Introduction to FreeNAS 8.3

Dru Lavigne
Director of Community Development, iXsystems
TLF, August 4, 2012

Outline

- Introduction to FreeNAS 8.3
- Features and ZFS Overview
- What's New in 8.3
- Configuration Workflow
- Extending Functionality with Plugins
- Additional Resources

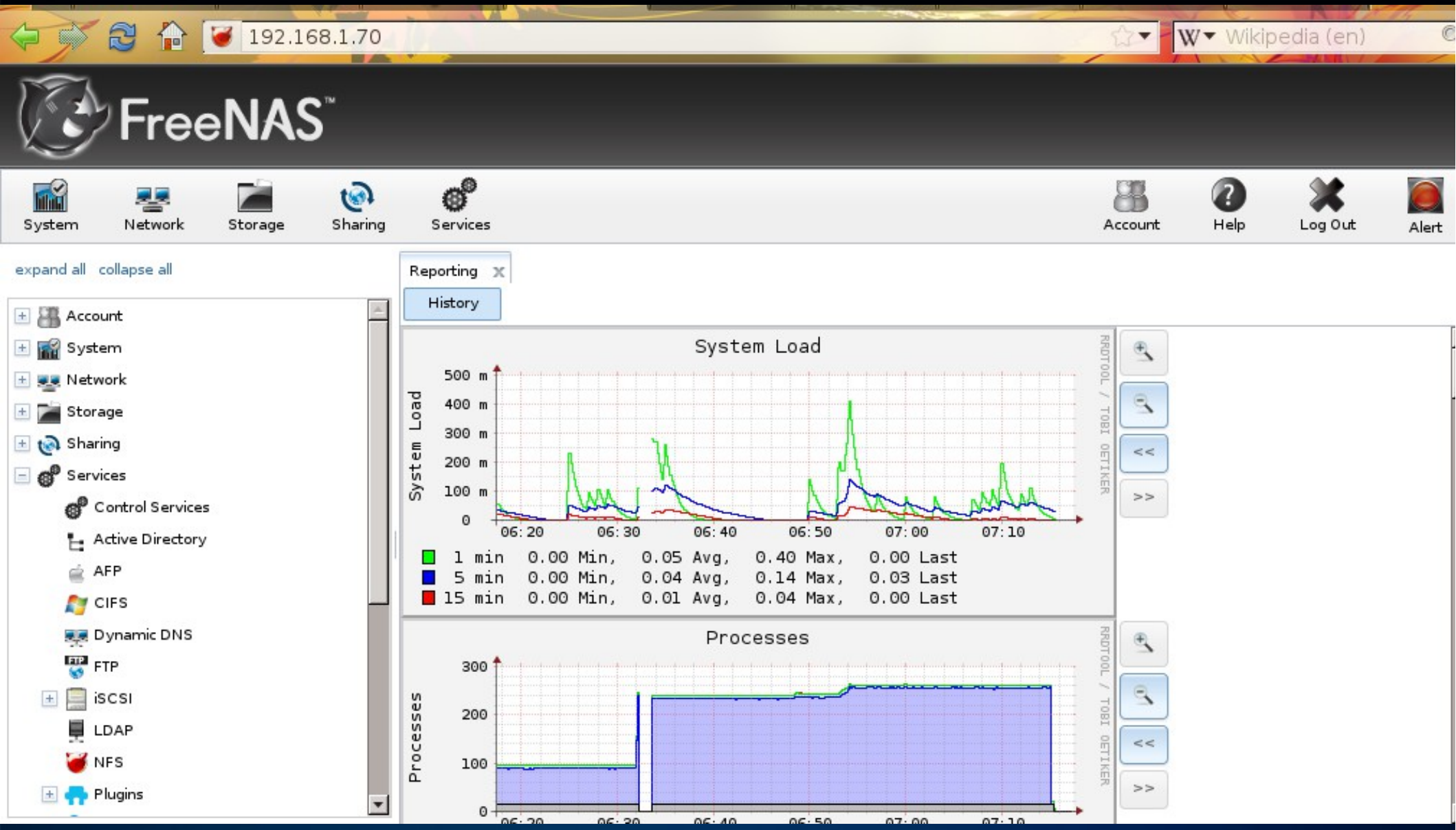
Introduction

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 plugin architecture

Designed to be installed on flash device and administered from a web browser

Administrative GUI



Introduction

8.2-RELEASE-p1 is the current release version; it introduced the plugin architecture

8.3, currently in beta, is due for release in August, 2012; includes ZFSv28 support which adds deduplication, RAIDZ3, and removable log device

