



White Paper

FILLING THE GAPS: MANAGING PARTS SHORTAGES INSIDE THE EXECUTION WINDOW



An E2open White Paper

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Executive Summary

The purpose of this paper is to examine the problems posed by critical parts shortages and to describe the technology and business processes needed to expeditiously and profitably solve these problems. This paper will discuss how to identify parts shortages by gathering the necessary data from across the supply chain, how to obtain urgently needed supplies of short components, and how to analyze the profitability and customer service impacts of the selected course of action.

We live in a volatile world. Demand is unpredictable. Supplies can be disrupted by a host of factors, from unanticipated demand spikes, to natural disasters, to geopolitical upheaval. With so much of modern industry dependent upon distributed networks of trading partners, dealing with critical parts shortages comes down to the ability to respond to demand you can't predict with supply you don't control.

There are two major approaches to dealing with parts shortages: (1) re-planning as disruptions occur in the extended network; or (2) finding a way to make your original plans work with the assets you currently have in motion. Re-planning costs time you may not have when margin windows are closing or financial deadlines are approaching. The challenge, then, is finding a way to make your existing plans work, when the assumptions underlying them have changed.

There are five functionalities critical to finding profitable, practical solutions to parts shortage problems within the execution window:

1. Connectivity to your trading partners
2. Multi-enterprise business process orchestration
3. Real-time analytics
4. Collaborative decision support
5. Real-time decision execution

These elements enable collaborative execution, a core competency that allows brand owners and manufacturers to leverage the collective brainpower of their trading partner communities to efficiently manage end-to-end supply chain processes and to respond intelligently to continuous changes to supply, demand, products, and partners. A collaborative execution framework facilitates three key ways of resolving parts shortages within the execution window, giving your company the option to expedite, transfer, or re-route existing assets that aren't (yet) where you want them, or aren't (yet) going where you need them.

World Out of Balance

Shortages of critical parts can be caused by a number of different factors, including

- Unanticipated demand spikes (“hot product”)
- Rapidly expanding markets outstripping supplier capacity
- Natural disasters disrupting production (e.g., tsunami, flooding)
- Natural disasters disrupting distribution (e.g., Icelandic volcano eruption)
- Geopolitical disruptions
- Labor disputes (e.g., port closures by striking workers)
- Right parts, wrong place

Regardless of how or why parts shortages occur, the result is the same from the perspective of the brand owner: a lack of critical components when and where they are needed to fulfill customer demand.

The costs of these shortages can be enormous. For example, the Thailand floods of late 2011 left a large number of suppliers and manufacturing facilities damaged or out of commission, resulting in a 30 percent cut in global hard drive production and a projected drop in 2012 PC shipment growth rates from 9.5 to 6.8 percent (source: IHS iSuppli). And the disruption was not confined to the high-tech industry; several major auto makers were forced to reduce or suspend production due to parts shortages caused by the flooding, including \$1.65 billion in production cuts for Toyota (source: Credit Suisse Group, AG).

The situation is particularly complicated for companies with widely distributed and outsourced supply chains, which place heavy reliance on suppliers and partners outside the traditional four walls of the enterprise. For many of these companies, a lack of visibility into the extended supply chain means that they do not receive adequate warning of looming problems—and therefore are unable to resolve exceptions before they negatively impact customer fulfillment.

Whether they come in the form of natural disasters or dramatic spikes in demand, disruptions are an inevitable aspect of supply chain management and go-to-market planning. So if we can't predict or prevent them, what can we do to more intelligently manage and resolve them?

The Elements of a Parts Shortage Solution

Part One: Identifying and Contextualizing the Problem

The first step in dealing with a parts shortage is identifying that one is happening. This sounds obvious, but can be a particularly tricky issue when dealing with second and third-tier suppliers, to which most companies have

limited or no visibility. Oftentimes, this means that a problem is not identified until the brand owner realizes that it cannot fulfill a customer order (at which point service levels and revenues have already taken a hit). What, then, is required to enable the multi-tier visibility needed to see problems brewing, while there is still time to make course corrections? Two things:

1. Electronic connectivity with trading partners
2. The ability to understand trading partner data in the context of relevant business processes (such as an order)

Partner connectivity is the foundation of any successful solution to parts shortages. You cannot communicate in a timely, effective manner if you are not electronically connected with your trading partners. Ideally, you should have the capacity to connect with partners at every level of technical sophistication, from large enterprises with EDI connections to small job-shops with dial-up Internet connectivity uploading spreadsheets or using Web-based interfaces.

