

# Your Guide to Mastering First and Middle-Mile Logistics

Boosting first and middle-mile efficiency for hassle-free shipping.





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## Start strong with enhanced first-mile and middle-mile delivery

Across all industries, from [healthcare](#) to [industrial](#) to [retail](#), businesses often focus on [last-mile delivery](#) instead of first or middle-mile delivery. While the last mile is important—it's the portion of the logistics process that puts your product in your customers' hands—it's not the only stage that you should focus on.

The biggest names in retail are increasingly optimizing their first-mile and middle-mile logistics with innovative and

cost-effective solutions. Companies are using [automated warehouses](#) and distribution centres, inventory-picking technology and decentralized warehouses to better understand every mile of the logistics journey. These changes were catalyzed by the pandemic, supply chain shortages and surges and falls in consumer demand. No matter the size of your business, by optimizing first and middle-mile logistics, your supply chain and logistics will be better positioned to adapt to market demand changes.



## What are first-mile logistics?

First-mile logistics refers to the processes that make up first-mile delivery. The process begins with sourcing. Before any goods are transported, manufacturers would greatly benefit from ensuring the efficiency of their first-mile procurement. Choosing international or domestic suppliers who provide high-quality raw materials and components impacts every stage of the logistics process.

When a customer orders a product, it's transferred from the manufacturer's warehouse to the courier, making first-mile delivery the first step of [order fulfilment](#). Once the materials are manufactured, visibility and tracking are essential to ensure that goods are delivered to customers on time.

## What is first-mile delivery?

First-mile delivery refers to transporting goods from a manufacturer's factory to a warehouse in order to be picked up by a carrier or logistics partner. Working closely with a fast and reliable first-mile carrier ensures success at this stage.

First-mile delivery also impacts [last-mile delivery](#). Businesses should regularly assess their first-mile delivery to speed up shipping and truck loading times.

Another way to optimize this stage is by examining your first-mile sorting centre processes. Ideally, companies should practice first-mile tracking. Visibility into the first mile of the supply chain speeds up order fulfilment and helps manufacturers understand their inventory needs so they can seamlessly move into the middle-mile stage.

## What are middle-mile logistics?

Middle-mile logistics refers to the operations that make up the larger process of middle-mile delivery. This stage occurs when goods are delivered from a warehouse or distribution centre to a fulfilment centre. The [right fulfilment partner](#) will be able to support you throughout the middle-mile logistics process.

This is also known as local distribution. Middle-mile logistics can give you a variety of advantages over competitors that use last-mile delivery (directly to the consumer instead).

Both first and middle-mile logistics set the groundwork for your business' success from manufacturing to logistics fulfilment because they improve:

- Supply chain efficiency and flexibility
- Delivery times
- Shipping/transportation costs
- Transparency across the channel
- Last-mile delivery

## What is middle-mile delivery?

Middle-mile delivery is the stage where goods are shipped from a warehouse to a fulfilment centre. This stage can entail more complex shipping processes such as [international](#) or [cross-border](#) transportation and customs clearance. It's important for businesses to partner with reliable delivery providers to avoid middle-mile bottlenecks, which have a significant negative impact on the overall delivery process.







## Understanding the logistics journey

To understand each logistics mile, let's think of a company that sells shoes. First-mile delivery is the journey of the raw materials (leather, canvas, rubber, etc.) as they're turned into consumer-ready shoes. This first mile includes everything up until the point where the shoes arrive at a warehouse or distribution centre. These locations are responsible for product rollout (with retailers or directly to the consumer).

On the other hand, if the shoe company was an e-commerce business, then the first mile would be slightly different. The e-commerce first mile starts when the retailer receives an order and transfers the product from their warehouse to a courier's fulfilment centre.

First-mile delivery key players and considerations include:

### 1 Suppliers and manufacturers:

- Examine the manufacturing process. How long does it take to transform leather, canvas and rubber into shoes? Does the process ever cause supply chain issues?
- Determine the efficiency of your suppliers. Raw materials can come from anywhere in the world, which can also have a huge impact on a business' logistics costs and product quality.

