**LanStorage, LanDrive, Landisk**
version 0.0

## Preface

This is a recompilation of information about cheap Nas devices. It can contain mistakes and errors. I think there is only a irrefutable true, The death, of course parts of this document may no be correct.

Finally, sorry for my errors with the English language and thanks to every body, and specially to Zeroday (Dennis) for his greats pages in aroundmyroom.

Feel free to modify all you think in this document.

Salut

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## The Device

It is a HDD enclosure with a Lan port and USB port (some models). It can hold a IDE HDD from 6 GB (i tested it, may be less) to 400GB (I not tested, may be more). It has some sort of embedded OS with Samba/Cifs support (Not 100% CIFS compatible), similar to a WIN98 shared unit. Supports (depend of OS versions):
- Win XP.
- Mac OS.
- Linux (mount as smbfs not like cifs).
- Seems it has problems with Vista



For first time you need:
- Erase al partitions on hard disk, create only 1 partition (device only recognizes first partition).
- Install HD inside enclosure.

- Be sure of **any firewall** or other soft can break communications with device.
- Configure lan access, easy with web interface (initial at 169.254.0.1).
- Format HD, only as FAT32.
- Configure users.

About RJ45 lan port, it support 10/100Mb direct and cross cables with auto sense. I think speed we can meet depends on how LanDisk negotiate speed with switch/hub.

Some models that run same firmware:

- LanStorage: ETH3556.
- Conceptronic: CHD3LAN.
- Pleidades: Pleiades USB-LAN.
- Hotway: HD9-U2LA.
- Vipower: VPA-3528Net.
- And more, more others.

## Performance

There is my approximated conclusions, lan speed is not very impressive,  (i do not make professionals tests):
- Lan port:
   - Write up to 3MB/s (24Mb/s) (depends of size of files, aprox.)
   - Read up to 4MB/s (32Mb/s)
- Usb port: not fully tested but much more faster than Lan Port.

You can see some more accurate performances of other NAS models at TomsNetworking.

## Hardware

Heart and brain of this models is manufactured by RDC Semiconductor Co., Ltd, you can get some info about their 28xx series products at: 28xx Series. Unfortunately, the R2882 is not part of the available listings, but i think it is an internal evolution of R2881, that includes a like 80186 CPU.

It looks like the base firmware could be designed by RDC, because if you look through the firmware file you'll find "RDC Semiconductor Co., Ltd" where the KERNEL is defined, and also the HTML setup, then I'm guessing the different vendors customize it to their usage/branding.
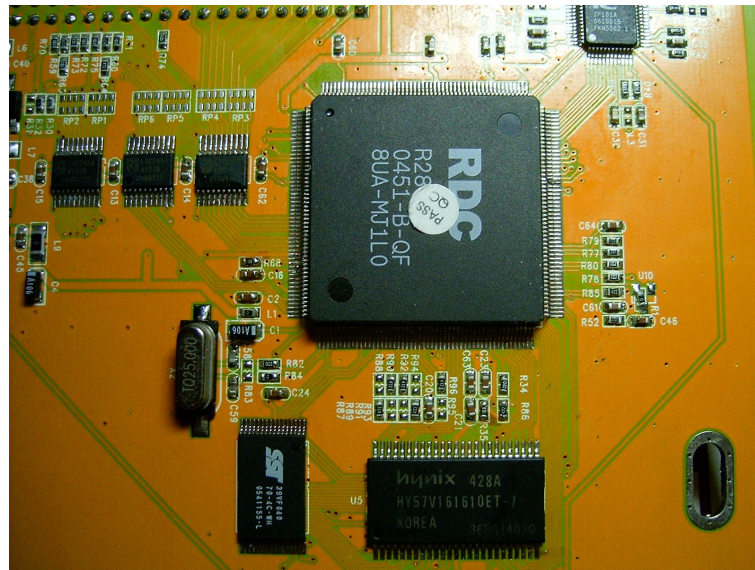
- Lan interface:       IC: IP101A
- Usb interface:       PROLIFIC: PL-2506 (High speed USB-IDE bridge controller)
- CPU:                 RDC: R2882
- Eprom:               SST: 39VF040(512k x 8bits)
- Ram:                 HYNIX: HY57V1610ET(1024k x 16bits)

## Firmwares and important info

You can get firmwares from this pages:

>  http://www.station-drivers.com/
>  http://www.lanserver.co.uk.tt/

But i prefers this flavor: http://www.aroundmyroom.com/landisk/

important info and other users experiences can be fount at:

>  http://www.aroundmyroom.com/tag/landisk

and

>  http://forums.whirlpool.net.au/forum-replies-archive.cfm/424238.html

## Similar products

There is a family with the RDC 2881 processor (i think same as RDC 2882). It uses a PCI-IDE controller (ATP-865). You can see a PCB below. Firmware are not compatible because, as said, it uses a PCI controller. Firmware names are like SNAS05-0607.bin or NetHDD007-0428.bin. I think it has a RTC (Real time clock, you can see battery below processor).

