napp-it cs
Client Server Edition

ZFS Storageserver
on Windows

„under construction"
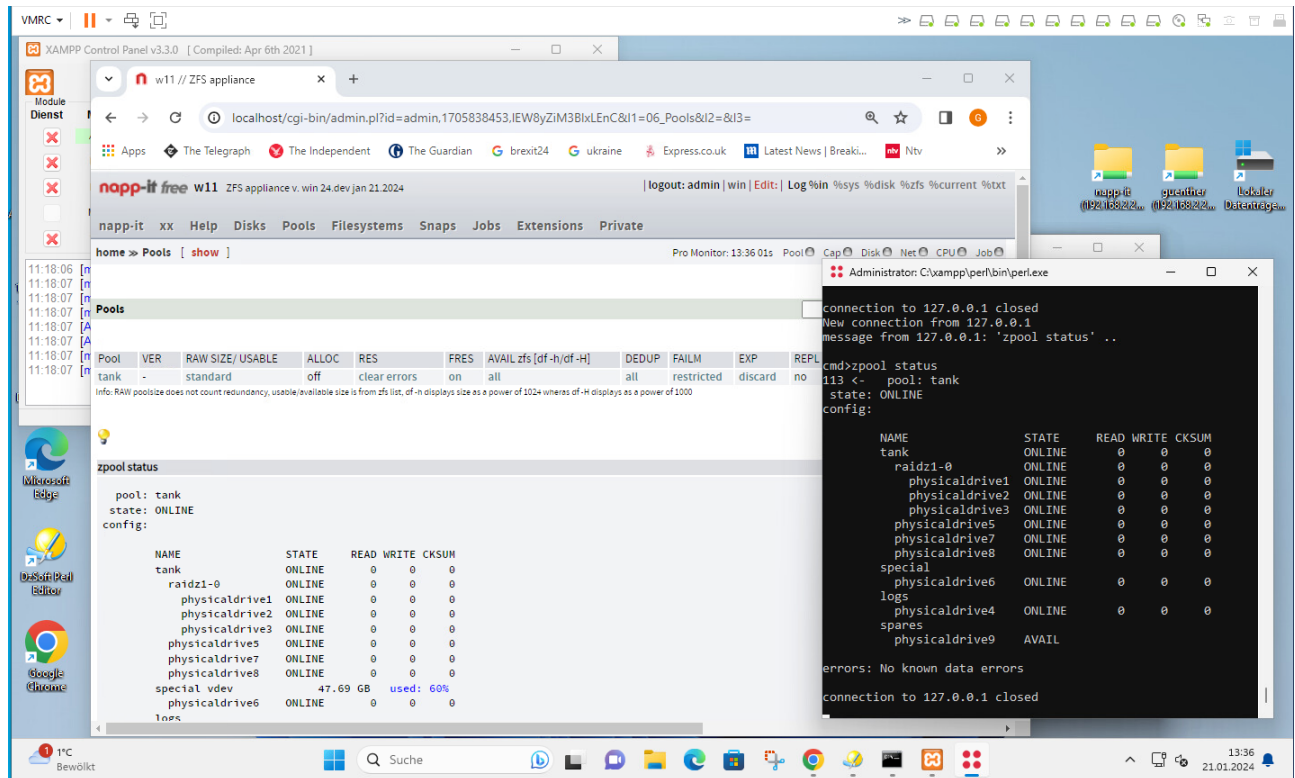
Howto

napp-it cs for ZFS on Windows

About

Napp-it is a webbased management tool for a ZFS server since the early days of ZFS on Sun Solaris or OpenSolaris. Now ZFS is available on BSD, Illumos (Solaris fork), OSX and Windows where the first release candidate is available now. This gives a unique combination. The original Windows SMB server is not only quite the fastest one, it is also the most Windows compatible one especially regarding ACL permissions where only the Solaris kernelbased SMB server comes close. Combined with ZFS you have a dream team.

Napp-it cs is the „Rosetta Stone" of any mixed ZFS emvironment.
It is planned to manage any ZFS server (native Solaris ZFS or Open-ZFS) or replicate ZFS filesystems between them (native Solaris ZFS cannot replicate to/from Open-ZFS).

Main advantages of napp-it cs:
It is a mobile „Copy and Run" application, no installation requiredIt runs on Windows 10+ or Server.
Simply download and start. Setup, Update or downgrade is a simple copy action.

