



# Rethinking physical security in the data center era

FOR HYPERSCALE AND  
COLOCATION ENVIRONMENTS

**AXIS**<sup>®</sup>  
COMMUNICATIONS

# The global data revolution and the security imperative

Backed by global data center infrastructure market research (2025–2030)

The worldwide demand for data center capacity is projected to triple by 2030, fueled by the rapid expansion of AI, cloud services, and connected devices. This growth is reflected in massive capital investment.

Spending on security and fire protection systems is anticipated to grow at a 17% CAGR through 2030 as the industry shifts toward integrated, network-enabled security solutions.

Most data center security failures don't come from poor technology, they come from treating physical security as an afterthought.

In modern data centers, **physical security is no longer an add-on or a standalone system.** It is core facility infrastructure, planned, funded, and deployed alongside power, cooling, and connectivity.

Operators that align security with infrastructure design early reduce operational risk, accelerate certification, and avoid costly retrofits as facilities scale.



# Protecting your most valuable asset

Over the past two decades, the value of data has been transformed. It is a driver of growth, a source of competitive advantage and arguably the most precious commodity in the global economy. As well as being valuable, it also comes with legal and moral obligations to safeguard it. That's why cybersecurity – the business of protecting data from digital attacks – has become a major, booming industry.

**Every reputable business has detailed measures for protecting their data from online threats, but what can they do to guard against physical threats?**

Operators demand security solutions that meet infrastructure-grade requirements: high availability, long lifecycles, fail-secure operation, and seamless integration with building and operations systems.

Axis solutions are designed to meet these expectations. Our technology is built to operate continuously in mission-critical environments, integrate into broader facility platforms, and protect uptime, compliance, and customer trust over the full life of the data center.

# 5-layer defense strategy

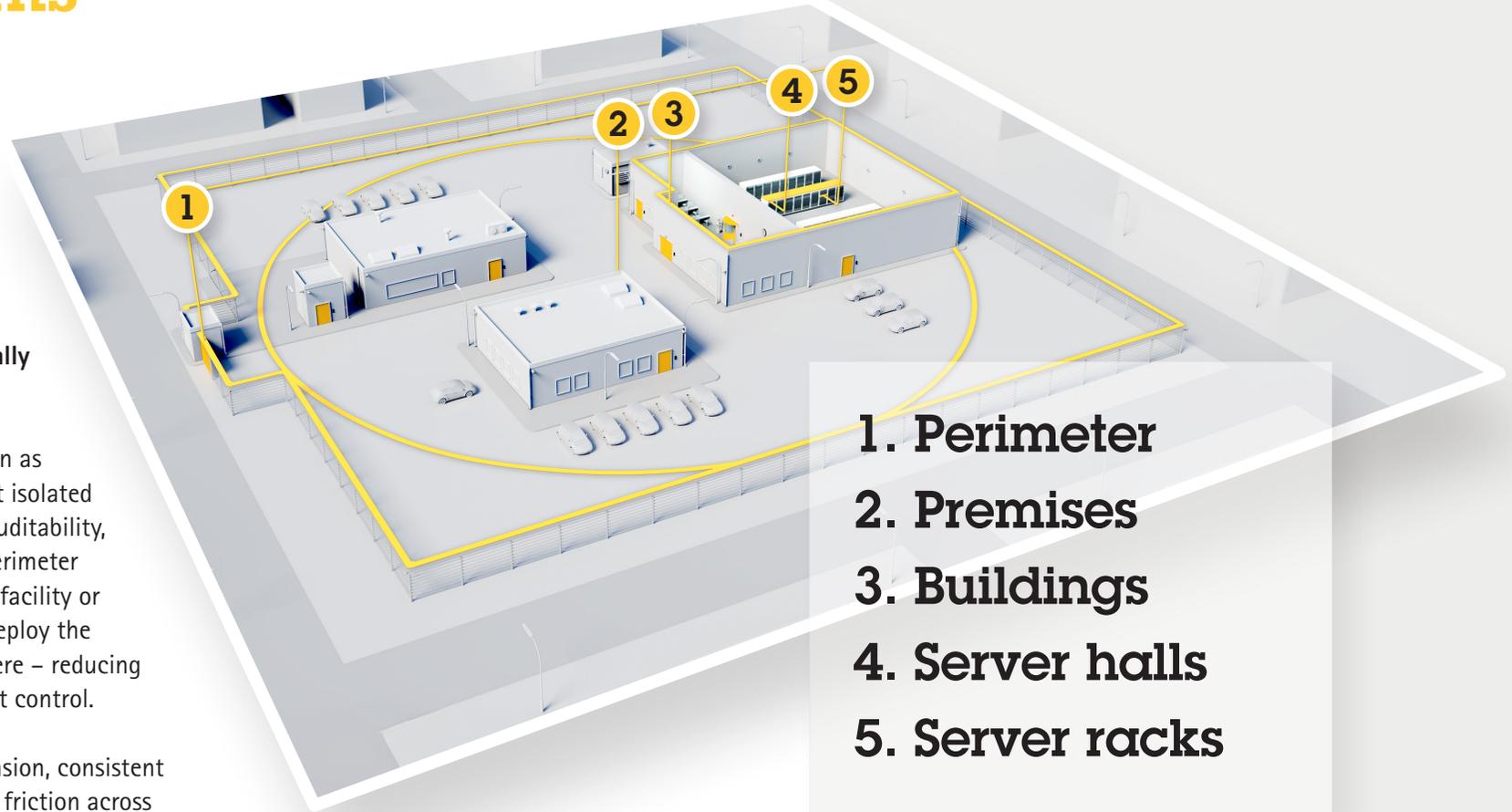
## for hyperscale and colocation environments

Data center operators demand more than coverage. They require repeatable, scalable security architectures that can be deployed consistently across multiple sites and regions.

