Dr.WEB®

Anti-virus for UNIX File Servers

Defend what you create

Administrator Manual

Dr.Web Anti-virus for UNIX File Servers
Version 10.1.0
Administrator Manual
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Doctor Web Head Office
2-12A, 3rd str. Yamskogo polya
Moscow, Russia
125124

Web site: www.drweb.com
Phone: +7 (495) 789-45-87

Refer to the official web site for regional and international office information.

Doctor Web

Doctor Web develops and distributes Dr.Web® information security solutions which provide efficient protection from malicious software and spam.

Doctor Web customers can be found among home users from all over the world and in government enterprises, small companies and nationwide corporations.

Dr.Web antivirus solutions are well known since 1992 for continuing excellence in malware detection and compliance with international information security standards. State certificates and awards received by the Dr.Web solutions, as well as the globally widespread use of our products are the best evidence of exceptional trust to the company products.

We thank all our customers for their support and devotion to the Dr.Web products!

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Document Conventions

The following conventions and symbols are used in this manual:

Convention	Description
Bold	Names of buttons and other elements of the graphical user interface (GUI), and required user input that must be entered exactly as given in the guide.
Green and bold	Names of **Dr.Web** products and components.
Green and underlined	Hyperlinks to topics and webpages.
`Monospace`	Code examples, input to the command line and application output. Command-line commands, which are entered via a keyboard (in the terminal or terminal emulator), are marked with the command prompt character `$` or `#` in the current manual. The character indicates the privileges required for execution of the specified command. According to the standard convention for UNIX-based systems `$` – indicates that the command can be executed with user rights. `#` – indicates that the command can be executed with superuser (usually `root`) privileges. To elevate the privileges, use **`su`** or **`sudo`** commands.
Italic	Placeholders which represent information that must be supplied by the user. For command-line input, it indicates parameter values.
CAPITAL LETTERS	Names of keys and key sequences.
Plus sign ('+')	Indicates a combination of keys. For example, ALT+F1 means to hold down the ALT key while pressing the F1 key.
Exclamation sign 	A warning about potential errors or any other important comment.

The following terms will be used without explanation hereinafter:

Convention	Complete form
EPM	ESP Package Manager (package manager)
FQDN	Fully Qualified Domain Name
FS	File System
GNU	GNU (GNU is Not Unix) project
HTML	HyperText Markup Language
HTTP	HyperText transfer Protocol
HTTPS	HTTP via SSL
ID	Identifier
IP	Internet Protocol
LKM	Linux Kernel Module
MBR	Master Boot Record
NSS	Novell Storage Services
OID	(SNMP) Object ID
OS	Operating System
PAM	Pluggable Authentication Modules
RPM	Red Hat Package Manager
RRA	Round-Robin Archive

Convention	Complete form
RRD	Round-Robin Database
SMB	Server Message Block (file access protocol)
SNMP	Simple Network Management Protocol
SP	Service Pack
SSH	Secure SHell
SSL	Secure Sockets Layer
URL	Unified Resource Locator
VBR	Volume Boot Record

Introduction

Thank you for purchasing **Anti-virus Dr.Web for UNIX File Servers**. It offers reliable protection from various types of computer threats using the most advanced virus detection and neutralization technologies.

This manual is intended to help users of computers running under OS **GNU/Linux** family and other UNIX-like OSes, such as **Solaris** and **FreeBSD,** install and use **Anti-virus Dr.Web for UNIX File Servers** 10.1.0 (**Dr.Web for UNIX File Servers** hereinafter).

If **Dr.Web for UNIX File Servers** 6.0.2 is already installed on your computer and you wish to upgrade the solution to version 10.1.0, do the steps of the upgrade procedure.

Convention for paths to product files

The product described in the present document is designed for operation in different UNIX-based operating system. Real paths to product files depend on the operating system installed on the user's computer. For notational convenience, the following conventions are used:

- `<opt_dir>` — directory where main product files reside (including executable files and libraries).
- `<etc_dir>` — directory where the configuration file and a key file reside.
- `<var_dir>` — directory where supporting and temporary product files reside.

Real paths corresponding to the conventions in different operating systems are given in the table below.

Operating system	Convention	Real path
GNU/Linux	**<opt_dir>**	/opt/drweb.com
	<etc_dir>	/etc/opt/drweb.com
	<var_dir>	/var/opt/drweb.com
FreeBSD	**<opt_dir>**	/usr/local/libexec/drweb.com
	<etc_dir>	/usr/local/etc/drweb.com
	<var_dir>	/var/drweb.com
Solaris	**<opt_dir>**	The paths are the same as for **GNU/Linux**.
	<etc_dir>	
	<var_dir>	

For space considerations, examples given in the present document use paths for **GNU/Linux** OS. In some places of the document, where it is possible, examples contain real paths for all of the OSes.

About this Product

Dr.Web for UNIX File Servers is an anti-virus solution designed to protect servers running under UNIX-like OSes (**GNU/Linux**, **Solaris** and **FreeBSD**) from viruses and another types of malicious software, and to prevent distribution of the threats designed for all popular operating systems including mobile platforms.

The core components of the program (anti-virus engine and virus databases) are not only extremely effective and resource-sparing, but also cross-platform, which allows **Dr.Web** specialists to create reliable anti-virus solutions for protection of computers and mobile devices running under prevalent operating systems from viruses and other threats targeting various platforms. By the present time, besides **Dr.Web for UNIX File Servers**, **Doctor Web** has developed different anti-virus solutions for UNIX-family OSes and for the other platforms: **IBM OS/2**, **Novell NetWare**, **OS X** and **Windows**. Moreover, there are anti-virus solutions designed for protection of mobile devices operating under **Android**, **Symbian**, **iOS** and **Windows Mobile** operating systems.

Components of **Dr.Web for UNIX File Servers** are constantly updated and virus databases are supplemented with new signatures to ensure up-to-date protection. Moreover, heuristic analysis methods are used for providing additional protection against unknown viruses.

Main Functions

Main functions **Dr.Web for UNIX File Servers** provides you with the following features:

1. **Detection and neutralization** of malicious programs (for example, viruses, including those that infect mail files and boot records, Trojans, mail worms) and unwanted software (for example, adware, joke programs, dialers).

   The product uses several malware detection methods simultaneously:

   - *signature analysis*, which allows detection of known threats
   - *heuristic analysis*, which allows detection of threats that are not present in virus databases

   Note that the heuristics analyzer may raise false alarms. Thus, objects that contain threats detected by the analyzer are considered "suspicious". It is recommended to quarantine such files and send them for analysis to **Doctor Web Virus laboratory**. For details on methods used to neutralize threats, refer to Appendix B. Fighting Computer Threats.

   Scanning at user's request can be performed in two modes: Full scan (scan of all file system objects) and custom scan (scan of selected objects: directories or files that satisfy specified criteria). Moreover, the user can start a separate scan of volume boot records and executables that ran processes that are currently active. In the latter case, if a malicious executable is detected, it is neutralized and all processes run by this file are forced to terminate.

2. **Monitoring access to files of**

   - **File system in the OS.** Monitors file events and attempts to run executables. This feature allows to detect and neutralize malware at an attempt to infect the server's file system.
   - **Samba shared directories.** Monitors read and write operations of local and remote users of the file server. This feature allows to detect and neutralize malware at an attempt to save the malicious program to storage, which prevents its distribution over the network.
   - **NSS (Novell Storage Services) volumes.** Monitors write operations of the NSS file storage users. This feature allows to detect and neutralize malware at an attempt to save the malicious program to NSS storage, which prevents its distribution over the network.

Note that the function of file system monitoring is available only for OSes of **GNU/Linux** family, and the function of **Novell Storage Service** volumes monitoring is available only for **Novell Open Enterprise Server** SP2 based on **SUSE Linux Enterprise Server** 10 SP3 and newer. For other supported OSes the corresponding monitoring components are not included in the distribution.

3. **Reliable isolation of infected or suspicious objects.** Such objects are moved to a special storage, quarantine, to prevent any harm to the system. When moved to quarantine, objects are renamed according to special rules and, if necessary, they can be restored to their original location only at user request.
4. **Automatic updating of Dr.Web** virus databases and of the anti-virus engine to support high level of protection against malware.
5. **Collection of statistics** on virus events, logging threat detection events. Notification on detected threats over SNMP to external monitoring systems and to the central protection server (if the suite operates in central protection mode).
6. **Operation in central protection mode** (when connected to the central protection server, such as **Dr.Web Enterprise Server** or as a part of **Dr.Web AV-Desk** service). This mode allows implementation of a unified security policy on computers within the protected network. It can be a corporate network, a private network (VPN), or a network of a service provider (for example, a provider of Internet service).

Program Structure

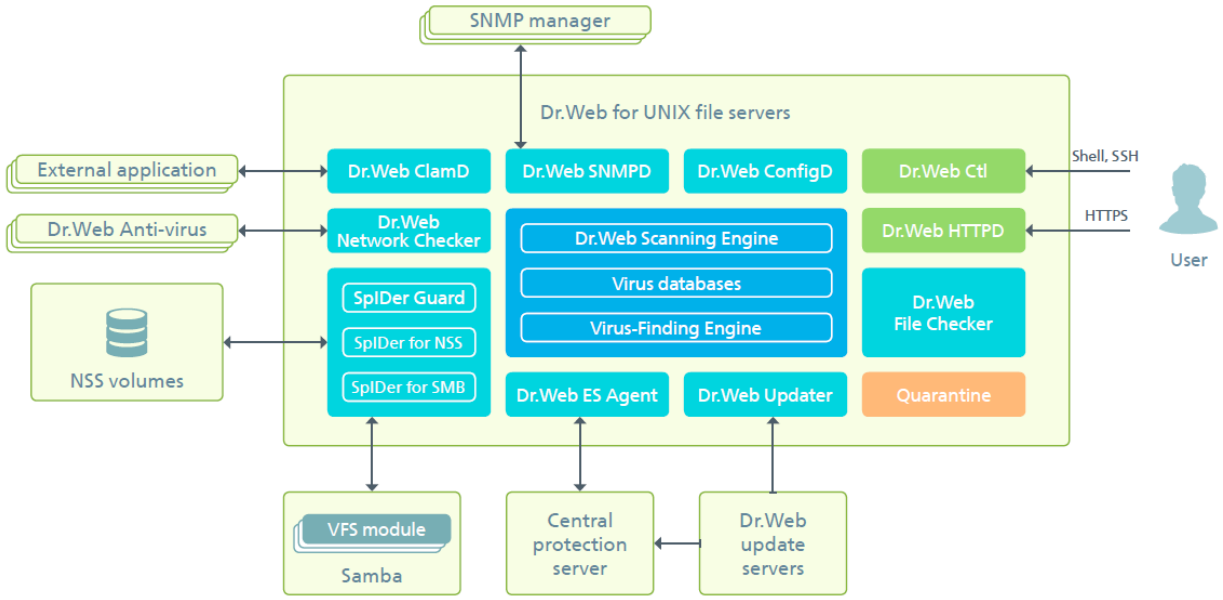
Dr.Web for UNIX File Servers is a suite composing several components each of which has an individual set of functions. Components included in **Dr.Web for UNIX File Servers** are listed below.

Specification	Description
Dr.Web ConfigD	Configuration daemon **Dr.Web for UNIX File Servers**, which performs the following functions: • Starts and stops suite components depending on the settings. Automatically restarts components if a failure in their operation occurs. Starts components at request of other components. Informs active suite components when another component starts or shuts down. • Uniformly stores information on license keys and settings and provides this data to other suite components. Receives adjusted settings and license keys from authoritative components of **Dr.Web for UNIX File Servers.** Notifies other components on changes in license keys and settings.
	Executable file: `drweb-configd` Internal name output to the log file: **ConfigD**
Dr.Web Virus-Finding Engine	Anti-virus engine. The main component of the anti-virus protection. Implements algorithms to detect viruses and malicious programs as well as algorithms to analyze suspicious behavior (by using signature and heuristic analysis).
	Executable file: `drweb32.dll` Internal name output to the log file: **CoreEngine**
Dr.Web Scanning Engine	Scanning engine. The component which loads anti-virus engine **Dr.Web Virus-Finding Engine** and virus databases. Transmits content of files and disk boot records to anti-virus engine for scanning at request of other **Dr.Web for UNIX File Servers** components. Queues files that are waiting for scanning. From the point of view of other **Dr.Web for UNIX File Servers** components, this is a service of anti-virus scanning. Can operate under the control of **Dr.Web ConfigD** and in standalone

Specification	Description
	mode. Executable file: **drweb-se** Internal name output to the log file: **ScanEngine**
Dr.Web virus databases	Automatically updated database used by anti-virus engine. The database contains information for detection of malware and curing of known viruses.
Dr.Web File Checker	The component which scans file system objects and manages quarantined files. Receives scanning tasks from other **Dr.Web for UNIX File Servers** components. Searches file system directories according to a received task, transmits files for scanning to **Dr.Web Scanning Engine** and notifies components on scanning progress. Removes infected files, moves them to quarantine, restores them from quarantine, and manages quarantine directories. Creates and updates cache that store information on scanned files to lessen the frequency of repeated file scanning. Executable file: **drweb-filecheck** Internal name output to the log file: **FileCheck**
SpIDer Guard	Linux file system monitor. Operates in background mode and controls file operations (such as creation, opening, closing, running) in **GNU/Linux** file systems. It sends the file scanning component requests to scan new or changed files as well as executables of programs when they are run. **SpIDer Guard** is included only in the distributions designed for **GNU/Linux** OSes. Executable file: **drweb-spider** Internal name output to the log file: **LinuxSpider**
SpIDer Guard for SMB	**Samba** shared directories monitor. Operates in background mode and monitors file system operations (such as creation, opening, closing, read and write operations) in directories of **Samba** SMB server file storages. Sends the file scanning component content of new or modified files for scanning. Integration with the file server is performed via **VFS SMB** modules that operate on **Samba** server side. Executable file: **drweb-smbspider-daemon** Internal name output to the log file: **SMBSpider**
SpIDer Guard for NSS	**NSS** volumes monitor (**Novell Storage Services**). Operates on background mode and controls file system operations (such as creation, opening, closing and write operations) on **NSS** volumes that are mounted on the file system. Sends the file scanning component content of new or modified files for scanning. **SpIDer Guard for NSS** is included only in the distributions designed for **GNU/Linux** OSes. The component can operate only on **Novell Open Enterprise Server** SP2 based on **SUSE Linux Enterprise Server** 10 SP3 and newer. Executable file: **drweb-nss** Internal name output to the log file: **NSS**
Dr.Web ES Agent	Central protection agent. Maintains suite operation in centralized and mobile modes. Provides communication between the suite and the central protection server, received license key file, updates to the virus databases

Specification	Description
	and components. Sends the server information on the components included in **Dr.Web for UNIX File Servers** ans their state as well as statistics of virus events.
	Executable file: `drweb-esagent` Internal name output to the log file: **ESAgent**
Dr.Web Network Checker	Agent for distributed file scanning. Allows to receive/transmit files for scanning from/to remote hosts. For that purpose, remote hosts must feature an installed and running **Dr.Web** Anti-virus for UNIX-based operating systems. Agent allows automatic distribution of scanning load among remote hosts by reducing load on hosts with a large number of scanning tasks (for example, on mail servers, file servers, Internet gateways). For security reasons, files are transmitted over SSL.
	Executable file: `drweb-netcheck` Internal name output to the log file: **NetCheck**
Dr.Web HTTPD	Web interface for **Dr.Web for UNIX File Servers** management. You can access the interface via web browser on a local or remote host. In-built web interface enables the product to use neither third-party web servers (such as **httpd Apache**) nor remote administration tools, such as **Webmin.** For security reasons, files are transmitted over HTTPS.
	Executable file: `drweb-httpd` Internal name output to the log file: **HTTPD**
Dr.Web Ctl	Tool for managing **Dr.Web for UNIX File Servers** from the command line. Allows to start file scanning, view quarantined objects, start a virus database update procedure, connect and disconnect the suite to the central protection server, view and configure suite parameters.
	Executable file: `drweb-ctl` Internal name output to the log file: **Ctl**
Dr.Web Updater	Update component. Downloads updates to virus databases and anti-anti-virus engine from **Doctor Web** servers (both as scheduled and at the user's request).
	Executable file: `drweb-update` Internal name output to the log file: **Update**
Dr.Web SNMPD	SNMP agent. Designed for integration of **Dr.Web for UNIX File Servers** with external monitoring systems over SNMP. Such integration allows to control states of suite components and collect statistics on threat detection and neutralization. Supports SNMP v2c and v3.
	Executable file: `drweb-snmpd` Internal name output to the log file: **SNMPD**
Dr.Web ClamD	Component emulating interface of the anti-virus daemon `clamd`, which is a component of **ClamAV® anti-virus.** Allows all applications that support **ClamAV® to transparently use Dr.Web for UNIX File Servers** for anti-virus scanning.
	Executable file: `drweb-clamd` Internal name output to the log file: **ClamD**

Structure of the **Dr.Web for UNIX File Servers** suite and interaction with external applications are illustrated on the picture below.



Picture 1. Structure of Dr.Web for UNIX File Servers suite

In this scheme, the following notations are used:

- – **Dr.Web for UNIX File Servers** as a whole and external applications together with systems which are not included in the solution.
- – Components that are included in **Dr.Web for UNIX File Servers** engine. Other product components use the engine as a service that performs anti-virus checks.
- – Service components designed to perform particular anti-virus protection functions (for example, scanning file system objects, updating virus databases, establishing connection to central protection servers, managing operation of the suite).
- – Components that provide the user with the interface for **Dr.Web for UNIX File Servers** management.
- – Quarantine as a set of file system directories which store isolated malicious files.

For details on the components, refer to Solution Components.

Quarantine Directories

Quarantine directories serve for isolation of files that pose a threat to system security and cannot be currently cured. Such threats are those that are unknown to **Dr.Web for UNIX File Servers** (that is, a virus is detected by the *heuristic analyzer* but the virus signature and method to cure are absent in the databases) or those that caused an error during scanning. Moreover, a file can be quarantined at user request if the user selected this action in the list of detected threats or specified this action in settings as reaction to this threat type.

When a file is quarantined, it is renamed according to special rules. Renaming of isolated files prevents their identification by users or applications and complicates access to them in case of attempt to bypass quarantine management tools implemented in **Dr.Web for UNIX File Servers**. Moreover, when a file is moved to quarantine, the execution bit is reset to prevent an attempt to run this file.

Quarantine directories are located in

- **user home directory** (if multiple user accounts exist on the computer, a separate quarantine

directory can be created for each of the users);

- **root directory** of each logical volume mounted to the file system.

Dr.Web quarantine directories are always named as `.com.drweb.quarantine` and are not created until the `Quarantine` action is applied. At that, only a directory required for isolation of a concrete object is created. When selecting a directory, the file owner name is used: search is performed upwards from the location where the malicious object resides and if the owner home directory is reached, the quarantine storage created in this directory is selected. Otherwise, the file is isolated in the quarantine created in the root directory of the volume (which is not always the same as the file system root directory). Thus, any infected file moved to quarantine always resides on the volume, which provides for correct operation of quarantine in case several removable data storages and other volumes are mounted to different locations in the system.

Users can manage objects in quarantine from the command line using **Dr.Web Ctl** utility. Every action is applied to the consolidated quarantine; that is, changes affect all quarantine directories available at the moment.

Operation with quarantined objects is allowed even if no active license is found. However, isolated objects cannot be cured in this case.

Files Permissions and Privileges

To scan objects of the file system and neutralize threats, **Dr.Web for UNIX File Servers** (or rather the user under whom it runs) requires the following permissions:

Action	Required permissions
Listing all detected threats	Unrestricted. No special permission required.
List archive contents (only corrupted or malicious elements)	Unrestricted. No special permission required.
Moving to quarantine	Unrestricted. The user can quarantine all infected files regardless of read or write permissions on them.
Removing a threat	User must have write permission on the deleted file.
Curing	Unrestricted. The permissions and owner of a cured file remain the same. If deletion is applied to the file while curing, it is removed from the system regardless of the permissions that the user has on the file.
Restoring a file from quarantine	The user must have permissions to read the file and to write to the restore directory.
Deleting a file from quarantine	The user must have write permissions to the file that was moved to quarantine.

To enable operation of the command-line management tool with superuser privileges, you can use the `su` command, which allows to change the user, or the `sudo` command, which allows to execute a command as another user.

Note that **Dr.Web Scanning Engine** scanning engine cannot check file which size exceeds 4 Gbytes (on attempt to scan such files, the following error message displays: "File too large").

Operation Modes

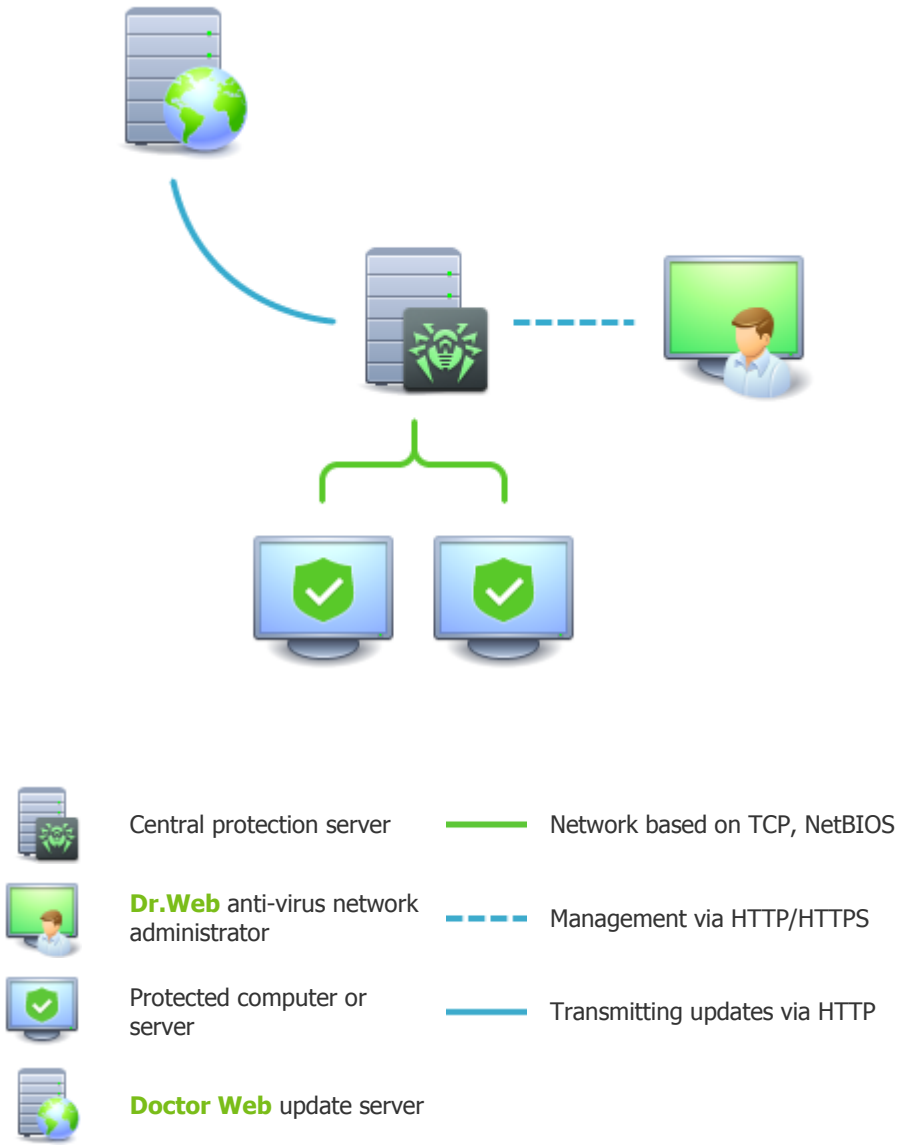
Anti-virus Dr.Web for UNIX File Servers can operate both in standalone mode and as a part of an anti-virus network managed by a central protection server. Operation in central protection mode does not require installation of additional software or **Dr.Web for UNIX File Servers** reinstallation or removal.

- **In standalone mode**, the protected computer is not connected to an anti-virus network and its operation is managed locally. In this mode, configuration and license key files reside on local disks and **Dr.Web for UNIX File Servers** is fully controlled from the protected computer. Updates to virus databases are received from **Doctor Web** update servers.
- **In central protection mode**, protection of the computer is managed by the central protection server. In this mode, some functions and settings of **Dr.Web for UNIX File Servers** can be adjusted in accordance with the general (corporate) anti-virus protection policy implemented on the anti-virus network. The license key file used for operating in enterprise mode is received from the central protection server. The key file stored on the local computer, if any, is not used. Statistics on virus events is sent to the central protection server. Updates to virus databases are also received from the central protection server.
- **In mobile mode**, **Dr.Web for UNIX File Servers** receives updates from **Doctor Web** update servers, but operation of **Dr.Web for UNIX File Servers** is managed with the local settings. The used key file is received from the central protection server.

Central protection concept

Doctor Web solutions for central protection use client-server model (see the picture below).

Workstations and servers are protected by *local anti-virus components* (herein, **Dr.Web for UNIX File Servers**) installed on them, which provides for anti-virus protection of remote computers and allows connection between the workstations and the central protection server.



Picture 2. Logical structure of the Anti-Virus Network

Local computers are updated and configured from the *central protection server*. The stream of instructions, data and statistics in the anti-virus network goes also through the central protection server. The volume of traffic between protected computers and the central server can be quite sizeable, therefore solutions provide options for traffic compression. To prevent leak of sensitive data or substitution of software downloaded onto protected computers, encryption is also supported.

All necessary updates are downloaded to the central protection server from **Doctor Web** update servers.

Local anti-virus components are configured and managed from the central protection server according to commands received from anti-virus network administrators. Administrators manage central protection servers and topology of anti-virus networks (for example, validate connections to the central protection server from remote computers) and configure operation of local anti-virus components when necessary.

Local anti-virus components are not compatible with anti-virus products of other companies or anti-virus solutions of **Dr.Web** if the latter do not support operation in Central protection mode (for example, version 5.0 of **Dr.Web for UNIX File Servers**). Installation of two anti-virus programs on the same computer can cause a system crash and loss of important data.

Please note that the current version of the **Dr.Web for UNIX File Servers** suite is not fully implements the central protection mode: central protection server cannot manage operation settings of the product components and cannot send scan tasks for the suite.

Connecting to Anti-Virus Network

Dr.Web for UNIX File Servers can be connected to an anti-virus network using the `esconnect` command of the command-line management tool **Dr.Web Ctl**.

Verification of central protection server requires use of public encryption keys, that is, each server is supplied with a unique public key. By default, central protection agent **Dr.Web ES Agent** does not allow connection to the server unless you provide a file containing a public key for authentication of the used server. Such public key file should be obtained from the administrator of your anti-virus network serviced by the server to which you want to connect **Dr.Web for UNIX File Servers**.

If **Dr.Web for UNIX File Servers** is a part of the anti-virus network, you can switch solution operation between mobile and enterprise modes. The operation mode option is managed with the configuration parameter **`MobileMode`** of **Dr.Web ES Agent**. Note that operation can switch to mobile mode only if it is allowed in the central protection server settings.

Disconnecting from Anti-Virus Network

Dr.Web for UNIX File Servers can be disconnected from the anti-virus network using the `esdisconnect` command of the command-line management tool **Dr.Web Ctl**.

Testing Solution Operation

The EICAR (*European Institute for Computer Anti-Virus Research*) Test helps testing performance of anti-virus programs that detect viruses using signatures. This test was designed specially so that users could test reaction of newly-installed anti-virus tools to detection of viruses without compromising security of their computers.

Although the EICAR test is not actually a virus, it is treated by the majority of anti-viruses as if it were a virus. On detection of this "virus", **Dr.Web** anti-virus products report the following: **EICAR Test File (Not a Virus!)**. Other anti-virus tools alert users in a similar way. The EICAR test file is a 68-byte COM-file for **MS DOS**/**Windows** OS that outputs the following line on the console when executed:

```
EICAR-STANDARD-ANTIVIRUS-TEST-FILE!
```

The EICAR test contains the following character string only:

```
X5O!P%@AP[4\PZX54(P^)7CC)7}$EICAR-STANDARD-ANTIVIRUS-TEST-FILE!$H+H*
```

To create your own test file with the "virus", you may create a new file with the line mentioned above.

If **Dr.Web for UNIX File Servers** operates correctly, the EICAR test file is detected during a file system scan regardless of the scan type and the user is notified on the detected threat: **EICAR Test File (Not a Virus!)**.

System Requirements

You can use **Dr.Web for UNIX File Servers** on a computer that meets the following requirements:

Specification	Requirement
Platform	Both 32-bit **(IA-32, x86)** and 64-bit **(x86-64, x64, amd64) Intel** platforms are supported.
Hard disk space	Minimum 1 GB of free disk space of the volume where **Dr.Web for UNIX File Servers** are located.
Operating system	**GNU/Linux** (kernel `2.6.37` or newer and library **glibc** `2.13` or newer), **FreeBSD** or **Solaris** for platforms **Intel x86/amd64**. Note that the system must use PAM. For systems operating on 64-bit platforms, support of 32-bit applications must be enabled (probably, additional libraries must be installed for this, see below). Tested operating system distributions are listed below.
Other	The following valid network connections: Valid Internet connection to enable updates for virus databases and **Dr.Web for UNIX File Servers** components. When operating in central protection mode, connection to the server on the local network is enough; connection to the Internet is not required.

Tested operating system distributions

The product was tested on the following distributions:

- **GNU/Linux** (for 32- and 64-bit platforms):

Linux distribution name Linux	Version	Required additional libraries for 64-bit OS version
Debian	7.8, 8.0, 8.1	**libc6-i386**
Fedora	20, 21	**glibc.i686**
Ubuntu	12.04, 14.04, 14.10, 15.04	**libc6-i386**
CentOS	5.11, 6.6, 7.1	**glibc.i686**
Red Hat Enterprise Linux	5.11, 6.6, 7.1	**glibc.i686**
SUSE Linux Enterprise Server	11 SP3, 12	–

Other **GNU/Linux** distributions that meet the above-mentioned requirements have not been tested for compatibility with **Dr.Web for UNIX File Servers** but may be supported. If a compatibility issue occurs, contact technical support on the official website at http://support.drweb.com/request/.

- **FreeBSD:**

Version	Required additional libraries for 64-bit OS version
9.3, 10.1	–

- **Solaris:**

Version	Required additional libraries for 64-bit OS version
10 u11	–

Please note that for **FreeBSD** and **Solaris**, the product can be installed only from universal package.

The **SpIDer Guard** and **SpIDer Guard for NSS** monitoring components are included only in the distributions designed for **GNU/Linux** OSes.

On **Debian, Fedora, Mint**, and **Ubuntu**, **SpIDer Guard** uses the **`fanotify`** monitoring interface by default. On **CentOS** and **Red Hat Enterprise Linux**, the component uses a special loadable kernel module, which is supplied completely assembled with the product.

If necessary, you can build a loadable kernel module manually by using the supplied source codes for any **GNU/Linux**-based operating systems with kernel `2.6.x` and newer.

Additional Packages

- **X Window System** graphics subsystem and any window manager – to enable startup of the GUI programs for product installation and removal in graphics mode.
- **xterm** or **xvt** terminal emulator – to start in graphics mode the product installer or uninstaller, designed for the command line, and for automatic starting of the interactive setup script during the GUI installation.
- For correct operation with user privileges, PAM must be installed in the operating system.

For convenient work with **Dr.Web for UNIX File Servers** in the command line, you can enable command auto-completion in the used command shell (if disabled).

Supported File Servers

Samba File Service

For integration with **Samba** file service, the installed and configured file server **Samba** 3.0 and newer is required.

The **SpIDer Guard for SMB** monitor uses a special **VFS SMB** module for the integration with the **Samba** server. With **SpIDer Guard for SMB**, several versions of this module which are built for various versions of **Samba** are supplied. However, the supplied versions of the **VFS SMB** module may be incompatible with the version of **Samba** installed on your file server. It may occur, for example, if the **Samba** server uses the `CLUSTER_SUPPORT` option.

In case of incompatibility of the **VFS SMB** module with the **Samba** server, the ***corresponding message is shown*** during the **Dr.Web for UNIX File Servers** product installation. In this case, build the **VFS SMB** module for your **Samba** server from the supplied source codes manually (including the compatibility with the `CLUSTER_SUPPORT` option if necessary).

The procedure of building the **VFS SMB** module from the supplied source codes is described in Appendix G.

NSS File Service

For integration with **NSS** file service, the installed and configured **Novell Open Enterprise Server** SP2 based on the operating system **SUSE Linux Enterprise Server** 10 SP3 or newer (11 SP1, SP2) is required.

If you encounter any problem with installation of additional packages and components, refer to User Manuals for the used distribution of the operating system.

Licensing

Permissions to use **Dr.Web for UNIX File Servers** are granted by the *license* purchased from **Doctor Web** company or from **Doctor Web** partners. License parameters determining user rights are set in accordance with the **License agreement** which the user accepts during product installation. The license agreement contains information on the user and the vendor as well as usage parameters of the purchased product, including:

- List of components licensed to the user
- License period
- Other restrictions (for example, number of computers on which the purchased **Dr.Web for UNIX File Servers** is allowed for use).

For evaluation purposes users may also activate *demo period*. After successful activation, demo period provides users with full functionality of the solution for the whole activated period.

Each **Doctor Web** product license has a unique serial number associated with a special file stored on the user computer. This file regulates operation of **Dr.Web for UNIX File Servers** components in accordance with the license parameters and is called a *license* key file. Upon activation of a demo period, a special key file, named a *demo* key file, is automatically generated.

If a license or a demo period are not activated on the computer, **Dr.Web for UNIX File Servers** components are blocked. Moreover, updates to virus databases and components cannot be downloaded from **Doctor Web** update servers. But you can activate the product by connecting it to the central protection server as a part of the anti-virus network administered by the enterprise or Internet service provider. In this case, operation of Anti-virus and updating are managed by the central protection server.

Please note that the current version of the **Dr.Web for UNIX File Servers** suite is not fully implements the central protection mode: central protection server cannot manage operation settings of the product components and cannot send scan tasks for the suite.

Purchasing and Registering Licenses

After a license is purchased, updates to product components and virus databases are regularly downloaded from **Doctor Web** update servers. Moreover, if the customer encountered any issue when installing or using the purchased product, they can take advantage of technical support service provided by **Doctor Web** or **Doctor Web** partners.

You can purchase any **Dr.Web** product as well as obtain a product serial number either on the online store or from our partners. For details on license periods and license types, visit the **Doctor Web** official website at http://www.drweb.com/.

License registration is required to prove that you are a legal user of **Dr.Web for UNIX File Servers** and activate the solution functions including virus database updating. It is recommended to register the product and activate the license once installation completes. A purchased license can be activated on the **Doctor Web** official website at http://products.drweb.com/register/.

During activation, it is required to enter the serial number of the purchased license. The serial number is supplied with the product or via email when purchasing or renewing the license online.

If you have used **Dr.Web for UNIX File Servers** in the past, you may be eligible for a 150-day extension to your new license. To enable the bonus, enter your registered serial number or provide the license key file.

If you have several licenses for using **Dr.Web for UNIX File Servers** on several servers, but choose to use the product only on one server, you can specify this and, hence, license validity period will be automatically extended.

Obtaining Demo License

A demo period for your copy of the product can be obtained on the **Doctor Web** official website at https://download.drweb.com/demoreq/biz/. After you select the product and fill the registration form, you will receive an email with a serial number or key file for **Dr.Web for UNIX File Servers** activation.

Another demo period for the same computer can be obtained after a certain time period.

Subsequent Registration

If a key file is lost but the existing license is not expired, you must register again by providing the personal data you specified during the previous registration. You may use a different email address. In this case, the key file will be sent to the newly specified address.

The number of times you can request a key file is limited. One serial number can be registered no more than 25 times. If requests in excess of that number are sent, no key file will be delivered. To receive a lost key file, contact technical support, describe your problem in detail, and state personal data you entered upon serial number registration. The license key file will be sent by email.

If the key file is sent by email, you need to install it manually.

Key File

The key file is a special file stored on the local computer. It corresponds to the purchased license or activated demo period for **Dr.Web for UNIX File Servers**. The file contains information on the provided license or demo period and regulates usage rights in accordance with it.

The key file has `.key` extension and is valid if satisfies the following criteria:

- License or demo period is not expired.
- Demo period or license applies to all anti-virus components required by the product.
- Integrity of the key file is not violated.

If any of the conditions are violated, the license key file becomes invalid.

During **Dr.Web for UNIX File Servers** operation, the key file must reside in the default `<etc_dir>` directory (`/etc/opt/drweb.com` for **Linux**) and have the **`drweb32.key`** name.

Components of **Dr.Web for UNIX File Servers** regularly check whether the key file is available and valid. The key file is digitally signed to prevent its editing. So, the edited key file becomes invalid. It is not recommended to open your key file in text editors in order to avoid its accidental invalidation.

If no valid key file (license or demo) is found, or if the license is expired, operation of the anti-virus components is blocked until a valid key file is installed.

It is recommended to keep the license key file until it expires, and use it to reinstall **Dr.Web for UNIX File Servers** or install it on a different computer. In this case, you must use the same product serial number and customer data that you provided during the registration.

Key File Installation

If you have a key file corresponding to the valid license for the product (for example, if you obtained the key file by email or if you want to use **Dr.Web for UNIX File Servers** on another server), you can activate the solution by specifying the path to the key file.

For that purpose:

1. Unpack the key file if archived
2. Do one of the following:
   - Copy the key file to the `<etc_dir>` directory and rename the file to **`drweb32.key`**
   - In the **Dr.Web for UNIX File Servers** configuration file, specify the key file path as the **`KeyPath`** parameter value.
3. If required, restart **`drweb-configd`** component by sending it the `SIGHUP` signal.

You can also use the following command:

```
# drweb-ctl cfset Root.KeyPath </path/to/key/file>
```

In this case, the key file will not be copied to the `<etc_dir>` directory and will remain in its original location.

For details on conventions used for `<opt_dir>`, `<etc_dir>`, and `<var_dir>`, refer to Introduction.

Installing and Removing Solution

This section describes how to install, update, and remove **Dr.Web for UNIX File Servers** 10.1.0. Also in this section you can find description of how to upgrade the product, if **Dr.Web for UNIX File Servers** 6.0.2 is already installed on your computer.

These procedures can be performed only by a user with administrative privileges (`root` superuser). To elevate privileges, use the **`su`** command (change the current user) or the **`sudo`** command (execute the specified command with the privileges of another user).

Please note that for **FreeBSD** and **Solaris**, the product can be installed only from universal package.

Upgrading to Newer Version

Introductory remarks

Please note that your version of **Dr.Web for UNIX File Servers** should be upgraded the same way as it was used during the installation:

- If the current version was installed from the repository, an upgrade requires updating program packages from the repository.
- If the current version was installed from the distribution, an upgrade requires installation of another distribution of the new version.

To identify how the product version was installed, check whether the solution executable directory `<opt_dir>/bin/` contains **`remove.sh`** delete script. If so, the current version was installed from the universal package; otherwise, it was installed from the repository.

Please note that for **FreeBSD** and **Solaris**, the product can be installed only from universal package.

For details on conventions used for `<opt_dir>`, `<etc_dir>`, and `<var_dir>`, refer to Introduction.

If you cannot update the product the way you installed it initially, remove your current version of **Dr.Web for UNIX File Servers**, and then install a new version using any convenient method. Installation and removal procedures for previous **Dr.Web for UNIX File Servers** versions are the same as installation and removal described in the current manual for version 10.1.0. For additional information, see User manual for your current version of **Dr.Web for UNIX File Servers**.

Note that **Dr.Web for UNIX File Servers** 10.1.0 **cannot operate** under the central protection server. Thus, if you need **Dr.Web for UNIX File Servers** to operate under the management of the server, **do not perform** the upgrade. Otherwise, after you upgrade the product, you will need to obtain a license key file and manage its operation locally, for example, by using the included management interface.

Installing universal package for an upgrade

Install **Dr.Web for UNIX File Servers** 10.1.0 from the installation file. During the installation, you are prompted to automatically remove the older version installed from the distribution.

If **several** **Dr.Web** server products 6.0.2 are installed on your server (for example, a product for file servers, for mail servers, and for Internet gateways), you need to select **only** the following packages for removal, in order to keep other server products that will not be upgraded (for mail servers, and for Internet gateways) fully functional:

```
drweb-file-servers-doc
```

```
drweb-samba-web
drweb-smbspider
```

Upgrading from the repository

Note that you **cannot** upgrade **Dr.Web for UNIX File Servers** 6.0.2 to 10.1.0 from the repository if your server features **several** **Dr.Web** server products 6.0.2 (for example, a product for file servers, for mail servers, and for Internet gateways). In this case, install the new version of **Dr.Web for UNIX File Servers** to a separate machine.

For updating your current **Dr.Web for UNIX File Servers** version, installed from the **Doctor Web** repository, in dependence of packages type, do the following:

- **In case of using RPM packages (yum):**
  1. Remove all packages of the current version using the command

     ```
     # yum remove drweb*
     ```

     This command will prompt you to remove **all** installed **Dr.Web** packages. Therefore it should be used carefully, if you have installed several **Dr.Web** products on your workstation.
  2. Change the used repository (from the package repository of your current version to the package repository 10.1.0).

     You can find the name of the repository in the Installing from Dr.Web Repository section. For details on how to change repositories, refer to help guides of the used operating system distribution.
  3. Install the new **Dr.Web for UNIX File Servers** version using the command

     ```
     # yum install drweb-file-servers
     ```

  For an additional information, refer to chapters Removing and Installing product packages using the **Dr.Web** repository (to parts, corresponding to OS and packages manager which are used).
- **In case of using DEB packages (apt-get):**
  1. Change the used repository (from the package repository of your current version to the package repository 10.1.0).
  2. Update the product using the following commands:

     ```
     # apt-get update
     # apt-get dist-upgrade
     ```

Please note that for OS **Ubuntu** 14.04 (64-bit version), the **apt-get** `dist-upgrade` command may fail. In this case use the **aptitude** package manager (to upgrade the product, issue the **aptitude** `dist-upgrade` command).

Key file transfer

Regardless of the selected method to upgrade product, the license key file is installed to the default location for new version of the product.

If any problem occurs during automatic installation of the key file, you can install it manually.

If a valid license key file is lost, contact **Doctor Web** technical support.

Installation Procedure

To install **Dr.Web for UNIX File Servers**, do one of the following:

1. Download the installation file with the universal package for UNIX systems from the **Doctor Web** official website. The package is supplied with installers (both graphical and console) started depending on the environment.
2. Download the native packages from the corresponding package repository of **Doctor Web**.

Please note that for **FreeBSD** and **Solaris**, the product can be installed only from universal package.

Regardless of the selected way to install **Dr.Web for UNIX File Servers**, after the installation completes, you need either to activate the license, or install the key file if obtained, or connect the product to the central protection server. For details, refer to Licensing.

Until you do that, **anti-virus protection is disabled.**

Installing Universal Package

Dr.Web for UNIX File Servers is distributed as an installation file named **drweb-file-servers_<version>~<OS>_<platform>.run**, where **<version>** is a line that contains the version and data of product release, **<OS>** – type of UNIX-like OS, and **<platfrom>** is a platform for which the product is intended (**x86** for 32-bit platforms and **amd64** for 64-bit platforms). For example:

```
drweb-file-servers_10.1.0.1-1409012000~linux_x86.run
```

Note that the installation file name corresponding to the above-mentioned format is referred to as **<file_name>.run**.

To install **Dr.Web for UNIX File Servers** components

1. If you do not have the installation file containing the universal package, download it from the official **Doctor Web** website: https://download.drweb.com/.
2. Save the installation file to the hard disk drive of the computer.
3. Allow the installation file to execute, for example, using the following command:

   ```
   # chmod +x <file_name>.run
   ```

4. Execute the installation file using the following command:

   ```
   # ./<file_name>.run
   ```

   or use the standard file manager of the graphical shell for both changing file properties and running the file.

   This runs an integrity check of the archive, after which the archived files are unpacked to a temporary directory and an install program is started. If the user does not have root privileges, the install program attempts to elevate its privileges and requires the root password (**sudo** is used). If the attempt fails, installation process aborts.

If the path to the temporary directory in the file system has not enough free space for the unpacked files, the installation process is aborted and an appropriate message is displayed. In this case, change the value of the `TEMPDIR` system environment variable so that it points to a directory with enough free space and repeat the installation. You can also use the `--target` option (for more details, see Custom Installation chapter).

Depending on the environment where the distribution is started, one of the following installation programs runs:

- Installation Wizard for graphics mode
- Installer for command-line mode

At that, the installer for command-line mode is automatically started if the Installation Wizard for graphics mode fails to start.

5. Follow the prompts of the installer.

Note that if the used **Linux** distribution features **SELinux**, the installation process can be interrupted by the security subsystem. If such situation occurs, set **SELinux** to the `(Permissive)` mode. To do this, enter the following command:

```
# setenforce 0
```

and restart the installer.

After the installation completes, configure **SELinux** security policies to enable correct operation of anti-virus components of the solution.

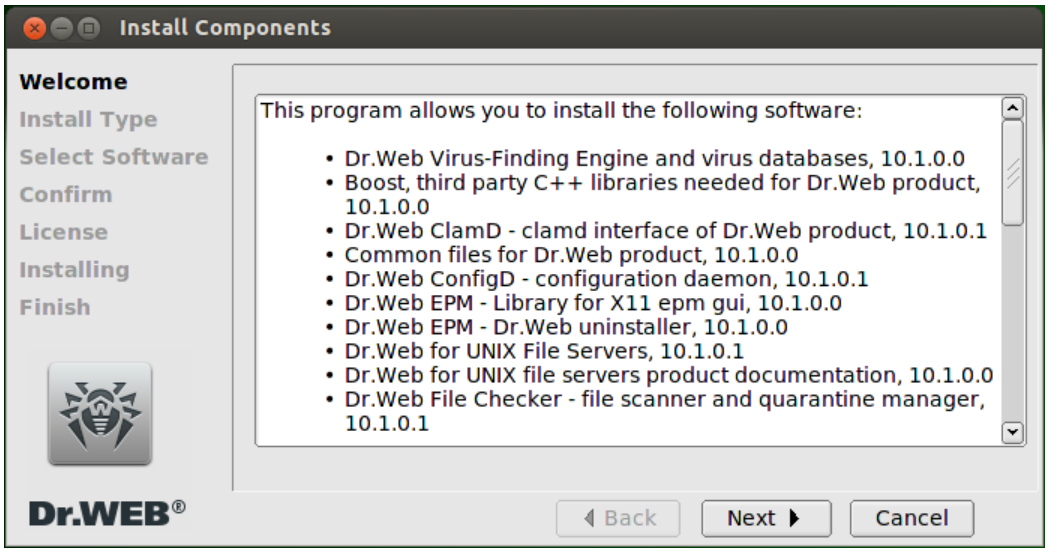
All unpacked installation files are deleted once the installation process completes.

After installation in the desktop graphical shell completes, the **Dr.Web** group is displayed on the application menu. This item contains item **Remove Dr.Web components** to delete the product.

If required, use custom installation of product components (for example, to resolve errors that occurred during **Dr.Web for UNIX File Servers** operation).

