# Load Building and Route Planning
# for SAP® ERP

Optimize your logistics using advanced 3D packing and loading,
and dynamic vehicle route scheduling

OPTIMIZED BY ORTEC
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**SAP®** Premium Certified
Integration with SAP Applications

Solution **ORTEC for SAP**

# Enhance your SAP ERP with logistics optimization

For most companies in manufacturing, retail and transportation, logistics costs have a considerable impact on profitability. A smooth-running shipping operation is key to improve margins. To achieve this, you need strong, integrated planning solutions capable of managing your entire supply chain. Are you struggling with inaccurate order or delivery-level estimates to determine your "real" cargo size, such as loading length or floor spots? Looking to optimize loads for trucks, trailers and containers? Want to move beyond static routes to dynamic vehicle route scheduling, adapting to daily changes in the most efficient way? Read on to uncover the benefits of ORTEC for SAP ERP.

## Why use an add-on for logistics optimization in your SAP ERP?

SAP® solutions are known for their broad coverage and adaptability to meet end-to-end business process needs, which makes them the preferred choice by many companies. This comes with the downside that some industry-specific requirements cannot always be covered in detail with standard SAP functionality. ORTEC's add-on for SAP ERP is the perfect alternative. It provides you with state-of-the-art logistics optimization capabilities, proven in many industries. Our solution is seamlessly embedded into your SAP ERP and helps you avoid complex and expensive custom-specific developments.

## The perfect add-on to your SAP ERP

ORTEC for SAP ERP is a certified add-on that provides advanced 3D packing and load optimization, and dynamic vehicle route scheduling. Using best-in-class optimization algorithms, ORTEC for SAP ERP supports your daily inbound and outbound logistics planning and execution with decision-ready proposals to optimize your material flow and reduce logistics costs.

## Your benefits

- Streamline and continuously improve your logistics plans with optimization tools embedded in your SAP ERP
- Lower costs by optimizing your plans to reduce empty miles and improve your vehicle fill rate
- Increase customer satisfaction by creating compliant plans and executing according to service level agreements
- More alignment and collaboration with all data for planning and execution in one place - in SAP ERP
- No costly integration projects, IT hurdles or long learning curves for end users - the add-on runs within your SAP environment
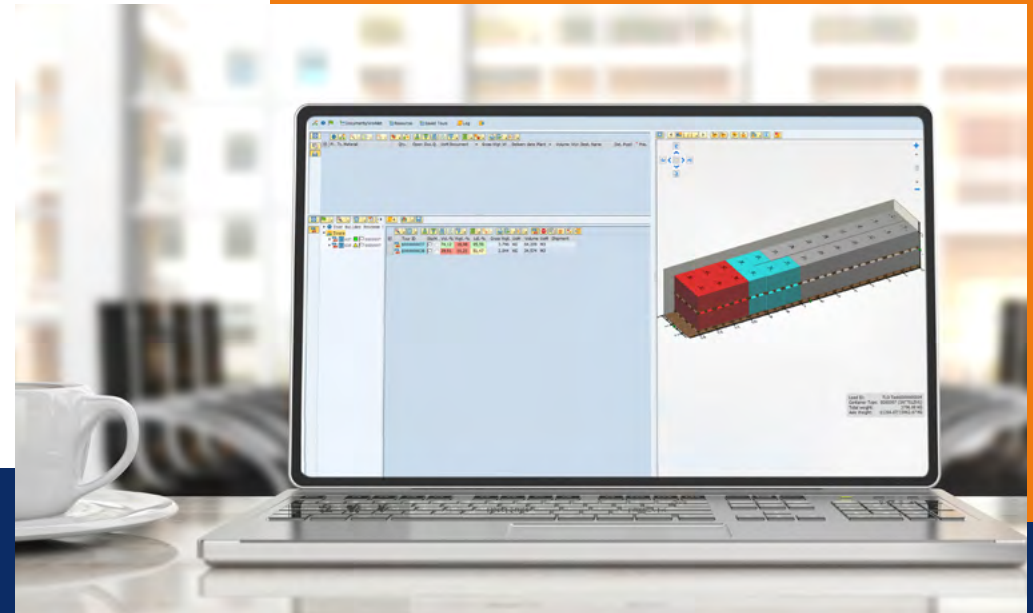
# ORTEC for SAP ERP

## Give your planners the tools they need

ORTEC for SAP ERP is a modular software add-on that can be configured according to your individual planning needs. The core module provides the foundation that integrates with your SAP software and enables you to use the optimization components. The Load Building and Route Scheduling modules provide optimization capabilities for packing, loading and routing, which you can use in different business situations. Besides those, there are two main planning applications: Transport Load Optimizer and Planboard. These applications are designed for different planning use cases. They provide the right user experience for different planning tasks in order to maximize efficiency.

