



DATASHEET

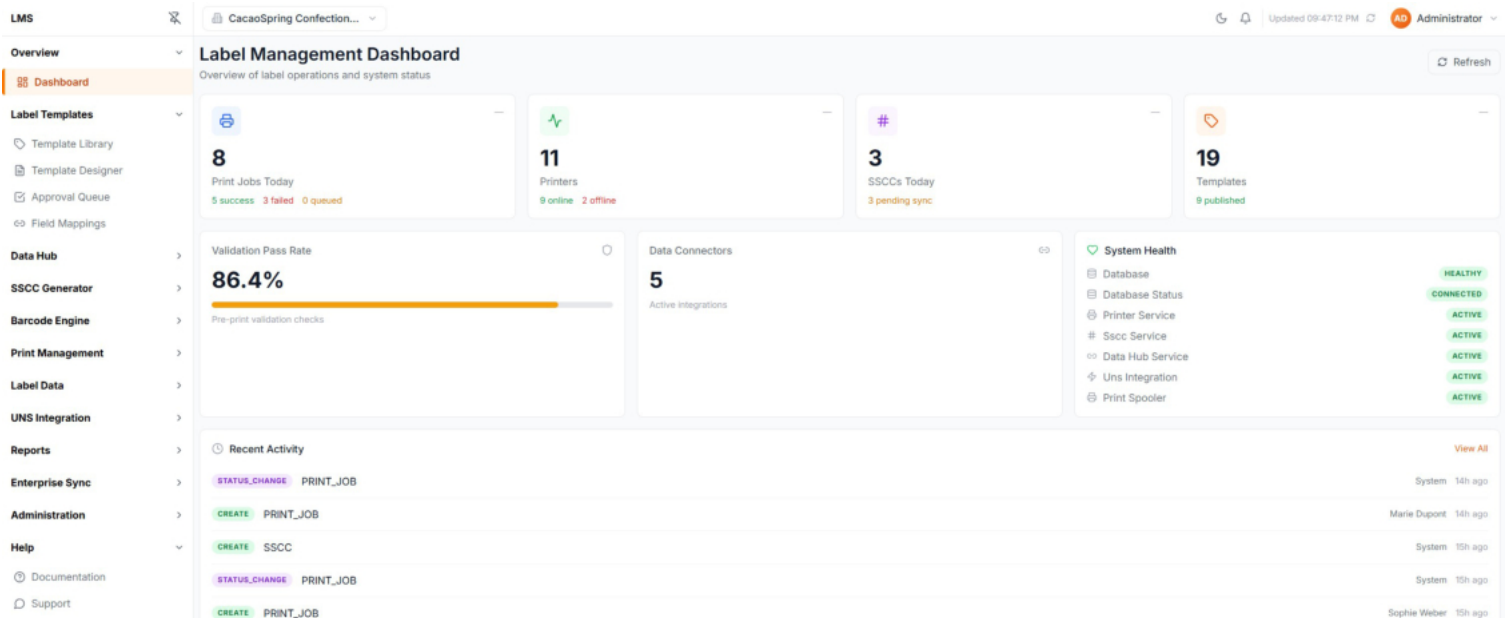
Label Management System

Globally Scalable Integrated Label & Printer Management

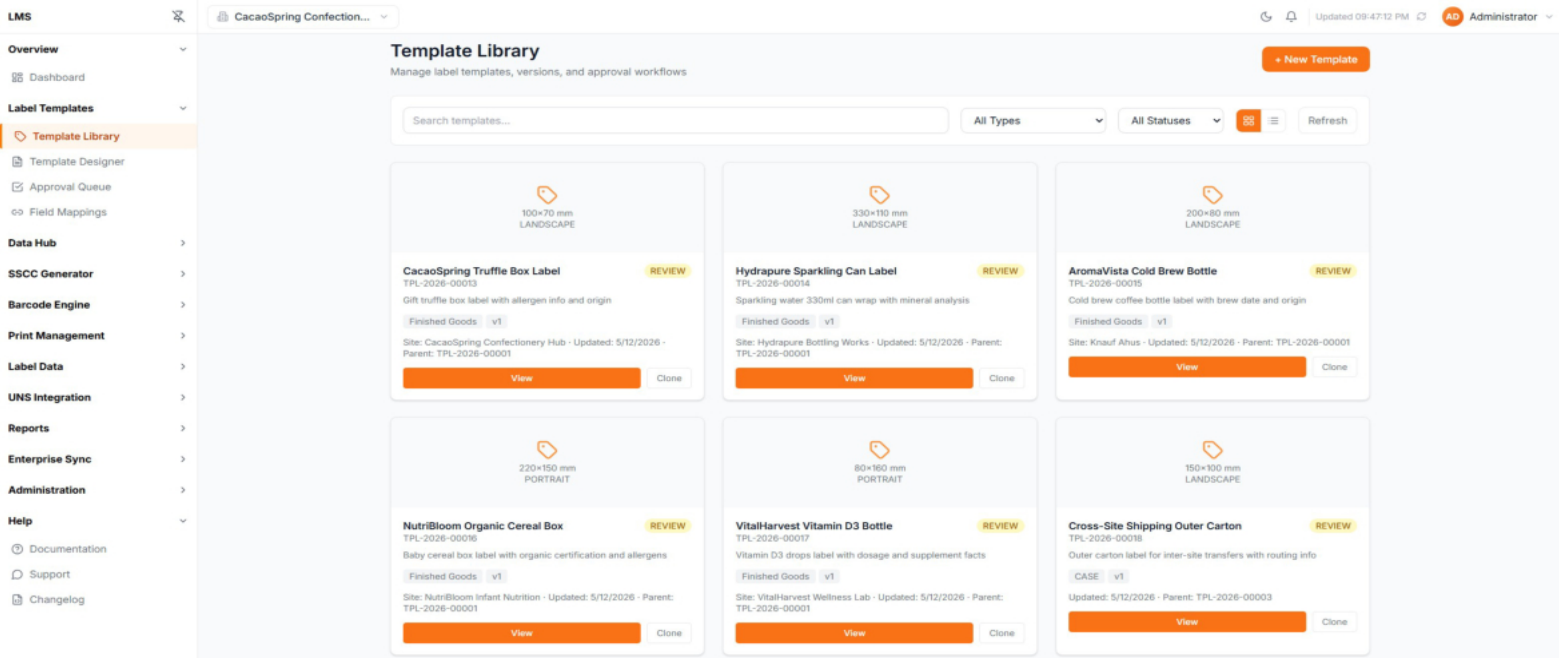
Manufacturing labeling remains one of the most fragmented functions in the enterprise — scattered across vendor-specific design tools, manual print processes, disconnected ERP label data, and inconsistent template governance across sites. Misabeled products lead to regulatory recalls, customer complaints, and supply chain disruption. The LOGICAL SYSTEMS Label Management System (LMS) replaces fragmented, vendor-dependent labeling ecosystems with a single, globally scalable platform for centralized label design, data aggregation, template governance, print orchestration, and traceability.

Built on the Inductive Automation® Ignition platform, the LMS module delivers comprehensive label lifecycle management with native industrial automation integration. It aggregates label data from SAP (via standard IDoc parsers including ZMATMAS for materials and ZLOIPRO05 for production orders), Product Information/Lifecycle Management (PIM/PLM) systems, OPC UA, MQTT, and local OT sources into a centralized data hub. A WYSIWYG template designer with drag-and-drop field placement binds dynamic fields to GS1 Application Identifiers via the data hub. Print orchestration handles automatic and manual print job creation, multi-printer fleet management, and network-resilient offline printing with store-and-forward reliability. Pre-print validation ensures data completeness and barcode grade verification before any label reaches a printer.

