

Minutes of Meeting LOFAR Software

Date:	2008-09-03
Next meeting:	2008-09-10 9:15-10:15
	Multimedia room
Present:	
Andre Gunst	Yes
Marcel Loose	Yes
Ruud Overeem	Yes
John Romein	No
Michael Wise	Yes

cc: Arnold Meijster, Rob van Nieuwpoort, Arthur Coolen, Jurjen Sluman, Pieter Donker, Chris Broekema, Martin Gels, Joris v. Zwieten, Marcel Loose, Adriaan Renting, Ger van Diepen, Max Avruch, Michiel v. Haarlem, Jan Reitsma, Ger de Bruyn, Arno Schoenmaker, Hanno Holties, Corina Vogt, Jan Noordam, Joe Masters, Lars Bähren, Dion Kant, Johan Hamaker, Maaijke Mevius

Remarks previous minutes

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Announcements

- ICR is written about the shared clock in the superstation
- WAN equipment for the Central Systems arrives Thursday evening at CIT
- WAN equipment stations and concentrator node is delivered in Excel Emmen

Action item overview

ID	Date submitted	Description	Owner	Planned date	Status
68	20080723	Test whether TBB dumps are actually possible from the station hardware (not just the test hardware).	Michael	20080919	Open
69	20080813	Draft set of regression tests for CIMAGER (with input from Casey)	Michael	20080919	Open
70	20080820	Contact Tim Cornell about CIMAGER testdata.	Ronald	20080920	Open
71	20080820	Organise data format meeting. Lars, Michael and Ger had a pre-meeting and agreed on a couple of tests to get a feel for performance issues. Meeting target date is early October. Lars and Ger are doing the performance tests.	Michael	200808027	Open

Last: 71

Progress

Stations (André):

Achieved since last meeting:

- Pieter finished the modifications in the TBB driver to drive the ARP message. There was 1 byte difference between the firmware and LCU.

Problems / current activities:

- Dips: Michiel Brentjens can currently predict the dips and the cause appears to be in the BeamServer software. The problem has not been solved yet.
- Long distance delay tracking observations have been done. James Anderson will look for fringes.

Next actions:

- Continu with LOFAR20

OLAP (John):

Achieved since last meeting:

- John explained starting up and stopping observations to the operators already. Martin will take this over.
- There is progress made in the IO node optimization. The current number is 126% which should end at 100% or preferably less. Currently we are waiting for IBM.
- The raw beamformer products can be written again on BG/P. The only restriction is that 54 subbands or 1 RSP board can be dumped per station.
- Bandpass correction is made runtime selectable.
- Python scripts are cleaned up.
- OLAP is ready for 4/8/16 bit mode.

Problems / current activities:

- Asynchronous transpose is implemented, but not tested yet.
- TAB implementation for superstation is under test.
- Robustness for failing disks is not included yet (Arnold Meijsters).

Next actions:

- Continu with LOFAR20

Offline pipeline (Ronald):

Achieved since last meeting:

- The offline software is ported to 64 bit machines by Marcel
- BBS solution based flagging is postponed a couple of weeks, because Sarod discovered a more efficient way for this.
- Profiling Cimagr: Overhead of the support function is less than expected. Gridding can speed up the Cimagr, but the largest performance gain can be used by faceted imaging. Tim Cornwell is working on that.

- The BBS issue list on the operations Wiki is updated by Joris.

Problems / current activities:

- Online bandpass correction verification by Pandey waits for station data.
- Marcel is busy with the pipeline integration and run into practical problems.
- Pandey's flagger in DP³ is not working properly yet.
- Joris and Ger are busy with the parameter handling.
- Comparison of beam models will be done by Joris.
- Johan his solver will be implemented in BBS (domain based). Currently Johan is documenting his solver.
- Pandey will commission the Global Solver.
- Pandey will test the HBA dipole beam model in BBS.

