

cs-team

Manual

Calendar, Calc, Text, Files, Tasks and Chat for teams, schools and clubs

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1. Goal of cs-team

1.1 Goal

The following goals were set for cs-team by the product owner (Gea). They are the yardstick for the short analysis in 17.2.

1. **About 80% of the most used functions** of Microsoft Teams / Office 365 for a school or a small organisation - deliberately **without** a built-in mail server, without its own video-conferencing infrastructure, without telephony and without comprehensive docx/xlsx compatibility.
2. **Less than 10% of the complexity** of MS Teams / O365 / Nextcloud (measured by moving parts: processes, database, configuration, installation, updates).
3. **KISS above all**: copy and run (a single file), file based, no database, local and in-house.
4. **Decentralised deployment possible**: can be run without an in-house IT department, a data centre or full-time staff.
5. **Easy to extend and adapt**, including new languages.
6. **In-house operation** with data security, confidentiality and GDPR compliance.

Most important: KISS. Whenever goals conflict, KISS wins: better to leave a function out than to introduce a database, an extra service or many dependencies.

1.2 Target audience

The list above names the feature scope; who actually needs cs-team follows more from the situation than from single features:

- **Departments with users from different countries**: 13 interface languages, freely chosen per user, without the organisation having to settle on one shared language.
- **Universities**: mainly the major EU languages plus English; the CalDAV calendar, file sharing and chat fit the everyday work of a department and its administration.
- **Schools with a culturally mixed student body** (e.g. Arabic, Ukrainian, Turkish): every student picks their own language, with no need for a second platform.
- **Users with high requirements for confidentiality, security, privacy and audits**: in-house operation, no cloud, two-factor login, data export and deletion under GDPR, an audit log (chapters 9, 12).
- **Users who want to customise or extend it themselves** (new languages or features): one interface file with no build step, open source code, the approach for AI-assisted customisation described in chapter 14.

cs-team fits less well for users who need full Office compatibility, telephony, or a certified compliance suite, and for large organisations with such policies (see 1.4).

1.3 Current state (short AI analysis)

This short analysis was written by an AI (Claude) from the source code, the interface and the manual for version 0.61 (as of October 6, 2026). The status entries were checked against the program and the manual; the overall judgements are **estimates** and not an independent expert opinion.

a) Coverage of the most used Teams/O365 functions

Function (Teams / O365)	Status	cs-team (remark)
Group chat and channels	available	chat per group with channels, attachments, live via WebSocket, unread counter, rights per group (5.9)
1:1 messages and reply threads	missing	chat is per group and flat only: no direct messages, no threads, no presence display, no read receipts
Reactions and mentions	partial	emoji reactions; @name is highlighted but triggers no notification of its own
Polls	available	in the chat: multiple choice, anonymous, end time, closing (0.60)

Function (Teams / O365)	Status	cs-team (remark)
Video meetings	partial	own WebRTC room for up to 6 participants (mesh) and invitation to external servers (Jitsi, MiroTalk); deliberately no conferencing infrastructure of its own
Screen sharing	available	button in the built-in video chat (0.60)
Calendar	available	CalDAV (Thunderbird, iOS, Android), group, organization, global and resource calendars, recurring events, attendees with invitation mail; no free/busy view, no scheduling assistant
File storage and sharing	available	WebDAV, shares, group folders, public links with expiry, trash, quota, versions from ZFS snapshots (not with S3)
Co-editing (Text, Calc)	partial	live editing by several users; but no simultaneous typing in the same paragraph or cell, no comments, no version history inside the document, no presentations
Office formats	partial	csv, xlsx (first sheet), docx, rtf export; without formatting, images, charts, macros; no odt, ods, xls, doc
Tasks (Planner, To Do)	partial	tickets with assignee, milestones, repetition, filters and notification; no Kanban board, no Gantt chart
Notebook and wiki (OneNote)	missing	not available (notes at most as a Text document)
Whiteboard	missing	not available
Forms and quiz (Forms)	partial	only polls in the chat; no forms, no quiz
Global search	missing	only filters and search within single lists; no search across chat, files, documents and tasks
Notifications, push, mobile	partial	phone layout in the browser, unread counter, optional desktop notification, mail and webhook for tasks; no PWA, no web push, no offline mode
Guests and external access	partial	public file links (read only, with expiry); no guest accounts
Sign-in: SSO and MFA	partial	local accounts, LDAP/AD, TOTP two-factor with recovery codes and app passwords; no OIDC/SAML SSO
User, group and organization management	available	roles, group admins, CSV import/export, year change, universal JSON export/import with all settings, optionally the password hash, and migration from host/AD/LDAP (0.61, chapter 15); no org chart or profile directory
Compliance (retention, export, audit, deletion)	available	data export (ZIP), deletion with anonymization, retention periods, audit lines, chat review with a reason (chapter 12); no certified compliance suite
AI assistant (Copilot)	available	optional, own provider or local model, with the rights of the user, proposals only (5.12)
E-mail and telephony	missing	deliberately not built: only outgoing mail via SMTP (notifications); telephony not planned

b) Tally and judgement of the 80% goal

Tally of the 22 rows: **8 of 22 complete, 9 partial, 5 missing**. Counting every row equally and "partial" as half gives 12.5 of 22 points, about 57%.

In the daily life of a school or a small business the functions are not equally important. The rows were therefore weighted: **used daily** (factor 3: chat, 1:1, reactions, video, calendar, files, co-editing, office formats, notifications, search), **used regularly** (factor 2: polls, screen sharing, tasks, administration, sign-in, guests, AI) and **used rarely** (factor 1: notebook, whiteboard, forms, compliance, e-mail and telephony). Result: about **60%** (partial = 0.5) to about **70%** (partial = 0.75, when the partial solution covers the daily needs of a small school).

Judgement: for a school or small business roughly 60 to 70% of the daily-used Teams/O365 functions are reached; the 80% goal is not reached yet. Weighting and point values are subjective and only an estimate. The biggest gaps: global search, 1:1 messages and threads, mention notification and push, guests, comments in documents. With the first three steps from 17.3 the same calculation would reach about 78% (strict) to 86% (generous), an estimate.

c) Metrics (as of October 6, 2026, lines including blank lines)

Metric	Value
Go source without tests	84 files, about 25,600 lines
Go tests	63 files, about 11,300 lines, about 208 test functions
User interface	one file web/index.html, about 3,700 lines
Go packages	12 (plus the main program)
Direct dependencies	8: coder/websocket, emersion/go-ical, emersion/go-webdav, go-ldap/ldap/v3, minio-go/v7, golang.org/x/crypto, golang.org/x/sys, teambition/rrule-go
Program size	about 12.5 to 14 MB per platform (Windows 14.0 MB, Linux amd64 13.6 MB), 8 platform builds
Interfaces	about 126 API routes, plus WebDAV, CalDAV and WebSocket
User interface languages	13
Databases	0 (files in a folder or an S3 bucket)

d) Complexity compared (moving parts, not lines of code)

Moving parts	cs-team	Nextcloud (typical setup)	MS Teams / O365
Processes and components	1 program (interface, WebDAV, CalDAV, chat, editors built in)	PHP application, web server, database, usually a Redis cache and a cron job; optionally an office server (Collabora or OnlyOffice)	cloud service run by Microsoft, not self-hostable
Database	none	yes (e.g. MariaDB or PostgreSQL)	part of the service, not visible
Runtime stack	none: one static Go program per platform	PHP with modules, web server, database	Microsoft cloud; browser or app as client
Configuration	environment variables (optionally one KEY=VALUE file), the rest in the interface	config.php, web server, PHP, database, cron	tenant administration (admin center, licences, policies)
Installation	copy the program, set variables, start (chapter 3)	several steps (packages, database, web server, TLS, cron) or a container image	create tenant and licences, set up users
Update	stop the service, replace the program, start	updater or occ upgrade, apps, database migrations	by Microsoft
Where the data lives	one folder (e.g. a ZFS dataset) or one S3 bucket; backup by snapshot	data folder and database (back up both)	in the Microsoft cloud
In-house possible	yes	yes	no

The goal "less than 10% of the complexity" is a **qualitative estimate**, not a measurement; no percentages are given for the competitors on purpose. Evidence: 1 program, 0 databases, 8 direct dependencies, one configuration via environment variables. Caveat: the simplicity applies to **operation**. The program itself has about 25,600 lines of Go code, and whoever changes it carries that complexity.

e) The remaining goals one by one

Goal	Assessment	Evidence
Copy and run (one file)	achieved	one program of about 13 to 14 MB with the interface embedded; 8 platform builds (Windows, Linux, macOS, FreeBSD, illumos, Solaris); started with a few environment variables
File based, no database	achieved	all data as files in a folder or ZFS dataset or in S3 (RustFS); backup and replication with ZFS snapshots
In-house, data security, GDPR	largely achieved	no cloud, no cookies, no tracking; data export, deletion with anonymization, retention, audit log, two-factor, links with expiry (chapter 12). Operator tasks remain (HTTPS, backup, periods, record of processing); the AI audit is no penetration test
New languages	achieved	13 languages; a new language is one JSON file in CS_LANGDIR, translated by an AI, without a rebuild (14.5)
Easy to extend and adapt	achieved, with a caveat	one interface file without a build step, 12 packages, about 200 tests, AI how-to (chapter 14); but no plugin system, and index.html is large at about 3,700 lines

1.4 Conclusion: AI: short summary

- **Where it stands:** by this estimate cs-team covers about 60 to 70% of the daily-used Teams/O365 functions; in operation and simplicity (one program, no database) the KISS goals are achieved.
- **Strengths:** calendar with CalDAV, files (WebDAV, links with expiry, trash, versions), co-editing, tasks, privacy tools, two-factor, own AI assistant, simple operation.
- **Weaknesses:** chat per group and flat only, no global search, no PWA and no push, no guests and no SSO, limited office compatibility, no comments in documents.

The five most valuable next steps, in this order (each must pass the KISS test: no database, no extra service, no flood of new dependencies):

1. Global search across chat, files, documents and tasks (effort medium).
 2. Notification on @mention plus PWA and web push (small to medium, and medium).
 3. 1:1 direct messages and reply threads (large).
 4. Guest access and OIDC/SAML sign-in (medium, and medium to large).
 5. Comments in Calc and Text (medium).
- **It fits** schools, small teams, clubs and anyone who wants to run in-house. **It does not fit** users who need full Office compatibility or telephony, and large organisations with compliance suites.
 - **One caution:** the AI-assisted audit (chapter 15) is not a penetration test. Operate cs-team only behind HTTPS, set up backups and snapshots and test the restore. The numbers in 1.3 are estimates by an AI based on code and manual.

2. What is cs-team?

cs-team is a small, self-contained collaboration platform ("Nextcloud light"): a single Go program with a built-in web interface that needs no database and no web server stack. Users work in the browser (desktop and phone) or with standard clients (Thunderbird, iOS, Android, Windows/macOS network drive).

The principles are the same as in napp-it CS: keep it simple (KISS), few dependencies, one binary per operating system (Windows, Linux, macOS, FreeBSD, OmniOS/illumos). All data lives in a normal folder (for example a ZFS dataset) or in an S3 bucket (RustFS), so snapshots, replication and backup can be done with the usual ZFS tools.

Functions at a glance

Menu	Function
User	User management: create, disable, delete, set password, CSV import/export, two-factor login (TOTP) in the account
Groups	Groups with permissions (Calendar, Calc, Text, Files), group admins, group folders, chat/message/task rights
Organizations	Combine groups (e.g. school, department, sales)
Calendar	CalDAV calendars (personal, global, group, resource, internet subscription) with day/week/month/agenda views, recurring events, time zones, event editing
Calc	Spreadsheet, multi-user editing, formulas, import/export (csv, xlsx)
Text	Word processor, multi-user editing, formatting, import/export (txt, rtf, docx)
Files	File storage with sharing, group folders, public links (with expiry), trash, file versions from ZFS snapshots and WebDAV
Tasks	Ticket system light: requester, assignee, milestones, history, repetition, notifications
Chat	Group chat with channels, attachments, reactions, polls, live via WebSocket; video chat (external servers or built-in WebRTC room with screen sharing)
Message	Broadcast to all members of a group by e-mail, webhook and/or chat
Settings	Mail server (SMTP), public address (DynDNS), webhooks, video chat servers (STUN/TURN), AI provider, file quota (global admins only)
AI assistant	Widget "KI": questions about tasks, appointments and files, documents only as a proposal; provider set centrally, no write access of its own
Assistant	Full-screen templates for global admins: year change (with repeaters), chat review; preview, password, snapshot, undo

Languages

The interface is available in German, English, French, Spanish, Italian, Russian, Chinese, Turkish, Arabic (right-to-left), Ukrainian, Polish, Greek and Japanese (thirteen languages; interface only, see 11.6). More languages can be added without rebuilding (see chapter 9).

3. Installation and setup

3.1 Requirements

- A computer or VM running Windows, Linux, macOS, FreeBSD or OmniOS/illumos (Go binary, no runtime needed).
- A storage location: a folder (recommended: its own ZFS dataset) **or** an S3 bucket (RustFS/MinIO compatible).
- A browser (Chrome, Edge, Firefox, Safari) on desktop or phone.
- For use on the internet: an HTTPS certificate (PEM) or an upstream HTTPS proxy such as cs-proxy.

3.2 Starting by hand

The program is controlled by environment variables or a configuration file (-c file or CS_CONF, lines KEY=VALUE). Environment variables take precedence over the file.

Variant A - folder (ZFS dataset):

```
export CS_DIR=/tank/team          # data goes to /tank/team/.csteam
export CS_LISTEN=:9004            # port (default :8080)
export CS_ADMIN_USER=admin CS_ADMIN_PASS=secret123 # first start only
./cs-team
```

Variant B - S3 bucket (RustFS):

```
export S3_ENDPOINT=127.0.0.1:9000 S3_KEY=... S3_SECRET=... S3_BUCKET=cs-team S3_TLS=0
export CS_ADMIN_USER=admin CS_ADMIN_PASS=secret123
./cs-team
```

Useful commands:

```
./cs-team adduser anna secret2 [admin] # create user / set password (optionally as global admin)
CS_MEM=1 ./cs-team                    # demo without storage (RAM only, gone when stopped)
```

The first admin is only created if no user exists yet. If the password is lost, "cs-team adduser name newpassword admin" resets it (with the same storage settings) – even while the service is running.

3.3 Storage

- **Folder:** CS_DIR=/path. Data is stored in /path/.csteam. Only **one** cs-team process may run per folder.
- **S3:** S3_ENDPOINT, S3_KEY, S3_SECRET, S3_BUCKET, S3_TLS. The bucket is created if needed. Conditional writes (If-Match/If-None-Match) should be tested against your own RustFS version before production use.
- **Backup:** never write directly into the base folder (.csteam) or the bucket – it holds the internal storage (metadata, rights and shares kept separately). Use SMB/S3 tools read-only for snapshots/backup. Use WebDAV for file access from outside.

3.4 HTTPS and proxy

cs-team uses Basic Auth. Always use HTTPS outside a trusted LAN:

- CS_TLS_CERT=/path/cert.pem (and CS_TLS_KEY=/path/key.pem if the key is not in the same PEM) enables HTTPS. Renewed certificates are picked up without a restart. HTTPS also makes the Windows network drive (WebDAV) work.
- Behind your own reverse proxy: CS_TRUST_PROXY=1 (evaluates X-Forwarded-For; set only behind a proxy).
- Failed logins: 5 wrong attempts per user and IP lock for 5 minutes (HTTP 429). In addition an address is locked after CS_MAX_FAILS_IP failed attempts (default 60, because of school NAT and proxies); users who are signed in at that moment are exempt.

3.5 Running under the napp-it CS web GUI (service menu)

The napp-it CS web GUI (csweb-gui) has the menu **System > Services > 17_cs-team**. It starts and stops the service and sets the **start parameters** only. Everything that concerns the running service (mail server, DynDNS address, webhooks) is configured inside cs-team itself in the *Settings* menu (chapter 5.11).

Field in the menu	Meaning
Storage	Folder (ZFS dataset) or S3 bucket (RustFS)
Folder / S3 endpoint / key / secret / bucket	Storage location, data in <folder>/.csteam; the bucket is created if missing
Port	Port of the web interface (default 9004); "behind a reverse proxy" = CS_TRUST_PROXY
HTTPS (PEM)	Certificate (and key); empty = HTTP. Web GUI default: the cs-proxy certificate
Sysadmin	the account from CS_ADMIN_USER (first start), or set with cs-team sysadmin NAME: a local cs-team account, always global admin and enabled, cannot be deleted, disabled or demoted; only it (or the command line) changes its password. It is the emergency access that works without a directory. All other global admins and group admins may be local or directory accounts; the role is always granted locally
Global admin	Name and password of the global admin. "Save + set global admin" creates it or resets the password
Snapshot	Snapshot before global actions: automatic (ZFS) or off; optionally dataset and own command (chapter 5.13, description in 11.1)
start / stop	Start or stop the process (autostart unchanged)
enable / disable	Start + autostart on, or stop + autostart off (start at every server start)

Settings are stored under `_cfg/team/` (readable by root only) and written to `team.cfg` when the service starts. Below the table the menu shows the address of the web interface and the last lines of the log (`team.log`). Changing the start parameters restarts a running service. On Windows the process is started hidden and detached from the web GUI; start and stop are verified and errors are shown.

3.6 Environment variables (overview)

Variable	Meaning	Default
CS_LISTEN	Address/port, e.g. :9004	:8080
CS_DIR	Data folder (alternative to S3)	-
S3_ENDPOINT / S3_KEY / S3_SECRET / S3_BUCKET / S3_TLS	S3 storage (RustFS)	-
CS_ADMIN_USER / CS_ADMIN_PASS	first admin (only if no user exists yet)	-
CS_TLS_CERT / CS_TLS_KEY	HTTPS certificate/key (PEM)	HTTP
CS_TRUST_PROXY	1 = evaluate X-Forwarded-For	0
CS_MAX_FAILS_IP	failed attempts per address before it is locked (signed-in users stay admitted)	60
CS_IDENTITY_MODE / _REALM / _REALM_DEFAULT / _URL / _BASE / _BIND_DN / _BIND_PW / _STARTTLS / _ADMIT_GROUPS / _LOCAL_GROUP / _ALLOW_LOCAL / _CACHE_DAYS	defaults for the directory sign-in (LDAP/AD, chapter 5.11); settings in the interface override them	local
CS_MAX_UPLOAD_MB	maximum file size on upload	100
CS_CHAT_MAX_MB	maximum attachment size in chat	10
CS_LANG / CS_LANGDIR	default language / folder for own language files	de
CS_CONF (or -c file)	configuration file KEY=VALUE	-
CS_SMTP_HOST / PORT / TLS / USER / PASS / FROM	mail defaults (better set in the Settings menu)	port 587, starttls
CS_QUOTA_MB	default for the file quota per user and group folder in MB (better set in the Settings menu)	0 (unlimited)
CS_TRASH_DAYS	default for how long deleted files stay in the trash, in days (better set in the Settings menu)	30 (0 = off)
CS_CHAT_ALLOW_PRIVATE	1 = allow webhooks to private networks by default	0
CS_MEM	1 = RAM only (demo/test)	0
CS_SNAPSHOT_CMD	command for the snapshot before global actions ({id} = run ID); takes precedence over ZFS detection	automatic (ZFS)
CS_SNAPSHOT	off = no snapshot before global actions	on
CS_SNAPSHOT_DATASET	ZFS dataset for the snapshot, set explicitly (e.g. winpool/data); takes precedence over detection	automatic

4. First steps

1. Open the web interface, e.g. `https://server:9004/`, and log in as global admin.
2. In the **Settings** menu enter the mail server and the public address (optional, but needed for e-mail and links).
3. In the **Groups** menu create a group and choose which areas its members may use.
4. In the **User** menu create users (one by one or by CSV import) and assign groups.
5. Users log in with the start password and choose their own password at first login (new password entered twice).

Login, account and header

At the top left is the title **cs-team** followed by the main menus. At the top right are the language selector, the logged-in user with role (Global admin / Group admin / User) and **Log out**. Your own **account** is the start page of the **User** menu:

- **Change password** (old password, new password twice; 8 to 72 characters). Afterwards update the password in CalDAV/WebDAV clients too.
- **E-mail address** and **chat address** (webhook URL of a chat service such as Slack, Discord, Telegram, ntfy) – both optional. They are used for messages and task notifications. The chat address usually contains an access key: it is visible and changeable only by the user and global admins; group admins only see "set" or "not set" and change only the e-mail address of members.
- Choose the **language** at the top right; it is stored in the account. Without a choice the browser language is used.
- **Appearance and keyboard**: The interface follows the **dark mode** of the system or browser (an operating-system setting, no choice in cs-team needed). All buttons, fields and the entries of the list on the left can be reached with **Tab** and **Shift+Tab** and opened with **Enter** or **Space**; the keyboard focus is clearly visible. With "reduce motion" switched on in the system, animations are omitted.
- The account page also offers the export of the user list as CSV (import format, without passwords).

