



## Analyzing **dimensional weight pricing** **and load optimization**

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*Bobby Miller is currently responsible for global consumer good product innovation and direction at ORTEC. Bobby pioneered the ORTEC solution 'Perfect Shipment' which utilizes demand forecasting to generate optimal shipments, enabling organizations to plan and reduce freight cost in advance of execution. He has over 25 years of expertise working in the Consumer Goods Industry and developing supply chain software solutions that help companies globally such as P&G, General Mills, Coca-Cola and Clorox. Prior to ORTEC, Bobby was Sr. Manager of Supply Chain Excellence for Georgia-Pacific, where he pioneered the concept of sales order load optimization. He has also held various positions with Kraft, Coopers Lighting, Information Resources, IRI Logistics and Manugistics. Bobby received a B.S. degree in Information Systems from Chicago State University. He is past chairman of the Technology Association of Georgia Supply Chain Society.*

# 1. Dimensional weight pricing

Remember products you've received in the past that arrived in oversized shipping boxes? Perhaps a single book arrived in a large box, taking up only a fraction of the space inside. The remainder of the box interior was filled with bubble wrap or other packing material. The box itself far outsized the contents.

Fast forward to the present and that empty space accompanying the product in the shipping box is now costing companies much more to send—perhaps up to 30% more according to industry experts.

Shipping giants UPS and FedEx have announced all ground shipment charges are now based on “Dimensional Weight Pricing.” This new pricing method is said to be the largest pricing increase in their history.

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According to Tim Sailor, of the Navigo Consulting Group, this new method is “...a game-changer for lightweight shippers.”

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# 2. The past

Prior to January 2015, shipping costs were calculated based upon gross weight. The size of the box didn't matter. Today it does. Now, shippers are charging for their floor or deck space on the truck, plane, or ship.

Shippers are overwhelmed by online next day or 3-day requests. No longer can they put a book in a barrel, fill up the excess room with peanuts, and ship away. Today, more products than ever are being shipped to our doors rather than stores.

Hence, space onboard trucks, planes, and ships come at higher premium. So-called, low-density packaging - the combined weight and dimensions of the box along with the shipped item inside the box, is no longer the measure.

Now, the contents of the box, as well as the box itself, is being reconsidered, weighed, and measured. Shippers are charging a premium for their challenged floor and deck space. Therefore, every inch and every ounce of the shipping box or package along with its contents are charged to the customer. Thus, the idea of Dimensional Weight Shipping was born.

### 3. What is dimensional weight?

According to a leading internet retailer, Dimensional Weight (also known as DIM Weight) is basically, a higher billable weight that applies to all packages where the Dimensional Weight exceeds the actual weight.

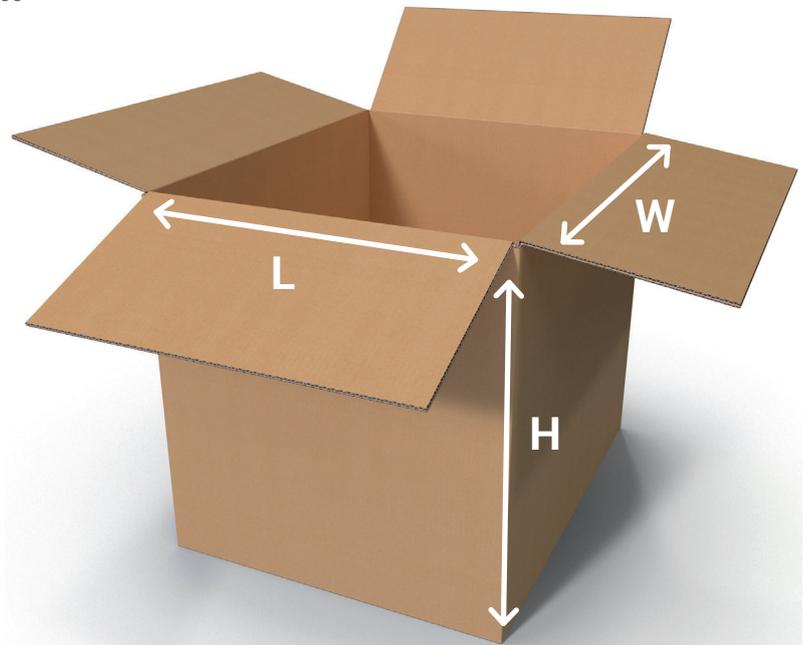
Dimensional Weight is calculated by multiplying the length by width by height of the package (in inches) dividing by 166 (for domestic shipments) or 139 (for shipments to Canada), unless a customized Dimensional Weight factor has been negotiated, in which case that factor should be used (any fraction is rounded up to the next pound).

