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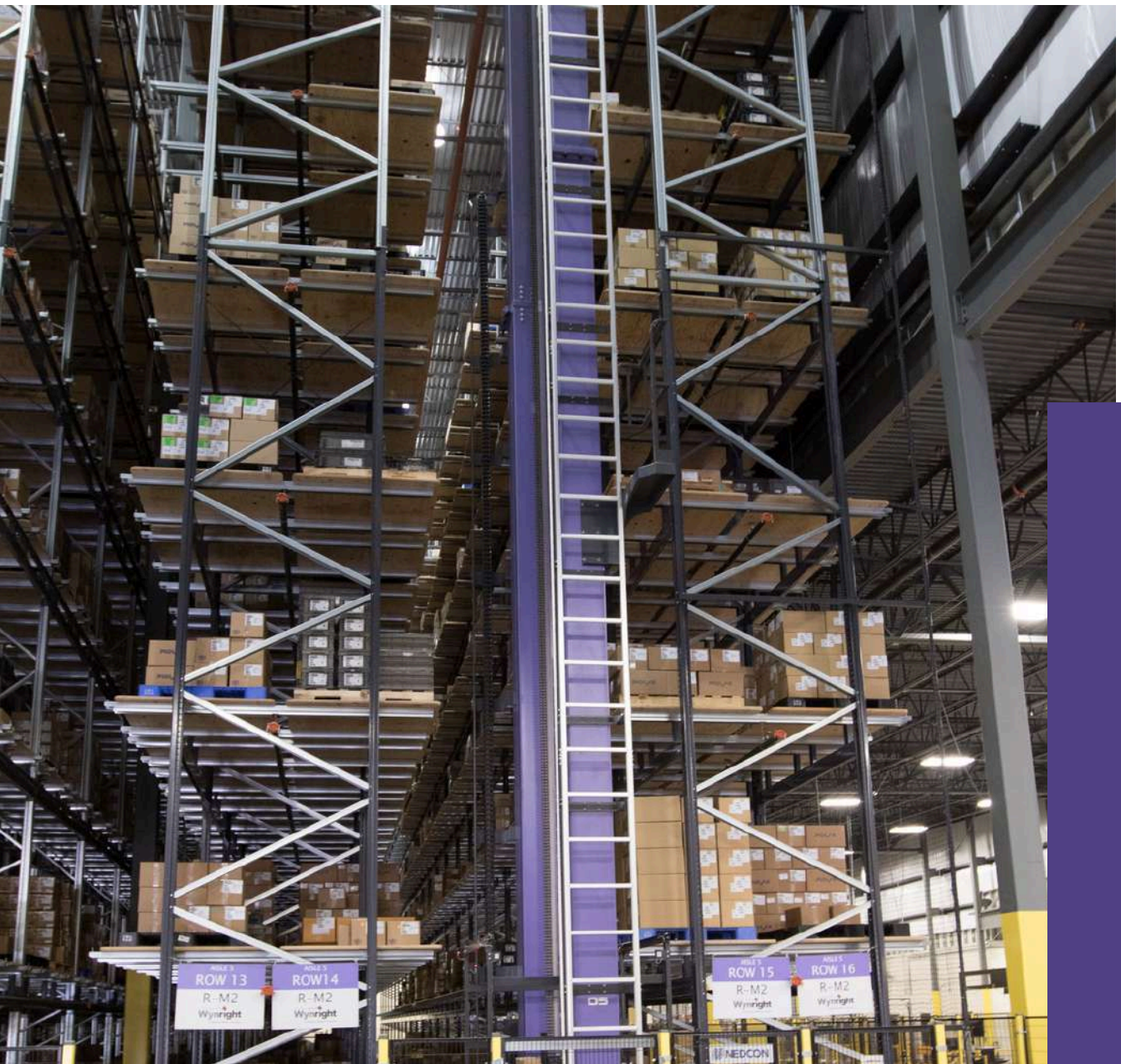
DELIVERING WHAT'S NEXT: A FUTURE-READY CONVEYANCE STRATEGY FOR THE NEXT DECADE

WHITE PAPER

DAIFUKU INTRALOGISTICS AMERICA



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AGENDA

Discover the top trends in warehouse conveyance and gain actionable strategies to future-proof your operations.

Introduction

- Overview of the evolving warehouse landscape
- Importance of proactive conveyance planning
- Objectives of the white paper

The Labor Shortage Challenge

- Industry-wide impact and statistics
- Causes of labor scarcity
- Implications for warehouse operations
- Strategic response: automation as a solution

Emerging Conveyance Trends and Technologies

- Automation & Robotics
- Smart Systems & IoT Integration
- Flexible and Scalable Infrastructure
- Sustainability in Conveyance

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INTRODUCTION

Warehouse conveyance is rapidly evolving from a technological and operational standpoint.

