Technical Manual

Prototype synchronization calendar service - VTCAL

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@MaiDAMA – @WeLiSa - @Hellodie

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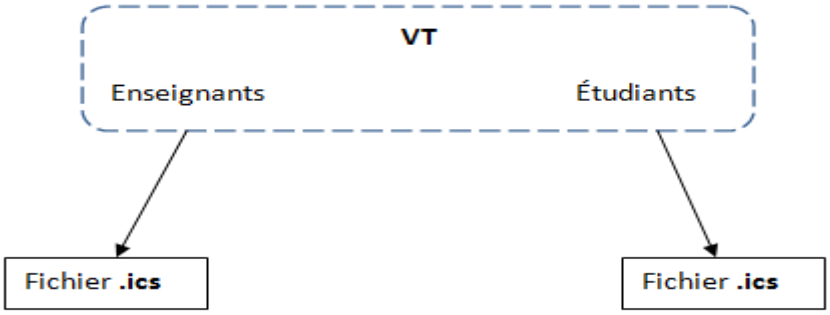
Presentation

The University of Evry Val d'Essonne currently uses the proprietary **Celtat** software for creating and managing schedules of students and teachers. Given that the university contributes to the development of free software. It was therefore decided to use the **Visual Timetabling** free software (VT) that will replace the Celtat software. VT has been designed to easily create schedules based on different profiles.

The primary need is that different users can synchronize their calendar (on smartphones or other) with ICS files generated by the software. The synchronization is done through a CalDAV server.

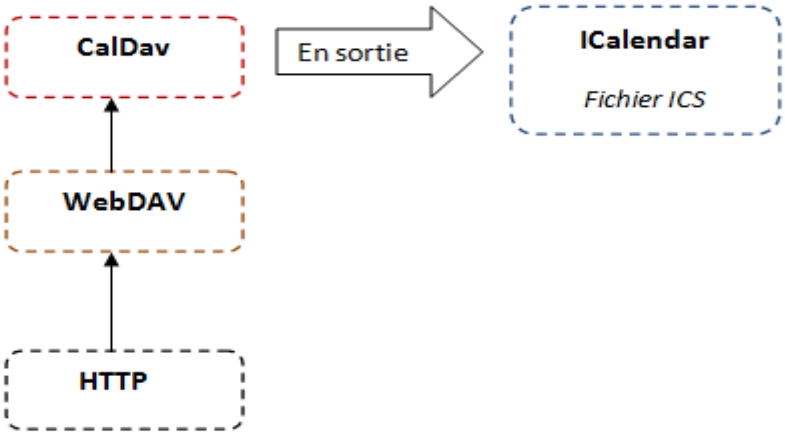
To do this, the tasks to be performed are:

- To study in depth the operation of VT: rights, storage, import, manage users, plugins and more.



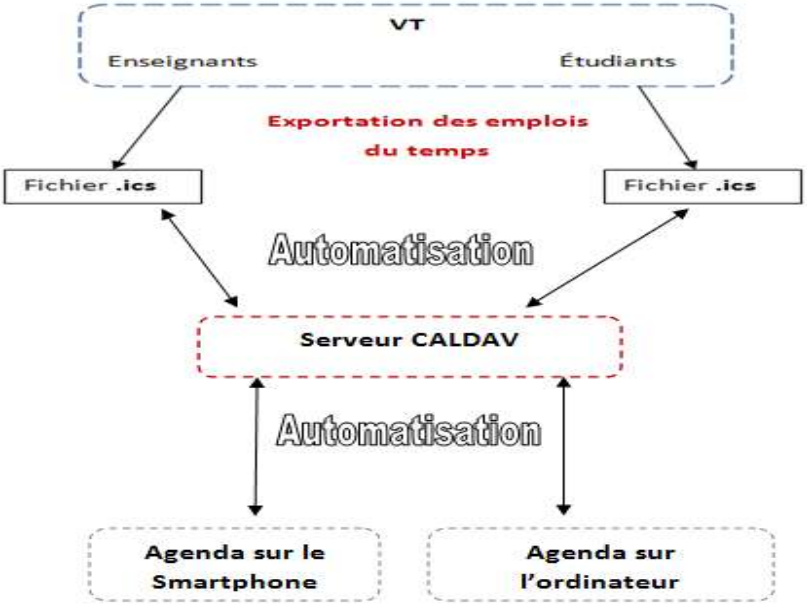
Schema export timetables

- To understand the functioning of the CalDAV protocol which is over WebDAV and HTTP. This will our thereafter choose the CalDAV server.



Hierarchical diagram of the CalDAV protocol

- To take decisions regarding the communication between the different components (VT, CalDAV server, smartphone, PC). Finally, the last task will be the implementation of a prototype calendar service.