7.x series has been EOL'd and rebranded as NAS4Free

Features

Create UFS or ZFS volumes (ZFS recommended)

Import existing UFS/ZFS RAID/z volumes

Import existing UFS, DOS, NTFS, EXT2/3 volumes

Create data shares using Appletalk, NFS, and SMB protocols

Can also configure data access through FTP/SFTP, SSH, and iSCSI

Features

Integration with OpenLDAP, Active Directory

Automated, secure replication via rsync/ssh

Automated ZFS snapshots and scrubs

Front-ends to cron, sysctls, loader.conf

Reporting graphs, scheduled S.M.A.R.T. tests, automated alerts, UPS

Features

Link aggregation and failover

IEEE 802.1q VLAN support

DDNS, SNMP, and TFTP support

Control panel to stop/start and view the status of services

Supports OSX Time Machine

Supports Windows Shadow Copies

Features

Upgrades keep a backup of the old OS, allowing for rollback

Administrative GUI accessed through a web browser; 8.2 added a web shell for command line operations

Users Guide published with each version and available in wiki, HTML, PDF, epub, and Kindle formats

ZFS

128-bit filesystem designed to be “self-healing” and to address hardware RAID issues with data integrity

Snapshots (point in time) only store what has changed since the last snapshot

Snapshots (ro) can be cloned (rw)

Can rollback to any snapshot

ZFS

RAIDZ1: equivalent to RAID5

RAIDZ2: double-parity solution similar to RAID6

RAIDZ3: triple-parity solution

Caveats: resilvering takes time and can stress disks

ZFS

Versions:

15: FreeNAS 8.0.x and 8.2

28: FreeNAS 8.3

30: Oracle has not open sourced (will they?)
- adds encryption

What's New in 8.2

Plug-in architecture for non-core functionality, uses the PBI format

Installed plugins can be configured from the GUI

Documented API so users can create and contribute their own plugins (currently WIP)

