

## Case Study: Cisco Addresses Supply Chain Risk Management

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This Case Study documents a presentation made at Gartner's Security and Risk Management Summit conference in 2010 on how Cisco manages the risks associated with supply chain disruptions. Gartner assesses Cisco's supply chain resiliency program as one of the better-executed programs we have seen, and recommends other clients study it to understand how they might "derisk" their own supply chains.

### Key Findings

- A product-centric approach provides more business value than an incident-centric approach to risk assessment for most businesses.
- Transparency is critical to both internal and external support for supply chain resiliency. Objective metrics contribute to transparency.
- As with any significant business endeavor, senior management support is critical to success. When senior managers care, everyone cares.

### Recommendations

- Tailor your resiliency challenge to your organization.
- Make business continuity planning (BCP) an essential foundation.
- Pick your approach, and stay the course.
- Incorporate resiliency in the supply chain design rather than focusing on post-disaster recovery.

## WHAT YOU NEED TO KNOW

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Supply chain risk management (SCRM) is a critical discipline within business continuity management (BCM) that many companies, particularly manufacturing firms, fail to perform well. This Case Study (which Cisco presented at Gartner's Security and Risk Management Summit conference in June 2010; see Note 1) highlights the tools, policies and practices that Cisco has implemented to support its SCRM process. Gartner believes it is these investments that make Cisco's SCRM system among the most evolved in the field.

## CASE STUDY

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### Introduction

Cisco, the global information and communication technology provider, has put in place a supply chain resiliency program that any company facing possible risk from supply chain disruption should study. Cisco's program for SCRM combines tools, policies, practices and management support into a comprehensive system that enables the company to truly understand and manage the risks associated with the supply of most of its products. Beginning with new product design and introduction, and continuing through to current product manufacturing and fulfillment, Cisco can predict potential risk points and work with members of its supply chain to manage and minimize those risks. Further, Cisco can recover from external disruptions quickly to minimize the impact on its customers. Other companies should study what Cisco has done and, as appropriate, implement SCRM programs that allow them to manage supply chain disruptions as effectively as Cisco does. Note that a supply chain resiliency program does not negate the need for proper demand planning, which can lead to product shortages in the market.

### The Challenge

Cisco's business model is complicated, relying extensively on outsourced manufacturing for more than 95% of the >12,000 products it delivers, most of which are configure-to-order. Cisco sells to a broad range of customers from the private and public sector, and as Cisco expands its presence in the consumer sector (with products such as the Linksys line), it is seeing a growing presence of make-to-stock products. The company's growth strategy includes being highly acquisitive. It has made more than 140 acquisitions since its founding and is presently making three to four acquisitions per quarter. In general, Cisco migrates the supply chain — including manufacturing — to the outsourced/contract manufacturing model, but it has retained some manufacturing of acquired businesses, at least in the interim. Cisco implements lean practices throughout the business, including its supply chain operations, and is focused on customer value delivered with minimal waste in its systems and processes.

While operating and growing its business in this environment, Cisco has had to balance a number of conflicting objectives:

- **Available versus lean:** Lean behavior dictates low inventories based on pull (requiring assembly time), yet customers want product with no lead times (especially an issue if demand surges).
- **Standardization versus differentiation:** Lean promotes standardization to minimize variation and improve quality, but too much standardization can eliminate product differentiation.
- **Redundant versus affordable:** Redundancy can guarantee availability, but the cost may not be acceptable to customers.

- **Reliable versus responsive:** Fast and quick to market, but with quality products.
- **Secure versus fast:** Need to do things quickly, but securely.
- **Process-driven versus innovative:** Lean is about process standardization, but Cisco wants to be seen as innovative in the marketplace.

Cisco characterizes these conflicting objectives as "the resiliency challenge" — balancing speed and flexibility, and how to be innovative while being resilient. What instigated this challenge and drove home the need to invest in a formal supply chain resiliency program was Hurricane Katrina. In the aftermath of the hurricane, Cisco released more than \$1 billion into the distribution channel to aid telecom infrastructure recovery, but in doing so, the company realized it could not see where the product was or the impact the released product was having on the company from a financial perspective. This "ah-ha" event motivated Cisco to put in place a supply chain resiliency program.

