



What Is CERF — and What Can It Do for Your Organization?

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What is CERF?

CERF (*Collaborative Electronic Research Framework*) is a 21 CFR Part 11 compliant Electronic Lab Notebook (ELN), Enterprise Document Management System, and scientific data management platform, delivered in a single, centrally managed solution that can be accessed by users on or off site.

Think of **CERF** as a secure, access-controlled operating system for your organization's most valuable knowledge assets: experimental data, research records, SOPs, image files, and intellectual property. **CERF** manages all of it — in one place, with a complete audit trail that meticulously records all activity and keeps your data, documents and access history safe and searchable forever.

Built and supported by **Lab-Ally LLC** in Columbus, Ohio, CERF has been trusted by pharmaceutical labs, government labs, histopathology facilities, CROs, and GLP/GMP-regulated organizations for nearly 20 years.

CERF replaces the fragmented, non-compliant tools most labs rely on today — SharePoint, shared drives, email attachments, Dropbox, Google Drive, and paper notebooks — with a single, compliant, centrally managed system that your organization can depend on for decades.

WHO IS CERF FOR?

CERF is designed for any organization where data integrity, long-term accessibility, regulatory compliance, intellectual property protection, and data sovereignty matter.

Who	How CERF Serves Them
Pharma & Biotech	GLP, GXP, and 21 CFR Part 11 compliant pre-clinical and discovery research environments.
Histopathology Labs	Compliant management of whole slide images, adjustment histories, staining protocols, tissue metadata, and study records.
Contract Research Orgs	Multi-client, multi-study data isolation with granular sponsor access controls and audit-ready records.
Medical Device Makers	Design history files, verification records, and regulatory submission documentation.
Academic Research Groups	Flexible collaboration, IP protection, patent support, and PI oversight across a career spanning decades.
Chemistry & Materials Labs	Chemical structure management, automated metadata extraction, and structural search.

QA / Regulatory Teams	SOP lifecycle management, training records, and inspection-ready audit exports.
Any Regulated Organization	Replace SharePoint, shared drives, or ad-hoc file systems with a compliant, flexible validated alternative that is a joy, not a chore to use.

THE PROBLEM CERF SOLVES

Most research organizations manage their data across a patchwork of tools that were never designed to work together with regulatory compliance or secure collaboration in mind. Critical documents lack version control. Shared drives provide no audit trail and poor search options. Expensive customizations designed to add 21 CFR Part 11 compliance fail validations. Hybrid organizations with a combination of on-site and work-from-home employees find it impossible to collaborate securely and managers can't determine who is working on what. The result: data that is hard to find, impossible to trust, and increasingly difficult to defend when IP ownership is challenged.

CERF solves this by replacing all of those disconnected tools with a single, purpose-built system that enforces compliance automatically — so your scientists can collaborate securely and focus on science, not on data management bureaucracy.

CORE CAPABILITIES

1. Electronic Lab Notebook

CERF's notebook system is the daily home for your scientists' experimental work. CERF supports a wide range of entry types — text, tables, images (and image grids), audio recordings, freehand drawings, MS Office documents, and files in any format — all stored securely with a full, browsable version history, rich metadata, unique identifiers and easily viewable relationships with other data.

- **Inline file preview** — View Word, Excel, PowerPoint, PDF, images, chemistry structures, AB1 trace files, biological sequences, and many other specialized formats directly within a notebook page — no external application required.
- **Round-trip editing** — Check out any file to your preferred desktop application, edit it exactly as you normally would, then check it back in. CERF stores the new version while permanently preserving every previous one.
- **Notebook templates** — Turn any notebook page into a reusable template for repeatable workflows. Intelligent placeholders hold positions for data files that have not yet been generated, ensuring the record is structurally complete before it can be signed.
- **Offline working** — Check out files before travelling or working in areas without network access. Check them back in when you reconnect — CERF handles all versioning automatically.
- **Track important metadata** — CERF allows you to build signature reports, provenance reports, track unsigned pages and see metadata and tags at the notebook, page and entry levels, as well as lists of all contributors and related internal and external data.

