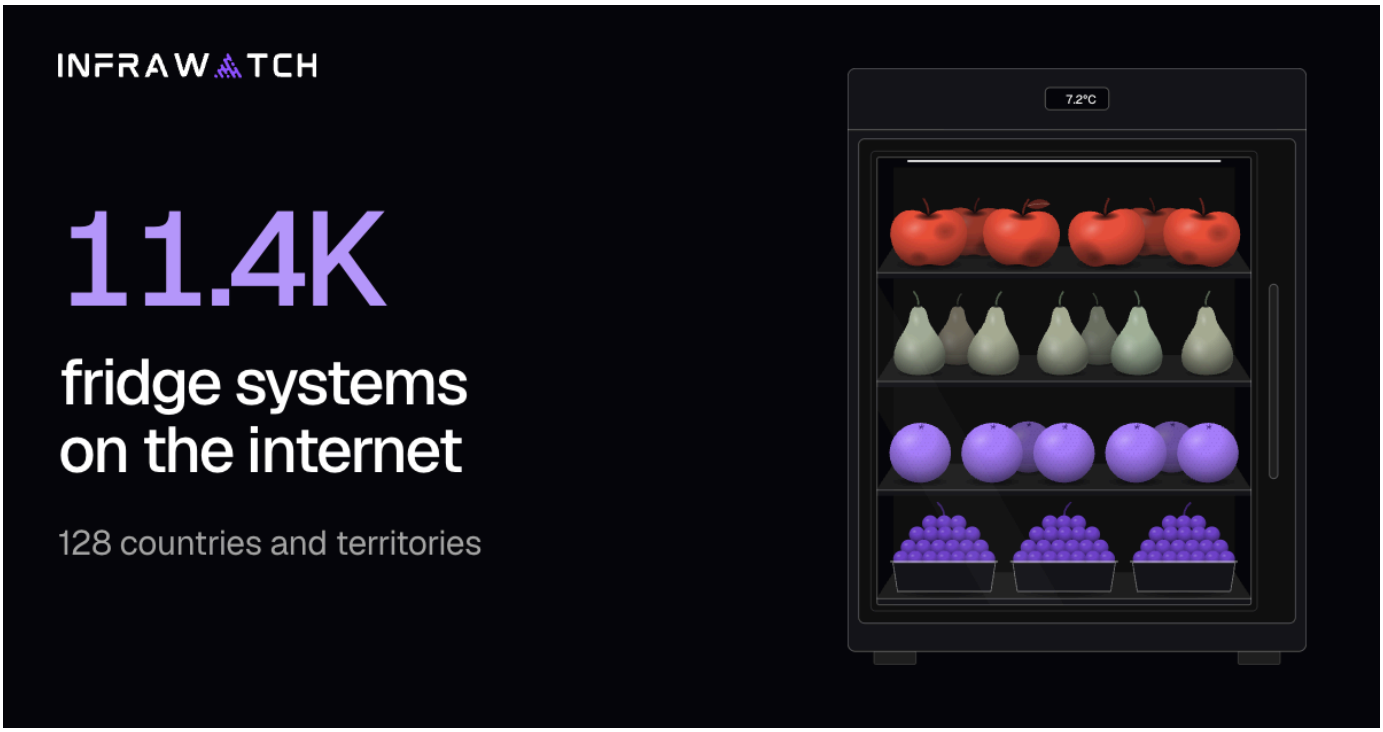
INFRAWATCH

# There are 11.4K fridge systems connected to the internet

Refrigeration risk reaches beyond supermarkets into food production, logistics, pharma and life sciences.

Infrawatch Research

https://infrawatch.com/blog/11409-fridge-systems-connected-to-the-internet




## Executive summary

A compromised refrigeration system can spoil stock, interrupt production and affect several retail networks through a shared supplier. The business risk extends across the cold chain, including food manufacturing, logistics, pharma and life sciences.

- 11.4K refrigeration systems are connected to the internet across 128 countries and territories.
- Mapped supplier relationships connect 32 suppliers to 14 UK retailers, and five suppliers to 12 French retail banners.
- Operators should urgently identify internet-exposed refrigeration systems and secure remote access. Attacks on these systems have already disrupted European retailers.

# Shared suppliers widen the impact

We used our internet vantage points and supplier intelligence to map relationships across the UK and French food retail sectors.

In the UK, the mapped relationships link 32 suppliers to 14 food retailers. The French map reaches 12 retail banners through just five suppliers.

