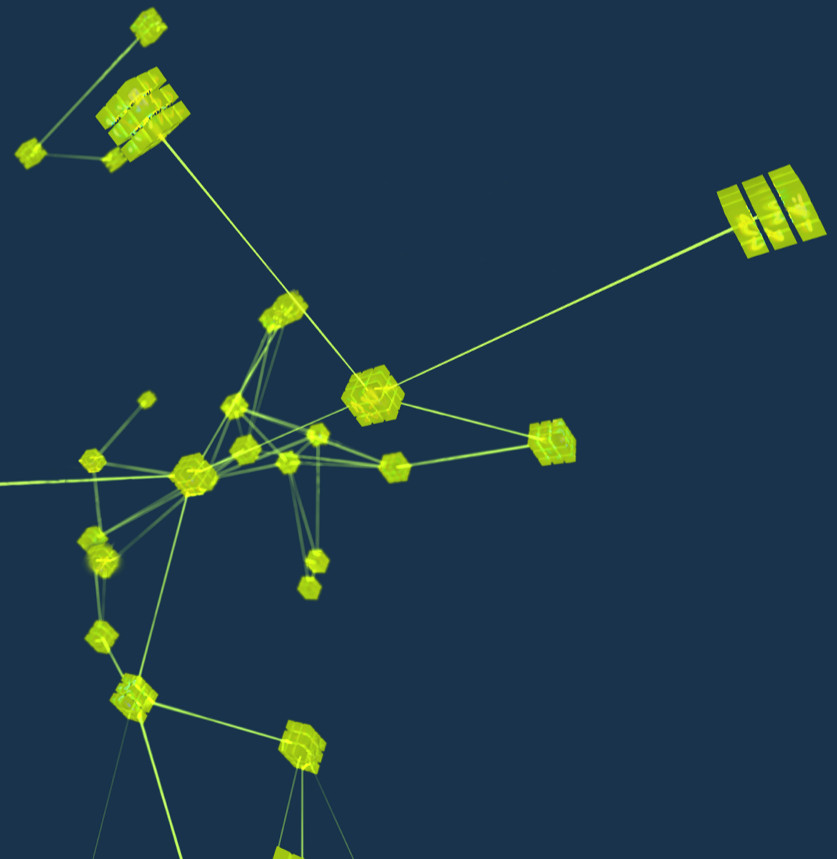
EPICS Collaboration Meeting September 2022

