

Atola Disk Recycler

Multi-port wiper and tester

User's Manual v1.2

Thank you for purchasing an Atola Technology product

The Atola Disk Recycler is a scriptable high-speed disk drive tester, wiper, repairer built for professional disk recycling applications. This product is operated either via host software, or stand-alone via a script uploaded onto a USB Flash stick.

The Atola Disk Recycler is designed for disk recertification applications where the condition of the attached hard disks is unknown. It comes equipped with full circuit protection that prevents taking damage from malfunctioning storage devices attached to the unit.

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Specifications

Atola Disk Recycler system includes:

- One or more 4-port Atola Disk Recycler units
- Windows control software running on a separate PC ("Host PC")
- 4-port 100 Mb Ethernet Router TP-LINK TL-R402M (optional)
- 8-port 1Gb Ethernet Switch TP-LINK TL-SG1008D (optional)

Atola Disk Recycler unit specifications

Dimensions	425mm (width) x 500mm (depth) x 84mm (height)
Weight	Approx. 8 kg
Number of SATA ports	4
Ethernet interface	RJ45 / 1Gbe
Maximum number of Recycler units in one network	200
Control interface	Windows application; standalone mode is available.
Maximum data transfer speed	300 MB/s (18 GB/min) per port
Supported hard drive interface	SATA I/II/III; IDE with adapter
Power consumption	90 W average

Installation

To get Atola Disk Recycler system up and running, you would need to perform the following:

1. Properly plug all Atola Disk Recycler units and the host PC into a single network
2. Install Atola Disk Recycler software onto the host PC.

Minimal PC configuration:

- CPU: Intel Core2 Duo, 2GHz+ or better
- Memory: 4GB or more
- Desktop resolution: 1680x1050 or better
- OS: Windows XP (32 or 64 bit) or newer

Default network configuration

In order to complete the network installation, you will need the following components:

- Host PC (described above)
- 1 or more Atola Disk Recycler units
- TP-LINK TL-R402M router (optional; can be replaced with any DHCP server)
- TP-LINK TL-SG1008D switch (optional; any Gigabit switch will be sufficient)
- RJ-45 Ethernet cables.

The ultimate goal is to have the Host PC and all Recycler units connected to one network. Here are step-by-step instructions on how to build a setup that is guaranteed to work:

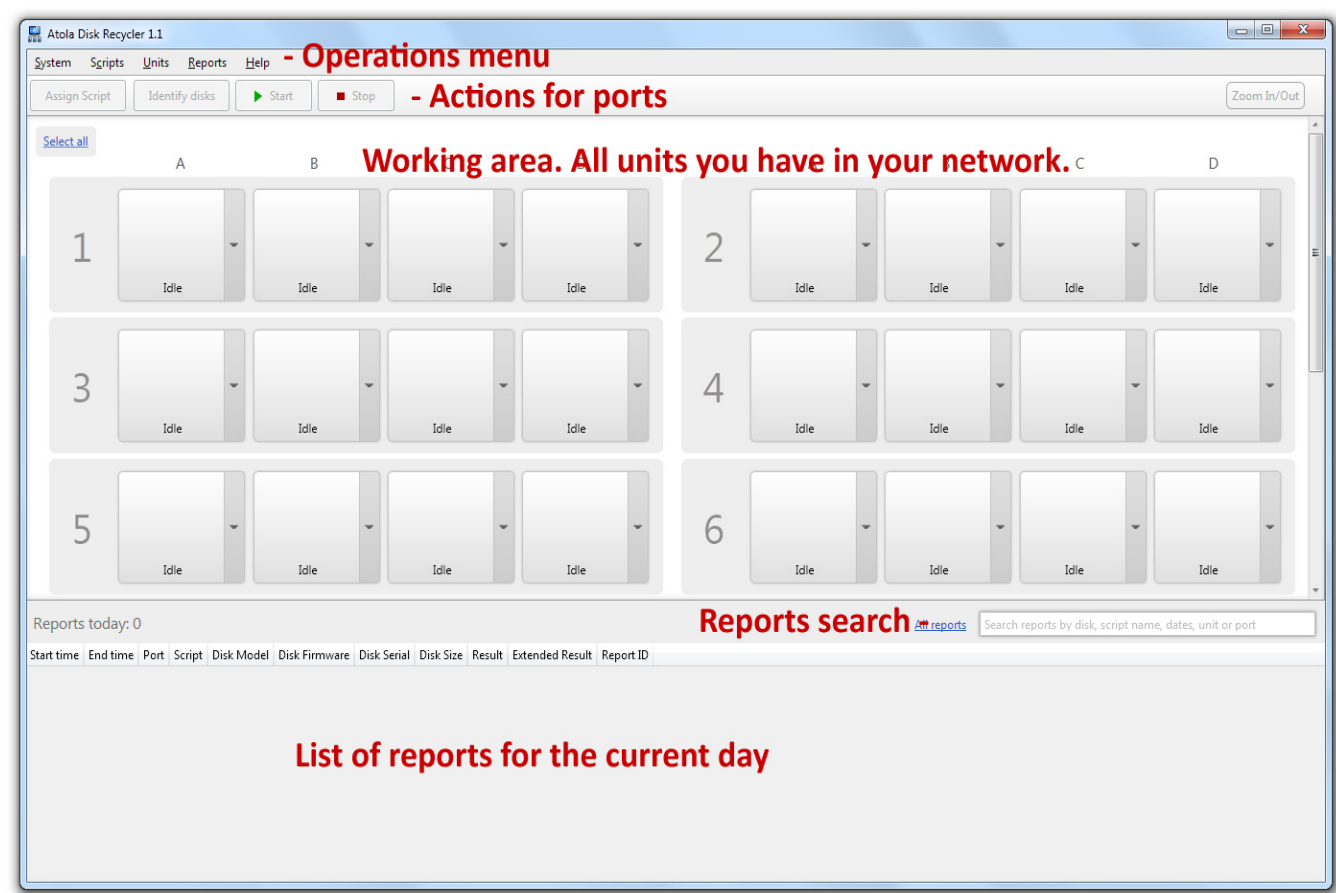
1. Take an Ethernet cable. Plug one end into the Ethernet port of the Host PC; plug the other end into the router's port 1.
2. Take another Ethernet cable. Plug one end into the router's port 2; plug the other end into the port number 1 of the switch.
3. Take another Ethernet cable. Plug one end into the router's port 3; plug the other end into a Recycler unit.
4. Take another Ethernet cable. Plug one end into the router's port 4; plug the other end into another Recycler unit.
5. Take another Ethernet cable. Plug one end into the port 2 of the switch; plug the other end into another Recycler unit.
6. Take another Ethernet cable. Plug one end into the port 3 of the switch; plug the other end into another Recycler unit.
7. Repeat step 6 until all remaining Recycler units are connected to the switch.

Plug all devices into the mains (PC, router, switch, all Recycler units) and power on everything.

Installing Atola Disk Recycler software

1. Download the latest Atola Disk Recycler software:
 - <http://atola.com/products/recycler/download.html>
2. Launch the downloaded file and specify the folder for extraction.
3. Navigate to the folder with the unpacked files and launch setup.exe.
4. Perform the installation.

Main window



The blocks numbered 1, 2, 3, ... represent physical Recycler units. Let's take a closer look at the unit number 1:

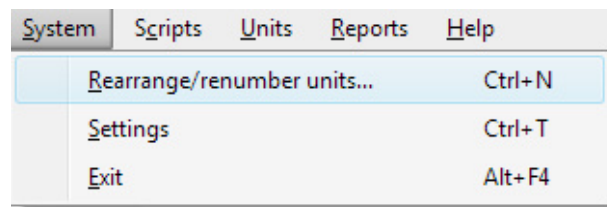


Boxes **A, B, C, D** represent physical hard drive ports of the unit and are called **Port Control Boxes**.

Assigning numeric IDs to Recycler units

By default, Atola Disk Recycler software numbers units without any specific order. The numbers assigned by default will most likely not correspond to the physical layout.

It is possible to assign new numeric IDs to the physical units by navigating to **Rearrange/Renumber units** under **System** menu.



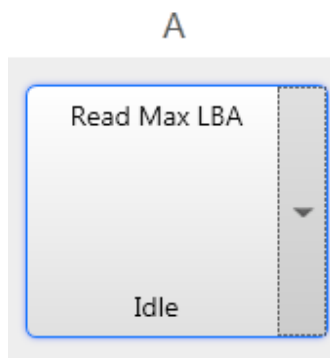
1. Click **Rearrange/Renumber units** under **System** menu.
2. Decide which physical unit will be number 1; approach it and press yellow START/STOP button of the port A. The unit will immediately appear in the software under ID = 1.
3. Decide which physical unit will be number 2; approach it and press yellow START/STOP button of the port A. The unit will be added to the list of rearranged units in the software.
4. Repeat step 3 until all units are rearranged in the preferred order.
5. Click OK in the software.

Note: to change the number of units displayed in one row, simply change the **Units in row** parameter under **System** → **Settings** menu.

