

Routes across GEANT used by eVLBI MkVs



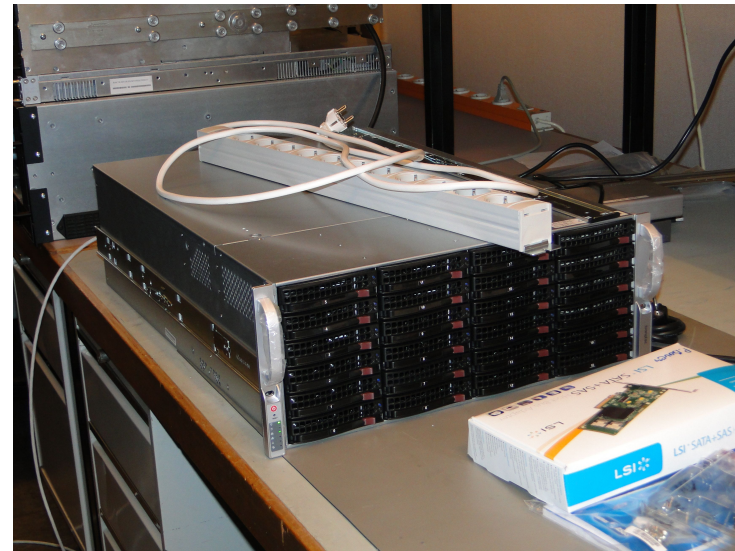
Mark5, SUs, MarkIV correlator

- Not much really changed since January
- Mark5, general
 - 10G cards/cables being exchanged (soon)
 - Decision on Sdk 9 *still* needed
- Mark5B/C
 - 2 units permanently converted to B, more as needed
 - 1 extra unit currently B+, 2 C units in place
 - 5 more C units (not hooked up yet) (soon!)
- SU
 - Full complement of functional
 - Although one caused problems recently
- MkIV Correlator
 - Has been holding up reasonably well
 - But is feeling its age
 - Spate of power supply failures
 - Probably related to power downs/ups



Mark5B/B+, Jive5AB, PCInt

- Native Mark5B, e-based:
 - Being tested in the wild, last week actually
 - Problem still lack of B-enabled stations
 - Which is rapidly changing because of roll-out of dBBCs
- Jive5AB control code re-written (yet again)
 - Stable production version available
 - Multi-threading sorted
 - Splitting of data streams enabled (for distributed correlation)
- PCInt replaced
 - Powerful computing platform
 - Large disk raid
 - Works to Dr. Bob's satisfaction (!!)



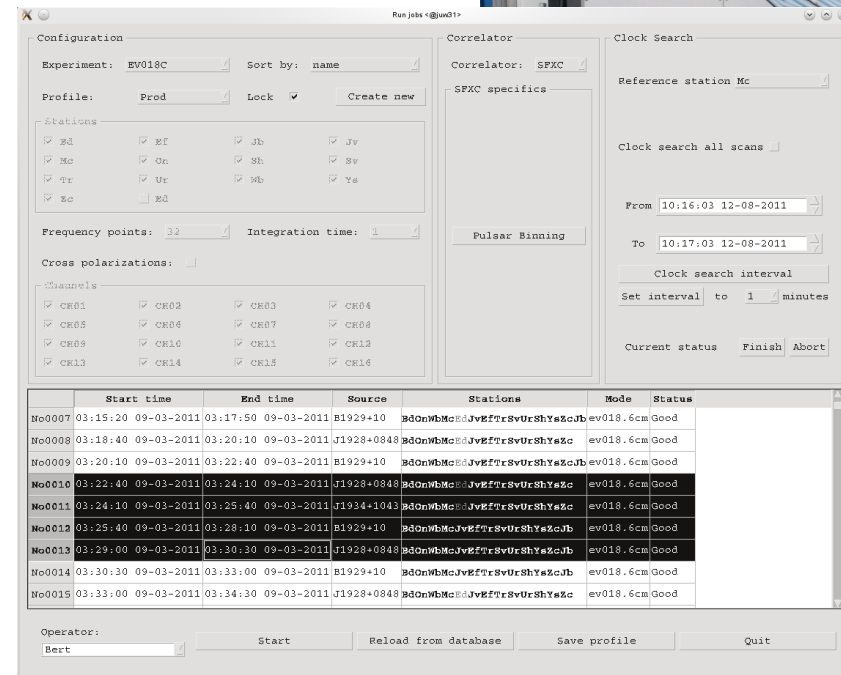
- Full 1024 Mbps used operationally, from most stations
 - e from dBBC working fine from Ef
- No more Merlincast (ever....?)
- Channel dropping available when needed
- Sh still limited to 256 Mbps
 - Congestion within China
 - No improvement in sight
- Ar at 512 Mbps, Hh at a full 1024 Mbps
- KVN tests show 512 Mbps possible (via GLIF)
 - Formatter test next
- EVN-ASKAP e-test within next few months
 - Needs real-time capability of SFXC software correlator
 - Which was tested last week
- Plans to distribute clock via fibre to Dwingeloo telescope
 - Part of large Dutch (STW) proposal

