

A woman with long brown hair, wearing a white lace-trimmed top, is smiling as she uses a smartphone to scan a purple product in a grocery store. The background shows shelves of produce and other store items.

NCR SOFTWARE DEFINED STORE

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Solution Brief

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The retail battleground has moved to the edge

Changing consumer behaviors. Anytime, anywhere sales. Rising costs. New security threats. The all-consuming need to innovate.

Retailers today are under relentless pressure. To keep up, they're facing an urgent need to digitize their physical stores to offer the modern experiences customers want while operating more efficiently.

On top of this, there are even more technologies to deploy. Higher IT workloads to manage. And more data than ever—that needs to be analyzed in real time. All while attempting to squeeze better performance from IT resources with lower latency and higher efficiency.

Retailers that win will deliver a superior experience, more services and faster innovation to the front lines. Those that won't will lag behind.

How legacy infrastructure is holding you back

Legacy IT infrastructures in-store simply can't keep up with the pace of the business—they're too complex, too patched, too expensive to maintain, too outdated. This creates a quandary: you need to modernize your store technology, but the costs to replace your hardware, software and peripherals are *enormous*.

Most retailers can't invest in a complete IT overhaul—but they also can't stay relevant with their existing investments. The impact on the business, both in terms of customer service and revenues can be significant. Here's how legacy infrastructure keeps you stuck:

Rising cost to serve. Retailers have complex in-store IT footprints built up over time due to the old system of deploying one application per device. This means high overheads: it requires expensive, time-consuming manual intervention for most changes. This leads to inefficiency and escalating costs, from an ever-growing IT bill of materials, to mushrooming support costs, to staff training and in-built business inflexibility, at a time when the pressure is on to reduce the cost to serve.

Stifled innovation. Experimenting with (and quickly deploying) new applications and services to create better customer experiences is the only way to compete. Having the freedom to deploy thinner clients or multi-functional devices so store associates can swipe from POS to Order System to any other application on one screen is the future. But legacy IT solutions don't provide the flexibility and control you need to continuously innovate, without risks to business continuity.

Enforced hardware upgrades. Device driven POS solutions, with each terminal running its own hardware, operating system and application, are completely dependent on vendor-dictated product and support cycles. Without POS virtualization, you could find yourself having to replace perfectly functional POS solutions to enable continued support and compliance, with significant costs. Microsoft end of support for POSReady 7 in October 2021 with no upgrade path to Windows 10 is a typical example.

Line busting. Abandoned baskets, lanes being down and slow service complaints result in lost revenue. But existing POS infrastructures are confined by their IT capabilities, making it difficult to quickly deploy new line busting technologies, such as portable POS tablets or self-checkout.

Security breaches. The burden of manually keeping retail store infrastructure secure and up to date with the latest patches and upgrades across hundreds or thousands of sites is enormous. The retail edge is a hostile environment, and the cost of store downtime due to security breaches or systems failure is significant. You need to be up to date to minimize risk and ensure compliance with PCI-DSS requirements.

Realizing the virtualized store. While back-office virtualization has been around for some time, the rate of adoption in retail stores, outside of corporate data centers, has been slow, because of the unique problem of supporting thousands of distributed, remote devices across multiple stores. And the virtualization of front office functions, including all types of POS terminals and their peripherals, has stalled due to capability and security shortfalls. You need end to end, front and back office virtualization of IT resources to realize maximum cost savings and business flexibility.

If you're hampered by store systems that each have their own separate hardware, software and peripherals, it can feel almost impossible to upgrade the entire system to a modern, flexible, innovative platform. Yet it's essential if you want to maintain loyalty and consumer engagement in the "anytime, anywhere" shopping environment of today.

So, when you think of your ability to meet today's demands and prepare for tomorrow's, is your store technology where you need it to be?

Or are you feeling stuck by your own infrastructure?



Modernize your store with your *existing* IT investments

What sounds better: upgrading one lane at a time—or upgrading all of your stores at once? We like the latter, too. That's the power of NCR Software Defined Store.

