

Maintenance of the Radon Scout Everywhere

Manual

SARAD GmbH*

October 21, 2026

*info@sarad.de

Contents

1	General Information	3
2	Technical Requirements	4
2.1	General	4
2.2	On the Company Network	4
2.3	On-site	4
3	Login Credentials	5
4	Instructions	6
4.1	Establishing a Connection	6
4.2	Disabling and Enabling Write Protection for Devices Prior to SN: RSE-00117	6
4.2.1	Disabling write protection	6
4.2.2	Enabling write protection	6
4.3	Disabling and Enabling Write Protection for Devices with Serial Numbers Starting with RSE-00117	7
4.3.1	Disabling write protection	7
4.3.2	Enabling write protection	7
4.4	Changing the Password	7
4.5	Updates to the <i>SARAD Registration Server</i> service	7
4.5.1	General	7
4.5.2	Steps to follow prior to SN: RSE-00117	8
4.5.3	Steps starting with SN: RSE-00117	8
4.6	Operating System Update	8
4.7	Configuring <i>SARAD Registration Server</i> service	8
4.8	Configuring the NTP Server to Set the System Time	8

1 General Information

The steps described below—with the exception of the recommended change to your user password—are only necessary if the manufacturer of your device instructs you to do so. Please perform these steps only if you understand the following instructions and feel confident working on the command line and using Linux text editors.

The *Radon Scout Everywhere* contains a built-in minicomputer (OrangePi Zero LTS) running Armbian Linux as its operating system and the *SARAD Registration Server* service.

The Ethernet interface of the *Radon Scout Everywhere* serves as the interface for all software maintenance tasks. From a PC or laptop, an SSH session is established, which provides access to the command line of the operating system running on the *OrangePi Zero LTS*.

You can use this command line to perform the following maintenance tasks:

- Update of the *SARAD Registration Server* service
- Update of the operating system
- Change the configuration of the *SARAD Registration Server* service
- Change the configuration for the setting of the system time

The update process is complicated by the fact that the SD card integrated into the device, which houses the operating system and the *SARAD Registration Server* service, is write-protected during normal operation. This is necessary to ensure that the contents of the SD card are not damaged when the power supply is disconnected. This write protection, known as the *Overlay File System*, must be disabled before the actual update and re-enabled after the update.

The *Radon Scout Everywhere* provides the *Vim* and *GNU nano* editors for editing configuration files.

2 Technical Requirements

2.1 General

We need:

- a PC with *PowerShell* 7 or later¹,
- a LAN with a DHCP server, a DNS server, and a gateway to the Internet.

2.2 On the Company Network

The necessary LAN is usually already in place at the company. The PC and the *Radon Scout Everywhere* are therefore simply connected to the LAN using an Ethernet cable each.

2.3 On-site

If this LAN infrastructure is not available on-site, we must set up a basic LAN consisting of

- an LTE router with at least one Ethernet port and
- an Ethernet cable.

In this case, the laptop can connect to the router via Wi-Fi, but the *Radon Scout Everywhere* must be connected to the router using the Ethernet cable.

The LTE router generally provides the necessary services (DHCP server, DNS server, and Internet gateway).

If you need or want to do without the router's DHCP and DNS functions, you can also use statically assigned IPv4 addresses. The router, acting as the gateway, is then assigned the static IP address 10.74.21.1, so that the *Radon Scout Everywhere*, which automatically has the static IP address 10.74.21.11 can be reached via this address. On the PC, you must then configure a static IP address from the same address space (e.g., 10.74.21.5).

¹Strictly speaking, any computer with a command line that supports SSH will work.

3 Login Credentials

Upon delivery of your *Radon Scout Everywhere*, you received an email granting you access to confidential information. The username and password for the SSH connection can be found in the README file under the “Credentials” section.

We strongly recommend that you change this password. To do so, follow the instructions in the section Changing the Password.

4 Instructions

4.1 Establishing a Connection

1. Set up the LAN
2. Launch PowerShell
3. Connect the RSE to the LAN. Check the connection to *Radon Scout Everywhere* using `ping rse-00123`. The hostname to use here is the serial number, which can be found on the nameplate on the bottom of the device.
4. `ssh default@rse-00123`. `default` is the username; instead of `rse-00123`, use the serial number of the device in question or, if using static IP addressing, `10.74.21.11`.
5. Enter the password.

4.2 Disabling and Enabling Write Protection for Devices Prior to SN: RSE-00117

4.2.1 Disabling write protection

1. Disable the overlay filesystem with `sudo armbian-config --cmd SY008`. Reboot with `sudo reboot`. From this point on, do not disconnect the device from power until the update process is complete!
2. Log in again with `ssh default@rse-0123`.
3. Check whether write protection was successfully removed: `mount | grep overlay`. If the output is empty, the operation was successful.