## Approach

Cisco's value chain risk management program was initiated four years ago, and is built around four major functional disciplines:

- BCP
- Crisis management
- Product resiliency
- Supply chain resiliency

The program today has a staff of eight. Cisco feels as if it is into the second generation. Cisco has evolved from a supply chain focus to a total value chain focus, and has developed a robust set of tools and practices that are being strongly embraced by the business units.

## Business Continuity Planning (BCP)

Within Cisco's supply chain resiliency program, BCP is a semiannual process to assess critical value chain partners (see Note 2). Cisco has a five-step process that consists of:

- **Identifying key nodes with high impact potential:** Nodes are characterized as a location where a single-source supplier is located or as a major logistics hub or supplier that touches a large part of the product portfolio. Key nodes are defined as those with a high revenue impact potential.
- **Evaluating preparedness based on an objective format:** Cisco has developed a Web-based tool that is objective and is being further standardized via Cisco's involvement with the Supply Chain Resiliency Leadership Council ([www.scrlic.com](http://www.scrlic.com)). Cisco conducts initial and periodic evaluations/audits of all critical supply chain partners.
- **Mapping critical components to supplier sites.**
- **Identifying time to recover (TTR) at the part and site levels:** TTR can be measured against multiple factors, such as at the manufacturing, test or component level. It can be remediated by second sourcing, recovery locations (hot or warm) and so on. TTR is a critical element in defining resiliency in Cisco's program (see Note 3).
- **Validation through audits and drills:** Supplier TTRs are reconciled — claims are validated and compared to known and tested values. If a supplier fails an audit, it may

be put on a performance improvement program or see some of its volume shifted to other suppliers.

## **Crisis Management**

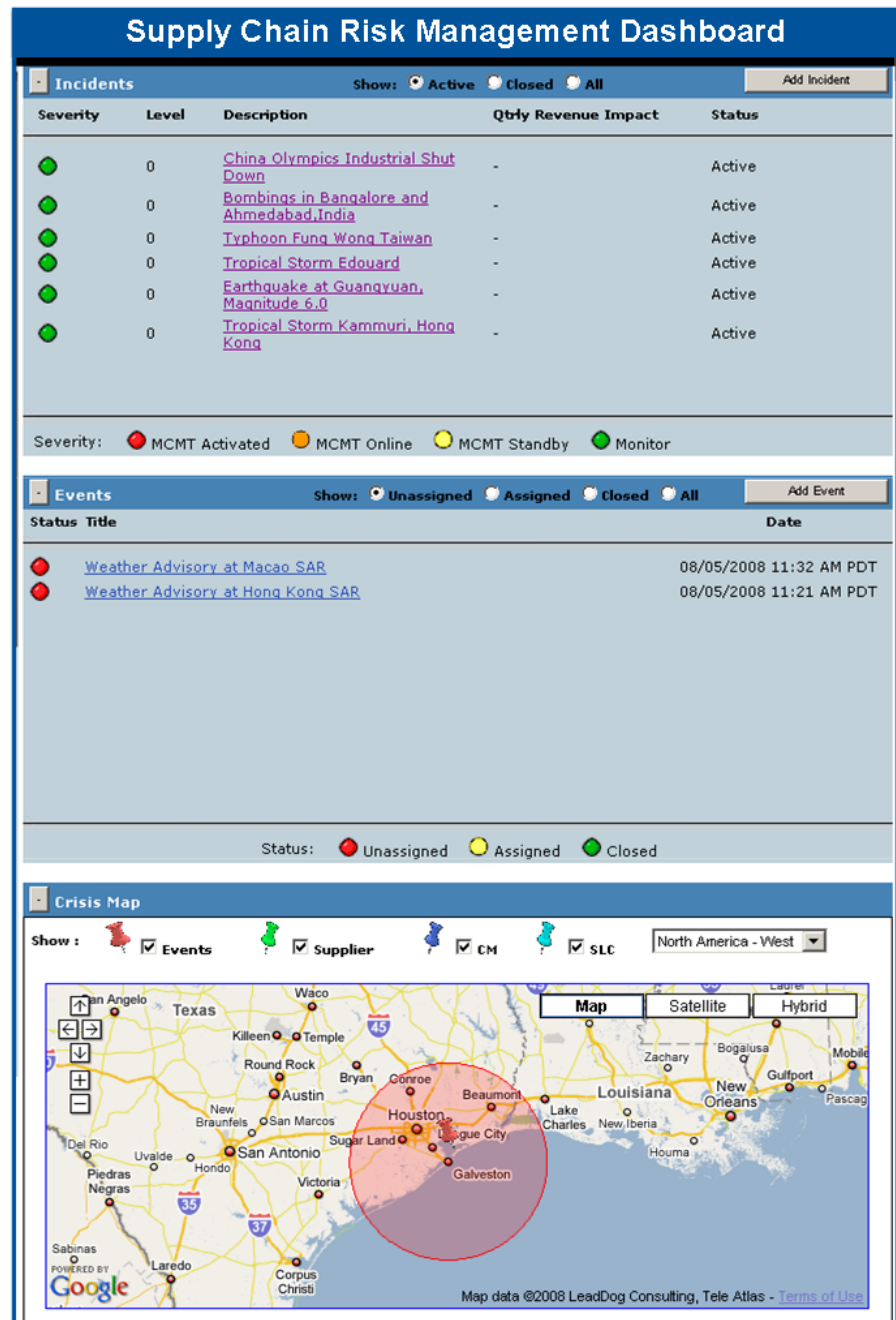
Using feeds from an external provider, NC4 ([www.nc4.us](http://www.nc4.us)), Cisco has developed a crisis management dashboard. One hundred products in 25 different product families account for just over half of Cisco's revenue. Using the BCPs for these products — tied to the External Situational Awareness feed from NC4 — and a Google Earth mashup, Cisco's crisis management dashboard can display the potential disruptive threat on a global basis (see Figure 1).

