



# Membuat NAS dengan Mikrotik

By: **Novan Chris**

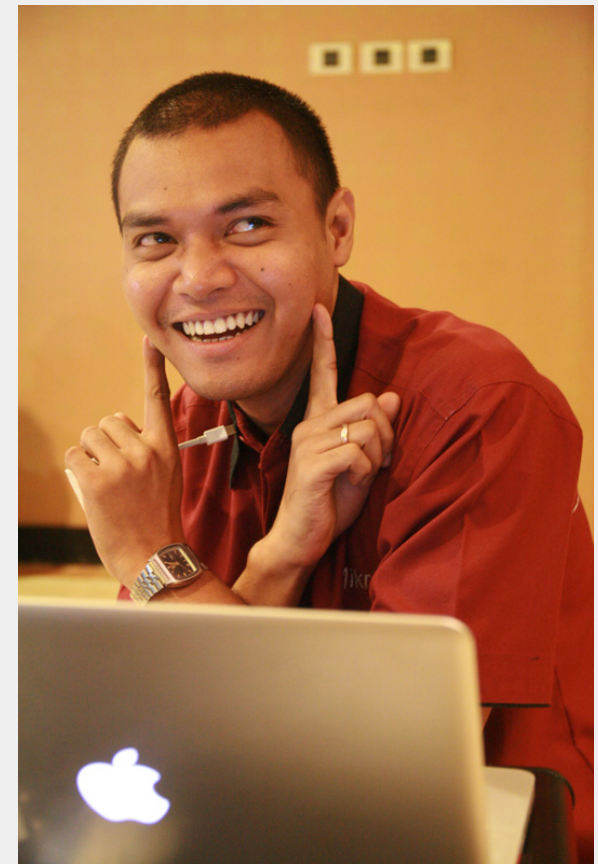
CITRAWEB NUSA INFOMEDIA

[www.mikrotik.co.id](http://www.mikrotik.co.id)

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# Introduction

- **Novan Chris**
- Work for Citraweb / Citranet
  - Mikrotik Distributor & Training Partner, ISP
- Product Manager & Support Manager
- Mikrotik Certified Trainer
- MTCNA, MTCTCE, MTCRE, MTCWE, MTCUME, MTCINE



# NAS

- **Network Attached Storage (NAS)** adalah sebuah server dengan sistem operasi yang dikhususkan untuk melayani pertukaran data file.
- Mulai menjadi “trend” pada tahun 2010.
- Berawal dari Sharing File tersebar di tiap workstation menjadi media penyimpanan terpusat yang bisa diakses oleh seluruh jaringan.
- Perlu adanya Storage yang besar untuk dapat menampung semua file yang akan disimpan.

# NAS Capability

- Andrew File System (AFS)
- Apple Filing Protocol (AFP)
- Server Message Block (SMB, also called CIFS)
- File Transfer Protocol (FTP)
- Hypertext Transfer Protocol (HTTP)
- Network File System (NFS, a UNIX protocol)
- rsync
- SSH file transfer protocol (SFTP)
- Universal Plug and Play (UPnP)

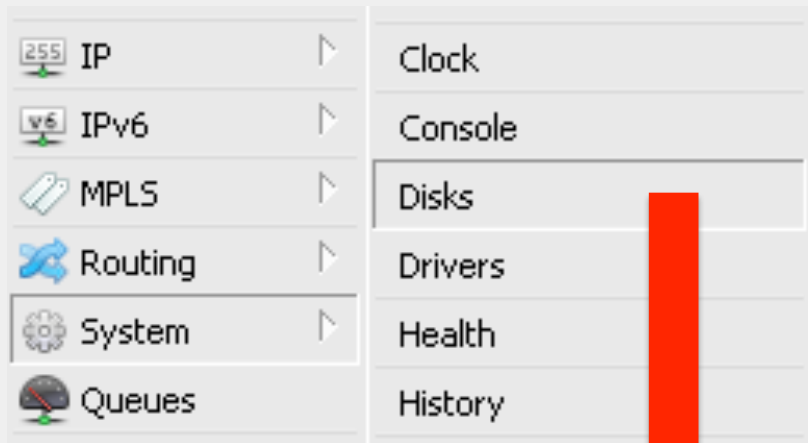
# NAS Capability on Mikrotik

- Syarat penting pada sebuah NAS adalah pada media penyimpanan. Mikrotik sudah mampu menggunakan External Storage.
  - Saat ini di rekomendasikan di platform x86
- Mikrotik sudah memiliki fungsi SMB di versi 6.xx, fungsi ini merupakan fungsi dasar dari sebuah NAS.
- Mikrotik masih memiliki kemampuan Virtualisasi yang masih bisa dikembangkan.

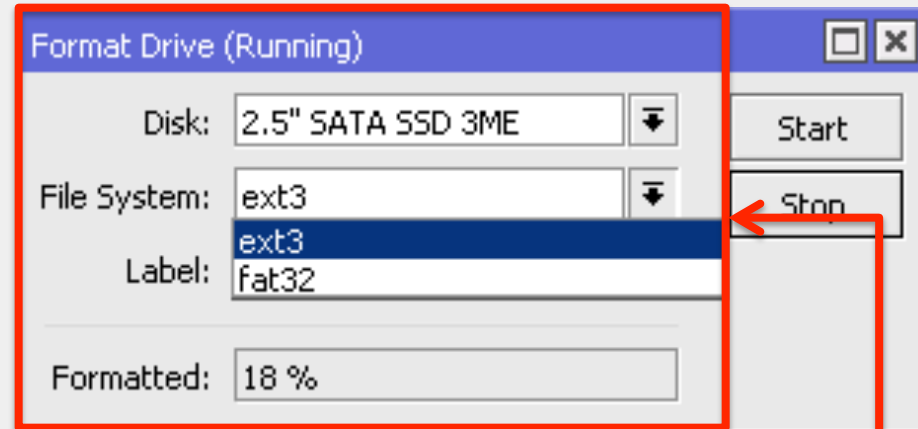
# Mikrotik – Disk (External Storage)

