

LCLS How-to Release Software

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- [High Level Apps Release Procedure](#)
- [EPICS IOC Applicaion Deployment and Release Procedure Rev 4](#)
- [EPICS Soft IOC Depolymnet and Release Procedure for Production](#)
- [Adding software to eco](#)
- [CRAM Migration Guide](#)

LCLS Code Management

- [LCLS CVS Repository](#)
- [LCLS Directory Tree](#)
- [EPICS Modules and Dependencies](#)
- [LCLS How-to Tag a Release](#)
- [LCLS How-to Branch a Release](#)
- [EPICS Modules Maintenance and Patch Management Guidelines](#)

LCLS PLC Development Getting Started

- [How-to Download PLC Ladder Logic](#)
- [LCLS How-To Restore PLC Software from CVS](#)

LCLS How-To Boot an EPICS IOC

- [LCLS Directory Tree](#)
- [How-to Setup DHCP for an IOC](#)
- [Cheetsheet for AFS IOC boot paramrters](#)
- [Cheetsheet for NFS IOC boot parameters](#)
- [Cheetsheet for Reflashing RTEMS IOC](#)

EPICS Directory Tree		
Description	CVS Repository	Reference Directory
EPICS IOC Applications	epics/ioc	/afs/slac/g/lcls/epics/<version>/iocTop
EPICS Site	epics/site/src	/afs/slac/g/lcls/epics/<version>/modules
EPICS Base	epics/base	/afs/slac/g/lcls/epics/<version>/base
EPICS Extensions	epics/extensions	/afs/slac/g/lcls/epics/<version>/extensions
EPICS IOC Boot	epics/iocCommon	/afs/slac/g/lcls/epics/<version>/iocCommon
EPICS CPU Boot	epics/cpuCommon	/afs/slac/g/lcls/epics/<version>/cpuCommon

Tools Directory Tree		
Description	CVS Repository	Reference Directory
EDM Configuration Files	tools/edm/config	/afs/slac/g/lcls/tools/edm/config
EDM Displays	tools/edm/display	/afs/slac/g/lcls/tools/edm/display
EDM Scripts	tools/edm/scripts	/afs/slac/g/lcls/tools/edm/script
Alarm Handler Configuration Files	tools/alh	afs/slac/g/lcls/tools/alh/config
Channel Watcher Configuration Files	tools/ChannelWatcher	afs/slac/g/lcls/tools/ChannelWatcher/config
PLC Applications	plc	/afs/slac/g/lcls/plc
Firmware	firmware	/afs/slac/g/lcls/firmware

Note: PLC applications are generated on windows machines. See subsystem controls engineer for details

It is important to note that releasing software to the Development System during the 2007 run will affect the production system displays, standalone process restarts, and IOC's upon boot.

For plc's follow Step 1-4 only.

Step 1: General Instructions

1. Log into your SLAC Unix account on the host lcls-dev2
2. [Setup your CVS environment variables for the LCLS environment.](#)
3. All EPICS IOC Application should include the site modules iocAdmin, which provides ioc statistics. Those applications that require restore capabilities should include the module autosave or restore, which uses ChannelWatcher. To add these modules, please note that the configure /RELEASE file will need to be modified. # US

Step 2: Modifying existing software in CVS:

Note: if a cross compiler does not exist for your source, for example plc ladder logic and firmware, skip item 4 below.

1. Change directory to your local sandbox
2. Use eco to checkout software from cvs, or do it manually `cvs co -d <directory> <module name>`
3. modify software
4. if applicable, build your application to verify that the build is successfully.
5. test your changes in development
6. if ready, commit your changes to CVS, making sure to edit the RELEASE_NOTES describing the changes made
7. Tag your release.
8. Use cram push your application to production

Step 3: Importing new software into CVS:

1. Change directory to the TOP of your new application
2. Make sure you have a RELEASE_NOTES and README file at the top of your application
3. Modify you configure/RELEASE file for production use
4. Import your software into CVS. The cvs import syntax is

```
cvs import -m "Initial import of ..." epics/base <vendor_tag> <release_tag>
cvs import -m "Initial import of ..." epics/site/src/<package> <vendor_tag> <release_tag>
cvs import -m "Initial import of ..." epics/ioc/<subsystem> <vendor_tag> <release_tag>
```

EPICS IOC Example)

```
cvs import -m "Initial import of..." epics/ioc/Vacuum Vacuum Vacuum-R1-0-0
```

PLC Example)

```
cvs import -m "Initial import of..." plc/Water/ioc-in20-wa01 ioc-in20-wa01 ioc-in20-wa01-R1-0-0
```