$$\text{Dimensional Weight} = \frac{L \times W \times H}{166}$$

**L** = Length in inches

**W** = Width in inches

**H** = Height in inches



*Dimensional Weight*

Companies typically save at least 20% when utilizing box optimization, and with new Dimensional Weight Pricing changes, can save even more on shipping costs by using the perfectly sized box for every shipment.

In the example above, the new Dimensional Weight rule change causes the package to shipping rate to increase by 24%.

## 4.

### Does DIM weight impact e-commerce?

A UPS e-commerce study revealed that more than half of online shoppers have abandoned an online shopping cart due to the estimated delivery date and 61 percent cited shipping costs as the top reason for cart abandonment. E-commerce providers are trying to address this dilemma by turning to more economical packaging. Three trends are contributing to increased demand for parcel delivery:

- Popularity of online shopping is increasingly replacing traditional brick-and-mortar
- Manufacturers are developing their own e-commerce strategies
- Fluctuating gas prices

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There are two challenges that e-commerce companies have to continuously address. The first is that a large percentage of orders received require the warehouse pickers to determine which box size to use. The picker has to decide the optimal box size, manually. They may have to choose from 200 to 300 pre-fabricated boxes, consuming a great deal of time. Second, and just as important, the cost associated with shipping air in a carton, now that cube affects the delivery price, is enormous. Material handling systems are optimized to handle medium and large box sizes efficiently. There will be a decrease in package dimensions to accommodate the switch to dimensional weight pricing and an increase in smaller box sizes with more products placed in a given box. Consumer good companies that manufacture items such as cosmetics, fragrance, and body care products are high volume users of parcel delivery carriers. Getting more goods into the same box will save a significant amount of parcel freight cost. Life science manufacturers, such as medical device and secondary pharmaceutical providers, will also see a substantial rise in parcel delivery costs. Today, these manufacturers ship thousands of parcels on a daily basis in many different size boxes. One such shipper uses FedEx and UPS and has 200 plus prefabricated boxes. The complexity becomes overwhelming for the pickers given the choices and the various sizes of the products placed in the boxes.

## 5.

### The ORTEC solution

Anticipating the impending problem for many of its clients, ORTEC preemptively created the perfect solution. By collaborating with companies that specialize in making the perfect size package for each item shipped, ORTEC sought to minimize costs for its customers. ORTEC knew companies that ship an abundance of lightweight cartons are particularly impacted by the new Dimensional Weight shipping, therefore, it's imperative to minimize package size and reduce void.

ORTEC's Box Optimization solution identifies the optimal box size to reduce the overall number of parcel deliveries. The use of optimization technology is applied to evaluate the contents of an order to determine the number and size of each shipping carton required for the orders while minimizing cost and increases efficiency.

## 6. The next step? Load Building

Now that you have the perfect cartons, the next step?-shipping them. Since transportation costs account for up to 75% of total supply chain expenses, managing shipping optimally is critical. ORTEC's Load Building solution enables customers to save millions in shipping costs by simply rethinking the way loads are configured. Used individually or combined to create a robust multi-optimizer solution, ORTEC Load Building has been a proven solution for more than ten years.