NCR Software Defined Store is the smart way to offer the innovative experiences your customers want without having to replace your entire store IT infrastructure. It's the only virtualization solution **purpose-built for retail** and designed specifically to optimize store system performance. Now you can deliver the personalized, future-facing capabilities your customers expect while radically reducing the cost to serve in-store.

It's a unique solution that virtualizes back and front office store systems with intelligent automation to deliver software defined stores. Specific virtualization solutions are available for Point of Sale (POS), tablets, kiosks, self-checkout and a variety of other retail store applications. By virtualizing these store touchpoints, you're free to upgrade your hardware and software independently, add new technologies faster, and deploy new stores easier than ever before.

A photograph of a young woman with long brown hair, smiling warmly at the camera. She is wearing a dark blue top. The background is a blurred retail store environment with shelves and products. A quote is overlaid on the image, and a large white quotation mark is visible on the left side.

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Store IT infrastructures today are complex and expensive to maintain. By shifting our store infrastructure from a hardware centric to a software focused approach, we will be able to increase our speed-of-service, quickly deploy upgrades across our network of stores and add new features and innovations including cloud-enabled services across our chain.”

**Mike Rogers,
Chief Strategy & Information Officer
– Pilot Flying J**

Before NCR Software Defined Store (traditional POS deployment)



Peripheral Mgmt
Hardware
Application
OS for Application

A typical POS terminal includes software and an operating system (OS) license deployed on the terminal hardware, including what's needed to run peripherals. This is multiplied for each terminal—often 1,000's of POS per retailer.

After NCR Software Defined Store (with POS virtualization)



Intelligent
Edge Client

Intelligent
Edge Client

Intelligent
Edge Client



Peripheral Mgmt
Hardware Application
OS for Application

POS software, OS license and CPU power are removed from each terminal to a virtualized edge server (Intelligent Edge.) This significantly reduces per-terminal costs, helps optimize performance and simplifies maintenance.

How it works

NCR Software Defined Store moves the workload of each store endpoint onto a virtualized store server that integrates with a centralized, cloud-based controller.

Each endpoint now operates through the same virtualized server, so hardware and operating system requirements per endpoint is eliminated. For the POS, the solution reconnects peripherals to the virtualized application so cash drawers, barcode scanners, scales, printers and the like can continue to operate as they always have, without any changes. The devices are connected to the physical POS terminal, even though they're managed through the centralized solution.

Best of all, virtualization is invisible to users—your associates will see the same interface as the original POS terminal. And performance improvements are common since your systems are no longer bound by hardware limitations on each terminal.