LMS integrates natively with our Unified Namespace (UNS) App for real-time production context enrichment: line, shift, batch, and product code injected directly from ISA-95 aligned tag structures. Enterprise Sync enables multi-site template propagation with conflict resolution, ensuring every plant prints from the same approved templates. With SSCC generation per GS1 standards, EU Digital Product Passport readiness, and full audit trails, the system meets global regulatory and supply chain traceability requirements. With its comprehensive set of capabilities, LMS replaces standalone label design tools and middleware-dependent print servers with native SCADA/OT integration, UNS-driven data contextualization, ISA-95 alignment, and zero additional middleware licensing — turning labeling from a disconnected vendor stack into a first-class part of your manufacturing platform.



From Template Design to Automated Print Execution



Comprehensive Enterprise Label Management

Template Governance

LMS brings centralized governance and automation to every aspect of manufacturing labeling. A WYSIWYG template designer with drag-and-drop fields replaces fragmented vendor tools with a single versioned, approval-controlled template library. Dynamic fields bound to GS1 Application Identifiers pull data directly from SAP, PIM/PLM systems, OPC UA, and MQTT sources — eliminating manual data entry and transcription errors.

Operators gain confidence knowing that every label is validated before printing, with pre-print checks on data completeness, barcode quality grades, and field format compliance. Supervisors benefit from full traceability - every print job is linked to a production order, template version, and printer.

Print Orchestration

Print orchestration automates label production from end to end. Jobs are triggered automatically by SAP IDoc arrivals, UNS tag changes, or production thresholds - no operator intervention required. Multi-printer fleet management with queue priority, failed job recovery, and offline store-and-forward ensures labels print reliably even during network disruption.

