End-to-End Flexibility and Performance with Modular Computing

All-in-One PCs with modular Intel® NUC Element products demonstrate benefits of modular computing for the channel and end users

Modular computing offers interchangeable, prequalified building blocks—compute, boards, and chassis—with which channel members can design and build custom PCs and other systems. The goal of modular computing is to enable just-in-time system building and local integration, so the channel can deliver high-performance solutions with minimal research and development (R&D), lower inventory costs, and faster time to market.

To explore the real-world benefits of modular computing, this case study traces the benefits of All-in-One PCs built with an Intel® NUC Compute Element and Intel® NUC Assembly Element from the OEM (Loop International), to a system integrator and distributor (Centerprise International), to an online retailer and integrator (Ebuyer).

Manufacturing PCs with a Competitive Advantage

Loop International designs and manufactures computer hardware with the simplicity and refinement of Scandinavian design. The OEM sells stylishly designed All-in-One PCs, desktop tower chassis, and a touchscreen kiosk to system integrators in markets worldwide, including countries in Europe, the Americas, and Asia. With a height-adjustable stand, quiet performance, and the latest multimedia features, Loop's All-in-One PCs are ideal for home office, business, government, and education deployments.

In 2019, Loop began manufacturing All-in-One PCs with an Intel NUC Assembly Element—a modular carrier board with built-in rack and thermal solution—and support for the Intel NUC Compute Element. Intel NUC Compute Element products feature a range of Intel® processors, built-in memory, and integrated Wi-Fi and Bluetooth. They readily plug into the Intel NUC Assembly Element, making it easy for OEMs and integrators to develop custom solutions.

With a traditional PC, an integrator might purchase hundreds of units preconfigured with different processors and other specifications. The integrator pays full price, tying up a lot of cash in inventory. With Loop's All-in-One PCs featuring Intel NUC Element products, integrators instead can buy "bare-bones" systems from Loop at a lower cost, then purchase the Intel NUC Compute Element from a distributor when needed for just-in-time integration.

Both Intel NUC Compute Element and Intel NUC Assembly Element products come with a three-year warranty and three-year product availability. The ongoing support and extensive reliability testing of the Intel NUC Compute Element—including electrical, mechanical, and thermal testing—were especially important to Loop and its customers.

Loop initially offered All-in-One PCs that supported an Intel® NUC 8 Compute Element. When the next-gen Intel® NUC 11 Compute Element became available, offering boundary-breaking performance with up to 11th Gen Intel® Core™ i5 and i7 processors, Loop simply replaced the earlier Intel NUC Assembly Element with the latest board and thermal solution that is compatible with the Intel NUC 11 Compute Element and the generation to follow.

"Intel has eliminated a lot of the hard work for system builders by prequalifying and standardizing the boards and the Element card, which makes it incredibly easy. All we had to do was drop in a new card, and the integrators we sell to could be first to market with All-in-Ones featuring the latest Intel Core processors," said Stephen Blomfield, sales and marketing director at Loop.

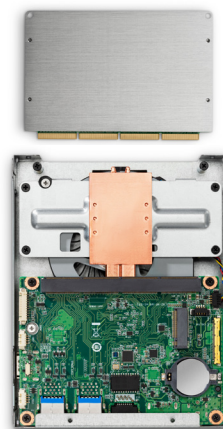## Streamlined System Integration for Faster Time to Market

Centerprise International (CI) is a UK-based IT solutions provider that operates as a distributor and system integrator for customers in military, education, business, and other verticals. Since 2018, CI has purchased All-in-One PCs and other products from Loop and sold the PCs under the Centerprise brand.

CI recently began selling Loop-manufactured All-in-One PCs featuring Intel NUC Element products. According to Iain Gillogaley, business manager at CI Distribution, a major advantage of the new products is that they greatly shorten the typical lead time of four to five months that integrators require to qualify third-party boards, memory, and other components.

"All the qualifying work is done for us, which saves us a lot of time so we can get to market faster," said Gillogaley. In addition, he noted that the All-in-One PCs appeal to a variety of new customers, including early adopters and potentially those in the military and education markets that are drawn to the flexibility of modular computing.

"The development time for the system integrators we work with has been reduced tremendously. With other products, they might spend months gathering hardware from different vendors and testing the configurations. Our new All-in-Ones shorten that development time by about 90 percent."