**Axis applies a defense-in-depth security model designed specifically for large-scale data centers.**

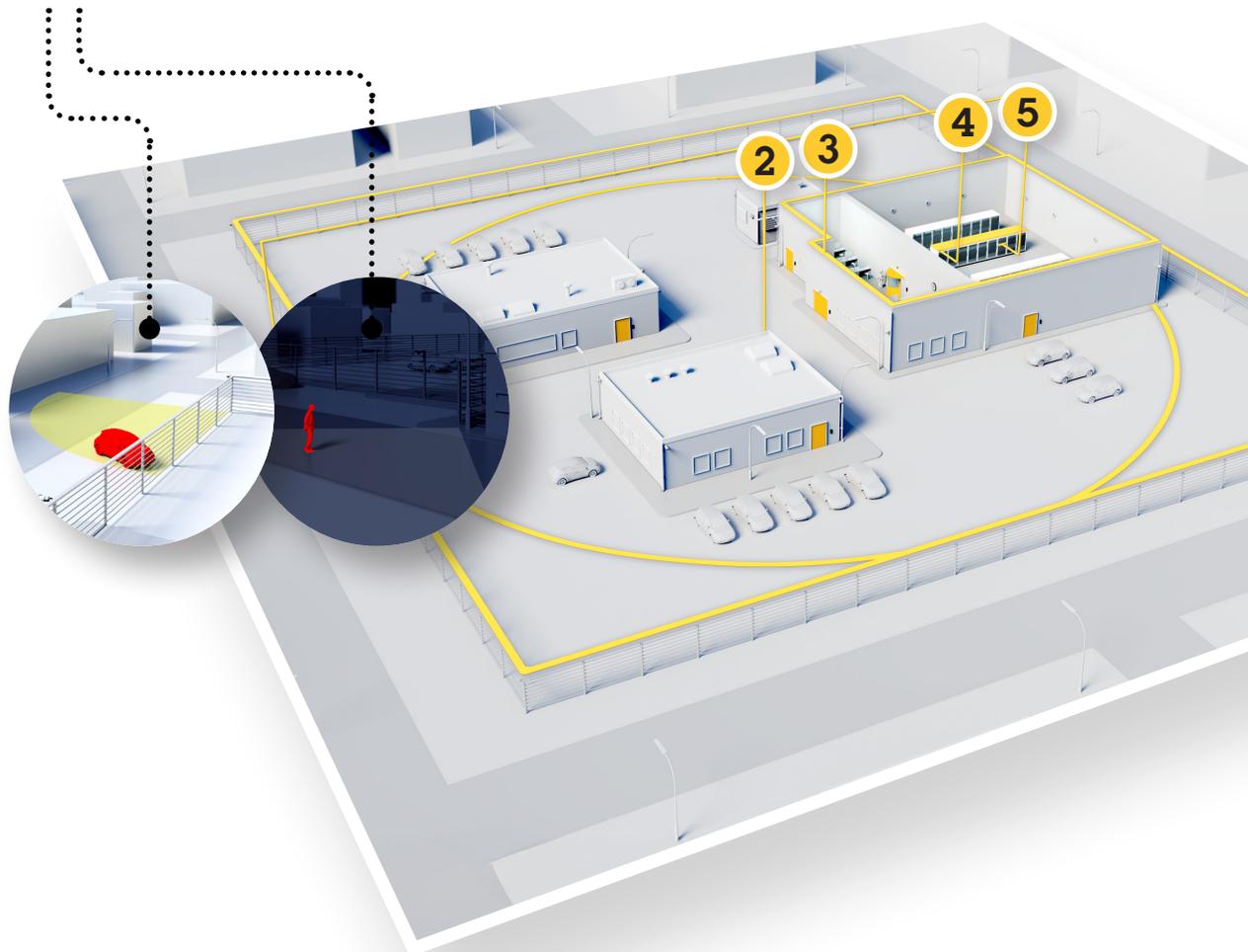
Each layer is engineered to function as part of a unified infrastructure, not isolated components, ensuring resilience, auditability, and operational continuity from perimeter to rack. Whether securing a single facility or a global footprint, operators can deploy the same security framework everywhere – reducing complexity while maintaining strict control.

This approach enables faster expansion, consistent compliance, and lower operational friction across growing data center portfolios.



