



CERTIFIED DATA ERASURE

BLANCCO LUN FOR UNIX

Overview

VERSION 2014 - 1.0.1.0

ABSTRACT

This is the official Blancco LUN for Unix overview. Blancco is the proven data erasure solution for millions of users around the world. As the pioneer and global leader in data sanitization and end-of-lifecycle solutions, the company offers the most certified data erasure within the industry.

Blancco LUN allows data storage administrators to securely erase individual drives, as well as logical drives (such as LUNs), in an active storage environment.

DEFINITIONS

ITEM	EXPLANATION
administrator rights	To execute some actions administrator rights may be required. This means that only the person with permission and unrestricted access, or the administrator, has the rights to implement said act.
AIX	Advanced Interactive eXecutive is a series of proprietary Unix operating systems developed and sold by IBM for several of its computer platforms.
console	A console based program uses a text based interface. Many console applications are command line tools.
DWORD	DWORD is one of the terms used to describe a variety of sizes of data. A DWORD consists of two WORDs which is equal to 32 bits.
HASP key	HASP key is inserted in a USB port and contains the Blancco licensing data.
HP-UX	HP-UX (Hewlett-Packard UniX) is Hewlett-Packard's proprietary implementation of the Unix operating system, based on UNIX System V.
HTML	HTML, which stands for Hyper Text Markup Language, is the predominant markup language for web pages. It provides a possibility to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists etc. as well as for links, quotes, and other items.
I/O	In computing, input/output or I/O is the communication between an information processing system (such as a computer) and the outside world, possibly a human or another information processing system. Inputs are the signals or data received by the system, and outputs are the signals or data sent from it. The term can also be used as part of an action; to "perform I/O" is to perform an input or output operation.
IDE, SCSI, FC and iSCSI	IDE, SCSI, FC and iSCSI are all types of drives with different capacities and traits. They differ in everything from cable amount, drives per bus, and transmitting capacity.
LUN	Logical Unit Number is a unique number, from 0 to 7, used to identify a logical unit (or) SCSI devices (e.g. external hard drives).
Red Hat Enterprise Linux Server	Red Hat Enterprise Linux (RHEL) is a Linux-based operating system developed by Red Hat
Solaris	Solaris is a Unix operating system originally developed by Sun Microsystems.
string	String is a data type consisting of a sequence of characters. A string is often carried out as a word (byte).
SUSE Linux Enterprise Server	SUSE Linux is a computer operating system built on top of the open source Linux kernel and is distributed with system and application software from other open source projects.
tar ball	A tar file (tar ball) is a file format mainly used to gather many files into one larger file for distribution or archiving.
XML	eXtensible Markup Language is a markup language that defines a set of rules for interpreting documents.

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BLANCCO LUN

Blancco LUN is created for demanding enterprise environments where secure data erasure of individual disks or logical disk units, such as LUNs, needs to be performed in active data storage environments and systems without reboot.

FEATURES AND REQUIREMENTS

Key Features

- Shredding of disk drives supported by the operating system in hand, including IDE, SCSI, FC and iSCSI.
- Easy to use administrative interface based on command line.
- Multiple drives can be shredded concurrently.
- Supports all leading data erasure standards which enable compliance with different relevant policies and regulations.

Supported operating systems

- Solaris 10 x86
- Solaris 10 SPARC
- Solaris 11 x86
- Solaris 11 SPARC
- HP-UX 11.23 PA-RISC
- HP-UX 11.31 PA-RISC
- HP-UX 11.23 IA64
- HP-UX 11.31 IA64
- AIX 5.1
- AIX 5.3
- AIX 6.1
- AIX 7
- Red Hat Enterprise Linux Server 6
- SUSE Linux Enterprise Server 11 and 12
- VMware ESXi 4 and 5
- Other operating systems and OS versions might be supported. Contact Blancco for more information.

