



The POS/mPOS Market - 2025

An IHL Retail Executive Advisory Program Research Study



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HARD DATA, **SMART** DECISIONS

Executive Summary

The 2025 POS and mPOS report evaluates 16 top vendors—Aptos, Cegid, Diebold Nixdorf, Epicor, Flooid, GK Software, Jesta I. S. , Jumpmind, KWI, MI9 Retail, NCR Voyix, NewStore, Oracle, Salesforce, Teamwork Commerce, and Toshiba—on criteria spanning AI/ML, architecture, functionality, hardware and installation, payment and security, omnichannel, reporting, and more. These platforms serve a wide range of retail verticals and emphasize cloud-native, mobile-first, and highly integrated omnichannel commerce, unifying transactions, inventory, and customer data across fixed and mobile touchpoints.

A clear industry direction emerges: API-driven architectures, modular deployment, and robust support for multiple form factors—fixed lanes, tablets, and smartphones—most with both iOS and Android. Most vendors deploy microservices and offer private or multi-tenant SaaS, zero-downtime upgrades, elastic scaling, strong offline modes, and certifications like PCI DSS, SOC 2, and GDPR. Security, audit logging, and continuous monitoring are now baseline requirements.

Modern solutions deliver complete POS and mPOS with resilient offline capabilities, extensive payment and tender options, and seamless mobile selling, including line busting and Tap-to-Pay. Omnichannel is universal: all vendors support workflows like BOPIS, BORIS, and ship-from-store, with near real-time inventory visibility, robust fulfillment logic, and tight e-commerce or OMS integrations. Store-level mobility and automated workflows for inventory, replenishment, and order routing are common, while advanced vendors provide intelligent routing and dynamic allocation.

All platforms enable rich customer profile capture and omnichannel loyalty or clienteling. Approaches vary between native loyalty stacks and deep integrations with enterprise CDPs, but all stress instant visibility into customer history, balances, and offers. Central price and promotion management ensures consistency, while the most advanced products feature unified commerce—combining POS, OMS, analytics, and sometimes e-commerce, with carts and journeys moving fluidly between in-store and online.

Analytics and reporting are increasingly embedded, offering dashboards, exception management, and executive KPIs, while mature solutions embed or integrate customer analytics and segmentation. AI capabilities (recommendations, forecasting, intelligent routing) are growing but uneven; most vendors highlight AI, generative, and agentic features on their near-term roadmaps alongside international expansion and deeper extensibility.

Professional service models are established, with structured rollouts, robust training, and 24x7 support. Integration complexity and organizational change remain the key implementation challenges, addressed by pre-built connectors, best practices, and structured change management. Most solutions target mid-market to enterprise retailers, with some focused on vertical specialization or handling global complexity. Collectively, these offerings showcase a mature, resilient, and innovation-focused POS landscape, with differentiation centered on omnichannel execution, flexibility, and the breadth of ecosystem and platform.

IHL's Evaluation of the Retail POS/mPOS Software Market

Market Observations

The surveyed vendor base demonstrates a clear convergence toward cloud-native, API-first architectures that emphasize resilience, scalability, and enterprise-grade security. Platform providers are implementing microservices-based infrastructure with managed services delivery models, enabling large-scale retailers to achieve global consistency while maintaining local flexibility. This architectural convergence reflects industry maturation around containerization, orchestration via Kubernetes, and leveraging cloud providers—primarily AWS, Google Cloud Platform (GCP), and Azure—to support automatic scaling and high availability. Notably, enterprise-focused solutions now typically guarantee 99%+ uptime with sub-second transaction processing, supporting 300+ transactions per second, and enabling offline-first capabilities that queue transactions during connectivity loss for seamless reconciliation upon restoration.

Market Architecture and Technical Evolution

The technical foundation of modern POS solutions has shifted from monolithic, on-premise systems toward distributed, cloud-native architectures. The surveyed vendor landscape shows near-universal adoption of microservices patterns, with independent scaling of components such as checkout, inventory management, order processing, and customer engagement. Infrastructure-as-Code (IaC) tooling including Terraform, Ansible, and Helm enables reproducible deployments across customer instances and geographies, while containerization via Docker and orchestration through Kubernetes has become standard practice for managing complexity across global deployments.

Performance benchmarks across the enterprise vendor segment show remarkable consistency: platforms delivering 99th percentile API latency under 200-500ms (depending on geography) are now the norm, supporting sustained transaction processing of 300+ transactions per second with peaks exceeding 450, and maintaining 99.85-99.95% uptime targets. These capabilities enable retailers to consolidate multiple legacy systems onto unified platforms while scaling to support global operations. The shift toward managed services and Platform-as-a-Service (PaaS) delivery models has also accelerated innovation velocity, allowing vendors to deploy updates every 2-4 weeks.

Omnichannel and Unified Commerce Capabilities

Omnichannel and unified commerce are now mandatory capabilities, with vendors universally supporting BOPIS (Buy Online, Pick Up In Store), BORIS (Buy Online, Return In Store), ship-from-store, and endless aisle workflows through tight integration with order management systems (OMS), customer relationship management (CRM), and e-commerce platforms. Leading platforms highlight real-time inventory visibility across all channels, unified customer profiles that create a 360-degree view of customer behavior, and single pricing engines that enforce consistency across all touchpoints, though the depth and native scope of these capabilities vary significantly by vendor.

Solutions explicitly positioned as unified commerce suites embed OMS, inventory management, and CRM into a single data model and corporate database, enabling faster implementation and reduced integration complexity compared to platforms that rely more heavily on external system connectors and third-party APIs. This architectural choice directly impacts time-to-value, operational complexity, and the ability to execute rapid iteration on business logic and processes. Cross-channel fulfillment optimization, including intelligent order routing, split shipments, and curbside/contactless workflows, has become a competitive differentiator, with vendors increasingly providing geofencing, mobile notification, and staff workflow optimization as native or integrated capabilities to support evolving consumer expectations around convenience and safety.

Mobile-First and Device-Agnostic Strategies

The market has shifted decisively toward mobile-first or device-agnostic approaches, providing extensive support for tablets, smartphones, and self-service hardware. This evolution reflects dual pressures: first, the need for associate-driven selling through mobile point-of-sale (mPOS) tools that enable line-busting, pop-up events, and assisted selling workflows, and second, consumer demand for self-checkout, mobile payments, and contactless experiences. Support for iOS and Android is now largely native across the board, with some vendors leveraging progressive web technologies or Apache Cordova frameworks to ensure consistent experiences across devices without requiring separate native codebases.

Hardware certification and compatibility have become critical differentiators, with vendors certifying against leading payment terminal manufacturers—Verifone, Ingenico, PAX—and increasingly supporting emerging form factors including Tap to Pay on iPhone and Android, biometric authentication, and IoT integrations such as smart scales, weight-based pricing, and connected

shelf management. This approach has also democratized access to advanced POS capabilities across retail segments by reducing upfront infrastructure costs.