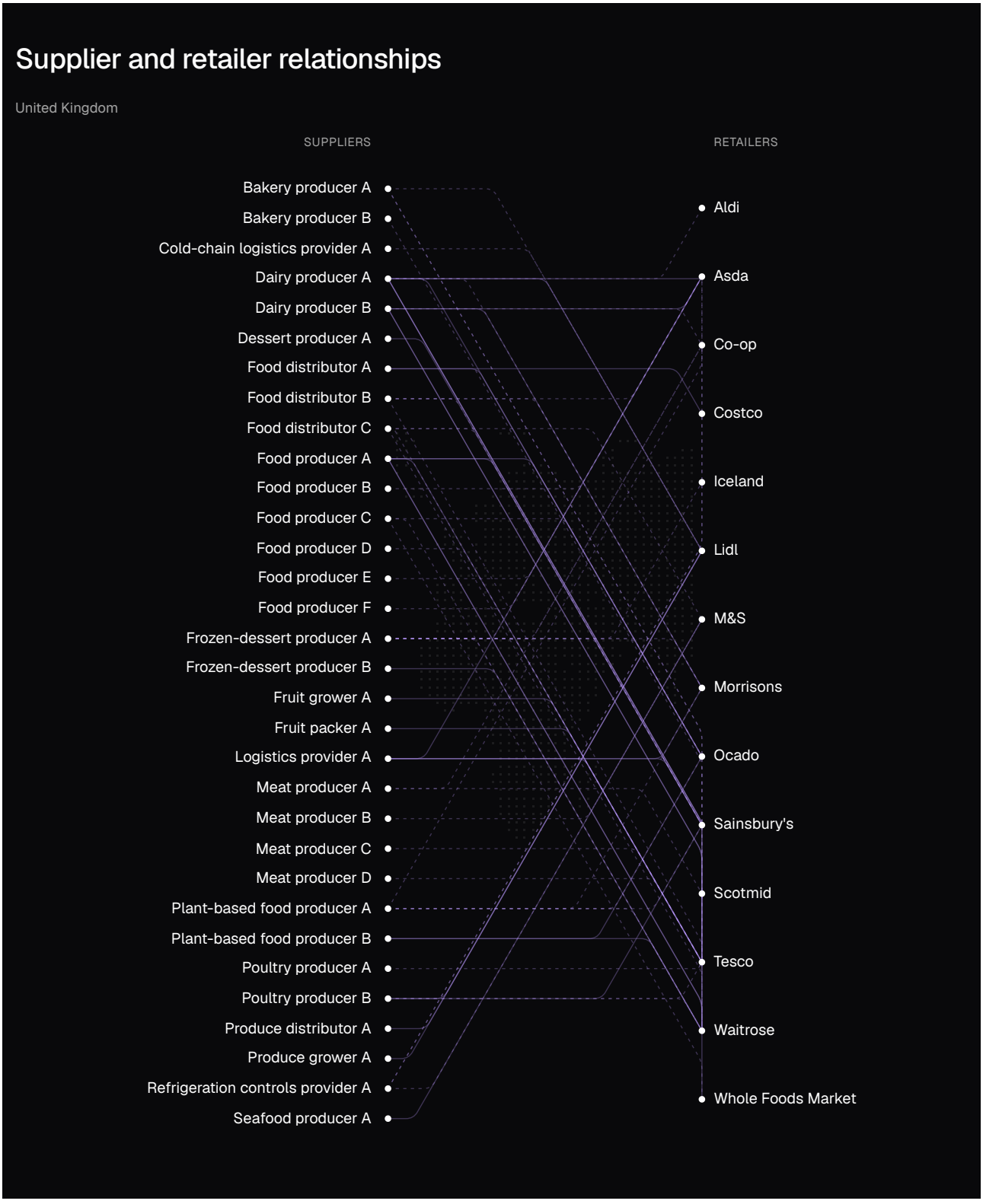



*Figure 1. Shared suppliers connect UK and French supermarket chains. Each line represents a recorded relationship.*

Reviewing retailers separately misses these shared dependencies. Follow the supplier, its refrigeration systems and its maintenance provider through Infrawatch's supply-chain exposure.

# The cold chain extends beyond supermarkets

The UK research also points to a laboratory manufacturer and a multi-tenant science park whose occupiers include pharmaceutical and life-sciences businesses. Temperature-control disruption can interrupt laboratory manufacturing and put stored research or production materials at risk.