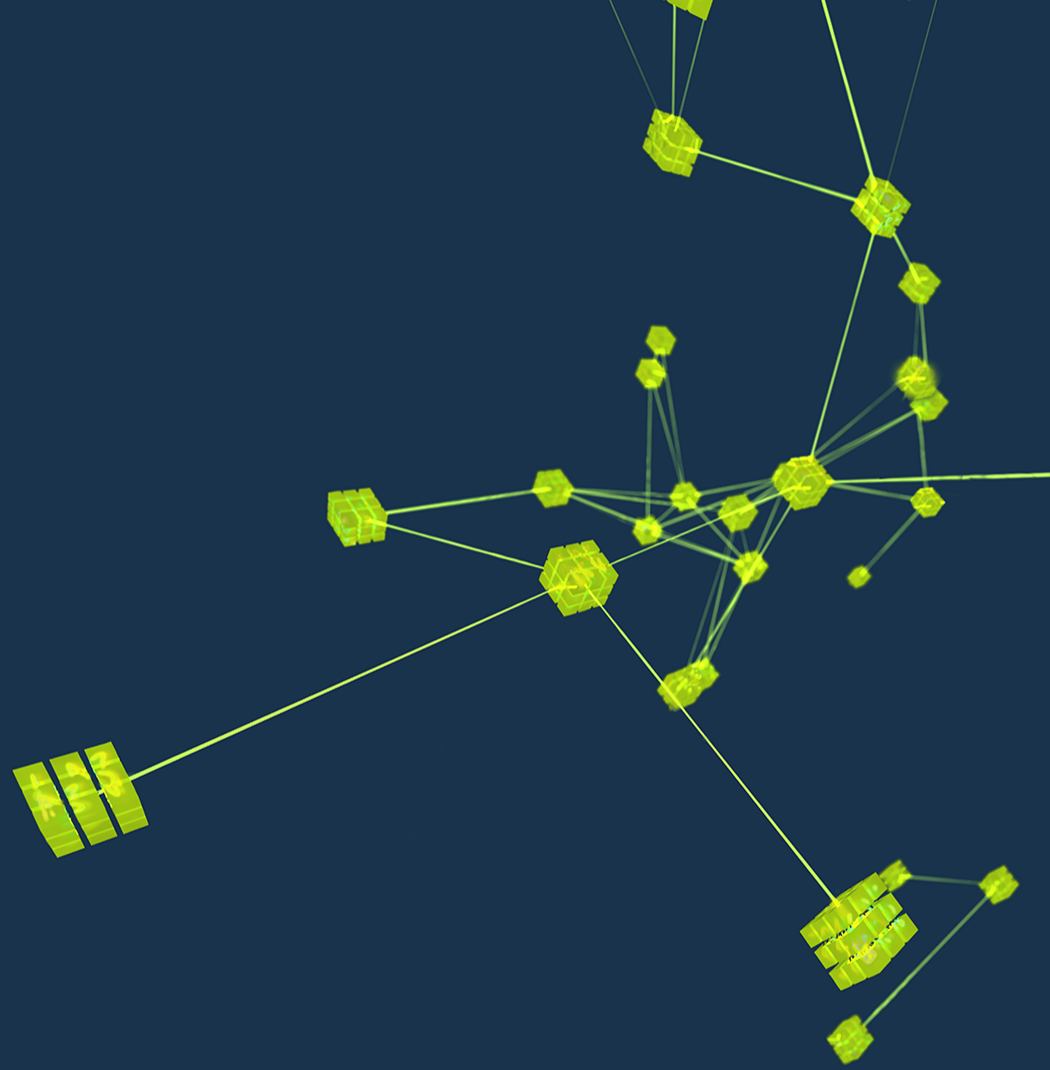


EPICS Core Developments and Plans

Ralph Lange *for the EPICS Core Developers*

Outline

- Developments
  - Changes in EPICS versions released since July 2021
- Plans
  - Changes under review or development
  - Future plans and ideas for the IOC
  - Long term plans



DEVELOPMENTS

SINCE JULY 2021

EPICS

EPICS Releases since July 2021

- EPICS 7.0.6.1 06 October 2021
- EPICS 7.0.7 07 September 2022

Changes in EPICS 7.0.6.1

- mbboDirect record enhancements:
  Single bit fields are updated (and monitors sent) when writing VAL
  Single bit fields can be used to initialize the record value
- Minimum required Perl version bumped to 5.10.1
- DB links to DBF_MENU fields fixed (broken in 7.0.6)
- Long string access to CALC fields fixed (broken since 7.0.5)
- Compiler interface for epicsAtomic tidied up
  Performance improvements under CLANG (built-in instead of mutex)
- epicsTime code has been reimplemented
- Many improvements in the Record Reference documentation

Full list (with links to issue tickets) at
https://epics-controls.org/resources-and-support/base/epics-7/7-0-6/

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Changes in EPICS 7.0.7

- Incompatible change to db_field_log
  This may cause channel filters that manipulate arrays to fail
- Automatic COMMANDLINE_LIBRARY with newer compilers
  Careful: Older compilers need editing of CONFIG_SITE
- aaoRecord gains OMSL and DOL
  I.e., can fetch an array from one record and write it to a different one
- RSRV CA server exports RSRV_SERVER_PORT
  For ‘multiple IOCs on a host’ setups, the used TCP port is available
- Simulation mode RAW support for output record types
  SIMM=RAW on ao, bo, mbbo, mbboDirect records converts the value and writes RVAL using SIOL

More Changes in EPICS 7.0.7

- Make epicsInt8 signed on all architectures
  epicsInt8 used to be unsigned where char is unsigned (e.g., PowerPC)
  This fix may change behaviour of existing databases on targets where char is unsigned when using input links to read from CHAR arrays
- Allow hexadecimal and octal values in hardware links
  Might break links that have numbers starting with 0, as these are now interpreted as octal numbers
- Colorized messages for errlog
  ANSI escapes are not used on output not intended for a terminal (e.g., when using errlog, with redirected stderr or when $TERM is not set)
- More Doxygen annotations in the code
  (thanks to the 2022 EPICS Codeathon participants)

Even More Changes in EPICS 7.0.7

- Build system updates
  Fix top level uninstall triggering the clean target (since 7.0.5)
  Fix build of Base's (modularized) structure with INSTALL_LOCATION
- Fix time synchronization issues on VxWorks
  Proper use of OS clock time synchronization on VxWorks 6.9