Two-factor login (TOTP) and app passwords

With **two-factor login** (2FA) signing in needs, in addition to the password, a 6-digit code from an authenticator app on your phone (e.g. Google Authenticator, Microsoft Authenticator, FreeOTP or Aegis; method TOTP as in RFC 6238). It is optional and applies to **local cs-team accounts** only; directory accounts (LDAP/AD) are exempt, the rules of the directory apply there. A global admin can make 2FA mandatory for admin accounts (see below).

Set-up in 2 minutes

1. Open the **User** menu (account page), section **Two-factor login (TOTP)**, choose **Set up two-factor login (TOTP)**. The key and a QR code appear.
2. Open the authenticator app and **scan the QR code** (or type the key in by hand). The app now shows a new 6-digit code every 30 seconds.
3. In cs-team enter your **password** and the **current code** from the app and confirm.
4. Save the **8 recovery codes** shown at once (print them or keep them in a password manager): each works only once and is shown only now.
5. From now on use **password + code** to sign in (see below). For WebDAV/CalDAV programs create an **app password**.

Signing in: the password field holds the password directly followed by the 6-digit code, e.g. `secret123456`; a recovery code is appended the same way (`secret123ABCD-EFGH-IJKL`). After the first successful check cs-team remembers the sign-in for **12 hours** (in memory only, per user and address): during that time the same browser needs no new code. Changing the password, switching

2FA off or resetting it, locking or deleting the user and a restart of cs-team end this session. A wrong code behaves like a wrong password (same message, same lockout after failed attempts, chapter 8); the password alone is never enough.

- **Switch off** in the account: needs the password and the current code (or a recovery code). The page shows how many recovery codes are left.
- **App passwords** (section *App passwords*, **New app password**): for programs that cannot enter a code, e.g. Thunderbird, DAVx5, rclone or the Windows network drive. You give it a name (e.g. Thunderbird, phone); the password has 24 characters and is **shown only once** (please copy it). At most 10 per account; the list shows name, creation date and last use, **Revoke** withdraws an app password at once. App passwords work **only for files (WebDAV) and calendars (CalDAV)**, never for the web interface, administration or the account. They exist only while 2FA is on; switching off or resetting removes them.
- **Mandatory for admins**: Settings, section *Two-factor login*, tick *Require two-factor for admin accounts*. Local admins without 2FA then reach only the account page (with a notice) until they have set it up; switching it off is then blocked for admins. Directory accounts are exempt.
- **Reset by an admin**: global admins choose the user in the user list and **Reset two-factor** (for a lost device). Recovery codes and app passwords are deleted; the user then signs in with the password alone again and sets up 2FA anew. This is not possible for your own account or for the sysadmin account and is logged. Emergency: the command line (`cs-team adduser NAME password` or `cs-team sysadmin NAME`) removes the 2FA of the account as well.

Problem	Solution
Phone lost or replaced	Use a recovery code instead of the 6-digit code, then set up 2FA again. Without codes a global admin resets the 2FA (command line for the sysadmin account).
Code is rejected	The time on phone and server must be right (phone: set the time automatically; cs-team tolerates only about 30 seconds of deviation). Each code works only once: wait for the next one. After 5 failed attempts cs-team locks user and address for 5 minutes.
WebDAV/CalDAV program keeps asking or is rejected	Enter an app password in the program instead of the account password.
Only the account page is reachable	An admin has made 2FA mandatory for admin accounts: set up 2FA, then everything is open again.

Roles and rights

Role	May
Global admin	manage everything: users, groups, organizations, settings; release or delete documents and files of deleted users
Group admin	manage the members of his groups (create, disable, change contact data), write in the group folder and group calendar; automatically becomes a member (e.g. teacher, department head)
User	use the areas his groups enable; manage and share his own documents, files and calendars

Every user belongs to at least one group (default: *alluser* or *users*). The rights of several groups are combined. The last active admin is protected and can be neither deleted nor disabled. Deleted or disabled users lose access immediately for new requests; already open WebSocket connections run until they end. Documents of a deleted user are kept.

Questions (delete, reset password, rename) appear as dialogs inside the page, no longer as browser windows: Enter confirms, Esc cancels, passwords are typed hidden. Messages such as "Password changed" appear as an OK dialog or as a bar at the bottom.

5. The main menus

All main menus look alike: a list on the left (with filter, **+ add** to create, **[x]** to delete), the content on the right. Menus without permission are hidden. **Chat** and **Message** only appear when a group allows them, **Settings** only for global admins.

5.1 User

The screenshot shows the 'User' menu in the cs-team application. The top navigation bar includes 'cs-team', 'User' (selected), 'Groups', 'Organizations', 'Calendar', 'Calc', 'Text', 'Files', 'Tasks', 'Chat', 'Message', 'Settings', a language dropdown set to 'English', the user 'admin (Global...)', and a 'Log out' button. The left sidebar has a 'Filter' input and a list of users: 'admin' (Global admin, alluser), 'anna' (alluser, klasse5a), and 'bob' (alluser, klasse5a), followed by a '+ add' button. The main content area is titled 'Account: admin (Global admin)' and shows 'Groups: alluser'. It contains two main sections: 'Change password' with fields for 'old password' and 'new password (min. 8)' and a 'Change' button, and 'External addresses' with fields for 'Email address' and 'Chat address (https://...)' and a 'Save' button. A note below the password section says 'Afterwards also change the password in CalDAV/WebDAV clients.' At the bottom, there is a link 'Export users as CSV' with a note '(import format, Excel-compatible, without passwords)'.

User menu: start page with your own account (password, addresses)

- **List on the left:** all users with role and groups; a click opens the user, **+ add** opens the create form.
- **Create:** name (a-z 0-9 . _ -), start password (at least 8 characters), groups (at least one, comma separated), optional e-mail and chat address. The user must change the start password at first login.
- **Edit:** reset password, disable/enable, grant admin role, change groups, change contact data (group admins too, for their members).
- **Delete** (global admins only): wizard with preview, password and snapshot, see below. Removes the account's files, documents, calendars and shares.
- **Import (CSV):** one line per user, separator ; or tab, # = comment:
name;password;group1,group2;mail;chat-url. Fields 4 and 5 are optional (empty = unchanged). The password appears only in this file: it is hashed immediately and the user must change it at first login. New groups can be created from a template; existing users are updated.
- **Export:** users and groups as CSV (Excel friendly, without passwords). Changing a class: export, change groups, import again.
- **Own data:** every user exports on the account page, with **Export my data (ZIP)**, everything cs-team has stored about them; a global admin creates the export for a user with **Export data** (chapter 12.2).

The screenshot shows the 'cs-team' user management interface. On the left is a sidebar with a 'Filter' section containing a list of users: 'admin' (Global admin, alluser), 'anna' (alluser, klasse5a), and 'bob' (alluser, klasse5a), along with a '+ add' button. The main area is titled 'Create user' and contains several input fields: 'name (a-z 0-9 . _ -)', 'Initial password (min. 8)' with a note 'User must change it at first login', 'Email address (optional)', and 'Chat address (https://...) (optional)'. There is a checkbox for 'Global admin' and a 'Groups (at least one, comma separated):' field with 'alluser' entered. A 'Create' button is below these fields. The 'Import (CSV)' section follows, with a detailed instruction: 'One line per user: name;password;gruppe1,gruppe2;mail;chat-url (separator ; or Tab, # = comment). The password is only in this file: it is hashed immediately, the user must change it at first login. For existing users (checkbox "update") the file replaces the groups; empty password = unchanged. Class change: export, change groups, import again. Optional fields 4 and 5: email address and chat address (empty = unchanged)'. A text area contains the example 'lisa;geheim123;klasse5a'. At the bottom of the import section are buttons for 'Choose File' (showing 'No file chosen'), checkboxes for 'update existing' (checked) and 'create new groups using template', a 'Files only' dropdown, and an 'Import' button.

Create user and CSV import

Delete a user (with snapshot)

Only global admins delete users (list on the left: entry with **[x]**). Your own account and the last global admin cannot be deleted. A wizard leads through three steps:

1. **Preview:** cs-team shows what will disappear (number of files, documents and calendar entries of the account) and whether a snapshot is possible. It also shows how many chat entries, tasks and events would be anonymized; the tick *Replace the name in chat, tasks and events (anonymize)* (on by default) can be switched off.
2. **Password:** confirm with your own admin password (with lockout against guessing).
3. **Snapshot:** before deleting, a ZFS snapshot `deluser-<id>` is created. If no snapshot is possible, the admin must explicitly confirm *without snapshot*.

Deleted are the name's files, documents, calendars and shares; the name also disappears from other people's share lists and from group-admin lists. With anonymization (default) messages, tasks and events of other calendars show the text `gelöschter Benutzer` instead of the name; without it these entries are kept unchanged. The log (without contents) is in `users/_delete-log.json`.

Note: A snapshot contains the deleted data until it is destroyed. If contents must not remain anywhere, delete explicitly without a snapshot. Restoring from the snapshot is a task for the ZFS admin (clone or rollback).

5.2 Groups

The screenshot shows the 'cs-team' Groups menu. The top navigation bar includes 'User', 'Groups', 'Organizations', 'Calendar', 'Calc', 'Text', 'Files', 'Tasks', 'Chat', 'Message', and 'Settings'. The 'Groups' tab is active. On the left, a filter sidebar shows 'alluser cal,calc,text,files' and 'klasse5a cal,calc,files,text' with an '[x]' icon and a '+ add' button. The main content area is titled 'klasse5a' and contains the following settings:

- Areas:** A table with columns 'read' and 'change' for 'Calendar', 'Calc', 'Text', and 'Files'. All checkboxes are checked.
- ☐ Create group folder (Files) ☐ Members may write
- Chat: **members write** (dropdown) Create channels: **admins only** (dropdown) Send message: **admins only** (dropdown) Create tasks: **any member** (dropdown)
- Save** button
- Organizations: **all** (text input) **Save** button
- Group admins: **anna** (text input) **Save** button
- Members (2)** section with a text area containing 'anna' and 'bob'. Below the text area is a **Save members** button.

Groups menu: settings of a group

- **Areas:** per area (Calendar, Calc, Text, Files) the boxes *read* and *change* define what members may use.
- **Members:** list of names (comma, space or line break). Added users must exist; a removed user keeps at least one other group.
- **Group admins** manage the members of the group.
- **Chat retention (days)** (global admin): chat messages of the group are deleted automatically after this number of days (0 = unlimited, chapter 12.3).
- **Create group folder (Files):** members read, group admins write; with *Members may write* all members write. WebDAV: /webdav/groups/<group>/.
- **Group calendar:** comes with the group (checkbox *Create group calendar*, templates team/class) or later in the group settings (global admin, select *Group calendar (release)*): no calendar, *not released* (draft, responsible persons only), *entitled users read* or *all entitled users may add entries*; a calendar can only be removed while it holds no events. Members read, group admins always add.
- **Chat:** members write / admins only write / off. **Create channels:** admins only / any member / nobody. **Send message:** admins only (default) / any member / off. **Create tasks:** any member (default) / admins only / off.
- **Repeaters:** group admins keep a list of members who stay at their level in the year change (see 5.13).
- **Organizations:** assign the group to one or more organizations.
- **AI for members:** a group admin (or global admin) decides whether the AI assistant may propose documents to members (default: off; see 5.12).
- **New group (+ add):** name, optionally a template ("Team / department" or "Class" pre-fills the boxes, freely changeable afterwards). **Export** of the groups as CSV.

AI for members **off** **Save**

The AI assistant may propose documents for members of this group; they are only created after the member confirms. Group admins may always do this. Applies only if AI documents are enabled in the settings. Default: off.

Group page: AI for members (default: off)

5.3 Organizations

The screenshot shows the 'Organizations' menu in the cs-team application. The top navigation bar includes 'cs-team', 'User', 'Groups', 'Organizations' (selected), 'Calendar', 'Calc', 'Text', 'Files', 'Tasks', 'Chat', 'Message', 'Settings', 'English' (dropdown), 'admin (Global...)', and 'Log out'. The left sidebar has a 'Filter' section with 'all 2 Groups' and a '+ add' button. The main content area is titled 'Organizations' and contains the text: 'Organizations (e.g. school, department, sales) group groups together. A group can belong to several organizations; without a choice it belongs to all. An organization grants no rights.' Below this text, it says '1 Organizations'.

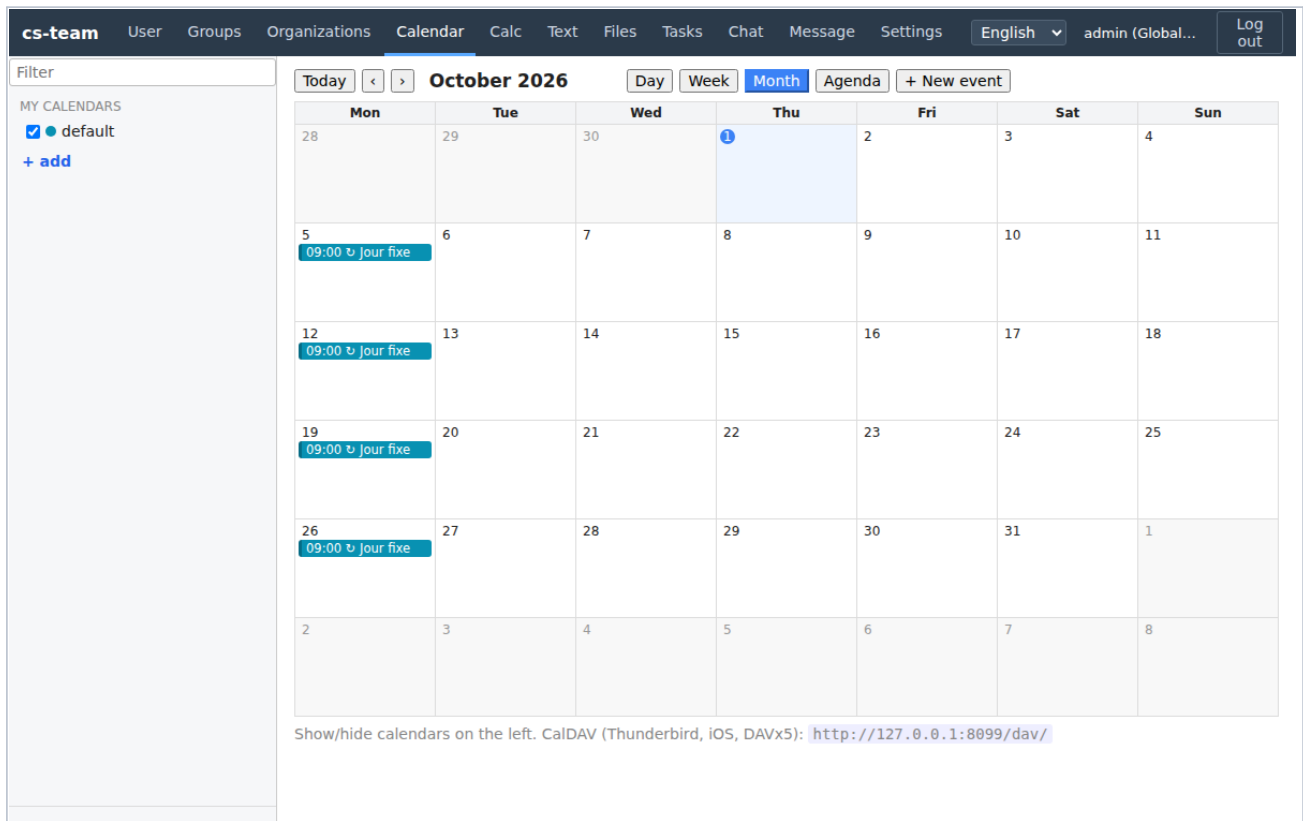
Organizations menu

Organizations (e.g. school, department, sales) combine groups and keep large installations tidy. A group can belong to several organizations; without an entry it belongs to the default organization *all*, which cannot be deleted. Deleting an organization only removes the groups from it. Only global admins see this menu.

5.4 Calendar

The screenshot shows the 'Calendar' menu in the cs-team application. The top navigation bar is the same as in the previous screenshot. The left sidebar has a 'Filter' section with 'MY CALENDARS' and two checked items: 'Team' (purple dot) and 'default' (blue dot), with a '+ add' button. The main content area is titled 'Calendar' and shows a month view for 'October 2026'. The view includes a header with 'Today', navigation arrows, and tabs for 'Day', 'Week', 'Month' (selected), and 'Agenda', along with a '+ New event' button. The calendar grid shows days from 28 to 4 of the following month. Events are listed for specific days: '18:00 Sommerfest' on Monday the 5th, '18:00 Wartung S...' on Thursday the 8th, and '18:00 Sprint-Revi...' on Friday the 2nd. At the bottom, there is a link to 'Show/hide calendars on the left. CalDAV (Thunderbird, iOS, DAVx5): <http://127.0.0.1:8099/dav/>'.

Calendar menu (month view)



Weekly series in the month view

New event

Jour fixe Raum 1

Wochenbesprechung

Calendar: **default** ☐ all day

from 10/05/2026, 09:00 AM to 10/05/2026, 10:00 AM

Repeat: **weekly** Interval 1 End: **after number** 4

New event with repetition

Edit event

Jour fixe (verschoben) Raum 1

Wochenbesprechung

Calendar: **default** ☐ all day

from 10/12/2026, 02:00 PM to 10/12/2026, 03:00 PM

☒ Only this event ☐ All events of the series

Edit a single event of a series

- **Views:** day, week, month, agenda (next 60 days); **Today** and arrows to browse; **+ New event** (title, location, description, start, end, all-day, repetition).
- **Recurring events** are displayed correctly (circular-arrow symbol before the title), including series with exceptions and individually moved events from Thunderbird, iOS or Outlook. Times are stored with their time zone, so an event at 9:00 stays at 9:00 after the daylight-saving change. Windows/Outlook time zones are recognized; events without a time zone ("floating") appear in the viewer's local time.

- **Editing events:** clicking an event shows the details with **Edit** and **Delete**. For a **repetition** (daily, weekly, monthly, yearly; with interval and end never / after a number / on a date) you choose **Only this event** (the event is changed or deleted individually, the series stays) or **All events of the series**. If you change the start or the repetition of the whole series, events of the series that were changed or deleted individually are dropped. Complex rules from other programs (e.g. Tuesday and Thursday) stay unchanged; text, time and location can still be changed.
- **Show/hide calendars on the left;** all visible calendars are overlaid, each in its own color.
- **Create a calendar (+ add on the left):** **personal** (only you), **group** (members read), **organization** (all groups of that organization) or **global** (all users). The list is sorted from the inside out: own, group, organization, global, followed by the subscriptions. Responsible and therefore able to change it: personal the user, group its group admins (they see their group calendar even without being a member), organization and global the global admins.
- **Release** per calendar (calendar bar > **Edit**): **not released** (draft: only those responsible see the calendar, the list marks it with "(not released)"), **those entitled read** or **all entitled may write**. Events may be changed by whoever is responsible and - with the release "all entitled may write" - by every entitled user.
- **Subscription** (ICS URL, https:// or webcal://) as an internet calendar, e.g. public holidays or school holidays: read-only, updated every 30 minutes, **Refresh now** in the bar, status and errors are shown. Everyone creates a subscription for themselves, for a group the group admin, for organization and global the global admins. End a subscription: clear the URL in the edit dialog.
- **Resource** (room, device): prevents double bookings, also for simultaneous bookings and recurring events (checked up to two years ahead; cancelled events and single changed events of a series are handled correctly). The message names the time in the event's time zone (otherwise UTC with the zone shown).
- **Thunderbird, Apple Calendar, iPhone (CalDAV):** all visible calendars appear at https://server:9004/dav/ (also /.well-known/calDav), login with the cs-team account. The client sees exactly the visible calendars; calendars that are not released are missing (direct access 404). Writing is allowed only where the release "all entitled may write" applies or the user is responsible; subscriptions are read-only (HTTP 403). Writing with If-Match/If-None-Match is mapped to S3 ETags (HTTP 412 on conflict).
- **Your own calendars** can always be written to and deleted (the release only concerns other people; if the calendar area is read-only, your own calendars are locked as well). New calendars are created here in cs-team (**+ add**): a CalDAV client gets 405 when creating one (MKCALENDAR), while MKCOL with resource type calendar works.
- **Tasks in the calendar:** Your own open tasks (and their milestones) appear on the due day as a yellow-framed line with a check mark, overdue ones in red - in month, week (all-day row), day and agenda view. A click opens the task in the menu *Tasks*. The lines are display only; no calendar entries are created.
- **Touch use:** On phone and tablet a **long press** (about half a second, without swiping) replaces the double click: on a day in the month or a time in the day/week grid it creates a new event. Swiping scrolls as usual.
- **Export and import (file):** **Export (.ics)** in the calendar bar saves the selected calendar as a file - for programs without CalDAV and for passing it on, also for read-only calendars and subscriptions. **Import (.ics)** reads a file into a writable calendar (matched by UID; importing twice creates no duplicate events).

