



SC Current Issues



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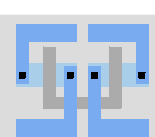
9th VXD Belle II Workshop

Valencia

14.01.2016

Roughly in chronological order:

- Status / Recent Progress
- This year's activities (including DESY test beam).
- Outlook



Recent Progress

- I wanted to write „a lot has happened“, „quite successful“, but then the BPAC report took care of that...
- From the just-released BPAC review:

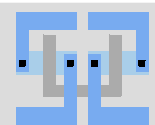
“The BPAC was very impressed by the overall achievements, not only in the detector construction, but also in the area of data acquisition, detector control and software.”

“The overall monitoring and slow controls development has seen tremendous progress.”
- A big **THANK YOU** to all involved!

- Reminder: Problem is random position of the optical multiplexer.
- Solution is to read **all** data the device takes, not just samples.
- New approach uses two TCP connections
 - fast wavelength data
 - control commands and full spectra
- Status:
 - fast connection established and thread reading at full speed running.
 - needs to be merged with the code for the control and full spectra connection (part of the old IOC).
 - Planned: automatic FFT for vibrations

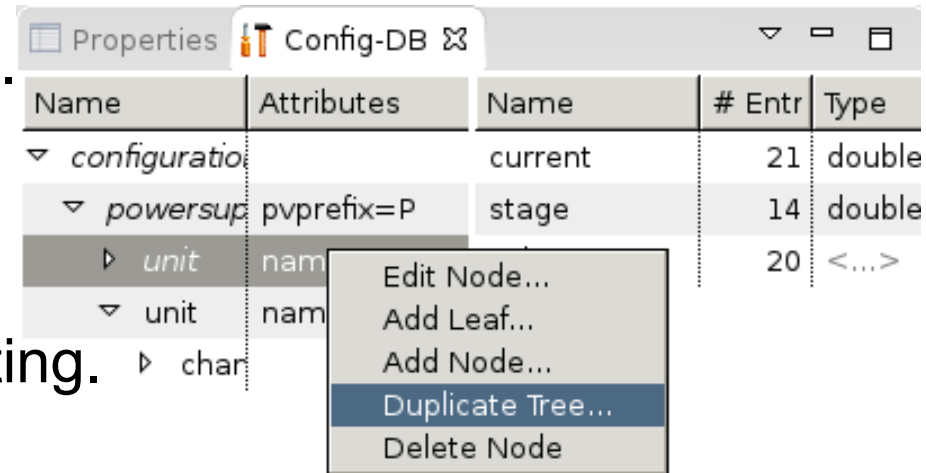
```
2015-12-06 21:35:26.924 [finer ] [Device ] New channel: ch 1, switch 0, peak 1 : 1530.1
2015-12-06 21:35:26.925 [finer ] [Device ] New channel: ch 1, switch 0, peak 2 : 1540.22
2015-12-06 21:35:26.925 [finer ] [Device ] New channel: ch 1, switch 0, peak 3 : 1550.02
2015-12-06 21:35:26.925 [finer ] [Device ] New channel: ch 1, switch 0, peak 4 : 1560.02
[... 5 more from other channels ...]
2015-12-06 21:35:26.925 [finer ] [Device ] New channel: ch 1, switch 1, peak 1 : 1530.06
2015-12-06 21:35:26.926 [finer ] [Device ] New channel: ch 1, switch 1, peak 2 : 1540.2
2015-12-06 21:35:26.926 [finer ] [Device ] New channel: ch 1, switch 1, peak 3 : 1550.06
2015-12-06 21:35:26.926 [finer ] [Device ] New channel: ch 1, switch 1, peak 4 : 1559.74
```