Operating Disk Recycler

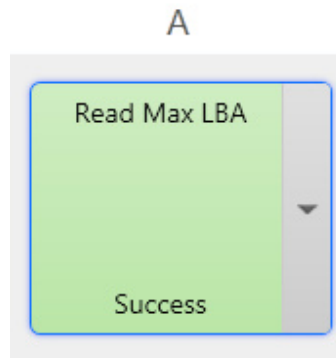
Single disk run - example

1. Take one working SATA hard drive
2. Attach it to the port A of the unit 1
3. Launch Atola Disk Recycler software
4. Verify that the unit 1 in the software corresponds to the physical unit number 1. This can be done by selecting the unit and then navigating to menu **Units** → **Blink LEDs** (you should see all LEDs of the physical Unit 1 blinking).
5. Select port A of the unit 1 in the software by clicking its port control box
6. Click the down-arrow button and select the **Read Max LBA** script (or any other script you may have prepared):



7. Now launch the script by clicking the **Start** button located on the top toolbar. Alternatively, you may push the Start/Stop button of the port A on the unit itself.

8. After script has finished, the port status will switch into Success:



At this point it is safe to detach the drive.

9. You can now view the detailed script execution log (report) by double-clicking the port control box.

Multiple disk run

Running Atola Disk Recycler with many hard drives at the same time is not much different than running it with just one drive. To speed up the process, you can assign the scripts first, and then launch the process by pushing the START/STOP button on the unit itself right after the disk is attached to the unit. The ports are completely independent; therefore starting/stopping a script on one port does not affect other ports in any way.

To assign the same script to several ports, simply select these ports by holding CTRL and clicking the respective port control boxes (or unit numbers to select all 4 ports on that unit). To select all ports, press CTRL+A. After selection has been made, click Assign Script button on the top toolbar and select the desired script.

To launch script execution for several ports at once, simply select the ports as described above, and then click Start button located on the top toolbar.

Scripts

All disk operations in Atola Disk Recycler are done via scripts. A script is basically a text file that contains one or more commands for the Disk Recycler.

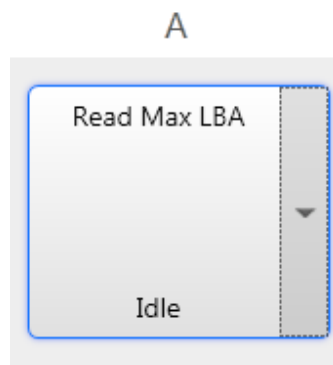
Fresh installation of the Atola Disk Recycler provides several sample scripts:

- Check SMART
- Read Max LBA
- Read MBR
- Scan test
- Scan with Report
- Security Erase with HDD Repair On
- Wipe using DoD

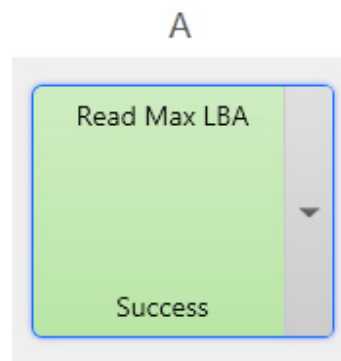
You can also create custom scripts of virtually any complexity.

Let's try and launch one of the default scripts. You will need a working SATA hard drive for the test run:

1. Attach the drive to the port A of the Recycler unit number 1.
2. Launch Atola Disk Recycler software.
3. Select port A of the unit number 1 by clicking the port control box.
4. Click **Assign Script** button on the top left corner of the window and select **Read Max LBA** script. Now the script is assigned to the port:



5. Now click the **Start** button and the script will execute.
6. After successful execution the port control box will display Success status:



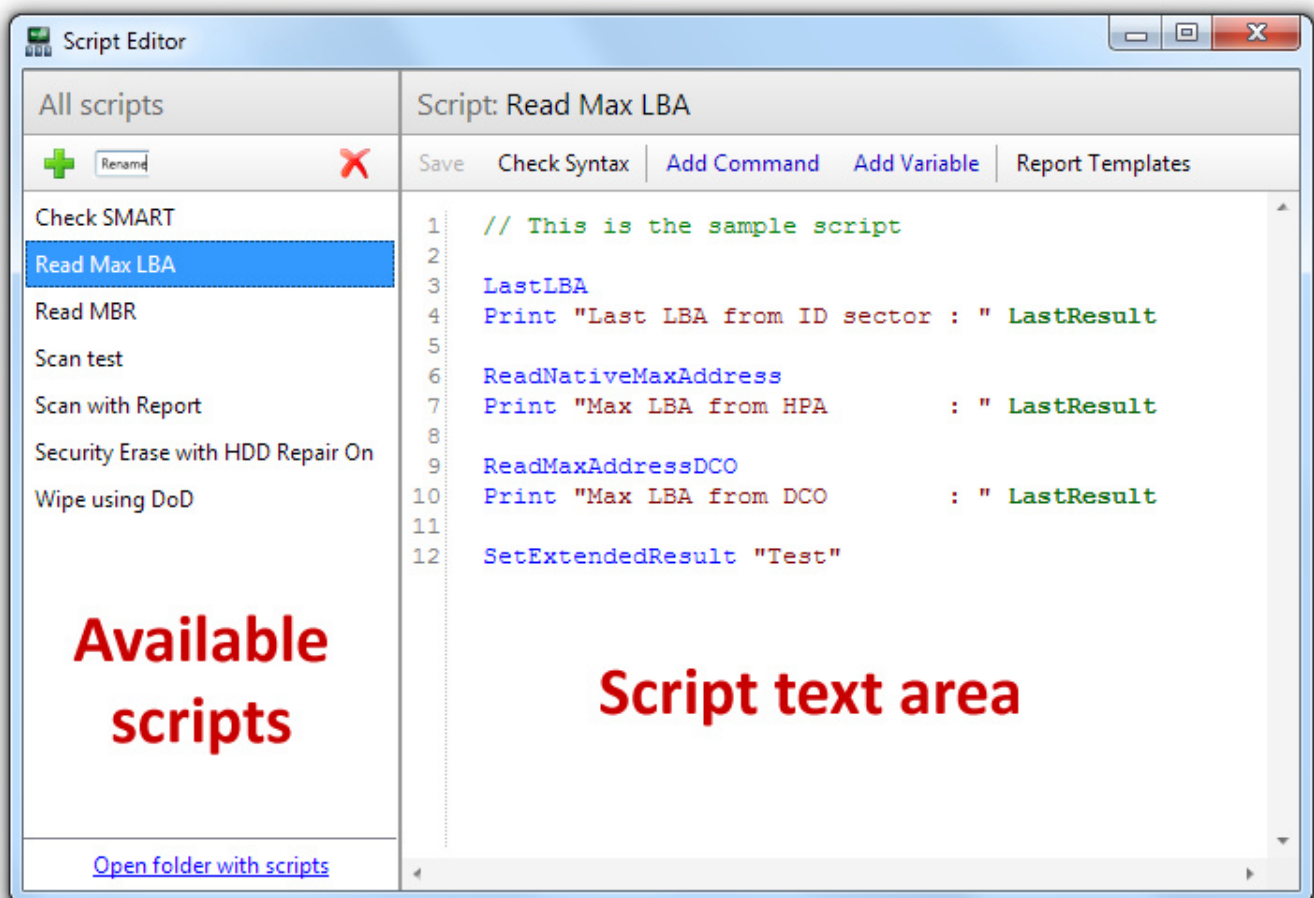
7. Double-click the port control box to display the report.

Writing scripts


Scripts can be composed with the help of Script Editor, which can be accessed from **Scripts** → **Script Editor** menu.

Script Editor window contains two parts:

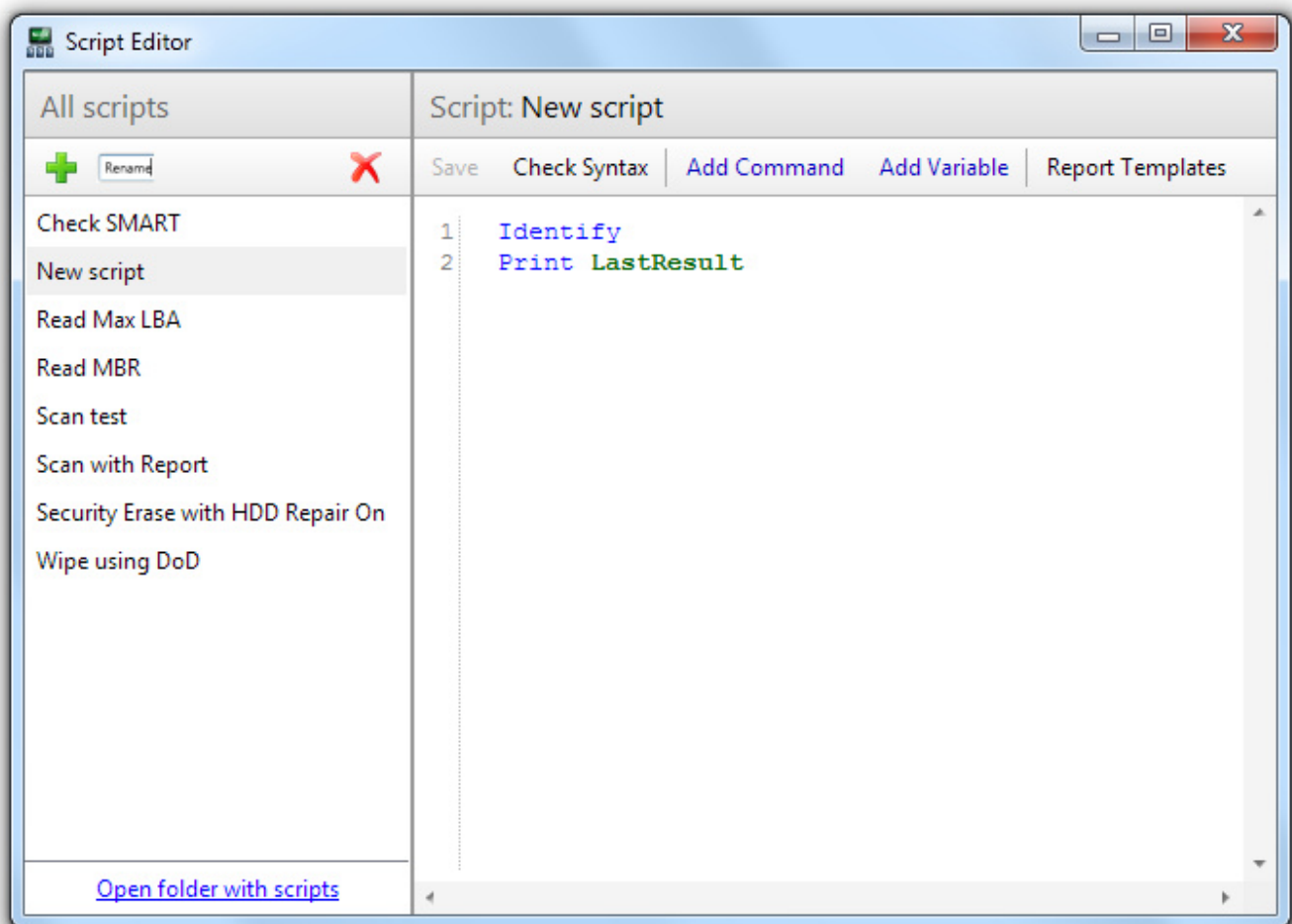
- List of available scripts on the left
- Script editor on the right



To create a new script:

1. Click the green Plus icon: 
2. Make up a name and click OK

3. New script has been created. Let's add a command to the script.
4. Click **Add Command**.
5. Select **Identify** command from the list and click **Add**.
6. In the text editor press **Enter** to create a new line.
7. Let's add another command by clicking **Add Command**.
8. Select **Print** command
9. In the Parameter field type **LastResult** and then click **Add**
10. We have just added another command with a parameter.
11. Click **Check Syntax** to verify that everything is fine.
12. Click **Save**.



Congratulations, you have just created a script that reads the ID sector from the disk and outputs it into the report as a HEX-dump.

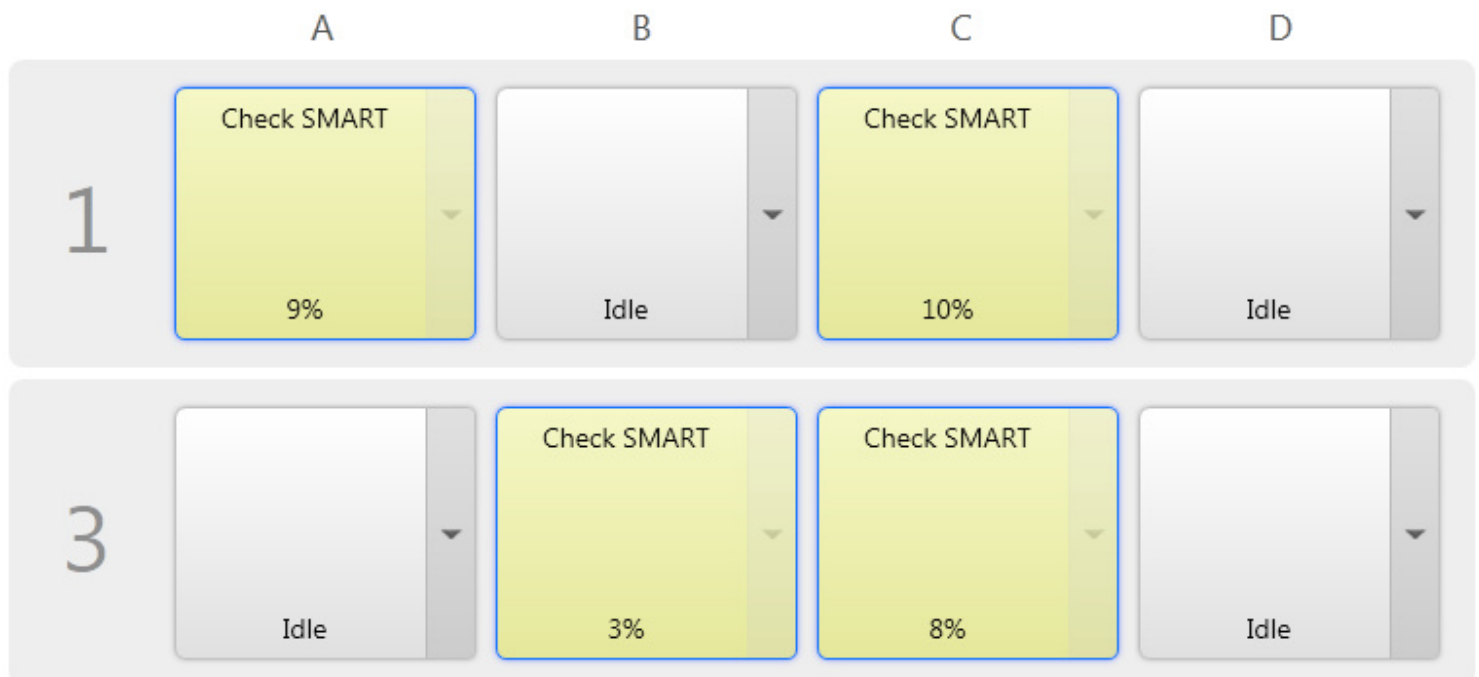
Assigning and launching scripts

To assign and launch a script please perform the following:

1. Make sure you are on the main window of the Atola Disk Recycler software
2. While holding **Ctrl**, click as many port control boxes across as many units as you like. This selects the ports. You can also use **Shift** to select ranges of ports and/or units.
3. Click **Assign Script** button located in the top left part of the screen
4. Select the desired script
5. Click **Start** to begin the script execution. Alternatively, press the yellow Start/Stop button on the Atola Disk Recycler unit.

Example:

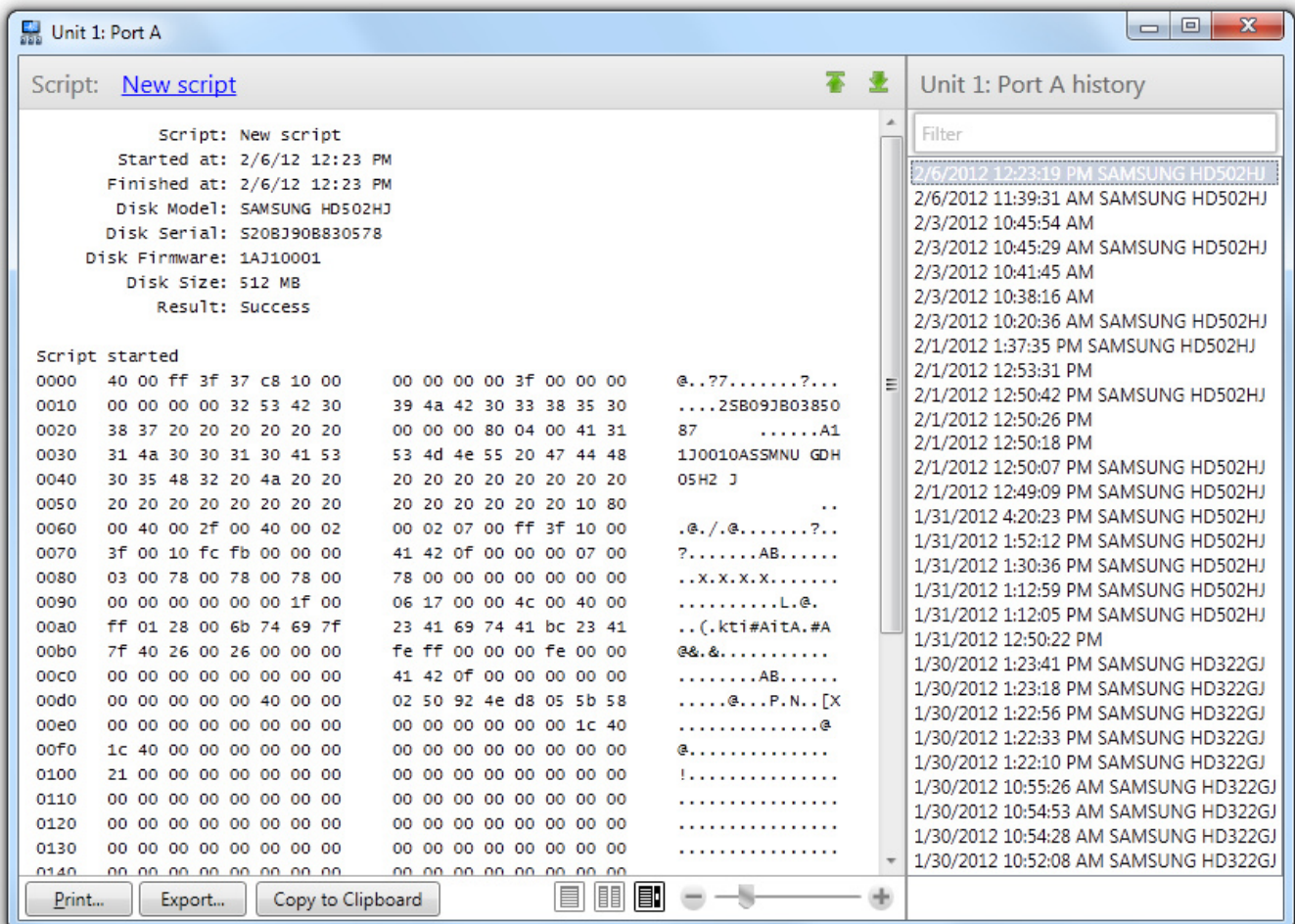
We have selected ports A and C of the unit 1 as well as ports B and C of the unit 3. Then we have assigned the *Check SMART* script to these specific ports and launched it.



