

Augmenting safety and security with AI on Arm

Case Study

Company snapshot

Name: **Baidu, Inc**
Vertical: **Search Engine and Internet Services**
Size: **42,267 employees**
HQ: **Beijing, China**
Founded: **2000**

Baidu Goal

Expand AI implementation across products and services to improve safety and engagement in places such as factories, industrial parks, catering services, and classrooms that rely on AI-assisted surveillance.

Solution

Deployment of Akraino Edge Stack, an open source software project under the Linux Foundation that supports a high-availability cloud stack optimized for edge computing systems and applications. The Akraino Edge Stack contains multiple blueprints suited for various use cases. Baidu implemented video security monitoring blueprints on Arm infrastructure with cloud-edge servers, hardware accelerators, and custom CPUs for industry-leading performance.

Benefits

- + Real-time, accelerated high-performance data processing capabilities enabled by Arm servers.
- + Improved application efficiency with Arm Integrated Edge Cloud optimized for cloud-native workloads.
- + Reduced latency for AI/ML operations.
- + Built-in end-to-end security on Arm Neoverse platforms
- + Reduced network load with high data processing capabilities for local sites on at the edge

Baidu Selects Arm Edge Blueprints and Neoverse Servers to Support its Vision of the Future

Baidu, Inc. is one of the largest AI and internet services companies in the world, specializing in a wide range of consumer and business focused products, from search to maps and from discussion forums to augmented reality platforms. Founded in 2000, Baidu's mission is to make a complicated world simpler through technology. Now, thanks to Arm, it can bring the advantages of AI to real-life situations with its implementation of intelligent computing at the edge.

“Baidu’s vision is to push the limits of AI across our products and services to improve the customer experience,” explains Hechun Zhang, staff systems engineer at Baidu. “As part of that, a key goal is to increase safety and engagement in places that use AI-assisted surveillance, such as factories, industrial parks, catering services and classrooms. With systems as vast as ours, only Arm could help us find the right solution.”

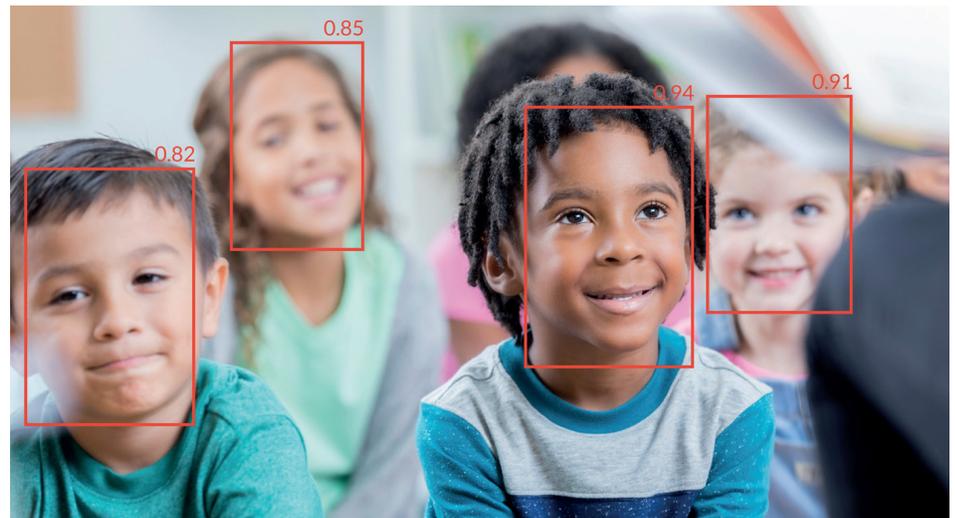
Akraino Optimized for the Edge

Working with Arm experts and partners, Baidu deployed Akraino Edge Stack, an open source software project under the Linux Foundation, that supports a high-availability cloud stack optimized for edge computing systems and applications. The Akraino Edge Stack contains a large collection of blueprints suitable for a wide variety of use cases. Baidu implemented video security monitoring blueprints on Arm infrastructure, including cloud-edge servers, hardware accelerators, and custom CPUs designed for world-class performance.

Arm is a member of the Akraino project and provides an edge cloud reference stack of networking platforms and cloud-edge servers built on Arm Neoverse. The Arm Neoverse architecture supports a vast ecosystem of cloud-native applications and combines with Arm’s AI Edge blueprint for an open source mobile edge computing (MEC) platform optimized for sectors such as safety, security, and surveillance.