- First version of the scripts made available to U Mainz.
- Revisited the approach to simplify the usage:
 - First run the python scripts generating the top level OPI and the LUT, i.e. the scripts that define the system to learn about all macros. The *identical* scripts can be used in the dynamic version.
 - Then convert from the top OPI down. For each OPI:
 - Find links to dynamic OPIs
 - Create the corresponding static OPI
 - Replace the links
- Some implementation details:
 - To run the python scripts, CS-Studio's runtime environment is faked with own modules.
 - The OPIs (stored as XML files) are transformed with XSLT (via xsltproc). Should be fairly robust.
 - The recursive conversion is controlled via another python script.
 - The latest version also handles links in the common header template.
 - Only ~250 LOC

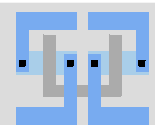


Configuration Database

- New minor release 0.10.0.20160111122
- New functions: Structure edit support.
 - Add / delete nodes.
 - New File(!)
 - Duplicate subtrees.
- More data verification before committing.
 - Stricter PV name checks.
- (mostly useless) gimmick: web version built and tested:
<https://sussrv04.ziti.uni-heidelberg.de:8443/webopi-unicos/w>



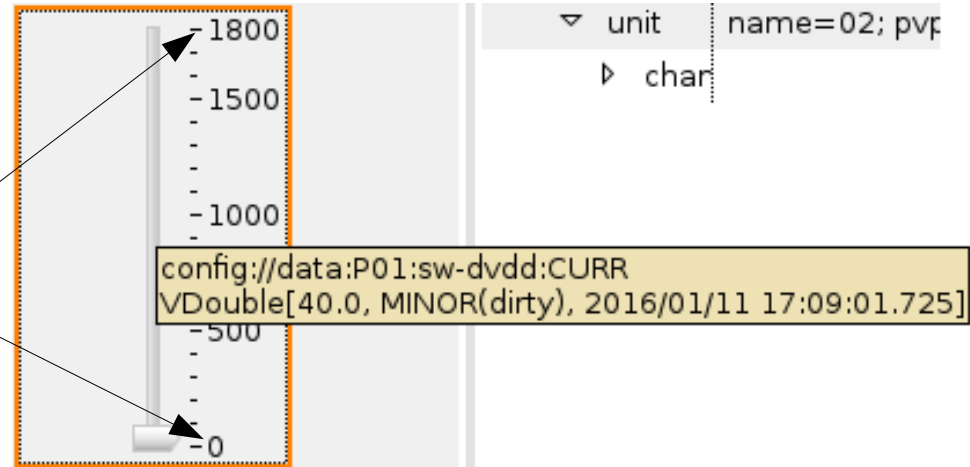
Name	Attributes	Entries	Type	Value	Unit
configuration		1	double	30.0	mA
power supply	pvprefix=P	1	double	1800.0	mV



Configuration Database II

- min/max support for widgets and editing.