Scheme for automating a service calendar

Reflexion

After studying the functioning and operation of the VT CalDAV protocol which is over WebDAV and HTTP. We decided to work with the Radicale server for managing calendars. Latter interact with the Lightning client (computer side) and Firefox Os (mobile side).

However, given the complexity of VT software, it was decided to develop a "VTCAL" application that will communicate with the CalDAV server.

During this project, we proceed as follows:

1. Synchronize schedules between CalDAV server to the Lightning client (computer side)
2. Synchronize schedules between CalDAV server to FirefoxOs (mobile side)
3. Synchronize schedules between VTCAL application and CalDAV server
4. Prototype implementation of a service schedule

Nota:
This project will be available in a directory on GitHub linked as follows:
https://github.com/WeLiSa/VTCAL

Installation tools

Pour que ce prototype de synchronisation de service de calendriers fonctionne, il faut installer les outils suivants :

For this prototype synchronization service calendars work, you must install the following tools:

1. The email client developed by the Mozilla Foundation, **Thunderbird** with **Lightning** extension for managing calendars
2. **Radicale** Caldav server
3. **Firefox OS simulator** or have a mobile Firefox OS
4. The **Application** developed by us

I. Instaling Thunderbird and Lightning extension

- To do this, you must download the software from the following link:

```
http://www.mozilla.org/fr/thunderbird/?flang=fr
```

- and follow the instructions.

In a second step, the addition of Lightning is by the Add-ons Manager available in Thunderbird, or manually by downloading the Mozilla website.

By default, Thunderbird will automatically check if a new version of Lightning is available and performs the update.

II. Installation Radicale Caldav server

1) Installation

```
# aptitude install radicale
```

2) Setting up the server

a) Edit the main configuration file

Edit the configuration file /etc/radicale/config :

```
# vim /etc/radicale/config
```

This allows you to configure more technical and securely

b) Create the storage folder

Create the storage folder (the location specified in the config file):

```
# mkdir /data/radicale
```

Changer the folder owner:

```
# chown radicale:radicale /data/radicale
```

Check permissions on the file:

```
# ls -l /data | grep radicale
  drwxr-xr-x  3 radicale radicale      4096   7 sept.  21:55 radicale
```

c) Chexk the log file

```
# ls -l /var/log | grep radicale
  drwxr-xr-x  2 radicale radicale      4096   7 sept.  19:34 radicale
```

```
# ls -l /var/log/radicale
  total 2576
  -rw-rw----  1 radicale radicale     2630711  8 sept. 09:11 radicale.log
```

The owner and group of these files must be well radical radical. If a custom pid file was created, you must also check the rights.

d) Create htpasswd file

- Install package apache2-utils

```
# aptitude install apache2-utils
```

- Create the file users

```
# htpasswd -cbd /chemin/vers/monfichier/.htpasswd utilisateur mot_de_passe
```

Indicating the path to the file. htpasswd, user name and password required.

- Replace `/chemin/vers/monfichier/.htpasswd` by `/etc/radicale/users`;
- Replace `utilisateur` with the desired user name;
- Raplace `mot_de_passe` with the desired password.

Change the file owner:

```
# chown radicale:radicale /etc/radicale/users
```

3) Starting the server

```
# /etc/init.d/radicale start
```

Check that everything went well:

```
# /etc/init.d/radicale status
  radicale is running.
```

The server is operational.

The data are available at url http://mon_serveur:5232/mon_utilisateur/nom_de_l_agenda. Do not forget to add a port forwarding on the nat if necessary.

4) Client Configuration

a) For the calendar

In this example I use mozilla thunderbird (icedove in Debian) but explanations can easily be reused for another client. I assume that thunderbird is already installed on your machine.

We will use the `lightning` extension that integrates a calendar to thunderbird.

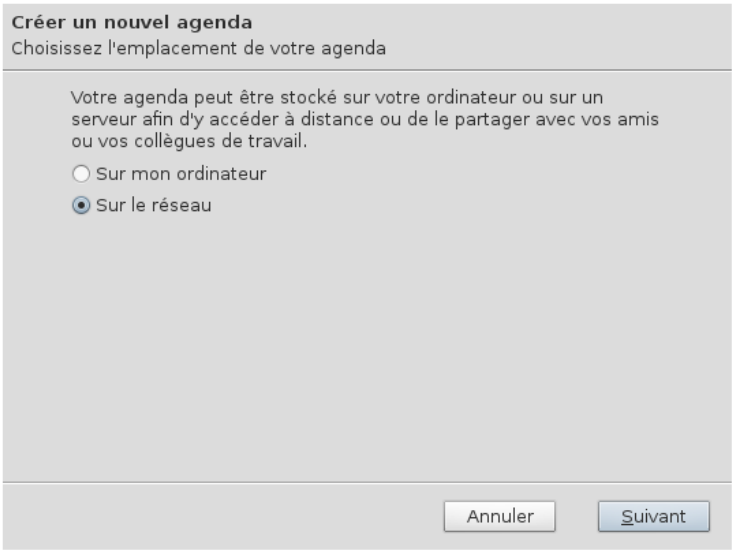
- Install lightning

```
# aptitude install iceowl-extension
```