Solution architecture

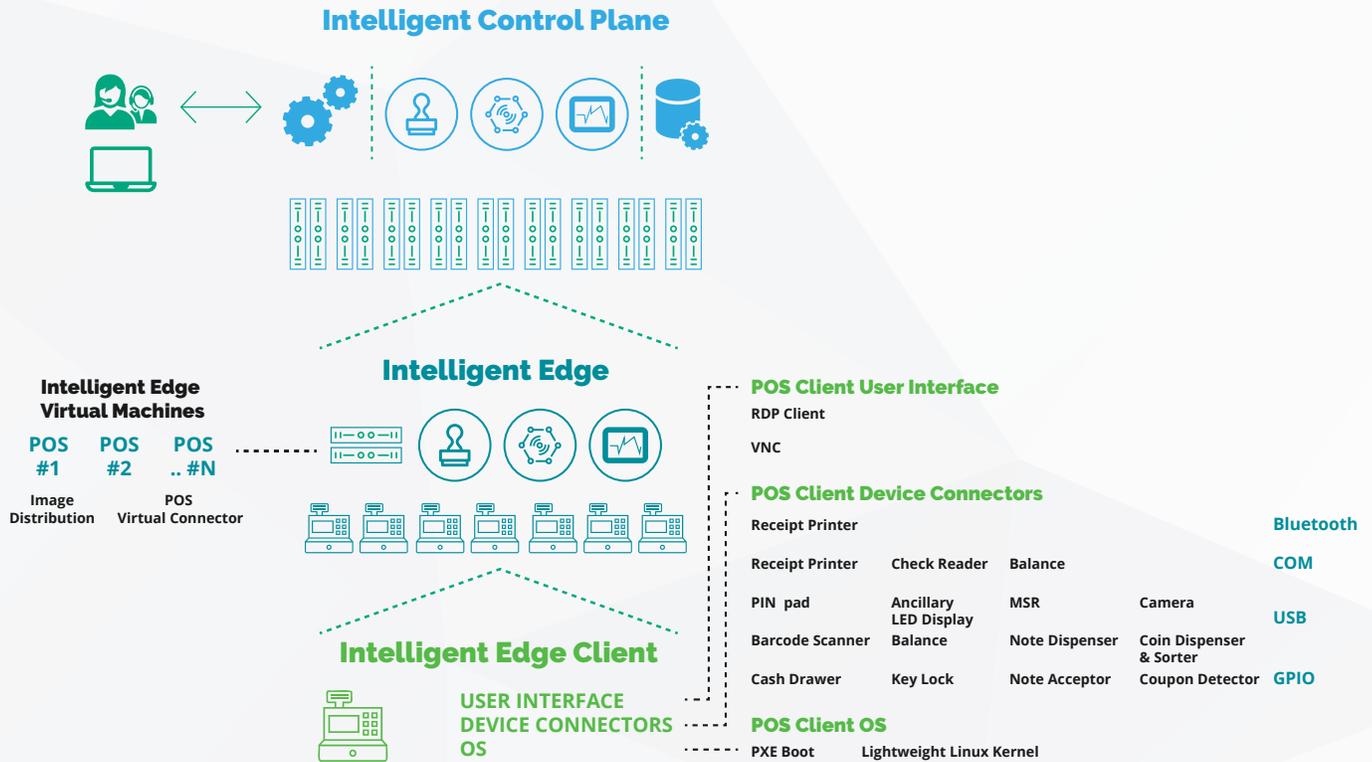
NCR Software Defined Store has three integrated components:

Intelligent Edge virtualizes your store systems and includes basic infrastructure services, configured for each store's unique requirements. This component includes the IT services and virtual machine resources needed to host store systems. Installed on your choice of hardware, the architecture is designed for retail, significantly reducing the physical footprint of your IT inside the store and driving operational efficiency.

Intelligent Control Plane is a cloud-based controller that centrally manages all of the store-level Intelligent Edge devices, enabling the provisioning, management, control and updating of hundreds or

thousands of virtualized edge servers and server workloads across your complete retail estate. Offering high availability, local backup, scalability and more, it simplifies and accelerates what would otherwise be complex IT tasks, while ensuring a consistent, secure IT environment in every store.

Intelligent Edge Client securely connects each peripheral to the virtualized software running on the intelligent edge server. For applications such as POS, our unique virtualization technology enables existing peripherals such as scanners, printers and cash drawers to remotely connect to the intelligent edge without need for replacement or upgrade.



Virtualization of our key upsell platform is a smart way to reduce the number of devices at customer checkout and deliver a far leaner and efficient IT footprint in the store."

Edward Dzadozsky,
VP North America IT – Circle



How your stores can benefit— 164% ROI is just the beginning.

NCR Software Defined Store is a key pillar of NCR’s Next-Generation Retail Architecture, designed to help you manage your stores more easily and innovate quickly with less cost.

Reduce cost to serve

With store systems centralized from one single control point, you can simplify IT management at scale and remove complex IT footprints by introducing less expensive, thin client hardware, saving time and money.

Improve customer experience

You can make store touchpoints multi-purpose so your associates can better serve your customers with less hardware, and reduce lines by introducing portable POS tablets during peak hours. As retail labor costs rise, it’s essential to put the right technology in your associates’ hands to boost productivity.

Innovate at speed

By decoupling hardware from software, you can test and deploy new technologies faster, extend the life of your existing hardware and reduce time to deploy new stores by up to 50%. All patches and updates to the system software are automated across your store estate.