SFXC Correlator

- Software correlator operational:
 - 16 cluster nodes
 - each 2 quad core CPUs: 128 cores
 - 1 head node, quad core
 - Direct 1GE/2GE to Mark5s
 - 40 Gbps Infiniband between nodes



- Pulsar experiments, multiple phase centers, increased use (and demand)
- New hardware delivered
 - Will be installed as part of general overhaul
 - e-VLBI works with simulated data
- Now has “real” interface
- Run by operators

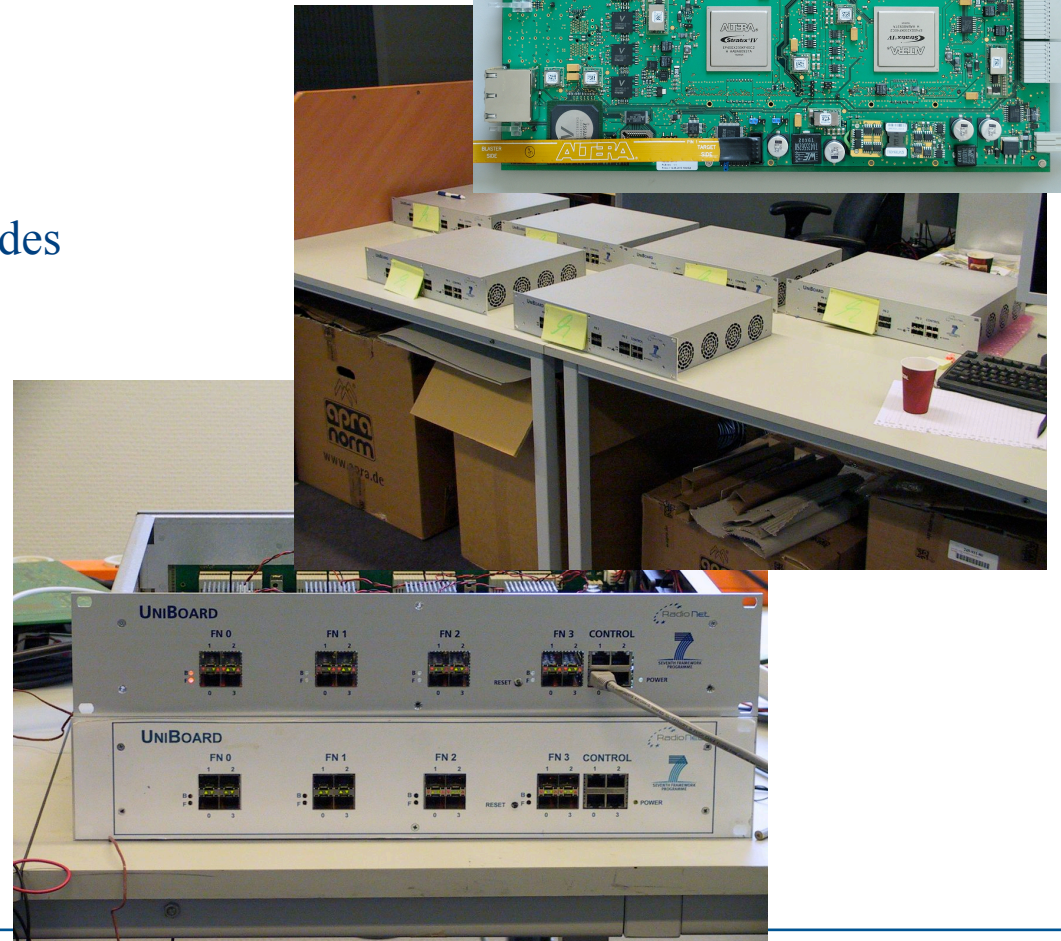
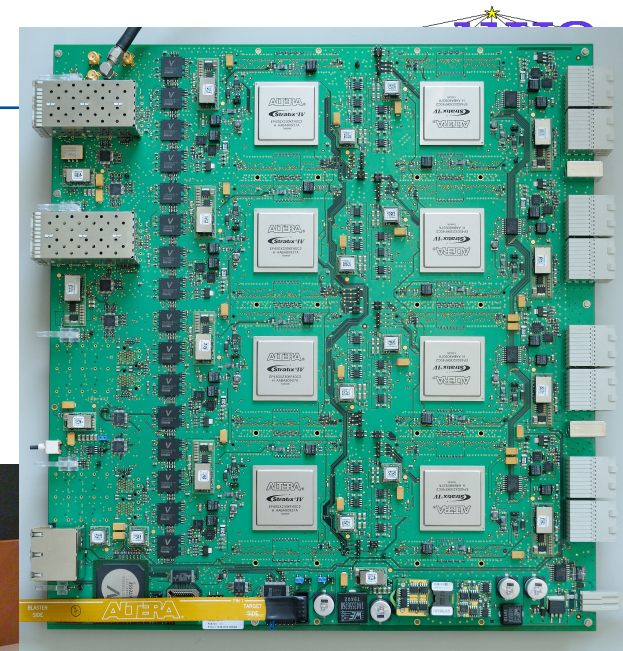