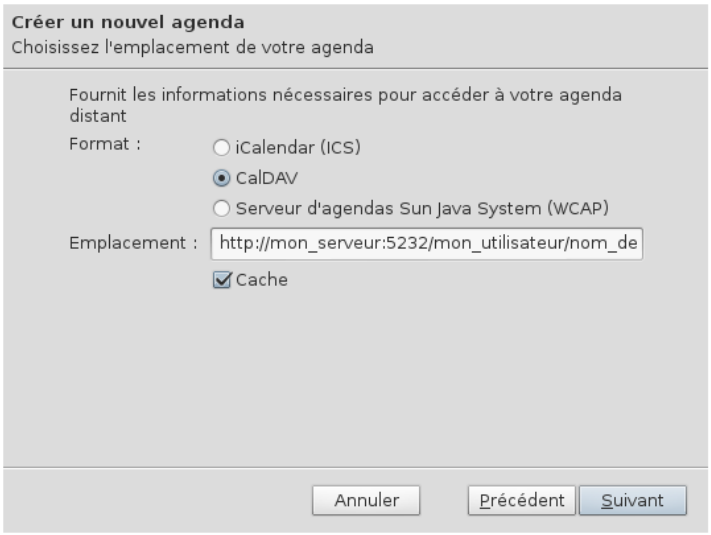
Restart thunderbird.

- Créating a calendar

- Start Thunderbird ;
- File > New > Calendar… ;
- Sélect “On the Network” ;

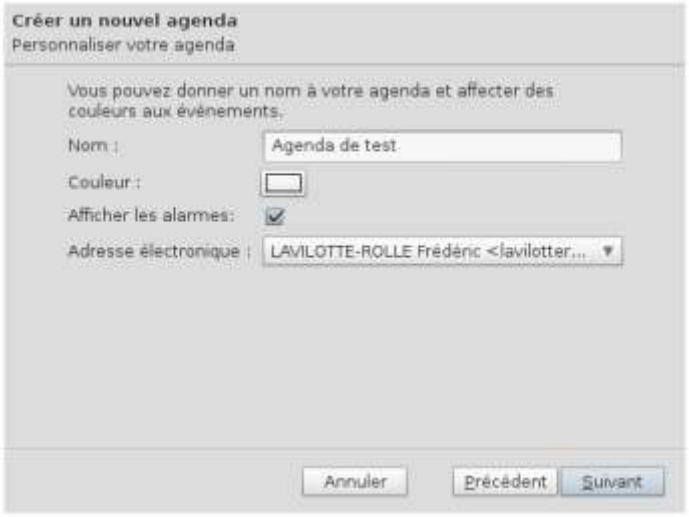


- Select the calendar format;;
- Entrer the URL of the server: :
  - http://mon_serveur:5232/<mon_utilisateur>/<nom_de_l_agenda>

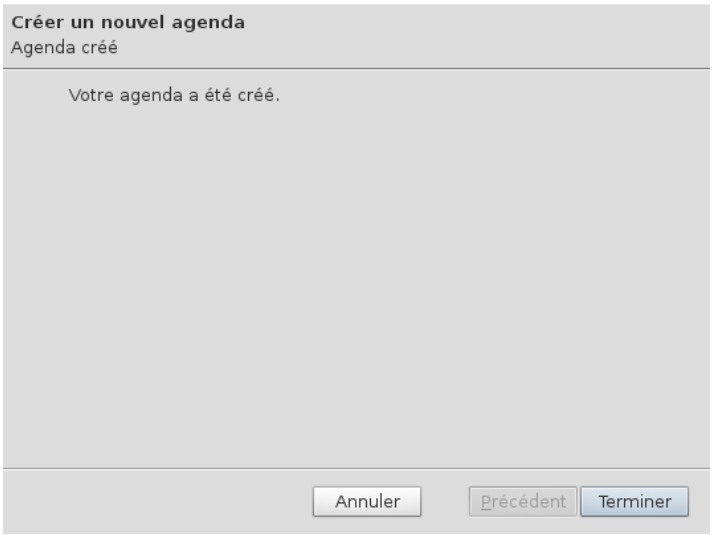


- Raplace `<mon_utilisateur>` the username specified in `/etc/radicale/users` ;
- Raplace `<nom_de_l_agenda>` by the desired name for your calendar (eg: `default.ics`) ;
- If the calendar does not exist it will be created automatically.