Enhance security and control

Unlike virtualization solutions created for data centers, this solution is purpose-built for retail, designed from scratch with the security features most important to your business, including PCI-DSS compliance for our system software.

Future-proof value

The solution delivers value throughout the entire lifecycle of your store IT, saving huge costs, from the moment you provision our software, to continual updating and monitoring of store systems—through to the future for new technology deployment.

NCR and Zynstra commissioned Forrester Consulting to conduct a Total Economic Impact™* study to explore the potential return on investment by deploying Software Defined Store. Through two customer interviews and data aggregation, Forrester concluded NCR Software Defined Store enabled by Zynstra has the following three-year financial impact:

NCR Software Defined Store Delivered 164% ROI

Three-year risk-adjusted

Improved store efficiency		\$6.4M
Avoided revenue loss		\$2.7M
Hardware cost savings		\$5.4M
Software cost savings		\$1.5M



50%
Reduction in break-fix & software upgrade cost



50%
Downtime avoided



10%
Improvement in point-of-sale speed



57%
Annual hardware cost savings per store

*Total Economic Impact™ of NCR Software Defined Store Enabled By Zynstra, a November 2019 commissioned study conducted by Forrester Consulting on behalf of Zynstra and NCR

Choose from a variety of deployment methods to meet your needs:

Virtualized Store: Manage all store systems virtually

With a fully-virtualized store, devices can be multi-purpose. For example, a mobile tablet used for operational analytics can become a line-busting POS during busy periods. Even systems already centralized at the store, such as kitchen production, fuel controllers and back office systems, can be virtualized to provide a single point of control for maximum cost savings and business flexibility across your entire store estate.

Virtualized POS—Manage all POS terminals on a single server

Extend the life of your current POS hardware or transition to lower-cost thin clients. With virtualized POS, you can even remove the hard discs, the most common point of failure. Maintenance becomes simpler and more cost effective. Patches and updates to POS lanes can be applied remotely. And store associates don't need additional training as the POS interface remains exactly the same.

Virtualized POS Tablet: Bring the checkout to the customer

Check out customers wherever they are by turning mobile devices into a PCI compliant, tablet-based POS to provide a higher level of customer service during peak periods. It's a fast, cost-effective and flexible way to help deliver a frictionless checkout experience to the customer even when the store is busy. Curbside collection, checkout in the aisle, pop-up stores...it's all possible.

Virtualized Self-Checkout: Transform performance, reliability and serviceability

A flexible infrastructure for the optimization of your self-checkout investment. You'll extend the life of your self-checkout terminal hardware and make management and maintenance faster, easier and more cost effective.



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Got long lines or peak times?

Your sales associates can break away from the POS terminal with a tablet, bringing the POS to the customer, and creating a great experience.”

The time to move is now. Let us help.

With NCR Software Defined Store, you can truly achieve a connected, agile store—innovating not just the POS, but all store systems to better serve your customers.

You'll move from a static, "one problem at a time" mindset and instead create a dynamic, flexible IT ecosystem that's ready for anything. With NCR, it's easy for you to invest in tomorrow while seeing more value from your infrastructure today.

