FreeBSDournal Editorial Board

John Baldwin •	FreeBSD Developer, Member of the FreeBSD Core Team and Co-Chair of FreeBSD Journal Editorial Board.
Brooks Davis •	Senior Computer Scientist at SRI International, Visiting Industrial Fellow at University of Cambridge, and mem- ber of the FreeBSD Core Team.
Bryan Drewery •	Senior Software Engineer at EMC Isilon, member of FreeBSD Portmgr Team, and FreeBSD Committer.
Justin Gibbs •	Founder of the FreeBSD Foundation, Director of the FreeBSD Foundation Board, and a Software Engineer at Facebook.
Daichi Goto •	Director at BSD Consulting Inc. (Tokyo).
Joseph Kong •	Senior Software Engineer at Dell EMC and author of <i>FreeBSD Device Drivers</i> .
Steven Kreuzer •	Member of the FreeBSD Ports Team.
Dru Lavigne •	Director of Storage Engineering at iXsystems, author of BSD Hacks and The Best of FreeBSD Basics
Michael W Lucas •	Author of Absolute FreeBSD.
Ed Maste •	Director of Project Development, FreeBSD Foundation.
Kirk McKusick •	Treasurer of the FreeBSD Foundation Board, and lead author of <i>The Design</i> and Implementation book series.
orge V. Neville-Neil •	President of the FreeBSD Foundation Board, and co-author of The Design and Implementation of the FreeBSD Operating System.
Philip Paeps •	Secretary of the FreeBSD Foundation Board, FreeBSD Committer, and Independent Consultant.
Hiroki Sato •	Director of the FreeBSD Foundation Board, Chair of Asia BSDCon, member of the FreeBSD Core Team, and Assistant Professor at Tokyo Institute of Technology.
enedict Reuschling •	Vice President of the FreeBSD Foundation Board, a FreeBSD Docu- mentation Committer, and member of the FreeBSD Core Team.
bert N. M. Watson •	Director of the FreeBSD Foundation Board, Founder of the TrustedBSD Project, and University Senior Lecturer at the University of Cambridge.

Geo

Be

Rot

S&W PUBLISHING LLC PO BOX 408, BELFAST, MAINE 04915 Publisher • Walter Andrzejewski

 walter@freebsdjournal.com
 Editor-at-Large • James Maurer jmaurer@freebsdjournal.com
 Copy Editor • Annaliese Jakimides
 Art Director • Dianne M. Kischitz dianne@freebsdjournal.com
 Advertising Sales • Walter Andrzejewski walter@freebsdjournal.com Call 888/290-9469
 FreeBSD Journal (ISBN: 978-0-615-88479-0) is published 6 times a year (January/February, March/April, May/June, July/August, September/October, November/December). Published by the FreeBSD Foundation, 5757 Central Ave, Suite 201, Boulder, CO 80301

ph: 720/207-5142 • fax: 720/222-2350 email: info@freebsdfoundation.org Copyright © 2018 by FreeBSD Foundation. All rights reserved. This magazine may not be reproduced in whole or in part without written permission from the publisher. **LETTER** from the Board

erhaps not all our readers may know this but the Berkeley Software Distribution, BSD, from which FreeBSD is descended, started out as, essentially, a science project. Since the early days of BSD at UC Berkeley our systems have often been used in the advancement of science, whether on computer science or in support of non-computer science, such as physics, chemistry and biology. Many of the technologies that are now mainstream, such as virtual memory and the TCP/IP protocols, started out as experiments in BSD. Long before the term machine learning was coined, the BSDs were used to store and process scientific data at universities around the world. and in the National Laboratories of the US and other countries. In our latest issue of the FreeBSD Journal. we talk about modern FreeBSD in scientific computing, with articles from Jason Bacon, Benedict Reuschling, and Johannes Dieterich.

We round out our issue with two articles on storage, one on NVM Express, from Jim Harris and Warner Losh, who have written a good chunk of the code in FreeBSD that handles this new, persistent, high speed storage technology. Rick Macklem takes us through pNFS, which allows the Network File System (NFS) to operate in parallel, across a series of servers, which is a common use case within the scientific computing community.

Finally, we have our usual collection of columns this month, with Steven Kreuzer discussing the commit of pNFS to FreeBSD in svn Update, Michael Lucas handling our Letters, and Dru Lavigne keeping you up-todate on all that is coming up in future months with the Events Calendar.

All of us here at the *Journal* hope that if you're in a place that's quite summery, you'll pour a version of your most relaxing beverage, sit in the shade, and enjoy this cool mix of all that's best in FreeBSD.

George Neville-Neil President of the FreeBSD Foundation Board of Directors

July/Aug 2018 3