- Choose the name, color and associated with this agenda::



- Cliquer on finish:



- Thunderbird then asks the user and password;;
- Validate the certificate if SSL is used;;
- Refresh remote calendars right to make changes in accounts of other users click.

III. Installing Firefox OS simulator

- Open the Mozilla browser
- Go to the menu, "Add-ons"
- Find the "Firefox OS Simulator" plugin
- And follow the installation instructions

IV. Installing the application VTCAL

To install the application, the user must:

- Install WampServer 2.2
- Unzip the application and store the directory "www" wampServer
- Store all types of calendars. ics in the "calendar" directory to perform the export or shipment to Radicale

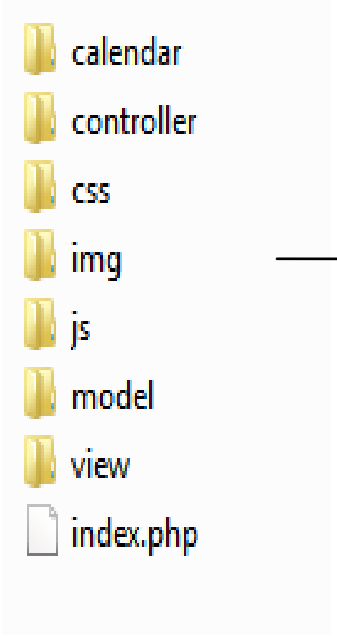
Application Development

The VTCAL application is a test to allow protypage automation of file type calendar (. Ics) to the Radical server that is synchronous interaction with a computer or mobile to manage calendars. To remedy this so we used several technologies:

- **HTML5** that generates web pages,
- **CSS3** used to optimize the design of the pages,
- **PHP5** for dynamic pages,
- **Wampserver 2.2** that uses the apache server to interpret the PHP
- The **Jquery** framework for JavaScript client-side
- The **Jquery Ui** plugin to use Datapicker component,
- **Design Pattern MVC** to structure the application
- The **iCalcreator** librairy that handles the management of calendars

However, to manage the data of the application, a dataset has been established in the manner of a database.

Application tree



These records include files.

Model : The different classes and the library iCalcreator

Controller : the file traitement.php The controller interacts. with the view and the model. It is he who is in charge of the actions performed on the page

View : other views relating to the index.php page

Js : files **js, jquery, jQueryUI** hand where the management of calendars is performed

Css : style.css

Calendar : different files. ics filtering to be exported or sent to the caldav server

Technical memo functions of Controller

```
/*Compare two date**/

function compareDate($dateoccurrence,$date)

/*Remove The slashes**/

function supprimerSlashe($date)

/ * Filtering a file based on dates * /

function filtrageFile($name_file,$datedebut,$datefin)

/ ** Gets the existing configuration ** /

function recupereConfigFichierExistant($name_file)

/ ** Removes event components ** /

function deleteComposantsEvent($v,$uids,$unique_id)

/ ** Exports a file filter * /

function exporterFile($v)

/ *** Checks the file extension *** /

function isCalendar($chemin)

/ **** Send to caldav server *** /
function envoieVersCalDAV($v,$name_profil)

/ *** Displays the send has had success *** /

function recapulatifSucess($name_profil,$datedebut,$datefin)

/ *** Redirect the page if an error *** /

function errorDateEmpty()
```

<u>Procédure pour les méthodes exporter et envoyer vers le serveur CalDav</u>

Foremost to one of two actions it took to filter the user selected file.

Filtering

The user has the possibility of performing filtering according to a file date of start and end. For this development side we have:

1. Manage dates entered by the user (conversion, removal slashes)
2. Retrieve configuration data .Ics file

3. In itialize a new calendar which is assigned configurations obtained and assigned the selected file
4. Parser calendar
5. Browse the calendar recovering all uids events do not correspond to the user request
6. Remove events according to their uids
7. Rename the file according to the date and time

Export

1. Collect the filtered calendar
2. Allow Downloading Calendar

Send to the CalDAV server

1. Collect the filtered calendar
2. Depending on the user profile sent the calendar through the HTTP PUT method to the CalDAV server

Updates timetables for implementation compared to Caldav server

Batch "synch_radicale_appli.bat" is running at the same time as the launch of the application. It aims to recover all the calendars on the Caldav server and paste in the "calendar" directory of the application and that every 10 seconds.

