Connect+ enterprise management software

Connecting assets and systems for
enterprise retail insights and optimization

COPELAND
Engineered for Sustainability

Seamlessly connect and actively manage your multi-site food retail operations.

Supermarket, restaurant and convenience store operators face an increasingly complex retail environment. Technology is permeating every facet of their operations and the food supply chain, from farm and transport to shopping and delivery. As consumers demand maximum food quality, variety and convenience, retailers that can adapt quickly to emerging trends and provide exceptional, consistent shopping experiences will be rewarded with loyal customers.

Copeland's 3D approach to enterprise management

To succeed in this new era of food retail requires new tools. Large enterprises need robust technologies and an expert partner to help navigate this rapidly changing landscape. Connect+ is that toolset. Copeland is that partner.

Combining **D**ata acquisition, **D**omain expertise in facility management and refrigeration, and **D**ata science capabilities into a single software, Copeland takes a 3D approach to enterprise management.

Copeland helps address your operational concerns

Preserving food quality and safety

Adapting to the quickly evolving technological landscape

Maintaining system and data security

Reducing operational costs and increasing employee efficiency

Succeeding in the omnichannel arena

Meeting sustainability and energy management objectives

RESTAURANT

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What's at stake for food retailers

Market Drivers

1 in 6 Americans (48 million people) contract foodborne illnesses each year[1]

Infrastructure retrofits

Retailers are investing $1 trillion in small-format stores annually[5]

Food quality

88%

88 percent of consumers are **willing to pay more for healthier foods**[2]

Technician shortage

Approximately **115,000 technicians will be needed** in HVACR by 2022[6]

Regulations

5–50%

DOE is mandating 5–50 percent **energy reductions** on various classes of commercial refrigeration equipment[3]

Consumer preferences

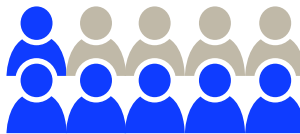Global sales of **healthy foods exceeded $1 trillion** in 2017[2]

Energy sustainability

40%

More than 40 percent say **sustainability influences their buying decisions**[4]

Foodservice expansion

61 percent of **millennials purchase prepared food from a c-store** at least once a month[7]

How We Deliver Value

7M

Supermarket chain saves over **$7M across 1,000+ stores** through setpoint management and energy commissioning program

Multi-site facility management

Rapid issue resolution to help maintain an optimal shopping experience

Energy management

Supermarket chain earns **$290k annually** through demand response load shedding application

Food loss prevention

Facility supermarket has saved **$225k in food loss** prevention across 75-store enterprise via alarm monitoring

