From Devices to Decisions

AI at the Edge. Power in the Cloud. Security Everywhere.

Andrew Gens
Research Analyst, AI Software
IDC Asia/Pacific

Stephanie Krishnan
Associate Vice President
IDC Asia/Pacific

Table of Contents

Executive Summary

AI, cloud, and edge are fundamentally reshaping physical security. What was once passive monitoring is now becoming a driver of resilience, operational efficiency, and measurable ROI. For industries like manufacturing, retail, and education, this transformation is particularly important: IDC research shows that physical security of assets is now a top 5 priority for organizations in these sectors.

- **Hybrid cloud is now the default option:** Nearly 60% of digital-native enterprises use hybrid AI security architectures to balance governance, compliance, and scalability.
- **Edge AI drives responsiveness and cost savings:** Local processing cuts latency, lowers operating costs, and boosts resilience, with 32% of enterprises prioritizing cost reduction.
- **Security scope is widening:** AI supports workforce wellness and safety by detecting falls, personal protective equipment (PPE) compliance, and environmental risks — reducing downtime and building trust.
- **Sustainability is part of the equation:** Energy-efficient edge devices and modular AI platforms help cut storage costs and align with ESG goals.

In short, physical security is evolving into a strategic enabler. Retailers are reducing fraud and optimizing customer flow, manufacturers are enhancing workforce safety and operational continuity, and schools are creating safer, more trusted learning environments. For decision-makers evaluating investments, the convergence of AI-powered analytics, hybrid architectures, and modular platforms represents a technology shift that drives business impact through reduced risk, improved efficiency, and strengthening of long-term resilience.

Security Is Now Strategy:
From Guarding Assets to Safeguarding Growth

AI is shifting physical security from being a cost center into a source of resilience and efficiency, enabling organizations to proactively manage risk while lowering long-term costs.

PHYSICAL SECURITY OF ASSETS is a **TOP 5 PRIORITY**
of education, retail, and manufacturing organizations as an area to mitigate risk in their industry ecosystems

Organizations are adopting AI-enabled platforms to integrate surveillance, data analytics, and sustainability priorities, ensuring both security resilience and operational efficiency.

Risk Mitigation

AI integration:
AI enables faster, more accurate threat detection, reducing risk exposure and freeing staff for higher-value tasks.

Operational Efficiency

Cloud infrastructure:
Cloud-based platforms allow security to scale seamlessly across sites and geographies, improving visibility and cutting duplication costs.

ESG Alignment

Sustainability considerations:
Greener, more efficient security solutions align with ESG commitments, lowering energy and compliance costs.

AI is transforming physical security by analyzing large volumes of data in real time, identifying hidden patterns, and enabling faster, more effective responses to potential threats.

Enterprise Visibility

Unifies data from multiple sources, giving leaders a complete view of security risks across the business.

Proactive Risk Management

Analyzes data to forecast threats before they occur, helping avoid costly incidents.

Enhanced Access Control

Strengthens protection of people and assets by accurately verifying identities.

Early Warning Signals

Identifies unusual activity in real time, reducing the likelihood of breaches escalating into crises.

Real-Time Incident Resolution

Minimizes business disruption by triggering immediate, coordinated responses to threats.

Source: IDC 2025 *Future of Industry Ecosystem Survey,* IDC 2024 *Future of Industry Ecosystem Survey,* n (WW retail, manufacturing, and education) = 550

Next-Generation Security:
Intelligence, Cloud, and Integration

Edge AI, cloud-managed systems, and integrated security platforms are reshaping operational security, driving business resilience, cost savings, and compliance readiness.

EDGE AND CLOUD AI

Adoption hotspots: Industries requiring fast, local decision-making (manufacturing, retail, healthcare, transportation).

- Reducing response times and optimizing costs through local, real-time processing
- Protecting sensitive information by avoiding cloud exposure
- Cutting network costs by processing data locally

CLOUD MANAGED OPERATIONS

Adoption hotspots: Where centralized oversight and cost efficiency are critical (networking, security, storage).