- Sejak RouterOS Versi 6.20 Mikrotik menerapkan system pengelolaan External Storage yang baru.
- System - Store -> System – Disk
- FileSystem Support :
  - EXT3
  - FAT32 (New)
- Multi Partititon Support (Passive)
- Fast and Stable Automount
- Quick Format

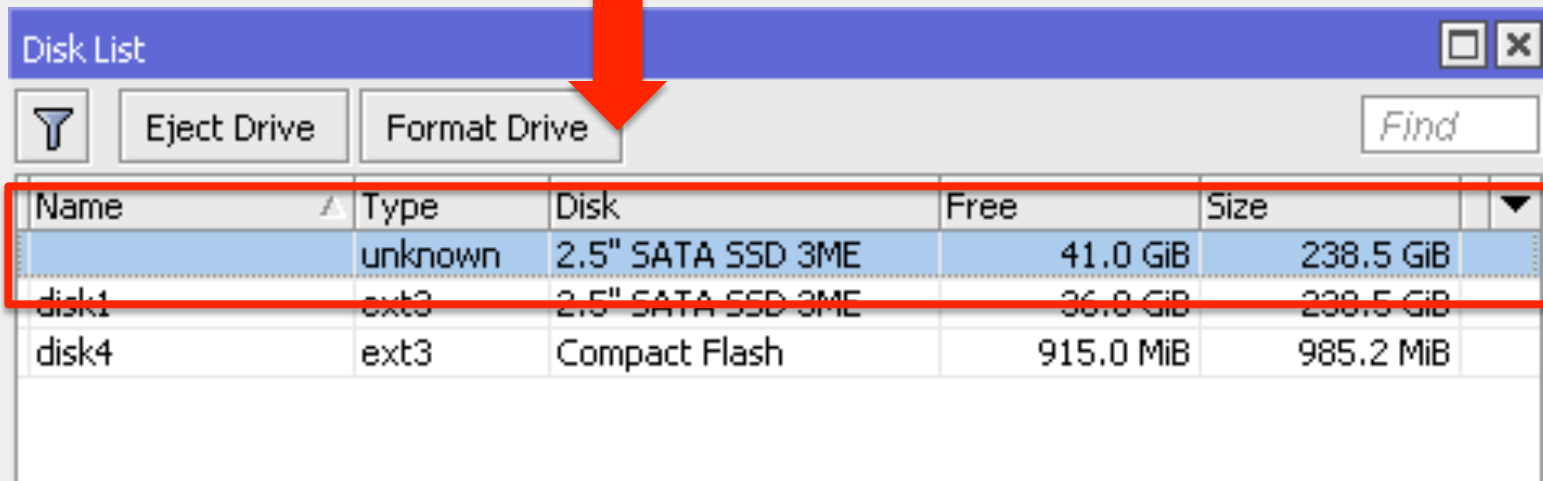
# System Disk



A screenshot of the Mikrotik WinBox interface showing the 'System' menu expanded. The menu items are: IP, IPv6, MPLS, Routing, System, and Queues. The 'System' sub-menu is open, showing: Clock, Console, Disks, Drivers, Health, and History. A large red arrow points from the 'Disks' option in the 'System' sub-menu down to the 'Disk List' window.



A screenshot of the 'Format Drive (Running)' dialog box. The 'Disk' dropdown is set to '2.5" SATA SSD 3ME'. The 'File System' dropdown is set to 'ext3', and the 'Label' dropdown is also set to 'ext3'. The 'Formatted' progress bar shows '18 %'. There are 'Start' and 'Stop' buttons on the right side. A red arrow points from the 'Stop' button to the 'ext3' label in the 'Label' dropdown.



A screenshot of the 'Disk List' window. It features a toolbar with 'Eject Drive' and 'Format Drive' buttons, and a 'Find' search box. Below is a table with columns: Name, Type, Disk, Free, and Size. The table contains three rows of disk information. A red box highlights the first two rows of the table. A red arrow points from the 'Format Drive' button in the toolbar to the first row of the table.

Name	Type	Disk	Free	Size
	unknown	2.5" SATA SSD 3ME	41.0 GiB	238.5 GiB
disk1	ext3	2.5" SATA SSD 3ME	36.8 GiB	238.5 GiB
disk4	ext3	Compact Flash	915.0 MiB	985.2 MiB

# Mikrotik External Storage

- Compatibility Media Storage :
  - **Hardisk** => (IDE / SATA / SCSI\*)
  - **USB Flash Storage**
  - **Flash Storage** => CF Disk / SSD / MicroSD
- External Storage bisa digunakan di fitur :
  - **Webproxy Cache**
  - **User Manager**
  - **the Dude**
  - **SMB**
  - **Virtualisasi**

