Vba32 Rescue
User Guide

VirusBlokAda

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VirusBlokAda may make improvements or changes in the product described in this documentation at any time. The latest version of the documentation is available on the developer's web-site:

http://www.anti-virus.by/en/

Contents

Introduction

Vba32 Rescue allows you to recover system functionality after malware impact.

This software makes it possible to cure malware (and suspicious software) on a user's computer with maximum effect. The scanning and curing processes are implemented independently of the OS installed on the computer. For this reason, malware is unable to resist the cure process.

> **Attention!** This software doesn't guarantee that situations of the same kind will not arise in the future. To prevent the computer from being infected, it's necessary to use the whole range of antivirus programs offered by «**VirusBlokAda**».

Vba32 Rescue is a bootable ISO-image that can be burned on a CD/DVD-disk or USB-drive. In the basis of the image there is an OS **Linux** kernel, boot loader **grub2**, console scanner **Vba32.CS.L** for **Linux** and other modules for the file system, network, graphic user interface and so on.

Vba32 Rescue works in the following modes:

- **vba32rescue** – standard mode;
- **vba32rescue2ram** – loading image into memory mode.

The first mode provides Rescue Image standard features and is invoked by default. This mode is less demanding on computer hardware.

Besides standard features, the second mode provides a feature of discarding the drive this image was booted from. This makes it possible to perform a scanning check of several computers using the same bootable CD or USB-drive.

Work of each of the modes is considered in this guide in greater detail.

Advantages of **Vba32 Rescue** Image:

- **high speed booting**;
- **mode of discarding the drive** the image was booted from;
- **automatic network configuration** allows you to customize the connection with the update server;
- **ability to update antivirus scanner and bases** allows you to maintain the image up to date and doesn't require daily downloading of the whole image;
- **saving updated image on a USB-drive**;
- **ability to create a bootable USB-drive in OS** Windows, Linux and in **Vba32 Rescue** environment;
- **using swap files on "weak" computers** makes it possible to produce full service even with very old computers;
- **availability of mhdd and memtest utilites** ensures the possibility to scan RAM and HDD on hardware error;
- **support of a great number of file systems**;
- **using Vba32.CS.L scanner** allows you to apply all the features of **Vba32** antivirus kernel;
- **possibility of individual scanning configuration settings**;
- **copying infected and suspicious files to Quarantine** allows you to avoid data loss due to false antivirus responses;
- **keeping report files** allows you to analyze the results of system scanning and maintain feedback with the Technical Support Service.

Note. All products and utilities described in this guide are available to be downloaded from servers and also from the «**VirusBlokAda**» site:

http://anti-virus.by/

ftp://anti-virus.by/

ftp://vba.ok.by/vba/

Hardware requirements

Necessary hardware requirements for the different modes of operation of **Vba32 Rescue** Image are specified below.

For loading:

- i686 processor;
- 96MB RAM;
- CD/DVD-ROM or USB-drive with a storage capacity of at least 128 MB.

For scanning:

- i686 processor;
- 96MB RAM;
- CD/DVD-ROM or USB-drive with a storage capacity of at least 128 MB;
- HDD with PATA or SATA interface and the corresponding controller.

For updating and scanning:

- i686 processor;
- 192MB RAM;
- CD/DVD-ROM or USB-drive with a storage capacity of at least 128 MB;
- HDD with PATA or SATA interface and the corresponding controller;
- Ethernet-interface.

For releasing drive and scanning:

- i686 processor;
- 192MB RAM;
- CD/DVD-ROM or USB-drive with a storage capacity of at least 128 MB;
- HDD with PATA or SATA interface and the corresponding controller;
- Ethernet-interface.

For releasing drive, updating and scanning:

- i686 processor;
- 256MB RAM;
- CD/DVD-ROM or USB-drive with a storage capacity of at least 128 MB;
- HDD with PATA or SATA interface and the corresponding controller;
- Ethernet-interface.

Supported file systems: NTFS, FAT, ext2/3/4, ReiserFS.

Creating a bootable disk

Vba32 Rescue Image supports the ability to boot from two types of drives: CD/DVD and USB-drive. Below is the process for creating a bootable CD/DVD disk or USB-drive.

Create a bootable CD/DVD

For creating a bootable CD/DVD disk it is necessary to record ISO image **vbarescue.iso** on CD/DVD using burning software.

> **Note.** Before creating CD/DVD make sure that your computer supports booting from these media.
>
> **Note.** You can use **Nero** package for your disk burning software. For burning a CD/DVD disk it is necessary to put matrix in CD/DVD-ROM drive, run **Nero Burning ROM**, select menu item **File/Open**. In the appeared window select the file **vbarescue.iso** and follow the instructions.

Create a bootable USB-drive

Vba32 Rescue provides three ways to create a bootable USB-drive. The first way is to create in **Vba32 Rescue** environment. The next two ways are to create with the help of special utilities in Windows OS and in Linux OS.

> **Note.** Before creating a bootable USB drive make sure that your computer supports booting from a USB-drive.

Create a bootable USB-drive in Windows OS

It is necessary to use the **vbarescue_wintools** package utilities for this:

1. It is necessary to unzip the archive **vbarescue_wintools.zip** into a new folder;
2. Copy ISO image **vbarescue.iso** to the folder **vbarescue_wintools**;
3. Launch bat-file **runme.bat** and follow the instructions.

> **Attention!** During the creation of the bootable USB-drive in Windows all data on this drive will be lost. It is recommended to save all files from USB-drive to another drive.
>
> **Attention!** It is impossible to create bootable USB-drive with several partitions in Windows OS.
>
> **Attention!** Windows OS does not properly recognize a bootable USB-drive created with **vbarescue_wintools**.

