

Pre-commit CI in FreeBSD with CIRRUS-CI

Moin Rahman

\$ whoami

- bofh (The B*****/Moin)
- FreeBSD
 - ports committer
 - Avid docs/src contributor
- Professional paranoid
- Conference hopper and repeat offender
- Lifelong student/Avid technical trainer

Background

What everyone thinks about us

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log msg

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Commit message (Expand)		Author	Age	Files	Lines
* tcp: Functional implementation of Accurate ECN HEAD main	* tcp: finish SACK loss recovery on sudden lack of SACK blocks	Richard Scheffenegger	3 hours	6	-32/+316
	* Store mpidr as a 64-bit value on arm64	Richard Scheffenegger	4 hours	1	-17/+22
	* OptionalObsoleteFiles.inc: Add missing sendmail feature macro files.	Andrew Turner	6 hours	6	-11/+24
	* arm64: Fix hwpmc module for OPT_ACPI isn't selected	Peter Wemm	7 hours	1	-0/+3
	* protosw: repair protocol selection logic in socket(2)	Emmanuel Vadot	9 hours	2	-0/+8
	* procstat: fix printing divert(4) sockets	Gleb Smirnov	12 hours	3	-6/+6
	* tests: use PF_DIVERT/SOCK_RAW instead of PF_INET/SOCK_RAW/IPPROTO_DIVERT	Gleb Smirnov	17 hours	2	-6/+11
	* ipfwpcap: use PF_DIVERT/SOCK_RAW instead of PF_INET/SOCK_RAW/IPPROTO_DIVERT	Gleb Smirnov	17 hours	2	-5/+5
	* natd: use PF_DIVERT/SOCK_RAW instead of PF_INET/SOCK_RAW/IPPROTO_DIVERT	Gleb Smirnov	17 hours	1	-1/+1
	* sqlite3: Vendor import of sqlite3 3.39.2	Gleb Smirnov	17 hours	1	-4/+4
	* sqlite3: Vendor import of sqlite3 3.39.2	Cy Schubert	18 hours	8	-123/+179
	* sqlite3: Vendor import of sqlite3 3.39.2 vendor/sqlite3/sqlite-3390200 vendor/sqlite3	Cy Schubert	18 hours	8	-123/+179
	* divert(4): make it compilable and working without INET	Gleb Smirnov	18 hours	2	-10/+21
	* divert(4): maintain own cb database and stop using inpcb KPI	Gleb Smirnov	18 hours	2	-183/+132
	* divert(4): provide statistics	Gleb Smirnov	18 hours	5	-21/+65
*	* protosw: cleanup protocols that existed merely to provide pr_input	Gleb Smirnov	18 hours	7	-219/+49
	* divert: declare PF_DIVERT domain and stop abusing PF_INET	Gleb Smirnov	18 hours	11	-63/+74
	* mount_nfs.8: Note that NFSv4 requires unique /etc/hostid's	Rick Macklem	26 hours	1	-1/+2
	* cp: Fix build without VM_AND_BUFFER_CACHE_SYNCHRONIZED.	Alexander Motin	26 hours	1	-10/+9
	* ucom(4): Make sure the open routine is executed synchronously.	Dave Baukus	26 hours	1	-2/+2
	* umodem(4): Clear stall at every open.	Hans Petter Selasky	26 hours	1	-8/+14
	* tcp: remove a dead code leftover from T/TCP,	Gleb Smirnov	38 hours	1	-10/+0
	* divert: merge div_output() into div_send()	Gleb Smirnov	38 hours	1	-24/+12
	* domains: merge domain_init() into domain_add()	Gleb Smirnov	38 hours	2	-67/+11
	* domains: use queue(9) SLIST for linked list of domains	Gleb Smirnov	38 hours	5	-24/+16
	* domains: init pr_domain in pr_init()	Gleb Smirnov	38 hours	1	-7/+6
	* mbufs: isolate max_linkhdr and max_protohdr handling in the mbuf object	Gleb Smirnov	38 hours	5	-44/+52
	* bhyve virtio-scsi: Avoid out of bounds accesses to guest requests.	John Baldwin	42 hours	1	-1/+23
	* bhyve virtio-scsi: Tidy warning and debug prints.	John Baldwin	42 hours	1	-12/+10
	* bhyve e1000: Sanitize transmit ring indices.	John Baldwin	42 hours	1	-5/+13
	* routing: constantify @rc in rib_decompose_notification().	Alexander V. Chernikov	46 hours	4	-7/+7
	* devstat: Remove DTrace io probes lacking a BIO reference	Mark Johnston	47 hours	1	-10/+0
	* makelfs tests: Do not run ZFS tests in parallel	Mark Johnston	48 hours	1	-2/+5
	* makelfs tests: Do not install ZFS tests if WITHOUT_ZFS is defined	Mark Johnston	48 hours	1	-0/+4
	* makelfs: Remove some redundant initializations	Mark Johnston	48 hours	1	-3/+0
	* Revert "routing: install prefix and loopback routes using new nhop-based KPI."	Alexander V. Chernikov	2 days	5	-208/+174
	* rb_tree: avoid extra reads in rebalancing	Doug Moore	2 days	2	-39/+52
	* routing: improve multiline debug	Alexander V. Chernikov	2 days	6	-57/+59
	* routing: extend nhop(9) kpi	Alexander V. Chernikov	2 days	7	-42/+102
	* routing: fix rib_add_route_px()	Alexander V. Chernikov	2 days	1	-17/+3
	* routing: add ability to store opaque identifiers in nhops/nhgs	Alexander V. Chernikov	2 days	9	-11/+41
	* routing: make rib_add_redirect() use new nhop-based KPI	Alexander V. Chernikov	2 days	2	-27/+24
	* routing: make IPv6 defrouter code use new nhop-based KPI.	Alexander V. Chernikov	2 days	1	-39/+24
	* routing: add rib_add_default_route() wrapper	Alexander V. Chernikov	2 days	2	-2/+58
	* routing: install prefix and loopback routes using new nhop-based KPI.	Alexander V. Chernikov	2 days	5	-174/+210
	* Correct calculation of inode location in getnextino cache.	Kirk McKusick	2 days	1	-2/+2
	* mana: Fix a couple i386 build errors	Wei Hu	2 days	1	-0/+6
	* Updates to UFS/FFS superblock integrity checks when reading a superblock.	Kirk McKusick	2 days	1	-1/+1
	* Correct calculation of inode location in getnextino cache.	Kirk McKusick	2 days	2	-7/+3
	* mana: some code refactoring and export apis for future RDMA driver	Wei Hu	2 days	5	-31/+311

