When Companies Compete On After-Sales Support, Service Supply Chains Take Center Stage

By Jean V. Murphy – March 2006 Issue

For many companies, after-sales activities are money in the bank as they may account for anywhere from 10 percent to 40 percent of revenue.

Companies increasingly are using after-sales service as both a competitive weapon and a source of high-margin revenue. As a result, service supply chains are becoming mission-critical operations.

"To succeed in today's competitive marketplace, multinational companies are organizing their aftermarket service to differentiate themselves from their competitors and to provide highly profitable revenue for their company," says Ebrahim Butt, automotive sales-Americas, for DHL Global Customer Solutions, Plantation, Fla. In the automotive industry, he notes, about half of all OEM profits are derived from aftermarket operations.

The automotive sector is not alone. An Aberdeen Group benchmark survey, "Best Practices in Strategic Service Management," found that after-sales service accounts for 10 percent to 40 percent of revenue for many industrial and service companies and represents up to 50 percent of inventory investment.

A number of market pressures are behind the elevation of post-sales service, says Boston-based Aberdeen:

• Customers are demanding faster problem resolution and little or no down-time on critical equipment—demands reflected in broader manufacturer warranties and more stringent service level agreements (SLAs).

• Price pressures are eroding product-based profit margins in many industries, driving firms to rely more on post-sales service for revenue growth.

• Customer service has become a strategic competitive play, a consequence of customer retention costs averaging 15 percent less than customer acquisition.

• End users no longer are willing to maintain the equipment they purchase, but expect the supplier to shoulder this responsibility.

• Companies, in general, are striving to do more with less.

One manufacturer experiencing this trend is Lucent Technologies. The current climate among Lucent's telecommunications customers is very different from the boom years when the focus was on acquiring new assets and infrastructure. "In recent years telecom operators have been more cautious about investing in new equipment so they need more service on what they have," says Brendan Kenny, a Lucent field manager based in Dublin, Ireland. "To extract maximum value from the existing infrastructure assets, they are focusing on the maintenance and operation of that equipment."

Lucent provides world-scale network infrastructure to major telecom operators in the U.S., Europe and Asia, including many areas "that can be a little hard to get to from a logistics perspective," says Kenny.
These networks typically have tens and often many hundreds of sites, often with large installations of complex telecom equipment in each. "Those networks are what generate our customers' revenue streams, so keeping them up and running is absolutely critical," Kenny says.

Planning Tool

Lucent uses a service parts planning solution from Baxter Planning Systems, Austin, Texas, to help it optimize the quantity and location of parts inventory in order to meet service-level agreements in the most cost-efficient way. "We put into the system all of our service-level agreements, our physical stocking locations and customer equipment by site, as well some data on historical failure rates for parts, and the planning tool generates a series of stocking levels," Kenny says. "So, for example, in order to support 300 service contracts across the EU, it would tell us, 'here are the recommended locations to hold stock and here are the parts and quantities that we recommend you hold at each of these locations.' It is definitely an effective materials planning tool."

"Different parts, different stocking strategies and different locations all need to be modeled," says Mark Anderson, product vice president at Baxter. "Probably the biggest challenge is having a strategy that not only is cost effective in terms of inventory but that also provides service levels that are acceptable to the companies that are paying for the service level agreement.

"If the field service network was left on its own, it would want multiple copies of everything," Anderson says, "but the logistics folks have a different agenda. They want minimal amounts of inventory and the fewest possible movements. So service parts planning is all about balancing the carrying costs of inventory with the costs of not

having the part where it is supposed to be and optimizing that point."

This involves calculating the cost and likelihood of a stockout for each item at each location and the cost of holding the part in inventory in order to come up with an optimized field plan. "This is not just a statistics game," says Anderson. "All kinds of variables have to be considered." Having such detailed information, however, allows the plan to remain dynamic. "In the old world, inventory allocation was based on first-come, first-served," he says. "Now, since we have gone to great lengths to calculate all of these stockout costs by site and we know our exposure in every situation, we can replenish or re-position inventory to the site that most needs it, which may not be the one that ordered first."

Baxter is one of several companies answering the demand for optimized service parts planning—a market that also includes MCA Solutions, Philadelphia; Servigistics, Atlanta; and ClickCommerce, Chicago, among others. Companies using these solutions realize, on average, a 22 percent reduction in parts inventory and 90 percent higher fill rates, according to Aberdeen.

Such results are important because the cost of not having a part available when a machine goes down can be very high, both to the end user and the service provider, which typically pays penalties if promised response times are not met. Because of the high stakes involved, leading parts users are looking for new ways to structure SLAs.

Led by the defense and aerospace industries, there is an increasing move away from service agreements based on response times in favor of performance-based contracts. The idea, explains Bob Salvucci, CEO of MCA Solutions, "is that companies don't want to talk about parts availability and fill rates, they just want to know their uptime, so they are starting to construct contracts around that criteria."

