How new integrated platforms are making edge AI infrastructure seamless

LENOVO + INTEL® SOLUTION BRIEF

Redefining distributed AI with Intel® Tiber™ Edge Platform and the automations enabled by Lenovo's ThinkEdge portfolio.

The situation: Complexity is slowing down edge AI adoption

Edge AI infrastructure is becoming key to competitiveness. With edge AI, insight is created not just in the data center but across a mix of servers, clouds, and edge infrastructure. Organizations can use this agile IT to transform operations and deliver new experiences. Use cases include automated quality inspections in manufacturing, personalized assistants in retail, traffic management in smart cities, and network optimization in telecommunications.

However, the complex nature of integrating AI systems at the edge is slowing down transformation for many organizations. Building edge AI solutions is complex, typically requiring the integration of new and existing heterogeneous infrastructure and applications. Another difficulty is migrating AI workloads to the edge: AI applications are often energy- and performance-hungry. But edge locations such as telco stations and retail branches demand compact, energy-efficient hardware.

Then there are the challenges of deploying and managing edge AI infrastructure at scale. Organizations may need hundreds or thousands of distributed nodes and applications, extending across diverse sites, geographies, and regulatory jurisdictions. The job of configuring, standing up, and managing all of this infrastructure becomes extremely costly, both financially and to the environment, as hardware is shipped multiple times and skilled IT professionals must travel to each edge location.

Only through efficient, edge-optimized automation can organizations realize the full potential of edge AI.

The challenges for adopters of AI and edge computing:

Most organizations recognize the potential of edge AI, but far fewer have started to actually realize its value. A 2023 Accenture survey of enterprises found that:

- **83%** believe edge computing will be essential to remaining competitive in the future.
- **98%** say AI foundation models will play an important role in their strategies in the next three to five years.
- **But only 65%** of companies are using edge today.

Compared to their competitors, the most advanced edge adopters are:

- **4x** more innovative
- **9x** more efficient
- **Nearly 7x** more cost-effective[1]

Organizations therefore have compelling reasons to overcome the technical challenges of edge AI adoption. Gartner analysis suggests that "infrastructure and operations leaders need to evaluate solutions that accelerate deployments and support extensibility." If organizations could access a simple edge AI foundation for integrating diverse systems, optimizing AI workloads, and managing distributed infrastructure, the path could be made easier and less risky.

Lenovo and Intel® deliver complete edge AI solution

To help simplify edge AI, Lenovo and Intel® have created a new generation of solutions built on Intel® Tiber™ Edge Platform, Lenovo Open Cloud Automation, and the Lenovo XClarity family of management tools, all of which are seamlessly integrated in the edge-optimized Lenovo ThinkEdge Series of devices.

Intel® Tiber™ Edge Platform is a new, commercial software platform that enables enterprises to build, deploy, run, manage, and scale edge and AI solutions on standard hardware with cloud-like simplicity. This platform provides simple and intuitive control of the automations and management solutions built into ThinkEdge devices, including Lenovo Open Cloud Automation (LOC-A) and Lenovo XClarity. LOC-A enables organizations to rapidly deploy edge AI infrastructure at scale, in multiple locations and with just a few touches. Lenovo XClarity provides deep remote visibility into all Lenovo hardware at the edge. With the OpenVINO™ toolkit, as part of Intel® Tiber™ Edge Platform, developers have built-in AI inferencing capabilities that are optimized for the low latency, low power characteristics of edge-AI infrastructure.

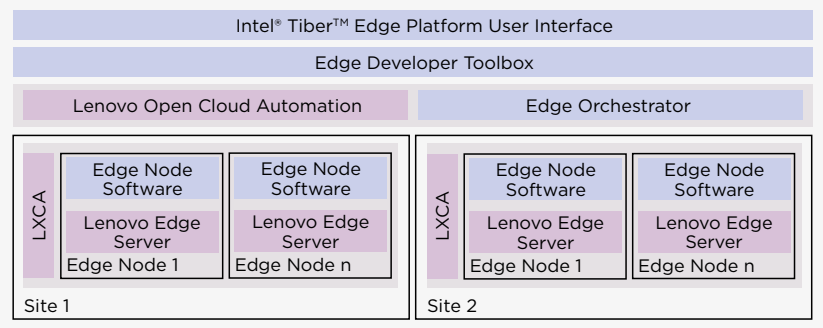

Figure 1: Intel® Tiber™ Edge Platform provides single-pane control for distributed ThinkEdge infrastructure, with deployment and management automated by Lenovo XClarity and LOC-A.

Together, the Lenovo ThinkEdge portfolio and Intel® Tiber™ Edge Platform deliver a seamless experience combining truly edge-native capabilities for security and near-zero-touch management, built on our deep industry experience and unrivaled ecosystem.

