



FUTURE-PROOFING PERISHABLES

Rethinking Resilience as a Competitive Advantage
in Refrigerated Cargo Transportation

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Setting the course for Reefer Transportation

The Big Picture

Reefer cargo has become essential to global trade. In 2024, approximately 139 million tonnes of temperature-controlled goods moved worldwide. A number that is expected to rise by 8% to 9% annually through 2030, making reefer one of the fastest-growing segments in container shipping.


Asia-Pacific now accounts for over 60% of global reefer volumes, driven by growing demand for fruits, meats, seafood, and pharmaceuticals. While fresh produce still dominates in volume, pharmaceutical shipments are expanding rapidly due to stricter handling requirements and the global push for healthcare access.


Yet as reefer volumes increase, expectations are rising. Cold chain performance is no longer just an operational concern, it's becoming a source of competitive advantage. For many shippers, getting it right isn't optional. It's business-critical.


Challenges Worth Solving

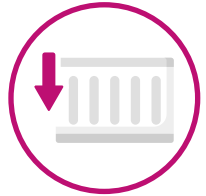
The rising demand brings an increased pressure to deliver. Today's reefer shippers are facing a mix of systemic and seasonal challenges that make consistency harder to maintain.

These challenges are not new, but they're becoming increasingly urgent as the demands on cold chain logistics grow in speed, complexity, and expectation.

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Temperature precision
Even a small fluctuation can damage pharmaceuticals, seafood, and fresh produce. Carriers have no margin for error.
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Tight transit windows
Delays from port congestion, equipment constraints, or even weather reduces shelf life and can lead to rejected cargo at destination.
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Complex documentation
Regulations vary widely across borders. A single error or missed document can cause customs delays and non-compliance penalties.
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Space and equipment availability
During peak seasons, demand for reefer containers and plugs often exceeds supply, leading to costly delays and rerouting.

Purpose-Built Solutions

At Ocean Network Express (ONE), we've developed our cold chain solutions around the realities of perishable shipping. Our reefer fleet, now over 330,000 TEU, is one of the largest and youngest in the world. It's equipped with advanced temperature control, cold treatment capabilities, and controlled atmosphere systems that help extend shelf life and protect product quality.

Customers can use our real-time monitoring platform Container+ to track temperature, humidity, ventilation, and containers across every move. Every reefer is inspected pre-trip and supported by a team of reefer specialists focused on performance and reliability.

Our Commitment

Since 2020, ONE has added nearly 60,000 new reefers. We lead the market in active controlled atmosphere containers and continue to invest in visibility tools, prevention-focused processes, and around-the-clock technical support. Our containers are designed for high thermal efficiency and minimal heat loss, helping maintain cargo integrity on long transits.

As the reefer market grows, we remain focused on what matters most. Helping our customers ship smarter, reduce risk, and protect every shipment from origin to arrival.

Global Reefer Trends

With global reefer volumes expected to approach 150 million tonnes by 2025, the growth of this segment is outpacing the overall container market. Growth is driven by a rising demand for year-round access to perishable goods, stricter quality standards, and an expansion of the pharmaceutical trade.

At the same time, reefer cargo is no longer limited to traditional routes or commodities. Exporters are moving up the value chain, with more complex commodities requiring specific temperatures, increasing the stakes across every stage of the supply chain.

“Reefer trade continues to be a strategic growth driver for the global shipping industry. As consumer demand shifts and supply chains evolve, our focus is on strengthening network reliability, investing in our capabilities, and supporting key perishable trade flows with greater consistency.”

**Takeshi Uechi, Vice President,
Strategic Yield Management, Ocean Network Express**

Riding the Cold Chain Wave

A large factor behind this reefer growth is consumption. Diets are shifting to include more fresh produce, protein, and ready-to-eat meals, particularly in Asia. At the same time, pharmaceuticals are moving through the supply chain at unprecedented levels. Driven by broader access to medications, the growth of personalised treatments, and a critical need for temperature-controlled vaccine distribution.