What we actually do

S	W	Name ↓	Last Success	Last Failure	Last Duration	# Issues
⚠	☁	FreeBSD-main-aarch64-test	18 hr #707	1 day 18 hr #706	4 hr 48 min	-
✖	🔌	FreeBSD-main-amd64-dtrace_test	5 mo 8 days #15841	11 min #16890	15 min	-
⚠	⚙️	FreeBSD-main-amd64-KASAN_test	3 hr 57 min #2667	2 days 0 hr #2655	2 hr 26 min	-
✖	🔌	FreeBSD-main-amd64-KMSAN_test	N/A	2 hr 35 min #2561	1 hr 21 min	-
⚠	⚙️	FreeBSD-main-amd64-test	1 hr 45 min #21984	1 day 13 hr #21974	1 hr 25 min	-
✖	🔌	FreeBSD-main-amd64-test_ltp	3 mo 13 days #7067	6 hr 54 min #7567	1 hr 47 min	-
✅	⚙️	FreeBSD-main-amd64-test_tcptestsuite	1 hr 45 min #4156	4 mo 12 days #3372	40 min	-
✖	🔌	FreeBSD-main-amd64-test_zfs	10 mo #9088	4 hr 7 min #10304	3 hr 52 min	-
✖	🔌	FreeBSD-main-armv7-test	1 yr 11 mo #72	18 hr #965	7 hr 34 min	-
✖	🔌	FreeBSD-main-i386-test	6 days 16 hr #15854	1 hr 20 min #15909	2 hr 50 min	-
✖	🔌	FreeBSD-main-powerpc64-test	4 mo 18 days #541	18 hr #659	5 hr 52 min	-
✖	🔌	FreeBSD-main-powerpc64le-test	3 mo 27 days #171	18 hr #268	7 hr 12 min	-
⚠	⚙️	FreeBSD-main-riscv64-test	18 hr #15293	14 days #15279	6 hr 21 min	-
⚠	⚙️	FreeBSD-stable-12-amd64-test	11 hr #4227	8 mo 7 days #3919	1 hr 22 min	-
✖	🔌	FreeBSD-stable-12-armv7-test	N/A	18 hr #1212	0.85 sec	-
⚠	⚙️	FreeBSD-stable-12-i386-test	11 hr #4225	1 mo 10 days #4174	1 hr 25 min	-
✖	🔌	FreeBSD-stable-12-mips64-test	N/A	18 hr #501	0.81 sec	-
⚠	⚙️	FreeBSD-stable-13-amd64-test	3 hr 13 min #1854	20 days #1812	1 hr 1 min	-
⚠	⚙️	FreeBSD-stable-13-armv7-test	18 hr #501	11 days #490	2 hr 18 min	-
✖	🏠	FreeBSD-stable-13-i386-test	15 hr #1847	2 hr 53 min #1848	1 hr 7 min	-
✖	🔌	FreeBSD-stable-13-mips64-test	1 yr 2 mo #129	18 hr #501	2 hr 2 min	-
✖	🔌	FreeBSD-stable-13-powerpc64-test	3 mo 12 days #268	18 hr #350	5 hr 34 min	-
✖	🔌	FreeBSD-stable-13-powerpc64le-test	3 mo 9 days #189	18 hr #268	5 hr 14 min	-
⚠	⚙️	FreeBSD-stable-13-riscv64-test	18 hr #501	8 mo 17 days #264	4 hr 23 min	-