Sources

https://www.cdc.gov/foodborneburden/index.html
https://www.forbes.com/sites/nancygagliardi/2015/02/18/consumers-want-healthy-foods-and-will-pay-more-for-them/#215695075c55
https://climate.copeland.com/documents/v1-n2-doe-regulations-drive-significant-energy-reductions-en-us-146188.pdf
https://www.supermarketnews.com/sustainability/shoppers-overlook-sustainability-seals-grocery-packaging
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http://careersinhvacr.org/site/1/Home
https://csnews.com/what-millennials-want-their-c-store-shopping-experiences
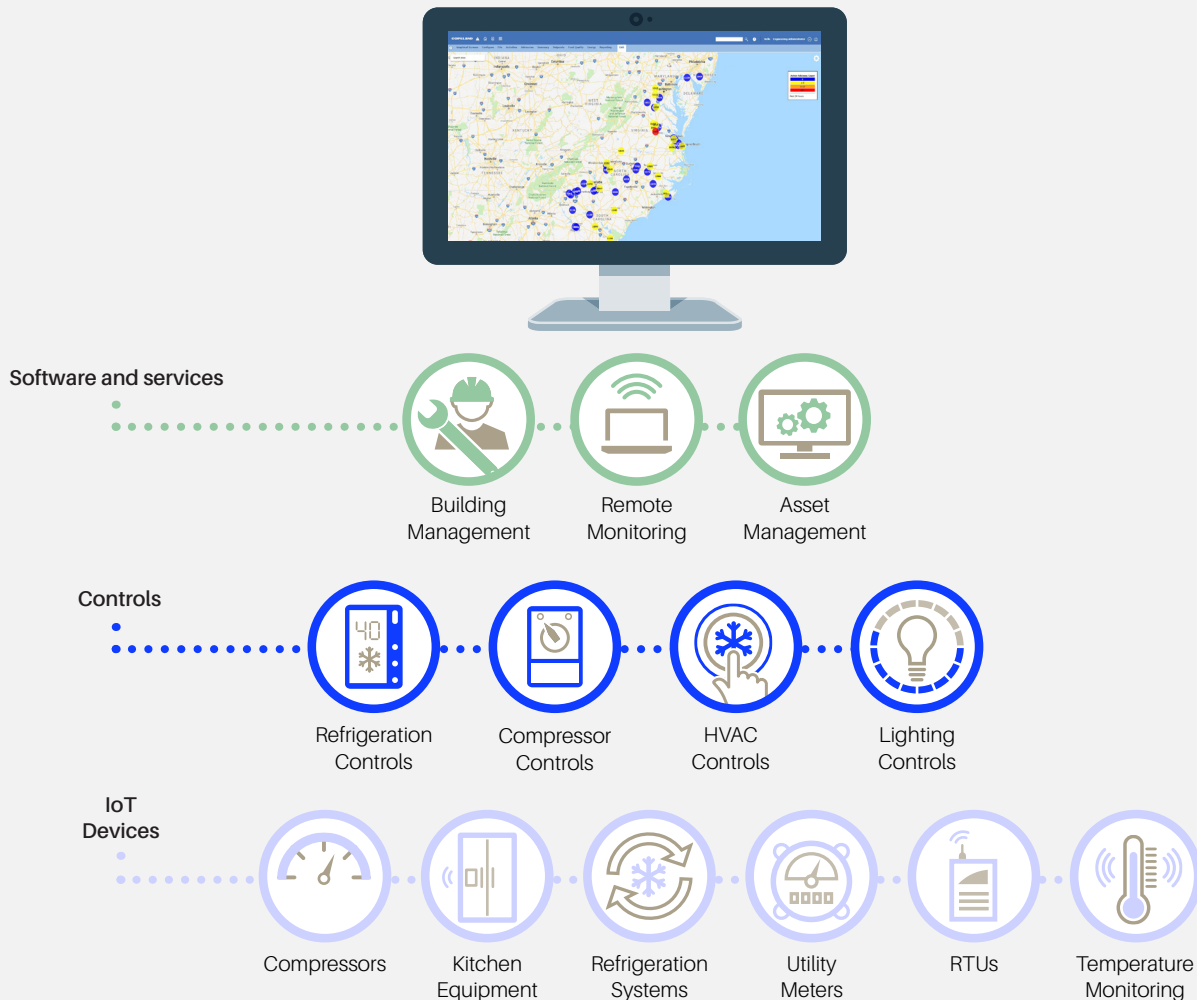
Take complete control of your enterprise

The Connect+ software platform enables supermarkets and restaurants to take control over the management of their individual facilities and multi-site enterprises. Paired with our comprehensive portfolio of refrigeration and facility management assets, Copeland is uniquely positioned to provide seamless integration and optimization of nearly every aspect of your operations. By connecting devices and controllers to the cloud for comprehensive data management and analytics, we're providing the architecture, information and intelligence to address today's challenges while scaling to meet tomorrow's demands.

With more than 60,000 retail sites under management, Copeland has direct access to rich data — that when combined with our deep domain knowledge — results in root cause analysis and prescriptive, corrective actions which save both time and costs.

Software and services

- Building Management
- Remote Monitoring
- Asset Management

Controls

- Refrigeration Controls
- Compressor Controls
- HVAC Controls
- Lighting Controls

IoT Devices

- Compressors
- Kitchen Equipment
- Refrigeration Systems
- Utility Meters
- RTUs
- Temperature Monitoring

Centralized management and control across the enterprise

Connect+ is a scalable, customizable and robust software toolset designed to help you significantly reduce operational inefficiencies and protect your brand reputation. It provides near real-time access to the critical information you need to immediately track, triage and quickly respond to issues across your multi-site network. Through secure data acquisition, storage and aggregation, Connect+ enables fast analysis of current enterprise conditions and historical comparisons for deep business insights. Regardless of your role — C-suite level officer, facility manager, data scientist, food safety administrator or IT manager — Connect+ delivers relevant, contextual information at your fingertips in an intuitive, icon-based graphical interface.