Full list (with links to issue tickets) at
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- pvAccessCPP: bug fixes (enum) and performance improvements
- pva2pva: access security hooks; timestamp.userTag from UTAG field

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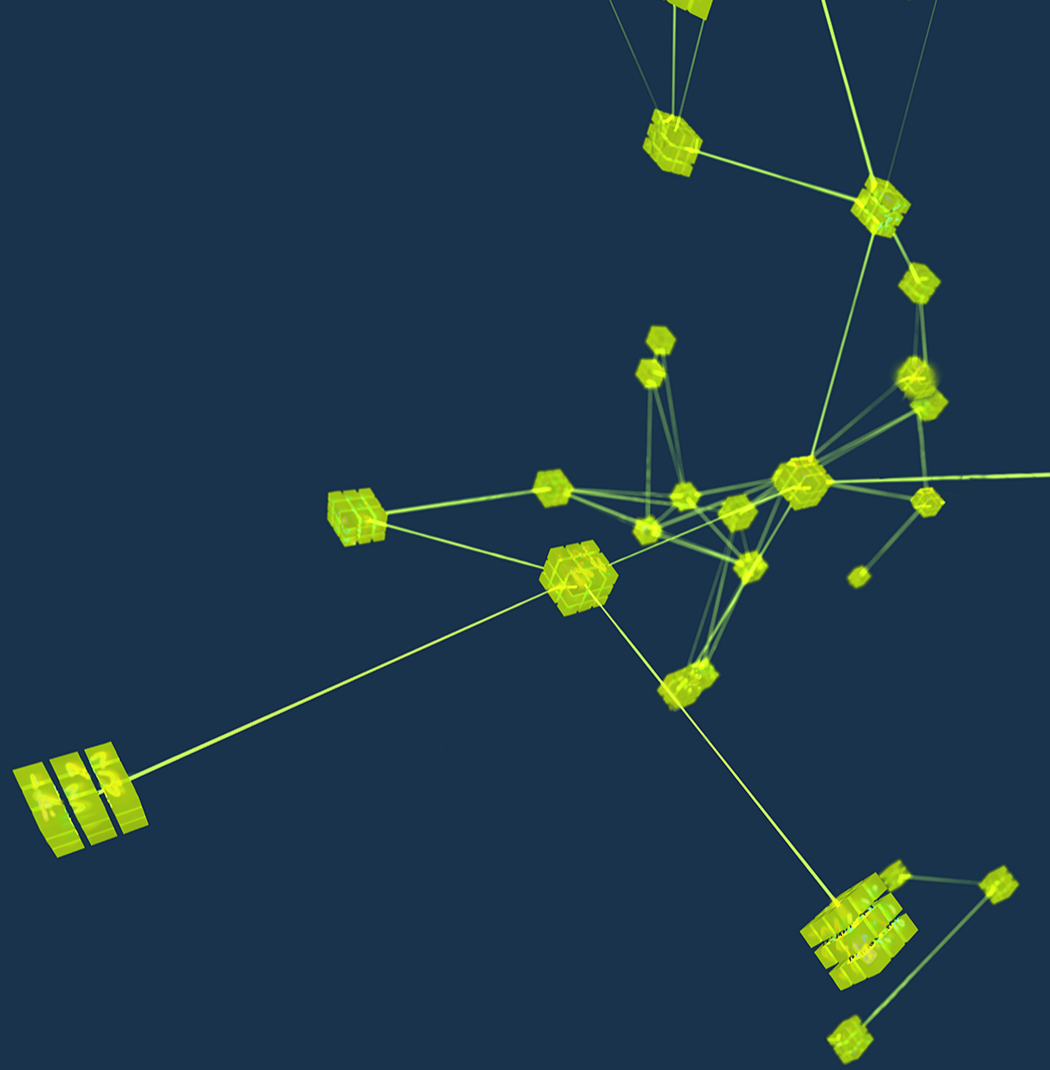
In Other News

- PVXS 1.0.0 released
  Switching to strict numbering policy
- P4P (incl. PVA Gateway) 4.1.2 released



PLANS

WHAT NEXT?