This evolution is driven by a variety of trends, and operators need to be aware of the landscape and the solutions that can help them stay competitive in the rapidly changing logistics landscape.

In this paper, we dig further into some of the trends that are currently — and poised to continue — influencing the warehouse over the next decade and how operators can take advantage of various solutions to meet these challenges head-on.

Read on to learn more or contact Daifuku Intralogistics America today.

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Navigating Workforce Shortages

One key trend shaping many of the solutions we'll discuss throughout this piece is the labor shortage.

According to some reports, nearly 75 percent of warehouse operations struggle to source enough labor to adequately meet their business's demands.

These shortages are driven by several factors. For instance, overall, the current workforce is aging, meaning more workers are exiting the field than there are those entering it. Complicating things is evolving preferences. Once seen as prideful blue-collar work, younger generations of workers aren't interested in warehouse work and would rather prioritize work-life balance or strive to find more perceived meaning in what they do. Then, there's the e-commerce boom, which is only further straining warehouse environments as demand for faster fulfillment and shipping is sought by consumers.

Nearly 75% of warehouses struggle with staffing.

It's all causing complications in warehouse staffing, thereby resulting in delays, increased costs and challenges meeting consumer demands. And while there are various initiatives underway to try to encourage more high school students and young professionals to pursue a career in the warehouse environment, the current shortages aren't expected to simmer anytime soon. According to the U.S. Bureau of Labor Statistics, there's currently a shortage of about 35,000 positions in the industry. A separate report from the American Staffing Association states that there were 1.7 million warehouse and transportation job openings in 2024, and there's the potential for that number to increase to 2.1 million by 2030.

The labor gap is expected to grow to 2.1 million job openings by 2030.

So, how can warehouse operators overcome labor challenges to keep costs in check and business streamlined? The answer is to incorporate more automation into these environments to optimize conveyance. In the next section, we'll discuss the various strategies and technologies for achieving this.

Warehouse Conveyance Strategy & Trends

Conveyor systems integrated with sensors and automation can reduce picking and routing errors by up to 67%, improving order accuracy and customer satisfaction.

Source: LogisticsIQ

The labor shortage isn't the only major warehouse challenge that these businesses will have to navigate over the next decade and more. Warehouses are also frequently challenged with various strategic and operational hurdles, such as managing inventory, maximizing space within current facilities, ensuring accurate order fulfillment and adjusting for fluctuations in demand at various times of the year.

All of these challenges will have a major influence on the future of conveyance and the decisions operators take to optimize their strategies in 2025 and beyond. Some of the trends that operators should expect to capitalize on to stay competitive include:

- Automation and robotics
- Smart conveyors and related technologies
- Flexible systems
- Sustainability

Conveyors and sorters are no longer static infrastructure, they are adaptive, intelligent systems.

80%

of high-throughput e-commerce fulfillment centers use conveyor-based material handling systems as their primary means of product transport and sortation.

Source: Statista & Modern Materials Handling

Warehouse Conveyance Strategy & Trends

AUTOMATION AND ROBOTICS

Automation will continue to shape the future of the warehouse in just about every facet of its operations.
While acquiring automated solutions involves an upfront investment, the benefits have the potential to far outweigh the initial costs.
When automation is implemented properly, benefits include streamlined operations, process improvements and minimized human error, storage and retrieval optimization, and lower labor costs.

Some of the key automated solutions that are poised to play a role in the future of conveyance include:

- AGVs and AMRs: Automated guided vehicles (AGVs) and autonomous mobile robots (AMRs) are becoming more commonplace in the warehouse environment, specifically for transporting materials and enhancing efficiency. AGVs can be used to transport goods through a plant or warehouse or move products on conveyors or on and off assembly lines. AGVs tend to be flexible and cost-effective, and can accommodate up to 22,000 pounds when handling loads. Since developing its first AGV in 1961, Daifuku has sold more than 14,000 units in markets ranging from automotive to distribution.

- AS/RS Systems: Automated storage and retrieval systems (AS/RS), are a key part of goods-to-person automation, bringing items directly to workers instead of having them search and retrieve manually. This shift improves order fulfillment speed and boosts accuracy in picking and packing. Daifuku's expertise in developing AS/RS solutions dates back to the 1960s when it was credited for designing Japan's first of its type. Daifuku's expertise continues to shine in the range of solutions we offer, including the Unit Load, Mini Load and Shuttle Rack AS/RS.

