Product Brief

AI Acceleration
Video Analytics

intel.

Intel® Video AI Box

A robust, diverse portfolio of high-performance solutions helps you develop and deploy video analytics at the edge faster to meet surging opportunity

By analyzing video data at the edge before it's transmitted to centralized systems—preprocessing it to reduce volume size and for fast ingestion—the Intel® Video AI Box can reduce latency and storage demands and improve the performance of video analytics systems.

The value of the data produced by video systems has skyrocketed as new AI-driven use cases and analytics technologies have emerged. Deep learning networks capable of extracting insights from video data in real time can improve security, safety, and operational efficiency and even reveal new opportunities for revenue.

Intel is helping solution developers deliver the results that businesses and other organizations want with the Intel® Video AI Box. This expanding portfolio of solutions empowers video innovators to develop and deploy solutions that span a variety of imaging devices, modalities, and environments—from medical imaging in hospitals to frictionless retail experiences, smart communities, intelligent transportation, and automated situational awareness in remote corners of the world.

An expanded offering for AI video analytics

The growing portfolio of Intel Video AI Box solutions offers proven edge video inference appliances that can help transform new and existing video infrastructures into near-real-time video analytics solutions. The available form factors are easy to purchase, develop, and deploy and are supported across the life cycle. Intel® NUCs are verified for video analytics software and can accelerate deployments where high performance and low power are required at the edge.

With new advancements that speed software development, solution developers can easily customize and implement highly resilient and performant video analytics systems using the Intel Video AI Box. Support for the Intel® Distribution of OpenVINO™ toolkit also creates opportunities for developers to scale solutions without needing to rebuild their models.

Overcoming barriers to innovate at the edge

The deployment and adoption of AI-driven video use cases has been held back by the sheer volume of data produced by intelligent video systems. With camera count and resolution quickly rising, transmitting video data from the camera to the cloud for analytics and then back to the edge is inefficient and leads to higher latency. In addition, AI video use cases have been limited by demanding physical requirements such as tight spaces for installation, highly dispersed distributions, and the need to deploy in harsh environments. Edge computing solutions for video systems need to be compact and highly adaptable while offering multiple layers of security to protect the device as well as data.

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GRAPHICS

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Why choose the Intel Video AI Box for analytics?

Cisco predicted that 82 percent of IP traffic would be video traffic by 2022,1 and video analytics could effectively process digital video data and extract valuable insights via AI inference. The expanded portfolio for Intel Video AI Boxes, including Intel NUCs with 11th and 12th Gen Intel® Core™ processors and Intel vPro® technology, delivers an expandable architecture that can be deployed at the edge for critical applications running analytics that demand high-speed processing and low-latency, deterministic computing. Newly added Intel NUCs provide high compute density and thermal designs that are optimized for high power configurations to drive max performance for video analytics at the edge in a small form factor. By analyzing video data at the edge before it's transmitted to centralized systems—preprocessing it to reduce volume size and for fast ingestion—the Intel Video AI Box can reduce latency and storage demands and improve the performance of video systems.

A scalable, easy-to-deploy solution for video analytics

With scalability at the core of the design and a prevalidated software stack, the portfolio of Intel Video AI Boxes as well as solution provider offerings can help streamline the process of bringing the intelligence you need to the edge. Each iteration of the platform is designed to easily integrate into new or existing infrastructure, offering businesses a fast path to achieving intelligent video use cases. Devices can even be stacked to add new capabilities or amplify compute power. And with one-click download for software and built-in options for rapid customization, the expanded portfolio of Video AI Boxes including Intel NUCs can accelerate the process of edge deployment.

To achieve the results that businesses and other organizations want, it's critical that these intelligent video solutions reach a high degree of reliability and resiliency and integrate open standards-based platforms that can scale. They also need to offer simplified paths for customization and deployment to speed time to value. The Intel Video AI Box provides solution innovators a scalable architecture purpose-built for video analytics and an open software platform capable of launching next-generation intelligent video systems.

A selection of performant, efficient compute built for the edge

The diverse capabilities and cost-effective performance of the Intel Video AI Box architecture center on the capabilities of Intel® processors, which offer integrated graphics and exceptional performance for video processing. The Intel Video AI Box portfolio expansion now includes 12th Gen Intel Core processor platform-enabled Intel NUCs verified for Intel® Video Analytics Software development tools and features. Developers will enjoy a single-click download-and-deploy experience and be able to take advantage of rapid customization features for accelerated video analytics deployments at the edge. 12th Gen Intel Core processors also offer built-in deep learning acceleration with the integration of Intel® Deep Learning Boost (Intel® DL Boost), which extends the speed advantage of Intel® Advanced Vector Extensions 2 (Intel® AVX2) to deep learning workloads. The portfolio of compute options for the Intel Video AI Box also includes high performance 11th Gen Intel Core processors and Intel® Celeron® processors which deliver exceptional performance-to-power ratio.