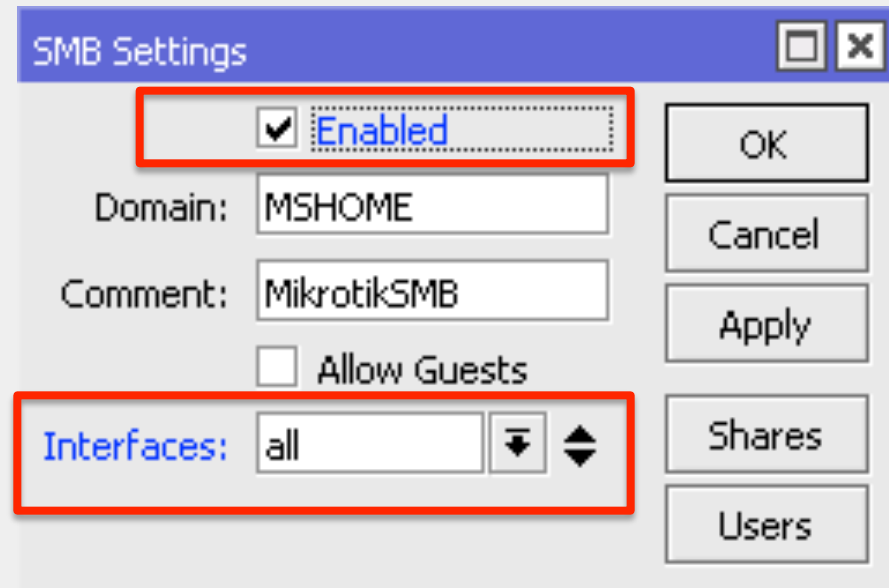
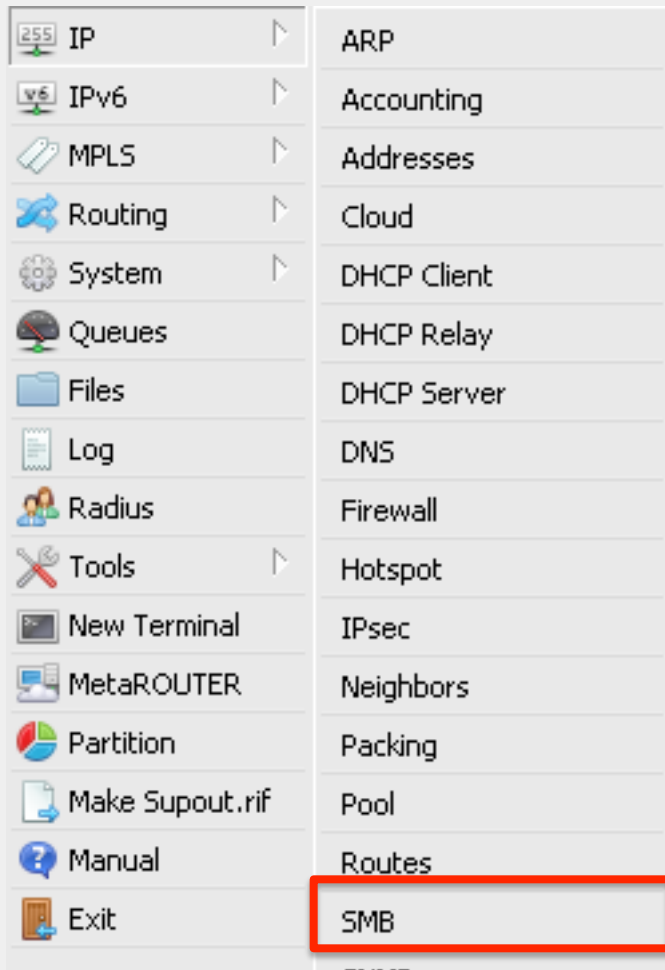
\*Check detailed list of supported hardware on [http://wiki.mikrotik.com/wiki/Supported\\_Hardware](http://wiki.mikrotik.com/wiki/Supported_Hardware)



# Mikrotik - SMB

- Diperkenalkan di Versi 6.x.
- Memungkinkan membuat File Server di Mikrotik RouterOS.
- RouterOS only supports SMB **v1.0** and **v2.002**
- Dapat diaktifkan di Platform x86 dan juga RouterBoard.

# Mikrotik - SMB



**\*Allow Guests :**  
memperbolehkan akses tanpa Autentikasi

# Mikrotik – SMB – User

SMB Settings

Enabled

Domain: MSHOME

Comment: MikrotikSMB

Allow Guests

Interfaces: all

OK

Cancel

Apply

Shares

Users

Users

Name	Password	Read Only
* guest	*****	yes
user-test	*****	no

SMB User <user-test>

Name: user-test

Password: \*\*\*\*\*

Read Only

OK

Cancel

Apply

Disable

Copy

Remove

enabled

# Mikrotik – SMB – Share

**SMB Settings**

Enabled

Domain: MSHOME

Comment: MikrotikSMB

Allow Guests

Interfaces: all

OK  
Cancel  
Apply  
Shares  
Users

**Shares**

Name	Directory	Max Sessions
;;; default share		
* pub	/pub	10
share1	disk1/share1	10

**SMB Share <share1>**

Name: share1

Directory: disk1/share1

Max Sessions: 10

OK  
Cancel  
Apply

**File List**

File Name	Type	Size
disk1	disk	
disk1/lost+found	directory	
disk1/share1	directory	

# SMB Test

Connect to Server

Server Address:  
 +

Favorite Servers:

- smb://192.168.135.55
- smb://192.168.5.110

Remove Browse Connect

Enter your name and password for the server "192.168.10.100".