Fast, friendly, flexible and secure

We make it easy for you to manage the tasks that matter most in modern retail operations, without placing your sensitive data at risk.

Expanded site connections

- Push updates of 100s or 1,000s sites in hours instead of days to save labor, time and expense while allowing resources to focus on important store initiatives or customer service.
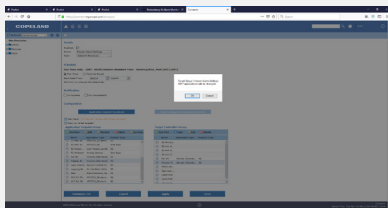
Improved alarm visibility

- Navigate to active critical alarms in a single click for fast triaging and resolution.


Faster, real-time performance

- Access and review live data in near real time for prompt triage and issue analysis.

Color-coded network map

- Quickly see the health of your multi-site enterprise in a familiar map view.
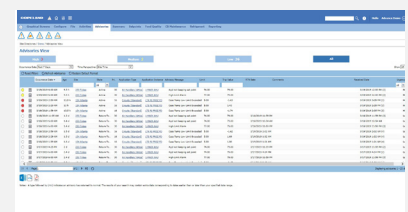
Data grid usability

- Identify outlier conditions indicated through conditional color-coding that denote which sites require immediate attention to limit costly operational issues.
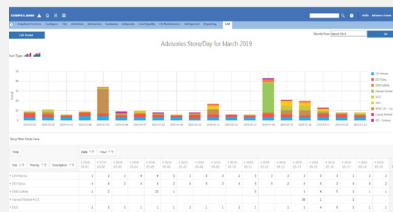
Intuitive enterprise navigation

- Locate functions you use most via easily accessible left navigation tree to reduce time to complete critical tasks.

- Access key features via icon-based, user-friendly main navigation.

- Allow users of varying skill levels to access functions they need quickly at their fingertips.

- Easily customize screen look and feel to match your preferences.

- Take a deep dive into the data you need in just a few clicks.

- Quickly understand tabular data through intuitive colorization that helps you immediate identify the highest-priority issues and trends.


System security and recovery

- Powerful "end-to-end" security measures include: strong user authentication and device provisioning; LDAP compliance; ISO 27001 data center(s); audit-log traceability; and disaster recovery.

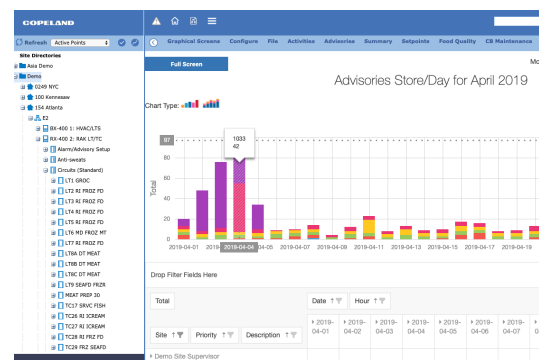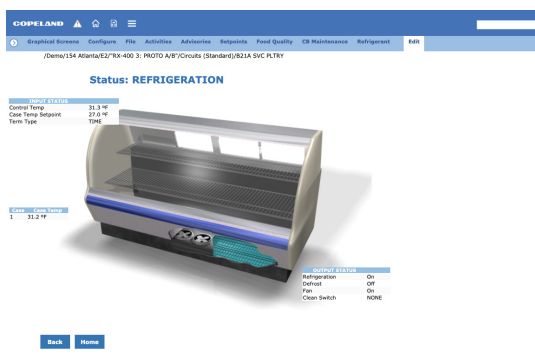# *From 10,000 feet to asset-level analysis*