> **Note. Vbarescue_wintools** supports Windows 2000, Windows XP, and Windows 2003.

Create a bootable USB-drive in Linux OS (without data loss)

It is required that the **vbarescue_linux** utilities package be used:

1. It is necessary to unzip the archive **vbarescue_linux.tar.gz** into a new folder;
2. Copy ISO image **vbarescue.iso** to the folder **vbarescue_linux**;
3. Mount USB-drive with FAT32;
4. Run the script **runme.sh** and **runme.sh** and transfer the path to the point where the USB-drive is mounted.

```
wget ftp://anti-virus.by/pub/vbarescue_linux.tar.gz
```

```
wget ftp://anti-virus.by/pub/vbarescue.iso

tar -xzf vbarescue_linux.tar.gz

mount /dev/sdb1 /mnt/flash -t vfat

./runme.sh /mnt/flash
```

Attention! This command allows for the creation of a bootable USB-drive without data loss. However, it is recommended to save all files from USB-drive to another drive.

Create a bootable USB-drive in the Vba32 Rescue environment (without data loss)

It is required to use the menu command **Create bootable drive**.

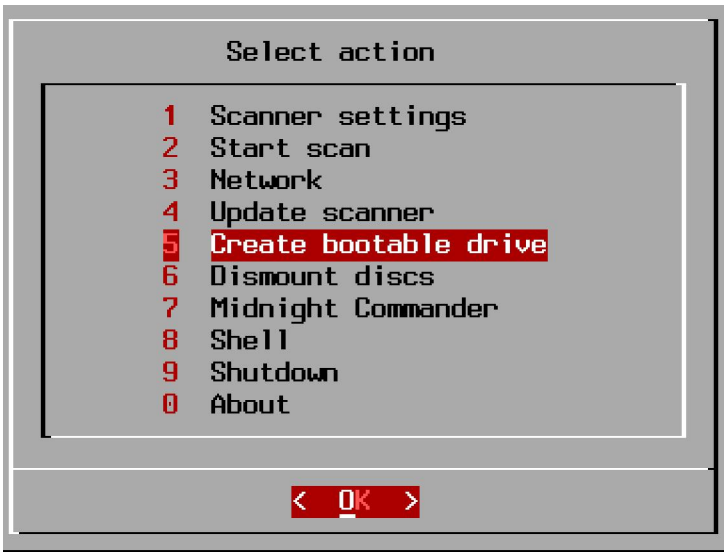

Figure 1 – Menu item Create bootable drive

Select this menu item and follow the instructions.

Attention! This command allows for the creation of a bootable USB-drive without data loss. However, it is recommended to save all files from USB-drive to another drive.

Note. In this mode it is possible to create a bootable USB-drive with several partitions. Files will be created on the first partition. Also, if this partition isn't formatted in FAT32, the software will offer to do it.

Boot Vba32 Rescue image

During **Vba32 Rescue** Image loading, the user is offered the following operational modes to choose from:

Figure 2 – Window for selecting the Rescue Image operational mode

- **vba32rescue** – standard mode for Rescue Image operation;
- **vba32rescue2ram** – Rescue Image loading mode with the ability to release the drive from which this image was loaded;

Figure 3 – Window for removing the bootable drive

- **memtest** – launching **memtest86+**. This utility allows for scanning the computer's RAM in order to detect the presence of hardware errors.

Homepage: http://www.memtest.org/;

- **mhdd** – launching **mhdd**. This utility allows for scanning the computer's hard disks to check for the presence of errors.

Homepage: http://www.ihdd.ru/;

- **reboot** – computer rebooting.

Selection one of the modes or **vba32rescue** or **vba32rescue2ram** leads to loading user's interface. It is necessary to select a screen resolution.

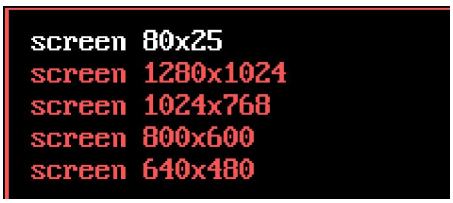

Figure 4 – Window for selecting a screen resolution

Initialization of the program internal components will start after selecting a screen resolution.

> **Note.** Initialization time depends on selected bootable mode, RAM capacity, amount of partitions on hard disks and free space. Initialization can take up several minutes.

Loading of Rescue Image will be finished with the dialog for selecting the user's interface language.

Figure 5 – Window for selecting the user's interface language

Vba32 Rescue supports four localizations: English, Russian, German and Belarusian.

Attention! If the computer's hard disks were not properly unmounted before the image downloading (for example, as the result of a "cold" reboot), or the computer was in Sleep or Hibernating, then the hard disks will not be mounted automatically to the **Vba32 Rescue** Image. In such a situation the user will be presented the option to mount the necessary disks in manual mode.

Vba32 Rescue User Interface

In this chapter we will consider some menu settings of the **Vba32 Rescue** Image user interface.

