

Disks must be added before they can be formatted and mounted or configured in a RAID array.


All disks that you wish to configure in NAS4Free should ideally be connected when NAS4Free boots up, although external USB drives may be connected once NAS4Free is running.

 Do not remove USB drives once mounted in NAS4Free otherwise a reboot may occur.


The High-Level process flow for configuring a visible share in NAS4Free is:

1. Add Disks
2. Format Disks (if required) in UFS filesystem
3. Add Mount Point
4. Enable Services (CIFS, FTP, etc.)









To remove a disk, you must delete the Mount Point first and remove the disk after.


 Please ensure you add disks and test each of them before attempting to configure disks in any RAID configuration.

Adding a disk or CD/DVD drive

To add a disk, open the Disks/Management page and click the  on the right hand side of the Display area

Disks | Management

Management								S.M.A.R.T.	iSCSI Initiator
Disk	Size	Description	Device model	Serial number	Standby time	File system	Status		
ada1	953870MB	Schijf 1	WDC WD10EADS-00LSB1	WD-WCAU4C611299	Always on	SoftRaid	ONLINE		
ada2	953870MB	Schijf 2	WDC WD10EADS-00LSB1	WD-WCAU4C444927	Always on	SoftRaid	ONLINE		
ada3	953870MB	Schijf 3	WDC WD10EADS-00LSB1	WD-WCAU4C444919	Always on	SoftRaid	ONLINE		
ada4	953870MB	Schijf 4	WDC WD10EADS-00LSB1	WD-WCAU4C311324	Always on	SoftRaid	ONLINE		



In the drop down, select a disk drive. In this example, we will select ada1.

Disks | Management | Disk | Edit

Management	S.M.A.R.T.	iSCSI Initiator
Disk	ada1: 953870MB (WDC WD10EADS-00L5B1 01.01A01)	
Description	Schijf 1 You may enter a description here for your reference.	
Transfer mode	UDMA-133 This allows you to set the transfer mode for ATA/IDE hard drives.	
Hard disk standby time	Always on Puts the hard disk into standby mode when the selected amount of time after the last hard disk access has been elapsed.	
Advanced Power Management	Level 254 - Maximum performance, maximum power usage This allows you to lower the power consumption of the drive, at the expense of performance.	
Acoustic level	Maximum performance, maximum acoustic output This allows you to set how loud the drive is while it's operating.	
S.M.A.R.T.	<input checked="" type="checkbox"/> Activate S.M.A.R.T. monitoring for this device.	
S.M.A.R.T. extra options	 Extra options (usually empty). Please check the documentation .	
Preformatted file system	Software RAID This allows you to set the file system for preformatted hard disks containing data. Leave 'Unformatted' for unformatted disks and format them using format menu.	



FOR USB OR COMPACT FLASH INSTALLATIONS (ref section 3.2) Do not add the NAS4Free boot drive (in this example ad0) Adding the NAS4Free Boot drive WILL affect the operation of NAS4Free, and also incorrectly permits the boot drive to be formatted and mounted, which is then not accessible as a share. (In this example ad0 is the NAS4Free boot drive)



You can add the boot hard-drive ONLY if you need to take advantage of NAS4Free power saving configuration.

FOR TWO PARTITION HARD DRIVE INSTALLATIONS, where you want to share the capacity of a single hard drive between NAS4Free and storage, you can add the NAS4Free boot drive (ada0 in this example)


For information about the Hard Disk Standby Time, Advanced Power Management and Acoustic Level setting, please refer to section 5.4. For the moment, leave these as default.

For the 'Preformatted FS': Leave it as default for new disk, or set it to NTFS/EXT2 or FAT32 for existing disk. Anyway, it's an information field that don't impact the comporment of NAS4Free.








Click the Add button. Continue to add additional disks as required. The Disk/s should appear in the table and the Status should show **ONLINE** as illustrated below.

Disks | Management


Management **S.M.A.R.T.** iSCSI Initiator

 The configuration has been changed. You must apply the changes in order for them to take effect.

Apply changes

Disk	Size	Description	Device model	Serial number	Standby time	File system	Status	
ada1	953870MB	Schijf 1	WDC WD10EADS-00LSB1	WD-WCAU4C611299	Always on	SoftRaid	ONLINE	
ada2	953870MB	Schijf 2	WDC WD10EADS-00LSB1	WD-WCAU4C444927	Always on	SoftRaid	ONLINE	 
ada3	953870MB	Schijf 3	WDC WD10EADS-00LSB1	WD-WCAU4C444919	Always on	SoftRaid	ONLINE	 
ada4	953870MB	Schijf 4	WDC WD10EADS-00LSB1	WD-WCAU4C311324	Always on	SoftRaid	ONLINE	 

Rescan disks



Click the *Apply Changes* button and if successful, the following message will be displayed.

Formatting a Disk

If you have an existing disk with existing data on it - **DO NOT FORMAT THE DISK**, it WILL erase all the data. If you have a disk that you want to clean out and format for Read/Write Access, Initialise the disk, as described next.



For two partition hard drive installations, where you want to share the capacity of a single hard drive between NAS4Free and storage, you do not have to format the disk, this was already done for you back in the console setup. The storage partition is already formatted as UFS.

Click on the Disks/Format page and in the dropdown; select the drive you want to format.

