

ABI RESEARCH COMPETITIVE RANKING  
**INTELLIGENT ACCELERATOR PROVIDERS**

**intel**®



**OVERALL: 81.3 | INNOVATION: 81.0 | IMPLEMENTATION: 81.5 | RANK: 1**



# INTELLIGENT ACCELERATOR PROVIDERS COMPETITIVE RANKING

This competitive ranking covers vendors providing intelligent accelerator solutions. Intelligent accelerators refer to any programmable accelerator that is capable of offloading workloads and functions from the core Central Processing Unit (CPU). Examples of intelligent accelerators are Smart Network Interface Cards (SmartNICs), Data Processing Units (DPUs), and Infrastructure Processing Units (IPUs). The assessment process examines, among other things, the vendor's workload acceleration capability, platform openness, technological features, market reach, and ecosystem partnerships..

ABI Research developed this competitive ranking to offer an unbiased assessment and ranking of intelligent accelerator providers.

# OVERALL LEADER



Intel claimed the top spot in the competitor ranking for intelligent accelerator technology providers, followed closely by Marvell in second place, and AMD securing the third spot. Other leading providers include NVIDIA, Napatech, Amazon Web Services (AWS), and Microsoft Azure. Alibaba Cloud and Kalray were not far behind, offering acceleration solutions catered to industries such as life sciences, automotive, etc.



## INNOVATION SUMMARY

The demand for intelligent accelerators, such as DPUs, IPUs, and SmartNICs, has grown in recent years, used primarily to offload network, storage, and security functions from the core CPU, enabling CPUs to parallel process large amounts of workload-specific data, ultimately optimizing data center operations.

Technology providers, such as Intel with the E2000 IPU, AMD with the Pensando family of DPUs, Marvell (OCTEON 10 DPUs), and NVIDIA (BlueField-3), are well-placed to capture this growing market. Cloud hyperscalers, such as AWS, Microsoft Azure, and Alibaba Cloud, are also building proprietary accelerators as differentiating value propositions in the battle for cloud dominance.



## IMPLEMENTATION SUMMARY

Intelligent accelerators are primarily deployed in large data centers, particularly data centers managed by cloud hyperscalers.

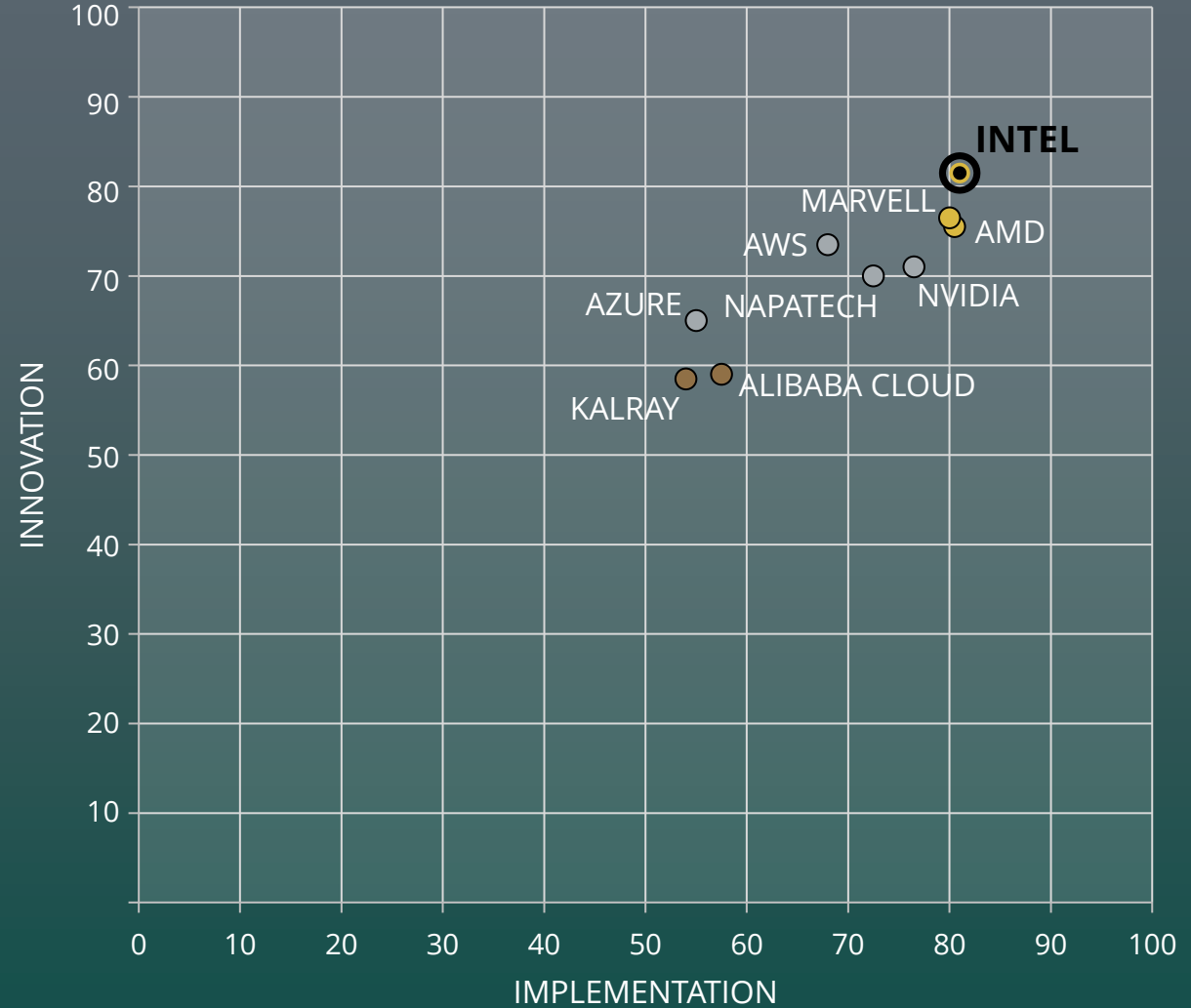
Most of the intelligent accelerator technology providers have deep relationships with the Tier One cloud hyperscalers, more often than not working directly to customize and optimize the solution to ensure high levels of performance.