Advisory management

Advisory Management is at the core of Connect+ capabilities. Designed to allow enterprise and facility managers to quickly view, triage and respond to issues that could impact their operations — in individual facilities and across the multi-site network of stores. Starting from a 10,000-foot map view of the enterprise,

the robust, intuitive software allows users to respond to alarms and identify performance issues in specific stores. Then, they can rapidly drill down to individual assets and component-level information to examine root causes and quickly prioritize issue resolution.
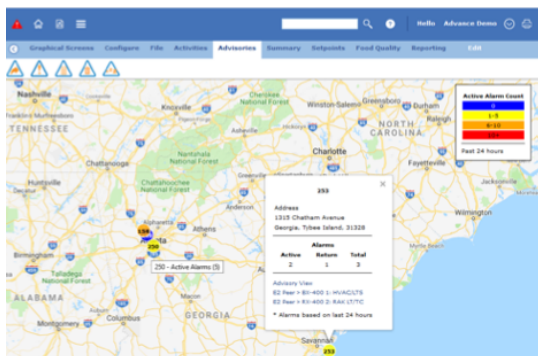
Advisories Status Map View takes the guesswork out of identifying which stores need attention. And with links to Advisory details and graphs, investigation can now be completed faster. Color-coding of site active alarms provides an indication of alarm severity. Click on a location needing attention to access the Snapshot Summary of "Active" and "Return-to-Normal" advisory counts with links to Advisory details or a specific device UI.

Floorplan link: Asset-level view allows you to click on temperatures to provide details of alarm and defrost settings. Click on a component to view live-state, graphical details of coil, fans and doors.

Map SnapShot link: Floorplan view allows you to see current temperatures and status of key assets in play, and the option to click on them for further information.

Advisory Analysis Trends view allows you to select specific advisories for direct comparison to historical performace for deeper insights into issues. And with just one more click, you can see the asset-level values for diagnostics.
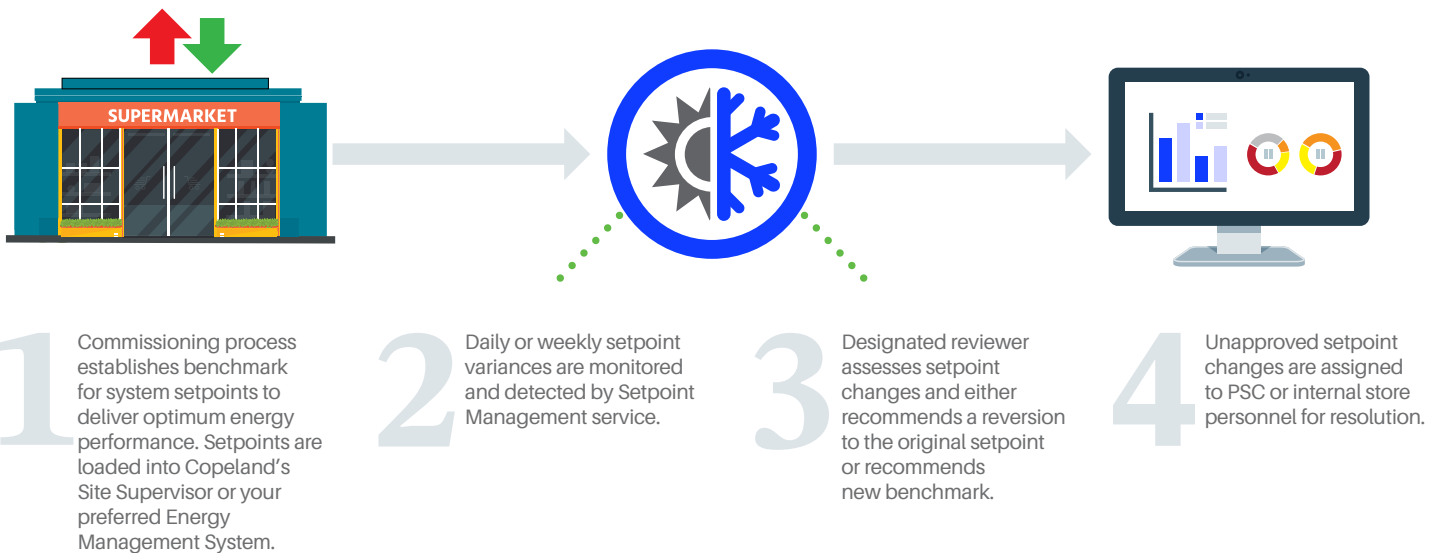
Continuous commissioning

Many retail operators make significant investments to improve energy usage during the commissioning process, where setpoints for refrigeration, HVAC and lighting systems are carefully optimized. Unfortunately, over a relatively short period of time, these systems often deviate from original setpoints, and operators experience increased energy consumption, declining food quality, and rising operational costs across the multi-site enterprise.

