

8.5 System

System

The system tab includes various properties, configurations, and settings of the system and contains the following pages:

| | | | | | | | |
|-------------------|----------------|-------------------------|---------|-----------------|--------------|-------|---------------------|
| SYSTEM | ADMINISTRATION | SOFTWARE | STARTUP | SCHEDULED TASKS | MOUNT POINTS | BOARD | CERTIFICATE STORAGE |
| LED CONFIGURATION | TIME SYNC | BACKUP / FLASH FIRMWARE | REBOOT | | | | |

- SYSTEM: properties and settings of the system.
- ADMINISTRATION: settings of the administration for various services.
- SOFTWARE: settings of the packages.
- STARTUP: process management.
- SCHEDULED TASKS: settings of the scheduled tasks.
- MOUNT POINTS: settings for the mount points.
- BOARD: board configuration.
- CERTIFICATE STORAGE: certificate management panel.
- LED CONFIGURATION: settings for the LEDs.
- TIME SYNC: time synchronization of WCC Lite
- BACKUP/FLASH FIRMWARE: management of the configuration files and firmware image upgrade.
- REBOOT: device reboot page.

System

Basic aspects of the device can be configured. These include time settings, hostname, system event logging settings, language and theme selection.

System properties

General Settings

SYSTEM PROPERTIES

General Settings

Logging

Language and Style

Local Time

Tue Jul 11 13:37:50 2023

Sync with browser

*It is not advisable to synchronise time from web browser

Hostname

wcc-lite

Timezone

UTC

General settings of the WCC Lite device are defined as follows:
Local Time: Current local time.
Hostname: The label that is used to identify the device in the network.
Timezone: A region of the globe that observes a uniform standard time. The time zone number indicates the number of hours by which the time is shifted ahead of or behind UTC – Coordinated Universal Time. Some zones are, however, shifted by 30 or 45 minutes.

Logging

SYSTEM PROPERTIES

General Settings

Logging

Language and Style

System log buffer size

16

?

kiB

External system log server

0.0.0.0

External system log server port

514

External system log server protocol

UDP

▼

Write system log to file

/root/syslog

Log output level

Debug

▼

Cron Log Level

Normal

▼

Logging settings of the WCC Lite device are defined as follows:

System log buffer size: The amount of the records before writing these data to the disk.

External system log server: IP address of the server.

External system log server port: An endpoint of communication with the server.

External system log server protocol: A standard that defines how to establish and maintain a network connection: UDP - User Datagram Protocol, TCP - Transmission Control Protocol.

Write system log to file: The name of the file with the path to it.

Log output level: Log output messages can be grouped by their importance to the user. Levels are described in the table below.

| Log output level | Description |
|------------------|--|
| Emergency | System is unusable |
| Alert | Action must be taken immediately |
| Critical | Critical conditions |
| Error | Error conditions |
| Warning | Potentially hazardous conditions |
| Notice | Normal conditions that might need action |
| Info | Information messages |
| Debug | Debugging messages |

Cron Log Level: Cron has three output levels to choose from to write to its logs. Possible options are described in the table below.

| Cron log level | Description |
|----------------|----------------------------------|
| Debug | Debugging messages |
| Normal | General administrative messages |
| Warning | Potentially hazardous conditions |

Time synchronization

WCC Lite has an NTP client to synchronize date and time with external sources. It is not the only source for synchronization, it can also be done using methods defined in IEC-60870-5 protocols.

TIME SYNCHRONIZATION

Enable NTP client

☒

Provide NTP server

☐

NTP server candidates

0.openwrt.pool.ntp.org

1.openwrt.pool.ntp.org

2.openwrt.pool.ntp.org

3.openwrt.pool.ntp.org

Save & Apply

Save

Reset

Please take care choosing a time sync method. If both NTP and IEC 60870-5 protocol slave interface time sync methods are activated simultaneously, they can interfere if there is a time difference. We strongly recommend to use single time sync method to prevent time interference.

Time synchronization options are defined as:
Enable NTP client: The local time of the device will sync with external time servers.
Provide NTP server: Turn the device into a local NTP server.
NTP server candidates: The network time protocol servers.

