Exploring FreeNAS 8

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FreeNAS is a free and open source, ZFS-driven, NAS/SAN solution for home, business, and enterprise. Early versions of FreeNAS started as a hobby for Olivier and gradually evolved into the project we know and love. Current development of the FreeNAS project is primarily funded by iXsystems, Inc., a server and storage appliance manufacturer that has advocated open source for over a decade. iXsystems became involved with the FreeNAS project soon after Olivier announced he would no longer have time for the project and as a result it would be switching to Linux. Instead of changing operating systems, the project forked to OpenMediaVault and iXsystems began the rewrite of FreeNAS 8.

FreeNAS 8 was imagined as a modular system taking advantage of modern frameworks such as django, nanobsd, dojo, as well as technology developed in-house at iXsystems. Other major design goals were to eradicate the PHP m0n0wall framework and adopt a more maintainable development stack. One of the major missing features not currently supported in the current implementation of FreeNAS is the adoption of the PBI package management system developed for PC-BSD. The intent is to wrap extended features like UPnP and Bit Torrent into django application PBI's that can be added or removed via the WebGUI or CLI.

The tight integration of frameworks provided iXsystems with a solid stack to build an appliance on. This is referred to as the iXsystems *BSD Redundant Appliance Infrastructure Network*, or BRAIN Framework. BRAIN is comprised of nanobsd as the base, django and dojo as the WebGUI, and our custom middleware interacting with the CLI and WebGUI to communicate with the base system. There are other components involved, like sqlite and lighttpd which serve up the database and WebGUI respectively. Another benefit to Django is its MVC "rapid development" framework and well-written documentation. The goal was to modularize sections of the interface as well as provide user authentication. Django sits beneath the Dojo Javascript Toolkit

which is primarily used for the layout and form elements, and provides a fully functional AJAX environment. FreeNAS is based on nanobsd, a FreeBSD system image intended for embedded applications that has all the bells and whistles one would expect from FreeBSD, such as ZFS. Most of the key features in ZFS, like deduplication, replication, and snapshots can be managed from the web user interface (which saves hours of set-up time compared to performing the same tasks on a 'vanilla' FreeBSD box).

Using FreeNAS is simple and can be performed from the WebGUI or CLI; however, it may be beneficial to watch the instructional videos produced by the iXsystems Marketing Team after reading through the documentation. Those seeking help can use any channel they prefer; IRC, the forums, and iXsystems Professional Support, as all are suitable places to find support. One of the first things to do after installing FreeNAS is to set up networking. FreeNAS provides a user interface for managing network interfaces and can also configure LAGG and VLANs. Volumes are managed using the Storage section of the interface and allow the use of UFS and ZFS file systems. ZFS in particular opens a plethora of volume options and advanced features like stacked devices so that one may stripe two ZFS mirrors together to achieve RAID1+0.

Some tasks take a lot of time and effort to configure by hand. One of those features is Periodic Snapshots because there are no "auto-magical" FreeBSD utilities available. FreeNAS exposes this feature in the WebGUI which will save hours of configuration time. ZFS Volumes, or zvols, are managed by iSCSI for block level exports and are configured via the WebGUI. Replication is another major feature and allows one FreeNAS box to replicate a snapshot to another FreeNAS box, which is also pretty time consuming to do by hand. With ZFS Datasets, volumes can be independently managed allowing things like compression levels and quotas to be set separately. The ability to clone ZFS snapshots in the GUI allows us to rollback to a previous state, make changes, and if necessary, share the snapshot using NFS, AFP, and CIFS. Creating shares on FreeNAS 8 is very simple and often requires little more than a couple of form fields to be filled out. FreeNAS provides full access to the true

power of NFS. Active Directory and LDAP integration is supported and extends the volume permissions screen to display those users. LDAP and Active Directory are mutually exclusive so they cannot be used together.

FreeNAS 8 has been under active development since 2010 with 8.0.1 released in September of 2011. The 8.0.1 release includes many feature additions, bug fixes, and interface enhancements. Features added to FreeNAS in the 8.0.1 branch include S.M.A.R.T. and UPS services, USB 3.0 support, and OSX Lion AFP and Time Machine compatibility. In addition, cronjob support and rsync have been added to the GUI, and replication has been improved for increased data integrity.

From hobbyist's dream to entrepreneur's enterprise appliance, FreeNAS has certainly proven itself as the open source solution for storage devices. iXsystems looks forward to continued development and interaction with the FreeNAS community and encourages everyone to continue hacking and submitting bugs.