## 7. How load building works

- First:** By utilizing ORTEC's Carton Optimization system, customers are ensured of determining the optimal transportation packaging on an order-by-order basis. And, our solution pays strict attention to any applicable restrictions during the optimization process such as customer-, material-, and packing-specific master data, and stackability.
- Next:** Pallet Optimization and Order Picking Control calculates the optimum order in which to pick and configure pallets, while also considering any existing restrictions.
- Finally:** ORTEC's Load Space Optimization ensures that every transport unit is ideally loaded, by using the customer's route plans loading and unloading sequences to calculate the ideal placement of every item to be shipped.

## 8. ORTEC Load Building benefits

- Seamless integration of ORTEC Load Building and ORTEC Routing
- Optimal utilization of cartons, pallets, and load spaces
- Fewer transport units required
- Minimized packing, order picking, and loading times
- Clear instructions for work preparation
- Optimal planning of personnel, equipment, and other resources
- Less work through fewer administrative processes
- Better delivery service
- Support customer services during order entry
- Simulate loading to optimize capacity planning
- Include exact instructions with parcel and other similar services
- Easy setup of loading and stowage rules for the transportation of hazardous materials
- See-at-a-glance with detailed graphical and tabular displays of the calculation results

# 9.

## Medtronic case study

Medtronic recently acquired pharmaceutical device maker Covidien, the largest medical device manufacturer in the U.S. The company wanted to reduce the cost of parcel deliveries in Europe and Asia by increasing cube fill. Medtronic ships more than 2.5 million parcel deliveries domestically annually and even more outside North America. The distribution center in Europe ships an estimated 4,000 deliveries on a daily basis. The company required the ability to maximize the utilization of parcel boxes used for shipments to increase cube fill rate. The logistics business process takes customer orders and groups the orders and materials into specific box sizes.

Medtronic deployed ORTEC's innovative box optimization solution which selects the optimal box size to ensure as many materials can go into the box as possible. In conjunction with this process, is the ability to select between pre-fabricated boxes, parcel delivery company provided boxes and the usage of boxes made on demand. Given the number of deliveries shipped on a daily basis, the ORTEC solution generates the optimal number of materials in a box and the optimal box in less than 3 seconds. The solution then either identifies which box to use or passes the pre-fabricated box dimensions to a machine which automatically creates the box from corrugated cardboard every 5 seconds. This unique and very innovative process ensures Medtronic has a cost avoidance solution for the dimensional pricing increases and completely automates the labor required to determine which box to use.

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ORTEC Load Building Optimization allows customization based on your requirements. You check the boxes and select the modules needed.

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- Comply with truck-trailer axle load limits
- Direct material takeover from the material assortment
- Automatic rounding of load units
- Automatic calculation in the background
- Data takeover from files in CSV format and the creation of an order list per file
- Conversion of loading graphics, item lists, and loading lists into Excel files for direct emailing
- Definition of combinations of materials and their stacking relationship
- Definition of individual scoring models to analyze critical factors
- Documentation and archiving of planning results
- Consideration of material-specific separation rules during packing, palletizing, and loading
- Layer-oriented palletizing
- Consideration of pre-assigned loading and unloading sequences
- Control of loading priorities
- Assignment of defined material to specific types of container
- Use of special transport units such as: railcars, gooseneck trucks, open top containers, fatracks, barge containers, airfreight containers, double stock trucks and ship holds
- Cylinder loading calculation for optimal loading with cylinders and rolls

# 10.

## Conclusion

Dimensional Weight Pricing doesn't have to mean increased costs that threaten your business. Combined with our revolutionary Load Building Optimization, ORTEC has the solution to revolutionize your shipping and storage problems, while making the process more efficient and cost saving.