Language and styles

SYSTEM PROPERTIES

General Settings

Logging

Language and Style

Language

auto

Design

Wcc

Language and Style settings are defined as follows:
Language: The language of the Web interface of the device.
Design: The theme of the Web interface of the device.

Administration

Administrator Password

PASSWORD INSTANCE

Password

Confirmation

Administrator password can be changed. To change it the combination of digits and letters of the alphabet should be entered and then confirmed in the confirmation field by typing in again.

It is advised not to use the default password.

Password policy

| PASSWORD POLICY INSTANCE | |
|---|--------------------------------|
| Enable Password Policy | <input type="checkbox"/> |
| <small>Enable or disable password policy</small> | |
| Minimum Password Length | <input type="text" value="6"/> |
| Minimum Number of Upper Case Letters | <input type="text" value="0"/> |
| Minimum Number of Lower Case Letters | <input type="text" value="0"/> |
| Minimum Number of Digits | <input type="text" value="0"/> |
| Minimum Number of Special Characters | <input type="text" value="0"/> |
| Check for Similiar Characters | <input type="checkbox"/> |
| <small>Enable or disable repeated character check in password</small> | |

For future password changes, user can configurate password policy to create a safer password. Here password requirement can be created such as minimum password length, minimum number of upper or lower case letters, digits and special characters. By ticking the box for checking similar characters, new password will be required to not have repeated characters.

SSH Access

WCC Lite has a compact secure shell (SSH) server named Dropbear. Multiple options are available to be changed via WCC Lite web interface, ranging from automatic firewall rules to authentication flexibility.

| DROPBEAR INSTANCE | |
|--|-------------------------------------|
| Delete | |
| Interface | |
| <input type="radio"/> | gsm: |
| <input type="radio"/> | lan: |
| <input type="radio"/> | wan: |
| <input type="radio"/> | wan6: |
| <input checked="" type="radio"/> | unspecified |
| <small>Listen only on the given interface or, if unspecified, on all</small> | |
| Port | <input type="text" value="22"/> |
| <small>Specifies the listening port of this Dropbear instance</small> | |
| Password authentication | <input checked="" type="checkbox"/> |
| <small>Allow SSH password authentication</small> | |
| Allow root logins with password | <input checked="" type="checkbox"/> |
| <small>Allow the root user to login with password</small> | |
| Gateway ports | <input type="checkbox"/> |
| <small>Allow remote hosts to connect to local SSH forwarded ports</small> | |
| Add | |

Dropbear options are defined as follows:

Interface: Listen only on the given interface or on all, in unspecified.

Port: Specifies the listening port of this interface.

Password authentication: Allow SSH password authentication.

Allow roots logins with password: Allow the root user to login with the password.

Gateway ports: Allow remote hosts to connect to local SSH forwarded ports.

SSH-keys

SSH-KEYS

Here you can paste public SSH-Keys (one per line) for SSH public-key authentication.

SSH keys can be added via WCC Lite web interface. They might be helpful if the user logs into device frequently and does not want to always have to write his credentials.

RADIUS Client

RADIUS SERVER CONFIGURE

Add or Remove RADIUS client configuration

Enable

Hostname / IP

Timeout

Shared secret

This section contains no values yet

Add

RADIUS client redirects user authorization to remote server, which controls users and their access. A user can add multiple RADIUS clients by clicking add and entering information required.

HTTPS certificate

CERTIFICATE

Certificate file

server1.pem

WCC Lite by default is shipped with a default certificate for HTTPS connection. This certificate only enables connecting to device via web interface and might cause warnings from a web browser. To eliminate them, user can use his own certificate to secure access to web interface.

User can use certificates uploaded to a certificate storage. It should be noted that only valid certificates with *.pem extension can be used. Certificate to be used is validated every time device is restarted. If validation fails, default certificate is used. This is done to prevent user from losing device access via web interface. For new certificate to come to effect user should restart the device.

Software

Individual packages can be installed via WCC Lite web interface. They can either be installed using web link or selected from the pre-defined feeds.

