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Core Developments, 2018

Talk Outline

- Recent releases (C/C++ implementation only)
 - Base-3.14.12.8
 - Base-3.15.6
 - Base-3.16.2-rc1
 - Base-7.0.2-rc1
- Future of our release series
- Development plans

Recent Releases

C/C++ Only, some still -rc1

Base-3.14.12.8 (Released on 2018-09-14)

- Bug fixes – mostly internal issues, see rel-notes and Launchpad
- Changes to support new versions of MSVS and Apple Xcode
- Fix for iocLogServer to perform as documented, then deprecate
 - We recommend using other log servers now; IOCs connect to a tcp socket and send messages as plain text. The iocLogServer code is old and not really compatible with modern systems
- Clean-up of the startup directory
 - The build system no longer needs a startup directory to be installed
 - EpicsHostArch.pl script is now installed under lib/perl
 - The startup directory holds sample unix.sh, unix.csh, win32.bat and windows.bat files which sites may edit and use as needed
 - An 'EpicsHostArch' shell-script was retained for synapps CI-jobs

Base-3.15.6 (Released on 2018-10-11)

- Includes all the changes from 3.14.12.8, modified as necessary
- Additional bug-fixes for some 3.15-series internal issues
- How-to on converting Record Reference docs to POD
 - Help wanted; some Base record types have been converted since this release but those changes are not in the repository yet. We will still need to update the converted text for changes to record behaviours
- All array record types now post monitors on their NORD field
- Some msi updates — parser catches more input errors; the ‘,undefined’ macro markers now removed unless -V given
- New iocsh command ‘epicsUnsetEnv’

Base-3.16.2 (-rc1 on 2018-10-25)

- Includes all the changes from 3.15.6, modified as necessary
- Additional bug fixes for issues present in 3.16.1
- Updated JSON parser, handles 64-bit integers (API change)
 - Constant links can now hold 64-bit integer scalars or arrays
- mbb[io]Direct records VAL field upgraded to 32-bit DBF_LONG
 - New fields B10-B1F added for the extra value bits
- New iocsh command 'dbli' to list record info-items
- IOC now propagates PUTF state across DB links
 - PUTF reprocesses async records if fields modified while record active
- New build targets 'show-makefiles' and 'PRINT.var'
- New 'RTEMS-pc386-qemu' target architecture

Base-3.16.2 continued

■ Link type enhancements

- New link types ‘state’, ‘debug’ and ‘trace’
 - ‘state’ links are an alternative to the bi/bo ‘Db State’ device support
 - ‘debug’ and ‘trace’ links are for debugging new link types
- ‘calc’ link type supports timestamp selection
- Output records can use a ‘calc’ link for processing the record’s value
 - In the expression, ‘VAL’ is the value from the record
 - The ‘out’ parameter is an embedded JSON link for directing the result

■ Type-safe device and driver support tables

- Similar to the type-safe record support tables added in 3.16.1
- With some simple modifications, support tables can still build on older versions of Base but be type-checked on 3.16.2 and later

EPICS 7.0.2 (-rc1 on 2018-11-01)

- Includes all the changes from 3.16.2, modified as necessary
- Several iocsh-only commands have been added to VxWorks, more protection added against NULL input parameters
- Git branches ‘core/master’, ‘libcom/master’, ‘ca/master’ and ‘database/master’ recombined into one branch ‘7.0’
 - The split-branch approach made it hard to propose merge requests to change more than one of these modules
 - The source directory structure under ‘modules’ has not changed
 - PVA modules are still git submodules in separate Github repositories

EPICS 7.0.2 PVA Module Changes

- Many bug-fixes and major stability improvements
- Some obscure/broken APIs deprecated
- New easier-to-use API for writing PVA servers
- Reimplementation of the pvtools programs pvget, pvput etc.
 - Internally simpler, support for JSON formatting of pvStructures
 - New programs added: 'pvcall' and 'pvmonitor' (an alias for 'pvget -m')
 - The 'eget' program has been unbundled to a separate repository. A replacement may be added back to pvAccess in a future release
- Significant updates to the ca provider
 - All known deadlock situations have now been resolved
 - New pvRequest field options for monitor events and data conversions
- New pva link type added to the pva2pva module
 - PVA IOCs can get data from or put data to a pvAccess server

Future Base Release Series

Trimming Branches

The Release Management Burden

- Managing lots of release branches uses effort we don't have
- We are closing two of our release series
 - Base 3.14 series is old — 3.14.12 was released in November 2010
 - Plan to upgrade to the 3.15 or later series
 - Base 3.16 is almost identical to EPICS 7 without the PVA modules
 - New enough that there are very few users
 - Base-3.16.1 had a couple of major bugs (fixed in 7.0.1.1 and 3.16.2)
 - Upgrading to 7.0 should be straight-forward
 - Many 'bleeding edge' developers have already done so
- The Core Developers will concentrate our maintenance efforts on future 3.15 and 7.0 series releases

Development Plans

Prediction is hard, especially about the future

Danish Proverb, or Niels Bohr, or Yogi Berra, or ...

What's in the Pipeline

■ Core:

- JSON-5 support — permits hex integers in array constants, omit quotes from object keys (already allowed in DB files)
- Documentation
 - Convert AppDevGuide API documentation to Doxygen annotations
 - Convert Record Reference Wiki to POD annotations in DBD files

■ PVA:

- Work on p2p Gateway including Access Security now funded
- Add JSON alternative to the current pvRequest syntax
- Still several problems in pvAccess that need rework to fix (\$\$\$)

■ ...

Questions?