Asia-Pacific is leading this wave. In 2024, China's cold chain logistics market was valued at approximately **USD 17 billion** and is projected to reach around USD 51 billion by 2032, growing at a CAGR of 14.8%. Meanwhile, the broader Asia-Pacific cold chain market is expected to grow from USD 168 billion in 2025 to **USD 253 billion by 2030**.

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Shifting Trade Corridors

Alongside the growth, we see a shift in global trade flows. Routes from South America to Asia are driven by exports of avocados, citrus, seafood and poultry. Asia to the Middle East is another growth corridor, supporting the rising demand in the Gulf markets.

However, the most significant change is the rapid growth of the intra-Asia trade. Countries like Japan, Korea, China, and Vietnam are seeing year-round demand for chilled and frozen imports. These short-haul movements of tropical fruits, dairy, frozen protein, and ready-to-eat meals are becoming a larger part of the total trade, with projections that the ASEAN cold chain logistics market will reach **USD 15 billion by 2030**, growing at a CAGR of 8.8% from USD 10 billion in 2025.

These shorter, high-frequency shipments require agile logistics networks, faster turnaround times, and consistent service across smaller ports. Carriers with the right equipment mix and strong regional infrastructure are best positioned to support this shift.

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Global Reefer Trends

Transport Under Strain

Yet as volumes increase, pressure on infrastructure continues to grow. Port congestion, equipment shortages, and vessel delays hurt delivery windows and shipment reliability.

In early 2024, rerouting of vessels around the Cape of Good Hope led to longer transit times between Asia and Europe, a delay that added pressure on equipment availability in Asia-Pacific and required significant repositioning efforts to regain control.

Transshipment delays can cause cargo to miss connections and also result in equipment shortages downstream. Additionally, plug availability must be considered to avoid temperature fluctuations, especially for sensitive pharmaceutical, confectionery, and fresh-cut produce.

For shippers, resilience is now a core requirement. Cold chains need buffers in their transit times, reliable service networks, and partners who can bring solutions when the unexpected happens.

Compliance and Trade Policy

Compliance, trade policies and regulatory issues can directly impact a shipper's routing, costs, and their ability to stay compliant across a global cold chain.

Regulators worldwide are tightening food safety, labelling, and traceability requirements. For shippers of fresh produce, proteins, and pharmaceuticals, missed documentation or temperature excursions can result in cargo rejection at destination and substantial financial loss.

Staying ahead requires close coordination with your shipping partner, and at ONE we work closely with our customers to monitor these global policy shifts. Ensuring customers stay compliant, and their cargo keeps moving no matter what changes at the border.



Challenges in Reefer Logistics

Complex Supply Chains

In cold chain logistics, there's no one-size-fits-all solution. Every shipment demands seamless operations between producers, storage providers, truckers, ports and carriers. Because if one link slips, the whole cold chain is at risk. At ONE, we coordinate with our customers from the field to the final mile, keeping cargo moving under the right conditions, at all times.

No Room for Spoilage

For perishable cargo, temperature control isn't optional. Even a small deviation can lead to spoiled cargo and product loss. Whether it's seafood, fruit, or pharmaceuticals, shipments need to stay within range from origin to destination.

ONE supports this with pre-trip inspections, real-time temperature monitoring via Container+, and equipment designed for high thermal stability. Our goal is simple. Protect the cargo, maintain quality throughout the cold chain, and reduce any risk before it starts.

Customs & Compliance

Perishable cargo faces strict food safety laws, temperature rules, and border inspections that can derail a shipment if anything is off. Small issues like missing paperwork or delays during loading, can cause spoilage and ultimately rejection at destination.

Despite the progress, it remains that nearly a third of refrigerated cargo is loaded at the wrong temperature, often due to poor coordination during stuffing. At ONE, our reefer fleet is backed by strict handling standards and real-time monitoring, giving customers the tools to stay compliant and deliver safe, high-quality cargo every time.