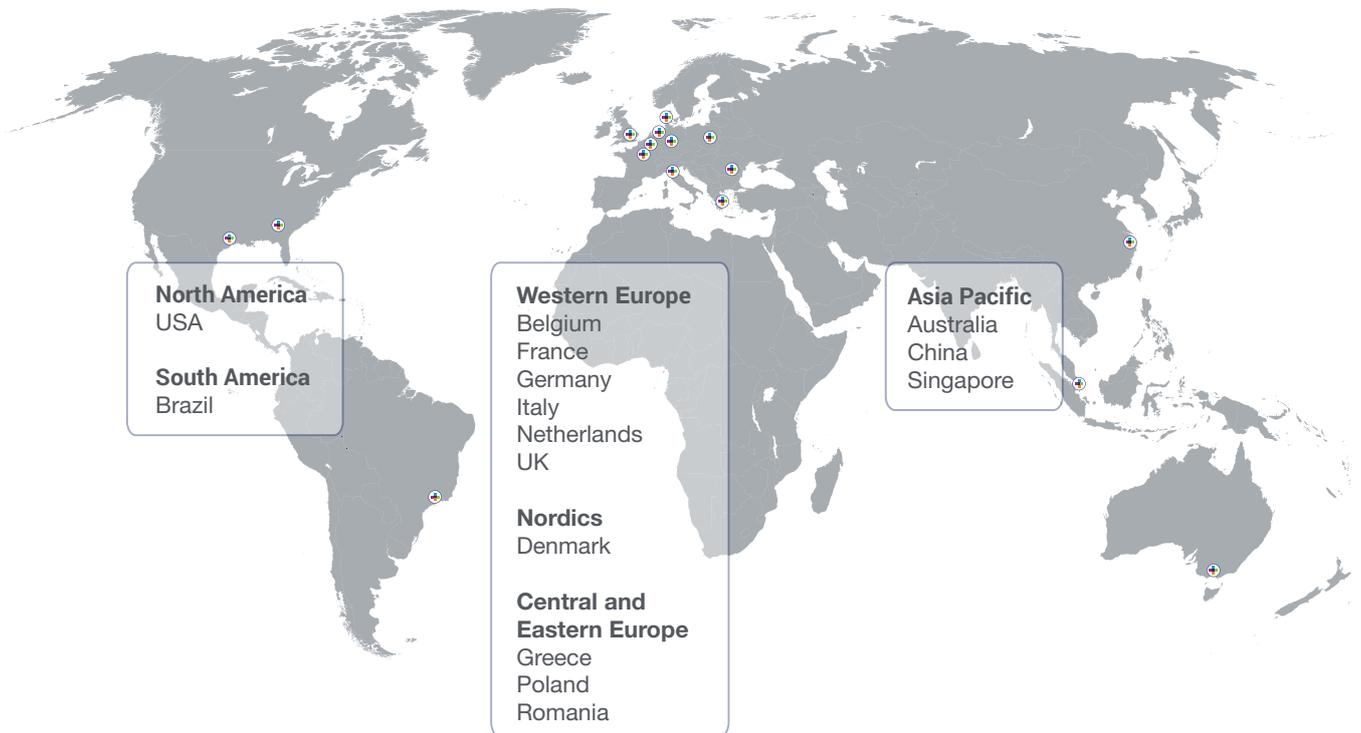
And for a winning formula for shipping and profitability, ORTEC + SAP guarantees optimized logistics. ORTEC is a Platinum Certified SAP partner, integrating directly in SAP ERP. We fill in the white spaces to provide real-time support. With a presence in more than 50 countries, ORTEC is a worldwide leader in creating business solutions.

**ORTEC ...thinking smart in and out of the box.**

## ORTEC world wide

### About ORTEC

ORTEC is one of the largest providers of advanced planning and optimization solutions and services. Our products and services fully optimize fleet routing and dispatch, vehicle and pallet loading, workforce scheduling, delivery forecasting, logistics network planning, and warehouse control. We offer stand-alone, custom-made and SAP® certified and embedded solutions that are supported by strategic partnerships. Our 750 employees support over 1,800 customers worldwide from offices in Europe, North America, South America, and Asia Pacific.



**Want to learn more about our solutions? Contact us at:**

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