

CLS advances on EPICS tools and environment

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- 3 months at CLS
- 3 years at Sirius
- Working with:
 - Motion Control Systems
 - EPICS Apps, devices and drivers
 - EPICS GUIs
- Before: Embedded Systems



Outline

- New O.S. selection
- IOC build tool migration
- New GUI manager selection

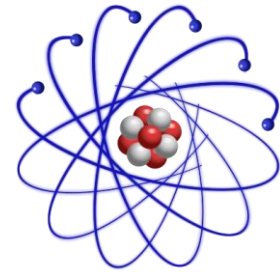


New O.S. Selection



New O.S. Selection

- Considered Distros:
 - Scientific Linux 7 ➤ obsolete
 - CentOS 8.1 ➤ RHEL upstream
 - Alma 8 ➤ RH code restrictions
 - Alma 9 ➤ RH code restrictions
 - Debian 12 ➤ chosen one



Scientific Linux



Build Tool Migration



Build tool Migration

- Traditional → Require

driver.makefile

- 1 point of entry
- no configure/RELEASE
- OS-specific
(EPICS_HOST_ARCH)
- builds for installed EPICS versions
- automatic dependency resolution
- version handling

require

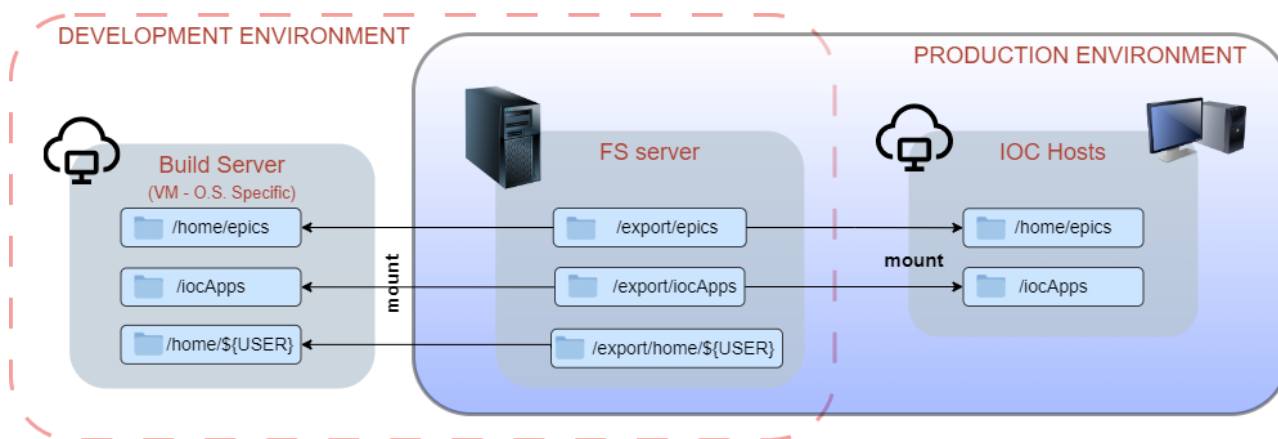
- dynamic loading of libs
- version handling
- auto “sourcing” scripts
- abstracting devices
- unifying integration

iocsh

- softloc wrapper
- setup of default environment
- can initialize specific environments (i.e. python venv)
- handles EPICS version