5.5 Calc (spreadsheets)

Budget 2027 Owner admin Export: .csv (Excel) Download → Files

► Share

B **I** **U** Size **A** **a** **Σ** **x** Applies to the whole selection.

A1 Posten

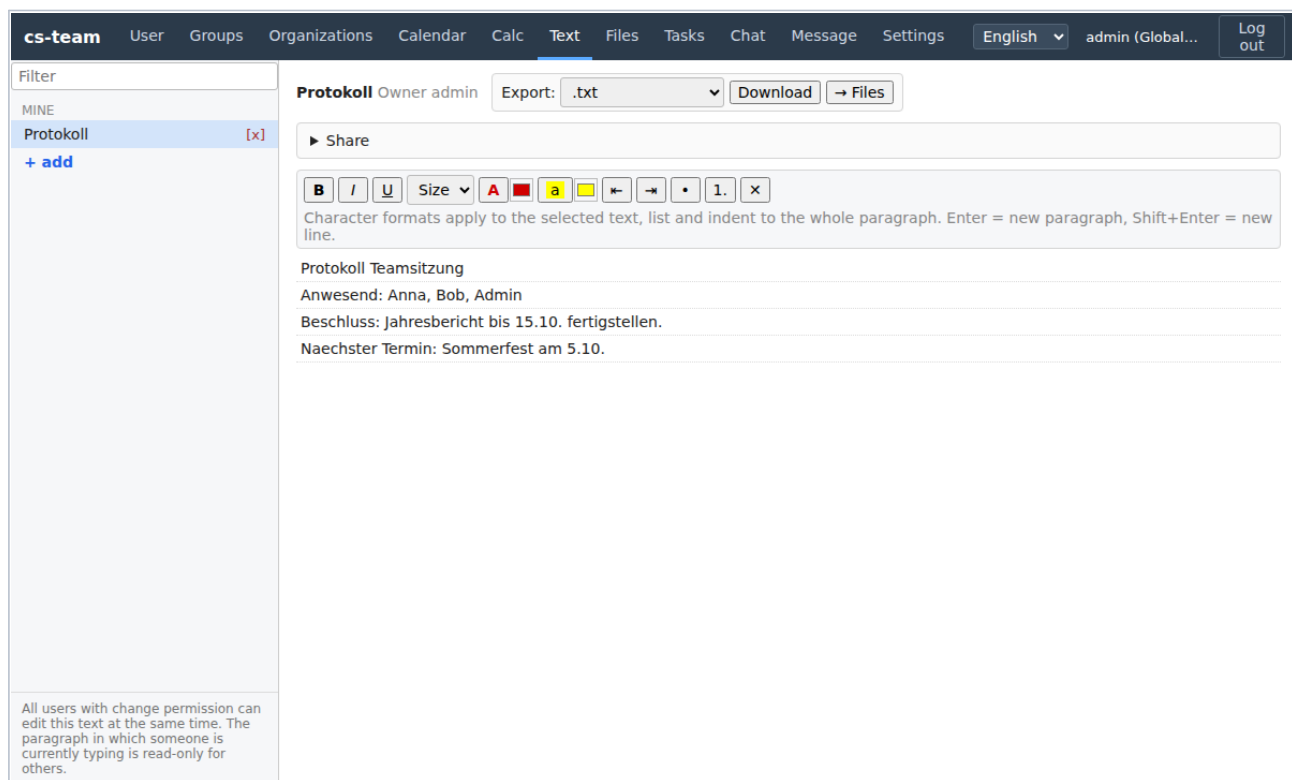
	A	B	C	D	E	F	G	H	I	J
1	Posten	Q1	Q2	Summe						
2	Miete	1200	1200	2400						
3	Server	300	450	750						
4	Summe	1500	1650	3150						
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

Select a range (mouse, Shift+arrows) · formulas e.g. =SUM(A1:A5) or =IF(A1>0,"yes","no") · Ctrl+C/X/V copy, Ctrl+D/R fill, Σ = insert sum

Calc menu

- Create a **new sheet** with **+ add** or import from Files (csv, xlsx, .cscal).
- **Simultaneous editing**: all users with write permission edit the same sheet live. The cell in which someone is currently typing is read-only for others ("... is writing"). The server resolves conflicts per cell (the newer entry wins).
- **Formulas** start with =: the four basic operations, =SUM(A1:A5), =IF(A1>0;"yes";"no") and others. The formula bar shows the content of the selected cell.
- **Operation**: select a range (mouse or Shift+arrows), Ctrl+C/X/V copy, cut, paste, Ctrl+D / Ctrl+R fill down / right, Σ inserts a sum.
- **Character format** (for the whole selection): bold, italic, underline, size, text color, background, clear formatting. The status line shows sum, average, min, max and count of the selection.
- **Share**: individual users (read/write), groups, or **Team** (all logged-in users). If a right is withdrawn or the document is deleted, the user loses access immediately (after 15 seconds at most), even in an open window; "You no longer have access to this document." appears.
- **Export**: csv (Excel), xlsx or the own format .cscal – as download or directly to **Files**. Cell values and formulas are kept, not cell formats, charts or macros.

5.6 Text



Text menu

- Multi-user word processor: changes appear live for everyone; the paragraph in which someone is typing is read-only for others. Typing in the same paragraph at the same time is not possible.
- **Character formats** (bold, italic, underline, size, text color, background) apply to the selected text; **bullets**, **numbering** and **indent/outdent** to the whole paragraph. Enter = new paragraph, Shift+Enter = new line.
- **Share** as in Calc (users, groups, team).
- **Export:** .txt, .rtf, .docx or .cstext; **import:** .txt, .docx, .cstext. Only text is kept, no fonts or page layout.

Office formats: import and export (Calc, Text)

Calc and Text are deliberately simple editors for everyday shared work. For exchange with Excel and Word they read and write the common formats, but only the **content**, **not the layout**.

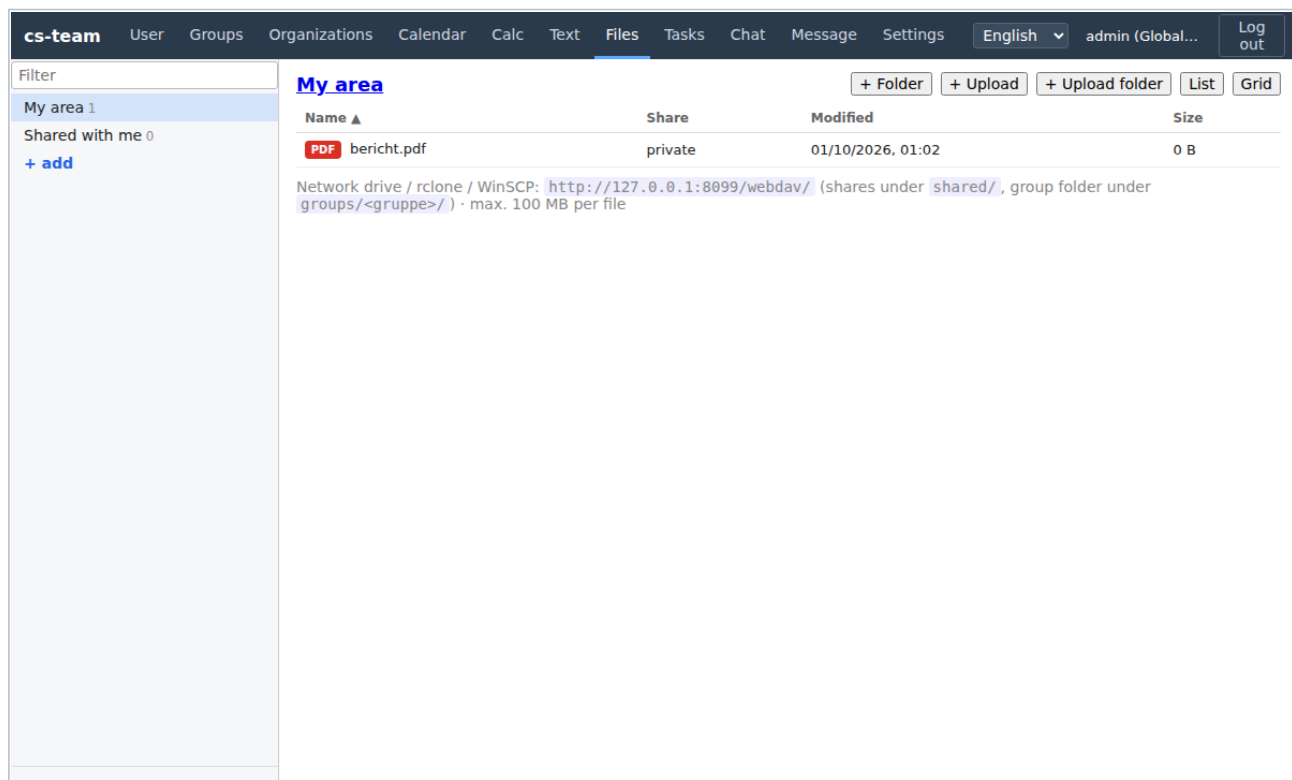
Format	Import	Export
csv	Calc	Calc (Excel-friendly; cells starting with = + - @ get an apostrophe)
xlsx	Calc (first sheet only)	Calc (cell values and formulas from the function list)
docx	Text	Text
rtf	-	Text
txt	Text	Text
.cscalc / .cstext	Calc / Text	Calc / Text (own format)

- **xlsx date cells** (built-in and custom date formats) arrive as a date or time in the form YYYY-MM-DD [hh:mm] instead of a serial number, truth values as TRUE/FALSE.
- **docx tables** are imported: each table row becomes one paragraph, the cells separated by tabs. Duplicate text from text boxes is skipped.

Not supported: formatting (cell formats, fonts, page layout, templates), several sheets (only the first), images, charts, macros, references to other sheets; formulas only from the Calc function list, everything else is written as text. The formats odt, ods, xls and doc are not read: save them as xlsx, docx or csv in Excel, Word or LibreOffice first. From PDF only the AI reads the text.

Anyone who has to exchange layout, templates or several sheets faithfully still needs Word, Excel or LibreOffice. cs-team does not replace them, it complements them for shared editing in the browser.

5.7 Files



Files menu

- **My area** (own files) and **Shared with me** (from others, groups or the team), plus the group folders of your own groups.
- **Upload** (also whole folders), **+ Folder**, rename/move, delete; list or grid view; search. Uploads are streamed (default max. 100 MB per file). The same name replaces the whole file (no merge – use Calc and Text for shared editing).
- **Sharing** per file: selected users (read / write), **Team** (all logged-in users) and optionally a **public link** /pub/<token> (read only, revocable at any time, random token). In a group folder the group controls access.
- **Public link with expiry:** when switching it on you choose **Valid for** 1 day, 7 days (default), 30 days or unlimited; the dialog then shows "Expires on ..." or "Does not expire (unlimited)". The period can be changed or extended in the share dialog at any time (same link, the period starts anew); the tick **revokes** the link. An expired link answers like an unknown one (404, the expiry is not revealed); the hourly run deletes it together with its token. Links from earlier versions have no expiry and stay valid ("unlimited") until you revoke them or give them a period. A global admin can set the **Maximum validity of public links (days, 0 = unlimited allowed)** in Settings (11.2): then "unlimited" disappears, longer requests are shortened, existing links are left untouched. Creating, changing and revoking are logged (never the token).
- PDF, images and text are shown in the browser, everything else (HTML, SVG, ...) only as a download. Downloads in the browser support partial requests (Range) and conditional requests (ETag, answer 304): videos can be skipped through, interrupted large downloads can be resumed.

- **Trash:** deleted files (and folders with their files) go to the **Trash** shown on the left below the group folders – in the browser as well as via WebDAV. It lists the original path, the location, the size, who deleted it and when, and when the entry expires. **Restore** puts the file back in its old place (if the name has been taken in the meantime it gets a new name, which the message states), **Delete permanently** removes one entry, **Empty trash** all of them. Entries are deleted permanently after the configured number of days (default 30, Settings 5.11). In a group folder everyone who may manage it sees and restores entries (group admins and, if everyone may write, every member). The trash counts towards the quota; if space runs short for a new upload, the oldest trash entries are removed permanently first. A group folder can only be deleted once its trash is empty.
- **Quota:** if a quota is set in Settings (5.11), it applies per user and per group folder, for the browser and WebDAV. The bottom line shows "X of Y used" (with the part in the trash); when it is full the server answers "storage quota exceeded" (HTTP 507). A replaced file is not counted twice.
- **WebDAV:** <https://server:9004/webdav/> (Basic Auth, same rights as in the browser). The root is your own files, [shared/<owner>/](#) what is shared with you, [groups/<group>/](#) the group folders. Suitable clients: rclone, WinSCP, Cyberduck, the macOS Finder and the Windows network drive (HTTPS only).
- **File locks (WebDAV LOCK):** cs-team reports DAV class 2 and supports LOCK/UNLOCK. This lets Windows Explorer, Word and Excel open files for writing. A locked file is read-only for all other users (answer 423 "Locked"), in the browser as well as via WebDAV; reading stays possible. A lock expires after 10 minutes (the client renews it, at most 1 hour) and is released when the file is closed. Locks are kept in memory only: after a restart of cs-team the clients lock again. The lock holder may also write without a token, so a crashed client never locks anyone out.

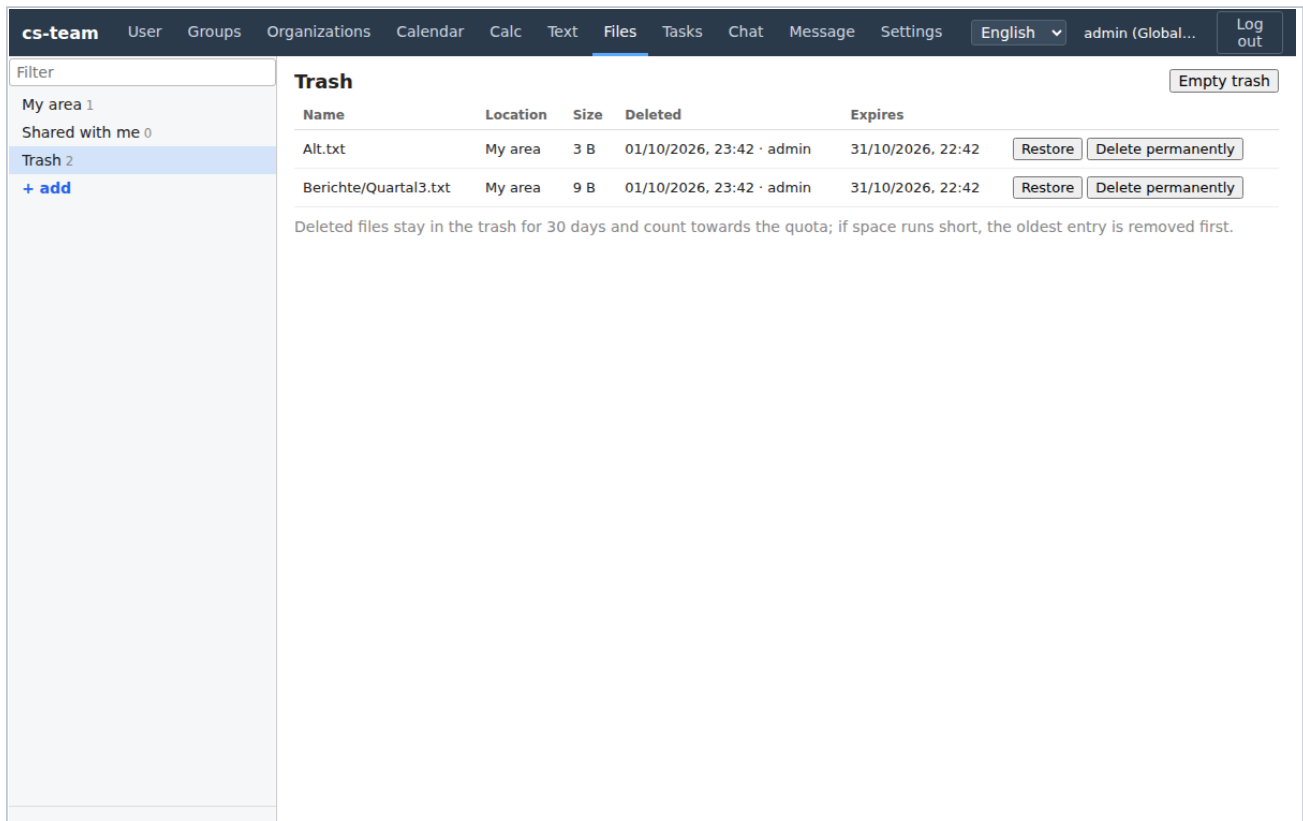
The screenshot shows the cs-team web interface. The top navigation bar includes links for User, Groups, Organizations, Calendar, Calc, Text, Files, Tasks, Chat, Message, Settings, and a language dropdown. The main content area is titled 'My area' and contains a table with the following data:

Name ▲	Share	Modified	Size
Bericht.pdf	private	01/10/2026, 18:31	2.4 MB

Below the table, there is a network drive information section:

Network drive / rclone / WinSCP: <http://127.0.0.1:8099/webdav/> (shares under [shared/](#), group folder under [groups/<gruppe>/](#)) · max. 100 MB per file · 2.4 MB of 500.0 MB used

Files with quota display



Trash: restore, delete permanently, empty

File versions from ZFS snapshots

If the data folder lies on a ZFS dataset with snapshots (e.g. the automatic snapshots of napp-it), cs-team shows earlier states of a file: in the file dialog the button **Versions**. cs-team makes **no copies of its own** for this and calls no zfs command; it only reads the hidden directory `.zfs/snapshot` (read only).

- **Requirement:** local data folder (CS_DIR) on a ZFS dataset that has snapshots. cs-team finds the mount point itself (the nearest parent folder of the data folder that has a subfolder `.zfs`); if it is elsewhere, set CS_SNAP_ROOT to that folder.
- **List:** up to 50 versions, newest first, with date and size. A state equal to the current file, and consecutive snapshots with the same size and time, are not listed (counted once); the 300 newest snapshots are examined.
- **Download:** downloads the chosen version (read only, the file stays unchanged).
- **Restore:** after the question "Restore the version from ...? The current file goes to the trash." the version becomes the current file; the previous state first goes to the trash as a copy (if the trash is on). Shares and the public link of the file stay; quota, file locks and size limit apply as for an upload. Message: "Version restored."
- **Rights:** whoever may read the file sees its versions; whoever may write can restore. Only regular files are read (symlinks inside a snapshot are never followed); every restore is in the log (audit: file restored).

What it cannot do

- **No ZFS or no snapshots:** with S3/RustFS storage, the in-memory demo or a folder without snapshots the dialog says "Versions need a ZFS dataset with snapshots (see the manual)" or "No earlier versions found."
- Versions are only as fine as the snapshot schedule: changes between two snapshots cannot be fetched individually. They are files in Files, not the Calc and Text documents.
- **Deleted files** are recovered from the **trash**; the interface offers versions only for existing files. Snapshots are no replacement for a backup on a second system.

Privacy: snapshots keep deleted and overwritten data until they expire. The retention of snapshots is up to the operator (chapter 12.2).

5.8 Tasks

cs-team User Groups Organizations Calendar Calc Text Files Tasks Chat Message Settings English admin (Global... Log out

Filter

FILTER

Mine

From me 2

Please take 1

Due within 7 days 1

Overdue

► All open 2

Completed

TASKS

● Jahresbericht schreiben bob · ...

● Backup pruefen free · 31/10/2...

+ add

Jahresbericht schreiben Open

Requester: admin · Assignee: bob · Group: alluser · Priority: high · Due: 11/10/2026

Hand back In progress Report done Close Edit Delete

Milestones

☐ Entwurf 06/10/2026

☐ Final

History: Requester Assignee Others

admin created the task 01/10/2026, 01:02

admin assigned the task to bob 01/10/2026, 01:02

Write a comment ...