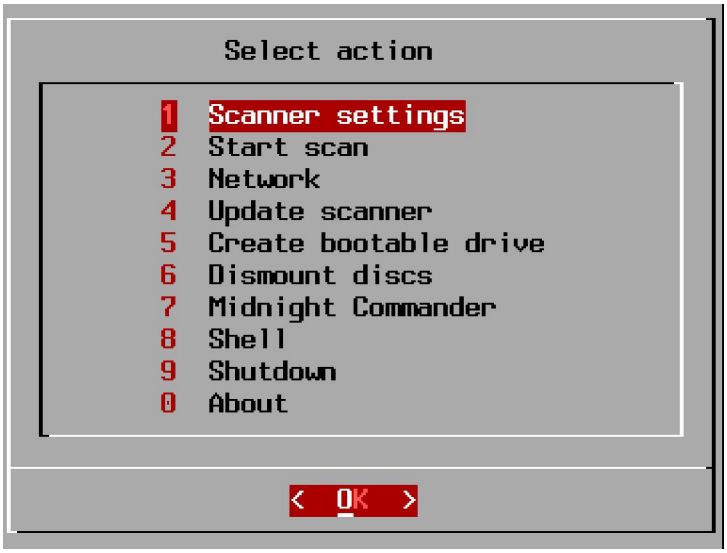

Figure 6 – Main menu

> **Note.** Settings of the menu item **Create bootable drive** are considered in the chapter **Create bootable drive**.
>
> **Note.** Settings of the menu item **Scanner settings** and **Start scan** are considered in the chapter **Computer scanning**.
>
> **Note.** Settings of menu item **Network** and **Update scanner** are considered in the chapter **Vba32.CS.L update**.

The menu navigation is implemented using the following keys:

- **Up/down** – navigation on menu lists;
- **Left/right** – navigation on action buttons;
- **Space** – enable / disable the selected item;
- **Enter** – enter menu item or apply changes;
- **Escape** – exit menu or cancel changes;
- **Numbers** – quick selection of menu items.

Switching between entry fields and other elements of user's interface is possible using the Tab key.

Vba32 Rescue user interface is built on the basis of the project **Dialog**.

Homepage: http://www.invisible-island.net/dialog/dialog.html.

Midnight Commander

This allows you to run **Midnight Commander.**

Midnight Commander is a file manager with text interface like Norton Commander for OS UNIX. File Manager provides an intuitive user interface and allows you to perform most common operations on files — create, view, edit, move, rename, copy, delete, etc..

Homepage: http://www.midnight-commander.org.

Figure 7 – Midnight Commander

Shell

The menu item **Shell** is intended to enter the command shell **Vba32 Rescue**. After you choose this menu item, the screen prompts you to enter the **vba32rescue**.

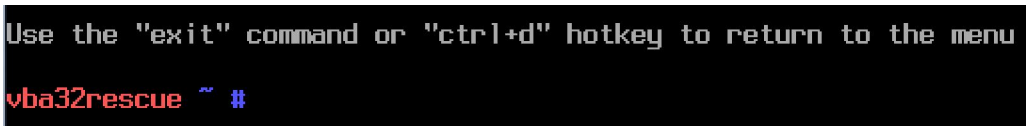

Figure 8 – Shell

By using this mode, all the actions available through the user's menu can be performed.

Thus, for example, call **Midnight Commander** is available from the following command:

mc

Rescue Image supports the ability to work in four command shells. Each is allocated key combinations from **Alt + F1** to **Alt + F4**. The report about the work of Rescue Image is available in the fifth command shell. The User Interface is available in the sixth command shell (**Alt + F6**).

Working with console scanner **Vba32.CS.L** via command shell will be described in the chapter **Computer scanning**.

Vba32.CS.L console scanner update via command shell will be described in the chapter **Vba32.CS.L update**.

Attention! The working mode via the command shell is designed for users who are confident about their knowledge. Using this mode is not recommended for unskilled users. For more stable and reliable work of software, it is recommended that you work through the user interface menu.

Dismount disks

This item allows you to dismount disks mounted through **Vba32 Rescue** initialization, as well as USB-drive mounted to the system.

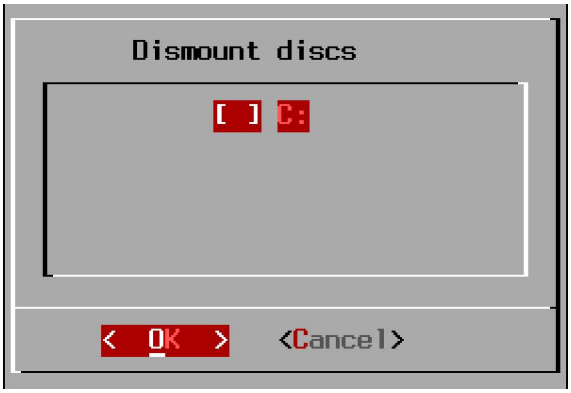

Figure 9 – Dismount disks

Shutdown

By using this menu item, the computer can be powered off or rebooted.

Figure 10 – Shutdown the computer

About

This menu item displays the current version of the **Vba32.CS.L** console scanner.

Figure 11 – Current version

Information about the navigation keys, company contact information and acknowledgements to those projects that have been used to create software.