# 1 Perimeter

Defending the boundaries  
of your data centers



Axis solutions guard your perimeter with IP video and thermal cameras that use edge analytics – software that runs on the device itself – to track intruders and issue alerts and alarms. This is done in real time, even in low light or complete darkness. Our network cameras keep false alarms to a minimum, because they let your staff visually verify incidents or unexpected visitors. Setting up alarms and other triggers in this way means that you need fewer routine patrols: your staff can spend their time reacting to actual incidents instead.

Access control solutions at your perimeter let you automatically grant entry to employees and people in approved vehicles, and then video analytics can detect any non-registered license plates inside your property.

The presence of our cameras also helps deter potential perimeter breaches.

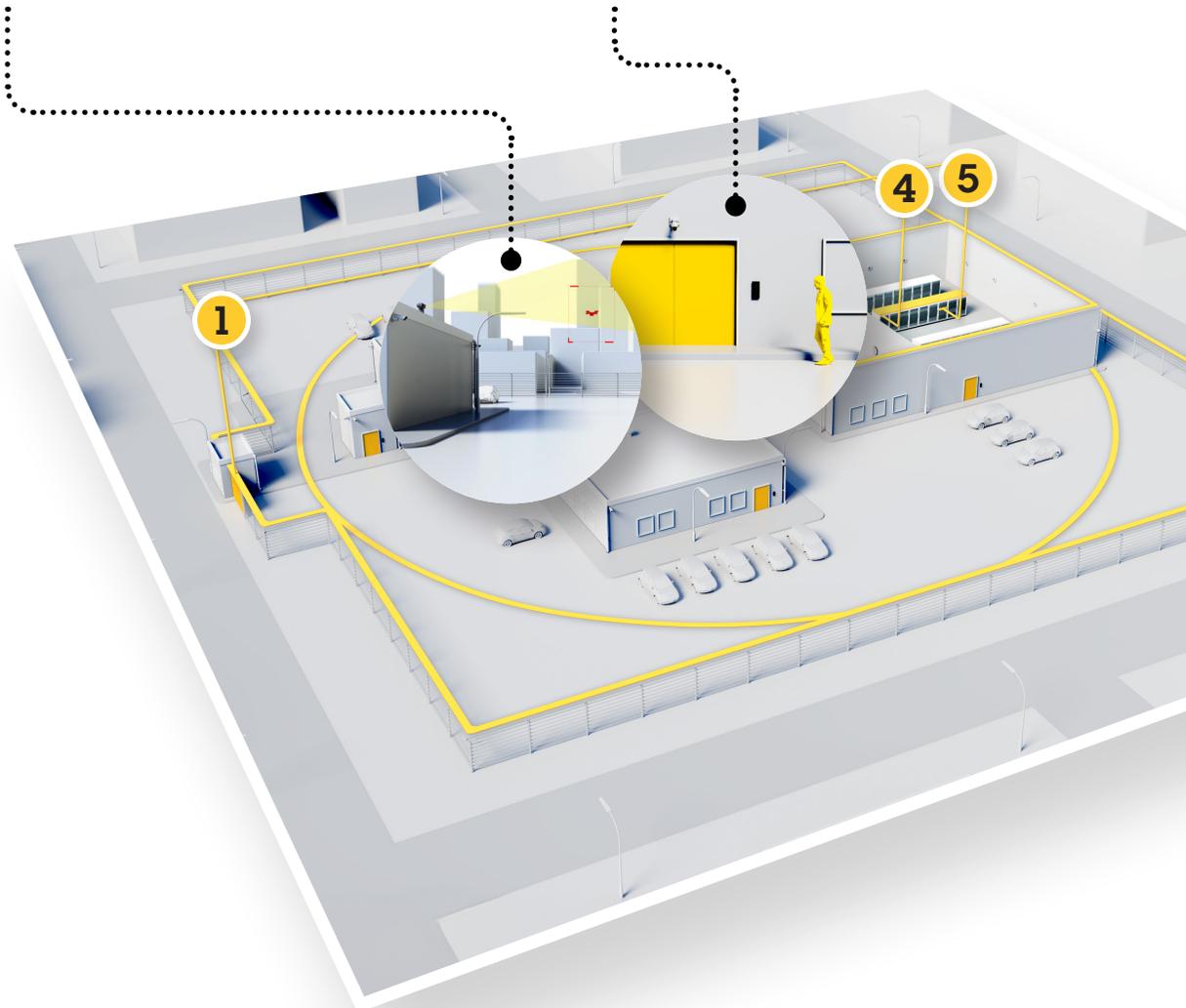
- **Detect, verify, deter**
- **Access control**
- **Night and day coverage**