After script finishes

After each script's run, Atola Disk Recycler software prepares a report and stores it in the database.

To view the report, simply double-click the port control box. Alternatively, right-click the port control box and select **Port status** menu item.



Examples of simple scripts

1. Remove HPA

```
endLba = LastLba
nativeMaxAddress = ReadNativeMaxAddress

if (endLba.Number < nativeMaxAddress.Number)
{
    Print "HPA is set. Current Max LBA: " endLba.Number
    Print "Resetting HPA..."
    SetMaxAddress nativeMaxAddress.Number
    Print "Re-identifying the hard drive..."
    Identify
    newEndLba = LastLba
    Print "HPA has been reset. New Max LBA: " newEndLba.Number
}
else
    Print "HPA is not set, nothing to do"
```

2. Perform media scan 10 times; abort immediately when found a bad sector

```
maxCycles = 10
Scan
while (maxCycles > 0 && LASTRESULT.OK)
{
    maxCycles--
    Scan
}
if (LASTRESULT.OK)
    Print "The disk withstood 10 full runs"
else
    Print "The disk has failed"
```

3. Find and report all sectors that do not match the pattern "FFEE"

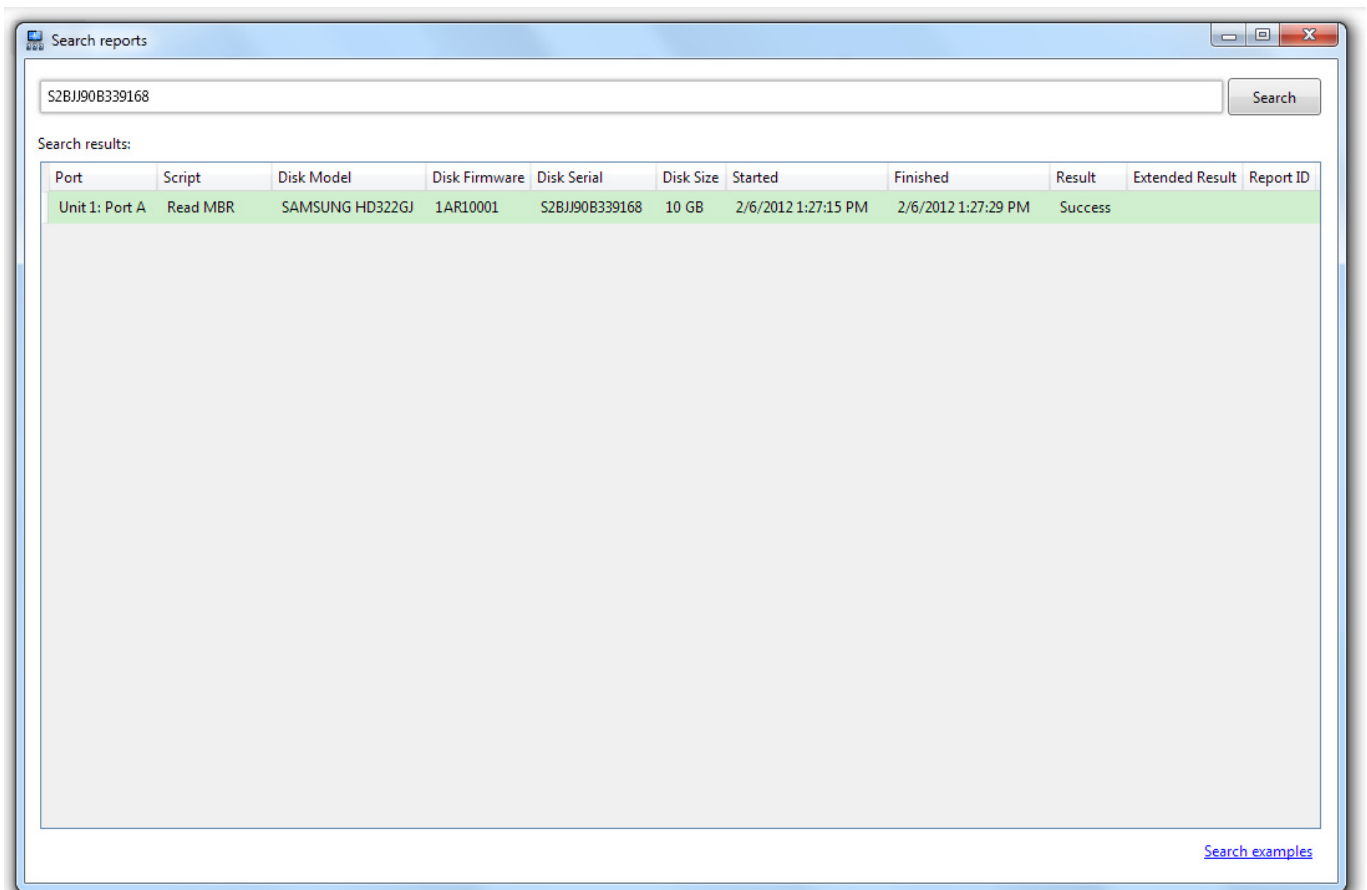
```
Compare "FFEE"
foreach (Block b in LASTRESULT.Blocks)
{
    Print "The following block does not match the pattern: " b
}
}
```

Reporting

Atola Disk Recycler has a powerful reporting engine.