4.2.2 Enabling write protection

1. Enable the overlay filesystem with `sudo armbian-config --cmd SY007`. Reboot with `sudo reboot`.
2. Log in again with `ssh default@rse-0123`.
3. `sudo bash`, enter your password. Then run `echo "overlayroot=tmpfs" > /etc/overlayroot.conf`.
4. Reboot: `reboot`

5. Check whether write protection was successfully enabled: `mount | grep overlay`. If the output consists of multiple lines, the operation was successful.
6. Log out with CTRL+D. **Done.** You can now simply let the *Radon Scout Everywhere* continue running, or you can safely disconnect it from the power supply.

4.3 Disabling and Enabling Write Protection for Devices with Serial Numbers Starting with RSE-00117

4.3.1 Disabling write protection

1. Disable the overlay filesystem typing `rootwork`.
2. Verify that write protection has been successfully removed: `mount | grep overlay`. If the output is empty, the operation was successful.

You now have root privileges and can make persistent changes to the files. From this point on, do not disconnect the device from power until you have re-enabled write protection!

4.3.2 Enabling write protection

1. Pressing CTRL+D to exit root mode re-enables write protection.
2. Check whether write protection was successfully enabled: `mount | grep overlay`. If the output consists of multiple lines, the action was successful.
3. Log out using CTRL+D. You can now safely disconnect the *Radon Scout Everywhere* from the power supply or restart the operating system with `sudo reboot`.

4.4 Changing the Password

After connecting the device and disabling write protection, use the command `passwd`. You will first be prompted for the old password and then asked to enter a new password. As you type the password, no placeholders will be displayed (see also <https://wiki.ubuntuusers.de/passwd/>).

Write down the password and keep it in a safe place. Resetting the password to the factory default can only be done by SARAD employees and requires partial disassembly of your device.

4.5 Updates to the SARAD Registration Server service

4.5.1 General

During the update, the *Radon Scout Everywhere* retrieves the code to be updated from a repository on the Internet. For this to work, the Ethernet network interface must have not only a connection to the connected computer but also a connection to the Internet.

4.5.2 Steps to follow prior to SN: RSE-00117

1. Update: `sudo -H PIPX_HOME=/opt/pipx PIPX_BIN_DIR=/usr/local/bin pipx reinstall regserver`. Enter the password (see above).
2. Restart *SARAD Registration Server* service: `sudo systemctl restart regserver.service`. Enter the password if prompted. Verify success with `systemctl status regserver.service`

4.5.3 Steps starting with SN: RSE-00117

1. Update: `PIPX_HOME=/opt/pipx PIPX_BIN_DIR=/usr/local/bin pipx reinstall regserver`.
2. Enable write protection, followed by a reboot.
3. Verify success with `systemctl status regserver.service`.

4.6 Operating System Update

1. `sudo bash` (only for devices with serial numbers prior to RSE-00117)
2. `apt update`
3. `apt full-upgrade`
4. CTRL+D

4.7 Configuring SARAD Registration Server service

The *SARAD Registration Server* service configuration is located in `/etc/regserver/config.toml`. All available configuration options are listed and explained in the comments in the example file `config.example.toml` in the same directory.

After making changes, restart the *SARAD Registration Server* service with `systemctl restart regserver.service` and verify that it started successfully with `systemctl status regserver.service`.

4.8 Configuring the NTP Server to Set the System Time

The *Radon Scout Everywhere* does not have a continuous real-time clock. Therefore, the system time must be set by querying a time server every time the device is restarted. This is essential for the device to function properly.

The *Radon Scout Everywhere* normally obtains its system time from an NTP server. This can become a problem if the device is operated on a local corporate network via Ethernet and IT administrators have restricted access to NTP servers on the Internet. In such cases, it is possible to use the local network's DHCP server to specify which NTP server—whether within the LAN or on the Internet—should be used. If the DHCP server is configured this way, then the *Radon Scout*

Everywhere will honor that setting and use the specified NTP server. Only if this server is not specified or is unreachable will the system attempt to connect to one of the FallbackNTP servers listed in `/etc/systemd/timesyncd.conf`. These are: `0.pool.ntp.org` `1.pool.ntp.org` `2.pool.ntp.org` `3.pool.ntp.org`

If these are also unreachable, then the *Radon Scout Everywhere* attempts to obtain its system time from `https://sarad.de/time.php`. However, this last option is only a workaround, because the system time is set only once when the device starts up. During continuous operation over several months, the timestamps of the measured values may then deviate by several minutes from the actual measurement time.

Edit the file `/etc/systemd/timesyncd.conf` if you wish to change the behavior of your *Radon Scout Everywhere* in this regard.