Actions

Configuration

No package lists available

Update lists

Free space: 100% (895.72 MB)

Download and install package:

OK

Filter:

Find package

Status

Installed packages

Available packages

Package name

Version

Remove

alarm-generator

1.3.4-2016-08-02

Remove

base-files

1.00-50007

Various options can be selected when installing packages, however, default ones should work well enough and it's advised to only change them for advanced users.

Actions

Configuration

dest root /
dest ram /tmp
lists_dir ext /var/opkg-lists
option overlay_root /overlay
option check_signature 1

Submit

Reset

Feeds from which packages are listed for update are defined in Open PacKaGe management (OPKG) configuration that can be changed easily from user interface.

src/gz designated_driver_base http://downloads.openwrt.org/snapshots/trunk/ar71xx/generic/packages/base
src/gz designated_driver_kernel http://downloads.openwrt.org/snapshots/trunk/ar71xx/generic/packages/kernel
src/gz designated_driver_telephony http://downloads.openwrt.org/snapshots/trunk/ar71xx/generic/packages/telephony
src/gz designated_driver_elseta http://downloads.openwrt.org/snapshots/trunk/ar71xx/generic/packages/elseta
src/gz designated_driver_packages http://downloads.openwrt.org/snapshots/trunk/ar71xx/generic/packages/packages
src/gz designated_driver_routing http://downloads.openwrt.org/snapshots/trunk/ar71xx/generic/packages/routing
src/gz designated_driver_luci http://downloads.openwrt.org/snapshots/trunk/ar71xx/generic/packages/luci
src/gz designated_driver_management http://downloads.openwrt.org/snapshots/trunk/ar71xx/generic/packages/management
src/gz designated_driver_targets http://downloads.openwrt.org/snapshots/trunk/ar71xx/generic/packages/targets

Submit

Reset

Specific distribution feeds can also be added for special cases if standard ones do not fit the needs.

add your custom package feeds here

src/gz example_feed_name http://www.example.com/path/to/files

Submit

Reset

Startup

All of the processes that have init.d scripts can optionally enabled or disabled. This can be very useful if user only intends to use only part of the processes.

| Start priority | Initscript | Enable/Disable | Start | Restart | Stop |
|----------------|------------|----------------|-------|---------|------|
| 0 | sysfixtime | Enabled | Start | Restart | Stop |
| 10 | boot | Enabled | Start | Restart | Stop |
| 10 | gsm-init | Enabled | Start | Restart | Stop |
| 10 | system | Enabled | Start | Restart | Stop |
| 11 | svsctl | Enabled | Start | Restart | Stop |

 User should not disable processes that are essential for device operation as it can render the device unusable.

```
# Put your custom commands here that should be executed once
# the system init finished. By default this file does nothing.
```

```
exit 0
```

Submit

Reset

User can optionally run scripts and programs on device startup by putting them into a `/etc/rc.local` file. This file can be updated from WCC Web interface.

Scheduled tasks

```
MAILTO=info@elseta.com
0 18 1-15 * * du -h --max-depth=1 /
```

Various tasks can be scheduled with the system crontab. New tasks can be included by creating and saving new rules conforming to cron rules. WCC Lite accepts full cron configuration functionality.

Example in the pictures shows how to execute the disk usage command to get the directory sizes every 6 p.m. on the 1st through the 15th of each month. E-mail is sent to the specified email address.

Mount points

Global settings

GLOBAL SETTINGS

Generate Config

Generate Config



Find all currently attached filesystems and swap and replace configuration with defaults based on what was detected

Anonymous Swap

☐

Mount swap not specifically configured

Anonymous Mount

☐

Mount filesystems not specifically configured

Automount Swap

☒

Automatically mount swap on hotplug

Automount Filesystem

☒

Automatically mount filesystems on hotplug

Check filesystems before mount

☐

Automatically check filesystem for errors before mounting

File system mount point configuration window.

Generate Config: Find all currently attached filesystems and swap and replace configuration with defaults based on what was detected.

Anonymous Swap: Mount swap not specifically configured.

Anonymous Mount: Mount filesystems not specifically configured.

Automount Swap: Automatically mount swap on hotplug.