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Some similar models.

- Argosy: [HD363N](#)
- Tritton Technologies: [TRI-NSS001](#)
- IONi: [HD363N](#)
- MediaSonic: [HD363N](#)
- Cintre [WebSite](#)
- V-Gear: [LANDISK](#),
- aka Bytecc: [ME-850](#)
- FujitsuSiemens: [StorageBird](#)
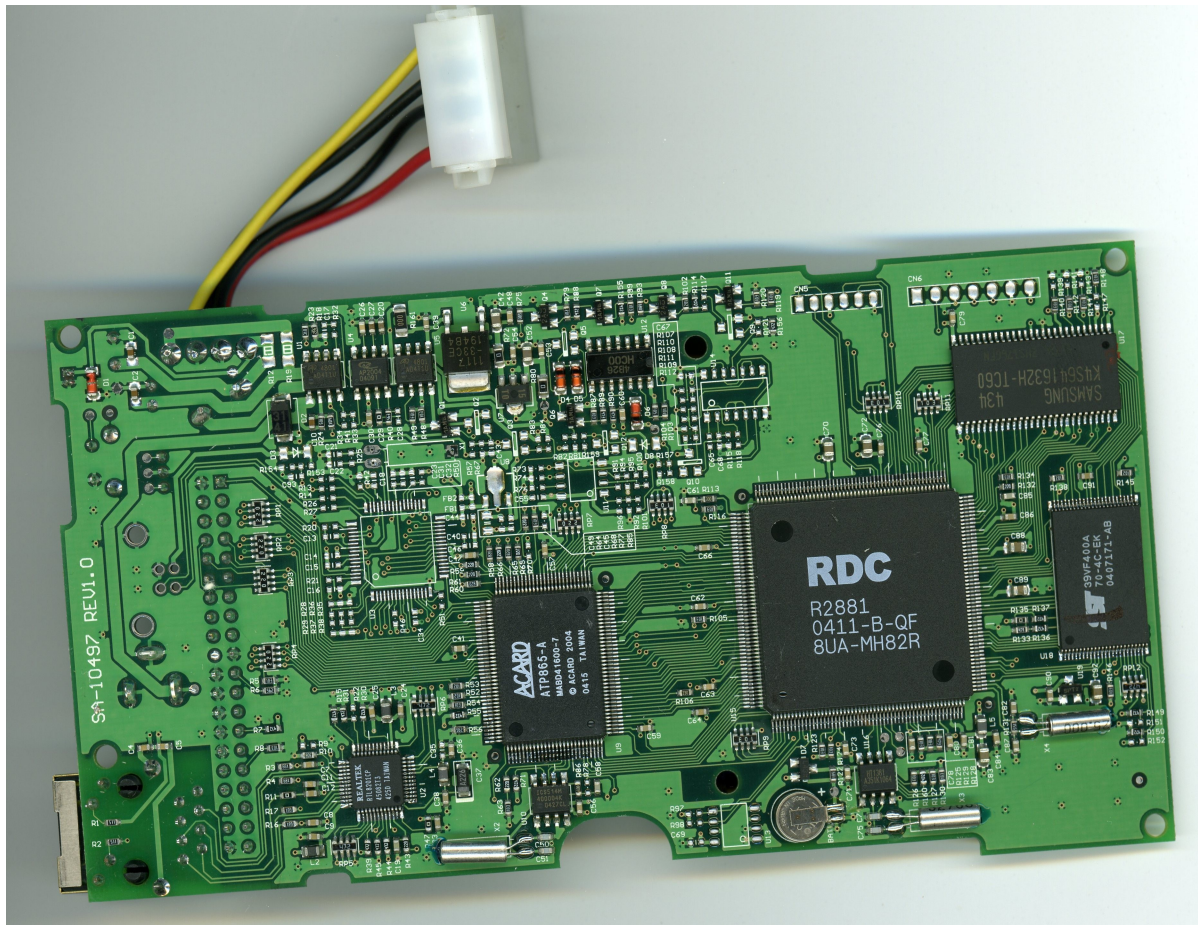


## Firmware upgrade.

There are some utilities you can use, MT.exe (Text mode and only update **loader**), Web interface, Quick_Upgrade .exe (win xp tool), TFTP.exe (tftp -i **ip_address** put **firmware**.bin) , ... You can found all at [www.aroundmyroom.com](http://www.aroundmyroom.com).