**LEARN MORE ABOUT  
AXIS PERIMETER DEFENDER**

## 2 Premises

## 3 Buildings

Identifying intruders and controlling access



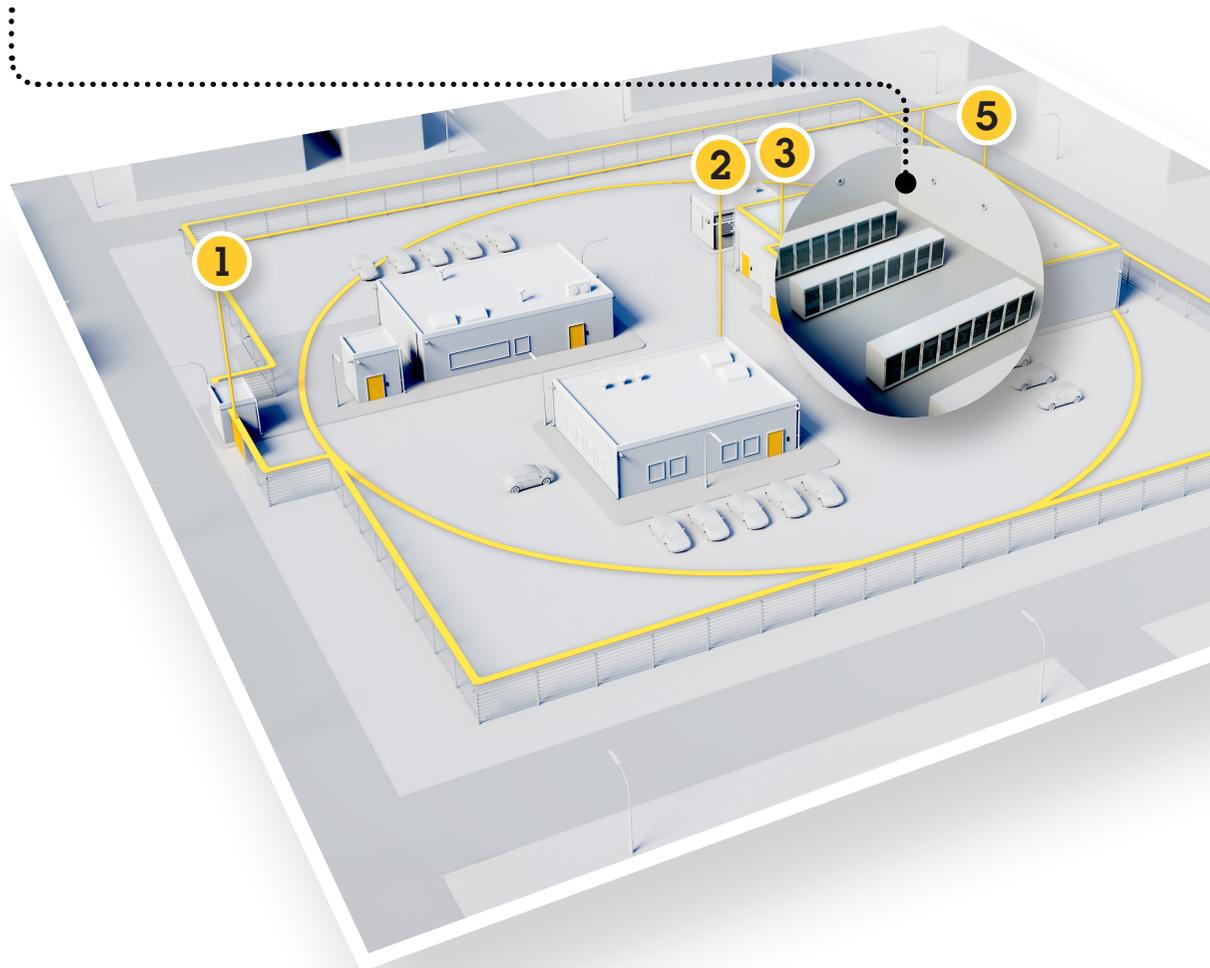
These two layers are about protecting your facilities, both outdoors and in. Outside, radar technology combines with pan, tilt and zoom (PTZ) cameras to track and visually verify anyone on your property. The presence of unidentified individuals can automatically send an alert to security staff or trigger loudspeakers to play a prerecorded warning message.

Access control systems use a combination of technologies to manage entry to your grounds, car parks and individual buildings. Depending on your specific needs, access can be granted through automatic authentication (key cards, PIN codes, facial recognition, smartphone keys) or manually (using network video and/or two-way audio). Either way, it can be done remotely reducing the need for on-site presence. It also provides identifiable visual records of people entering and leaving your buildings.

- **AXIS Object Analytics**
- **Video and radar surveillance**
- **Drone detection**

# 4 Server halls

Meticulous coverage for the most sensitive areas



At the heart of your data centers, you need coverage that is precise and powerful. Our access control solutions let you grant employees entry only to specific rooms, and you can enforce this with biometric identification and anti-tailgating technology with help of AXIS Object Analytics.

