Mom’s Birthday
DTSTART:20050507T000000
DTEND:20050508T000000
RRULE:FREQ=YEARLY
UID:15369079-4F9A-4D0A-9ABF-EC5F2F5F1C7F
END:VEVENT
BEGIN:VEVENT
SUMMARY:Mom’s Birthday
DTSTART;VALUE=DATE:20050507
RRULE:FREQ=YEARLY
UID:15369079-4F9A-4D0A-9ABF-EC5F2F5F1C7F
END:VEVENT
BEGIN:VEVENT
SUMMARY:Mom’s Birthday
DTSTART;VALUE=DATE:20050507
DURATION:P1D
RRULE:FREQ=YEARLY
UID:15369079-4F9A-4D0A-9ABF-EC5F2F5F1C7F
END:VEVENT
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
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
# iCalendar Interchange Protocols

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

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)
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

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
How Many Time Zones in the USA?
What Time is it in Oregon?
What Time is it in Oregon?
What Time is it in Indiana?
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
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

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
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

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",""
```

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

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

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>
      <Event 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>
      </Event>
    </component>
  </Vcalendar>
</rdf:RDF>
```

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

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