The Setpoint Management module in Connect+ is designed to continually preserve setpoint optimization after the commissioning process. By monitoring real-time setpoints in comparison with predefined ranges, the software notifies designated service personnel when further investigation or corrective action is needed.

Setpoint Management benefits include:

- Continuous energy savings via management of refrigeration, HVAC and lighting setpoints

- Help maximizing food quality and reduced product shrinkage

- Notification of variances that fall outside of predefined ranges

- Continuous oversight and verification of setpoints compared to established benchmarks

- Automates the assignment of corrective actions to designated site personnel or ProAct Service Center (PSC)

Setpoint management workflow example

1 Commissioning process establishes benchmark for system setpoints to deliver optimum energy performance. Setpoints are loaded into Copeland's Site Supervisor or your preferred Energy Management System.

2 Daily or weekly setpoint variances are monitored and detected by Setpoint Management service.

3 Designated reviewer assesses setpoint changes and either recommends a reversion to the original setpoint or recommends new benchmark.

4 Unapproved setpoint changes are assigned to PSC or internal store personnel for resolution.

Enterprise view of setpoint changes allows a designated reviewer to approve or reject each line instance.

Enterprise view allows review of setpoint benchmarks.

Condition based maintenance

The Condition Based Maintenance (CBM) module enables a proactive approach to equipment reliability. Instead of waiting for dormant problems to result in equipment failure or conducting preventive maintenance according to a predetermined schedule, CBM monitors actual equipment conditions in real time to detect trends and performance anomalies. This allows retailers to limit unnecessary maintenance calls and prevent failures that could potentially impact their customers and operational efficiencies.

CBM users reap the benefits of Copeland's refrigeration data, domain expertise and data science capabilities. As machine-level sensors continually provide an abundance of system data into smart algorithms, Connect+ leverages decades of refrigeration experience to identify and prioritize performance issues. As these exceptions are detected, Connect+ sends mobile alerts to designated service personnel and allows retailers to quickly triage, diagnose and fix issues.

As Connect+ gathers data, it also accumulates an ever-expanding library of datasets to fuel its analytics engines. These information-rich datasets are providing a strong foundation on which the next generation of predictive maintenance is being built. Today, CBM helps you to answer the following mission-critical questions:

- Which of my refrigeration systems are operating improperly or inefficiently?
- Which of my refrigeration systems are leaking refrigerant?
- How can I implement a better maintenance scheme or prioritize maintenance dispatches?
- Where should I focus my maintenance?

CBM alerts allow you to see error conditions such as high compressor cycling and refrigerant leaks.

Condition Based Maintenance alarms by store and incidents report provide a visual breakdown of activities across the enterprise.

CBM workflow example

1 CBM algorithms detect potentially failure-causing equipment defects at individual or multiple sites.

2 CBM analyzes conditions and parameters, and compares them to normal operation.

3 Alert is sent to designated maintenance personnel or service team; team further investigates root cause of issue.

4 Maintenance personnel respond to incident for fast resolution, pre-empting equipment failure.

Once you ID a fix and the cause, then you can "tune" the system to do even a better job at the prevention or the frequency of the event.

Maximize food quality and reduce risk with automatic temperature monitoring and recording

Food quality reports

Food retailers stake their reputations on the quality of their offerings and the safety of their perishable items. That's why the abilities to accurately and efficiently monitor and report on product and case temperatures are essential to ensuring consistently fresh, top quality foods. But manual temperature recording and tracking methods consume large amounts of employee time and can be prone to errors.

The Food Quality Reports (FQR) helps automate the monitoring and reporting processes to provide comprehensive data on refrigeration factors contributing to food quality and safety. This service can highlight deviations from the acceptable limits, document defrost cycles, and is an effective addition to any food quality control system. For those adhering to the internationally recognized HACCP methodology, FQR helps with the fulfillment of "establishing monitoring procedures" and "establishing record-keeping and documentation procedures."