Following the Arm’s IEC blueprints, Baidu implemented the following solutions:

Improved Student-Teacher Engagement



Using deep learning model training for video data from classrooms, school management can evaluate class engagement and analyze individual student concentration levels to improve real-time teaching situations.

Enhanced Factory Safety and Protection



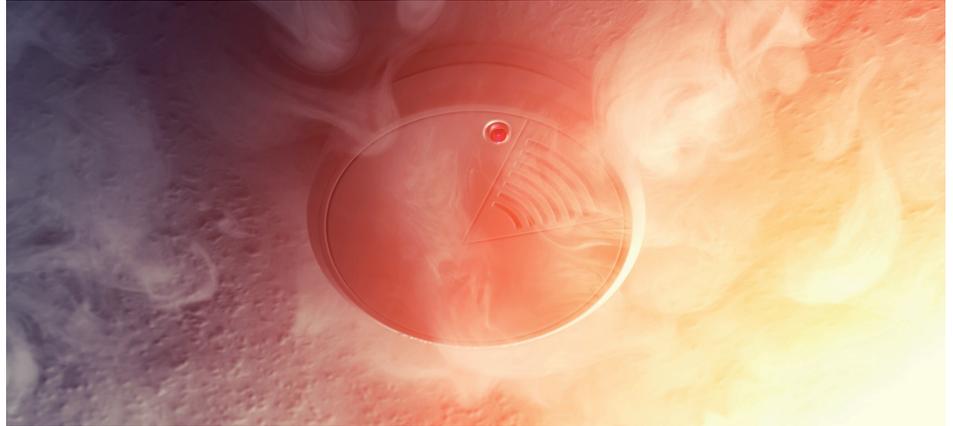
Real-time monitoring helps detect factory workers who might forget safety equipment, such as helmets, safety gloves, and so on, to prevent hazardous accidents in the workplace. Companies can monitor safety in a comprehensive and timely way, and used findings as a reference for strengthening safety management.

Reinforced Hygiene and Safety in Catering

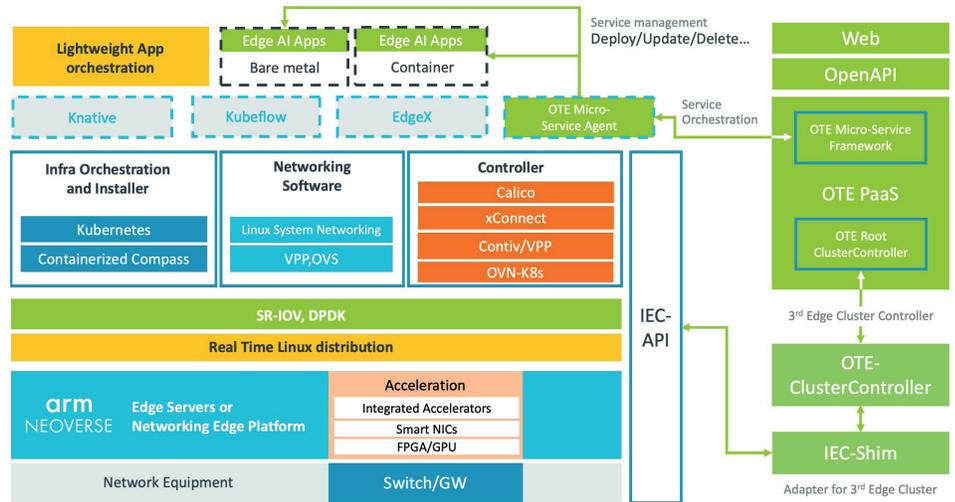


Through monitoring staff behavior in the kitchen, such as smoking breaks and cell phone use, this solution ensures the safety and hygiene of the food production process.

Advanced Fire Detection and Prevention



Linked and networked smoke detectors in densely populated places, such as industrial parks and community properties, can help quickly detect and alert authorities to fire hazards and accidents.



Arm IEC Blueprint built on Neoverse servers for Baidu AI Video Security Monitoring

A Powerful AI Foundation

“The Arm Neoverse-powered edge cloud is the perfect solution to enable the diverse set of high-performance, secure, and scalable solutions Baidu needs to make our vision of using AI to solve complex problems come to a reality,” Zhang explains. “With the Arm architecture in place and its vast ecosystem of support, we’re confident we have the best solution to take AI into the future.”