Installing in Graphics Mode

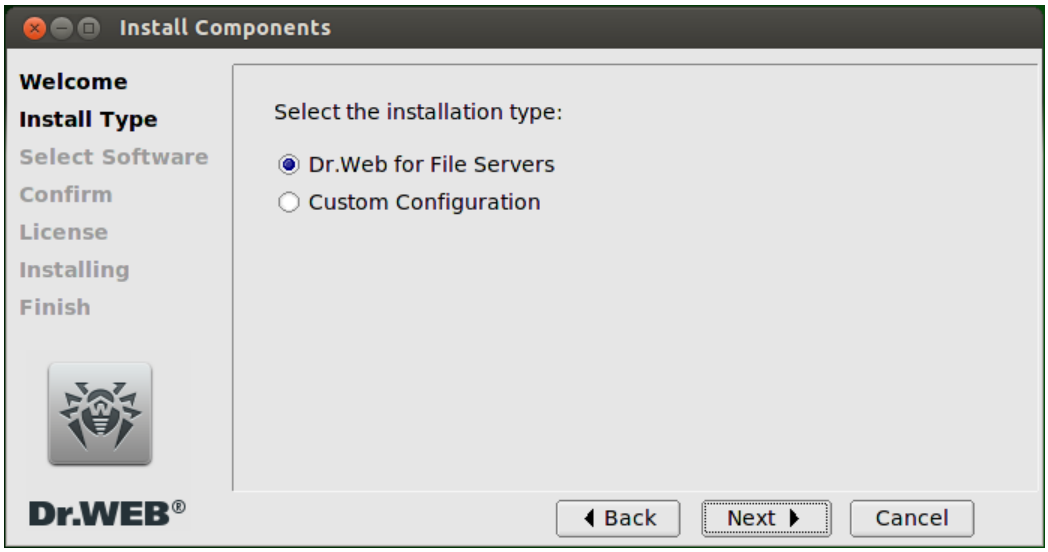
After the installation program for graphics mode starts, a window of the Installation Wizard displays. The welcome page shows packages of the product that are included in the distribution and can be installed via the Wizard.



Picture 3. Welcome page

To start installation of **Dr.Web for UNIX File Servers**, click **Next**. If you choose not to install the product and exit the Wizard, click **Cancel**.

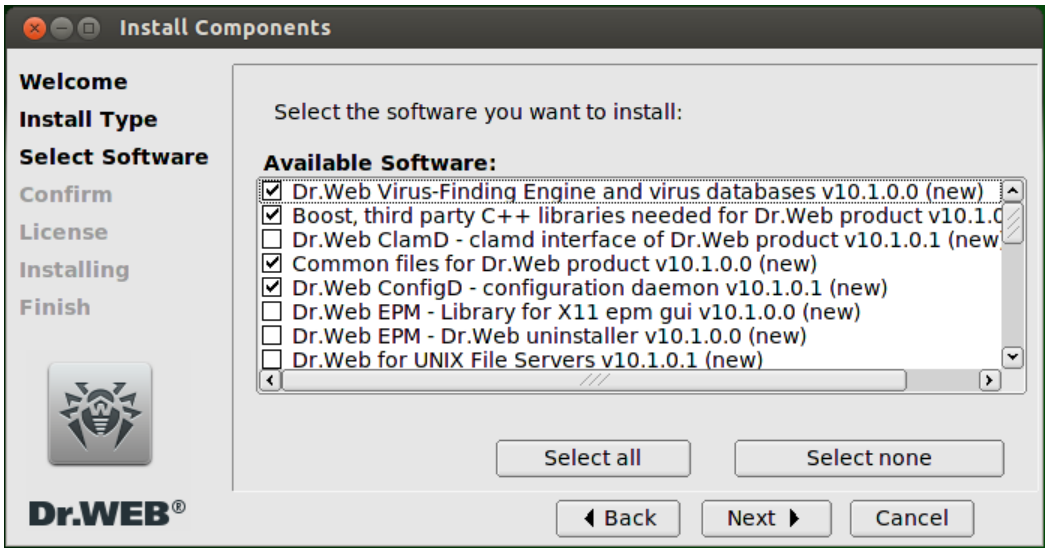
1. In the first step, select the type of the installation by using the switch button. If the **Dr.Web for UNIX File Servers** item is selected, all packages included in **Dr.Web for UNIX File Servers** will be automatically installed. If the **Custom Configuration** item is selected, you will be prompted to select required components manually in step 2. Otherwise, the Wizard will proceed to step 3.



Picture 4. Selection of the installation type

After you select the installation type, click **Next**. If you choose not to install the product and exit the Wizard, click **Cancel**.

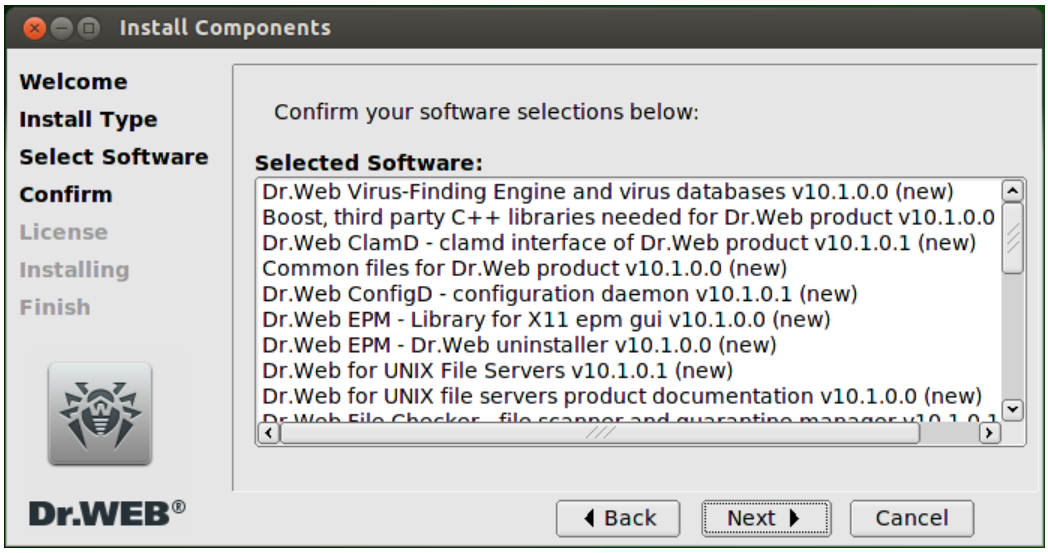
2. If in the first step you selected **Custom Configuration**, the next screen will prompt you to select packages for installation. By clicking **Select all**, you can select all of the components at once; by clicking **Select none**—clear the selection. Note that selection of a package means automatic selection of other packages on which this package is dependent. Similarly, deselection of a package means automatic deselection of all packages that depend on it.



Picture 5. Selection of packages to be installed

After you select required components, click **Next**. If you choose not to install the product and exit the Wizard, click **Cancel**.

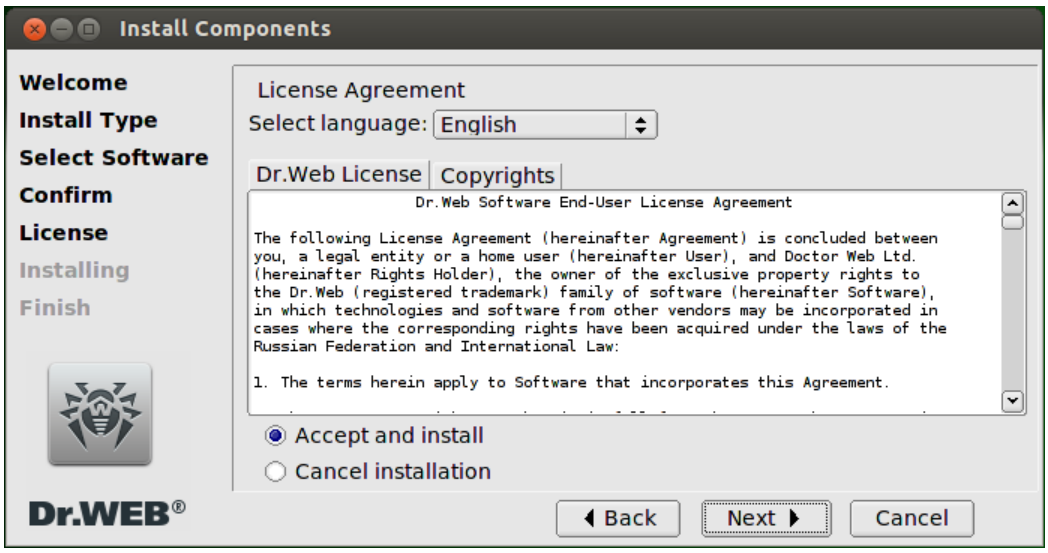
3. The next page of the Wizard displays the list of product packages that will be installed on your computer.

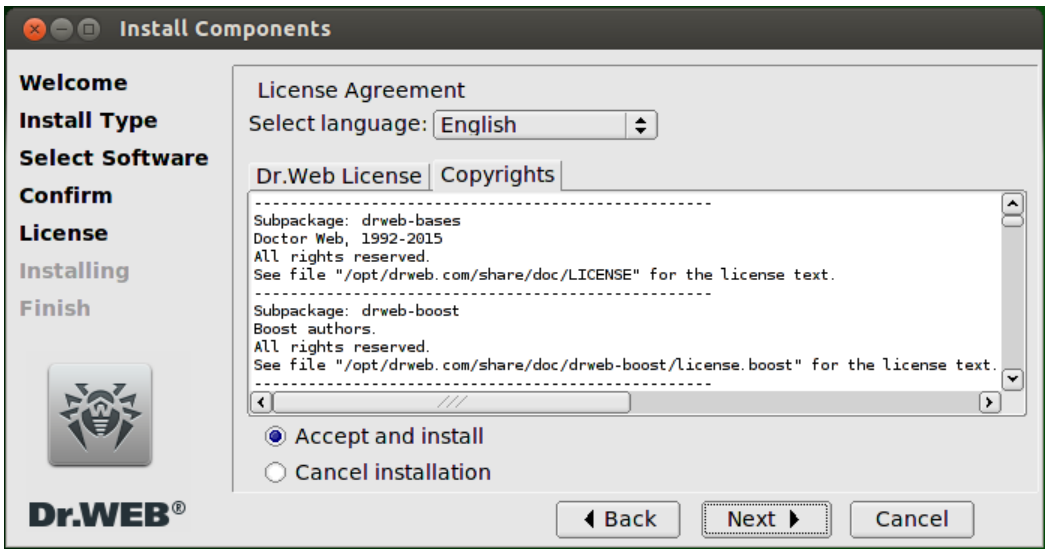


Picture 6. Confirming the list of components to be installed

To confirm your selection, click **Next**. To cancel the installation and exit the Wizard, click **Cancel**. To edit the list of the components to be installed, click **Back**. Note that clicking the **Back** button opens the windows with listed components (step 2) regardless of the installation type that you selected in step 1.

3. In the next step, read the text of the **Dr.Web** License agreement and information about copyright on the installed **Dr.Web for UNIX File Servers** components (including copyright on third-party components). To view the text of the License agreement and information on copyright, select the corresponding tab. The **Select language** drop-down list allows to select the language for the **Dr.Web** License Agreement.

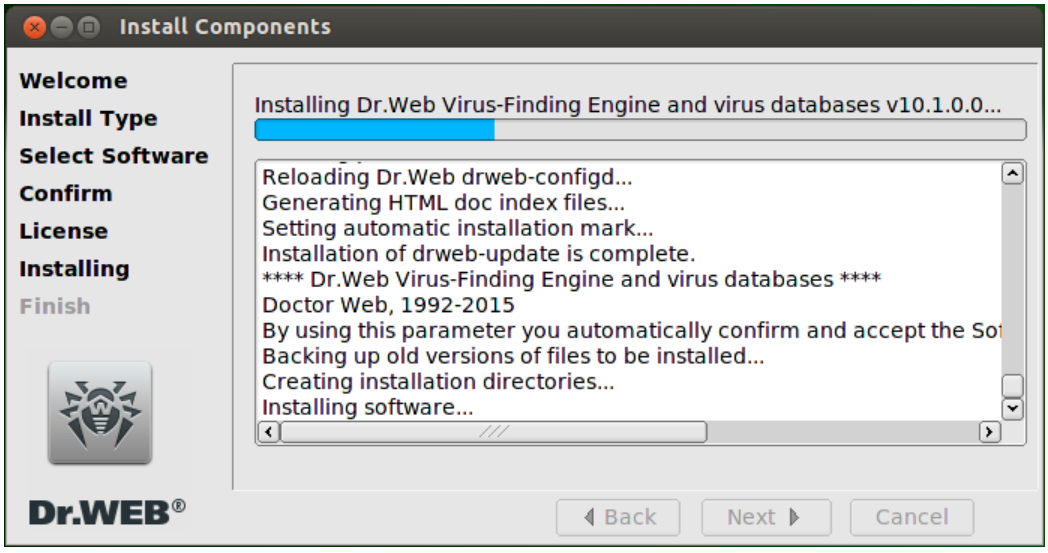




Picture 7. Viewing the License agreement and copyright information

To start installation of the product packages, accept the terms of the license agreement (for this, use the **Accept and install** switch) and click **Next**. Note that if you select **Cancel installation** and click **Next**, the Installation Wizard will exit as the terms of the License agreement were not accepted. You can also click **Cancel** to end the installation process and exit the Wizard.

4. After you accept the terms of the License agreement, unpacking of packages and copying files to your computer will start.

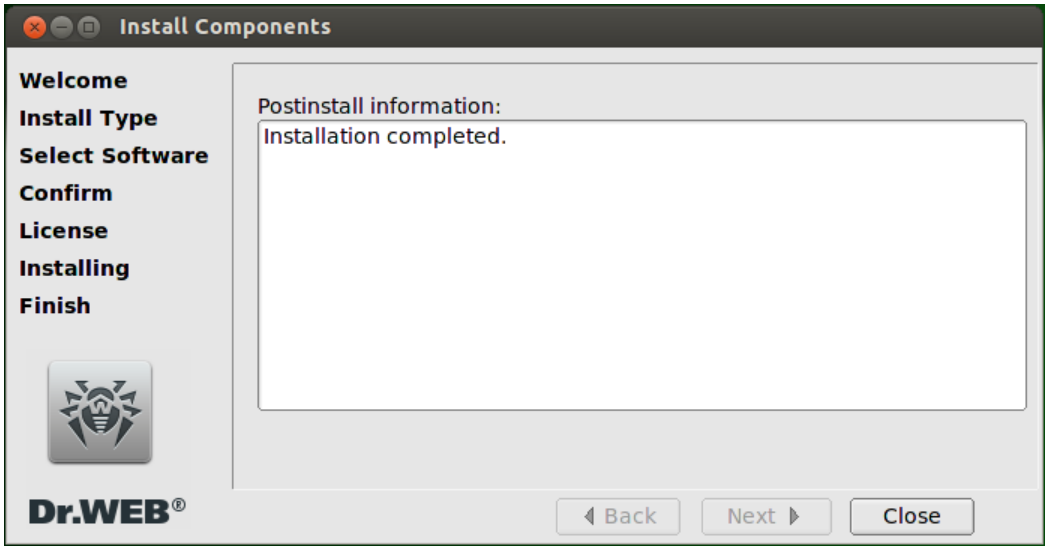


Picture 8. Installation of the product packages

5. After program files are successfully copied and all required changes to the system files are made, you will see the **Run interactive postinstall script** option below the installation log. Select this option if you want to start an interactive script for product setup. You can skip this step and configure the product later. Then click **Next**. If the **Run interactive postinstall script** option was selected, an interactive setup script will run (see below). When execution of the script completes, the final page of the wizard opens. If the option was not selected, the Wizard will proceed to its final page.

If **xterm** terminal emulator is not present in the system, the interactive setup script cannot be started automatically. In this case, start the script manually after the installation process completes (the script file **drweb_smbspider_configure.sh** resides in the <opt_dir>/share/drweb-smbspider-modules/ directory).

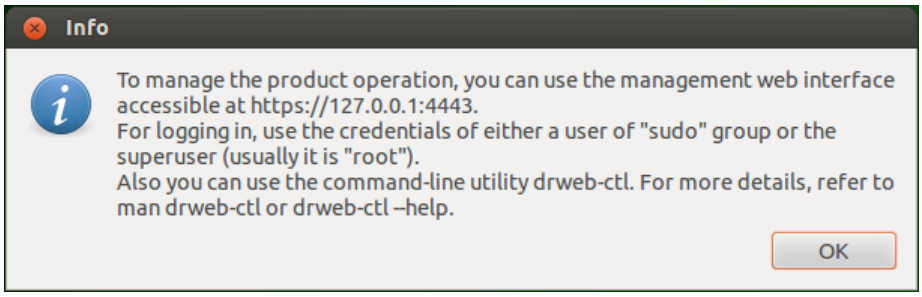
6. In the last step, the final page of the Wizard opens and displays the results of **Dr.Web for UNIX File Servers** installation.



Picture 9. Final page

To exit the Wizard, click **Close.** If the installation process failed due to an error, the final page of the Wizard will display an appropriate message. If so, exit the Wizard by clicking **Close.** Remove the problems, which caused this error, and start installation again.

7. After the installation completes, an appropriate message displays and informs on how to manage product operation (the text of the message is duplicated in the terminal emulator, if it is open).

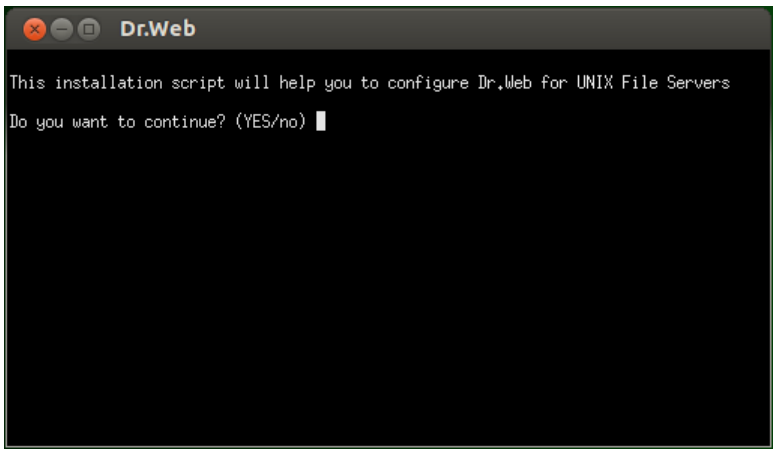


Picture 10. Text message

Interactive setup script

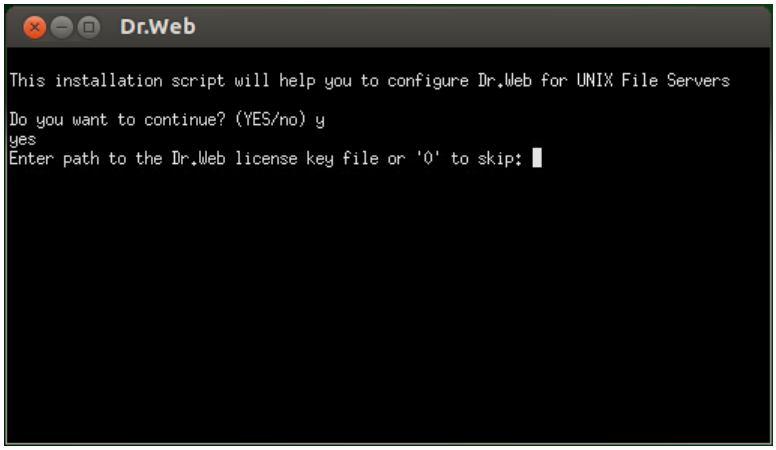
Interactive setup script allows automatic integration of **Dr.Web for UNIX File Servers** and **Samba** file server and helps to specify the list of shared directories monitored by monitor **SpIDer Guard for SMB**.

If you wish to configure integration, enter **y** or **yes** as the answer to the question "`Do you want to continue?`". If you enter **n** or **no**, execution of the script will end.



Picture 11. Running the interactive setup script

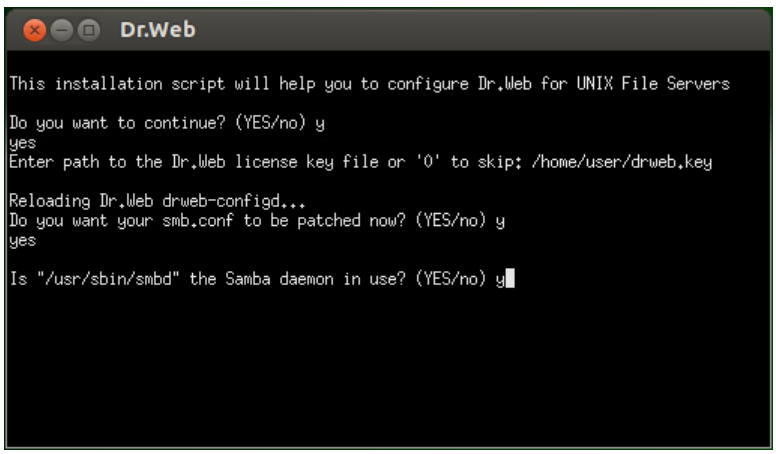
If a valid key file is not available on your computer in the standard product directory, the script will offer you to specify the path to the valid key file. Otherwise, this step will be automatically skipped.



Picture 12. Specifying path to key file

To skip this step, enter **0**. Later, you can install the key file manually. If a valid key file is available on your computer, specify the path to it and press ENTER. The file will be copied to the standard product directory.

Next, allow or deny modification of the `smb.conf` configuration file of the **Samba** server and confirm that the installation script found the right path to the **Samba** server. Otherwise, specify the correct path.



Picture 13. Determination of the used Samba server and its configuration file

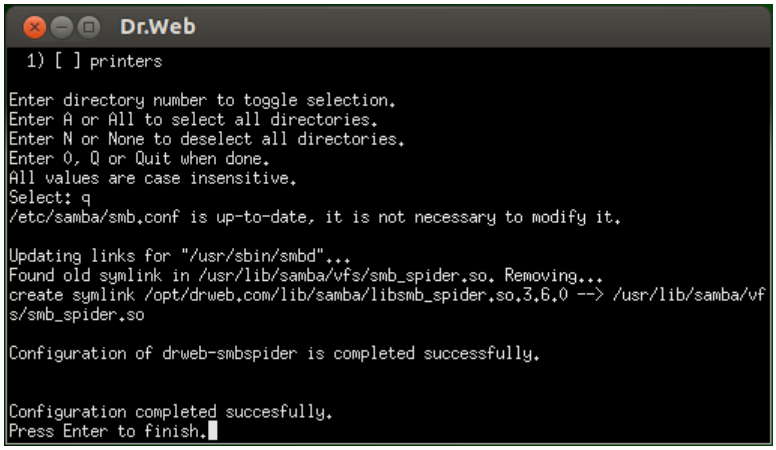
Select shared directories, managed by Samba, that must be monitored by **SpIDer Guard for SMB**. For that, follow the instructions of the script:

- If you specify the number of a shared directory that is not marked with [X], this directory is to be monitored; otherwise, it is excluded from monitoring.
- If you enter **A** or **All**, all available shared directories will be added for monitoring; if you enter **N** or **None**, all shared directories will be excluded from monitoring.

Picture 14. Selection of shared directories for monitoring

To finish the selection and save the changes to the configuration file, enter **0**, **Q**, or **Quit**.

After that, all changes are saved to the configuration file. Additionally, the required version of the **VFS SMB** library module will be determined and the corresponding link will be added to the **Samba** server directory.



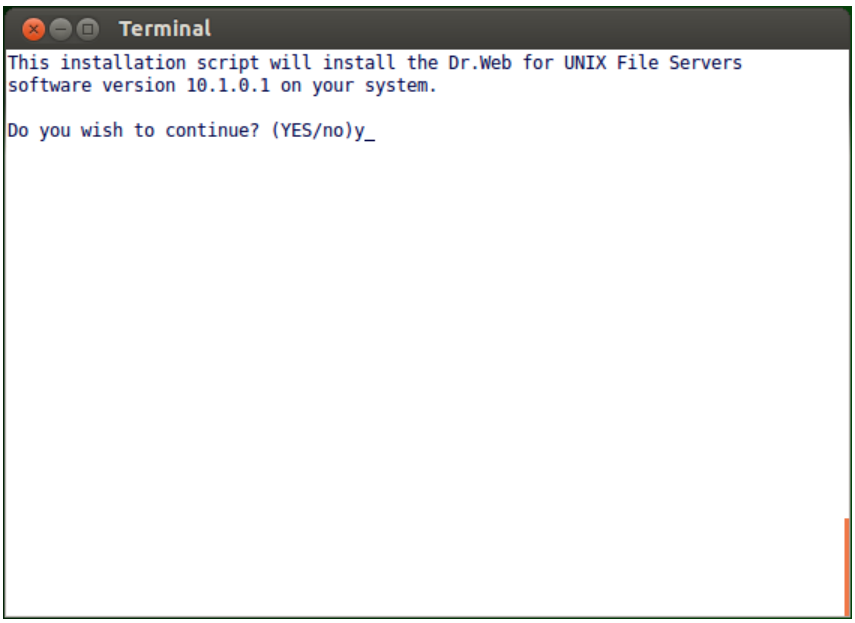
Picture 15. Completion of the script operation

After you finish adjusting the settings, press ENTER to end execution of the script.

Installing from Command Line

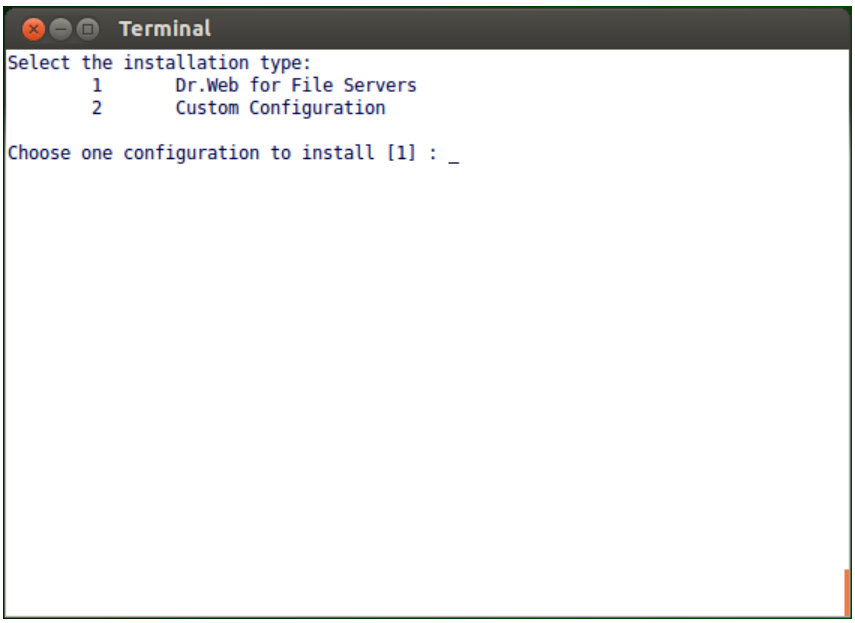
Once the program for command-line installation starts, the command prompt displays on the screen.

1. To start the installation process, enter **`Yes`** or **`Y`** in response to the "Do you wish to continue?" question. If you choose not to install Anti-virus on your computer, enter **`No`** or **`N`**. In this case, the installation will be canceled.



Picture 16. Command prompt to install the product

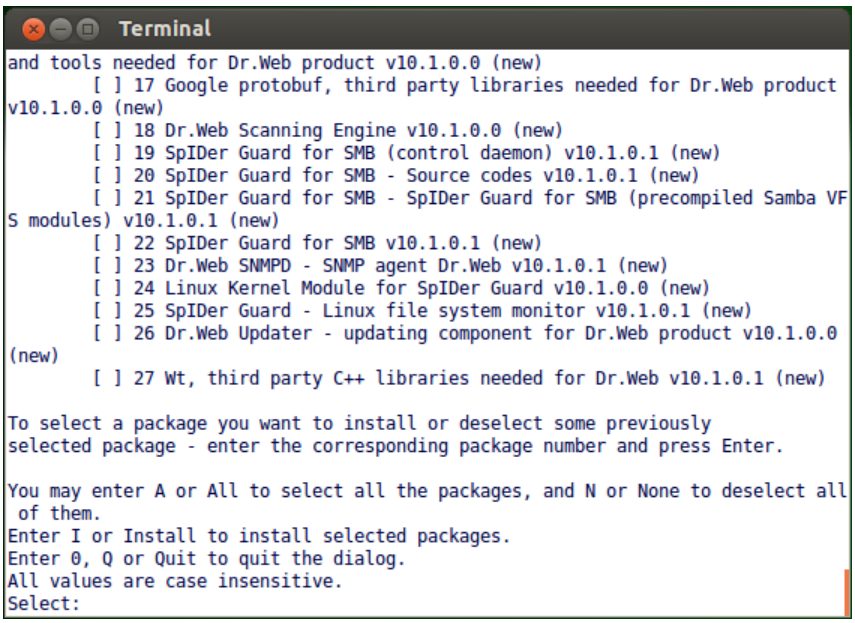
2. Next, choose the installation type: all components of **Dr.Web for UNIX File Servers** or only a set of required **Dr.Web** components (the **Custom Configuration** menu item).



Picture 17. Selection of the installation type

To select the required installation type, enter the corresponding number of the menu item and press ENTER.

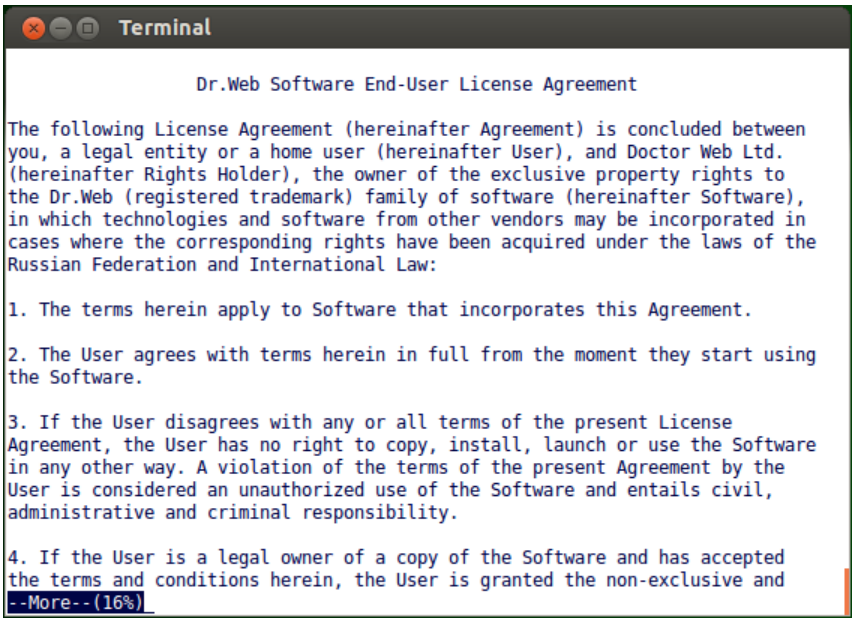
3. If you selected **Custom Configuration** in the previous step, you are prompted to select packages included in the distribution. Otherwise, the installer proceeds to the License agreement (step 4).



Picture 18. Selection of packages to be installed

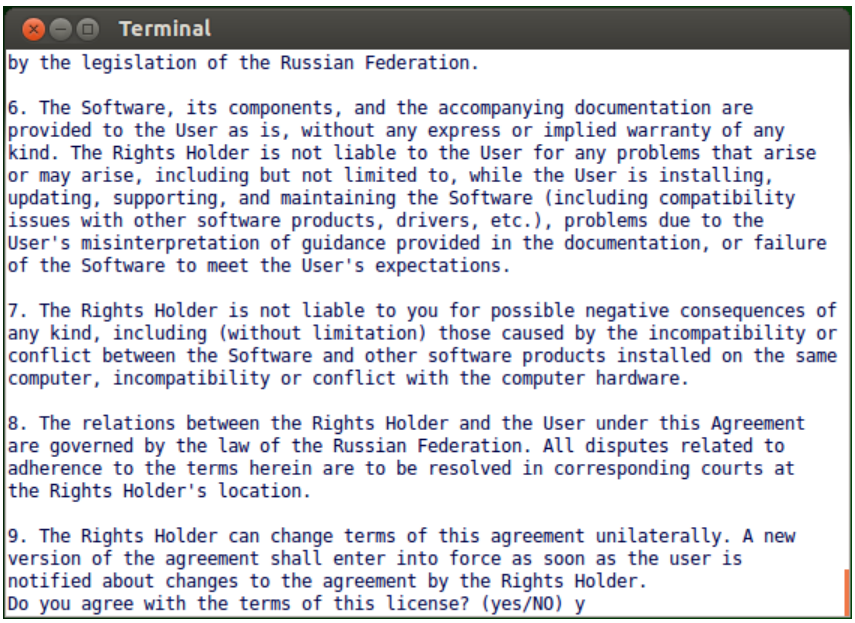
To select a package to be installed, enter the number corresponding to its position on the list. To select all packages at once, enter **A** or **All**; to deselect all packages at once, enter **N** or **None**. Note that selection of a package means automatic selection of other packages on which it is dependent. Similarly, deselection of a package means automatic deselection of all packages that depend on it. To proceed to installation of the packages, enter **I** or **Install**. To end the installer, enter **0**, **Q**, or **Quit**.

4. After that, you need to view the terms of the **Dr.Web** License agreement, which is displayed on the screen. Press ENTER to line down or SPACEBAR to page down the text. Note that options to line up or page up the License agreement text are not provided.



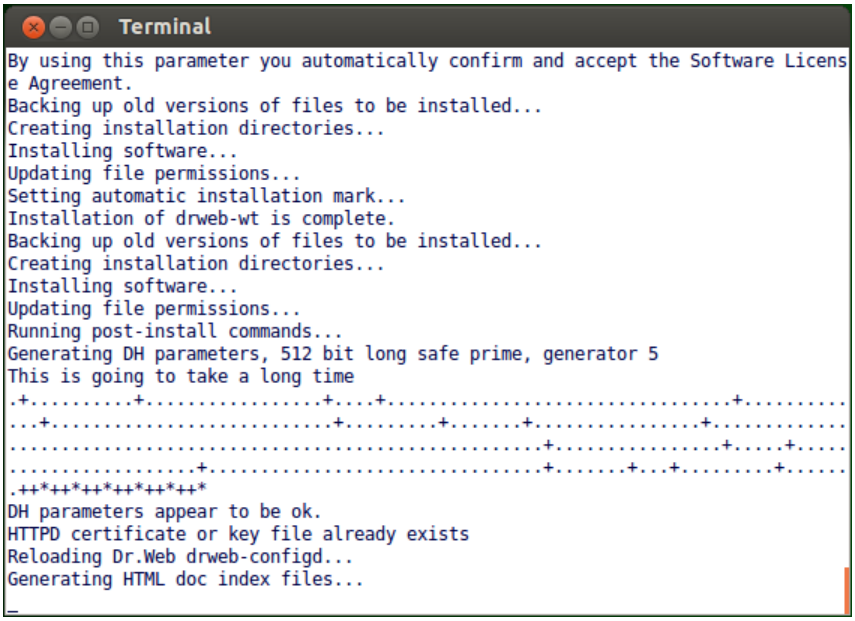
Picture 19. License Agreement page

5. After you read the License agreement text, you will be prompted to accept the terms. Enter **Yes** or **Y** if you accept the terms of the **Dr.Web** License agreement. If you refuse to accept them, type **No** or **N**. In the latter case, the installer will exit.



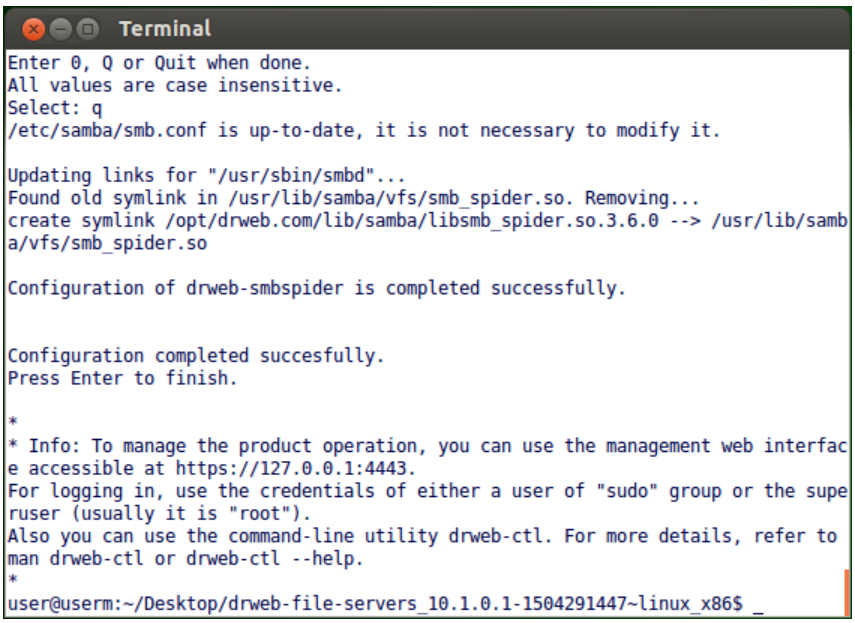
Picture 20. Accepting the License Agreement terms

6. After you accept the terms of the License Agreement, installation automatically starts. During the procedure, information about the installation process, including the list of installed components, will be displayed on the screen.



Picture 21. Installation process

7. After the installation successfully completes, interactive setup script is automatically started. After it finishes its operation, an appropriate message will be displayed on the screen, informing you on how to manage operation of the product.



Picture 22. Installation complete message

If an error occurs, a message describing the error is displayed on the screen and then the installer exits. When the installation process fails due to an error, remove the problems that caused this error and start an installation again.

Custom Installation

Unpacking installation file

If you choose to install only certain product components, unpack the installation file **<file_name>.run** without running an installation program. For that, specify the `--noexec` command-line parameter as follows:

```
$ ./<file_name>.run --noexec
```

After the command is executed, a nested directory `<file_name>` appears in the current directory.

You can also specify the following command-line parameters when launching the run-file:

`-keep` — instructs to unpack product installation files of the `<file_name>` directory to the current one (and not to `/tmp`), which prevents automatic deletion of files after the installation completes.)

`--target <path_to_directory>` — instructs to unpack product installation files of the `<file_name>` directory to the specified one. Note that the unpacked files will be automatically detected after the installation completes unless you specify one of the following parameters: `--noexec` or `--keep`.

For a full list of command-line parameters that can be specified for an installation file, type the following command:

```
$ ./<file_name>.run --help
```

Custom Installation

Installation directory contains packages of all **Dr.Web for UNIX File Servers** components and supporting files. The package of every component **<component_name>** contains two files: `<component_name>.install` and `<component_name>.remove`. These files are command scripts. The first script is used to install the component, the second script—to remove the component. Names of

all packages containing components of **Dr.Web for UNIX File Servers** are started with the `drweb.` prefix.

In general, the archive contains the following packages:

Package	Content
`drweb-bases`	Files of anti-virus engine **Dr.Web Virus-Finding Engine** and **Dr.Web** virus databases
`drweb-boost`	**Boost** framework libraries
`drweb-clamd`	Files of **Dr.Web ClamD** component
`drweb-common`	Main configuration file `drweb.ini`, libraries, documentation, and directory structure During the installation, `drweb` user and `drweb` group are created.
`drweb-configd`	Files of **Dr.Web ConfigD** и **Dr.Web Ctl**
`drweb-epm10.1.0-libs`	Supporting libraries for installation program
`drweb-epm10.1.0-uninst`	Supporting libraries for uninstallation program
`drweb-esagent`	Files of **Dr.Web ES Agent** component
`drweb-filecheck`	Files of **Dr.Web File Checker** component
`drweb-file-servers-doc`	PDF documentation for the solution
`drweb-file-servers`	Root meta-package of the solution
`drweb-httpd`	Files of **Dr.Web HTTPD** component and management web interface
`drweb-icu`	Unicode and internationalization supporting libraries
`drweb-libs` *	Common libraries of the solution
`drweb-netcheck`	Files of **Dr.Web Network Checker** component
`drweb-nss`	Files of **SpIDer Guard for NSS** component
`drweb-openssl`	**OpenSSL** framework libraries
`drweb-protobuf`	**Protobuf** framework libraries
`drweb-se`	Files of **Dr.Web Scanning Engine** component
`drweb-smbspider-daemon`	Files of **SpIDer Guard for SMB** component (SMB monitoring daemon)
`drweb-smbspider`	Files of **SpIDer Guard for SMB** component
`drweb-smbspider-modules`	Files of **SpIDer Guard for SMB** component (VFS SMB modules)
`drweb-smbspider-modules-src`	Files of **SpIDer Guard for SMB** component (VFS SMB module source codes)
`drweb-snmpd`	Files of **Dr.Web SNMPD** component
`drweb-spider`	Files of **SpIDer Guard** component
`drweb-spider-kmod`	Files of **SpIDer Guard** component (loadable kernel module for LKM mode)
`drweb-update`	Files of **Dr.Web Updater** component
`drweb-wt`	**Wt** framework libraries (used by management web interface)

*) Versions for 64-bit systems include two packages: `drweb-libs` and `drweb-libs32` that contain libraries for 64-bit and 32-bit components accordingly.

To start installation of a component, run the corresponding installation file from the console (or via a console emulator — terminal for the graphics mode).

Installation scripts can be run only by a user with administrative privileges (`root` superuser). To elevate privileges, use the **su** command (change the current user) or the **sudo** command (execute the specified command with other user privileges).

When installing any component, all dependencies are automatically resolved, that is, if another component is required for installation, its presence in the system is checked and the required component is automatically installed if it is missing.

If it is necessary to run a program for installing the whole suite, run the automatic installation script from the unpacked directory by typing the following command:

```
$ ./install.sh
```

Installing from Dr.Web Repository

Dr.Web for UNIX File Servers native packages are stored in the official **Dr.Web** repository at http://repo.drweb.com/drweb/. After you add the **Dr.Web** repository to the list of those used by your operating system package manager, you can install the product from native packages as you install any other programs from the operating system repositories. Required dependencies are automatically resolved.

All commands, mentioned below, for connecting repositories, import of digital signature keys, installation, and removal of packages, must be performed with administrative (`root`) privileges. To elevate the privileges, use the **su** command (change the current user) or the **sudo** command (execute the specified command with other user privileges).

Please note that for **FreeBSD** and **Solaris**, the product can be installed only from universal package.

Debian, Mint, Ubuntu (apt)

The repository for these operating systems is digitally signed. To enable correct operation, import a digital signature key using the following command:

```
wget -O - http://repo.drweb.com/drweb/drweb.key | apt-key add -
```

or

```
curl http://repo.drweb.com/drweb/drweb.key | apt-key add -
```

To connect the repository, add the following line to the `/etc/apt/sources.list` file:

```
deb http://repo.drweb.com/drweb/debian 10.1.0 non-free
```

Besides that, you can obtain the key automatically and connect to the repository of version 10.1.0 via downloading and installing a special DEB packet. Link to download the package: http://repo.drweb.com/drweb-repo10.deb.

To install **Dr.Web for UNIX File Servers** from the repository, use the following commands:

```
apt-get update
apt-get install drweb-file-servers
```

You can also use alternative package managers (for example, **Synaptic** or **aptitude**) to install the product. Moreover, it is recommended to use alternative managers, such as **aptitude**, to solve a package conflict if it occurs.

Red Hat Enterprise Linux, Fedora, CentOS (yum)

Add the file with the content mentioned below to the `/etc/yum.repos.d` directory:

For 32-bit version

```
[drweb]
name=DrWeb - 10.1.0
baseurl=http://repo.drweb.com/drweb/el5/10.1.0/i386/
gpgcheck=1
enabled=1
gpgkey=http://repo.drweb.com/drweb/drweb.key
```

For 64-bit version

```
[drweb]
name=DrWeb - 10.1.0
baseurl=http://repo.drweb.com/drweb/el5/10.1.0/x86_64/
gpgcheck=1
enabled=1
gpgkey=http://repo.drweb.com/drweb/drweb.key
```

Besides that, you can connect to the repository of version 10.1.0 via downloading and installing a special RPM packet. Link to download the package: http://repo.drweb.com/drweb-repo10.rpm.

To install **Dr.Web for UNIX File Servers** from the repository, use the following command:

```
yum install drweb-file-servers
```

You can also use alternative package managers (for example, **PackageKit** or **Yumex**) to install the product.

Adjusting SELinux Policies

If the used **GNU/Linux** distribution features **SELinux** (`Security-Enhanced UNIX`), you may need to configure **SELinux** security policies to enable correct component operation (for example, operation of the scanning engine) after they are installed.

1. Universal package installation issues

If **SELinux** is enabled, installation from the installation file (`.run`) can fail because an attempt to create the `drweb` user, under which **Dr.Web for UNIX File Servers** components operate, can be blocked.

In case of failure, check the **SELinux** operation mode with the **`getenforce`** command. The command outputs one of the following:

- **`Permissive`**—protection is active but a permissive strategy is used: actions that violate the security policy are not denied but information on the actions is logged.
- **`Enforced`**—protection is active and restrictive strategy is used: actions that violate security policies are blocked and information on the actions is logged.
- **`Disabled`**—**SELinux** is installed but not active.

If **SELinux** is operating in `Enforced` mode, change it to `Permissive` for the period while the product is being installed. For that purpose, use the **`setenforce 0`** command, which temporarily (until the next reboot) enables `Permissive` mode for **SELinux**.

Note that regardless of the operation mode enabled with the **`setenforce`** command, restart of the operating system returns **SELinux** operation to the mode specified in the **SELinux** settings (file with **SELinux** settings usually resides in the `/etc/selinux` directory).

After the product installation successfully completes, enable `Enforced` mode for **SELinux** again before

starting the product. For that, use the **setenforce 1** command.

2. Operation issues

In some cases, when **SELinux** is enabled, certain auxiliary **Dr.Web for UNIX File Servers** modules (for example, **drweb-se** and **drweb-filecheck**) cannot start. If so, object scanning and file system monitoring become unavailable.

119 and 120 errors can also indicate an attempt to start the product on 64-bit version of the operating system if the 32-bit application support library is missing (see System Requirements).

SELinux messages are registered in the system log. In general, when **audit** daemon is used on the system, the audit log file is `/var/log/audit/audit.log`. Otherwise, messages on blocked operations are saved to the general log file located in `/var/log/messages`.

If auxiliary modules do not function because they are blocked by **SELinux**, compile special security policies for them.

Note that certain **Linux** distributions do not feature the utilities mentioned below. If so, you may need to install additional packages with the utilities.

To create required policies

1. Create a new file with the **SELinux** policy source code (`.te` file). This file defines restrictions applied to the module. The policy source code can be specified in one of the following ways:

   1) **Using** the **audit2allow** utility, which is the simplest method. The utility generates permissive rules from messages on access denial in system log files. You can set to search messages automatically or specify a path to the log file manually.

      Note that you can use this method only if **Dr.Web for UNIX File Servers** violated **SELinux** security policies and these events are registered in the audit log file. If not, wait for such an incident to occur or force-create permissive policies by using the **policygentool** utility (see below).

      The **audit2allow** utility resides in the `policycoreutils-python` or `policycoreutils-devel` package (for **RedHat Enterprise Linux, CentOS, Fedora** operating systems depending on the version) or in the `python-sepolgen` package (for **Debian, Ubuntu** OSes).

      Please note that for **Fedora** 20 it is required to install additionally the `checkpolicy` package, otherwise the **audit2allow** utility returns an error.