Min/max
from the data

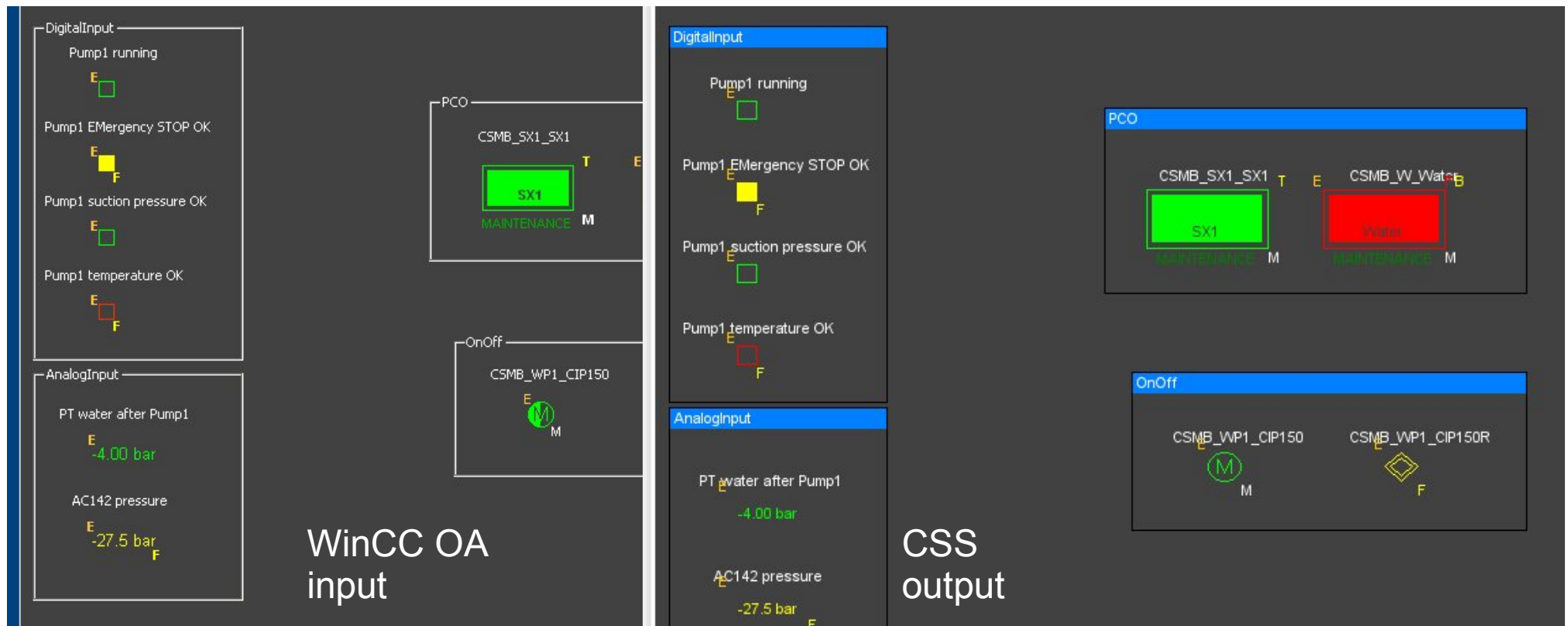


Error messages on invalid input.

Outlook for 2016

IBBelle (UNICOS)

- SC commissioning from ~March.
⇒ conflict with test beam! No problem if both run well...
- Most widgets ready. Some work still required for the more complex ones.
- Converter from WinCC OA (aka. PVSS) panels to CSS OPIs is under development. Will save many hours...



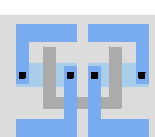
- **Next milestone for SC developments.**

- Big system test. Interaction between subsystems, with RC.
- Load evaluation (might still be too small for reliable extrapolation...).

- **2½ months from now!**

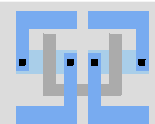
Until then:

- B2GM: Communications test with global RC/PSC.
- After B2GM: Start preparing the SC servers.
 - Same hardware as last time, but with SL 7.
 - EPICS base RPMs.
 - PostgreSQL
 - Archiver, Alarm Server
 - Web services
- Early March: Establish global RC at DESY.
- March: Prepare first overview CSS screens.
- March / April: Install latest IOCs from RPMs as hardware arrives.



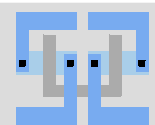
TB Readiness Matrix

System	EPICS	CSS	Power-Up Sequence	Config-DB	RPM
PS	OK	old template	prepared, partly untested	foreseen	OK
DHE/DHC	OK	basic, old template	?	to be migrated	OK
ONSEN	partly	fairly advanced	requires test	?	n/a
ONSEN IPMI	read-only	monitoring only	does not take part?	?	
DATCON	Planned IPbus				
MARCO	via PVSS	old template	n/a. maybe health check?	n/a	n/a
RC/PSC	untested			n/a	
DESY beam	via Tango	old template	n/a	n/a	n/a
FOS?	slow only	old template	health check?	conversion parameters?	