### 2 Warehouses:

- Businesses can use historical sales data and predictive market reports to forecast their upcoming inventory. By accurately tracking their inventory, they can more readily meet customer demand and plan out their supply chain strategy ahead of time. Additionally, an e-commerce business can easily satisfy customer orders if their inventory is kept in stock with products ready for delivery.

- Sorting operations are another incredibly important part of the first-mile process. Once goods arrive at the warehouse, they need to be sorted in preparation for the next stage of the journey. Properly sorted goods lead to fewer inaccurate deliveries down the line, while also increasing efficiency and speed when products need to be packaged and shipped.
  - It's important to consider how demand may change throughout the year. For example, winter boots will be more popular leading into the colder months while demand for the latest sneakers will increase during the back-to-school season or over the winter holidays.
  - Understanding demand helps businesses avoid fees for unused or extra warehouse space.
- ### 3 Logistics providers:
- The logistics provider transports goods from the production facility or supplier warehouse to the warehouse or distribution centre.
  - Transportation type (rail, air, land, etc.) can be confusing and sometimes costly when the process isn't streamlined. Combining multiple types of transportation with a [shipping consolidation solution](#) can help [improve efficiency and reduce delivery times](#).
  - Customers may experience delays or consistently fast delivery depending on your transportation solution.
  - Delivery approaches may change depending on seasonal demand.



Let's move on to the middle-mile delivery with the same shoe company example. This is where the shoes are transferred from a warehouse to a fulfilment centre. At this stage, products get packed into orders and sent out to other distribution hubs or retail locations.

Middle-mile delivery key players and considerations:

### 1 Fulfilment centre:

- [The right fulfilment partner](#) is reliable, completes orders accurately, supports your business as it grows and offers help with reverse logistics.
- Use one centralized fulfilment centre or multiple centres with strategic locations.
- Understand how products will perform so that order fulfilment centres have adequate inventory to keep customers satisfied and retailers well-stocked.

### 2 Logistics providers

- Partner with a provider that [offers consistently fast delivery](#).
- They should offer various types of transportation and options to combine them for improved efficiency.

### 3 Storage facilities

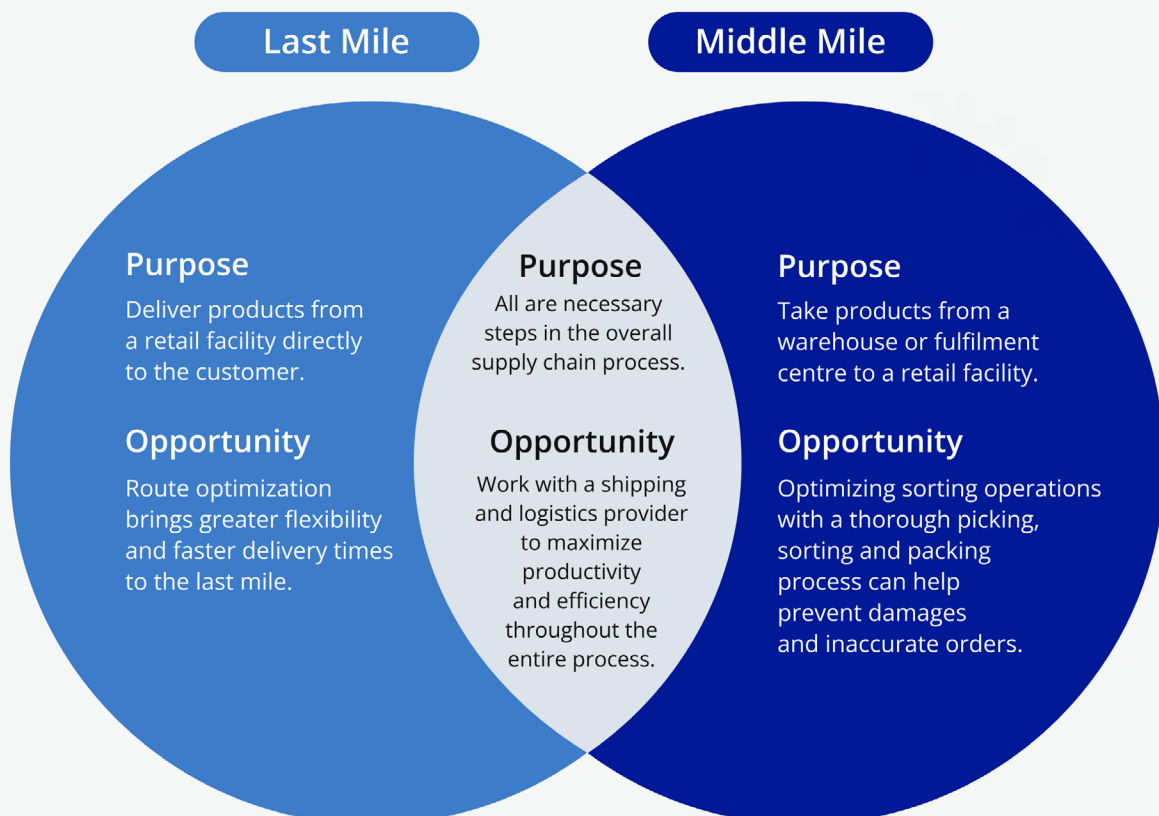
- The location of a business' storage facilities is important so products aren't shipped via inefficient routes.
- The location should be in a place that's central to the business' retailers or consumers.
- Consider supply and demand balance to avoid wasting valuable storage space on products that aren't moving quickly.