Web shell

Automatic configuration of multi-path hardware

What's New in 8.3

Deduplication, RAIDZ3, removable log device

Front-end to /etc/hosts

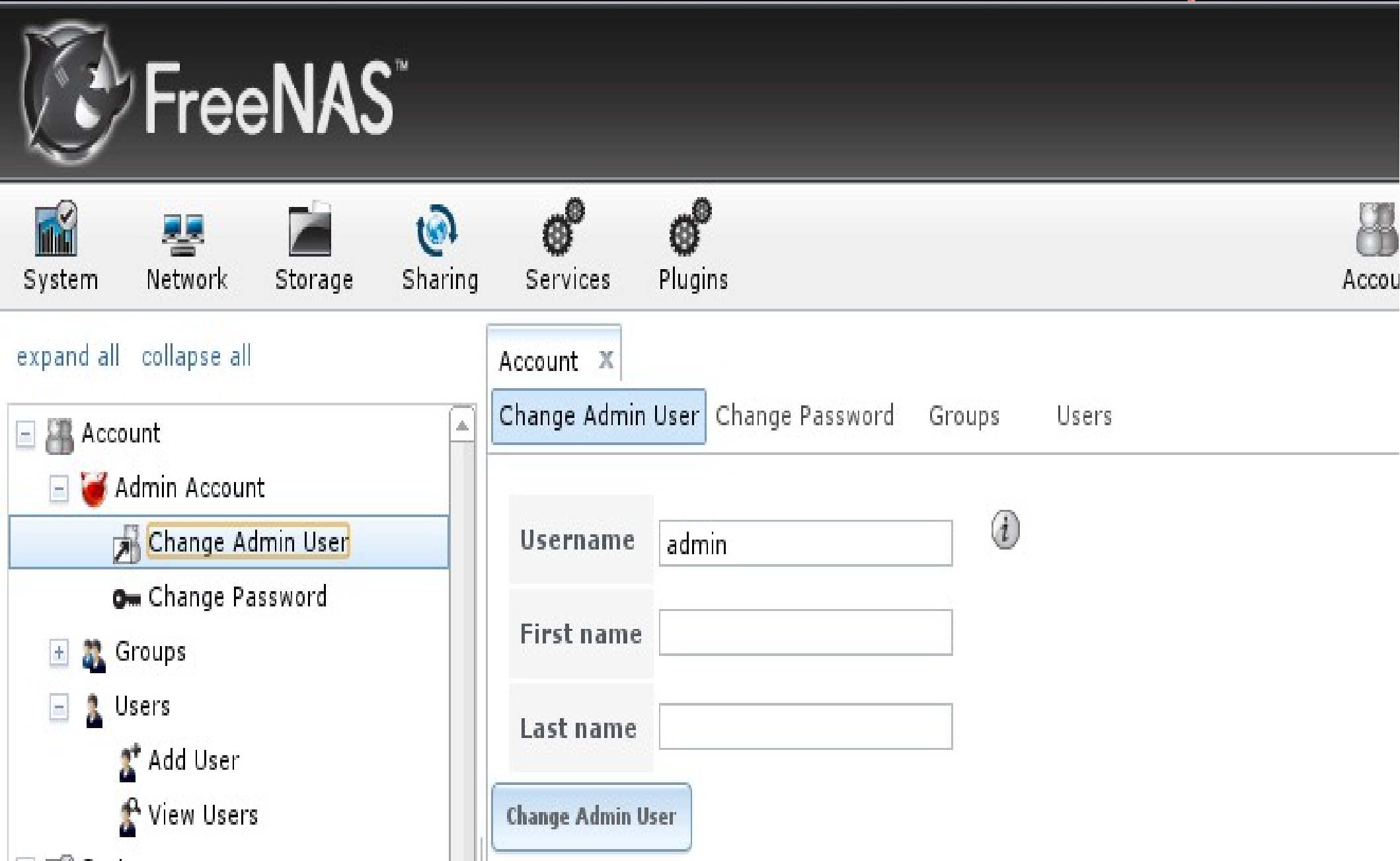
Navigable reporting graphs

Improved hardware driver support

Configuration Workflow

1. Set the administrative username and password
2. Create volumes/datasets
3. Create users/groups or integrate with LDAP/AD
4. Configure share
5. Start applicable service(s)
6. Test the configuration

