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How container shipping lines work

Liner services and rotations, the ship count behind a weekly sailing, mainline, feeder and transshipment, alliances and slot sharing, container ownership and leasing, the empty container imbalance and what happens inside the line from booking to loading

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SHORT ANSWER

A container line runs scheduled, usually weekly, sailings between advertised ports; a weekly service needs at least as many ships as its round voyage lasts in weeks. Large ships call at a few big ports, and cargo reaches the others by feeder via transshipment hubs. Lines share ships through slot charters, vessel sharing agreements (VSAs) and alliances, but each line sets its own price and issues its own bill of lading. In 2021 about half the world's containers belonged to the lines and the rest to leasing companies; because trade is unbalanced, empties make up about a fifth of container handling in the world's ports.

A short note first

This page explains in general terms how liner container shipping works from the inside; it does not name shipping lines or alliances. Figures come from UNCTAD's Review of Maritime Transport 2025 and from academic sources. Sentences marked "in our view" or "in our experience" are opinion.

The liner service: rotation and ports of call

Container shipping runs on the **liner** model. The EU's former block exemption for liner consortia defined it as the regular carriage of goods between set ports, to a published timetable, open to anyone who pays. In other words, the ship sails on the advertised schedule whether or not she is full. In **tramp** shipping, common in bulk, the ship goes wherever the cargo is, under a charter. How the two models differ as markets is covered in Market segments: dry bulk, tanker and container.

A liner service has three basic building blocks:

- **Rotation (port rotation):** the sequence of ports the ships call at. A service is a loop: after the last port the ship returns to the first and starts the sequence again. One full loop is the **round voyage**.
- **Frequency:** how often a ship leaves the same port. On the main trades the standard is one departure a week.

- **Number and size of ships:** how many ships the loop needs to keep a weekly frequency depends on how long the round voyage takes. The calculation is below.

A service usually links two regions, for example the Far East and the Mediterranean, or Northern Europe and North America. When the rotation changes, because a port is dropped or the order of calls is changed, the transit time and the need for transshipment change for the cargo tied to that port. For an exporter, the point is to know the rotation of the service you book: does your cargo go straight to the port of discharge, or does it change ships at a hub on the way?

The container fleet in numbers

These are the main container figures in UNCTAD's Review of Maritime Transport 2025, published in September 2025. For ship numbers and TEU, the report uses April 2025 figures from a commercial data provider.

Indicator	Value	Period
Number of container ships	6,033 (up 7.3% in a year)	April 2025
Total container ship capacity	30.3 million TEU (up 10.1% in a year and 42.9% on April 2019)	April 2025
Container ships' share of the world fleet (dwt)	14.9% (14.0% a year earlier)	1 January 2025
Growth in container ship dwt capacity	9.7%	2024 → 2025
Share of ships delivered (gross tonnage)	41.3% (the largest share)	2024
Share of ships ordered (gross tonnage)	29.4%	2024

Source: UNCTAD, Review of Maritime Transport 2025, chapter 2. The same report projects containerized trade growth of 1.4% in 2025 and an average of 2.3% a year over 2026–2030. How capacity growing faster than demand feeds into freight rates is covered in The supply side: fleet, orderbook, scrapping and speed.

Weekly sailings: how many ships does a service need?

On a weekly service, one ship must leave each port every week. So the loop needs at least as many ships as the round voyage lasts in weeks, rounded up. Academic work on liner network design uses this as a basic rule.

Worked example. If a full loop takes 70 days: 70 ÷ 7 = 10 weeks, so a weekly departure needs 10 ships. If the route gets longer and the loop takes 84 days: 84 ÷ 7 = 12 weeks, so the same weekly frequency needs 12 ships. It works the other way too: when ships slow down (slow steaming), the loop gets longer and ships are added to keep the weekly frequency.

This simple sum has three consequences for an exporter:

- **Rerouting ties up capacity.** When ships are sent on a longer route, each service needs extra ships to hold its weekly schedule. Even if total fleet capacity stays the same, usable capacity falls. UNCTAD notes that rerouting has lengthened voyages and increased fuel use, and that this has fed into freight rates.
- **Delays add up.** If a ship is late at one port, its later calls slip too. The line may skip a port or cancel a sailing to recover. Rollovers and blank sailings are covered in Transshipment, feeders and blank sailings.

- **Feeder loops are short.** The same academic study shows feeder services designed with a one-week loop, so each needs only one ship. A weekly feeder from a small port is timed to connect with the weekly departure on the main line.

Mainline, feeder and transshipment: hub and spoke

Large ships do not call everywhere. Lines connect their ocean-going mainline services to a small number of big ports and reach the others with small feeder ships. The port where cargo changes ships is the **transshipment hub**. Because the pattern resembles the hub and spokes of a wheel, it is called **hub-and-spoke**.