- Pré-requis :

- Have 2 Windows PC on the same network, one with and one with Radical App
- The "test_batch_OK" attached script will be put on and run on the PC app

- Key to adapt the batch (right click on the file and then "Edit"):

=> Edit there was color

NOM-PC-2 : name of the PC on which there is an application (in the file explorer on the left, under "Network")

wamp\www\VTCAL\calendar : path of the directory "wamp \ www \ VTCAL \ calendar" where you want to store calendars recovered Radical

WORKGROUP : to find it, go to "Start", right click on "Computer", "Properties" and it is in "Settings Computer name, domain, and workgroup" => "Working Group"

User : login session 2 pc (Application). To find out, "Start" and it's just below the name of the avatar (picture)

Mdp : corresponds to the password of the session of the User

C:\XXX\radicale\data\user : path to the directory containing the calendars to retrieve Radical

```
@echo off&cls

NET USE * /DELETE /YES

net use T: \\NOM-PC-2\wamp\www\VTCAL\calendar /USER:WORKGROUP\User mdp

setlocal enabledelayedexpansion

set $Source=C:\XXX\radicale\data\user

set $Destination=T:\

:commence

for /f "delims=" %%a in ('dir "%$Source%" /od/b') do (echo Copie du fichier : %%a

xcopy "%$Source%\%%a" /y "%$Destination%")

:Termine

Echo Termin,

Timeout 10

goto:commence

net use T: /DELETE
```

Synchronization between the Caldav server (Radical) and Thunderbird Lightning

I. Pre-requisites

- Have Thunderbird with Lightning extension
- Have a Caldav server (Radical)
- Arrange calendar iCalendar (iCal) with the extension . ics

II. Characteristic technique Radical

Created on each agenda Radical has a property file associated with the extension. Props. It is in this file that is stored characteristics. This file has the same name as the agenda with the addition of the extension. Props.

For example, if my calendar I want to share is called "monAgenda.ics." The. Props' file will be named "monAgenda.ics.props."

. Props' default a file is {"tag": "VCALENDAR"}. However, it may contain other information.
In addition to this particular file that is created by Radical, other attributes are added at the beginning of the calendar by a client.
The X-RADICAL-NAME attribute is a very important attribute that displays events already in the calendar.

How is the added X-RADICAL-NAME attribute?
The attribute is formed using the UID of the event followed by ". Ics." If the UID contains other special items such as @, this attribute will be malformed and the result will be the absence of events.

III. Tutorial on synchronization

I monAgenda.ics a file and I want to sync to the server Radical.

- Create a monAgenda.ics.pros file in the user /etc/radicale/data/user

```
$ sudo gedit agenda.ics.props
```

- Copy and paste the text below and save the file:

```
{"tag": "VCALENDAR"}
```

- Stop and restart the server Radical
- Save the agenda in the same directory
- Change use group files:

```
$ sudo chown radicale:radicale monAgenda.ics.props

$ sudo chown radicale:radicale monAgenda.ics
```

- Check permissions with "ls-al" command:

```
-rw-r--r-- 1 radicale radicale    146657 mars  27 21:40 monAgenda.ics

-rw-r--r-- 1 radicale radicale     21 mars  27 21:57 monAgenda.ics.props
```

- If the rights are different, change them by "chmod"

```
$ sudo chmod 644 monAgenda.ics
```

or

```
$ sudo chmod 644 monAgenda.ics.props
```

- Create a new calendar in Lightning put a link to the calendar:

```
http://localhost:5232/users/monAgenda.ics/
```

IV. Adaptation of the file. Ics' Visual Timetabling (VT)

For schedules generated by VT is viewable on Radical when you want to synchronize, you must change the UID generated by VT.

Indeed, the UID file 'ics' is in the form:

```
UID:20140211T095200Z-16142178@visual.timetabling.free.fr
```

