Smart cities AI for public safety with Vaidio

AI-driven insights transform public safety and urban mobility. Proactive detection of accidents, traffic, and anomalous activities accelerates emergency response, while compliance analytics reduce risks and cut case resolution times.

Real-time AI-driven insights transform city video networks improving **safety**, **mobility**, and **operational efficiency**. By automating monitoring and analysis, municipalities reduce reliance on manual supervision, lower costs, and scale safety operations with AI.

The Lenovo Hybrid AI Advantage™ with NVIDIA smart cities solution, is built on the Lenovo Validated Design for Smart Cities AI for Public Safety with Vaidio. It combines the Vaidio AI vision platform and Lenovo ThinkEdge SE100 and SE455 V3 servers, accelerated by NVIDIA L4 and RTX A1000 GPUs, to deliver real-time vision AI at the edge.

The solution delivers low-latency, privacy-by-default analytics (with built-in PII anonymization), integrates with 30+ VMS/NVR platforms, and runs on a Kubernetes-based architecture across edge, core, and cloud. Automated camera configuration reduces deployment time by up to 90%, while validated sizing models and deployment guides minimize risk and enable modular scaling from pilots to city-wide rollouts.

2 SEC Return search results within **2 SECONDS** at scale.

Why build a smart cities hybrid AI solution?

Cities struggle to optimize roadways, safeguard public spaces, and ensure better city efficiency. Traditional video monitoring is costly, labor-intensive, and prone to error, making it hard to monitor thousands of cameras, detect incidents, and respond quickly.

Challenges:

- **Manual monitoring gaps:** Human operators can't reliably watch large volumes of video feeds in real time.

- **Scalability limits:** Expanding coverage adds complexity, overhead, and inconsistent performance.

- **Inefficient investigations:** Reviewing hours of footage is slow, resource-intensive.

- **False alarms:** Legacy motion detection creates distraction and alert fatigue.

Powered by Vaidio, this solution transforms city video networks into intelligent, real-time platforms. Proactive AI detection of traffic events, pedestrian risks, and anomalous activity accelerates response, strengthens compliance, and reduces liability—creating safer streets, smoother transportation, and more resilient services.

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Key takeaways

Delivering tangible city outcomes—improving public safety, mobility, and operational efficiency
Key advantages include:

Achieving tangible improvements in smart city safety and efficiency

By applying real-time analytics across thousands of streams, municipalities can enable faster, more proactive response. With automated deployment, privacy-by-default security, and flexible edge-to-cloud scaling, cities can modernize legacy systems while reducing cost and complexity.

⊘ **Fast search and response:** Sub-2 second search accelerates search across large video datasets.

⊘ **Flexible scaling:** Supports deployments from pilots to 100,000+ cameras with validated small, medium, and large models.

⊘ **Privacy and compliance by design:** Role-based access and automatic PII blurring build trust and meet regulations.

⊘ **Seamless integration:** ONVIF compliance and APIs deliver interoperability with 30+ VMS and third-party systems.

⊘ **Resilient operations:** Kubernetes orchestration provides high availability and centralized management at scale.

NVIDIA acceleration
Real-time, low-latency video analytics at the edge with Lenovo ThinkEdge and NVIDIA L4/RTX A1000 GPUs.

Scalability
Validated Small/Medium/Large models scale from pilots to city-wide deployments.

Enhanced security and compliance
Privacy-by-default with PII blurring and role-based access; secure HTTPS APIs; standards-based integration with 30+ VMS/NVR platforms.

By unifying AI-driven video analytics with Lenovo ThinkEdge infrastructure and NVIDIA GPU acceleration and AI models, such as NVIDIA Metropolis for vision AI applications. The platform helps municipalities cut incident response times, strengthen compliance, and deliver smarter, safer, and more efficient city services.

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Lenovo Validated Design

The Lenovo Validated Design: Smart Cities AI for Public Safety with Vaidio is a fully tested reference architecture for AI-powered video intelligence. Running on Lenovo ThinkEdge servers accelerated by NVIDIA GPUs, it enables real-time detection, rapid search, and centralized, scalable operations— reducing risk and speeding time to deployment.

Lenovo ThinkEdge SE100
Compact, purpose-built edge server for tight spaces; optimized for AI with local processing, storage, and networking.

Lenovo ThinkEdge SE455 V3
High-performance 2U edge server designed for demanding AI workloads; supports up to two NVIDIA L40 GPUs for GPU-rich analytics.

	ThinkEdge platform	GPU	CPU	RAM	No. cameras
Small	SE100	RTX A1000	16 cores	32GB	16
Medium	SE455 V3	1× NVIDIA L4	32 cores	96GB	30
Large	SE455 V3	2× NVIDIA L4	32 cores	192GB	70

Why Lenovo

Lenovo's ThinkEdge portfolio brings high-performance, secure compute to the edge, pre-validated for AI video analytics and supported by deployment guides and a Kubernetes-based design to speed rollout and scale reliably across city sites.

- **Pre-tested design** with deployment guides, benchmarks, and sizing to speed time to value.
- **Optimized performance and scalability** on ThinkEdge servers with Kubernetes-based redundancy and centralized fleet management.
- **Open, hybrid architecture** with ONVIF compliance and APIs for 30+ VMS/NVR and third-party integrations; Lenovo XClarity for end-to-end lifecycle management.

Why NVIDIA

NVIDIA L4 and RTX A1000 GPUs deliver energy-efficient, real-time acceleration for compute-intensive video analytics at the edge, utilizing NVIDIA NIM and NeMo microservices for enabling rapid detection at city scale.

- **Real-time inference** for high-density video workloads.
- **Energy-efficient edge performance:** Ada Lovelace-based GPU (24GB GDDR6, ~72W) and compact RTX A1000 (~50W) enable powerful analytics in constrained edge sites.
- **Scales stream density and responsiveness:** GPU acceleration enables sub-second search and faster incident detection and decision-making across large deployments.

[Download technical guide]

Lenovo Validated Design: Smart Cities AI for Public Safety with Vaidio and NVIDIA

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