A standard text on port economics (Notteboom, Pallis and Rodrigue) sets out the patterns in which transshipment arises:

Pattern	What happens	What it means for the exporter
Direct service	The same mainline ship calls at every port on the route.	No transshipment; the shortest transit time.
By-passing	A low-volume port is dropped from the mainline and served by a feeder from a hub.	The cargo joins the mainline ship at a hub.
Tail cutting	The port at the far end of the route is dropped and replaced by a feeder, to cut delays on long routes.	Cargo for the end port travels by feeder.
Hubbing	A region's transshipment is concentrated in one port, which often becomes a pure transshipment hub.	The region's smaller ports depend on that hub.
Intersection	Mainlines serving different markets (for example east-west and north-south) are connected at one port.	Cargo changes hands between two mainlines.
Relay	Mainlines on the same trade axis that call at different groups of ports are linked at one port.	Port pairs without a direct service are connected.

According to the same source, with by-passing and tail cutting transshipment is at most 30 to 40% of the port's throughput. At pure transshipment hubs in a hub-and-spoke structure it can reach around 90%.

In our view, the practical question for the exporter is this: does the booking confirmation show a transshipment port between loading and discharge? If so, transit time will be longer and congestion at the hub can leave the box behind for the next ship. Under a letter of credit, also check whether transshipment is allowed (see the Transshipment entry).

Alliances, vessel sharing (VSA) and slot charters

Running a weekly service with large ships takes many ships. Since it is hard for one line to do that alone on every route, lines cooperate operationally. The OECD's International Transport Forum (ITF), in a 2018 report, distinguishes these arrangements by how close the cooperation is:

- **Slot charter:** one line operates the ship; one or more other lines buy a fixed share of space (slots) on it, or swap it for space on their own ships. The ITF describes this as essentially a contractual arrangement.

- **Vessel sharing agreement (VSA):** several lines put ships owned or operated by different carriers into a joint service on a given trade, and plan the schedule and ship deployment together.
- **Consortium:** cost-cutting cooperation focused on a single liner service. Its internal rules usually take the form of slot charters and vessel sharing agreements.
- **Shipping alliance:** a bundle of vessel sharing agreements between the same lines on a global scale. Cooperation covers ship use, schedules, containers and joint use of terminals.

What is not shared? According to the ITF, alliances do not cover joint sales, marketing or pricing. Each line quotes its own price to its own customers, takes its own bookings and issues its own bills of lading. The EU's consortia block exemption (Regulation 906/2009) likewise exempted operational activities such as exchanging, selling or cross-chartering space on ships, pooling ships and port installations, and adjusting capacity. That regulation expired on 25 April 2024 and the European Commission did not renew it; consortia are now assessed under the general EU competition rules.

The picture in 2025. According to UNCTAD's 2025 report, the alliance structure was reorganised in February 2025: two new alliances took effect, the old ones were wound down by July 2025, and only one alliance carried on unchanged. The world's largest container line operates outside the alliances, with its own global network.

What it means for cargo owners.

- **The line you book with and the line operating the ship may differ.** The bill of lading is issued by the line you contracted with; the ship may belong to a partner. The vessel name and voyage number appear on the booking confirmation.
- **There may be less choice than it seems.** The ITF report finds that alliances have narrowed options for shippers and forwarders, made services more uniform and, on some trades, reduced direct port connections and weekly frequencies. According to the same report, alliances have not improved schedule reliability.
- **Spreading risk may land you on the same ship.** In our view, an exporter who thinks they are spreading risk by using two different lines may find both bookings loaded on the same alliance ship. That is why checking the vessel name matters.

Lines that operate ships are not the only ones selling space: NVOCCs and forwarders that issue their own bills of lading also resell space bought from the lines. The difference in liability between these roles is covered in Agent or carrier: the liability difference.

Equipment: COC, SOC and container leasing

A line does not only sell space on a ship; it also provides the box. Who owns the container decides who bears which cost.

- **COC (carrier owned container):** the container belongs to the line or is leased by it. You collect the empty from the line's depot, deliver it full and, at destination, return it empty to the depot the line nominates. Once free time runs out, demurrage and detention apply.
- **SOC (shipper owned container):** the container belongs to the cargo owner or is leased by them. The line sells only the space on board. Where the empty goes next, and how it comes back, is the cargo owner's business.

In our experience SOC is chosen on routes where equipment is scarce or the return leg is difficult, for project cargo and for one-way moves.

How much of the box fleet do the lines own? Notteboom and Rodrigue report that the shipping lines' share of the world container fleet fell from 59.8% in 2008 to 48% in 2021; the rest belongs to container leasing companies. In the early 2020s about 60% of leasable equipment was controlled by five lessors with fleets of over 1 million TEU each.