      Example usage:

      ```
      # grep drweb-se.real /var/log/audit/audit.log | audit2allow -M drweb-se
      ```

      In the given example, the **audit2allow** utility performs a search in the `audit.log` file to find access denial messages for **drweb-se** module.

      The following two files are created: policy source file `drweb-se.te` and the `drweb-se.pp` policy module ready to install.

      If no security violation incidents are found in the system audit log, the utility returns an error message.

      In most cases, you do not need to modify the policy file created by the utility. Thus, it is recommended to go to step 4 for installation of the `drweb-se.pp` policy module. Note that the **audit2allow** utility outputs invocation of the **semodule** command. By copying the output to the command line and executing it, you complete step 4. Go to step 2 only if you

want to modify security policies which were automatically generated for **Dr.Web for UNIX File Servers** components.

2) **Using** the **policygentool** utility. For that purpose, specify name of the module operation with which you want to configure and the full path to the executable file.

Note that the **policygentool** utility, included in the `selinux-policy` package for **RedHat Enterprise Linux** and **CentOS Linux** OS, may not function correctly. If so, use the **audit2allow** utility.

Example of policy creation via **policygentool**:

- For **drweb-se**:

```
# policygentool drweb-se /opt/drweb.com/bin/drweb-se.real
```

- For **drweb-filecheck**:

```
# policygentool drweb-filecheck /opt/drweb.com/bin/drweb-filecheck.real
```

You will be prompted to specify several common domain characteristics. After that, three files that determine the policy are created for each of the modules:

`<module_name>.te`, `<module_name>.fc` and `<module_name>.if`.

2. If required, edit the generated policy source file `<module_name>.te` and then use the **checkmodule** utility to create a binary mapping of the local policy source file (`.mod` file).

Note that to ensure success of the command, the `checkpolicy` package must be installed in the system.

Example usage:

```
# checkmodule -M -m -o drweb-se.mod drweb-se.te
```

3. Create an installed policy module (`.pp` file) with the use of the **semodule_package** utility.

Example:

```
# semodule_package -o drweb-se.pp -m drweb-se.mod
```

4. To install the created policy module, use the **semodule** utility

Example:

```
# semodule -i drweb-se.pp
```

For details on **SELinux** operation and configuration, refer to the documentation for the used **Linux** distribution.

Product Files Location

After installation of **Dr.Web for UNIX File Servers**, its files reside in the `/opt`, `/etc`, and `/var` directories of the file system.

Structure of the used directories :

Directory	Content
`<etc_dir>/`	Common configuration file and product key file
`/etc/init.d/`	Managing startup script for configuration daemon **Dr.Web ConfigD**

Directory	Content
<opt_dir>/	Main product directory
bin/	Executable files of all product components (except for **Dr.Web Virus-Finding Engine**)
include/	Header files of used libraries
lib/ lib64/	Used libraries for 32- and 64-bit platforms
man/	Files for **man** help system
share/	Supporting product files
doc/	Product documentation (readme files and license agreement texts)
drweb-bases/	Files of **Dr.Web** virus databases (source files supplied during installation)
scripts/	Supporting script files
<var_dir>/	Supporting and temporary product files
bases/	Files of **Dr.Web** virus databases (up-to-date version)
cache/	Cache of updates
drl/	Lists of servers used for updates
lib/	Anti-virus engine **Dr.Web Virus-Finding Engine** as a dynamic library **drweb32.dll** and settings for operating in central protection mode
update/	Directory where updates are temporarily stored during their download

For details on the directory notation, refer to Introduction.

Removing Solution

Depending on the method of **Dr.Web for UNIX File Servers** installation, you can remove the suite in one of the following ways:

1. Starting the uninstall program to remove the universal package distribution (for graphics or command-line mode, depending on the environment).
2. Deleting packages installed from the **Doctor Web** repository via the package system manager.

Please note that after removal of **Dr.Web for UNIX File Servers**, you need to manually delete the link to **VFS SMB Dr.Web** from **Samba** directories and edit the configuration file of **Samba** (smb.conf) by removing the following line from parameter sections: vfs objects = smb_spider (where smb_spider is the name of the symbolic link to **VFS SMB Dr.Web**).

Removing Universal Package

You can remove **Dr.Web for UNIX File Servers**, installed from the distribution with the universal package for UNIX systems via the application menu of the desktop environment or via the command line.

Removing program via application menu

On the application menu, click the **Dr.Web** item and select **Remove Dr.Web components.** Removal program will start.

Removing program via command line

To remove Anti-virus, run the **remove.sh** script, which resides in the <opt_dir>/bin directory. Thus, to start the procedure, for example, in **Linux** OS, use the following command:

```
# /opt/drweb.com/bin/remove.sh
```

Then an uninstall program starts (either in graphics or command-line mode, depending on the environment).

To start the uninstall program directly from the command line, use the following command (in **Linux** OS):

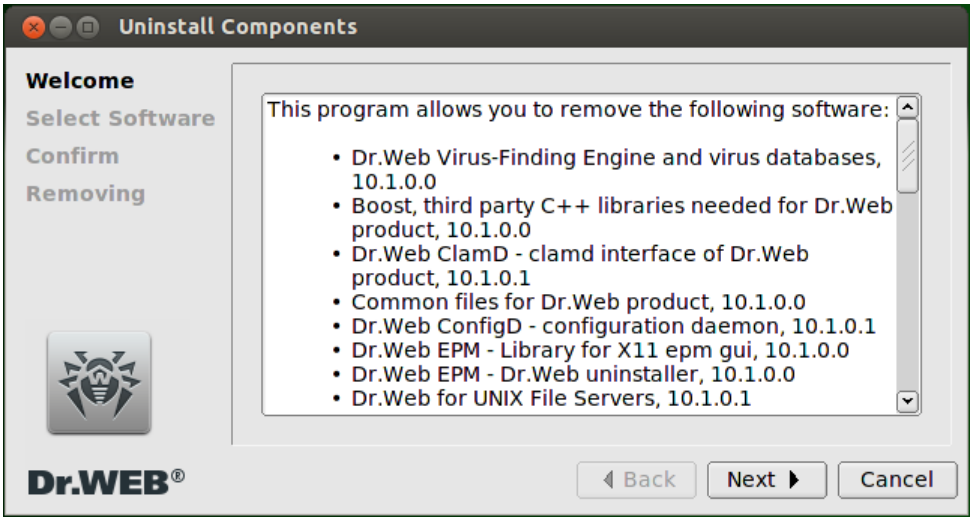
```
# /opt/drweb.com/bin/uninst.sh
```

Removal of **Dr.Web for UNIX File Servers** is described in the following chapters:

- Removing in Graphics Mode
- Removing from Command Line

Removing in Graphics Mode

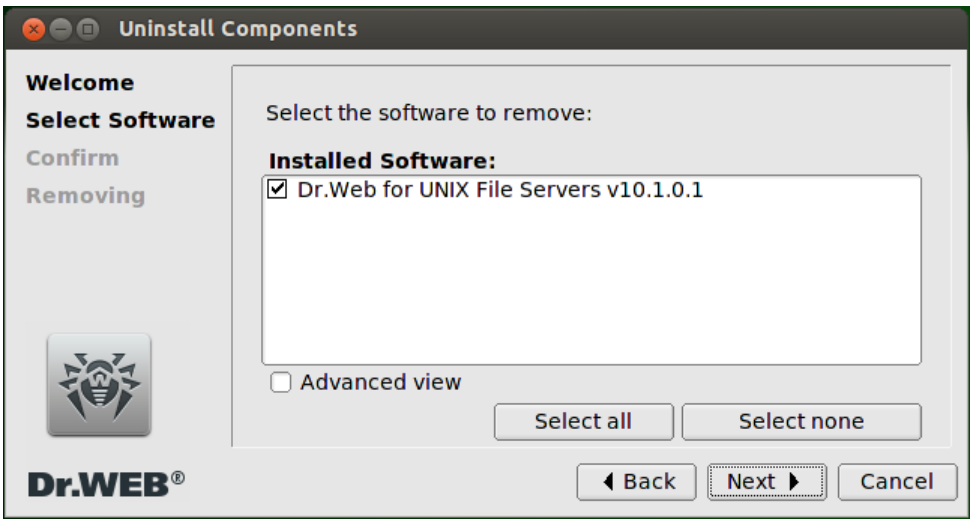
Once the Removal wizard starts in graphics mode, its welcome page is displayed informing you on product packages that can be removed with the Wizard.



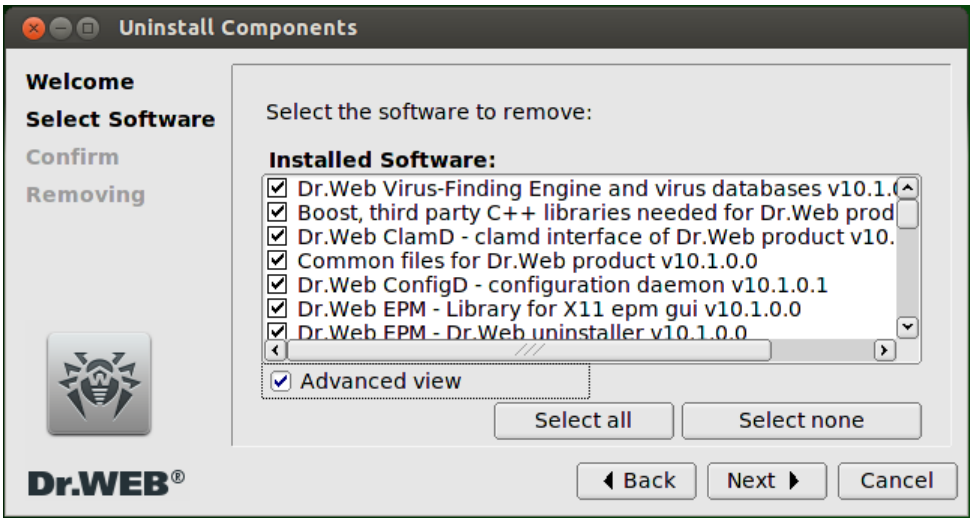
Picture 23. Welcome page

To select **Dr.Web** packages for removal, click **Next**. If you choose not to remove the product, you can terminate the operation of the Wizard by clicking **Cancel**.

1. In the first step, you will be prompted to select product packages to be removed. Two modes are available for the removal: basic and advanced. In *basic* mode, all products of **Dr.Web**, installed on your computer and available for removal, are displayed. If you select a product on the list, all packages of this product will be automatically selected for removal and if they are not used by other **Dr.Web** products installed on your computer. In the *advanced* mode, all packages of **Dr.Web** are displayed; so, you can select only those packages that you want to remove. Click **Select all** if you want to select all list items for removal (installed products or packages, depending on the mode). Click **Select none** is you want to deselect all list items.



Picture 24. Selection of products for removal in basic mode



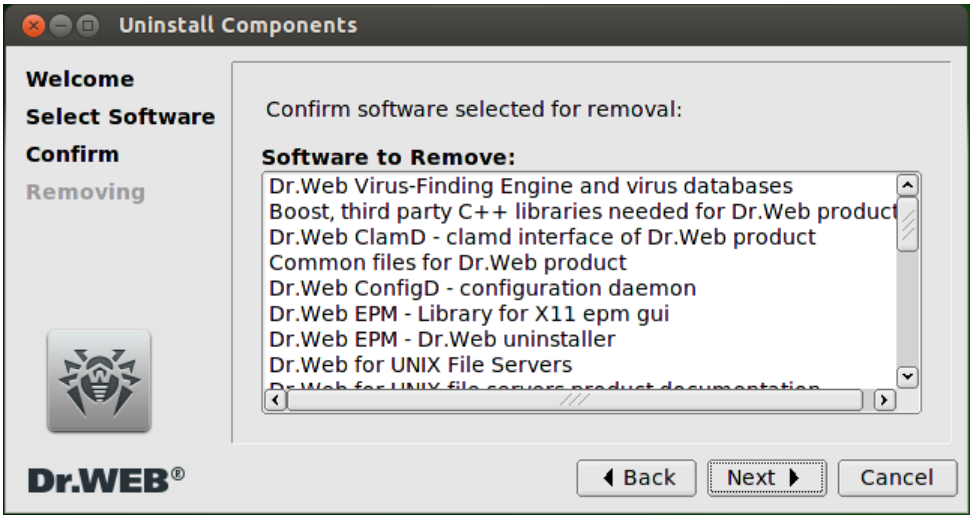
Picture 25. election of products for removal in advanced mode

To switch to advanced mode, select **Advanced view**; to switch back to basic mode, deselect this option. Note that selection of a package for removal leads to automatic selection of all packages that depend on this package. Similarly, deselection of a package leads to deselection of all packages on which this package is dependent. After selecting all required products or packages, click **Next** to proceed to confirmation of the removal. To terminate the operation of the Wizard, click **Cancel**.

Be careful when selecting packages for removal in advanced mode: removal of some package can cause problems in operation of all installed **Dr.Web** that use files from this package.

If you removed a package by mistake, use the installer in **Custom configuration** mode and install this package again.

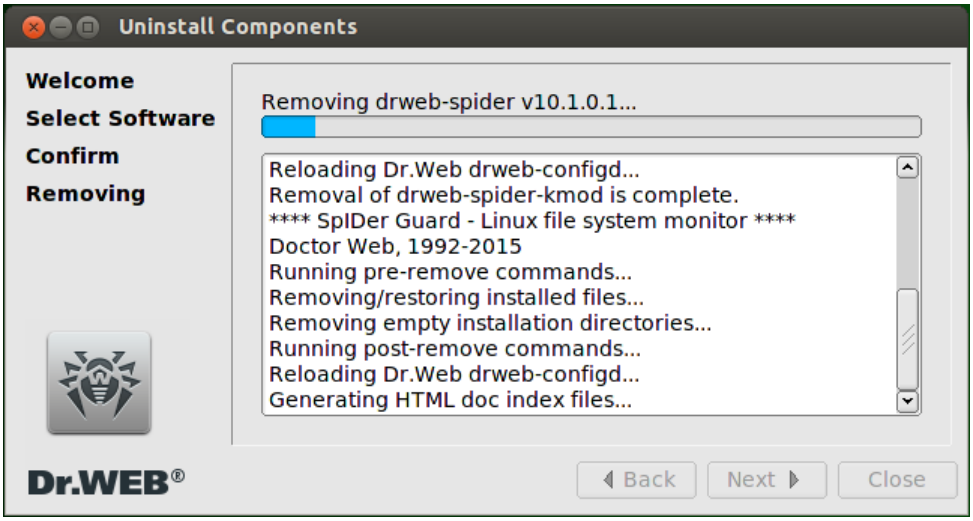
2. In the next step, the list of **Dr.Web** to be removed are displayed.



Picture 26. Removal confirmation

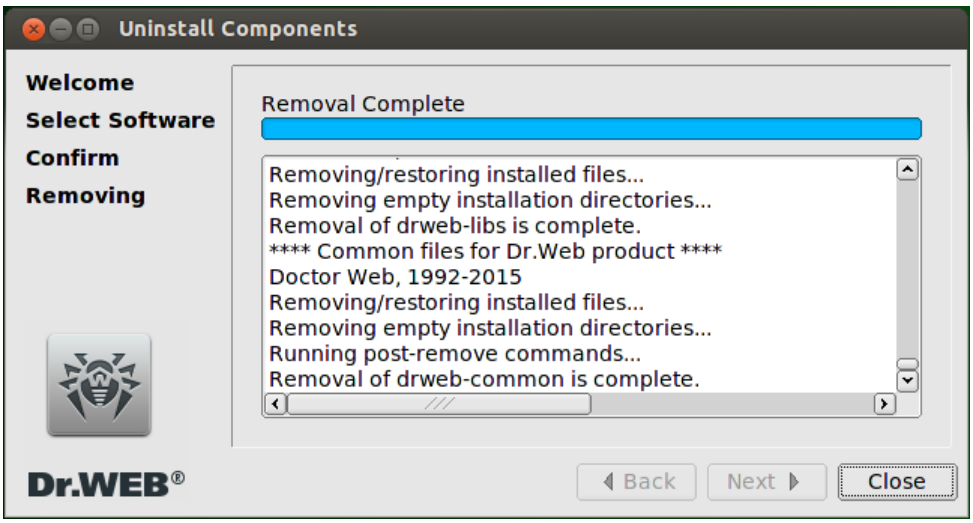
To confirm the removal, click **Next**. To edit this list, click **Back**. If you choose not to remove the packages and terminate the operation of the Wizard, click **Cancel**.

3. After you confirm the removal of **Dr.Web**, the process starts.



Picture 27. Removal process

To close the Removal Wizard after it deletes all files, click **Close**.

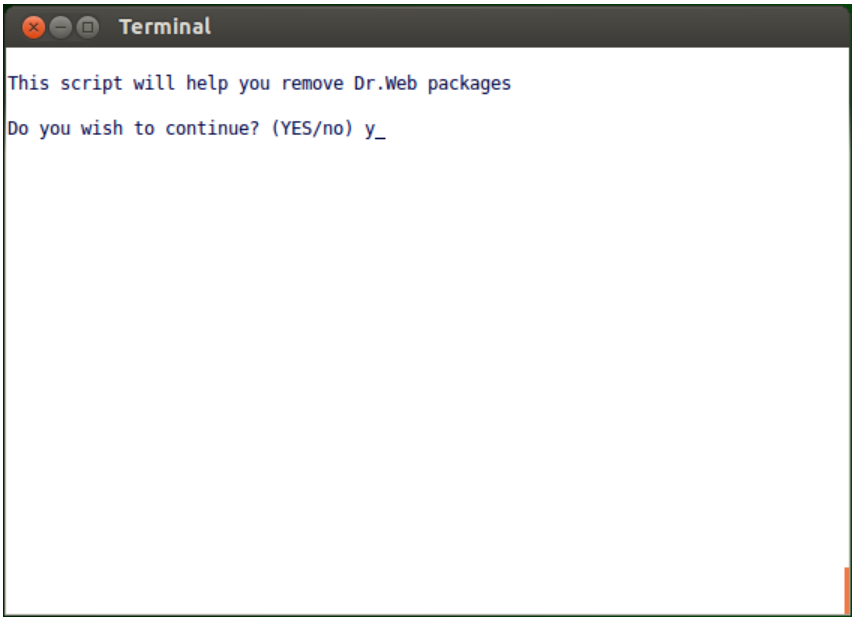


Picture 28. Completion of the removal

Removing from Command Line

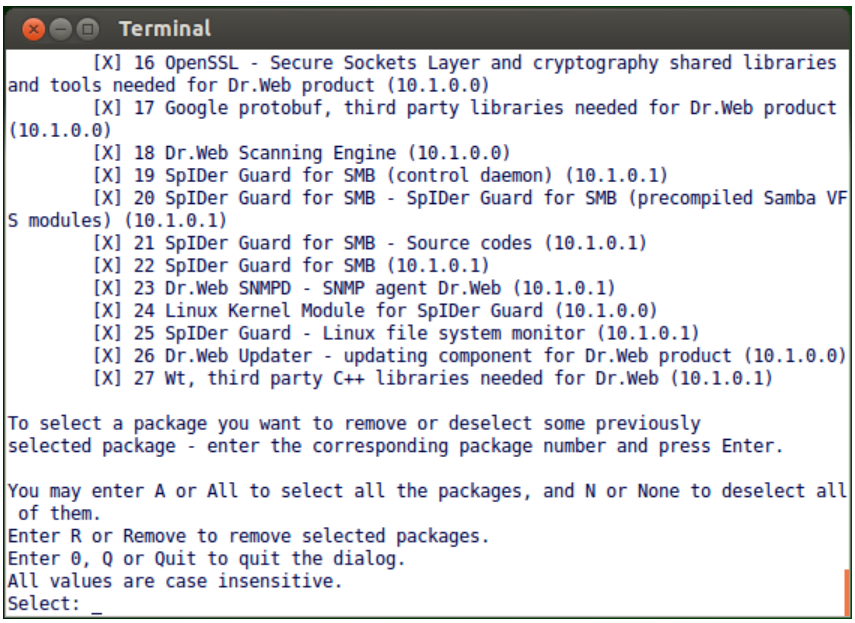
Once the removal program for command-line mode starts, the command prompt is displayed on the screen.

1. To start removal, enter **Yes** or **Y** in response to the "Do you wish to continue?" question. To exit the removal program, type **No** or **N**. In this case, removal will be canceled.



Picture 29. Command prompt to uninstall the product

2. After that, a list of installed **Dr.Web** components is output.

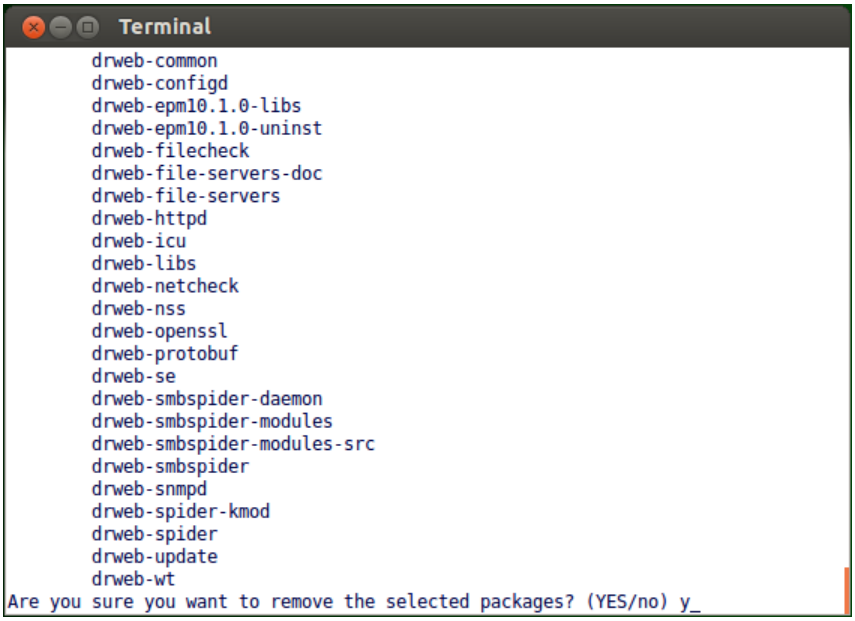


Picture 30. Viewing the list of components and selecting the components for removal

3. To continue the removal, select the components to be deleted. For selecting a certain component, enter its number in the list. Note that all packages depending on a selected package are also automatically selected for removal.
   - To select all listed components, type **All** or **A** instead of a component number.
   - To reject selection of the packages, type **None** or **N** instead of a component number.
   - To cancel removal, type **0**, **Q** or **Quit** instead of a component number. If so, the removal program exits.

   After you select the components to be removed, type **Remove** or **R** to start the process.

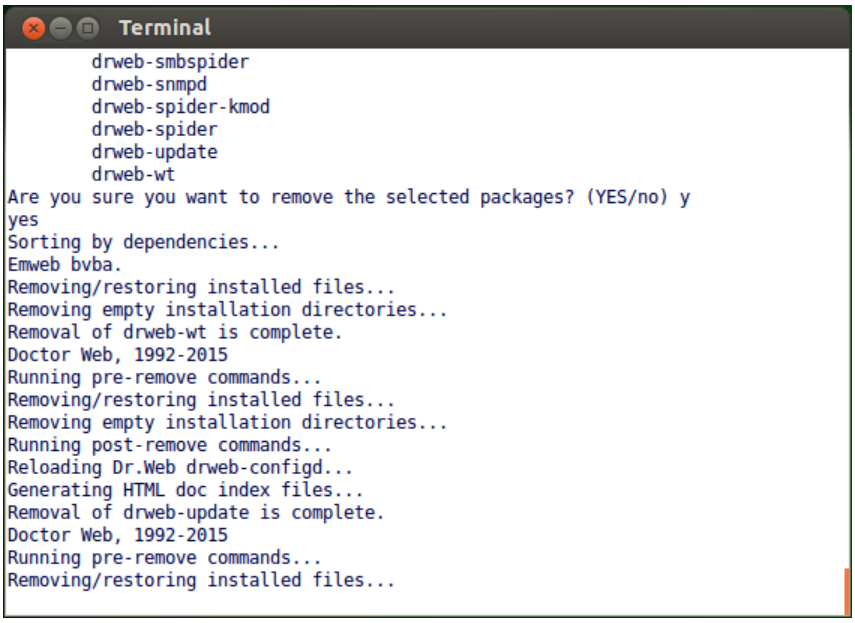
5. On the next page, view the list of packages selected for removal and confirm the action by typing **Yes** or **Y**. If you choose not to delete the components, exit the removal program by typing **No** or **N**.



Picture 31. Component removal confirmation

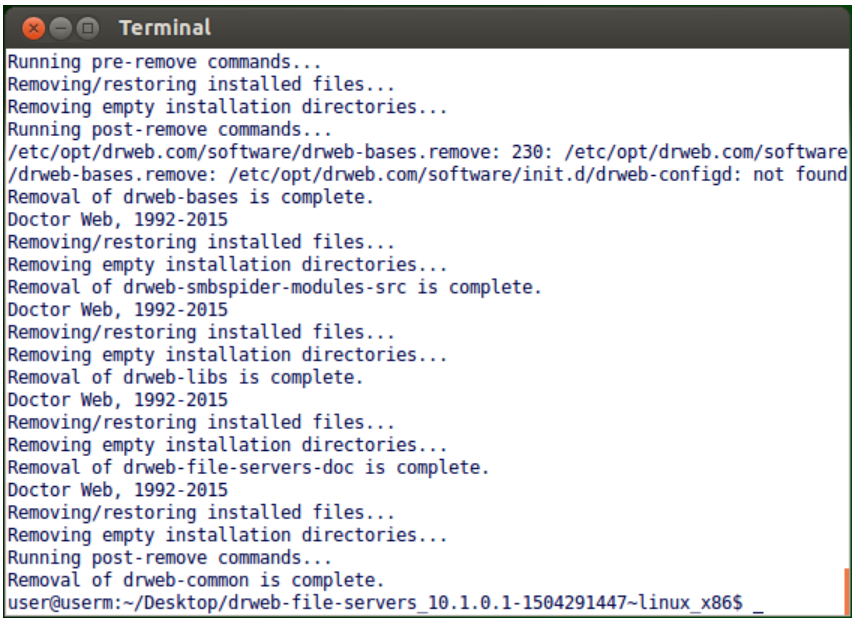
6. After removal of the selected components starts, messages about the removal process are output in

the screen and logged.



Picture 32. Uninstallation log

7. After the process completes successfully, the removal program displays an appropriate message on the screen and exits.



Picture 33. Removal complete message

Removing Product Installed from Repository

All commands mentioned below for package removal require administrative (`root`) privileges. To elevate the privileges, use the **`su`** command (change the current user) or the **`sudo`** command (execute the specified command with the privileges of another user).

Debian, Mint, Ubuntu (apt)

To remove the root metapackage of **Dr.Web for UNIX File Servers**, enter the following command:

```
apt-get remove drweb-file-servers
```

To remove all installed **Dr.Web** packages, enter the following command (in some operating systems, a '*' character must be escaped: '*'):

```
apt-get remove drweb*
```

To automatically remove all packages that are no longer used, enter also the following command:

```
apt-get autoremove
```

Note special aspects of removal using the **`apt-get`** command:

1. The first mentioned version of the command removes only the `drweb-file-servers` package; all other packages that could be automatically installed to resolve dependencies remain in the system.
2. The second mentioned version of the command removes all packages which name starts with "`drweb`" (standard name prefix for **Dr.Web** products). Note that this command removes all packages with this prefix, not only those of **Dr.Web for UNIX File Servers**.
3. The third mentioned version of the command removes all packages that were automatically installed to resolve dependencies of other packages and are no longer necessary (e.g., due to their removal). Note that this command removes all packages that are not used, not only those of **Dr.Web for UNIX File Servers**.

You can also use alternative managers (for example, **Synaptic** or **aptitude**) to remove packages.

Red Hat Enterprise Linux, Fedora, CentOS (yum)

To remove all installed **Dr.Web** packages, enter the following command (in some operating systems, a '*' character must be escaped: '*'):

```
yum remove drweb*
```

Note special aspects of removal using the **`yum`** command:

This version of the command removes all packages which name starts with "`drweb`" (standard name prefix for **Dr.Web** products). Note that this command removes all packages with this prefix, not only those of **Dr.Web for UNIX File Servers**.

You can also use alternative managers (for example, **PackageKit** or **Yumex**) to remove packages.

Getting Started

1. To start using the installed **Dr.Web for UNIX File Servers**, obtain and install a key file.
2. Integrate the product with file services (instruction for **Samba**, instruction for **NSS**).
3. Check what components are running and enable additional components that are disabled by default if they are necessary for protection of your server (for example, **SpIDer Guard** monitor, **Dr.Web ClamD** component or **Dr.Web SNMPD** SNMP agent, depending on the distribution). Note that you may also need to perform other actions apart from enabling the additional components, for example, adjust their default configuration. To view the list of installed and running components and their settings, use one of the following:
   - The tool for command-line management **Dr.Web Ctl** (use **`drweb-ctl appinfo`**, **`drweb-ctl cfshow`** and **`drweb-ctl cfset`** commands)
   - Managing web interface **Dr.Web for UNIX File Servers** (by default, you can access it via a web browser at `https://127.0.0.1:4443/`).

Integration with Samba File Server

The **SpIDer Guard for SMB** monitor uses a special **VFS SMB** module for the integration with the **Samba** server. With **SpIDer Guard for SMB**, several versions of this module which are built for various versions of **Samba** are supplied. However, the supplied versions of the **VFS SMB** module may be incompatible with the version of **Samba** installed on your file server. It may occur, for example, if the **Samba** server uses the `CLUSTER_SUPPORT` option.

In case of incompatibility of the **VFS SMB** module with the **Samba** server, the ***corresponding message is shown*** during the **Dr.Web for UNIX File Servers** product installation. In this case, build the **VFS SMB** module for your **Samba** server from the supplied source codes manually (including the compatibility with the `CLUSTER_SUPPORT` option if necessary).

The procedure of building the **VFS SMB** module from the supplied source codes is described in Appendix G.

To integrate **Dr.Web for UNIX File Servers** with the **Samba** file server, do the following:

1. In the directory with **Samba** VFS modules (the default directory in **Linux** is `/usr/lib/samba/vfs`), create a symbolic link **`smb_spider.so`** that refers to the module **VFS SMB Dr.Web** corresponding to the used **Samba**.

   The **VFS SMB** modules, which are supplied by **Dr.Web**, reside in the product libraries directory:

   - `<opt_dir>/lib/samba` – for 32-bit platforms
   - `<opt_dir>/lib64/samba` – for 64-bit platforms

   The module files have the following pattern name: **`libsmb_spider.so.<ver>`**, where `<ver>` is the version of **Samba** interacting with the module.

   For example, `/opt/drweb.com.lib/samba/libsmb_spider.so.3.6.0` file is for **Samba** 3.6.0, operating on **Linux** OS designed for 32-bit platform.

2. In the **Samba** configuration file `smb.conf` (the default **Linux** directory is `/etc/samba`), create sections for the shared directories. Such section is as follows:

   ```
   [<share_name>]
   comment = <any_comment>
   path = </directory/to/be/protected/>
   vfs objects = smb_spider
   writeable = yes
   browseable = yes
   guest ok = yes
   public = yes
   ```

   where `<share_name>` is any name of the shared resource and `<any_comment>` is an arbitrary line with a comment (optional). The object's name specified in `vfs objects` must be the same as the name of the symbolic link (here `smb_spider`).

   After that, this directory will be monitored by **SpIDer Guard for SMB**. Interaction between **SpIDer Guard for SMB** and VFS SMB **module will be performed via UNIX socket** / <samba_chroot_path>/var/run/.com.drweb.smb_spider_vfs. By default, the path to this UNIX socket is specified in the **SpIDer Guard for SMB** settings and in the settings of the **VFS SMB** module.

3. If you need to change the path to the socket, specify the new path both in the settings of **SpIDer Guard for SMB** (the **`SmbSocketPath`** parameter) and in the configuration file of **Samba** `smb.conf`. For that, add the following line to the `[<share_name>]` section:

   ```
   smb_spider:socket = <path_to_socket>
   ```

   where `<path_to_socket>` must be an absolute path to the UNIX socket relative to the root

directory, specified for **Samba** by using `chroot`.

4. If required, you can use `ExcludedPath` and `IncludedPath` parameters to exclude paths to objects located in the protected shared directories or to include them in **SpIDer Guard for SMB** checks. You can specify paths to directories or paths to files. If you specify a directory, all content of the directory is skipped or scanned. Note that the `IncludedPath` parameter takes precedence over the `ExcludedPath` parameter, that is, if the same object (file or directory) is included in both parameter values, this object will be checked.

5. If you need to specify personal scanning settings (different from the default settings for all modules) for this shared directory, set a tag -identifier for the **VFS SMB** module that controls this directory:

   ```
   smb_spider:tag = <share_name>
   ```

   Then specify personal settings to control the shared directory in **SpIDer Guard for SMB** settings as a separate section `[SMBSpider.Share.<share_name>]`.

   To add new section with a tag `<share_name>` by command-line tool **Dr.Web Ctl**, it is necessary to use the command `drweb-ctl cfset SmbSpider.Share.<share_name>.<parameter> <value>`.

   Example:

   ```
   # drweb-ctl cfset SmbSpider.Share.DepartFiles.OnAdware Quarantine
   ```

   This command adds to the configuration file the additional section `[SMBSpider.Share.DepartFiles]`. The section will contain all parameters for the shared directory, and values for the all parameters, beside `OnAdware` parameter, which is specified in the command, will equal to values of the corresponding parameters from the common `[SMBSpider]` section.

After all settings are adjusted, restart both **Samba** and **SpIDer Guard for SMB**. It is recommended to restart **SpIDer Guard for SMB** by restarting the suite **Dr.Web for UNIX File Servers**. For that, restart the configuration daemon **Dr.Web ConfigD**.

To avoid conflicts between **SpIDer Guard for SMB** and **SpIDer Guard**, which may occur when scanning files in shared **Samba** directories, it is recommended to additionally configure **SpIDer Guard** by performing one of the following:

- add shared **Samba** directories to the exclusion scope (specify these directories in `ExcludedPath` parameter)
- add the **Samba** process (`smbd`) to the list of ignored processes (specify `smbd` in `ExcludedProc` parameter).

Scripts to support integration

For convenient integration of **Dr.Web for UNIX File Servers** withe the file server **Samba**, the product is supplied with special setup scripts. They are located in the product directory (**Linux** default directory is `/opt/drweb.com`), in the `share/drweb-smbspider-modules` subdirectory:

Script file	Function
`drweb_smbspider_configure.sh`	Interactive script that allows to change **Samba** configuration file `smb.conf` in the dialog window (the script adds shared directories described in the file to monitoring).
`update-links.sh`	The script that adds/updates the link to module **VFS SMB Dr.Web** in the **Samba** directory.
`vfs-versions.sh`	Auxiliary script that determines the version of module **VFS SMB Dr.Web**; used by the script `update-links.sh`

The `update-links.sh` script automatically runs once **Dr.Web for UNIX File Servers** is installed. If required, you can run it manually. The `rweb_smbspider_configure.sh` script run automatically only if you install the product from universal package, and it is recommended to be run after completes installation of the product from **Dr.Web** repository. It can be run several times, when it is necessary to enable or disable monitoring of certain directories. The script saves the original (unmodified) copy of the **Samba** configuration file `smb.conf` by adding the `.drwebsave` extension to its name.

Integration with Novell Storage Services

To integrate **Dr.Web for UNIX File Servers** with **Novell Storage Services** volumes, specify values for parameters that are in the `[NSS]` section of the configuration file:

- in the **NssVolumesMountDir**, specify the path to the file system directory, where NSS volumes are mounted (the defaukt directory is `/media/nss`).
- In the **ProtectedVolumes** parameter, specify names of NSS volumes that are on the **NssVolumesMountDir** mount point and must be protected. If the parameter is empty, all volumes in the **NssVolumesMountDir** directory are protected.
- If required, you can use **ExcludedPath** and **IncludedPath** parameters to exclude paths to objects located in the protected volumes or to include them in **SpIDer Guard for NSS** checks. You can specify paths to directories or paths to files. If you specify a directory, all content of the directory is skipped or scanned. Note that the **IncludedPath** parameter takes precedence over the **ExcludedPath** parameter, that is, if the same object (file or directory) is included in both parameter values, this object will be checked.

After all necessary changes are done, restart **SpIDer Guard for NSS**. For that purpose, it is recommended to restart the suite **Dr.Web for UNIX File Servers** by restarting configuration daemon **Dr.Web ConfigD**.

Quick Guide

How to connect Dr.Web for UNIX File Servers to Samba

Follow the instructions provided in the Integration with Samba File Server section.

How to connect Dr.Web for UNIX File Servers to Novell Storage Services

Follow the instructions provided in the Integration with NSS Volumes section.

How to restart Dr.Web for UNIX File Servers

Use the script to manage the configuration daemon **Dr.Web ConfigD**. Startup, stop, and restart of the daemon causes the startup, stop, and restart of **Dr.Web for UNIX File Servers**.

The default directory for the script to manage operation of **Dr.Web ConfigD** is `/etc/init.d`. The name of the script is **`drweb-configd`**. It has the following parameters:

Parameter	Description
`start`	Instructs to start **Dr.Web ConfigD** if it is not running. Upon its startup, **Dr.Web ConfigD** runs all required modules of **Dr.Web for UNIX File Servers**.
`stop`	Instructs to shut down **Dr.Web ConfigD** if it is running. When finishing its operation, **Dr.Web ConfigD** shuts down all **Dr.Web for UNIX File Servers** modules.
`restart`	Instructs to restart (shut down and start) **Dr.Web ConfigD**. **Dr.Web ConfigD** shuts down and then start all modules of **Dr.Web for UNIX File Servers**. If **Dr.Web ConfigD** is not running, the parameter has the same effect as `start`.
`condrestart`	Instructs to restart **Dr.Web ConfigD** only if it is running.
`reload`	Instructs to send **Dr.Web ConfigD** `HUP` signal if the component is running. **Dr.Web ConfigD** forwards this signal to all **Dr.Web for UNIX File Servers** modules. The parameter is used to make all component reread their configuration.
`status`	Instructs to output the current state of **Dr.Web ConfigD** to the console.

To restart (or start if not running) **Dr.Web for UNIX File Servers** use the following command:

```
# /etc/init.d/drweb-configd restart
```

How to connect to the anti-virus network server

To connect **Dr.Web for UNIX File Servers** to the central protection server, ask your anti-virus network administrator for the address of the central protection server and the public key file. You may also need additional parameters, such as the host's identifier and password or identifiers of the main and tariff groups.

Then, use the command `esconnect` of the tool for the solution management from the command line **Dr.Web Ctl**.

For connection, use the `--Key` option and specify the path to the server's public key file or use the `--WithoutKey` option if you want to allow the central protection agent to establish a server connection without authentication. Moreover, you can specify the `--WrongKey` option to allow the server connection if the public key does not match the open key on the server.

You can additionally specify the host's identifier and password for authentication on the server by using the `--Login` and `--Password` parameters. In this case, connection to the server will be established only if you specify a correct identifier/password pair. If the parameters are not specified, connection to the server will be established only if it is approved on the server (automatically or by the administrator of the anti-virus network, regardless of the server settings).

Moreover, you can use the `--Newbie` option (connect as a new user). If this mode is allowed on the server, then after this connection is approved, the server automatically generates a unique identifier/password pair, which will be further used for connection of this agent to the server. Note that in this mode the central protection server generates a new account for the host even if this host already has another account on the server.

A standard example of the command instructing **Dr.Web for UNIX File Servers** to connect to the central protection server:

```
# drweb-ctl esconnect <server_address> --Key /path/to/server_public_key_file
```

After connection to the central protection server is established, the suite operates in central protection mode or in mobile mode, depending on the permissions set on the server and the value of the configuration parameter **MobileMode** of **Dr.Web ES Agent**. To allow unconditional use of mobile mode, set the parameter value to `On`. For operation on central protection mode, set the parameter value to `Off`.

A standard example of the command instructing **Dr.Web for UNIX File Servers** change enterprise to mobile mode:

```
# drweb-ctl cfset ESAgent.MobileMode On
```

If the used central protection server does not support or forbids mobile mode, adjusting the **MobileMode** parameter cannot switch operation of **Dr.Web for UNIX File Servers** to mobile mode.

How to disconnect from the central protection server

To disable the enterprise mode and switch operation of the suite to standalone mode, use the command `esdisconnect` of the tool for the solution management from the command line **Dr.Web Ctl**:

```
# drweb-ctl esdisconnect
```

For successful operation of the suite in standalone mode, a valide license key file is required. Otherwise, anti-virus functions of the product will be blocked after the operation is switched to standalone mode.

How to activate the product

1. Register on the official website of **Doctor Web** at http://products.drweb.com/register/.
2. Check the email that you specified during the registration for an archive (or download the archive from the website after you finished the registration). The archive contains a valid license key file.
3. Install the key file.

How to add a new shared directory

1. Edit the configuration file of the **Samba** server `smb.conf` by adding a section describing the shared directory. The section of the shared directory must be as follows:

   ```
   [<share_name>]
   comment = <any_comment>
   path = </directory/to/be/protected/>
   vfs objects = smb_spider
   writeable = yes
   browseable = yes
   guest ok = yes
   public = yes
   ```

   where `<share_name>` is any name of the shared resource and `<any_comment>` is an arbitrary line with a comment (optional).

2. If you need to specify scanning settings for the added shared directory and these settings differ from the default **SpIDer Guard for SMB** settings, use 3 and 4 items of the instruction given in the Integration with Samba File Server section.
3. Restart the **Samba** server and **Dr.Web for UNIX File Servers**.

How to add a new protected NSS volume

1. Specify the name of the volume, which is to be protected, in the **ProtectedVolumes** parameter (in the `[NSS]` section of the configuration file). If the parameter value is empty, all volumes in the directory specified in **NssVolumesMountDir** are protected.
2. Restart **Dr.Web for UNIX File Servers**.

How to upgrade the product

- If you installed the product from native packages for your OS from the repository, start the upgrade procedure for your package manager (for example, by executing the following commands sequentially: **apt-get** `update` and **apt-get** `upgrade` for the package manager **apt** with `root` privileges). For more information, refer to documentation on your OS.
- If you installed the product from the universal package (the `.run` file), download an upgraded version of the distribution and install it. During the installation procedure, all outdated components are replaced to their upgraded versions from the repository. The adjusted configuration of the product remains the same.

Solution Components

The section contains description of **Dr.Web for UNIX File Servers** components. For each of them, you can find information about the functions, operation principles, and parameters stored in the configuration file of the suite.

Dr.Web ConfigD

Configuration daemon **Dr.Web ConfigD** is the core component of **Dr.Web for UNIX File Servers.** It provides for central storage of configuration for all suite components, as well as manages operation of all components and organizes trusted data exchange between them.

Operation Principles

Main functions

1. Starts and stops suite components depending on the settings. Automatically restarts components if a failure in their operation occurs. Starts components at request of other components. Informs active suite components when another component starts or shuts down.
2. Provides for a centralized access of all components to configuration settings. Provides special components with interface for centralized management of configuration parameters. Notifies all required components about changes in configuration.
3. Provides components with information from the used license key file. Receives new license information from special components. Notifies running components on changes in license data or in configuration parameters.

Configuration daemon **Dr.Web ConfigD** is always started with `root` privileges. It runs other components of **Dr.Web for UNIX File Servers** and communicates with them via a preliminarily open socket. The daemon receives connection from other components via an information socket (publicly available) and a management socket (available only for components with root privileges). Loads configuration parameters and license data from files or delivers them from the used central protection server via the central protection agent **Dr.Web ES Agent**, as well as substitute correct default values for configuration parameters. Thus, by the moment when any component starts or `SIGHUP` signal is sent, the configuration daemon has an integral and consistent set of parameters for **Dr.Web for UNIX File Servers.**

Upon receipt of `SIGHUP` signal, the configuration management daemon rereads configuration parameters and license data. If required, the daemon sends all components notifications instructing them to reread their configuration. Upon receipt of `SIFTERM` signal, the daemon shuts all components down and only after that finishes its own operation. The maximum time to stop the monitor is 40 seconds. The daemon also removes all temporary files of components after they are shut down.

Communication principles

1. All components use only those configuration parameters and license data, which they received from the configuration daemon **Dr.Web ConfigD** on their startup.
2. The daemon provides the scheme of collecting messages from all controlled components to an integrated journal. All information output by a component to the error stream **`stderr`** is collected by the daemon and written to the general journal of the suite with a mark indicating what component output this.
3. When shutting down, the controlled components return an exit code. If the code differs from 101, 102, or 103, the configuration daemon restarts this component. Thus, abnormal termination of a component triggers its restart and registration of an error message from **`stderr`** in the suite journal.

- If a component exits with code 101, the component will be started again only after license parameters are changed. Thus, if a component cannot operate because of license restriction, it terminates its operation and outputs code 101 to **stderr**.
- If a component exits with code 102, the component will be started again only after configuration parameters change. Thus, if a component cannot operate because of its configuration, it terminates its operation and outputs code 102 to **stderr**. The configuration daemon will attempt to start the component again only after any parameters are changed.
- Components started by configuration daemon at request can terminate their operation when idle and output code 103. Such components are scanning engine **Dr.Web Scanning Engine** and file checking component **Dr.Web File Checker**.
- If new parameter values received by a component from configuration daemon cannot be applied "on the fly" (that is, component restart is required), the component exits with code 0. If so, **Dr.Web ConfigD** restarts the component.
- If a component cannot connect to configuration daemon or a communication protocol error occurs, the component outputs an appropriate message to **stderr** and exits with code 1.

4. Signal exchange:
   - Configuration daemon sends the component `SIGHUP` signal, which instructs to change parameters of configuration.
   - Configuration daemon sends the component `SIGTERM` signal, which instructs the component to terminate operation in 30 seconds.
   - `SIGKILL` signal is sent by configuration daemon to trigger force termination of components which failed to shut down within 30 seconds after they received a `SIGTERM` signal.

Command-Line Arguments

To run a configuration daemon **Dr.Web ConfigD**, type the following command in the command line:

```
$ <opt_dir>/bin/drweb-configd [options]
```

Configuration daemon **Dr.Web ConfigD** can process the following options:

Short form	Long form	Arguments
`-h`	`--help`	
Description: instructs to output short help information to the console about command-line parameters and exit.		
`-v`	`--version`	
Description: instructs to output information on the module version and exit.		
`-c`	`--config`	`<path to file>`
Description: instructs to use the specified configuration file.		
`-d`	`--daemonize`	
Description: instructs to run the component as daemon; that is, without access to terminal.		
`-p`	`--pid-file`	`<path to file>`
Description: instructs to use the specified PID file.		

Example:

```
$ /opt/drweb.com/bin/drweb-configd -d -c /etc/opt/drweb.com/drweb.ini
```

The command runs **Dr.Web ConfigD** as daemon which uses the following configuration file: `/etc/opt/drweb.com/drweb.ini`.

Notes about startup

To support performance of the suite, the component must be run as daemon. In standard mode, **Dr.Web ConfigD** is run upon operation startup and has a standard management script located in `/etc/init.d`.