- Simplifying multisite operational oversight through central management
- Gaining scalable and flexible infrastructure without heavy capital outlays
- Automating IT tasks to reduce overhead and staffing pressure

INTEGRATED PLATFORMS

Adoption hotspots: Enterprises prioritizing integrated risk oversight, compliance readiness, and coordinated response.

- Integrating risk, compliance, and sustainability data into one view
- Enabling faster, coordinated enterprise-wide responses
- Lowering long-term costs via streamlined governance and oversight

Key Drivers

AI adoption in physical security and surveillance is accelerating due to data growth, real-time intelligence needs, and new compliance demands. Key market forces include:

Cyber-physical risks: Rising convergence of IT and operational technology (OT) threats.

Smart infrastructure growth: Urbanization and connected facilities driving demand for integrated surveillance.

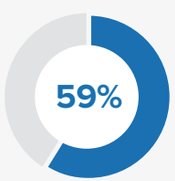
Regulatory pressure: Stricter audit, privacy, and evidence-grade compliance requirements.

Tech Shift:
Enterprises Balance Control and Scalability

Hybrid cloud is emerging as a critical enabler for AI-driven physical security, combining the compliance control of on-premises systems with the scalability and efficiency of cloud platforms. Digital-native companies are leading this shift, recognizing hybrid deployments as essential to strengthen governance, deliver predictable cost management, and build resilience on a global scale.

Hybrid solutions combine the control of on-premises systems with the scalability of cloud, delivering key benefits such as:

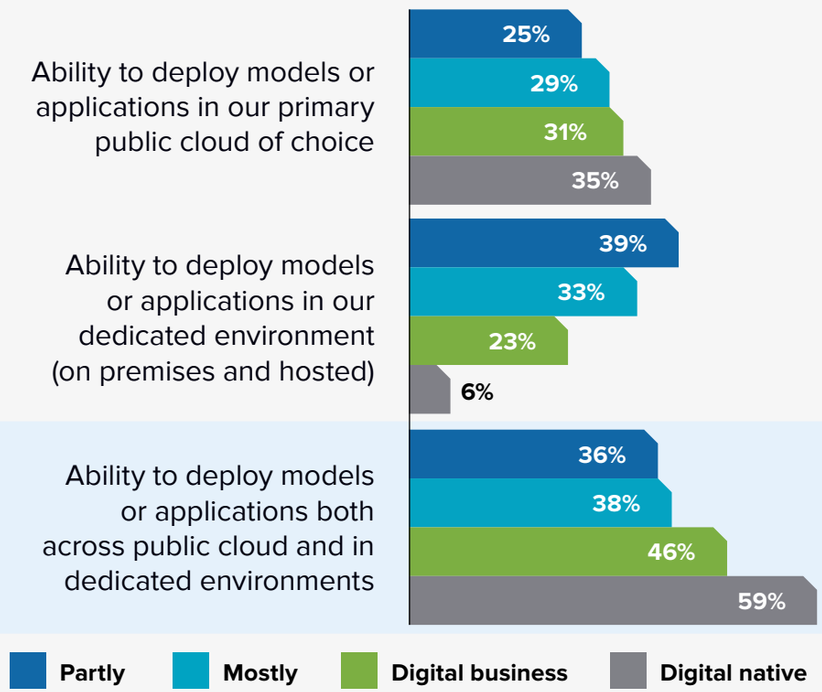
- **Stronger governance and compliance**
  Ensures sensitive data remains under enterprise control to meet regulatory and audit demands.
- **Faster, more responsive operations**
  Reduces latency by positioning AI applications closer to the source for real-time detection and response.
- **Resilient and cost-efficient**
  Flexible failover between cloud and dedicated systems reduces downtime and avoids costly disruptions.



of digital-native enterprises now run hybrid-by-default AI security architectures, confirming hybrid cloud as the new enterprise standard.

