

RFID-Driven Inventory Control for Accuracy, Speed, and Compliance

An integrated RFID-driven Track & Trace solution that transforms inventory accuracy into operational control, labor savings, and real business impact.

Solution Overview

An integrated RFID-based inventory control architecture designed to deliver item- and case-level traceability, high-speed data capture, and real-time ERP/WMS synchronization across retail, warehousing, and manufacturing environments.

The solution combines:



Serialized RFID
label printing

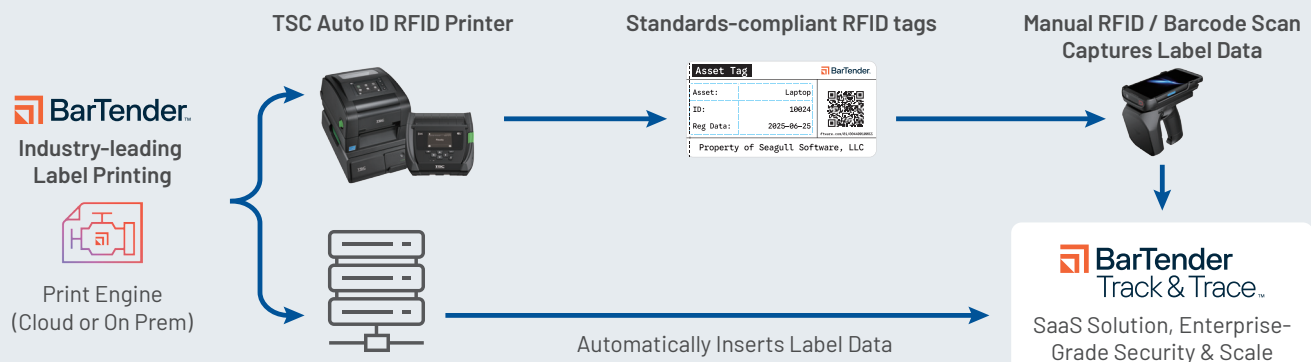


Enterprise mobile
RFID data capture



Event-based Track & Trace workflows
(BarTender)

This architecture ensures accurate, fast, and compliant inventory operations without requiring a full software platform replacement.



Data capture supported via **manual** label scan or **automatically** via direct integration

Architecture Components

A. Serialized Identity Foundation (RFID Printer)

High-precision RFID label printing ensures:

- Unique EPC assignment at item or case level
- Encoding validation to prevent duplicate or corrupted tags
- Standard-compliant data structure (GS1, EPCglobal, UDI)
- Consistent label format across multi-site deployments

B. High-Performance Data Capture (Mobile RFID)

Enterprise mobile computers with integrated or sled-based RFID readers provide:

- Long-range bulk scanning (>10m)
- High-speed read rate (>1300 tags/sec)
- Rapid cycle counting without line-of-sight
- Exception detection (missing, duplicate, misplaced items)

C. Workflow & System Compatibility (BarTender Track & Trace)

- High-precision RFID label creation for item- and case-level traceability
- Event logging: receiving, put-away, picking, shipping
- Cycle counts: >98% accuracy, zone-based verification
- Item visibility, picklist management, and location tracking
- Audit-ready compliance logs
- Integrates seamlessly with ERP/WMS

End-to-end support from label creation to inventory tracking, enabling rapid, accurate, auditable item-level operations.



Operational Impact

By combining serialized identity, high-speed data capture, and workflow compatibility:

95–99%

Inventory accuracy

10–20×

Faster cycle counting

50–70%

Labor reduction

60–90%

Fewer mislabeling/
shipping errors

40–70%

Chargebacks
reduction

30–60%

Inventory
write-offs reduction

This shifts inventory management from periodic correction to continuous validation.

Deployment Characteristics

The solution can be deployed flexibly to match operational scale:

- Single-site to multi-facility environments
- Phased RFID rollout by zone, SKU, or distribution tier
- Compatible with existing ERP/WMS systems
- Optimized for high-volume DCs, retail, and manufacturing



Business & Technical Value

Key operational and technical benefits of this architecture include:

- **Operational Control:** Continuous item-level visibility eliminates blind spots and reduces manual intervention
- **Compliance & Standardization:** Supports GS1, EPCglobal, UDI, and industry-specific serialization requirements
- **Scalable Architecture:** Designed for single-site deployments or global multi-facility rollouts
- **Unified Auto ID Ecosystem:** Integrated printing, mobility, and data capture—strengthened by TSC's 2024 acquisition of Bluebird



Target Environments

- Distribution centers and warehouses
- Logistics and supply chain operations
- Operations requiring item- and case-level traceability