Configuration Parameters

The daemon **Dr.Web ConfigD** uses configuration parameters which are specified in `[Root]` section of the integrated configuration file of **Dr.Web for UNIX File Servers.**

The section contains the following parameters:

DefaultLogLevel = {logging level}	Defines default verbosity level of event logging for all **Dr.Web for UNIX File Servers** modules. The parameter value is used if another value is not specified in the configuration of another module. Default value: **DefaultLogLevel** = Notice
LogLevel = {logging level}	Logging level for configuration daemon **Dr.Web ConfigD.** Default value: **LogLevel** = Notice
Log = {log type}	Logging method of configuration daemon and logging method of those modules for which another value of this parameter is not specified. Note that upon its initial startup, before the configuration file is read, configuration daemon uses the following values of the parameter: • As a daemon (if run with the `-d` option)—`SYSLOG:Daemon` • Otherwise — `Stderr` Default value: **Log** = Syslog:Daemon
PublicSocketPath = {path to file}	Path to the public communication socket for interaction between **Dr.Web for UNIX File Servers.** Default value: **PublicSocketPath** = /var/run/.com.drweb.public
AdminSocketPath = {path to file}	Path to the administrative communication socket for interaction between **Dr.Web for UNIX File Servers.** Default value: **AdminSocketPath** = /var/run/.com.drweb.admin
CoreEnginePath = {path to file}	Path to the dynamic library of the anti-virus engine**Dr.Web Virus-Finding Engine**. Default value: **CoreEnginePath** = <var_dir>/lib/drweb32.dll For **Linux**: **CoreEnginePath** = /var/opt/drweb.com/lib/drweb32.dll For **FreeBSD**:

	CoreEnginePath = /var/drweb.com/lib/drweb32.dll For **Solaris**: **CoreEnginePath** = /var/opt/drweb.com/lib/drweb32.dll
VirusBaseDir = {path to directory}	Path to the directory with virus database files. Default value: **VirusBaseDir** = <var_dir>/bases For **Linux**: **VirusBaseDir** = /var/opt/drweb.com/bases For **FreeBSD**: **VirusBaseDir** = /var/drweb.com/bases For **Solaris**: **VirusBaseDir** = /var/opt/drweb.com/bases
KeyPath = {path to file}	Path to the key file Default value: **KeyPath** = <etc_dir>/drweb32.key For **Linux**: **KeyPath** = /etc/opt/drweb.com/drweb32.key For **FreeBSD**: **KeyPath** = /usr/local/etc/drweb.com/drweb32.key For **Solaris**: **KeyPath** = /etc/opt/drweb.com/drweb32.key
CacheDir = {path to directory}	Path to the cache directory (used both for cache of updates and for cache of checked files). Default value: **CacheDir** = <var_dir>/cache For **Linux**: **CacheDir** = /var/opt/drweb.com/cache For **FreeBSD**: **CacheDir** = /var/drweb.com/cache For **Solaris**: **CacheDir** = /var/opt/drweb.com/cache
TempDir = {path to directory}	Path to the directory with temporary files Default value: **TempDir** = /tmp
RunDir = {path to directory}	Path to the directory with PID files and files of communication sockets. Default value: **RunDir** = /var/run
VarLibDir = {path to directory}	Path to the library directory. Default value: **VarLibDir** = <var_dir>/lib For **Linux**: **VarLibDir** = /var/opt/drweb.com/lib For **FreeBSD**: **VarLibDir** = /var/drweb.com/lib For **Solaris**:

	VarLibDir = /var/opt/drweb.com/lib
VersionDir = {path to directory}	The parameter is not used. Default value: **VersionDir** =
DwsDir = {path to directory}	The parameter is not used. Default value: **DwsDir** = <var_dir>/dws For **Linux**: **DwsDir** = /var/opt/drweb.com/dws For **FreeBSD**: **DwsDir** = /var/drweb.com/dws For **Solaris**: **DwsDir** = /var/opt/drweb.com/dws
HtmlTemplatesDir = {path to directory}	The parameter is not used. Default value: **HtmlTemplatesDir** = <var_dir>/html For **Linux**: **HtmlTemplatesDir** = /var/opt/drweb.com/html For **FreeBSD**: **HtmlTemplatesDir** = /var/drweb.com/html For **Solaris**: **HtmlTemplatesDir** = /var/opt/drweb.com/html
MailTemplatesDir = {path to directory}	The parameter is not used. Default value: **MailTemplatesDir** = <var_dir>/mail For **Linux**: **HtmlTemplatesDir** = /var/opt/drweb.com/mail For **FreeBSD**: **MailTemplatesDir** = /var/drweb.com/mail For **Solaris**: **MailTemplatesDir** = /var/opt/drweb.com/mail
AdminGroup = {group name | GID}	Group of users with administrative privileges for **Dr.Web for UNIX File Servers** management. These users, along with root, can elevate privileges of **Dr.Web for UNIX File Servers** components to superuser privileges. Default value: **AdminGroup** =
TrustedGroup = {group name | GID}	The parameter is not used. Default value: **TrustedGroup** =
DebugIpc = {boolean}	Indicates whether detailed IPC messages are included in the log file on debug level (**LogLevel** = DEBUG); that is whether events about interaction of configuration daemon **Dr.Web ConfigD** and other components are registered. Default value: **DebugIpc** = No

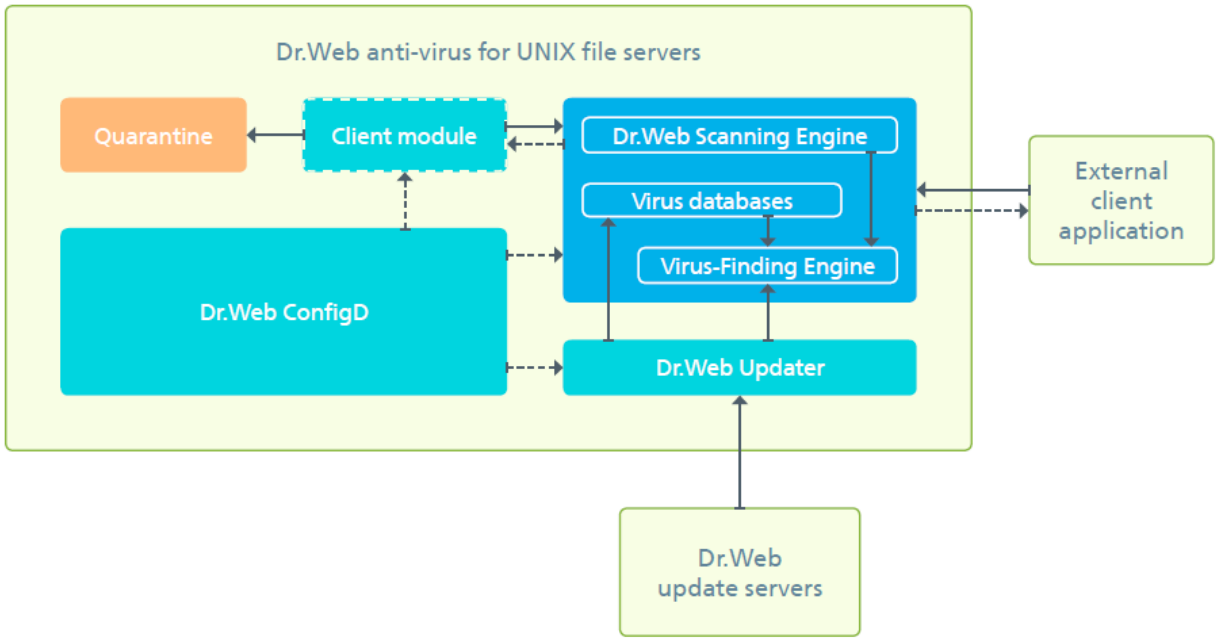
Dr.Web Scanning Engine

Dr.Web Scanning Engine scanning engine is designed to search viruses and other malicious objects in files and boot records (*MBR — Master Boot Record, VBR — Volume Boot Record*) of disk devices. The component loads the anti-virus engine **Dr.Web Virus-Finding Engine** into memory and starts it as well as loads **Dr.Web** virus databases used by the engine for threats detection.

The scanning engine operates in daemon mode, as a service which receives scanning requests from other **Dr.Web for UNIX File Servers** components.

Operation Principles

The component operates as a service which receives requests to scan file system objects (files and boot disk records) from **Dr.Web for UNIX File Servers** components. It also queues scanning tasks and scans requested objects by using **Dr.Web Virus-Finding Engine.** If a threat is detected and the scanning task instructs to cure threats, the scanning engine attempts to cure it if this action can be applied to the scanned object. The picture below shows the operation scheme of **Dr.Web Scanning Engine** scanning engine.



Picture 34. Component operation scheme

The scanning engine, the anti-virus engine **Dr.Web Virus-Finding Engine,** and the virus databases form one unit and cannot be separated: the scanning engine downloads virus databases and provides the operation environment for the cross-platform anti-virus engine **Dr.Web Virus-Finding Engine**. The virus databases and the anti-virus engine are updated by the special module **Dr.Web Updater** that is included in the product but this module is not part of the scanning engine. The module is run by the configuration daemon **Dr.Web ConfigD** periodically or forcefully, if such command is sent by the user. Moreover, if **Dr.Web for UNIX File Servers** operates in enterprise mode, virus databases and anti-virus engine are performed by the central protection agent **Dr.Web ES Agent** (it is not shown in the abovementioned scheme) which interacts with the central protection server and receives the updates.

Scanning engine can operate both under management of the configuration daemon **Dr.Web ConfigD** and in standalone mode. In the former case, the daemon runs the engine and ensures that virus databases are up to date. In the latter case, engine startup and updating of virus databases is performed by an external application that uses the engine. **Dr.Web for UNIX File Servers**

components that process tasks to scan files (indicated as "Client module" in the scheme) use the same interface as external applications do.

Received tasks are automatically distributed into queues with different priorities: high, normal and low. Selection of the queue depends on the component that created a task: for example, tasks created by a file system monitor receive high priority as response time is important for monitoring. The scanning engine computes statistics of its operations, including the number of all tasks received for scanning and the queue length. As the average load rate, the scanning engine uses the average length of queues per second. This rate is averaged for the last minute, last 5 minutes and last 15 minutes.

Anti-virus engine **Dr.Web Virus-Finding Engine** supports signature analysis (signature-based detection of threats) and other methods of heuristics and behavioral analysis designed for detection of a potentially dangerous object based on machine instructions other attributes of malicious code.

Heuristic analysis cannot guarantee highly reliable results and may commit type I or type II errors: omit viruses or raise false alarms.

Thus, objects detected by the heuristics analyzer are treated as "suspicious ".

It is recommended to move suspicious objects to quarantine. After virus databases are updated, such files can be scanned using signature analysis. Keep the virus databases up to date in order to avoid errors of the II type.

Dr.Web Virus-Finding Engine allows to scan and cure both files and packed objects or objects in different containers (such as archives, email messages, etc.).

Command-Line Arguments

To run the scanning engine **Dr.Web Scanning Engine** from the command line, type the following command:

```
$ <opt_dir>/bin/drweb-se [options]
```

Dr.Web Scanning Engine can process the following options:

Short form	Long form	Arguments
-h	--help	
Description: instructs to output short help information about command-line parameters to the console and exit.		
-v	--version	
Description: instructs to output information on the module version and exit		
Additional options (they are the same as configuration file parameters and substitute them when required):		
	--Socket	<address>
Description: socket address used by **Dr.Web Scanning Engine.** It can be specified as a file path (UNIX socket) or as an <IP address:port> pair; at that, if you need to use a network interface by default, type the asterisk character ('*'). Examples: **--Socket** /var/opt/drweb.com/ipc/.se **--Socket** 127.0.0.1:1000 **--Socket** *:1000		
	--EnginePath	<path to file>
Description: path to the library of **Dr.Web Virus-Finding Engine.**		

	`--VirusBaseDir`	`<path to directory>`

Description: path to the directory with virus database files.

	`--TempDir`	`<path to directory>`

Description: path to the directory with temporary files.

	`--Key`	`<path to file>`

Description: path to the license key file.

	`--MaxForks`	`<number>`

Description: maximum allowed number of child processes, which can be started by **Dr.Web Scanning Engine** during scanning.

	`--WatchdogInterval`	`<time interval>`

Description: frequency with which **Dr.Web Scanning Engine** checks whether child processes are operable and stops those processes that stopped responding.

	`--ShellTrace`	

Description: turn on the shell tracing (log detailed information on file scanning performed by **Dr.Web Virus-Finding Engine**).

	`--LogLevel`	`<logging level>`

Description: level of detail at which operation of **Dr.Web Scanning Engine** is logged. Allowed values:

- `DEBUG` — the most verbose logging level. All messages and debug information are registered.
- `INFO` — all messages are registered.
- `NOTICE` — all error messages, warnings, and notifications are registered.
- `WARNING` — all error messages and warnings are registered.
- `ERROR` — only error messages are registered.

	`--Log`	`<destination>`

Description: method for logging module messages. Allowed values:

- `Stderr[:ShowTimestamp]` — messages are output to a standard error stream **`stderr`**.
  Additional option `ShowTimestamp` prescribes to add a time stamp to every message.
- `Syslog[:<facility>]` — messages are transmitted to the system logging service**syslog.**
  Additional option `<facility>` is used to specify a level at which **syslog** registers messages. The following values are possible:
  - `DAEMON` — messages of daemons
  - `USER` — messages of user processes
  - `MAIL` — messages of mail programs
  - `LOCAL0` — messages of local processes 0

    `...`
  - `LOCAL7` — messages of local processes 7.
- `<path>` — path to the file where all messages are registered.

Examples:

```
--Log /var/opt/drweb.com/log/se.log
--Log Stderr:ShowTimestamp
--Log Syslog:DAEMON
```

Example:

```
$ /opt/drweb.com/bin/drweb-se -c /etc/opt/drweb.com/drweb.ini --MaxForks=5
```

This command starts an instance of **Dr.Web Scanning Engine**, instructs it to use the `/etc/opt/drweb.com/drweb.ini` configuration file, and sets the limit to start no more than 5 child scanning processes.

Notes about startup

When necessary, any number of scanning engine **Dr.Web Scanning Engine** instances can be started. The instances provide client applications (not only **Dr.Web for UNIX File Servers** components) with the scanning service. If the parameter **Dr.Web for UNIX File Servers** **SeFixedSocketPath** (in the section `[ScanEngine]`), is specified, one the scanning engine instances will be always running (started by configuration daemon **Dr.Web ConfigD**). The instances of the scanning engine started directly from the command line, will operate in standalone mode without establishing connection to the configuration daemon, even if it is running.

To scan files at request, use the command-line command-line tool for the solution management from the command line **Dr.Web Ctl** (it is run by **drweb-ctl** command).

Configuration Parameters

The component uses configuration parameters which are specified in `[ScanEngine]` section of the integrated configuration file of **Dr.Web for UNIX File Servers.**

This section stores the following parameters:

LogLevel = {logging level}	Logging level for **Dr.Web Scanning Engine.** If the parameter is not specified, the **DefaultLogLevel** parameter value from `[Root]` section is used. Default value: **LogLevel** = Notice
Log = {log type}	Logging method for **Dr.Web Scanning Engine.** Default value: **Log** = Auto
ExePath = {path to file}	Path to the executable of **Dr.Web Scanning Engine.** Default value: **ExePath** = <opt_dir>/bin/drweb-se For **Linux**: **ExePath** = /opt/drweb.com/bin/drweb-se For **FreeBSD**: **ExePath** = /usr/local/libexec/drweb.com/bin/drweb-se For **Solaris**: **ExePath** = /opt/drweb.com/bin/drweb-se
FixedSocketPath = {path to file}	Path to the socket file of the fixed **Dr.Web Scanning Engine** instance. If this parameter is specified, configuration daemon **Dr.Web ConfigD** checks that a scanning engine instance is running and is available to all clients via this socket. Default value: **FixedSocketPath** =

MaxForks = {integer}	Maximum allowed number of child processes run by **Dr.Web Scanning Engine**, which can be run simultaneously. Default value: **MaxForks** = Automatically determined as twice the number of available CPU cores; or 4, if the resulting number is less than 4.
WatchdogInterval = {time interval}	Rate at which **Dr.Web Scanning Engine** checks whether child processes are operable in order to detect processes that stopped responding ("watchdog"). Default value: **WatchdogInterval** = 1.5s
IdleTimeLimit = {time interval}	Maximum time that the component can remain idle. If the specified value is exceeded, the component shuts down. Minimum value — 10s. If the **FixedSocketPath** parameter is running, this setting is ignored (the component does not finish its operation after the time interval expires). Default value: **IdleTimeLimit** = 1h

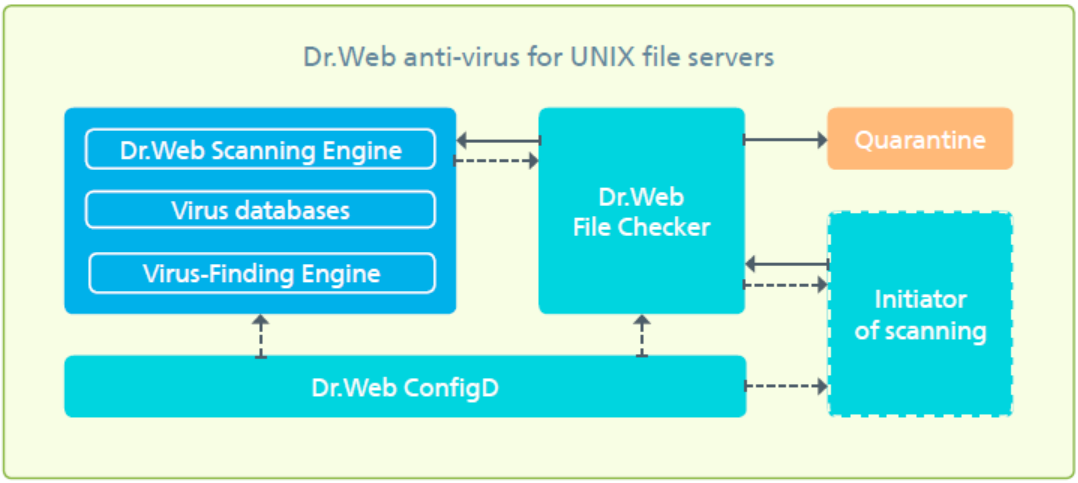
Dr.Web File Checker

The component of file checking **Dr.Web File Checker** is designed for checking files and folders in the file system. It is used by other components of **Dr.Web for UNIX File Servers** for checking file system objects. Moreover, this component also performs a function of a quarantine manager by managing content of directories where isolated files are located.

Operation Principles

The component is designed to provide access to file system objects (files, folders, boot records). They are started with superuser (`root`) privileges.

It indexes all checked files and directories and saves all data on checked objects to a special cache to avoid repeated check of objects that were already checked and were not modified since that (in this case, if a request to check such object is received, the previous check result, retrieved from cache, is returned). The component operation scheme is shown in the picture below.



Picture 35. Component operation scheme

When a request to check a file system object is received from **Dr.Web for UNIX File Servers** components, it checks whether this object requires scanning. If so, a scanning task is generated for scanning engine **Dr.Web Scanning Engine**. If the scanned object contained a threat, **Dr.Web File Checker** neutralizes it (deletes or quarantines) if this action was specified by the client component that initiated the scanning. Scanning can be initiated by various product components (for example, **SpIDer Guard for SMB** monitor).

During scanning, the component generates and sends the client component a report with scan results and applied actions, if any.

Apart from the standard scanning method, the following special methods are available for internal use:

- The "flow" scanning method. A component that uses this scanning method initializes detection and neutralization parameters only once. These parameters will be applied to all future requests for file check coming from the component. This method is used by **SpIDer Guard** monitor.
- The "proxy" scanning method. A component that uses this scanning method scans files without applying any actions (including event logging) to detected threats. Necessary actions must be applied by the component that initiated the scanning process. This method is used by **SpIDer Guard for SMB** monitor and **Dr.Web ClamD** component.

Files can be scanned with the "flow" and "proxy" scanning methods by **Dr.Web Ctl** utility (launched by the **`drweb-ctl`** command) using the **`flowscan`** and **`proxyscan`** commands. However, for the

standard scanning on demand, it is recommended to use the **scan** command.

The component collects statistics on scanned files averaging the number of files scanned per second in the last minute, 5 minutes, 15 minutes.

Command-Line Arguments

To run **Dr.Web File Checker**, type the following command in the command line:

```
$ <opt_dir>/bin/drweb-filecheck [options]
```

Dr.Web File Checker can process the following options:

Short form	Long form	Arguments
-h	--help	
Description: instructs to output short help information about command-line parameters to the console and exit.		
-v	--version	
Description: instructs to output information on the module version and exit		

Example:

```
$ /opt/drweb.com/bin/drweb-filecheck --help
```

This command outputs short help information on **Dr.Web File Checker.**

Notes about startup

The component cannot be run directly from the command line of the operating system in standalone mode. It is run automatically by configuration daemon **Dr.Web ConfigD** when a scanning task is received from **Dr.Web for UNIX File Servers** components.

To scan files at request, use the command-line command-line tool for the solution management from the command line **Dr.Web Ctl** (it is run by **drweb-ctl** command).

Configuration Parameters

The component uses configuration parameters which are specified in [FileCheck] section of the integrated configuration file of **Dr.Web for UNIX File Servers.**

This section stores the following parameters:

LogLevel = {logging level}	Logging level for file checking component **Dr.Web File Checker.** If the parameter value is not specified, the value of **DefaultLogLevel** from [Root] section is used. Default value: **LogLevel** = Notice
Log = {log type}	Logging method for file checking component **Dr.Web File Checker.** Default value: **Log** = Auto
ExePath =	Path to the executable of **Dr.Web File Checker.**

	Default value: **ExePath** = <opt_dir>/bin/drweb-filecheck For **Linux**: **ExePath** = /opt/drweb.com/bin/drweb-filecheck For **FreeBSD**: **ExePath** = /usr/local/libexec/drweb.com/bin/drweb-filecheck For **Solaris**: **ExePath** = /opt/drweb.com/bin/drweb-filecheck
DebugClientIpc = {boolean}	Indicates whether detailed IPC messages are included in the log file on debug level (**LogLevel** = DEBUG). Default value: **DebugClientIpc** = No
DebugScan = {boolean}	Indicates whether detailed IPC messages, received during a file check, are included to the log file on debug level (**LogLevel** = DEBUG). Default value: **DebugScan** = No
DebugFlowScan = {boolean}	Indicates whether detailed messages about scanning of files by "flow" method are included in the log file on debug level (**LogLevel** = DEBUG). This method is used by **SpIDer Guard** monitor. Default value: **DebugFlowScan** = No
DebugProxyScan = {boolean}	Indicates whether detailed messages about monitoring of files by "proxy" method are included in the log file on debug level (**LogLevel** = DEBUG). This method is used by **SpIDer Guard for SMB** monitor and **Dr.Web ClamD** component. Default value: **DebugProxyScan** = No
DebugCache = {boolean}	Indicates whether detailed messages about cached check results are included in the log file on debug level (**LogLevel** = DEBUG). Default value: **DebugCache** = No
MaxCacheSize = {size}	Maximum allowed size of cache to store data on scanned files. If 0 is specified, caching is disabled. Default value: **MaxCacheSize** = 50MB
RescanInterval = {time interval}	Period of time during which a repeated check of file content is not performed if results of the previous check are stored in cache (period while the stored information is considered up-to-date). If 0 is specified, file are always checked at request. Default value: **RescanInterval** = 1s
IdleTimeLimit = {time interval}	Maximum time that the component can remain idle. If the

	specified value is exceeded, the component shuts down. Minimum value — `10s`.
	Default value: **`IdleTimeLimit`** = `30s`

SpIDer Guard

Linux file system monitor **SpIDer Guard** is designed for monitoring file activity on **GNU/Linux** file system volumes. The module operates in daemon mode and controls main file system events related to modification (file creation, opening, closing). When such event is intercepted, the monitor checks whether the file was modified and, if so, the module generates a task for component **Dr.Web File Checker** to initiate scanning of the modified file by scanning engine **Dr.Web Scanning Engine**.

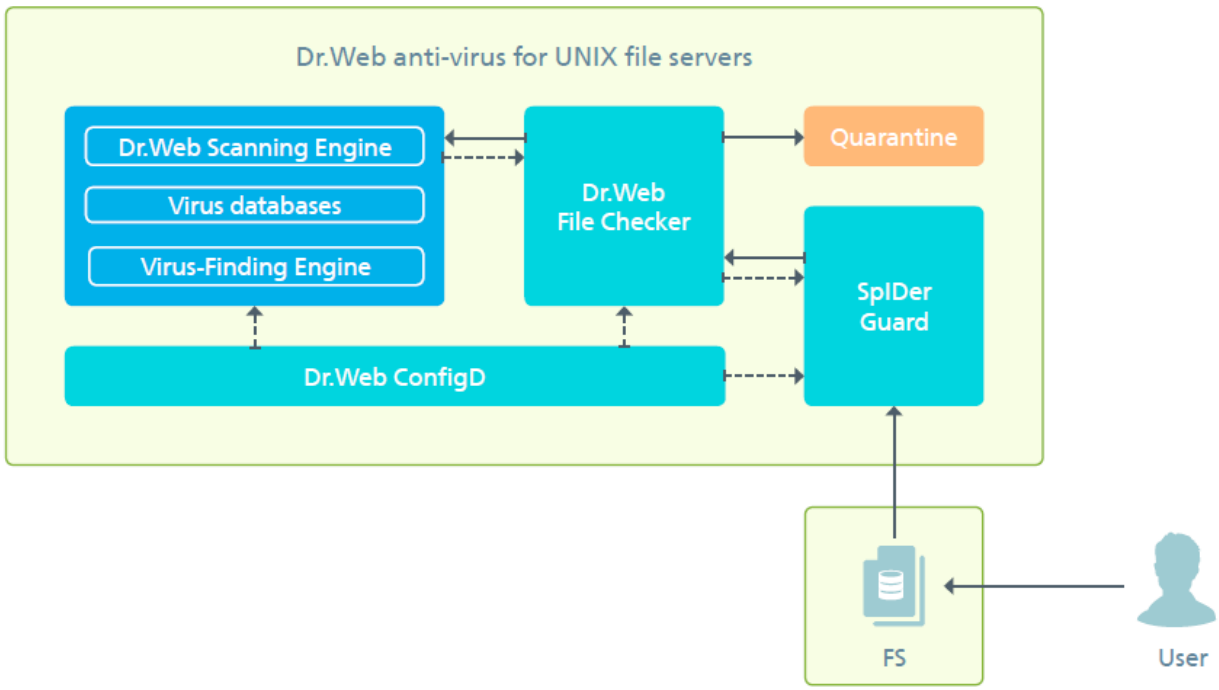
Moreover, the file system monitor **SpIDer Guard** detects attempts to run programs form their executable files. If a program in an executable file is detected malicious, all processes started from this executable file are forcibly terminated.

The component is included only in the distributions designed for **GNU/Linux** OSes.

Operation Principles

The file system monitor **SpIDer Guard** can operate in both user space (*user mode*) and **Linux** kernel space (via *LKM — Linux kernel module*). It is recommended to use automatic mode (*auto*), which will allow the module to define the best operation mode on startup, as not all **Linux** kernel versions support `fanotify` used when the monitor operates in *user mode*. If the module cannot support the specified integration mode, the module exits after startup. If the auto mode is selected, the modules attempts to use the user mode and then — LKM mode. If neither of these two modes can be used, the module exits.

When new or modified files are detected, the monitor sends component **Dr.Web File Checker** a task to scan these files. The component then initiates their scanning by scanning engine **Dr.Web Scanning Engine**. The operation scheme is shown in the picture below.



Picture 36. Component operation scheme

To define file system objects that must be monitored, **SpIDer Guard** uses two configuration parameters:

- **IncludedPath** — paths to be monitored ("monitoring scope").
- **ExcludedPath** — paths to be excluded from monitoring ("exclusion scope").

Thus, only those files are monitored which paths are specified in the **IncludedPath** parameter and not specified in the **ExcludedPath** parameter. If a path is specified in both parameters, the **IncludedPath** parameter takes precedence over the other parameter: the objects are monitored by Samba file system monitor **SpIDer Guard** (for details on the algorithm to define objects included or excluded from monitoring, see below).

Example:

Let us assume that the lists contain the following paths:

```
IncludedPath = /a, /b/c, /d/file1
ExcludedPath = /b, /d/file1, /b/c/file2
```

Then the file system monitor **SpIDer Guard** will monitor access to:

- all files in the `/a` directory
- all files in the `/b/c` directory except for `file2`
- `/d/file1`

With these settings, the monitor does not control operations with other files.

Note that specifying `/b` path in the **ExcludedPath** list is syntactically valid, but has no effect: files in this directory are not monitored anyway as this path is not within the monitoring scope specified in the **IncludedPath** list.

Specifying exclusion in the **ExcludedPath** list can be useful when, for example, some files are frequently modified, which results in constant repeated scanning of these files and, thus, can increase system load. If it is known with certainty that frequent modification of files in a directory is not caused by a malicious program but is due to operation of a trusted program, you can add the path to this directory or add these files to the list of exclusions. In this case, the file system, monitor **SpIDer Guard** stops responding to modification of these objects, even if they are within the monitoring scope. Moreover, you can add a program to the list of trusted programs (**ExcludedProc** configuration parameter). In this case, file operations of this program will not cause scanning even if the modified or created files are monitored.

The file system monitor**SpIDer Guard** automatically detects mounting and demounting of new file system volumes (for example, on USB flash drives, CD/DVD, RAID arrays) and adjusts the list of monitored objects, if required.

Defining whether an object is monitored

To define whether a file system object is to be monitored, the file system monitor **SpIDer Guard**, when detecting a file operation, does the following:

1. Gets information on the process that performed the file operation. If the executable path of this process (name of the executable file and its full path) is specified in the **ExcludedProc** list, the modified object is not within the monitoring scope and will not be scanned; the procedure ends.
2. Otherwise, the monitor gets the full path to the modified object.
3. This path is checked if it is specified in the **IncludedPath** or **ExcludedPath** lists.
4. If the path coincides with one of the items in the **IncludedPath** list, the object is scanned; the procedure ends.
5. If the path coincides with one of the items in the **ExcludedPath** list, the operation is ignored and the object is not scanned; the procedure ends.

6. If the path is not specified in any of the lists, the path is changed to another path which is one level up.
7. If this result path is empty, the procedure ends. Otherwise, the procedure goes to step 3.

The procedure continues until the result path of an iteration coincides with an item of either **IncludedPath** or **ExcludedPath**, or until the system root directory is reached.

Command-Line Arguments

To run the file system monitor **SpIDer Guard** from the command line, type the following command:

```
$ <opt_dir>/bin/drweb-spider [options]
```

SpIDer Guard can process the following options:

Short form	Long form	Arguments
-h	--help	
Description: instructs to output short help information about command-line parameters to the console and exit.		
-v	--version	
Description: instructs to output information on the module version and exit		

Example:

```
$ /opt/drweb.com/bin/drweb-spider --help
```

This command outputs short help information on **SpIDer Guard** file system monitor.

Notes about startup

The component cannot be run directly from the command line of the operating system in standalone mode. It is run automatically on operating system startup by configuration daemon **Dr.Web ConfigD.** To start or stop component operation, you can use the command-line tool for the solution management **Dr.Web Ctl** started by **drweb-ctl** command).

Configuration Parameters

The component uses configuration parameters which are specified in [LinuxSpider] section of the integrated configuration file of **Dr.Web for UNIX File Servers.**

The section contains the following parameters:

LogLevel = {logging level}	Logging level for the file system monitor **SpIDer Guard.** If the parameter is not specified, the **DefaultLogLevel** parameter value from [Root] section is used. Default value: **LogLevel** = Notice
Log = {log type}	Logging method for the file system monitor **SpIDer Guard.** Default value: **Log** = Auto
ExePath = {path to file}	Path to the executable of **SpIDer Guard.** Default value: **ExePath** = <opt_dir>/bin/drweb-spider

	For **Linux**: **ExePath** = /opt/drweb.com/bin/drweb-spider
Start = {boolean}	Indicates whether it is required to run **SpIDer Guard** on the **Dr.Web for UNIX File Servers** startup. Default value: **Start** = Yes
ExcludedPath = {path to file or directory}	Path to the object which must be excluded from monitoring. You can specify a directory or file path. If a directory is specified, all directory content will be excluded. Note that symbolic links here have no effect as only the direct path to a file is analyzed when scanning. You can specify a list as the parameter value. The values on the list must be separated with commas and enclosed in quotation marks. The parameter can be specified more than once in the section (in this case, all its values are combined into one list). Default value: **ExcludedPath** = "/proc", "/sys"
IncludedPath = {path to file or directory}	Path to the object which must be monitored and scanned upon any file event. You can specify a directory or file path. If a directory is specified, all directory content will be scanned, if the paths are not specified in the **ExcludedPath** list. Note that symbolic links here have no effect as only the direct path to a file is analyzed when scanning. Note that this parameter takes precedence over **ExcludedPath** parameter of the same section; that is, if the same object (file or directory) is specified in both parameter values, this object will be scanned upon any file event. You can specify a list as the parameter value. The values on the list must be separated with commas and enclosed in quotation marks. The parameter can be specified more than once in the section (in this case, all its values are combined into one list). Default value: **IncludedPath** = /
ExcludedProc = {path to file}	List of processes that are excluded from monitoring. If a file operation was initiated by one of the processes specified here, the modified or created file will not be scanned. You can specify a list as the parameter value. The values on the list must be separated with commas and enclosed in quotation marks. The parameter can be specified more than once in the section (in this case, all its values are combined into one list). Default value: **ExcludedProc** =
Mode = {LKM|FANOTIFY|AUTO}	Operation mode of the file system monitor **SpIDer Guard.** Allowed values: • LKM — Operation in operating system kernel mode (LKM for **GNU/Linux**) • FANOTIFY — Operation in user mode • AUTO — The best operation mode is set automatically. Note that changing of this parameter value should be done with

	the highest caution as not all kernels of **GNU/Linux** operating systems work correctly with **SpIDer Guard** in different modes. It is strongly recommended to set this parameter value to `AUTO`, as in this case the best mode will be selected for integration with the file system manager on startup. At that, the module will attempt to enable `FANOTIFY` mode and, on failure — `LKM`. If none of the modes can be set, the module exits. Default value: **Mode** = AUTO
OnKnownVirus = {action}	Action applied by **Dr.Web for UNIX File Servers** to a known threat (virus, etc.) detected by using signature analysis during the scanning initiated by **SpIDer Guard**. Allowed values: Cure, Quarantine, Delete Default value: **OnKnownVirus** = Cure
OnIncurable = {action}	Action applied by **Dr.Web for UNIX File Servers** to an incurable threat (that is, an attempt to apply `Cure` failed) detected during the scanning initiated by **SpIDer Guard**. Allowed values: Quarantine, Delete Default value: **OnIncurable** = Quarantine
OnSuspicious = {action}	Action applied by **Dr.Web for UNIX File Servers** to an unknown threat (or suspicious objects) detected by using heuristic analysis during the scanning initiated by **SpIDer Guard**. Allowed values: Report, Quarantine, Delete Default value: **OnSuspicious** = Quarantine
OnAdware = {action}	Action applied by **Dr.Web for UNIX File Servers** to adware detected during the scanning initiated by **SpIDer Guard**. Allowed values: Report, Quarantine, Delete Default value: **OnAdware** = Quarantine
OnDialers = {action}	Action applied by **Dr.Web for UNIX File Servers** to a dialer program detected during the scanning initiated by **SpIDer Guard**. Allowed values: Report, Quarantine, Delete Default value: **OnDialers** = Quarantine
OnJokes = {action}	Action applied by **Dr.Web for UNIX File Servers** to a joke program detected during the scanning initiated by **SpIDer Guard**. Allowed values: Report, Quarantine, Delete

	Default value: **OnJokes** = Report
OnRiskware = {action}	Action applied by **Dr.Web for UNIX File Servers** to riskware detected during the scanning initiated by **SpIDer Guard**. Allowed values: Report, Quarantine, Delete Default value: **OnRiskware** = Report
OnHacktools = {action}	Action applied by **Dr.Web for UNIX File Servers** to a hacktool detected during the scanning initiated by **SpIDer Guard**. Allowed values: Report, Quarantine, Delete Default value: **OnHacktools** = Report
ScanTimeout = {time interval}	Timeout for scanning of one file at request received from **SpIDer Guard**. If the value is set to 0, time to scan a file is not limited. Default value: **ScanTimeout** = 30s
HeuristicAnalysis = {On | Off}	Indicates whether heuristic analysis is used for detection of unknown threats during the file scanning initiated by **SpIDer Guard**. Heuristic analysis provides higher detection reliability but, at the same time, it increases time of virus scanning. Action applied to threats detected by heuristic analyzer is specified as the **OnSuspicious** parameter value. Allowed values: • On — instructs to use heuristic analysis when scanning. • Off — instructs not to use heuristic analysis. Default value: **HeuristicAnalysis** = On
PackerMaxLevel = {integer}	Maximum nesting level when scanning packed objects. All objects at a deeper nesting level are skipped during the file scanning initiated by **SpIDer Guard**. If the value is set to 0, nested objects are not scanned. Default value: **PackerMaxLevel** = 8
ArchiveMaxLevel = {integer}	Maximum nesting level when scanning archives. All objects at a deeper nesting level are skipped during the file scanning initiated by **SpIDer Guard**. If the value is set to 0, nested objects are not scanned. Default value: **ArchiveMaxLevel** = 0
MailMaxLevel = {integer}	Maximum nesting level when scanning email messages and mailboxes. All objects at a deeper nesting level are skipped during the file scanning initiated by **SpIDer Guard**.

	If the value is set to 0, nested objects are not scanned. Default value: **MailMaxLevel** = 0
ContainerMaxLevel = {integer}	Maximum nesting level when scanning other containers (for example, HTML pages). All objects at a deeper nesting level are skipped during the file scanning initiated by **SpIDer Guard**. If the value is set to 0, nested objects are not scanned. Default value: **ContainerMaxLevel** = 8
MaxCompressionRatio = {integer}	Maximum compression ratio of scanned objects (ratio between the uncompressed size and compressed size). If the ratio of an object exceeds the limit, this object is skipped during the file scanning initiated by **SpIDer Guard**. The compression ratio must be at least equal to 2. Default value: **MaxCompressionRatio** = 500

SpIDer Guard for SMB

SpIDer Guard for SMB is a monitor of shared file system directories used by SMB file server **Samba.** This component is designed to monitor actions applied to files in **Samba** shared directories. It operates as a resident monitor and controls basic actions in the protected file system (creation, opening, closing, and read or write operation). Once the component intercepts such operation, it checks whether the file was modified and if so, a task to scan the file is created and sent to the file scanner **Dr.Web File Checker**. If the file requires scanning, **Dr.Web File Checker** initiates the scanning by scanning engine **Dr.Web Scanning Engine**.

To avoid conflicts between **SpIDer Guard for SMB** and **SpIDer Guard**, which may occur when scanning files in shared **Samba** directories, it is recommended to additionally configure **SpIDer Guard** by performing one of the following:

- add shared **Samba** directories to the exclusion scope (specify these directories in **ExcludedPath** parameter)
- add the **Samba** process (**smbd**) to the list of ignored processes (specify **smbd** in **ExcludedProc** parameter).

The **SpIDer Guard for SMB** monitor uses a special **VFS SMB** module for the integration with the **Samba** server. With **SpIDer Guard for SMB**, several versions of this module which are built for various versions of **Samba** are supplied. However, the supplied versions of the **VFS SMB** module may be incompatible with the version of **Samba** installed on your file server. It may occur, for example, if the **Samba** server uses the `CLUSTER_SUPPORT` option.

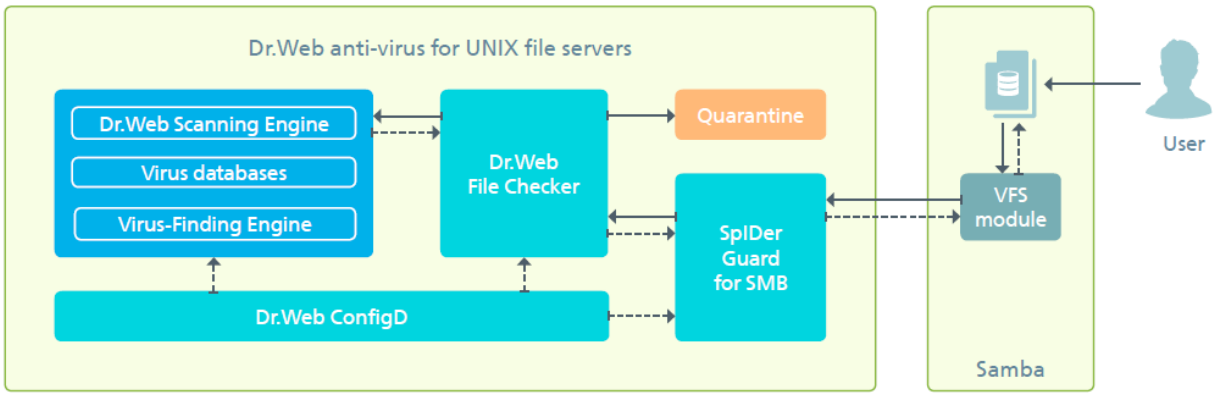
In case of incompatibility of the **VFS SMB** module with the **Samba** server, build the **VFS SMB** module for your **Samba** server from the supplied source codes manually (including the compatibility with the `CLUSTER_SUPPORT` option if necessary).

The procedure of building the **VFS SMB** module from the supplied source codes is described in Appendix G.

Operation Principles

SpIDer Guard for SMB operates as daemon (usually it is started by configuration daemon **Dr.Web**

ConfigD on system startup). After startup, the component operates as a server to which special plug-ins are connected (**VFS SMB** modules) that operate on the **Samba** server side and monitors user activity in shared directories. When a new or modified file is found on a volume, the monitor instructs **Dr.Web File Checker** to scan the file. Monitor operation scheme is shown in the picture below.



Picture 37. Component operation scheme

If a file scanned at request of the monitor is infected with an incurable threat or with a threat for which "Block" action is specified, the monitor instructs the **VFS SMB** module controlling the corresponding shared directory to block this file (that is, to prevent users from reading, editing, and running the file). A text file is also created next to the blocked object, if this setting is not disabled. The created file describes the reason why the object was block. It is necessary to avoid the "unexpected disappearance" of the file to which the action "Delete" or "Move to quarantine" was applied. Thus, it prevents users from multiple attempts to recreate the moved or deleted file. Moreover, this text file also notifies the user that the computer may be infected with a malicious program. If informed on this, the user can start anti-virus scanning of the computer and neutralize local detected threats.

You can disable monitoring of the specified files and directories stored in controlled shared directories of the **Samba** server. It can be useful when, for example, some files are frequently modified, which results in constant repeated scanning of these files and, thus, can increase system load. If it is known with certainty that frequent modification is typical for these files in the storage, it is recommended to add them to the list of exclusions. In this case, the monitor stops responding to modification of these objects and their scanning is not initiated.

To distinguish between directories that are to be monitored and the exclusions, the **Samba** shared directories monitor **SpIDer Guard for SMB** uses two configuration parameters:

- **IncludedPath** — paths to be monitored ("monitoring scope").
- **ExcludedPath** — paths to be excluded from monitoring ("exclusion scope").

Normally, as the monitoring scope, the monitor uses the entire shared directory. If you specify different monitoring and exclusion scopes, only those files in shared directory are monitored which paths are not specified in the **ExcludedPath** parameter or specified in the **IncludedPath** parameter. If a path is specified in both parameters, the **IncludedPath** parameter takes precedence over the other one: the objects are monitored by the **Samba** shared directories monitor **SpIDer Guard for SMB**. Thus, use the **IncludedPath** parameter to add some files and directories for monitoring if they are residing in the exclusion scope.

You can specify different protection parameters for different **Samba** shared directories monitored by **SpIDer Guard for SMB**, including different monitoring and exclusion scope as well as reaction to detected threats. For that purpose, in the configuration section of **SpIDer Guard for SMB** specify individual settings for **VFS SMB** modules that control shared directories.

Command-Line Arguments

To run **Samba** shared directories monitor **SpIDer Guard for SMB** from the command line, type the following command:

```
$ <opt_dir>/bin/drweb-smbspider-daemon [options]
```

SpIDer Guard for SMB can process the following options:

Short form	Long form	Arguments
-h	--help	
Description: instructs to output short help information to the console about command-line parameters and exit.		
-v	--version	
Description: instructs to output information on the module version and exit		

Example:

```
$ /opt/drweb.com/bin/drweb-smbspider-daemon --help
```

This command outputs short help information on **SpIDer Guard for SMB** monitor.

Notes about startup

The component cannot be run directly from the command line of the operating system in standalone mode. It is run automatically on operating system startup by configuration daemon **Dr.Web ConfigD**. To start or stop the component, you can use the command-line tool for the solution management **Dr.Web Ctl** started by `drweb-ctl` command).

Configuration Parameters

The component uses configuration parameters which are specified in `[SMBSpider]` section of the integrated configuration file of **Dr.Web for UNIX File Servers.**

The section contains the following parameters:

LogLevel = {logging level}	Logging level for SMB directories monitor **SpIDer Guard for SMB.** If the parameter is not specified, the **DefaultLogLevel** parameter value from `[Root]` section is used. Default value: **LogLevel** = Notice
Log = {log type}	Logging method for SMB directories monitor **SpIDer Guard for SMB.** Default value: **Log** = Auto
ExePath = {path to file}	Path to the executable of **SpIDer Guard for SMB.** Default value: **ExePath** = <opt_dir>/bin/drweb-smbspider-daemon For **Linux**: **ExePath** = /opt/drweb.com/bin/drweb-smbspider-daemon For **FreeBSD**:

	ExePath = /usr/local/libexec/drweb.com/bin/drweb-smbspider-daemon For **Solaris**: **ExePath** = /opt/drweb.com/bin/drweb-smbspider-daemon
Start = {boolean}	Indicates whether it is required to run **SpIDer Guard for SMB** on the suite startup. Default value: **Start** = Yes
SambaChrootDir = {path to directory}	Path to the root directory of SMB file storage (overrides by the file server via **chroot**). Used as a prefix substituted at the beginning of all paths to files and directories residing in the file storage and describes the path relative to the root of the local file system. If not specified, the path to the file system root / is used. Default value: **SambaChrootDir** =
[*] **ExcludedPath** = {path to file or directory}	Path to the object which must be skipped during scanning. You can specify a directory or file path. It is also possible to use file masks (which contain question marks ? and asterisks * as well as character classes [ ], [!], [^]). If a directory is specified, all directory content will be skipped. You can specify a list as the parameter value. The values on the list must be separated with commas and enclosed in quotation marks. The parameter can be specified more than once in the section (in this case, all its values are combined into one list). Default value: **ExcludedPath** =
[*] **IncludedPath** = {path to file or directory}	Path to the object which must be scanned. You can specify a directory or file path. It is also possible to use file masks (that contain question marks ? and asterisks * as well as character classes [ ], [!], [^]). If a directory is specified, all directory content will be scanned. Note that this parameter takes precedence over **ExcludedPath** parameter of the same section; that is, if the same object (file or directory) is specified in both parameter values, this object will be scanned. You can specify a list as the parameter value. The values on the list must be separated with commas and enclosed in quotation marks. The parameter can be specified more than once in the section (in this case, all its values are combined into one list). Default value: **IncludedPath** =
[*] **AlertFiles** = {boolean}	Indicates whether a text file is created next to an object blocked by SMB directory monitor as malicious. The created file describes the reason why the object was block. Created files are named as follows: <blocked_object_name>.drweb.alert.txt Allowed values: • Yes — Files are created.

