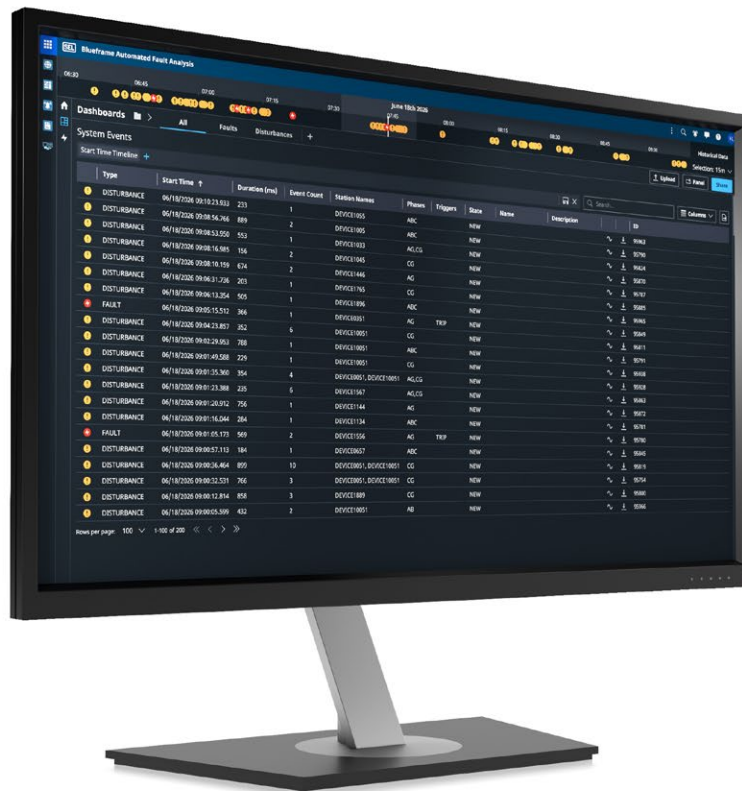


SEL Blueframe® Automated Fault Analysis (AFA)