1. Set Administrative Creds



2. Create Volume

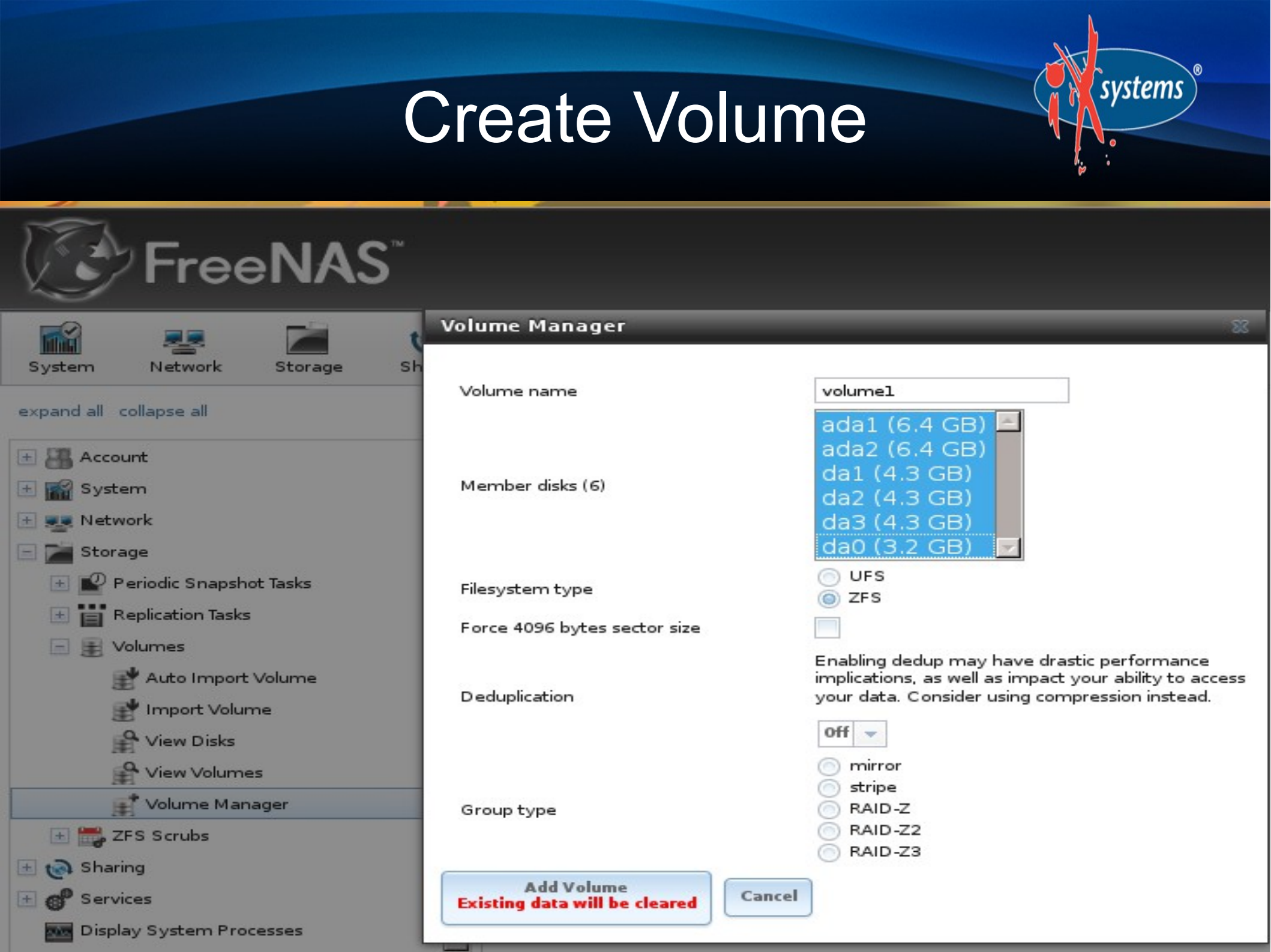
1. Import existing UFS RAID or ZFS pool

2. Import existing disk or partition(s) formatted with UFS, FAT, NTFS, or EXT2/3

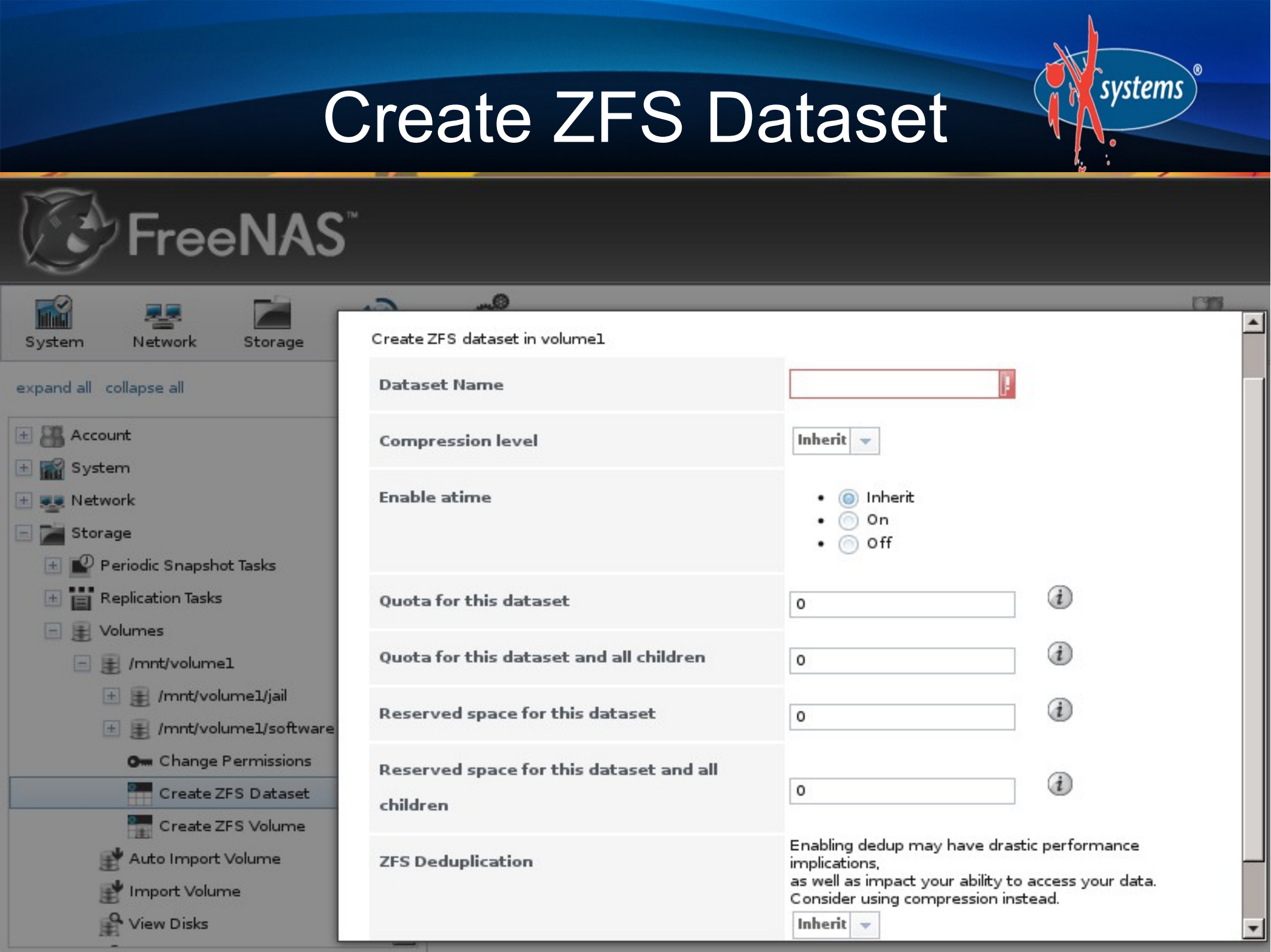
3. Create UFS or ZFS volume

Once a ZFS volume (pool) is created, it can be divided into datasets (with own options) or zvols (to use as a “raw” disk for iSCSI)

