



## Single or Multi-DC Network: Pros, Cons and Considerations

*Companies need to factor in multiple details when choosing whether to operate from one or more distribution center.*

## Introduction

*Best-in-class companies periodically review their distribution network with the objectives of reducing cost and/or improving delivery service. The most successful of these companies employ state-of-the-art analytical tools in combination with deeply experienced distribution practitioners to develop meaningful improvement recommendations. Given varying degrees of internal expertise related to major distribution network changes, this paper will bring some order to factors that might warrant either expansion or consolidation of the distribution network, including the customer, the product, and management and IT capabilities.*

## The Customer

Today's most successful companies understand that agile distribution operations are a major contributor to gaining and keeping market share. Often, this is directly dependent upon their ability to offer delivery service that meets or exceeds customer needs. Whereas a direct-to-consumer (DTC) company might feel the need to offer two-day ground service to most of its market, a manufacturing company selling to industrial customers might find that four-or-five day delivery is perfectly acceptable as long as expedited freight can be employed in the event of an emergency. To support two-day ground service to align with consumer expectations, the DTC organization would likely find the need to provide the expected delivery service through a multi-distribution center (DC) network. At the other end of the spectrum, a manufacturer, whose customers order in truckload quantities, could serve them through a single DC or directly from manufacturing plant(s), providing a much lower cost basis.

The table below provides examples of customer categories and their typical delivery expectations ranging from low to high.

Customer Category	Typical Delivery Expectations	Single or Multi-DC Tendency
Direct to Consumer (DTC)	2-day ground	Multi
Service Parts	2-day ground	Multi
Retail	2- to 3-day ground	Single or Multi
Wholesale	2- to 3-day ground	Single or Multi
Manufacturer	Contract dependent	Single or factory warehouse

A second customer-related factor which could dictate a multi-DC network is the need for continuity of shipping to customers in the event of a disaster, e.g., fire, flood, blizzard, etc. Inability to ship product would have highly unfavorable consequences for customers of many organizations. This concern alone drives many executives toward multi-DC configurations even though it might not be the most cost-effective solution. The mere existence, however, of more than one DC in a company's network by itself does not provide sufficient insurance against lost shipping capabilities. Information technology (IT) systems allowing agile reassignment of customers to a DC, the ability to recover and re-assign partially processed orders from the impacted DC to the operational DC(s) and other IT infrastructure need to be in place. Additionally, the ability to quickly ramp up throughput capacity at the operational DC(s) to absorb the demand normally satisfied by the impacted DC is necessary.

Prior to making a decision to transition from a single DC to a multi-DC network, two additional factors related to the customer experience need to be considered. First, are your customers willing to accept multiple shipments to complete a single order? With additional stocking points in the network, the likelihood of having the right item in the right quantity in the right place decreases. To keep order fill rates at pre-expansion levels, many organizations find the need to ship items from two or more facilities to complete some orders. This can be a major irritant to the customer due to the handling of additional receipts, challenges with reconciling receipts to purchase orders and other inefficiencies related to receiving the product. Secondly, there will be additional transportation costs associated with any order split between two shipping DCs. Assessment of these transportation costs has the potential to become a contentious issue. Recognition of this potential for additional transportation costs and determining who will bear them needs to be considered.

As evidenced above, the customer needs to be a key focus area during the development of plans for sizing and shaping the distribution network. Fully understanding the many ways in which the customer experience could be impacted is an essential part of the decision-making process.

## The Product

The characteristics of an organization's products play a role in supply chain network structure. In some extreme circumstances (e.g., handguns), regulatory issues dictate the delivery mode. By law, they must be shipped via air service regardless of the customer's delivery requirement or the ability for rapid ground service delivery. Use of multiple distribution centers to try to improve delivery service would be futile in this instance. Other instances where product characteristics dictate premium transportation modes include temperature control, hazardous, legal, etc.

Product value-to-weight ratio can be a factor where goods are best stored relative to customer location. Striking a balance between inventory costs and transportation costs is critical to defining the optimal network. Fine jewelry is an extreme example of product with a high value-to-weight ratio, where bulk produce would tend toward the low value-to-weight range. The higher the value-to-weight ratio for a company's product, the more impact the inventory costs will have on finding the proper balance point. Moving from a single DC to a multi-DC network is less likely to result in overall cost reductions substantial enough to warrant the required infrastructure investment.

