Field System
Status and New Features

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FS Linux Distributions

- FSL11
  - Current standard
  - Based on Debian *Bullseye*
    - LTS expected until June 2026
  - 32- and 64-bit support
  - Improved RAID support
  - *gfortran* is stricter
  - *python2* support is weak (no *numpy*)
  - Expanded hardening for IT support
  - Requires FS *10.2*
- FSL12
  - Potential release Summer 2025
  - Probably based on Debian *Trixie*
    - LTS expected until 2030
  - No *python2*
  - Streamlined IT hardening
  - Other features TBD

FS *10.2* – Current Release

- Tag *10.2.0* released in December 2023
- Support for FSL11
  - FORTRAN typographic changes
    - Handling of hex/octal/binary constants, etc.
  - All *python* scripts are converted to *python3*
    - *python2* versions are still available
- Support up to 16-character experiment names
- DBBC3 support expanded
- Display server shuts down on FS `terminate`
- *plotlog* handles RDBE and DBBC3 log data
- *streamlog* utility to stream log and display data
- See the FS update notice for all the changes:
  - Uses “collapsible boxes” to simplify listing of changes
  - https://nvi-inc.github.io/fs/releases/10/2/10.2.html
- You must install FS 10.1 before upgrading

FS *10.2* – Major changes for DBBC3

- DDC_E firmware
- Firmware versions:
  - Up to v126 for DDC_E & DDC_U
  - Up to v125 for DDC_V
- USB/LSB TPI values are now reported “unswapped”
  - Environment variables are available to disable
    - Needed for older firmware versions, particularly for DDC_V
- Legacy T_{sys} is now supported
- Averaging and filtering continuous T_{sys} is supported
  - Filtering uses colors in the *monit7* display
- Multicast time-out detection improvements
  - Time-out increased to 1.45 seconds
  - After the first time-out
    - Shorten time-out to 1.00 seconds
    - Report in a 60 second summary format
- Environment variable to set interval for incorrect firmware error
- 15 major improvements covered in the update notes

FS *10.3* – Fall 2024

- Use `keepsync` for DBBC3 mode setting
  - Manual use of `setup`*nn*`=keepsync`
  - Possible *skedf.ctl* option to use in *.snp* files
- DDC_V v126
  - Multicast, `inputselect`
- `lo` command for DBBC3
  - How will this interact with local `lo` commands? TBD
- Inclusion of `atm`
- Support for chopper wheel T_{sys}
  - *.rxg* file change
  - *antabfs* support?
- Limited VEX2 support possible for current 1/2-bit
- R2DBE VGOS backend
- `holog` command support for FlexBuff

FS *10.4* – Summer 2025

- DBBC3 firmware v13*x*
- 8-bit support?
- FSL12 support
- …

DBBC3 T_{sys} Filtering

- Remove RFI from T_{sys} display
- T_{sys} display is averaged
- Sets a per IF threshold for data clipping
- `cont_cal=on,,,,,1,ifa,…,ifh`
  - `1` -- enable filtering
  - `ifx` – percentage of average for clipping
    - For example, if `ifa` is 20
      - Data more than ±20% from average is clipped
  - Average is in color if clipping is active
    - 1-2 times in a row, background color is green
    - 3-5: yellow
    - 6 or more: red
  - Hidden short-term average
    - If red clipping and short-term average is more than set percentage from long-term average, then long-term average is reset to short-term average
    - When reset occurs the background is blue one time

plotlog – plot log data utility

- Plots many types of ancillary data found in logs:
  - weather, clocks, T_{sys}, Recorder performance
  - Phase-cal, Cable, CDMS, Receiver
  - More can be added
- Using it is simple, e.g., to plot to X11 display:

```
cd /usr2/log
plotlog vo2230oe.log
```

- Command line options available for:
  - File output
  - Selecting which items to include
  - Different slices of:
    - DBBC3/RDBE T_{sys}
    - RDBE Phase-cal
  - Control scaling of some plots
- Command line options can be placed in script or alias
  - Easy reuse

plotlog - improvements in FS *10.2*

- DBBC3 and RDBE data
- Wind speed and direction
- Expand clock coverage:
  - `maser`, `fmout`, `gps`, `dot2gps`, `dot2pps`, `pps2dot`, `setcl`
  - Multicast and command output for DBBC3, RDBE
- Recorder performance
  - Late start, recording short, missing bytes
- CDMS
- Support *giza* for FSL11
- *plotlog* with no log specified
  - Current FS log, plotted on display
- More command line options to control features
- Other improvements …, see **`plotlog -h`**

plotlog - possible future improvements

- Hardcoded
  - Late `preob` - schedule is running late
  - `preob` running long
  - Late onsource
  - Onsource time lost in scans
  - Station specific data – contact Ed
  - Limited syntax for user extensions
  - Other suggestions …
- A different option: *logpl*
  - Offers user extensible selections
  - Plot data versus time or versus other data
  - Can be run interactively or from a script