Application Environments — makeBaseApp

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1 Overview *What is it?*

makeBaseApp is the EPICS Base tool to create an application environment. It was originally developed at the APS by Marty Kraimer and Janet Anderson. There has been some additional work by Ralph Lange (BESSY) between Base releases 3.13.0.beta11 and beta12.

makeBaseApp creates a directory structure which an application programmer can use to develop different types of things. Before Base 3.13.0.beta12 this structure was created by a makeBaseApp script that contained all the necessary files and kind of self-exploded into the programmer's development area.

This method was very static and inflexible. Every change in the created structure implied changes to the makeBaseApp script itself.

makeBaseApp now uses a far more flexible design.

2 Design *How does it work?*

makeBaseApp creates structures by copying from a template.

While copying files and directories, it checks file names and file contents for certain tags and does string replacement on those tags. The user may add or redefine these replacements without changing the makeBaseApp script.

makeBaseApp can create development structures for different kinds of applications from different templates. The user may specify the type of application he wants to develop on the command line.

There may be different sets of application templates. EPICS Base contains one set of application templates which supports a minimal application structure as well as an example application template. Sites (or users) may easily set up template sets for the application types they need without interfering with EPICS Base.

Application types may have their own make rules which are merged into the user's rules in a reasonable way.

makeBaseApp is written in perl. There is a hook mechanism: the template structure may contain perl code that is executed by makeBaseApp when the template is used.

3 Application Templates *What does Base include? How do I extend this?*

EPICS Base contains a set of four application templates:

exampleApp	Development structure with some small examples for the most important and most frequent IOC applications: New Record Type, new Device Support, Channel Access client, sequencer program, plain and template generated databases.
exampleBoot	IOC boot directory structure for use with the example databases.
simpleApp	Minimal structure: Like the exampleApp, but without examples.
simpleBoot	Minimal IOC boot directory structure.

There are two suggested ways to generate a new application template:

1. Change an existing application template

Create a new application template top directory where you want to keep your newly created templates.

Copy the Makefile and the config subdirectory from the EPICS Base template top to your new template top.

Copy an application template that fits your needs most into your template top.

Change it. Use tags instead of specific names wherever possible. Verify that your changes work by regularily using makeBaseApp with your template top and comparing what you get with what you wanted. Put the template under CVS control. The special CVS files will not be copied when the template is used.

2. Turn an existing application into an application template

Create a new application template top directory where you want to keep your newly created templates.

Copy the Makefile and the config subdirectory from the EPICS Base template top to your new template top.

Copy the application to your new template top.

Change it by carefully replacing every specific piece of information with the appropriate tag — as well within the files as within the file names. Verify that your changes work by regularily using makeBaseApp with your template top and comparing what you get with what you wanted. Put the template under CVS control. The special CVS files will not be copied when the template is used.

4 Status *Does it work?*

makeBaseApp is tested on all common host platforms (including WIN32 architectures).

makeBaseApp

- Overview — *What is it?*
- Design — *How does it work?*
- Application Templates — *What does Base include? How do I extend this?*
- Status — *Does it work?*

Overview

- makeBaseApp Creates a Directory Structure for Developing Applications (makeBaseApp Module)
- Has Been in Base for a While
- Old Method (Self-Exploding Script) was Not Flexible Enough
- Major Redesign for Base 3.13.0.beta12

Design

- Template Based
- Tag Replacement in File Names and Contents (User-Defineable)
- Supports Templates for Different Application Types
- Supports Different Template Sets
- Supports Additional Application Specific Make Rules
- Template Hook (Perl Code) will be Executed by makeBaseApp when Template is Used

Application Templates

EPICS Base Includes Four Templates:

exampleApp	Small Examples for Most Common IOC Applications: New Record Type, New Device Support, CA Client, Sequencer Program, Plain and Template Generated Databases
exampleBoot	IOC Boot Structure for exampleApp
simpleApp	Minimal Development Structure
simpleBoot	Minimal IOC Boot Structure

Application Templates

- Create New Template Top
- Copy Top Makefile and Config Subdir

Creating from Existing Template:

- Copy Existing Application Template
- Change It to Match Your Needs
- Test Your Changes Often

Creating from Existing Application:

- Copy Existing Application
- Change It:
  Replace All Specific Names with Tags
  (within Files and File Names)
- Test Your Changes Often

- Put Template under CVS (Safe)

Status

Tested on All Host Platforms (Including WIN32)

Conclusion

makeBaseApp is an Application Environment Generation Tool:

It Can Create Almost Anything

... If You Designed a Template for It