These processors also offer integrated graphics acceleration with on-chip Intel® Iris® X^e graphics, which enables them to analyze up to 32 channels at once. Intel processors are also more flexible than other approaches to video analytics, allowing businesses to run different types of workloads on the same module. While some solutions struggle to switch between real-time analytics and other types of content, Intel Video AI Boxes can converge edge workloads to increase efficiency and data availability. These capabilities allow businesses to extract value and insights from camera metadata, integrated sensors, and other sources of data beyond captured video.

Flexible development and fast deployment

With the Intel Video AI Box platform, you can configure your application end to end for flexible AI capacity. The Intel Video AI Box also simplifies the process for solution developers. A Reference Video Analytics pipeline speeds development, and Edge AI Box for Video Analytics is available in two install scripts—a development package and a streamlined deployment package—so you can target the script to your stage in the solution development cycle.

Edge AI Boxes can also be stand-alone devices connected to cameras to enable edge analytics in real time or connect to the network and serve as a discrete AI service that runs offline deep learning analytics on demand.

Advantages of Intel® Video AI Box over Internet Protocol (IP) cameras with embedded AI

- Process multiple channels simultaneously
- Handle complicated use scenarios
- Employ legacy IP cameras for edge intelligence with reduced TCO
- Scale quickly and flexibly to meet requirements from different workloads
- Manage, maintain, and upgrade more easily
- Reduce latency and improve response stability
- Cut bandwidth demands and costs
- Enhance data security through local processing

Enterprise AI use cases

Intel® Video AI Boxes are being customized by solution providers to meet the requirements of a wide variety of use cases and industries.

Retail
- Touchless shopping
- Personalized experiences
- Loss prevention

Healthcare
- Remote patient monitoring
- Medical imaging analysis
- Threat detection

Industrial
- QA automation
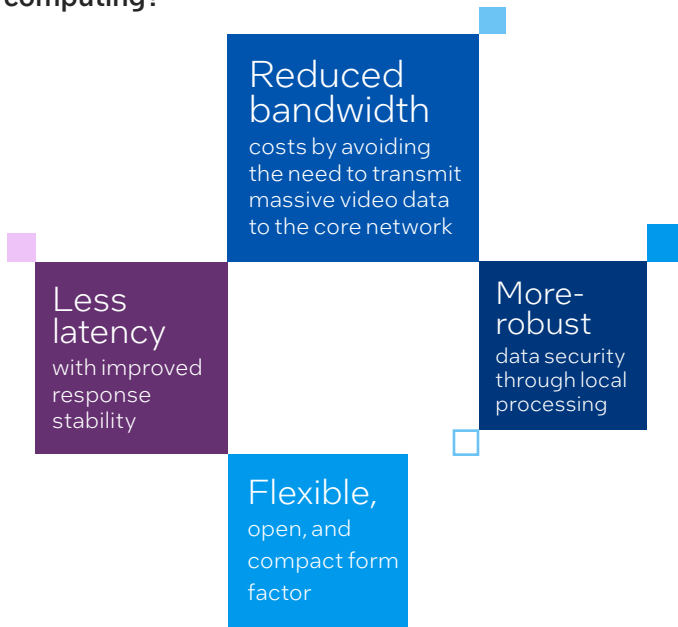- Machine vision for robotics
- Predictive maintenance

Smart city
- Automated security
- Fire detection
- Traffic analysis

Open software architecture and framework

Bringing compute to the edge is only part of the benefit of working with the Intel Video AI Box for video analytics. The complexities of distributed camera systems can overwhelm their value. That's why each Intel Video AI Box module is built on an open software framework that makes it easy to integrate your applications for performing analytics or other workloads. This open software environment allows more flexibility to develop AI applications. It can also help end users and operators avoid the vendor lock-in that can occur with closed, proprietary architectures.

Why choose the Intel® Video AI Box over cloud computing?

Reduced bandwidth costs by avoiding the need to transmit massive video data to the core network

Less latency with improved response stability

More-robust data security through local processing

Flexible, open, and compact form factor

Edge AI Box for Video Analytics software, powered by Intel® OpenVINO™

A free offering from Intel, the Edge AI Box for Video Analytics software creates a full video analytics pipeline for lightweight edge devices. Here are just a few of the ways that it can help you get a faster, more productive start to developing and deploying transformative video solutions.

- **Integrate** video decode on multiple streams with video analytics
- **Configure** your application end to end with flexible AI capacity and a Reference Video Analytics pipeline for fast development
- **Connect** a stand-alone device to cameras to enable edge analytics in near-real time
- **Create** a discrete AI service on the network to run offline deep learning analytics on demand

OpenVINO™

The Intel® Distribution of OpenVINO™ toolkit is at the core of the software environment. It provides a set of tools for video inference and deep learning. Working with the Intel® Video AI Box also provides a unified environment for developers, allowing you to write code once and deploy it anywhere.