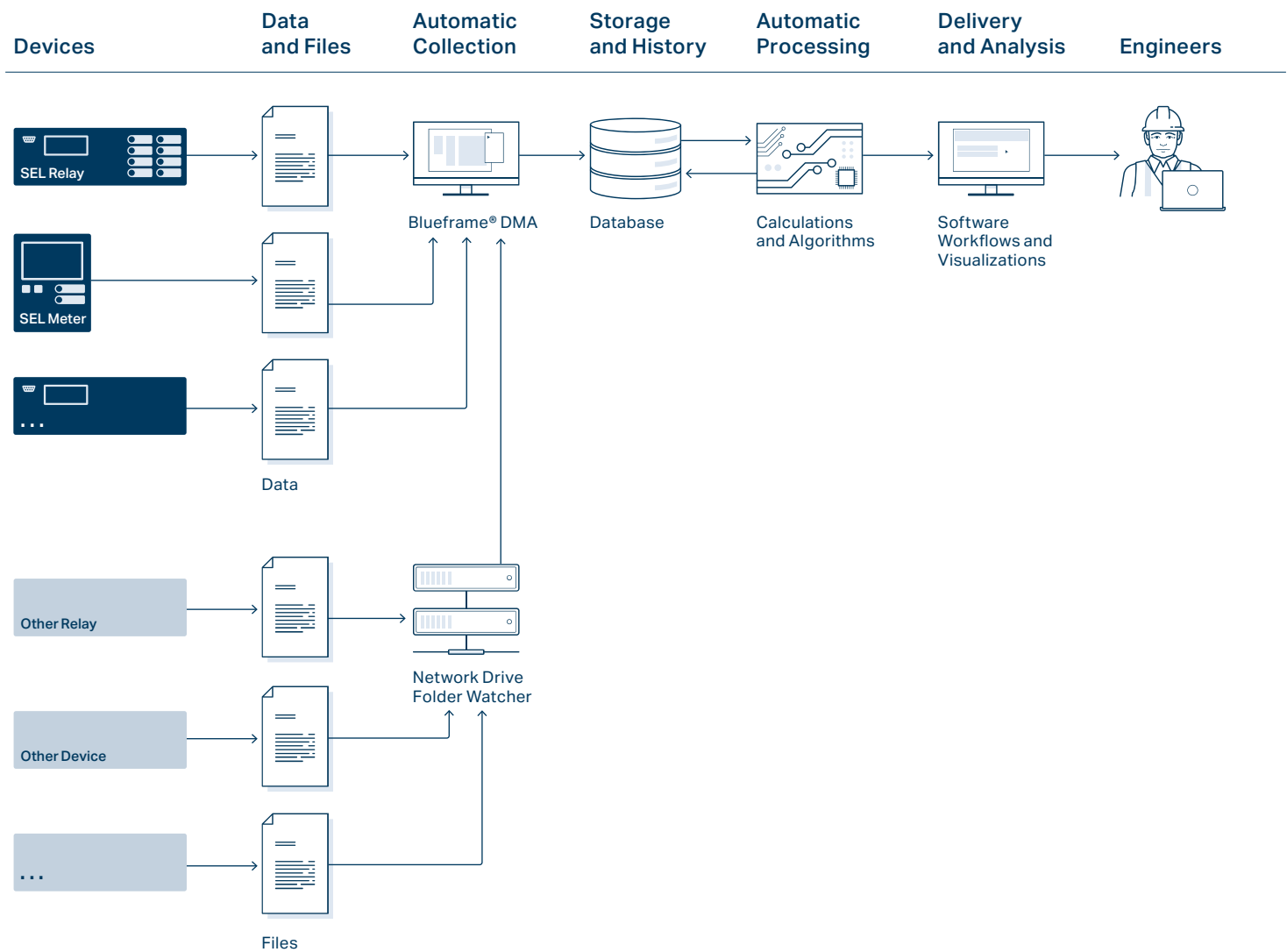


Accelerate event analysis and fault locating

- Identify equipment and reliability risks from patterns across event records.
- Locate faults quickly with automated double-ended calculations.
- Strengthen root-cause analysis with system-wide data and historical trends.
- Streamline reporting with customizable data summaries and exports.

Overview

The Blueframe AFA solution automatically analyzes every event record Blueframe Device Management and Automation (DMA) collects from relays, digital fault recorders, reclosers, and meters. It accelerates root-cause investigation and uncovers equipment and reliability risks across your system. Use insights from trends and anomalies to prioritize areas for engineering review. Blueframe AFA helps shorten analysis and reporting cycles.



