Managing Unbundled IOC Support and Applications

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EPICS Base Unbundled

- From Release 3.14 onwards, EPICS base releases and distributions will only contain soft channel device support, and no drivers
  - Bug fixes to Release 3.13.2 will retain the existing support
- While producing Release 3.14, we are unbundling the base hardware support into several separate <*supporttop*> applications
- These collections are being placed in the CVS repository at APS in `epics/modules/<class>/[<subclass>/]<supporttop>`
- APS will stop maintaining applications that we don't use
- Other sites will have to take responsibility for future updates, bug fixes and enhancements to these applications

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Unbundled Support Applications

- Unbundling the base software into several <*supporttop*> applications makes it easy to spread the maintenance, upgrade and release tasks between people and labs
  - Each support application can set its own release schedule
  - Distribution methods can be different to EPICS base
- A new EPICS web-site at APS will provide a database-driven directory of available support applications
  - This incorporates the data from Steve Lewis' lists of EPICS Supported Hardware and Supported Record types
  - APS is happy to provide CVS access and web-space for support applications on request from any module owner

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Managing Operational IOC and Support Applications

- At present the APS control system comprises 175 active IOCs with about 380,000 EPICS records
  - 12 different kinds of IOC
    - Using 4 different versions of EPICS from R3.13beta11 onwards
  - 20 different support applications
    - Some support apps have multiple releases in use
    - Support apps need to be built against multiple EPICS versions
  - Several people (12+) can make changes in the CVS repository
- For this size and complexity of system, it is essential to carefully manage the software running on the IOCs

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IOC Software Configuration Management Procedures

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- Our documented Configuration Management procedures are not onerous, and protect us from mistakes
  - Only Operations personnel can install software in the official area
  - All IOC source code and configuration data is held in CVS
  - IOC applications have different rules to support applications
  - Incompatible versions of EPICS base start a new installation tree
    - Minor bug fixes to base don't need this (base is a support app!)
  - Developers check out private versions to work on changes
    - Use of home directories on the Operations server is encouraged
    - They only check out the applications that need to be modified
    - Operational IOCs may use development versions for "short periods"

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Support Applications

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- Support applications are never modified after installation
  - If changes/bug-fixes are needed, a new version must be installed
    - The old version is not removed
    - IOC applications can migrate to use the new release slowly
  - CVS tags mark particular versions for installation
  - Local bug-fixes for external support apps have a **`-asd`*n*** revision
  - Use of **`cvs export`** to install applications prevents **`cvs update`**
- The official install pathname for a particular version of a support app ends with the version number, e.g.

  `/usr/local/iocapps/R3.13.2/support/ipac/2-1-asd2`
- The set of support application versions used by an IOC must be completely consistent

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IOC Applications

- Unlike support apps, IOC apps are modified frequently
  - A rigid "no modifications" rule would be counter-productive
  - CVS is used to record and synchronize all application changes
- CVS branches allow operational modifications to be checked in while a developer is making major changes
  - A branch is created when an IOC app is installed by Operations
  - Minor modifications are checked in along this branch
  - The official pathname for an IOC app ends with the branch, e.g.
    `/usr/local/iocapps/R3.13.2/ioc/sr/3`
  - Whenever multiple versions of an application need to be installed at the same time, a new branch is created off the main CVS trunk
    - Parallel modifications must be made to both branches while there are still IOCs booting from the old branch

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For More Information

- The APS procedures are given in Chapter 7 of the IOC Software Configuration Management guide
  (formerly known as Building & Source/Release Control)
- A 2-sided A4 quick-reference card is also available and provides a summary of all the common procedures
  - After an initial learning period, this card provides all the information that the developers need to operate these procedures
- See the EPICS Documentation pages at APS

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