The screenshot shows the SFXC correlator software interface. It includes a configuration panel with fields for Experiment (EV018C), Profile (Prod), Lock, and Create new. There are sections for Stations (Md, Mf, Jb, Jv, Mc, Mn, Sh, Sv, Tr, Ur, Mb, Ya, Xc, Xd), Frequency points (32), and Integration time (1). A table of Cross polarizations (CR01 to CR16) is also visible. The main window displays a table of observation records with columns for Start time, End time, Source, Stations, Mode, and Status. The table contains 15 rows of data. At the bottom, there are buttons for Start, Reload from database, Save profile, and Quit, along with an Operator field containing the name 'Bert'.

No	Start time	End time	Source	Stations	Mode	Status
No0007	03:15:20 09-03-2011	03:17:50 09-03-2011	B1929+10	hdOnWbMcBdJvKfTrsvUrShYzCub	ev018.6cm	Good
No0008	03:18:40 09-03-2011	03:20:10 09-03-2011	J1928+0848	hdOnWbMcBdJvKfTrsvUrShYzCub	ev018.6cm	Good
No0009	03:20:10 09-03-2011	03:22:40 09-03-2011	B1929+10	hdOnWbMcBdJvKfTrsvUrShYzCub	ev018.6cm	Good
No0010	03:22:40 09-03-2011	03:24:10 09-03-2011	J1928+0848	hdOnWbMcBdJvKfTrsvUrShYzCub	ev018.6cm	Good
No0011	03:24:10 09-03-2011	03:25:40 09-03-2011	J1934+1043	hdOnWbMcBdJvKfTrsvUrShYzCub	ev018.6cm	Good
No0012	03:25:40 09-03-2011	03:28:10 09-03-2011	B1929+10	hdOnWbMcBdJvKfTrsvUrShYzCub	ev018.6cm	Good
No0013	03:29:00 09-03-2011	03:30:30 09-03-2011	J1928+0848	hdOnWbMcBdJvKfTrsvUrShYzCub	ev018.6cm	Good
No0014	03:30:30 09-03-2011	03:33:00 09-03-2011	B1929+10	hdOnWbMcBdJvKfTrsvUrShYzCub	ev018.6cm	Good
No0015	03:33:00 09-03-2011	03:34:30 09-03-2011	J1928+0848	hdOnWbMcBdJvKfTrsvUrShYzCub	ev018.6cm	Good