Figure 1. Crisis Management Dashboard

Crisis team activation

Global monitoring of events that may disrupt Cisco's supply chain

Mapping capabilities to assess supply chain nodes within the radius of an event



Source: Cisco

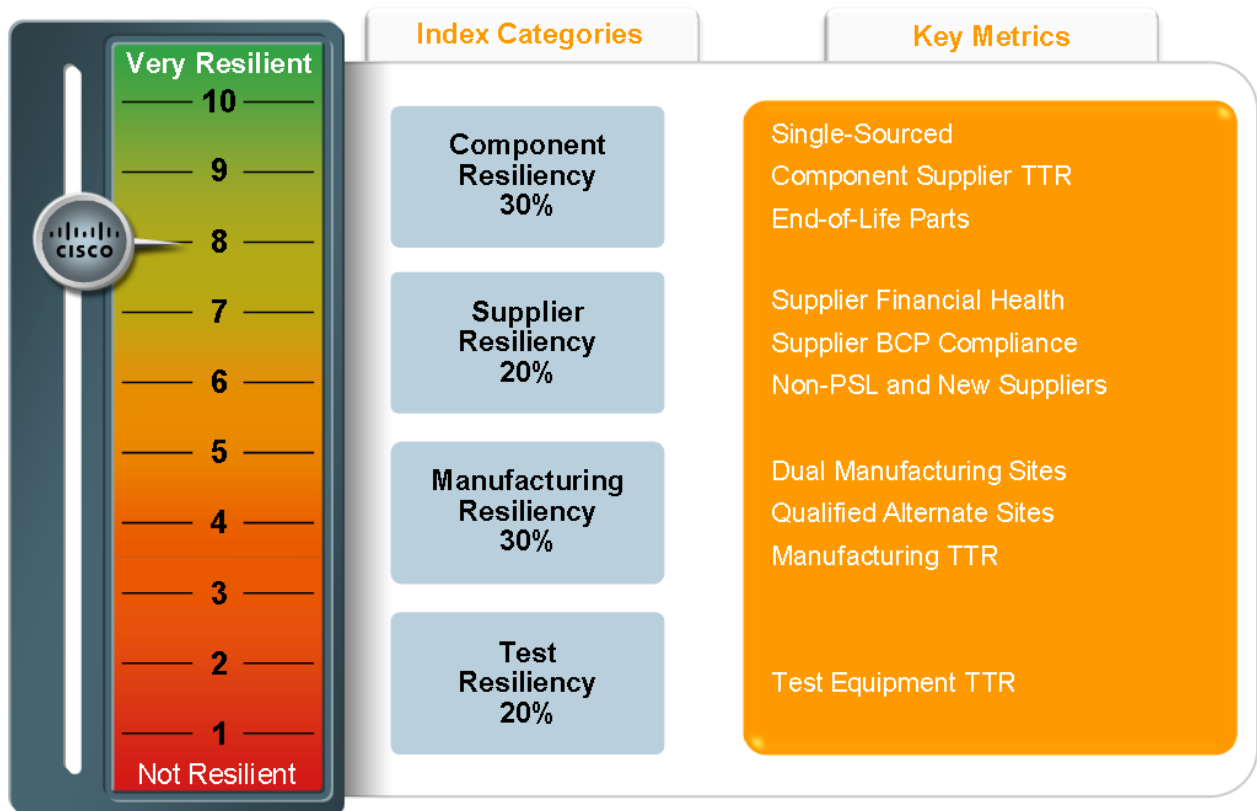
Cisco has a multilevel response model. The lowest level is just an online display, while the highest level engages senior management in the response. Cisco started with an eight-hour response window when the program was initiated, but by using some follow-the-sun techniques, response time to any incident has been cut to a maximum of two hours. The cost to develop the dashboard was in the low five figures, so the investment has been paid back many times over.