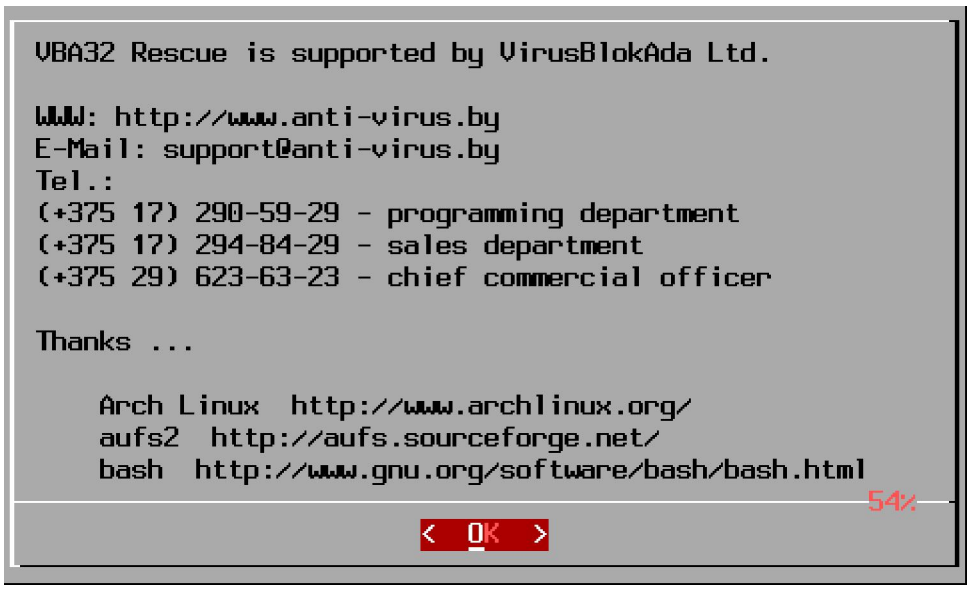

Figure 12 – About window

Computer scanning

In this chapter we will consider the main task of **Vba32 Rescue** – scanning by the **Vba32.CS.L** antivirus scanner. This scanner is a powerful facility which makes it possible to detect and cure infected objects on the user's computer. The undoubted advantages of this scanner are:

- **powerful heuristic analyzer** – allows you to detect unknown patterns of malware. The possibility to select different working modes (from optimal to excessive) allows you to get the required balance between quality of detection and quantity of false positives;
- **file viruses curing function** – gives you the ability to deal qualitatively with the consequences of viral infections. Analysis of cure of such large-scale infections as **Sality (Sector)** and **Virut** has proved the validity of this method;
- **Vba32 software code emulator** – allows you to detect malware processed already by known or unknown programs of difficult analysis of malicious code (cryptors, packers, obfuscators). This is achieved through continuous improvements of the emulator rather than the addition, is newly known algorithms for static extraction;
- **just-in-time technology** – allows you to speed up emulation of processed files;
- **daily updates of antivirus bases** – makes it possible to reduce the threats impact on the user's computer;
- **support of all common archive formats**, mail databases and other data formats.

Next there is a description of scanner settings, scanning process and console scanner keys to run via command shell.

Attention! Before running the scanner, make sure that a current version of the product is used. If Rescue Image is used with outdated databases, it is recommended that you update or download new one.

Attention! Optimal settings for scan / cure are set in the product by default. It is not recommended that unskilled users modify them.

Scanner settings

The menu item **Scanner settings** allows you to configure the scanner settings used by the **Vba32.CS.L** scanner.

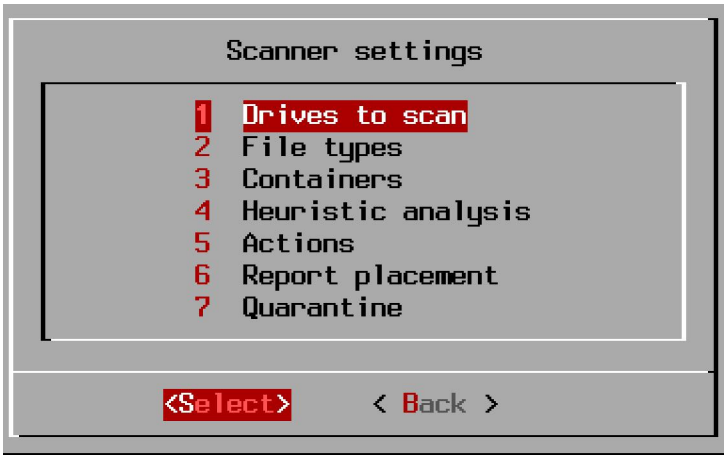

Figure 13 – Scanner settings

Tentatively, settings can be divided into three groups:

- **scanning of objects settings**;
- **interface settings**;
- **action settings**.

Scanning of objects settings

The scanning of objects setting is produced via the following menu items:

- **Drives to scan** – sets disks which will be checked by antivirus scanner.

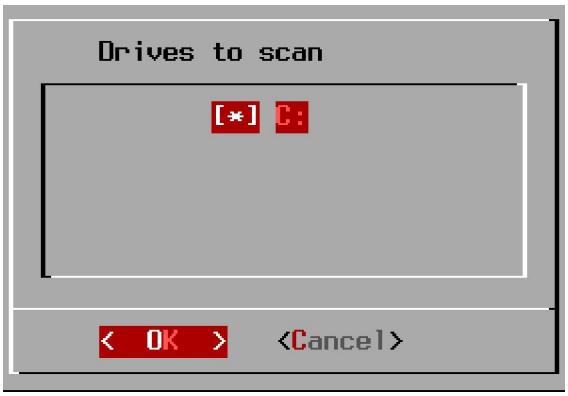

Figure 14 – Drives to scan

By default, all logical drives which could be detected and mounted are scanned;

- **Files types** – sets lists of file extensions which will be checked by the antivirus scanner.