System Overview

Blancco LUN can be run on numerous different operating systems. It has the ability to erase all units that the operating system can detect and use. If any unique drivers need to be installed in order to make the drive work, these have to be installed before the erasure is performed. Any logical disk unit or individual disk that can be mounted in the operating system with the solution installed can be securely erased.

The solution is optimized for individual disks or logical disk units such as LUNs and does not try to dissolve any raid configuration or access the hardware without using the BIOS. The solution erases functional drives and assemblies of drives.

Pre-installation requirements

For HTTPS traffic, this program requires that *cURL* and *OpenSSH* are installed before installation. These two components are used in the communication with the Blancco Management Console. Otherwise, HTTP will work without cURL and OpenSSH.

Licensing

The license system is connected to the Blancco Management Console and the Blancco HASP system. The HASP key in use must be activated along with the solution ID, the number of gigabytes available for erasure, as well as the agreed end-date in the contract. Please contact your sales representative to go through these licensing options.

Blancco LUN is also capable of time-based licensing in which no HASP dongle is necessary.

Administrator Rights Required

This solution is designed for shredding the entire drive. It should therefore be started with the raw device as parameter. It will then overwrite the entire writeable area on the drive, sector by sector, according to the selected erasure standard.

You need to have sufficient user rights to be able to access the entire raw drive.

INSTALLATION

This solution consists of three different files. They are delivered in a tar ball. These files should all be extracted from the tar ball to the same destination folder. Depending on which tools are installed in the target system, the following step can be seen as an example:

```
# tar xvf BlanccoLUN.tar
```

LICENSE FILE

The license file is called *license.dat* and is supplied with each delivery. While the Blancco Management Console and HASP key contain the actual licenses, this file simply contains information about the license validity. If your license has expired and you want to extend it, you only need to replace this file, unless instructed otherwise by the Blancco support team.

The license file should be located in the same folder as the rest of the files. If you want to move these files, please refer to the instructions below, under *Configuration*.

CONFIGURATION

Included in the installation package is a file named "config.txt" This file is an example of a configuration file and should be modified according to specific user requirements.

Example file

```
# Comment

# The path to the license file.
LicenseFile = "license.dat"
# The path to the report folder
#ReportPath = "/var/logs"
BufferSize = "-1"
MaxMBPerSecond = "5"

# Address to the Blancco Management Console
#MCServerAddress = "http://10.10.1.1:8080"
# The user that should be used to import the reports
#MCUserName = "blancco"
# Password for the user
#MCPassword = "dsajlkdsa78sjl"

#[extra1]
#name = "Extra 1"
#mandatory = 1
#default = "Default Value"
#disabled = 0

#[extra2]
#name = "Extra 2"
#mandatory = 0
#default = "Default Value"
#disabled = 0

#[info1]
#mandatory = 1
#default = "info value"
#disabled = 0
```

Comments

Comments can be added to the configuration file by adding a # sign in the beginning of the row.

Changing the location of the Configuration file

The default location of the configuration file is the LUN installation path. However, it is possible to change both the path as well as rename the file itself.

This can be accomplished with the parameter *–configfile* See below for an example in which the path is changed to */root* and the name is changed to *config1.txt*

```
# BlanccoLUN algo=0 target=/dev/sda1 -y -configfile=/root/config1.txt
```

License file

This software requires a file called "license.dat" to be located in the current folder. If you want change the path to this file, you need to define where this file is located.

```
# The path to the license file.  
LicenseFile = "/BlanccoLUN/license.dat"
```

Report path

The path for storing the locally saved erasure reports is determined by this parameter. In the previous page example, the reports will be saved in */var/logs*

Buffer size

Blancco LUN supports a variety of different storage equipment. Depending of the type of storage the amount of I/O sent at one time can affect the performance of the erasure. The user can affect this amount by changing the parameter *BufferSize*.

If the *BufferSize* parameter is not set the software will try to use the preferred size specified by the hardware and the operating system. Especially in high-end storage systems this size is normally too small to get the optimal erasure performance.