Legend: Normal | Too Cold | Too Hot | Defrost (log) | Defrost (schedule) | Data Gathering Issue | Data Error - Local Issue

Temperature Report for "154 Atlanta". Wed, 24 Apr 2019 EDT
Food Quality Reports

Temperature Report for Atlanta, GA.

By automatically logging and reporting the status of critical temperatures affecting food quality and safety (e.g., cases/food probes), FQR eliminates error-prone manual processes and helps achieve HACCP compliance.

Food Quality Reports benefits include:

- Preserve food safety and protect brand reputation
- Reduce food waste
- Comply with corporate or municipal standards
- Allow employees to focus on customer service

FQR workflow example

1 Retailer defines critical control points in each store.

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2 Product probes record refrigerated case temperature data.

3 Hourly web-based report shows fixture temperatures.

Energy management

Managing energy efficiency across a network of retail stores requires both internal expertise and the tools necessary to continuously monitor the energy consumption of each store. Unfortunately, many companies don't have an energy engineer on staff or the infrastructure necessary to alert them when stores are exceeding acceptable energy consumption levels. As a result, these stores continue to operate inefficiently for weeks, months and potentially even years — all the while chipping away at retail profit margins.

Connect+ was designed with robust energy management capabilities to address these enterprise inefficiencies. Its multi-site outlier management tool helps enterprise managers quickly identify which stores are exceeding their corporate energy efficiency standards at any given moment. An intuitive multi-site dashboard guides end users and operators through the process of finding and fixing outliers:

- Quickly view which stores are using too much energy based on historical models
- Prioritize and rank those stores by severity
- Drill down into individual stores to identify root causes of excess consumption
- Expedite the ability to evaluate issues and perform corrective actions as needed
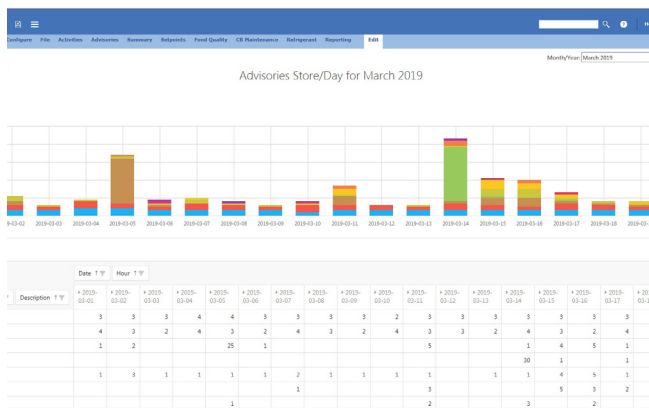
Outlier sites can be ranked by aggregated consumption and energy cost with sortable breakdown by refrigeration, HVAC, and lighting and refrigeration — and by date and timestamp.

Copeland's comprehensive approach to energy management — which includes data acquisition, domain expertise and data science — provides a solid foundation for driving energy conservation in refrigeration, HVAC and lighting systems in individual stores and across the enterprise

Extend your capabilities

Measurement and verification applications — for those enterprises with an energy engineer on staff and/or seeking more advanced energy management capabilities, Connect+ can be extended to include measurement and verification capabilities.

Energy API — if you're already working with an energy partner and connect to data gathered from Copeland control devices, we have an energy API that can deliver the energy points from refrigeration, HVAC and lighting systems into your applications and analytics packages.

Energy consumption: It all adds up

A key performance indicator for larger retail enterprises is energy consumption, measured in kilowatts per hour (kWh). In a typical supermarket, energy costs can amount to more than $200,000 of annual expenditures. Understanding the source of these costs is a critical component of enterprise management. Here's the average breakdown per system category of total supermarket energy usage:

55%	25%	10%	10%
Refrigeration	HVAC	Lighting	All Other
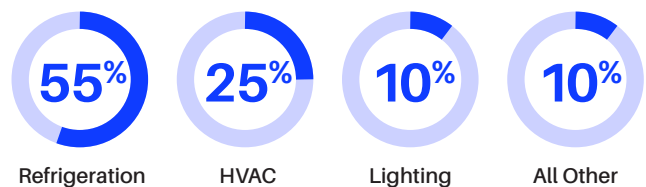
The ability to actively monitor energy consumption to achieve cost control and bottom line savings is imperative to effective enterprise management.