Preferred AI Deployment Models Across Business Types

Q. Which option for AI model and AI application deployment location is most important when choosing an AI platform?



Source: IDC's 2025 *Future Enterprise Resiliency and Spending Survey,* Wave 1 — January 2025

AI at the Edge:
From Smart Device to Autonomous Decision-Maker

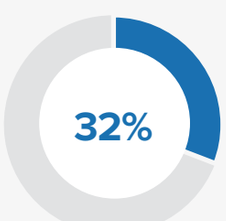
Edge intelligence: Processes data locally, reducing latency and ensuring faster, more reliable decision-making without dependence on cloud networks.

Automation at the edge: Filters routine events and false alarms, lowering operational costs and freeing teams to focus on genuine risks.

Illustrative use case: Edge AI distinguishes harmless incidents (like a dropped bag) from real threats in real time, improving accuracy, preventing unnecessary escalations, and reducing costly disruptions.

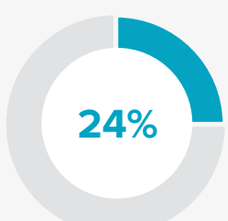
Edge AI transforms security devices into autonomous decision-makers, enabling faster responses, lower costs, and more resilient security operations.

AI Priorities



Reducing cost

Prioritize cost reduction by streamlining data transport and storage



Extending AI to edge

Prioritize edge location capabilities to enhance resilience and responsiveness

Source: IDC's 2025 *Future Enterprise Resiliency Survey,* Wave 1 (January 2025), n = 424

Edge Vision Intelligence:
Powering Real-Time Security Decisions

Multimodal AI and foundation models accelerate incident detection, cut latency, and transform video into faster, smarter security operations.

Multimodal AI, led by vision-language models (VLMs), is transforming video analytics into a driver of faster detection, smarter analysis, and more automated, resilient security operations through:

1. **Faster threat detection:** Local analytics reduce latency for real-time incident response (e.g., school campus security).
2. **Smarter analysis:** Multimodal AI links video and text for richer context (e.g., factory floor safety and retail checkout monitoring).
3. **Operational efficiency:** Automation filters routine events so teams focus on real risks (e.g., monitoring industrial facilities).
4. **Search at speed:** Natural language queries allow intuitive access to video data (e.g., retail store incident reviews).
5. **Quicker investigations:** AI-powered video search eliminates manual footage review (e.g., tracing shoplifting patterns, or safety breaches).
6. **Precision focus:** Pinpoints incidents accurately, minimizing false alarms (e.g., reducing disruptions in classrooms or production lines).

Edge-driven intelligence not only accelerates security workflows but also transforms video analytics into actionable insights.

Key Capabilities Driving Edge Video Intelligence

Faster Response
Enabling rapid detection and resolution of security incidents.

Incident Prioritization
Automatically ranking events based on urgency and impact.

Natural Language Search
Querying video data with simple, intuitive text commands.

Edge AI
Local analysis using AI-powered foundation models across diverse data types.

Video Capture
Collecting real-time video streams for instant analysis.

Business Impact:
AI-Driven Security Protects People and Operations

Expanding AI's Role in Wellness and Safety

- **Real-time situational awareness:** AI systems can analyze diverse data sources, such as cameras and sensors, to deliver a comprehensive view of potential risks (e.g., identifying spills or unauthorized access). This proactive capability improves early detection and incident prevention.
- **Automation in emergency response:** AI applications can automatically trigger critical actions such as alarms, alerts, or system shutdowns (e.g., in case of gas leaks or equipment overheating), helping responders focus on urgent tasks and reducing reaction times.
- **Wellness as a broader goal:** Beyond incident prevention, AI can monitor workforce health indicators such as fatigue, posture, or air quality. These insights support healthier and safer work environments.

AI-driven workforce wellness and safety solutions shift organizations from reactive monitoring to proactive protection, safeguarding people, minimizing operational risk, and supporting a healthier, more resilient workforce.

AI Applications for Workforce Wellness and Safety

Modular Ecosystem Supports Industry-Specific Needs

Modular, API-enabled platforms and edge AI support industry-specific needs in security, operational intelligence, and customer experience through configurable solutions.