The final part of the supply chain journey is the last mile. Like the earlier parts of the process, the last mile is equally as important as the rest. Discover how you can [perfect last-mile logistics](#).



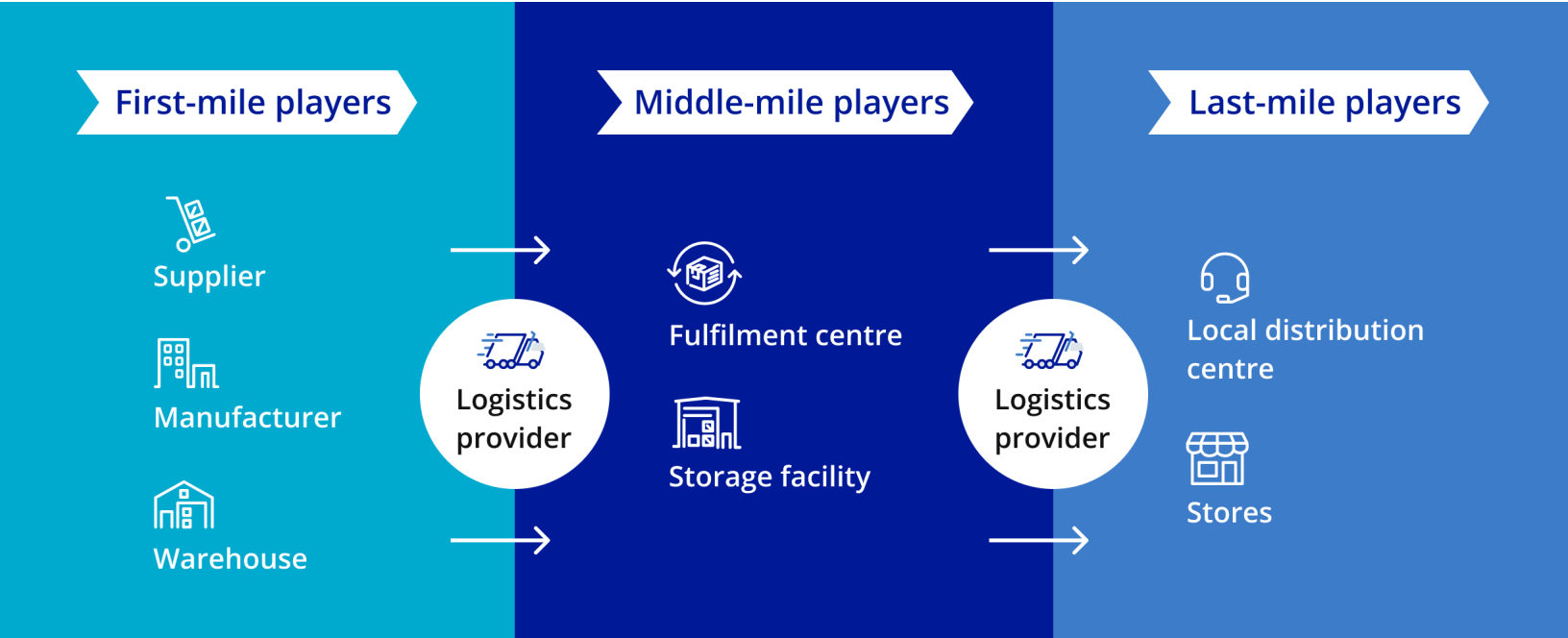
Learn more with our e-commerce supply chain logistics strategies checklist.