UniBoard

- Production run concluded
 - Boards distributed among partners
 - Not much activity yet
 - Vacations....
- Digital receiver design in good shape
 - Developed at INAF/Bordeaux
- VLBI correlator
 - Good progress (after recent regress)
 - Timing checks out for front and backnodes
 - First auto-correlation soon
 - Delay model implemented, not yet included
 - First fringes before end of year?
- At Astron:
 - backplane, beamformer for Apertif system
 - all-dipole Lofar correlator
- Next production run in planning phase
- Architecture considered for SKA



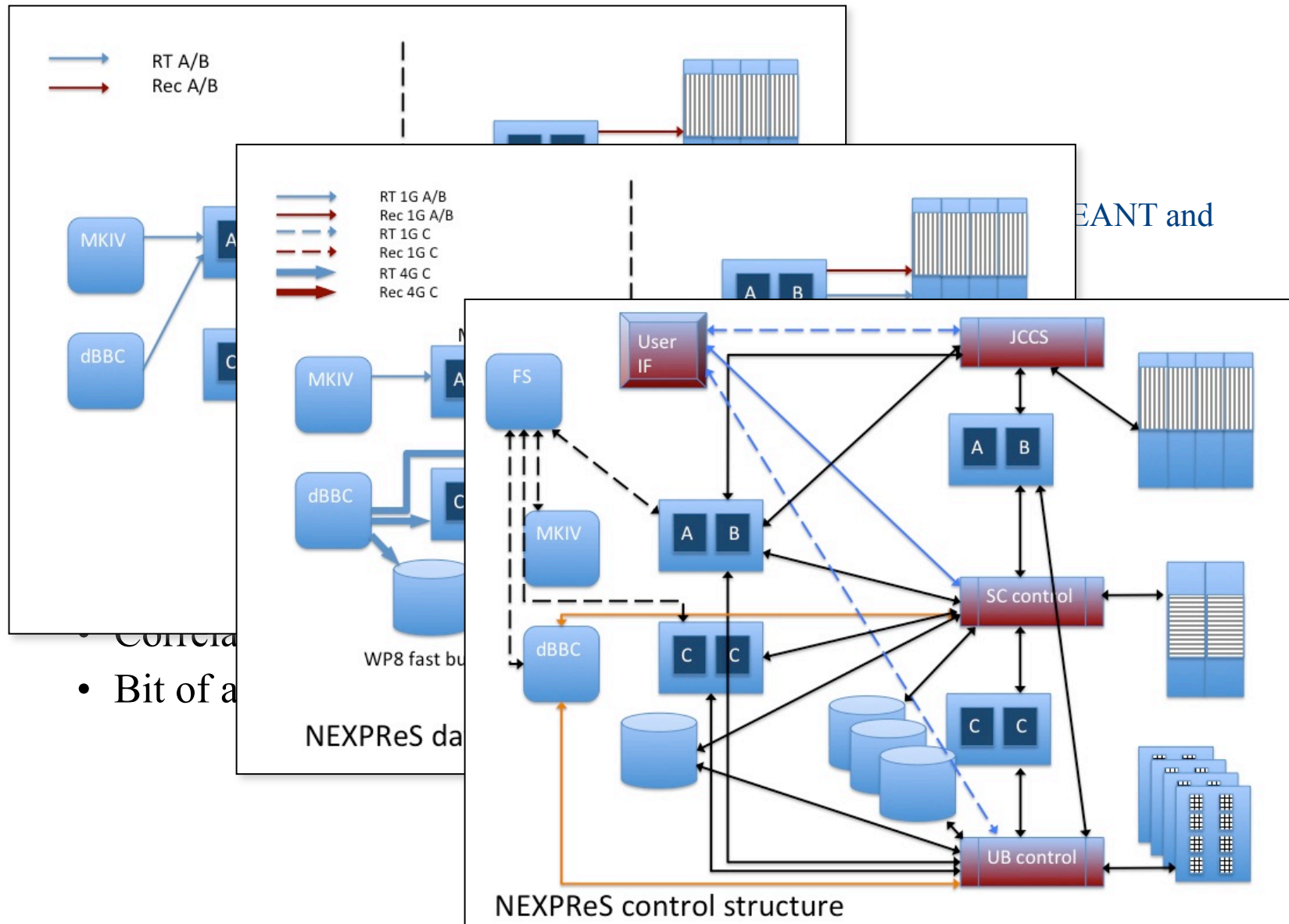
NEXPReS: EXPReS follow-up

- Service Activity 1 (Arpad Szomoru): Cloud correlation:
 - flexible buffering at stations and correlator
 - automated network-dependent correlation
 - continuous quality monitoring and remotely controlled operations
- Service Activity 2 (Paul Boven): High bandwidth on demand:
 - integrate e-VLBI with existing BoD
 - investigate on-demand access for large archives
 - establish international multi-Gbps on-demand services