Integration Trends

API-led adaptability: Modern platforms built on APIs and modular designs enable faster integration, reducing reliance on costly customization.

85% of organizations view **API management** tools as critical to scaling AI initiatives.

83% view **API gateway** tools as essential enablers.

Operational Automation

From surveillance to intelligence: Edge AI and vision-language models generate actionable insights that streamline workflows, cut manual effort, and strengthen resilience.

Integrations with equipment monitoring, access control, anomaly detection, and remote operations reduce risk and accelerate decision-making.

Shift to Modular Platforms

- **Scalable by design:** Modular configurations allow industries to respond quickly to new risks, regulatory requirements, and customer expectations.

AI-Powered Video Surveillance Integration Across Sectors

	Security and Safety	Operational Efficiency	Customer/ Student Experience
Manufacturing	Worker safety, PPE detection, hazard alerts, perimeter intrusion.	Asset tracking, incident verification, site activity monitoring, workflow bottlenecks.	Quality checks (visual), anomaly alerts, line audits.
Retail	Loss prevention, facial recognition, behavior analysis conflict detection.	Queue management, shelf stock visibility, cleaning monitoring.	Foot traffic analysis, dwell time, sentiment analysis, abandonment prediction.
Education	Access control, emergency response, crowd conflict, vape detection.	Campus surveillance, incident review, occupancy tracking, facility monitoring.	Safety alerts, well-being monitoring, bullying detection, engagement tracking.

API-driven and modular AI platforms are turning video surveillance into a lever for operational efficiency, risk management, and customer experience, delivering measurable impact in industries like manufacturing, retail, and education.

Source: IDCs *Worldwide AI-Enhanced Connectivity Automation Survey,* 2024

AI Video Intelligence:

Turning Surveillance into Measurable Business Impact

AI-powered video intelligence is more than monitoring. It is about measurable business outcomes that protect revenue, reduce risk, improve productivity, and strengthen trust across industries.

Leading capabilities, key investments, and value across industries:

Industry	Smart Security Capabilities	Areas of Application	IT Value	Business Value
Retail	AI video analytics, POS integration, queue management, facial recognition, zone heatmaps.	35% of retailers use computer vision for fraud detection[1]; 20% invest in vision for AI self-checkout[1].	API integration with POS, scalable cloud-native security solutions.	Fraud prevention, faster checkout, better customer flow insights.
Education	Automated surveillance and environment sensors for vape/smoke detection, crowd conflict (bullying) prevention, and student safety insights.	34% of Asia/Pacific institutions invest in video analytics[2] for use cases such as intruder detection, in addition to safety incident review, and behavior monitoring.	Secure visitor management, hybrid cloud video monitoring with API flexibility.	Safer campus environments, improved emergency response.
Manufacturing	AI-driven analytics, facial recognition, restricted zone alerts.	30% adopt biometrics for workforce safety[3]; AI video analytics ensure PPE compliance, shift handover verification.	Low-latency monitoring through hybrid cloud, integration with operations IT.	Workforce safety, operational efficiency, bottleneck detection.
Property Management	AI video analytics, tenant movement tracking, facial recognition, dynamic signage, real-time alerts.	Unauthorized access detection, loitering or tailgating, occupancy tracking, unattended object alerts.	API-first platforms that integrate with building automation and IoT systems.	Enhanced tenant safety, optimized building operations, occupancy management.

The convergence of AI analytics and modular digital platforms transforms surveillance into a source of risk reduction, operational excellence, and growth.