## Management and IT Capabilities

The prospect of managing a multi-DC distribution network obviously presents more challenges than a centralized DC. Managing and controlling an operation at a single physical location is certainly less taxing on the distributor's resources. Conversely, decentralized distribution means decentralized management staff to operate multiple facilities. A clear management structure with well-defined processes and communication channels is necessary. To a great extent, the capabilities of the management team to overcome the challenges of multi-DC distribution will impact the success of the organization's network.

Likewise, the organization's IT team and infrastructure must be robust to properly support an effective multi-DC network. Software systems must have the capabilities to route orders and/or order segments to the proper DC(s) based on criteria such as ship-to address, stock availability and other customer-specific shipping requirements. The ability to forecast demand and allocate inbound product across the network, as well as strategically reallocate inventory between the DCs is also critical. Oftentimes, home-grown, *legacy* software systems have not been designed with this functionality in mind.

Deciding to upgrade your distribution network from one DC can be challenging. Details such as costs, delivery times, products, management capabilities and more weigh heavily in the decision process. Working with an experienced supply chain consulting engineering firm that understands the benefits and risks involved can assist companies with making a prudent business choice.

### Case in Point

A leading company that designs and markets high-performance sporting goods, apparel and accessories in more than 40 countries worldwide was nearing the limits of capacity at its single distribution center located on the West Coast. Their products are offered through a specialty dealer channel, large sporting goods retailers, and direct to the consumer through the company's website. In order to meet its strong commitment to customer service and delivery, the company had moved toward expediting freight as a means to improve service to customers in the Midwest and East.

The time seemed to be opportune to consider establishing a second distribution center in the eastern U.S. They partnered with FORTE to develop a comprehensive network strategy, by channel, for a proposed five-year growth plan. The first phase in the development of the strategy was a Network Optimization engagement designed to determine the appropriate number of distribution centers by channel and identify their location(s) and size(s). In addition, understanding the impact of the proposed network on inventory carrying costs, customer service levels, and inbound and outbound transportation costs at a product family level was imperative. In the second phase, FORTE thoroughly analyzed the business case for establishing a second distribution center in Tennessee, the location that was deemed optimal by the Network Optimization study.

Although a second location in Tennessee would result in significant transportation savings, the costs of establishing and operating a second distribution center, including transition and inventory carrying costs, outweighed those potential savings at their current level of business. A careful evaluation of the business case suggested, instead, that they could expand or relocate to a larger distribution center on the West Coast to accommodate projected growth and permit a continued commitment to high customer service levels. Even with investment in expedited freight, they were able to establish a highly efficient and cost-effective solution without incurring the expenses and complexity of a second distribution center in the network that will support them through planned growth for several years, at which time the business case will be re-evaluated.



## Why FORTE

### Single-Source Accountability

Whether we're helping you develop a strategic plan, design and build a distribution facility, or optimize a distribution operation through performance metrics and analytics, FORTE provides a true single point of contact responsible for the complete performance of your distribution network. No finger pointing. No fragmentation of responsibility. No multiple suppliers for technical support. You have performance goals, and it's our job to make sure they're met on an ongoing basis.

### Total Objectivity

We don't manufacture equipment. We don't develop WMS software. We don't have commercial arrangements with any suppliers for expected volumes of business. We're simply interested in delivering the most efficient distribution solutions at the lowest total cost. Our client-side service approach means our only allegiance is to our customers. So with every engagement, you know we'll choose the most appropriate level and blend of technologies integrated into an effective operational system.

### Expertise

Our team is deeply rooted in the hands-on implementation of distribution center design and warehouse automation. FORTE's engineers and technicians integrate today's best practices in supply chain management and distribution center operations while developing next-generation technologies. As a result, our solutions employ the best combination of practical advice, data-driven analysis and technology-enabled systems. With FORTE, you get:

- More accountability than a consultant
- More experience than a systems integrator
- More objectivity than a manufacturer

***That's why the world's fastest-growing companies are making distribution their FORTE.***