Connect as:  Guest  
 Registered User

Name:

Password:

Remember this password in my keychain

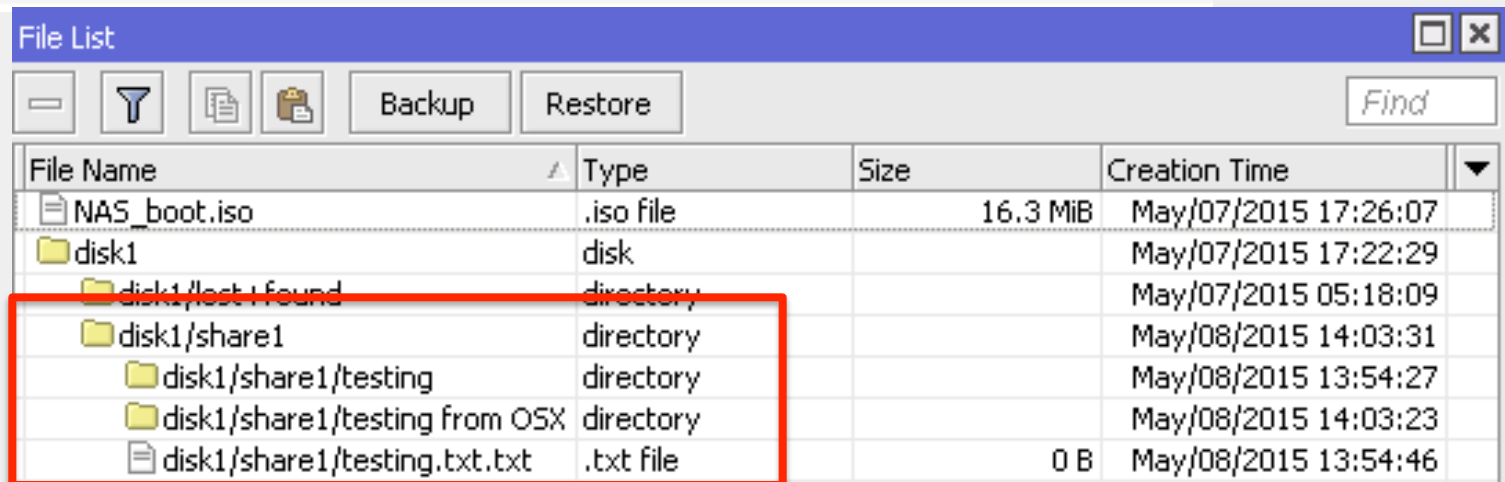
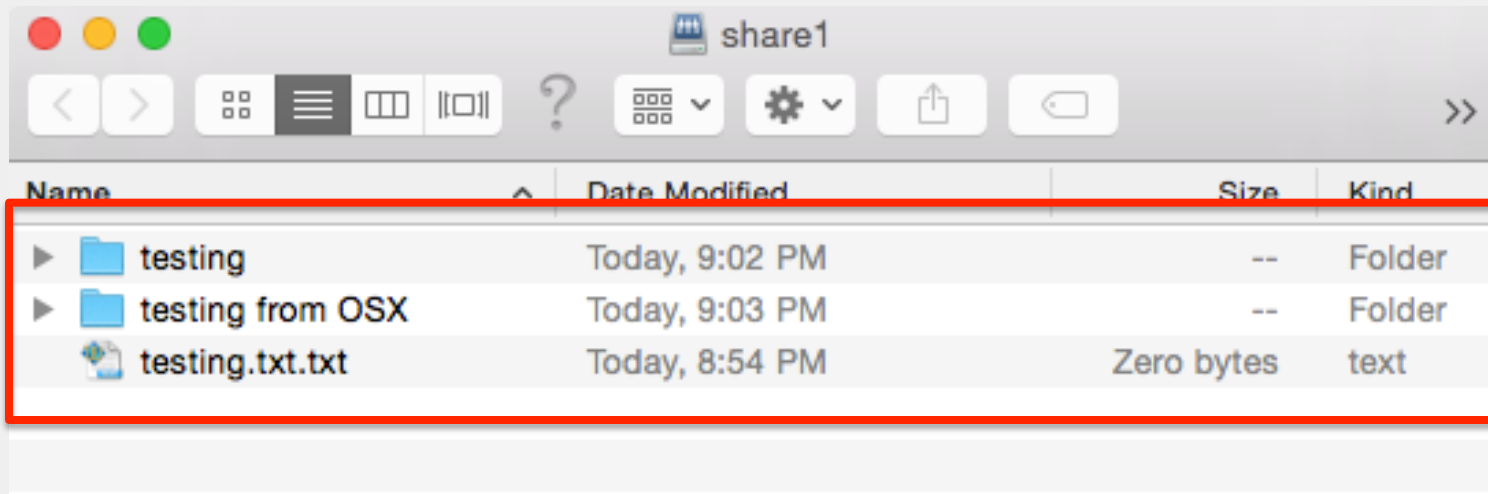
Cancel Connect

Select the volumes you want to mount on "192.168.10.100":

- pub
- share1

Cancel OK

# SMB Test



# Mikrotik - SMB

- Easy Setup & Configuration.
- Bisa memanfaatkan External Storage.
- Fitur yang ditawarkan masih sangat sederhana, belum bisa sebanding dengan SAMBA yang ada di Linux.
- Belum bisa digabungkan dengan Radius Authentication.
- Masih belum responsive (akses terkadang masih lambat)