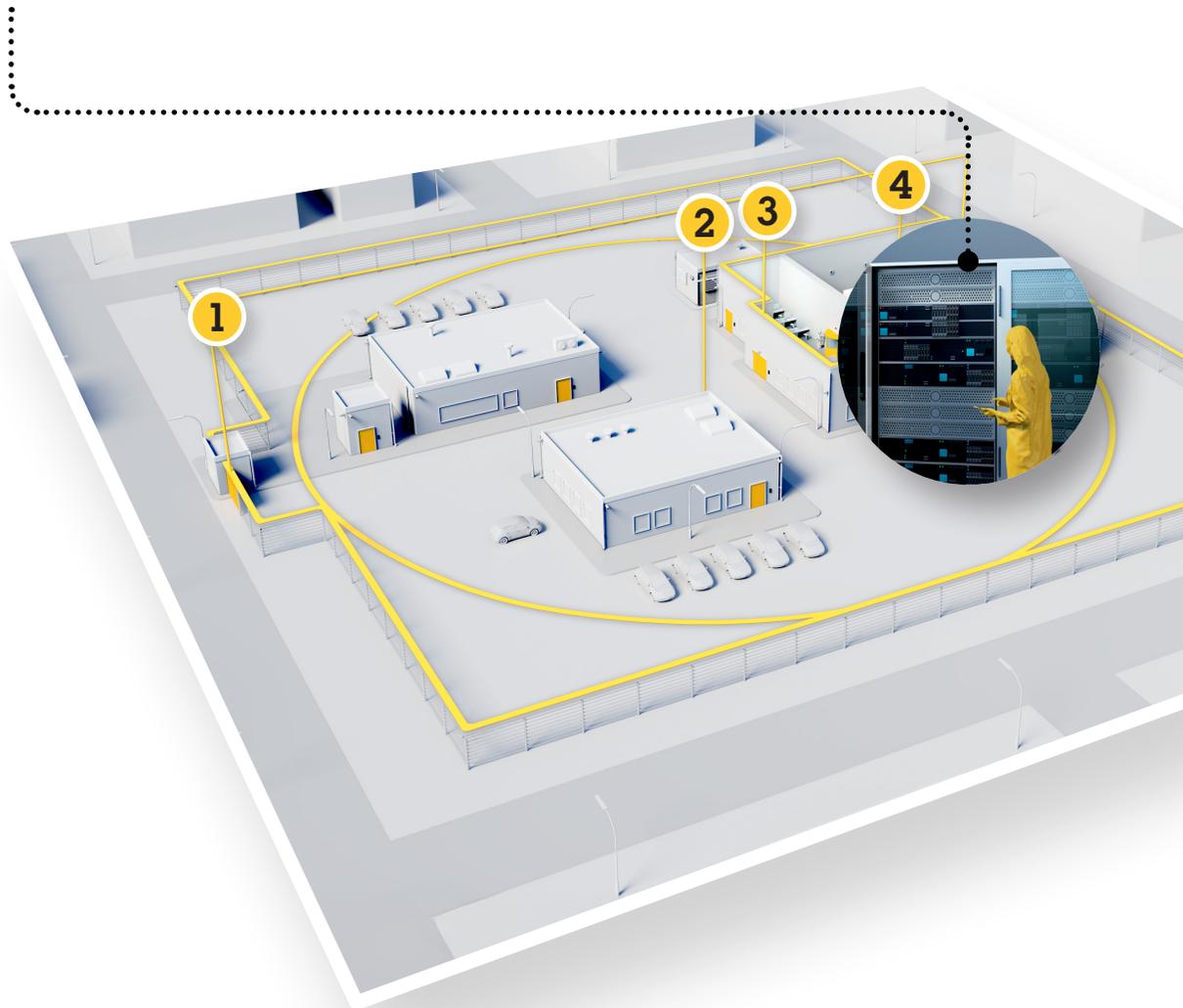
Inside the server halls, every angle matters. Axis multi-sensor PTZ cameras deliver total visibility with zero compromises. Our smart technology saves on storage by ignoring empty rooms, but captures forensic-grade detail the moment it's needed.

This is more than security; it's operational intelligence. Use thermal cameras and AI to detect temperature anomalies and smoke, instantly triggering integrated alerts to your cooling systems and backup generators. Turn your security system into your first line of defense against downtime.

- Access control
- Air quality monitoring
- Thermal detection

# 5 Server racks

## Monitoring your key resources



Your security shouldn't stop at the server room door. Axis technology takes it all the way to the rack, giving you the power to control and monitor access to individual cabinets. This is your last, and strongest, line of defense.

Discreet cameras mounted inside provide a crystal-clear HDTV view of your hardware, day or night. Get instant alerts for any unexpected activity, from an unauthorized touch to a cabinet door left open. Go from alert to action in seconds and have a complete video record for any investigation.

With Axis, you protect your servers from the inside out. It's a powerful solution that turns carelessness into compliance and transforms a potential vulnerability into a fortified asset.

- Alerts and alarms
- High-quality 5 MP video
- Temperature monitoring

# How to do more with less



As data centers grow in size and number, the challenge shifts from deploying security systems to operating them efficiently at scale. Modern data centers face high construction and operating costs, making resource optimization essential. Leading operators are redesigning physical security operations to function like other critical infrastructure systems: centrally managed, standardized, and resilient by design. Axis enables this shift by supporting centralized monitoring across sites, automated event detection, and remote verification – reducing dependency on local staffing while maintaining consistent security standards.