## ORTEC Transport Load Optimizer

ORTEC's Transport Load Optimizer for SAP ERP (TLO) is a flexible planning application that focuses on item line oriented, priority-based load planning in SAP ERP. It provides logistics planners advanced decision support, especially to build full truckloads for transports between two locations. The planner can use TLO to edit product quantities, reassign loading priorities and run the optimizer until the fill rate is maximized. This can be done interactively by the planner, or fully automated. The planning application supports out-of-the-box multiple configurable business processes in SAP ERP, such as purchasing, replenishment and shipping including the creation of subsequent SAP documents.

## Main features

- A flexible, modern and user-friendly planning application for your transportation planners
- Create tours based on vehicle combinations and orders
- Use packing and load optimization to split SAP Deliveries automatically for different transport units
- Leverage route scheduling to plan cost-optimized tours considering vehicle and order constraints, using detailed geographic location information
- Analyze planning quality with interactive 3D load graphics or digital maps
- Integration into the SAP workflow, from order to delivery and shipment
- Create subsequent SAP documents from tours (tour releases), such as SAP Deliveries and SAP Shipments

## ORTEC Planboard for SAP ERP

ORTEC's Planboard for SAP ERP is an application that enables transportation planners to consolidate orders and deliveries and allocate them to tours and vehicles in an optimal sequence, either manually or with the support of load building and route scheduling optimization.

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# ORTEC Load Building for SAP ERP

## Maximize your fill rates for shipping and transportation

ORTEC Load Building for SAP ERP is setting new benchmarks with its advanced 3D load optimization capabilities. It helps you maximize fill rates while considering all packing and loading strategies and rules in your supply chain.

## A complex equation

How many products fit per container? How should I organize loads at DCs for picking and loading efficiency? Which orders will fit into a given truck considering the route? How can I respect product-related constraints and create secure, stable loads for the best fitting vehicle types? When are the maximum limits for axle weights reached? If you face questions like these on a daily basis, you know it can be hard to arrive at an optimal mix for your packing and transport units. To meet the challenge in today's complex supply chain landscape, you need advanced decision support.

## The optimal loading scenario - in seconds

Using the best algorithms available in the marketplace, ORTEC's packing and load optimization software helps you pack items in cartons, build pallets, and load trucks or containers in the most efficient way. Decision-ready proposals, presented in interactive 3D graphics, enable you to make the right decisions almost instantly.

## Fit-for-purpose, not "one-size-fits-all"

ORTEC's packing and loading software is used globally by many companies - large and small, of different sizes, and in different industries. The flexibility to adapt to industry-specific needs and the ability to use it for various business process scenarios, such as order-to-cash, dynamic replenishment, order picking, loading, and vendor managed inventory, are key reasons that make us their vendor of choice.

## Unveil opportunities

Improve loads for inbound transportation, internal movements and customer shipments to unveil opportunities for logistics optimization - from faster processing times to reduced transport units. Companies using ORTEC Load Building for SAP ERP see numerous benefits.

- Better fill rate
  Up to 7% improvement in shipping and transport asset utilization
- Less planning time
  Up to 70% reduction in planning times, compared to manual planning
- Lower risk of damage
  Prevent damage to goods with an improved load fit
- More customer satisfaction
  Streamline transport to drive customer happiness

# Optimize parcel, less-than-truckload, full-truckload, sea and air freight
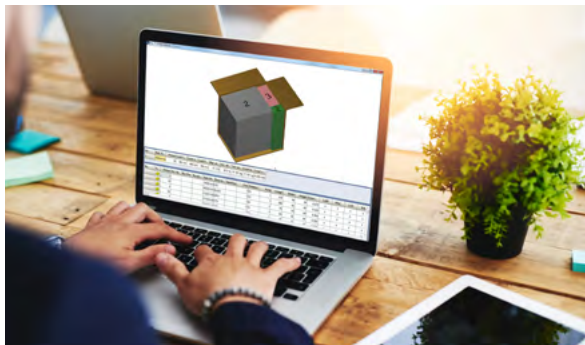
## Three-step optimization

Whether you need to pack cartons, optimize pallets or select the best possible container type, ORTEC has the solution. ORTEC Load Building for SAP ERP offers modules to manage each of these tasks. All modules can be used individually or combined in sequence to create a powerful multi-level packing optimization solution.