Payment Processing and Fraud Prevention

Payment processing capabilities have become increasingly sophisticated, with platforms supporting a broadening array of payment methods including contactless transactions, mobile wallets (Apple Pay, Google Pay, WeChat, Alipay), BNPL solutions (Klarna), cryptocurrency where applicable, and local payment schemes (SEPA, Girocard, iDEAL). Split-tender transactions, multi-currency and real-time foreign exchange conversion, and VAT handling including EU ViDA compliance are now standard features to support international expansion.

Fraud prevention approaches vary substantially across vendors. Some have invested in native loss prevention rules engines, behavioral analytics, and video linkage for post-transaction investigation, while others emphasize integration with specialized fraud detection partners such as Adyen, Worldline, and niche third-party providers. Payment tokenization and point-to-point encryption (P2PE) are now standard across all enterprise vendors, with the industry increasingly moving toward decoupled payment architectures that separate the POS from payment service providers (PSPs) through gateway abstraction. This decoupling reduces PCI scope significantly and enables provider switching without requiring POS modifications, a critical capability for retailers seeking flexibility and competitive pricing in payment processing.

Compliance certifications including PCI DSS Level 1, GDPR, CCPA, and SOC 2 Type II are table stakes across the enterprise segment, with many vendors holding ISO 27001 accreditation and undergoing annual third-party security audits by recognized auditors. The maturity of compliance posture across vendors suggests that regulatory requirements are now fully baked into product architecture rather than treated as add-ons, reducing implementation risk for international retailers.

Implementation Methodologies and Professional Services

Enterprise implementation timelines have contracted modestly over the past 3-5 years, with vendors frequently citing 8-16 weeks for average deployments versus the 6-12 month timelines that characterized earlier POS platform migrations. This improvement reflects standardized methodologies, pre-built connectors to common enterprise systems and reduced custom development requirements. Vendors emphasize structured phased approaches (typically spanning discovery, design, build, test, deploy, close phases) with formal gating controls to manage risk, though complexity factors including data cleansing, legacy system integration, and organizational change management continue to drive substantial variation between simple and complex deployments.

Data migration capabilities have matured substantially across the vendor landscape, with platforms generally offering robust legacy system support, automated deduplication and validation, detailed rollback procedures, and comprehensive parallel testing frameworks. Professional services delivery models increasingly emphasize configuration over customization, train-the-trainer approaches to accelerate knowledge transfer, and proactive change management coaching to drive adoption.

Emerging AI and Predictive Capabilities

Artificial intelligence and machine learning are becoming more prevalent across the vendor landscape, though implementation approaches and maturity levels vary substantially. Native capabilities tend to focus on inventory optimization, demand forecasting, and labor scheduling, while more advanced AI-driven personalization, recommendation engines, and predictive maintenance tend to require third-party integrations. Vendors have invested in AI-powered loss prevention, including image recognition for detecting ticket switches and non-scans, behavior pattern detection for identifying associate anomalies, and facial recognition for age verification automation.

Some vendors emphasize their API-first architecture's ability to integrate with best-in-class AI solutions, including generative AI for associate support and agentic AI for autonomous workflows, positioning this flexibility as preferable to native capabilities that may lag proprietary solutions in performance or feature maturity. Several vendors have announced or are actively developing agentic AI roadmaps to support autonomous decision-making in areas including inventory optimization, order routing, and operational exception handling. Computer vision and edge AI remain emerging capabilities with limited production deployments, though several vendors identify these as near-term roadmap items that will drive competitive advantage in loss prevention and operational efficiency.

Analytics, Reporting, and Business Intelligence

Real-time analytics and reporting are now core functionality rather than premium add-ons, with platforms offering customizable dashboards, mobile access, and executive-level KPI tracking. Approaches vary between vendors offering embedded business

intelligence (Epicor leveraging Domo, Flooid leveraging Insights, MI9 offering MI9 Intelligence as an optional add-on) and those emphasizing openness to third-party BI platforms via clean data APIs and data lake access. Out-of-the-box reporting libraries typically span 30-100+ pre-built reports covering sales analysis, inventory performance, employee productivity metrics, and detailed financial analysis, with many platforms supporting drag-and-drop report customization for business users without requiring technical expertise.

Internationalization and Regulatory Compliance

The international scope of the surveyed vendor base reflects both global consolidation in the POS market and the significant complexity of regulatory requirements across diverse geographies. Vendors range from predominantly North American operations (Epicor Propello focused on North American mid-market, some horizontal vendors) to global enterprises operating in 50+ countries (Cegid, Diebold, GK Software, Oracle, Toshiba). Multi-entity and franchise support, including localized customization, currency handling, and consolidated reporting across regions, has become a critical capability for retailers expanding internationally and managing complex corporate hierarchies.

Fiscalization compliance—including e-invoice capabilities and country-specific tax reporting requirements—is now supported across major markets including France, Germany, Italy, Spain, and other EU nations, typically through dedicated fiscal modules and partnerships with specialized fiscal service. Data localization and privacy regulations, including GDPR compliance and regional data residency requirements (e.g., hosting in EU or China-specific regions), have significantly influenced architectural decisions around cloud provider selection and the choice between single-tenant versus multi-tenant deployment models. The trend toward hybrid support—where vendors maintain managed cloud deployments for new implementations while pragmatically continuing to support on-premise and hybrid models for existing customers—reflects mature, customer-centric approaches to managing legacy installed bases while driving gradual migration to cloud-native architectures.

Market Positioning and Customer Satisfaction

The surveyed vendor base spans distinct market segments and retailer sizes, with enterprise-focused vendors typically targeting retailers with \$50M+ annual revenue and 20+ locations, mid-market solutions addressing the \$10-100M revenue segments, and specialized players focusing on vertical-specific requirements (e.g., hardware retail, specialty retail, food and beverage, lodging). Customer satisfaction metrics across vendors indicate a mature market, with vendors reporting Net Promoter Score (NPS) ratings in the 40-80+ range and customer retention rates exceeding 90%, reflecting both product stability and deep, long-standing vendor-retailer relationships.

New customer acquisition rates and detailed win/loss analysis suggest intense competition at the enterprise level, with vendors consistently competing against 5-10 other platforms in pursuit of significant deals. Notably, win factors correlate strongly with solutions' ability to address inherited complexity through native omnichannel and data unification capabilities, often outweighing pure technical functionality or pricing considerations. The depth of professional services capacity and the organizational ability to execute phased, risk-managed implementations continue to differentiate vendors, particularly in markets with high integration complexity or significant organizational change management requirements.