Once connectivity is established, it is imperative to put the data it provides into the context of shared business processes. After all, numbers out of context are just noise. In order to make sense of the data you are receiving across multiple enterprises, you need the ability to map your partners' business processes to your own (only now does data become truly "actionable"). This mapping requires an in-depth understanding of both technologies and business process variations. For example, what are the data elements included in an order? Does each party mean the same thing when using a particular word? What work flows comprise a particular process? What are the dependent or supporting processes? Which events are truly exceptions and not just meaningless noise?

Once partner connectivity is established and data is properly contextualized, you now have the ability to see, in near real time, into the farthest reaches of your supply chain. With visibility across multiple tiers of suppliers and inventories, you can detect looming problems before they become full-blown catastrophes. But, once you have red-flagged a looming part shortage, what can you do about it?

Part Two: Assessing the Impacts of Potential Decisions

There are two major approaches to dealing with parts shortages: (1) re-planning as disruptions occur in the extended network; or (2) finding a way to make your original plans work with the assets you currently have in motion. Re-planning costs you time you may not have and treats the parts shortage as a new constraint, rather than an opportunity for finding a way to hit the plan as it stands. So how can you make your existing plan work? Potential solutions include expediting, transferring, or re-routing existing assets that aren't (yet) where you want them, or aren't (yet) going where you need them to be.



There are two facets to an effective solution: visualization of the impact of the current situation; and enumeration of possible courses of action, including their impacts on key performance indicators (KPIs) such as revenue, profit, or customer satisfaction.

The multi-enterprise data and contextualization needed to identify problems also provide the raw material for finding solutions. Accurately contextualized information allows you to assess the potential impact of a shortage: what are the severity and duration of the problems caused by a shortage likely to be? Will the shortage affect a single location or an entire region? Is the shortage of a single component, or an entire commodity group? Having this information readily at hand is a prerequisite for analyzing the problem and devising an effective solution. With a clear, zero-latency picture of the inventory levels of all your components—at supplier locations, in transit, at contract manufacturers, or elsewhere—you can use targeted analytical tools to determine how best to re-allocate, expedite, re-route, or transfer critical component inventory in order to maximize revenue, profit, and customer satisfaction.

Part Three: Resolving the Disruption with Collaborative Execution

Once you have identified the best course of action within the constraints of time and available inventory, you need a platform that enables collaborative execution of your latest decisions. Here again the combination of connectivity and business process harmonization provides the platform for collaboratively solving complex, time-sensitive supply chain problems. You can propose solutions to your trading partners, and they can confirm their ability to either perform as required or suggest alternatives—all in real time. Without the errors and latency often introduced by manual processes, you and your partners are able to collaboratively design and execute a solution to the parts shortage issue at hand.

This combination of connectivity, harmonized business processes, and interactive problem solving is the essence of **collaborative execution**, a core competency that enables companies to maximize profitability inside the execution window (that period of time after plans have been made and within the lead time required to produce one's way out of the current set of constraints).

Indeed, collaborative execution provides a platform for turning challenges into opportunities. When critical components are in short supply, whether due to supply disruption or surging demand, the first company to detect the looming shortage has the ability to secure the supply needed before it falls under the control of a competitor. This “early warning system” provides both a defensive advantage and an opportunity for making strategic buys in order to gain control of critical parts and develop competitive leverage.

Ultimately, the ability to see situations as they develop, clearly and in real time, provides companies with the agility and adaptability to not just survive—but also thrive—in an increasingly volatile world.

An Illustrated Example: New Tablet Takes Off

Consider the following example: a new tablet product is introduced to the marketplace and is met with significantly greater-than-projected demand. This demand spike leads to an increased number of orders from retailers, which in turn means that the brand owner must increase its order with its contract manufacturer. The contract manufacturer now faces a dilemma: respond to the increased order within 24 hours, or lose the business (and potentially future business) to a competitor.

Within a collaborative execution framework, key personnel (e.g., account manager, demand planner) at the brand owner and contract manufacturer will be alerted to the demand spike as soon as the increased orders are placed, virtually eliminating internal and inter-company communication latencies. The analytical elements of the collaborative execution environment provide the demand planner with a complete view of demand within the network at an aggregate level, with the ability to drill down into details (e.g., the source of the demand) and to collaborate with supply planning colleagues to determine the potential impact on the order of long lead-time critical parts.