 - position EVN to take full advantage of emerging 100 Gbps technology
- Joint Research Activity 1 (Mark Kettenis): Computing in a shared infrastructure
 - Use existing network and computing resources within EVN for distributed correlation
 - real-time stream processing
 - develop generic Grid alternatives
- JRA2 (Ari Mujunen): High-bandwidth, high-capacity networked storage:
 - Develop multi-Gbps storage elements with simultaneous I/O streaming
 - investigate use of such elements as LTAs
 - investigate allocation methods

NEXPRoS: considerations, motivation

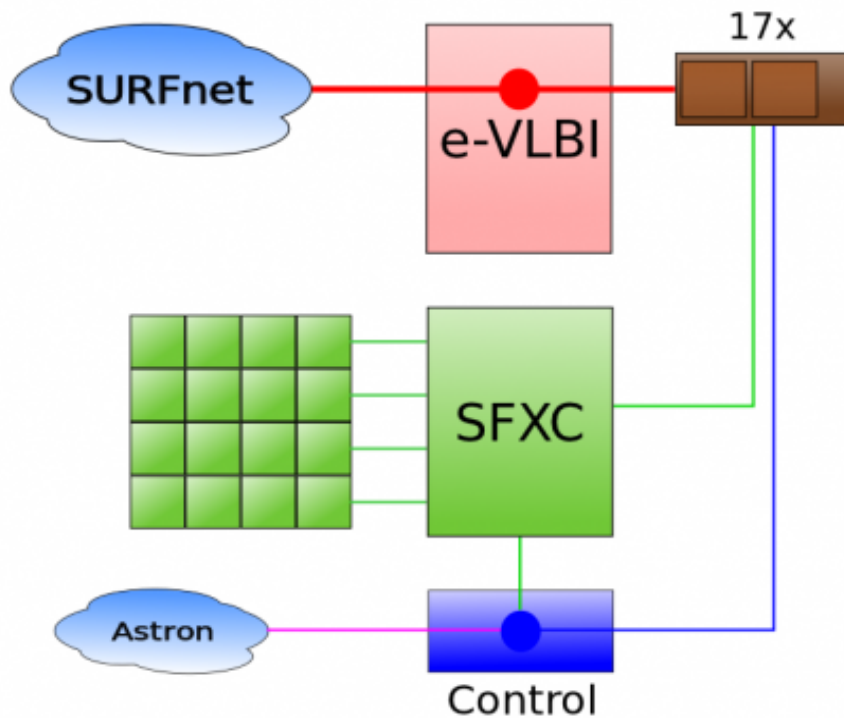
- Growth of bandwidth, sensitivity, size of EVN
 - 2 Gbps, 4 Gbps, more?
- Growth of network capacity
 - 100 Gbps on the way
- Change of business model/appearance of business model
- Need to map one development on the other
 - And find an economic way of doing it..
 - And preserve/augment the development and achievements of e-VLBI
- Increase available bandwidth
- Reserve and use bandwidth only when needed