# NAS on Virtualization

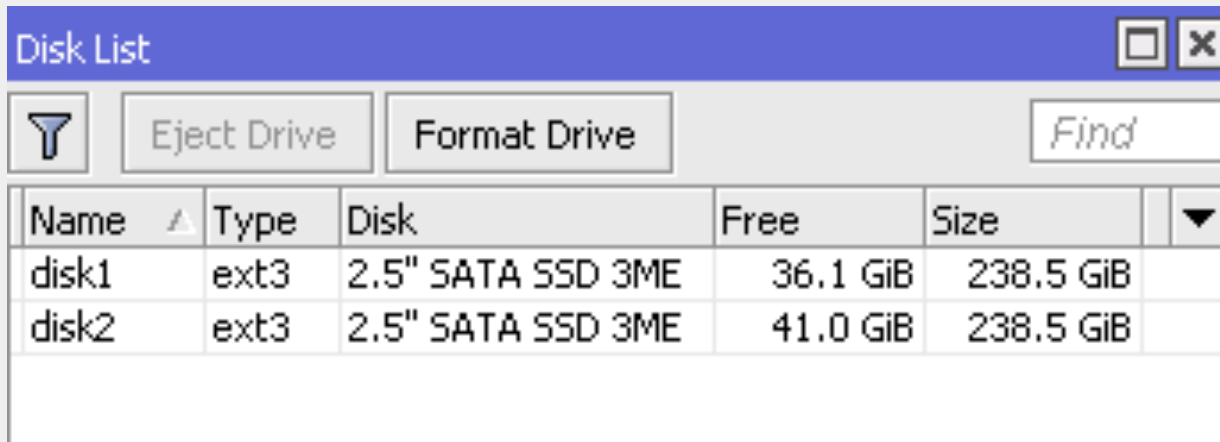
- Mikrotik memiliki fitur Virtualisasi (KVM) yang bisa kita gunakan dan kembangkan.
- Dengan adanya External Storage di Mikrotik tidak menutup kemungkinan kita membangun NAS dengan Virtualisasi.
- KVM support di CPU yang memiliki fitur :
  - **Intel VT-x**
  - **AMD-V**
  - **VIA-VT**
- Mengenai Virtualisasi di Mikrotik sempat saya bahas di :
  - <http://mum.mikrotik.com/presentations/ID14/novan.pdf>



# NAS - Xpenology

- Adalah open source project dari Synology.
- Merupakan modifikasi dari Firmware Synology yang memungkinkan untuk diinstall pada virtualisasi (bahkan bisa juga diinstall langsung pada Hardware Server)
- Dikembangkan dari GPL Source Synology
- Project Xpenology masih terus diupdate sampai saat ini.

# Mikrotik – Disk Preparation



The screenshot shows a window titled "Disk List" with a blue header bar. Below the header are three buttons: "Eject Drive", "Format Drive", and a "Find" search box. Below the buttons is a table with the following data:

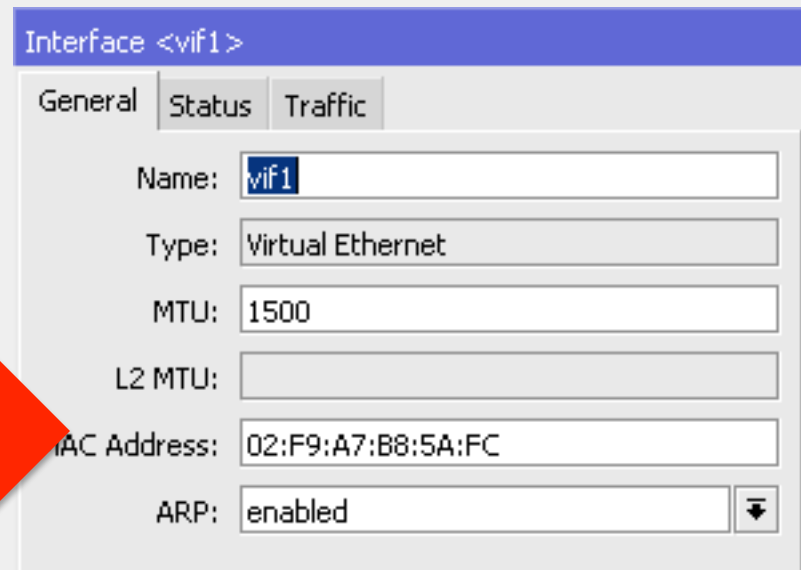
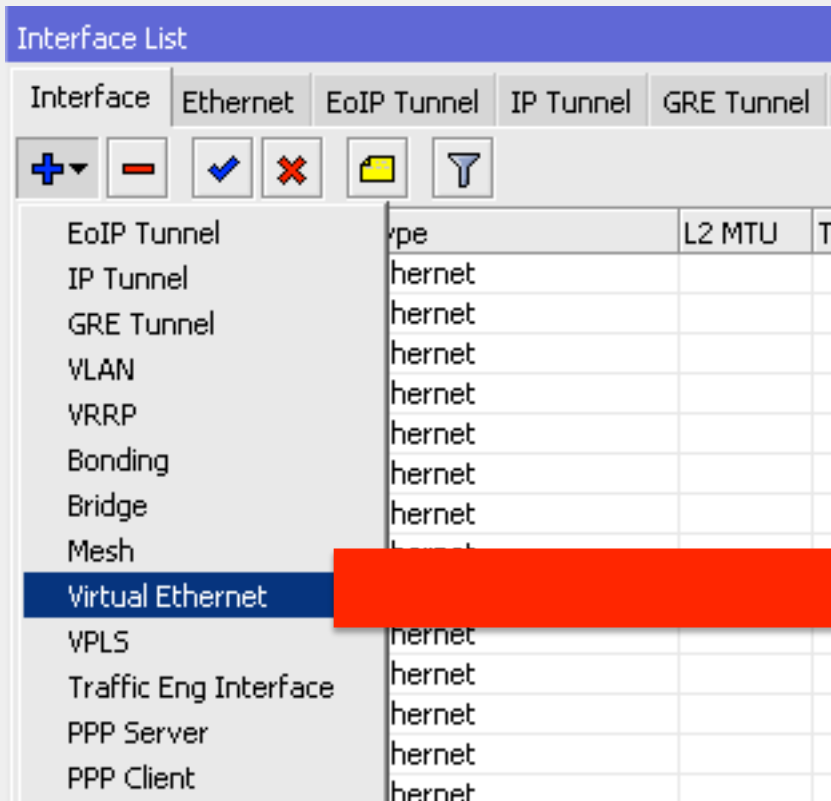
Name	Type	Disk	Free	Size	
disk1	ext3	2.5" SATA SSD 3ME	36.1 GiB	238.5 GiB	
disk2	ext3	2.5" SATA SSD 3ME	41.0 GiB	238.5 GiB	

- Misal kita gunakan 2 SSD/Hardisk yang sudah terpasang di Mikrotik.
- Pastikan format semua SSD/Hardisk dengan File System ext3.