Conclusion

The POS and mPOS market has evolved from a fragmented landscape of monolithic, on-premise systems to a consolidated set of cloud-native, API-first platforms characterized by unified commerce, advanced analytics, and sophisticated AI integration. This transformation reflects both technological maturation and changing retailer requirements around agility, omnichannel capability, and rapid innovation velocity. Enterprise retailers now expect cloud-native architectures, 99%+ uptime, sub-second transaction processing, and the ability to integrate with best-in-class solutions across inventory, payments, CRM, and analytics. The competitive intensity in this segment suggests that differentiation is increasingly driven by implementation excellence, professional services capability, and the ability to navigate complex organizational change, rather than raw technical features. Future evolution is likely to emphasize agentic AI capabilities, edge computing for resilience, and deeper integration across the broader retail technology ecosystem.

Retailer Key POS/mPOS Selection Questions

Selecting a POS/mPOS solution represents one of the most significant technological decisions a retail or hospitality enterprise can make. The choice impacts daily store operations, customer experience, employee productivity, financial performance, and long-term competitive positioning. This guide reframes the most important POS capabilities into 15 strategic questions that retail executives and procurement teams should ask prospective vendors during the evaluation process.

These questions are designed to:

- Uncover vendor capabilities in areas critical to modern retail success
- Assess strategic alignment between vendor roadmap and retailer vision
- Evaluate implementation risk and vendor stability
- Understand total cost of ownership and partnership value
- Identify competitive differentiation and future-readiness

Question 1: WHAT IS YOUR ROADMAP FOR EMERGING TECHNOLOGIES LIKE AI, AGENTIC AI, AND ADVANCED PERSONALIZATION?

Why This Matters: AI is rapidly transforming retail—from inventory optimization and demand forecasting to fraud detection and personalized recommendations. Agentic AI—systems that autonomously make retail decisions—will become increasingly important. Vendors investing in these areas demonstrate forward-thinking and provide competitive advantage. Understanding vendor commitment to emerging technologies is essential for long-term partnership viability.

Question 2: TELL US ABOUT YOUR CUSTOMER BASE. WHAT IS YOUR RETENTION RATE, AVERAGE CUSTOMER TENURE, AND CUSTOMER SATISFACTION METRICS?

Why This Matters: POS implementations represent multi-year commitments and significant capital investments. Vendors with strong customer retention rates, long average customer tenure, and high satisfaction indicate platform quality and customer-centric development. High churn and declining retention suggest platform weaknesses, poor support, or strategic misalignment. Vendor stability is essential to prevent forced migration and stranded investment.

Question 3: DESCRIBE YOUR API ARCHITECTURE AND INTEGRATION CAPABILITIES. HOW FLEXIBLE ARE YOU FOR CUSTOM INTEGRATIONS?

Why This Matters: Modern retail ecosystems are complex, involving integrations with ERP systems (SAP, Oracle, NetSuite), e-commerce platforms (Shopify, SFCC), OMS solutions, CRM systems, loyalty platforms, payment processors, and emerging technologies. An API-first architecture ensures flexibility to integrate with best-of-breed solutions and adapt as technology landscapes evolve. Vendors with limited or immature APIs constrain retailer flexibility and increase technical debt.

Question 4: DESCRIBE YOUR APPROACH TO LOCALIZATION AND COMPLIANCE FOR MULTI-REGION RETAILERS. WHICH GEOGRAPHIC MARKETS DO YOU SUPPORT?

Why This Matters: Retailers operating across multiple regions face complex, divergent regulatory requirements. Fiscalization requirements (Germany, France, Italy), VAT handling variations, sales tax complexity, receipt formatting standards, consumer protection laws, and data residency requirements vary significantly by jurisdiction. Vendors capable of supporting multi-region deployments with built-in compliance reduce implementation burden and regulatory risk.

Question 5: WALK US THROUGH YOUR PRICING MODEL AND TOTAL COST OF OWNERSHIP. WHAT IS INCLUDED IN THE BASE LICENSE VS. ADD-ON MODULES?

Why This Matters: POS costs extend well beyond software licensing—including hardware, professional services, training, ongoing support, maintenance, integrations, and customizations. Understanding the vendor's pricing model and true total cost of ownership (TCO) is essential

for budgeting, ROI analysis, and ensuring no hidden costs emerge post-contract. Transparent pricing prevents budget surprises and enables accurate financial comparison across vendors.

Question 6: HOW DO YOU ARCHITECT TRUE OMNICHANNEL OPERATIONS WITH REAL-TIME INVENTORY VISIBILITY?

Why This Matters: Omnichannel retail is now table-stakes. Customers expect to shop seamlessly across in-store, online, mobile, and social channels with consistent pricing, accurate inventory, and flexible fulfillment options. A unified omnichannel architecture where POS, OMS, merchandising, and customer data operate on a single data model ensures that inventory is a single source of truth and prevents costly overselling or lost sales from inaccurate stock information.

Question 7: WHAT CERTIFICATIONS AND COMPLIANCE FRAMEWORKS DO YOU MAINTAIN FOR SECURITY AND DATA PROTECTION?

Why This Matters: Retailers are the custodians of sensitive customer data and process billions of dollars in payment transactions. Security and regulatory compliance are non-negotiable baseline requirements. Breaches expose retailers to operational disruption, customer trust erosion, regulatory fines (often 2-4% of global revenue under GDPR), and reputational damage. Vendors must maintain rigorous security certifications (SOC 2, ISO 27001), payment compliance (PCI DSS Level 1), and privacy compliance (GDPR, CCPA) with continuous monitoring and regular updates.

Question 8: DESCRIBE YOUR MOBILE POS CAPABILITIES AND OFFLINE FUNCTIONALITY. HOW LONG CAN STORES OPERATE WITHOUT CONNECTIVITY?

Why This Matters: Mobile POS enables associates to serve customers anywhere in the store, reducing checkout wait times and enabling personalized, consultative selling. Sophisticated offline functionality ensures business continuity during network outages, prevents lost revenue, and enables POS deployment in locations with inconsistent connectivity (remote stores, pop-ups, trade shows). The ability to operate for extended periods offline—with full transactional capability, complex promotions, payment processing, and tax calculations—is a critical differentiator.

Question 9: WHAT OMNICHANNEL FULFILLMENT CAPABILITIES DO YOU PROVIDE, AND HOW DO YOU OPTIMIZE ORDER ROUTING?

Why This Matters: BOPIS (Buy Online, Pick Up In Store), ship-from-store, and similar fulfillment models have become competitive necessities. Intelligent order orchestration—automatically routing orders to optimal fulfillment locations based on real-time inventory, distance, cost, and fulfillment capacity—directly impacts customer satisfaction (faster fulfillment), inventory efficiency (better stock utilization), and profitability (reduced shipping costs). Vendors with sophisticated order routing algorithms provide significant competitive advantage.

Question 10: DESCRIBE YOUR CLOUD ARCHITECTURE, DEPLOYMENT MODELS, AND UPTIME GUARANTEES. WHAT HAPPENS WHEN YOU UPDATE SOFTWARE?