Key Benefits

Identify Reliability Risks

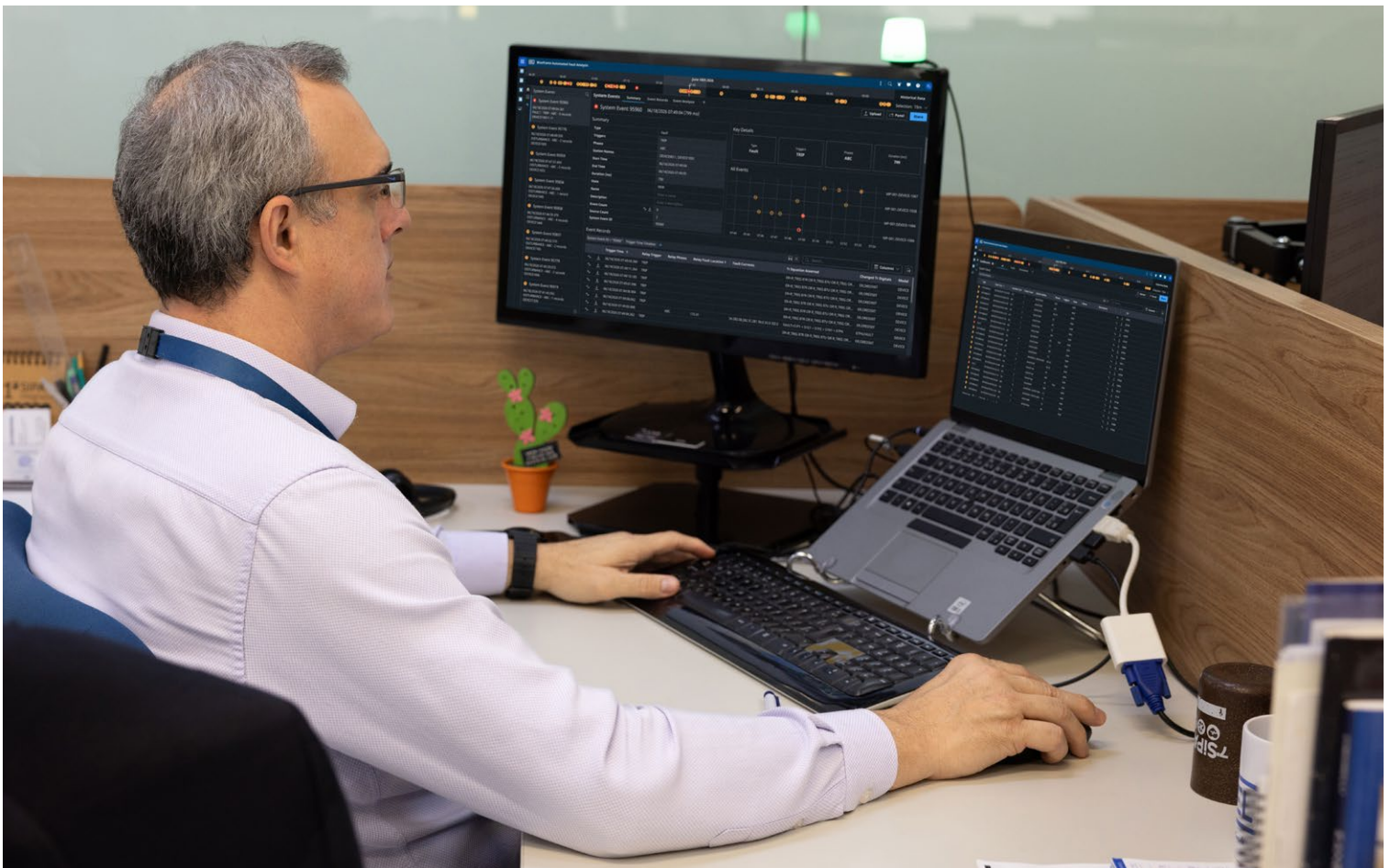
Extend analysis beyond high-severity events to all collected event records, including transients, rapid voltage changes, and voltage sags, swells, and interruptions. Patterns across event records help engineers identify emerging equipment or reliability concerns and prioritize investigation. Inform maintenance and replacement decisions for lines, transformers, motors, and switchgear by using system-wide evidence.

Accelerate Analysis and Reporting

Aggregated event data and customizable analysis templates expedite event analysis and review. Explore related event records across connected assets to build a comprehensive view of system behavior for each disturbance. Long-term database storage preserves event information beyond traditional device storage limits, supporting trend analysis and anomaly detection.

Locate Faults Quickly

Automatically calculate double-ended fault locations from paired event records. Deliver fault locations and affected phases to operators and field crews with confidence and speed. Identify line sections where faults concentrate across events, and prioritize them for inspection.



SEL Blueframe AFA

Built on a secure platform with shared administration, data exchange, and integration with other Blueframe applications.