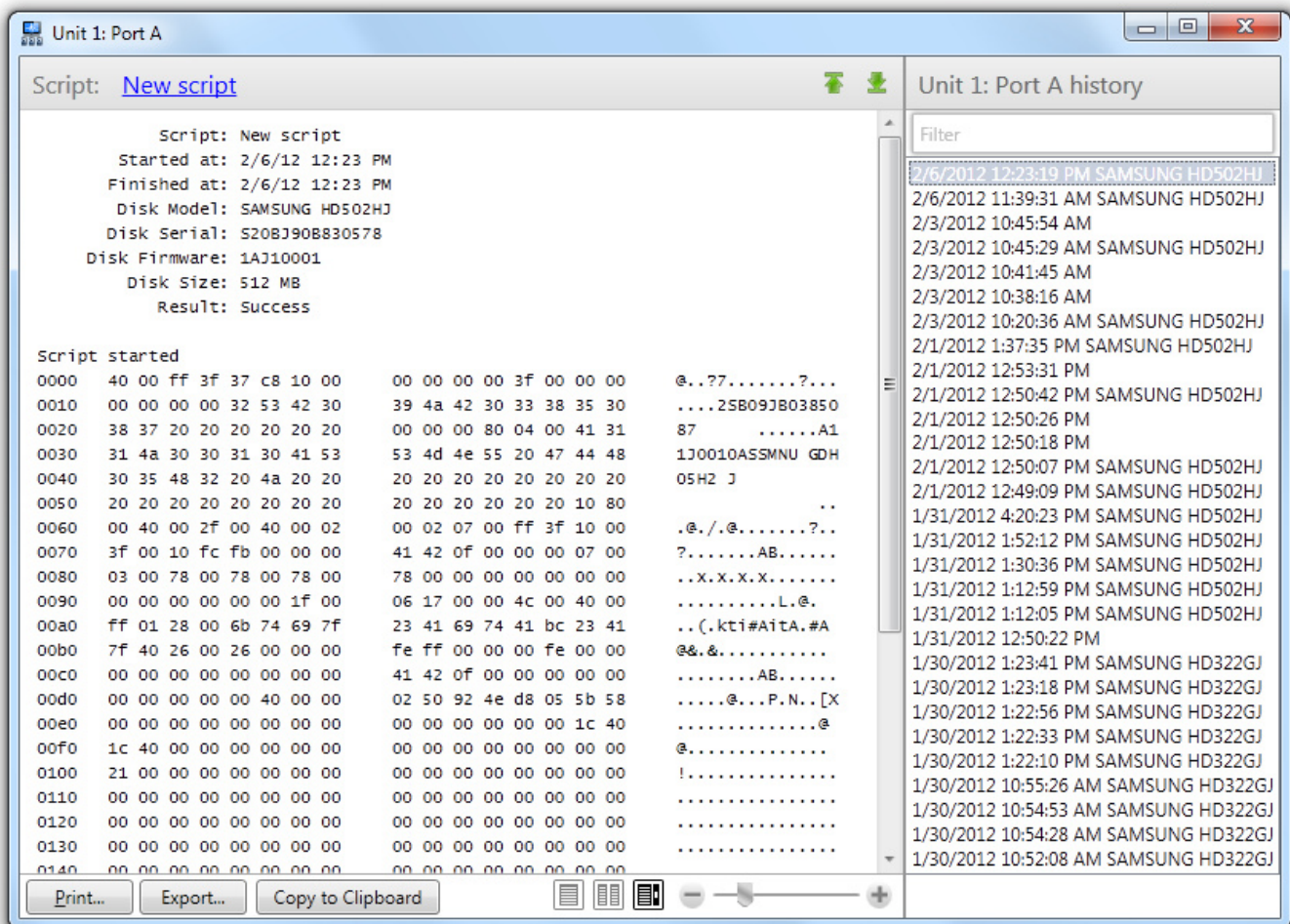
Finding a report for a specific hard drive

To locate a report for a specific hard drive, navigate to **Reports** → **Search** menu. Then type the hard drive's serial number in the search field and press Enter. The software will search the database and display all reports for that hard drive. You can then double-click the found entry to open the report.



Printing reports

It is possible to print a report from the report view window (the window that displays the actual report). The **Print** button is located on the left bottom part of the window:



Certificates

Standard reports basically contain logs of the script execution progress, which might not be suitable for certain applications. Atola Disk Recycler can automatically produce a Certificate based on a custom template.

Certificates are produced *in addition* to the report.

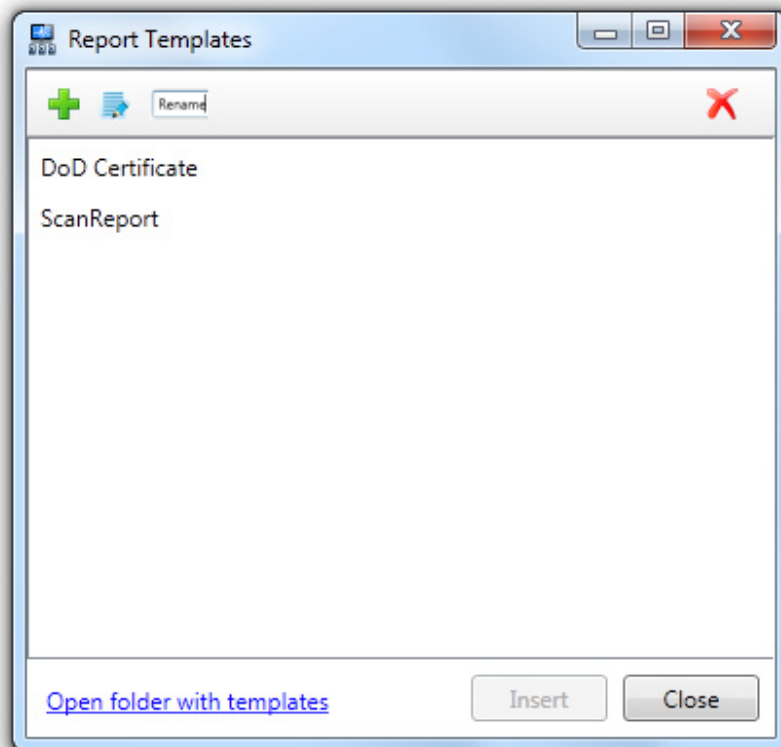
To create certificates, you basically need to do two things:

1. Prepare a certificate template
2. Then add the **Report** command at the end of the script with the reference to

the certificate template

The following steps illustrate the procedure.

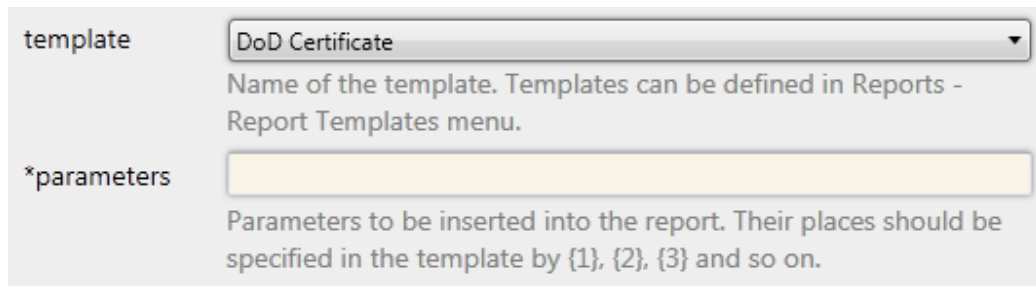
1. Open Script Editor (menu **Scripts** → **Script Editor**)
2. Select the script that must generate a certificate
3. Click **Report Templates** button. You will see Report Templates window.
4. Here you can import a text file containing the certificate template (green plus icon **+**), or modify an existing template (next icon).



5. After you have modified or imported your template, close this window
6. Next, put the cursor on the new line at the end of the script and click **Add Command** button.
7. Select the **Report** command; specify the template and parameters. The first parameter will replace the "{1}" in the template; the second parameter will

replace "{2}" and so on. Parameters (variables) must be defined in the script before the Report command.

For example, to insert a hard drive's model, serial and revision number into the supplied "DoD Certificate" sample, specify the following:



The image shows a configuration window for a report. It has two main sections. The first section is labeled 'template' and contains a dropdown menu with 'DoD Certificate' selected. Below the dropdown is a descriptive text: 'Name of the template. Templates can be defined in Reports - Report Templates menu.' The second section is labeled '*parameters' and contains a large, empty text input field. Below this field is a descriptive text: 'Parameters to be inserted into the report. Their places should be specified in the template by {1}, {2}, {3} and so on.'

** Model, Serial and Revision numbers must be put into the specified variables by the script before the **Report** command.*

8. Click **Add**.

Now save the script, assign it to a port, and launch it. After execution, Atola Disk Recycler will create a standard report, plus a certificate.

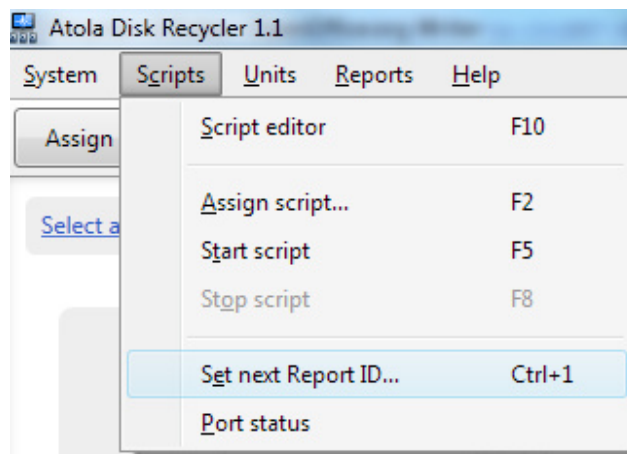
Using Report IDs

Atola Disk Recycler software can assign a specific ID to a report. This is convenient if you have internal accounting software which assigns identifiers to all hard drives passing through the system.

The Report ID can contain numbers and letters.