Why This Matters: Cloud-native architecture (microservices, containerization, API-first, headless design) enables rapid innovation, elastic scalability for peak seasons, and zero-downtime deployments. Modern retailers cannot tolerate planned downtime for software updates or routine maintenance. Cloud providers like AWS and Azure have made it possible to deploy production updates without service interruption. Understanding the vendor's architecture, deployment strategy, and uptime guarantees is essential for assessing operational excellence.

Question 11: HOW DO YOU MAINTAIN A UNIFIED CUSTOMER PROFILE ACROSS ALL CHANNELS? WHAT PERSONALIZATION CAPABILITIES DO YOU OFFER?

Why This Matters: Modern retail is fundamentally about personalization. Unified customer profiles—consolidating data from in-store, online, mobile, and social touchpoints—enable associates and marketing teams to understand complete customer context, deliver tailored

recommendations, and provide individualized loyalty benefits. This capability directly drives customer loyalty, repeat purchase rates, and wallet share. Sophisticated personalization can increase conversion rates 10-15% and customer lifetime value 20-30%.

Question 12: DESCRIBE YOUR PRICING AND PROMOTION ENGINE. HOW DO YOU ENSURE CONSISTENCY ACROSS ALL CHANNELS?

Why This Matters: Pricing and promotion consistency across channels directly impacts profitability and brand trust. A centralized, configurable pricing engine ensures customers see identical prices whether shopping in-store or online, that loyalty members receive promised benefits across channels, and that promotional campaigns execute simultaneously across touchpoints. Inconsistent pricing erodes customer trust and creates operational friction. AI-driven pricing optimization—analyzing elasticity, competitor pricing, and inventory—can increase margins 1-3%.

Question 13: WHAT ANALYTICS AND REPORTING CAPABILITIES DO YOU PROVIDE? CAN WE ACCESS REAL-TIME INSIGHTS WITHOUT EXTERNAL TOOLS?

Why This Matters: Data-driven decision-making is fundamental to retail success. Retail leaders need real-time visibility into sales performance, inventory accuracy, employee productivity, and customer behavior across the store, regional, and enterprise levels. Advanced analytics enable predictive forecasting, anomaly detection, and prescriptive recommendations. Vendors providing native analytics (vs. requiring third-party BI tools) typically offer faster insights and lower implementation complexity.

Question 14: WHAT PAYMENT PROCESSORS AND PAYMENT METHODS DO YOU SUPPORT? HOW DO YOU ENSURE PAYMENT SECURITY?

Why This Matters: Customers expect diverse payment options—credit/debit cards, digital wallets (Apple Pay, Google Pay), BNPL (Buy Now Pay Later), alternative payment schemes. Payment infrastructure must be flexible (supporting multiple processors), secure (PCI DSS compliance), and innovative (supporting emerging payment technologies). Understanding payment flexibility and security architecture is essential for competitive positioning and risk mitigation.

Question 15: DESCRIBE YOUR IMPLEMENTATION METHODOLOGY AND TYPICAL PROJECT TIMELINE. WHAT SUPPORT DO YOU PROVIDE DURING AND AFTER GO-LIVE?

Why This Matters: POS implementation is complex and mission-critical. Vendors with strong implementation methodologies, comprehensive training, change management expertise, and ongoing support significantly increase the probability of successful deployment and rapid time-to-value. Poor implementations result in delayed store openings, employee confusion, customer frustration, and lost revenue. Understanding vendor implementation approach is essential for risk mitigation.

CONCLUSION: STRATEGIC EVALUATION AND VENDOR SELECTION

These 15 critical questions form a comprehensive evaluation framework for assessing prospective POS/mPOS vendors. Rather than focusing on feature checklists, these questions encourage strategic thinking about:

- Omnichannel capability: Can the vendor enable true omnichannel retail with unified inventory and customer data?
- Security and compliance: Are we confident in the vendor's ability to protect sensitive data and maintain regulatory compliance?
- Operational resilience: Can the system operate during network outages and support distributed retail scenarios?
- Data-driven operations: Does the vendor provide analytics and insights that enable informed decision-making?
- Strategic alignment: Does the vendor's roadmap align with our long-term vision for retail innovation?
- Partnership quality: Can we trust the vendor to be a true partner, providing excellent implementation, training, and ongoing support?
- Financial viability: Is the total cost of ownership reasonable and predictable? Is the ROI achievable?

Evaluating vendors across these 15 dimensions provides a comprehensive foundation for selecting a POS platform that will deliver sustained competitive advantage, operational excellence, and business value. Further details and an insight into this topic are detailed at the end of this report in a breakout section.

AI Overview

Multiple vendors are converging on several core AI/ML capabilities that are increasingly becoming table-stakes in the retail POS space. Personalization and recommendation engines are being implemented by approximately half of respondents, typically using machine learning models that identify "buy it again," "frequently bought together," and "similar items" patterns. Several vendors are embedding these recommendations directly into checkout workflows to drive incremental sales. Real-time anomaly detection for fraud and loss prevention is another widely deployed capability, with vendors using configurable rule-based systems that flag unusual transaction patterns—such as unusual void frequencies, excessive discounts, or rapid refunds—and trigger alerts for store operations teams. Customer lifetime value (CLV) prediction appears across multiple platforms as a foundational analytics capability, enabling retailers to segment customers by loyalty tiers and target retention efforts accordingly. Integration-first approaches are nearly universal among vendors, with most offering APIs and webhooks to connect external AI solutions from third parties rather than building all AI capabilities natively. Finally, digital receipt personalization with targeted promotional messaging is supported by the majority of vendors, allowing retailers to surface relevant offers and loyalty information at the moment of transaction capture.

Several vendors are delivering differentiated, high-value AI and agentic capabilities that go well beyond industry norms. Fully integrated computer vision and edge-AI systems are being deployed to perform real-time item recognition, produce scanning, and loss prevention analysis at the point of sale and self-checkout—with models continuously retraining on live production data. This end-to-end ownership of the AI/IoT stack (from cameras and algorithms to SaaS platform and field services) enables rapid iteration and customization for retailer-specific shrink scenarios. Agentic AI orchestration frameworks are being actively developed by multiple vendors, architected to enable autonomous decision-making workflows that can trigger pricing adjustments, dynamic promotions, workforce scheduling, and fulfillment routing without human intervention—while maintaining explainability and governance controls. Natural language query capabilities for business intelligence are emerging, allowing store managers and headquarters staff to ask ad-hoc questions of the data warehouse in plain language and receive generated dashboards and reports, significantly reducing the dependency on data analysts. Closed-loop AI model governance with continuous monitoring, version control, and retraining policies is differentiating vendors that have invested in operational AI practices; these systems track precision, recall, and false-positive rates in production and automatically adapt to seasonal or behavioral shifts. Finally, AI-driven inventory optimization and dynamic replenishment powered by forecast models and real-time demand signals is enabling retailers to reduce markdowns and stockouts simultaneously by distributing inventory more intelligently across the network.

