Customizing FreeNAS 8.3
Using the Plugins Jail

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Outline

- Brief Introduction to FreeNAS 8.3
- Introduction to Jails, PBIs, and Plugins
- Installing the Plugins Jail
- Installing and Configuring PBIs
- Installing non-PBI Software
- Creating Custom PBIs
Intro to FreeNAS 8.3

Open source NAS (network attached storage) based on an embedded version of FreeBSD (nanoBSD) and released under 2-clause BSD license

Modular design: core NAS features can be extended using a plugins architecture

Designed to be installed on flash device and administered from a web browser
Core NAS Features Include

- Ability to create AFP, CIFS, NFS shares
- Support for iSCSI, SSH, FTP/SFTP, TFTP
- Active Directory and OpenLDAP integration
- Automated, secure replication via rsync/ssh
- Automated ZFS snapshots and scrubs
- Link aggregation and failover
Limitations of Core NAS

Due to its embedded nature, there is no room to install additional software.

NAS does not include built-in UPnP, iTunes, or BitTorrent support.

Users have all kinds of edge use cases for their NAS.

It is possible, but inconvenient, to compile a custom version of FreeNAS.
Plugins Architecture

Provides the administrator the flexibility to install additional software from the FreeNAS GUI to meet the requirements of the NAS

Comprised of three components:

- FreeBSD Jail
- PBI (Push Button Installer) files
- Plugins
What is a Jail?

A FreeBSD feature for providing light-weight, operating system-level virtualization.

A jail has its own hostname, IP address, users, and is separated from the host operating system.

FreeNAS implementation includes vimage which gives the jail its own networking stack and IP broadcasting.
What is a PBI/Plugin?

Originally created by the PC-BSD project (a desktop version of FreeBSD)

Provides a graphical installation wrapper for software ported to FreeBSD

FreeNAS implementation extends this functionality by incorporating the application's configuration file into the FreeNAS graphical administrative interface—the result is known as a Plugin
Installing the Plugins Jail

Before any plugins can be installed, the Plugins Jail must be installed and started.

Recommended that Plugins Jail is installed into its own ZFS dataset and that a second dataset is used to store the installed software.

The Plugins Jail and supported Plugins can be downloaded from plugins folder for architecture
http://sourceforge.net/projects/freenas/files/FreeNAS-8.3.0/
Installing the Plugins Jail

Step 2 of 3

Plugins jail path: /mnt/volume1/jail

Jail name: software

Jail IP address: 192.168.243

Jail IP Netmask: /24 (255.255.255.0)

MAC: 

Plugins archive path: /mnt/volume1/software

Upload Jail PBI
Starting the Plugins Jail
Installing a PBI

Once the Plugins Jail is installed and the Plugins service started, you can install FreeNAS PBIs (Plugins)

As each Plugin is installed, an icon will be added to the FreeNAS menu (used to configure the application) and its service will be added to the Plugins tab of the Control Services menu so it can be started
## Installing a PBI

### Services

#### Core
- Transmission
  - Version: 2.51
  - PBI: transmission-2.51-amd64
  - Service status: OFF
- Firefly
  - Version: 1696_6
  - PBI: firefly-1696_6-amd64
  - Service status: OFF
- MiniDLNA
  - Version: 1.0.22_3
  - PBI: minidlna-1.0.22_3-amd64
  - Service status: OFF

#### Plugins
- Control Services
- Active Directory
- AFP
- CIFS
- Dynamic DNS
- FTP
- iSCSI
- LDAP
- NFS
Configuring a PBI
Installing Non-PBI Software

If a PBI is not available, you can still install packages or compile ports within the Plugins Jail

Software installed this way will not be integrated into the administrative interface but can be configured and started from the command line

Use FreshPorts.org to search for software that has been ported to FreeBSD
Installing Packages

A FreeBSD package is a pre-compiled binary that includes the dependencies required by the application.

Installed using the `pkg_add -r` command: FreshPorts.org will tell you the exact command to use.

`pkg_info -Lx` will tell you what gets installed.

Typically, conf files are in `/usr/local/etc/` and startup scripts are in `/usr/local/etc/rc.d/`
Compiling Ports

Packages are recommended unless a package is not available or you need to change a compile option as compiling takes time and system resources.

FreshPorts.org will list the available compile options.

Use the **make install** command to compile.

Once compiled and installed, the software can be configured like any other package.
Creating Custom PBIs

FreeNAS PBIs are still new (only available since July 2012)

3 official PBIs: Firefly, MiniDLNA, Transmission

List of PBI requests: http://doc.freenas.org/index.php/PBI_Requests

Creating Custom PBIs

A PBI is created from a PBI module: a set of files and directories containing the installation instructions for an application.

These files are trivial to edit, except for the control file which contains the instructions for integrating the installed PBI into the FreeNAS GUI.

The control file requires development experience with a programming language supported by the FastCGI API (typically Python or PHP).
Creating Custom PBIs

In theory, the Plugins Jail has all of the tools needed to create a custom PBI; this needs to improve in practice.

The documentation for creating PBIs is mostly complete but needs programmatic examples for the *control* file.

For now, use packages, help test upcoming PBIs, and interact with other PBI creators on the forums or IRC.
Resources

Website: http://www.freenas.org
Forums: http://forums.freenas.org
Bug tracker: http://support.freenas.org
Documentation: http://doc.freenas.org/Plugins
IRC: #freenas on Freenode
Questions?

Contact:
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URL to Slides:
http://slideshare.net/dlavigne/scale13