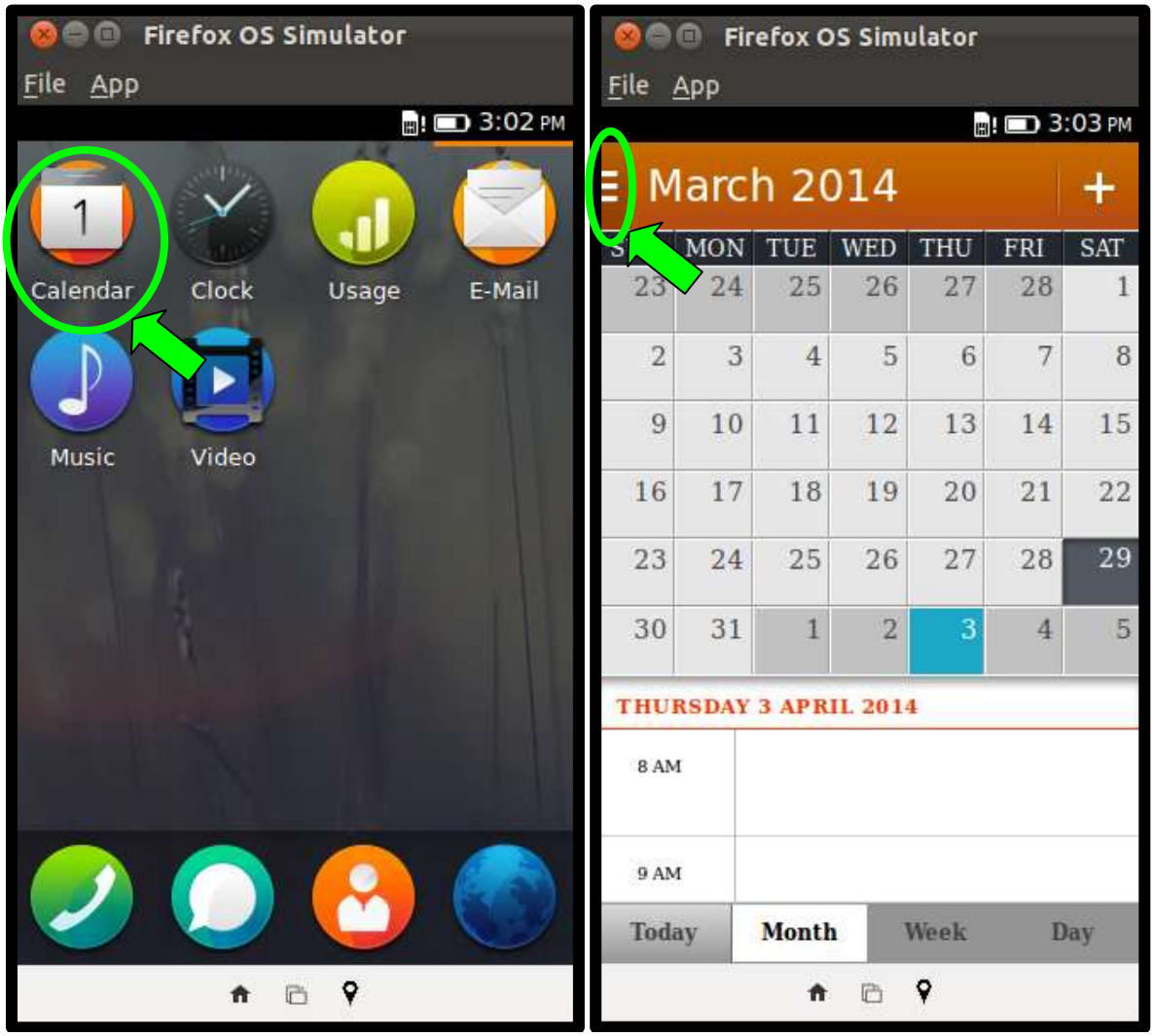
For this to work, you must remove the '@ visual.timetabling.free.fr' in the script file generation 'ics.

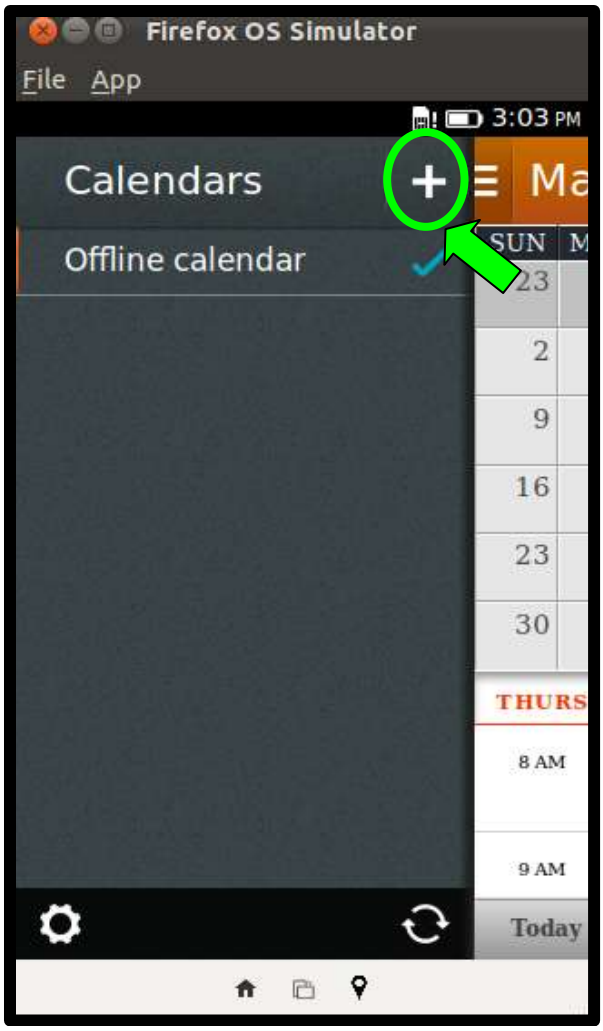
Synchronization between the Caldav server (Radical) and Firefox OS