## Step 1 - Carton optimization

**Packing cartons**

The carton optimization module calculates the number of cartons required to ship items on an order-by-order basis. Use it to determine the most efficient carton type mix for packing while taking various constraints into account.

## Step 2 - Pallet optimization

**Packing pallets**

The pallet optimization module calculates the number of pallets required to ship items. Use it to build as few pallets as possible while taking multiple constraints into account.

## Step 3 - Load optimization

**Loading into trucks, containers, railcars, air cargo containers**

The load optimization module calculates the optimal number of transport units required to load items and can also determine the most efficient vehicle type. Leverage it to use as few vehicles as possible while taking multiple constraints into account.

# ORTEC Load Building for SAP ERP:
## The powerful multi-level packing optimization solution

## Main business usage scenarios

ORTEC Load Building for SAP ERP can be applied to multiple business processes and functions.

- Demand-driven replenishment
  Combine product demand quantities and existing sales orders from plant to plant or plant to distribution center in full-truckloads with maximum fill-rate, using configurable priority rules and special fill-up logic

- Order-based full-truckload planning
  Change the sales (outbound) or purchase (inbound) order to create a maximum fill rate and avoid unused space or overflow in a second transport unit

- Automated outbound delivery split
  Allocate the products of a very large outbound delivery automatically onto multiple, optimally used transport units within the SAP system

- Combine routing and loading for transportation planning
  Ensure that a tour planned with ORTEC Route Scheduling for SAP ERP is feasible from a capacity perspective

## Top features

ORTEC Load Building for SAP ERP offers numerous optimization possibilities and extensions.

- Consider real product dimensions and weights, use constraints such as stacking rules, allowed orientations, and compatibility rules
- Consider multiple optimization objectives such as minimize load volume, minimize load length, minimize costs and others
- Optimize for a single load carrier or means of transport, or find the best mix out of multiple (e.g. 20' and 40' containers)
- Define your own load carriers and means of transport, such as carton, box, pallet, various truck types (standard, double decker with beams, double decker with single floor, gooseneck, semi-trailer), container types (standard, open-top, flat rack), railcar, and air cargo containers
- Use specific rules for individual orders to overrule general rules, such as maximum pallet load height or using separator pallets between different product layers
- Create secure and stable loads by considering axle weight and center of gravity
- Use the result as instructions for your execution in the warehouse

# ORTEC Route Scheduling for SAP ERP

## From static routes to dynamic route scheduling

ORTEC Route Scheduling for SAP ERP improves your daily transportation planning in SAP ERP with dynamic vehicle route scheduling. It helps you reduce your mileage while considering all relevant transportation constraints.

## Quite a big puzzle

Every day, companies need to decide how to deliver and collect goods in the most efficient way, using freight forwarders or their own fleet. How do you assign and sequence orders into routes in such a way that all resources are used in the best way, without violating constraints, and at the lowest possible cost? Many companies manage daily transportation planning by using static route plans, but here cost-efficiency depends heavily on regular order patterns.

## Become dynamic

Transport planners have to deal with changes on a daily basis. Orders need to be delivered to different locations, new requests come in to pick up returned goods or to collect orders from suppliers. Sometimes even the number of available vehicles changes. This is where static route plans typically fail, and transportation planners need to react. What if your planner could be more proactive and create dynamic route plans for changing situations?

## Unlock your potential

Improve daily planning for inbound transportation, internal movements and customer shipments to unlock your potential for logistics optimization - from faster processing times to reduced transport units. Companies using ORTEC Route Scheduling for SAP ERP see numerous benefits.

- Significantly lower transport costs by reducing mileage and drive times, and increasing vehicle fill rates
- Reduced planning and dispatch times
- Increased insight into route plans and vehicle costs
- Greater capability to adapt the plan when last-minute changes come up (e.g. urgent orders)
- Automatically consider restrictions, such as delivery windows