Increasingly, the large private enterprises have also begun to experiment with intelligent accelerators, starting with pilot workloads that are data-intensive. Industries that are gaining traction are in the industrial manufacturing, automotive, and capital markets.



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INTEL  
INNOVATION  
VERSUS  
IMPLEMENTATION  
MATRIX



## INNOVATION



**INNOVATION  
SCORE: 81.0**



### **Acceleration Capability: Score 9/10**

Intel's IPU solution offloads infrastructure workloads from the CPU to the IPU cores, reducing compute load. Block storage is enabled in the E2000 architecture, allowing for the decoupling of compute processes and storage performance, delivering better I/O performance. Intel's IPU also supports crypto and compression acceleration.

### **Next-Gen Workload Support: Score 8/10**

The E2000 IPU is deployed in Google Cloud's C3 compute engine, providing support for AI-specific workloads, data analytics, database processing, high-performance media streaming, and encoding. The IPU also supports C3's CPU-based ML training and inference.

### **Platform Openness/Standards: Score 8/10**

Intel is a founding member of the Linux Foundation Open Programmable Infrastructure (OPI) Project and created the IPDK as a vendor-agnostic framework for infrastructure offload and management. Intel integrated the IPDK framework into OPI and hosted the first OPI event.

### **Technology and Workload Optimization Performance: Score 8/10**

Both Intel's FPGA (F2000X-PL) and Application-Specific Integrated Circuit (ASIC) (E2000)-based IPU help reduce and eliminate workload bottlenecks, helping lower the cost of ownership by reducing the need for extra CPU cores. In most cases, energy consumption is also reduced by ~30%, further lowering the server ownership cost.

### **Research & Development (R&D): Score 8/10**

Intel has laid out a development plan for its IPUs, with the first generation of 200 GB IPUs released in 2022, followed by 400 GB in 2023 and 2024, as well as an 800 GB IPU expected to ship in the 2025 to 2026 time frame, for both ASIC- and FPGA-based hardware.

# IMPLEMENTATION



**IMPLEMENTATION  
SCORE: 81.5**



## Market Performance: Score 9/10

Intel is focused on serving the cloud hyperscaler market, with success with six of the top eight hyperscalers, and is moving its solution into the Tier Two public cloud, private cloud, and enterprise data center market segments.