Requirements:
Napp-it cs needs a simple webserver with Perl and cgi capability. I decided to use
Xampp portable as it offers a whole webserver suite with Apache, FileZilla ftp, MercuryMail, mySQL, Perl, PHP, phpMyAdmin and sendmail. You can minimize size by deleting functions beside Apache and Perl.

Current state:
First beta with basic Disk, Pool, vdev and snap management.
Jobmanagement (snap, scrub, other)
Raid expansion, draid

todo: more testing, jobs and non ZFS functions ex disk handling on all platforms

Is it free?
Yes, for private noncommercial homeuse.

Those who use it for work need a Pro version to pay for development.

1. Concept

Napp-it cs requires a webserver that can run Perl scripts via cgi under any user account. I decided to use Apache on Windows with Xampp portable as this is well maintained and documented. Xampp comes with many additional services that you may need. If not just delete the according folders.

The whole Napp-it cs appliance software is in c:\xampp\[napp-it].
No installation required, just copy or update this folder.

The foldername [napp-it] can be changed ex to web-gui or other names.

Within the [napp-it] folder, you find 3 areas:

1. napp-it cs menues and scripts in
c:\xampp\[napp-it]\[data]   napp-it menues and scripts of a napp-it release
c:\xampp\[napp-it]\[data]\tools   Socket/background services, cgi libraries
You can have different napp-it versions in additional folders like data2,data3

In each data folder you find a startscript „start_zfs-gui_as admin.bat" and a stopscript.
Start the startscript as admin to start this version. This allows a troublefree up/downgrade

2. napp-it global settings, common for any release
c:\xampp\[napp-it]_log   napp-it settings, passwords or jobs
c:\xampp\[napp-it]\cfg   napp-it defaults
c:\xampp\[napp-it]\tmp   napp-it tmp folder (cleared on napp-it startup)

3, private files (update/downgrade safe) in
c:\xampp\[napp-it]_my
._my\wwwroot   -> data accessible via browser inder /my
                       -> individual html, logos, js or css files
._my\menues   -> individual web-gui menues
                       -> add =P to a folder with a private menu ex 01_My settings=P
._my_lib   -> individual language translations, menu settings or scripts

Start/Restart napp-it cs as admin via
C:\xampp\[napp-it]\[data]\start_zfs-gui_as_admin.bat

This will (re)start the ZFS web-gui with the version of this folder.
To switch to a version from another data folder, just (re)start it from there again.

When you (re)start napp-it, it will
- kill running napp-it cs services
- configure Apache and napp-it for this folder
- stop/start Apache
- start socket.pl as a backround server (to execute cli commands like zfs and zpool)
– start monitor.pl as a background task (for monitoring or preload data)
- start auto.pl as a background task for planned tasks without Windows settings)

This allows napp-it cs to be truly portable. You can use it as base for additional menues according to your needs or modify it with your look and feel without a reference to napp-it cs.

2. Setup 1 – 2 (no step 3)

1. Install newest Open-ZFS for Windows (current is 2.2.2 rc1)
https://github.com/openzfsonwindows/openzfs/releases

2. Download Xampp.zip with napp-it cs
https://drive.google.com/file/d/1iKobZdTJKB3XXBrv-hVs50h6TIwsaIvY/view?usp=drive_link

or download Xampp portable from https://www.apachefriends.org/
uncompress to c:\xampp and add the [napp-it] web-gui folder,

–Start C:\xampp\napp-it\data\start_zfs-gui_as_admin.bat
This will copy the file to c:\xampp so you can start it from there as well.

–Open a Browser on Windows with adress http(s)://localhost
or from a remote client with the ip adress of Windows.You may need to open the firewall for remote access.