## Supply Chain Resiliency/Product Resiliency

The resiliency programs consist of proactive efforts in the design and execution of the supply chain that reduces post-disaster time to recover and, thus, improves the supply chain resiliency. When the BCP process and the dashboard are applied at the product or supplier level, they become the instantiation of resiliency measurement. For the resiliency process to be effective and for it to provide the transparency desired, hard metrics are required. Since they were unable to identify any readily available sources of "resiliency metrics" externally, metric developing was part of the learning process.

To ensure the metrics were objective and comparable, Cisco created an index that is used either to judge a supplier or assess a particular product/design. The index has multiple elements. For designs/products, the component element and the manufacturing and test elements are critical, while for suppliers, the supplier-centric metrics replace the component-based metrics as shown in Figure 2.

Figure 2. Resiliency Index Definition



Source: Cisco

A key factor in ensuring supplier resiliency is Cisco's inclusion in contracts that the TTR trumps "force majeure" when it comes to disruptions. After all, the point of the process is to mitigate the risks associated with the disruptions that force majeure clauses usually are put in place to address from a supplier liability perspective. If the disruptions are covered by force majeure clauses, then Cisco would not be able to enforce its resiliency program — hence the reason TTR supersedes force majeure.

When applied against specific products, the resiliency scores are reported semiannually to senior management by the general managers. This ensures that designers know management is aware of product resiliency, and operations executives are managing supplier resiliency to minimize risk to the business.

## Results

Cisco considers the specific economic benefits to be proprietary information, but it has cited multiple examples of how its SCRM program has benefited the company:

- **Chengdu earthquake (May 2008)** — This 7.8-magnitude earthquake in central China occurred on a Sunday (U.S. time). Cisco was able to use its crisis management capabilities to shift suppliers and reschedule orders by the end of Monday, minimizing the impact on key customers.
- **Financial crisis (late 2008 to mid-2010)** — After analytics revealed that five key suppliers faced a high risk of disruption, Cisco instituted "last-time buys" or exercised other options, such as second sourcing. Cisco was not affected when all five suppliers ended up filing for bankruptcy.
- **Product derisking (ongoing)** — With the current tools, Cisco can derisk a product before the product is introduced into the market. This can save as much as \$1 million (the cost to derisk a well-established existing product). As noted above, proper supply chain demand planning is still required to avoid product shortages in the market. Failure to forecast demand can still result in product shortages due to parts availability issues.