AI and agentic capabilities are poised to fundamentally transform in-store operations and customer experience over the coming years. Checkout friction will decrease significantly as computer vision systems, mobile POS, and intelligent recommendation engines work in concert to enable fast, accurate, and personalized transactions—whether through traditional registers, self-checkout, or mobile associate-led checkout. Customers will encounter hyper-personalized engagement at every touchpoint, from the moment they enter the store, with real-time offers, product suggestions, and loyalty recognition that adapt based on their history and current behavior. Loss prevention and shrink will decline materially through continuous video analysis, automated exception detection, and AI-driven intervention alerts that empower associates to act before theft or fraud occurs. Store associate productivity and job satisfaction will improve as AI handles routine operational decisions (like dynamic pricing, markdown recommendations, and inventory transfers), freeing associates to focus on high-value customer service, advisory selling, and exception management. Inventory accuracy and fulfillment speed will reach new levels, enabling seamless omnichannel experiences where customers can confidently order online for in-store pickup, access any inventory held anywhere in the network, and complete returns or exchanges with minimal friction. Real-time operational insights will flow continuously to store managers and district leaders, surfacing optimization opportunities in labor scheduling, category performance, and customer engagement before they become problems.

Autonomous checkout and frictionless transactions will become mainstream, with computer vision-based scanning, mobile POS, and self-checkout technologies reducing time at registers and enabling associates to complete transactions anywhere in the store, whether at a traditional checkout counter, in the aisles, or curbside. Dynamic, context-aware pricing and promotions will be updated in real time based on local inventory levels, customer segments, and competitive positioning, with personalized offers appearing on digital signage, mobile apps, and receipts the moment they become relevant to each customer. Proactive customer service through connected intelligence will emerge, where integrated systems surface customer profiles, purchase history, preferences, and past service issues to associates the moment a customer is recognized, enabling personalized recommendations and preventing service failures before they occur. Agentic AI-driven task orchestration will streamline store operations, automatically assigning inventory pulls, markdowns, stock adjustments, and fulfillment work to associates based on real-time priorities and labor availability, while continuously optimizing for speed and accuracy. Unified omnichannel fulfillment will create a seamless experience where inventory visibility is accurate across all channels, orders can be placed and modified up to pickup/delivery, and returns can happen at any location with instant refunds or exchanges processed through integrated systems. Data-driven merchandising at scale will enable retailers to automatically optimize shelf pricing, promotional placement, and assortment based on continuous learning from transaction data, video analytics, and customer behavior—moving from static quarterly planning to

dynamic, adaptive strategies. Finally, privacy-first personalization will establish trust, with transparent AI governance, explicit customer consent management, and explainable AI decisions ensuring that the enhanced personalization and loss prevention capabilities operate within clear ethical and regulatory boundaries, building customer confidence in the brand.

The investment in AI/ML/Agentic capabilities by POS vendors signals a clear industry direction: retail is moving from transaction processing toward intelligent, adaptive, autonomous systems that enhance both operational efficiency and customer experience. The next two years will see accelerating convergence around certain core capabilities particularly real-time personalization, autonomous task orchestration, and integrated loss prevention while vendors who have built end-to-end ownership of AI infrastructure (data, models, governance) will have the agility to differentiate. For retailers, the opportunity lies not just in adopting these capabilities, but in orchestrating them as a unified system where data flows seamlessly, decisions are made at the edge where they matter most, and every interaction between customer and associate, associate and system, or system and system is informed by continuous learning and optimization.



Current AI/ML/Agentic Capability

- **Oracle Retail AI Foundation as Analytical Backbone:** Serves as the analytical backbone across the retail suite, consolidating data from planning, buying, merchandising, and selling applications. Packaged AI capabilities in production include Affinity Analysis (product relationships using graph algorithms), Customer Segmentation (RFM clustering for localized assortments), Store Clustering (grouping for pricing strategies), Customer Decision Trees (hierarchical behavior prediction), Demand Transference (omnichannel buying pattern modeling), and Strategic Forecasting (item-location forecasts with confidence intervals and cold-start handling).
- **Xstore Product Recommender:** Deployed in production for checkout recommendations, enabling retailers to optimize for revenue or margin using data from Merchandising, Xstore POS, or Customer Engagement services.
- **AI-Powered Pricing and Promotion Optimization:** Oracle provides AI-driven pricing, promotion optimization, anomaly detection, CLV modeling, and rich KPI analytics through Oracle Retail and OCI services that can be integrated with Xstore, with large retailers running these combined Oracle Retail solutions across thousands of stores and high transaction volumes.
- **Customer Lifetime Value (CLV) Prediction:** Provides transactional and predictive CLV models, RFM scoring, and engagement metrics through Customer Engagement and Unity CDP.
- **Advanced Analytics with 20,000+ Retail KPIs:** Surfaces over 20,000 retail-specific measures and KPIs through Oracle Retail Insights, including demand decomposition, price/promotion sensitivity with elasticity estimation, basket and affinity analytics, and automated business recommendations for markdowns, assortments, allocation, and replenishment.
- **Innovation Workbench for Custom ML:** Enables retailers to build custom ML models using notebook-based Python tools to extract insights from images, social media, or proprietary algorithms while maintaining integration with Oracle workflows.
- **Oracle Roving Edge for Store-Level AI:** Brings OCI services, including AI capabilities, to store edge with containerized deployment (8 OCPU, 64GB RAM, 7.7TB storage, battery operation), enabling local AI processing during network disruptions.
- **Production-Scale Enterprise Deployment:** Spans 300+ retail brands globally, processing 1.5 million transactions daily at single retailers with deployments supporting 8,000 stores for individual customers.

Future AI/ML/Agentic Capability

- **Agentic AI Framework with Human-in-the-Loop:** Aligning with OCI GenAI and agents capabilities to enable safe, policy-first autonomy.
- **Model Context Protocol (MCP) Integration (2025-2026):** Announced at Oracle AI World 2025, includes SQLcl MCP Server (natural language database queries with audit trail), Oracle Analytics Cloud MCP Server (bridge to agentic workflows), Oracle Vector Store MCP Server (secure vector embedding access), and standardized agent interoperability treating MCP as "USB-C for AI."
- **Oracle AI Agent Marketplace and Studio:** In production, enables customers to deploy Oracle-validated or partner-developed agents with no coding for sustainability, supplier assessment, and asset maintenance.
- **Multi-Modal MCP Servers (2025-2026):** Planned to handle text, image (BLOB), and spatial data, with medium-term vision for autonomous database AI agents managing performance, security, and cost optimization without human intervention.