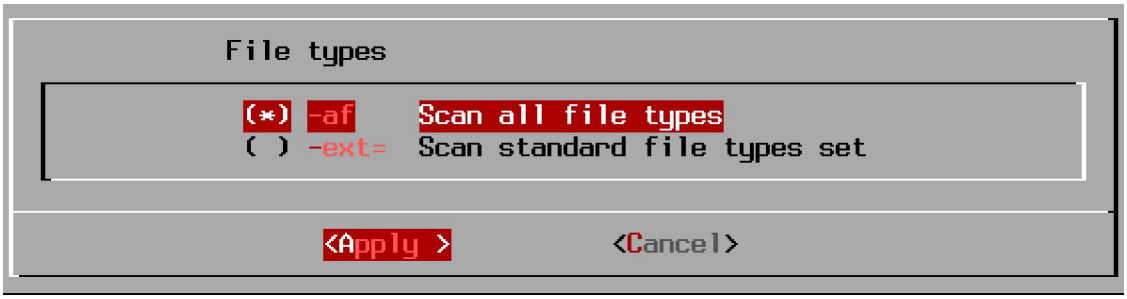

Figure 15 – File types

All the file types (**Scan all file types**) are scanned by default. The setting **Scan standard file types** can be used to reduce the scan time. This operation checks only files with following extensions:

.COM.EXE.DLL.DRV.SYS.OV?.VXD.SCR.CPL.OCX.BPL.AX.PIF.DO?.XL?.HLP.RTF.WI?.WZ?

.MSI.MSC.HT.VB*.JS.JSE.ASP*.CGI.PHP*.?HTML.BAT.CMD.EML.MSG.NWS.XML.MSO*

.WPS.PPT.PUB.JPG.JPEG.INF.PDF.SWF.TMP.NET.ERA.WMX.VMX.LNK.ASF.ARJ.A0?.RAR.R0?

.ZIP.HA.GZ.TGZ.TAR.BZ2.CHM.DBX.TBB.MBX.PST

- **Containers** - specifies the need to scan the archives **(Scan archives)**, mail databases (**Scan mail**), malware installers (**Scan malware installers**).

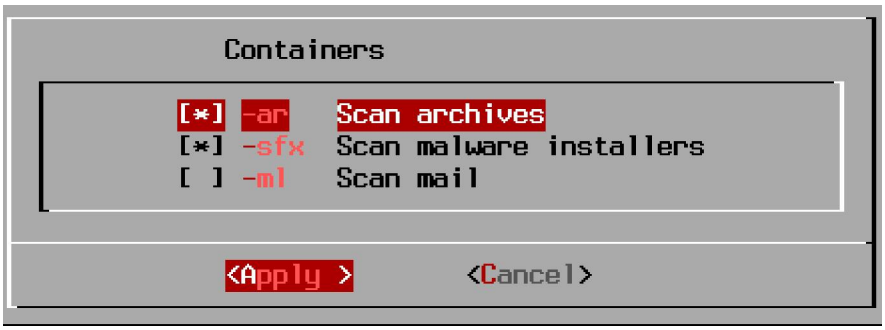

Figure 16 – Containers

Scan archives and Scan malware installers are enabled by default.

- **Heuristic analysis** – specifies the mode of heuristic analysis (**Disabled**, **Optimal**, **Maximum**, **Excessive**).

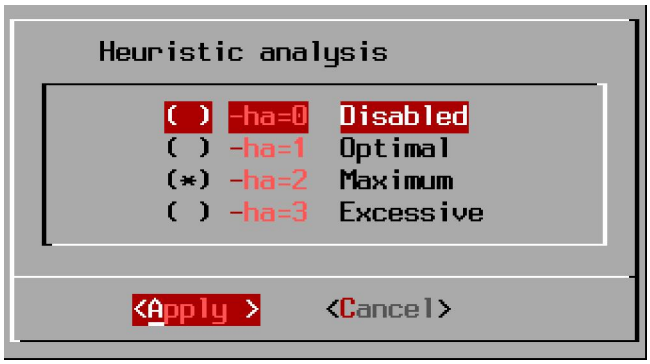

Figure 17 – Heuristic analysis

Maximum mode is specified by default.

Interface settings

The interface setting is produced through the next menu item:

- **Report placement** – specifies the disk on which would be created the folder VBARESCUE. In this folder will be kept the report file vba32.rpt and Quarantine. The first partition is specified as a default disk.

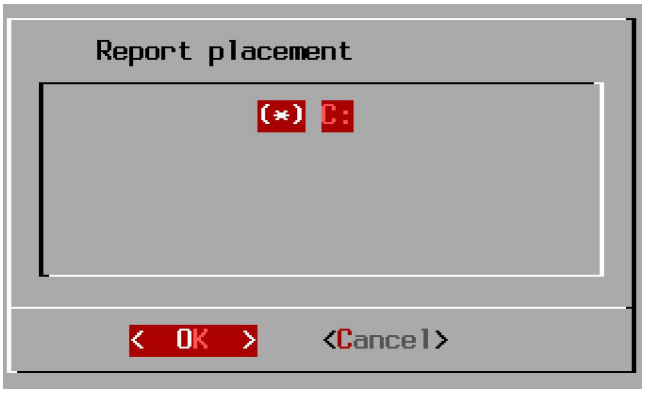

Figure 18 – Report placement

Action settings

Setting of actions upon objects is produced via menu item:

- **Actions** – specifies actions upon infected and suspected objects.

Figure 19 – Actions

Keys **Cure infected files** and **Delete infected files** are specified by default.

> **Note.** When settings **Cure infected files** and **Delete infected files** are combined, deletion of infected files will occur only if it is impossible to cure them. Thus, the file viruses will be cured and trojans will be deleted.