The consequences are already visible in retail. On 2 November, Euronews reported temperature changes and spoiled food in European supermarkets, with some Swedish systems reaching 50°C. Belgian installer Sabcobel described refrigeration units being switched into defrost mode.

The incidents followed October attacks in France. CERT-FR confirmed compromises involving Danfoss and Copeland/Dixell controllers. Its guidance calls for removing direct public access, checking controller settings including defrost periods, restoring maintenance through a secured VPN or protected network, and following manufacturer firmware guidance.

One supervisory interface can control multiple refrigeration units. Claroty's XWEB Pro research describes a supervisor coordinating field controllers that operate compressors, cooling fans and defrost heaters. One exposed management system can therefore affect several cabinets, cold rooms or production processes.

# Danfoss: 1.1K StoreView systems

Infrawatch identifies 1.1K Danfoss StoreView systems across 69 countries. France leads with 271, followed by the United States with 100 and Belgium with 99. France holds 25.5% of StoreView exposure, compared with 6.5% of the wider refrigeration population.

## Across all vendors, 1.7K systems expose other access services

Across all refrigeration vendors, 1.7K systems share an internet address with another remote-access or file-transfer service. SSH appears alongside 1.3K, FTP alongside 210, VNC alongside 204, Telnet alongside 125 and RDP alongside 58.

Closing the refrigeration web interface leaves those separate access services to address. They belong in the same maintenance-access review.

# Exposure by country, vendor and network

Italy leads with 1.3K systems, followed by Romania with 910 and the UK with 784. The United States has 712, Brazil 588 and Australia 449.




*Figure 2. Refrigeration exposure spans 128 countries and territories. Brighter violet indicates larger populations.*

The ten largest country populations contain 6.9K systems, or 60.3%. Another 4.5K are spread across 118 countries and territories.

CAREL appears on 4.4K systems and Dixell on 2.7K. Together, they account for 61.6% of the census. Danfoss accounts for 1.1K systems, or 9.7%.

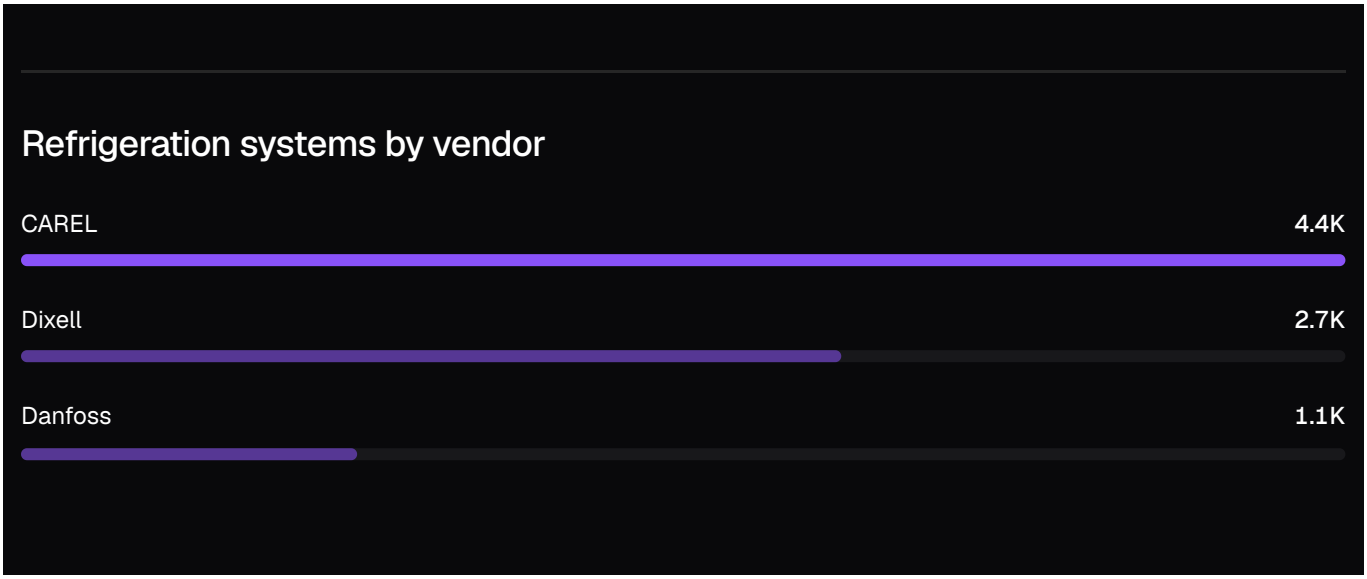



*Figure 3. Refrigeration systems by vendor. CAREL and Dixell account for 61.6% of the census.*

National concentrations are sharper. Dixell appears on 292 of Greece's 318 systems, or 91.8%. CAREL appears on 115 of Estonia's 118, or 97.5%, and 822 of Romania's 910, or 90.3%.