Note that Blancco LUN requires double the amount of RAM based off of the buffer size. For example, if the buffer size is 512MB, then 1024MB of RAM will be used.

If you want the software to automatically change the buffer depending on the current performance, the configuration should be set to the following:

```
BufferSize = "-1"
```

The buffer size then changes each minute depending on the current performance.

If the same storage is erased over and over again the most efficient is to manually specify a buffer size that is believed to optimize performance. The software will then run the whole operation with the specified buffer size. The buffer size used needs to be dividable with 1024.

Example with 50MB buffer:

```
BufferSize = "52428800"
```


Speed limit

Blanco LUN automatically attempts to optimize its speed to achieve the highest possible performance. However, in a live environment this is not always the best option. The user has the option to limit the speed to a fixed number of MB per second.

Here is an example with a speed limit of 5 MB/s:

```
MaxMBPerSecond = "5"
```

The speed limit should never be set to a lower value than the buffer size. Should that happen, the speed limit might not hold constant but can vary during the operation. If the buffer size is set to dynamic, it will automatically never exceed the speed limit.

The speed limit is set per operation. If more than one thread or process is in use (either manual or automatic), the speed limit still effects each operation independently. For example, if two processes are running simultaneously with the above example, a total of 10 MB per second will be consumed.

Blancco Management Console configuration

Blancco Management Console (BMC) is used for both licensing purposes as well as centralized logging.

Define the URL to the management console. Remember to also define the port.

```
MCTServerAddress = "http://10.10.1.1:8080"
```

The reports have to be owned by a user created in the BMC. Define the user properties as following:

```
# The user that should be used to import the reports
MCUserName = "blancco"
# Password for the user
MCPassword = "ffds#FF22"
```

Extra and Info fields

The report can contain user defined values. These values will also be imported to the BMC where they can be used for filtering and searching.

The following is an example of adding an extra field called "Company":

Order of the field. This has to be defined in order.

```
[extra1]
```

Name of the field. Presented to the user when the user has to type in the value.

```
name = "Company"
```

The program will not continue before a valid value has been entered. Empty values as not allowed.

```
mandatory = 1
```

Default value prompted to the user.

```
default = "Default Value"
```

Defines that the user cannot change the value. The default value will always be used.

```
disabled = 1
```

More extra and info fields can be created by using the same template as above. If no extra fields are needed, remove the information in the configuration file and the user will no longer be prompted.

USER GUIDELINES

This solution is based on a console that requires high user rights.

Usage

When starting the application from the console without any parameters, it will print out a short help instruction as below. The instructions are depending on operating system.

```
Blancco LUN 1.0.0.8  
=====
```

Erase a drive:

```
BlanccoLUN [options] <algo=0> <target=/dev/sdb> [...]
```

Options:

```
-y          Do not ask for confirmation before erasure.  
-sms=<cell phone nr> Send status sms to the specified number.  
-simpleui    Use simpler progress bar.
```

Show available algorithms:

```
BlanccoLUN -standards
```

Import an existing report to Management Console:

```
BlanccoLUN -send <file path>
```

Sends a test text message to the number provided:

```
BlanccoLUN -sms <cell phone number(00358207433850)>
```

Erase a drive

To start an erasure, specify the algorithm of choice and which drive or drives to shred (with space in between each new input value).

Example:

```
# BlanccoLUN algo=0 target=/dev/sdb target=/dev/sdc
```

This example will shred drive `/dev/sdb` using the HMG Infosec Baseline standard simultaneously with drive `/dev/sdc`. Drive `/dev/sdc` will be shredded with the same algorithm.

TIP: Alternatively you can choose to start one or more additional instances of the program instead, and let each drive be erased on its own per instance. Your choice of method can affect the erasure speed and output and will depend on the system at hand.