The following options can be also controlled: **Delete suspicious files**, **Delete archives containing viruses**, **Delete messages containing viruses**;

- **Quarantine** - control the ability to save infected (**Save infected files to Quarantine**) and suspicious objects (**Save suspicious files to Quarantine**). Both options are specified by default.

Figure 20 – Quarantine

Infected and suspicious files will be copied to Quarantine with saving to the source file.

Note. The folder VBARESCUE is named Quarantine. This folder is created according to settings of the menu item **Report placement**.

Attention! Files in **Vba32 Rescue** Quarantine do not modify. Launching Quarantine files could lead to further infection of the computer.

Scanning process

The scanning process starts by option of the menu item **Start scan**.

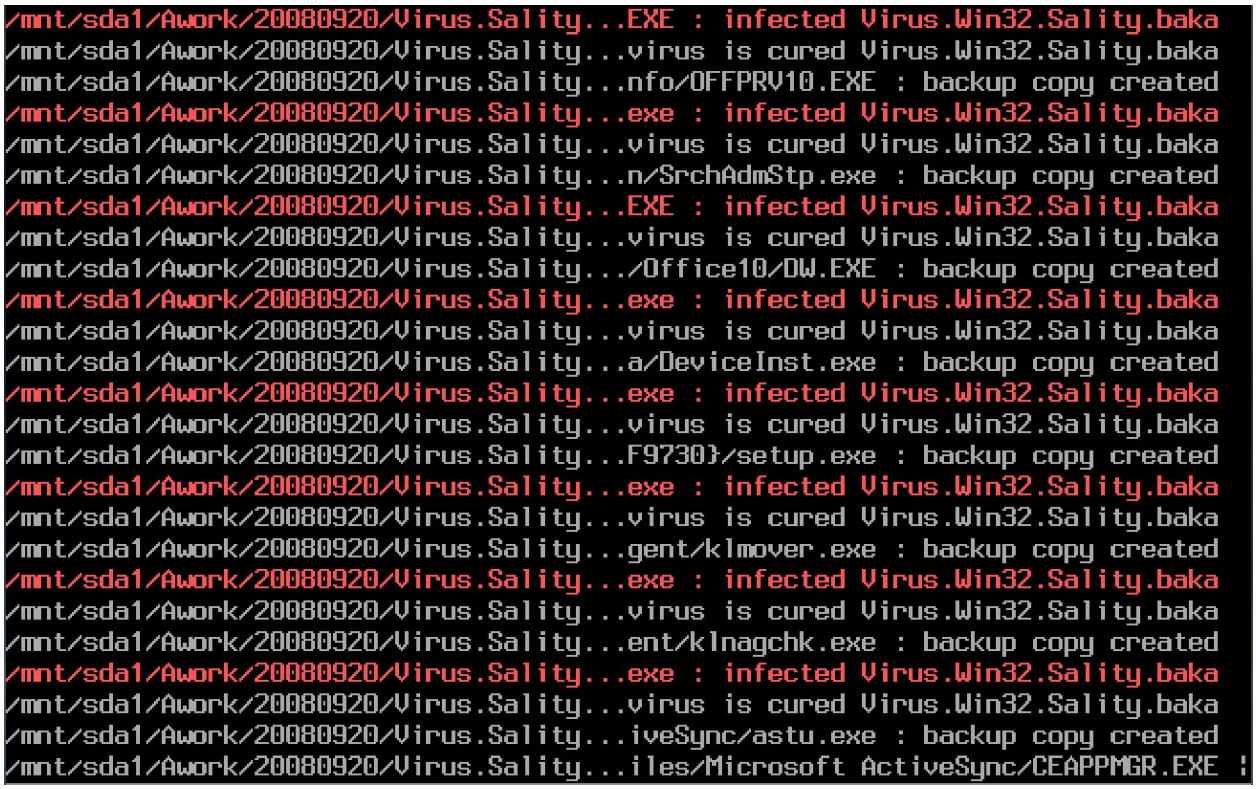

Figure 21 – Scanning results

Launching Vba32.CS.L in manual mode

Vba32 Rescue Image is the ability to work with **Vba32.CS.L** console scanner via command shell. There is a command for this:

/opt/vba/vba32l [path] ... [path] [-key] ... [-key]

Full keys list is provided upon commands:

/opt/vba/vba32l -?

/opt/vba/vba32l -H

/opt/vba/vba32l -HELP

Keys should be separated from each other by the space symbol and preceded by the hyphen symbol «-». Keys can be written both in upper case and in lower case. Paths are separated from keys by space symbol.

Below there is a keys list available to the console scanner:

@filename	*- scan files from filelist;*
key	*- specify program options;*
-?[+|-]	*- show help screen;*
-H[+|-]	*- show help screen;*
-HELP[+|-]	*- show help screen;*
-M=1	*- fast scanning mode;*
-M=2	*- optimal scanning mode (/AF+);*
-M=3	*- excessive scanning mode (/AF+ /PM+);*