Leasing lets a line grow or shrink its fleet with demand without tying up capital in boxes. According to the same source, lease arrangements differ in their length and in who takes on repositioning of the empties. Cargo owners can also lease containers for SOC moves; the lease then states the depot where the box must be returned at destination.

Container types and dimensions are covered in Shipping container types and dimensions; how to read the owner code in the container number is in Container number.

Empty container imbalance and repositioning

Trade is not equal in both directions. Empties pile up in import-heavy regions while export-heavy regions run short. The line has to move empties to where they are needed: this is **empty container repositioning**. Moving an empty box earns nothing, yet it takes up as much space on the ship and in the terminal as a full one.

Figures from Notteboom and Rodrigue show the scale of the problem:

- Under normal conditions, empties make up about 10% of existing container assets and about 20% of container handling in the world's ports.
- Repositioning accounts for about 15% of the operating costs of container assets.
- In the US example, of every 100 containers entering the country, about 50 are sent back abroad empty; most of the rest also return empty to port. Only about 5 are loaded with export cargo straight after unloading.
- Lines recover the cost by charging more on the busy leg and less on the weak (backhaul) leg.

In a freight quotation this cost sometimes shows up as a separate line: CIC (container imbalance charge). Other surcharges are listed in The most common surcharges.

The inland leg: carrier haulage and merchant haulage

The road or rail move between depot, factory and port is arranged by one of two parties:

- **Carrier haulage:** the line arranges the inland move as well and includes it in its price. According to Notteboom and Rodrigue, in this model the carrier sets up the whole chain, chassis included.
- **Merchant haulage:** the cargo owner or their forwarder arranges the inland move; the line carries port to port only.

Under either model, the line decides which depot the empty comes from and which depot it goes back to. In our view, for an exporter producing in an industrial zone far from the port, the location of the empty depot is a big

part of the inland cost, and it pays to compare the total cost of both models when getting quotations.

Street turns: reusing an import box for export

Handing an unloaded import container straight to a nearby exporter for loading, instead of taking it back to the depot or terminal, is called a **street turn**. A study of empty container moves in Southern California (METRANS, 2003) identifies the main benefit as the direct reuse of an import container for an export load, and lists these conditions:

- The container must belong to the same line, or the line must allow reuse; the transfer of responsibility for the box from one user to another (interchange) must be arranged.
- The imported and exported goods must suit the same container type.
- The container must be in the right place at the right time.
- The box's condition must be recorded on an equipment interchange receipt (EIR) at every handover; that record decides who is responsible for damage.

In our experience, if the same company both imports and exports, or the importer and exporter are in the same area, asking the line for written approval of a street turn can save two empty moves. How the detention clock will run should be confirmed in writing at the same time.

From booking to loading: what happens inside the line

The steps the exporter sees, with their dates, are in An FCL export step by step. The table below describes the same process from the line's side, based on our experience: what do the line and its agent check between the booking request and the bill of lading?

Stage	What happens inside the line	What it means for the cargo owner
1. Space and equipment check	The booking request is checked against the space and weight quota for that port on that sailing, and against the availability of the requested container type at the depot. Dangerous goods, reefer and out-of-gauge cargo go for separate approval.	In peak periods the booking may only be accepted on a later sailing or in another container type.
2. Booking confirmation and equipment release	A booking number is issued, with the depot for the empty and the cut-offs. A release order goes to the depot.	Damage is noted on the EIR when the empty is collected; on exports the detention clock usually starts here.
3. Documents and weight	Shipping instructions (SI) and the verified gross mass (VGM) are collected; advance electronic filings are made where the destination country requires them.	A box that misses a cut-off may not be loaded. Details: Cut-offs.
4. Load list and stowage plan	Containers delivered to the terminal with complete documents make up the load list. The ship planner draws up the stowage plan around weight, dangerous goods segregation and the order of discharge ports.	The box's slot on board is given as bay, row and tier.

Stage	What happens inside the line	What it means for the cargo owner
5. Loading and bill of lading	The container is loaded; the line or its agent issues the bill of lading with the loading date.	Check the draft bill of lading before loading. Details: Bill of lading.

Why does a ship sometimes look "full"? In our experience, the line allocates space on each sailing to ports and customer groups in advance. Bookings, meanwhile, can be cancelled free of charge, which exposes the line to lost revenue. Academic work on liner shipping therefore treats booking cancellations and accepting more bookings than there is space (overbooking) as a problem in its own right. In our view, running out of space at the end and having your booking moved to the next ship (rollover) are two sides of the same balance. The way to reduce rollover risk is to deliver documents and the box before the cut-offs and to follow the vessel named on the booking confirmation.

The line's local work is usually done by its agent: taking bookings, issuing bills of lading and delivery orders, keeping track of containers and invoicing demurrage. See The liner agent: bills of lading, containers and demurrage.