First of all you must ensure:
- Firmware are compatible with your device.
- Power stability.
- Stay 1 or 2 min. before reboot after firmware are downloaded.

Firmware consist of two parts:
  · Loader. Contains Bios of device (max 64kB size). Loader name are like **rom125_2m.bin**.
  · Firmware. Contains Kernel and web interface (max, i think, 384kB size, 6x64kB segment size). Firmware name are like **FirmwareBasicNas45.bin** or **Kernel_web45.bin**.

Firmware kernel, web and loader must be put in a 512kB rom (8 x 64 KB). I think  it rest 1 segment (64 kB) free or used for internal parameters, i don't know.

## Unbrick your device.

If you brick your device upgrading firmware don't worry maybe you can unbrick it. First try with tools explained at previous part, if there no works then, try with method explained below. First of all if it rest bricked after upgrading kernel-web firmware, don't worry probably you can recover it. If you brick upgrading loader i don't know if this method works fine but at this moment you can't losses any more, try it!!.

This method are inspired with [Linksys](#) routers recover procedures. Basically it consist in a cold start of device and break code execution after Bios load.
At Bios load, loader are waiting for a possible upgrade, you can see it viewing  a portion of rom125_2m.bin with a editor text:

at first line:

```
"RDC Semiconductor Co., Ltd.      LOADER  y#é  ÿ#   Ö#....."
```

in the middle:

```
"------RDC Semiconductor Co., Ltd. (%s)------

 R2882 Ver 0.6.9 ------   Welcome to RDC20xx world!   ------
 ------   Hardware ID %x CPU ID %x   ------
 (Support  2M SDRAM,  ETH1,  IDE,  Self Test module, )
 Begin ethernet lookback self-test...
  [PASS].
  [Fail]  [All Fail!]
 Please choose download method (timeout 2 seconds):
 1. through Ethernet. (default)
 2. from UART.


Use TFTP to download new firmware...
 [default: MAC(%2x:%2x:%2x:%2x:%2x:%2x) IP(%d.%d.%d.%d)]
 new IP (ESC):

[LOADER] Input Fail!
 Waiting for TFTP upgrade...


UART: use XMODEM to download new firmware...
 (baud rate = %s bps)
 KERNEL KERNEL KERNEL Kernel Size is too large %lu.

Program kernel (len=%ld) into flash memory  HTML HTML Web Size is too large %lu.

Program WWW (len=%ld) into flash memory  LOADER LOADER [FLASH] Program Kernel Error!

 Boot the kernel from 0x%08lx
```

```
 R2882 Ver 0.6.9 ...................."
```

As you can see, at boot process, system waits 2 seconds for upgrading (timeouts 2 seconds), and after boot process continues. To verify if it works you must:

1.- Attach your device directly to your computer.
2.- Ensure your computer has ip address in range 169.254.0.X where x is a number between 2 to 254.
3.- Ensure your computer has ip mask 255.255.255.0
4.- Configure your computer ethernet card as 10 Mb / Half duplex.
5.- and there are **NO FIREWALLS WORKING!!!!.**
6.- Open a windows CMD command window (windows) or a terminal window (linux) and run a continuous ping process to 169.254.0.1 host.
7.- Power on your device and wait for a ping response, if not try several times (power off and power on your device)
8.- If device responds some pings you can recover device.

Unplug power on device, and do:

1.- To force upgrade boot process i put pin A18 to high (VDD) (address bus of R2882), this force to use only last 64K segment of 512k eprom. Loader can take control. In next picture you can see one easy point to put A18 to high on eprom side. I use a steel needle at point indicated in picture (this depends of your board).
2.- Open a windows CMD command window (windows) or a terminal window (linux) and run a continuous ping process to 169.254.0.1 host.
3.- Power on your device and wait for a ping response. After boot, device must **responds ALL** pings. Then i release pin A18.
4.- Then (without unplug device) you can put firmware (FirmwareNas45.bin) with utility firmware_upgrade as normal operation (or Loader).
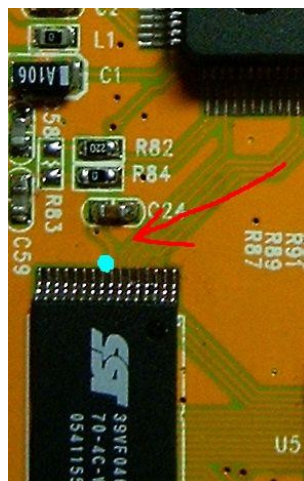
**Fields to work**

Activate JTAG access.