DIGI Romania carries 842 systems, followed by Orange with 452, Fastweb with 396, Wireless Logic with 376 and Proximus with 281. These five networks carry 2.3K systems, or 20.5% of the total.

## In Romania, one vendor and carrier dominate

All 842 DIGI systems are in Romania, representing 92.5% of the country's exposure. Of these, 799 present CAREL software: 87.8% of Romania's total and 97.2% of its CAREL population.

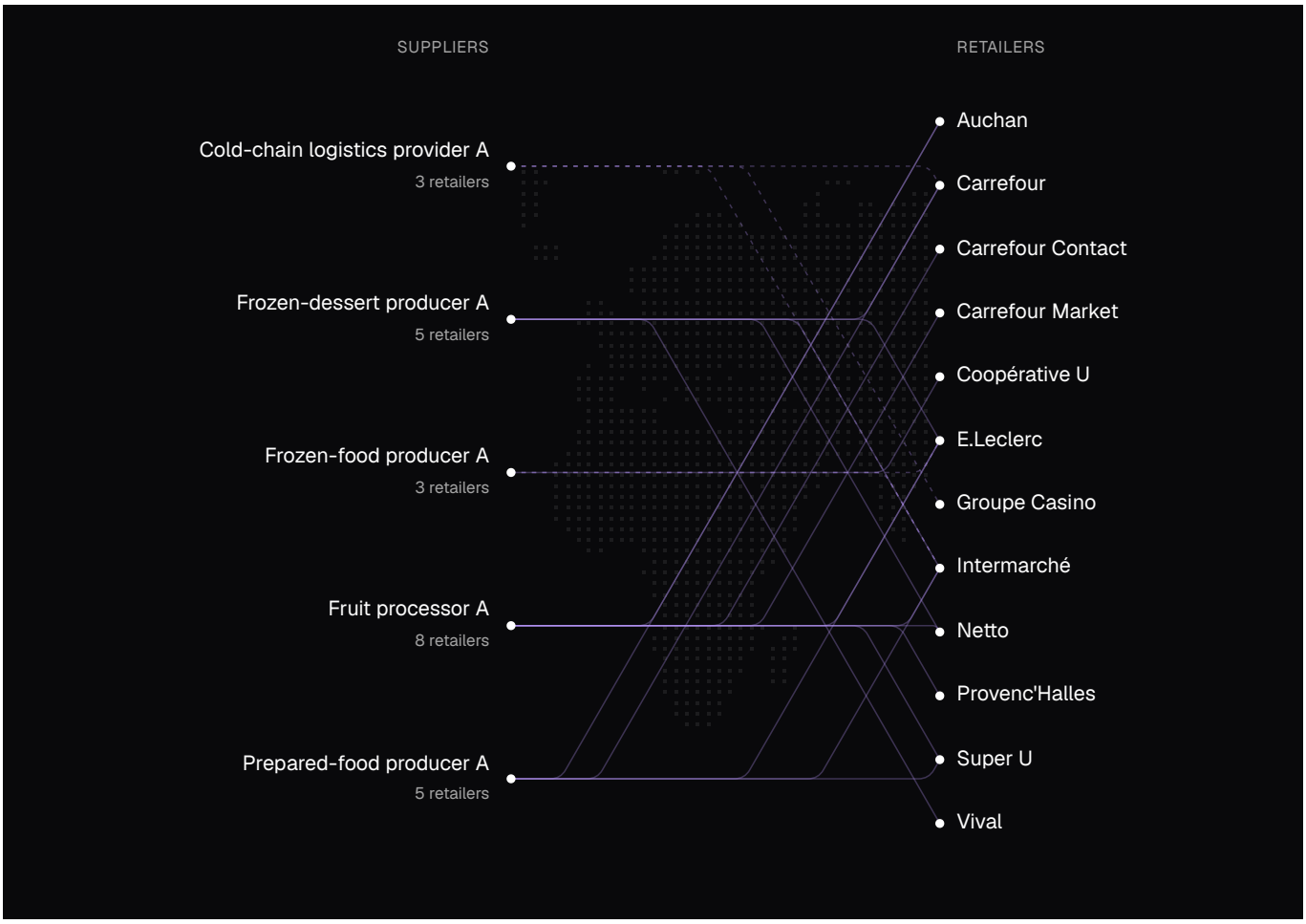
Shared suppliers can turn one refrigeration outage into a problem for several retailers. Operators need to identify exposed controls across their own estate and suppliers, then secure the maintenance connections that keep them running. With attacks already disrupting European retailers, this is an immediate operational priority.