[Learn more](#)





# First-mile vs. middle-mile vs. last-mile delivery: What's the difference?





# First-mile challenges and optimization solutions

## First-mile logistics challenges

- ✓ Inventory forecasting
- ✓ Supply chain optimization
- ✓ Visibility
- ✓ Tracking
- ✓ Route efficiency
- ✓ Packaging
- ✓ Import/export delays



Visibility, tracking, packaging, import/export delays and route efficiency and optimizations top the list of first-mile challenges for many companies. By re-examining and optimizing these areas for your business, you can save time, money and effort. Most importantly, you'll find it easier to serve your customers well.



### Inventory forecasting

Inventory forecasting helps you manage shipments throughout the entire supply chain. And proper inventory forecasting can even support your business margins, helping to build your brand reputation and improve customer satisfaction levels. It involves predicting the inventory your business needs in order to fulfil future consumer orders within a specific time period. These estimates are usually based on historical sales data, scheduled promotions and external circumstances that could affect sales.

When you can accurately predict manufacturing times, warehouse receiving timelines and the exact stock of each product, you can gain a more thorough understanding of the production cycle and work seamlessly with your shipping provider to accurately fulfil customer orders.

This way, you can make informed decisions about your production schedules and shipments, while also improving the customer experience.



### Supply chain optimization opportunities

An inefficient first mile can have a trickle-down effect on your entire supply chain, slowing down the last mile of delivery. A delay in production or inaccurate deliveries can disrupt the rest of the supply chain, especially if you have orders that depend on the next shipment.

Thus, when it comes to optimizing your supply chain, you'll want to begin by optimizing first-mile delivery. One of the most time-consuming aspects of first-mile logistics is manual processing, which may also be prone to human error. To help improve this process, consider automated solutions that allow you to collect data and key distribution metrics.

Through partnering with a shipping provider that uses a warehouse management system, you'll be able to track metrics like time to ship, time to stock and transit damage rate. It will also become easier to pinpoint first-mile delivery inefficiencies and start implementing solutions to solve them.

The right shipping partner will take care of data monitoring and reporting for you, while also offering solutions that can further streamline your operations.



## Visibility, tracking and digitization

What does real-time visibility mean? This type of visibility focuses on exactly where your goods are at any given time. Since the information is live, you'll have more insight into challenges like traffic-heavy routes and anything that slows down your logistics process or incurs unnecessary costs.

Today, real-time visibility is a necessity. Many companies use GPS or electronic logging device (ELD) tracking on their vehicles paired with real-time [supply chain visibility](#) software. The technology helps them keep track of valuable goods and make shipping improvements.



## Focus on first-mile experience

In e-commerce especially, it's easy to put all of your eggs in the last-mile basket. However, it's important to focus on the first mile since this is where manufacturing happens. Strengthening this area of your [logistics can also strengthen your supply chain](#) since this is where raw material sourcing begins. If you use an international supplier and often experience delays, for example, this can be costly and slow down the rest of your logistics.