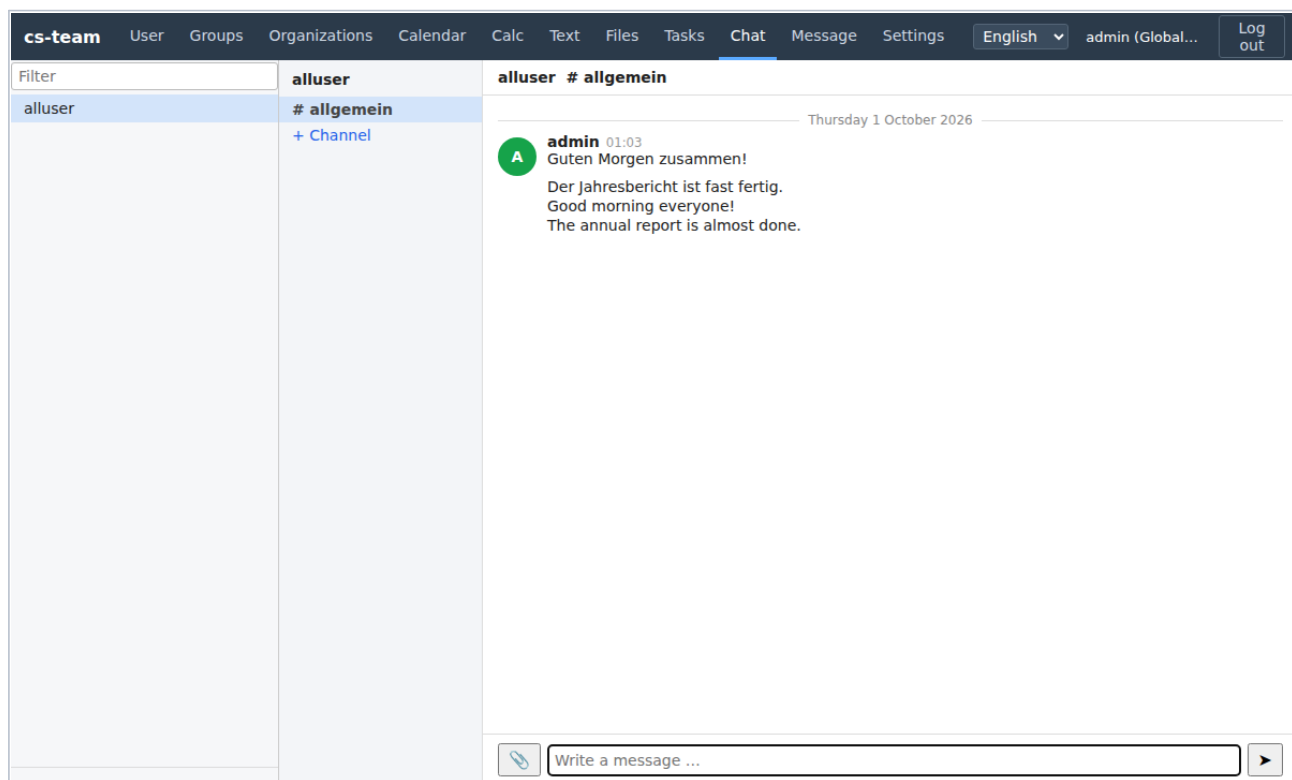
Tasks menu

A ticket system light: everyone (or only admins, depending on the group) creates tasks and assigns them to a user or puts them in a list as *Please take*, from which any group member can take them.

- **Fields:** title, description, requester, group (optional), assignee (empty = Please take), watchers, priority (low/normal/high), due date.
- **Milestones:** text plus date – targets for when the task should be finished completely or in parts; they are ticked off.
- **History:** like a chat – comments by requester (blue), assignee (green) and others, plus system lines (created, assigned, taken, milestone ticked, status changed).
- **Status:** Open – In progress – Done – Accepted. The assignee sets In progress and Done, ticks milestones and comments. The requester, group admins and global admins change master data, accept, reopen and delete.
- **Repetition** (daily, weekly, monthly, yearly; needs a due date): accepting creates exactly one follow-up task. Due date and milestones move by the same period, never into the past.
- **Filters on the left:** Mine, From me, Please take, Today and overdue, Due in 7 days, Overdue, All open, Completed. A red counter on the menu shows news for you. In "Today and overdue" and "Due in 7 days" the list is divided into Overdue, Today and This week (the earliest open date counts: due date or milestone).
- **Quick line** above the list: one sentence is enough, Enter creates the task, e.g. Parents letter @anna !high tomorrow. @name sets the assignee (@me = yourself; without it the task is listed under "Please take"), !high or !low the priority, #group the group. Date: today, tomorrow, next week, a weekday name (friday), 24.12. or 2026-12-24 (German words such as heute, morgen, übermorgen work too). A preview below the field shows how the line is read; anything not recognised (e.g. an ambiguous @an) stays in the title. Add description, participants, milestones and repetition afterwards with "Edit".

- **Checkbox in the list:** for your own open tasks the checkbox reports "done"; requesters accept finished tasks with the checkbox (if the requester is also the assignee the task is accepted at once). To undo, use "Reopen" in the task.
- **Notifications** in the app and by e-mail/webhook on assignment, taking, done, acceptance, comments as well as for due dates and milestones (checked hourly). The mail contains a link `<public address>/#task/<id>`.
- **Visibility:** tasks with a group are seen by its members (unless the group switches tasks off) and admins. Anyone may create tasks without a group; only requester, assignee, watchers and admins see them.

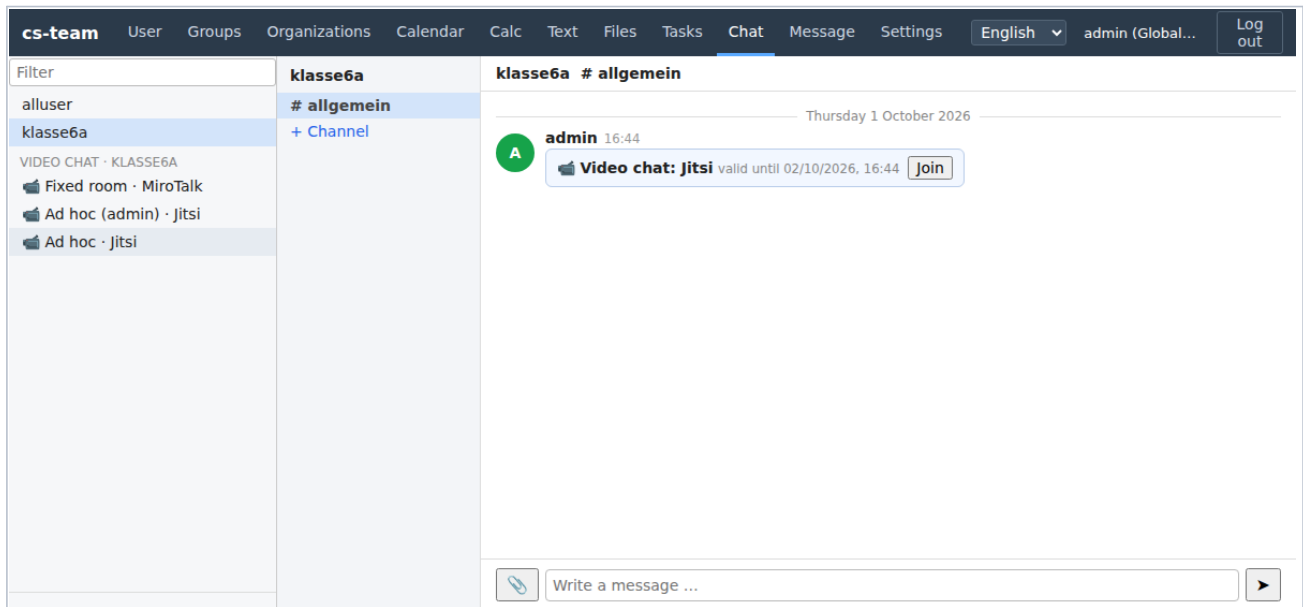
5.9 Chat



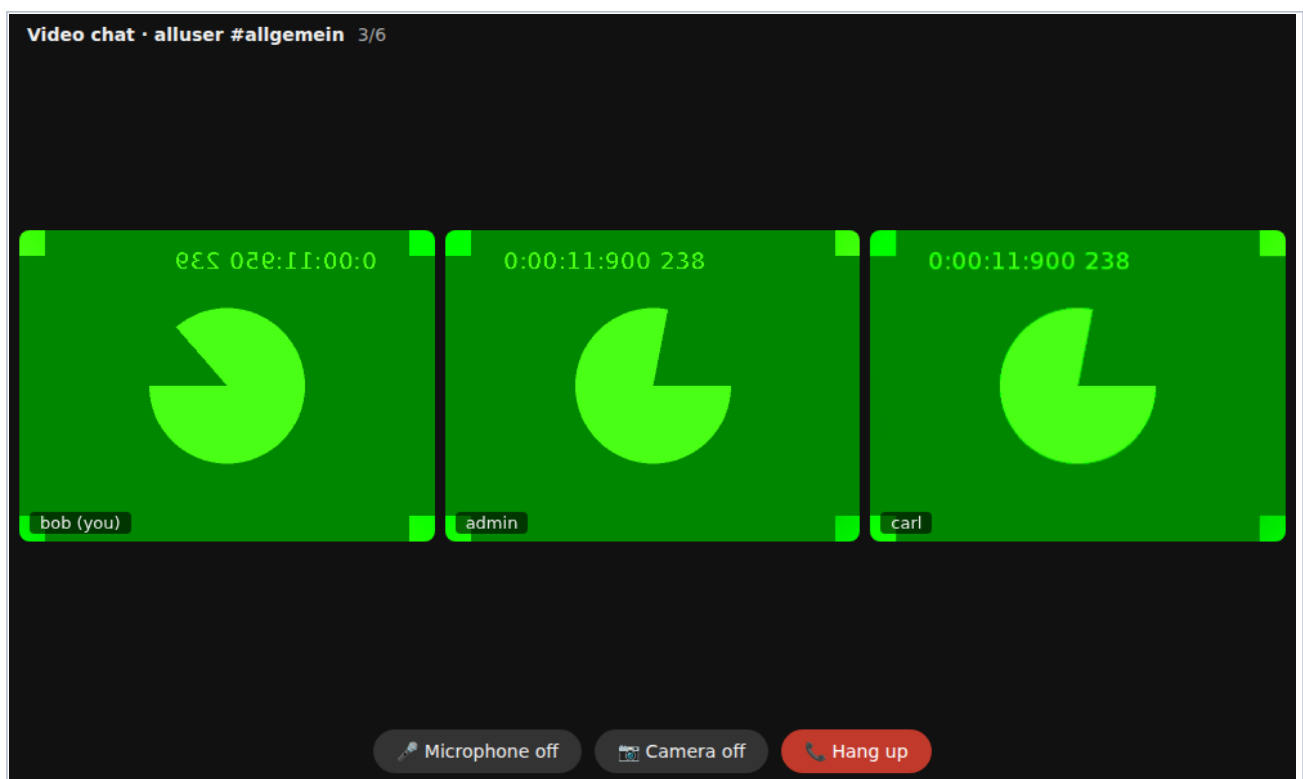
Chat menu

- One chat per group with **channels**: `# allgemein` always exists, further ones are created with **+ Channel** (name a-z 0-9 _ -) if the group allows it.
- Live via WebSocket, **@name** mentions a colleague, links become clickable. **Reactions** (emoji), **edit** and **delete** own messages, **attachments** (paper clip; default max. 10 MB), load older messages.
- **Unread** marker and a red counter on the menu; optional desktop notifications (bell).
- Rights per group: members write, only admins write, or chat off. Where the chat is read-only, reactions and editing are not possible either. Sending, reacting and editing share a rate limit (20 per 10 seconds and user); one user can keep at most 8 chat connections (tabs, devices) open, the oldest one yields.
- **Video chat:** if the admin has entered video servers in the settings (see 5.11), a section *Video chat* appears on the left below the group list with up to three entries: **Fixed room** (one permanent room per group, e.g. the class), **Ad hoc (admin)** (new room, group admins only) and **Ad hoc** (new room, everyone who may write in the channel). A click opens the room in a new tab and posts an invitation with a **Join** button in the channel. Ad-hoc invitations are valid for 24 hours, after that the button is gone. The room name cannot be guessed and is not stored in the message; only members who may read the chat can join. Whoever passes the link on lets outsiders into the room, though.

- **Built-in video chat (WebRTC):** if it is switched on in the settings, *Video chat* also lists **WebRTC (browser)**. Everyone who may write in the channel can start it, with at most 6 participants. The click posts an invitation in the channel (valid for 24 hours) and opens the video view with one tile per participant; whoever accepts the invitation with **Join** enters the same room. At the bottom: **Microphone off/on**, **Camera off/on**, **Share screen** (shows the screen or a window instead of the camera picture; people who join later see it too) and **Hang up**. A device without a camera takes part with audio only. If a call is already running in the channel, starting again joins that call. Video and audio go directly between the browsers; cs-team only brokers the connection. The browser requires https (or localhost) and asks once for camera and microphone.



Chat with video chat entries and an invitation



Built-in video chat: tile view with controls

Polls in the chat

A poll is a normal chat message with answers to click. The **Poll** button sits next to the input field and appears where you may write in the channel.

- **Create (Create poll):** question (up to 200 characters), 2 to 10 different answers (up to 100 characters each), tick **Multiple choice**, tick **Anonymous** and optionally an **end** (at most 366 days ahead). The same rate limit applies as for messages.
- **Vote (button Vote):** every member who may read the chat of the group (also in an admin-only chat), as long as the poll is open, i.e. neither ended nor expired. The result, the number of votes per answer, is shown in the message.
- **Named poll:** the choice is visible to all readers of the channel (names per answer); a vote can be changed or withdrawn.
- **Anonymous poll:** While it is open everyone sees only the number of participants and their own vote; **the result appears only after it has ended** (expiry or closing). cs-team stores only a counter per answer and, per person, the mark "has voted", **not** the choice; there is no assignment, admins cannot see it either. Therefore: **Anonymous votes cannot be changed** (notice and question "Vote now?"). Residual risk: anyone with access to the storage who compares before and after a vote sees which counter went up; in very small groups "anonymous" is therefore only partly anonymous.
- **End (End this poll?):** the creator or a group admin; if an admin ends it, this is logged. Polls cannot be edited; if the message is deleted, the poll goes with it.
- **Retention, access, deletion:** polls are stored like messages in the chat storage and disappear after the retention period of the group (12.3). The data export (chat.json) contains your own choice for named polls and only "participated" for anonymous ones. When a user is deleted with anonymization, the name in votes and participant list is replaced; the counters stay.

5.10 Message

Message menu

Send text to all members of a group: choose the group on the left, enter subject and text and tick the channels: **E-mail**, **External chat address** (webhook of each member) and/or **Group chat**. After sending, cs-team shows for each channel how many members were reached and how many have no address. By default only admins may send (group setting "Send message"). The menu only appears when at least one group allows sending.

Webhook formats: Slack ({"text"}), Discord ({"content"}), Telegram (text=), otherwise text/plain (e.g. ntty).

5.11 Settings

The screenshot shows the 'Settings' menu in the cs-team application. The top navigation bar includes 'cs-team', 'User', 'Groups', 'Organizations', 'Calendar', 'Calc', 'Text', 'Files', 'Tasks', 'Chat', 'Message', 'Settings' (highlighted), 'English' (dropdown), 'admin (Global...)', and 'Log out'. On the left, a sidebar contains 'Filter' and 'Settings' (highlighted). The main content area is titled 'Settings' and contains a note: 'These settings belong to cs-team itself and take effect immediately without a restart. The service start parameters (port, storage, HTTPS, admin) are not set here.' Below this, there are two sections: 'Mail (SMTP) for messages and tasks' and 'Network'. The 'Mail (SMTP)' section has input fields for 'SMTP server', '587', 'Default (by port)' (dropdown), 'User', 'Password', and 'Sender (cs-team@example.org)'. The 'Network' section has an input field for 'https://team.example.org:9004' with the label 'Public address (e.g. DynDNS) for links in notifications' and a checkbox for 'Allow webhooks (external chat addresses) in private networks'. At the bottom, there are two buttons: 'Save' and 'Save + test mail to me'.

Settings menu (global admins only)

These settings belong to cs-team itself, are stored in the storage as `settings.json` and take effect **immediately without a restart**. They can also be reached by clicking the title "cs-team". Start parameters (port, storage, HTTPS, admin) do not belong here but to the service or the service menu.

Section	Fields
Mail (SMTP)	SMTP server, port (587), encryption (default by port, STARTTLS 587, SSL 465, none 25), user, password, sender. The password is never shown again; leave empty = unchanged, "Delete password" removes it.
Video chat	Up to three external video chat servers: option 1 fixed room per group, option 2 ad-hoc room for group admins only, option 3 ad-hoc room for everyone who may write. Choose the provider per option (Jitsi, MiroTalk or Own address with {room}) and enter the server address, or leave it "off". cs-team never calls these servers, it only decides the room and invites.
Built-in video chat	Checkbox <i>Enable built-in video chat</i> (option 4, WebRTC in the browser, up to 6 participants). STUN servers : a public server is pre-filled; it only sees the participants' IP addresses, not video or audio. Enter your own servers (one per line) or clear the field (then only connections within the same network work). TURN server (optional): relays the stream behind a strict firewall; run coturn with use-auth-secret and enter the TURN secret here, cs-team then issues time-limited credentials (12 hours). The secret is never shown again.
Files	Quota per user and per group folder in MB (0 = unlimited, default from the start parameter CS_QUOTA_MB). It applies to the browser and WebDAV and takes effect immediately. Below it Trash: days until permanent deletion (default 30, default from CS_TRASH_DAYS; 0 = no trash, deleting is then immediate and final). It applies to newly deleted files; existing entries get their expiry date from the new setting.
Public links and two-factor	Maximum validity of public links (days, 0 = unlimited allowed; 0 to 3650) and tick Require two-factor for admin accounts (chapter 4 and 5.7).
Privacy and retention	Closed tasks: days until automatic deletion (0 = never) and Privacy notice (additional text), appended to the notices before first use of AI and external video chat (chapter 12).

Section	Fields
Network	Public address (e.g. DynDNS: <code>https://team.example.org:9004</code>) – it appears in the links of notifications. Checkbox "Allow webhooks to private networks": otherwise webhooks to private addresses are blocked (SSRF protection).

Video chat (external servers) The video servers run outside cs-team. cs-team only decides the room and invites in the chat with a link. Choose a provider per option or switch it off.

Option 1: fixed room per group (all members)

MiroTalk

Option 2: ad-hoc room (group admins only)

Jitsi

Option 3: ad-hoc room (everyone who may write in the channel; invitation valid for 24 hours)

Jitsi

Settings: video chat (three external options)

Built-in video chat (option 4: WebRTC in the browser) Ad-hoc room for up to 6 participants that everyone with write access in the channel can start (the invitation is valid for 24 hours). Video and audio go directly between the browsers; cs-team only brokers the connection. The browser needs https or localhost.

☒ Enable built-in video chat

STUN servers (one per line). A public server is pre-filled; it only sees the participants' IP addresses, not video or audio. Empty = only connections within the same network.

TURN servers (optional, for strict firewalls; coturn with use-auth-secret, cs-team issues time-limited credentials)

Settings: built-in video chat (STUN/TURN)

Files

Quota per user and group folder (MB, 0 = unlimited)

Settings: file quota

cs-team
User
Groups
Organizations
Calendar
Calc
Text
Files
Tasks
Chat
Message
Settings
English
admin (Global...)
Log out

Filter
Settings

Option 1: fixed room per group (all members)
off

Option 2: ad-hoc room (group admins only)
off

Option 3: ad-hoc room (everyone who may write in the channel; invitation valid for 24 hours)
off

Built-in video chat (option 4: WebRTC in the browser) Ad-hoc room for up to 6 participants that everyone with write access in the channel can start (the invitation is valid for 24 hours). Video and audio go directly between the browsers; cs-team only brokers the connection. The browser needs https or localhost.

☐ Enable built-in video chat

STUN servers (one per line). A public server is pre-filled; it only sees the participants' IP addresses, not video or audio. Empty = only connections within the same network.

