Technology

Leading an automation revolution in logistics

Rapyuta Robotics

With Lenovo ThinkEdge servers controlling and maintaining autonomous mobile robots on the warehouse floor, Rapyuta Robotics helps logistics clients keep their operations moving faster, expanding easily and more efficiently.

Lenovo

Who is Rapyuta Robotics?

Rapyuta Robotics is a global technology startup that builds cloud robotics solutions. Established in 2014, the company currently employs around 170 people worldwide at offices in Japan, India, and the United States.

Rapyuta Robotics aims to make it easy for businesses to deploy robotics solutions that help humans exert more creativity and intelligence. By integrating robot hardware, software, sensor data, and applications in the cloud, the company's Robotics as a Service (RaaS) solutions allow customers to focus on their business processes instead of managing hardware or software.

rapyuta robotics

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The
Challenge

Robots are being adopted across a growing number of industries to automate dangerous, repetitive, and time-consuming work. Rapyuta Robotics has seen particularly strong demand from the logistics sector. To meet the need, the company has been rapidly developing Pick Assist Autonomous Mobile Robots (PA-AMR).

Rapyuta Robotics PA-AMRs are used in warehouses to convey goods flexibly and effectively. Unlike Automatic Guided Vehicles (AGV), which run along the defined routes guided by electromagnetic adhesive on the floor, PA-AMRs can navigate around the space largely autonomously by learning and choosing the best routes, working with human operators to pick orders and transport items.

PA-AMRs are highly sophisticated machines. They are equipped with camera and LiDAR to recognize shelf layout and obstacles to avoid collisions autonomously, while Rapyuta's cloud robotics platform "rapyuta.io" contemplates the most efficient movement of all robots through group-control AI technology.

This combination of intelligence requires real-time interaction, so would be hampered by network latency between the warehouse and public cloud. For this, the company needs high-performing hardware than can run right on the warehouse floor.

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"The pandemic has had a huge impact on logistics businesses already experiencing long-term issues such as labor shortages and an aging society. Field automation is their top priority, and we are helping them to deploy, operate, and maintain robots with ease and flexibility. Our rapyuta.io cloud platform provides technology excellence as a foundation for controlling and maintaining multiple robots across multiple sites, including log management and software installation."

Kazuhiro Aizawa
Senior Product Manager, Rapyuta Robotics

Powering operations **at the edge** and teams on the move

Rapyuta Robotics uses Lenovo ThinkEdge servers as the foundation for its AMR solution. The servers pack data center-grade performance and reliability into a robust, compact footprint—providing an ideal platform for supporting real-time communications at the edge, particularly for logistics warehouses where not an inch of the floorspace can be wasted.

Deploying Lenovo ThinkEdge servers at each logistics warehouse also helps Rapyuta Robotics' cloud operations and, by collecting lots of data, enables engineers to monitor what their highly functional robots are doing in real time—keeping their logistics customers satisfied.

Hardware
Lenovo ThinkEdge Series

A **powerful and flexible** hardware platform

Today, Lenovo ThinkEdge servers are used to enable real-time monitoring and control of approximately 500 robots in use at more than 50 distribution warehouses. The ThinkEdge devices act as local servers in each client's warehouse and work in concert with the rapyuta.io cloud platform and Rapyuta Robotics engineers.

The edge server is used for real-time robot control and route optimization in the warehouse. Meanwhile, the cloud environment supports monitoring of robot and human operators, display of dashboards, and integration with various warehouse management systems.

With its business enjoying healthy growth, the Lenovo environment at Rapyuta Robotics also continues to grow, with the company adding ThinkEdge servers continuously. The ThinkEdge server remote maintenance functionality underscores this high-paced deployment of PA-AMR solution over more and more warehouse sites.

"We chose Lenovo ThinkEdge ahead of other vendors' proposals for its compactness. ThinkEdge empowers our solutions for logistics customers by delivering data center-grade performance and functionalities in a compact and flexibly designed form factor, which saves warehouse space for goods inventory and operations."

Robert Tiinus
Senior Infrastructure Operations Engineer, Rapyuta Robotics

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Results

The flexible design, small form factor, and massive processing power of Lenovo ThinkEdge servers make them ideal for industrial spaces. They fit unobtrusively onto crowded warehouse floors, where they can withstand dust, high temperatures, and vibrations, all while delivering strong performance and reliability for data processing workloads at the edge and enabling Rapyuta engineers to remotely operate and maintain PA-AMR systems deployed over 50 warehouse sites.

✓ Expected to double the PA-AMR deployment in the near term

✓ 500 robots monitored and controlled through Lenovo edge servers with Rapyuta cloud AI

✓ Helps logistics clients operate faster and more efficiently

Supporting a **growing** business

Already the AMR market leader in Japan, Rapyuta Robotics believes that Lenovo hardware will help lift its business to even greater heights of success. In 2023, the company expects unit sales of AMRs for logistics warehouses to grow by 1.7 times over the previous year—an increase enabled in part by its robust edge computing capabilities.

With Lenovo, Rapyuta Robotics has also established firm hardware foundations for future innovation. The company plans to launch a line of autonomous forklifts in 2023. It is also looking at expanding its artificial intelligence (AI) capabilities to help robots perform even more complex and coordinated tasks.

Kazuhiro Aizawa, Senior Product Manager at Rapyuta Robotics, concludes: "We are a startup with a small number of people to develop solutions and support customers. Our partnership with Lenovo is key to growing our business, as we can leverage Lenovo's strength in IT infrastructure, technology, and solutions. We look forward to Lenovo's support in achieving this goal."

"With the further evolution of AMR, we hope to help our customers improve their operations by providing more sophisticated robotics solutions, powered by our compact, high-performance, and remotely manageable Lenovo ThinkEdge servers."

Robert Tiinus
Senior Infrastructure Operations Engineer, Rapyuta Robotics

Why **Lenovo**?

After evaluating multiple edge computing solutions, Rapyuta Robotics opted for Lenovo ThinkEdge servers.

Robert Tiinus, Senior Infrastructure Operations Engineer at Rapyuta Robotics, explains: "In a distribution warehouse, the equipment we install must be high-density and space-saving. Lenovo ThinkEdge servers are flexible enough to be deployed in locations where space is limited."

The ability to centrally manage and operate the edge servers was another deciding factor.

"We like that Lenovo ThinkEdge servers can be remotely managed," notes Tiinus. "This is common for data center servers, and it is even more important for edge servers that work in remote distributed environments."

How can logistics firms streamline warehouse operations?

Rapyuta Robotics deploys autonomous mobile robotics solutions combined with Lenovo edge computing to help clients power ultra-efficient automated order picking in warehouses.

[Explore Lenovo Edge Soluions]

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