Next actions:

- Continu with LOFAR20

SAS + MAC + SHM (Ruud):

Achieved since last meeting:

- Arthur developed the test scripts for doing the performance tests. This is waiting for the station data for actually tests.
- At CS001T a scrambled order of the cross correlations is detected and Max is looking into that.
- Pieter updated the TBB driver for the ARP messages. Changes in the hardware monitor and PVSS are necessary as well, because the format of the messages is changed (16 flash images instead of 32). This was not anticipated in the planning.
- SPU can be read now.

Problems / current activities:

- Pieter has been working on the temperature control.
- Red Hat licenses are not bought yet (waiting for ETM).
- Ruud is working on a central database for the ITRS to ITRF conversions.
- Stefan wants a modification in the CalServer, so that the gains are written in a file (extra work!).
- Stefan wants to have a file with the cable lengths which needs to be read in by the RSPDriver (Step 2 work).
- Different configurations are proposed by Menno, which has huge impact on MAC/SAS. Ruud will discuss this first with Andre.
- Issue: 7 seconds per subband. Optimization is already made. Three seconds can be gained with this.
- Ruud is implementing the connection with SHM to use the state information of SHM.

- The information of the MCU should be connected to the database too.
- As it stands now: real significant different observations on BG/P has as a consequence that the RSP Driver must be restarted with another configuration file. This is the case if the station data must be send to different IOs of the BG/P from observation to observation.
- Metadata flow work is ongoing. Arno is busy with a mechanism to distribute the static meta data from SAS to the stations.
- Extra status registers which are implemented in the FPGAs are not driven yet by the LCU.

Next actions:

- Continu with LOFAR20

User Software (Michael):

Achieved since last meeting:

- Cosmic Ray tools have been made ready for HDF5.
- Manual about the TBB datawriter, beamformed datawriter and DAL was written by Joe.
- Lars updated the HDF5 ICD.
- John Swinbank demonstrated a version of the transient detection pipeline, which is parallelized.
- False detection algorithm for the source detection is written in Python by John Swinbank and Hanno Spreeuw. This can probably be used for the standard imaging pipeline as well.
- Casey and Ilse are generating simulated data to use for validation purposes of the pipelines with known static data.
- Ilse wrote a document about ionosphere simulations.

Problems / current activities:

- Casey will design a set of scientific validation tests for the CIMAGER.
- Near field imager work is ongoing.
- Members of the Magnetism KSP are exploring using the VisIVO package to visualize RM synthesis cubes.
- Alexander started with a radio image mosaicing script for casacore.

Next actions:

- Continu with LOFAR20

Holidays

John: From ~26 August 3 weeks and structural one day off from ~26 August onwards.

Ronald: 25 August to 12 September

Software integration

Achieved since last meeting:

- The software development strategy is currently to do the active development on the trunk. For a predictable result we make a release so now and then. You can always tag the complete LOFAR tree, so that you can have a revision of the current repository.
- LOFAR development machine is currently the DOP143 where multiple virtual machines are installed.
- Martin, Marcel and Lars are busy to compile LOFAR code with cmake. Some issues are not solved yet. A meeting with Martin, Lars, Marcel and Ger will be held to summarize the results.

Problems / current activities:

- Compile a list of anticipated data products and calibration or metadata files associated with each of the pipelines.

Next actions:

- A test program will be initiated to verify the functioning of the LOFAR software in a more structured way. In OLAP it is possible to store the raw station data and feed this into the pipeline later on. This makes it possible to define a standard data set, which can be applied to the pipeline as soon as major software changes have been taken place.