Disks | Format

Disk	ada0: 7648MB (OnSpec Electronic, Inc. CompactFlash 46.0.142) ▾
File system	UFS (GPT and Soft Updates) ▾
Volume label	<input type="text"/> Volume label of the new file system.
Minimum free space	8 ▾ Specify the percentage of space held back from normal users. Note that lowering the threshold can adversely affect performance and auto-defragmentation.
Advanced Format	<input type="checkbox"/> Enable Advanced Format (4KB sector)
Don't Erase MBR	<input type="checkbox"/> Don't erase the MBR (useful for some RAID controller cards)

Format disk

Warning:
UFS is the NATIVE file format for FreeBSD (the underlying OS of NAS4Free). Attempting to use other file formats such as FAT, FAT32, EXT2, EXT3, or NTFS can result in unpredictable results, file corruption, and loss of data!



Only Disks that you have added appear in the drop down list

In this example we will configure the disk for normal use using the native FreeBSD UFS filesystem.

Leave the File system setting as **UFS (GPT and Soft Updates)** and leave the minimum free space at the default value.

In the Display area, information similar to the following should be displayed. The amount of data and the content will differ in your case.

```
Erasing MBR and all partitions.
Destroying old GPT information:
Creating GPT partition:
/dev/adalp1 added
Creating filesystem with 'Soft Updates':
/dev/adalp1: 100.0MB (204732 sectors) block size 16384, fragment size 2048
    using 4 cylinder groups of 25.00MB, 1600 blks, 3200 inodes.
    with soft updates
super-block backups (for fsck -b #) at:
 160, 376512, 752864, 1129216, 1505568, 1881920, 2258272, 2634624, 3010976,
 3387328, 3763680, 4140032, 4516384, 4892736, 5269088, 5645440, 6021792,
 6398144, 6774496, 7150848, 7527200, 7903552, 8279904, 8656256, 9032608,
 9408960, 9785312, 10161664, 10538016, 10914368, 11290720, 11667072,
12043424,
12419776, 12796128, 13172480, 13548832, 13925184, 14301536, 14677888,

    <= TEXT REMOVED =>

 813296832, 813673184, 814049536, 814425888, 814802240, 815178592,
815554944,
 815931296, 816307648, 816684000, 817060352, 817436704, 817813056,
818189408,
```

818565760, 818942112, 819318464, 819694816, 820071168, 820447520,
 820823872,
 1045506016, 1045882368, 1046258720, 1046635072, 1047011424, 1047387776,
 1047764128, 1048140480, 1048516832
 Done!

If you have previously added other disks, then select the additional disks and format them as well, if required.



Formatting hardware RAID may require you select: "don't erase the MBR" (Some hardware RAID controllers store information's on the disks MBR)

Mounting a disk

Once a disk is formatted it needs to be mounted before it can be used. Go to the Disks/Mount Point page and Click the **+** on the right hand side and in the Disk drop down, select the drive that you previously added and formatted (Raid5 in this example).

Disks | Mount Point | Edit

Management	Tools	Fsck
Settings		
Type	Disk	
Disk	Raid5: 2861609MB (Software graid5 RAID 5)	
Partition type	GPT partition EFI GPT if you want to mount a GPT formatted drive (default partition since 0.684b). MBR partition, for UFS formatted drive or Software RAID volume (created before 0.684b) or imported disks from other OS. CD/DVD or Old software RAID for old SoftwareRAID volumes (created before version 0.68) or CD/DVD.	
Partition number	1	
File system	UFS	
Mount point name	Data	
Description	Data You may enter a description here for your reference.	
Read only	<input type="checkbox"/> Mount the file system read-only (even the super-user may not write it).	
File system check	<input checked="" type="checkbox"/> Enable foreground/background file system consistency check during boot process.	
Access Restrictions		
Owner	root	

Partition	Description
EFI GPT	It's the default NAS4Free method when initializing a drive. This method permits support for volumes bigger than 2TB.
1	For MBR partition n°1 or for software RAID array (created with NAS4Free release newer than the 0.68)
2	For MBR partition n°2 (If you used the same drive for NAS4Free and for the DATA, don't forget to select the partition 2)
3-4	For MBR partition n°3 to 4: To be used only for adding existing disk to NAS4Free
CD/DVD	For CD/DVD ROM (no partition)
Previous software RAID	Used to mount Software RAID array created with NAS4Free releases older than the 0.68

File system	Description
UFS	NAS4Free (FreeBSD) native disk
FAT	FAT16 or FAT32 drive
CD/DVD	Used for CD/DVD ROM with the cd9660 filesystem
NTFS	For Windows XP/2000/2003/Vista native hard drive
EXT2	For Linux EXT2 or EXT3 drive

Mount point name: Name that you want to appear on the network (Raid5, in this example). Supports Linux standards, a-z, A-Z, 0-9, - (dash), _ (underscore) characters.

Description: Enter a description for the share.

Click *Save* and the disk should appear in the table with a Status of *Configuring*. If you have additional disks you have previously *Added* and *Formatted*, then you can also mount these now.

Click *Apply Changes* and a '*Changes have been applied successfully*' message should be seen. Drive Status should now show *OK*



Depending on the size of the Disk/s, mounting may take some time to complete. During 'Applying Changes', ALL shares are temporarily offline.

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