To select a span of targets for shredding, use the following command structure:

```
# BlanccoLUN algo=0 target=/dev/sdb-/dev/sdd
```

In the above example, targets `/sdb`, `/sdc` and `/sdd` will all be shredded.

Note that it is the first character which is changed that determines the sequence. As an example, `/dev/rdisk/c0t3d0s2-/dev/rdisk/c0t3d2s2` will run the following:

```
/dev/rdisk/c0t3d0s2  
/dev/rdisk/c0t3d1s2  
/dev/rdisk/c0t3d2s2
```

The algorithm is selected by the number in the table shown below under “Erasure Standards” and the drive by the path created by the operating system when attaching the drive. Due to the fact that different operating systems handle drives in different ways, the path to these drives can be different in your target environment. Please refer to the manual of your operating system for more information.

If your operating system is dividing raw drives and normal drives, you should always supply the raw device.

HP-UX

In HP-UX, always use the legacy DSF like `/dev/rdsk/c0t8d1`

Solaris

Supply the drive like `/dev/rdsk/c0t3d0s2`. If `s2` in `c0t3d0s2` does not exist, write a new disk label to the disk using the command `format` and in the menu `label`. The command `prtvtoc /dev/rdsk/c0t3d0s2` should be able to read the disk structure in order to erase the target successfully.

AIX

In AIX the raw disk are supplied like `/dev/rhdisk2`

The user will be prompted if any extra or info fields must be defined.

```
Blancco LUN 1.0.0.8
=====
```

```
Enter extra and info field information:
```

```
-----
Project ID: Default Value
Extra 2: Default Value
Info1: info value
```

The drive will be presented and the user has a last chance to abort the operation without making any changes to the target drive.

```
The following drive will be erased!
Vendor: LIO-ORG
Product: FILEIO
Rev: 3.1
Serial: RN303RE0014B-005
All data and partitions will be erased! Do you wish to
continue? (Yes/No): Yes
```

During the operation, a progress bar will inform the user how much of the erasure has currently been completed.

```
The following drive will be erased!
Vendor: LIO-ORG
Product: FILEIO
Rev: 3.1
Serial: RN303RE0014B-005
All data and partitions will be erased! Do you wish to
continue? (Yes/No): Yes
```

```
[XXXXXXXXXXXXXXXX 42% (19 MB/s) Elapsed: 00:00:21 Remaining:
00:00:32 .....]
```

After the operation is completed, the program clearly indicates if the operation was successful or not. The program also displays statistics about the operation. Please see example below:

```
[XXXXXXXXXXXXXXXX 100% (19 MB/s) Elapsed: 00:00:53 Remaining:
00:00:00 XXXXXXXXXXXXXXXX]
Shredding of /dev/sdd was successful
1073742336 bytes erased in 53.128 secs (19 MB/sec)
```

Short Message Service (SMS)

If your license agreement includes the SMS (text message) module you can receive an SMS when the operation is ready. You can also follow the progress of the operation, as long as have access to your cell phone.

To test the service you can send a text SMS to yourself to see if it comes through. Please note that an internet connection is required for the host computer where Blancco LUN is running.

Example:

```
-sms 00358207433850
```

The cell phone number should be specified in international format always starting with zeros (do not use the + sign). In the example above the number starts with 00358 for a Finnish number.

To enable the SMS service during an erasure, add the optional parameter *sms*.

Example:

```
# BlanccoLUN algo=0 target=/dev/sdb -sms=00358207433850
```

In this example the HMG Infosec lower standard will be used (0) to erase the target and SMS messages will be sent to number 00358207433850 every two hours with progress reports.

An SMS will be sent to the specified cell phone number when the operation is performed. The SMS will contain information about the outcome of the operation and duration time.

An SMS progress report will look like this:

Blancco LUN have completed x% of the drive (drive number/LUN specified in job combined with manufacturer and model) on (computer name). Speed xy MB/s – Elapsed time: hh:mm:ss – Time left: hh:mm:ss.