The Lead Time Issue

Perishable cargo runs on tight margins and tighter timelines. But as congestion, vessel changes, and tight berthing windows become the norm, operating with lean inventories and no buffer in your schedule is a risk. One late pickup or missed connection can significantly reduce a cargo's shelf life, spike costs, or lead to cargo rejection on arrival.

That's where ONE steps in. With smarter routing options, proactive scheduling, and real-time container visibility, we help shippers stay agile and keep their cold chain on track, no matter what the network throws at them.



Smarter Reefer Shipping with ONE

Complex Supply Chains

Safely moving temperature-sensitive cargo requires more than a plug. It takes planning, consistency, and access to a global network. At ONE, we support our customers with reliable infrastructure, smart technology, and deep reefer expertise built over decades.

Operating one of the largest and youngest reefer fleets in the world, we have over 330,000 TEU of refrigerated capacity. Our global network spans key trade corridors across Asia, Europe, the Americas, the Middle East, and the fast-growing Asia–Mexico and Intra-Asia trade lanes. Wherever your cargo needs to go, we have the coverage to move it with confidence.

 <p>4th largest reefer fleet</p>	 <p>Average reefer age is 5 years</p>	 <p>60,000 new reefers added since 2020</p>
 <p>Largest operator of active CA containers</p>	 <p>Real-time visibility with Container +</p>	 <p>24/7 expert reefer support</p>

Expertise Where it Counts

To effectively manage the different requirements of our reefer shippers, ONE offers a full suite of container technologies, refrigeration and atmospheric controls.

Key features include:

- Controlled atmosphere systems** to slow ripening and extend shelf life
- Cold treatment protocols (COOLTemp)** to meet quarantine requirements without fumigation
- Humidity control** between 50% and 95% to reduce moisture loss and decay
- Fresh air ventilation automation** to manage CO₂ for respiring cargo
- Ozone-based treatment** for added microbial protection
- Temperature stability from –35°C to +30°C** with minimal deviation
- VPSA-based gas exchange systems** to manage O₂ and CO₂ levels accurately

Our global reefer specialists work closely with customers to plan stowage, adjust ventilation settings, and monitor cargo during transit. Container+ provides real-time visibility into temperature, humidity, ventilation, power status, and location, so that any issues can be flagged and addressed, before any cargo is at risk.

Behind the Strategy

A Conversation with Matty van der Waal, Global Head of Reefer and Special Cargo, Ocean Network Express

Stepping into his new role as Global Head of Reefer and Special Cargo, Matty van der Waal brings a wealth of experience from his previous roles held in Europe and Africa, and a strong ambition to make an impact on a global scale.

The rising demand for quality fruits, vegetables and proteins in Asia is driving significant growth in the reefer trade, “We’re seeing consistent growth, around 3% annually for general commodities, but pharmaceuticals are expanding faster, at roughly 4 to 6%”, says Matty van der Waal. This growth is particularly noticeable in key regions like Asia and Latin America, where exports such as citrus, grapes, and blueberries are seeing significant increases in trade volumes.

When it comes to challenges facing customers, Matty is candid: “Vessel delays and port omissions are top of mind for everyone shipping perishables - as the consequences of these disruptions are severe.” ONE addresses this proactively, providing timely updates on potential delays and offering alternative solutions wherever possible to minimize the impact on our customers’ supply chain.

Technology plays a critical role in delivering quality service. ONE has a clear commitment to continuous improvement and preventive actions to safeguard our customers' cargo. 80% of our reefer fleet will be equipped with Remote Monitoring Systems by the end of the year to give shippers additional visibility into their cargo, and the advancements in Controlled Atmosphere (CA) technology are significantly extending the shelf life of perishable cargo like avocados, ensuring products reach market in optimal condition.

Compliance, particularly GDP certification for pharmaceuticals, remains paramount. “We're constantly documenting preventive actions and ensuring our processes are continuously improving.” says Matty, which connects with his long-term goal of creating proactive, more agile operations to deliver a smoother and more reliable customer experience. “This integration is essential if we're going to outpace market growth and become known not just for volume, but for quality and trust.”