## Propose best order/best tour

Alternatively, your transportation planner can ask specific questions during planning. For example, which planned tour would be the best one to assign an unplanned order to? Which unplanned order would be the optimal choice for this planned tour? This functionality has proven to be very valuable for large operations, helping planners make faster and optimal decisions.
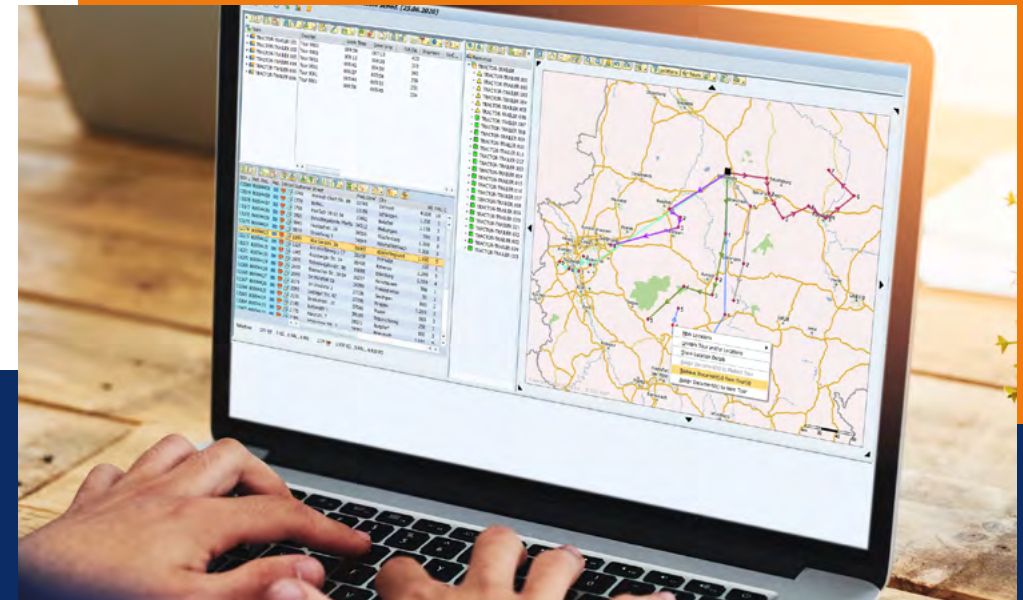
## Manual interaction

Last, but not least, your transportation planner can adjust each tour manually when needed - the user is always in control.

# Transportation planning at your service

ORTEC Route Scheduling for SAP ERP gives your transportation planners multiple decision support capabilities.

## Complete solution

Let the optimizer prepare a complete, cost-optimized tour plan within a few minutes, for all orders and vehicles. This task can be scheduled in SAP ERP as an overnight job, giving your transportation planner a proposal to review when they start their workday.

## Plan your reality, no matter how complex

ORTEC Route Scheduling for SAP ERP can be applied to multiple transportation planning scenarios in your company.

- Deliver to customer
- Collect return/empties from customer
- Pick up from supplier
- Direct store delivery
- Outbound cross-docking transportation

## Top features

ORTEC Route Scheduling for SAP ERP provides different transportation planning strategies and considers multiple constraints:

- Manual, semi-automatic and automatic creation of tours
- Use various planning cost factors (fixed & variable) to create cost-efficient tour plans
- Use different route optimization objectives, such as minimize distance, minimize cost, reduce constraint violations
- Combine inbound and outbound deliveries in one tour, release them to separate SAP Shipments (LE-TRA)
- Use digital map data to calculate "real" street-level time and distance
- Create single or multi-day tours
- Create multiple tours for a vehicle per day
- Multiple loading locations (Depots) in the same tour (Reloading)
- Consider your own vehicles with priority over external fleet
- Consider required vehicle or driver equipment for loading/unloading
- Use different factors to calculate loading and unloading durations
- Use preferred drivers or exclude drivers for certain customers
- Consider driver break times
- Consider different vehicle capacity types or use ORTEC Load Building for SAP ERP for additional vehicle load checks