During the operation the service will send an SMS every second hour, updating the operator about the progress.

The SMS service has no understanding of office hours. Therefore SMS can be sent to the receiving cell phone during night time as well.

Simple user interface

If your terminal is not supporting the command given to create the normal user output the program is defaulting on a terminal width of 80 characters. If no progress is shown or is deformed the program can be started with a simpler user interface.

Start the program with the optional parameter *-simpleui*.

Example:

```
# BlanccoLUN -simpleui algo=0 target=/dev/sdb
```

This will cause the program to print a simpler progress for the user.

```
34% (13 MB/s) Elapsed: 00:04:38 Remaining: 00:08:45
34% (13 MB/s) Elapsed: 00:04:39 Remaining: 00:08:44
34% (13 MB/s) Elapsed: 00:04:40 Remaining: 00:08:43
35% (13 MB/s) Elapsed: 00:04:41 Remaining: 00:08:42
```

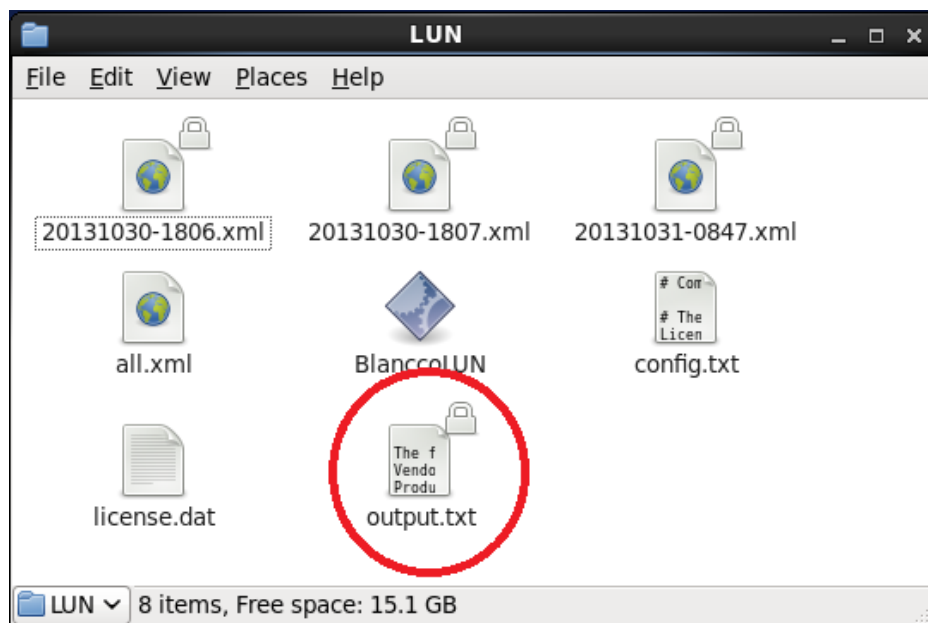
This simpler user interface should be used when the problem described above occurs.