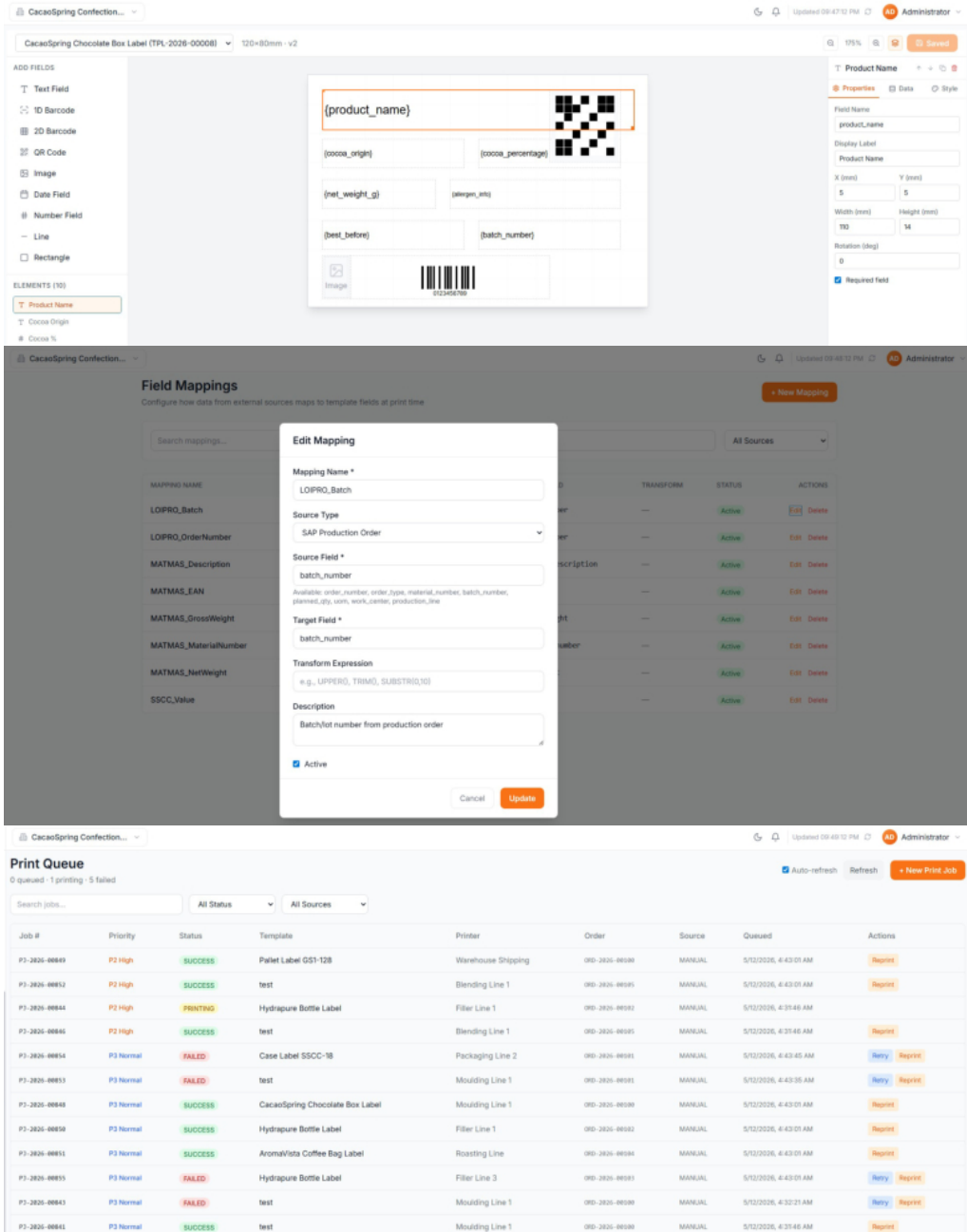
Barcode & Identifier Integrity

This automation ensures consistent, compliant labeling across every line and shift. Beyond print execution, the barcode engine validates symbology quality to ISO/IEC 15416 and 15415 standards, while SSCC generation per GS1 standards creates traceable handling units with automatic SAP submission.

Enterprise Synchronization

Enterprise Sync propagates approved templates from a central authority to all sites with conflict detection and version tracking, ensuring every plant prints from the same controlled source.

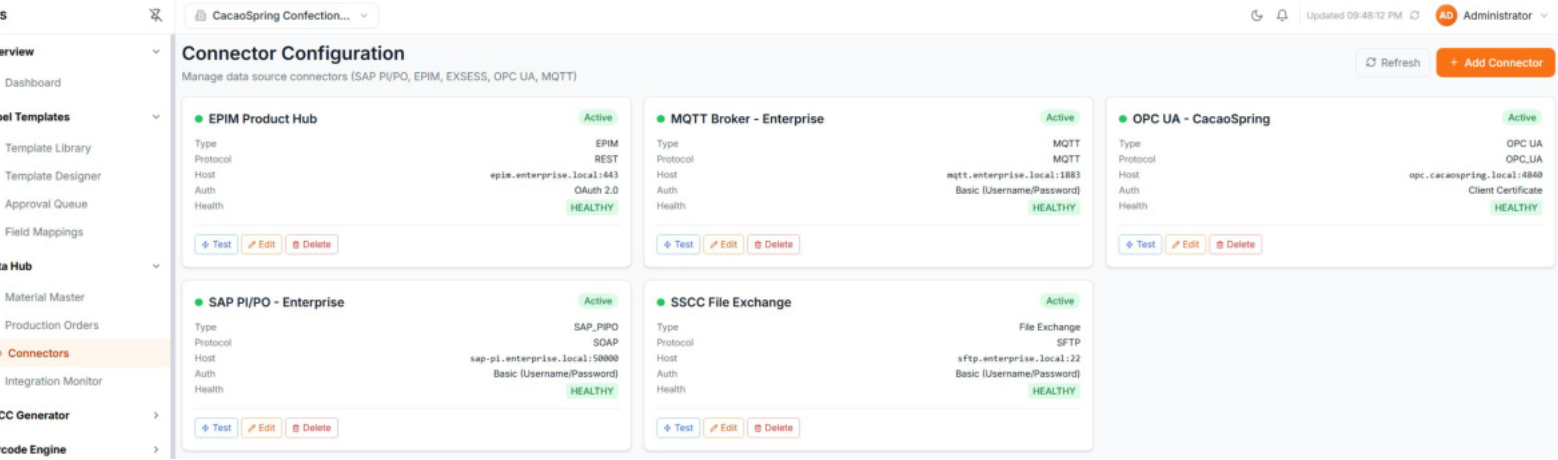
At scale, LMS replaces middleware-dependent labeling stacks with native Ignition integration — no per-user fees, no additional middleware licensing, and full air-gapped deployment capability. With LMS, every label begins where the data lives: validated, versioned, and ready to print.