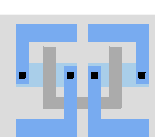


Everybody:

- Please update the naming conventions document.
- Keep the test beam status page up to date.
https://belle2.cc.kek.jp/redmine/projects/pxdonline/wiki/PXD_slow-control_overview_DESY2016
- Prepare RC integration for your devices.
 - More instructions after finalizing the RC mapping and NSM-EPICS gateway at the B2GM.
- Prepare GUIs to fit in the global GUI hierarchy according to the GUI Guidelines.
 - Probably there will be a lot of expert panels outside the hierarchy, but at the very least a status overview should be reachable via the hierarchy.
 - Templates and a framework for the hierarchical links as they are used for ONSSEN will be made available. (see the [next talk](#) by Bjoern to see how what looks like).

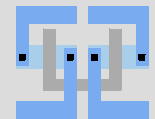


- (Not in the matrix yet:) Define alarm states.
 - We will have a lot of monitoring data, so we should be able to implement useful alarms.
 - I can help with the implementation in EPICS, but need good specifications:
 - What happened?
 - How is it detected?
 - How to distinguish from a similar error with a different cause?
 - The alarms are managed in a tree-like fashion:
 - Link down
 - Sender down
 - » hardware broken
 - » no link detected
 - Receiver down
 - no communication possible
 - » handshake failed
 - » cable unplugged
 - Errors propagate up to the root of the tree.



Other Important Information

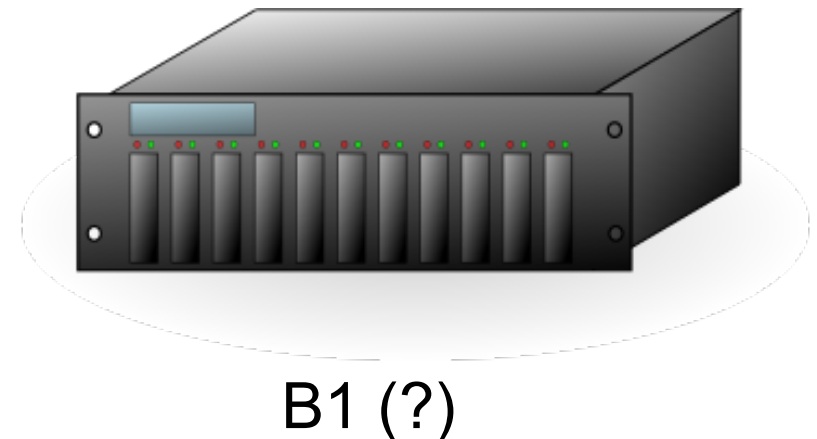
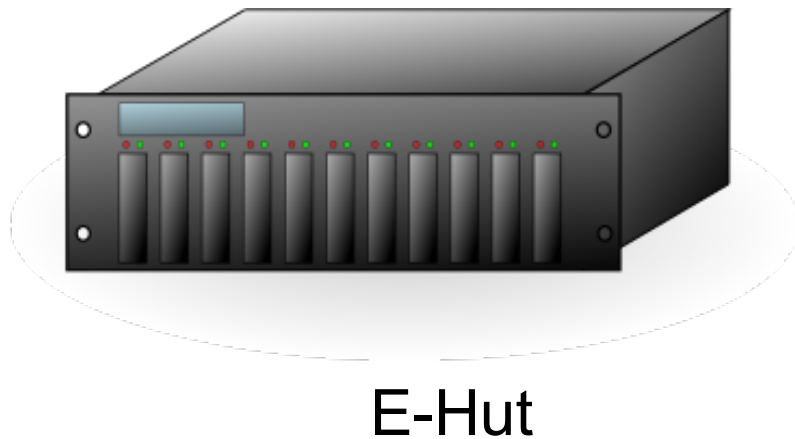
- After the test beam, support for SL6 will be frozen.
 - No new packages, new setups with SL7 only!
 - SL7 will be updated by upstream until 30.06.2024. Does not quite cover Belle II operation.
- CSS 4.1 is our main version at the moment.
 - 4.2 still has some small build issues
 - 4.2 will come with new OPI window management
- Please migrate your OPIs from `epics:// PVs` to `ca:// PVs`.
 - Simple text substitution is enough.
 - The former is only an alias and will disappear at some point in the future.
 - (With EPICS v4 `pva://`, `epics://` is ambiguous.)
- It's "EPICS", not "EPICs".