Sources: [1]IDC 2024 *Global Retail Survey,* n (retailers = 980),
[2]IDC 2024 *AP Data, GenAI and Insights Survey,* n (Asia/Pacific education) = 38,
[3]IDC 2025 *Emerging Technology Survey,* n (manufacturing) = 71

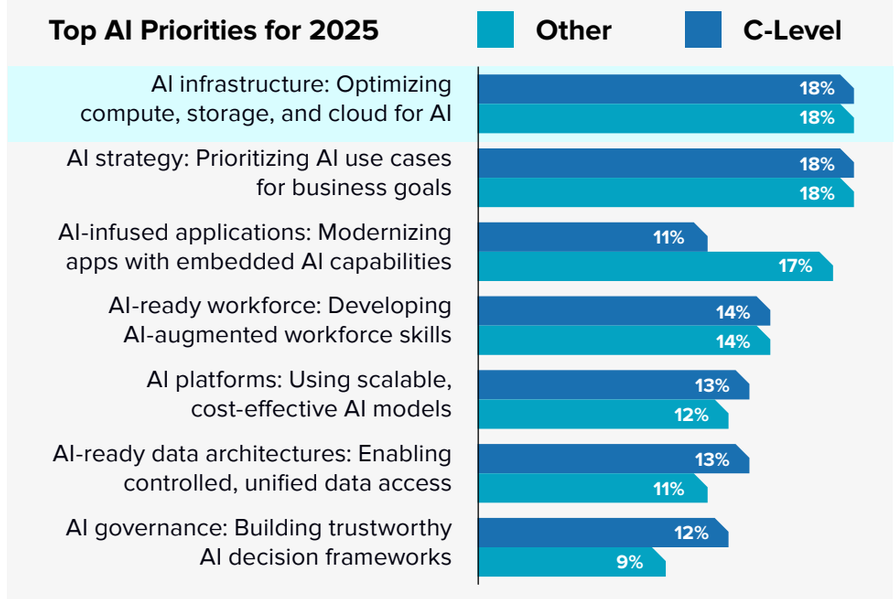
Sustainable Intelligence: Optimizing Resource Utilization

Eco-friendly edge AI devices reduce power consumption and transform security infrastructure into a driver of sustainable growth.

- **Shift to proactive intelligence:** Security systems are evolving to manage rising data demands while cutting energy consumption.
- **Edge AI for efficiency:** Processing data closer to the source lowers bandwidth needs, reduces cloud costs, and accelerates response times.
- **Greener infrastructure:** Minimizing data transfers trims storage overheads and improves energy efficiency.
- **Industry innovation focus:** Low-power, eco-friendly devices are becoming central to AI sustainability strategies.

Low-power and eco-friendly edge devices are reducing energy consumption by reducing cloud data transfers, cutting storage costs while maintaining security performance.

AI infrastructure optimization combines edge processing with energy-efficient design, reducing costs while accelerating secure, sustainable operations.



Source: IDC's 2025 *Future Enterprise Resiliency Survey,* Wave 1 (January 2025), n = 424

The Future Outlook: Driving Operational Automation

Key Drivers of Operational Automation

Integration with Broader **Ecosystems**

Seamless connectivity with IoT and smart infrastructure.

Advancements in **Cloud-Based Surveillance**

AI-enhanced cloud services for advanced surveillance.

AI-powered operational automation in physical security is becoming the next major evolution, with many organizations already exploring or pivoting toward these solutions, driven by **ecosystem integration** and **cloud-based surveillance** advancements.

Emerging Capabilities Powered by Multimodal AI

- Advanced video analytics leveraging foundation models (video, language, etc.) for precise incident detection and context-aware alerts.
- Environmental sensing, combining video with modalities like air quality or temperature sensing for holistic situational awareness.
- Multisensory event detection, correlating sound, motion, and object activity with visual inputs or identifying incidents independently (e.g., glass breaking, intrusion, asset removal).

Why It Matters

These capabilities are transforming surveillance from passive monitoring to proactive response, unlocking new operational automation use cases such as:

- **Reduced risk exposure:** Predictive maintenance (detecting unusual activity or conditions before incidents occur) lowers the likelihood of costly disruptions.
- **Continuity under pressure:** Dynamic crowd and traffic management (reducing congestion and enabling faster incident response) helps maintain safe, uninterrupted operations.
- **Resource efficiency:** Intelligent resource allocation (staffing, facility adjustments based on real-time insights) optimizes costs while improving safety and resilience.