	• No — Files are not created. Default value: **AlertFiles** = Yes
[*] **OnKnownVirus** = {action}	Action applied by **Dr.Web for UNIX File Servers** to a known threat (virus, etc.) detected by using signature analysis during the scanning initiated by **SpIDer Guard for SMB**. Allowed values: Block, Cure, Quarantine, Delete Default value: **OnKnownVirus** = Cure
[*] **OnIncurable** = {action}	Action applied by **Dr.Web for UNIX File Servers** to an incurable threat (that is, an attempt to apply Cure failed) detected during the scanning initiated by **SpIDer Guard for SMB**. Allowed values: Block, Quarantine, Delete Default value: **OnIncurable** = Quarantine
[*] **OnSuspicious** = {action}	Action applied by **Dr.Web for UNIX File Servers** to an unknown threat (or suspicious objects) detected by using heuristic analysis during the scanning initiated by **SpIDer Guard for SMB**. Allowed values: Pass, Block, Quarantine, Delete Default value: **OnSuspicious** = Quarantine
[*] **OnAdware** = {action}	Action applied by **Dr.Web for UNIX File Servers** to adware detected during the scanning initiated by **SpIDer Guard for SMB**. Allowed values: Pass, Block, Quarantine, Delete Default value: **OnAdware** = Pass
[*] **OnDialers** = {action}	Action applied by **Dr.Web for UNIX File Servers** to a dialer program detected during the scanning initiated by **SpIDer Guard for SMB**. Allowed values: Pass, Block, Quarantine, Delete Default value: **OnDialers** = Pass
[*] **OnJokes** = {action}	Action applied by **Dr.Web for UNIX File Servers** to a joke program detected during the scanning initiated by **SpIDer Guard for SMB**. Allowed values: Pass, Block, Quarantine, Delete Default value: **OnJokes** = Pass

[*] **OnRiskware** = {action}	Action applied by **Dr.Web for UNIX File Servers** to riskware detected during the scanning initiated by **SpIDer Guard for SMB**. Allowed values: Pass, Block, Quarantine, Delete Default value: **OnRiskware** = Pass
[*] **OnHacktools** = {action}	Action applied by **Dr.Web for UNIX File Servers** to a hacktool detected during the scanning initiated by **SpIDer Guard for SMB**. Allowed values: Pass, Block, Quarantine, Delete Default value: **OnHacktools** = Pass
[*] **BlockOnError** = {boolean}	Indicates whether **SpIDer Guard for SMB** blocks access to a file if an attempt to cure it resulted in an error. Allowed values: • Yes — block access to a file. • No — access to a file is not blocked. Default value: **BlockOnError** = Yes
[*] **ScanTimeout** = {time interval}	Timeout for scanning one file initiated by **SpIDer Guard for SMB**. If the value is set to 0, time to scan a file is not limited. Default value: **ScanTimeout** = 30s
[*] **HeuristicAnalysis** = {On | Off}	Indicates whether *heuristic analysis* is used for detection of unknown threats during the scanning initiated by **SpIDer Guard for SMB**. Heuristic analysis provides higher detection reliability but, at the same time, it increases time of virus scanning. Action applied to threats detected by heuristic analyzer is specified as the **OnSuspicious** parameter value. Allowed values: • On — instructs to use heuristic analysis when scanning. • Off — instructs not to use heuristic analysis. Default value: **HeuristicAnalysis** = On
[*] **PackerMaxLevel** = {integer}	Maximum nesting level when scanning packed objects. All objects at a deeper nesting level are skipped during the scanning initiated by **SpIDer Guard for SMB**. If the value is set to 0, nested objects are not scanned. Default value: **PackerMaxLevel** = 8
[*] **ArchiveMaxLevel** = {integer}	Maximum nesting level when scanning archives. All objects at a deeper nesting level are skipped during the scanning initiated by **SpIDer Guard for SMB**.

	If the value is set to 0, nested objects are not scanned. Default value: **ArchiveMaxLevel** = 0
[*] **MailMaxLevel** = {integer}	Maximum nesting level when scanning email messages and mailboxes. All objects at a deeper nesting level are skipped during the scanning initiated by **SpIDer Guard for SMB**. If the value is set to 0, nested objects are not scanned. Default value: **MailMaxLevel** = 8
[*] **ContainerMaxLevel** = {integer}	Maximum nesting level when scanning other containers (for example, HTML pages). All objects at a deeper nesting level are skipped during the scanning initiated by **SpIDer Guard for SMB**. If the value is set to 0, nested objects are not scanned. Default value: **ContainerMaxLevel** = 8
[*] **MaxCompressionRatio** = {integer}	Maximum compression ratio of scanned objects (ratio between the uncompressed size and compressed size). If the ratio of an object exceeds the limit, this object is skipped during the scanning initiated by **SpIDer Guard for SMB**. The compression ratio must be at least equal to 2. Default value: **MaxCompressionRatio** = 500
SmbSocketPath = {path to file}	Path to the socket file which enables interatcion between **SpIDer Guard for SMB** and **VFS SMB** modules. The path is always relative and is a supplement for the path specified as the **ChrootPath.** parameter value. Default value: **SmbSocketPath** = var/run/.com.drweb.smb_spider_vfs
ActionDelay = {time interval}	Delay time between the moment when a threat is detected and the moment when **SpIDer Guard for SMB** applies the action specified for this threat type. During this time period, the file is blocked. Default value: **ActionDelay** = 24h
MaxCacheSize = {size}	Size of cache used by **VFS SMB** modules to store data on scanned files in monitored shared **Samba** directories. If 0 is specified, data is not cached. Default value: **MaxCacheSize** = 10mb

Customizing scanning settings

You can specify a different tag for each **VFS SMB** module which monitors each shared directory (storage). You can do it in the configuration file of SMB server **Samba** (typically, this is `smb.conf` file. Unique tags for **VFS SMB** modules in `smb.conf` file are specified as follows:

```
smb_spider:tag = <someTag>
```

where <someTag> is a unique tag assigned to a **VFS SMB** module by **Samba** SMB server for a shared directory.

If a **VFS SMB** module has a unique tag <someTag>, you can create a separate section in the configuration file of **Dr.Web for UNIX File Servers** in addition to **[SMBSpider]**. The created section will store all configuration parameters for scanning a particular storage protected by this **VFS SMB** module.

This section must be named as **[SMBSpider.Share.<someTag>]**.

Sections created for **VFS SMB** modules can contain parameters indicated with asterisk **"[*]"** in the above mentioned table. Other parameters cannot be specified in such individual sections as the parameter values configure operation of all **VFS SMB** modules operating with SMB directories monitor **SpIDer Guard for SMB.**

VFS SMB module uses parameter values from the general section **[SMBSpider]** if these parameters are not specified in the individual section **[SMBSpider.Share.<someTag>]**, created for this module. Thus, if no individual section, indicated with a tag, is created, all **VFS SMB** modules use the same parameters for monitoring shared directories. If you delete some parameter from the **[SMBSpider.Share.<someTag>]** section, the parameter value for this section (and for the corresponding shared directory with <someTag>) will be taken from the "parent" parameter with the same name from the general **[SMBSpider]** section; the default parameter value is not used in this case.

To add new section for the **Samba** shared directory with a tag <someTag> by command-line tool **Dr.Web Ctl**, it is necessary to use the command **drweb-ctl** cfset SmbSpider.Share.<someTag>.<parameter> <value>.

Example:

```
# drweb-ctl cfset SmbSpider.Share.DepartFiles.OnAdware Quarantine
```

This command adds to the configuration file the additional section **[SMBSpider.Share.DepartFiles]**. The section will contain all parameters for the shared directory, indicated with asterisk **"[*]"** in the above mentioned table. Values for the all parameters, beside **OnAdware** parameter, which is specified in the command, will equal to values of the corresponding parameters from the common **[SMBSpider]** section.

SpIDer Guard for NSS

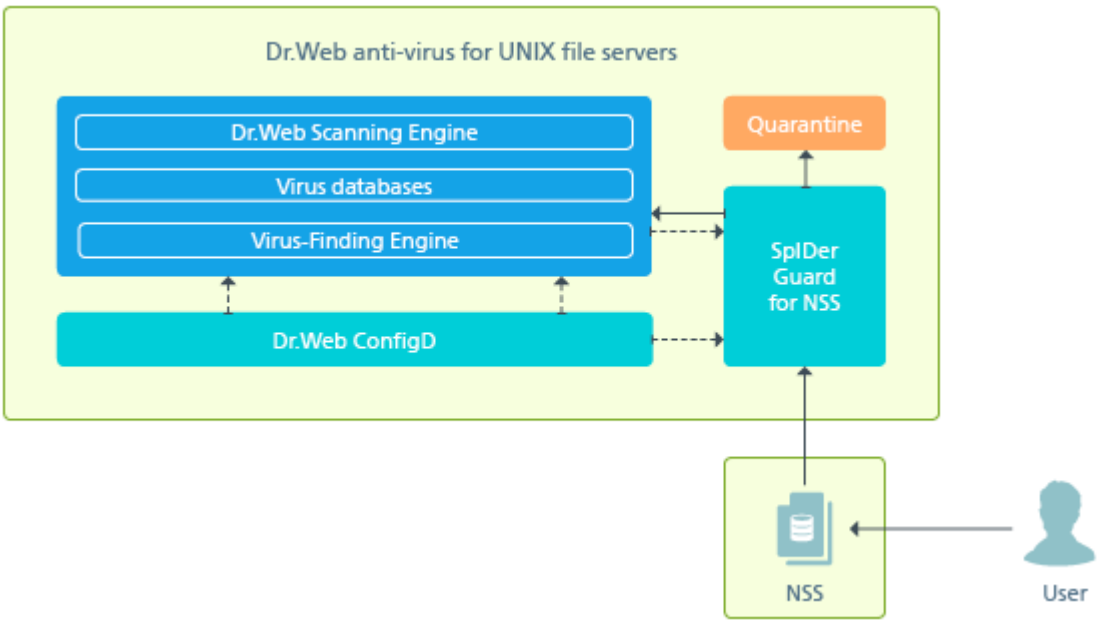
NSS volumes monitor **SpIDer Guard for NSS** is designed for monitoring file activity on **NSS** (**Novell Storage Services**) file system volumes. The component operates in daemon mode and controls main file system events related to modification (creation, opening, closing). When such event is intercepted, the monitor checks whether the file content was modified and, if so, the monitor generates a task for **Dr.Web File Checker** to scan the modified content.

The component is included only in the distributions designed for **GNU/Linux** OSes. It can operate only on **Novell Open Enterprise Server** SP2 based on **SUSE Linux Enterprise Server** 10 SP3 and newer.

Operation Principles

SpIDer Guard for NSS operates as a daemon (usually it is started by configuration daemon **Dr.Web ConfigD** on system startup). This monitor controls only the volumes which are specified in the settings (**NssVolumesMountDir** and **ProtectedVolumes** parameters). The monitor does not detect automatically, when a new NSS file system volume is mounted or unmounted. When a new or modified

file is found on a volume, the monitor instructs **Dr.Web Scanning Engine** core component to scan the file. Another feature of this monitor is that it manages its own, separate, quarantine for threats detected on NSS volumes. The monitor operation scheme is shown in the picture below.



Picture 38. Component operation scheme

NSS volumes monitor has the following feature: if a threat is detected in a file upon its copying (to a protected volume or within an NSS volume), **SpIDer Guard for NSS** marks only the copy of the infected file. The threat in the original file will not be detected. This file will be considered safe until an attempt to access this (original) file is performed or until it is modified if the file resides on an NSS volume.

If `Quarantine` action is specified for some threat type in NSS volumes monitor settings, the object containing a threat of this type will be placed to quarantine again on attempt to restore this object from quarantine to an NSS volume. For example, the following default settings

```
NSS.OnKnownVirus = Cure
NSS.OnIncurable = Quarantine
```

move all incurable objects to quarantine. At that, when any incurable object is restored from quarantine to an NSS volume, this object is automatically returned to quarantine.

If required, you can disable **SpIDer Guard for NSS** monitoring of certain files or directories. It can be useful when, for example, files in some directory are frequently modified, which results in constant repeated scanning of these files and, thus, can increase system load. If it is known with certainty that frequent modification of files in a directory is not caused by a virus but is due to operation of a trusted program, you can add the path to this directory or these files to the list of exclusions. In this case, the NSS volume monitor **SpIDer Guard for NSS** stops responding to modification of these objects.

Command-Line Arguments

To run NSS volumes monitor **SpIDer Guard for NSS** from the command line, type the following command:

```
$ <opt_dir>/bin/drweb-nss [options]
```

SpIDer Guard for NSS can process the following options:

Short form	Long form	Arguments
`-h`	`--help`	

Description: instructs to output short help information about command-line parameters to the console and exit.		
`-v`	`--version`	
Description: instructs to output information on the module version and exit		

Example:

```
$ /opt/drweb.com/bin/drweb-nss --help
```

This command outputs short help information on **SpIDer Guard for NSS**.

Notes about startup

The component cannot be run directly from the command line of the operating system in standalone mode. It is run automatically on operating system startup by configuration daemon **Dr.Web ConfigD**. To start or stop component operation, you can use the command-line tool for the solution management **Dr.Web Ctl** started by `drweb-ctl` command).

Configuration Parameters

The component uses configuration parameters which are specified in `[NSS]` section of the integrated configuration file of **Dr.Web for UNIX File Servers.**

The section contains the following parameters:

LogLevel = {logging level}	Logging level for SMB directories monitor **SpIDer Guard for NSS.** If the parameter is not specified, the **DefaultLogLevel** parameter value from `[Root]` section is used. Default value: **LogLevel** = Notice
Log = {log type}	Logging method for SMB directories monitor **SpIDer Guard for NSS.** Default value: **Log** = Auto
LogProtocol = {boolean}	Indicates whether protocol messages are registered in the log file of NSS volumes monitor **SpIDer Guard for NSS.** Allowed values: • `Yes` — messages are registered. • `No` — messages are not registered. Default value: **LogProtocol** = No
ExePath = {path to file}	Path to the executable of **SpIDer Guard for NSS.** Default value: **ExePath** = <opt_dir>/bin/drweb-nss For **Linux**: **ExePath** = /opt/drweb.com/bin/drweb-nss
Start = {boolean}	Indicates whether it is required to run **SpIDer Guard for NSS** on the **Dr.Web for UNIX File Servers** startup.

	Default value: **Start** = Yes
NssVolumesMountDir = {path to directory}	Path to the file system directory where NSS file system volumes are mounted. Default value: **NssVolumesMountDir** = /media/nss
ProtectedVolumes = {volume name}	Names of NSS file system volumes mounted on **NssVolumesMountDir** and protected by the suite. If no value is specified, all volumes in **NssVolumesMountDir** must be protected. You can specify a list as the parameter value. The values on the list must be separated with commas and enclosed in quotation marks. The parameter can be specified more than once in the section (in this case, all its values are combined into one list). Default value: **ProtectedVolumes** =
ExcludedPath = {path to file or directory}	Path to the object which must be skipped during scanning. You can specify a directory or file path. If a directory is specified, all directory content will be skipped. You can specify a list as the parameter value. The values on the list must be separated with commas and enclosed in quotation marks. The parameter can be specified more than once in the section (in this case, all its values are combined into one list). Paths in the list must be relative to **NssVolumesMountDir** path. Default value: **ExcludedPath** =
IncludedPath = {path to file or directory}	Path to the object which must be scanned. You can specify a directory or file path. If a directory is specified, all directory content will be scanned. Note that this parameter takes precedence over **ExcludedPath** parameter of the same section; that is, if the same object (file or directory) is specified in both parameter values, this object will be scanned. You can specify a list as the parameter value. The values on the list must be separated with commas and enclosed in quotation marks. The parameter can be specified more than once in the section (in this case, all its values are combined into one list). Paths in the list must be relative to **NssVolumesMountDir** path. Default value: **IncludedPath** =
OnKnownVirus = {action}	Action applied by **Dr.Web for UNIX File Servers** to a known threat (virus, etc.) detected by using signature analysis during the scanning initiated by NSS volumes monitor. Allowed values: Cure, Quarantine, Delete Default value: **OnKnownVirus** = Cure

OnIncurable = {action}	Action applied by **Dr.Web for UNIX File Servers** to an incurable threat (that is, an attempt to apply `Cure` failed) detected during the scanning initiated by NSS volumes monitor. Allowed values: `Quarantine, Delete` Default value: **OnIncurable** = Quarantine
OnSuspicious = {action}	Action applied by **Dr.Web for UNIX File Servers** to an unknown threat (or suspicious objects) detected by using heuristic analysis during the scanning initiated by NSS volumes monitor. Allowed values: `Report, Quarantine, Delete` Default value: **OnSuspicious** = Quarantine
OnAdware = {action}	Action applied by **Dr.Web for UNIX File Servers** to adware detected during the scanning initiated by NSS volumes monitor. Allowed values: `Report, Quarantine, Delete` Default value: **OnAdware** = Report
OnDialers = {action}	Action applied by **Dr.Web for UNIX File Servers** to a dialer detected during the scanning initiated by NSS volumes monitor. Allowed values: `Report, Quarantine, Delete` Default value: **OnDialers** = Report
OnJokes = {action}	Action applied by **Dr.Web for UNIX File Servers** to a joke program detected during the scanning initiated by NSS volumes monitor. Allowed values: `Report, Quarantine, Delete` Default value: **OnJokes** = Report
OnRiskware = {action}	Action applied by **Dr.Web for UNIX File Servers** to riskware detected during the scanning initiated by NSS volumes monitor. Allowed values: `Report, Quarantine, Delete` Default value: **OnRiskware** = Report
OnHacktools = {action}	Action applied by **Dr.Web for UNIX File Servers** to a hacktool (tool for remote administration, Trojan, etc.) detected during scanning initiated by NSS volumes monitor. Allowed values: `Report, Quarantine, Delete` Default value: **OnHacktools** = Report

OnError = {action}	Action applied by **Dr.Web for UNIX File Servers** to files that caused an error during the scanning initiated by NSS volumes monitor. Allowed values: Report, Quarantine, Delete Default value: **OnError** = Report
ScanTimeout = {time interval}	Timeout for scanning one file initiated by NSS volumes monitor. If the value is set to 0, time to scan a file is not limited. Default value: **ScanTimeout** = 30s
HeuristicAnalysis = {On | Off}	Indicates whether heuristic analysis is used for detection of unknown threats during the scanning initiated by NSS volumes monitor. Heuristic analysis provides higher detection reliability but, at the same time, it increases time of virus scanning. Action applied to threats detected by heuristic analyzer is specified as the **OnSuspicious** parameter value. Allowed values: • On — instructs to use heuristic analysis when scanning. • Off — instructs not to use heuristic analysis. Default value: **HeuristicAnalysis** = On
PackerMaxLevel = {integer}	Maximum nesting level when scanning packed objects. All objects at a deeper nesting level are skipped during the scanning initiated by NSS volumes monitor. If the value is set to 0, nested objects are not scanned. Default value: **PackerMaxLevel** = 8
ArchiveMaxLevel = {integer}	Maximum nesting level when scanning archives. All objects at a deeper nesting level are skipped during the scanning initiated by NSS volumes monitor. If the value is set to 0, nested objects are not scanned. Default value: **ArchiveMaxLevel** = 0
MailMaxLevel = {integer}	Maximum nesting level when scanning email messages and mailboxes. All objects at a deeper nesting level are skipped during the scanning initiated by NSS volumes monitor. If the value is set to 0, nested objects are not scanned. Default value: **MailMaxLevel** = 8
ContainerMaxLevel = {integer}	Maximum nesting level when scanning nested objects. All objects at a deeper nesting level are skipped during the scanning initiated by NSS volumes monitor. If the value is set to 0, nested objects are not scanned. Default value: **ContainerMaxLevel** = 8

MaxCompressionRatio = {integer}	Maximum compression ratio of scanned objects (ratio between the uncompressed size and compressed size). If the ratio of an object exceeds the limit, this object is skipped during the scanning initiated by NSS volumes monitor. The compression ratio must be at least equal to 2. Default value: **MaxCompressionRatio** = 500

If Quarantine action is specified for some threat type in NSS volumes monitor settings, the object containing a threat of this type will be placed to quarantine again on attempt to restore this object from quarantine to an NSS volume. For example, the following default settings

```
NSS.OnKnownVirus = Cure
NSS.OnIncurable = Quarantine
```

move all incurable objects to quarantine. At that, when any incurable object is restored from quarantine to an NSS volume, this object is automatically returned to quarantine.

Dr.Web Updater

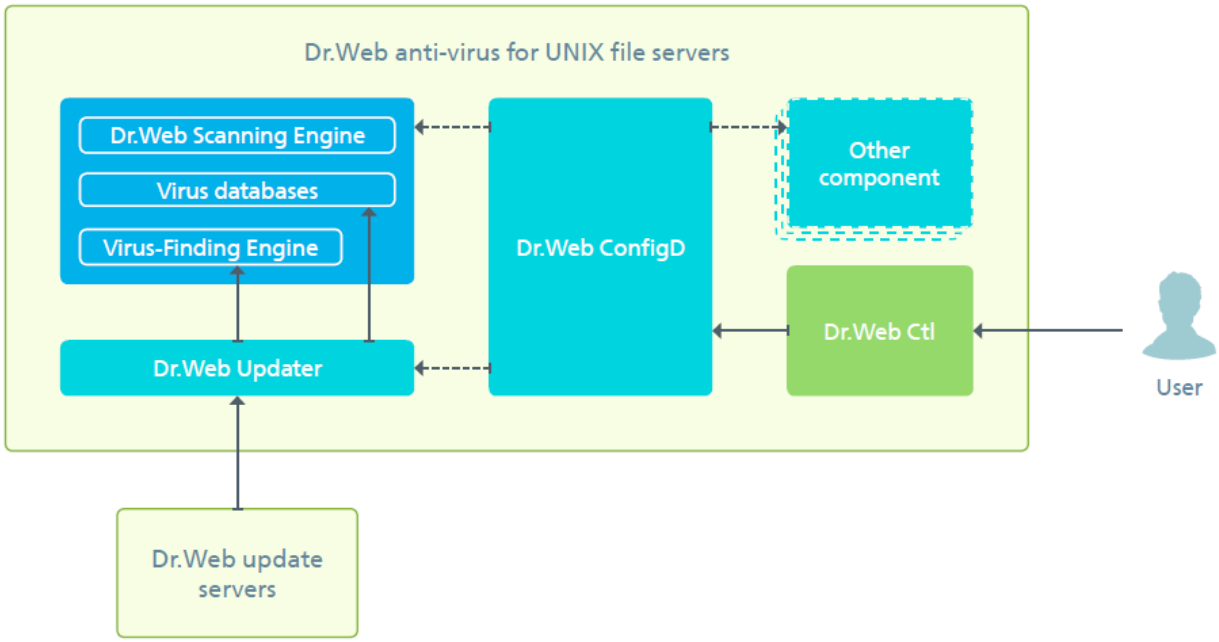
The update component **Dr.Web Updater** is designed for receiving all available updates for virus databases and anti-virus engine **Dr.Web Virus-Finding Engine** from **Doctor Web** update servers.

If **Dr.Web for UNIX File Servers** operates in enterprise mode, the updates are received from the central protection server (for example, from **Dr.Web Enterprise Server**); at that, all updates are received from the server via component **Dr.Web ES Agent** and **Dr.Web Updater** is not used for downloading updates.

Operation Principles

The component is designed to establish connections to update servers of **Doctor Web** for checking for updates to virus databases and anti-virus engine **Dr.Web Virus-Finding Engine**. The lists of update servers are stored in a special file (the file is signed to prevent modification).

If the suite is not connected to the central protection server or is connected to the server in mobile mode, **Dr.Web Updater** is automatically started by the configuration daemon. Startup is performed at periods specified in the settings. The component can be also started by the configuration daemon if the appropriate command is received from a user (unscheduled update). The component operation scheme is shown in the picture below.



Picture 39. Component operation scheme

When updates become available on the server, they are downloaded to the `<var_dir>/cache` directory (for **Linux** — `var/opt/drweb.com/cache`), after that they are moved to the working directory of **Dr.Web for UNIX File Servers.**

Command-Line Arguments

To run **Dr.Web Updater**, type the following command in the command line:

```
$ <opt_dir>/bin/drweb-update [options]
```

Dr.Web Updater can process the following options:

Short form	Long form	Arguments
`-h`	`--help`	
Description: instructs to output short help information about command-line parameters to the console and exit.		
`-v`	`--version`	
Description: instructs to output information on the component version and exit		

Example:

```
$ /opt/drweb.com/bin/drweb-update --help
```

This command outputs short help information on **Dr.Web Updater.**

Notes about startup

The component cannot be run directly from the command line of the operating system in standalone mode. It is run automatically on operating system startup by configuration daemon **Dr.Web ConfigD.** To receive updates to virus databases and anti-virus engine from the update servers of **Doctor Web**, you can send a request to use the command-line tool for the solution management **Dr.Web Ctl** (is started by `drweb-ctl` command).

Configuration Parameters

The component uses configuration parameters which are specified in `[Update]` section of the integrated configuration file of **Dr.Web for UNIX File Servers.**

The section contains the following parameters:

LogLevel = {logging level}	Logging level for **Dr.Web Updater.** If the parameter value is not specified, the value of **DefaultLogLevel** from `[Root]` section is used. Default value: **LogLevel** = Notice
Log = {log type}	Logging method for **Dr.Web Updater.** Default value: **Log** = Auto
ExePath = {path to file}	Executable path of **Dr.Web Updater.** Default value: **ExePath** = <opt_dir>/bin/drweb-update For **Linux**: **ExePath** = /opt/drweb.com/bin/drweb-update For **FreeBSD**: **ExePath** = /usr/local/libexec/drweb.com/bin/drweb-update For **Solaris**: **ExePath** = /opt/drweb.com/bin/drweb-update
UpdateInterval = {time interval}	The frequency to check for updates available for virus databases and anti-virus engine. This is a time period between a previous successful update (initiated automatically or manually) and the next attempt to perform an update. Default value: **UpdateInterval** = 30m
RetryInterval = {time interval}	Frequency of repeated update attempts if the previous update failed. The parameter can have a value of `1m` to `30m`. Default value: **RetryInterval** = 3m
MaxRetries = {integer}	Number of repeated attempts to perform an update (at the rate specified in **RetryInterval**) if the previous attempt failed. If the value is set to 0, repeated attempts are not made (the next update will be performed after the time period specified in **UpdateInterval**). Default value: **MaxRetries** = 3
Proxy = {connection string}	Parameters that configure connection to the proxy server used by **Dr.Web Updater** to connect to **Doctor Web** update servers (for example, if direct connections to external servers is prohibited by the security policies of your network).

	If the parameter value is not specified, the proxy server is not used. Allowed values: <connection string> — Proxy server connection string. The string has the following format (URL): [<protocol>://][<user>:<password>@]<proxyhost>:<port> where • <protocol> — Type of the used protocol (in the current version, only http is available). • <user> — Name of the user for connection to proxy. • <password> — Password for connection to proxy. • <proxyhost> — Address of the host where the proxy operates (IP address or domain name). • <port> — Used port. The <protocol> and <user>:<password> parameters can be absent. The address of proxy <proxyhost>:<port> is obligatory. If the user name (<user>) or password (<password>) contains the following characters: '@', '%' or ':', these characters must be changed to the following codes: "%40", "%25", and "%3A" respectively. **Examples:** 1. In the configuration file: • Connection to proxy on host proxyhost.company.org using port 123: **Proxy** = proxyhost.company.org:123 • Connection to proxy on host 10.26.127.0 using port 3336 over http: protocol as user "legaluser" with password "passw": **Proxy** = http://legaluser:passw@10.26.127.0:3336 • Connection to proxy on host 10.26.127.0 using port 3336 "user@company.com" with password ''passw%123:": **Proxy** = user%40company.com:passw%25123%3A@10.26.127.0:3336 2. Using command **drweb-ctl** cfset for specifying the same parameters: **drweb-ctl** cfset Update.Proxy proxyhost.company.org:123 **drweb-ctl** cfset Update.Proxy http://legaluser:passw@10.26.127.0:3336 **drweb-ctl** cfset Update.Proxy user%40company.com:passw%25123%3A@10.26.127.0:3336 Default value: **Proxy** =
ExcludedFiles = {file name}	Name of the file that is not updated by **Dr.Web Updater.** You can specify a comma-separated list as the parameter value. The parameter can be specified more than once in the section. In this case, values in the list must be separated with commas and enclosed in quotation marks: **ExcludedFiles** = "file1", "file2" It is recommended to specify one value per line: in this case, quotation marks can be omitted:

	ExcludedFiles = file1 **ExcludedFiles** = file2 Default value: **ExcludedFiles** = drweb32.lst
NetworkTimeout = {time interval}	Network operation timeout for updating. This parameter is useful when a connection is temporarily lost: if the connection is established again before the time-out expires, the interrupted updating process will be continued. Specifying the time out value larger than 75s has no effect as the connection is closed by TCP timeout. The minimum allowed value is 5s. Default value: **NetworkTimeout** = 60s
BaseDrlPath = {path to file}	Path to the used signed file that contains the list of update servers and is used by the updating component Default value: **BaseDrlPath** = <var_dir>/bases/update.drl For **Linux**: **BaseDrlPath** = /var/opt/drweb.com/bases/update.drl For **FreeBSD**: **BaseDrlPath** = /var/drweb.com/bases/update.drl For **Solaris**: **BaseDrlPath** = /var/opt/drweb.com/bases/update.drl
BaseCustomDrlPath = {path to file}	Path to the used signed file that contains an additional list of update servers and is used by the updating component Default value: **BaseCustomDrlPath** = <var_dir>/drl/custom.drl For **Linux**: **BaseCustomDrlPath** = /var/opt/drweb.com/drl/custom.drl For **FreeBSD**: **BaseCustomDrlPath** = /var/drweb.com/drl/custom.drl For **Solaris**: **BaseCustomDrlPath** = /var/opt/drweb.com/drl/custom.drl
BaseUpdateEnabled = {boolean}	Indicator that shows whether or not updating of virus databases is allowed. Allowed values: • Yes — updating is allowed and will be performed. • No — updating is not allowed and will not be performed. Default value: **BaseUpdateEnabled** = Yes
VersionDrlPath = {path to file}	Path to the used signed file that contains the list of update servers and is used by the updating components of **Dr.Web for UNIX File Servers.**

	Default value: **VersionDrlPath** =
VersionUpdateEnabled = {boolean}	Indicator that shows whether or not updating of **Dr.Web for UNIX File Servers** components is allowed. Allowed values: • Yes — updating is allowed and will be performed. • No — updating is not allowed and will not be performed. Default value: **VersionUpdateEnabled** = No
DwsDrlPath = {path to file}	The parameter is not used. Default value: **DwsDrlPath** = <var_dir>/dws/update.drl For **Linux**: **DwsDrlPath** = /var/opt/drweb.com/dws/update.drl For **FreeBSD**: **DwsDrlPath** = /var/drweb.com/dws/update.drl For **Solaris**: **DwsDrlPath** = /var/opt/drweb.com/dws/update.drl
DwsCustomDrlPath = {path to file}	The parameter is not used. Default value: **DwsCustomDrlPath** = <var_dir>/dws/custom.drl For **Linux**: **DwsCustomDrlPath** = /var/opt/drweb.com/dws/custom.drl For **FreeBSD**: **DwsCustomDrlPath** = /var/drweb.com/dws/custom.drl For **Solaris**: **DwsCustomDrlPath** = /var/opt/drweb.com/dws/custom.drl
DwsUpdateEnabled = {boolean}	The parameter is not used. Default value: **DwsUpdateEnabled** = Yes
RunAsUser = {UID | user name}	Name of the user whose privileged are used for running the updating component. The user name can be specified as the user's UID or as the user's login. If the user name consists of numbers, it is specified with the name: prefix, for example: **RunAsUser** = name:123456 If a user name is not specified, the component terminates with an error after the startup. Default value: **RunAsUser** = drweb

Dr.Web ES Agent

Central anti-virus protection agent **Dr.Web ES Agent** is designed for connecting **Dr.Web for UNIX File Servers** to the central protection server (for example, to **Dr.Web Enterprise Server**).

When **Dr.Web for UNIX File Servers** is connected to the central protection server **Dr.Web ES Agent**, the license key file is synchronized according to key files stored on the central protection server. Moreover, **Dr.Web ES Agent** sends to the central protection server statistics on virus events, list of the running components and their status.

Dr.Web ES Agent also updates virus databases of **Dr.Web for UNIX File Servers** directly from the connected central protection server bypassing the update component **Dr.Web Updater.**

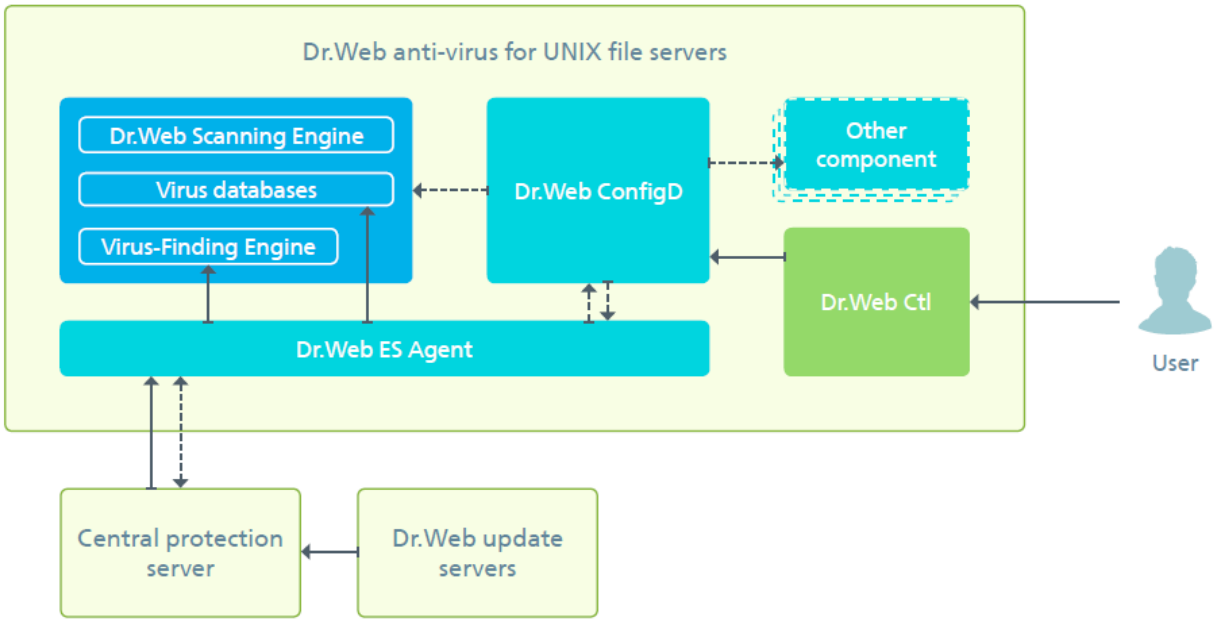
Operation Principles

Dr.Web ES Agent establishes connection fileto the central protection server (for example, to **Dr.Web Enterprise Server**), which allows the network administrator to implement common security policy within the network, in particular, configure the same scanning settings and reaction on threat detection for all network stations and servers. Moreover, the central protection server also performs a role of an internal update server on the network, as it stores up-to-date virus databases, components (in this case, updating is performed via **Dr.Web ES Agent, Dr.Web Updater** component is not used).

When connecting **Dr.Web ES Agent** to the central protection server, the agent ensures receipt of up-to-date settings for program components and license key file, which are then transmitted to configuration daemon **Dr.Web ConfigD** for applying them to managed components. Moreover, the component also receives tasks to scan file system objects on the station (including scheduled tasks).

Please note that the current version of the **Dr.Web for UNIX File Servers** suite is not fully implements the central protection mode: central protection server cannot manage operation settings of the product components and cannot send scan tasks for the suite.

Dr.Web ES Agent collects and sends the server statistics on detected threats and applied actions. The operation scheme is shown in the picture below.



Picture 40. Component operation scheme

To connect **Dr.Web ES Agent** to the central protection server, the password and identifier of the host are required, as well as the public encryption key file, which is used by the server for authentication. Instead of the host identifier, you can specify the identifier of the main and tariff groups where the station is to be included. For required identifiers and public key file, contact the administrator of your anti-virus network.

Moreover, if this option is allowed on the server, you can connect a file server host as a "newbie". In this case, after the administrator confirms the request to connect, the central protection server automatically generates an identifier and a password, and sends them to the Agent for future connections.

It is possible (but not recommended) to allow the Agent **Dr.Web ES Agent** to connect to the central protection server without using a server public key or using an invalid key. For details, refer to the description of **esconnect** command of **Dr.Web Ctl** utility.

Command-Line Arguments

To run a central protection agent **Dr.Web ES Agent** type the following command in the command line:

```
$ <opt_dir>/bin/drweb-esagent [options]
```

Dr.Web ES Agent can process the following options:

Short form	Long form	Arguments
-h	--help	
Description: Instructs to output short help information to the console about command-line parameters and exit.		
-v	--version	
Description: Instructs to output information on the module version and exit		

Example:

```
$ /opt/drweb.com/bin/drweb-esagent --help
```

This command outputs short help information on the central protection agent **Dr.Web ClamD.**

Notes about startup

The component cannot be run directly from the command line of the operating system in autonomous mode. It is run automatically by configuration daemon **Dr.Web ConfigD** when required (usually on operating system startup). To connect **Dr.Web for UNIX File Servers** with the central protection server, you can use the command-line tool for the solution management **Dr.Web Ctl** started by **drweb-ctl** command).

Configuration Parameters

The component uses configuration parameters which are specified in [ESAgent] section of the integrated configuration file of **Dr.Web for UNIX File Servers.**

The section contains the following parameters:

LogLevel = {logging level}	Logging level for **Dr.Web ES Agent.** If the parameter value is not specified, the value of **DefaultLogLevel** from [Root] section is used. Default value: **LogLevel** = Notice

Log = {log type}	Logging method of **Dr.Web ES Agent.** Default value: **Log** = Auto
ExePath = {path to file}	Path to the executable of **Dr.Web ES Agent.** Default value: **ExePath** = <opt_dir>/bin/drweb-esagent For **Linux**: **ExePath** = /opt/drweb.com/bin/drweb-esagent For **FreeBSD**: **ExePath** = /usr/local/libexec/drweb.com/bin/drweb-esagent For **Solaris**: **ExePath** = /opt/drweb.com/bin/drweb-esagent
DebugIpc = {boolean}	Indicates whether detailed IPC messages are included in the log file on debug level (**LogLevel** = DEBUG) such as such as interaction between **Dr.Web ES Agent** and configuration daemon **Dr.Web ConfigD**). Default value: **DebugIpc** = no
MobileMode = {On | Off | Auto}	Indicates whether the suite can operate in mobile mode when connected to central protection server. Allowed values: • On — instructs to use mobile mode if it is allowed by central protection server (that is, perform updates from update servers of **Doctor Web** via **Dr.Web Updater** component). • Off — instructs not to use mobile mode and continue operation in central protection mode (updates are always received from the central protection server). • Auto — instructs to use mobile mode, if allowed by central protection server, and perform updates both from update servers of **Doctor Web** via **Dr.Web Updater** and from central protection server, depending on which connection is available and which connection quality is higher. Note that behavior of this parameter depends on server permissions: if mobile mode is not allowed on the used server, this parameter has no effect. Default value: **MobileMode** = Auto
Discovery = {On | Off}	Indicates whether the agent is allowed to receive discovery queries from the network inspector built in the central protection server (discovery requests are used by the inspector to check the structure and state of the anti-virus network). Allowed values: • On — allow the agent to receive and process discovery requests. • Off — forbid the agent to receive and process discovery requests. Note that this parameter takes precedence over the settings of the central protection server: if the parameter value is set to Off, the agent does not receive discovery requests even if this option is

	enabled on the server. Default value: **Discovery** = On

Dr.Web HTTPD

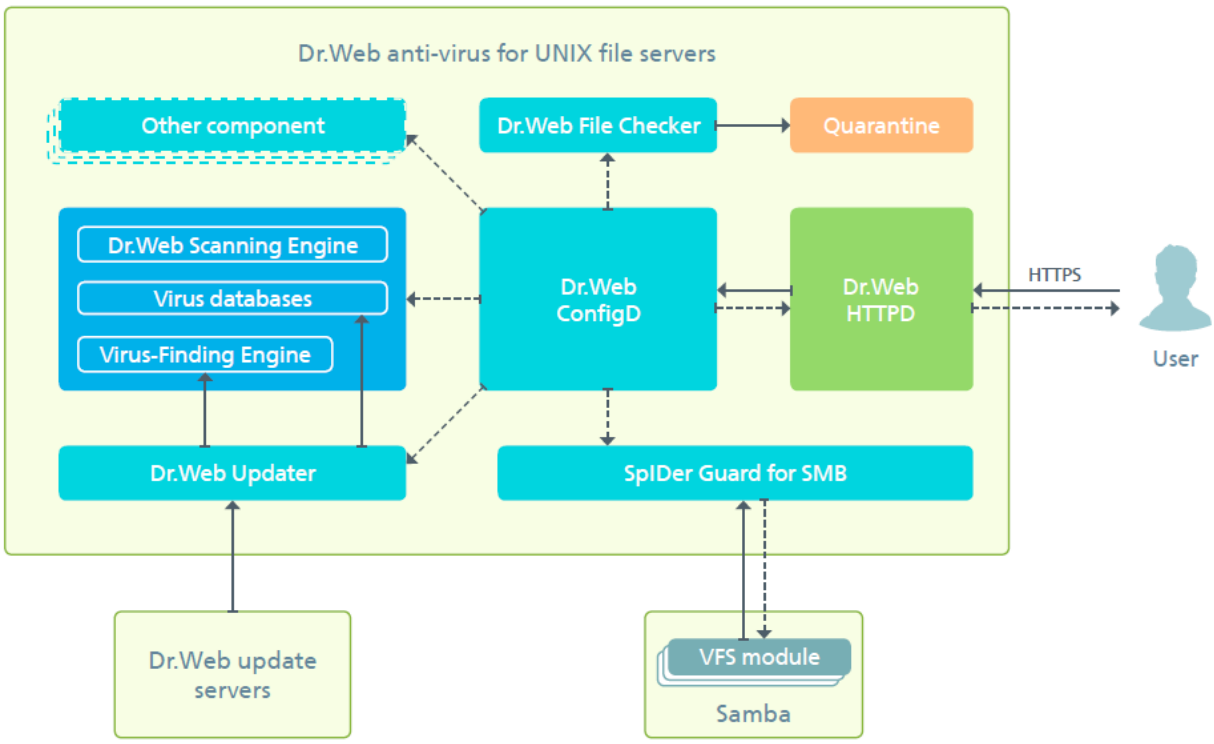
Web interface for anti-virus management **Dr.Web HTTPD** is a web interface for managing **Dr.Web for UNIX File Servers** operation without using external web servers (such as **httpd Apache**) and tools for remote administration, like **Webmin.**

For security reasons, interaction with clients is performed via a secure HTTPS protocol (HTTP over SSL). Thus, `OpenSSL` must be installed in the system (by default, the component uses version of `OpenSSL`, that is included in the distribution kit of **Dr.Web for UNIX File Servers**).

Operation Principles

Dr.Web HTTPD performs functions of a simplified web server. It does not require additional installation of a full web servers (such as **Apache**) as well as a service for administration **Webmin.** Moreover, the component can operate on the same host with other servers without interruption to their operation.

The server of the web interface services requests received via HTTPS at the network interface specified in the settings, which allows using it regardless of operation of the standard web server interface (if it is used on the same host). The operation scheme is shown in the picture below.



Picture 41. Component operation scheme

Dr.Web HTTPD forms control instructions for configuration daemon of **Dr.Web for UNIX File Servers**, **Dr.Web File Checker** component and **SpIDer Guard for NSS** monitor, based on commands received via the web interface.

For details on how to manage the product via the web interface provided by **Dr.Web HTTPD**, refer to the corresponding section.

Command-Line Arguments

To run the web interface for Anti-virus management **Dr.Web HTTPD** from the command line, type the following command:

```
$ <opt_dir>/bin/drweb-httpd [options]
```

Dr.Web HTTPD can process the following options:

Short form	Long form	Arguments
-h	--help	
Description: instructs to output short help information to the console about command-line parameters and exit.		
-v	--version	
Description: instructs to output information on the module version and exit.		

Example:

```
$ /opt/drweb.com/bin/drweb-httpd --help
```

This command outputs short help information on the server of the web interface **Dr.Web HTTPD.**

Notes about startup

The component cannot be run directly from the command line of the operating system in standalone mode. It is run automatically by configuration daemon **Dr.Web ConfigD** when required (usually on operating system startup). If the component is running, you can enable management of **Dr.Web for UNIX File Servers** components by establishing an HTTPS connection to an address listened by the component using any standard browser.

Moreover, to manage component operation, use the command-line tool for managing the solution from the command line **Dr.Web Ctl** (it is run by **drweb-ctl** command).

Configuration Parameters

The component uses configuration parameters which are specified in [HTTPD] section of the integrated configuration file of **Dr.Web for UNIX File Servers.**

The section contains the following parameters:

LogLevel = {logging level}	Logging level for the server of the management interface **Dr.Web HTTPD**. If the parameter value is not specified, the value of **DefaultLogLevel** from [Root] section is used. Default value: **LogLevel** = Notice
Log = {log type}	Logging method for the server of the management interface **Dr.Web HTTPD**. Default value: **Log** = Auto
ExePath = {path to file}	Path to the executable of **Dr.Web HTTPD.** Default value: **ExePath** = <opt_dir>/bin/drweb-httpd

	For **Linux**: **ExePath** = /opt/drweb.com/bin/drweb-httpd For **FreeBSD**: **ExePath** = /usr/local/libexec/drweb.com/bin/drweb-httpd For **Solaris**: **ExePath** = /opt/drweb.com/bin/drweb-httpd
Start = {boolean}	Indicates whether it is required to run **Dr.Web HTTPD** on the **Dr.Web for UNIX File Servers** startup. Default value: **Start** = Yes
ListenAddress = {address}	Socket (IP address and port) listened by **Dr.Web HTTPD**, which is waiting for client connections. Default value: **ListenAddress** = 127.0.0.1:4443
ServerSslCertificate = {path to file}	Path to the file with the server certificate used by the web interface server for communication with other hosts via HTTPS. This file is generated automatically during component installation. Default value: **ServerSslCertificate** = <etc_dir>/certs/serv.crt For **Linux**: **ServerSslCertificate** = /etc/opt/drweb.com/certs/serv.crt For **FreeBSD**: **ServerSslCertificate** = /usr/local/etc/drweb.com/certs/serv.crt For **Solaris**: **ServerSslCertificate** = /etc/opt/drweb.com/certs/serv.crt
ServerSslKey = {path to file}	Path to the private key file used by the server of web interface for communication with other hosts via HTTPS. This file is generated automatically during component installation. Default value: **ServerSslKey** = <etc_dir>/certs/serv.key For **Linux**: **ServerSslKey** = /etc/opt/drweb.com/certs/serv.key For **FreeBSD**: **ServerSslKey** = /usr/local/etc/drweb.com/certs/serv.key For **Solaris**: **ServerSslKey** = /etc/opt/drweb.com/certs/serv.key
DhPath = {path to file}	Path to the file which contains parameters of the Diffie–Hellman key exchange method. These parameters are used by the managing web interface for communication with clients via HTTPS. This file is generated automatically during component installation. Default value: **DhPath** = <etc_dir>/certs/dh.pem

	For **Linux**: **DhPath** = /etc/opt/drweb.com/certs/dh.pem For **FreeBSD**: **DhPath** = /usr/local/etc/drweb.com/certs/dh.pem For **Solaris**: **DhPath** = /etc/opt/drweb.com/certs/dh.pem
DocumentRoot = {path to directory}	Path to the directory which stores static website content used by the server of the managing web interface (root directory, same as `htdocs` directory for **httpd**). Default value: **DocumentRoot** = <opt_dir>/share/drweb-httpd/www For **Linux**: **DocumentRoot** = /opt/drweb.com/share/drweb-httpd/www For **FreeBSD**: **DocumentRoot** = /usr/local/libexec/drweb.com/share/drweb-httpd/www For **Solaris**: **DocumentRoot** = /opt/drweb.com/share/drweb-httpd/www
AppRoot = {path to directory}	Path to directory with working files of the web interface managing server. Default value: **AppRoot** = <opt_dir>/share/drweb-httpd For **Linux**: **AppRoot** = /opt/drweb.com/share/drweb-httpd For **FreeBSD**: **AppRoot** = /usr/local/libexec/drweb.com/share/drweb-httpd For **Solaris**: **AppRoot** = /opt/drweb.com/share/drweb-httpd
AccessLogPath = {path to file}	Path to the file where all HTTP requests from client to the web interface server are registered. If not specified, HTTP requests are not registered. Default value: **AccessLogPath** =

Managing Product Operation via Web Interface

Managing web interface **Dr.Web for UNIX File Servers** allows you to perform the following:

1. View statuses of **Dr.Web for UNIX File Servers** components (for example, **SpIDer Guard for SMB** monitor), as well as start and stop their operation.
2. View status of updates and start an updating process manually, if required.
3. View the list of detected threats and manage quarantined objects (via **Dr.Web File Checker** component).
4. Edit settings of **Dr.Web for UNIX File Servers**.