- The rise of robotics: Robotics can help offset the industry's current labor shortages and automate basic tasks like picking, sorting and palletizing. Robots can integrate with conveyors to help improve speed and accuracy. In some cases, robots may work in tandem with humans (i.e., cobots), to help handle repetitive tasks and free up more complex roles for humans to tackle.

Warehouse Conveyance Strategy & Trends

Real-time monitoring, predictive maintenance, and intelligent diagnostics are becoming standard.

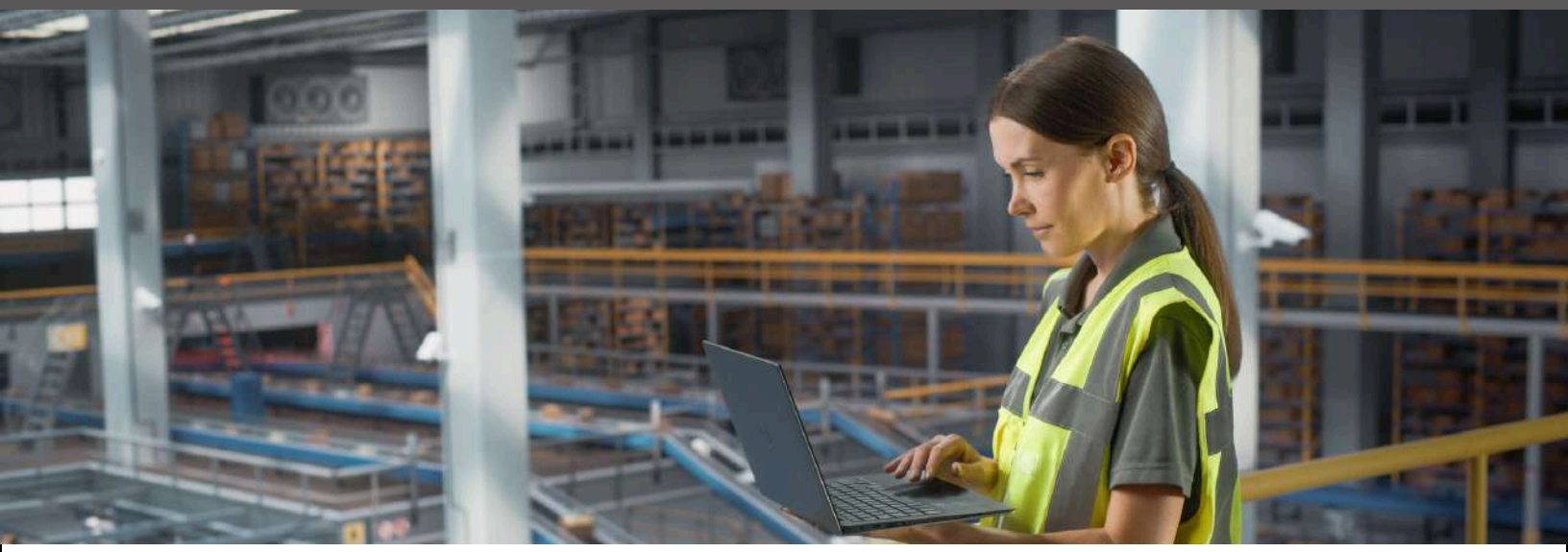
Smart Systems

Over the past decade, homeowners have installed a number of emerging technologies throughout their households (i.e., learning thermostats, smart speakers, etc.) to make their properties run smarter and more efficiently.

These trends are translating to the warehouse environment, albeit on a bit of a grander scale. The integration between the Internet of Things (IoT) and conveyors is taking shape throughout warehouses, helping them become smarter with the inclusion of sensors to facilitate real-time monitoring, predictive maintenance and better overall performance.

Other trends include AI, machine learning, and connected systems. These technologies can provide operators with real-time data to help them run their businesses more effectively and efficiently. Such systems also generate a significant amount of data, which leadership can analyze to further identify improvements and optimize performance.

Warehouse Conveyance Strategy & Trends



Why Conveyors and Sorters Matter More Than Ever

As part of this transformation, conveyors and sortation systems play a foundational role in enabling smart, automated workflows.

Conveyors form the backbone of material flow in most distribution centers and warehouses, facilitating the seamless and continuous movement of goods across various zones. Today's advanced conveyor systems are no longer static, equipped with embedded controls, variable-speed drives, and modular designs; they offer flexibility, scalability, and intelligent diagnostics.