This is also an opportunity to audit and map out your supply chain process. Here are some questions to think about to increase efficiency:

- 1 Where do your raw materials come from and how long do they take to reach your production facility before the manufacturing process starts?
- 2 Have you diversified your supplier and vendor options in case of unexpected changes in your supply chain or consumer demand?
- 3 How are you transporting your goods?
- 4 Can optimizations be made with your delivery and logistics?



## Import and export efficiency

Importing and exporting goods helps your business grow, but paperwork and process errors can result in costly delays or even having your products rejected by customs altogether. Things get more complicated if you're [shipping dangerous goods](#) like devices containing [lithium batteries](#), for example.

When importing and exporting, most delays happen because of improper paperwork and incomplete processes. This includes insufficient permits, unclear product origins, shipping prohibited items, not having a business number and not paying the required taxes and duties.

Partner with an experienced logistics provider to avoid these errors when [importing](#) or [exporting](#). Here are some offerings to look for in a provider:

- [Cross-border shipping experience](#)
- Reasonable shipping costs
- [Special Handling Service \(SHS\)](#) and [dangerous goods services](#)
- Ability to handle urgent shipment needs with [Mission Critical](#) services
- An expansive shipping network
- International freight forwarding
- Assistance with [customs forms and brokerage](#)

If you're shipping to the U.S., you can easily find the necessary documents using the [Purolator Trade Assistant](#). This service will walk you through the process and help you understand which customs documentation and government agency-specific forms your business needs. Additionally, our [Digital Commercial Invoice](#) allows you to transmit your trade records electronically, accelerating customs clearance and saving time. Use both of these tools to make [shipping to the U.S. easier and faster](#).







## Route efficiency

Innovative solutions like GPS tracking and real-time supply chain visibility software come in handy when you're looking at your current routes. Perhaps your company has multiple warehouses, distribution centres and storage facilities. Or maybe you use a more centralized approach. Either way, it's essential to use efficient routes. With real-time tracking and visibility, you can see exactly where your products are in their journey at any time, giving you better insights into what's slowing down transportation. Moreover, it makes reverse logistics easier, as you'll also be able to [track order returns](#). Here are some questions to consider when optimizing your routes:

- Are you using air, rail, land, sea or a combination solution? How often do you encounter shipping delays?
- How do shipping delays impact your business? For example, do you end up paying extra for storage when products arrive at a warehouse or distribution centre at the wrong time?
- How many warehouses, distribution centres and fulfilment centres do you work with? Are they in locations that make it hard to get goods to retailers or customers?



## Proper labelling and packaging

Human error through manual labelling is the most common cause of labelling errors. Despite production automation, workers may select the wrong label or enter the wrong information. These errors can be costly and can lead to product recalls, [which cost manufacturers](#) in the food and beverage industry (for example) billions of dollars (USD). These costs are a combination of logistics fees, recall penalties and wasted product.

Improper packaging also drives up logistics costs. Make sure that the [packaging your shipments](#) uses fits the product without being significantly bigger than the product. The larger the package, the higher the delivery fees. You'll also want to reduce the risk of damaging your products by filling empty spaces with packing peanuts or similar filler material, so the items stay put in transit. This practice [is also eco-friendly](#), as it reduces the amount of packaging needed while also keeping it sturdy and intact.



## Packaging products sustainably

What are the best packaging materials for shipping? And how can you make your packaging more sustainable? [Customers are demanding more sustainable packaging](#) that minimizes the use of non-recyclable materials. These are excellent starting points for auditing and streamlining your packaging process.

Cardboard boxes are tried and true for businesses of all sizes. They're affordable, durable and highly sustainable. Other eco-friendly materials that will also protect your products during shipping include:

- 1 Alternative packing peanuts
- 2 Biodegradable plastic
- 3 Recyclable materials like cardboard
- 4 Paper-based air cushion film
- 5 Eco-friendly padded mailers
- 6 Any materials manufactured with minimal energy consumption

In today's market, sustainability is key. It can help your business save money, get closer to any net-zero commitments and win the favour of consumers.