# KVM – Image

The screenshot shows the Mikrotik WinBox interface for managing KVMs. The 'KVMs' tab is active, and the 'Make RouterOS Image' button is highlighted with a red box. Below it, two dialog boxes are open, each with a red box around the 'File Name' and 'File Size' fields. The first dialog shows 'File Name: disk1/test.img' and 'File Size: 200000 MIB'. The second dialog shows 'File Name: disk2/test2.img' and 'File Size: 200000 MIB'. A green text box at the bottom of the image contains the text: 'Tambahkan dua RouterOS Image di kedua hardisk yang berbeda.'

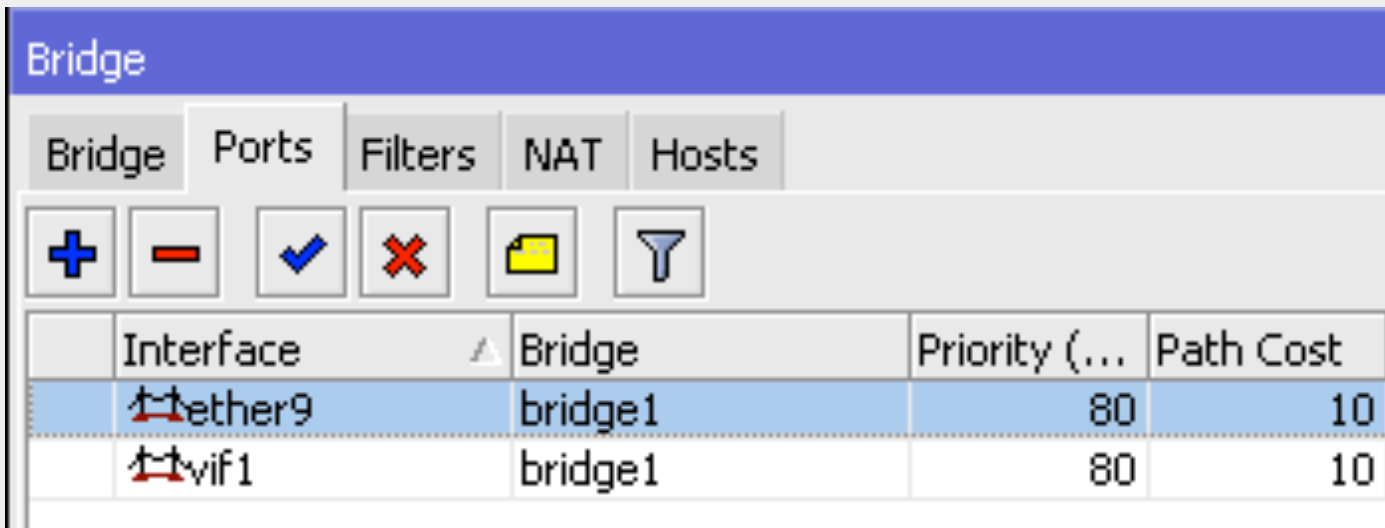
# Mikrotik - Virtual Ethernet



Tambahkan Virtual Ethernet untuk ethernet port di Virtual NAS.

# Bridge + DHCP Server

- Tambahkan Bridge.
- Masukkan Virtual Ethernet dan juga Ethernet yang terhubung ke jaringan lokal ke dalam bridge.
- Buat DHCP Server di Interface bridge.



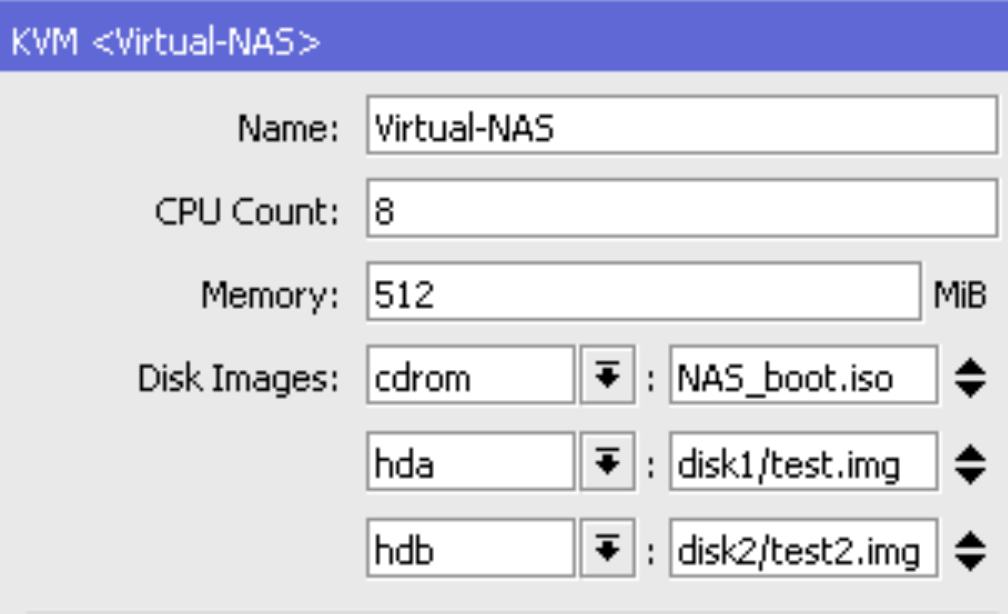
The screenshot shows a network configuration window titled "Bridge". It has tabs for "Bridge", "Ports", "Filters", "NAT", and "Hosts". Below the tabs are several icons: a plus sign, a minus sign, a checkmark, a red X, a folder icon, and a funnel icon. A table below the icons lists the bridge's configuration:

Interface	Bridge	Priority (...)	Path Cost
veth9	bridge1	80	10
vif1	bridge1	80	10

# Download Xpenology

- Ada beberapa file yang harus didownload :
  - Xpenology nanoboot (file iso – untuk booting)
  - Synology Assistant (file exe – untuk installer)
  - Synology DSM (file pat – untuk firmware)
- Semua file tersebut bisa didownload :
  - <http://xpenology.org>
  - <http://xpenology.com>
- Pastikan download ketiga file tersebut pilih versi yang sama

# Create Virtual NAS



KVM <Virtual-NAS>

Name: Virtual-NAS

CPU Count: 8

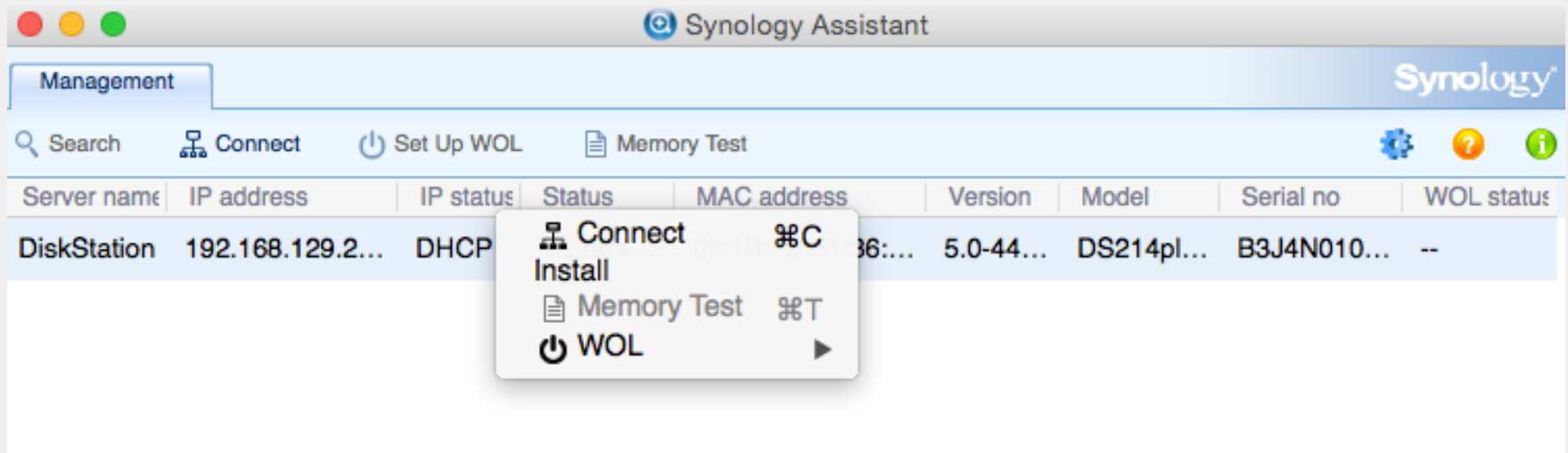
Memory: 512 MiB

Disk Images:

cdrom	▼	:	NAS_boot.iso	◆
hda	▼	:	disk1/test.img	◆
hdb	▼	:	disk2/test2.img	◆

- Setelah file Xpenology nanoboot iso sudah didownload, pasang sebagai 1<sup>st</sup> Drive CDROM
- Masukkan file image yang sudah dibuat sebelumnya sebagai **HDA** dan **HDB**.

# Synology Assistant



- Aktifkan Virtual NAS di Mikrotik KVM.
- Jalankan program Synology Assitant di PC Installer yang satu segmen dengan Router.
- Tunggu sampai Virtual NAS terdeteksi, lalu Install.



# Upload Firmware & User Config

## Welcome to the Setup Wizard!

Setup Wizard will install DSM and migrate existing system configurations (such as user accounts and privileges) stored on the hard drives to the new system.

Please input the path of installation file.

Browse

## Enter server information

Administrator's account: admin

New password:

Confirm new password:

Server name:

# Network Configuration

## Setup network

- Get network configuration automatically (DHCP) (recommended)
- Use manual configuration

IP address: 192.168.129.203

Subnet mask: 255.255.252.0

Default gateway: 192.168.128.1

DNS server: 8.8.8.8

Konfigurasi Network sesuai kondisi jaringan yang ada.

# Setup Process

Applying system settings...

It takes about 10 minutes or longer, depending on the size of your hard drives. Please wait, and do not turn off the power during this procedure.