Decisions

ID	Date submitted	Decision
02	20061220	Every Step will start with a Kick-off meeting, in which the complete software team participates.
03	20061220	The project team starts immediately with the preparations of the next CDR in order to preserve progress of the CS1 realization
04	20070116	This meeting will take place every week on Tuesday 11:00. The existing software team meeting with all developers will stop to exist.
05	20070130	Step 1 will be changed to 16 subbands instead of 32 subbands.
06	20070130	Step 2 will contain a multiple node BBS. 6 μ Stations/Station will be postponed. Instead of this, 32 subbands measurements will be realized.
07	20070206	Step 1 will support 160 MHz observations. The other steps will support 200 MHz as well.
08	20070424	Step 2 will support 16 subbands @ 200MHz and 24 MHz at 160 MHz
09	20070424	During the rest of step two, OLAP will only support observations during the weekend.
10	20070522	The number of subbands per Measurement Set is set to 6 or 8 default.
11	20070522	Scheduler activities will be preferably activated in Q4 2007.
12	20070522	Procure, three Local Control Units to accommodate 12 microstations in CS010 in a quick way.

13	20070529	Integrate version numbers in all software.
14	20070529	Distinguish the software between a production version and an engineering version (partly now already the case).
15	20070605	All developed software under CVS will be transferred to Subversion. The main reason for this is that Subversion supports the integration of version numbers in the executables. In this way you can always retrieve which software is used for a certain build. First the impact of the transfer will be investigated by Marcel.
16	20070619	Marcel Loose will be the librarian of the LOFAR software. The available time for this will be shared with his BBS work.
17	20070710	The known pulsar survey mode will be the next mode to support (not in its full extent but partly on-line and off-line).
18	20070710	The temporarily off-line part of the known pulsar mode pipeline will not be under control of SAS/MAC. This will be put under control of SAS/MAC as soon as that software is available in the on-line part of the system.
19	20070814	Joe Masters makes the routine to read in the TBB data.
20	20071002	Fault tolerance of the system (mainly OLAP) is put at the top of the priority list after closing the SAS-MAC and CEP integration.
21	20071123	Kubuntu 7.10 desktop 64 bit OS is chosen for all machines except the BG/L and MAC/SAS machines
22	20071123	Station calibration work is smeared out over Step 4 and Step 5.
23	20071123	Global bandpass shape is moved to Step 5 because of its low priority.
24	20071211	Multiple beams per observation will be implemented instead of multiple observations (this is consistent with the plan).
25	20071211	Step 3 will be closed next Thursday. Any open items will be finished in Step 4.
26	20080130	Multiple beams are defined as multiple directions with the same set of antennas. Hence, only the angle, subbands and beamlets can be modified per beam.
27	20080206	Step 4 and Step 5 for MAC/SAS will be changed. The control of the offline pipeline will be postponed because the offline subsystems are not fixed yet. Currently the definition and design of the metadata flows will be set as goal for Step 4 and the implementation of the metadata flow will be the end goal of Step 5. Hence, after Step 5 (part of) the metadata is included in the Measurement Set.
28	20080213	Currently a single subband and single beam is stored in a Measurement Set. As soon as we are ready for mosaicing this probably should be changed in the future.
29	20080220	For storing the raw station beams the sanitizing operations like input buffer will be included in the online part. For this OLAP has to give operational support or instructions to the observers how to start up manually such observations. Since, this is an between solution this will not be automated via SAS/MAC.
30	20080227	Weekly build environment will be updated and automated.
31	20080227	After Step 5 the software documentation will be updated and obsolete packages will be removed.
32	20080423	Basically two Low Band modes will be supported initially: a LBL and LBH mode. The connection between antennas and RCUs have to be chosen such that those to modes make sense.
33	20080528	The position of all individual dipoles will be made available centrally in the database.
34	20080603	The data format of the positions will be delivered in ETRS coordinates by the roll out team. However, the data format of the positions will be stored in ITRF format in the LOFAR databases. Hence, all software and configuration files dealing with coordinates must be made compatible with the ITRF dataformat. Hans van de Marel is responsible to convert the ETRS coordinates to ITRF coordinates for the LOFAR system.
35	20080903	Kubuntu will be installed on LOFAR18, which will serve as a software development machine.

Table round

- Marcel: Is there any effort done to view the distributed images? We can make a cube from the images. This is not done nor decided yet. A task will be defined for this for both the offline group and USG.
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