Overall AI and Agentic Product Strategy, Points of Differentiation

- **Comprehensive Retail AI Suite Across Value Chain:** Oracle's primary differentiator is breadth and depth of production-deployed retail AI spanning demand forecasting, assortment planning, pricing optimization, promotion execution, inventory management, and POS recommendations—an integrated ecosystem across Plan-Source-Buy-Move-Market-Sell-Fulfill-Replenish with over 20,000 retail-specific KPIs creating network effects competitors with siloed AI cannot replicate.
- **AI Foundation as Universal Intelligence Layer:** Centralized predictive AI engine and data consolidation platform powers all Oracle Retail Cloud Services, enabling consistent ML model performance, centralized governance, and rapid deployment of new capabilities—architecturally distinct from competitors with fragmented AI features or third-party ML platforms.
- **Enterprise-Grade AI at Production Scale:** Xstore capability enabling 300+ retail brands deployed, processing 1.5 million daily transactions at individual retailers, handling 626,000 transactions per hour and supporting 8,000-store deployments, Oracle demonstrates production AI maturity at enterprise scale few POS competitors match, providing operational confidence that AI capabilities are battle-tested.

- **Model Context Protocol (MCP) as Strategic Enabler:** Native MCP integration in Oracle AI Database 26ai with full audit trail integration positions Oracle ahead of retail technology vendors for emerging agentic AI landscape, treating agents as first-class database citizens—fundamentally different from application-layer AI integration.
- **Prescriptive AI Beyond Predictive:** Extends beyond forecasting to recommend specific actions (price ladders, promotional mechanics, discount depths) with expected financial impact, confidence scores, and constraints, moving from "AI as insight tool" to "AI as decision engine" with A/B testing hooks and closed-loop learning.
- **Policy-First Agentic AI Philosophy:** Emphasizes human-in-the-loop guardrails, role-based access control, configurable tolerances, and approval steps allowing AI-suggested actions to be auto-applied within limits, escalated, or blocked—addressing enterprise concerns about runaway automation with safe autonomy framework including policy enforcement at edge and audit trails.

Positioning Maps

Revenue metrics alone fail to capture momentum. To identify true market leaders, we evaluate vendors across three dimensions: innovation velocity, market strength, and install base resilience. In this section, we attempt to provide a more accurate representation of the leading software players' true position in the market.

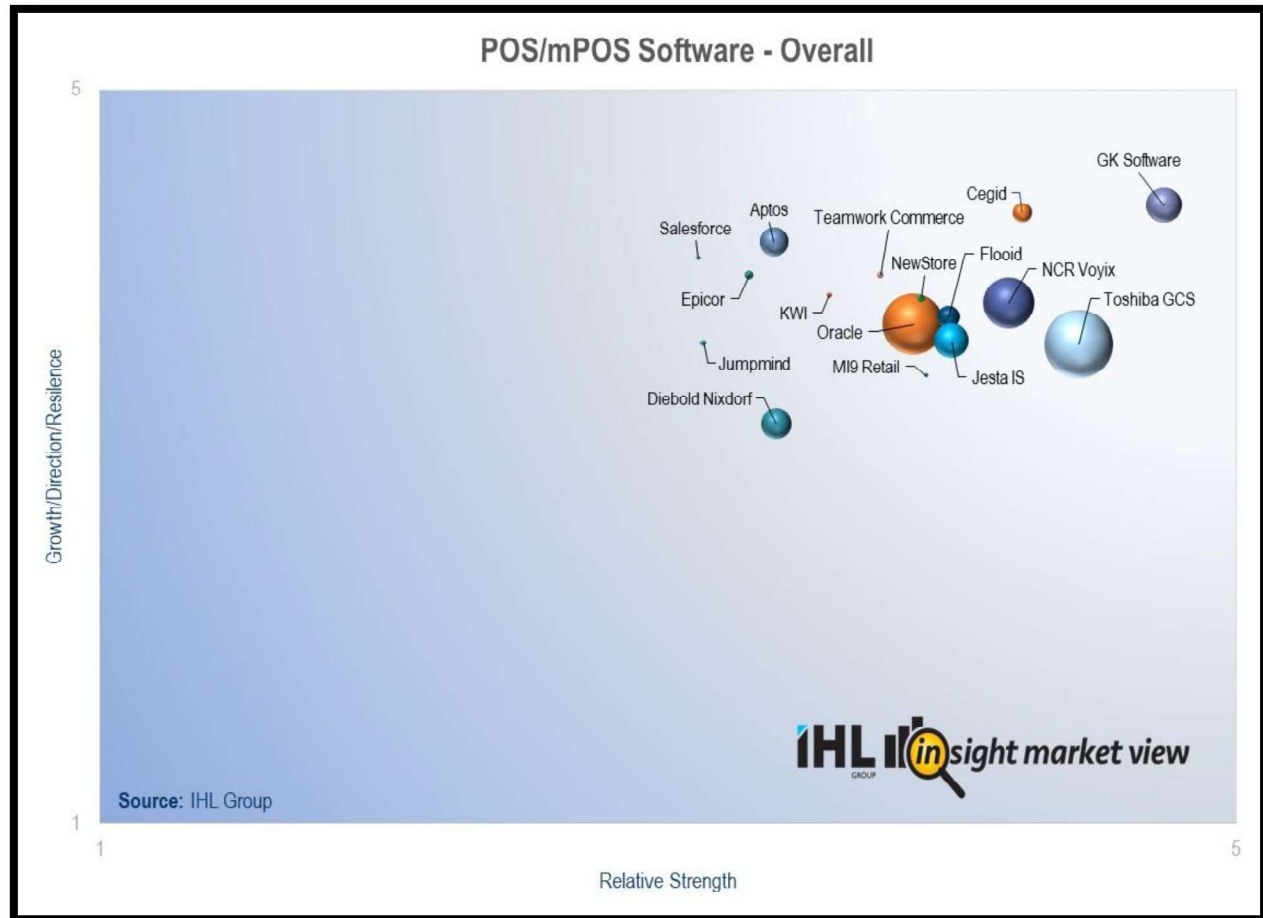
The IHL Insight Market View Positioning Map displays vendors by innovation, market strength, and market share. It is a 3-dimensional view of the market that takes into consideration the scale of the vendors involved and not just direction. So, the reader gets to see size of strength, not just position of strength.

Over 80% of the ratings and positioning come from completely objective measures leveraging our WorldView IT Sizing and Forecasting model and our Sophia data service which tracks installs by vendor. Less than 20% of the total positioning is in any softer measure such as review of innovation or customer satisfaction. For this 20% we have undertaken further measures to ensure there is no bias. Our analysis demonstrates a clear commitment to objectivity in evaluating each solution.

Here are the categories that make up each axis.