TURN servers (optional, for strict firewalls; coturn with use-auth-secret, cs-team issues time-limited credentials)

Files

Quota per user and group folder (MB, 0 = unlimited)

Trash: days until permanent deletion (0 = no trash)

Show usage

Owner	Files	Used	of which trash	Quota
admin	1	3.3 MB	488.3 KB (1)	33 %
Total	1	3.3 MB	488.3 KB	

Network

Public address (e.g. DynDNS) for links in notifications

Settings: AI assistant (provider, model, files, chat review)

Set up provider: Inhouse Provider (OpenAI compat)

Address of the machine

(IP:port)

If the field stays empty, a key already remembered for this host is used.

Popup after choosing a provider: check the API key (IP:port for own servers)

The section **AI assistant** applies centrally to all users. Set-up in three steps: switch **AI on**, choose a **provider** from the list and enter the **API key** in the popup, then choose a **model** from the list. The key stays on the server and is never shown again. Below: image recognition, answer tokens and requests per minute and user. Checkboxes: *Allow endpoint in the local network* (e.g. Ollama), *Read and analyze selected files and documents*, *Global admins may review chat incidents with AI* and *AI may propose documents* (each default: off; see 5.12). **Save + test AI** checks the connection.

- **Choose provider:** after the choice a popup opens. It asks for the API key (for Ollama and "Inhouse Provider" it asks *IP:port* instead, the key is optional there). **Check and continue** asks the provider for its model list: if the key is wrong the popup stays open with the message; if it is valid the model list appears. If the provider cannot be checked (e.g. no model list), the popup offers *Use without checking*. **Cancel** restores the previous state. **Change key ...** opens the popup again later. Nothing is stored until you click **Save**.
- **Templates:** the list offers 15 common providers (OpenAI, Anthropic, Ollama, own server, OpenRouter, Groq, Mistral, DeepSeek, xAI, Together, Fireworks, Cerebras, Gemini, Z.AI international and China) and pre-fills protocol and endpoint. The list is a file `providers.txt` in the data store (one line per provider, tab-separated: name, protocol openai/anthropic/ollama, endpoint; # = comment) and can be shortened or extended; if it is missing the built-in list applies.
- **Own server on the network** (Ollama, "Inhouse Provider"): the popup asks for *IP:port*; the checkbox *Allow endpoint in the local network* is set.
- **Model:** pick list with the provider's models (image recognition marked "vision"); *Enter own model ...* allows free input, without a list the input field appears directly. **Load models** fetches the list again.
- **Advanced** (collapsed): protocol (Anthropic, OpenAI-compatible, Ollama), endpoint address, IP:port and the key field for special cases or custom settings.
- **Key:** remembered per target machine and never shown. If you switch provider and later switch back, the key is there again; *Delete key* removes it.
- **Second provider:** takes over if the first does not answer (error, timeout). Own template, address, model and key; without a model it is off.
- **Limits:** *messages of history* (how many messages the widget sends along, default 11) and *characters per message* (default 12000).

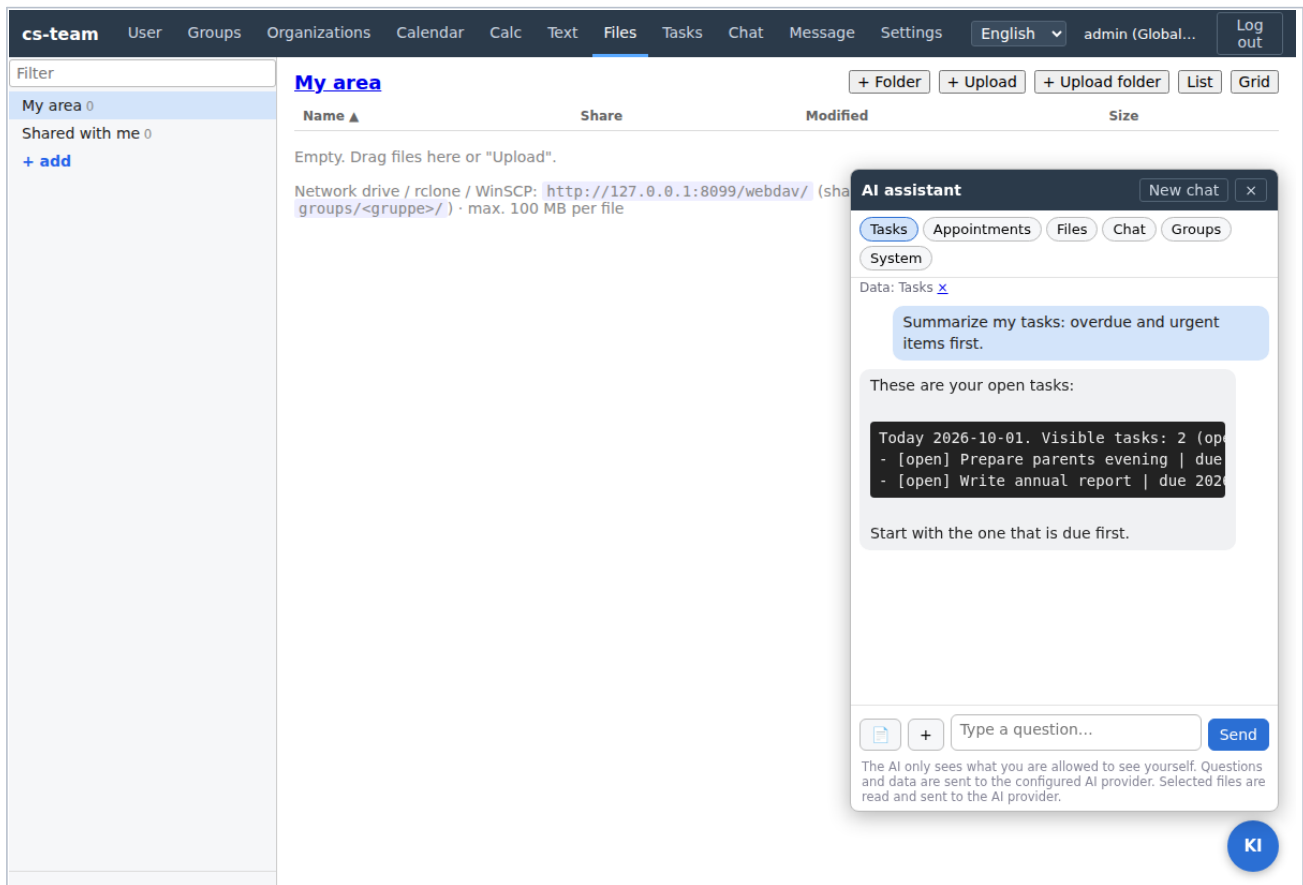
Save + test mail to me sends a test mail to your own e-mail address. If the service was started with mail defaults (environment variables `CS_SMTP_*`), these apply only as long as nothing is saved here.

Sign-in with a directory (LDAP / Active Directory)

Besides local accounts cs-team can sign users in against the company or school directory (*Settings* menu, sign-in section, global admins only). The defaults come from the CS_IDENTITY_* variables (chapter 3.6); values set in the interface override them.

- **Mode:** *local* (local accounts only), *dir* (directory only) or *mixed* (both). Directory accounts sign in as name@realm; a default realm allows signing in with the name alone.
- **Directory:** LDAP URL, base DN, bind account and password, optional STARTTLS. Only members of the entered **admit groups** are admitted; at the first login a mirror account is created in cs-team and the group memberships are taken over.
- **Local accounts** can stay allowed in addition (option "allow local sign-in", own group for local accounts).
- **Offline cache** (days, 0 = off): if the directory is briefly unavailable, users who are already known can still sign in.
- On Windows the operating-system sign-in can be used as well (accounts and groups of the machine or domain).

5.12 AI assistant



AI assistant: "KI" button at the bottom right, topic buttons and answer

Once an AI provider is set up (Settings menu, see 5.11), the button **KI** appears at the bottom right. The widget answers questions like a normal AI chat and can know your own data on request: the buttons **Tasks**, **Appointments**, **Files**, **Chat**, **Groups** and **Account** (admins: **System**) fetch the matching data and send it together with the question to the provider. **New chat** starts over.

- **Same rights as in the interface:** the server fetches the data with the credentials of the person asking. The AI sees only what that user may see and **cannot change anything itself** (new documents only as a proposal, see below).

- **Files and documents:** the button with the document symbol picks up to 4 own or shared files (also from group folders) and Calc and Text documents. Supported: text, CSV, JSON, code, DOCX, XLSX, PDF, Calc, Text documents and images (with image recognition); PDFs need real text (no OCR; encrypted and scanned PDFs are rejected). At most 2 MB or 40000 characters per file. The AI summarizes, analyzes, calculates or translates; you copy the result yourself.
- **Images:** attach up to 3 images with + (only for providers with image recognition).
- **Privacy:** questions and the chosen data go to the configured provider. The key stays on the server. The log contains only user, topic and count, never questions, answers or contents. A per-user limit (requests per minute) applies.
- Contents of files, titles and names are treated as **untrusted**: the AI does not follow instructions found in them.

Proposing and creating documents

The screenshot shows the 'cs-team' web interface. The top navigation bar includes 'User', 'Groups', 'Organizations', 'Calendar', 'Calc', 'Text', 'Files' (active), 'Tasks', 'Chat', 'Message', 'Settings', 'English', 'admin (Global...)', and 'Log out'. The left sidebar shows a 'Filter' section with 'My area 0' and 'Shared with me 0', and a '+ add' button. The main content area is titled 'My area' and shows a table with columns 'Name', 'Share', 'Modified', and 'Size'. Below the table, it says 'Empty. Drag files here or "Upload".' and provides a network drive path: 'Network drive / rclone / WinSCP: http://127.0.0.1:8099/webdav/ (shared with groups/<gruppe>/) · max. 100 MB per file'. An 'AI assistant' chat window is open on the right, showing a conversation where the user asks to 'Write a parents letter: no school on Friday.' and the AI responds with a draft preview card. The draft card shows the title 'Parents letter (Text document)' and the content 'Dear parents, there is no school on Friday. Kind regards'. Below the draft are 'Create' and 'Discard' buttons. At the bottom of the chat window, there is a text input field 'Type a question...' and a 'Send' button. A small 'KI' logo is visible in the bottom right corner of the interface.

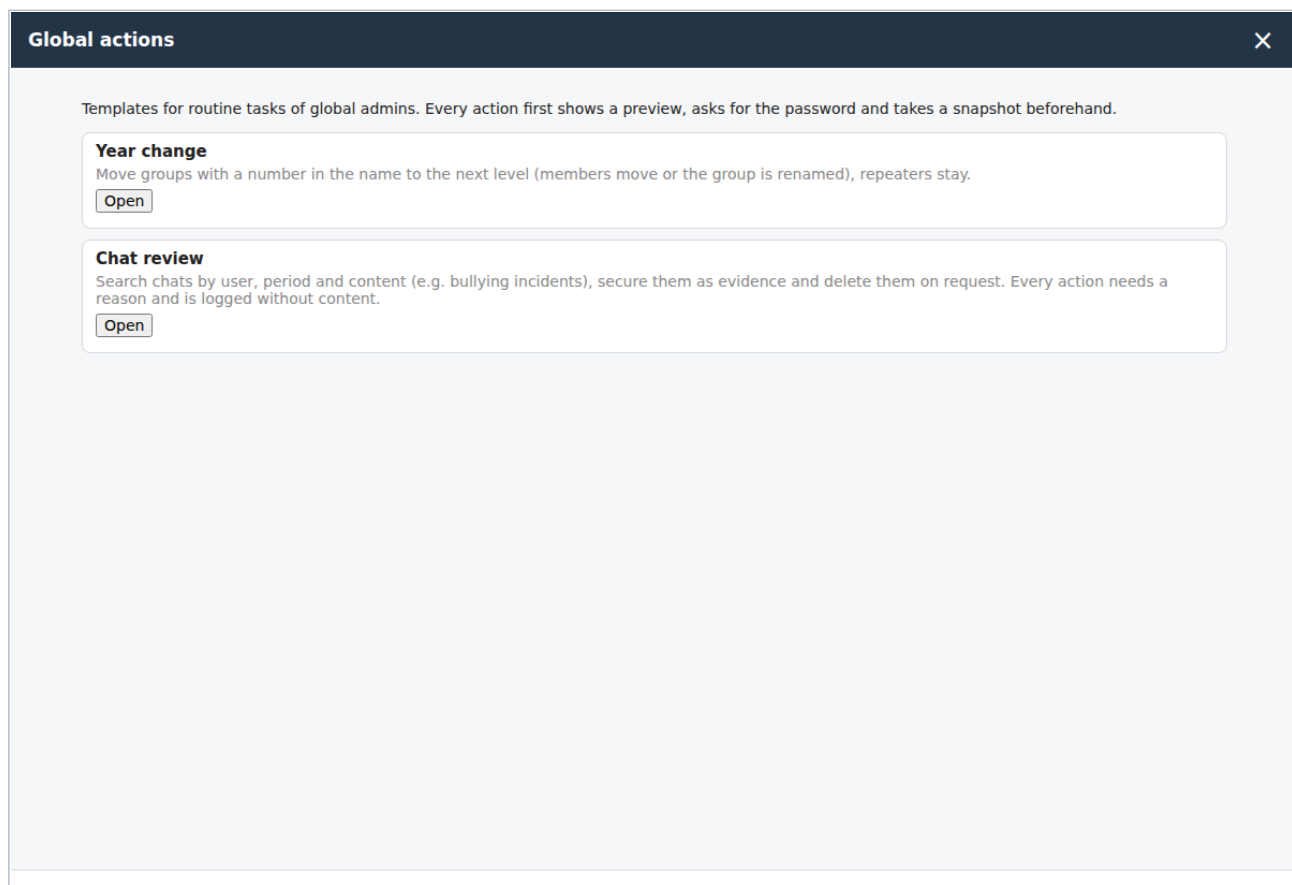
AI proposal: preview card with Create and Discard

If *AI may propose documents* is switched on in the settings and the user is allowed to use it (see below), the AI can on request **propose a new** text document or calc sheet (e.g. "Write a parents letter: no school on Friday"). A preview card appears below the answer; only **Create** saves the document, **Discard** removes the proposal, **Open** jumps into the document after creating it.

- **New only:** a new document owned by the user is always created; the AI never changes or deletes existing ones. Afterwards it is like any document (share, export).
- **Checked by the server:** the preview shows the cleaned version and exactly that is created. Limits: text up to 300 paragraphs or 60000 characters, sheet up to 200 rows by 26 columns and 3000 cells; control characters are removed. Formulas only with numbers, cell references and the functions SUM, AVERAGE, MIN, MAX, COUNT, COUNTA, PRODUCT, ROUND, ABS, SQRT, AND, OR, NOT, IF.
- **The user's rights:** without write permission for Text or Calc the request is refused.

- **Who may:** global admins and group admins always; members only if one of their groups has **AI for members** switched on (default: off). Without permission the AI is not told about this function. The global setting (default: off) applies first.
- **No preview, no document:** the AI does not follow instructions in files or data to create a document; the user always decides in the preview.
- **Privacy:** the log contains only user, type and counts, never contents.

5.13 Assistant for global actions



Groups > "Assistant: global actions...": template choice

Only global admins find the button **Assistant: global actions...** in the **Groups** menu (home page). It opens a full-screen assistant with templates for routine work that affects many accounts or groups. Every template follows the same pattern:

1. **Preview:** the server computes what would happen and changes nothing. Single groups or accounts can be deselected.
2. **Confirmation:** password entered again plus the checksum of the preview. If the data changed in the meantime the run is refused and a new preview is required.
3. **Snapshot:** before every run a ZFS snapshot is taken if possible (see below). If it fails, nothing is changed.
4. **Backup and log:** the affected accounts and groups are backed up; the history shows every run and offers **Undo** for the most recent run.

Template: year change

Year change 1 Rules 2 Preview 3 Run X

Moves the members of every group with a number in its name to the next group (5a → 6a, 9b → 10b). Repeaters stay; group admins and global admins are never moved. Nothing is changed until preview, password and backup.

Mode

☐ Members move (groups are year levels: chat, folder and calendar stay with the group)

☒ Group is renamed (groups are classes: members, files and shares move along)

Also moves along: ☒ Calendar ☒ Chat ☐ Tasks

☐ Also give the group admins to the new group

Groups without a next group (leavers)

☐ leave unchanged

☒ Rename the group to: {name} {year}

History

-

Templates Calculate preview

Year change, step 1: mode and rules

Moves all groups with a number in their name to the next level: 5a becomes 6a, 9b becomes 10b, 09 becomes 10. There are two modes:

- **Members move** (groups are year levels): the members move from 5a to 6a. Chat, group folder, calendar and tasks belong to the group and stay there.
- **Group is renamed** (groups are classes): 5a becomes 6a and takes along its members, group folder with files, shares, group admins and - selectable - calendar, chat and tasks. Below it a new, empty group 5a is created (settings copied).
- **Leavers** (group without a next level): leave unchanged; in members mode move to a group, disable the accounts or just remove them from the group; in rename mode rename the top level (e.g. ehem-{name}-{year}).
- **Repeaters**: group admins (teachers) keep a list *Repeaters* on the page of their group. In the preview these accounts are preset to "stays"; the checkbox can be changed per account ("all stay" / "all move"). Repeaters join the group of their level.
- Global admins are never moved. If the target name is held by a group that stays, the group is shown as blocked and is not renamed.

Year change
1 Rules
2 Preview
3 Run

3 groups will be renamed. With: files, shares, Calendar, Chat · Will be created: 5a

☒ **5a → 6a (group is renamed)** 3 move along, 1 stay (repeaters)
[all stay](#) · [all move](#)
☐ ben ☒ mia ☒ paul ☒ weber

☒ **6a → 7a (group is renamed)** 1 move along, 0 stay (repeaters)
[all stay](#) · [all move](#)
☒ lena

☒ **7a → ehem-7a-2026 (group is renamed)** 1 move along, 0 stay (repeaters)
[all stay](#) · [all move](#)
☒ tom

Checked = moves with the group, unchecked = stays at the level (repeater, joins the group of that level). The list kept by the group admins is preselected.

Back
Next

Year change, step 2: preview with a repeater (ben stays)

Undo (latest run only): in members mode the group memberships are restored from the backup; in rename mode the groups are renamed back in reverse order as long as the new groups are still empty. After that only the snapshot helps (see below).

Snapshot before global actions

Before every global action cs-team takes a snapshot so that a mistake can be rolled back:

- **automatic:** with folder storage (CS_DIR) cs-team detects the ZFS dataset and runs zfs snapshot <dataset>@cs-team-<id> without a shell (also OpenZFS on Windows). The service needs the right to create snapshots (e.g. started as root/administrator).
- **Windows (OpenZFS on Windows):** cs-team maps the drive to the pool by its *volume label* (drive D: labelled winpool belongs to pool winpool; with only one pool that one is used). Folders and junctions below are datasets, the longest matching one is taken (D:\data = winpool/data).
- **Set the dataset explicitly:** CS_SNAPSHOT_DATASET (e.g. winpool/data) takes precedence over detection. In the napp-it CS web GUI (service menu cs-team) there are fields for snapshot (on/off), dataset and command.
- **own command:** CS_SNAPSHOT_CMD (e.g. with cs-freeze4snap; {id} is replaced by the run ID); it takes precedence over automatic detection.
- **off:** CS_SNAPSHOT=off. If no snapshot is possible the admin must explicitly confirm the run *without snapshot* in the assistant.

Note: A snapshot still contains deleted content until it is destroyed. Undoing by ZFS rollback discards all changes since the snapshot - it makes sense only immediately after the run. Objects in RustFS/S3 cannot be read safely one by one from a snapshot; a ZFS clone with a second RustFS instance helps there.

5.14 Chat review

Chat review

Only for justified cases (incident, deletion request). Every search, export and deletion is logged with reason, time and administrator – without message content.

Case 2026/14

Groups: 5a no selection = all Channel: allgemein

Authors: paul of mm/dd/yyyy to mm/dd/yyyy

Search terms: dumb, likes ☐ all terms Context ± messages: 2

Search

2 hits · paul 2

[select all](#) · [none](#) · [only paul](#)

5a/allgemein
01/10/2026, 10:19 mia Hi everyone, who does the maths homework with me?
01/10/2026, 10:19 ben Me! Let us meet after school.
☒ 01/10/2026, 10:19 paul Ben, you are so dumb, you will not manage it anyway.
01/10/2026, 10:19 mia Leave him alone, Paul.
☒ 01/10/2026, 10:19 paul Nobody likes you, Ben. Just stay at home tomorrow.
01/10/2026, 10:19 ben That was not nice.
01/10/2026, 10:19 weber Please be fair to each other. The trip is on Friday.