By minimizing false alarms, enabling remote response, and integrating analytics at the edge, Axis helps operators maintain strong security postures without increasing headcount or operational complexity as facilities grow.

#### **Operational efficiency in multi-tenant environments**

In colocation data centers, operational efficiency is inseparable from customer trust. Security teams must manage frequent access events, contractors, and visitors while maintaining strict tenant separation and auditability. Integrated security enable faster investigation, clearer accountability, and verifiable compliance without increasing operational burden as tenant density grows.

# Operational intelligence beyond surveillance

Axis solutions combine sensing, analytics, and automation to detect conditions such as heat, smoke, flooding, and abnormal activity, and to trigger predefined responses automatically. This reduces the need for constant human monitoring and shortens response times when issues occur.

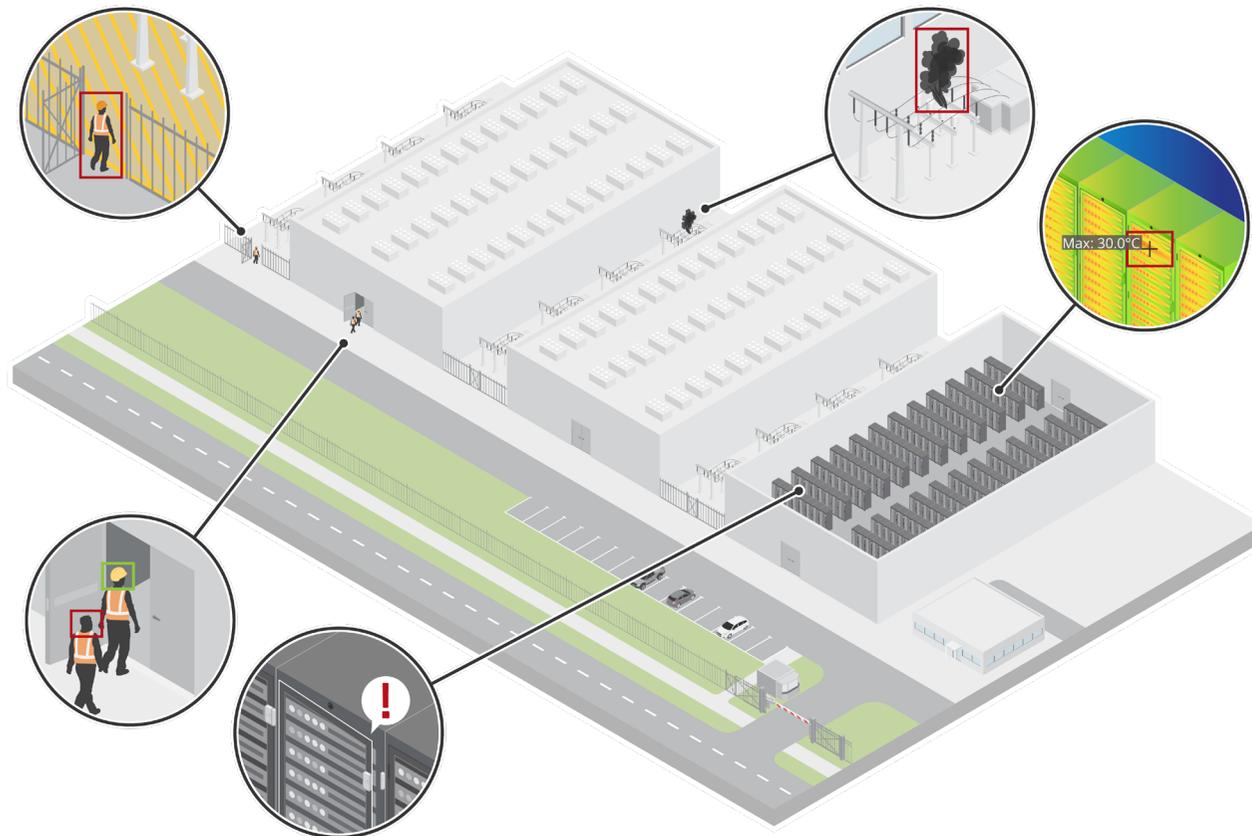
At the same time, video analytics transform visual data into operational insight. By applying AI at the edge, Axis systems generate metadata that helps operators understand how their facilities are actually used across security, safety, compliance, and efficiency domains.

This includes insights into occupancy, foot traffic, movement patterns, and dwell time, enabling data-driven decisions around access policies, staffing, space utilization, and risk management. The result is a security system that does more than protect, it actively supports scalable, efficient data center operations.



# Smart monitoring:

Protecting people, property,  
and performance



In a data center, uptime is everything. Even short interruptions can have a direct impact on service availability, customer trust, and operating costs. Network cameras support data center operations by adding an extra layer of awareness, helping teams spot issues early, verify alarms remotely, and avoid unnecessary shutdowns or on-site interventions.

## ➤ Temperature monitoring

Early visibility into abnormal temperatures helps prevent overheating and unplanned downtime.

## ➤ Early fire prevention

Visual recognition of smoke supports faster assessment and response before issues escalate.