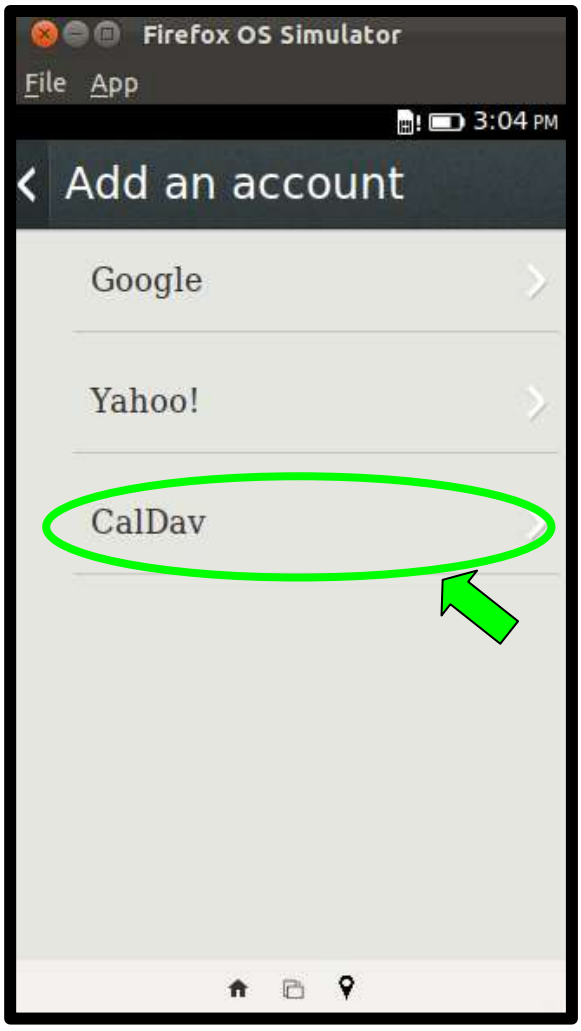
I. Pre-requisites

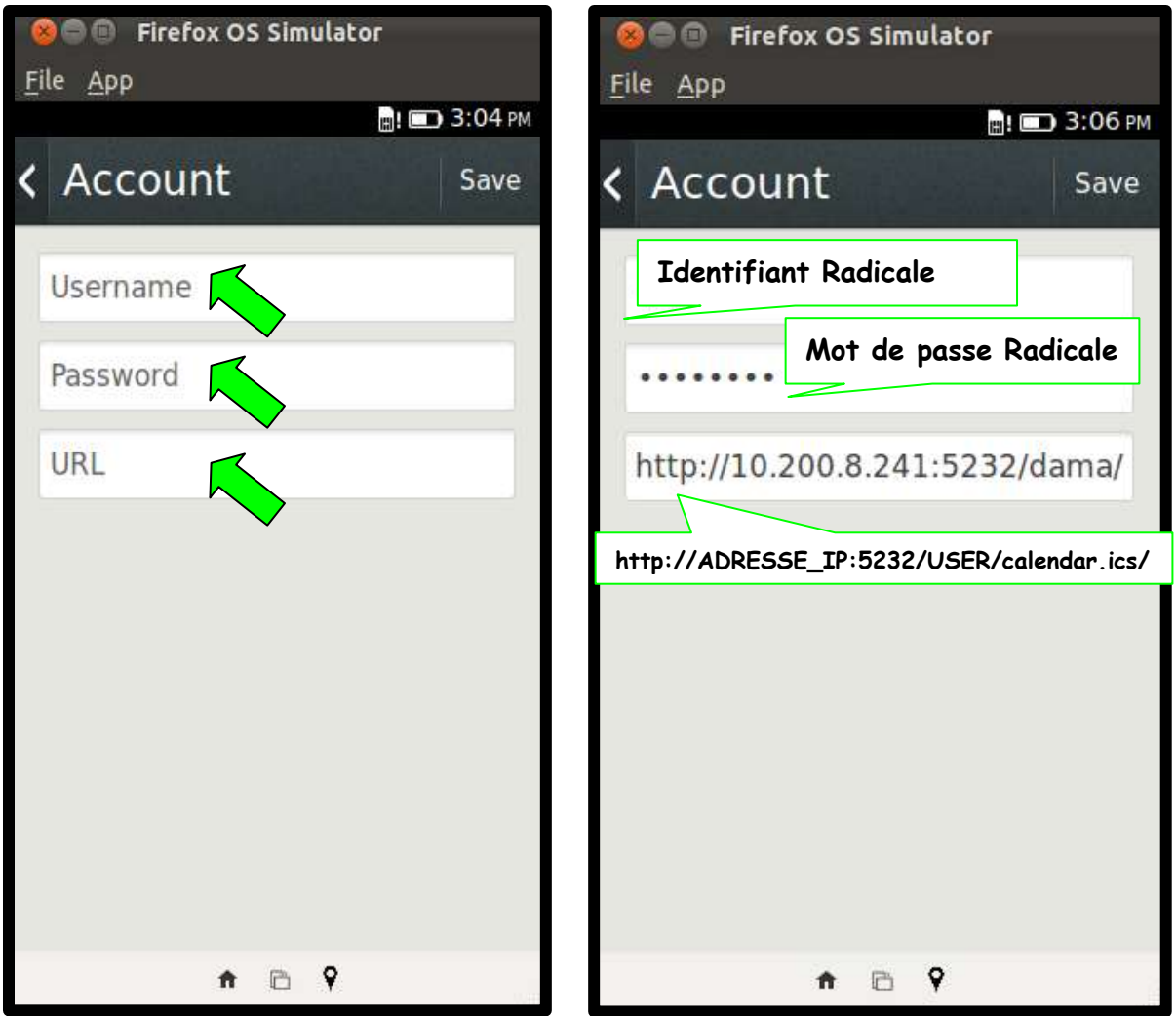
- Having already filed schedules iCalendar (iCal) with the extension. Ics on the Caldav server (Radical)
- Having a mobile Firefox Firefox OS or OS simulator