Step 4: Commit your changes to CVS and Tag

1. Change directory to the directory where your changes were made locally.
2. Commit all changed files to cvs: `cvs commit -m "comment" <filename>`
3. Move to the top level directory of your application you wish to tag. For PLC applications this will be the nodename directory.
4. Tag software: `cvs tag <modulename>-RX-Y-Z`

EPICS IOC Applicaiton Example: `cvs tag Vacuum-R1-0-1`

PLC Example: `cvs tag ioc-in20-wa01-R1-0-0`

Step 5: CVS Tag your changes

For ioc common startup: `cd /afs/slac/g/lcls/epics/iocCommon/<subsystem>/<nodename>`

For ioc application: `cd /nfs/slac/g/lcls/epics/iocTop/<subsystem>`

For modules: `cd /afs/slac/g/lcls/epics/modules/<module>`

For epics base: `cd /afs/slac/g/lcls/epics/base/base-<version>`

1. `cvs co -P -d <tagged version> -r <tagged version> <module name>`
2. `cd <tagged version>`
3. `gmake`
4. Send an email to controls-software-release regarding your tagged software release. If other applications need your changes, describe how to include your new version and the features of this new release.

Step 6: ChannelWatcher

1. Update configuration files for your ioc if necessary.
2. Create or modify the Master.XX file for your subsystem.
3. Restart your ChannelWatcher monitoring process. For more information click here.

Step 7: Follow instructions on[How-To Boot an EPICS ioc|LCLS How-To Boot an EPICS IOC]

1. Test your new release on the development system.
2. If booting from the LCLSCA subnet proceed to Step 9. Otherwise, request permission from mcc ops to reboot your ioc. Once permission has been granted, send an email to controls-software-release regarding your ioc boot. This email message is forwarded to the Operations E-log. Boot your ioc and test. Send email to controls-software-release when your test has finished, providing the results of your test. If you have to backout your release, go to Step 8, Otherwise, your done!

Step 8: Backout out a Release

1. Ask ops permission to back out you release
2. Send a message to the MCC E-log
3. From lcls-dev2, use [CRAM](#) to backout your release. Note: From lcls-dev2, type `cram --revert` or `cram --upgrade` for help
4. Reboot your ioc from the production network panel.

Step 9: Preliminary checkout in Production

Check for duplicate PV using `dupePVs.bash`

Examples:

1) *get usage*
`dupePVs.bash -h`

2) *check all iocs found in \$IOC*
`dupePVs.bash`

3) *check all eioc's*
`dupePVs.bash eioc`

4) *check all iocs with mg in the name*
`dupePVs.bash mg`

5) *check all soft magnet IOCs*
`dupePVs.bash sioc-.*-mg01`

Step 10: Exporting Software to Production System

When your EPICS IOC Application is ready for release to production, which means that you have completed the following;

1. committed your changes to CVS
2. tagged your release
3. built and tested on the development system (lcls-dev2)

You are ready to export your software to production.

For EPICS IOC Applications:

1. If your application is Crammed from lcls-dev2:
 - a. `cd` to TOP of your Application
 - b. `cram push`
2. Otherwise,
 - a. `ssh` to the production machine shared account, may need to `hope` to lcls-prod02 first
 - b. `cd $EPICS_IOC_TOP/<Application>`
 - c. Use `eco` to checkout your application
 - d. `cd` to the TOP of your release
 - e. build your application by typing "make"
 - f. `cd $EPICS_IOC_TOP/<nodename>`
 - g. For hard iocs
 - i. `cp -p startup.cmd startup.cmd_backup`
 - ii. edit `startup.cmd` file and point to the new tagged release
 - h. For soft iocs
 - i. `mv bin bin_backup`
 - ii. `ln -s ../../iocTop/<subsystem>/<tagged-version>/bin/<OS> bin`
 - i. Enter a log in the operations elog book by sending email to controls-software-release
 - j. Reboot ioc from network panel, after mcc has granted permission.

Matlab Programs Released to Production:

- [how-to release matlab software on production](#)
- or all new release, enter a message in the operation elog book by sending email to controls-software-release.

Step 11: Export ChannelWatcher Config Files

(see the example below)

- `ssh iocmgr@lcls-builder` or `ssh physics@lcls-srv01`
- `export CVSROOT=:ext:luchini@lcls-prod02:/afs/slac/g/lcls/cvs`
- `cd $TOOLS/ChannelWatcher/config`
- `cvs update <filename>`
- `ssh laci@lcls-daemon1`
- `cd /etc/init.d`
- `./st.cw<Subsystem> restart` ex) `st.cwMG` for Magnets
- `logout`
- Note: if you have the Message Logger up (from lclshome) note the number of pv's that failed to connect to ChannelWatcher.
- Enter a message in the operation elog book by sending email to controls-software-release.