## ➤ Keep restricted areas clear

Automated audio or visual warnings can guide individuals away from restricted areas, helping maintain safety.

## ➤ Maintenance verification

Visual confirmation ensures work is completed correctly and supports consistent procedures.

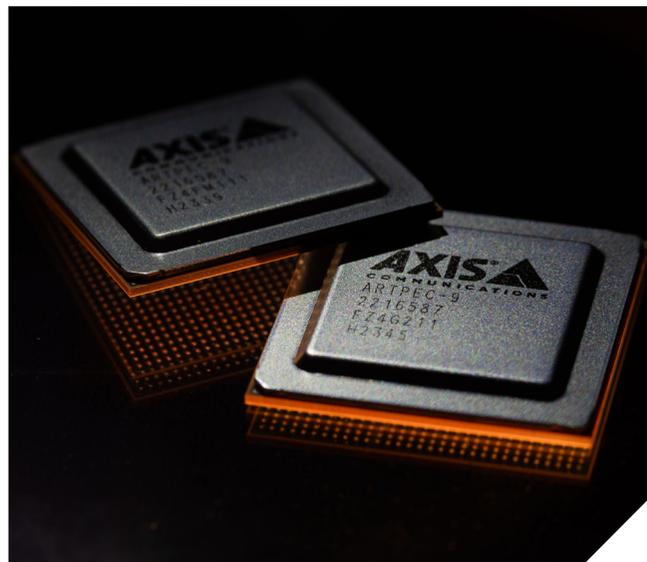
## ➤ PPE detection

Helps enhance workplace safety, reduce accident risks, and streamline compliance monitoring.



You can even configure cameras and microphones to detect signs of server failure and deterioration, helping you keep on top of server maintenance and avoid downtime.

In November 2024, we announced the launch of our latest purpose-built system-on-chip, [ARPTEC-9](#). In an industry first, it supports the open AV1 encoding standard, which can deliver even higher quality video at low bitrates. The improved precision will also improve analytics: the granular detail allows for more detailed object classification, meaning it can provide even more useful insights for both security and operational purposes.



**LEARN MORE ABOUT  
ACTIONABLE INSIGHTS**

THROUGH A WIDE RANGE OF FLEXIBLE  
AND SCALABLE ANALYTICS

# Protection against supply chain attacks

Cybercrime is a real and significant threat, and shielding servers from increasingly sophisticated and often state-sponsored digital attacks is a major concern. Data centers have both economic and legal reasons to make sure their cybersecurity defense is robust. As a result, attackers scramble to find new ways of infiltrating data centers, and if they cannot attack servers directly, then they often look for vulnerabilities in IoT devices.

Strikes on third-party IoT devices – supply chain attacks as they're often known – are extremely dangerous and increasingly common. Data centers have an obligation to protect themselves from these attacks by ensuring that all connected devices, including network cameras, are secure.

It is not enough to blindly trust in the security of third-party hardware. Instead, data centers must look for evidence

that connected devices are safe. Axis use a hardware-based cybersecurity platform to protect our devices, trusted module platform (TPM 2.0) implementation, signed OS and secure boot. You can visit our website to find the specific security measures on all our products.

Axis is fully transparent in our vulnerability management. We use the Axis Security Notification Service to keep you updated on any issues around software and services connected to our technologies, and Axis Device Manager lets you remotely check that your technology is functioning correctly and that all software is up to date. We also offer guidance and training on how to implement best practices and processes.

Clearly the system you use to secure your assets must, in itself, be secure. We provide demonstrable and documented evidence that our solutions are well-defended.



# The value of minimizing energy use

Data centers are facing the complicated challenge of reducing their environmental footprint while meeting growing demand, and energy use is a key consideration. **Facility infrastructure, including cooling and security, is projected to become a \$106 billion market by 2030.** As regulations like the EU Energy Efficiency Directive come into force, data centers must meet strict Power Usage Effectiveness (PUE) targets. Network video and audio technology make up a very small proportion of the energy use of a data center, but all efficiency gains help when it comes to reducing costs and meeting sustainability goals.

Fortunately, Axis solutions are designed with efficiency in mind. By minimizing data storage and bandwidth needs and [Zipstream](#), our technology uses less power over time. A similar principle is true for our edge analytics: by analyzing video footage on the camera itself, less data is transferred, resulting in energy savings.

Our surveillance solutions can also help cut the energy costs of lighting your premises. With low-light technologies such as Axis Lightfinder, our cameras can capture clear, actionable footage in almost complete darkness.

# Achieving our goals and helping you achieve yours



As part of our commitment to the UN's Sustainability Development Goals, Axis has worked for many years to lessen the environmental impact of our products. We have a green-design policy where we use sustainable materials wherever possible, and 80% of Axis cameras and encoders are now PVC-free.

Our products also help businesses – including data centers – meet their sustainability goals. As well as providing security, our technology can generate and analyze data about everything from the temperature of your servers to building occupancy. With these kinds of actionable insights, you can make decisions that improve operational efficiency and run your data centers more profitably and more sustainably.