Automount Filesystem: Automatically mount filesystems on hotplug.

Check filesystems before mount: Automatically check filesystem for errors before mounting.

Mounted file systems

| MOUNTED FILE SYSTEMS | | | | |
|----------------------|-------------------------|-----------------------|-----------------|---------|
| Filesystem | Mount Point | Available | Used | Unmount |
| /dev/root | /rom | 0.00 B / 12.75 MB | 100% (12.75 MB) | |
| tmpfs | /tmp | 28.36 MB / 29.48 MB | 4% (1.13 MB) | |
| /dev/sda3 | /overlay | 833.27 MB / 898.37 MB | 0% (2.64 MB) | |
| overlayfs:/overlay | / | 833.27 MB / 898.37 MB | 0% (2.64 MB) | |
| tmpfs | /dev | 512.00 KB / 512.00 KB | 0% (0.00 B) | |
| /dev/sda1 | /data | 935.69 MB / 1.36 GB | 2% (16.31 MB) | Unmount |
| /dev/sda1 | /tmp/cache/cloud-logs | 935.69 MB / 1.36 GB | 2% (16.31 MB) | Unmount |
| /dev/sda1 | /tmp/cache/cloud-alarms | 935.69 MB / 1.36 GB | 2% (16.31 MB) | Unmount |
| /dev/sda1 | /tmp/lib/redis | 935.69 MB / 1.36 GB | 2% (16.31 MB) | Unmount |

List of mounted file systems, some of which can be dismounted manually.

Mount points

| MOUNT POINTS | | | | | | | |
|---|--|-------------|------------|----------|---------|-------|----------------|
| Mount Points define at which point a memory device will be attached to the filesystem | | | | | | | |
| Enabled | Device | Mount Point | Filesystem | Options | Root | Check | |
| <input type="checkbox"/> | UUID: 44e3cc6c-139b-410c-86b1-db099c5887c5 (not present) | /mnt/sda1 | ? | defaults | no | no | Edit Delete |
| <input type="checkbox"/> | UUID: cc85fea3-836c-4ddc-9828-f35147f21318 (not present) | /mnt/sda2 | ? | defaults | no | no | Edit Delete |
| <input type="checkbox"/> | UUID: 1f1c6431-d632-4e11-9c12-3c913d3986e7 (not present) | /mnt/sda3 | ? | defaults | no | no | Edit Delete |
| <input type="checkbox"/> | Label: overlay (/dev/sda3, 929 MB) | /overlay | ext4 | defaults | overlay | no | Edit Delete |
| Add | | | | | | | |

List of mount points which can be enabled, disabled or deleted.

Swap

Swap section is used to describe the virtual memory that can be used if there’s a lack of main memory. WCC Lite does not use any virtual memory by default.

| SWAP | |
|--|--------|
| If your physical memory is insufficient unused data can be temporarily swapped to a swap-device resulting in a higher amount of usable RAM. Be aware that swapping data is a very slow process as the swap-device cannot be accessed with the high datarates of the RAM. | |
| Enabled | Device |
| This section contains no values yet | |
| Add | |

It should be noted that virtual memory might do a lot of reading and writing operations. As WCC Lite uses SD card as an additional flash memory, it is highly advised to not use swap to reduce wearing.

Board

BOARD CONFIGURATION

Port 1 mode RS-485

Save & Apply Save Reset

Here a user can configure PORT1 as RS-485 or RS-232.

Certificate storage

CERTIFICATES

Below is a list of succesfully uploaded certificates and their properties

| File name | Valid from | Valid until | Issuer | Subject |
|-------------------------------------|------------|-------------|--------|---------|
| This section contains no values yet | | | | |

Choose File No file chosen

Upload

Save & Apply Save Reset

This section is intended to upload certificate files and viewing information about them.

LED configuration

WCC Lite has three LEDs that can be configured: WAN, LAN and WLAN. All of the LEDs have a default configuration which should fit most of the cases.

Delete

Name WLAN

LED Name wcclite:blue:wlan

Default state ☐

Trigger netdev

Device wlan0

Trigger Mode

☒ Link On ☒ Transmit ☒ Receive

Add

Save & Apply Save Reset

All possible LED configuration options: Name: Name of the LED configuration.

