

Guide for FTP tests during NMEs

Author: Benito Marcote

Date: 17 April 2019

Version: 4.2

Before the NME start

Make vaxfile

In case Bob has not made it yet:

Log in to **ccs**:

```
ssh -X jops@ccs
cd /ccs/expr/
mkdir <EXP> # if necessary
cd <EXP>
```

If the experiment has not been introduced into the database yet:

```
cd /ccs/var/log2vex
```

Update the `MASTER_PROJECTS` file including the experiment name and the date of the observation.

The necessary directories (e.g. the ones in `logexp_date` should be automatically populated every hour).

If the `.vax` does not exist, the create it:

```
log2vex.pl
```

Then follow the next steps:

- Select Experiment.
- EOP (Earth orientation parameters).
- TapeLog: prefer e-*vlbi* (for NMEs).
- Sched: from Skdfile.
- Clock.
- Show Clock graph: do all stations have a clock value? Is the fit OK?


```
-f FFT, --fft FFT      number of fft points to use
-s SCANS, --scans SCANS
                        ftp-scans to generate stuff for
-d, --dummy           make a dummy list of file locations
-g, --gabri           create folders according to Gabriele's taste
.....
```

If you run it as

```
ftptest.py -d -g <exp>.vax
```

it creates all the directories and dummy files for all the ftp-tests that are present in the vaxfile. If you don't use the *-d* option the script looks for real data on *sfxc-h1*.

Remember to modify the *.scan##.ctrl* file according to the data available for SFXC. Or run *ftptest.py* without the *-d* option again just before running SFXC.

In case you decide to prepare everything manually:

```
cd ~/sfxc/ftp/<session_name>/<exp>/
mkdir ctrl
mkdir html
mkdir output
```

and inside each directory create a directory for each scan that will be part of the FTP-tests (check the *.vax* file). Copy the *.vax* file into *ctrl/scan##/* and copy a *ctrl* file from a previous NME and edit it according to the FTP-test.

Preparing the website for the NME

Go to **dop288** to prepare the *ftp.html* file by adding the new NME.

```
ssh -X jops@dop288
cd /www/evlbi.org/tog/ftp_fringes/
vim ftp.html # or your favourite text editor
```

Add the path for the experiment, save it, and close it.

```
mkdir <EXP>
cd <EXP>
cp ../<EXP_OLD>/index.html .
vim index.html # Modify it accordingly to the NME, save it
mkdir scan## # Create a directory for each scan
```

Otherwise you can also run *ftptest_report.py* to make a draft of *index.html*.

Monitor the arriving data

All participating stations send data to JIVE.

```
ssh jops@fringetest.jive.nl
cd /ftp/ftpdata/
ls -ltr *<exp>*00##*      # where ## is the number of the scan

watch -n 2 ls -ltr *<exp>*00##* # To run auto. the previous command every 2 s
```

check here the right name of the data files and which has arrived. You can also use some features of *ftptest.py* right before running SFXC to include only the files that have arrived.

Start chat session

Open *Mattermost* and create a new channel for this NME with its name as channel name.

Announce it in the general channel and invite all the interested people.

Provide the times of the FTP tests in the chat window.

OLD: Skype accounts.

In case it is necessary: open Skype and start a group chat. Add here all the people from the involved stations. Below there is a list of people (Skype names) for each station:

- **Ef:** Effelsberg Friend (*effelsberg_vlbi*) Uwe Bach (*uwe_interwegs*)
- **Wb:** Geert Kuper (*geertkuper*) Antonis Polatidis (*apolatid*) Richard Blaauw (*blaauw.richard*)
- **Jb:** Jodrell Bank VLBI Room (*jodrell_vlbi*) Alastair Gunn (*alastair.gunn*)
- **On:** Jun Yang (*uaoagn*) Michael Lindqvist (*ml_nolvik*) Observer OSO (*observer_oso*) Roger Hammargren (*roger.hammargren*)
- **Mc:** Giuseppe Maccaferri (*gmacc06*) Andrea Orlati (*goldenarm1474*)
- **Nt:** Noto Friend (*noto.friend*) Salvo Buttaccio (*salvo.b-vlbi*)
- **Tr:** Torun Telescope Operator (*torun_telescope_operator*) Sebastian Soberski (*torun-ssober*) Kaz Borkowski (*tr-kaz*) Grzegorz Hrynek (*vario_vlbi*)
- **Sh/T6:** VLBI-SH (*vlbi_sh*)
- **KVAZARS:** Andrey M. (*agm.iaa*)
- **Hh:** HartRAO Friend (*vlbi_hh*) Jonathan Quick (*jfhquick*)
- **Ys:** Pablo de Vicente (*pablo.d.vicente*) Yebes40m (*yebes40m*)
- **Ur:** (*uaonanshan*)

- **Sr:** Carlo Migoni (*carlo.migoni*) Control Room SRT (*srtcontrolroom*)
- **Ar:** Tapasi Ghosh (*tghosh9*)
- **Km:** (*kunming40*)
- **Ir:** Vladislavs Bezrukovs (*slavabezrukov*) Miks (*miskapers*)
- **Mh:** Kurpro (*kurpro*)
- **KVN:** AOC KVN (*kvn.aoc*)