X – Market Strength	Y – Growth/Direction/Resilience	Z – Market Share
Functionality across 13 Key Categorizations	Revenue Growth Trend	Market Share
# Retail/Hospitality Accounts	Customer Satisfaction	
Size of Accounts	Unified Commerce Coverage (BI, Commerce, Merch/SCM, Sales & Mktg, Store Systems)	
	Stability/R&D Commitment/Funding	

Total POS/mPOS Software – Overall Positioning



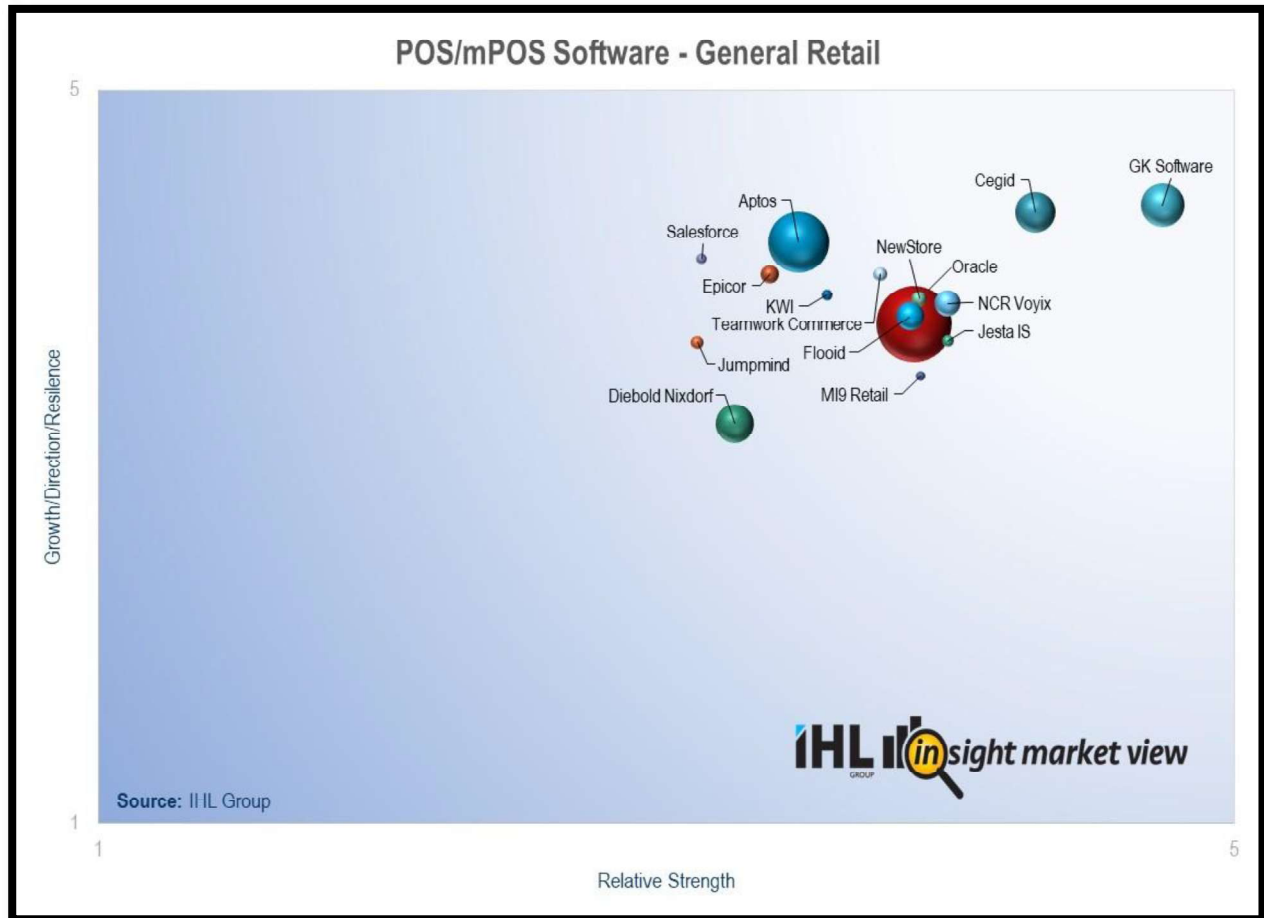
The IHL Insight Market View of the POS/mPOS landscape shows a tightly clustered, highly competitive POS/mPOS vendor landscape, with most leading solutions grouped in the upper-right quadrant, indicating strong market strength combined with positive growth, direction, and resilience. The bubble sizes highlight that a few vendors pair this strong positioning with particularly large market share, while a number of emerging or more focused players achieve similar directional momentum with somewhat smaller installed bases.

In the core leadership zone, NewStore, Mi9 Retail, Oracle, Teamwork Commerce, and Flooid form the central mass of the market, combining above-average strength with solid forward trajectory. NCR Voyix, Toshiba GCS, Jesta IS, and Cegid sit slightly to the right and higher, signaling that they match or exceed this group on both current footprint and resilience, with Toshiba in particular standing out for the size of its bubble and its strong placement on both axes. GK Software appears even farther toward the upper-right, marking it as one of the most advanced and resilient offerings overall, albeit with a somewhat more focused market footprint compared with the very largest players.

Just behind this core cluster, vendors such as Aptos, Salesforce, Epicor, KWI, and Jumpmind occupy positions that suggest credible strength and positive momentum but with relatively smaller market share, implying either strong niche plays or solutions earlier in their growth curve. Diebold Nixdorf sits slightly lower and left of this group, indicating a more moderate combination of growth and relative strength, reflecting a more mature, established base with slower directional change.

Across the chart, the absence of vendors in the lower-left and lower-right regions reinforces that the evaluated players are generally healthy: even solutions with modest share tend to show constructive growth and resilience rather than decline. Taken together, the map tells a story of an increasingly consolidated, innovation-driven POS market in which a concentrated group of platforms set the pace, a few large incumbents leverage scale and stability, and a cohort of agile, cloud-native vendors press upward with strong innovation velocity and targeted market focus.

Total POS/mPOS Software – General Retail



In the General Retail view, the landscape again concentrates most major vendors in the upper-right quadrant, but the pack is tighter and more evenly matched, underscoring how competitive POS is in specialty and department store segments. Relative strength scores for the top dozen vendors are clustered in a narrow band above the midpoint, with almost all of them also showing clearly positive growth, direction, and resilience, suggesting a mature market where leaders are differentiated more by nuance than by dramatic gaps.

Within this cluster, Teamwork Commerce, NewStore, NCR Voyix, Flooid, Oracle, Mi9 Retail, and Jesta IS overlap closely, forming the core of the specialty and department store leaders that blend solid current franchise strength with forward momentum. Their bubbles are moderate to large, indicating that these solutions pair that attractive trajectory with meaningful installed bases across specialty softlines, hardlines, and department store environments. Cegid and GK Software sit just above and to the right of this central mass, signaling that they outpace peers slightly on both axes and stand out as particularly resilient and strategically well-positioned for general retail.