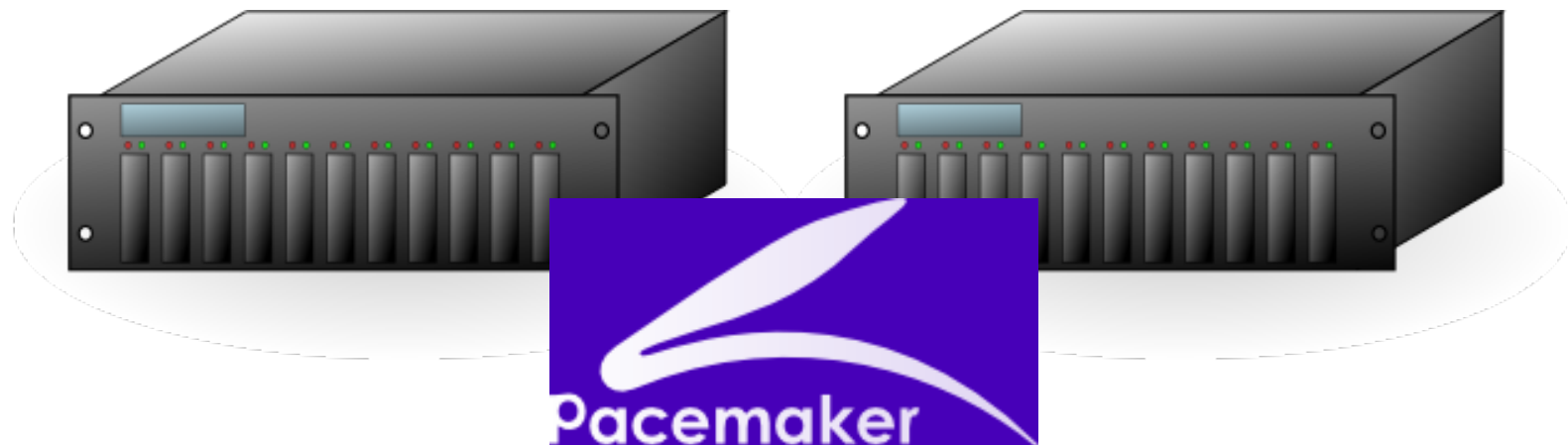
Outlook for 2017 & Later

PXD SC Commissioning in Tsukuba — Stage 1

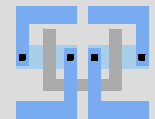
- In the end, all servers will be installed redundantly.
⇒ we will have enough hardware (perhaps excluding switches) to support two setups without redundancy.
- During commissioning / phase 2 / CR we support two setups:
 - in the E-Hut, connected to the hardware near the IP
 - in B1 for the hardware there



- When the PXD is integrated into Belle II, the servers are merged in the E-Hut.
- pacemaker is used to provide redundancy.



- Servers and switches will be bought in Japan
 - ⇒ 100V. At least 2 phases. 2kW in E-Hut and B1?
- Who provides UPS?
- Network connectivity, services. Under discussion with Nakao-san.
 - First tests (in E-Hut) to start around February B2GM.
- Optical fiber from Belle II to E-Hut.
- 19” rack space in B1 for stage 1.
 - or also put these servers in the E-Hut and string another fibre from B1 to the E-Hut.
- Backup to KEKCC?



Thank you!