2. Document and File Management

CERF's File Cabinet system is a secure, organized, version-controlled home for every file your organization generates. Drag and drop individual files or entire nested folder trees directly into CERF, with automatic metadata extraction and search indexing.

- **Universal file support** — CERF stores, indexes, and generates previews for any file type, including specialized scientific formats: microscopy images, sequence files, chemistry structures, instrument data files, and more. All files are viewable and searchable from day one.
- **Permanent version history** — No version of any file is ever deleted in CERF. Previous versions are retained permanently, viewable by authorized users at any time, and available for export or regulatory inspection.
- **Rich Metadata** — CERF extracts and indexes files properties, allows addition of rich, categorical semantic metadata and illuminates relationships with other internal or external data.
- **Network file links** — CERF can link to large files stored on external SMB volumes without physically copying them into the system, providing flexibility for organizations with existing bulk storage infrastructure.
- **CERF Exporter** — Export some or all of your CERF data with associated metadata as native-format files plus accompanying XML. Your data is never locked into a proprietary format — you can always get it out.

3. 21 CFR Part 11, GLP, and ALCOA-PLUS Compliance

CERF was designed from the ground up to meet the requirements of 21 CFR Part 11 (electronic records and electronic signatures) and the data integrity principles of ALCOA-PLUS. Every compliance feature is built into the core system — not added as an afterthought.

- **Immutable audit trail** — Every user action — creation, edits, access events, signature events, login attempts — is captured in a secure, computer-generated, time-stamped audit trail that cannot be modified or deleted from within CERF. When regulators arrive, you can produce a complete record in a single click.
- **True PKI digital signatures** — CERF is the only commercially available ELN that uses built-in Public Key Infrastructure (PKI) hashing via the U.S. federal government's Digital Signature Algorithm (DSA). Every signed record carries a unique MD5 hash digest. Signatures are cryptographically linked to the records they protect and cannot be transferred or falsified.
- **Configurable signature workflows** — Define workflows for any level of peer review and management oversight: Submitter → Peer Reviewer → Manager → Legal/Regulatory. A notebook page cannot be signed unless all required SOP placeholders are in place — making non-compliance structurally impossible.
- **GLP-compliant corrections** — Errors are corrected using the built-in Strike Out function, which applies a visible strikethrough to the incorrect entry. The original text remains legible on screen and in all printed or PDF copies, exactly as required by GLP and ALCOA principles.
- **IQ/OQ validation support** — Lab-Ally and its qualified validation partners provide Installation Qualification (IQ) and Operational Qualification (OQ) services to order. CERF is designed to be validated in your specific environment — the correct approach under 21 CFR Part 11.

4. SOP and Controlled Document Management

CERF includes a dedicated Controlled Documents module for managing Standard Operating Procedures, protocols, assays, NDAs, required training and other regulated documents throughout their full lifecycle — from creation and approval through distribution, acknowledgment, expiry, renewal, and archiving. This module alone can replace dedicated third-party document management systems.

- **Enforced acknowledgment** — When an SOP is assigned, CERF enforces a configurable review period before the user can acknowledge it. Users who have not acknowledged the current version of a required SOP are prevented from signing relevant notebook pages.
- **SOP placeholders** — Notebook page templates include SOP placeholders that must be filled with the active version of a specified controlled document before the page can be digitally signed.
- **Expiry management** — CERF monitors SOP expiry dates and sends configurable warning notifications to managers and users before documents expire, preventing compliance lapses.
- **Training records** — A complete, time-stamped record of every user's acceptance of every SOP version is maintained automatically and can be exported at any time for auditor review.

5. Advanced Semantic Search

Finding data in CERF is not limited to searching by filename or date. CERF's multi-parametric search engine indexes the full-text content of most file types and automatically extracts and indexes file properties, as well as user-created metadata like tags, annotations, and keywords drawn from context-specific controlled vocabularies. Fast, intuitive and effective, the CERF search engine is simply the best in the industry.