## Critical Success Factors

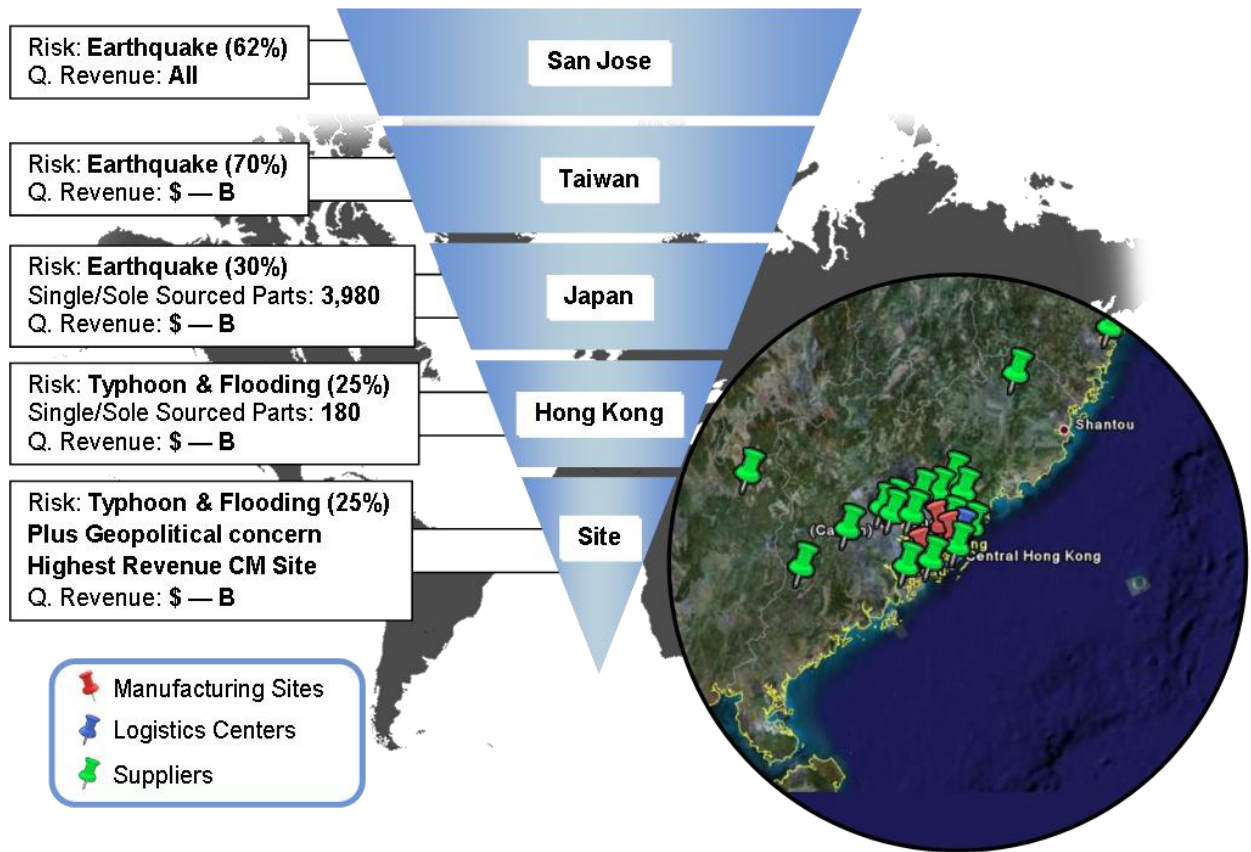
As with any significant undertaking, high-level management support at the board level is critical to project success. A supply chain risk management program requires significant cultural change internally, as well as within the value chain. Without that senior management support, Cisco would not have executed as well as it has. That senior-level interest has led to business-unit-to-business-unit comparisons of risk vulnerability, which has led to internal competition, which, in turn, is driving down risk quotients across all business units.

Transparency into the SCRM processes has been critical both internally and with trading partners. Internally, by giving engineers clear and objective information about new designs and by providing suggested remediation steps to derisk a design, Cisco has found that, in almost all cases, the engineering staff readily adopts the get-well plans (see Note 4). Also internally, clear and objective metrics have facilitated the business-unit comparisons noted above. Externally, when working with suppliers, having clear and objective measurements opens a dialogue with suppliers about the costs to derisk. With an open, two-way dialogue, Cisco can decide to invest with its suppliers or to accept higher piece-part pricing for a less-risky position.