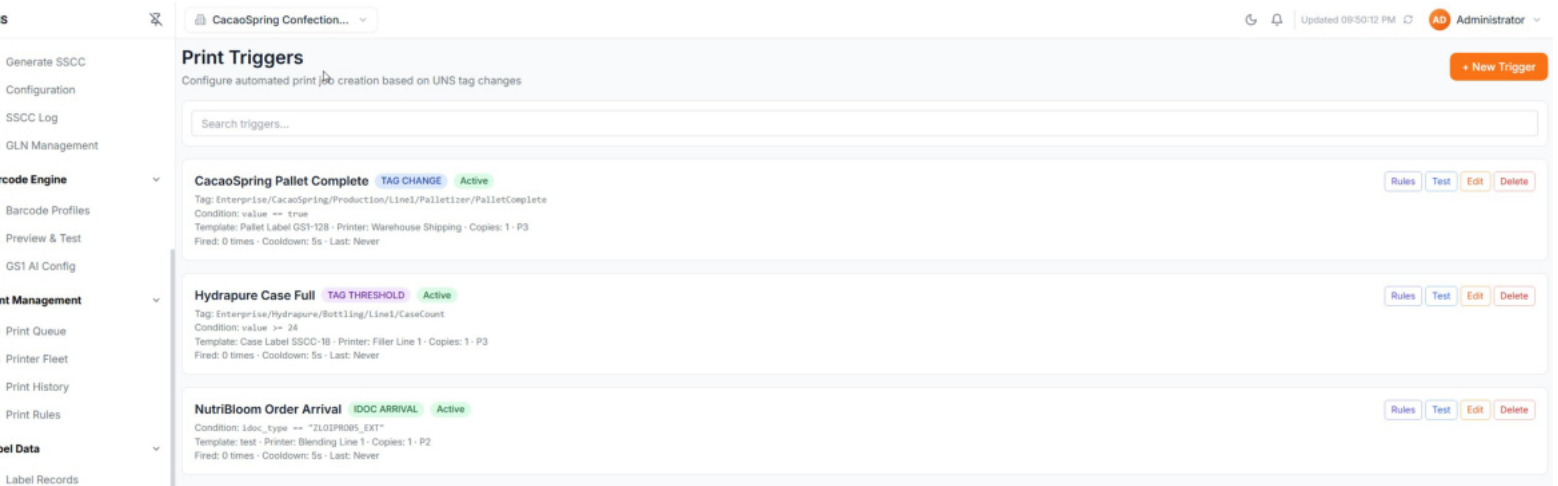
Data-Driven Automation

From ERP Integration to Tag-Triggered Print Execution

The LOGICAL SYSTEMS LMS app aggregates label data from across the enterprise, creating a single authoritative source for every label field. Material master records and production orders are ingested directly from SAP via IDoc parsers (ZMATMAS for materials, ZLOIPRO05 for orders), while additional data flows in from PIM/PLM systems, OPC UA, and MQTT connectors. Field mappings translate source data into template fields with configurable transform expressions, ensuring label content is always current and consistent regardless of origin. Store-and-forward reliability guarantees data delivery even during intermittent SAP or network connectivity.



Print automation eliminates manual label creation by configuring triggers that automatically generate print jobs based on real-time production events. The system supports tag change triggers (e.g., pallet complete signal), tag threshold triggers (e.g., case count reaches target), and IDoc arrival triggers (e.g., new production order received from SAP). Each trigger specifies a template, printer, copy count, and cooldown period. The trigger monitor provides a real-time execution log showing fired, skipped, and error results with full tag path and condition detail. This automation delivers consistent, timely labeling without operator intervention — directly from the plant floor.