## Bolster sustainability initiatives with a circular supply chain

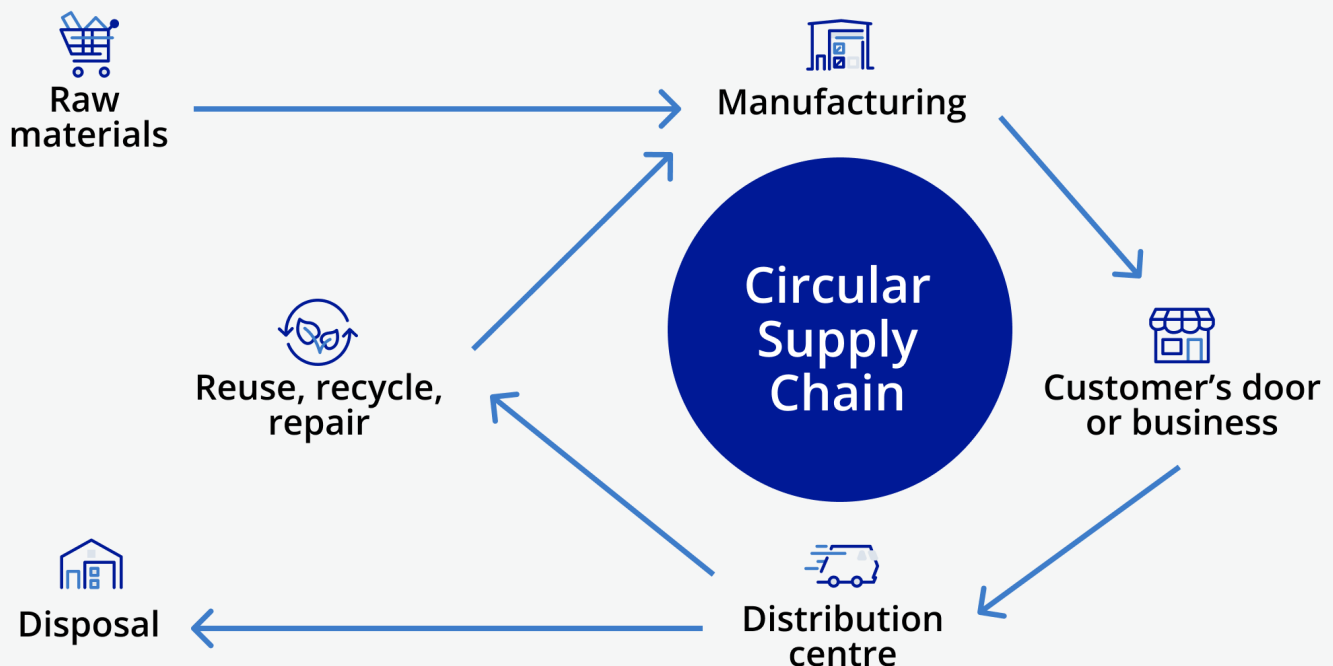
A [circular supply chain](#) aims at making the overall logistics process more sustainable. It involves reusing, repairing, refurbishing and recycling returned products. There are three main circular supply chain models:

- **Circular supplies model**—This model supplies fully renewable, recyclable or biodegradable resource inputs to support circular production.
- **Product-as-a-service (PaaS) model**—In this model, products are used by one or many customers through a lease or pay-per-use agreement.
- **Resource recovery model**—This model is based on converting waste into secondary raw materials. This method presents the opportunity for companies to recover costs of resources at a value that is equal to, or even above the initial investment.



Learn three best practices to make your packaging more eco-friendly.

[Learn more](#)





# Middle-mile challenges and optimization solutions

## Middle-mile logistics challenges

- ✓ Warehouse operations
- ✓ Inventory management
- ✓ Loading and unloading
- ✓ Shipping and receiving



The middle mile plays a vital role, linking the first and [last miles of the supply chain](#). Its purpose is to successfully receive products from the first mile and prepare them for delivery to the customer in the last mile. Warehouse operations, inventory management and loading and unloading operations are essential to middle-mile delivery. By taking a fresh look at your approach to these areas, you can increase efficiency and eliminate unnecessary delays, processes and costs.



