Red Hat, Intel, and UST computer vision checkout solution

Customers have come to expect speed and convenience, especially with brick and mortar checkout experiences. In response, retailers are investing in innovative computer vision checkout solutions to ensure positive customer experiences at the point of sale.

Retail stores must meet customer expectations and deliver best user experiences

Waiting in lines remains a part of the brick-and-mortar shopping experience, frustrating consumers who have come to expect ever-increasing speed and convenience. Customers who are made to wait more than a few minutes, or are repeatedly made to wait, may decide to avoid the store or switch to competitors in the future. Other market factors, such as cost of labor and labor shortages, are also negatively affecting the business.

In response to these challenges, retailers are investing in computer vision (CV) checkout solutions, using 5G to deliver a speedy and effortless checkout experience. With CV checkout, retailers can become contact free with self-checkout scanning bays and digital payment options.

A modern approach to in-store self checkout

Together, Red Hat, Intel, and UST provide a computer vision (CV) checkout solution. The UST CV checkout solution is interfaced with a touchless screen, a scanning bay with 5 USB-interfaced cameras, and a USB scale. The cameras take images of the items on the top of the scale and are sent to a multiaccess edge computing (MEC) GPU platform over a private 5G network. In the MEC, the artificial intelligence (AI) model processes the images over a graphics processing unit (GPU) to identify items and then map it to a SKU ID in product information databases, including price, sending the response back in 7 milliseconds* or less. The result is then shown on the screen, allowing the customer to complete the transaction and make a payment, providing a smooth end-to-end experience.

Red Hat's security-focused, open platform supports infrastructure modernization requirements and security needs for embracing 5G connectivity. Built-in security features, including validation, verification and hardening, help address security vulnerabilities and ensure compliance requirements are met.

In addition, Red Hat and Intel's joint development, integration, and testing efforts ensure the complete hardware, software, and networking stack works together effectively. A validated architecture has been implemented in multiple customer organizations, proving its ability to deliver speed, security, and reliability. A recent study by Intel[1] showed that the solution performs 3 times faster than competitive solutions in the market.

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1 Intel whitepaper. "Private 5G connected frictionless checkout," 3 Apr. 2023.

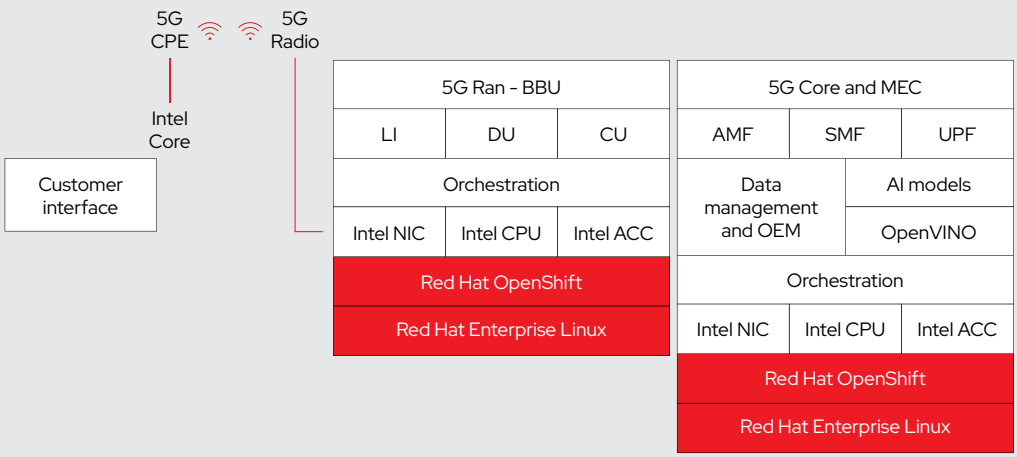

Figure 1: Red Hat, Intel, and UST CV checkout solution

- **Intel® NUC Enthusiast Kit:**
  The customer interface includes a touchless screen and scan bay.
- **Intel® Core™ i7-12700H Processor**:**
  This powers the Intel® NUC Kit.
- **Intel® Data Center GPU Flex 170:**
  This is a discrete GPU for item recognition and inferencing.
- **Intel Network Edge Server:**
  This is used for delivering the private 5G network and powering the CV checkout solution.
- **Intel® OpenVINO™:**
  This solution is for adopting and maintaining code and optimizing the conversion of the AI model in preparation for inferencing.
- **Red Hat® OpenShift®:**
  The industry's leading hybrid cloud application platform for container management and orchestration, including Intel Network Edge Server and 5G core components.
- **Red Hat Enterprise Linux®:**
  The world's leading enterprise Linux platform with ensured stability and deployment at the edge with zero touch provisioning and real-time security remediations throughout the entire life cycle.
- **UST Vision Checkout:**
  This cutting-edge system offers a smooth shopping experience, allowing you to complete your purchases swiftly and efficiently.

Learn more

To learn more about the Red Hat, Intel, and UST CV checkout solution, visit Red Hat brings open source to the edge. Schedule a discovery session with your account executive to see a demonstration.

**Time tested Using a 5G network*

***24M Cache, and up to 4.70 GHz*

research by Box Technologies and Intel

About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers develop cloud-native applications, integrate existing and new IT applications, and automate and manage complex environments. A trusted adviser to the Fortune 500, Red Hat provides award-winning support, training, and consulting services that bring the benefits of open innovation to any industry. Red Hat is a connective hub in a global network of enterprises, partners, and communities, helping organizations grow, transform, and prepare for the digital future.

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