Sortation systems, which work in tandem with conveyors, are designed to direct items to specific destinations based on predefined parameters such as size, weight, barcode, or shipping method. From sliding shoe sorters to cross-belt and tilt-tray solutions, modern sortation technologies are engineered to handle high volumes with precision and speed. Zero-touch sortation solutions see orders picked, sorted and packed with minimal operator input.

When integrated with Dainamics Warehouse Execution System (WES) and warehouse management systems (WMS), they contribute to faster order fulfillment, reduced error rates, and enhanced throughput. Returns handling can be improved and processing times cut. Storage space can be optimized.

These sortation systems are evolving into intelligent conveyance solutions, capable of learning from operational data and adjusting in real-time to changes in order volume, product mix, or system bottlenecks.

Whether used in e-commerce, retail, or industrial applications, smart conveyors and sorters are transforming warehouse operations by increasing efficiency, reducing labor dependencies, and improving overall agility.

Warehouse Conveyance Strategy & Trends

Flexibility is Key

With property rates on the rise, it can be challenging for warehouse operators to expand conventionally. Instead, there's a focus on "building up" in the warehouse and maximizing vertical storage to ensure that every space — from floor to ceiling — is maximized.

Modular conveyor systems help facilitate easy configuration of warehouse layouts to help them adapt to changes in demand and any other trends. Additionally, more modular conveyors are also unique in the range of product types and product sizes that they can handle, which can help with flexibility.

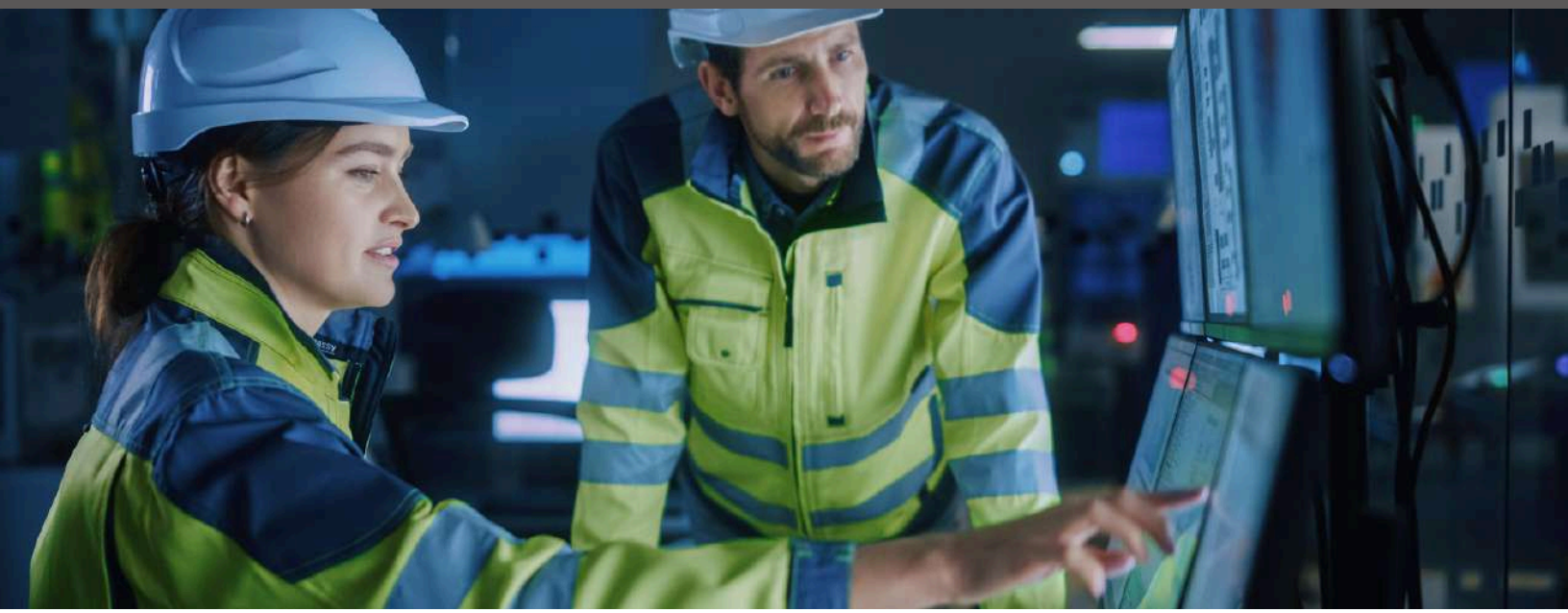
In addition to modular conveyors, advanced storage solutions such as rack systems, AS/RS solutions, and shuttle car systems (STVs) can help maximize storage space and enable warehouses to operate efficiently within their existing footprints. While STVs are not as flexible as AMR systems, in loop configurations—particularly larger ones—customers often have the option to add additional STVs to increase throughput. This provides a degree of scalability and flexibility, though it is important to note that this benefit applies only to loop systems, not single or dual shuttle configurations.