Update/Downgrade napp-it cs
A online update/ downgrade option in napp-it is planned. Until then, simply stop the webserver and
replace the [napp-it] folder or add another data folder with another version. Restart napp-it of choice.

newest beta.
https://napp-it.org/doc/downloads/napp-it_nightly.zip

Config methods

You can run a Windows ZFS server in a barebone setup or you can virtualize Windows under ESXi,
Hyper-V or ProXmox, best with SAS/Sata HBA or NVMe passthrough

Not convinced?
Uninstall Open-ZFS and delete c:\xampp

Discuss:
https://forums.servethehome.com/index.php?forums/solaris-nexenta-openindiana-and-napp-it.26/
https://www.reddit.com/r/zfs/comments/19dpz70

Current state, Feb 12b: first beta with
Disk, Pool, ZFS and Snap management
Jobmanagement (snap,scrub, other)
Raid-Z expansion, draid support
Overview of registry configuration options and settings in menu System.
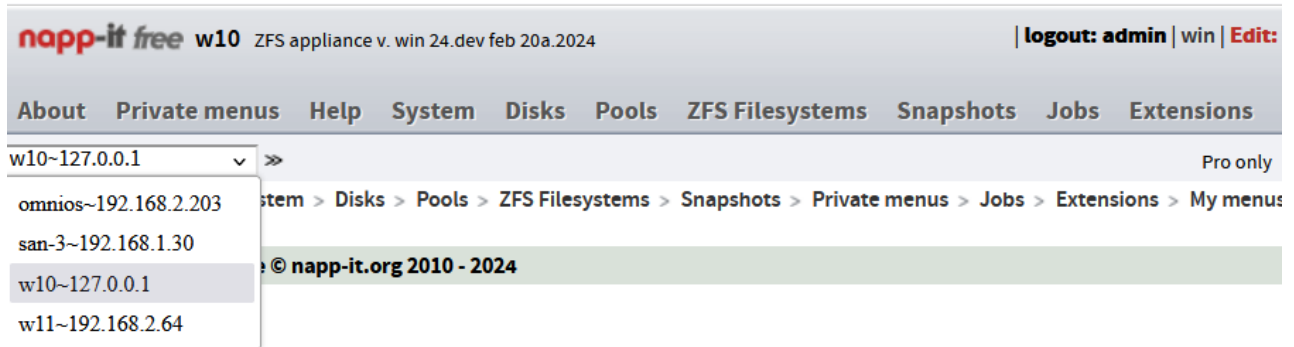
Todo list:
additional jobs like (remote) replication
performance considerations

newest infos:
https://www.napp-it.org/downloads/windows_en.html

3. Socket groups

Napp-it is more than a simple web-cgi app to manage a local ZFS sever. It is a client server architecture where the webserver application admin.pl is only there for user interaction. ZFScommands, jobs or other OS settings are done by background services under remote control of the client webserver application.

For the server part napp-it starts a socketserver background task. As the socketserver can not only run on localhost but any remote host, you can use this to build sockerserver groups. In the main menu of current napp-it (up from feb 20), you can switch to another ZFS server that was added as a socketmember in menu Extensions > Socketgroup.

At the moment you can only manage other Windows ZFS appliances but it is planned to offer socketserver versions for Illumos and Linux, later BSD and OSX. This will allow napp-it to remotely manage various ZFS server options.

To build a sockerserver group:
Use menu Extensions > Socketgroup: add++

Enter ip and hostname and an auth value that is needed to authorize socketserver access.
Use longer auth values ex from a SHA256 hash.

This creates a member file in ./_log/group/hostname~ip.txt with the auth value as content. This auth value ex 123abc is used for access to this ZFS socketserver.

The local Windows socketserver is in ./data/tools/socket/server.pl and started together with napp-it. In the socket folder you find a file server.auth. Insert the same auth string as in hostname~ip.txt ex 123abc

The auth value (123abc) is used for client authentication. It must be the same like the content of the socketgroup memberfile in napp-it. If you copy the socket folder to other BSD/Linux/OSX/Windows to build (mixed) server groups, care that server.auth and the groupfile hostname~ip.txt contain the same value.

Todo: socketserver for non-Windows guests.
I need to define a set of actions like getdisk, getstatus, readf, writef, typef etc with a socketserver app that translates this according to the OS it is running under.
More jobs like replication (local-local, remote-local, local-remote, remote-remote)

What is needed for any remote non-Windows server under control of napp-it for Windows:
- ideally a copy and run folder with Perl and the socketserver ex /opt/web-gui
with the datafolder from napp-it Windows without the menues but a suitable /data/tools/socket/server.pl

Socketserver can then be started manually on demand ex perl ./path/socket/server.pl or via any sort boot init.