—Dragos Popescu,
   business development director, Loop International

Modular Computing:
Intel® NUC Pro Assembly Element

All Standard Components:
Loop pre-installed Intel® NUC Pro Assembly Element inside every AIO

Storage:
Intel® M.2 SSD

USB 3.0 Storage bay for SATA 2.5" SSD

Driving Online Sales and Processor Refreshes

With four million registered customers, Ebuyer is one of the UK's leading online electrical retailers. In 2021, Ebuyer started selling three of Loop's All-in-One PCs featuring Intel NUC Element products under the Xenta brand. The PCs are preconfigured with different Intel NUC Compute Element products to give customers a range of processor, memory, and I/O options.

Lee Weymouth, commercial director at Ebuyer, said it is likely that end users will purchase an initial All-in-One PC and refresh sooner to a better processor once they recognize the low cost and plug-and-play simplicity of the Intel NUC Compute Element. In addition, customers may appreciate the sustainability of modular computing, which makes it easy to refresh the processor without discarding the chassis and board.

In addition to its online sales, Ebuyer's sales staff market the All-in-One PCs manufactured by Loop to customers in the education and business sectors, customizing the PCs as needed to meet different customer needs.

"When orders come in, we can build one of these All-in-Ones with the Intel NUC Compute Element in 15 minutes, instead of the usual 45 minutes to an hour. That saves us money, and it means we can get them out fast to our customers," said Weymouth.
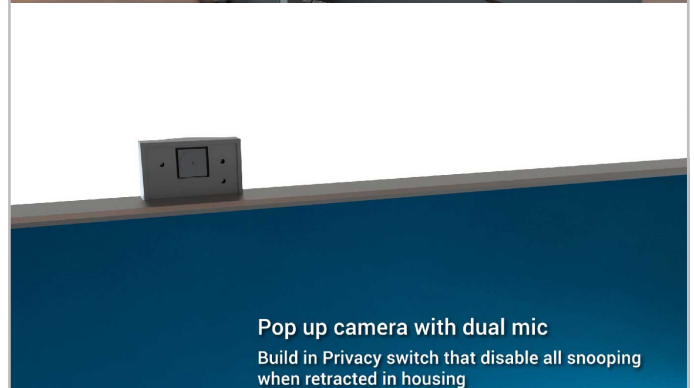
Flexibility, Performance, and Sustainability with Modular Computing

As demonstrated by the All-in-One PCs manufactured by Loop and integrated and sold by companies including Centerprise International and Ebuyer, the Intel NUC Element family provides a new way to design, build, and service high-performance PCs, digital signage solutions, and other systems.

With modular computing, channel members can get to market fast with custom solutions that require minimal R&D and low inventory costs. For end users, modular PCs are a smart and sustainable long-term investment that makes it easy to refresh to the latest processor at a low cost, without discarding the chassis and other components.
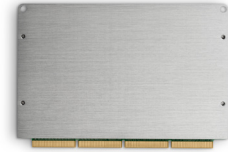
Loop International products include:

- 23.8" IPS FHD panel
- Fully adjustable stand with height adjust, tilt, rotate, and swivel function
- Internal silent power supply
- Multimedia features with pop up camera and dual microphone—when retracted they disconnect for privacy.
- Internal stereo speakers
- WiFi and Bluetooth with internal antenna
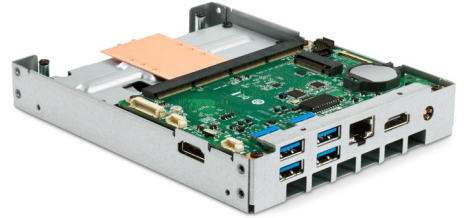- HDMI input for attaching another device and connecting to the multimedia features

Build in fan-less power supply

Pop up camera with dual mic
Build in Privacy switch that disable all snooping when retracted in housing

Intel® NUC Compute Element

Intel® NUC Board/Assembly Element

"If you try to upgrade a standard PC, you have to replace the board, memory, CPU, and other components. What our customers like with this modular platform is that you can simply swap out one Intel NUC Compute Element and put in a new one to upgrade performance. It's a smart way to save money over the long term."

—Iain Gillogaley, business manager, CI Distribution

Learn more

Learn more about Loop International products at **loopint.com**.

Explore Centerprise International solutions at **CIDistribution.com**.

Shop Ebuyer product listings at **ebuyer.com**.

For details on All-in-One PCs featuring Intel NUC Element products, visit **eBuyer landing page**.

For details on Intel NUC Compute Element product family, visit **intel.com/content/www/us/en/products/details/nuc/elements.html**.

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