Web Interface System Requirements

Correct operation of the web interface is guaranteed for the following web browsers:

- **Internet Explorer** (version 8 and above)
- **Mozilla Firefox** (version 25 and above)
- **Google Chrome** (version 30 and above).

Accessing the Web Interface

To access the web interface, type an address of the following type in the browser address bar

```
https://<host_with_drweb>:<port>/
```

where `<host_with_drweb>` is the IP address or the name of the host where the product including **Dr.Web HTTPD** and `<port>` is the port in this host listened by **Dr.Web HTTPD**. To access a product component which operates on the local host, use IP address `127.0.0.1` or the name `localhost`. By default, the `<port>` is `4443`.

Thus, to access the web interface on the local host by default, enter in the browser address bar the following URL

```
https://127.0.0.1:4443/
```

After a connection to the managing server is established, the startup page opens and displays an authentication form. To access management functions, fill in the authentication form by specifying the login and password of a user who has administrative privileges on the host where the suite operates.

Main menu

At the top of the web interface pages, you can find the main menu that provides you with the following options:

- Main — opens the main page which displays the full list of **Dr.Web for UNIX File Servers** and their status.
- Threats — opens the page which displays all detected threats. In this section, you can manage detected threats (for example, move infected objects to quarantine, rescan the system, cure or delete malicious objects).
- Settings — opens a page with **Dr.Web for UNIX File Servers** component settings installed on the server.
- **Help** — opens a new browser tab with help information on the installed product components.
- **Sign out** — ends the current web interface session.

Component Management

You can view a list of components included in **Dr.Web for UNIX File Servers** and manage their operations on the **Main** page.

Listed product components can be divided into two groups: main components, which monitor threats, and service components, which provide correct operation of the suite.

The table below contains description of the components that monitor the file system (the component set depends on the solution type that you use). For each component, the following information is included:

1. **Component name.** Click the name to open the component settings page.
2. **Component state.** State of the component is illustrated by an icon (switch) and a note on the current component's state. To start or suspend component operation, click the switch. If an operation error occurs, click *Error* to open a window with detailed information. The component state can be indicated with one of the following icons:

    — the component is disabled and is not used.

    — the component is enabled and works correctly.

    — the component is enabled but is not working due to an error.

3. **Average load.** For each component, the average numbers of files processed per second within the last minute, 5 minutes, 15 minutes are specified (in a format of three numbers separated by a forward slash "/").

To display a tooltip, place the cursor over the icon .

Below the table, which provides information on monitoring components, you may find a list of service components (such as the scanning engine, the file scanning component, etc.). For each service component, its state and operational statistics. To open the component settings page, click the name of a required component.

The bottom of the page displays whether the virus database is up to date and license information. To force a virus database update, click **Update**. To renew your license, click **Upload** (you will be prompted to upload a valid key file).

Threats Management

You can view the list of detected threats and manage the reaction to them on the **Threats** page.

This page contains a full list of threats detected by **Dr.Web for UNIX File Servers** components. On the left, you can see a menu which allows filtering the threats by category:

- **All** — show all detected threats (including both active and quarantined threats).
- **Active** — show only active threats; that is, detected but yet to be neutralized.
- **Blocked** — show all blocked threats (that is, threats that were not neutralized but the infected objects containing them were blocked (only for file storages monitored by **SpIDer Guard for SMB**).
- **Quarantined** — show threats that were isolated in quarantine.
- **Errors** — show threats that were not processed due to an error.

On the right side of the category, the menu displays a number of detected threats that fall into this category. Active threats are indicated in bold on the menu. To display threats of a required category, click its name on the menu.

For each threat, the following information is listed:

- *File* — name of the file that contains a malicious object (file path is not specified).
- *Owner* — name of the user who owns the infected file.
- *Component* — name of the **Dr.Web for UNIX File Servers** component that detected the threat.
- *Threat* — name of the threat that was detected in the file (as defined in the classification of **Doctor Web**).

For an object selected in the list, the following information is displayed:

- Name of the threat (displayed as a link that opens the page of **Dr.Web** virus library with the threat description).
- File size, in bytes.
- Name of the component that detected the threat.
- Date and time when the threat was detected.
- Date and time when the threat was last modified.
- Name of the user who owns the infected file.
- Name of the group that includes the file owner.
- Name of the user who quarantined the file (only for file storages monitored by **SpIDer Guard for SMB**).
- File identified in quarantine (if the file was quarantined).
- Full path that points to the original file location (where the file was located at the moment of threat detection).

To select an object in the list, click the corresponding list item. For multiple selection, click the boxes in the corresponding strings. To select all objects or cancel the selection, click the box in the **File** field in the threat list header.

To apply actions to objects selected in the list, click the corresponding button on the toolbar, which is located directly above the threat list. The toolbar contains the following buttons (note that some of them can be unavailable depending on the type of selected threats):

 — instructs to cure selected files.

 — instructs to quarantine selected files.

 — instructs to restore selected files from quarantine to their original location.

 — instructs to remove selected files.

— instructs to apply an additional action to selected files (available actions are specified in the drop-down list):

- **Ignore** — instructs to ignore the threats detected in selected files and remove the threats from the list.
- **Download** — instructs to save the files on the local computer.

Note that managing of threats detected on NSS volumes requires **SpIDer Guard for NSS** to be started.

If `Quarantine` action is specified for some threat type in **SpIDer Guard for NSS** settings, the object containing a threat of this type will be placed to quarantine again on attempt to restore this object from quarantine to an NSS volume. For example, the default settings of the monitor move all incurable objects to quarantine. At that, when any incurable object is restored from quarantine to an NSS volume, this object is automatically returned to quarantine.

You can also filter displayed threats based on the search query. To filter unnecessary threats out and display only those that correspond to the query, use the search box. The box is displayed on the right side of the toolbar and is marked with . To filter the threat list, enter a word in the search box. All threats that do not have the entered word in their name or description, will be hidden (the case of the text has no effect). To clear search results and display the unfiltered list, click in the search box and delete the word.

Settings management

You can view and change current configuration parameters of components, included in **Dr.Web for UNIX File Servers** and listed on the main page. For that, open the **Settings** page.

On the left of the page, the menu is displayed, which contains names of all suite components allowing adjustment of their settings. To view and adjust the settings of a component, click its name on the menu. The name of the currently viewed component is highlighted in bold.

If a component has sections with advanced settings apart from the section with main settings (for example, such sections are present in the configuration of ClamAV® interface module **Dr.Web ClamD** and contain individual parameters for scanning clients that use a particular connection address), then an icon indicating that you can expand/collapse additional sections is displayed. If the icon is as follows , additional sections are hidden. If the icon is as follows , additional sections are displayed on the menu, one per line. To expand/collapse the list of additional sections, click the appropriate icon next to the name of the required component.

- Additional sections are marked with . To view or edit parameters of an additional section, click its name on the menu.
- To add a new subsection for a component, if allowed, click to the right of the component's name. In the appeared window, specify a unique name (tag) for the new subsection and click **OK**. To close the window without creating a subsection, click **Cancel**.
- To delete a subsection for a component, if allowed, click to the right of the subsection's name (tag). In the appeared window, confirm that you want to delete the subsection and click **OK**. To close the window without deleting a section, click **No**.

On the top of the settings page, you can see the menu that allows to change the view mode. The following modes are available:

- **All** — show the table with all component configuration parameters that can be viewed and adjusted.
- **Modified** — show the table with component configuration parameters that have values different from the default ones.
- **Ini Editor** — show a text editor with component configuration parameters that have values different from the default ones. The displayed text has the same format as the configuration file (**`parameter`** `= value` pairs).

You can also filter displayed parameters based on the search query. To filter unnecessary parameters out and display only those that correspond to the query, use the search box. The box is displayed on the right side of the menu and is marked with . To filter the parameter list, enter a word in the

search box. All parameters that do not have the entered word in their description, will be hidden (the case of the text has no effect). To clear the search results and display the unfiltered list, click in the search box and delete the word.

Parameters can be filtered out only when they are displayed in tabular form (in **All** and **Modified** modes).

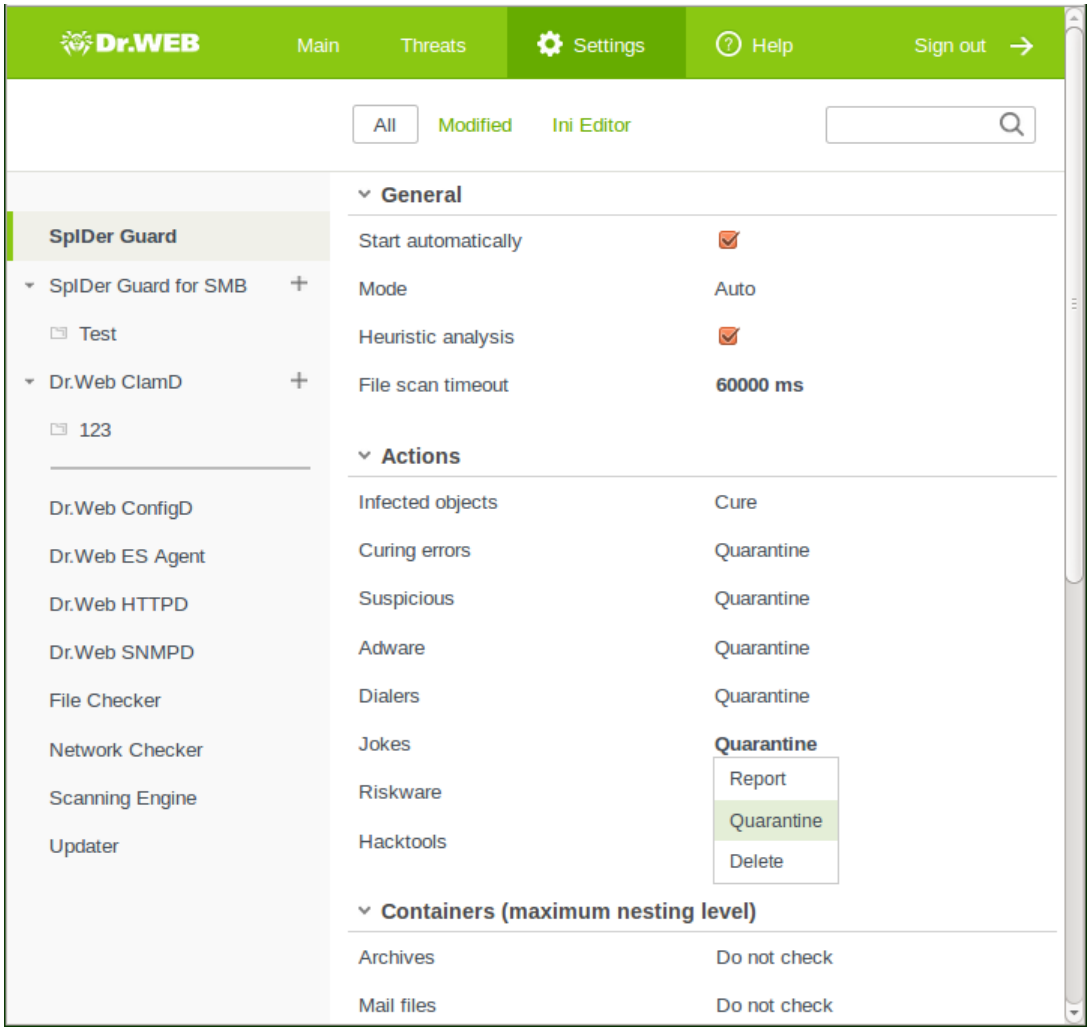
Viewing and editing component settings in tabular form

When viewing parameters in tabular form (**All** and **Modified** modes), each table row contains the parameter description (on the left) and the current value (on the right). For Boolean parameters (those that have only two available values: "Yes" and "No"), the indicator is displayed as a value (on-position means "Yes", off-position — "No").

When you select to view all parameters (not only those that were changed), the adjusted values are indicated in bold.

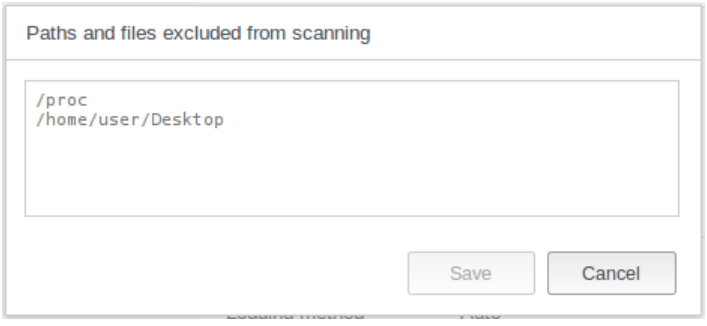
The complete parameter list is split into groups (such as **Main**, **Advanced**, etc.). To collapse or expand the group, click the corresponding head. When a group is collapsed and its parameters are not displayed in the table, the following icon appears on the left of the group name . When a group is expanded and the parameters are displayed in the table, the following icon appears on the left of the group name .

To adjust a parameter, click its current value in the table (for a Boolean parameter — change the indicator's position). If a parameter has a set of predefined values, they will all appear as a drop-down list after you click the current value. If a parameter has a numeric value, an edit box will appear after you click the current value. Specify a required value and press ENTER. The picture below shows examples of how to change parameter values (note that the component set in the picture can differ from the one supplied to you). All changes in parameter values are applied immediately.



Picture 42. Component settings in tabular form.

If a parameter has a string value or it has no predefined values, a pop-up window appears after click the current value. If the parameter has a list of values, they are shown in a multiline edit box (one value per line) as shown in the picture below. To edit the listed values, change, delete or add required lines in the edit box.



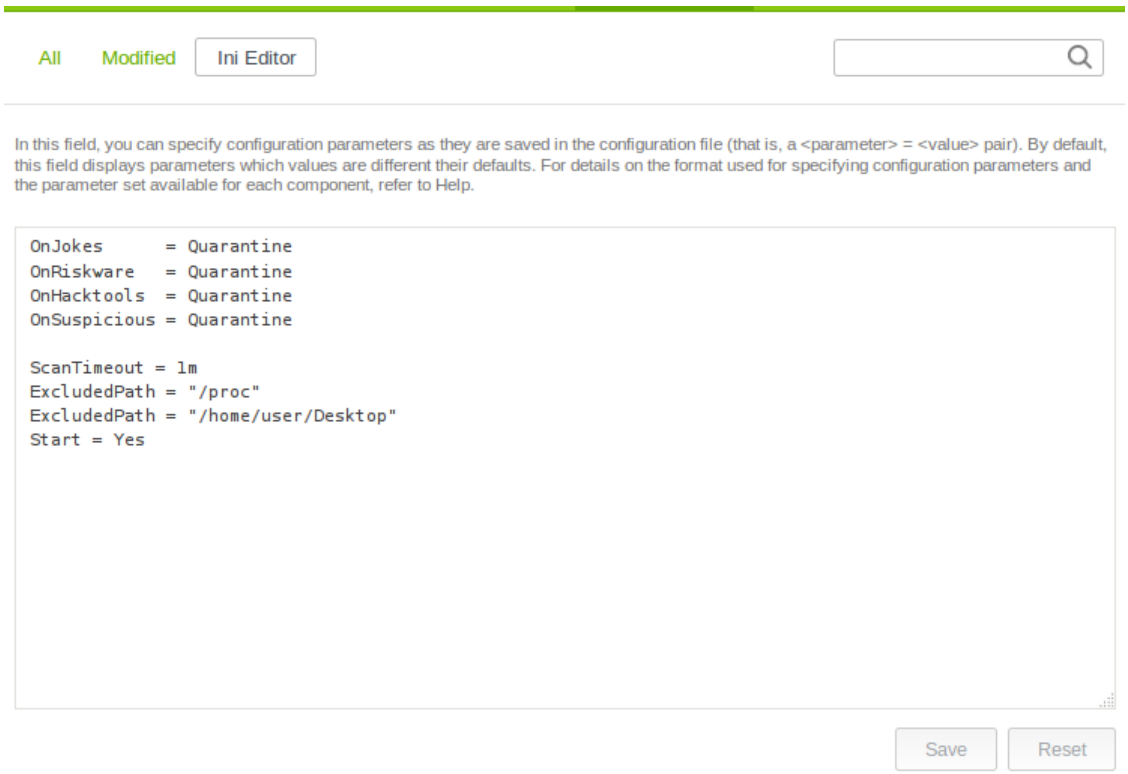
Picture43. Value list editing

After you adjusted a parameter value, click **Save** to apply the changes and close the window or click **Cancel** to close the window without applying or saving the changes.

Viewing and editing component settings in a text editor

When viewing parameters in **Ini Editor** mode, they are displayed of the configuration file format (as **`parameter`** = `value` pairs), where **`parameter`** is the parameter name specified directly in the

component settings section of the configuration file. In this mode, only those parameters are displayed that have values different from the default ones (that is, parameters which values are indicated in bold in the **All** table). The picture below shows how parameters are displayed in a text editor.



Picture 44. Simple text editor

To make required changes, edit the text in a text editor according to the rules of how to edit a configuration file (edit only the section which contains settings of the component highlighted on the left). When necessary, you can specify any parameter available for the component. In this case, the default parameter values changes to the value you enter in the editor.

After you adjusted a parameter value, click **Save** to apply the changes or click **Cancel** to discard them.

If you click **Save**, the text is validated: the program checks whether all parameters are existent and valid. In case of an error, the appropriate message is displayed.

For details on the configuration file, its structure, and features important for specifying parameter values, refer to Appendix D.

Additional Information

- Configuration parameters of **SpIDer Guard**.
- Configuration parameters of **SpIDer Guard for NSS**.
- Configuration parameters of **SpIDer Guard for SMB**.
- Configuration parameters of **Dr.Web ClamD**.
- Configuration parameters of **Dr.Web File Checker**.
- Configuration parameters of **Dr.Web Scanning Engine**.
- Configuration parameters of **Dr.Web Network Checker**.
- Configuration parameters of **Dr.Web SNMPD**.

Dr.Web Ctl

You can manage operation of **Dr.Web for UNIX File Servers** from the command line with the help of a special command-line tool — **Dr.Web Ctl** (`drweb-ctl`).

You can do the following actions from the command line:

- Start scanning file system objects including boot records and files of running processes
- Start updating virus databases
- View and change parameters of **Dr.Web for UNIX File Servers** configuration
- View status of **Dr.Web for UNIX File Servers** components and statistics on detected threats
- View quarantine and manage quarantined objects (via **Dr.Web File Checker** component)
- Connect to the central protection server or disconnect from it

User commands for **Anti-virus** management can have an effect only if **Dr.Web ConfigD** configuration daemon is running (by default, it is automatically run on system startup).

Note that some control commands require superuser privileges.

To elevate privileges, use the **su** command (change the current user) or the **sudo** command (execute the specified command with other user privileges).

The **Dr.Web Ctl** tool supports auto-completion of commands for managing Anti-virus operation if this option is enabled in the used command shell. If the command shell does not allow auto-completion, you can configure this option. For that purpose, refer to the instruction manual for the used OS distribution.

Command-Line Call Format

1. Format of the utility call

The call format for the command-line tool which manages **Dr.Web for UNIX File Servers** operation is as follows:

```
$ drweb-ctl [<general options> | <command> [<argument>] [<command options>]]
```

where:

- `<general options>` — options that can be applied on startup when the command is not specified or can be applied for any command. Not mandatory for startup.
- **`<command>`** — command to be performed by **Dr.Web for UNIX File Servers** (for example, start scanning, output the list of quarantined objects).
- `<argument>` — command argument. Depends on the specified command. Can be missing for certain commands.
- `<command options>` — options managing command operation. Can be missing for certain commands.

2. General options

The following general options are available:

Option	Description
`-h`, `--help`	Show summary help information and exit. For information on a certain command, enter the following:

Option	Description
	drweb-ctl -h **<command>** or **drweb-ctl <command>** -h
-v, --version	Show information on the module version and exit
-d, --debug	Instructs to show debug information upon execution of the specified command. Has no effect if a command is not specified. To invoke a command, enter the following: **drweb-ctl** -d **<command>**

3. Commands

Commands to manage **Dr.Web for UNIX File Servers** can be divided into the following groups:

- Anti-virus scanning commands
- Commands to manage updates and operation in Central protection mode
- Configuration management commands
- Commands to manage detected threats and quarantine
- Information commands

3.1. Anti-virus scanning commands

The following commands to manage anti-virus scanning are available:

Command	Description
scan <path>	**Function** Start checking the specified file or directory via **Dr.Web File Checker** component. **Arguments** <path> — path to the file or directory which is selected to be scanned. This argument can be missing if the --stdin or --stdin0 option is specified. To specify several files that satisfy a certain criterion, use the **find** utility (see the examples) and the --stdin or --stdin0 options. **Options** -a [--Autonomous] — Start a separate instance of **Dr.Web Scanning Engine** scanning engine and file checking module **Dr.Web File Checker** for scan and terminate their operation after the scanning task completes. Note that threats detected during autonomous scanning are not displayed in the common threat list that is output by threats command (see below). --stdin — Get list of paths to scan from the standard input string (stdin). Paths in the list must be separated by the new line character ('\n'). --stdin0 — Get list of paths to scan from the standard input string (stdin). Paths in the list must be separated by the NUL character ('\0'). Note that templates are not allowed when specifying paths for either of these options. Recommended usage of the --stdin and --stdin0 options is processing a path list (generated by an external utility, for example, **find**) in the **scan** command (see examples). --Report <BRIEF|DEBUG> — specify the type of scanning results reports. Allowed values: • BRIEF — brief report. • DEBUG — detailed report. Default value: BRIEF

Command	Description
	`--ScanTimeout <number>` — specify timeout to scan one file, in ms. If the value is set to 0, time to scan a file is not limited. Default value: `0` `--PackerMaxLevel <number>` — set the maximum nesting level when scanning packed objects. If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--ArchiveMaxLevel <number>` — set the maximum level of nesting when scanning archives (zip, rar, etc.). If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--MailMaxLevel <number>` — set the maximum level of nesting when scanning email messages (pst, tbb, etc.). If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--ContainerMaxLevel <number>` — set the maximum level of nesting when scanning containers of other types (HTML and others). If the value is set to `0`, nested objects are skipped during scanning. Default values: `8` `--MaxCompressionRatio <ratio>` — set the maximum compression ratio for scanned objects. The ratio must be at least equal to `2`. Default value: `3000` `--HeuristicAnalysis <On|Off>` — enable or disable *heuristics analysis*. Default value: `On` `--OnKnownVirus <action>` — action applied to a threat detected using signature analysis. `REPORT`, `CURE`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnIncurable <action>` — action applied on failure to cure a detected threat or if a threat is incurable. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnSuspicious <action>` — action applied to a threat detected using heuristics analysis. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnAdware <action>` — action applied to adware. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnDialers <action>` — action applied to dialers. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnJokes <action>` — action applied to joke programs.

Command	Description
	Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnRiskware <action>` — action applied to potentially dangerous programs (riskware). Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnHacktools <action>` — action applied to hacktools. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default values: `REPORT`
bootscan `<disk drive> | ALL`	**Function** Start checking boot records on the specified disks via **Dr.Web File Checker** component. Both MBR and VBR records are scanned. **Arguments** `<disk drive>` — path to a block file of the disk device, which boot record is to be scanned. If you specify `ALL`, all boot records of all available disks are scanned. Mandatory argument. **Options** `a [--Autonomous]` — start a separate instance of **Dr.Web Scanning Engine** scanning engine and file checking module **Dr.Web File Checker** for scanning and terminate their operation after the scanning task completes. Note that threats detected during autonomous scanning are not displayed in the common threat list that is output by `threats` command (see below). `--Report <BRIEF|DEBUG>` — specify the type of scanning results reports. Allowed values: • `BRIEF` — brief report. • `DEBUG` — detailed report. Default value: `BRIEF` `--ScanTimeout <number>` — specify timeout to scan one file, in ms. If the value is set to 0, time to scan one file is not limited. Default value: 0 `--HeuristicAnalysis <On|Off>` — enable or disable heuristics analysis. Default value: `On` `--Cure <Yes|No>` — enable or disable attempts to cure detected threats. If the value is set to `no`, only notification is output. Default value: `No` `--ShellTrace` — enable output of additional debug information when scanning a boot record.
procscan	**Function** Start checking executable files containing code of currently running processes via **Dr.Web File Checker** component. If a malicious executable file is detected, it is neutralized and all processes run by this file are forced to terminate. **Arguments** No. **Options**

Command	Description
	`a [--Autonomous]` — start a separate instance of **Dr.Web Scanning Engine** scanning engine and file checking module **Dr.Web File Checker** for scanning and terminate their operation after the scanning task completes. Note that threats detected during autonomous scanning are not displayed in the common threat list that is output by `threats` command (see below). `--Report <BRIEF|DEBUG>` — specify the type of scanning results reports. Allowed values: • `BRIEF` — brief report. • `DEBUG` — detailed report. Default value: `BRIEF` `--ScanTimeout <number>` — specify timeout to scan one file, in ms. If the value is set to 0, time to scan one file is not limited. Default value: 0 `--HeuristicAnalysis <On|Off>` — enable or disable heuristics analysis. Default value: `On` `--PackerMaxLevel <number>` — set the maximum nesting level when scanning packed objects. If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--OnKnownVirus <action>` — action applied to a threat detected using signature analysis. `REPORT`, `CURE`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnIncurable <action>` — action applied on failure to cure a detected threat or if a threat is incurable. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnSuspicious <action>` — action applied to a threat detected using heuristics analysis. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnAdware <action>` — action applied to adware. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnDialers <action>` — action applied to dialers. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnJokes <action>` — action applied to joke programs. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnRiskware <action>` — action applied to potentially dangerous programs (riskware). Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT`

Command	Description
	`--OnHacktools <action>` — action applied to hacktools. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` Note that if a threat is detected in an executable file, **Dr.Web for UNIX File Servers** terminates all processes started from the file.
netscan `<path>`	**Function** Start distributed scanning of the specified file or folder (via agent for distributed scanning **Dr.Web Network Checker**). If connections to other hosts with **Dr.Web Anti-virus Solution** are not found, a local scanning is performed (similar to **scan** command). **Arguments** `<path>` — path to the file or directory which is selected to be scanned. **Options** `--Report <BRIEF|DEBUG>` — specify the type of scanning results reports. Allowed values: • `BRIEF` — brief report. • `DEBUG` — detailed report. Default value: `BRIEF` `--ScanTimeout <number>` — specify timeout to scan one file, in ms. If the value is set to 0, time to scan one file is not limited. Default value: 0 `--HeuristicAnalysis <On|Off>` — enable or disable heuristics analysis. Default value: `On` `--PackerMaxLevel <number>` — set the maximum nesting level when scanning packed objects. If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--ArchiveMaxLevel <number>` — set the maximum level of nesting when scanning archives (zip, rar, etc.). If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--MailMaxLevel <number>` — set the maximum level of nesting when scanning email messages (pst, tbb, etc.). If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--ContainerMaxLevel <number>` — set the maximum level of nesting when scanning containers of other types (HTML and others). If the value is set to `0`, nested objects are skipped during scanning. Default values: `8` `--MaxCompressionRatio <ratio>` — set the maximum compression ratio for scanned objects. The ratio must be at least equal to `2`. Default value: `3000` `--Cure <Yes|No>` — enable or disable attempts to cure detected threats. If the value is set to `no`, only notification is output.

Command	Description
	Default value: `No`
`flowscan` `<path>`	**Function** Start scanning the specified file or directory via **Dr.Web File Checker** component using "flow" method (used by **SpIDer Guard** monitor). For scanning on demand it is recommended to use the **`scan`** command. **Arguments** `<path>`—path to the file or directory which is selected to be scanned. **Options** `--ScanTimeout <number>` — specify timeout to scan one file, in ms. If the value is set to 0, time to scan one file is not limited. Default value: 0 `--HeuristicAnalysis <On|Off>` — enable or disable heuristics analysis. Default value: `On` `--PackerMaxLevel <number>` — set the maximum nesting level when scanning packed objects. If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--ArchiveMaxLevel <number>` — set the maximum level of nesting when scanning archives (zip, rar, etc.). If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--MailMaxLevel <number>` — set the maximum level of nesting when scanning email messages (pst, tbb, etc.). If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--ContainerMaxLevel <number>` — set the maximum level of nesting when scanning containers of other types (HTML and others). If the value is set to `0`, nested objects are skipped during scanning. Default values: `8` `--MaxCompressionRatio <ratio>` — set the maximum compression ratio for scanned objects. The ratio must be at least equal to `2`. Default value: `3000` `--OnKnownVirus <action>` — action applied to a threat detected using signature analysis. `REPORT`, `CURE`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnIncurable <action>` — action applied on failure to cure a detected threat or if a threat is incurable. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnSuspicious <action>` — action applied to a threat detected using heuristics analysis. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT`

Command	Description
	`--OnAdware <action>` — action applied to adware. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnDialers <action>` — action applied to dialers. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnJokes <action>` — action applied to joke programs. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnRiskware <action>` — action applied to potentially dangerous programs (riskware). Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT` `--OnHacktools <action>` — action applied to hacktools. Allowed values: `REPORT`, `QUARANTINE`, `DELETE`. Default value: `REPORT`
`proxyscan` `<path>`	**Function** Start scanning the specified file or directory via **Dr.Web File Checker** component using "proxy" method (used by **SpIDer Guard for SMB** monitor and **Dr.Web ClamD** component). Note that threats detected during this scanning method are not added to the general list of detected threats output by `threats` command (see below). For scanning on demand it is recommended to use the **`scan`** command. **Arguments** `<path>` — path to the file or directory which is selected to be scanned. **Options** `--Report <BRIEF|DEBUG>` — specify the type of scanning results reports. Allowed values: • `BRIEF` — brief report. • `DEBUG` — detailed report. Default value: `BRIEF` `--ScanTimeout <number>` — specify timeout to scan one file, in ms. If the value is set to 0, time to scan one file is not limited. Default value: 0 `--HeuristicAnalysis <On|Off>` — enable or disable heuristics analysis. Default value: `On` `--PackerMaxLevel <number>` — set the maximum nesting level when scanning packed objects. If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--ArchiveMaxLevel <number>` — set the maximum level of nesting when scanning archives (zip, rar, etc.). If the value is set to `0`, nested objects are skipped during scanning. Default value: `8`

Command	Description
	`--MailMaxLevel <number>` — set the maximum level of nesting when scanning email messages (pst, tbb, etc.). If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--ContainerMaxLevel <number>` — set the maximum level of nesting when scanning containers of other types (HTML and others). If the value is set to `0`, nested objects are skipped during scanning. Default values: `8` `--MaxCompressionRatio <ratio>` — set the maximum compression ratio for scanned objects. The ratio must be at least equal to `2`. Default value: `3000`
rawscan `<path>`	**Function** Start "raw" scanning of the specified file or directory using scanning engine **Dr.Web Scanning Engine** directly without use of the component for checking files **Dr.Web File Checker**. Note that threats detected during "raw" scanning are not added to the general list of detected threats output by `threats` command (see below). For scanning on demand it is recommended to use the **`scan`** command. **Arguments** `<path>` — path to the file or directory which is selected to be scanned. **Options** `--ScanEngine <path>` — path to UNIX socket of the scanning engine **Dr.Web Scanning Engine**. If not specified, an autonomous instance of scanning engine is started (it is shut down after scanning completes). `--Report <BRIEF|DEBUG>` — specify the type of scanning results reports. Allowed values: • `BRIEF`—brief report. • `DEBUG`—detailed report. Default value: `BRIEF` `--ScanTimeout <number>` — specify timeout to scan one file, in ms. If the value is set to 0, time to scan one file is not limited. Default value: 0 `--PackerMaxLevel <number>` — set the maximum nesting level when scanning packed objects. If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--ArchiveMaxLevel <number>` — set the maximum level of nesting when scanning archives (zip, rar, etc.). If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--MailMaxLevel <number>` — set the maximum level of nesting when scanning email messages (pst, tbb, etc.). If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--ContainerMaxLevel <number>` — set the maximum level of nesting when scanning containers of other types (HTML and others).

Command	Description
	If the value is set to `0`, nested objects are skipped during scanning. Default values: `8` `--MaxCompressionRatio <ratio>` — set the maximum compression ratio for scanned objects. The ratio must be at least equal to `2`. Default value: `3000` `--HeuristicAnalysis <On|Off>` — enable or disable heuristics analysis. Default value: `On` `--Cure <Yes|No>` — enable or disable attempts to cure detected threats. If the value is set to `no`, only notification is output. Default value: `No` `--ShellTrace` — enable output of additional debug information when scanning a boot record.
`cloudscan` `<path>`	**Function** Start scanning of the specified file or directory using information on threats from **Dr.Web Cloud** service. Not implemented. For scanning on demand use the **`scan`** command. **Arguments** `<path>` — path to the file or directory which is selected to be scanned. **Options** `--Report <BRIEF|DEBUG>` — specify the type of scanning results reports. Allowed values: • `BRIEF` — brief report. • `DEBUG` — detailed report. Default value: `BRIEF` `--ScanTimeout <number>` — specify timeout to scan one file, in ms. If the value is set to 0, time to scan one file is not limited. Default value: 0 `--PackerMaxLevel <number>` — set the maximum nesting level when scanning packed objects. If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--ArchiveMaxLevel <number>` — set the maximum level of nesting when scanning archives (zip, rar, etc.). If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--MailMaxLevel <number>` — set the maximum level of nesting when scanning email messages (pst, tbb, etc.). If the value is set to `0`, nested objects are skipped during scanning. Default value: `8` `--ContainerMaxLevel <number>` — set the maximum level of nesting when scanning containers of other types (HTML and others). If the value is set to `0`, nested objects are skipped during scanning. Default values: `8`

Command	Description
	`--MaxCompressionRatio <ratio>` — set the maximum compression ratio for scanned objects. The ratio must be at least equal to `2`. Default value: `3000` `--HeuristicAnalysis <On|Off>` — enable or disable heuristic analysis. Default value: `On` `--Cure <Yes|No>` — enable or disable attempts to cure detected threats. If the value is set to `No`, only notification is output. Default value: `No` `--ShellTrace` — enable output of additional debug information when scanning a boot record.

3.2. Commands to manage updates and operation in Central protection mode

The following commands for managing updates and operation in Central protection mode are available:

Command	Description
update	**Function** Instruct the updating component to download and install updates to virus databases and components from **Doctor Web** update servers or terminate an updating process if running. The command has no effect if **Dr.Web for UNIX File Servers** is connected to the central protection server. **Arguments** No. **Options** `--Stop` — terminate the currently performed updating process.
esconnect `<server>[:port]`	**Function** Connect **Dr.Web for UNIX File Servers** to the specified central protection server (for example, **Dr.Web Enterprise Server**). For details, refer to the Operation Modes. **Arguments** • `<server>` — IP address or network name of the host on which the central protection server is operating. The argument is mandatory. • `<port>` — name of the port used by the central protection server. The argument is optional. Specify the argument only if the central protection server uses a non-standard port. **Options** `--Key <path>` — path to the public key file of the central protection server to which **Dr.Web for UNIX File Servers** is connected. `--Login <ID>` — login (workstation identifier) used for connection to the central protection server. `--Password <password>` — password for connection to the central protection server. `--Group <ID>` — identifier of the group to which the workstation is added on connection. `--Rate <ID>` — identifier of the tariff group applied to a workstation when it is included in one of the central protection server groups (can be specified only together with the `--Group` option).

Command	Description
	`--Compress <On|Off>` — enables (`On`) or disables (`Off`) force compression of transmitted data. When not specified, usage of compression is determined by server. `--Encrypt <On|Off>` — enables (`On`) or disables (`Off`) force encryption of transmitted data. When not specified, usage of encryption is determined by server. `--Newbie` — connect as a "newbie" (get a new account on the server). `--WithoutKey` — allows connection to the server without using the public key. `--WrongKey` — allows connection to the server even if the specified public key is wrong. The `--Key` and `--WithoutKey` options are mutually exclusive. One of these options must be specified in the command. Note that this command requires **`drweb-ctl`** to be started with superuser privileges.
`esdisconnect`	**Function** Disconnect **Dr.Web for UNIX File Servers** from the central protection server and switch its operation to standalone mode. The command has no effect if **Dr.Web for UNIX File Servers** is in standalone mode. **Arguments** No. **Options** No. Note that this command requires **`drweb-ctl`** to be started with superuser privileges.

3.3. Configuration management commands

The following commands to manage configuration are available:

Command	Description
`cfset` `<section>.<parameter> <value>`	**Function** Change the active value of the specified parameter in the current configuration. Note that an equal sign is not allowed. **Arguments** • `<section>` — name of the configuration file where the parameter resides. The argument is mandatory. • `<parameter>` — name of the parameter. The argument is mandatory. • `<value>` — new value that is to be assigned to the parameter. The argument is mandatory. The following format is used to specify the parameter value `<section>.<parameter> <value>` For description of the configuration file, refer to the Appendix D, or to the `man` documentation `drweb.ini(5)`. **Options** `-a [--Add]` — do not substitute the current parameter value but add the specified value to the list (allowed only for parameters that can have several values, specified as a list). `-e [--Erase]` — do not substitute the current parameter value but remove the specified value from the list (allowed only for parameters that can have several values, specified as a list). `-r [--Reset]` — reset the parameter value to the default. At that, `<value>` is not required in the command and is ignored if specified.

Command	Description
	Options are not mandatory. If they are not specified, the current parameter value (or the list of ones if several values are specified) are substituted with the specified value. For the `-r` option, a special syntax to invoke the **`cfset`** command is used: **`cfset`** `<section>.* -r` In this case, all parameters of the specified section are reset to defaults. If you specify `-r` option for sections containing individual parameters of **Dr.Web ClamD** component connection points and for shared directories for **SpIDer Guard for SMB** monitor, the parameter value in the individual section will be changed to the value of its "parent" parameter having the same name in the general component settings section. If it is necessary to add a new section containing individual parameters for a connection point `<point>` of **Dr.Web ClamD** or for a **Samba** shared directory with the `<tag>`, use the following command: **`cfset`** `ClamD.Endpoint.<point>.<parameter> <value>`, for example: **`cfset`** `ClamD.Endpoint.Point1.ClamdSocket 127.0.0.1:3344` **`cfset`** `SmbSpider.Share.<tag>.<parameter> <value>`, for example: **`cfset`** `SmbSpider.Share.DepartFiles.OnAdware Quarantine` Note that **`cfset`** command requires **`drweb-ctl`** to be started with superuser privileges.
`cfshow` `[<section>[.<parameter>]]`	**Function** Output parameters of the current configuration. The command to output parameters is specified as follows `<section>.<parameter> = <value>`. Sections and parameters of non-installed components are not output. **Arguments** • `<section>` — name of the configuration file section, which parameters are to be output. The argument is optional. If not specified, parameters of all configuration file sections are output. • `<parameters>` — name of the output parameter. The argument is optional. If not specified, all parameters of the section are output. Otherwise, only this parameter is output. If a parameter is specified without the section name, all parameters with this name from all of the configuration file sections are output. **Options** `--Uncut` — output all configuration parameters (not only those used with the currently installed set of components). If the option is not specified, only parameters used for configuration of the installed components are output. `--Ini` — output parameter values in the INI file format: at first, the section name is specified in square brackets, then the section parameters listed as <parameter> = <value> pairs (one pair per line).

3.4. Commands to manage detected threats and quarantine

The following commands for managing threats and quarantine are available:

Command	Description
`threats` `[<command> <object>]`	**Function** Apply the specified action to detected threats by their identifiers. Type of the action is configured with the specified command option.

Command	Description
	If the action is not specified, output information on detected but not neutralized threats. **Arguments** No. **Options** `-f [--Follow]` — wait for new messages about new threats and output the messages once they are received (interrupt waiting with **^C**). `--Cure <threat list>` — attempt to cure the listed threats (threat identifiers are specified as a comma-separated list). `--Quarantine <threat list>` — move the listed threats to quarantine (threat identifiers are specified as a comma-separated list) `--Delete <threat list>` — delete the listed threats (threat identifiers are specified as a comma-separated list). `--Ignore <threat list>` — ignore the listed threats (threat identifiers are specified as a comma-separated list). If it is required to apply the command to all detected threats, specify `all` instead of `<threat list>`. For example, the following command **drweb-ctl** `threats --Quarantine all` moves all detected malicious objects to quarantine.
quarantine `[<command> <object>]`	**Function** Apply an action to the specified object in quarantine. If not specified, the following information is output: object identifier in quarantine and brief information on source files. **Arguments** No. **Options** `--Delete <object>` – Delete the specified object from quarantine. Note that objects are deleted from quarantine permanently. `--Cure <object>` – Try to cure the specified object in quarantine. Note that even if the object is successfully cured, it will stay in quarantine. To retrieve the cured object from quarantine, use the `--Restore` command. `--Restore <object>` – Restore the specified object from quarantine to the original location. Note that this operation may require that **drweb-ctl** is started with superuser privileges. The object can be restored even if it contains a threat. As an `<object>` specify the object identifier in quarantine. To apply the command to all quarantined objects, specify `all` as an `<object>`. For example, the following command **drweb-ctl** `quarantine --Restore all` restores all objects from quarantine.
nss_threats	**Function** Apply the specified action to detected on NSS volumes threats by their identifiers. Type of the action is configured with the specified command option. If the action is not specified, output information on detected but not neutralized threats. **Arguments** No. **Options**

Command	Description
	`-f [--Follow]` — wait for new messages about new threats and output the messages once they are received (interrupt waiting with **^C**). `--Cure <threat list>` — attempt to cure the listed threats (threat identifiers are specified as a comma-separated list). `--Quarantine <threat list>` — move the listed threats to NSS quarantine (threat identifiers are specified as a comma-separated list) `--Delete <threat list>` — delete the listed threats (threat identifiers are specified as a comma-separated list). `--Ignore <threat list>` — ignore the listed threats (threat identifiers are specified as a comma-separated list). If it is required to apply the command to all detected threats, specify `all` instead of `<threat list>`. For example, the following command **drweb-ctl** `nss_threats --Quarantine all` moves all detected malicious objects to NSS quarantine. Note that this command requires **SpIDer Guard for NSS** to be started.
nss_quarantine	**Function** Apply an action to the specified object in NSS quarantine. If not specified, the following information is output: object identifier in NSS quarantine and brief information on source files. **Arguments** No. **Options** `--Delete <object>` – Delete the specified object from NSS quarantine. Note that objects are deleted from quarantine permanently. `--Cure <object>` – Try to cure the specified object in NSS quarantine. Note that even if the object is successfully cured, it will stay in quarantine. To retrieve the cured object from quarantine, use the `--Restore` command. `--Rescan <object>` – Rescan the specified object in NSS quarantine. Note that even if rescanned object will clean, it will stay in quarantine. To retrieve the cured object from quarantine, use the `--Restore` command. `--Restore <object>` – Restore the specified object from NSS quarantine to the original location. Note that this operation may require that **drweb-ctl** is started with superuser privileges. The object can be restored even if it contains a threat. `--TargetDir <path>` – Restore the object which is specified in `--Restore` option, to the specified directory, instead of its original location. This option can be used only together with `--Restore` option. As an `<object>` specify the object identifier in NSS quarantine. To apply the command to all quarantined objects, specify `all` as an `<object>`. For example, the following command **drweb-ctl** `nss_quarantine --Restore all` restores all objects from NSS quarantine. Note that this command requires **SpIDer Guard for NSS** to be started.

If `Quarantine` action is specified for some threat type in **SpIDer Guard for NSS** settings, the object containing a threat of this type will be placed to quarantine again on attempt to restore this object from quarantine to an NSS volume by the **`nss_quarantine`** command. For example, the following default settings

```
NSS.OnKnownVirus = Cure
NSS.OnIncurable = Quarantine
```

move all incurable objects to quarantine. At that, when any incurable object is restored from quarantine to an NSS volume by the **`nss_quarantine`** command, this object is automatically returned to quarantine.

3.5. Information Commands

The following information commands are available:

Command	Description
`appinfo`	**Function** Output information on active **Dr.Web for UNIX File Servers** modules. **Arguments** No. **Options** `-f [--Follow]` — wait for new messages on module status change and output them once such a message is received (interrupt waiting with **`^C`**).
`baseinfo`	**Function** Output information on the current version of the **Dr.Web Virus-Finding Engine** and status of virus databases. **Arguments** No. **Options** No.
`license`	**Function** Output information on the active license. **Arguments** No. **Options** No.
`stat`	**Function** Output statistics on operation of components that process files (**`^C`** or **`q`** interrupts the statistics display) or on operation of network scanning agent **Dr.Web Network Checker**. The statistics output includes: • Name of the component that initiated scanning • PID of the component • Average number of files processed per second in the last minute, 5 minutes, 15 minutes • Percentage usage of the scanned files cache • Average number of scan errors per second. For a distributed scanning agent, the following information is output: • List of local components that initiated scanning • List of remote hosts that received files for scanning • List of remote hosts that sent files for scanning

Command	Description
	For local clients of the distributed scanning agent , their PID and name are specified; for remote clients — address and port of the host. For both clients — local and remote — the following information is output: • Average number of files scanned per second • Average number of sent and received bytes per second • Average number of errors per second **Arguments** No. **Options** `-n [--netcheck]` — output statistics on operation of the distributed scanning agent.