An expanded software offering to accelerate progress

Edge AI Box for Video Analytics is now available in two different configurations to simplify your process.

Development package	Deployment package
Full SDK and toolkits to integrate video decode on multiple streams with video analytics. Set up your development environment with the least effort.	Similar software modules, but mainly runtime libraries. Suitable for edge device deployment where memory and storage could be constrained resources.

Browse packages on the Intel® Edge Software Hub ›

Open software architecture and framework

Cloud services

User applications

Intel® Distribution of OpenVINO™ toolkit
Deploy high-performance deep learning inference

⊙penVINO™

Docker and Kubernetes base stack

Intel® CPU | Operating system
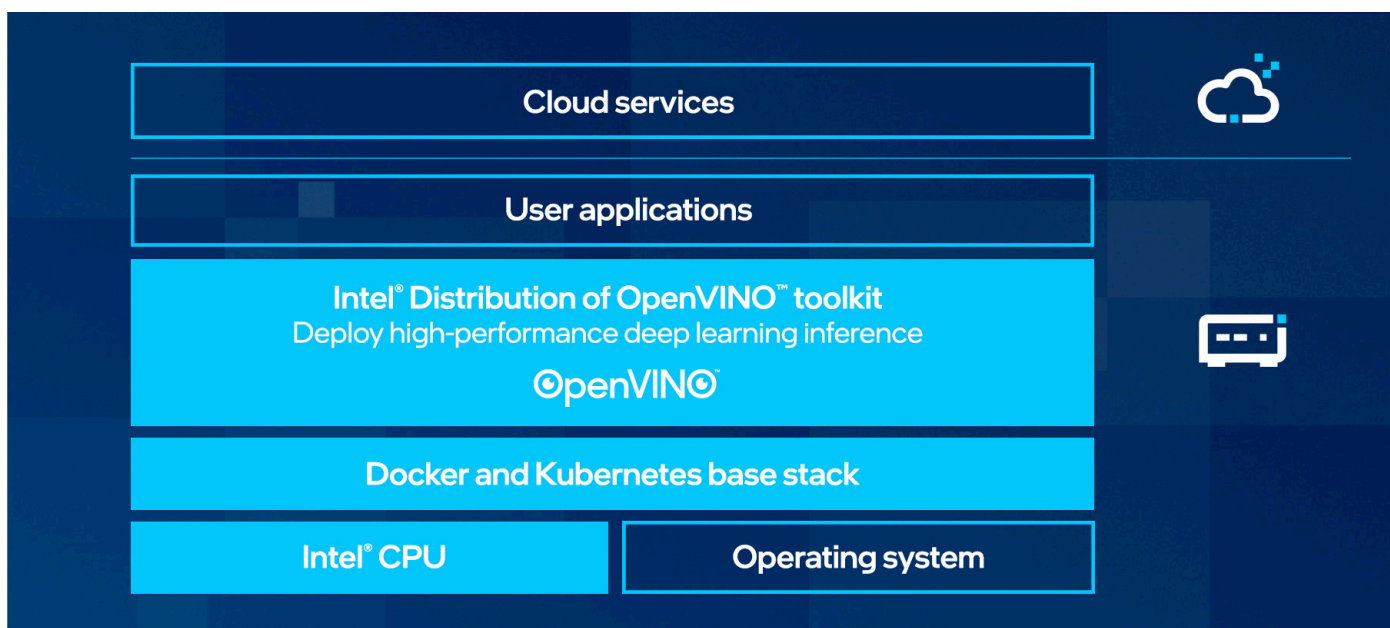
Figure 1: Intel® Video AI Box offers an open yet mature software stack.

The right features for scalable video analytics

Bringing intelligence to the edge requires having choices that allow you to effectively customize solutions. The Intel Video AI Box solution architecture comprises a selection of trusted, industry-standard components for connectivity, storage, memory, and enclosure and options for wired and wireless networking.

Features of new Intel® NUC-based Intel® Video AI Boxes

Intel NUCs are a versatile and robust PC platform for commercial environments with a small form factor, platform longevity, and I/O expandability.

- 12th Gen Intel® Core™ i7/i5 vPro® and Intel® Core™ i7/i5/i3 processors
- Qualified for 24/7 operation
- Remote manageability with Intel vPro® technology
- Space saving at 0.49L or 0.71L and energy efficient
- Up to 4 screens at 4K resolution
- Highly customizable with third-party functional lids and internal expansion modules

Learn more about the Intel NUC ›

What makes an Intel® NUC-based Intel® Video AI Box different than other choices?