Sustainability is a shared responsibility for us all, and choosing dependable, committed partners is a crucial factor. Collaboration across the whole ecosystem is needed to run a sustainable operation in the face of increasing data demand.

Setting the standard:

# The Axis and Moro Hub partnership

As one of the Middle East's leading data centers, Moro Hub has both a desire and an obligation to ensure its premises are thoroughly secure. The Dubai facility is also committed to operating sustainability, as demonstrated by its innovative design and its use of renewable energy – it holds the Guinness World Record as the largest solar-powered data center in the world.

Since 2018, Moro Hub has partnered with Axis for its security needs. Axis visual and thermal cameras are installed throughout the facility, but most importantly they are integrated into a holistic platform. In fact, it's an excellent example of our five layers of protection in action.

It starts just outside the facility perimeter where Axis cameras are integrated with road blockers, under-vehicle scanners and loudspeakers to detect, verify, and deter unauthorized access. Analytics enable automatically triggered alerts, so personnel can be proactive about identifying and mitigating potential threats before they escalate.

The second layer of protection has surveillance cameras providing total coverage of the grounds and providing real-time information to both controllers and on-the-ground personnel.

The third layer controls entry to the main building. There, the access control system incorporates keycards, biometric scanners, X-ray machines, and a visitor management system to ensure that only people with the appropriate clearance level are allowed to enter.

Individual server rooms are protected by layer four. Motion sensors and fingerprint scanners prevent unauthorized access and keep a record of who is in every room and when.

Finally, the fifth layer protects individual racks with modular camera systems ensuring that sensitive data remains secure.

Moro Hub is a benchmark for data centers across the Middle East, so it is fitting that they have a comprehensive security solution in place. Crucially, they don't stand still. In partnership with Axis, they have implemented a system that can be scaled up and enhanced if required and when future innovations emerge. As well as optimal security, it's a system that reduces the need for manned patrols and uses metadata to provide operational efficiency insights – and it's set up to become even more impressive in the future.

**“As a valued partner, Axis is not just supplying us with a product. We are always looking for aftersales support and consultation, and how we can upgrade the existing system to align with the latest technology in the market.”**

**Ayman Alkhzaimi**  
Facility Manager, Moro Hub

➤ **See the full story here**

# Recommended solutions for data centers

➤ Read more about our solutions for data centers

**AXIS D2123-VE**  
Radar



Works either standalone or integrated with selected PTZ cameras to enable next-level radar-video fusion technology to minimize false alarms. With state-of-the-art autotracking capabilities, adding an extra layer of protection to enhance your surveillance system.

**Axis**  
network horn  
speakers



Axis network horn speakers allow you to discourage unwelcome activity and warn off bad actors detected by your cameras. For example, the speakers can be used to deter unwanted presence/activity by a site's perimeter. The speakers can also be used to provide voice instructions during an emergency or inform about illegal parking.

**Axis F2107-RE**  
Standard Sensor



Protect your server racks with alarms and alerts that notify you of open cabinet doors or other unexpected activity. With a small cylinder-shaped form factor AXIS F2107-RE offers discretion. Thanks to its small size, it's ideal for installation in tight spaces as server racks.

**AXIS P3287-LVE**  
Dome Camera



Built on ARTPEC-9, this robust AI-powered dome camera with support for AV1 codec delivers excellent 5 MP image quality in any light conditions. It offers accelerated performance to run impressive analytics applications on the edge.

**AXIS Q1961-TE**  
Thermal Camera



This halogen-free, thermometric camera lets you remotely monitor temperatures and trigger temperature-based events. Ideal for improving operational efficiency. Robust and impact-resistant, it offers early fire detection analytics and built-in cybersecurity features.

**Axis**  
access control



Axis provides the hardware and analytics to identify, authenticate, and authorize entry to buildings and rooms. Our access control technology protects critical or vulnerable areas with automatic (key cards, PIN codes, QR codes) or manual authentication (2-way network video and audio).

# Axis benefits

## – for a smarter, safer world



### Sustainability

All our products, practices and processes contribute to a smarter, safer world, and our goal is to promote sustainable ways of working in the entire value chain.



### Cybersecurity

Cybersecurity is about products, people, technology, and ongoing processes. At Axis, we tackle cybersecurity by continuously monitoring threats and consequences, and taking quick, decisive action.



### Quality

Quality is at the heart of the culture of Axis. We work to provide the best quality in our products and solutions, our business relationships, training, technical support and customer services.



### A true network of opportunities – partner ecosystem

- Market-leading innovation
- Highest product quality
- Local expertise, service, and support
- Complete system reliability
- Optimized user experience
- Trained, certified, and competent solution providers

➤ Read more about our solutions for data centers

## About Axis Communications

Axis enables a smarter and safer world by improving security, safety, operational efficiency, and business intelligence. As a network technology company and industry leader, Axis offers video surveillance, access control, intercoms, and audio solutions. These are enhanced by intelligent analytics applications and supported by high-quality training.

Axis has around 5,000 dedicated employees in over 50 countries and collaborates with technology and system integration partners worldwide to deliver customer solutions. Axis was founded in 1984, and the headquarters are in Lund, Sweden.