To specify a Report ID for a specific hard drive, please perform the following **before** you launch a script:

1. Highlight (click) the appropriate port control box
2. Navigate to **Scripts** → **Set next Report ID** menu.

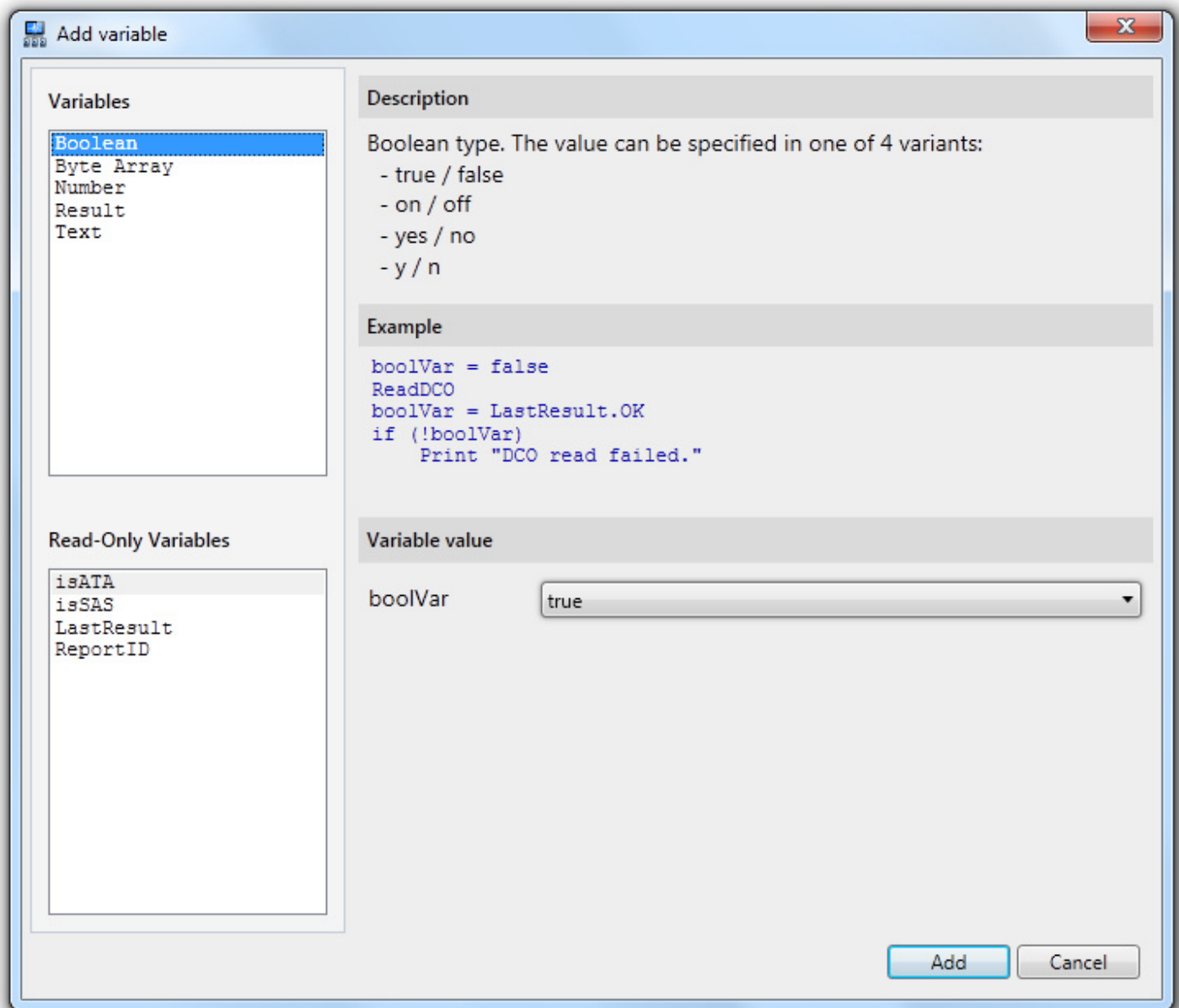


3. Enter Report ID.

If you need to specify Report IDs for all 4 ports of the unit (or even to several units) at once, first select the units and then Navigate to **Scripts** → **Set next Report ID** menu.

The specified Report ID can be used in a script or certificate. To access it within a script, perform the following:

1. Open Script Editor (**Scripts** → **Script Editor**)
2. Select the desired script
3. Click **Add Variable** button.



4. Select **ReportID** and click **Add**.

Alternatively, simply type *ReportID* in the script wherever you need to use it (it is basically a read-only variable).

Examples:

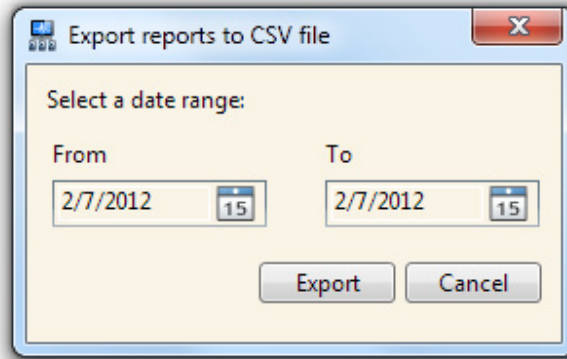
```
Print "Report ID is " ReportID
Report MyCertificate ReportID
```

Prints ReportID into the report
Sends ReportID as the first ({1})
parameter of the MyCertificate
certificate

```
if (ReportID == "S393168")      Prints a warning when ReportID  
  Print "Warning: processing S393168" equals to S393168
```

Exporting reports to CSV

To export report data into a csv file, perform the following:



1. Navigate to **Reports** → **Export to CSV** menu.
2. Pick a date range.
3. Click **Export** and specify a CSV file.
4. Click Save. The data will be saved into the selected file.

If the file already exists, the new data will be **added** to the file.

Customizing Disk Recycler software for more efficiency

Some features of the Atola Disk Recycler are customizable.

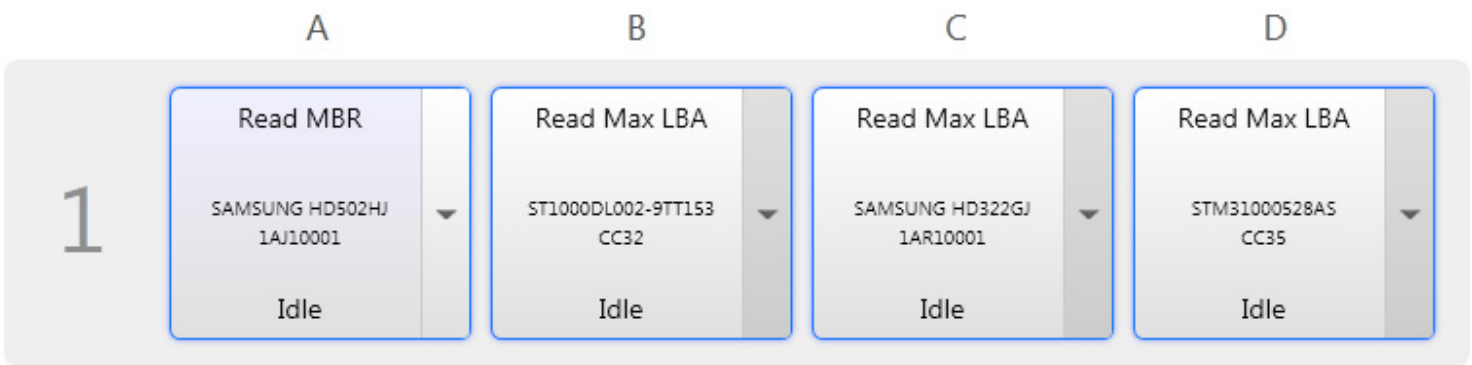
Disk parameters

Each port control box can display different information about the attached hard drive:

- Report ID
- Size
- Model
- Revision
- Serial

However, only 2 of them can be displayed at the same time. To select what items to display, navigate to **System** → **Settings** menu (**View** tab).

For example, if we pick Model and Revision to display on the port control box and then identify hard drives on all ports, we will see the following:



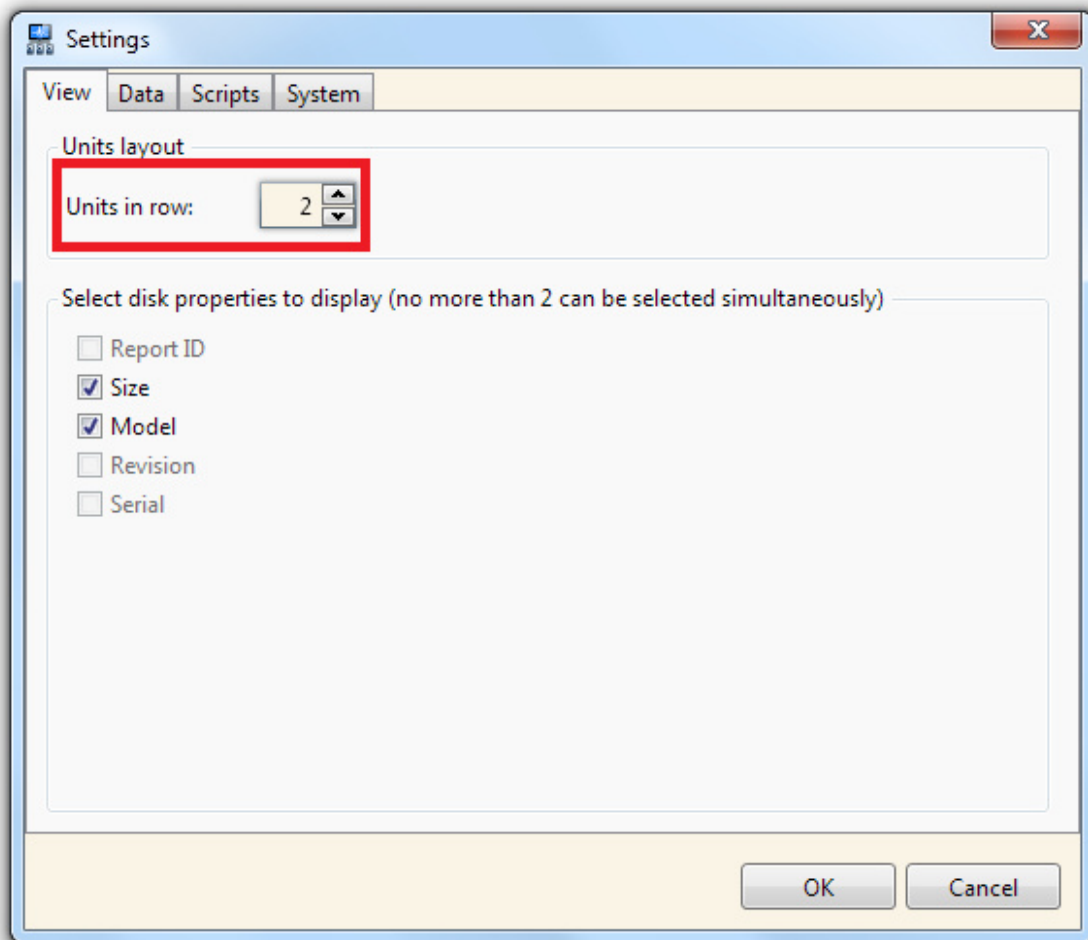
Zoom In/Out

It is possible to scale the main area of the software. Mouse over the **Zoom In/Out** button to reveal the zoom control.

Number of units in row

It is possible to configure how many units to display in a row. This could be used to arrange the units on the screen exactly as you have them set up physically.

Simply navigate to **System** → **Settings** → **View** tab and there you can change the **Units in Row** parameter.



Standalone operation

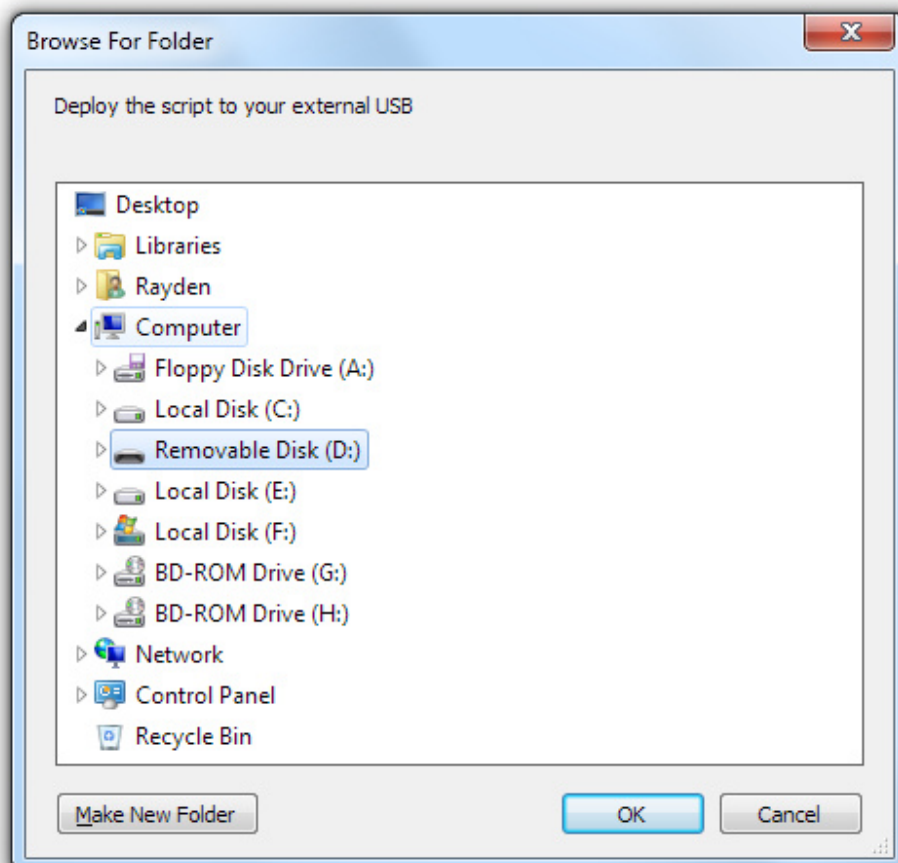
Each Disk Recycler unit can function in Standalone mode, when it is not being controlled by host software and/or it is not attached to the Network at all.

In Standalone mode, Disk Recycler still requires a script to execute. However, since there is no Network connection, the script must be supplied on a USB flash stick. The USB flash connector is located on the rear of the unit.

How to start a script in Standalone mode

To assign a script to all ports of a Recycler unit in Standalone mode, please perform the following:

1. Launch Atola Disk Recycler Editor application on any available PC
2. Insert a USB flash stick into the PC
3. Select the script you wish to upload to the USB flash stick
4. Click **Deploy to Flash** button to write the script onto the USB flash stick.



5. Select the USB flash stick device
6. Click OK. The script will be transferred onto the USB flash stick (the data on the USB flash stick is safe – only a single file **Script.cscript** will be changed)

7. Remove the flash stick and insert it into the Recycler unit's rear USB port
8. Wait about 10-30 seconds. The script will be automatically assigned to all 4 ports. You can now push the yellow Start/Stop button on each port to launch the script.

Reports in Standalone mode

In Standalone mode all reports are saved onto the USB flash stick (the same stick used for the script). The reports are saved to the **Reports** folder and arranged by date.

For example, to locate all reports created on February 7, 2012, you would need to perform the following:

1. Plug the USB flash stick to a PC.
2. Navigate to **Reports** folder.
3. Navigate to **2012** folder.
4. Navigate to **2** folder.
5. Navigate to **7** folder.
6. At this point you will find all reports completed on February 7, 2012.

Firmware update

Atola Disk Recycler software may request that you upgrade the firmware of one or several Recycler units. *There is no need to upgrade the firmware unless the Atola Disk Recycler software explicitly requests it.*

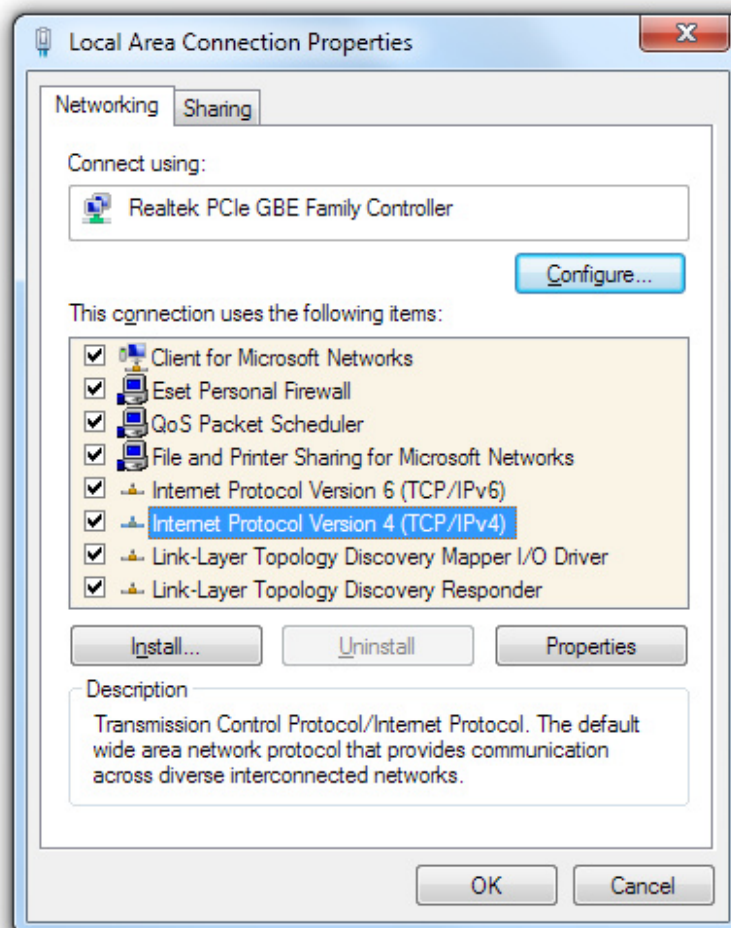
When the software requests a firmware upgrade, simply click **Update Firmware on all units** button; a file open dialog will open. Please navigate to the folder where Atola Disk Recycler is installed and select the firmware file called **Firmware.cos**. Then proceed with the update by clicking **Update**.