When asked to summarise what sets ONE apart, Matty puts it simply: “There’s no piece of business we can’t handle - just ask us, and we’ll take care of it.”

As ONE continues to strengthen our position in the global reefer and special cargo market, Matty’s leadership brings both strategic vision and hands-on expertise. His focus on clear communication, customer-first thinking, and continuous improvements reflects our aims in this business - to deliver quality, reliability and service excellence.

Backed by our latest investments in technology, compliance, and cross-functional collaboration, ONE is doubling down on what matters most: helping our customers move temperature-sensitive cargo with confidence.

Real-World Lessons in Reefer Logistics

How Leaders are Looking Ahead

In logistics today, disruption is part of the game. But the companies leading the way aren't scrambling to react to these challenges, they're planning for them. Building strategies to move faster, stay flexible, and remain two steps ahead. Looking at their cold chain as not just a cost to manage but a growth engine.

Their focus is on building networks that are flexible, responsive, and built to withstand pressure.

Digitalisation as a Differentiator

In a cold chain where precision is everything, visibility is no longer a luxury. Digital tools are essential for shifting from reactive problem-solving to predictive, data-driven control.

Tools like ONE's Container+ give shippers real-time insights into temperature, humidity, airflow, power status, and live location. But visibility is just the beginning. The real advantage lies in using this data to predict disruptions and cut delays throughout the supply chain. Shippers who incorporate analytics, planning and monitoring systems into their cold chain gain more than efficiency, it's a key competitive edge.

Common strategies include



Diversifying sourcing regions
to avoid over-reliance on any one country or climate zone



Maintaining buffer inventory
of critical perishables to handle port delays or equipment shortages



Establishing regional distribution centres
to stay close to end markets and reduce lead time



Collaborating closely with carriers
to align vessel schedules with volume swings and peak seasons

These aren't just ideas on paper, they're real-world changes to protect shelf life, bring costs under control, and give companies more options when the unexpected hits.

What Success Looks Like

Case Study: Edamame from Indonesia
Origin: East Java
Destination: Japan, South Korea, Europe
Challenge: Preserve texture, colour, and shelf life during long-haul transit
Solution: COOLXTEND CA+ to slow respiration, pre-trip inspections, and live condition monitoring
Result: Cargo arrived in premium condition, allowing exporters to avoid spoilage claims and grow global supply relationships

Case Study: Seafood from Pakistan
Origin: Karachi
Destination: UAE, Saudi Arabia, East Asia
Challenge: Maintain temperature control through a congested export hub
Solution: High-efficiency reefers set to -18°C , coordinated port handling, and Container+ tracking
Result: Shipments met international quality standards, reduced waste, and helped strengthen retail and wholesale buyer relationships



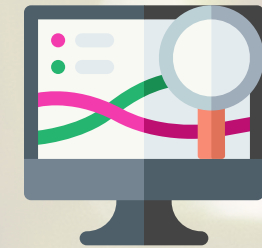
Best-Practices in Motion

Top shippers and carriers are using proven practices to reduce claims and improve reliability. These aren't just checkboxes, they're key levers for performance.



Pre-trip inspections

Proper pre-checks cut reefer claim rates up to 30 percent



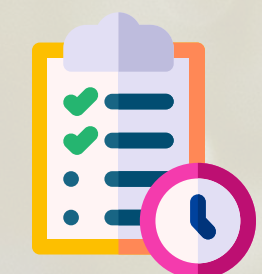
Live monitoring

Real-time data helps shippers react fast if something changes



Expert handlers

Operators who understand how to load and manage reefers



Smarter planning

Better routing and forecasting to cut transit times up to 15%



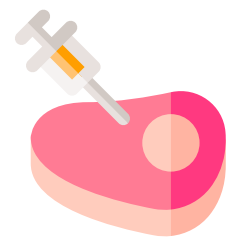
Reefer Ready Future

A Sector on The Move

The cold chain is evolving quickly. New cargo types, stricter requirements, and rising volumes are redefining what effective reefer logistics looks like.