-AF[+|-]	*- all files;*
-SL[+|-]	*- follow symbol links;*
-PM[+|-]	*- excessive search;*
-RW[+|-]	*- detect Spyware, Adware, Riskware;*
-CH[+|-]	*- enable cache while scanning objects;*
-FC[+|-]	*- cure infected files;*
-FD[+|-]	*- delete infected files;*
-FR[+|-]	*- rename infected files;*
-FM+[directory]	*- move infected files to specified directory (by default /var/virus);*
-SD[+|-]	*- delete suspicious files;*
-SR[+|-]	*- rename suspicious files;*
-SM+[directory]	*- move infected files to specified directory (by default /var/virus);*
-HA=[0|1|2|3]	*- heuristic analysis level (0 - disable, 2 - maximum);*
-QI[+[directory]|-]	*- move to Quarantine infected objects;*
-QS[+[directory]|-]	*- move to Quarantine suspicious objects;*
-D=[N,][filename]	*- launch program once in N days (by default 1);*
-R=[filename]	*- save report to file (by default VBA32.RPT);*
-R+[filename]	*- append report to file (by default VBA32.RPT);*
-L=[filename]	*- save list of infected files to file (VBA32.LST);*
-L+[filename]	*- append list of infected files to file (VBA32.LST);*
-QU[+|-]	*- interrupt launching program (by default disabled);*
-OK[+|-]	*- include "clean" filenames in report;*
-AR[+|-]	*- include scanning files in archives;*
-AL=[file_size,kB]	*- don't scan archives larger than specified;*
-AD[+|-]	*- delete archives containing infected files;*
-SFX[+|-]	*- detect malware installers;*
-ML[+|-]	*- mail scanning;*
-MD[+|-]	*- delete messages containing infected files;*
-VL[+|-]	*- view list of viruses known to program;*
-VM[+|-]	*- show macros information in documents;*
-SI[+|-]	*- additional information about program support;*
-LNG= suffix	*- select language file VBA32<suffix>.LNG;*
-KF={ directory|path }	*- specify path to key file;*
-EXT=	*- specify list of scanning file extensions;*
-EXT+	*- add file extensions to default list;*
-EXT-	*- remove file extensions from default list;*
-WK[+|-]	*- wait for pressing any key for finishing;*
-SP[+|-]	*- show overall check progress;*
-J[+|-|=thread_count]	*- multithreaded mode, count of simultaneously processed files can be set to default value (-J, -J+, preferred) or explicitely (-J=count);*

The following settings are active by default: -QU –RW

By default, the console scanner launches via the user's interface with the following keys:

-WK+ -FC+ -FD+ -AF+ -AR+ -CH- -RW+ -SFX+ -HA=2 -LNG="ru" –J+
-R+"/media/C:/VBARESCUE/vba32.rpt" -QI+"/media/C:/VBARESCUE"
-QS+"/media/C:/VBARESCUE"

If it is necessary for the user to scan, for example, the directory C:\Windows with the same settings with which it is done in the user interface by default, then enter the following command in a single line:

/opt/vba/vba32l "/media/C:/Windows" -WK+ -FC+ -FD+ -AF+ -AR+ -CH- -RW+ -SFX+ -J+
-HA=2 -LNG="ru" -R+"/media/C:/VBARESCUE/vba32.rpt" -QI+"/media/C:/VBARESCUE"
-QS+"/media/C:/VBARESCUE"

Attention! To avoid errors, use of the scanner via the menu of user interface is given priority.

Vba32.CS.L update

Update antivirus scanner makes it possible to support the **Vba32 Rescue** Image in its actual state. This ability is available in both modes (**vba32rescue** and **vba32rescue2ram**) of software.

Updating the antivirus scanner is possible over the Ethernet via FTP, HTTP either using a proxy authorization or without it. The path http://anti-virus.by/update/ is shown as updating source by default. But there is the possibility to change the updating path by specifying another source in Internet or in a local net work.

> **Note.** «**VirusBlokAda**» provide an opportunity to display the internal update server in a local network. For this it is necessary to take advantage of the free software **Vba32 Update Center**. To have the opportunity to update **Vba32 Rescue** from a local network on the tab **Complectation** in **Update Center** setting, it is necessary to flag **Vba32 Command-Line Scanner for Linux**.

Vba32 Rescue also allows you to save an updated Image on the USB-drive. Below is a description of settings of the menu item **Network**, the menu item **Update scanner**, the update process in manual and automatic modes and the process of saving updated image to the USB-drive.

Network

The menu item **Network** is designed to get access to network settings.

The first time you select this menu item, the working modules are initialized with network environment. Then you have the ability to configure it.

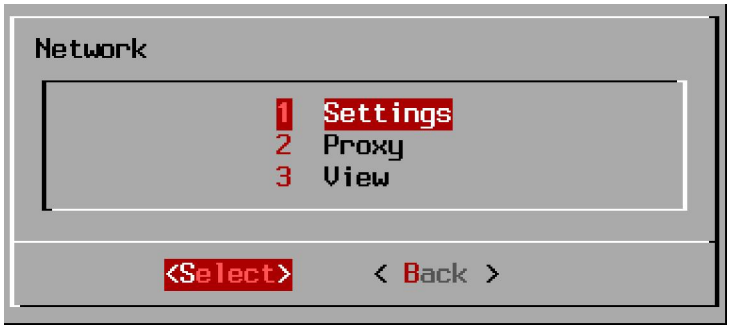

Figure 22 – Network

The menu item **Settings** is designed for this. The network setting is available via DHCP (if it is supported in the network) in automatic mode or in manual mode.

Figure 23 – Automatic network settings

In manual mode, it is necessary to specify computer's IP-address, subnetwork mask, gateway IP-address, DNS-server IP-address.

The menu item **Proxy** allows you to specify the proxy address in host[:port] format and proxy authorization in login:[password] format. If authorization is not necessary, it is suggested to leave this field blank.

With the help of the **View** menu item, the network environment configuration can be viewed.