Erasure Status as a File Output

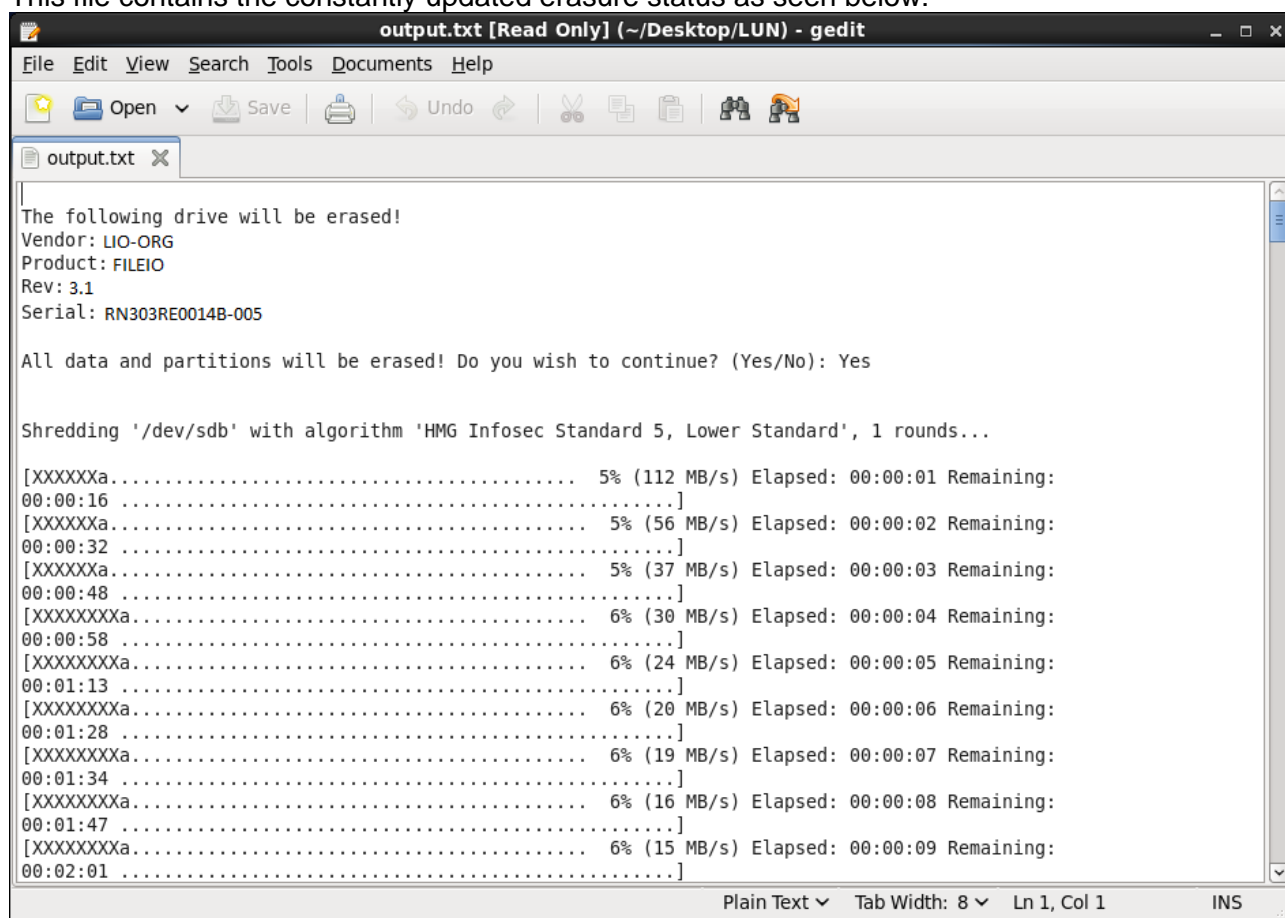
The system output can also be piped directly into a text file by giving the following optional parameter:

./BlanccoLUN -outputfile=output.txt which is followed by the *algo* and *target* as usual.

Once the erasure has begun, a file called “output.txt” will be created in the LUN installation path as seen below.