Correlation with SFXC

Once the NME starts and you have data from the stations you can run SFXC in *head.sfxc*:

```
cd ~/sfxc/ftp/<session_name>/<exp>/ctrl/scan##  
run_sfxc.py <exp>.vax <exp>.scan##.ctrl
```

It generates all the html that are in `~/sfxc/ftp/<session_name>/<exp>/html/scan##/`

You can look at the *index.html* file by running Firefox. If everything looks OK you can copy all the files to **dop288**:

```
scp -r jops@head.sfxc:/home/jops/sfxc/ftp/<session_name>/<exp>/html/scan##/\*  
/www.evlbi.org/tog/ftp_fringes/<EXP>/scan##
```

After the NME

You should send an email to *EVNtech@jb.man.ac.uk* (with copy to Bob, *jops@jive.eu*) with the subject: *EVNtech: N17C1 FTP Fringe Test Results*.

In the body of the email you have to write something like:

```
Version: 1  
  
Summary:  
Ftp data arrived from:  
Ef, Wb, Jb, On, Mc, Nt, Tr, Ys, Sh, T6, Td, Yd, Md, Sd.  
  
Selected results can be found here:  
http://www.evlbi.org/tog/ftp\_fringes/N14M1  
  
Legend:  
Y = Performed as expected  
N = Did not perform as expected  
? = No feedback available from station  
Blank = Not applicable or waiting for further tests
```

F14M1, Freq= 6662.52-6674.52 MHz; Mode=1024 ch-128 Mbps-16x2MHz-2sec; obs
date=01/03/2014

| | Ef | Jb | Wb | On | Mc | Nt | Tr | Ys | Sh | T6 | Td | Yd | Md | Sd |
|-------------|----|----|----|----|----|----|-----|----|----|----|----|----|-----------|----|
| Observed | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Frng.(ftp) | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | Y | Y | Y |
| Record. OK | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Crs.pols OK | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Check VCs | | | | | | | 7,8 | | | | | | 1,2,3,4,5 | |
| See notes | | | | | | | a | | | | b | c | d | e |

Notes:

general: the calibrator used in scan02 (3C48) is much weaker than calibrator used in scan21 and scan59 (DA193). This is the reason of the lack of fringes for scan02.

a) Tr: no fringes in BBCs 7 and 8.

b) Tr also sent DBBC data designated as 'Td'.

c) Ys also sent DBBC data designated as 'Yd'.

d) Mc also sent DBBC data designated as 'Md'. Md shows weaker fringes than Mc, this could be the reason of no fringes in DBBCs 1 (LL-USB & LSB), 2 (RR-LSB), 3(LL-USB & LSB), 4(RR-LSB), 5 (LL-LSB)

e) T6 also sent DBBC data designated as 'Sd'.

questions/comments - please email surcis@jive.nl

Regards,

Automatic Fringe Test

In ccs in the directory where .vax is you should type:

```
ssh -Y jops@ccs
cd /ccs/expr/<expname>

# If needed:
log2vex.pl
- tapelog evlbi
```

- EOP
- Sched from Skdfile
- Clock
- Compile vexfile

```
vex2db <exp>.vexfile
```

```
schedule_fringe_test -h # if you need help
```

```
schedule_fringe_test -e EXP -n No00## -s EfJb08 -m email
-t START -d DURATION
```

```

          |          |          |          |
name of the experiment |          |          |
          |          |          |
          scan you want |          |
          to correlate  |          |
          |             |          |
          list of station you |
          want to correlate |
          (don't use spaces) |
          (no vdif supported) |
          |                   |
          your email address

```

example: `schedule_fringe_test -e N16M1 -n No0002 -s EfJb08 -m surcis@jive.eu`

You can specify either the scan number or the time from when you want the data in vex format (e.g. 2017y290d12h42m00s).

The data are in `ssh -X jops@sfxc.h0.sfxc` in `/scratch/sfxc/fringetest/<EXP>/`

if you wish to recorrelate, type in ccs

```

recorrelate_fringe_test -e name.experiment -n No0000
          |          |
          name of the experiment |
          |                   |
          scan you want         |
          to recorrelate

```

```
recorrelate_fringe_test -e N16M1 -n No0002 # for example
```

In case of questions contact eBob (eldering@jive.eu)

Clock Search fit

Some times the clocks for the stations are not accurately set. In this cases you may want to run a clock search fit (there may be a fringe but with a large clock offset).

To do that, first you need to modify the `{exp}.scan##.ctrl` file to increase the number of channels (e.g. 4096 or 8192), and decrease the integration time to a small value (e.g. 0.2 or 0.5 s). In this way, we will be searching in a big window with enough temporal points to fit the rates.

Then, run the correlation as usual (with `run_sfxc.py`). And run the simple clock search fit:

```
simple_fit.py -f ../../output/scan##.cor {exp}.vax {ref_station}
```

The output will contain the delays, rates, total SNR, and weights for each telescope.