Helping the food cold chain make the digital transformation

Consumer demand for fresh foods and maximum convenience requires more interdependence and cooperation among every stakeholder in the food cold chain. With domain expertise from farm to fork, Copeland is helping create the connectivity and safe handling practices to keep food safe along its journey, so retailers and restaurants can confidently stand behind the products they deliver to their customers.

Enterprise visibility

- Connectivity and monitoring
- Cloud-based, hosted solutions
- Operational insights
- Compliance management and assurance

### Condition management and optimization

- Process automation and management
- Preventive and predictive services
- Asset life extension
- New business optimization models (CaaS)

Devices and components

- Compressors and refrigeration
- Controls and electronics
- Temperature management
- Trackers and loggers
- Architecture and systems
- System design
- Integrated solutions
- Project management services
- Condition status reporting

Architecture and systems

- System design
- Integrated solutions
- Project management services
- Condition status reporting

End-to-end data, services and insights

Harvest	Processing	Transportation	Distribution	End Users
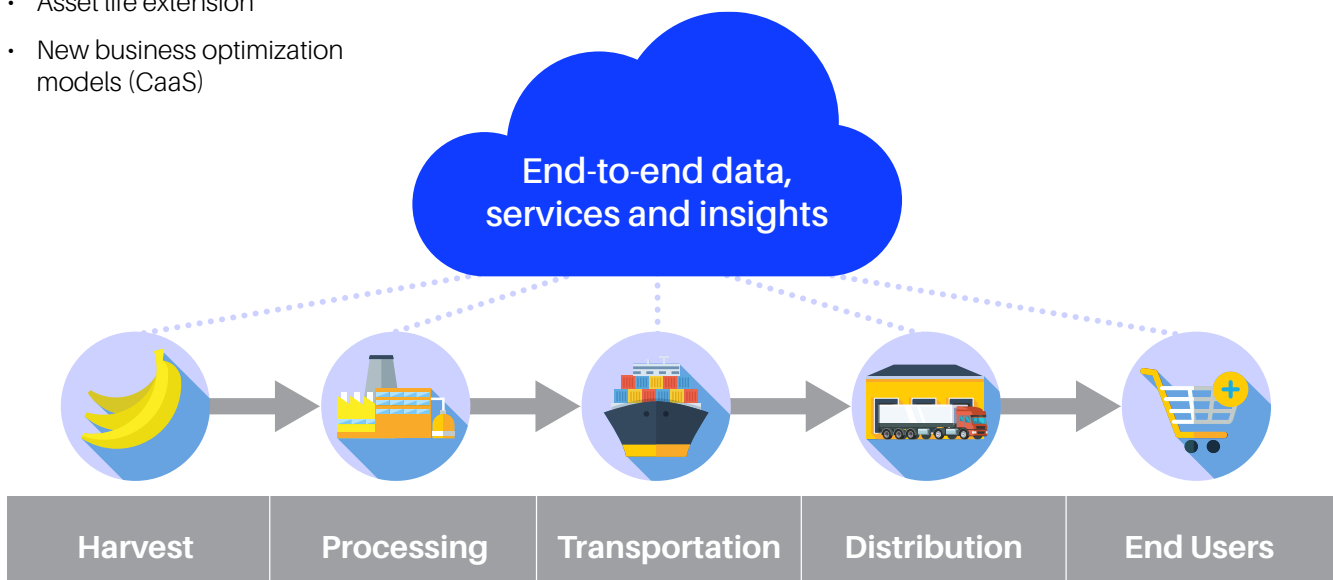
About Copeland

Copeland, a global provider of sustainable climate solutions, combines category-leading brands in compression, controls, software and monitoring for heating, cooling and refrigeration. With best-in-class engineering and design and the broadest portfolio of modulated solutions, we're not just setting the standard for compressor leadership; we're pioneering its evolution. Combining our technology with our smart energy management solutions, we can regulate, track and optimize conditions to help protect temperature-sensitive goods over land and sea, while delivering comfort in any space. Through energy-efficient products, regulation-ready solutions and expertise, we're revolutionizing the next generation of climate technology for the better.

To learn more, visit **copeland.com**

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