# Need help with your logistics in SAP ERP?

Our mission is to optimize your logistics and contribute to a better world, using mathematical optimization technology and advanced analytics. We've been helping our global customers grow with our expertise in supply chain optimization and analytics for more than 37 years.
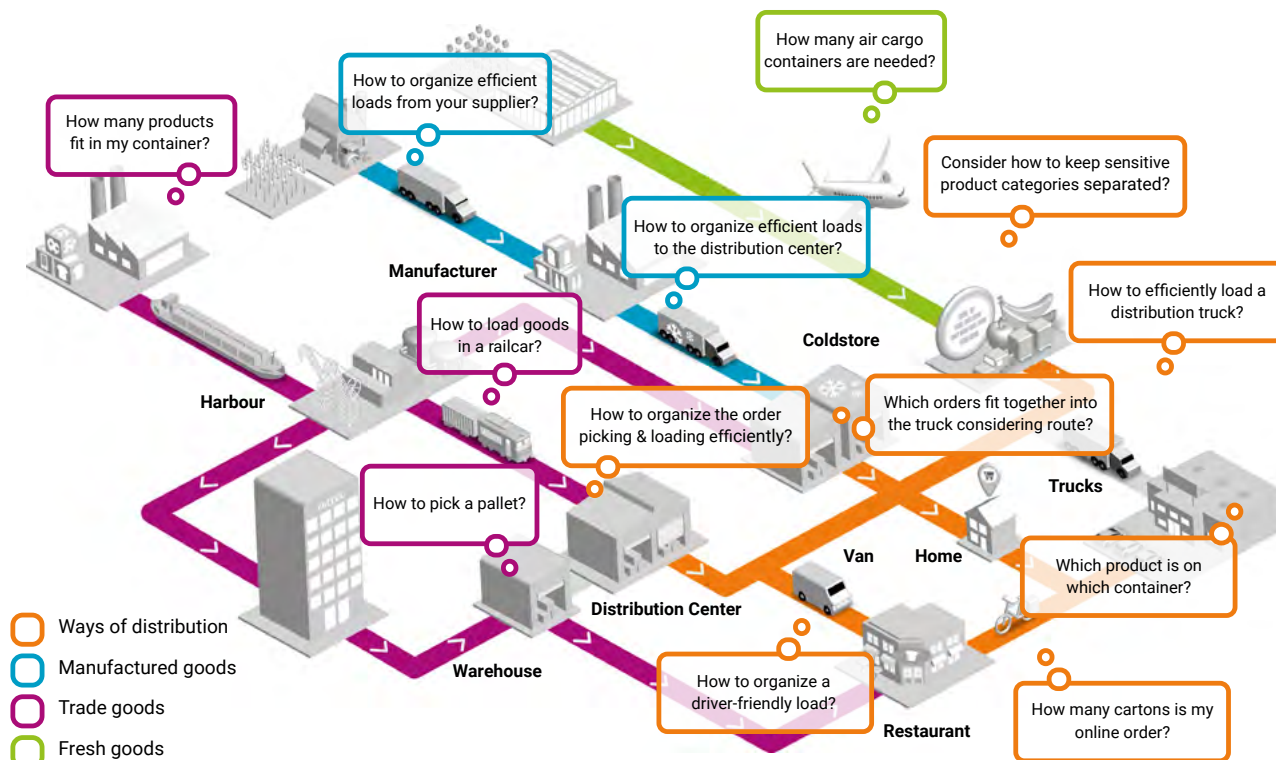
As a SAP silver partner, we are proud to offer you innovative technology built specifically for SAP ERP. We have collaborated with SAP for more than 19 years, delivering add-ons that meet SAP's high standards for software quality, performance and security. We prove this with every

new release by going through the SAP integration certification process, which ensures that our software is fully compliant with your SAP solution.

Our customers see us as a long-term partner. We continuously support them to maximize the use of our software and innovate together based on new and existing business challenges.

SAP Silver Partner
**SAP**® Premium Certified
Integration with SAP Applications



How many products fit in my container?

How to organize efficient loads from your supplier?

How many air cargo containers are needed?

Consider how to keep sensitive product categories separated?

**Manufacturer**

How to organize efficient loads to the distribution center?

How to efficiently load a distribution truck?

How to load goods in a railcar?

**Coldstore**

**Harbour**

How to organize the order picking & loading efficiently?

Which orders fit together into the truck considering route?

How to pick a pallet?

**Trucks**

**Van**   **Home**

Which product is on which container?

**Distribution Center**

**Warehouse**

How to organize a driver-friendly load?

How many cartons is my online order?

**Restaurant**

Ways of distribution
Manufactured goods
Trade goods
Fresh goods

*A fast and flexible process to determine the exact number of shipping and transportation units needed before any physical packaging has started.*

# Our software solutions

## ORTEC for SAP ERP

Certified add-on for SAP ERP, providing load building for cartons, pallets, trucks and containers as well as optimal vehicle route scheduling, seamlessly embedded into your SAP ERP solution.

## ORTEC Warehouse Execution for SAP WM

Add-on to warehouse management in SAP ERP
for picking planning and control, including paperless picking.

## ORTEC for SAP S/4HANA®

Certified add-on for SAP S/4HANA, providing load building for cartons, pallets, trucks and containers as well as optimal vehicle route scheduling, seamlessly embedded into your SAP S/4HANA solution.

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