Usage Examples

Usage Examples for **Dr.Web Ctl** (**`drweb-ctl`**):

1) Start scanning of the `/home` directory with default parameters:

```
$ drweb-ctl scan /home
```

2) Scan paths listed in the `daily_scan` file (one path per line, a vertical bar character (|):

```
$ drweb-ctl scan --stdin < daily_scan
```

3) Scan listed paths separated with the NUL character:

```
$ find -print0 | drweb-ctl scan --stdin0
```

4) Start scanning the boot record on the **`sda`** disk:

```
$ drweb-ctl bootscan /dev/sda
```

5) Output all parameters from the `[Root]` section of the active configuration:

```
$ drweb-ctl cfshow Root
```

6) Set `'No'` as the **`Start`** parameter value in the `[LinuxSpider]` section (this parameter value disables **SpIDer Guard** — monitor of the file system in **Linux** OS):

```
# drweb-ctl cfset SMBSpider.Start No
```

Note that superuser privileges are required to perform this action. To elevate the privileges, you can use the **`sudo`** command, as shown in the following example:

```
$ sudo drweb-ctl cfset SMBSpider.Start No
```

Example usage of the **`find`** utility to select files for scanning (the **`drweb-ctl`** `scan --stdin` command):

1) Scan all files in all directories, starting from the root directory, on the same partition of the file system:

```
$ find / -xdev -type f | drweb-ctl scan --stdin
```

2) Scan all files in all directories, starting from the root directory, except files residing in the `/var/log/messages` and `/var/log/syslog` directories:

```
$ find / -type f ! -path /var/log/messages ! -path /var/log/syslog | drweb-ctl scan -stdin
```

3) Scan all files of the `root` user in all directories, starting from the root directory:

```
$ find / -type f -user root | drweb-ctl scan --stdin
```

4) Scan files of the `root` and `admin` users in all directories, starting from the root directory:

```
$ find / -type f \( -user root -o -user admin \) | drweb-ctl scan --stdin
```

5) Scan files of users with `UID` in the range `1000 - 1005` in all directories, starting from the root directory:

```
$ find / -type f -uid +999 -uid -1006 | drweb-ctl scan --stdin
```

6) Scan files in all directories, starting from the root directory, with a nesting level not more than five:

```
$ find / -maxdepth 5 -type f | drweb-ctl scan --stdin
```

7) Scan files in a root directory ignoring files in subdirectories:

```
$ find / -maxdepth 1 -type f | drweb-ctl scan --stdin
```

8) Scan files in all directories, starting from the root directory, with following all symbolic links:

```
$ find -L / -type f | drweb-ctl scan --stdin
```

9) Scan files in all directories, starting from the root directory, without following symbolic links:

```
$ find -P / -type f | drweb-ctl scan --stdin
```

10) Scan files created not later than July 3, 2013 in all directories, starting with the root directory:

```
$ find / -type f -newermt 2013-07-03 | drweb-ctl scan --stdin
```

Configuration Parameters

The command-line tool **Dr.Web Ctl** does not have a parameter section in the integral configuration file of **Dr.Web for UNIX File Servers.** It uses parameters specified in the `[Root]` section.

Dr.Web Network Checker

Dr.Web Network Checker is an agent designed for distributed scanning for threats. The component creates connection between hosts with installed **Dr.Web for UNIX File Servers** for receiving and sending files via network, which provides for distributed scanning. The component organizes automatic distribution of scanning tasks (by transmitting file content over the network) to all available hosts connection to which is configured. The component balances the load between the hosts caused by scanning tasks.

If there are no configured connections to remote hosts, the component uses only the local **Dr.Web Scanning Engine**.

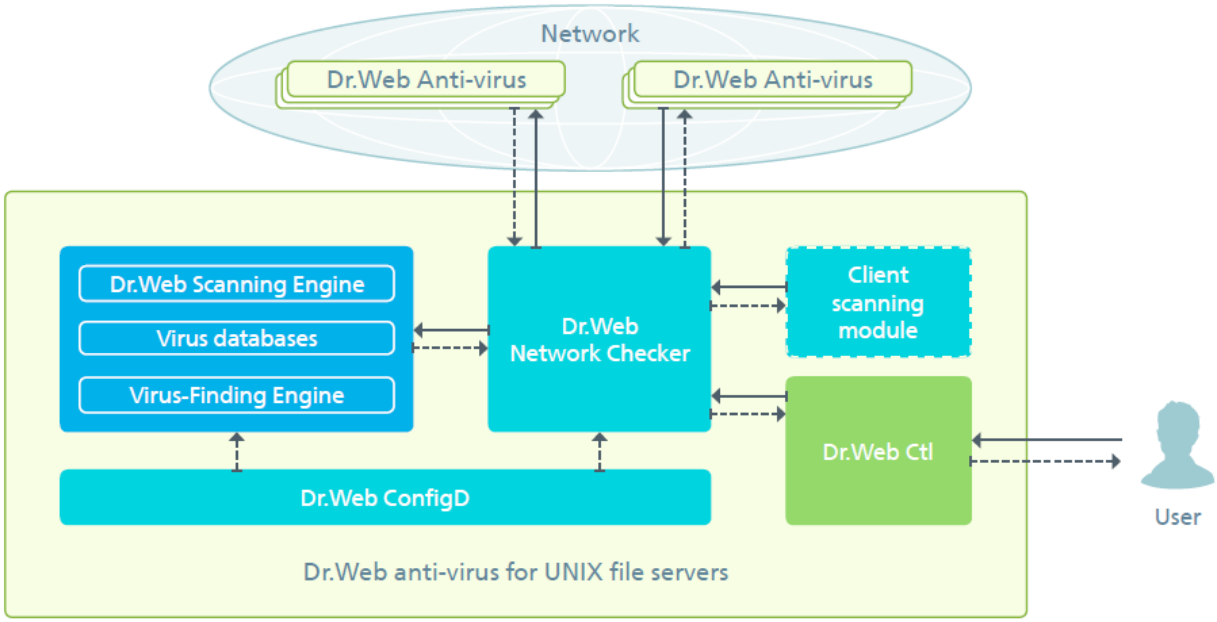
To secure communication between agents of scanning via network, you need to configure a connection over SSL. Note that an installed **OpenSSL** is required for this purpose (by default, the component uses version of **OpenSSL**, that is included in the distribution kit of **Dr.Web for UNIX File Servers**).

Operation Principles

Dr.Web Network Checker allows to establish connection between one host and a set of other hosts which have **Dr.Web for UNIX File Servers** (or other **Dr.Web for UNIX servers** solution version

10.1 or above) installed on them. This will provide for a distributed file scanning. To create and configure a "scanning cluster", the component runs an instance of the distributed scanning agent **Dr.Web Network Checker** on each host that is to be included in the cluster.

On each of the hosts within the cluster, **Dr.Web Network Checker** enables automatic distribution of scanning tasks by sending all available hosts data to scan. At that, the agent balances the load caused by file scanning. The load balancing is based on the amount of available resources (that is, the number of child scanning processes of **Dr.Web Scanning Engine** on the host). The agent also considers the queue of files waiting for scanning. Data received for scanning over the network are transmitted to the scanning engine **Dr.Web Scanning Engine**, as it is shown in the picture below.



Picture 45. Component operation scheme

Any host within a "scanning cluster" can be both a client sending files for scanning and a server receiving files for scanning from other hosts. If required, **Dr.Web** agent for distributed scanning can be configured so as to assign a host only one role and set it to perform either the functions of the server or the functions of the scanning client.

On a local host, scanning can be started both at user's command specified via the command-line management tool and at requests received from some product components, for example, **Dr.Web ClamD** component, which provides the interface of `clamd` daemon included in **ClamAV®**. That is why the scheme contains an abstract "Client scanning module". Note that such modules use the **Dr.Web Network Checker** agent for transmitting files to be scanned, even if **Dr.Web Scanning Engine** is located at the local host.

Command-Line Arguments

To run the agent for distributed scanning **Dr.Web Network Checker** from the command line, use the following command:

```
$ <opt_dir>/bin/drweb-netcheck [options]
```

Dr.Web Network Checker can process the following options:

Short form	Long form	Arguments
`-h`	`--help`	
Description: instructs to output short help information about command-line parameters to the console and exit.		

-v	--version	
Description: instructs to output information on the module version and exit		

Example:

```
$ /opt/drweb.com/bin/drweb-netcheck --help
```

This command outputs short help information on **Dr.Web Network Checker.**

Notes about startup

The component cannot be run directly from the command line of the operating system in autonomous mode. It is run automatically by configuration daemon **Dr.Web ConfigD** when required (usually on operating system startup). To start scanning via network, you can use the command-line tool for the solution management **Dr.Web Ctl** started by **drweb-ctl** command). If there are no configured connections to remote hosts, the local scanning will be started.

Configuration Parameters

The component uses configuration parameters which are specified in [NetCheck] section of the integrated configuration file of **Dr.Web for UNIX File Servers.**

The section contains the following parameters:

LogLevel = {logging level}	Logging level for the distributed scanning agent **Dr.Web Network Checker.** If the parameter is not specified, the **DefaultLogLevel** parameter value from [Root] section is used. Default value: **LogLevel** = Notice
Log = {log type}	Logging method for the distributed scanning agent **Dr.Web Network Checker.** Default value: **Log** = Auto
ExePath = {path to file}	Path to the executable of **Dr.Web Network Checker.** Default value: **ExePath** = <opt_dir>/bin/drweb-netcheck For **Linux**: **ExePath** = /opt/drweb.com/bin/drweb-netcheck For **FreeBSD**: **ExePath** = /usr/local/libexec/drweb.com/bin/drweb-netcheck For **Solaris**: **ExePath** = /opt/drweb.com/bin/drweb-netcheck
LoadBalanceUseSsl = {boolean}	The indicator which determines whether a secure SSL connection is used for connection to other hosts. Allowed values: • Yes—instructs to use SSL • No—instructs not to use SSL Default value: **LoadBalanceUseSsl** = No

LoadBalanceSslCertificate = {path to file}	Path to the file with the server certificate used by the distributed scanning agent for communication with other hosts via a secure SSL connection. Default value: **LoadBalanceSslCertificate** =
LoadBalanceSslKey = {path to file}	Path to the private key file used by the distributed scanning agent for communication with other hosts via a secure SSL connection. Default value: **LoadBalanceSslKey** =
LoadBalanceSslCa = {path to file}	Path to the file with the root certificate which authenticates certificates used by the "scanning cluster" agents when exchanging data via SSL. Default value: **LoadBalanceSslCa** =
LoadBalanceServerSocket = {address}	Socket (IP address and port) which is listened on the station by the distributed scanning agent for receiving files to check sent by remote stations (if the station can operate as a scanning server). Default value: **LoadBalanceServerSocket** =
LoadBalanceAllowFrom = {IP address}	IP address of a remote station from which the distributed scanning agent can receive files to check (as a scanning server). If the parameter is empty, removed files cannot be received for scanning (the station does not operate as a scanning server). You can specify a list as the parameter value. The values in the list must be separated with commas and enclosed in quotation marks. The parameter can be specified more than once in the section (in this case, all its values are combined into one list). Default value: **LoadBalanceAllowFrom** =
LoadBalanceSourceAddress = {IP address}	IP address of an interface used on the station by the distributed scanning agent for transferring files for their remote check (if the station operates as a scanning server and has several network interfaces). If an empty value is specified, the network interface automatically selected by the OS kernel is used. Default value: **LoadBalanceSourceAddress** =
LoadBalanceTo = {address}	Socket (IP address or port) of a remote station to which the distributed scanning agent can send files to check (as a network scanning client). If the parameter value is empty, local files cannot be transferred for a remote check (the station does not operate as a network scanning client). You can specify a list as the parameter value. The values in the list must be separated with commas and enclosed in quotation marks. The parameter can be specified more than once in the section (in this case, all its values are combined into one list). Default value: **LoadBalanceTo** =

LoadBalanceStatusInterval = {time interval}	Time interval between when the station sends information about its workload to all scanning clients (specified in **LoadBalanceAllowFrom** parameter). Default value: **LoadBalanceStatusInterval** = 1s
SpoolDir = {path to directory}	File system directory used to store files sent over the network for scanning and received by the distributed scanning agent. Default value: **SpoolDir** = /tmp/netcheck
LocalScanPreference = {fractional number}	Relative weight (priority) of the station used when a station for a file check is selected (a local file or a file received over the network). If the relative weight of the local station is greater than the weights of all stations available as scanning servers, files are scanned locally. Default value: **LocalScanPreference** = 1
IdleTimeLimit = {time interval}	Maximum time that the component can remain idle. If the specified value is exceeded, the component shuts down. Minimum value — 10s. If the **LoadBalanceAllowFrom** parameter is running, this setting is ignored (the component does not finish its operation after the time interval expires). Default value: **IdleTimeLimit** = 30s
RunAsUser = {UID | user name}	Name of the user whose privileged are used for running the component for distributed scanning service. The user name can be specified as the user's UID or as the user's login. If the user name consists of numbers, it is specified with the name: prefix, for example: **RunAsUser** = name:123456 If a user name is not specified, the component terminates with an error after the startup. Default value: **RunAsUser** = drweb

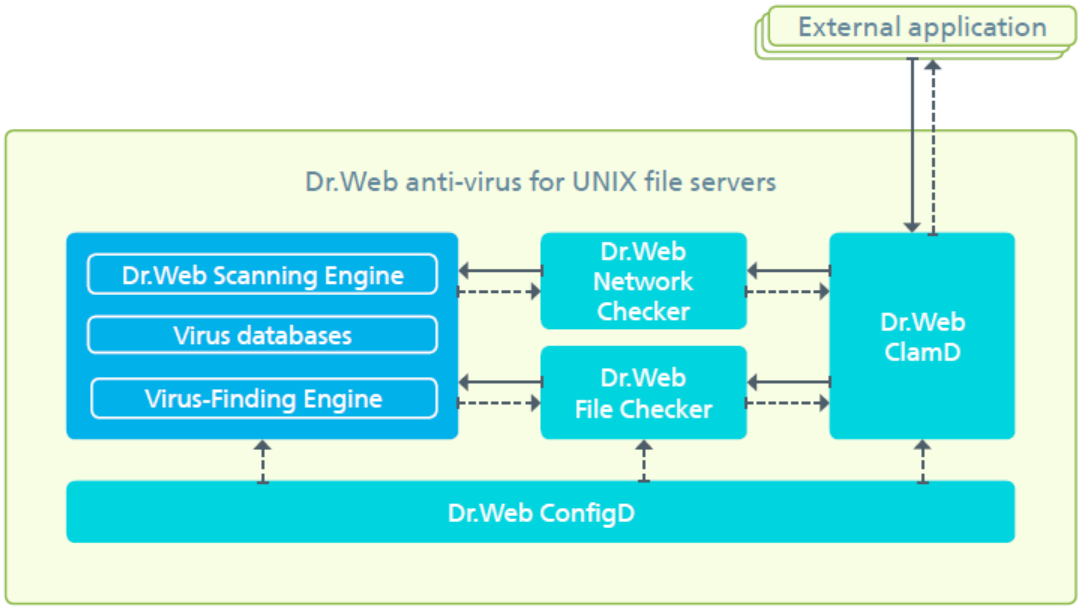
Dr.Web ClamD

Interface module ClamAV® **Dr.Web ClamD** is a component emulating for **Dr.Web for UNIX File Servers** the interface of anti-virus daemon **clamd**, which is the core component of anti-virus product **Clam AntiVirus (ClamAV®)** from Sourcefire, Inc. This interface allows external applications, which support operation with **ClamAV®** to use **Dr.Web for UNIX File Servers** for anti-virus scanning.

Operation Principles

The component is designed to check both content of files in the local file system and streams of data transmitted by a client application via socket. Such checks are performed by the component at a client application request. Moreover, the component can check content of files for which an open descriptor was transmitted via the socket. If a client application transmitted only a file path, the component sends

the scanning task to the component of file checking **Dr.Web File Checker**; otherwise, the component transmits data, received via the socket, to network scanning agent **Dr.Web Network Checker**, as shown in the picture below.



Picture 46. Component operation scheme

By default, the component is not automatically run upon **Dr.Web for UNIX File Servers** startup. To enable starting of the component, it is necessary to set `Yes` value for the **`Start`** parameter and define at least one connection point for client applications. After that, the component starts waiting for external application requests to scan files or data streams. In the component settings, you can configure several connection points for client applications and adjust different scan settings for each of the points, if required.

Detected threats cannot be neutralized by **Dr.Web for UNIX File Servers**; the client application receives only scan results. Thus, a detected threat should be neutralized by a client application.

Command-Line Arguments

To run **Dr.Web ClamD**, type the following command in the command line:

```
$ <opt_dir>/bin/drweb-clamd [options]
```

Dr.Web ClamD can process the following options:

Short form	Long form	Arguments
`-h`	`--help`	
Description: instructs to output short help information to the console about command-line parameters and exit.		
`-v`	`--version`	
Description: instructs to output information on the module version and exit		

Example:

```
$ /opt/drweb.com/bin/drweb-clamd --help
```

This command outputs short help information on **Dr.Web ClamD**.

Startup notes

The component cannot be run directly from the command line of the operating system in standalone mode. It is run automatically by configuration daemon **Dr.Web ConfigD** when required (usually on operating system startup).

Configuration Parameters

The component uses configuration parameters which are specified in `[CLAMD]` section of the integrated configuration file of **Dr.Web for UNIX File Servers.**

The section contains the following parameters:

LogLevel = {logging level}	Logging level for **Dr.Web ClamD.** If the parameter value is not specified, the value of **DefaultLogLevel** from `[Root]` section is used. Default value: **LogLevel** = Notice
Log = {log type}	Logging method Default value: **Log** = Auto
ExePath = {path to file}	Path to the executable of **Dr.Web ClamD.** Default value: **ExePath** = <opt_dir>/bin/drweb-clamd For **Linux**: **ExePath** = /opt/drweb.com/bin/drweb-clamd For **FreeBSD**: **ExePath** = /usr/local/libexec/drweb.com/bin/drweb-clamd For **Solaris**: **ExePath** = /opt/drweb.com/bin/drweb-clamd
Start = {Boolean}	The component must be run by a configuration daemon **Dr.Web ConfigD.** Default value: **Start** = Yes
Endpoint.<tag>.ClamdSocket = {IP address | UNIX socket}	Defines a connection point with the name <tag> and socket (IPv4 address or address of UNIX socket) for clients that need to check files for threats. For one connection point <tag>, several sockets can be specified. For that, specify the parameter several times with the same prefix **Endpoint.<tag>.** Default value: **Endpoint.<tag>.ClamdSocket** =
[Endpoint.<tag>.]ReadTimeout = {time interval}	Sets the maximum time to wait for data from client. If **Endpoint.<tag>** prefix is specified, the parameter is considered defined for the <tag> point; otherwise, it is considered defined for all points which do not have another value of this

	parameter specified for them. Default value: **[Endpoint.<tag>.]ReadTimeout** = 5s
[Endpoint.<tag>.] StreamMaxLength = {size}	Sets the maximum size of data which can be received from client (for transmitting data to scan as a stream of bytes). If **Endpoint.<tag>** prefix is specified, the parameter is considered defined for the <tag> point; otherwise, it is considered defined for all points which do not have another value of this parameter specified for them. Default value: **[Endpoint.<tag>.]StreamMaxLength** = 25mb
[Endpoint.<tag>.]ScanTimeout = {time interval}	Sets the maximum time to scan one file (or one portion of data) received from client. If **Endpoint.<tag>** prefix is specified, the parameter is considered defined for the <tag> point; otherwise, it is considered defined for all points which do not have another value of this parameter specified for them. Default value: **[Endpoint.<tag>.]ScanTimeout** = 30s
[Endpoint.<tag>.] HeuristicAnalysis = {On | Off}	Indicates whether heuristic analysis is used for scanning. If **Endpoint.<tag>** prefix is specified, the parameter is considered defined for the <tag> point; otherwise, it is considered defined for all points which do not have another value of this parameter specified for them. Default value: **[Endpoint.<tag>.]HeuristicAnalysis** = On
[Endpoint.<tag>.] PackerMaxLevel = {integer}	Sets the maximum nesting level of packed objects that can be scanned. If **Endpoint.<tag>** prefix is specified, the parameter is considered defined for the <tag> point; otherwise, it is considered defined for all points which do not have another value of this parameter specified for them. Default value: **[Endpoint.<tag>.]PackerMaxLevel** = 8
[Endpoint.<tag>.] ArchiveMaxLevel = {integer}	Sets the maximum nesting level of archives that can be scanned. If **Endpoint.<tag>** prefix is specified, the parameter is considered defined for the <tag> point; otherwise, it is considered defined for all points which do not have another value of this parameter specified for them. Default value: **Endpoint.<tag>.]ArchiveMaxLevel** = 8
[Endpoint.<tag>.]MailMaxLevel = {integer}	Sets the maximum nesting level of mail files that can be scanned. If **Endpoint.<tag>** prefix is specified, the parameter is considered defined for the <tag> point; otherwise, it is considered defined for all points which do not have another value of this parameter specified for them.

	Default value: **[Endpoint.<tag>.]MailMaxLevel** = 8
[Endpoint.<tag>.] ContainerMaxLevel = {integer}	Sets the maximum nesting level of objects in containers that can be scanned. If **Endpoint.<tag>** prefix is specified, the parameter is considered defined for the <tag> point; otherwise, it is considered defined for all points which do not have another value of this parameter specified for them. Default value: **[Endpoint.<tag>.]ContainerMaxLevel** = 8
[Endpoint.<tag>.] MaxCompressionRatio = {integer}	Sets the maximum compression ratio for packed objects. If **Endpoint.<tag>** prefix is specified, the parameter is considered defined for the <tag> point; otherwise, it is considered defined for all points which do not have another value of this parameter specified for them. Default value: **[Endpoint.<tag>.]MaxCompressionRatio** = 500

Special aspects of component configuration

Parameters marked by an optional prefix **[Endpoint.<tag>.]** can be grouped. Each group defines a connection point (endpoint) with a unique **<tag>**, the identifier of which is used by clients to connect to the module. All scanning parameters that are included in one group define parameters that are applied for scanning data of clients which connected to this point. If the parameter is specified without **Endpoint.<tag>** prefix, it sets the value for all connection points. If you delete some parameter from section of some connection point, the parameter value for this point will be taken from the corresponding "parent" parameter with the same name (without the **Endpoint.<tag>** prefix); the default parameter value is not used in this case.

The **ClamdSocket** parameter must be specified with **Endpoint.<tag>** prefix as it defines both a listening socket and a group (connection point) where this socket is bound.

Example:

Let us assume that we need to have two connection points. The first one is for group of external applications (servers) named `servers1` and the second one is for group of servers named `servers2`. At that, servers from the first group can be connected only via a UNIX socket and servers from the second group—via both a UNIX socket and network connection. Moreover, heuristic analysis is disabled by default, but it must be used for servers from the `servers2` group. The following example shows how to configure this.

1) In the configuration file:

```
[ClamD]
HeuristicAnalysis = Off

[ClamD.Endpoint.servers1]
ClamdSocket = /tmp/srv1.socket

[ClamD.Endpoint.servers2]
ClamdSocket = /tmp/srv2.socket
ClamdSocket = 127.0.0.1:1234
HeuristicAnalysis = On
```

2) Via the command-line tool **Dr.Web Ctl**:

```
# drweb-ctl cfset ClamD.HeuristicAnalysis Off
# drweb-ctl cfset ClamD.Endpoint.servers1.ClamdSocket /tmp/srv1.socket
# drweb-ctl cfset ClamD.Endpoint.servers2.ClamdSocket /tmp/srv2.socket
# drweb-ctl cfset -a ClamD.Endpoint.servers2.ClamdSocket 127.0.0.1:1234
# drweb-ctl cfset ClamD.Endpoint.servers2.HeuristicAnalysis On
```

Both ways have an equal effect but if you edit the configuration file, you will also need to apply the changed settings by sending a `SIGHUP` signal to **drweb-configd** module.

Integration with External Applications

The interface that emulates the one of the anti-virus daemon **clamd** (included in **ClamAV**) allows **Dr.Web ClamD** to communicate with any external application which can be connected to this anti-virus daemon.

The table below shows examples of applications that can use **clamd** for anti-virus scans:

Product	Integration
File services	
FTP server **ProFTPd**	**clamd usage:** Scan of files uploaded to the server via FTP. **Integration requirements:** Build **ProFTPd** with an additional module `mod_clamav`. **Links to documentation:** **ProFTPd** documentation: http://www.proftpd.org/docs/ Description and source codes of `mod_clamav`: https://github.com/jbenden/mod_clamav

In the settings of the component which communicates directly with **Dr.Web ClamD** as with the anti-virus daemon, specify the **clamd** connection address as the path to the UNIX socket or to the TCP socket listened by **Dr.Web ClamD** at one of the endpoints created in the socket configuration.

1. Example of how to connect **ProFTPd** to **Dr.Web ClamD**:
   1. Configure **Dr.Web ClamD**:

      ```
      [ClamD.Endpoint.ftps]
      ClamdSocket = 127.0.0.1:3310
      ```

   2. Configure **ProFTPd**:

      ```
      ClamAV on
      ClamServer 127.0.0.1
      ClamPort 3310
      ```

Dr.Web SNMPD

Dr.Web SNMP agent (**Dr.Web SNMPD**) is designed for integration of **Dr.Web for UNIX File Servers** suite and systems of monitoring via SNMP. Such integration will allow to control operational status of **Dr.Web for UNIX File Servers** as well as collect statistics on detected and neutralized threats. The agent provides monitoring systems and SNMP managers with the following information:

- State of any suite
- Number of detected threats of certain types (according to the **Dr.Web** classification)
- List of detected threats

Moreover, the agent sends SNMP trap notifications upon detection of a threat and upon failures in neutralization of detected threats. The agent supports SNMP protocol of version 2c and 3.

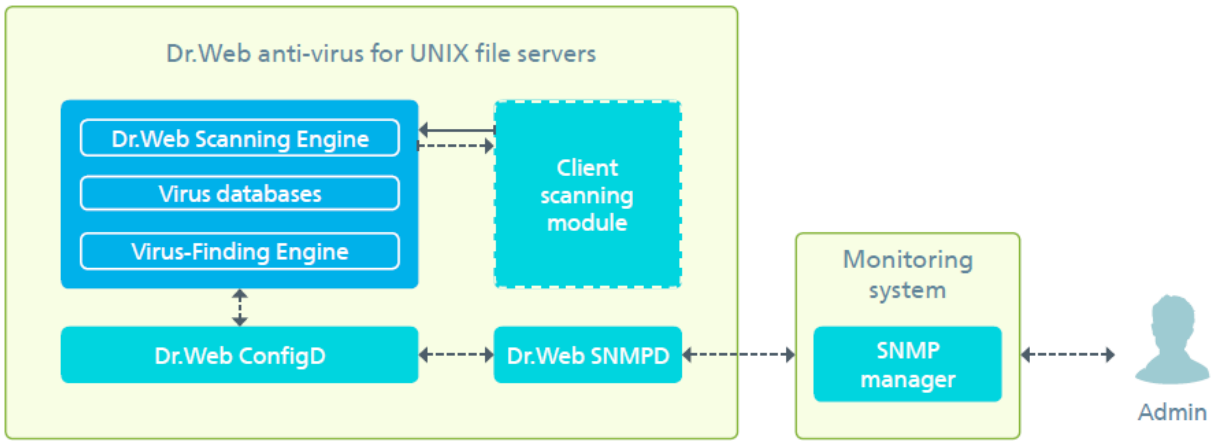
Description of the information which can be sent by the agent is stored in a special section of MIB (Management Information Base) created by **Dr.Web**. In the MIB section, defined by **Dr.Web**, the following information is specified:

1. Format of SNMP trap notifications on detected threats. The notification includes:
   - File name (path to the file) where the threat was detected
   - Name of the infected object
   - Threat type
   - Threat name
   - Name of the component that requested the scan during which the threat was detected.
2. Format of SNMP trap notifications on unsuccessful attempt to neutralize a threat. The notification has the same fields as an SNMP trap notification on a detected threat and one additional threat with description of the occurred error.
3. Operation statistics and states of the suite components:
   a) Counters of detected threats
      - Known viruses
      - Suspicious Objects
      - Adware
      - Joke programs
      - Dialers
      - Riskware
      - Hacktools
      - Table with threat information (name, number of detections)

   b) Counters of suite errors
4. Information on component states:
   - PID
   - State
   - Last modified time
   - Last modified code.

Operation Principles

By default, the component is run automatically upon **Dr.Web for UNIX File Servers** startup. When run, the component structures data according to the structure described in MIB **Dr.Web** and waits for requests to receive data from external SNMP managers. The component receives information on the status of the program components and notifications on detected threats directly from the configuration daemon **Dr.Web ConfigD**, as shown in the picture below.



Picture 47. Component operation scheme

Threats can be detected by the scanning engine during the scanning initiated by **Dr.Web for UNIX File Servers** components; thus, the scheme contains an abstract "client scanning module". On threat detection, the appropriate count (of this threat type) is incremented by one and all SNMP managers that can receive notifications get an SNMP trap notifying on the detected threat.

Integration with the system SNMP agent

To enable correct operation of **Dr.Web SNMP agent** if the main system SNMP agent **`snmpd (net-snmp)`** already operates on the server, configure transmission of SNMP requests through the **Dr.Web** MIB branch from **`snmpd`** to **Dr.Web SNMPD**. For that purpose, edit the **`snmpd`** configuration file (usually for **Linux** the file is as follows: `/etc/snmp/snmpd.conf`), by adding the following string:

```
proxy -v <ver> -c <community> <host>:<port> <MIB branch>
```

where

- `<ver>` – used SNMP version (2c, 3);
- `<community>` – "community string" used by **Dr.Web SNMPD.**
- `<host>:<port>` – address listened by **Dr.Web SNMPD.**
- `<MIB branch>` – OID of the MIB branch. OID contains description of variables and traps used by **Dr.Web** (`.1.3.6.1.4.1.29690`).

When using settings of **Dr.Web** SNMP agent. The added string is as follows, by default:

```
proxy -v 2c -c public localhost:50000 .1.3.6.1.4.1.29690
```

Note that as port 161 is used by the main system SNMP agent **`snmpd`** in this case, it is required to specify another port for **Dr.Web SNMPD** in the **`ListenAddress`** parameter (in this example, `50000`).

Command-Line Arguments

To run **Dr.Web SNMP agent** from the command line, type the following command:

```
$ <opt_dir>/bin/drweb-snmpd [options]
```

Dr.Web SNMPD can process the following options:

Short form	Long form	Arguments
-h	--help	
Description: instructs to output short help information to the console about command-line parameters and exit.		
-v	--version	
Description: instructs to output information on the module version and exit		

Example:

```
$ /opt/drweb.com/bin/drweb-snmpd --help
```

This command outputs short help information on **Dr.Web SNMP agent.**

Notes about startup

The component cannot be run directly from the command line of the operating system in standalone mode. It is run automatically by configuration daemon **Dr.Web ConfigD** when required (usually on operating system startup).

Configuration Parameters

The component uses configuration parameters which are specified in [SNMPD] section of the integrated configuration file of **Dr.Web for UNIX File Servers.**

The section contains the following parameters:

LogLevel = {logging level}	Logging level for **Dr.Web SNMP agent.** If the parameter is not specified, the **DefaultLogLevel** parameter value from [Root] section is used. Default value: **LogLevel** = Notice
Log = {log type}	Logging method for **Dr.Web SNMP agent.** Default value: **Log** = Auto
ExePath = {path to file}	Path to the executable of **Dr.Web SNMPD.** Default value: **ExePath** = <opt_dir>/bin/drweb-snmpd For **Linux**: **ExePath** = /opt/drweb.com/bin/drweb-snmpd For **FreeBSD**: **ExePath** = /usr/local/libexec/drweb.com/bin/drweb-snmpd For **Solaris**: **ExePath** = /opt/drweb.com/bin/drweb-snmpd

Start = {Boolean}	The component must be run by the configuration daemon **Dr.Web ConfigD.** Default value: **Start** = Yes
ListenAddress = {address}	Address (IP address and port) listened by **Dr.Web SNMPD**, which is waiting for client connections (SNMP managers). Note that interaction with **snmpd** requires a specified port, different from the standard port (161), and **snmpd** must be configured for proxying. Default value: **ListenAddress** = 127.0.0.1:161
SnmpVersion = {V2c | V3}	The used SNMP protocol version (*SNMPv2c* or *SNMPv3*). Default value: **SnmpVersion** = V2c
V3EngineId = {string}	Identifier (string) of Engine ID for SNMPv3 (according to RFC3411) Default value: **V3EngineId** = 800073FA044452574542
TrapReceiver = {address list}	List of addresses (IP address and port) where **Dr.Web SNMPD** sends SNMP trap after **Dr.Web for UNIX File Servers** components detected a threat. Addresses must be separated with commas. Default value: **TrapReceiver** =
V2cCommunity = {string}	The string "SNMP read community" for authentication of SNMP managers (SNMPv2c protocol) when **Dr.Web** MIB variables are accessed for reading. The parameter is used if **SnmpVersion** = V2c Default value: **V2cCommunity** = public
V3UserName = {string}	The user name for authentication of SNMP managers (SNMPv2c protocol) when **Dr.Web** MIB variables are accessed for reading. The parameter is used if **SnmpVersion** = V3 Default value: **V3UserName** = noAuthUser
V3Auth = {SHA(<pwd>) | MD5(<pwd>) | None}	Method to authenticate SNMP managers (SNMPv2c protocol) when **Dr.Web** MIB variables are accessed for reading. Allowed values: • SHA(<PWD>) — SHA hash of the password is used (<PWD> strings). • MD5(<PWD>) — MD5 hash of the password is used (<PWD> strings). • None — authentication is disabled. where <PWD> is a plain text password. The parameter is used if **SnmpVersion** = V3

	When specifying the parameter value from the command line, you may need to escape the brackets by using the slash mark \ in some shells.
	Example:
	1. Value of the parameter in the configuration file:
	`V3Auth = MD5(123456)`
	2. Specifying the parameter value from the command line via command `drweb-ctl cfset`:
	`drweb-ctl cfset SNMPD.V3Auth MD5\(123456\)`
	Default value:
	`V3Auth = None`

`V3Privacy = {DES(<secret>) | AES128(<secret>) | None}`	Method to encrypt SNMP messages (SNMPv3 protocol).
	Allowed values:
	• `DES(<secret>)` — DES encryption algorithm is used.
	• `AES128(<secret>)` — AES128 encryption algorithm is used.
	• `None` — SNMP-messages are not encrypted.
	where `<secret>` is a secret key shared by the manager and the agent (plain text).
	The parameter is used if `SnmpVersion = V3`
	When specifying the parameter value from the command line, you may need to escape the brackets by using the slash mark \ in some shells.
	Example:
	1. Value of the parameter in the configuration file:
	`V3Privacy = AES128(supersecret)`
	2. Specifying the parameter value from the command line via command `drweb-ctl cfset`:
	`drweb-ctl cfset SNMPD.V3Privacy AES128\(supersecret\)`
	Default value:
	`V3Privacy = None`

Integration with SNMP Monitoring Systems

Dr.Web SNMP agent can perform functions of a data provider for any monitoring system that uses SNMP protocol version 2c or 3. The list of available data and their structure are provided in the description file MIB **Dr.Web** **DrWeb-Snmpd.mib**, supplied with the product and residing in the `<opt_dir>/share/drweb-snmpd/mibs` directory.

For easy configuration, the module is supplied with templates of settings for popular monitoring systems:

- Cacti
- Munin
- Nagios
- Zabbix

Customization templates for monitoring systems reside in the `<opt_dir>/share/drweb-snmpd/connectors` directory.

Integration with Cacti monitoring system

Cacti monitoring system uses object descriptions and object counts that are imported from templates for displaying statistics on application operation on hosts and network equipment. Thus, templates for all required counts are prepared at first, and then the count templates are bound, as objects, to the graph templates. Then the graph templates are assigned to data host templates. Thus, the template of a host (or network equipment) is the root template and it describes the host added to **Cacti** for monitoring; this means that all count lists and predefined templates, which data are included in collected statistics, become available for the host.

To include **Dr.Web SNMPD** to the **Cacti** monitoring system, the `<opt_dir>/share/drweb-snmpd/connectors/cacti` directory contains a ready-to-use XML file `cacti_host_template_drweb.xml` with a template description of the monitored host that features installed **Dr.Web** solution.

This template file provides for connection of the host to the monitoring system and collection of statistics on detection of various threats and on file scanning. This template can also be imported to **Cacti** as well as be modified or used as the basis for creating new templates.

Connecting a host to Cacti

In the present instruction, it is assumed that the **Cacti** monitoring system is already deployed on the monitoring server and the monitored host features an installed and functioning (it is possible for the component to function in proxy mode together with **snmpd**).

1. In the **Cacti** web interface, import the host template `cacti_host_template_drweb.xml` (for that, click **Console** –> **Import Templates**, specify path to the template file, and click **Import**). If the import was successful, its results will contain the list of imported objects (**DrWeb Host** template).
2. Add the host that is to be monitored to the **Devices** list of **Cacti** web interface (**Console** –> **Devices** –> **Add**). As the host template, you can select the **DrWeb Host** template imported in the previous step. When adding the host, assign it an identifier (for example, **DrWeb-Device**), specify the host's network address (FQDN or IP address) and correct SNMP parameters: version, port, read community, and other (depending on the protocol version). Click **Save**. The added host will appear on the **Devices** list of the **Cacti** web interface.
3. For the added device, create graphs that demonstrate operation of **Dr.Web** on the host. Select **Console** –> **New Graphs**, then select the monitored host from the device list (**DrWeb-Device** in the example), specify the graphs type — **Graph Template Based**. Then select the check boxes of available counts from the imported template. Click **Create**.
4. Make sure that new data sources were created in the previous step. For that, select **Console** –>

Data Sources. This page must contain the following data sources:

```
DrWeb-Device-adware counter *
DrWeb-Device-dialers counter
DrWeb-Device-hacktools counter
DrWeb-Device-jokes counter
DrWeb-Device-known viruses counter
DrWeb-Device-riskware counter
DrWeb-Device-suspicios counter
DrWeb-Device-filecheck scanned bytes
```

*) `DrWeb-Device`, in this case — name of the device added in step 2.

It is recommended to make sure that for every data source a corresponding RRA archive **RDD Tool** was added. For that, click the source and then click **Turn On Data Source Debug Mode**. This shows the command of generating a data source and results of its execution.

5. By selecting **Console** –> **Graph Management**, activate these graphs. You can view graphs that were already built by clicking the name of the required graph. If it is not displayed, click **Turn On Graph Debug Mode** to view the command of creating the graph and its execution result. Select the following graphs on the list:

   ```
   DrWeb filecheck scan statistic
   DrWeb found malware
   ```

   In the **Choose an action** field, select **`Place on a Tree (Default Tree)`** and click **Go**.

6. To view graphs, which were built, click **graphs**. Note that the results must appear 10 minutes after data sources were added. At that, creation of graphs and data sources can be still incomplete before the first SNMP polling (about 5 minutes after the device was added).

If required, you can extend the set of data sources and corresponding graphs. For that, add a new data source generated from the system *SNMP — Generic OID Template*. In the generation settings, specify OID of the required count. Then add the received *Data Template* as an object to other graph templates.

The basic configuration of **Cacti** does not support collection and display of SNMP traps and does not support notification on different events. To enable support for both these functions, install the corresponding plug-ins.

Configuration of the SNMP trap plug-in to enable **Dr.Web SNMPD** notifications is similar to configuration of SNMP trap for any other source.

For official documentation on configuration of the **Cacti** monitoring system, refer to http://docs.cacti.net/manual:088.

Integration with Munin monitoring system

The **Munin** monitoring system includes the central server (master) **munin**, which collects statistics from clients **munin-node** residing locally on the monitored hosts. At request of the server, each monitoring client collects data about monitored host operation by starting plug-ins that provide data transferred to the server.

To enable connection between **Dr.Web SNMPD** and the **Munin** monitoring system, a ready-to-use plug-in **`drweb`** is supplied. The plug-in resides in the `<opt_dir>/share/drweb-snmpd/connectors/munin/plugins` directory. This plug-in collects data required for construction of the following two graphs:

- Number of detected threats
- File scan statistics

The plug-in supports SMNP protocols 1, 2c, and 3. Based on this template plug-in, you can create any other plug-ins to poll for the status of **Dr.Web for UNIX File Servers** components via **Dr.Web SNMPD**. This plug-in represents a set of plug-ins as one plug-in returns data for only one graphic, as it is seen by **Munin**.

In the `<opt_dir>/share/drweb-snmpd/connectors/munin` directory, the following files are located.

File	Description
`plugins/drweb`	The **munin-node** plug-in used for polling **Dr.Web SNMPD** via SNMP.
`plugin-conf.d/drweb.cfg`	The **munin-node** configuration template for establishing connection to **Dr.Web SNMPD**

Connecting a host to Munin

In the present instruction, it is assumed that the **Munin** monitoring system is already deployed on the monitoring server and the monitored host features an installed and functioning (it is possible for the component to function in proxy mode together with **`snmpd`**), **munin-node**, and **`snmpget`** (**`net-snmp`** package).

1) Monitored host configuration

- Copy **`drweb`** file to the directory with plug-in libraries **munin-node** `<munin_lib_plugins>`
- Create two symbolic links in the `<munin_plugins>` directory with **munin-node** plug-ins

```
<munin_plugins>/drweb_malware -> <munin_lib_plugins>/drweb
<munin_plugins>/drweb_scanstat -> <munin_lib_plugins>/drweb
```

- Copy the `drweb.cfg` file to the **munin-node** configuration path `/etc/munin/munin-node` and edit the parameters for connecting **`drweb`** plug-ins and **Dr.Web SNMPD**:

```
[drweb_*]
user root
group root
env.SNMP_WALK_COMMAND snmpwalk -c public -v 2c localhost:161
```

- Adjust these parameters by assigning them actual values (matching the configuration of **Dr.Web SNMPD**). The given example uses default values.
- In the `munin-node.conf` configuration file, specify a regular expression to include all IP addresses of hosts that are allowed to connect to **munin-node** for receiving the values of monitored parameters, for example:

```
allow ^10\.20\.30\.40$
```

  In this case, only the IP address 10.20.30.40 is allowed to receive host parameters.

- Restart **munin-node** (for example, by using **`service`** `munin-node restart` command).

The paths `<munin_lib_plugins>` and `<munin_plugins>` depend on the operating system. In **Debian/Ubuntu** operating systems, these paths are as follows: `/usr/share/munin/plugins` and `/etc/munin/plugins` respectively.

2) **Munin** server (master) configuration

Add the address and identifier of the monitored host to the **Munin** configuration file `munin.conf`, which is located, by default, in `/etc` (in **Debian/Ubuntu** operating systems: `/etc/munin/munin.conf`:

```
[<ID>;<hostname>.<domain>]
address <host IP address>
use_node_name yes
```

where `<ID>` is the displayed host's identifier, `<hostname>` is the name of the host, `<domain>` is the name of the domain, `<host IP address>` is the IP address of the host.

Integration with Zabbix monitoring system

File templates, required for establishing connection between **Dr.Web SNMPD** and the **Zabbix** monitoring system, are residing in the `<opt_dir>/share/drweb-snmpd/connectors/zabbix` directory.

File	Description
`zbx_drweb.xml`	Template for description of the monitored host that features installed **Dr.Web** solution.
`snmptt.drweb.zabbix.conf`	Configuring SMNP trap SMNP handler **`snmptt`**

Template for description of the monitored host features

- Description of counts ("Items", according to the terminology of **Zabbix**). By default, the template is set to be used with SNMP v2.
- The set of predefined graphs: number of scanned files and distribution of detected threats by their type.

Connecting a host to Zabbix

In the present instruction, it is assumed that the **Zabbix** monitoring system is already deployed on the monitoring server and the monitored host features an installed and functioning **Dr.Web SNMPD** (it is possible for the component to function in proxy mode together with **`snmpd`**). Moreover, if you want to receive SNMP trap notifications from the monitored host (including notification on threats detected by **Dr.Web for UNIX File Servers**), install the **`net-snmp`** package on the monitoring server (standard tools **`snmptt`** and **`snmptrapd`** are used).

1. In the **Zabbix** web interface, on the **Configuration** –> **Templates** tab import the template of the monitored host from the `<opt_dir>/share/drweb-snmpd/connectors/zabbix/zbx_drweb.xml` directory.
2. Add the monitored host to the appropriate list (at **Hosts** –> **Create host**). Specify correct parameters of the host and settings of the SNMP interface (they must match the settings of **`drweb-se`** and **`snmpd`** on the host).
   - The **Host** tab:

     Host name: `drweb-host`

     Visible name: `DRWEB_HOST`

     Groups: select `Linux servers`

     Agent interfaces: specify IP address and port of **Dr.Web SNMPD** (`127.0.0.1` and `10050` by default).

     Snmp interfaces: Click **add** specify the IP address and port listened at **`snmptrapd`** on the host where **Zabbix** is installed (see below, `127.0.0.1` and `161` by default).
   - The **Templates** tab:

Click **Add**, check `DRWEB`, click **select**.

- The **Macros** tab:

  Macro: `{$SNMP_COMMUNITY}`

  Value: specify "read community" for SNMP V2c (by default, `public`).

Click **Save**.

Note: The `{$SNMP_COMMUNITY}` macro can be specified directly in the host template.

By default, the imported *DRWEB* template is configured for SNMP v2. If you want to use another version of SNMP, edit the template accordingly on the appropriate page.

3. After the template is bound to the monitored host, if the settings are specified correctly, the **Zabbix** monitoring system will start to collect data for counts (items) of the template; the collected data will be displayed on the **Monitoring** –> **Latest Data** and **Monitoring** –> **Graphs tabs**.
4. A special item `drweb-traps` is used for collecting SNMP traps from **Dr.Web SNMPD**. The log pf received SNMP trap notifications is available on the **Monitoring** –> **Latest Data** –> **drweb-traps** –> **history** page. To collect notifications, **Zabbix** uses standard tools **`snmptt`** and **`snmptrapd`** from the **`net-snmp`** package. For details on how to configure the tools for receiving SNMP trap notifications from **Dr.Web SNMPD**, see below.
5. If necessary, you can configure a trigger that will change its state upon receipt of an SNMP trap notification from **Dr.Web SNMPD**. Changing its state can be used as an event source for generation appropriate notifications. The example below shows an expression for configuration of a trigger; the expression is specified in the **trigger expression** field:

```
({TRIGGER.VALUE}=0 & {DRWEB:snmptrap[.*\.1\.3\.6\.1\.4\.1\.29690
\..*].nodata(60)}=1 )|({TRIGGER.VALUE}=1 & {DRWEB:snmptrap[.*\.1\.3\.6\.1\.4\.1
\.29690\..*].nodata(60)}=0)
```

An event is triggered (the value is set to 1) if the log of SNMP trap notifications from **Dr.Web SNMPD** was updated within a minute. If the log was not updated within the next minute, the value of the trigger is set to 0 again).