Choosing a line and a service: what to check

This list is based on our experience; the weighting changes from shipment to shipment.

1. **Direct or via a hub?** Is your port of discharge in the rotation, or does the cargo go through a transshipment port? If so, which one, and how long a wait is expected there?
2. **Transit time and frequency.** Is the quoted transit time port to port or door to door? Is the service weekly? If not, missing a sailing can cost two weeks.
3. **Who operates the ship?** Look at the vessel name on the booking confirmation. If you use two lines to spread risk, check that both shipments have not ended up on the same ship.
4. **Equipment.** Is the container type and size you need available in your loading area? How far is the empty depot from your factory?
5. **Free time and local charges.** Are demurrage and detention free times, local charges and surcharges clearly stated in the quotation? For a checklist see Questions to ask when getting a quotation.
6. **Cut-offs and documents.** Do the document, VGM and terminal cut-offs fit your production and customs schedule?
7. **The inland leg.** Is carrier haulage or merchant haulage the better fit? Compare the total cost.

Where to go next in the guide

- Dates, cut-offs, VGM and rollover from booking to delivery: Container shipment timeline
- Why freight rates swing, supply and demand, indices: Shipping markets and freight cycles
- Freight quotations and surcharges (including CIC): Freight quotations and surcharges

- Free time, demurrage and detention: Demurrage, detention and storage
- The container's path through the terminal: Ports and terminals
- The liner agent's role: Ship agency
- Container types and dimensions: Shipping container types and dimensions
- Packing the inside of the box correctly: Container packing and weight distribution

Which courses cover this topic?

In the curricula we reviewed, container and liner shipping is taught as a dedicated course in 8 programmes and within another course in 28. Some examples:

- Aydın Adnan Menderes University, Söke Faculty of Business — International Logistics and Transportation (bachelor's) — Maritime Business Management and Container Shipment (ULT405)
- Tekirdağ Namık Kemal University, Barbaros Maritime Vocational School — Maritime and Port Management (associate degree) — Container Transport (BDL316)
- Gaziantep University, Oğuzeli Vocational School — Logistics (associate degree) — Container Systems and Operations (OMLP236)
- Tarsus University, Logistics Vocational School — Logistics (associate degree) — Container and Seaport Management (LJ 209)
- The Hong Kong Polytechnic University — MSc in International Shipping and Transport Logistics (master's) — Liner Shipping Management (LGT5072)
- Institute of Chartered Shipbrokers (ICS) — Foundation Diploma, Advanced Diploma and PQE (certificate) — Liner Trades

Test yourself

1. A service takes 63 days for a full loop. How many ships does a weekly departure need? What happens if rerouting stretches the loop to 77 days? *(Answer: 63 ÷ 7 = 9 ships. At 77 days, 77 ÷ 7 = 11 ships are needed; two ships must be added to keep the same frequency.)*
2. You booked with two different lines, but both booking confirmations show the same vessel name. How can that be? *(Answer: The two lines may be in the same alliance or vessel sharing agreement; one operates the ship and the other uses slots on it. Each line still issues its own bill of lading.)*
3. The booking confirmation shows another port between the port of loading and the port of discharge. What does this tell you, and what do you check? *(Answer: The cargo will be transshipped there. Transit time is longer and there is a rollover risk at the hub; check whether the letter of credit allows transshipment.)*
4. A container moves as SOC. After it is unloaded at destination, who charges detention on the box? *(Answer: The box belongs to the cargo owner or their lessor, not the line, so the line does not charge equipment detention. Where and how the empty goes back is a matter for the cargo owner or the lease.)*

Frequently asked questions

Is a container line the same as a shipowner?

The words are often used interchangeably, but they need not be the same. The container line runs the scheduled service and sells the space; some of the ships in the service may be chartered from another owner. And a sailing within an alliance may be performed on a partner's ship rather than the ship of the line you contracted with.

What is the difference between a slot charter and a vessel sharing agreement (VSA)?

In a slot charter one line operates the ship and another buys or swaps a set share of its space; it is essentially a contractual arrangement. In a VSA several lines put their ships into a joint service and plan the schedule together. In both cases each line sets its own price and issues its own bill of lading.

Do alliances set freight rates together?

No. According to the ITF, alliances do not cover joint sales, marketing or pricing; cooperation is limited to ships, schedules, containers and terminal use. The EU's former consortia block exemption also covered only operational cooperation, and it expired on 25 April 2024.

Why can't I find an empty container?

If exports from your area exceed imports, empties run short and the line has to bring them in from elsewhere. In our experience it helps in peak periods to book early, be flexible on container type, ask about other empty depots and, where it fits, consider SOC.

Can I do a street turn?

Only if the line allows it. The box must belong to the same line, be of a suitable type and condition for the export cargo, and be recorded on an EIR at the handover. Confirm in writing with the line how the detention clock will run.

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