## Business & GTM Strategy: Score 8/10

Intel's IPU's are available in both ASIC and FPGA, giving it an advantage in this market. Intel is also laser-focused on the cloud hyperscaler market, which currently remains the largest segment in terms of intelligent accelerator deployments. However, Intel recognizes the enterprise market as an area where Intel can capitalize on its extensive network of partner ecosystems to capture the growing demand for IPU's.

## Integration & Implementation Capability: Score 8/10

Intel has built a foundation of open standards, open frameworks, and industry standard APIs, simplifying the integration of Intel IPU's, as well as easing the migration of intelligent accelerators from legacy solutions. Customers are available to move from a legacy solution to a SmartNIC or IPU platform, leveraging their software investments in management, orchestration, and data plane architecture.

## After-Sales Support Capability: Score 8/10

Intel provides support directly to its cloud hyperscaler customers, working closely with the engineers and data center operators to ensure optimal performance for Intel hardware. Intel also has a direct relationship with its partners, ensuring high support is provided to customers through certified and qualified ecosystem partners.

## Comprehensive Delivery Mechanism: Score 8/10

Intel delivers its solution by working tightly with the cloud hyperscalers, both in terms of collaborating and designing the product, as well as providing design, integration, and delivery service to customers. The end-to-end delivery cycle is an important aspect of Intel's value proposition and Intel supports its partners equally, enabling all customers to take advantage of the IPU in a disaggregated data center.





# CRITERIA AND METHODOLOGY

## VENDOR MATRIX

**Methodology:** After individual scores are established for innovation and implementation, an overall company score is established using the Root Mean Square (RMS) method:

$$\text{Score} = \sqrt{\frac{\text{innovation}^2 + \text{implementation}^2}{2}}$$

The resulting overall scores are then ranked and used for percentile comparisons.

The RMS method, in comparison with a straight summation or average of individual innovation and implementation values, rewards companies for standout performances.

For example, using this method, a company with an innovation score of nine and an implementation score of one would score considerably higher than a company with a score of five in both areas, despite the mean score being the same. ABI Research believes that this is appropriate as the goal of these matrices is to highlight those companies that stand out from the others.

## RANKING CRITERIA

**Leader:** A company that receives a score of **75 or above** for its overall ranking

**Mainstream:** A company that receives scores **between 60 and 75** for its overall ranking

**Follower:** A company that receives a score of **60 or below** for its overall ranking

**Innovation Leader:** A company that receives a score of **75 or above** for its innovation ranking.

**Implementation Leader:** A company that receives a score of **75 or above** for its implementation ranking.



## INNOVATION CRITERIA

**Acceleration Capability:** Ability to offload functions, including network, security, and storage functions, from a core CPU, enabling the CPU to perform more efficiently and economically without affecting workload processing performance.

**Next-Gen Workload Support:** Ability to provide a high level of acceleration capability for highly-specialized and data-intensive processes, such as Artificial Intelligence (AI) solutions, Machine Learning (ML) modeling, and High-Performance Computing (HPC).

**Platform Openness/Standards:** Ability to integrate with different architectures, hardware, and platforms through open standards, Application Programming Interfaces (APIs), etc.

**Technology and Workload Optimization Performance:** Demonstrated ability in providing reduced power consumption, better processing capability, increased security functions, etc.

**Research & Development (R&D):** Investments in R&D, number of resources dedicated to product innovation, product/solutions roadmap that caters to current and future demands, etc.

## IMPLEMENTATION CRITERIA

**Market Performance:** Customer acquisition, number of installed base, as well as industry penetration, geographic reach, etc.

**Business and Go-to-Market (GTM) Strategy:** Clear understanding of customer needs and demands, clear articulation of GTM strategy and marketing plans, as well channel focus (direct versus indirect), partnerships with data center solution providers, Independent Software Vendors (ISVs), Original Equipment Manufacturers (OEMs), etc.

**Integration & Implementation Capability:** Ability to deliver and support a wide range of customer environments; from existing infrastructure, platforms, and architecture to new “greenfield” deployments.

**After-Sales Support Capability:** Ability to provide direct support, as well as an ecosystem of partners that can help customers troubleshoot challenges, self-service help portal, etc.

**Comprehensive Delivery Mechanism:** Ability to provide end-to-end product design, implementation, and integration through various routes (direct, channel ecosystem, OEM collaboration) to market.



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