Current Status

- No pre-commit testing facility
- Developers just do basic functionality testing
- Jenkins cluster tests the builds on various archs after the commit
- Difficult to point committer on the hook
- Low interest from developers on deploying their own jenkins cluster
- Lots of test failures

Requirements

- An uniform set of scripts
- Compatible with testing from
 - command line (what do you think of make ci?)
 - Jenkins
 - `^(?:Hosted)?Gitlab !!`
 - Github Actions!!
 - Github + Cirrus-CI !!
- Low resource hungry
- Accessible to most developers

Possible solution analysis

command line

- Pros
 - Developer can use own hardware
- Cons
 - Requires huge time for non-x86 on qemu
 - Requires huge fire power
 - Based on current electricity cost may not be a viable solution

Jenkins

Mostly like command line; but

- Pros
 - Possibility of using other cloud services like GCP/AWS
 - Have to find a viable way of sharing resources as we do get AWS credits
 - Due to the integration of third party plugins can be used as our post-commit CI/CD system
 - Archives of logs and history
- Cons
 - Simulating an artifact server is difficult locally
 - Need to figure out an easy way of deployment for developers

^(?:Hosted)?Gitlab

Gitlab's new policy for open source projects is difficult to attain.
Hosted Gitlab can be considered.

- Pros
 - Gitlab runner runs on FreeBSD
 - Can be integrated with other Cloud providers like with Jenkins
- Cons
 - Gitlab ecosystem is difficult to maintain
 - Upgrade procedure is also a bit cumbersome and requires investment of time
 - Security concern

Github Actions

- Pros
 - Some minor smoke tests can be performed
- Cons
 - Resources for free accounts are too low to complete full build and test within the 6 hour time limits
 - Github runners are not compatible with FreeBSD host

Github + Cirrus-Cl

- Pros
 - Free resources are adequate enough to complete x86 based builds and tests
 - cirrus-cli(runner) supports FreeBSD and already on the tree
 - Can be integrated with other Cloud Providers like AWS/GCP/Azure
 - GCP and ARM is still in beta and once released Cirrus wil bring support for ARM
- Cons
 - Only supports Github and Gitlab with hacks


Current Progress


- CIRRUS-CI with some limitations
- Current test cases are for i386/amd64
- No support for non-x86 tests due to time limit
- Possible of integration in case running on cloud
- JUnit support is pending
- No pull request build support yet
- Uses the modified scripts of our Jenkins scripts


Testing procedure


- Create a fork from <https://github.com/freebsd/freebsd-src>
- Enable Cirrus-CI for the project
- Get the patch from <https://reviews.freebsd.org/D36257>
- Apply the patch on a new branch named **jarvis(IMPORTANT)**


CI Results

 5u623l20

 freebsd-src

 jarvis

 Created 3 weeks ago













 Failed in 02:52:22

Merge branch 'freebsd:main' into jarvis
Commit [0569ec6](#) on branch [jarvis](#).

RE-RUN FAILED TASKS

TASKS (6)

HOOKS (0)

	01:34:00	 jarvis-BUILD-amd64	<div></div>
	01:22:43	 jarvis-BUILD-i386	<div></div>
	01:19:14	 jarvis-TEST-amd64	<div></div>
	01:29:39	 jarvis-TEST-i386	<div></div>
	27:40	 jarvis-LINT-amd64	<div></div>
	28:34	 jarvis-LINT-i386	<div></div>

Questions

Courtesy to:

Questions

Courtesy to:

The FreeBSD Foundation

Questions

Courtesy to:

The FreeBSD Foundation

lwhsu

Questions

Courtesy to:

The FreeBSD Foundation

lwhsu

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