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Under Review or Development

- More server-side filters:
  Access to the record's info item strings
  Access to the record timestamp (TIME field)
- Add OOPT to output record types (only write "On Change" etc.)
- iocShell <TAB> completion (with libreadline)
- EXT link modifier
  Ability to force links to be local unless marked EXT

Future Plans and Ideas for the IOC

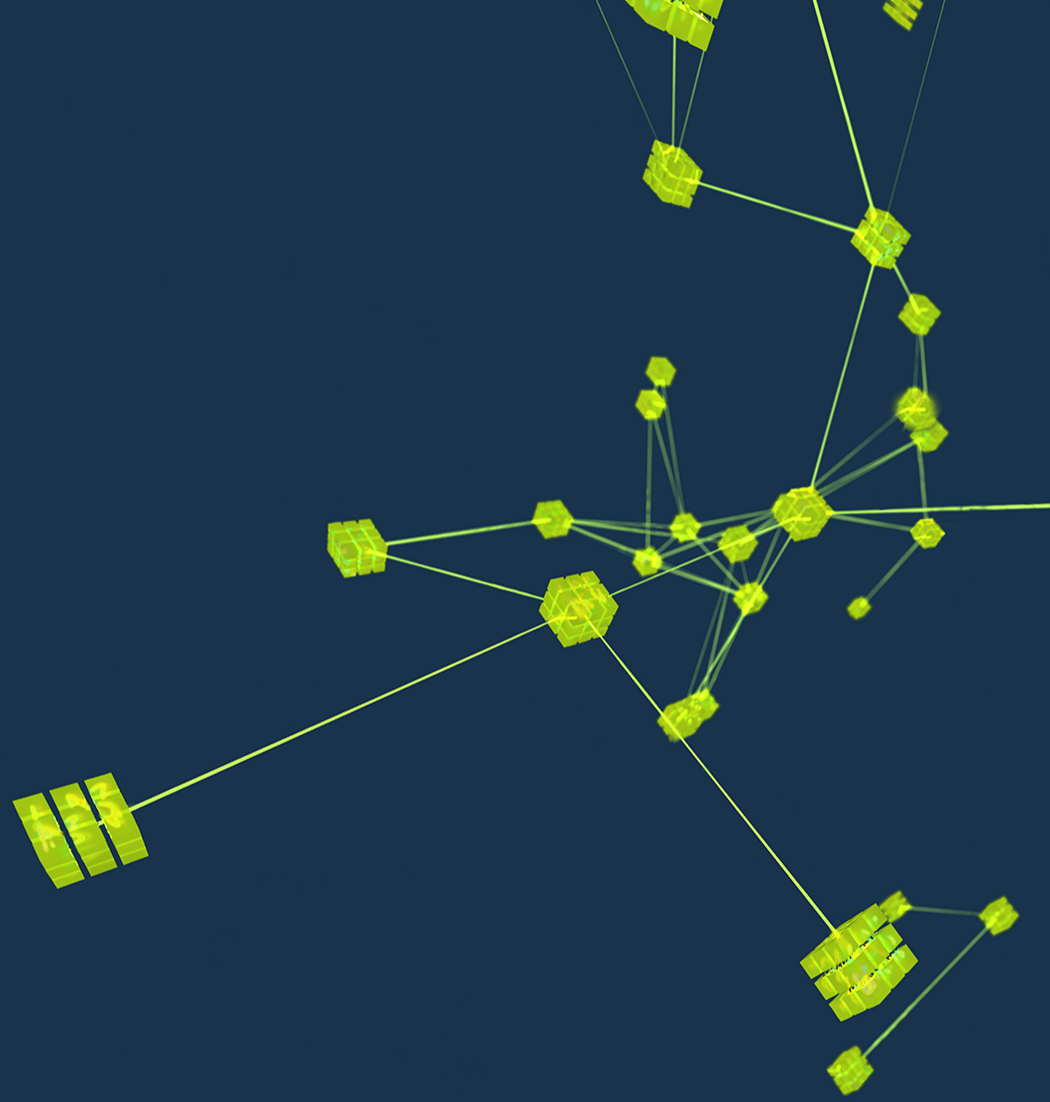
- Features being considered:
  - Server-side filtering of put operations (semantics tricky)
  - How to support complex structures as database fields
  - JSON link addresses for device support
- Move PVA link support into Base

Long Term Plans

- Moving the next generation user-level API library PVXS into Base
- Rebasing the IOC PVA server QSRV on top of PVXS
- Next major release – EPICS 7.1
  - No specific timetable for this yet
  - Will require C99 and C++11 compilers (GCC 4.8.1)
    -> No support for VxWorks 6.x or RTEMS 4.x
- IPv6 is supported by the next-gen PVA implementations
  Should Channel Access also get it??

Thank You for Your Attention!

Comments or Questions?



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