Progress

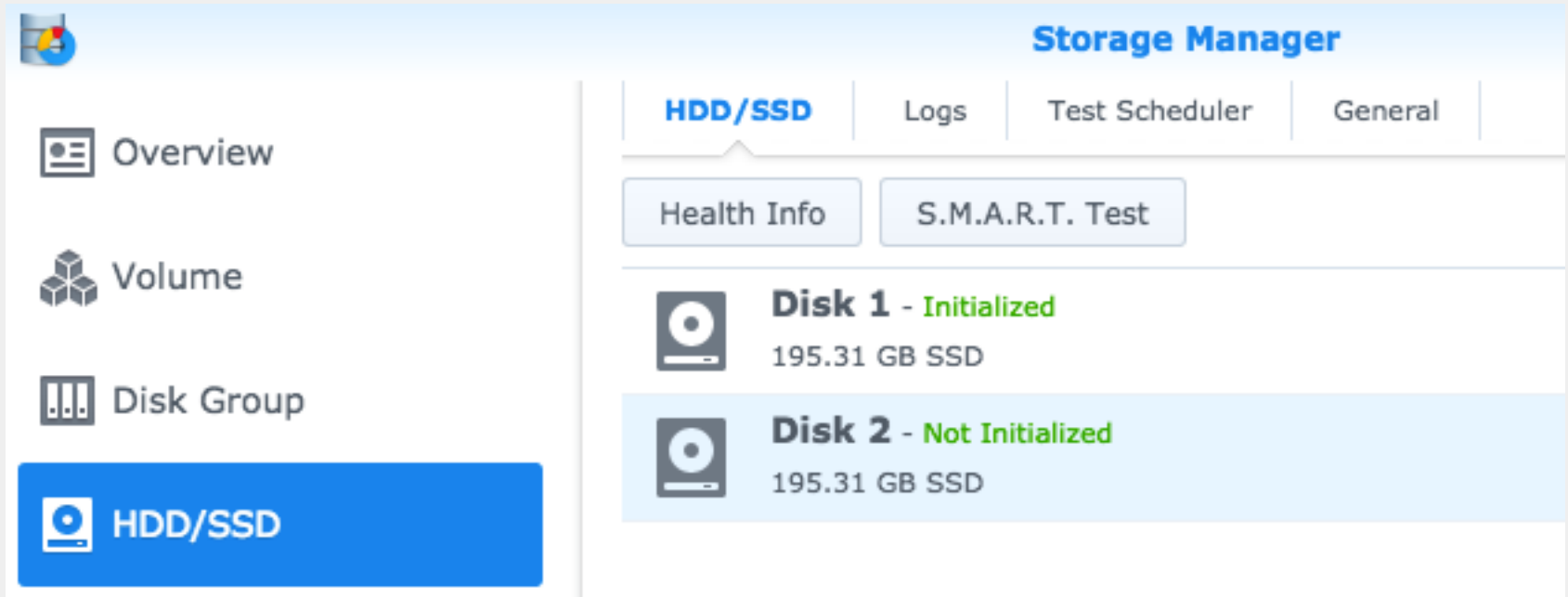
Progress: Installing DSM to hard drive ...



- ✓ 1. Applying network settings
- ⊖ 2. Formatting system partition
- ⊖ 3. Formatting data partition
- ➔ 4. Installing DSM
- 5. Writing configuration files

Proses instalasi berjalan selama ~10 menit tergantung besar hardisk yang digunakan.

# Disk Management













The screenshot displays the Mikrotik Storage Manager interface. On the left is a navigation sidebar with icons for Overview, Volume, Disk Group, and HDD/SSD. The main area is titled 'Storage Manager' and has tabs for HDD/SSD, Logs, Test Scheduler, and General. Under the HDD/SSD tab, there are buttons for 'Health Info' and 'S.M.A.R.T. Test'. Below these buttons, two disks are listed:

Disk ID	Status	Capacity
Disk 1	Initialized	195.31 GB SSD
Disk 2	Not Initialized	195.31 GB SSD

- Image file yang terpasang di Mikrotik KVM akan terdeteksi sebagai hardisk.
- Hardisk tersebut bisa dimanfaatkan untuk storage di dalam NAS.

# NAS Features

<b>Video Station</b> Synology Inc.  Install	<b>Antivirus Essential</b> Synology Inc.  Install	<b>Photo Station</b> Synology Inc.  Install	<b>Surveillance Station</b> Synology Inc.  Install	<b>Download Station</b> Synology Inc.  Install
<b>Audio Station</b> Synology Inc.  Install	<b>iTunes Server</b> Synology Inc.  Install	<b>Media Server</b> Synology Inc.  Install	<b>Cloud Station</b> Synology Inc.  Install	<b>VPN Server</b> Synology Inc.  Install

## Choose a RAID type

### With data protection

- Synology Hybrid RAID (SHR)
- RAID 1
- RAID 5
- RAID 5+Spare
- RAID 6
- RAID 10

### Without data protection

- Basic
- JBOD
- RAID 0

**Control Panel**

Search

**File Sharing**

- Shared Folder
- File Services
- User
- Group
- Directory Service

**Connectivity**

- QuickConnect
- External Access
- Network
- Wireless
- Security

**System**

- Info Center
- Login Style
- Regional Options
- Terminal & SNMP
- Notification
- Task Scheduler
- Hardware & Power

# NAS Features

- 2 Bay Hardisk - RAID 0 / RAID 1
- File Server
- Multimedia Sharing Server
- Surveillance Server
- Anti Virus
- Software Apps Management... dll

\*\* Walaupun GPL tidak semua Fitur & Fungsi Gratis!

# Conclusion

- Disk Management pada Mikrotik sudah mengalami perbaikan di Versi >6.20
- Mikrotik SMB bisa menjadi solusi yang mudah jika ingin membuat File Server (Sederhana).
- External Storage dan Virtualisasi di mikrotik, bisa dimanfaatkan untuk membangun sebuah NAS di Mikrotik Router platform x86.



# Thank You !!

[www.mikrotik.co.id](http://www.mikrotik.co.id)

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[@mikrotik\\_id](#)

Dijijinkan menggunakan sebagian atau seluruh materi pada modul ini, baik berupa ide, foto, tulisan, konfigurasi, diagram, selama untuk kepentingan pengajaran, dan memberikan kredit dan link ke [www.mikrotik.co.id](http://www.mikrotik.co.id)