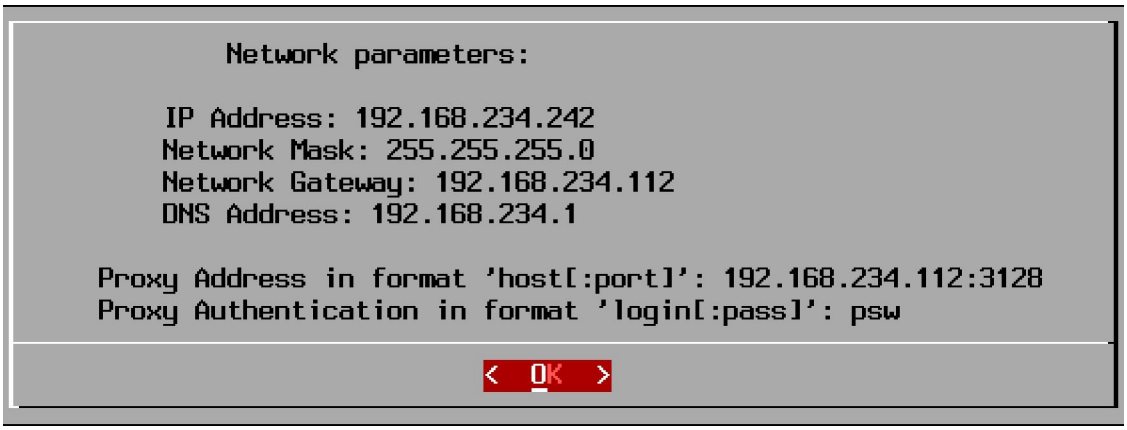

Figure 24 – Network configuration

Update scanner

Vba32.CS.L antivirus scanner update works in two modes: automatic (via menu items of user interface) and manual (via command shell).

Automatic update

The update is available via the menu item **Update scanner**.

After you select this item, you will prompted to update from a specified resource or to specify yours.

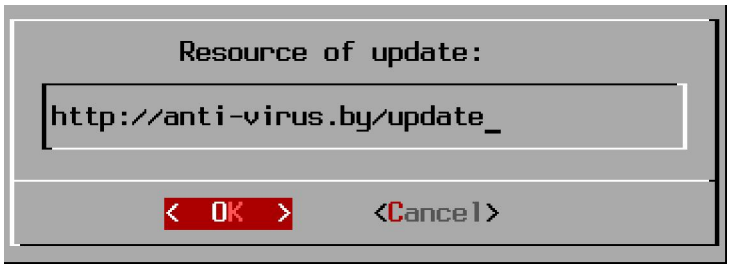

Figure 25 – Resource of update

After this the updating process begins.

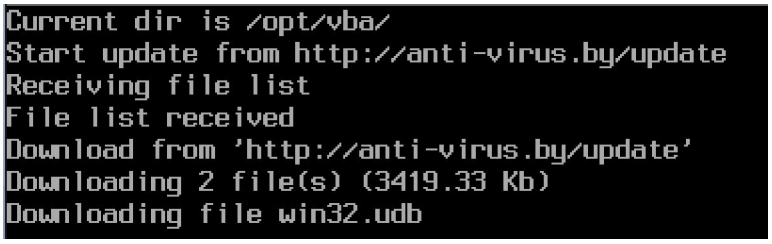

Figure 26 – Result of update

Note. All information about the updating process is saved to the vba32.rpt log file and can be analyzed by the user later or sent to Technical Support.

Update via command shell

To update the console scanner via command shell, the following command should be used:

/opt/vba/vbaupdx <update path> <options>

options:	*-p=<address:port>*	*- Proxy address and port;*
	-r=[file]	*- Save the report to file;*
	-r+[file]	*- Add the report to file;*
	-u=<username:password>	*- Proxy-authorization;*
	-no-ntlm	*- Disable NTLM support;*

Saving updated scanner to USB-drive

Vba32 Rescue Image provides the opportunity to save an updated scanner to drive. Thus, the user can maintain the image up to date permanently. For example, the user needs to update an image on bootable USB-drive. For this:

1. Boot from USB-drive to **vba32rescue2ram** mode;
2. Configure the network environment via the menu **Network**;
3. Update the **Vba32.CS.L** console scanner via the menu item **Update scanner**;
4. Record the updated image to USB-drive via the menu item **Create bootable drive**.

As a result, the image just re-records to the same drive from which it was booted.

Each of the above items is described in the respective chapter of this guide.

Acknowledgements

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aufs2	http://aufs.sourceforge.net/
bash	http://www.gnu.org/software/bash/bash.html
busybox	http://busybox.net
bzip	http://sources.redhat.com/bzip2
dialog	http://invisible-island.net/dialog/
gcc-libs	http://gcc.gnu.org
glib2	http://www.gtk.org/
glibc	http://www.gnu.org/software/libc
gpm	http://www.nico.schottelius.org/software/gpm/
grub2-bios	http://www.gnu.org/software/grub/
iana-etc	http://sethwklein.net/iana-etc
kernel26	http://www.kernel.org
lsof	http://people.freebsd.org/~abe/
lzo2	http://www.oberhumer.com/opensource/lzo
mc	http://www.ibiblio.org/mc/
memtest86+	http://www.memtest.org
MHDD	http://www.ihdd.ru/
ncurses	http://www.gnu.org/software/ncurses/
ntfs-3g	http://www.tuxera.com
pcre	http://www.pcre.org/
readline	http://tiswww.case.edu/php/chet/readline/rltop.html
slang	http://www.jedsoft.org/slang/
squashfs-tools	http://squashfs.sourceforge.net
xz	http://tukaani.org/xz/
zip	http://www.info-zip.org/pub/infozip/Zip.html
zlib	http://www.zlib.net/

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