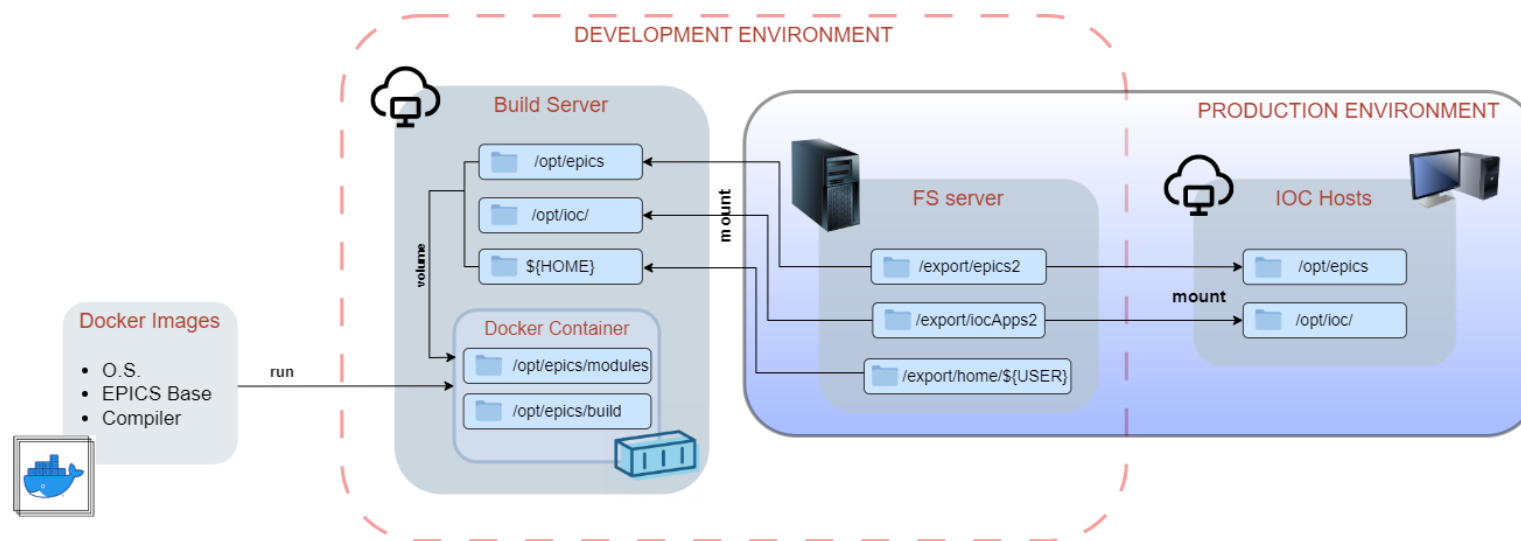


Build tool Migration



- Before
 - VM – OS specific
 - Maps EPICS base and drivers
 - Generates dynamic libs

- After
 - Docker Image (OS, Base, Compiler)
 - Maps drivers
 - Generates static libs



New GUI Manager Selection



New GUI Manager Selection

- EDM / mEDM
- caQtDM
- Screen Builder
- PyDM
- Grafana (Visualization)
- CSS-Eclipse
- CSS-Phoebus
- React Automation Studio



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Integrated Results		EPICS GUI Builder Technology Comparison Matrix													
Technology	Comments	Parameter -> Weights (1 to 5)	Support Existing Screens (EDM)	Ease of Use By Non-experts	Existing CID knowledge of it	Ease of Deployment	OS support (Windows, Linux, etc.)	Legacy OS support	Scriptability (supports macros)	Feature Set (widgets mostly)	Support from Developers	Running stability	PV Access Support (Epics 7)	Remote Access Support (i.e. HTTP)	Computer Resource Consumption
Raw Scores															
EDM	Default as of Now	Score (Input)	5	1	5	4	5	5	3	3	3	5	3	1	5
caQtDM	Qt and C++	Score (Input)	4	4	1	4	4	4	4	4	3	4	5	3	4
Screen Builder	Qt and Python (CLS)	Score (Input)	1	5	3	4	4	2	2	3	2	3	3	3	3
PyDM	Qt and Python	Score (Input)	1	3	3	4	5	3	3	3	3	4	3	5	3
Grafana	WEB-only visualization	Score (Input)	0	0	0	0	0	0	0	0	0	0	0	0	0
CSS-Classic	Java, and Eclipse based	Score (Input)	4	4	2	5	5	3	4	4	2	2	5	1	3
CSS-Phoebus	Java based	Score (Input)	4	5	1	5	5	3	3	3	3	3	5	3	3
React Automation Studio	Web based?	Score (Input)	0	0	0	0	0	0	0	0	0	0	0	0	0
Weighted Normalized Scores (calculations)															
		Max Value	25	15	10	10	20	15	15	15	15	25	5	5	
EDM	Default as of Now	Weighted	25	3	10	8	20	15	3	9	3	20	3	1	5
caQtDM	Qt and C++	Weighted	20	12	2	8	20	12	12	12	9	20	15	3	4
Screen Builder	Qt and Python (CLS)	Weighted	5	15	8	8	16	9	6	9	9	20	9	1	3
PyDM	Qt and Python	Weighted	5	9	6	8	20	9	12	9	6	20	9	5	3
Grafana	WEB-only visualization	Weighted	0	0	0	0	0	0	0	0	0	0	0	0	0
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React Automation Studio	Web based?	Weighted	0	0	0	0	0	0	0	0	0	0	0	0	0



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