### Find your exposed industrial systems

Identify internet-facing industrial controls across your estate and suppliers.

Explore ICS / OT ↗

# France: shared supplier relationships



# United Kingdom: supplier relationships

| Supplier profile | Retailer | Record |
|---|---|---|
| Produce grower A | Lidl | Supplier disclosure, Apr 2026 |
| Fruit grower A | Tesco | Supplier statement, undated |
| Seafood producer A | M&S | Annual report, 2025 |
| Dessert producer A | Sainsbury's | Supplier disclosure, 2024 |
| Food producer A | Ocado | Product listing, 2026 |
| Food producer A | Sainsbury's | Stockist page, undated |
| Food producer A | Tesco | Stockist page, undated |
| Food producer A | Waitrose | Stockist page, undated |
| Food producer A | Whole Foods Market | Stockist page, undated |
| Food distributor A | Costco | Product listing, 2026 |
| Food distributor A | Ocado | Stockist page, undated |
| Logistics provider A | Asda | Logistics supplier statement |
| Logistics provider A | Morrisons | Logistics supplier statement |
| Logistics provider A | Sainsbury's | Logistics supplier statement |
| Logistics provider A | Tesco | Logistics supplier statement |
| Meat producer A | Co-op | Historical stockist record |
| Meat producer A | Scotmid | Historical stockist record |
| Plant-based food producer A | Asda | Historical stockist record, 2023 |
| Plant-based food producer A | Morrisons | Historical stockist record, 2021 |
| Plant-based food producer A | Ocado | Historical stockist record, 2025 |
| Plant-based food producer A | Sainsbury's | Historical stockist record, 2025 |
| Plant-based food producer A | Waitrose | Historical stockist record, 2025 |
| Produce distributor A | Lidl | Supplier disclosure, Apr 2026 |
| Fruit packer A | Tesco | Supplier statement, undated |
| Bakery producer A | Lidl | Supplier record, 2023–24. Candidate association |
| Bakery producer A | Sainsbury's | Supplier disclosure, 2024. Candidate association |

| Supplier profile | Retailer | Record |
|---|---|---|
| Bakery producer A | Tesco | Group supplier record, 2025. Candidate association. Retail market unspecified |
| Meat producer B | M&S | Historical supplier record, 2016 |
| Food producer B | Asda | Historical supplier record, 2019 |
| Dairy producer A | Aldi | Historical supplier record, 2018 |
| Dairy producer A | Asda | Product listing, 2026 |
| Dairy producer A | Lidl | Supplier disclosure, Apr 2026 |
| Dairy producer A | Morrisons | 2023 disclosure and stockist page |
| Dairy producer A | Ocado | Product listing, 2026 |
| Dairy producer A | Sainsbury's | Supplier disclosure, 2024 |
| Dairy producer A | Tesco | Product listing, out of stock |
| Dairy producer A | Waitrose | Product listing, unavailable |
| Food producer C | Ocado | Product listing, 2026. Prior candidate association |
| Food producer C | Waitrose | Historical stockist record, 2011. Prior candidate association |
| Food producer C | Whole Foods Market | Historical stockist record, 2011. Prior candidate association |
| Poultry producer A | Tesco | Historical supplier record, 2013 |
| Food distributor B | Asda | Product listing, 2026. Legacy infrastructure association |
| Food distributor B | Morrisons | Product listing, 2026. Legacy infrastructure association |
| Food distributor B | Sainsbury's | Product listing, 2026. Legacy infrastructure association |
| Food distributor B | Tesco | Product listing, 2026. Legacy infrastructure association |
| Meat producer C | Tesco | Product listing, 2026. Candidate association |
| Food distributor C | M&S | Historical supplier record, 2012 |
| Food distributor C | Sainsbury's | Historical supplier case study |
| Food distributor C | Tesco | Historical supplier case study |