Sustainability

It's estimated that more than 40 percent of consumers factor sustainability into their purchasing decisions. Given this, it's important for brands to have a sustainability plan in place and for any behind-the-scenes operations to make an effort to work more sustainably. This translates to the warehouse environment.

From motor-driven roller conveyors that run on demand and when needed to systems with more sustainable materials and design, there are several ways to reduce the carbon footprint and maximize efficiency in the warehouse. While not directly tied to the future of conveyance, the warehouse could also implement clean energy solutions like solar panels to fuel certain operations.

Did you know?
Statistics Conveyors



DID YOU KNOW?

- The global conveyor system market is projected to grow $12.3 billion by 2030, at a CAGR of 4.3%, driven by increased demand in warehousing, manufacturing, and e-commerce.

Source: Fortune Business Insights

- Facilities that implement automated conveyor systems typically experience 30–50% improvement in labor productivity by reducing manual transportation tasks.

Source: MHI Annual Industry Report

- Variable frequency drives (VFDs) and energy-efficient motors used in modern conveyor systems can cut energy consumption by 20–30% compared to traditional fixed-speed conveyors.

Source: U.S. Department of Energy

Testimonial by David Campbell, Senior Vice President of Direct Sales and Marketing, Daifuku Intralogistics America

“The future of warehouse operations will not be defined by generic solutions, but by intelligent, scalable systems designed to meet the unique demands of a rapidly evolving supply chain. Purpose-built automation isn’t just a solution—it’s a strategic advantage."

David Campbell, SVP Direct Sales and Marketing.

Data & Key Statistics

The dynamic landscape of warehousing and distribution demands innovative solutions to enhance efficiency, optimize space, and reduce operational costs.

Topic	Statistics
Labor Shortage Impact	75% of warehouse operations report difficulty sourcing enough labor.
Current Labor Gap	35,000+ unfilled positions in the U.S. warehouse industry.
Projected Growth	1.7 million warehouse and transportation job openings in 2024, rising to 2.1 million by 2030.
AGV Adoption	Daifuku has sold over 14,000 AGVs globally since 1961.
Sustainability Influence	40%+ of consumers consider sustainability when making purchasing decisions.
Load Handling Capacity	AGVs can handle loads up to 22,000 pounds.

About Daifuku Intralogistics America

Daifuku Intralogistics America Corporation (ILUS), a subsidiary of Daifuku Co., Ltd., headquartered in Japan, specializes in designing, manufacturing, and installing cutting-edge technology that enhances the efficiency and safety of modern manufacturing and material handling operations.

As part of the Daifuku Group, a global leader in automated solutions, ILUS is dedicated to delivering exceptional systems tailored to the North American market, helping customers elevate their operations to new heights.

Explore how our Automated Storage and Retrieval Systems (AS/RS) can optimize your processes and drive greater performance. Contact us today to learn more about how we can support your goals and transform your operations.

Contact Daifuku Today

Are your operations prepared for the next decade? Do you have a conveyance strategy that's part of your operational plan?

If you don't, now is the time to start developing one so that you stay competitive. As world leaders in designing and manufacturing automated solutions, Daifuku is here to help.

With a range of industry-leading intralogistics solutions from AS/RSs to vehicle systems to advanced conveyors and sorters to picking systems, rack systems and IT systems, we're here to help you meet your goals as a valued partner.

Contact Daifuku for more information and to speak with an expert about our range of offerings and how they can help you stay ahead of the curve in your supply chain strategy.

Conclusion

As the warehousing and logistics industry continues to evolve, forward-thinking conveyance strategies will be essential for staying competitive, resilient, and efficient in the decade ahead. From navigating persistent labor shortages to embracing smart automation, flexibility, and sustainability, operators must prepare to make informed, strategic investments that address both current challenges and future demands.

The convergence of advanced technologies like AGVs, AS/RS, smart conveyors, and data-driven systems presents a powerful opportunity to transform warehouse operations. By aligning these solutions with long-term business goals, companies can unlock new levels of productivity, agility, and scalability—ensuring they are well-positioned to meet the expectations of tomorrow's supply chain.

At Daifuku Intralogistics America, we understand that no two operations are the same. As a global leader in intralogistics solutions, we are committed to being more than just a technology provider—we are your strategic partner in delivering what's next.

Now is the time to evaluate your conveyance strategy.
Let us help you build a future-ready system that works smarter, faster, and more sustainably.

REFERENCES

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