One MCA customer, KLA-Tencor, is a supplier to Intel. "In the fabrication plant, Intel measures the time a machine is down awaiting a part," he says. "They don't measure how often KLA had the part and how quickly it was delivered."

Garrett Gafke, CEO of SeeControl, San Mateo, Calif., notes that cost and revenue loss from downtime can neutralize 1 percent to 3 percent of a customer's revenue. To help companies ensure that they won't lose time waiting for parts, SeeControl offers an on-site solution. Secure cabinets are loaded with parts that can be accessed using smart cards or pin numbers and placed on site at customers like Network Appliance, says Gafke. Parts are scanned when removed from the cabinet and the transaction is automatically sent to Network Appliance so it can replenish the cabinet as needed. If a matching defective part is not scanned into the cabinet within a set period of time, an alert is sent. "This basically allows users to create their own little closed-loop logistics circle," says Gafke.

"There is a significant reverse logistics challenge in getting the good parts back onto inventory."
— Phil Corwin of UPS Supply Chain Solutions

This type of solution fits into a trend for customized service plans. “We are seeing more and more requests for tailored service levels, where a company wants multiple levels of service depending on the criticality of individual situations,” says Kenny. “It is no longer one size fits all.”

Parts & Locations

Differing and more stringent service requirements, the globalization of service areas and outsourcing of operations all make service parts planning a very complex problem to solve. Perhaps the greatest contributor to complexity, however, is the sheer number of parts and locations that must be modeled. “If you look at the automotive industry, a car might have a service lifetime of 20 years and in aerospace and defense it is even longer,” says Cliff Isaacson, director of product marketing at Servigistics. “If you think about all the parts that get changed over those years and the different substitution options, you can see that the bills of material get really complicated.” This means a huge number of calculations are required to come up with an optimal stocking plan. “It is only in the last five to 10 years that computing power has been available to actually solve these big service network problems that involve a lot of service parts,” Isaacson says.

At Dell Computer, for example, the Servigistics solution plans more than 200,000 part-location pairs to support more than 2 million same-day service level agreements. Based on demand and customer geographic density, Servigistics regularly updates the parts forecast to ensure the right parts are at the right location. Servigistics also runs a 24/7 centralized parts data center for Dell, which users access via the web. “At Dell, the customer experience is paramount,” says Doug Schmitt, director of enterprise service delivery. “The Servigistics solution delivered immediate value by enabling Dell to improve the management of its service parts planning while reducing costs.”

Similarly, MCA optimizes more than 250,000 parts across thousands of locations for Cisco Systems, which has a wide range of service-level contracts with its customers, including many with an aggressive two-hour response time from call to solution. “Cisco wants to do this optimization on a daily basis because they are constantly adding SLAs, so they had to have a solution that could handle that,” says Salvucci. “Actually, we do that whole optimization for Cisco in about eight minutes.” As is typical with these solutions, MCA’s Service Planning & Optimization product is Web-based and delivered on demand, so implementation is fast—it took only five months to deploy the solution throughout Cisco’s worldwide network and to go live with more than 1,000 users.

Because the modeling used in these solutions is stochastic—or designed to handle random variables—some long-standing problems in parts forecasting can now be solved, such as how to manage slow-moving parts.

“If you were only dealing with fast-moving parts, traditional forecasting techniques would work,” says Salvucci. “But with our customers, 90 percent to 95 percent of their parts have only one or two hits a year. So it becomes a stochastic risk management problem that requires totally different capabilities than traditional forecasting.”

Random Variables

Newer inventory optimization solutions, however, such as those from ToolsGroup and Smart Software, also are based on stochastic equations and these vendors are venturing into the parts planning arena.

Charles Smart, president of Smart Software, Belmont, Mass., notes that his company has a patent on its inventory optimization solution for intermittent, slow moving demand. "Service parts is a good example of this because these companies often maintain thousands, if not tens of thousands, of SKUs and demand for each of those can be intermittent," says Smart. "Demand during any bucketing period may be zero. Then, apparently randomly, demand spikes to a non-zero value and the next period it might be a different non-zero value and then it goes down again."

Smart Software won a series of competitive grants from the National Science Foundation to develop a new technology that it calls Statistical Boot Strapping. "We have proved again and again that we can provide almost 100 percent accurate estimates of minimum inventory needed to satisfy demand over specific lead times," using this method, Smart says. "There is a lot of math behind it, but the end user isn't forced to deal with that."

The latest enhancement to these solutions is pricing optimization, an area that Servigistics is advancing with its acquisition of Profit Science. Parts pricing is not as dynamic as in retail, says Isaacson. "People aren't making price changes to their service parts every month. But we are allowing them to appropriately price things so that if there is a shortage or if a part is reaching its end of life, they can change the price to draw those parts down at the rate they want."