| Supplier profile | Retailer | Record |
|---|---|---|
| Food distributor C | Waitrose | Historical supplier case study |
| Frozen-dessert producer A | Asda | Historical stockist record, 2022. Prior candidate association |
| Frozen-dessert producer A | Co-op | Product listing, 2026. Prior candidate association |
| Frozen-dessert producer A | Iceland | Product listing, 2026. Prior candidate association |
| Frozen-dessert producer A | Morrisons | Historical stockist record, 2022. Prior candidate association |
| Frozen-dessert producer A | Ocado | Historical stockist record, 2022. Prior candidate association |
| Frozen-dessert producer A | Sainsbury's | Historical stockist record, 2022. Prior candidate association |
| Frozen-dessert producer A | Tesco | Historical stockist record, 2022. Prior candidate association |
| Frozen-dessert producer A | Waitrose | Historical stockist record, 2022. Prior candidate association |
| Frozen-dessert producer B | Waitrose | Product listing, unavailable |
| Cold-chain logistics provider A | Lidl | Historical logistics contract, 2021–22 |
| Food producer D | Tesco | Group supplier disclosure, undated. Group disclosure. Retail market unspecified |
| Meat producer D | Tesco | Historical concession record, 2012–19 |
| Bakery producer B | Waitrose | Product listing, unavailable. Prior candidate association. Legal identity unresolved |
| Refrigeration controls provider A | Asda | Equipment deployment, 2016 |
| Refrigeration controls provider A | Co-op | Historical equipment case study |
| Refrigeration controls provider A | M&S | Equipment supplier statement |
| Plant-based food producer B | Ocado | Stockist page, undated |
| Plant-based food producer B | Waitrose | Stockist page, undated |

| Supplier profile | Retailer | Record |
|---|---|---|
| Poultry producer B | Lidl | Supplier disclosure, Apr 2026 |
| Poultry producer B | Sainsbury's | Supplier disclosure, 2024 |
| Poultry producer B | Tesco | Group supplier disclosure, undated. Group disclosure. Retail market unspecified |
| Poultry producer B | Waitrose | Supplier statement, undated |
| Food producer E | Asda | Historical supplier record, 2019 |
| Dairy producer B | Asda | Stockist page, undated |
| Dairy producer B | Co-op | Historical supplier contract, 2017 |
| Dairy producer B | Morrisons | Stockist page, undated |
| Dairy producer B | Tesco | Stockist page, undated |
| Dairy producer B | Waitrose | Product listing, 2026 |
| Food producer F | Asda | Historical supplier record, 2012. Legal identity unresolved |

# France: supplier relationships

| Supplier profile | Retailer | Record |
|---|---|---|
| Prepared-food producer A | Auchan | Supplier statement |
| Prepared-food producer A | Carrefour | Supplier statement |
| Prepared-food producer A | E.Leclerc | Supplier statement |
| Prepared-food producer A | Intermarché | Supplier statement |
| Prepared-food producer A | Super U | Supplier statement |
| Frozen-dessert producer A | Carrefour | Supplier listing |
| Frozen-dessert producer A | E.Leclerc | Supplier listing |
| Frozen-dessert producer A | Intermarché | Supplier listing |
| Frozen-dessert producer A | Netto | Supplier listing |
| Frozen-dessert producer A | Vival | Supplier listing |
| Frozen-food producer A | Coopérative U | Product listing |
| Frozen-food producer A | E.Leclerc | Product promotion, Oct 2026 |
| Frozen-food producer A | Intermarché | Product listing. Availability unverified |
| Fruit processor A | Auchan | Supplier statement |
| Fruit processor A | Carrefour Contact | Supplier statement |
| Fruit processor A | Carrefour Market | Supplier statement |
| Fruit processor A | E.Leclerc | Supplier statement |
| Fruit processor A | Intermarché | Supplier statement |
| Fruit processor A | Netto | Supplier statement |
| Fruit processor A | Provenc'Halles | Supplier statement |
| Fruit processor A | Super U | Supplier statement |
| Cold-chain logistics provider A | Carrefour | Customer reference, undated. Exact service unspecified |
| Cold-chain logistics provider A | Groupe Casino | Customer reference, undated. Exact service unspecified |
| Cold-chain logistics provider A | Intermarché | Customer reference, undated. Exact service unspecified |