Indicated pins below corresponds to a JTAG interface of R2882 CPU, that can give control of CPU. I not tested them but there is a line to investigate if you can't unbrick your device or you want to know more about this device. Jtag

| | |
|---|---|
| 97 | =JTAGEN |
| 117 | =TDO |
| 118 | =TMS |
| 120 | =TCK |
| 121 | =TDI |

And a serial interface at pins:

123=Serial in (3'3V interface)
124=Serial out (3'3V interface)
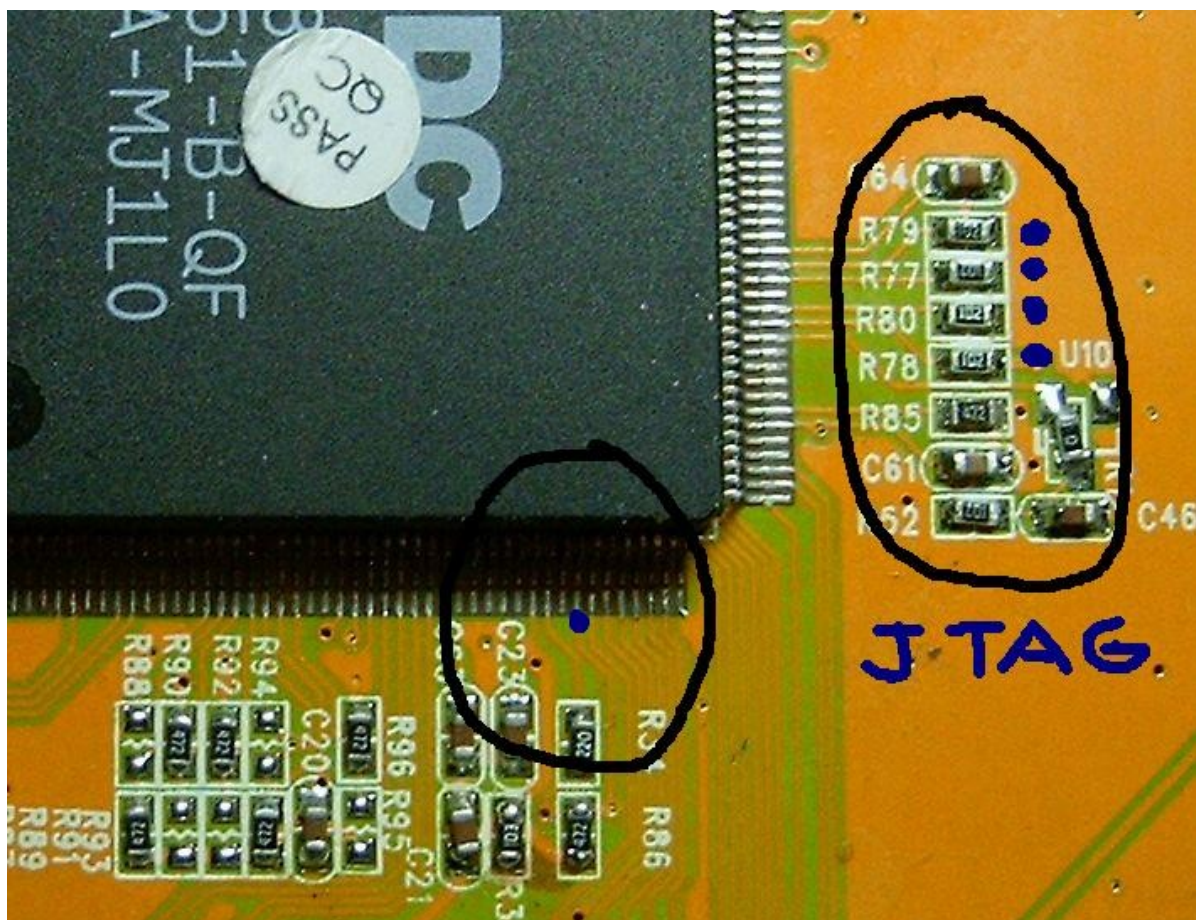


Memory and I/O map.

Memory and I/O ports usage can be interesting to make inverse engineering of bios and kernel.

23/November/2006
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