This file contains the constantly updated erasure status as seen below:



```
output.txt [Read Only] (~/Desktop/LUN) - gedit
File Edit View Search Tools Documents Help
Open Save Undo Cut Copy Paste
output.txt x
The following drive will be erased!
Vendor: LIO-ORG
Product: FILEIO
Rev: 3.1
Serial: RN303RE0014B-005

All data and partitions will be erased! Do you wish to continue? (Yes/No): Yes

Shredding '/dev/sdb' with algorithm 'HMG Infosec Standard 5, Lower Standard', 1 rounds...

[XXXXXXa..... 5% (112 MB/s) Elapsed: 00:00:01 Remaining:
00:00:16 .....]
[XXXXXXa..... 5% (56 MB/s) Elapsed: 00:00:02 Remaining:
00:00:32 .....]
[XXXXXXa..... 5% (37 MB/s) Elapsed: 00:00:03 Remaining:
00:00:48 .....]
[XXXXXXXXa..... 6% (30 MB/s) Elapsed: 00:00:04 Remaining:
00:00:58 .....]
[XXXXXXXXa..... 6% (24 MB/s) Elapsed: 00:00:05 Remaining:
00:01:13 .....]
[XXXXXXXXa..... 6% (20 MB/s) Elapsed: 00:00:06 Remaining:
00:01:28 .....]
[XXXXXXXXa..... 6% (19 MB/s) Elapsed: 00:00:07 Remaining:
00:01:34 .....]
[XXXXXXXXa..... 6% (16 MB/s) Elapsed: 00:00:08 Remaining:
00:01:47 .....]
[XXXXXXXXa..... 6% (15 MB/s) Elapsed: 00:00:09 Remaining:
00:02:01 .....]

Plain Text Tab Width: 8 Ln 1, Col 1 INS
```

Erasure standards

The following erasure standards are available as default. Others can be requested and implemented as part of a contracted solution.

Number	Shredding Algorithms (as used above)	Overwriting rounds
0	HMG Infosec, Lower standard (DEFAULT ALGORITHM)	1
1	HMG Infosec, Higher standard	3
2	Peter Guttman's Algorithm	35
3	U.S Department of Defense	3
4	Bruce Schneier's Algorithm	7
5	Navy Staff Office Publ.	3
6	NCS Center	4
7	Air Force System Security	4
8	US Army	3
9	German Standard VSITR	7
10	OPNAVINST 5239.1A	3
11	NSA 130-1	3
12	DoD 5220.22-M ECE	7
13	BSI-2011-VS (Similar)	3

