Содержание

VEOS Administrator Guide

VEOS is a multi-user Linux-based operating system for managing telecom services.
This guide contains basic operating principles, administration commands, and configuration examples.

Key VEOS features:

- Compatibility with standard Linux commands and utilities
- Management through the **bash** command shell (default)
- File system compliant with the **FHS** standard
- Initialization through **systemd**
- Access control based on users and groups

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1. Process management in VEOS

A **process** is a program loaded into the server memory and currently being executed. Processes are divided into two types:

Process type	Description	Examples
System	Ensure OS operation and services	`systemd`, `kernel`, `sshd`
User	Started on behalf of a user	`bash`, `ls`, `cat`

Commands for process management:

Action	Command	Note
View all processes	`ps aux`	Shows PID, CPU, memory
Process tree	`pstree`	Parent-child hierarchy
Run in background	`command &`	Add & at the end
Stop a process by PID	`kill <PID>`	Use `kill -9 <PID>` for forced termination

Background mode

A process can run without user interaction (in the background). Use & to move it to the background. If the process requires input, it will be stopped by the kernel until returned to normal mode.

Example

```
# Run a script in the background
./backup.sh &

# View background jobs in the current session
jobs
```

2. Working with the file system

VEOS uses a **hierarchical Linux file system** — a single tree starting from the root `/`. Different partitions and devices are mounted into directories (mount points).

2.1. Root directory structure

Most important directories:

Directory	Contents
`/bin`	Command shells and basic utilities
`/boot`	System kernel and bootloader
`/dev`	Device pseudo-files (created by udev)
`/etc`	Configuration files
`/home`	User home directories
`/opt/vasexperts`	VAS Experts products
`/proc`	Virtual FS with process information
`/root`	Administrator home directory
`/sbin`	System administration utilities
`/tmp`	Temporary files
`/usr`	User applications and libraries
`/var`	Variable data (logs, queues, cache)

2.2. Navigating the directory tree

Command	Action
`pwd`	Show the current directory
`ls [directory]`	List files (use the `-l` option for detailed output)
`cd <directory>`	Change directory
`cd ..`	Move one level up
`cd /`	Go to the root directory

Important: File and directory names are **case-sensitive** — `test.txt` and `TEST.TXT` are different files.

2.3. Disk and partition names

Devices are displayed in `/dev/`:

Device	Name
First disk	`/dev/sda`

Device	Name
Second disk	`/dev/sdb`
Disk partition	`/dev/sda1`, `/dev/sda2`, ...

Minimum partitions required for VEOS installation:

- Root partition `/`
- swap partition (recommended size — from one to two times the amount of RAM)
- Optional: separate partitions for `/home`, `/var`, `/usr`

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3. The bash shell

Bash (Bourne Again Shell) is the primary shell in VEOS.

3.1. Useful keyboard shortcuts

Shortcut	Action
`Ctrl+A`	Move to the beginning of the line
`Ctrl+U`	Delete the entire line
`Ctrl+C`	Stop the current task
`Ctrl+R`	Search command history
`Tab`	Auto-complete command/file name

3.2. Command history

Command	Action
`history`	Show the list of recent commands
`!!`	Repeat the last command
`!<number>`	Execute the command with the specified number

3.3. Grouping and chaining commands

Operator	Purpose	Example
`;`	Sequential execution	`cd /tmp; ls -la`
`|` (pipe)	Pass stdout of the first command as stdin to the second	`ls | grep .txt`
`>`	Redirect stdout to a file (overwrite)	`echo hello > file.txt`
`>>`	Append stdout to the end of a file	`echo world >> file.txt`
`<`	Use a file as stdin	`sort < file.txt`

Example of a pipe with sorting:

```
# Sort the list of files in /etc in reverse order
ls -la /etc | sort -r
```

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4. User and permission management

Users are identified by **UID** (numeric identifier), groups by **GID**.

4.1. Basic commands

Action	Command	Note
View information about the current user	`id`	Shows UID, GID, groups
Change password	`passwd`	The current user changes their own password
Change another user's password	`passwd <login>`	Root only
Add a user	`useradd <login>`	Then set a password using `passwd`
Modify user parameters	`usermod <options> <login>`	For example, `-G wheel`
Delete a user	`userdel <login>`	Add `-r` to remove the home directory

4.2. Groups and permissions

Each user belongs to at least one group (with the same name).
Additional groups are assigned using `usermod -G`.

Example of adding a user to the `wheel` group (for sudo access):

```
usermod -G wheel test
```

View user groups:

```
id test
```

Attention: Most privileged utilities in VEOS use the **SGID** bit rather than SUID. Be careful when changing group permissions on system directories.

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5. Superuser mode (root)

The **superuser (root)** has unrestricted access to all files and processes.

5.1. The "su" command

Command	Result
`su -`	Full login as root (with root environment)

Command	Result
`su`	Only changes the user, keeps the current environment (not recommended)

Why `su -` is important:
Without the hyphen, the `$PATH` and `$HOME` variables remain from the regular user, and commands from `/sbin` and `/usr/sbin` may be unavailable.

5.2. The "sudo" command

Allows executing individual commands as root without fully switching users.
To use `sudo`, the user must belong to the `wheel` group.

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6. systemd initialization system

systemd is the primary initialization system in VEOS. It starts services in parallel and tracks dependencies.

6.1. Basic service management commands

Action	Command (systemd)	Sysvinit equivalent
Start a service	`systemctl start <service>`	`service <service> start`
Stop a service	`systemctl stop <service>`	`service <service> stop`
Restart a service	`systemctl restart <service>`	`service <service> restart`
View service status	`systemctl status <service>`	`service <service> status`
Enable autostart	`systemctl enable <service>`	`chkconfig <service> on`
Disable autostart	`systemctl disable <service>`	`chkconfig <service> off`

Example for the `fastdpi` service:

```
systemctl start fastdpi.service
systemctl status fastdpi.service
systemctl enable fastdpi.service
```

6.2. Viewing logs (journal)

Command	Action
`journalctl`	Show the full system journal
`journalctl -b`	Show logs only from the current boot
`journalctl -f`	Follow new messages (similar to `tail -f`)
`journalctl -u <service>`	Logs for a specific service

Example:

```
journalctl -u fastdpi.service -b
```

7. Frequently asked questions (FAQ)

Question: Which command shell is used in VEOS by default?
Answer: bash. You can check it using `echo $SHELL`.

Question: How do I obtain root privileges with the full environment?
Answer: Run `su -`. Make sure to include the hyphen.

Question: What is `systemd` and how is it better than `sysvinit`?
Answer: `systemd` starts services in parallel, which speeds up boot time, and it does not stop the entire process if one service hangs.

Question: Which two hard disk partitions are required for VEOS?
Answer: The root partition `/` and the `swap` partition.

Question: How do I view logs for a specific service?
Answer: Use `journalctl -u service_name.service`.

Question: Can `sudo` be used in VEOS?
Answer: Yes, if the user is added to the `wheel` group. Example: `sudo systemctl restart fastdpi`.

 Technical document information

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