Create Volume



Create ZFS Dataset



3. Users/Groups

Choices:

1. Manually create
2. Import existing Active Directory users
3. Import existing LDAP users

4. Configure Share

AFP: for Mac OS X

CIFS: for Windows, also supports any other OS

NFS: faster than CIFS, supports any OS

SSH: CLI and GUI clients available for any OS

FTP: CLI and GUI clients available for any OS

iSCSI target: for access to “raw” disks

Configure Share

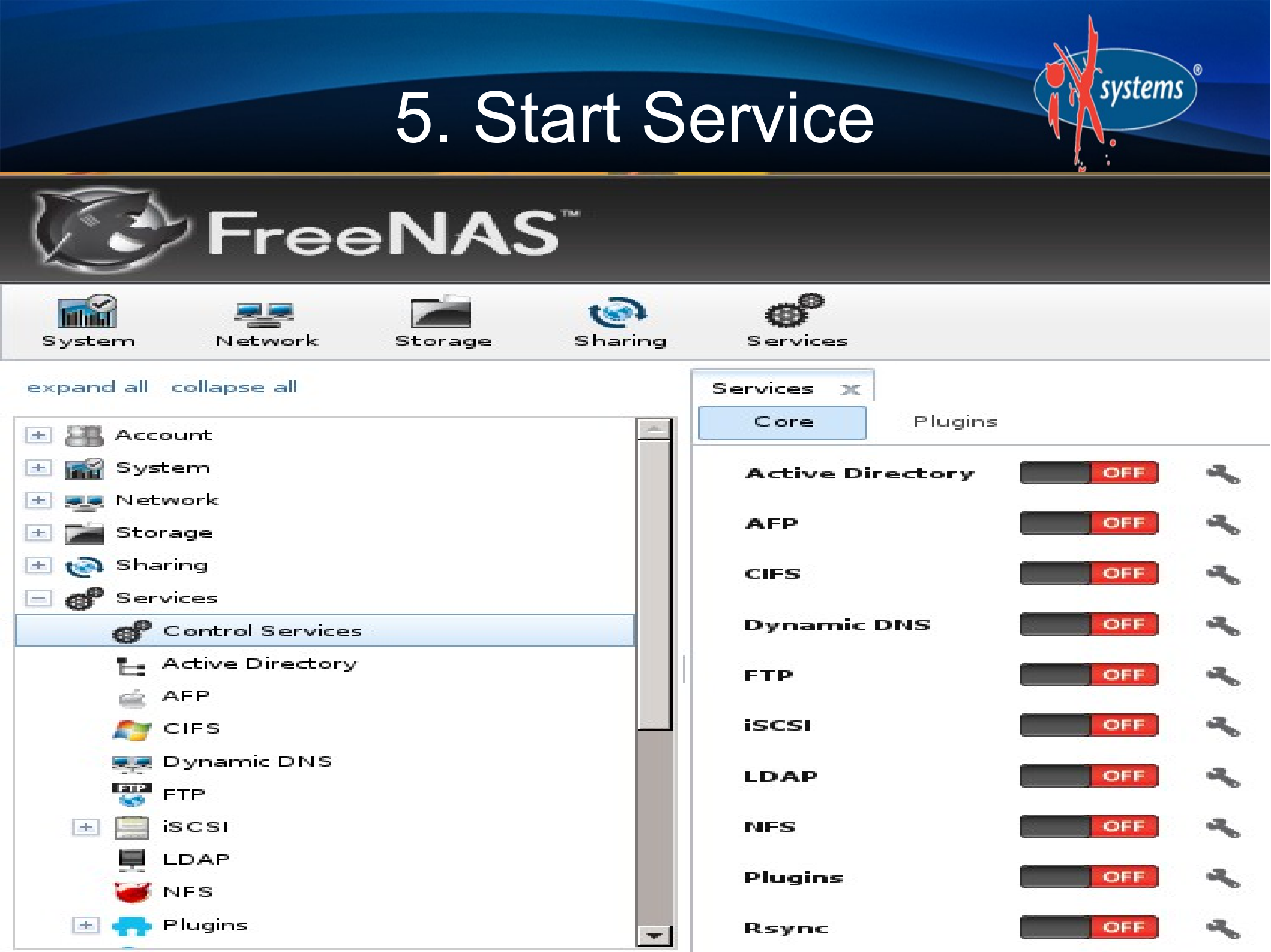
When configuring:

Recommended to only have one type of share to prevent filesystem/client conflicts

Users needing access to that share must have permission to the volume being shared, or the share access must be set to anon/guest

Permissions can be set on a per volume or per dataset basis

5. Start Service



6. Test Configuration

From a client, confirm that access is permitted to allowed users

Can enable console logging at bottom of browser to troubleshoot a service that won't start

Can use web shell to read logs when troubleshooting

Plugin Architecture

Once the Plugins Jail is installed and the Plugins service started, you can install additional software packaged in the PBI format

The associated service for each installed PBI can be started/stopped in Control Services

Plugins Jail itself and installed PBIs can be updated from the GUI as new versions become available

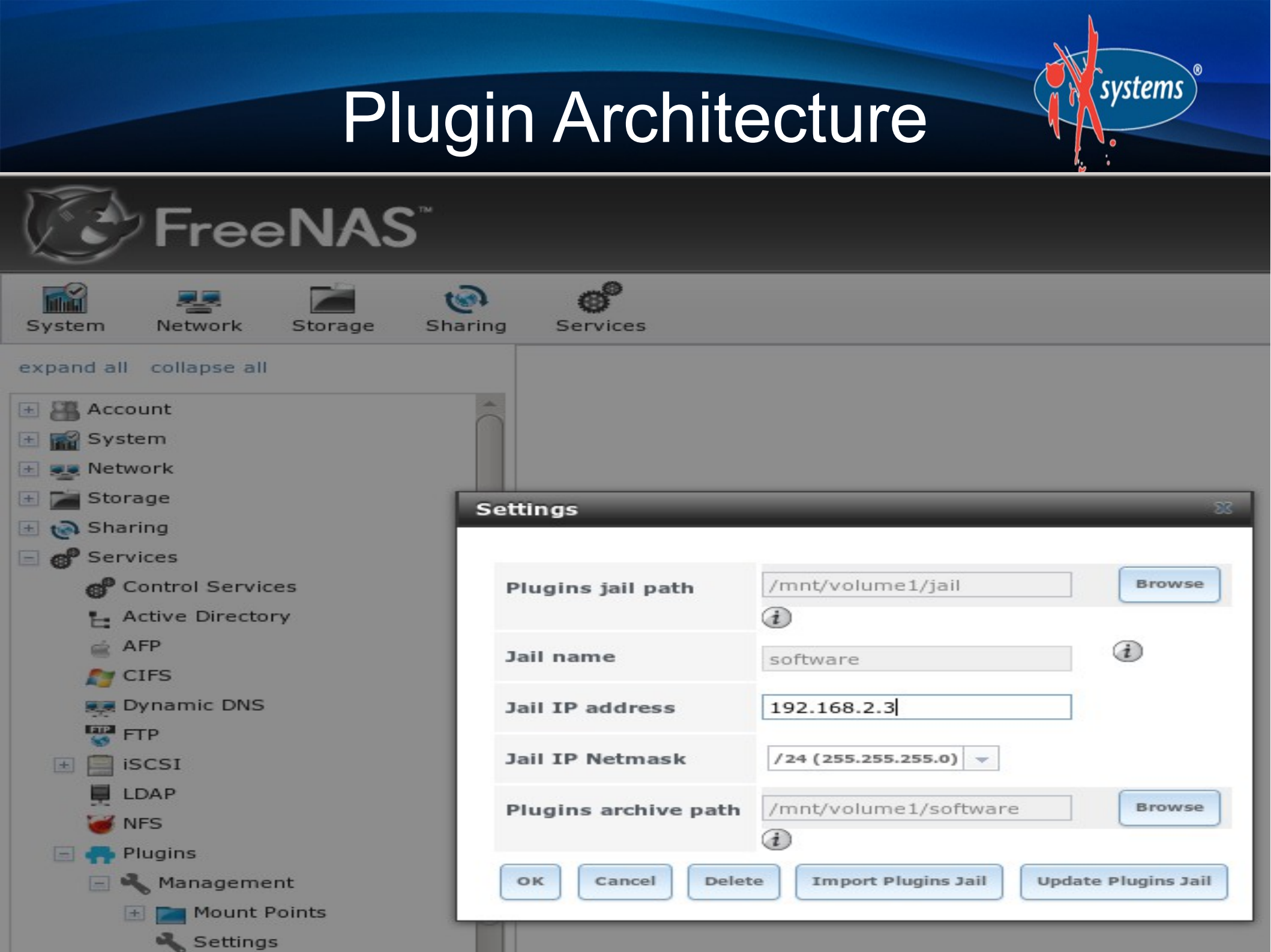
Plugin Architecture

Uses FreeBSD jail, vimage, and PBIs

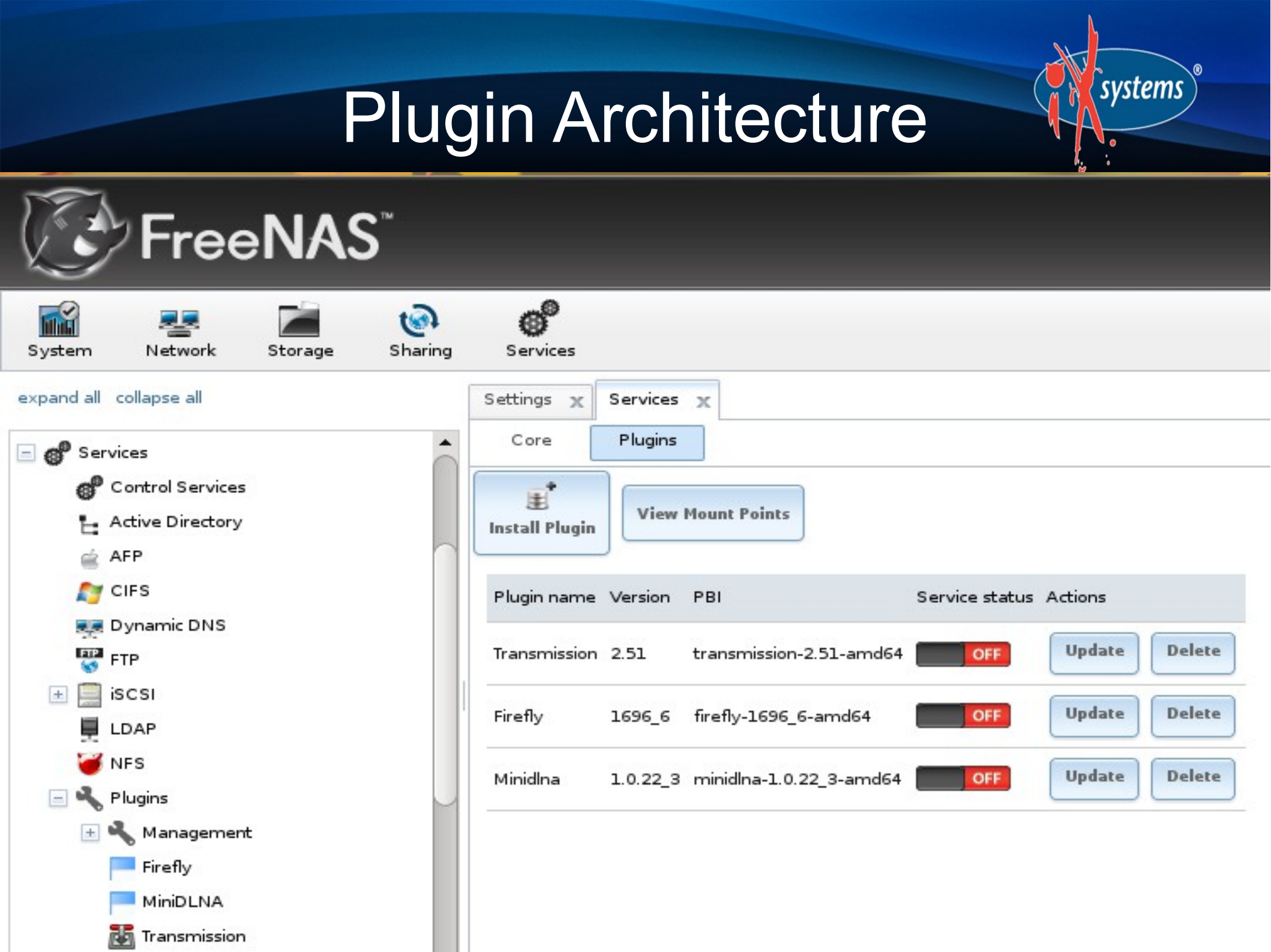
PBI format extended to add a config file which defines the configuration values displayed in the FreeNAS GUI