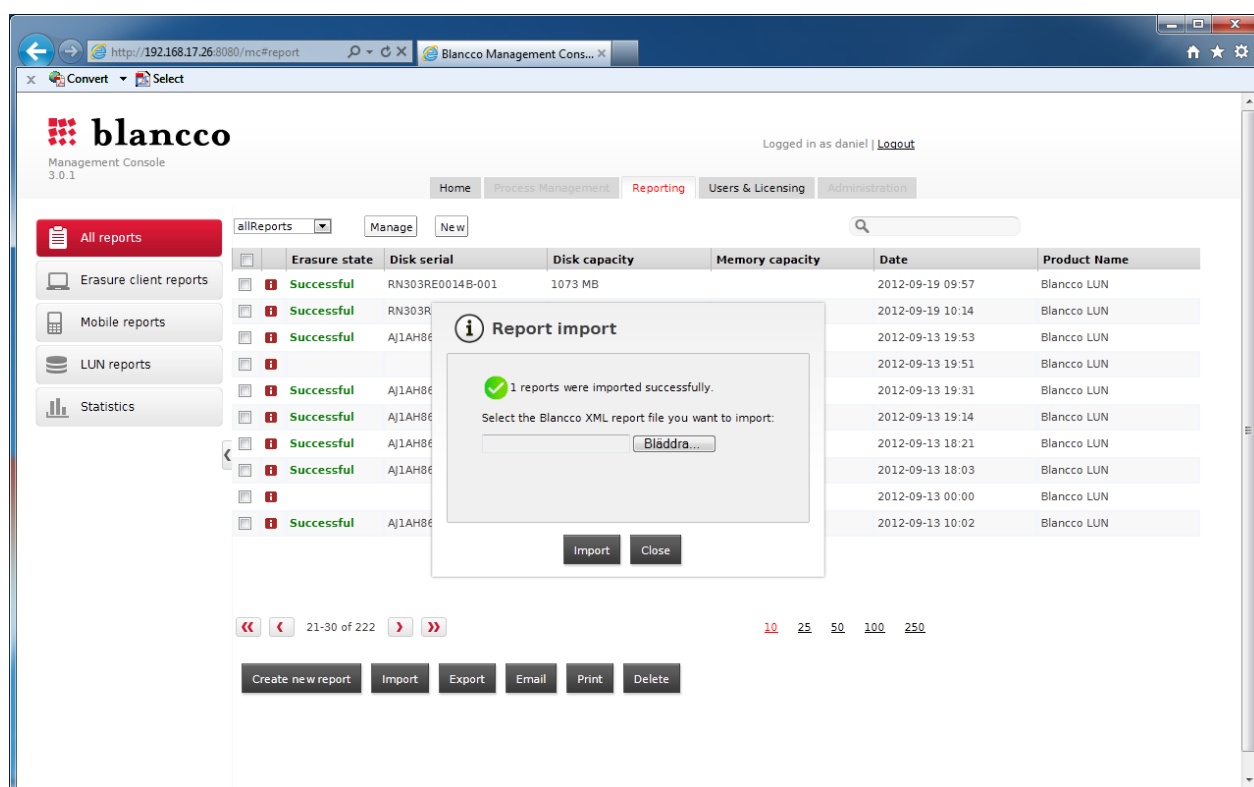
REPORTING

This solution will log information about the shredding in log files. These log files can be handled by an administrator. The report includes time, date and the unit being erased, as well as information about the erasure standard. Extra data fields for customer specific data to be entered into the report are also supported.

Importing the reports to the Blancco Management Console

The generated XML reports can be imported into the Blancco Management Console. The reports are available for importing one by one or all at once. Single reports are named after the date and time of when the erasure was started. The file containing multiple reports is named "all.xml".

To import the reports into the Blancco Management Console the HASP key needs to have a license for Blancco LUN as a product.



Example of view after successful import.

If a successful import of all reports has been made we recommend that you remove the all.xml which will create a new file that includes only the new reports made that are not yet imported into the database.

TROUBLESHOOTING

1. **The program freezes when the erasure is supposed to start.** The program is not crashed, but cannot show the progress however. Start the program with the parameter *-simpleui*. See *User Guidelines* (p.9-12).
2. **Remote erasure.** Verify that you have a stable connection and avoid using modem connection for erasure purposes.
3. **Sufficient user rights.** Make sure that the account you are using has full access to the unit/units where the erasure will be executed.
4. **Failed erasure, clean up and rebooting.** When erasing LUN's connected to clustered servers it is necessary to power down all other servers in the cluster except the one to be used to perform the erasure. This is to ensure that the other servers in the cluster don't reserve the hard drives thus preventing access to the hard drives and causing the erasure to fail. In some circumstances it may be necessary to also force a cleanup on the server you are using to perform the erasure. In the case of Wintel servers this can be done by accessing the Command prompt and typing the following command: `cluster node servername /forcecleanup`. It may also be necessary to then reboot the server after running this command if the hard drives are still not accessible.
5. **Using an older version of cURL.** If the version of cURL is older than that which is required to allow the software to run (for example libcurl.so.3 instead of the libcurl.so.4) it is possible to link the name of the required version to the older version. This will then allow the LUN Eraser application to run without having to update the software in the Linux installation. This can be done by using the following command: `CD /usr/lib64` (use `CD /usr/lib32` if it is a 32bit system). Once in the directory lib64, type the following command to link the name of the correct version to the current version: `ln -s libcurl.so.3 libcurl.so.4`

CONTACT INFORMATION

Visit the technical knowledgebase (FAQ) and contact Blancco Technical Support by submitting a technical support ticket at:

<http://support.blancco.com/>

See the instructional videos for Blancco products at:

<http://www.blancco.com/en/videos>

For contact information and the latest information about secure data erasure solutions, visit the Blancco website at:

<http://www.blancco.com/>

We are always looking for ways to improve our products. Please let us know if you have any suggestions!

For further information, please visit
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