Move faster towards digital-first retail with NCR

Make the most of existing IT investments



Eliminate software dependency on hardware



Significantly reduce maintenance costs



Simplify and streamline security compliance



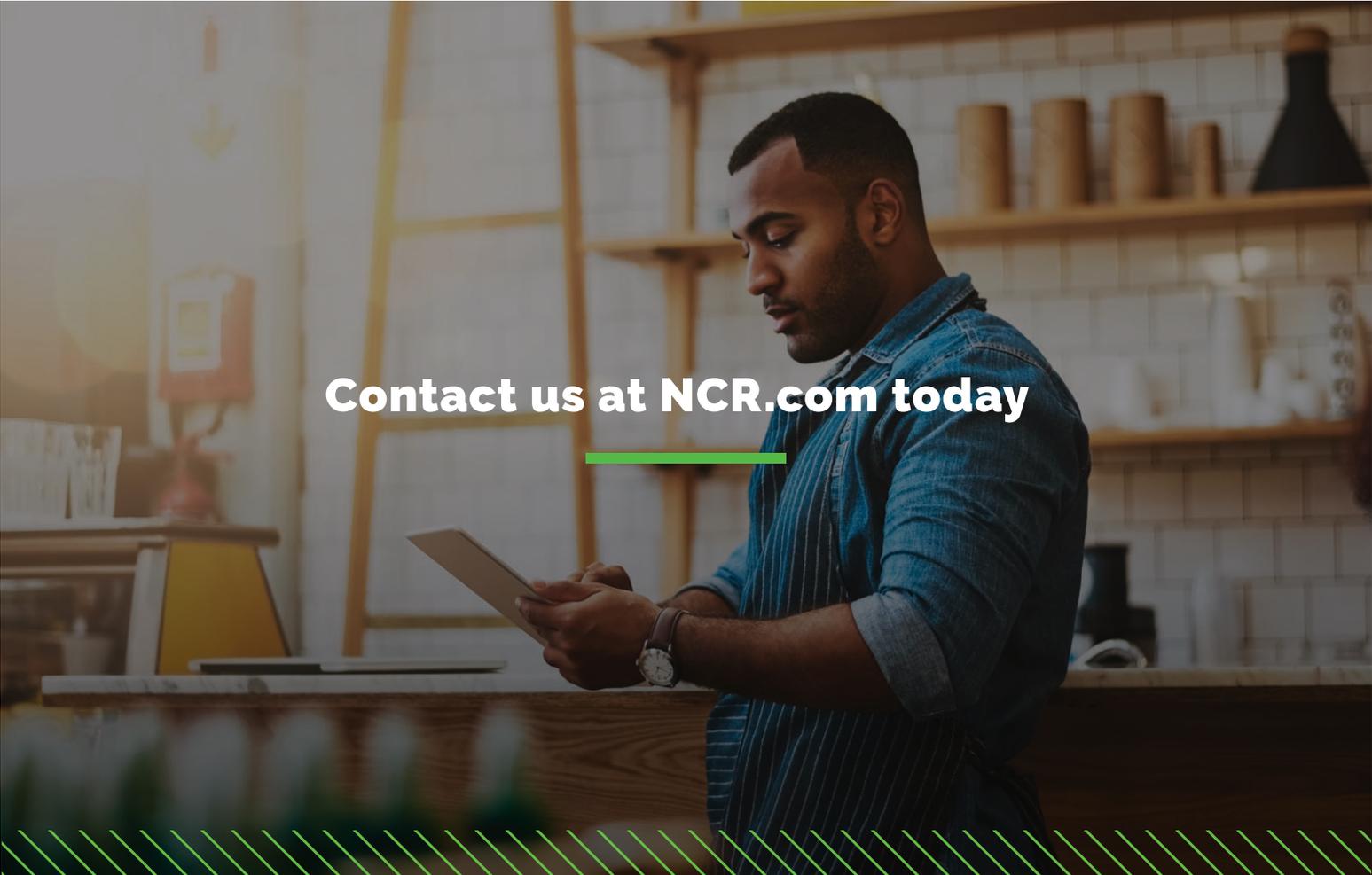
Improve store system performance



Achieve a flexible and scalable retail platform



Add new features, updates and upgrades—fast



Contact us at [NCR.com](https://www.ncr.com) today

About NCR

NCR Corporation (NYSE: NCR) is a leading software and services-led enterprise provider in the financial, retail, hospitality, small business and telecom and technology industries. We run key aspects of our clients' business so they can focus on what they do best. NCR is headquartered in Atlanta, GA with 34,000 employees and solutions in 141 countries. NCR is a trademark of NCR Corporation in the United States and other countries.

About Zynstra

Zynstra, an NCR company, is a leading software provider focused at the retail edge, to bring proven virtualization technology with centralized management to the retail industry. It's all part of NCR's blueprint for next-gen store architecture that helps retailers reduce costs and speed innovation.

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