

XRootD

From Conception to Release

XRootD Workshop

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<http://xrootd.org>

Introduction

- # Cutting a release is complicated
 - Requires coordination of a distributed team
 - All of which have competing assignments
 - Updating documentation ahead of time
 - Documenting feature interactions -> multiple docs
 - Testing
 - Final continuity sign-off by multiple parties
- # All done in a collaborative community

XRootD Release Notation

X.0.0

- A major release that can break ABI
 - Every 2 to 4 years

X.Y.0

- A feature release that can't break ABI
 - 1 to 2 each year

X.Y.Z

- A patch release to fix bugs
 - As often as needed

What's In a Release?

- # Daemons
- # Plug-ins
- # Commands
- # Libraries
- # Third Party Add-ons
- # Documentation
- # Source

Daemons

- # cmsd (Cluster Management Service)
- # frm_purged (File Residency Manager purge)
- # frm_xfrd (File Residency Manager migrate & stage)
- # XrdCnsd (Cluster Namespace Tracker)
- # xrootd (**XRootD** framework driver)
- # xrootdfs (FUSE file system)

Plug-ins I

Authentication

- gsi, krb5, pwd, sss, and unix
 - gsi specializations: authzvo(), gmapdn(), & ssl

Bandwidth Manager (deprecated)

Checksums

- adler32, crc32, md5, zcrc32

Cluster name space inventory

Name2Name (objectid-to-path)

Plug-ins II

Protocols

- HTTP[S], HTTP-TPC, WebDav, & **XRootD**

Proxy client

Proxy server (pss)

Scalable Service Interface (ssi)

- Scalable Service Interface logging

Security framework

Plug-ins III

- # Stat() for GPFS w/ tape backend
- # Throttle
- # **Xcache**
 - Plus caching decision plug-in

Commands

cconfig	cns_ssi
frm_admin	frm_xfragment
mpxstats	wait41
xprep	xrdacctest
xrdadler32	xrdcp
xrdfs	xrdgsiproxy
xrdgsitest	xrdmapc
xrdpfc_print	xrdpwdadmin
xrdqstats	xrdsssadmin
xrdstagetool	

Libraries

- # Client Interface
- # POSIX Interface
- # Server
- # Shared Memory
- # Utilities

Third Party Add-ons

- # The ones we track and supply separately
 - Ceph
 - Protocol convertors
 - **XRootD** to http
 - **Xcache** for CERNVMFS
 - **XRootD** For ROOT framework

Release Work Plan Drivers

- # Github Issues Page
 - Official record of bugs & enhancement reqs
- # OSG & WLCG meetings
- # Experimental meetings (e.g. S&C week)
- # Unofficial discussions
 - Usually with co-dependent system devops
- # Unsolicited contributions
 - Gees, why didn't we think of it?

Creating a Work Plan

- # A continuous work plan model is used
 - Allows us to be nimble with a small group
 - What proceeds is constantly assessed
 - Based on impact, effort, & developer availability
- # Work is farmed out to interested parties
 - This is a collaborative undertaking
 - Scope is outlined
 - Interdependencies identified and lined up
 - Timeline expectations are discussed & agreed

Release Testing

- # Done via continuous integration (gitlab)
 - RPMs are always available for testing
- # Providing release candidates ($x.y.z-RC_n$)
 - Expectation that community will test these
 - Works much of the time
 - But sometimes not so well and it becomes obvious
 - Multiple patch releases follow when that happens
- # We try to cajole impacted parties
 - Did the patches fix your problem?

Then the time comes...

- # The release manager is the final arbiter
 - The fabulous Michal Simon decides
 - When a release gets cut
 - What actually goes in
 - Based on complexity, sufficient testing, etc
- # This is a hard and fast rule
 - We found this to be the only workable model
 - Our collaborators constantly test this

The End Game

- # The final release is made available
 - EPEL repo for non-US sites
 - OSG repo for US sites
 - **XRootD** repo for non-conformists

Improvements?

- # This approach used since day 1 (>15 years)
 - It works given the collaborative environment
 - But maybe we are just used to it
- # Alternative suggestions always welcome
 - Though it's difficult to make radical changes
 - Given the number of inter-dependencies
 - Experiments and other HEP software systems
 - And contributory developer time is rarely secure
 - This further constrains any ambitions