2 messages selected
• Secure evidence (ZIP) AI review... Delete...

Log
01/10/2026, 10:20 · admin · Search · Case 2026/14 · 2 messages

Templates

Chat review: search (author paul, terms "dumb, likes") with context and actions

This template is meant for **justified individual cases**, for example a bullying incident or a deletion request from the school management or the data protection officer. It is available to global admins only (Groups menu > Assistant > Chat review). **Every search, export and deletion needs a reason** (case number or justification) and is logged with administrator, time, filter and count - **without message content**. The log is shown at the bottom of the assistant.

- **Search:** across all or selected groups and channels, by authors, period (from/to) and search terms (any or all), with up to 10 messages of context before and after (grey). Up to 500 hits are shown.
- **Selection:** tick hits one by one, all, none or "only <author>".
- **Secure evidence (ZIP):** creates a package with messages.csv, messages.json, the attachments and manifest.txt (reason, time, filter, SHA-256 of every file). The SHA-256 checksum of the ZIP file is shown and stored in the log so that later changes can be detected. Password required.
- **AI review** (only if enabled in the settings, default: off): a neutral assessment of the selected messages (who, when, possible insults or exclusion). Before every review you must confirm that the messages are sent to the AI provider. The AI gives an assessment only, not a decision; the log contains count and reason.
- **Delete:** selection, **preview** (count, attachments, authors, checksum), password, snapshot, then delete permanently. Either the note "deleted" stays in the chat (author and time are kept) or the entry is removed completely. Attachments are deleted too.

Chat review

Search

2 hits · paul 2

[select all](#) · [none](#) · [only paul](#)

5a/allgemein

01/10/2026, 10:19 mia Hi everyone, who does the maths homework with me?

01/10/2026, 10:19 ben Me! Let us meet after school.

☒ 01/10/2026, 10:19 paul Ben, you are so dumb, you will not manage it anyway.

01/10/2026, 10:19 mia Leave him alone, Paul.

☒ 01/10/2026, 10:19 paul Nobody likes you, Ben. Just stay at home tomorrow.

01/10/2026, 10:19 ben That was not nice.

01/10/2026, 10:19 weber Please be fair to each other. The trip is on Friday.

2 messages selected

.....

Secure evidence (ZIP)

AI review...

Delete...

Delete

☒ Delete content and attachment, the note "deleted" stays in the chat (author and time are kept)

☐ Remove the entry completely (including author and time)

Calculate preview

2 messages will be deleted, 0 of them with attachment. paul 2

Cannot be undone. If needed, secure the evidence (ZIP) first. A snapshot contains the deleted messages until it is destroyed.

☐ Run without snapshot (at your own risk)

Delete permanently now

Log

01/10/2026, 10:20 · admin · Search · Case 2026/14 · 2 messages

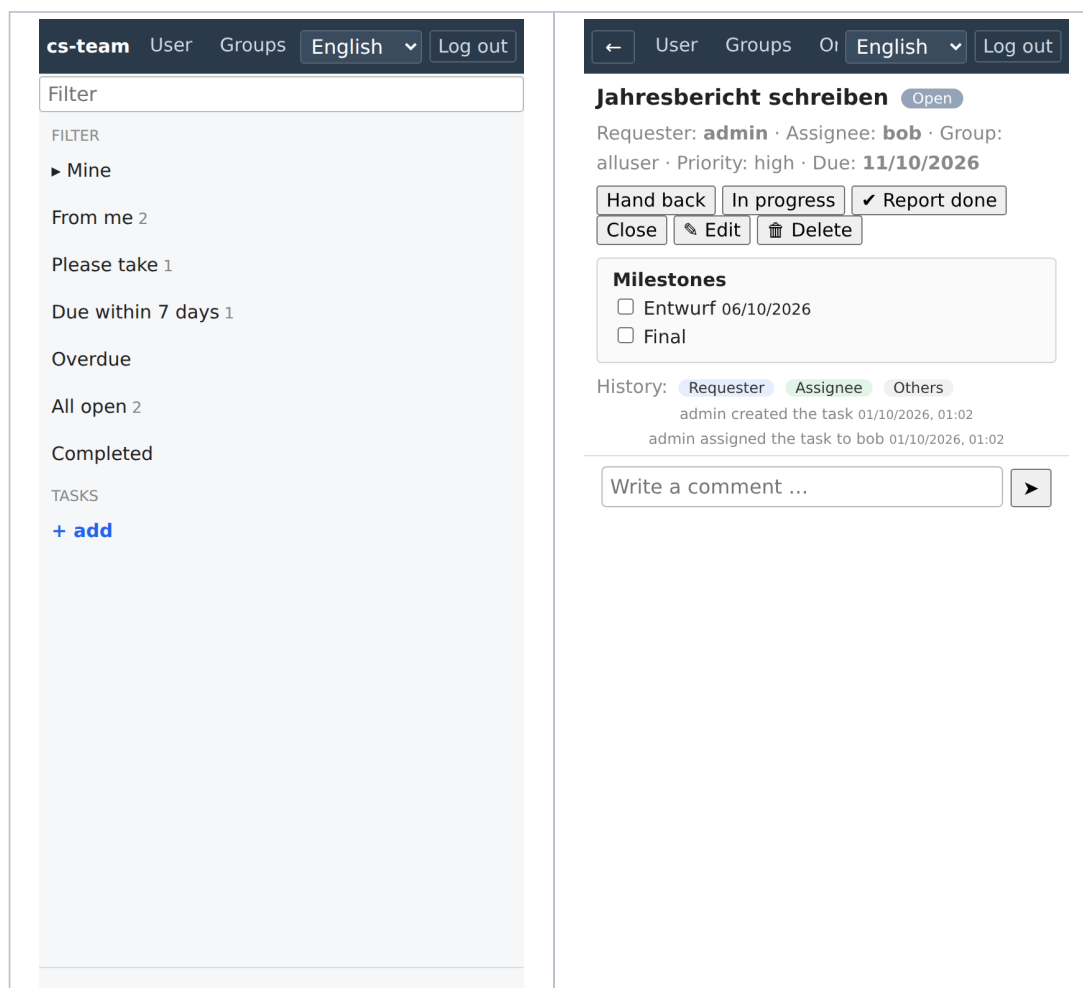
Templates

Delete: mode, preview, note about the snapshot

Note on deletion: deleting cannot be undone. If needed, secure the evidence (ZIP) first. A snapshot contains the deleted messages until it is destroyed; if content must not remain anywhere, run the deletion explicitly without snapshot and check existing snapshots and backups.

6. Using it on a phone

cs-team runs in the phone browser without installation. Up to **760 pixels width** the interface first shows the list and, after a tap, the content; the arrow ← at the top left goes back. The main menus can be swiped sideways, input fields do not trigger auto-zoom, and actions such as reaction, edit and delete are always visible on touch devices. The desktop layout is unchanged.



Phone: list (left) and content of a task (right)

Limitation: Calc is only partly usable by touch (input via the formula bar). For long sheets and texts a desktop browser is recommended.

7. Interfaces and clients

Service	Address / clients
CalDAV (calendars)	https://server:9004/dav/ or /.well-known/calDav - Thunderbird, DAVx5 (Android), iOS, macOS (with two-factor use an app password)
WebDAV (files)	https://server:9004/webdav/ - rclone, WinSCP, Cyberduck, macOS Finder, Windows network drive (HTTPS only). File locks (LOCK/UNLOCK, DAV class 2); deleted files go to the trash. With two-factor login switched on use an app password
Public links	https://server:9004/pub/<token> - read only, revocable, with expiry (default 7 days)
REST/JSON	/api/... (Basic Auth): /api/me, /api/users, /api/groups, /api/files, /api/cal, /api/docs, /api/tasks, /api/chat, /api/settings
WebSocket	/ws/<doc-id> (Calc/Text), chat and task push

Files in the storage: users/ (users, bcrypt), cal/ (.ics per event), doc/ (Calc/Text), files/ and filesmeta/, tasks/ (one JSON file per task), settings.json.

8. Security

- Passwords are stored with bcrypt (8 to 72 characters); the start password of a user created by CSV is valid for the first login only. The same applies to the first admin (CS_ADMIN_PASS), to cs-team adduser and to a password reset by an admin; trivial passwords (e.g. 12345678, password1, qwertzui) are refused when creating, changing, resetting and in the CSV import.
- Basic Auth: always use HTTPS outside the LAN. **Login protection:** 5 failed attempts per user and address lock for 5 minutes; additionally per address (60 failed attempts, all names; adjustable with CS_MAX_FAILS_IP, signed-in users stay admitted, counters expire after 15 minutes without a new failure) and per user name (100, all addresses). Behind a proxy (CS_TRUST_PROXY=1) only the last element of X-Forwarded-For counts. Successful logins are remembered for 45 seconds; password changes and locks take effect immediately.
- **Security headers** on all responses: X-Frame-Options DENY, nosniff, Referrer-Policy, Content-Security-Policy (own sources only), plus HSTS with HTTPS.
- Webhooks, calendar subscriptions and AI endpoints check targets against one common block list (private, loopback, link-local, CGNAT, NAT64, reserved ranges); webhooks do not follow redirects. Webhooks to private networks are blocked until an admin allows them (SSRF protection).
- **Export:** CSV cells starting with = + - @ get a leading apostrophe; xlsx contains only formulas from the Calc function list, everything else is written as text (formula injection).
- **Storage:** key names are checked the same way for folder and S3 (no path tricks). **Calendar:** recurrences finer than daily are refused, or removed on subscription import.
- **Delete user:** global admins only, with password and snapshot (or explicitly without), log without contents.
- Public links contain a random token, expire (default 7 days, cap adjustable) and can be revoked at any time. HTML and SVG are never executed in the browser but only delivered as a download.
- **AI assistant:** same rights as the user, no write access of its own (documents only as a proposal, created only after the user confirms; switchable globally and per group, default off), contents are treated as untrusted, the key stays on the server, no contents in the log. AI review of chats is off by default.
- **Global actions** (year change, chat review): global admins only, password confirmation with lockout against guessing, checksum of the preview, snapshot beforehand, log without contents; chat review only with a reason.
- Backup and restore via ZFS snapshots of the data folder (or S3 replication); never write directly into the .csteam folder.
- **Two-factor** (local accounts only): TOTP as in RFC 6238 with replay protection, 8 recovery codes (stored only as a hash), app passwords only for files and calendars (24 characters, bcrypt, revocable), can be made mandatory for admins, reset only by global admins with a log line. The code in the password field is the simplest route to Basic Auth: no cookie, no session store on disk; the 12-hour session lives in memory only (chapter 4).
- **Privacy:** access (ZIP export), deletion with anonymization, retention periods, notice before AI and video and templates for schools: chapter 12.

9. Own languages

More languages, e.g. for pupils with another language background: set CS_LANGDIR=/path/lang and put a file <code>.json there (e.g. fa.json, uk.json). It appears in the language selector at once (name from "_name"). Format: one JSON object, key = German text, value = translation; missing entries fall back to German. Use web/lang/_template.json as a template: give the file to an AI ("translate the values to Ukrainian, keep the placeholders {0} {1} and spaces at the edges, add _name"). Files in CS_LANGDIR override built-in texts of the same name – so single terms can be adapted too (e.g. "Group" to "Class"). Right-to-left writing is set automatically for ar, he, fa and ur.

10. Troubleshooting and limits

Problem	Solution
Service not running / page not reachable	Check the status in the service menu (started/stopped), read the last log lines (team.log), check port and firewall. Only one process per data folder and per port.
Admin password forgotten	Use "Save + set global admin" in the service menu or <code>cs-team adduser admin newpassword admin</code> – effective within about 30 seconds.
Snapshot not possible (assistant)	The service needs the right to run <code>zfs snapshot</code> (root/administrator) and a data folder on a ZFS dataset. Otherwise set <code>CS_SNAPSHOT_CMD</code> or explicitly confirm the run without snapshot.
AI widget missing or not answering	Settings > AI assistant: set mode provider, model and key and run "Save + test AI".
No mails	Settings menu: check SMTP server, port and encryption, run "Save + test mail to me". The recipient's address must be entered in the account.
Webhook does not arrive	Check the address in the account; target in a private network: enable "Allow webhooks to private networks" in Settings.
Wrong links in mails	Enter the public address (DynDNS) in Settings.
Windows network drive does not work	WebDAV needs HTTPS. Alternatively use rclone, WinSCP or Cyberduck.
File cannot be saved (423)	Another user has locked (opened) the file. The lock ends when the file is closed or after at most 10 minutes without renewal.
File deleted by mistake	Files > Trash > Restore (30 days by default). With the trash switched off only a snapshot helps.
Two-factor: phone lost, code rejected	Use a recovery code instead of the 6-digit code, then set up again; otherwise a global admin resets the 2FA. If the code is rejected: check the time on phone and server (chapter 4).
Public link no longer works	The link has expired (answer 404 as for an unknown link). Extend the period in the share dialog, the link stays the same (5.7).
Versions: only a notice	The data folder is not on a ZFS dataset with snapshots (or it is S3/RustFS). Create snapshots (e.g. napp-it auto snapshots); if <code>.zfs</code> is elsewhere, set <code>CS_SNAP_ROOT</code> (5.7).
Menu item missing	The group does not enable the area; Chat and Message appear only when a group allows them; Settings/Organizations only for global admins.
Error 429 "too many login attempts"	After too many failures cs-team locks user+address for 5 minutes, and an address after <code>CS_MAX_FAILS_IP</code> failures (default 60). Wait, or pass the address through a proxy correctly with <code>CS_TRUST_PROXY=1</code> . Users who are already signed in are not affected.
Directory sign-in fails	Check in Settings: mode, realm (name@realm), URL/base/bind account, admit groups; the account must be a member of an admit group. If the directory is down, the offline cache (days) helps.

Known limits

- Calendar sharing with individual users is not available yet (only personal, global, group).
- With several thousand events per calendar an index/cache becomes necessary.
- Typing in the same paragraph or cell at the same time is blocked (the second user only reads).
- Changes from other server instances are merged on save but not distributed live – hence one process per data folder.
- No task attachments, subtasks or time tracking (deliberately left out).
- AI: no OCR for scanned PDFs, no write access (the AI proposes, the user applies). Year change: undo only for the latest run.

- No mobile Calc for long sheets; documents are exported without page layout (text or cell values and formulas only).
- File versions need ZFS snapshots (not with S3/RustFS). Two-factor applies to local accounts only. Office import/export without formatting, images, charts and several sheets (4.5, 4.6).

11. Settings in detail

cs-team has settings on four levels. This chapter describes them one after the other and says for each option what it does, who may change it and whether it takes effect at once.

Level	Where	Who	Effect
Service start	napp-it service menu 17_cs-team (or environment variables, chapter 3.6)	server administrator	storage, port, HTTPS, snapshot, sysadmin; saving restarts the service
Global	cs-team, menu <i>Settings</i>	global admins	immediately, no restart
Object	group, calendar, task (menus <i>Groups</i> , <i>Calendar</i> , <i>Tasks</i>)	global admins, group admins, owners	immediately
Personal	menu <i>Users</i> (account page): password, e-mail, chat address; top right: language	every user	immediately, own account only

11.1 Service menu in the napp-it CS web GUI

The menu **System > Services > 17_cs-team** only defines *how* the service starts. At the top it shows the state of the service, below it the start parameters and at the bottom the last lines of the log. After **Save** a running service is restarted; the values are kept in `_cfg/team/` (readable by root only).

cs-team -- localhost-127.0.0.1:MSWin32;Windows;WIN:my-w11;[Win 10.0.26300.9457];cs 26.09.22_00:40;zfs

Service	Current	Actions	Storage	Web UI
cs-team	started	stop enable	folder d:\data\.csteam	https://localhost:9004/

Settings
Storage ☒ Folder (ZFS filesystem, no S3 needed) ☐ S3 bucket (RustFS)
Folder data goes to <folder>\.csteam
S3 endpoint ☐ TLS
S3 key / secret
S3 bucket (created if missing)
Port ☐ behind a reverse proxy (trust X-Forwarded-For)
HTTPS (PEM)
Snapshot dataset command
Global admin name + password of the global admin. "Save + set admin" creates the admin or resets its password now (also possible later if the password is lost); clear the password field
Saving restarts the service if it is running. Settings incl. secrets are kept in _cfg/team/ (root only). The web UI uses Basic Auth: outside a trusted LAN set an HTTPS certificate (PEM, default: the cs-proxy cert _cfg/cs-proxy-cert.pem + cs-proxy-key.pem) or put it behind an HTTP proxy. Users, groups, calendars, files: see the web UI (Users / Groups menu).

Log (last lines)

```

2026/10/06 10:28:55 storage: folder d:\data\.csteam
2026/10/06 10:28:56 snapshot before global actions: zfs snapshot inpool/data@cs-team-cid>
2026/10/06 10:28:56 cs-team listening on :9004
2026/10/06 10:28:56 https, cert /opt/csweb-gui/_cfg/cs-proxy-cert.pem

```

napp-it CS web GUI: service menu 17_cs-team (start parameters)

Field	Meaning and notes
Header Service / Current / Actions / Storage / Web UI	Name of the service, state (<i>started</i> or <i>stopped</i>), the matching action (<i>stop enable</i> or <i>start disable</i>), the active storage and the link to the cs-team web interface (<code>https://host:port/</code>). <i>enable</i> starts the service and switches autostart on, <i>disable</i> stops it and switches autostart off; <i>start</i> and <i>stop</i> leave autostart unchanged.
Storage	Folder: data is kept as files in a folder (default, e.g. a ZFS dataset; no S3 needed). S3 bucket (RustFS): data is kept in S3-compatible storage. The fields of the kind that is not selected are ignored.
Folder	Folder on the server; cs-team creates the subfolder <code>.csteam</code> in it (here <code>d:\data</code> gives <code>d:\data\.csteam</code>). It should live on a dataset with snapshots and backup.

Field	Meaning and notes
S3 endpoint, TLS	Address of the S3 server as <i>host:port</i> (e.g. 127.0.0.1:9000). Tick <i>TLS</i> if the server speaks https.
S3 key / secret	Credentials (access key and secret) of the S3 storage. The secret is shown as dots only and stays stored as long as the field is not changed.
S3 bucket	Name of the bucket (default cs-team); it is created if missing.
Port	Port of the web interface and the interfaces (default 9004). The check box <i>behind a reverse proxy (trust X-Forwarded-For)</i> sets CS_TRUST_PROXY: cs-team then trusts the client address from the X-Forwarded-For header. Tick it only if a proxy of your own really sits in front , otherwise an attacker can forge the address and bypass the lock-out after failed sign-ins. Without the tick the address of the direct connection counts (lock per address, chapter 8).
HTTPS (PEM)	Two fields: certificate and private key (PEM). Both empty = plain HTTP (trusted LAN only). The web GUI default is the cs-proxy certificate (_cfg/cs-proxy-cert.pem and cs-proxy-key.pem). Outside a trusted network, Basic Auth sign-in should run over HTTPS or behind an HTTPS proxy only.
Snapshot	Snapshot before global actions (year change, delete with preview): <i>automatic</i> = ZFS snapshot of the dataset that holds the data folder; the alternative switches it off (CS_SNAPSHOT=off). dataset : set the ZFS dataset explicitly (empty = detect automatically, CS_SNAPSHOT_DATASET). command : own command instead of ZFS detection, {id} is replaced by the run id (CS_SNAPSHOT_CMD, e.g. on Windows with a freeze tool). See chapter 5.13.
Global admin	Name and password of the sysadmin : the local account that always stays admin and cannot be deleted (CS_ADMIN_USER, chapter 4). Save + set global admin creates the account or resets its password (also later, if the password was lost); an empty password field leaves the password unchanged. Otherwise only the account itself changes this password. Further global admins and group admins are created in cs-team (menus <i>Users, Groups</i>).
Save / Save + set global admin	Save stores the start parameters and restarts the service; Save + set global admin does the same and also creates the admin account or resets its password.
Log (last lines)	The last lines of team.log: chosen storage, snapshot method, port and HTTPS certificate. Start errors (port in use, certificate unreadable) show up here too.

11.2 Global settings in cs-team

Menu *Settings* (global admins only; also reachable by clicking the title "cs-team"). All areas are on one page and are saved together with **Save**; for a wrong entry a message appears and the rest stays unchanged. The values are stored as settings.json in the storage. Secret values (passwords, keys, secrets) are never shown again: an empty field means "unchanged", the tick *delete* removes the value.

cs-team

User

Groups

Organizations

Calendar

Calc

Text

Files

Tasks

Chat

Message

Settings

English

admin (Global...