The built-in SSCC Generator creates 18-digit Serial Shipping Container Codes per GS1 standards with GLN and Plant-ID enforcement to prevent cross-site duplication. SSCCs are automatically submitted to SAP for Handling Unit creation, with offline generation and queued synchronization when connectivity is unavailable. The Barcode Engine supports 7 configurable profiles across 1D (Code 128, EAN-13, ITF-14, GS1-128) and 2D (PDF 417, Data Matrix, QR Code) symbologies, with a GS1 Application Identifier registry of 16 active AIs. Barcode preview and validation with quality grade verification (ISO/IEC 15416 for 1D, 15415 for 2D) ensures every barcode meets logistics and retail scanning requirements before printing.

LMS connects label operations to the broader manufacturing enterprise through native UNS integration and multi-site governance. UNS tag bindings enrich label data in real time with production context — line, shift, batch ID, and recipe code resolved from ISA-95 aligned tag paths at the moment of printing. Enterprise Sync propagates approved templates from a central authority to all sites, with conflict detection, version comparison, and push/pull synchronization. Print events are published back to the UNS for enterprise-wide monitoring and MES integration, closing the loop between label execution and production visibility. With EU Digital Product Passport (DPP) readiness and GS1/EPCIS compliance built in, LMS is positioned for current and emerging global traceability requirements.

Pre-print validation ensures every label meets quality standards before reaching a printer. Configurable rules per label type check mandatory fields, format compliance, and range limits. Data completeness scoring prevents incomplete labels from entering the print queue, while nonconformity detection generates automatic alerts and email notifications. Error logging with structured codes and escalation paths ensures validation failures are tracked and resolved systematically.



Key Features and Benefits

Features

- Centralized template library with WYSIWYG designer, version control, and approval workflows
- Enterprise data hub with SAP IDoc (ZMATMAS, ZLOIPRO05), PIM/PLM Systems, OPC UA, and MQTT connectors
- Print orchestration with multi-printer fleet management, queue priority, and failed job recovery
- 1D/2D barcode engine with GS1 Application Identifier registry and quality grade verification
- SSCC generation per GS1 standards with GLN management and SAP Handling Unit submission
- UNS integration with tag-driven print triggers, production context enrichment, and ISA-95 alignment
- Enterprise Sync for multi-site template propagation with conflict detection and resolution
- Pre-print validation engine with configurable rules, data completeness scoring, and error escalation
- Network-resilient offline printing with store-and-forward queue
- Label data repository with production order linkage for full batch-to-label traceability

Benefits

- Eliminates fragmented vendor-dependent labeling with a single globally scalable platform
- Reduces mislabeling risk through pre-print validation and barcode grade verification
- Automates print job creation from production events, SAP triggers, and UNS tag changes
- Ensures label consistency across sites with enterprise template governance and sync
- Enables offline printing for air-gapped OT environments without network dependency
- Accelerates SAP integration with pre-built IDoc parsers and middleware connectors
- Supports GS1, EPCIS, EU Digital Product Passport, and ISO barcode quality standards
- Eliminates third-party middleware dependency — no additional middleware licensing required

Technical Requirements

System Requirements

Ignition® (8.1.+) Core Modules, Quad-core processor, 16 GB RAM, 10 GB free disk space

Supported Operating Systems

Windows Server 2019/2022/2025, Windows 10/11, macOS (X, 10.16+), Linux (Ubuntu, CentOS, RHEL)

Supported Protocols

MQTT, OPC UA / OPC DA, REST API (JSON Payloads)
Kafka (via connector), Snowflake (via pipeline, data bridge)

Supported Databases

Microsoft SQL Server, Oracle, MySQL, MariaDB, PostgreSQL, any database with JDBC driver

Supported Browsers

Chrome, Firefox, Safari, Microsoft Edge

LOGICAL SYSTEMS LMS

**Every label validated, every barcode verified,
every site synchronized — from template to
print floor.**

**The LOGICAL SYSTEMS LMS app transforms
fragmented labeling operations into a unified,
automation-driven label management platform
delivering consistent, compliant, traceable labels
across every production line and every site.**