Many companies turn to third-party logistics providers to execute the stringent requirements of their SLAs and inventory plans. Choice Logistics, New York, specializes in this area, working primarily with high-tech companies like Akibia, Westborough, Mass., which manages and supports corporate data centers around the world.

"We were expanding fairly rapidly from next-day to same-day service offerings," says Mike Parisi, director of global logistics at Akibia. Choice was selected to manage stocking locations on Akibia's behalf and to deliver the services required to meet same-day commitments to customers. "Choice has continuously met or exceeded our service requirements and regularly looks for ways to optimize processes and to avoid unnecessary logistics costs," says Parisi.

"Our customers look to us to gain complete visibility and control of the inventory assets that are deployed in after-sales service and to provide them with the information they need to plan their service requirements," says John Miller, vice president of business development at Choice. The provider operates more than 285 stocking locations around the world and about two-thirds of its transactions are to meet two- and four-hour delivery requirements. Choice owns no transportation assets, but uses express carriers designated by the customer. "Our clients like the fact that we are vendor neutral when it comes to carriers," says Miller. "They want the flexibility to use the carrier they choose."

The large express carriers themselves have units specializing in parts management. Butt, at DHL, says customers are asking logistics companies for comprehensive services in three areas: logistics consultancy, including design and management of the aftermarket supply chain; integration between OEMs, their partners and logistics providers to provide the visibility required to balance service and cost; and the pre-positioning and delivery of parts inventory.

For a global operation of an automotive company, DHL brought together the expertise of all of its business units—DHL Express, DHL Danzas Air/Ocean and DHL Solutions Group—to create a comprehensive solution, he says. “With this client, we jointly selected a location for the distribution center, we built it from the ground up and we manage and operate it, including providing a customer-service function for their customers within that region. This company is sourcing from literally every region of the globe and we manage all inbound logistics as well as transportation to the end customer.”

United Parcel Service maintains a large parts bank and repair center at its airfreight hub in Louisville, Ky., from which it replenishes hundreds of small, field stocking locations and ships direct to customers with next-day service.

One laptop manufacturer combines this capability with other UPS services to support its warranty program, sys Phil Corwin, director of service parts logistics at UPS Supply Chain Solutions, Atlanta. If a laptop goes down, the customer can take it to any UPS store in the U.S. and for a set fee have it boxed and shipped to the Louisville facility for next-day arrival. “We have a very tight agreement to diagnose the problem, repair the laptop if possible and ship it back within a 12- to 18-hour window,” says Corwin. “The customer gets their own, specific laptop back within three days.”

This demonstrates the importance of reverse logistics in the overall value proposition of service parts, Corwin adds. Field engineers typically take several parts on a service call but may only use one, he explains. “There is a significant reverse logistics challenge in getting the good parts back onto inventory as quickly as possible so that copies are not ordered and in either repairing and returning the broken part or disposing of it.”

Logistics Hubs

This is an area that contract manufacturer Solectron emphasizes as well, with its post-manufacturing logistics services. “Computers, cell phones, and advanced telecommunications and networking equipment contain information vital to the end user,” says Joseph Tou, director of strategic marketing and alliances. “Fast turnaround time is essential.” Solectron partners with transportation and delivery companies to create a worldwide network of logistics and warehousing services. Service facilities are located in strategic logistics hubs to ensure that products and recovered parts reach their destination quickly at the lowest cost, he says.

Menlo Worldwide and Schneider Logistics are two 3PLs that have concentrated on the automotive parts sector. Both note the impact that offshore sourcing has had on the parts

supply chain.

“There is a big push from our customers to use more overseas lower cost suppliers,” says Bill Miller, vice president, automotive, at Schneider, Green Bay, Wis. “As a supply chain provider to those customers, we are trying to support them as they move overseas and that adds complexity and length to the supply chain. This is the primary trend that I see going on in service parts and it mirrors a lot of what you see in industry in general.”

Greg Lehmkuhl, vice president of the automotive group at Menlo Worldwide, San Mateo, Calif., says that the aftermarket parts units at automotive OEMs are increasingly sourcing parts separately from the manufacturing organization. “A manufacturing plant or OEM purchasing organization may not be comfortable buying a part like seat covers from a manufacturer in China or India because of all the different colors and material options involved,” Lehmkuhl says. “But the service parts side might say, ‘you know, 70 percent of replacement seats are tan leather and I can go to Brazil or Morocco or India or China and get these at a $20 discount.’ So they may source 70 percent of their volume from this new global supplier.

“We definitely are seeing service-parts shop independently of manufacturing and this is causing more activity to go overseas.” The result is “much more complexity for us to manage.”

As a result of this trend, he says, “Menlo now operates service-parts warehouses in the EU, Chile, Mexico, a couple in China and a bunch in India. It’s a pretty broad global footprint.”