### Streamlining warehouse operations

Examining every step of your process is well worth it given the time and money your business may save or put towards other important tasks. Start by finding out how long each step takes. For example, how long does it take to load a single truck with pallets? How easy is it to find specific products using your current barcode system? Is there a lack of visibility into your warehouse operations? Inefficiencies in these areas can be solved with the right equipment for moving product around your warehouse and a smart barcode system. The key is keeping it fast and simple.

Maximizing warehouse space is also critical. It might entail reorganizing the space with taller and more efficient shelving or rearranging storage space to ensure that warehouse vehicles can travel with ease and pick products efficiently. You may even discover that you need to downsize your warehouse space. Streamlining warehouse operations can also improve customer experience. After all, an efficient warehouse will be able to ship products faster and more accurately, getting your products into the right hands at the right time.



### Enhancing inventory management

Inventory management impacts warehouse operations and supply chain. Without a structured inventory management system, your business might pay for unnecessary warehouse space. Conduct an audit to identify all the types of inventory you currently have. This can include safety stock, repair supplies, unfinished products, finished products and more.

Inventory management can be optimized with [technology-based logistic solutions](#) including:

- 1 Inventory management software
- 2 POS systems
- 3 Mobile scanners

These technological solutions can create many new opportunities for middle-mile logistics optimization. They can improve accuracy with digital databases that capture customer data, including addresses, purchased products and delivery dates. With this information, your [last-mile operations](#) will have all it needs to function quickly and efficiently. Ultimately, by tracking sales data and staying on top of your current inventory as well as new stock you receive, your supply chain will be more efficient and flexible.



## Optimizing loading and unloading operations

Safety and efficiency are the primary elements to focus on when optimizing loading and unloading operations. With that in mind, it's important to think about people as well as processes. When employees are properly trained and in a safe environment, they'll also be more productive. You can help prevent injuries and boost loading and unloading efficiency with these best practices:

- Equip loading and unloading areas with proper traffic lights and dock lights so vehicles can move smoothly and safely.
- Advanced technology solutions ensure your loading and unloading operations are working at maximum efficiency. For example, a loading dock management system integrated with cameras and sensors can allow managers to keep track of and supervise multiple docks at the same time without having to walk back and forth.
- Use barrier gates and dock levellers to eliminate falling hazards and make loading and unloading easier (especially with heavier cargo). Gates and levellers can also be connected to your master control panel.
- Create a dock layout that helps prevent congestion, especially during high-volume periods.
- Weather-proof docks to prevent damaging goods and to keep workers dry and safe.
- Use restraints (connected to your master control panel) to keep trucks in place when loading and unloading products.
- For extra safety and convenience, consider using telescopic belt conveyors that reach inside a vehicle to unload items in a way that's safe and efficient.
- Ensure that all dock equipment receives regular maintenance. Forklift failure can cause serious delays, but can be completely avoided with regularly scheduled maintenance.
- Train employees on how to safely load and unload cargo and other safety and communication practices. This includes using traffic lights, dock lights and ensuring employees lift with their legs and keep items close to their bodies.
- Improved lighting, airflow and weather-sealed dock doors can make the area more comfortable to work in. When employees are more comfortable, they'll likely be more productive and energetic.
- Inefficient space can cause massive bottlenecks. Plan out your loading and unloading schedule to ensure there's always enough space for trucks to drive in and out, while also keeping workers informed of when vehicles will be arriving.





# Refining the shipping and receiving processes

Purolator's National Hub is an innovative, sustainable, technology-based way to improve your routes and middle-mile delivery. Here's how the Toronto-based hub supports growing businesses:

- Optimizes sorting operations by processing over 70,000 parcels per hour.
- Is strategically located near four major highways.
- Uses digital modelling for route efficiency and middle-mile optimization.

