

The EPICS v3 Development Road-map

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Outline

- Current status of the Base 3.14 and 3.15 branches
- Plans for near-term releases
- Code waiting to be reviewed and merged
- What we're planning to work on next
- How you can influence what happens



Base 3.14 and 3.15 branches

- 3.14 branch
 - Stable release branch
 - 3.14.12.1 released on 26th April 2011
 - 38 commits since 3.14.12.1
 - No significant new features
 - Most were minor bug-fixes
 - Some updates for build issues, to clean up warnings, or improve error checking
- 3.15 branch
 - Development branch
 - Many changes included (see later slides)
 - All 3.14 branch commits are merged into 3.15
 - Many deprecated & 3.13 compatibility features removed
 - Source directory layout changed, fewer libraries



Release plans

- Bugs will be fixed and patch releases made from the 3.14 branch
 - Version 3.14.12.2 could be released any time
 - If you have deadlines for a down-stream release, let me know
 - Versions 3.14.12.3 and later may follow
 - No intention to make any releases numbered 3.14.13.x
- The 3.15 and later branches are for new features
 - Many changes have already been merged
 - Several feature branches are awaiting review
 - More were developed at the Codeathon in August
- When should we start releasing 3.15.x?
 - “Tomorrow” → missing several features not yet merged
 - “Merge what’s ready now” → some need documentation and review
 - “When it’s ready” → what features should be included?
 - Feedback welcome, talk to me



Branches awaiting merge

- Ip: ~anj/epics-base/process-get
 - Marty Kraimer's code from 2008 Codeathon
 - Changes Process Notify to support put-process-get operations
 - Adds "Async Soft Channel" device support for input record types
 - Status:
 - Regression tests need to be updated before merge
 - Documentation provided for Application Developers' Guide
 - Will be merged very soon

- Ip: ~dirk.zimoch/epics-base/non-val-attributes
 - Dirk's code from 2010 Codeathon
 - Corrects attributes reported for many record fields
 - Status:
 - Documentation provided for Release Notes
 - No tests for record types anyway
 - Likely to be merged soon



Branches awaiting review

- Ip: ~khkim/epics-base/alarm-filter
 - Bernd Schoeneburg and Kukhee Kim's code from 2009 & 2010 Codeathons
 - Low-pass filtering of level alarms for ai, calc, longin, mbbi records
 - Status:
 - No documentation or tests yet
 - Review comments welcome
- Ip: ~dirk.zimoch/epics-base/named-soft-events
 - Dirk's code from 2010 Codeathon
 - Changes all record **EVNT** fields from **DBF_SHORT** into **DBF_STRING**
 - Status:
 - Minimal documentation provided in Release Notes
 - No tests yet
 - Review comments welcome
- Several branches from 2011 Codeathon
 - See next talk...



Branches still needing work

- `Ip:~ralph-lange/epics-base/server-side-plugins`
 - Ralph Lange and my code from 2010 (see Ralph's talk later)
 - Adds data filtering and transformations to the IOC server
 - Status:
 - Unit test code included
 - No documentation or release notes
 - Needs review of memory allocation and error reporting
 - Merge conflicts with dynamic array sizing changes delivered in 3.14.12

- `Ip:~anj/epics-base/compiled-dbd`
 - Mostly my code developed off & on since 2004
 - Compile-time DBD file processing written in Perl
 - Status:
 - Unit test code included
 - No documentation or release notes
 - More development planned



Possible New Developments

- Fix slow CA reconnect issue
 - A CA client with thousands of open channels takes minutes to reconnect them all after the IOC reboots
 - Need to balance reconnection speed against overall system stability
- Ability to set MTU size for a subnet, maybe even QoS parameters
 - GHz networks support Ethernet packets up to 64KB, we use ~1024 Bytes
- Generic field type
 - Another extension point for the v3 database
 - All iocCore operations on this kind of field would go through an API



Looming Problem

- Jeff Hill's new CA server, supports Data Access
 - Not yet integrated with the server-side-plugins changes
 - LANSCE will need this working in 2012/2013
- Marty Kraimer's new v4 PV Access Server on v3 IOC
 - What version of Base does this currently run on?
 - What code changes does it require?
- How to reconcile these two replacement servers?
 - First-come-first-served?
 - Add a new plug-in server API?
 - The server-side-plugins code has part of one
- Community opinions needed
 - Opinions that come with developer effort will be more persuasive



Technical Quiz (off topic)

- When might this code call bar()?

```
void bar (void);
```

```
void foo (int x) {  
    if (x < 0) x = -x;  
    if (x < 0) bar();  
}
```

Technical Quiz (off topic)

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    if (x < 0) bar();  
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```

- Recent versions of gcc generate this code (maximum optimization)

Disassembly of section .text:

```
0000000000000000 <foo>:  
0:    f3 c3                repz retq
```

- Negating the value of INT_MIN is undefined behavior
- Optimizers may assume that undefined behavior can never occur, so gcc silently and correctly optimizes away all of the code from the function