LED Name: Colour and location of the LED. These can be changed, however, normally they should be left unchanged.

Default state of the LED: On/Off.

Trigger: One of the various triggers can be assigned to an LED to changes its states. Possible values are shown in a table below.

Table. Possible trigger for an LED:

| Trigger type | Description |
|---|---|
| none | No blinking function assigned to LED |
| defaulton | LED always stays on |
| timer | Blinking according to predefined timer pattern |
| heartbeat | Simulating actual heart beats |
| nand-disk | Flashed as data is written to flash memory |
| netdev | Flashes according to link status and send/receive activity |
| phy0rx, phy0tx, phy0radio, phy0tpt, phy0assoc | Flashed on WiFi activity events |
| usbdev | Turned on when USB device is connected. Applicable for modems |

Device: Network interface which is going to be tracked.

Time sync

TIMESYNC

Enable ☒

Timeout

NTP

Enable ☒

Priority

IEC101

Enable ☒

Priority

DNP3

Enable ☒

Priority

IEC104

Enable ☒

Priority

Save & Apply Save Reset

This service syncs WCC Lite time with protocols shown. Here user can also select priority levels of protocols which syncs with WCC Lite.

Backup/flash firmware

Software update allows to upgrade the software running in WCC Lite. It is recommended to keep the device up to date to receive the latest features and stability fixes.

Backup archives contain complete WCC Lite configuration that can be restored at any time. A file will be downloaded by your browser when creating a backup. This file can be later uploaded to the web page to restore configuration.

⚠ Generated backup archive should only be applied to the same firmware version it was generated. Applying backup to a different firmware version might render some parts of operating system unstable or even unusable

Actions Configuration

BACKUP / RESTORE

Click "Generate archive" to download a tar archive of the current configuration files. To reset the firmware to its initial state, click "Perform reset" (only possible with squashfs images).

Download backup: **Generate archive**

Reset to defaults: **Perform reset**

Get System Diagnostic Report: **Generate archive**

To restore configuration files, you can upload a previously generated backup archive here.

Restore backup: No file chosen **Upload archive...**

FLASH NEW FIRMWARE IMAGE

Upload a sysupgrade-compatible image here to replace the running firmware. Check "Keep settings" to retain the current configuration (requires a compatible firmware image).

Keep settings: ☐

Keep only network settings: ☐

Image: No file chosen **Flash image...**

ⓘ Since version 1.8.3, user can save network settings before upgrading the firmware, such as firewall settings, traffic rules, interfaces etc. To do so, before upgrading firmware, "Keep only network settings:" box should be checked.

A user can choose to keep existing settings after an upgrade. Marking Keep Settings checkbox preserves files listed in `/etc/sysupgrade.conf` and `/lib/upgrade/keep.d/`. It is advised to do a clean install and use backup files to restore settings later if a user intends to make a major system upgrade.

ⓘ Uploading firmware image, to preserve RAM memory, will stop all Protocol HUB processes. After upload, you will have 2 minutes to proceed with firmware flash or to cancel it. After 2 minutes, firmware file will be deleted and Protocol HUB processes will be restarted.

Actions

Configuration

This is a list of shell glob patterns for matching files and directories to include during sysupgrade. Modified files in /etc/config/ and certain other configurations are automatically preserved.

Show current backup file list

Open list...

```
## This file contains files and directories that should
## be preserved during an upgrade.

# /etc/example.conf
# /etc/openvpn/
```

Submit

Reset

A file name /etc/sysupgrade.conf can be updated via WCC Web interface. To preserve additional file user should add them to backup file and press Submit. To get the whole list files that would be backed up press Open list.... It is advised to check it before doing a back-up or an upgrade while keeping settings.

Reboot

SYSTEM

ADMINISTRATION

SOFTWARE

STARTUP

SCHEDULED TASKS

MOUNT POINTS

LED CONFIGURATION

BACKUP / FLASH FIRMWARE

REBOOT

Reboot

Reboots the operating system of your device

Perform reboot

This reboots the operating system of the device.