Aptos, with one of the largest bubbles on the chart, appears slightly left of the absolute leaders but higher on the growth and resilience axis, highlighting a vendor that combines substantial market share with especially strong innovation and directional momentum in specialty and department store use cases. Salesforce, Epicor, KWI, and Jumpmind cluster just behind the main group, indicating credible and improving offerings whose relative strength and growth are positive but not yet at the same level as the largest incumbents and omnichannel suites. Diebold Nixdorf is positioned lower and farther left than the rest, implying a more limited relative strength and slower trajectory in these segments, which likely reflects a more focused or legacy-oriented presence compared with the cloud-first and unified-commerce leaders.

The overall story from this chart is of a healthy and innovation-oriented general retail POS market in which numerous vendors provide robust solutions for specialty and department stores, but a handful of platforms—especially Cegid, GK Software, Aptos, and the tightly bunched omnichannel suites around Teamwork Commerce and NewStore—set the pace on both current market position and future readiness.

Vendor Solution Overviews



Solution Overview

Product Name:	Oracle Retail Xstore Point of Service
Target Markets:	Tier 1, 2, and 3 retailers across specialty (fashion, luxury, cosmetics, jewelry), department stores, hard goods, and multi-format operations
Core Platform:	Enterprise-grade POS solution with unified codebase supporting deployment models from fully cloud-based to fully on-premises, serving over 300 retail brands across 95 countries
Recent Strategic Acquisitions:	CrowdTwist (2019) for loyalty platform integration with Xstore

Top 5 Differentiators

1. Unparalleled Deployment Flexibility and Architectural Choice

Description: Oracle Xstore delivers genuine architectural choice with 60-70 distinct deployment configurations ranging from pure cloud (SaaS on Oracle Cloud Infrastructure) to pure on-premises (database at each register) with flexible hybrid options. This platform-agnostic approach extends across operating systems (Windows, Linux), databases (Oracle Database, Microsoft SQL Server), and mobile ecosystems (Android, iOS, Windows) without vendor lock-in. The containerized architecture with Oracle Roving Edge Infrastructure enables cloud capabilities at the store edge while maintaining local resilience.

Evidence:

- 60-70 deployment configurations from fully cloud-based SaaS to fully on-premises with database redundancy at each register
- Platform-agnostic: supports Windows, Linux OS; Oracle Database and Microsoft SQL Server; Android, iOS, Windows mobile devices
- Oracle Roving Edge Infrastructure delivers OCI components in compact form factor for store backroom deployment
- Fully containerized deployment option with complete Oracle Database support
- Certified hardware program supports any peripheral device with JPOS driver
- One retailer retooled entire store format from traditional fixed registers to fully mobile deployment using same codebase with zero application changes

2. Global Scale and Regulatory Compliance Leadership

Description: Oracle maintains dedicated resources exclusively focused on localization research and legal watch activities, proactively monitoring regulatory changes across 95 countries and delivering compliance updates as part of core subscription. The solution provides delivered country accelerators with pre-built fiscal printing integration, tax calculation rules, payment processing localization, and regulatory reporting rather than addressing localization as project-by-project afterthought.

Evidence:

- Retailers live in over 95 countries with delivered localizations for tax/fiscal requirements, language, receipt formats, payment integrations, and fiscal device integration
- Single retailer operates Xstore live in production across 63 countries
- Dedicated legal watch team provides quarterly newsletters and reference pages to customers
- 13 out-of-the-box languages with multi-byte character set support (Chinese Simplified, Chinese Traditional, Japanese)
- Extension framework enables retailers to extend localization for markets not covered by delivered accelerators without forking codebase
- Largest deployment: 8,000+ stores globally; highest volume: 1.5 million transactions daily, 626,000 transactions per hour

3. Enterprise-Grade User Experience Redesign with Cross-Device Consistency

Description: Oracle launched completely redesigned user experience in Xstore version 24 (December 2024 release), rebuilt using Oracle JET Redwood design principles. The redesign delivers absolute consistency in button placement, color schemes, screen layouts, and interaction patterns across desktop, tablet, and handheld devices—enabling associates trained on desktop POS to immediately operate mobile devices with zero additional training.

Evidence:

- Version 24 launched at NRF 2025 with complete UI redesign using Oracle JET Redwood principles
- Absolute consistency across all form factors—identical button positioning, color schemes, layouts on desktop, tablet, and handheld
- Initial customer feedback indicates significantly faster training times
- Dynamic sliding panels focus attention on sub-tasks while maintaining transaction context
- New customer-facing display shows transaction details and QR codes linked to retailer-defined URLs for marketing signup and loyalty enrollment
- At European Customer Advisory Board (30-35 attendees), customers universally reported upgrading to access version 24 capabilities

4. Upgrade-Safe Extensibility and Configuration-First Architecture

Description: Oracle Xstore implements sophisticated extension framework where customizations reside in separate file spaces and tables from core product libraries, ensuring extensions survive product upgrades, patches, and version updates without re-implementation. The architecture provides over 1,000 configuration options and operation chain configuration capabilities, enabling retailers to adapt the system through parameter settings and business rule definitions without code-level customization.

Evidence:

- Extensions in separate file spaces/tables from core libraries—overlay core logic while core maintains GA version compile
- Extensions require only smoke testing and unit testing during upgrades, not complete re-implementation
- Over 1,000 configuration options available
- Operation chain configuration allows modification of business logic flows without coding
- Oracle customers shifted from 80/20 configuration-to-customization ratios to 90/10 or better
- Published extension guidelines with API stability commitments and supported extension points
- Rich extension points across full application stack: UI modifications, business logic overrides, data model extensions, service integrations, peripheral device handlers

5. Comprehensive Retail Portfolio Integration and Unified Data Foundation

Description: Oracle Retail Xstore operates within Oracle's comprehensive retail portfolio spanning the entire retail lifecycle (plan, source, buy, move, market) integrates with Oracle Retail Order Management/Order Broker, Enterprise Inventory Cloud, Store Inventory Operations, Customer Engagement, Merchandising, and Pricing via REST APIs. This portfolio approach enables unified data flows and consistent business rules across the retail enterprise.

Evidence:

- Integrates with Oracle Retail Order Management/Order Broker, Enterprise Inventory Cloud, Store Inventory Operations, Customer Engagement, Merchandising, and Pricing
- Unified promotion and pricing management: central authoring in Oracle Retail Pricing Cloud with distribution and promotion publishing to all channels (POS, e-commerce, order management)
- Single customer profile across channels via Oracle Retail Customer Engagement as system of record
- Applied AI strategy embeds intelligence throughout retail portfolio leveraging data from planning, sourcing, merchandising, sales, fulfillment, and customer engagement
- Oracle provides complete technology stack (Oracle Cloud Infrastructure, Oracle Database, operating systems, hardware options) with unified support
- Seamless omnichannel capabilities (BOPIS, ship-from-store, cross-channel returns, intelligent sourcing) with significantly less custom integration work versus best-of-breed components