Log out

Filter

Settings

Settings

These settings belong to cs-team itself and take effect immediately without a restart. The service start parameters (port, storage, HTTPS, admin) are not set here.

Mail (SMTP) for messages and tasks

SMTP server

587

Default (by port)

User

Password

Sender (cs-team@example.org)

Network

https://team.example.org:9004

Public address (e.g. DynDNS) for links in notifications

☐ Allow webhooks (external chat addresses) in private networks

Save

Save + test mail to me

Menu Settings (global admins only)

Area / option	Description
Mail (SMTP)	Needed for notifications (message, tasks). Without a server no mails are sent; the in-app notification remains.
SMTP server, port	Address and port of the mail server (587 for STARTTLS, 465 for SSL, 25 without encryption).
Encryption	<i>Default (by port)</i> derives the method from the port; <i>STARTTLS</i> , <i>SSL</i> or <i>none</i> force it.
User, password, sender	Sign-in to the mail server and the sender address (e.g. cs-team@example.org). The password can be removed with <i>delete password</i> . If the service was started with <i>CS_SMTP_*</i> , these values apply only until something is saved here.
AI assistant	Central for all users (setup see 5.11 and 5.12): <i>AI off/on</i> , provider, model, key; <i>Images</i> (automatic/yes/no: whether images go to the model), <i>answer tokens</i> (length of the answer, default 1024), <i>requests per minute and user</i> (default 20), <i>messages of history</i> (default 11) and <i>characters per message</i> (default 12000).
AI: check boxes	<i>Allow endpoint in the local network</i> (needed for Ollama and own servers), <i>Read and evaluate selected files and documents</i> , <i>Global admins may evaluate chat incidents with AI</i> (the messages go to the provider; default off) and <i>AI may propose documents</i> (created only after confirmation; default off). <i>Second provider</i> steps in when the first does not answer.
Video chat (external servers)	Three options: 1 fixed room per group, 2 ad-hoc room for group admins, 3 ad-hoc room for everyone allowed to write in the chat. Per option choose provider (Jitsi, MiroTalk, own address with { room}) and server, or leave it off. cs-team never connects to these servers itself, it only defines the room and invites with a link in the chat.
Video chat built in	Option 4: WebRTC directly in the browser, up to 6 participants. <i>STUN servers</i> (one per line; empty = same network only), <i>TURN servers</i> (optional, for strict firewalls) and the <i>TURN secret</i> of coturn (use-auth-secret); cs-team derives credentials valid for 12 hours from it.

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Area / option	Description
Files	<i>Quota per user and group folder</i> in MB (0 = unlimited; applies to browser and WebDAV). <i>Trash: days</i> until final deletion (default 30, at most 3650; 0 = no trash, deleting is final at once). <i>Show usage</i> lists per owner (user or group folder) files, space used, share in the trash and quota usage; overruns are red.
Public links	<i>Maximum validity of public links (days, 0 = unlimited allowed)</i> , 0 to 3650. If a value is set, sharing offers no "unlimited" and longer requests are shortened to the cap (also when none is given). Existing links without expiry are left untouched (5.7).
Two-factor login	Tick <i>Require two-factor for admin accounts</i> : admins with a local account and no two-factor reach only the account page after signing in until they have set it up. Directory accounts (LDAP/AD) are exempt (chapter 4).
Privacy and retention	<i>Closed tasks: days until automatic deletion</i> (0 = never): done and accepted tasks are deleted after that. <i>Privacy notice (additional text)</i> : appended to the notices before first use of the AI assistant and external video chat (up to 2000 characters, e.g. a data protection contact). Details: chapter 12.
Network	<i>Public address</i> (e.g. <code>https://team.example.org:9004</code>) appears in the links of notifications; without it links in mails point nowhere. Tick <i>Allow webhooks in private networks</i> : otherwise webhook addresses in the local network are blocked (SSRF protection).
Sign-in (directory)	<i>Mode</i> local, dir or mixed; <i>realm</i> and <i>default realm</i> (sign-in without suffix), <i>group for local accounts</i> , LDAP URL, <i>base DN</i> with password (delete possible), <i>admit groups</i> (comma list), tick <i>STARTTLS</i> and <i>cache</i> in days (0 = off, at most 365). Local accounts are allowed in every mode so that the sysadmin can always sign in. Details: chapter 5.11.
Buttons	Save ; Save + test mail to me (test mail to your own address); Save + test AI (test question to the provider, shows answer and time).

11.3 Settings of a group

Menu *Groups*, choose the group in the list. **Global admins** change all fields; **group admins** see the page of their group and change only members, repeaters and AI. Members do not see the member list.

cs-team
User
Groups
Organizations
Calendar
Calc
Text
Files
Tasks
Chat
Message
Settings
English
admin (Global admin)
Log out

Filter
alluser cal,calc,text,files
klasse5a cal,calc,files,text [x]
+ add

klasse5a
Areas:

	read	change
Calendar	☒	☒
Calc	☒	☒
Text	☒	☒
Files	☒	☒

☐ Create group folder (Files)
☐ Members may write
Chat:
Create channels:
Send message:
Create tasks:

Save

Organizations:

Save

Group admins:

Save

Members (2)
A list of names (comma, space or line break). Added ones must exist; removed ones keep at least one other group.

anna
bob

Save members

Menu Groups: settings of a group

Option	Description	Changed by
Areas	Per area (Calendar, Calc, Text, Files) the ticks <i>read</i> and <i>change</i> . A user may use an area if one of the groups grants it; the rights of several groups add up.	global admin
Group folder (Files)	Creates a shared folder (WebDAV /webdav/groups/<group>/). Members read, group admins write; with <i>Members may write</i> all members write.	global admin
Chat	<i>Members write, only admins write or off.</i>	global admin
Create channels	Who creates chat channels in the group: <i>only admins, every member or nobody</i> .	global admin
Send message	Who may send messages (mail/notice) to the group: <i>only admins</i> (default), <i>every member</i> or <i>off</i> .	global admin
Create tasks	<i>every member</i> (default), <i>only admins</i> or <i>off</i> (see 11.5).	global admin
Group calendar (release)	<i>no group calendar, not released</i> (draft, owners only), <i>those entitled read</i> or <i>all entitled may enter</i> . A calendar can be removed only while it holds no events.	global admin
Organizations	Assignment to one or more organizations (comma list); without an entry the group belongs to <i>all</i> .	global admin
Group admins	Names of the group admins (local or directory accounts). They own the group calendar and maintain members. For <i>alluser</i> these are the global admins.	global admin
Members	One line or comma per entry: account (anna), subgroup (@class5a), directory group (Domain\Group, global admins only) and #organization (all groups of the organization, global admins only). Added accounts must exist; a removed account keeps at least one other group.	group admin
Chat retention (days)	Chat messages of the group including attachments are deleted automatically after this number of days (0 = unlimited, default). See chapter 12.3.	global admin
Repeaters	Reminder list of members who stay in their grade at the year change; it is cleared afterwards (chapter 5.13).	group admin
AI for members	<i>off</i> (default) or <i>on</i> : the AI assistant may propose documents to members. Works only if <i>AI may propose documents</i> is set in the global settings.	group admin

11.4 Settings of a calendar

When creating (+ **add** in the calendar bar) you choose the *kind*: personal, group, organization or global; this cannot be changed later. All other properties are changed by the **owners** in the calendar bar with **Edit**: for personal calendars the user, for group calendars the group admins, for organization and global calendars the global admins.

Option	Description
Name, description	Display name in the list and in CalDAV clients, plus a short text.
Release	Only for group, organization and global calendars. <i>not released</i> : draft, only the owners see the calendar (not in CalDAV clients either). <i>those entitled read</i> : all entitled users (members, organization, everyone) read, only owners change. <i>all entitled may enter</i> : every entitled user enters and changes events.
Resource	Tick <i>Resource</i> (room, device): <i>prevent double booking</i> : overlapping events are rejected, also for series (two years ahead) and from CalDAV clients. Not for subscriptions.

Option	Description
Subscription URL	ICS address (https:// or webcal://) of an internet calendar (holidays, school vacations). The calendar is then read-only and refreshed every 30 minutes; the bar shows status and errors and offers <i>Refresh now</i> . Empty the URL = end the subscription.
Delete	Owners only; a calendar with events cannot be deleted. Personal calendars are always deleted by their user.
Color	Every user chooses the color for themselves in the calendar bar; it applies to their own view only.
Export / import	<i>Export (.ics)</i> saves a calendar as a file, <i>Import (.ics)</i> reads a file into a writable calendar (by UID, no duplicates).

11.5 Settings for tasks

Tasks have no menu of their own for settings; their behavior comes from the group, the mail setup and the fields of the individual task.

Setting	Description
Create tasks (group)	In the group settings (11.3): <i>every member</i> (default), <i>only admins</i> or <i>off</i> . With <i>off</i> members no longer see the tasks of the group. Anyone may create tasks without a group; only the requester, assignee, participants and admins see them.
Assignment	Assignee set = the task belongs to that user; empty = <i>Please take</i> : any group member can take it.
Priority, due date, milestones	Priority low/normal/high; due date and milestones (text + date) drive the filters <i>Today and overdue</i> , <i>Due in 7 days</i> and the reminders.
Repetition	daily, weekly, monthly or yearly (needs a due date): on acceptance exactly one follow-up task is created, due date and milestones move on.
Retention	cs-team deletes closed tasks automatically after the number of days set in 10.2 (Settings > Privacy and retention; 0 = never).
Notifications	In the app always (red counter at the menu item); by e-mail only if mail (11.2) is set up, and by webhook. Triggers: assignment, taking over, done, acceptance, comment, due dates and milestones (hourly check). The link in the mail uses the <i>Public address</i> .
Quick line	One sentence creates a task: Write parents letter @anna !high tomorrow #class5a (assignee, priority, date, group; chapter 5.8).
Rights per status	The assignee sets <i>In progress</i> and <i>Done</i> ; requester, group admin and global admins change master data, accept, reopen and delete.

11.6 Languages

The **user interface** (menus, buttons, labels, messages and help texts) is available in thirteen languages: German, English, French, Spanish, Italian, Russian, Chinese, Turkish, Arabic (right-to-left) and Ukrainian, Polish, Greek and Japanese. Every user chooses their language at the top right; it is stored in the account, without a choice the browser language applies. This helps above all parents and pupils who do not yet master the local language.

- **Only the interface is translated:** texts written by users, i.e. chat and message contents, tasks, events, documents and files, stay unchanged in the language they were written in. cs-team does not translate content.
- **Machine translation:** The catalogs were translated automatically (by AI) and checked for everyday use. For binding matters such as letters to parents or legal notes a native speaker should proofread the most important terms; corrections are quickly made in the language file.

- **More languages are very easy to add, and the work can be automated:** a language is a single text file `<code>.json` (key = German text, value = translation, `"_name"` = display name). Give the template `web/lang/_template.json` to an AI with the task of translating the values (placeholders such as `{0}` and spaces at the edges are kept) and put the file into the folder `CS_LANGDIR`. No rebuild and no restart of the program is needed: the language appears in the selection at once. Missing entries fall back to German; right-to-left script is set automatically for ar, he, fa and ur (chapter 9).
- **Own terms:** files in `CS_LANGDIR` override built-in texts of the same name, e.g. to replace "group" by "class".

Order for the setup: first start the service (11.1) and sign in as sysadmin, then enter mail and the public address (11.2), create groups with areas, chat and tasks (11.3) and finally release calendars (11.4).

12. Privacy (GDPR)

This chapter summarises what cs-team stores about people, which tools for access, deletion and retention are built in, and what the operator (school, club, company) has to arrange. It is a technical help and not legal advice; please agree texts and periods with your data protection officer.

12.1 Overview

Question	Answer
What is stored?	Accounts (name, groups, e-mail, chat address, language, password only as a bcrypt hash), files and documents (Calc, Text), calendars and events, tasks, chat and messages, plus logs (12.4).
Where?	Only on your own server: in the data folder (e.g. a ZFS dataset, subfolder <code>.csteam</code>) or in an S3 bucket (RustFS). There is no vendor cloud.
What leaves the server?	Only mail via the configured SMTP server, requests to the AI provider (only if AI is switched on, see 12.5) and the link to an external video chat server (cs-team itself sends nothing there). Webhooks and calendar subscriptions go only to targets that the admin or the user enters.
Tracking?	None. cs-team sets no cookies (sign-in uses Basic Auth), loads no external fonts or scripts and contains no analytics.
Public links?	Every public file link expires (default 7 days, cap in Settings); expired links and their token are deleted hourly. Links from earlier versions without expiry stay valid until revoked or given a period.
Polls in the chat?	Named polls store the choice per person (visible to the readers of the channel). Anonymous polls store only counters per answer and "has voted" per person, no assignment. Polls disappear like messages after the retention period.
File versions?	They come from the operator ZFS snapshots; cs-team makes no copies of its own. Deleted or overwritten data stays in them until the snapshot expires (12.2).

12.2 Rights of data subjects

Right	Implementation in cs-team
Access and portability (Art. 15, 20)	Every user: menu <i>Users</i> (account) > Export my data (ZIP) . A global admin can create the export for a user: user list > select the user > Export data (this is logged).
Erasure (Art. 17)	Global admin: delete user (chapter 5.1) with preview, password and snapshot. The option Replace the name in chat, tasks and events with "gelöschter Benutzer" (anonymize) is on by default; the replacement text is the same fixed text in all languages.
Rectification (Art. 16)	Users change their own details (password, e-mail, chat address) themselves; admins change contact data and rename accounts.
Restriction (Art. 18)	Lock the account (edit user > lock): the account is kept, access is off.

Contents of the export

- README.txt (explanation), account.json (name, groups, e-mail, language, creation date; **without** the password hash, a webhook only as "set"), files/ (own files), calendars/*.ics (personal calendars, without subscriptions), tasks.json (tasks created or edited), chat.json (own messages with group, channel and time; for polls the own choice in named ones, only "participated" in anonymous ones).
- **Not included:** Calc and Text documents (ask the admin), content of other people, group folders and group calendars, server logs. The README.txt inside the ZIP says so too.

Deletion in detail

- Personal files are deleted (afterwards they stay **30 days in the trash**, depending on the setting in 11.2), as are documents, personal calendars and shares of the account. The preview in the dialog gives the numbers, including those for anonymization.
- With the option *anonymize* cs-team replaces the name in chat (author, reactions), tasks (client, assignee, history) and events of other calendars with the text gelöschter Benutzer. Without the tick the name stays there.
- **Snapshots and backups** contain the data until they expire. The operator should align the snapshot retention with this (e.g. no longer than necessary) and record it in the record of processing activities. This applies to file versions as well (5.7): what a user deleted or overwrote may stay retrievable from a snapshot; deletion is complete only when the snapshots have expired.
- The log users/_delete-log.json contains only name, time, admin and numbers. The chat audit log chat/_audit.json is an accountability record of admin reviews and is **not** anonymized.

12.3 Retention and deletion periods

cs-team deletes data automatically after a period (hourly run). The operator sets the periods; 0 always means "never".

Setting	Where	Effect
Chat retention (days)	Menu <i>Groups</i> , per group (global admin)	Chat messages of the group including attachments are deleted after this number of days (0 = unlimited).
Closed tasks: days until automatic deletion	Menu <i>Settings</i> , section <i>Privacy and retention</i>	Done and accepted tasks are deleted after that (0 = never).
Trash: days until permanent deletion	Menu <i>Settings</i> , section <i>Files</i>	Deleted files are removed for good after this time (default 30; 0 = no trash).

Each run writes a line to the log, e.g. retention: group=class5a deleted 12 messages (older than 365 days) or retention: closed tasks deleted 3 (older than 365 days).

Recommendation for schools (the operator decides): chat 180 to 365 days, closed tasks 365 days, trash 30 days. Events and files have no automatic period; they are removed with the account or when tidying up. At the end of the school year the year change (chapter 5.13) moves the classes; afterwards remove leavers and accounts that are no longer needed with *Delete user*.

12.4 Logs

cs-team writes to standard error (stderr); with napp-it CS this is the service log in menu *17_cs-team* (team.log). The log contains **user names and IP addresses and is therefore personal data**. Never logged are passwords, tokens, chat, file and document contents.

- **Start line** (storage, port, HTTPS, snapshot method), **failed sign-ins and lockouts** (auth:), at most 30 lines per minute.
- **Audit** (audit: and audit-denied:): write access to users, groups, settings, passwords and the year change, with user, address and result.
- **Errors**: http: 5xx and http: PANIC. **Retention**: retention: lines (12.3). **AI**: ai: lines with user and numbers, without content.
- Optional CS_LOG_ACCESS=1: every request (for troubleshooting only, switch it off afterwards).

Rotation and period: cs-team does not rotate the log itself. The operator should rotate it externally (logrotate, newsyslog or a scheduled task on Windows) and keep it for **30 to 90 days**, then delete it. Only these files persist in the data store: users/_delete-log.json (deletions), users/routine-log.json (year change) and chat/_audit.json (chat review by admins, only with a stated reason).

12.5 Notices for AI and video (third parties)

- **Notice before first use**: before the first use of the AI assistant and of the external video chat the interface shows a dialog (*Notice on the AI assistant* or *Notice on video chat*). It names the provider or server, which data goes there (AI: text, images and selected files of the request; video: audio, video and room name) and that use is voluntary. **Understood, continue** confirms, **Cancel** sends nothing.
- The acknowledgement is stored per user in the account and becomes **invalid as soon as the admin changes the provider or server address**; the notice then appears again.
- In menu *Settings > Privacy and retention* you can enter a **Privacy notice (additional text)** (up to 2000 characters, e.g. a contact person); it is appended to both notices.
- AI is **off** per group by default and can be switched off globally. The notice is enforced in the web interface only; programs that use the interfaces directly are not blocked.

Third party	What to clarify
SMTP provider	Data processing agreement (DPA) and location of the provider; your own school mail server avoids this.
AI provider	DPA, third-country transfer (provider outside the EU/EEA), training on inputs. Recommendation : a local model (e.g. Ollama on your own server) or a provider in the EU; avoid personal data in inputs.
Video chat server	For Jitsi, MiroTalk or your own service: check DPA and location or use a self-hosted server. The built-in video chat (WebRTC) only needs STUN/TURN, which see IP addresses.

12.6 Technical and organisational measures (Art. 32)

Measure	Implementation	Done
Encrypted transport	HTTPS (certificate and key in the service menu, CS_TLS_CERT) or an HTTPS proxy; WebDAV only over HTTPS	[]
Encrypted storage	ZFS dataset with native encryption for the data folder	[]
Passwords	bcrypt, start passwords must be changed at first sign-in, trivial passwords rejected, lockout after failed attempts (chapter 8)	[]
Two-factor login	switch TOTP on for local accounts, make it mandatory for admin accounts in Settings (chapter 4); keep recovery codes safe	[]
App passwords	give WebDAV/CalDAV programs their own revocable app passwords (files and calendars only, at most 10 per account); do not store the account password in programs	[]
Public links	choose a short period and limit the maximum validity in Settings (5.7, 11.2)	[]
Snapshots as file versions	align snapshot retention: deleted data stays retrievable until they expire (12.2)	[]
Roles and groups	global admin, group admin, member; separation by groups, rights per area; few global admins	[]
Web protection	CSRF protection, Content-Security-Policy and further security headers, HTML/SVG never executed in the browser	[]
Backup	ZFS snapshots and replication; retention aligned with 11.2	[]
Updates	keep cs-team and the operating system up to date (read CHANGELOG.md)	[]
Restrict access	access from outside only via VPN or the school network, firewall on the port	[]
Traceability	audit lines in the log; chat review only with a reason and logged	[]

12.7 School: templates

All templates are **examples to adapt** and must be checked by the school's data protection officer. Text in [square brackets] is to be filled in.

a) Notice on data processing for students and parents

Notice on data processing in the learning platform cs-team

Controller: [school, address] Data protection officer: [name, contact]

Purpose: lessons, communication, events and tasks of the school.

Data: name, class/group, e-mail (if given), files, events, tasks, chat messages, sign-in logs.

Recipients: teachers of the respective groups and the school administration. No disclosure outside the school except to the services set up by the school: [mail server], [AI service, only if enabled], [video chat server].

Storage: on the school's server. Chat [365] days, closed tasks [365] days, deleted files [30] days in the trash, logs [90] days. The account is deleted when you leave.

Rights: access, rectification, erasure, restriction, portability (export in the account), objection, and complaint to the supervisory authority [authority].