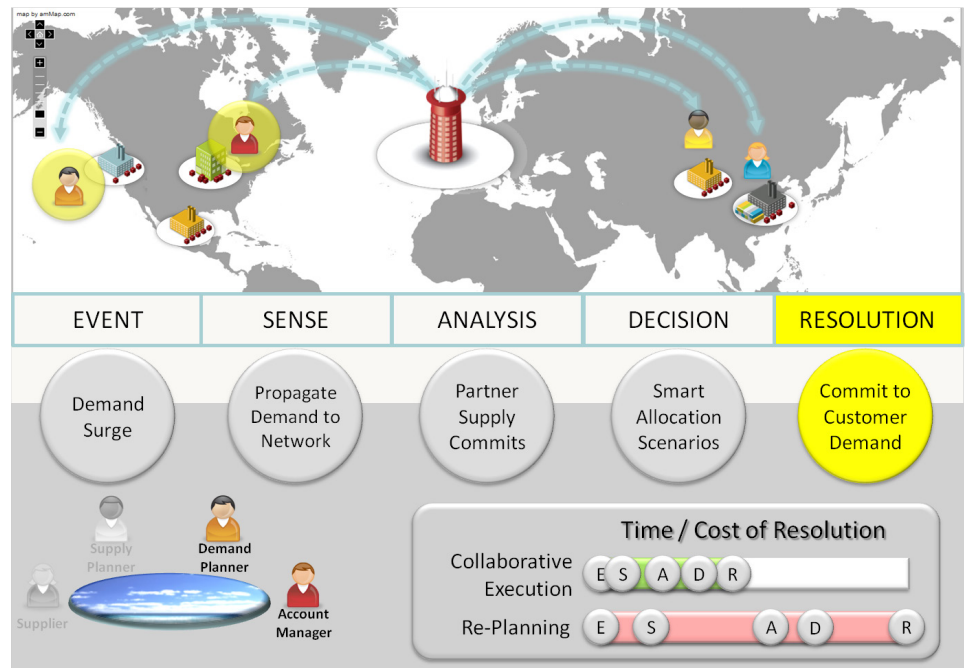


Figure 1. Successful issue resolution with collaborative execution.



The supply planner looks to the system for constraining parts in the exploded bill of materials (BOM) and discovers that one critical component, a high-resolution digital camera, will be short. The system helps the planner check for availability of the part throughout the supply chain, including supplier upside, alternate suppliers, and in-transit inventory that will reach its destination in time to help meet the surge. The supply planner also has visibility into which other products use the component, introducing the possibility of diverting components from less-urgent uses to meet the demand. The planner is able to analyze multiple scenarios (re-allocation, expediting, etc.) suggested by the system for impacts on key metrics, including revenue, profitability, and customer satisfaction levels. The planner then elects the best course of action for the current situation and communicates that choice to the affected parties, who are able to receive information and confirm/decline particular actions in real time.

Constant, real-time communications among participants make it possible to execute decisions as soon as they are made, wringing even more latency out of the system. Finally, the implemented solution can be captured in the systems of record (generally ERP) for auditable, truly closed-loop exception resolution. The order is accepted, the customer is pleased, and a key relationship is maintained with the minimum impact on margins.

Summary and Conclusion

A technology and business process platform that enables collaborative execution provides your organization with greater flexibility and responsiveness in dealing with the unforeseen. We all know what happens to the best-laid plans of mice and men; those of supply chain organizations fare no better when confronted with unplanned disruptions. Even scenario planning has its limits—it is simply not feasible to foresee every possible twist of circumstance. And crippling exceptions, such as critical parts shortages, can strike at the most inopportune times, such as the last few days of a quarter or at the end of the opportunity window for a seasonal product.

Critical parts shortages can arise from a host of factors—from natural disasters, to geopolitical events, to market factors such as demand spikes or resource shortages. There are a limited number of potential responses to a critical parts shortage: re-planning; or working to make the original plan work by expediting, transferring, or re-routing assets in motion. Within a collaborative execution framework, companies are able to meet the plans they have, rather than making new ones each time reality throws a curveball. Ultimately, this ability to act within the execution window yields business benefits such as increased profit, superior customer service, and reduced risk to financial or operating targets.



About E2open

E2open is a leading provider of cloud-based, on-demand software solutions enabling enterprises to procure, manufacture, sell, and distribute products more efficiently through collaborative execution across global trading networks. Brand owners use E2open solutions to gain visibility into and control over their trading networks through the real-time information, integrated business processes, and advanced analytics that E2open provides. E2open customers include Celestica, Cisco, Dell, Hitachi, IBM, LSI, Motorola, RIM, Seagate, and Vodafone. E2open is headquartered in Foster City, California with operations worldwide. For more information, visit www.e2open.com.

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