4. Manage non Windows ZFS server

Napp-it is currently ported from Illumos/Solaris to ZFS on Windows.
Napp-it for Windows is a client-server application with the web-gui for user interaction and a background socketserver (+ backround services for jobs and monitoring) on localhost or any remote host that executes common zfs, zpool or any other OS command in the background with admin permissions. Currently you can build server groups of Windows ZFS appliances but in a next step it is planned to offer copy and run socketserver options for other ZFS platforms like *BSD, Illumos (OmniOS, OpenIndiana, even SmartOS can be an option), Linux (mainly Debian/Proxmox) or Solaris that you can control via the web-ui on Windows 10/11 or server.

While this is not the next step as the Window port is not finished, you may play with the current state to evaluate how to start the socketserver on other platforms, create private menues in napp-it and execute zfs, zpool or other OS commands via **$r=&exe("command"); ex $r=&exe("zpool list"); from private (or possibly default) menues. If you have any insights, please report. I will publish here and an integration may be there sooner. Discuss at**
https://forums.servethehome.com/index.php?forums/solaris-nexenta-openindiana-and-napp-it.26/

*BSD, Debian/Proxmox, Illumos, OSX, Solaris:

How setup and run (should be copy and run) to allow a execution after download
How to detect disks with serial, manufacturer and size
Other notes like problems with the socket server script and its start options.

On SmartOS
How to create a folder ex on /opt with a ready to use persistent Perl environment
How to modify autostart

To setup the socketserver on any OS with a Perl environment, download
https://napp-it.org/doc/downloads/napp-it_nightly.zip

Unzip the napp-it folder and copy to /var or /opt
You only need the folder napp-it/data/tools/socket
Start the socketserver via perl /path_to/napp-it/data/tools/socket/server.pl
Insert an auth string to /path_to/napp-it/data/tools/socket/server.cfg

It is helpful if you use WinSCP or Putty on Windows access your server.

Download Xampp with napp-it on Windows, start napp-it via
/xampp/napp-it/data/start_zfs-gui_as_admin.bat (as admin) and open a browser with http://localhost

Add your BSD/Linux/OSX/Illumos/Solaris server at menu Extensions > Socketgroup
with hostname, ip and auth string (same as in socket/server.cfg above).

Create a private menu (see examples in napp-it).
You can execute commands (zfs or OS) from a menu script via
my $r=&exe("command");

To debug a script, use &mess($var); &print_array(@array); &print_hash(%hash);
A typical menu script first collects and needed info in a Perl hash, then interact with user and then executes commands, see menu ZFS filesystems > zfs data where all ZFS data is collected and printed.

To edit Perl scripts, use the Dzsoft Perl editor (now free) from
http://www.dzsoft.com/register.htm

5. FAQ

Is Open-ZFS 2.2 on Windows stable?
Open-ZFS on Windows has release candidate state, this means beta. But as the underlying Open-ZFS 2.2 is the same as on BSD or Linux, data security on a ZFS pool should be similar. Problems are more related to Windows crashes or performance.

Is napp-it on Windows stable?
Napp-it on Windows is a port of napp-it for Solaris with a different feature set. As napp-it is only there for easier handling of zfs, zpool or jobs to simplify management this is usually not critical. ZFS server functionality does not depend on napp-it. You can manage your server concurrently via CLI or web-gui. Current state is beta but this means mainly that not all functions are completely testet or fully ported.

Is napp-it for Windows free
Yes, for noncommercial homeuse. If you use it outside private homeuse you need a commercial Pro licence that includes updates and support. You can order single server or multiserver Pro subscriptions on an annual base or with a rebate for several years or perpetual.

Commercial users can request a quotation for a napp-it Pro subscription
(valid for a Unix or Windows ZFS server with napp-it): https://www.napp-it.org/extensions/quotation_en.html

Can I modify or redistribute napp-it
Yes for inhouse use. If you want to redistribute or sell you need a licence agreement.

Can I redistribute my own menues and functions that run under napp-it
Yes without any restrictions. If you want to include napp-it, ask for a redistribution licence.

Can I sell or configure servers with preconfigured napp-it
Yes, unless you or your customer has a Pro license for every server.
Ask for a reseller discount (depend on numbers).

Can I sublicence napp-it to distribute it under my own brand or exclusively for a region?
Yes, ask fo a redistribution license. Costs depend on numbers.