Full-text search — CERF indexes the content of MS Office files, PDFs, plain text, biological sequence files, chemistry structure files, scientific data formats, and more. Search for a specific value buried inside a file from years ago and find it immediately.

- **Metadata & Boolean search** — Combine any number of search parameters — contributor, date range, resource type, tag, custom metadata field, CERF resource ID, and many others — using AND/OR Boolean logic to build precise, repeatable queries.
- **Searchable image annotations** — Ideal for adding rich non-destructive descriptions and note and keywords pulled from controlled vocabularies to visual data of all kinds.
- **Saved searches** — Save frequently used search criteria as persistent, reusable queries. Saved searches function as dynamic smart cohorts — ideal for ongoing QA monitoring or project-specific data views.
- **Locate related links, versions or duplicates** — CERF includes powerful features to help trace the use of similar resources in multiple contexts and understand their provenance and meaning in each unique situation.
- **Find Experts search** — Locate colleagues who have specific expertise, based on the data and protocols they have contributed to CERF — a uniquely useful capability for large, distributed teams and a great way to discover knowledge that you don't yet have explicit access to.

6. Granular Access Control and Workgroup Management

CERF's Workgroup architecture supports any combination of open collaboration and tight data isolation — from a single user's file cabinet to multi-site organizations with dozens of projects and client-specific data boundaries.

- **Nine access roles** — Read Only, Annotator, Editor, Notebook Editor, Manager, and more — assigned at the workgroup level. Permissions are enforced down to the individual record; unauthorized users cannot even see that a resource exists in search results.
- **Additional Capabilities** — System administrators can grant specific abilities to appropriate users to delegate useful management tasks.
- **Hierarchical delegation** — System administrators can delegate workgroup management to project leads, enabling flexible self-organizing team structures without sacrificing security. A single user can belong to multiple workgroups with different roles in each.

- **Session security** — CERF enforces single-session login — a user cannot be simultaneously logged in from multiple workstations. Account lockout, configurable session timeout, and optional multi-factor authentication (TOTP) via Google, Microsoft, or Bitwarden apps are all standard in CERF 6.
- **Full cross-platform support** — CERF facilitates effortless collaboration in mixed-platform environments. Windows, Mac, and Ubuntu Linux users work together seamlessly within the same system.
- **Instant Fine-Tuning** — Admins can easily adjust resource ownership / visibility, user roles and Workgroup membership to reflect evolving access needs.

7. Automated Data Capture

The **CERF Automaton** monitors designated locations on your network and automatically ingests files into CERF as they are generated — establishing an unbroken chain of custody for instrument data from the moment of creation.

- **Code-free configuration** — Set up ingestion jobs for any file type, from any instrument, folder, or network source, using a simple configuration interface — no programming or API work required.
- **Email-to-CERF** — Any user can send files and email attachments directly into CERF via email. Files arrive in the correct location, attributed to the correct user, with automatic metadata extraction.

8. Flexible Deployment — On Your Terms

CERF runs as a client-server system. The CERF server holds all data; the client application connects from any machine on your network. Three deployment models are supported:

Cloud — Deploy on any cloud provider of your choice (AWS, Azure, GCP, etc.) or use a private AWS instance hosted and managed by Lab-Ally with no IT burden on your team.

On-Premise — Install CERF on your own physical or virtual server for maximum control over your data and infrastructure. The CERF server requires minimal ongoing IT maintenance.

Sealed LAN — For the most stringent security environments, CERF can operate on a completely air-gapped local area network with no internet connectivity whatsoever.

CERF is database-agnostic — compatible with MySQL (included by default), Microsoft SQL Server, or Oracle. Files are stored in native format; nothing is compressed into a proprietary container from which recovery is difficult. Licensing is available as an annual subscription or perpetual: named user seats belong to your organization permanently, regardless of your ongoing relationship with Lab-Ally.