NEXPreS in practice

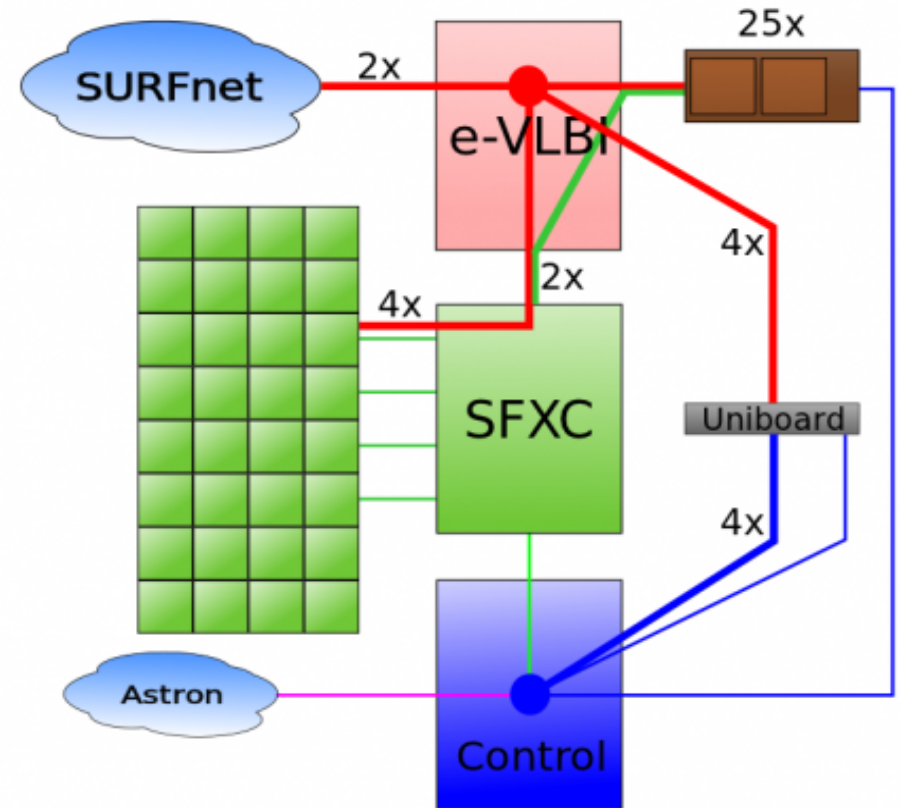


- Bit of a

Complete local network overhaul

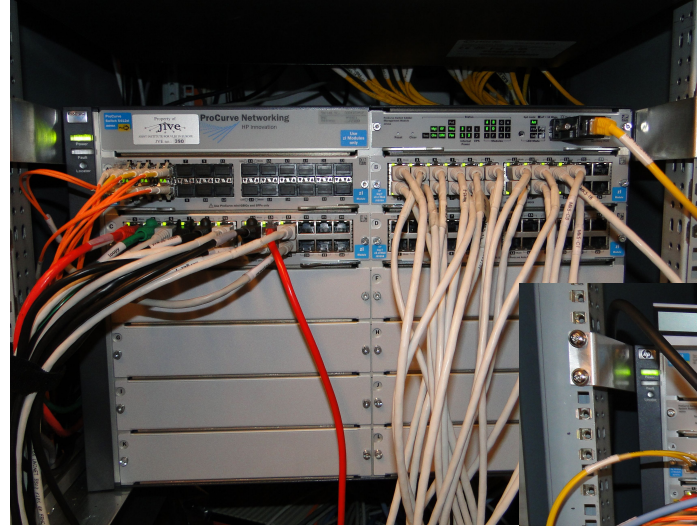
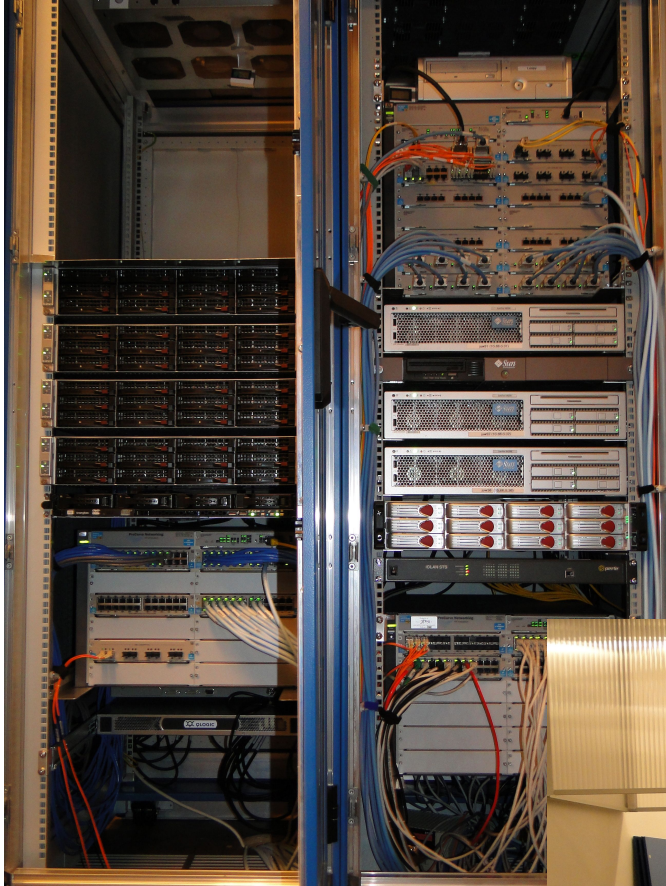


Current JIVE e-VLBI network



JIVE e-VLBI network after upgrade

Lot of (new) hardware moving around



NEXPReS status

- Cloud correlation:
 - TUM and MPG making good progress
 - Effort at JIVE up to full speed
 - First tool for system monitoring/alerting
- High bandwidth on demand
 - Definition phase over, standard has been decided upon
 - Somewhat slow process
 - Preparations for setting up first dynamic lightpath Onsala-JIVE
 - First interface using SOAP
- Computing in a shared infrastructure
 - Progressing well
 - New features added to SFXC
- High-bandwidth, high-capacity networked storage
 - Personnel in place
 - Hardware platform selected

The screenshot shows the 'Experiment Monitor' application window. The main window displays a table of reservation data for 'E_EMU_TESTING'. The table has columns for reservation ID, start/end time, and status for various components (X0, X1, X2, X3, X4, Xa). Below the table are tabs for X0, X1, X2, X3, X4, and Xa, and a 'Date' and 'Message' field. A 'New Reservation' dialog box is open in the foreground, containing fields for 'Requester', 'Provider', 'Period' (From and To), and 'Observation' (Name), along with a 'Submit' button.

	X0	X1	X2	X3	X4	Xa
No0016 07:55:00-07:56:00	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE	RECORD
No0017 07:56:00-07:57:00	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE	RECORD
No0018 07:57:00-07:58:00	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE	RECORD
No0019 07:58:00-07:59:00	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE	RECORD
No0020 07:59:00-08:00:00	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE	RECORD
No0021 08:00:00-08:01:00	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE	RECORD
No0022 08:01:00-08:02:00	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE	IDLE
No0023 08:02:00-08:03:00	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE	IDLE
No0024 08:03:00-08:04:00	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE
No0025 08:04:00-08:05:00	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE
No0026 08:05:00-08:06:00	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE	IGNORE