II. The steps




Firefox OS Simulator
File App
3:03 PM
Calendars
Offline calendar
SUN
23
2
9
16
23
30
THURS
8 AM
9 AM
Today

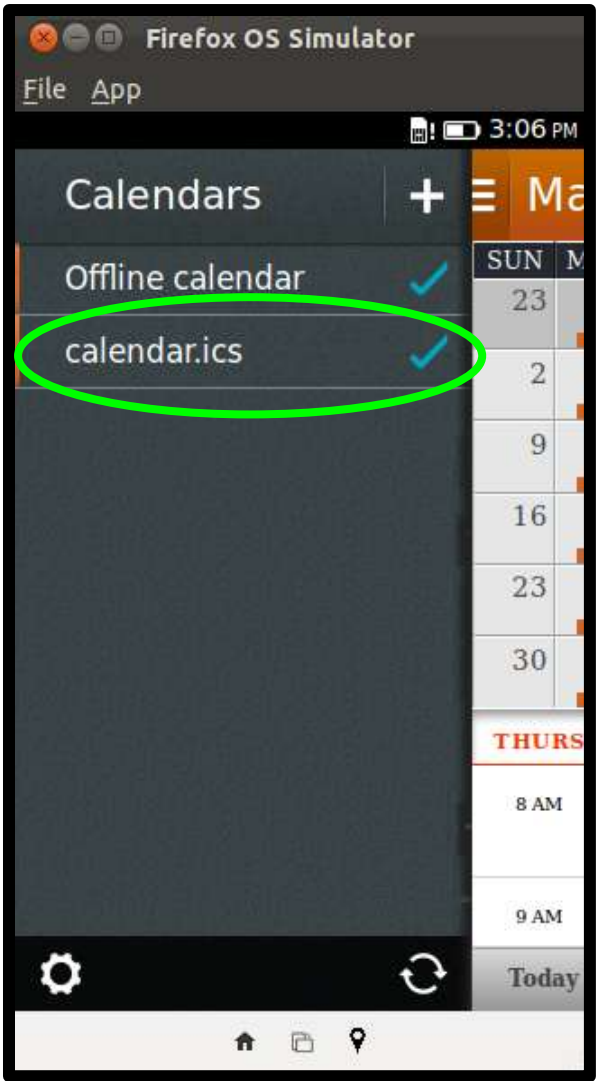

Firefox OS Simulator
File App
3:04 PM
Add an account
Google
Yahoo!
CalDav



You must enter the server URL: http://< IP_ADDRESS >:5232/<USER>/calendar.ics/

IP_ADDRESS = l'adresse IP du serveur Radicale.
USER = l'utilisateur créé sur le serveur Radicale.

Warning: do not forget to add the '/' at the end of the URL, after the name of the calendar!


Firefox OS Simulator
File App
3:06 PM
Calendars
Offline calendar
calendar.ics
SUN
23
2
9
16
23
30
THURS
8 AM
9 AM
Today


Firefox OS Simulator
File App
3:07 PM
March 2014
SUN MON TUE WED THU FRI SAT
23 24 25 26 27 28 1
2 3 4 5 6 7 8
9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30 31 1 2 3 4 5
THURSDAY 3 APRIL 2014
8 AM
GEA_EVALUATION D...
E 201
9 AM
Today
Month
Week
Day