Guidance for AI-Driven Security Transformation

Key actions and industry insights to align surveillance modernization with operational and ESG goals.

Key Actions for Organizations

- **Modernize surveillance:** Upgrade legacy CCTV to AI-enabled, cloud-managed platforms to cut false alarms, improve detection accuracy, and deliver actionable insights.
- **Enable scalable security with hybrid cloud:** Balance on-premises control of sensitive footage with the flexibility and cost efficiency of centralized analytics.
- **Leverage multimodal AI:** Combine video, language, and environmental inputs for faster, context-aware threat detection and proactive incident response.
- **Align security with business operations:** Integrate surveillance with access control, loss prevention, and facility management to optimize workflows and reduce operational risks.
- **Drive ESG outcomes through smart security:** Deploy energy-efficient edge devices and smart workload balancing to lower operational costs and strengthen sustainability credentials.

Industry Applications and ROI

Retail: Security systems integrated with POS systems to reduce fraud, optimize customer flow, and support smarter staffing decisions.

Key KPIs: Shrinkage reduction, checkout efficiency, dwell time analysis, staffing productivity.

Manufacturing: AI-enabled surveillance strengthens safety compliance, detects inefficiencies, and improves response to operational disruptions.

Key KPIs: Safety incident rates, downtime reduction, workflow efficiency, compliance reporting.

Education: Intelligent security systems enhance campus safety, streamline emergency response, and provide data-driven insights for risk mitigation.

Key KPIs: Emergency response times, vape detection, intrusion detection, incident reporting rates, safety perception metrics.

Property management: Smart surveillance improves tenant safety, optimizes building operations, and supports energy-efficient facility management.

Key KPIs: Occupancy-based energy usage, incident detection accuracy, tenant satisfaction, maintenance response times.

About the IDC Analysts

Andrew Gens
Research Analyst, AI Software
IDC Asia/Pacific

Andrew Gens leads IDC's research and thought leadership initiatives for Computer Vision (CV) and Multimodal AI Tools and Technologies. In this role, he tracks the software tools, technologies, and ecosystem trends that are catalyzing the expansion of CV and multimodal AI more broadly across business and consumer use cases.

Andrew has been conducting research at IDC since 2020. He has previously covered AI for Climate Intelligence, AI for the Metaverse, and continues to support coverage of business-to-business middleware and Integration and Automation Software.

More about Andrew Gens

Stephanie Krishnan
Associate Vice President
IDC Asia/Pacific

Stephanie Krishnan is an associate VP responsible for producing, developing, and growing the IDC Manufacturing and Energy Insights programs in Asia/Pacific. Within Manufacturing Insights, Stephanie conducts supply chain and Industry 4.0 research that supports clients with global sourcing (profitable proximity and sustainable outcomes), transportation, logistics, warehousing, and more. In addition, her contributions to subscription products and custom research span ecosystems, value chains, and the supply chains of industrial industries. In this role, she delivers a research agenda that supports technology buyers in their strategies and buying decisions as well as vendors in terms of market trends and intelligence.

More about Stephanie Krishnan

Message from the Sponsor

VIVOTEK

A Delta Group Company

VIVOTEK has spent 25 years pioneering innovations in network cameras, video management software, and cloud services. Leveraging cutting-edge video and audio technologies, we have grown into one of the world's most trusted security brands. Rooted deeply in Taiwan's dynamic R&D ecosystem and as part of the Delta Group, we deliver safer, smarter, and more sustainable security solutions.

VIVOTEK's cloud-based VORTEX platform extends this vision, offering a full-featured hybrid cloud architecture that empowers businesses to transition to the cloud easily. By combining AI-powered analytics, centralized remote management, and actionable intelligence, VORTEX helps enterprises enhance operational efficiency, strengthen security, and accelerate digital transformation.

Explore More Successful Cases

IDC Custom Solutions

IDC Asia/Pacific
The Work Project, 168 Robinson Road, Level 20 Capital Tower, Singapore 068912
T +65.6226.0330

idc.com @idc @idc