PBIs currently exist for Firefly, MiniDLNA, and Transmission

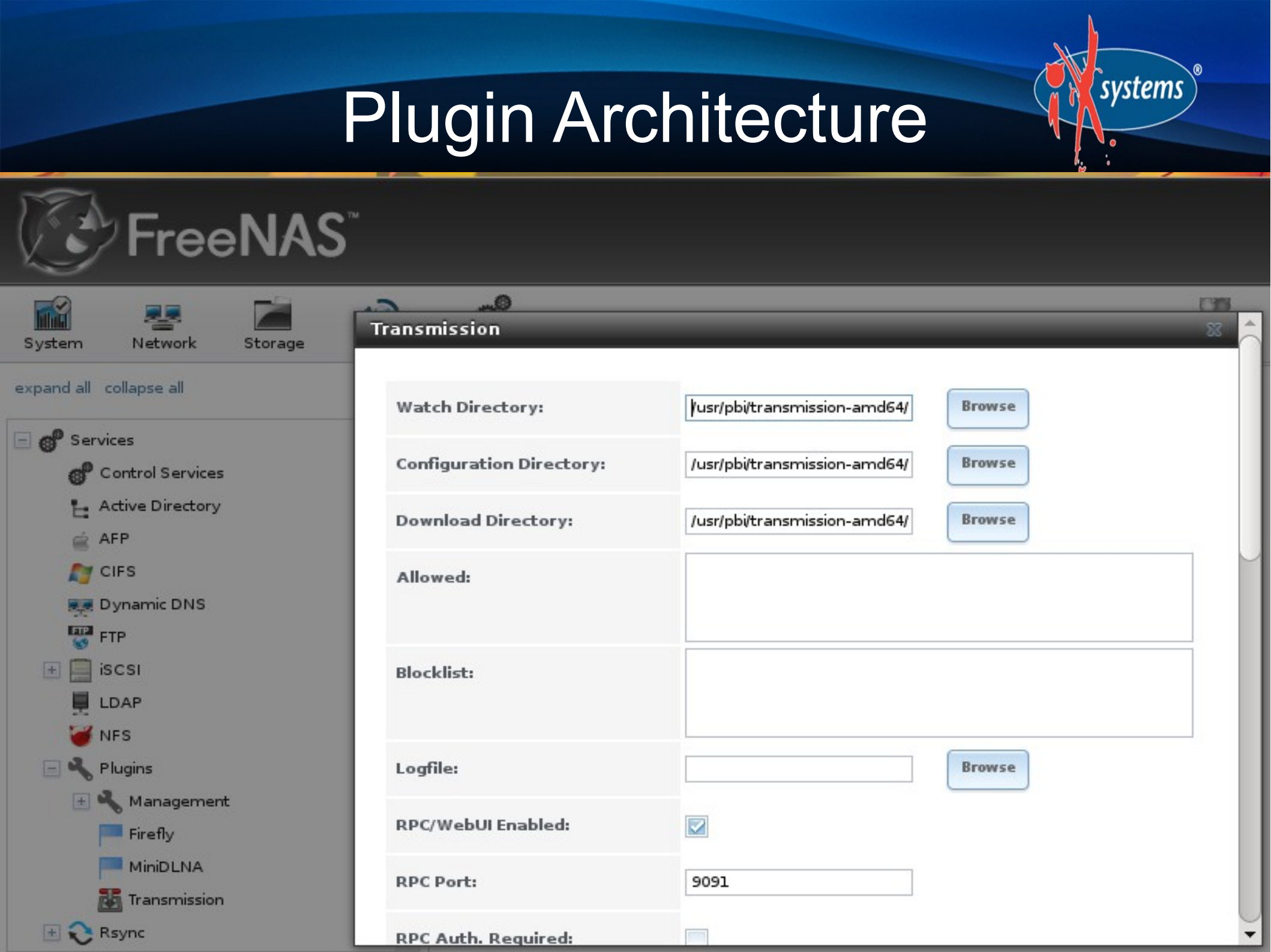
Plugin Architecture



Plugin Architecture



Plugin Architecture



Plugin Architecture

If a PBI is not available, software can still be installed within the Plugins Jail using FreeBSD packages or ports

Currently, over 23,750 ports are available

Installed packages/ports can be configured and their services started using the command line within the Plugins Jail

Resources

Website: http://www.freenas.org

Forums: http://forums.freenas.org

Bug tracker: http://support.freenas.org

Localization: http://pootle.freenas.org

Resources

Documentation: http://doc.freenas.org

IRC: #freenas on Freenode

Links to forums, mailing lists, instructional videos, trac database, and professional support:

http://doc.freenas.org/index.php/FreeNAS_Support_Resources

Questions?

Contact:

dru@freebsd.org

URL to Slides:

http://slideshare.net/dlavigne/tlf2012