Contact: [name, e-mail, phone]

b) Entry for the record of processing activities (Art. 30)

Processing activity: operation of the platform cs-team

Controller: [school] As of: [date]

Purpose: [lessons, internal communication, scheduling]

Legal basis: [school act [section] / consent Art. 6(1)(a)]

Data subjects: [students, parents, teachers, administration]

Data categories: master data (name, group, e-mail), content data (files, events, tasks, chat), log data (name, IP address)

Recipients: [internal: teachers, admin] [external: SMTP provider, if used AI, video chat - only with a DPA]

Third country: [no / yes, with safeguards]

Deletion periods: chat [365] days, tasks [365] days, trash [30] days, logs [90] days, account on leaving

TOMs: see handbook chapter 12.6 [and school annex]

c) Consent for AI and video chat (minors, parents)

Consent to the use of optional services in cs-team
 School: [name] Student: [name, class]

Use is voluntary; there is no disadvantage without consent.

[] AI assistant: my inputs (text, if applicable images and selected files) are sent to [provider, location] and processed there.

[] Video chat: audio, video and room name are transmitted via [server, location].

Consent can be withdrawn at any time with effect for the future: [contact].

Place, date: []

Signature student (from age [14]): []

Signature parent/guardian: []

12.8 Data breach (72 hours)

1. **Detect:** look for conspicuous patterns in the log (table below), e.g. many auth: login failed for one account, audit-denied or http: 5xx in series.
2. **Contain:** lock the affected accounts, have passwords changed, if needed stop the service or close access at the firewall; create a snapshot as evidence and secure the log.
3. **Assess:** which data and which people are affected, how high is the risk? Note the time you became aware.
4. **Report:** if there is a risk for the persons concerned, report within **72 hours** to the supervisory authority (Art. 33), the school management and the data protection officer. In case of a **high risk** also inform the persons concerned (Art. 34).
5. **Document:** record the incident, its effects and the countermeasures in writing, even if no report is required; renew passwords and access permanently.

Log line	Meaning
auth: login failed user="x" ip=...	Failed sign-in (without password). Many lines for one account or from one address: guessing attempt.
auth: locked "x" for 5m0s after N failed attempts	User and address locked because of failed attempts.
audit: POST /api/users/x -> 200 user="admin" ip=...	Successful change to accounts, groups, settings or passwords: who, what, from where.
audit-denied: ... -> 403 user="x" ip=...	Refused attempt to make such changes (missing rights).
http: 500 ... / http: PANIC ...	Server error or crash of a request; if frequent, troubleshoot, possibly an attack attempt.
retention: ...	Automatic deletion after the period (numbers only); shows whether retention is running.
ai: user=x ... ok=true	AI request with numbers, without content.

13. Appendix

Keyboard shortcuts in Calc

Key	Effect
Arrow keys	Move to another cell
Shift + arrow / drag with mouse	Select a range
Ctrl + C / X / V	Copy / cut / paste
Ctrl + D / Ctrl + R	Fill down / fill right
Σ	Insert the sum of the selection

Sources and help

Project and source code: github.com/guenther-alka/cs-team · Documentation and further manuals: napp-it.org. Changes per version are listed in the file CHANGELOG.md.

14. Customise, extend and audit with AI (build your own cs-team)

cs-team is deliberately small and the source code is open: one Go program without a database, a user interface in a single file, texts in plain language files. That makes it well suited to adapt, extend and security-check together with an AI assistant (Claude Code, Claude Cowork or another AI coding tool) for your own school or company. This chapter is a short how-to.

14.1 Get the source code

Requirements: **git** and **Go** (version see go.mod). Node.js is only needed for the syntax test of the user interface. Keep your own changes in a separate branch so that updates of the original can be pulled in later with git pull or merge.

```
git clone https://github.com/guenther-alka/cs-team.git
cd cs-team
git checkout -b my-changes
```

14.2 Build, test, run

```
go vet ./...
go test ./...
go build -o cs-team .
```

```
# your own test instance, separate from production data:
CS_LISTEN=127.0.0.1:9120 CS_DIR=./testdata CS_ADMIN_USER=sysadm CS_ADMIN_PASS=Start-Password ./cs-team
```

For other systems build with GOOS and GOARCH (e.g. GOOS=linux GOARCH=amd64 go build). The finished file replaces the program in the program folder; stop the service first. On first start the sysadmin has to change the start password (chapter 4).

14.3 Working with the AI

1. Start the AI tool in the project folder (with Claude Code: cclaude in the cs-team folder) and let it read README.md, TODO.md and CHANGELOG.md first. Structure: one Go package each for auth, cal, files, tasks etc.; the interface is web/index.html, texts are in web/lang/*.json.
2. Give small, clearly defined tasks and run go vet ./... and go test ./... after every step; the tests check, among other things, the syntax of the interface and that every text is in the language catalog.
3. Record every change in CHANGELOG.md and raise the version in main.go so it stays clear what is running.

4. Always check against your own test instance first (other port, own data directory), never against production data; take a backup or snapshot before bigger changes.

Example tasks:

- "Read README.md and explain the architecture in ten sentences."
- "Add the language Hindi: translate web/lang/_template.json to hi.json, keep placeholders like {0} unchanged, then run go test."
- "Replace Group by Class everywhere in the interface without changing code, using a file in CS_LANGDIR."
- "Add a room number field to the calendar, with a test, and record it in the CHANGELOG."

14.4 Audit with AI

An AI can check the source code and a running test instance systematically. This order has proven useful: first let it read and answer questions, then run a live test with several test users, and only then order corrections.

Check cs-team for security, usability and data protection (GDPR).

1. Read all HTTP handlers (mux.Handle) and check that every access verifies user and role (admin, group admin, member, guest).
 2. Look for path traversal, missing input validation, unchecked sizes and secrets in logs.
 3. Start a test instance (other port, empty data directory), create teacher, student and guest and, as a student, try to read other people data or escalate rights (API, WebDAV, CalDAV).
 4. Is the logging sufficient to analyse problems and incidents?
 5. Which GDPR points are open (deletion, access, retention)?
- Report only findings of category important/high, with location and proposal. Do not change anything yet.

An AI audit replaces neither a penetration test nor a legal review: always verify findings yourself, test fixes one by one and document the results. Self-built versions are not maintained by napp-it.org; checksums and updates of the original remain the operator's responsibility.

14.5 A new language in 3 steps

1. Copy web/lang/_template.json and name it after the language code (e.g. hi.json).
2. Give the file to an AI: "Translate the values to Hindi, do not change the keys, keep placeholders like {0} and {1} and spaces at the edges, set the language name in _name."
3. Put the file into the folder CS_LANGDIR: it appears in the language selector without a rebuild. Missing entries fall back to German.

Files in CS_LANGDIR override built-in texts of the same name; so single terms can be changed too (e.g. "Group" to "Class"). Details: chapter 9.

14.6 Extensibility

- **One binary:** go build produces the whole program, the interface is embedded. **One interface file:** web/index.html, no framework and no build step.
- **One package per area** (e.g. auth, cal, chat, conv, files, store, tasks). A new function usually consists of a handler, a test, a piece of interface and the new texts in web/lang/.
- **Tests:** about 200 test functions check, among other things, rights, the syntax of the interface and the language catalog; run go vet ./... and go test ./... after every change (14.3).
- There is **no plugin system**: extending means changing the source and rebuilding (best with an AI, 13.3); updates of the original are pulled in with git merge.

15. Audit Result 0.59

Before 0.59 was released, cs-team was audited with AI assistance (method as in chapter 14) in two passes: a source-code review of all new and changed places and a live test on a fresh instance with sysadmin, teachers, students, parents and a guest (setup, usage, security, privacy, logging). After the first pass all findings of category **high** and most of category medium were fixed; the second pass confirmed the fixes and found no new item of category high.

Area	Result
Setup	Start-password enforcement for sysadmin and new accounts, groups, members, group admin adds new accounts: passed
Usage	Calendars (group, resource, ICS), tasks, WebDAV, CalDAV, share link, trash, chat: passed
Security	Authorisation checks, privilege escalation, access to other people's data, CSRF, path traversal, zip slip, input limits, lockouts: passed
Privacy	Data export, deletion with anonymisation, retention, notice for AI and video: passed
Logging	Failed logins, lockouts, audit lines, exports, server errors: sufficient to analyse incidents

Checked and passed

- **Rights:** students, guests and group admins of other groups can neither change users, groups or settings nor read other people's calendars, chats, tasks or files; a group admin may add accounts without a group of their own to their group.
- **Data export** (access, portability): ZIP with the person's own data only, without password hash, protected against unsafe file names in the ZIP; export for other people only by global admins and with a log line; at most three exports at the same time.
- **Deletion:** preview and result match; anonymisation in chat, reactions, tasks (with history) and event attendees is on by default and can be switched off.
- **Retention:** chat days per group and closed tasks globally; allowed are 0 (off) or 7 to 36500 days, global admins only, every run is logged.
- **AI and video:** notice with confirmation per person; the confirmation applies to the stored address only and expires when the provider changes.
- **Input:** broken or very large requests never cause a server error; Windows device names (CON, NUL ...) are refused; error messages contain no server paths.
- **Web:** security headers, protection against cross-site requests, uploaded HTML is not executed; no hashes or passwords in responses, exports or logs.
- **Sign-in:** logout per user and address, logout per address, no user discovery through different error messages.
- **Calendar:** an empty ICS export returns a valid empty calendar, double booking of a resource is refused, group calendars for non-existing groups are refused.

Open points (medium and low)

There is **no open item of category high**. Known limitations the operator should be aware of:

- Names of deleted accounts remain in snapshots and backups, in the deletion log (users/_delete-log.json), in the chat review log and in free text (messages, task titles); retention for snapshots and logs is up to the operator (chapter 12).
- Automatic retention covers chat and closed tasks, not files and events; it deletes without a preview, hence the minimum of 7 days.
- The notices for AI and video are enforced in the web interface; other clients of the API are not prevented from using the features.

- Anonymisation is not atomic with the deletion of the account; after an error it can safely be repeated. The retention run and the deletion of chat attachments were checked in the code but not in the live test.
- Minor: no Cache-Control on the JSON API, students see the group list with the names of the admins, export slots are counted globally rather than per user.

The audit was carried out with AI and replaces neither a penetration test nor a legal review (chapter 14). It applies to version 0.59 and the settings tested there.

Addendum 0.60

The same procedure was repeated for the functions of version 0.60 (public links with expiry, two-factor sign-in with app passwords, polls in chat, file versions from ZFS snapshots, screen sharing, better xlsx/docx import): source review, live test on a fresh instance and a browser test of the new dialogs, then a second pass after the fixes.

- **Found and fixed:** (high) anonymous polls could be de-anonymised through the live updates; the server now sends neither names nor counts while an anonymous poll is open and the result appears only after it has ended; (medium) two-factor session after setup, too broad dropping of other people's sessions, an app password on a path outside its scope counted as a failed attempt, versions for read-only sharees.
- **Passed:** expiry and revocation of public links (expired, revoked and unknown cannot be told apart), TOTP with recovery codes, shared lockout counters for wrong passwords and wrong codes, app passwords only for WebDAV, CalDAV and files, no secrets in logs, responses and exports, versions without path bypass, browser test without errors (normal, admin, dark).
- **No open item of category high.** Known limitations: the TOTP secret is stored in plain text in the accounts file (protected by file permissions and an encrypted dataset); after a password change the next code has to be awaited; session store and replay protection live in memory only; the link cap applies to new or changed links only; not checked live were LDAP/AD accounts with 2FA (not applicable), operation behind a proxy, real ZFS snapshots and the screen-share button.

Addendum 0.61

The same procedure was applied to the new universal export/import (16.3): source review and three automated Go tests (round trip with a password hash, import without a hash using a generated starting password, rejection without admin rights); a dedicated live test with sysadmin, teachers, students, parents and a guest, as done for 0.59/0.60, is still outstanding.

- **Checked (code and test):** an export without pw=1/secrets=1 contains neither the password hash nor the TOTP secret, recovery codes or app passwords; import is restricted to the global admin (stricter than the existing CSV import, which also allows group admins); a brought-in hash for the sysadmin account is only applied when the import is run by the sysadmin itself; generated starting passwords (genpw=1) appear only in the HTTP response, never in plain text in users.json and never in the log.
- **No item of category high found.** Still open, because out of scope for this pass: a browser test of the export/import dialogs in the interface (at the time of the audit usable only via the HTTP API) and a live test with real AD/LDAP or Windows-host data.

16. Backup, Restore and Migration

cs-team stores all data as files (folder or S3 bucket), no database. A backup is therefore always a file copy or a snapshot, not a database dump. This chapter covers three cases: a full server backup/restore, the existing simple CSV export/import of users and groups, and the new universal JSON export/import with all settings and, optionally, the password hash (0.61).

16.1 Full backup and restore

The safe and simplest way when a machine is rebuilt from scratch or a system moves: back up and restore the whole data folder. Users, passwords (as a bcrypt hash), groups, files, calendars, chat and tasks come back unchanged; nobody has to log in anew or change a password.

1. Stop the service.
2. Back up the data folder (on ZFS a snapshot is enough, otherwise a file copy). It holds, among other things, users/users.json (users, password hashes, 2FA secrets, app passwords) and users/groups.json (groups).

3. Rebuild the machine resp. deploy the cs-team.exe/binary on the new system, set the same environment variables (data path, port, certificate, see chapters 3 and 11).
4. Copy the data folder back, start the service.
 - **ZFS snapshot/replication:** the natural path under napp-it CS/OmniOS. A snapshot before bigger changes, replication to a second system for disaster recovery.
 - **What does not come back:** live sessions and the directory-login cache live only in memory (chapter 15); everyone has to log in again once after a restore, including 2FA sessions.
 - **Windows accounts/AD as the login source:** if login via the operating system or LDAP/AD is configured (chapter 11.3), the actual accounts live there, not in cs-team. Restoring cs-team alone is then only enough if the directory or host is reachable unchanged.
 - **Test before the real thing:** verify a restore on a copy of the data (different port, separate test folder) before it is needed for a real move.

16.2 Simple export/import (CSV): users and group membership

For everyday use (a new class, maintaining groups) the existing CSV path under **Users > Export/Import** is enough:

- **Export** (GET /api/users/export, GET /api/groups/export): names, groups, mail, chat address. **No password** is exported, not even a hash.
- **Import** (POST /api/users/import, lines name;password;group1,group2;mail;chat-url): new users need a plaintext password (hashed on import, *change at next login* is enforced); for existing users an empty password field leaves it unchanged, only groups/contact are updated.
- Suitable to apply names and groups exported from AD/LDAP or a Windows host while assigning new starting passwords, or to sync only group membership for existing cs-team users without touching the password.

16.3 Universal export/import (JSON, 0.61): all settings, optionally with the password hash

In addition to the CSV path there is a full JSON export/import for users and groups with every cs-team setting (interface language, contact, GDPR acknowledgements, group rights, retention, membership sources and so on). Excluded are the server's own startup settings (environment variables such as port, certificate, data path): those concern the machine, not a user or a group.

- **Export** (GET /api/users/exportjson, global admin or group admin for their own groups): returns every field of every user and, for the global admin only, every group, as one JSON file.
- **&pw=1:** include the password hash. Only filled where cs-team holds it itself (its own accounts); for a directory mirror account it is always empty.
- **&secrets=1:** also include the TOTP secret, recovery codes and app passwords. A separate switch from pw, because these are equally sensitive credentials.
- **&users=a,b / &groups=g1,g2:** export only specific users or groups instead of all.
- **Import** (POST /api/users/importjson, global admin only, because such a dataset can set group rights and privacy-relevant fields of every user): &create=1 creates unknown groups, &update=1 overwrites existing users/groups, &genpw=1 generates a random starting password when the source has no hash (typical for an export from a Windows host or from LDAP/AD, see 16.4). The passwords generated this way are returned only in the HTTP response (a genpw field per user name), never stored in plaintext in users.json and never logged.
- The existing protection for the sysadmin account still applies: an imported hash for the sysadmin account is only applied when the import is run by the sysadmin itself.

An export with pw=1 or secrets=1 contains credentials and should be handled like a password: transferred encrypted (HTTPS), never stored unencrypted, deleted after use.

16.4 Migration between systems: host, AD/LDAP, another platform

What can be carried over depends on where the user list comes from. Overview for a source outside cs-team (e.g. to populate a freshly set up server with the previous users):

Source	Users	Password	Groups
Linux / macOS / FreeBSD (host)	yes	optional: Unix hash from /etc/shadow	no (no Unix groups as cs-team groups)
illumos / Solaris (host)	yes	optional: hash from shadow	yes: local SMB groups (smbadm show -m), flat; nesting only via AD domain groups
Windows (host)	yes	no (no hash access to the SAM database)	yes: local Windows groups, excluding default accounts/groups (Administrator, Guests, Everyone ...)
AD/LDAP	yes (directory search)	no (the directory supplies no hash, only the bind check at login)	yes, including nested AD groups (AD resolves this itself)

- If the source has no password hash (Windows host, AD/LDAP), the JSON import with `genpw=1` generates a random starting password per new user (16.3).
- For users that already exist in cs-team, an import without `genpw` can update only group membership; the password stays untouched.
- Instead of export/import, ongoing operation can also use the direct connection: login via the operating system (chapter 11.3) or LDAP/AD (11.3) usually makes migrating accounts unnecessary, because it checks the current state directly.
- The reverse direction (cs-team → host/AD) is not a cs-team feature but ordinary Windows/AD administration (e.g. `Get-ADUser/Add-ADGroupMember`).

17. Low-cost KISS options: cs-team with Windows-ACL-like SMB or S3 cloud

cs-team itself needs no database and no web server stack (chapter 16.1 of the goal chapter). This chapter compares what to run it on in-house when classic file sharing with Windows-like access rights (ACL) is also needed, for example because teachers or staff open the same files via a network drive (SMB).

17.1 Closed-source options: Windows

Option	User limit	Cost	Fits
Windows 11 Pro	no technical limit for cs-team itself; the machine's own SMB file sharing: 20 concurrent connections; open licence question for a third-party web service such as cs-team from roughly 20 users on (not legal advice)	included with the device	development, testing, small groups/offices
Windows Server Essentials	at most 25 users and 50 devices, a single AD server per organisation, no client access licences needed	low cost (one licence, no CALs)	small organisations, teacher/admin network
Windows Server Standard + CALs	practically unlimited	expensive (server licence plus a client access licence per user/device)	a school with many pupils, if it has to stay Windows

17.2 Open-source options

- **OmniOS/illumos: unlimited users**, no licence question. Offers nearly all the relevant Windows file-sharing features: NTFS-compatible ACLs, the Windows SID as an extended ZFS property (permissions/owners survive copy, backup, restore), local SMB groups (smbadm). These local SMB groups are **flat** (members are users, not another group as a member); real nested groups exist only through membership in an **AD domain** (smbadm join), because AD resolves the nesting itself. In addition, Windows' **Previous Versions** feature shows ZFS snapshots directly in Explorer without any special setup, and running as an AD member is straightforward. The natural platform for cs-team plus in-house file sharing (see napp-it CS).
- **FreeBSD, Linux, macOS**: also unlimited users and free of licence questions, but without a Windows SID and without SMB groups with real nesting; Samba on these systems maps groups through flat Unix groups (a user can be in several groups, but no group is a member of another). For plain cs-team use without a parallel SMB share this is no limitation; if Windows-like ACL nesting is also needed, OmniOS/illumos is the better fit.

17.3 S3-compatible cloud or object storage

cs-team can store files in an S3-compatible bucket instead of a folder (e.g. a self-hosted RustFS, see napp-it CS). This fits when several cs-team instances or sites should share the same storage, or when an S3 object store already runs in-house. ACL/SID/SMB groups as under 17.1/17.2 then only concern a possibly parallel classic file service, not cs-team's own S3 access.

17.4 Notes for school operation

- The pupil PCs (including Windows 11) are plain browser clients for cs-team; SMB file sharing is usually only used by teachers and administrators. File access in cs-team (UI, WebDAV, /api/files) uses HTTP/HTTPS, not SMB, and is unaffected by its 20-connection limit.
- **School network with NAT**: many pupils share one IP address. If needed raise the per-address lockout (default 60 failures) with CS_MAX_FAILS_IP; chat, tasks, documents and video keep one persistent WebSocket connection per user.

17.5 An in-house AI provider

The AI assistant in cs-team (chapter 5.10) talks to an OpenAI-compatible provider, which can also run in-house so that no request leaves the building (chapters 8, 11.5). A low-cost, quiet and adequately sized machine for such an in-house AI provider is, for example, an **Apple Mac mini or Mac Studio with 48 to 196 GB of RAM**: enough memory for current local language models, low power draw in continuous operation, no dedicated server room needed.