Customizable Dashboards and Panels

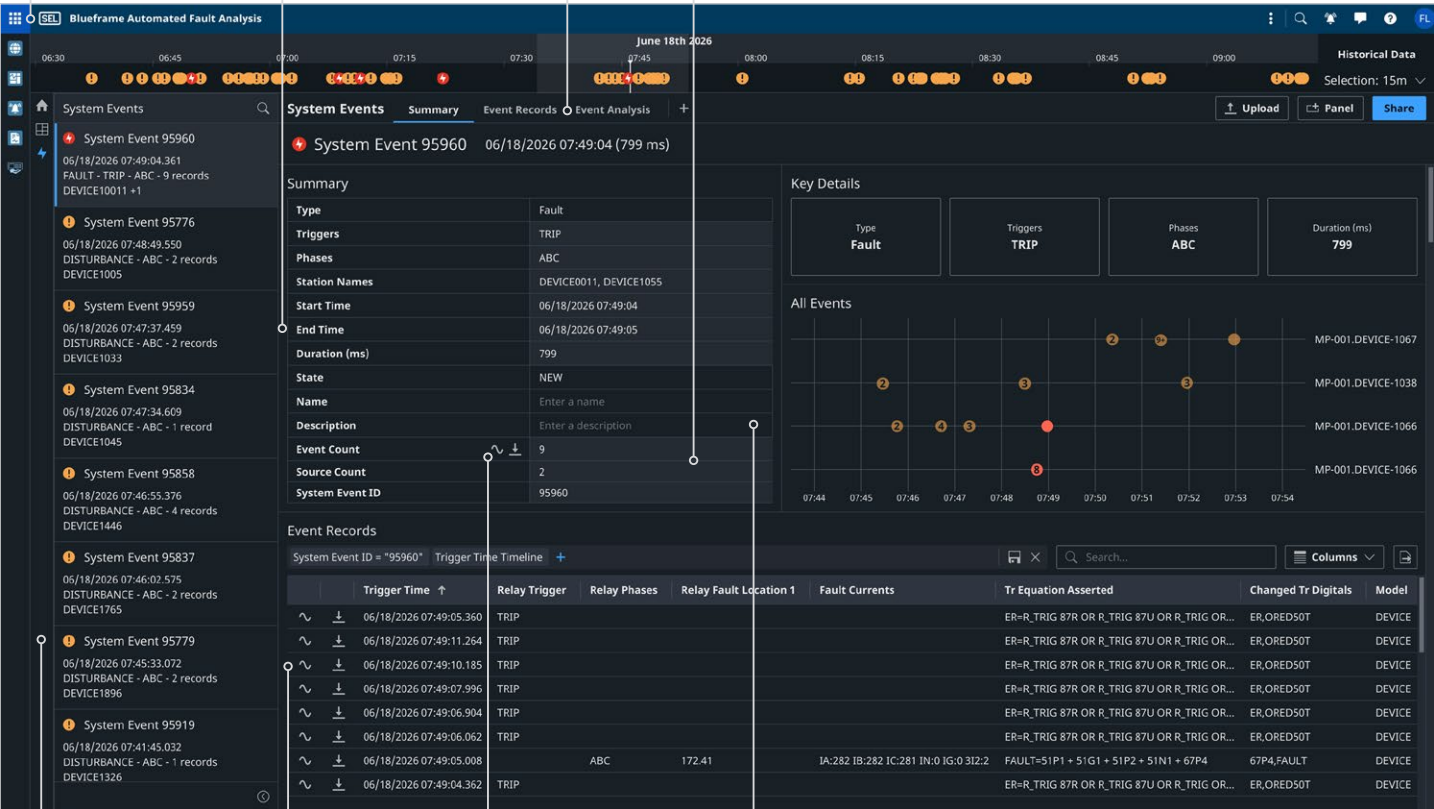
Start with standard dashboards, then tailor views for specific needs.

Inbox-Style Event Navigation

Scan a list of recent events for context, then open an event for details.

Automatic Grouping

Aggregated event records simplify review.



Open in SEL-5601-2 Synchrowave® Event Software

View any event record, and perform detailed waveform analysis.

Notes and Status

Capture field observations and engineering notes alongside the aggregated data, and track analysis status.