Deploy industry-ready solutions

Solve business problems with proven technologies: Lenovo offers more than 150 turnkey AI solutions for diverse use cases, built on proven software from the Lenovo AI Innovators ecosystem of independent software vendor (ISV) partners. The Intel® Edge Insights System provides integrated data ingestion and management, to enable industrial use cases such as defect detection and predictive analytics.

Build in edge expertise: The Lenovo ThinkEdge Series offers a long-established portfolio of purpose-built edge infrastructure. Intel® Tiber™ Edge Platform leverages the company's experience from supporting more than 90,000 edge deployments today, with a footprint spanning more than 200 million processors sold in the past ten years.

Support diverse hardware: Seamlessly integrate almost all Lenovo servers, storage, networking switches – including those in existing brownfield components – in one easier-to-manage solution.

Deliver accessible, optimized AI at the edge

Provide built-in AI tools: Developers can use built-in tools for AI model development and AI inferencing, including the Intel® Geti™ computer vision software and the Intel® distribution of the OpenVINO™ toolkit.

Simplify development: The OpenVINO™ toolkit provides a three-step workflow for AI development. First, you can train models with popular frameworks like TensorFlow and PyTorch and access 280+ open source and pre-trained models. Second, convert and optimize models with tools including Model Convertor for OpenVINO™. And third, easily deploy models across Lenovo edge AI environments.

Tune AI performance: The OpenVINO™ toolkit provides runtime optimizations for AI workloads and applications on a wide spectrum of edge hardware. You are supported to achieve desired speed, accuracy, and power efficiency on right-sized components.

Build computer vision models faster: Leverage Intel® Geti™, a new software platform for building computer vision models in a fraction of the time and with less data. The platform eases laborious data labeling, model training, and optimization tasks across the AI model development process, empowering teams to produce custom AI models at scale.

Optimize workloads at the edge: Granular application orchestration capabilities target existing workloads, AI initiatives, industrial controls, networking, and more, helping you run them with maximum efficiency.

Achieve near-zero-touch edge deployments

Rapidly deploy infrastructure at scale: Lenovo Open Cloud Automation (LOC-A) provides near-zero-touch-provisioning of Lenovo edge servers and remote deployment of edge cloud software. You can create repeatable deployment templates and configurations that accelerate infrastructure and workload expansions. Server infrastructure can be shipped directly to edge locations, eliminating the need for golden images and staging environments.

Support IT decarbonization efforts: Reduce transport-related carbon emissions and achieve near-total elimination of truck rolls from edge deployments, as automated cloud deployment becomes the new baseline for network expansion.

Make significant time and cost savings: LOC-A can help you reduce deployment time by up to 81% and improve time to revenue by an average of 25%, according to an AvidThink study. Deployment of VMware Cloud Foundation and Red Hat OpenShift are also up to three times faster with LOC-A automations.

Automate management of edge AI infrastructure

Agent-free hardware management: The Lenovo XClarity family of systems management tools helps you improve efficiency, reduce costs and enhance the availability of Lenovo infrastructure. Lenovo XClarity Administrator (LXCA) runs as a virtual appliance and provides agent-free hardware management that automates discovery, inventory, tracking, updates, monitoring, and provisioning for servers, storage, networking, and hyperconverged systems. The built-in Lenovo XClarity Controller (XCC) provides advanced service-processor control, monitoring, and alerting functions.

Gain deep observability into edge nodes: Integration between LOC-A, Intel® Tiber™ Edge Platform, and Lenovo XClarity tools provided by ThinkEdge infrastructure makes it possible to monitor the entire distributed infrastructure in a single pane. You can deploy and manage clusters, operating systems, and applications with fewer interactions.

Simplify operations and reduce costs: LOC-A enables you to easily scale across multiple platforms and users, activate tenant workloads in minutes, and reduce test expenses with built-in performance benchmarking.

Use zero-trust security features: Including safe device onboarding/boot, protected communications, full disk encryption, and identity and access management.

Why Lenovo and Intel®?

The long-standing partnership and co-innovation between Lenovo and Intel®, each industry leaders in AI and edge computing, has given rise to a new generation of edge AI solutions: one that not only delivers the performance required to run distributed AI workloads, but also solves the challenge of how to easily deploy and manage edge infrastructure at scale. Thanks to the deep integration between Intel® Tiber™ Edge Platform and the technologies in Lenovo ThinkEdge systems, edge AI is simpler to deploy and scale, more sustainable, and easier to use than ever before.

Lenovo Open Cloud Automation

Intel® Tiber™ Edge Platform

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