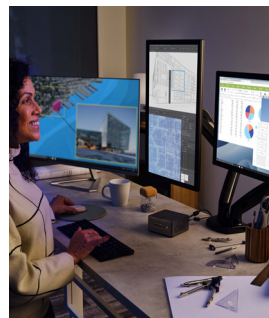Robust capabilities for reliable operation at the edge in different environments

Frictionless deployment to go from prototype to production fast, with greater expandability and options, including dual LAN

Enhanced dependability with three-year availability and a three-year warranty[2]

Upgradable, repairable, and reusable, making them more sustainable

Open ecosystem that allows third-party builders to incorporate Intel NUCs into their unique configurations

Enhanced security and resiliency at the hardware level

As video systems become more distributed and the vision and data they produce become more valuable, device security and management take on a new priority. Protecting data in transit and at rest while also hardening the device itself from potential attacks and exploits are critical concerns. Intel® Trusted Execution Technology (Intel® TXT) provides hardware-based mechanisms that help protect against software-based attacks, helping to enhance trust in the application's execution environment.

The ability to quickly recover from a software fault or other interruption in service is also critical to creating resilient intelligent video infrastructure. Intel® Active Management Technology (Intel® AMT), available on processors built on the Intel vPro platform, gives system operators seamless remote access to devices outside the firewall, even if the OS is not booting. With Intel AMT, you can reboot a device, push updates, repair drivers, and remedy a wide range of issues without needing physical access.

A growing ecosystem of support and innovation

The Intel Video AI Box portfolio now includes 12th Gen Intel Core processor-enabled Intel NUCs verified with the Intel® Edge AI Box for Video Analytics software, delighting developers with a single-click download and offering rapid customization for accelerated video analytics deployments at the edge.

Getting value in the long and short term from smart video systems also requires a thriving ecosystem to support ongoing innovation and to provide solutions capable of expediting the development process. Intel has spent years cultivating a vibrant community of computer vision innovators. Over 1,100 ecosystem partners have contributed more than 300 solutions for the edge alone. By collaborating with Intel, you can find the help you need to overcome hurdles and realize your vision.

1,100+
partners

Intel ecosystem

ODMs

Independent software vendors (ISVs)

System integrators (SIs)

OEMs
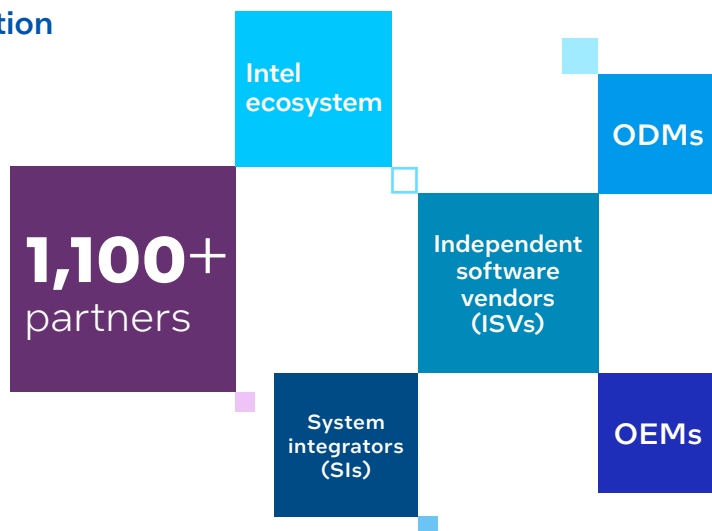
Browse Intel Video AI Box solutions for the edge from leading ODMs ›

Explore Intel NUC Video AI Box solutions on the Intel® Solutions Marketplace ›

Conclusion

The flexibility, cost efficiency, and simplicity of the growing portfolio of solutions built on the Intel Video AI Box platform are allowing businesses not only to create the smart video systems faster and more flexibly, but to transform legacy network video recorder (NVR) systems into ultralow-latency, real-time systems capable of cutting-edge AI use cases. Rather than replacing valuable existing infrastructure, the Intel Video AI Box allows businesses to use what they have more effectively.

The opportunity to deploy powerful intelligent analytics at the edge has never been greater. Intel and its ecosystem make it easy to get going with preintegrated, use case–specific modules that are ready to go. Setting up a proof of concept with the Intel Video AI Box for a transformative use case like touchless shopping is easier than it's ever been.

Contact your Intel rep to talk about your vision and challenges, and we can help you take advantage of the Intel Video AI Box to get to where you want to be sooner.

Get started with Intel Video AI Box today by contacting your Intel representative or exploring these solutions

Get more details about Intel Video AI Box offerings ›

Browse Intel NUC solutions ›

Check out the Intel Video AI Box in Intel's computer vision portfolio ›

See what you can do with Intel NUC for edge compute ›

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