Characterized Data

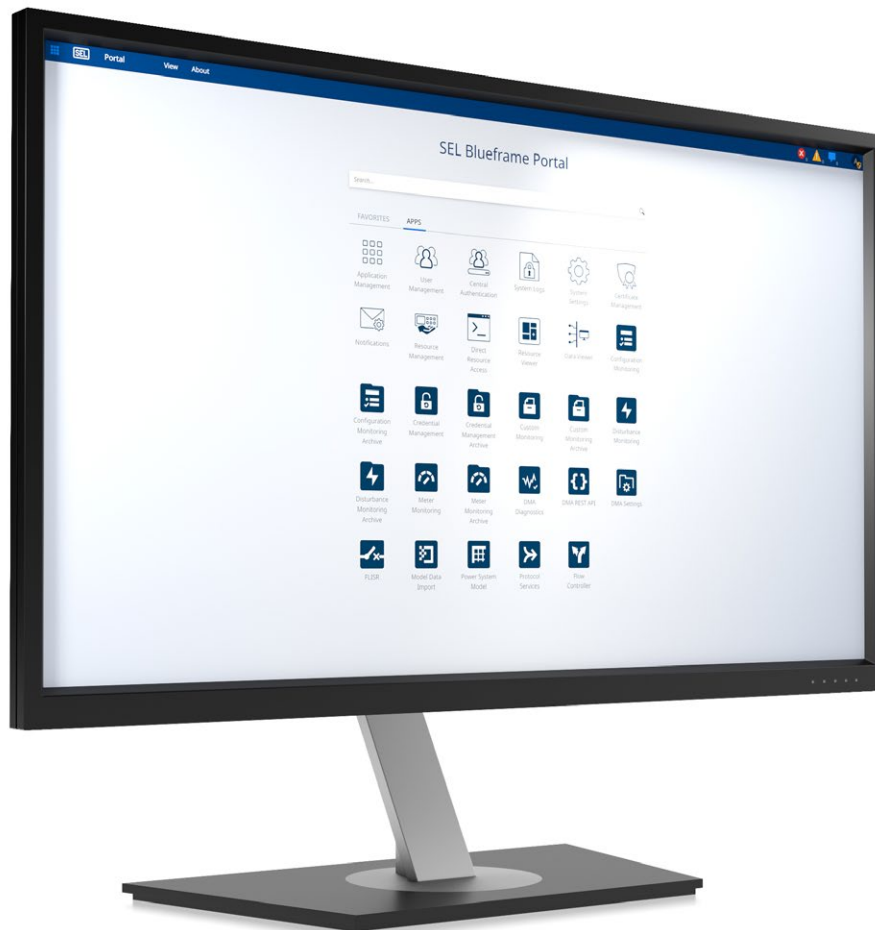
Automatic labels provide context and support prioritization.

Built on Blueframe

SEL Blueframe is a secure, reliable platform for deploying operational technology (OT) containerized applications. It is built on a hardened, Linux-based OS managed by SEL, which minimizes the attack surface and simplifies patch management. The platform offers robust role-based permissions as well as several measures for preventing unauthorized access and the installation of untrusted applications.

Blueframe allows users to collect, archive, and use a variety of data, including event reports, Sequence of Events logs, device settings, synchrophasors, metering data, SCADA data, and continuous waveform streams. The platform features an open architecture that enables efficient data sharing between trusted applications, so that users can leverage the wealth of data to visualize, analyze, and report on their system as well as deploy advanced automation and control solutions.

Designed to be flexible and scalable, Blueframe can be deployed at the grid edge using rugged SEL computing platforms or can be virtualized on server-grade hardware at centralized locations. Across all deployment options, Blueframe provides a consistent user interface and seamless data exchange.



Blueframe Solutions: Better Together

Maximize the value of your data by combining Blueframe data collection, analysis, and reporting solutions.

Blueframe Solution	Benefits
Device Management and Automation (DMA)	Leverage additional Blueframe DMA applications to extend device automation beyond event collection to credential management, configuration tracking, and custom monitoring.
Wide-Area Monitoring System (WAMS)	Extend event record analysis with continuous streaming analytics that identify oscillations and disturbances before they escalate to triggered events.
Energy and Power Monitoring System (EPMS)	Enrich root-cause investigation with power quality metrics. Harmonic distortion levels, IEEE 519 compliance status, and load profiles provide insights into conditions surrounding fault events.

Specifications

General

Deployment	Embed on SEL computers, or virtualize on server-grade hardware.
Authentication	Lightweight Directory Access Protocol (LDAP) integration
Data in Transit	Transport Layer Security (TLS) protected communications

Minimum System Requirements

Web Browser	Google Chrome version 73
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If Hosting On-Premises

Server File System	NFS version 3 (for typical deployments) or NFS version 4.1 (for cluster deployments) Local drive or external network file system (single-server installation)
Server	2.1 GHz processor with 16 cores, 16 GB RAM, two 10 Gb network cards See the instruction manual for minimum and high-performance recommendations.
Operating System	Blueframe OS See the Blueframe AFA instruction manual for supported versions.

Request a Personalized Demonstration or Consultation

Schedule a no-cost meeting with our experts to see how
SEL software can support your goals.



Making Electric Power Safer, More Reliable, and More Economical
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