Troubleshooting

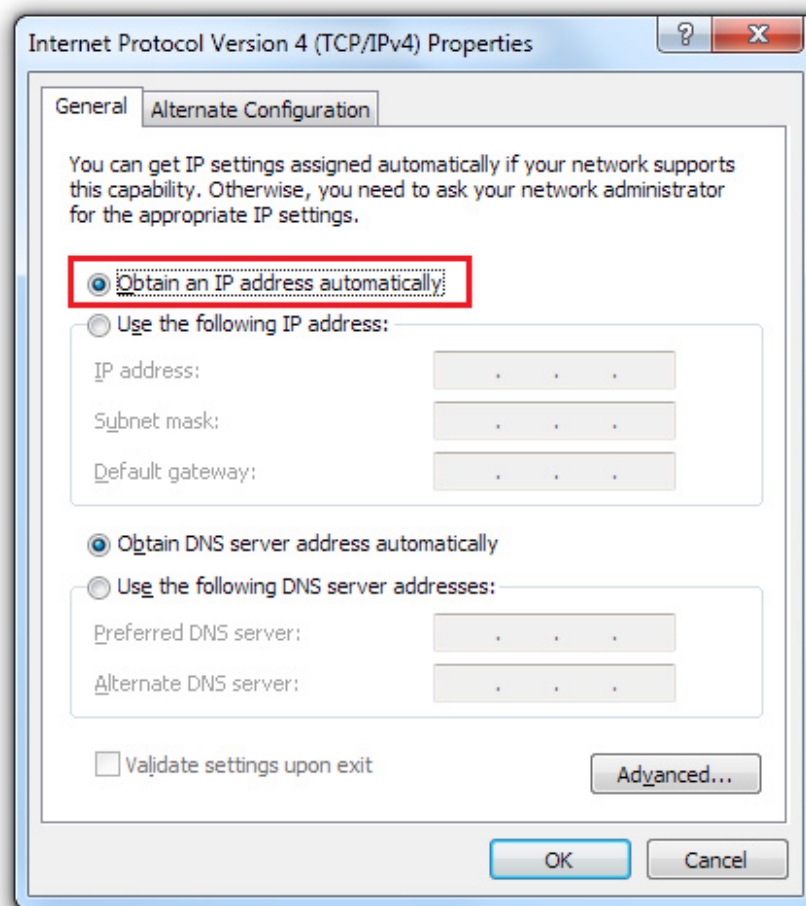
Recycler units are missing from the main screen

Please follow these steps to resolve this issue:

1. Make sure that the network adapter in the host PC is set to receive an IP address automatically:
 - Open network card properties
 - Select **Internet Protocol Version 4 (TCP/IPv4)**
 - Click **Properties**



- Make sure the settings are set exactly like on the picture below:

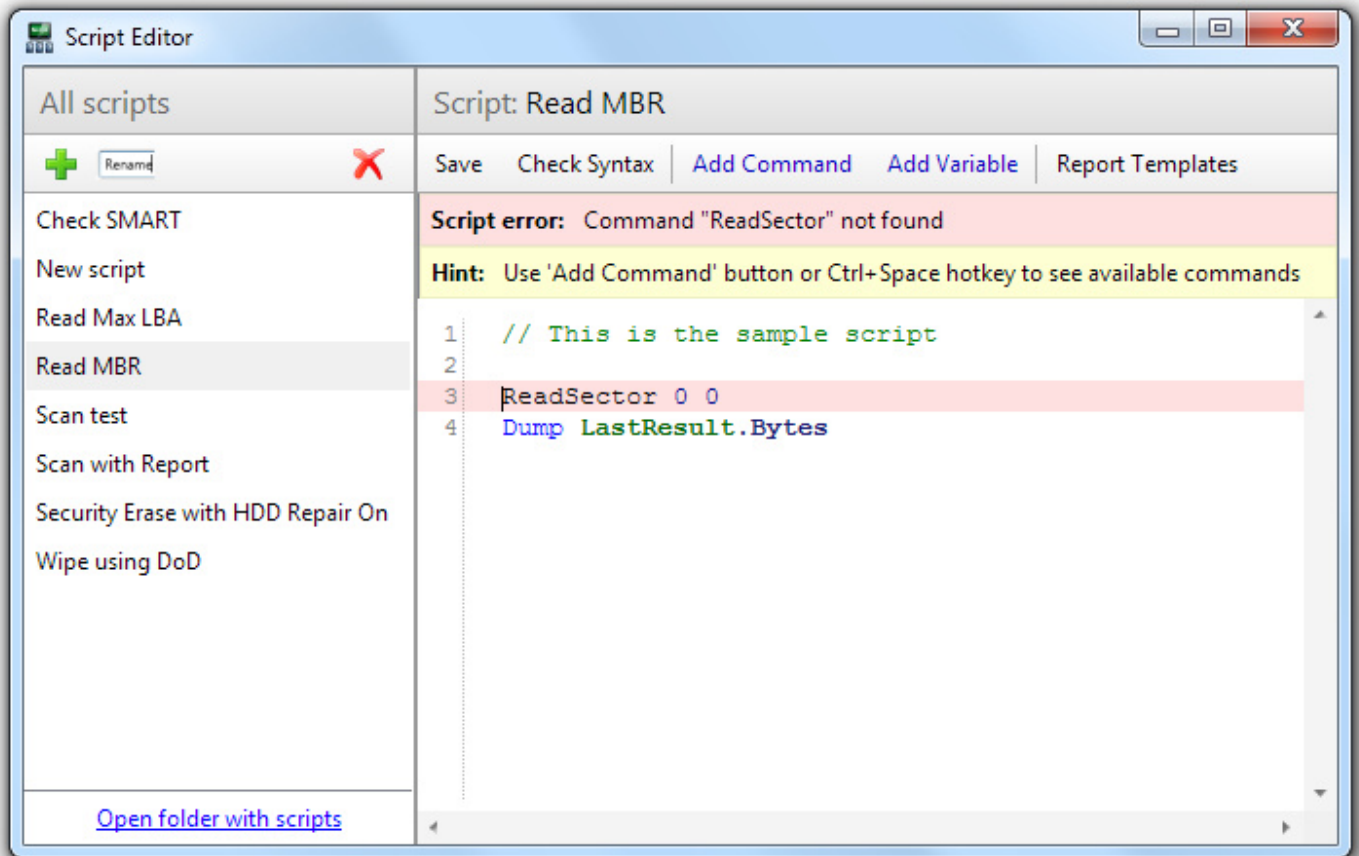


2. If you are using a network firewall (many Windows installations use a Firewall by default), then please add an exception for the Atola Disk Recycler. Ask your network administrator for assistance.

3. Make sure that all Ethernet cables are attached exactly as described in the **Default network configuration** section.

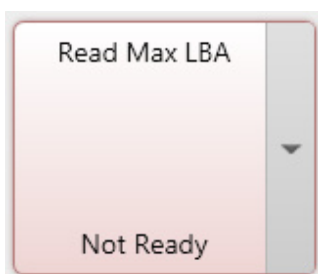
4. Make sure that the units and the router/switch are powered on.

Script syntax errors



These errors can be resolved by looking at the detailed error message shown in the **Script error** box. **Hint** box will provide additional help.

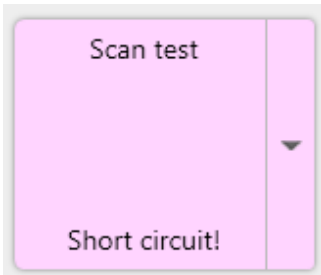
Port status: Not Ready



This status means one of the following:

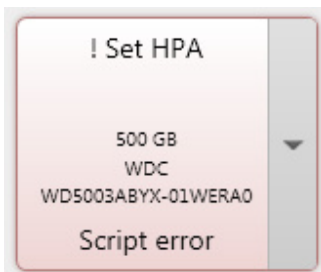
- There is no disk attached to the port (verify cables)
- The hard drive does not become ready after power on (failed hard drive).

Port status: Short circuit



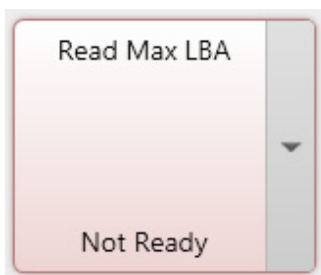
The hard drive causes a short circuit on the port. This means that the drive's PCB has failed.

Port status: Script Error



This means that there is an incorrect parameter in the command used in the script. To verify the exact cause simply open the last log for this port (by double-clicking the port control box) and you will find the detailed error message. Then you can resolve the issue by making the appropriate changes to the script.

Port status: Aborted



This can happen when an unspecified/unhandled error while executing the script has occurred. It is not related to the hard drive being damaged; it is solely a script-related error.

Unfortunately, there is no straight-forward solution to an error like this. We recommend contacting Atola Technology for assistance.

All port status LEDs are flashing green

This can only happen in Standalone mode and means one of the following:

- There is no USB media in the unit's USB port
- There is no free space available on the USB media (free space is required for

storing reports)

Both Red and Orange LEDs are flashing

This shows that there is an electric short circuit on the port, which is most likely due to the failed PCB of the hard drive attached to that port.