Two emerging commodities are leading this shift:

Lab-grown meats



Lab-grown meat is making its way into the supply chain, and it brings strict temperature control requirements. These products need precise temperature handling at every stage, with zero room for fluctuations. Because of their biological sensitivity, any cold chain failure isn't just expensive, it can make the product unsellable.

Next-generation vaccines



The growth of mRNA and personalised therapies is driving demand for deep-freeze and ultra-cold transport, especially over long distances and into emerging markets. Keeping temperatures stable from lab to clinic is no longer optional, it's mission-critical for efficacy and safety.

The Ecosystem Effect

No single company can manage the cold chain alone. Real success comes from working together across the network. Carriers, ports, shippers, truckers, warehouses and final-mile logistics providers all play a part in keeping cargo moving and protected.

When data flows between partners, visibility improves, and issues can be caught early. Sharing container and terminal data helps reduce delays, cut dwell time, and prevent missed connections.

Collaborative planning is just as important. When shippers and carriers align on demand, they can make sure equipment is in the right place at the right time, especially during harvest peaks or high-demand seasons.

Tomorrow's Partner, Today

The cold chain of the future will demand more from every party. For shippers, that means choosing partners who bring the right mix of scale, systems, and support.

ONE offers:

- A global network across 120 countries and 170 weekly service loops
- Advanced reefer tech, controlled atmosphere and remote monitoring
- A young, efficient reefer fleet built for temperature precision
- Ongoing investment in sustainability and emissions reduction
- Long-term partnerships across ports, depots, and inland providers

As reefer logistics gets more complex, ONE is here to help customers stay one step ahead. We're focused on giving you the right tools, infrastructure, and expert support to handle whatever your cold chain requires, confidently and consistently.



Our Shared Mission

Our Shared Mission

Cold chain logistics is more than containers and schedules. It's about how the world eats, heals, and grows. Behind every refrigerated shipment is something bigger. Fresh food reaching cities, medicine arriving in remote clinics, and livelihoods depending on products arriving in peak condition.

At ONE, we treat every reefer move as mission-critical. Because we know small decisions, like how a container is loaded or when it's plugged in, can make all the difference.

Global food waste remains a challenge, with nearly 14% of food lost between harvest and retail, much of it due to poor handling and temperature control. At the same time, vaccine and biopharma shipments are rising fast, demanding ultra-reliable cold chain infrastructure that can perform in the harshest conditions.

It's more than just logistics.

It's a system that underpins access, quality, and resilience on a global scale. That's why ONE continues to invest in next-generation reefer technology, real-time visibility through tools like Container+, and strong partnerships across ports, terminals, and inland providers. We're proud to support the industries that feed, protect, and improve lives, and we do it with consistency, care, and a commitment to what matters most.

Key Takeaways

The reefer trade is growing, and so are the demands. Staying competitive as a shipper means taking proactive steps to protect cargo, reduce risk, and deliver with confidence.



Plan for scale

Design logistics networks that can flex with shifting demand, growing volumes, and evolving trade patterns.



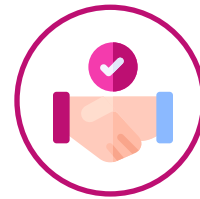
Invest in visibility

Leverage tools like Container+ for real-time monitoring so issues are spotted early, not after arrival.



Stay ahead of compliance

Master the documentation, handling standards, and regional regulations that can make or break a shipment.



Choose the right partners

Work with carriers who offer experience, reliability, and cold chain expertise, because not every shipment can afford a second chance.



Embed sustainability

From energy-efficient reefers to lower-emission routing, sustainable logistics is no longer optional. It's a performance advantage.



Ready to Start?

Whether it's fresh produce, seafood, pharmaceuticals, or the next generation of temperature-sensitive cargo, ONE is here to support your cold chain with the right tools, infrastructure, and expertise to keep things moving smoothly.

Let's build the future of cold logistics, together.



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