Configuring receipt of SNMP traps for Zabbix

1. On the monitored host in **Dr.Web SNMPD** settings (`SNMPD.TrapReceiver`), specify an address to be listened by **`snmptrapd`** on the host where **Zabbix** operates, for example:

```
SNMPD.TrapReceiver = 10.20.30.40:162
```

2. In the configuration file of **`snmptrapd`** (`snmptrapd.conf`), specify the same address and an application for processing received SNMP traps (in this example, **`snmptthandler`**, **`snmptt`** component):

```
snmpTrapdAddr 10.20.30.40:162
traphandle default /usr/sbin/snmptthandler
```

3. The **`snmptthandler`** component saves received SNMP trap notifications to the file on the disk in accordance with the specified format, which corresponds to the regular expression set in the host template for **Zabbix** (item `drweb-traps`). The format of the saved notification is specified in the `<opt_dir>/share/drweb-snmpd/connectors/zabbix/snmptt.drweb.zabbix.conf` file. The file must be copied to `/etc/snmp`.
4. Moreover, the path to the format files must be specified in the `snmptt.ini` file:

```
[TrapFiles]
# A list of snmptt.conf files (this is NOT the snmptrapd.conf file).
# The COMPLETE path and filename. Ex: '/etc/snmp/snmptt.conf'
snmptt_conf_files = <<END
/etc/snmp/snmptt.conf
/etc/snmp/snmptt.drweb.zabbix.conf
END
```

After that, restart **snmptt** if it was started in daemon mode.

5. In the configuration file of the **Zabbix** server (`zabbix-server.conf`), specify (or check if they are already specified) the following settings:

```
SNMPTrapperFile=/var/log/snmptt/snmptt.log
StartSNMPTrapper=1
```

where `/var/log/snmptt/snmptt.log` is a log file used by **snmptt** to register information on received SNMP trap notifications.

For official documentation on **Zabbix**, refer to https://www.zabbix.com/documentation/.

Integration with Nagios monitoring system

Files with configuration examples, required for establishing connection between **Dr.Web SNMPD** and the **Nagios** monitoring system, are residing in the `<opt_dir>/share/drweb-snmpd/connectors/nagios` directory.

File	Description
`nagiosgraph/rrdopts.conf-sample`	Example of the RRD configuration file
`objects/drweb.cfg`	Configuration file describing drweb objects
`objects/nagiosgraph.cfg`	The configuration file of the component for graph plotting used by **Nagiosgraph**
`plugins/check_drweb`	The script for collecting data from the host where **Dr.Web** is installed
`plugins/eventhandlers/submit_check_result`	Script for processing SNMP traps
`snmp/snmptt.drweb.nagios.conf`	Configuring SMNP trap SMNP handler **snmptt**

Connecting a host to Nagios

In the present instruction, it is assumed that the **Nagios** monitoring system is already deployed on the monitoring server, including configuration of the web server and the graphical tool **Nagiosgraph**, and the monitored host features an installed and functioning **Dr.Web SNMPD** (it is possible for the component to function in proxy mode together with **snmpd**). Moreover, if you want to receive SNMP trap notifications from the monitored host (including notification on threats detected by **Dr.Web for UNIX File Servers**), install the **net-snmp** package on the monitoring server (standard tools **snmptt** and **snmptrapd** are used).

In the current manual, the following path conventions are used (real paths depend on the operating system and **Nagios** installation):

- `<NAGIOS_PLUGINS_DIR>` — directory with **Nagios** plug-ins, for example: `/usr/lib64/nagios/plugins`
- `<NAGIOS_ETC_DIR>` — directory with **Nagios** settings, for example: `/etc/nagios`
- `<NAGIOS_OBJECTS_DIR>` — directory with **Nagios** objects, for example: `/etc/nagios/objects`
- `<NAGIOSGRAPH_DIR>` — **Nagiosgraph** directory, for example: `/usr/local/nagiosgraph`

- <NAGIOS_PERFDATA_LOG> — file where **Nagios** records results of service check (must be the same as the perflog file from <NAGIOSGRAPH_DIR>/etc/nagiosgraph.conf). Records from this file are read by the <NAGIOSGRAPH_DIR>/bin/insert.pl script and are recorded to the corresponding RRA archives **RRD Tool**.

Configuring **Nagios**:

1. Copy the check_drweb file to the <NAGIOS_PLUGINS_DIR> directory and the drweb.cfg file to the <NAGIOS_OBJECTS_DIR> directory.
2. Add hosts with **Dr.Web** that are to be monitored to the **drweb** group. On the hosts **Dr.Web SNMPD** must be running. By default, only **localhost** is added to this group.
3. If required, edit the **check_drweb** command which contains instruction to contact **Dr.Web SNMPD** on **drweb** hosts via the **snmplwalk** tool:

   ```
   snmpwalk -c public -v 2c $HOSTADDRESS$:161
   ```

   specify the correct version of SNMP protocol and parameters (such as "community string" or authentication parameters) as well as the port. The $HOSTADDRESS$ variable must be included in the command (as this variable is later substituted by **Nagios** to the correct host address when the command is automatically invoked). OID is not required in the command. It is also recommended to specify the command together with the full path to the executable file (usually /usr/local/bin/snmpwalk).
4. Connect DrWeb objects in the <NAGIOS_ETC_DIR>/nagios.cfg configuration file by adding the following string to the file:

   ```
   cfg_file= <NAGIOS_OBJECTS_DIR>/drweb.cfg
   ```
5. Add **RRD Tool** settings for DrWeb graphics from the rrdopts.conf-sample file to the <NAGIOSGRAPH_DIR>/etc/rrdopts.conf file.
6. If **Nagiosgraph** is yet to be configured, do the following steps for its configuration:
   - Copy the nagiosgraph.cfg file to the <NAGIOS_OBJECTS_DIR> directory and edit the path to the **insert.pl** script in the **process-service-perfdata-for-nagiosgraph** command; for example, as follows:

     ```
     $ awk '$1 == "command_line" { $2 = "<NAGIOSGRAPH_DIR>/bin/insert.pl"
     }{ print }' ./objects/nagiosgraph.cfg > <NAGIOS_OBJECTS_DIR>/
     nagiosgraph.cfg
     ```
   - Connect this file in the <NAGIOS_ETC_DIR>/nagios.cfg configuration file by adding the following line to it:

     ```
     cfg_file=<NAGIOS_OBJECTS_DIR>/nagiosgraph.cfg"
     ```
7. Check values of **Nagios** parameters in the <NAGIOS_ETC_DIR>/nagios.cfg configuration file:

```
check_external_commands=1
execute_host_checks=1
accept_passive_host_checks=1
enable_notifications=1
enable_event_handlers=1

process_performance_data=1
service_perfdata_file=/usr/nagiosgraph/var/rrd/perfdata.log
service_perfdata_file_template=$LASTSERVICECHECK$||$HOSTNAME$||$SERVIC
EDESC$||$SERVICEOUTPUT$||$SERVICEPERFDATA$
service_perfdata_file_mode=a
service_perfdata_file_processing_interval=30
service_perfdata_file_processing_command=process-service-perfdata-for-
nagiosgraph

check_service_freshness=1
enable_flap_detection=1
enable_embedded_perl=1
enable_environment_macros=1
```

Configuring receipt of SNMP traps for Nagios

1. On the monitored host in **Dr.Web SNMPD** settings (`SNMPD.TrapReceiver`), specify an address to be listened by **`snmptrapd`** on the host where **Nagios** operates, for example:

   ```
   SNMPD.TrapReceiver = 10.20.30.40:162
   ```

2. Check for existing the `<NAGIOS_PLUGINS_DIR>/eventhandlers/submit_check_result` script, which will be invoked when SNMP trap is received. If the script is missing, copy the `submit_check_result` file to this location from `<opt_dir>/share/drweb-snmpd/connectors/nagios/plugins/eventhandlers/`. In this file, change the path specified in the **`CommandFile`** parameter. It must have the same value as the **`command_file`** parameter in the `<NAGIOS_ETC_DIR>/nagios.cfg` file.

3. Copy the `snmptt.drweb.nagios.conf` file to the `/etc/snmp/snmp/` directory. In this file, change the path to the **`submit_check_result`**; for example, by using the following command:

   ```
   $ awk '$1 == "EXEC" { $2 = <NAGIOS_PLUGINS_DIR>/eventhandlers/
   submit_check_result }{ print}' ./snmp/snmptt.drweb.nagios.conf > /etc/
   snmp/snmp/snmptt.drweb.nagios.conf
   ```

4. Add the `/etc/snmp/snmptt.drweb.nagios.conf` string to the `/etc/snmp/snmptt.drweb.nagios.conf` file. After that, restart **`snmptt`** if it was started in daemon mode.

After all required configuration files of **Nagios** are added and edited, run **Nagios** in debug mode by using the following command:

```
# nagios -v <NAGIOS_ETC_DIR>/nagios.cfg
```

Upon receipt of this command, **Nagios** will check for configuration errors. If no error is found, **Nagios** can be restarted as usual (for example, by using the **`service`** `nagios restart` command).

For official documentation on **Nagios**, refer to http://www.nagios.org/documentation/.

Appendices

Appendix A. Types of Computer Threats

Herein, the term "*threat*" is defined as any kind of software potentially or directly capable of inflicting damage to a computer or network and compromising the user's information or rights (that is, malicious and other unwanted software). In a wider sense, the term "threat" may be used to indicate any type of potential danger to the security of the computer or network (that is, vulnerabilities that can result in hacker attacks).

All of the program types stated below have the ability to endanger the user's data or confidentiality. Programs that do not conceal their presence (e.g. spam distribution software and various traffic analyzers) are usually not considered as computer threats, although they can become threats under certain circumstances.

Computer Viruses

This type of computer threats is characterized by the ability to implement its code into other objects. Such implementation is called infection. In most cases, the infected file becomes a virus carrier itself and the implemented code does not necessarily match the original. Most viruses are intended to damage or destroy data in the system.

In **Doctor Web** classification, viruses are divided by the type of objects which they infect:

- **File viruses** infect files of the operating system (usually executable files and dynamic libraries) and are activated when the infected file is launched.
- **Macro-viruses** are viruses that infect documents used by Microsoft® Office and some other applications supporting macro commands (usually, written in Visual Basic). Macro commands are a type of implemented programs (macros) written in a fully functional programming language. For instance, in Microsoft® Word macros can automatically initiate upon opening (closing, saving, etc.) a document.
- **Script viruses** are created using script languages and usually infect other scripts (e.g. service files of an operating system). They are also able to infect other file formats that allow execution of scripts and thus take advantage of scripting vulnerabilities in web applications.
- **Boot viruses** infect boot records of diskettes and partitions or master boot records of fixed disks. They require very little memory and remain ready to continue performing their tasks until a system roll-out, restart or shut-down occurs.

Most viruses have some kind of protection against detection. Protection methods are being constantly improved and ways to overcome them are constantly being developed. All viruses may also be classified according to the type of protection that they use:

- **Encrypted viruses** cipher their code upon every infection to hamper their detection in a file, boot sector or memory. All copies of such viruses contain only a small common code fragment (the decryption procedure) that can be used as a virus signature.
- **Polymorphic viruses** also encrypt there code, but besides that they also generate a special decryption procedure that is different in every copy of the virus. This means that such viruses do not have byte signatures.
- **Stealth viruses** perform certain actions to disguise their activity and thus conceal their presence in an infected object. Such viruses gather the characteristics of an object before infecting it and then plant these "dummy" characteristics that mislead the scanner searching for modified files.

Viruses can also be classified according to the programming language in which they are written (in most cases, it is Assembler, high-level programming languages, script languages, etc.) or according to affected operating systems.

Computer Worms

Worms have become a lot more widespread than viruses and other types of computer threats recently. Like viruses, they are able to reproduce themselves and spread their copies, but they do not infect other programs and files (that is, they do not need host files to spread). A worm infiltrates a computer from a worldwide or local network (usually via an attachment to an email) and distributes its functional copies to other computers in the network. It can begin distributing itself either upon a user's action or in an automatic mode choosing which computers to attack.

Worms do not necessarily consist of only one file (the worm's body). Many of them have an infectious part (the shellcode) that loads into the main memory (RAM) and then downloads the worm's body as an executable file via the network. If only the shellcode is present in the system, the worm can be deleted by simply restarting the system (at which the RAM is erased and reset). However, if the worm's body infiltrates the computer, then only an anti-virus program can cope with it.

Worms have the ability to cripple entire networks even if they do not bear any payload (i.e. do not cause any direct damage) due to their intensive distribution.

In **Doctor Web** classification, worms are divided by the method of distribution:

- Net worms distribute their copies via various network and file-sharing protocols.
- Mail worms spread themselves using email protocols (POP3, SMTP, etc.).
- Chat worms use protocols of popular messengers and chat programs (ICQ, IM, IRC, etc.).

Trojan Programs (Trojans)

This type of computer threats cannot reproduce itself or infect other programs. A Trojan substitutes a program that is used a lot and performs its functions (or imitates its operation). At the same time, it performs some malicious actions in the system (damages or deletes data, sends confidential information, etc.) or makes it possible for hacker to access the computer without permission, for example, to harm the computer of a third party.

A Trojan's masking and malicious facilities are similar to those of a virus. A Trojan may even be a component of a virus. However, most Trojans are distributed as separate executable files (through file-exchange servers, removable data carriers or email attachments) that are launched by users or system tasks.

It is very hard to classify Trojans due to the fact that they are often distributed by viruses or worms and also because many malicious actions that can be performed by other types of threats are ascribed to Trojans only. Here are some Trojan types which are distinguished as separate classes in **Doctor Web**:

- **Backdoors** are Trojans that make it possible for an intruder to log on into the system or obtain privileged functions bypassing any existing access and security measures. Backdoors do not infect files, but they write themselves into the registry modifying the registry keys.
- **Rootkits** are used to intercept system functions of an operating system in order to conceal themselves. Besides, a rootkit can conceal processes of other programs (e.g. other threats), registry keys, folders and files. It can be distributed either as an independent program or as a component of another malicious program. There are two kinds of rootkits according to the mode of operation: *User Mode Rootkits (UMR)* that operate in user mode (intercept functions of the user mode libraries) and *Kernel Mode Rootkits (KMR)* that operate in kernel mode (intercept functions on the level of the system kernel, which makes it harder to detect).
- **Keyloggers** are used to log data that users enter by means of a keyboard. The aim of this is to steal personal information (i.e. network passwords, logins, credit card data, etc.).
- **Clickers** redirect hyperlinks to certain addresses in order to increase traffic of websites or perform DDoS attacks.

- **Proxy Trojans** provide anonymous Internet access through a victim's computer.

Trojans may also perform other malicious actions besides those stated above, for example, change the start page in a web browser or delete certain files. However, other actions can also be performed by other types of threats (viruses and worms).

Hacktools

Hacktools are programs designed to assist the intruder with hacking. The most common among them are port scanners that detect vulnerabilities in firewalls and other components of computer protection system. Besides hackers, such tools are used by administrators to check security of their networks. Occasionally, common software that can be used for hacking and various programs that use social engineering techniques are designated as among hacktools as well.

Adware

Usually, this term refers to a program code implemented into freeware programs that force display of advertisements to users. However, sometimes such codes can be distributed via other malicious programs and show advertisements in web browsers. Many adware programs operate with data collected by spyware.

Jokes

Like adware, this type of minor threats can not be used to inflict any direct damage to the system. Joke programs usually just generate messages about errors that never occurred and threaten to perform actions that will lead to data loss. Their purpose is to frighten or annoy users.

Dialers

These are special programs that are designed to scan a range of telephone numbers and find those where a modem answers. These numbers are then used to mark up the price of telephoning facilities or to connect the user to expensive telephone services.

Riskware

Riskware programs are not only those that can accidentally damage or delete data, but also ones that can be used by crackers or some malicious programs to do harm to the system. Among such programs are various remote chat and administrative tools, FTP-servers, etc.

Suspicious Objects

These are possible computer threats detected by the heuristic analyzer. Such objects can potentially be any type of threat (even unknown to IT security specialists) or turn out safe in case of a false detection. Suspicious objects should be sent for analysis to the **Doctor Web Virus Laboratory**.

Appendix B. Fighting Computer Threats

The **Dr.Web Anti-virus solutions** use several malicious software detection methods simultaneously, and that allows them to perform thorough checks on suspicious files and control software behavior.

Detection Methods

Signature analysis

The scans begin with *signature analysis* which is performed by comparison of file code segments to the known virus signatures. A *signature* is a finite continuous sequence of bytes which is necessary and sufficient to identify a specific virus. To reduce the size of the signature dictionary, the **Dr.Web Anti-virus solutions** use signature checksums instead of complete signature sequences. Checksums uniquely identify signatures, which preserves correctness of virus detection and neutralization. The **Dr.Web virus databases** are composed so that some entries can be used to detect not just specific viruses, but whole classes of threats.

Origins Tracing

On completion of signature analysis, the **Dr.Web Anti-virus solutions** use the unique **Origins Tracing™** method to detect new and modified viruses which use the known infection mechanisms. Thus, **Dr.Web** users are protected against such threats as notorious blackmailer **Trojan.Encoder.18** (also known as **gpcode**). In addition to detection of new and modified viruses, the **Origins Tracing™** mechanism allows to considerably reduce the number of false triggering of the heuristics analyzer. Objects detected using the **Origins Tracing™** algorithm are indicated with the `.Origin` extension added to their names.

Execution emulation

The technology of program code emulation is used for detection of polymorphic and encrypted viruses, when the search against checksums cannot be applied directly, or is very difficult to be performed (due to the impossibility of building secure signatures). The method implies simulating the execution of an analyzed code by an *emulator* – a programming model of the processor and runtime environment. The emulator operates with protected memory area *(emulation buffer)*, in which execution of the analyzed program is modelled instruction by instruction. However, none of these instructions is actually executed by the CPU. When the emulator receives a file infected with a polymorphic virus, the result of the emulation is a decrypted virus body, which is then easily determined by searching against signature checksums.

Heuristic analysis

The detection method used by the heuristics analyzer is based on certain knowledge *(heuristics)* about certain features (attributes) than might be typical for the virus code itself, and vice versa, that are extremely rare in viruses. Each attribute has a weight coefficient which determines the level of its severity and reliability. The weight coefficient can be positive if the corresponding attribute is indicative of a malicious code or negative if the attribute is uncharacteristic of a computer threat. Depending on the sum weight of a file, the heuristics analyzer calculates the probability of unknown virus infection. If the threshold is exceeded, the heuristic analyzer generates the conclusion that the analyzed object is probably infected with an unknown virus.

The heuristics analyzer also uses the **FLY-CODE™** technology, which is a versatile algorithm for extracting files. The technology allows making heuristic assumptions about the presence of malicious objects in files compressed not only by packagers **Dr.Web** is aware of, but by also new, previously unexplored programs. While checking packed objects, **Dr.Web Anti-virus solutions** also use structural entropy analysis. The technology detects threats by arranging pieces of code; thus, one database entry allows identification of a substantial portion of threats packed with the same polymorphous packager.

As any system of hypothesis testing under uncertainty, the heuristics analyzer may commit type I or type II errors (omit viruses or raise false alarms). Thus, objects detected by the heuristics analyzer are

treated as "suspicious".

While performing any of the abovementioned checks, the **Dr.Web Anti-virus solutions** use the most recent information about known malicious software. As soon as experts of **Doctor Web Virus Laboratory** discover new threats, the update for virus signatures, behavior characteristics and attributes is issued. In some cases updates can be issued several times per hour. Therefore even if a brand new virus passes through the **Dr.Web** resident guards and penetrates the system, then after an update the virus is detected in the list of processes and neutralized.

Actions

To avert computer threats, **Dr.Web** products use a number of actions that can be applied to malicious objects. A user can leave the default settings, configure which actions to apply automatically, or choose actions manually upon every detection. Below is a list of possible actions:

- **Ignore** — instructs to skip the detected threat without performing any other action.
- **Report** — instructs to inform on the detected threat without performing any other action.
- **Block** — instructs to block all attempts to access the infected file.
- **Cure** is an action that can only be applied to major threats (viruses, worms and Trojans). It implies deletion of malicious code from infected objects as well as recovery of their structure and operability to the state in which it was before the infection if possible. Sometimes malicious objects are made of malicious code only (for example, Trojans or functional copies of computer worms) and for such objects to cure the system means to remove the whole object completely. Not all files infected by viruses can be cured, but curing algorithms evolve all the time.
- **Quarantine** (**Move to Quarantine**) is an action when the detected threat is moved to a special directory and isolated from the rest of the system.
- **Delete** is the most effective action for averting computer threats. It can be applied to any type of computer threat. Note that deletion will sometimes be applied to certain objects for which the Cure action was selected. This will happen in cases if the object consists of only malicious code and have no useful information (for example, curing a computer worm implies deletion of all its functional copies).

Appendix C. Contacting Support

Technical support webpage of **Doctor Web** is located at http://support.drweb.com/.

If you encounter any issues installing or using company products, take advantage of the following **Doctor Web** support options:

- Download and review the latest manuals and guides at http://download.drweb.com/
- Read the frequently asked questions at http://support.drweb.com/
- Browse **Dr.Web Official Forum** at http://forum.drweb.com/

If you have not found solution for the problem, you can request direct assistance from **Doctor Web Technical Support** by filling in the web form in the corresponding section of the support site at http://support.drweb.com/.

For regional office information, visit the **official Doctor Web website** at http://company.drweb.com/contacts/moscow.

Appendix D. Configuration File

Configuration parameters of all **Dr.Web for UNIX File Servers** components are managed by a special coordinating daemon **Dr.Web ConfigD.** These parameters are stored in the `drweb.ini` file, which default directory is `etc_dir` (for **Linux:** `/etc/opt/drweb.com`).

The text configuration file stores only those parameters which values differ from the defaults. If a parameter is absent in the configuration file, its default value is used.

For details on conventions for `<opt_dir>`, `<etc_dir>`, and `<var_dir>`, refer to Introduction.

You can view the list of all available parameters, including those that are absent in the configuration file and have default values, by using the following command:

```
drweb-ctl cfshow
```

You can change any parameter value in one of the two following ways:

1. Specify the parameter in the configuration file (by editing the file in any text editor) and send `SIGHUP` signal to the configuration daemon (**`drweb-configd`**) in order to apply the changes.
2. Type this command in the command line

   ```
   drweb-ctl cfset <section>.<parameter> <new_value>
   ```

   Note, that this command can be executed only if the management tool **Dr.Web Ctl** is run with root privileges. To gain root privileges, use **`su`** or **`sudo`** command.

For details on the `cfshow` and `cfset` command syntax of the console management tool **Dr.Web Ctl** (**`drweb-ctl`** module), refer to Dr.Web Ctl section.

File Structure

The configuration file has the following structure:

- File content is divided into named sections. Possible names of these sections are strictly predefined and cannot be changed. The section name is specified in square brackets and is similar to the component name **Dr.Web for UNIX File Servers,** which uses the section parameters (except for `[Root]` section, which stores all parameters of the configuration daemon **Dr.Web ConfigD**).
- The `';'` or `'#'` characters in the configuration file indicate the beginning of a comment—all text following the characters is skipped by modules **Dr.Web for UNIX File Servers** while reading configuration parameters.
- One line of the file can contain only one parameter value. The general format of specifying the value is as follows (white spaces before and after an equal sign `'='` are ignored):

  ```
  <Parameter name> = <Value>
  ```

- All parameter names are strictly predefined and cannot be changed.
- All section and parameter names are case-insensitive. Parameter values, except for names of directories and files in paths (for UNIX-like OS) are also case-insensitive.
- Order in which sections are specified in the file and order in which parameters are specified in the section are of no importance.
- Parameter values in the configuration file can be enclosed in quotation marks, and must be enclosed in quotation marks if they have white spaces

- Some parameters can have a list of values. If so, the values are either separated with commas or specified several times in different lines of the configuration file. In the former case, white spaces around a comma are ignored. If a white space character is a part of a parameter value, the character must be enclosed in quotation marks.

  Example of how to specify several values for one parameter:

  1) As a comma-separated list:

  ```
  Parameter = Value1, Value2,"Value 3"
  ```

  2) In different lines of the configuration file:

  ```
  Parameter = Value2
  Parameter = Value1
  Parameter = "Value 3"
  ```

  Note that the order in which parameter values are specified is of no importance.

- If a parameter can have more than one values, it is designated explicitly. So, if this is not explicitly designated in the current manual or within the comments in the configuration file, the parameter can have only one value.

For description of the configuration file sections, see description of **Dr.Web for UNIX File Servers** components.

Parameter Types

Configuration parameters can be of the following types:

- **`Address`** — network connection address specified as <IP address>:<port> pair of values. In some cases, the <port> value can be omitted (if so, it is specified in the parameter description).
- **`Boolean`** — flag used as an indicator. Such parameters can have either Yes or No as values.
- **`Integer`** — parameter value can be a non-negative integer as a value.
- **`Fractional number`** — parameter value can be a non-negative number with a fractional part.
- **`Time interval`** — parameter value can be a time interval, consisting of a non-negative integer and a suffix (letter), which stands for a time unit. The following suffixes can be used:
  - `w` — weeks `(1w = 7d)`
  - `d` — days `(1d = 24h)`
  - `h` — hours `(1h = 60m)`
  - `m` — minutes `(1m = 60s)`
  - `s` — seconds.

  If the suffix is omitted, the interval is considered as in seconds. For the time interval, expressed in seconds, it is allowed to specify milliseconds after a point (but no more than three digits after the separator, for example, `0.5s` = 500 milliseconds). It is possible to specify several time intervals in different time units. In this case, the resulting interval is counted as a sum of intervals (in fact, a time interval is always converted to milliseconds before the value is written to configuration).

  In general terms, any time an interval can be represented as an expression of this form: N_1**w**N_2**d**N_3**h**N_4**m**N_5[.N_6]**s**, where N_1, ..., N_6 is a number of corresponding time unites included in this interval. For example, a year (365 days) can be represented as follows (all records are equal):

  `365d, 52w1d, 52w24h, 51w7d24h, 51w7d23h60m, 8760h, 525600m, 31536000s.`

  The examples below show you how intervals of 30 minutes, 2 seconds, 500 milliseconds can be specified:

  1. In the configuration file:

  ```
  UpdateInterval = 30m2.5s
  ```

2. Using command **drweb-ctl** cfset:

```
drweb-ctl cfset Root.UpdateInterval 1802.5s
```

3. Via a command-line parameter (for example, for the module **drweb-se**):

```
drweb-se --WatchdogInterval 1802.5
```

- **Size** — parameter value can be the size of an object (file, buffer, cash, and so on), consisting of a non-negative integer and a suffix, which stands for a unit. The following suffixes can be used:
  - mb — megabytes (1mb = 1024kb)
  - kb — kilobytes (1kb = 1024b)
  - b — bytes.

  If the suffix is omitted, the size is considered as in bytes. It is possible to specify several sizes in different units. In this case, the resulting size is counted as their sum (in fact, a size value is always converted to bytes).
- **path to a directory (file)** — parameter value can be a string, which is a path to a directory (file). Note that the file path must be ended with the file name.

In UNIX-like operating systems, all directory and file names are case-sensitive.

If it is not explicitly designated in a parameter description, paths cannot contain masks with special characters (?, *).

- **Logging level** — the level at which **Dr.Web for UNIX File Servers** events are logged. The parameter of this type can have the following values:
  - DEBUG — the most verbose logging level. All messages and debug information are registered.
  - INFO — all messages are registered.
  - NOTICE — all error messages, warnings, and notifications are registered.
  - WARNING — all error messages and warnings are registered.
  - ERROR — only error messages are registered.
- **Log type** — parameter value defines how **Dr.Web for UNIX File Servers** performs logging (its logging method). The parameter of this type can have the following values:
  - Stderr[:ShowTimestamp] — messages are output to a standard error stream **stderr** (used only for **drweb-configd** module).

    Additional option ShowTimestamp prescribes to add a time stamp to every message.
  - Auto — logging method is defined automatically according to the configuration daemon **Dr.Web ConfigD**. This value is specified for all components except for the configuration daemon and is used as a default value.
  - Syslog[:<facility>] — messages are transmitted to the system logging service **syslog**.

    Additional option <facility> is used to specify a level at which **syslog** registers messages. The following values are possible:
    - DAEMON — messages of daemons
    - USER — messages of user processes
    - MAIL — messages of mail programs
    - LOCAL0 — messages of local processes 0

      ...
    - LOCAL7 — messages of local processes 7
  - <path> — path to the file where all messages are registered

Example of how to specify the parameter value:

1. In the configuration file:

```
Log = Stderr:ShowTimestamp
```

2. Using command **drweb-ctl**cfset:

```
drweb-ctl cfset Root.Log /var/opt/drweb.com/log/general.log
```

3. Via a command-line parameter (for example, for the module **drweb-se**):

```
drweb-se --Log Syslog:DAEMON
```

- **action** — action performed by **Dr.Web for UNIX File Servers** upon detection of certain threats or upon another event. The following values are possible:
  - Report — instructs only to notify on threat detection without performing any other action.
  - Block — instructs to block all attempts to access the infected file without modifying it.
  - Cure — instructs to attempt to cure the threat (that is, remove only malicious content).
  - Quarantine — instructs to move the infected file to quarantine.
  - Delete — instructs to delete the infected file.

Some of the actions can be applied only upon certain events (for example, a "scanning error" event cannot trigger Cure action). Allowed actions are always listed in the parameter description of the **action** type.

Other parameter types and their possible values are specified in the description of these parameters.

Appendix E. Known Errors

If the occurred error is not present in this section, it is recommended to contact technical support. Be ready to name the error code and describe steps to reproduce the issue.

To identify the error, we recommend you to configure logging to a separate file and enable output of extended information to the log. For that, execute the following commands:

```
# drweb-ctl cfset Root.Log <path/to/separate/log/file>
# drweb-ctl cfset Root.DefaultLogLevel DEBUG
```

To return to the default logging method and verbosity level, execute the following commands:

```
# drweb-ctl cfset Root.Log -r
# drweb-ctl cfset Root.DefaultLogLevel -r
```

Errors determined by code

Error message: *Feature not implemented.*

Error code: `x65`

Description: one of the **Dr.Web for UNIX File Servers** components cannot be in operation as it is requested to perform a function which is not implemented in the current version.

Resolving the error:

- Restore software defaults. For that purpose
  1. Clear the contents of `<etc_dir>/drweb.ini` file It is recommended to back up the file before starting the procedure. For example:

     ```
     # cp /etc/opt/drweb.com/drweb.ini /etc/opt/drweb.com/drweb.ini.save
     # echo "" > /etc/opt/drweb.com/drweb.ini
     ```

  2. Execute the command

     ```
     # service drweb-configd restart
     ```

     to restart **Dr.Web for UNIX File Servers**.

If the error persists, contact technical support and be ready to name the error code.

Error message: *Invalid DRL file*

Error code: `x90`

Description: updating cannot be performed as **Dr.Web Updater** detected integrity violation or cannot find a signed file with the list of update servers.

Resolving the error:

- Install `drweb-bases and drweb-dws`, components (packages) separately and then start an update.
- If the error persists, remove **Dr.Web for UNIX File Servers** and then install it again on the system and restart the update.
- For details on how to install and remove the product or product components, refer to the Installation Procedure and Removing Solution.

If the error persists, contact technical support and be ready to name the error code.

Error message: *Invalid compressed file.*

Error code: `x92`

Description: **Dr.Web Updater** detected integrity violation or cannot find the archive file received from the update server.

Resolving the error:

- Restart the update after some time.

If the error persists, contact technical support and be ready to name the error code.

Error message: *Proxy authentication error.*

Error code: `x93`

Description: **Dr.Web Updater** failed to connect to an update server as was not authenticated on the proxy server used for receiving updates.

Resolving the error:

- Check and correct parameters of the used proxy server (username and password used for authentication).
- If an error persists, change the proxy server or do not use proxy for connections.

If the error persists, contact technical support and be ready to name the error code.

Error message: *No update servers available.*

Error code: `x94`

Description: **Dr.Web Updater** cannot connect to any of the update servers.

Resolving the error:

- Check whether the network connection is established and verify the connectivity. Make sure that your computer is connected to the Internet.
- If Internet connection is allowed only via proxy, configure the use of proxy for receiving updates.
- If a proxy server is used, check and adjust the parameters used for the connection to proxy.

If the error persists, contact technical support and be ready to name the error code.

Error message: *File format is unknown or unsupported.*

Error code: `x95`

Description: Updates cannot be received as key file integrity is violated.

Resolving the error:

- Install the key file from the backup. If you cannot find the backup, contact technical support to obtain it.

If the error persists, contact technical support and be ready to name the error code.

Error message: *License is already expired.*

Error code: `x96`

Description: updates cannot be received as the used license is expired.

Resolving the error:

- Purchase a new license and activate the product.

If you are sure that the licensed period is not expired, contact technical support and be ready to name the error code.

Error message: *Network operation timed out.*

Error code: `x97`

Description: **Dr.Web Updater** cannot receive the updates because connection was lost.

Resolving the error:

- Check whether the network connection is established and verify the connectivity. Make sure that your computer is connected to the Internet.
- If a proxy server is used, check and adjust the parameters used for the connection to proxy.
- If an error persists, change the proxy server or do not use proxy for connections.

If the error persists, contact technical support and be ready to name the error code.

Error message: *Invalid DRL file*

Error code: `x98`

Description: A file with updates received by **Dr.Web Updater** has a checksum that is not equal to expected.

Resolving the error:

- Restart the update after some time.

If the error persists, contact technical support and be ready to name the error code.

Error message: *Invalid demo key file.*

Error code: `x99`

Description: Updates cannot be received as demo key file integrity is violated or its use is not authorized.

Resolving the error:

- Purchase a license and activate the product.

If you are sure that the demo key file is valid, contact technical support and be ready to name the error code.

Error message:*Key file is blocked.*

Error code: `x100`

Description: Updates cannot be received as the used key file is blocked by **Doctor Web**.

Resolving the error:

- Purchase a license and activate the product.

If you are sure that the used key file is valid, contact technical support and be ready to name the error code.

Error message: *Invalid configuration.*

Error code: `x102`

Description: One of **Dr.Web for UNIX File Servers** components cannot be in operation due to incorrect configuration settings.

Resolving the error:

SpIDer Guard: the specified operation mode is not supported by the operating system.

- Execute the command

```
# drweb-ctl cfset LinuxSpider.Mode AUTO
```

  to switch the operation of **SpIDer Guard** to automatic mode.
- If the error persists, manually build and install the loadable kernel module to be used by **SpIDer Guard**.

Note that operation of **SpIDer Guard** and of the loadable kernel module is guaranteed only on the tested **UNIX** distributives (see System Requirements).

Other components:

- Restore software defaults. For that purpose
  1. Clear the contents of `<etc_dir>/drweb.ini` file It is recommended to back up the file before the procedure. For example:

```
# cp /etc/opt/drweb.com/drweb.ini /etc/opt/drweb.com/drweb.ini.save
# echo "" > /etc/opt/drweb.com/drweb.ini
```

  2. Execute the command

```
# service drweb-configd restart
```

     to restart **Dr.Web for UNIX File Servers**.

If the error persists, contact technical support and be ready to name the error code.

Error message: *Invalid executable file*

Error code: `x104`

Description: An executable file of one of **Dr.Web for UNIX File Servers** components is unavailable or corrupted.

Resolving the error:

- Install the package with the necessary component:
  - `drweb-spider` if the executable file of **SpIDer Guard** is invalid
  - `drweb-update` if the executable file of **Dr.Web Updater** is invalid

- If the error persists or you cannot detect which executable file is invalid, remove **Dr.Web for UNIX File Servers** and then install it again on the system.
- For details on how to install and remove the product or product components, refer to the Installation Procedure and Removing Solution.

If the error persists, contact technical support and be ready to name the error code.

Error message: *invalid core engine file.*

Error code: `x105`

Description: **Dr.Web for UNIX File Servers** cannot operate because the executable file of the dynamic library for the anti-virus engine **Dr.Web Virus-Finding Engine** is unavailable or corrupted.

Resolving the error:

- Update virus databases.
- If the error persists, install the `drweb-bases` package containing virus databases and anti-virus engine executable file.
- If the error persists, remove **Dr.Web for UNIX File Servers** and then install it again.
- For details on how to install and remove the product or product components, refer to the Installation Procedure and Removing Solution.

If the error persists, contact technical support and be ready to name the error code.

Error message:*No virus databases.*

Error code: `x106`

Description: **Dr.Web for UNIX File Servers** cannot protect your computer because virus databases are unavailable or corrupted.

Resolving the error:

- Updatevirus databases.
- If the error persists, install the `drweb-bases` package containing virus databases and anti-virus engine executable file.
- If the error persists, remove **Dr.Web for UNIX File Servers** and then install it again.
- For details on how to install and remove the product or product components, refer to the Installation Procedure and Removing Solution.

If the error persists, contact technical support and be ready to name the error code.

Error message: *Incompatible software detected.*

Error code: `x109`

Description: One of **Dr.Web for UNIX File Servers** components cannot be in operation as an incompatible software is detected.

Resolving the error:

- Disable or reconfigure the software so as to prevent any interference in **Dr.Web for UNIX File Servers** operation.

If the error persists, contact technical support and be ready to name the error code.

Error message: *ScanEngine is not available.*

Error code: `x119`

Description: Cannot check files as **`drweb-se`** module is missing or failed to start. This module is used for searching malicious objects.

Resolving the error:

- Execute the command

  ```
  $ drweb-ctl rawscan /
  ```

  If the output contains message `Error: No valid license provided`, the valid key file is not available. Register the product and purchase the license. If you have the license, check that the key file is placed to the valid directory and install it if necessary.

- If you use 64-bit version of the operating system, make sure that 32-bit application support libraries are installed (see System Requirements) and, if necessary, install them. After installing the library, restart **Dr.Web for UNIX File Servers** by the following command

  ```
  # service drweb-configd restart
  ```

- If your operating system uses **SELinux**, configure the security policy for **`drweb-se`** module (see Adjusting SELinux Policies).
- Execute the command

  ```
  # drweb-ctl cfshow ScanEngine.ExePath
  ```

  If the output string differs from `ScanEngine.ExePath = <opt_dir>/bin/drweb-se`, execute the following command:

  ```
  # drweb-ctl cfset ScanEngine.ExePath <opt_dir>/bin/drweb-se
  ```

- If the error persists, install `drweb-se` component (package) separately.
- If the error persists, remove **Dr.Web for UNIX File Servers** and then install it again.
- For details on how to install and remove the product or product components, refer to the Installation Procedure and Removing Solution.

If the error persists, contact technical support and be ready to name the error code.

Error message: *FileCheck is not available.*

Error code: `x120`

Description: Cannot check files as a Scanner component **`drweb-filecheck`**, used for this function, is missing.

Resolving the error:

- If you use 64-bit version of the operating system, make sure that 32-bit application support libraries are installed (see System Requirements) and, if necessary, install them.
- If your operating system uses **SELinux**, configure the security policy for **`drweb-filecheck`** module (see Adjusting SELinux Policies).
- Execute the command

  ```
  # drweb-ctl cfshow FileCheck.ExePath
  ```

  If the output string differs from `FileCheck.ExePath = <opt_dir>/bin/drweb-filecheck`, execute the following command:

```
# drweb-ctl cfset FileCheck.ExePath <opt_dir>/bin/drweb-filecheck
```

- If the error persists, install `drweb-filecheck` component (package) separately.
- If the error persists, remove **Dr.Web for UNIX File Servers** and then install it again.
- For details on how to install and remove the product or product components, refer to the Installation Procedure and Removing Solution.

If the error persists, contact technical support and be ready to name the error code.

Error message: *NetCheck is not available.*

Error code: `x123`

Description: Cannot control Internet access as **`drweb-netcheck`** is missing or failed to start. The module is used for a check of downloaded files.

Resolving the error:

- Execute the command

  ```
  # drweb-ctl cfshow NetCheck.ExePath
  ```

  If the output string differs from `NetCheck.ExePath = <opt_dir>/bin/drweb-netcheck`, execute the following command:

  ```
  # drweb-ctl cfset NetCheck.ExePath <opt_dir>/drweb-netcheck
  ```

- If the error persists, install `drweb-netcheck` component (package) separately.
- If the error persists, remove **Dr.Web for UNIX File Servers** and then install it again.
- For details on how to install and remove the product or product components, refer to the Installation Procedure and Removing Solution.

If the error persists, contact technical support and be ready to name the error code.

Errors without codes

Symptoms:

Web browser cannot establish connection to **Dr.Web** management web interface; components of the **Dr.Web** solution are not on the list of running processes, which is output by the command **`ps`** `ax | ` **`grep`** `drweb`); attempt to execute any **`drweb-ctl`** `<command>`, except for **`drweb-ctl`** `rawscan`, results in one of the following errors:

```
Error: connect: No such file or directory: "<path>/.com.drweb.public"
```

or

```
Error: connect: Connection refused: "<path>/.com.drweb.public".
```

Description:

Dr.Web for UNIX File Servers cannot start as the configuration daemon **Dr.Web ConfigD** is not available.

Resolving the error:

- Execute the command

  ```
  # service drweb-configd restart
  ```

  to restart **Dr.Web ConfigD** and **Dr.Web for UNIX File Servers**.

- If the command returns an error or has no effect, install the `drweb-configd` package.

- Also note that this may mean that PAM authentication is not used in the system. If so, please install and configure PAM (the product cannot operate correctly without PAM).
- If the error persists, remove **Dr.Web for UNIX File Servers** and then install it again.
- For details on how to install and remove the product or product components, refer to the Installation Procedure and Removing Solution.

If the error persists, contact technical support.

Appendix F. Building Kernel Module for SpIDer Guard

If the operating system does not support the **fanotify** monitoring interface, **SpIDer Guard** uses a special loadable module operating in kernel space.

By default, **SpIDer Guard** is supplied with a completely built loadable kernel module for the **CentOS** and **Red Hat Enterprise Linux** OSes, version 5.10 and 6.5, as these systems do not support **fanotify**. Moreover, you can build a loadable kernel module manually using the source codes supplied in a`tar.bz2` archive.

The loadable kernel module, used by **SpIDer Guard**, is intended for operation with **Linux** kernels 2.6 and newer.

The archive with source codes is located in the **share/drweb-spider-kmod/src** subdirectory of the **Dr.Web for UNIX File Servers** base directory `<opt_dir>` (for **Linux:** `/opt/drweb.com`). The archive's name is as follows: `drweb-spider-kmod-<version>-<date>.tar.bz2`.

The `drweb-spider-kmod` directory also contains the **check-kmod-install.sh** test script. Run the script to check whether the used OS supports kernel versions included in the product. If not, a message prompting to manually build the module displays on the screen.

If the `drweb-spider-kmod` directory is absent, install the **drweb-spider-kmod** package manually (from the **Dr.Web** Repository or by custom installation from the universal package, depending on the way of the product installation).

To build the loadable kernel module manually from the source codes, administrative (root) privileges are required. For that purpose, you can use the **su** command to switch to another user or the**sudo** command to build the module as a different user.

To build kernel module

1. Unpack the archive with source codes to any directory. For example, the following command

   ```
   # tar -xf drweb-spider-kmod-<version>-<date>.tar.bz2
   ```

   unpacks the source codes to the created directory. This directory has the archive's name and is created in the same location where the archive resides.

2. Go to the created directory and execute the following command:

   ```
   # make
   ```

   If an error occurs during **make** command execution, resolve the issue see below) and restart compilation.

3. After successful command execution, enter the following commands:

   ```
   # make install
   # depmod
   ```

4. After the kernel module is successfully compiled and registered on the system, perform additional configuration of **SpIDer Guard**. Set the component to operate with the kernel module by executing the following command:

   ```
   # drweb-ctl cfset LinuxSpider.Mode LKM
   ```

   It is also possible to specify `AUTO` instead of `LKM`. In the latter case, **SpIDer Guard** will attempt to use kernel module and the monitoring interface **fanotify**. For details, type the following command:

```
$ man drweb-spider
```

Possible build errors

While the **make** command is being executed, errors may occur. If so, check the following:

- To ensure successful building of the module, **Perl** and **GCC** are required. If they are missing on the system, install them.
- On certain OSes, you may need to install the **kernel-devel** package before starting the procedure.
- On certain OSes, the procedure can fail because the path to the directory with source codes was incorrectly defined. If so, specify the **make** command with the `KDIR=/path/to/kernel/source/codes` parameter. Typically, the source codes are located in the `/usr/src/kernels/<kernel_version>` directory. Note that the kernel version returned by the **uname** `-r` command can differ from the directory name `<kernel_version>`!

Appendix G. Building VFS SMB Module for Samba

If it is detected during the product installation that the **Samba** version used on your file server is incompatible with all the supplied versions of the **VFS SMB** modules for **SpIDer Guard for SMB**, you need to build the **VFS SMB** module manually using the supplied source codes.

The source codes of the **VFS SMB** module for **SpIDer Guard for SMB** are supplied in the additional package named **drweb-smbspider-modules-src**. The package contains a **drweb-smbspider-10.1.0.src.tar.gz** archive with the source codes. This archive is placed into `/usr/src/` directory. If the archive is absent in this directory, install the package with the source codes manually (from the **Dr.Web** Repository or by custom installation from the universal package, depending on the way of the product installation).

Beside the source codes of the **VFS SMB** module, you also need the source codes of **Samba** installed on your file server. If you do not have the source codes, download them from the developer's source, for example https://www.samba.org/samba/download/. To determine which version of the **Samba** is installed on your file server, use the following command:

```
$ smbd -V
```

To build the **VFS SMB** module for **SpIDer Guard for SMB**, the source codes of the actual version of **Samba** installed on your server must be used. Otherwise, correct operation of the **SpIDer Guard for SMB** is not guaranteed.

To build the module manually from the source codes, administrative (root) privileges are required. For that purpose, you can use the **su** command to switch to another user or the **sudo** command to build the module as a different user.

To build the VFS SMB module

1. Unpack the archive with the **VFS SMB** module source codes to any directory. For example, the following command

   ```
   # tar -xf drweb-smbspider-10.1.0.src.tar.gz
   ```

   unpacks the source codes to the created directory. This directory has the archive's name and is created in the same location where the archive resides.

2. Determine the version of **Samba** installed on your server and download its source codes if necessary.

3. Determine if the version of **Samba** installed on your server uses the `CLUSTER_SUPPORT` option. To do that, use the following command:

   ```
   $ smbd -b | grep CLUSTER_SUPPORT
   ```

   If the output contains the `CLUSTER_SUPPORT` string, the version of **Samba** installed on your server uses the `CLUSTER_SUPPORT` option.

4. Go to the directory with the **Samba** source codes, configure (**./configure**) and then build it (**make**). When configuring, define the correct value for the `CLUSTER_SUPPORT` option according to the **Samba** installed on your server. To learn to configure and build **Samba**, refer to developer's official documentation, for example at https://www.samba.org/samba/docs/.

Note that building **Samba** from the source codes is necessary only for the correct building of the **VFS SMB** module in the next step. You do not have to replace **Samba** already installed on your server with the new binaries built from the source codes.

5. When you have successfully built **Samba**, go to the directory with the **VFS SMB** module source codes and issue the following command:

```
# ./configure --with-samba-source=<path_to_dir_with_Samba_src> && make
```

where `<path_to_dir_with_Samba_src>` is the path to the directory where **Samba** was built in the previous step.

6. When you have successfully built the **VFS SMB** module, copy the **libsmb_spider.so** binary file from the `.libs` subdirectory (created while building) to the directory for the VFS modules of the installed **Samba** (by default, for **Linux**, it is `/usr/lib/samba/vfs`) and rename it to **smb_spider.so**. To do that, use the following command:

```
# cp ./.libs/libsmb_spider.so /usr/lib/samba/vfs/smb_spider.so
```

7. After copying of the built **VFS SMB** module, you can delete the directories were the **VFS SMB** module and the **Samba** were built.

8. After that, it is necessary to complete integration between **Dr.Web for UNIX File Servers** and the **Samba** server the way it is described in the corresponding chapter of the Administrator Manual. Please note that in this case, in the first step of the integration, it is not necessary to create the **smb_spider.so** symbolic link in the directory of the VFS modules of the installed **Samba**.

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