9. What's New in CERF 6 (Releasing May 2026)

CERF 6 is the most significant release in the product's history. Nearly all core components and libraries have been updated, bringing major improvements to speed, stability, security, and user experience — alongside important new capabilities.

- **Modernized interface** — Customizable light and dark themes, modern and classic icon sets, adjustable font sizes, and improved graphics throughout.
- **Multi-factor authentication** — Optional TOTP-based MFA for the CERF desktop client and Automaton, using standard authenticator apps (Google Authenticator, Microsoft Authenticator, Bitwarden).

- **Resource-specific metadata** — Files can now be instantly designated or re-designated as specific resource types such as "Tissue Sample", "Cell Type", or "Cell Image", unlocking appropriate metadata fields and annotation options.
- **Improved image annotation and thumbnails** — Add searchable annotations and relationships to any image, and view sets of related images using configurable thumbnails.
- **Enhanced chemistry metadata** — CERF 6 automatically extracts and indexes physical and chemical attributes from CML files — melting point, molecular weight, chemical formula, CAS numbers, PubChem IDs — all searchable as dedicated parameters.
- **Built-in chemistry reference library** — Every CERF 6 server ships with a pre-loaded public file cabinet of CML-format chemistry structures with embedded physical attributes.
- **Expanded file format support** — New native viewing and search indexing for OME-TIF, JP2, PSD (Photoshop), RTF, Apple iWork formats (.pages, .numbers, .key), CDXML, and a range of scientific sequence, technical and text formats.
- **Search enhancements** — Even more powerful Boolean queries, relationship tracing, enhanced sorting, filtering, location of related files and export of results.
- **Linux workstation support** — Full support for CERF client applications on Debian-based Linux workstations (Ubuntu 25.10 Gnome desktop).
- **Improved CERF Table** — Now supports embedded thumbnails to allow annotated grids of resources such as images and chemical structures.
- **Built-in Diff** — CERF 6 allows users to compare content and metadata to immediately see differences between file versions.
- **Updated components** — CERF 6 uses the latest version of java, tomcat and mysql with improved build, installation and maintenance technologies.

ARCHITECTURE AND LONG-TERM SUSTAINABILITY

CERF is designed to last. The architecture reflects a deliberate commitment to data longevity and organizational independence that most ELN vendors cannot match.

- **Native file storage** — Data files are stored in their original native format in a secure file store — not compressed into a proprietary database from which they may be difficult or impossible to extract.
- **Lightweight database** — The referential SQL database rarely exceeds 10 GB even after years of active use, and does not slow down as data accumulates.
- **Open-source components only** — CERF is built exclusively on open-source, industry-standard components selected for their technological longevity. No component depends on proprietary or externally hosted services.
- **Perpetual licensing option** — Your system continues to operate indefinitely — even on a sealed LAN with no internet access — regardless of changes in your vendor relationship.
- **Regular, included updates** — All CERF software updates (typically two per year) are included in the standard support package and involve no significant service interruption.
- **Proven sustainability** — CERF is robust and future proof. While other technologies quickly and in some cases deliberately become obsolete, CERF has a proven track record as long term home for your data that will stay viable for decades to come. The optional perpetual license allows you to purchase and use CERF forever.

DEPLOYMENT AND SUPPORT

Lab-Ally was founded by scientists. Our implementation and support team brings deep familiarity with research workflows, regulatory requirements, and the practical challenges of deploying data management systems in active laboratory environments.

- **Full deployment assistance** — Server configuration, workgroup setup, SOP workflow design, and user onboarding for organizations of any size.
- **Cross-platform flexibility** — Excels in mixed environments made up of Mac, Windows and Linux users working on site or from home.
- **IQ/OQ validation support** — In partnership with qualified third-party validation specialists.
- **Comprehensive training** — Administrator and end-user training, including live webcast sessions and formal user certification materials.
- **Responsive human support** — Email, phone, and scheduled appointments. A live human being answers your support questions.
- **Free trial server access** — Try CERF before you commit.

Ready to see CERF in action?

Contact us for a live webcast demo or to access a free trial server.

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