- Uses technology-based equipment to sort parcels by weight and size.
- Uses Siemens Remote Under Belt Unloading System (RUBUS). This robotic unloader has up to 10 times more throughput than manual unloading processes.

In terms of sustainability, Purolator's National Hub is designed to meet the Toronto Green Standard. It uses a standardized waste recycling program, battery-powered forklifts and has a non-potable grey water system for its toilets and irrigation system (which waters the 1,500 trees planted around the hub).

Purolator's National Hub sorting facility,  
Toronto, Ontario





# Partner with a leader in logistics

To truly master first and middle-mile logistics, partner with a trusted logistics provider helps you to streamline the shipping process. This partnership will help your business with everything from cross-border logistics to sustainable packaging to SHS. For maximum efficiency and cost-effectiveness, your provider should offer solutions that suit your business needs, such as:



## Technology capabilities

The right technology solutions offer your customers more transparency and control over their deliveries. They can [easily track their packages and indicate delivery preferences](#) using SMS. In the event that they miss a delivery, we'll follow up with detailed instructions to help your customers easily retrieve packages. If they need to [return an item](#), they can ship it back, label free, by printing out a shipping label with a QR code.



## Sustainable resources and solutions

Environmentally sustainable practices are a necessity across markets from retail to industrial spaces. That's why we offer [innovative sustainable delivery options](#) using low-speed electric vehicles and electric cargo bikes. We have a wealth of resources, from [sustainability reports](#) to emissions tracking to how we can help you reduce your environmental impact.

Purolator's National Hub also employs a range of sustainable practices to keep the facility running. Its package processing capabilities far exceed those of other similar facilities.



## Expedited shipping solutions

Today's consumers expect fast shipping for online orders and expedited options for deliveries to their businesses. [Purolator Mission Critical](#) provides fast and flexible shipping to the U.S., Canada and international destinations. This service is backed by best-in-class tracking visibility and 24-hour access to your own Mission Critical specialist. Most importantly, Purolator will ensure that your shipment is on the most efficient route to its destination. That means you can deliver on your promises to customers.



## Handling urgent and sensitive shipments

The pandemic stressed the importance of urgent shipping within the healthcare industry. [Purolator's Healthcare Digital Indicator](#) digitizes every Express healthcare shipment. We prioritize healthcare shipments from their induction right up to the point of delivery with smart technology-based solutions. This provides increased visibility throughout the process.



## Cross-border logistics

[Importing and exporting goods](#) is a lot easier with the support of a single-solution logistics provider. We can seamlessly manage your courier, freight, inbound international freight, air cargo and global supply chain needs. Whether you need to send goods from the U.S., the UK, Europe, India or China to Canada, we have the cross-border experience and [digital tools](#) that will help make your customs clearance process a breeze. In Canada and the U.S, we can also provide sweep the dock services, which help with supply chain optimization for your Canadian destinations. These services also make it easier to handle parcel, [truckload \(TL\) and less-than-truckload \(LTL\) shipping by consolidating](#) shipments.



## Hassle-free returns and reverse logistics

We help businesses create [flexible, seamless returns processes](#) that strengthen and complement the customer experience. This is especially important for retail businesses.

By sorting, repackaging or refurbishing returns as needed, [we help businesses manage the complexity of returns](#). We also help streamline their processes and make them more sustainable. Additionally, we support e-commerce integration with a variety of shipping platforms. With this type of support, customers and businesses can feel confident about ordering and fulfilling international online orders too.



# Staying competitive with logistics optimization

Purolator is here to help your business grow. We understand that optimizing first and middle-mile logistics is essential to last-mile delivery success for all types of businesses, especially in the e-commerce world. When an e-commerce business focuses on supply chain and logistics efficiency, for example, it becomes much easier to keep customers satisfied and reduce costs.







## Deliver customer satisfaction at every mile

When you partner with Purolator, you'll gain peace of mind. As your logistics partner, we'll have your business's supply chain covered from end to end.

Partner with Purolator

 **Purolator**  
Promises delivered®

[purolator.com](https://purolator.com)