## Lessons Learned

Cisco initially took an incident-based risk prioritization analytical approach, which proved to be interesting, but of minimal actual use. This initial analytical approach categorized the potential financial risk of disruptive incidents based on the product of the risk of the incident and the financial impact. The highest risk incident from the original analysis was an earthquake in San Jose, the location of Cisco's corporate headquarters. With a 62% probability of a disruptive earthquake — and all the revenue at stake — it was clear such an event would be catastrophic. Likewise, earthquakes in Japan and Taiwan had potentially billions of dollars of disruptive impact, as did weather-related incidents in other parts of Asia (see Figure 3).

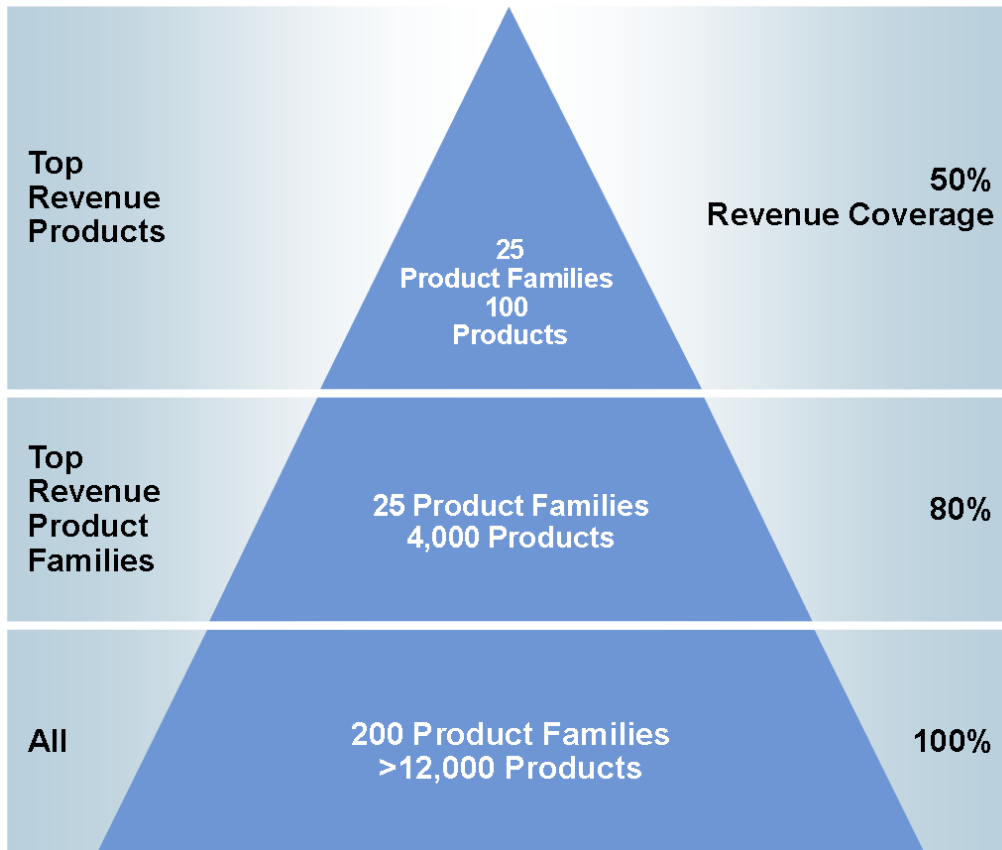
**Figure 3. Initial Approach Was Incident-Focused**



Source: Cisco

In reality, however, none of the risks has actually occurred. Meanwhile, other risks, although judged to be less likely or with lower financial impact, occur regularly. Cisco learned that, while the incident-based approach was useful into "scaring the business" into funding the program, the reality was that *they were always "guessing wrong," so they shifted to a product-based approach.* Analysis showed that relatively few products accounted for more than half the potential risk to Cisco (see Figure 4). As is the case in many companies, relatively few products account for a relatively large percentage of the company revenue.

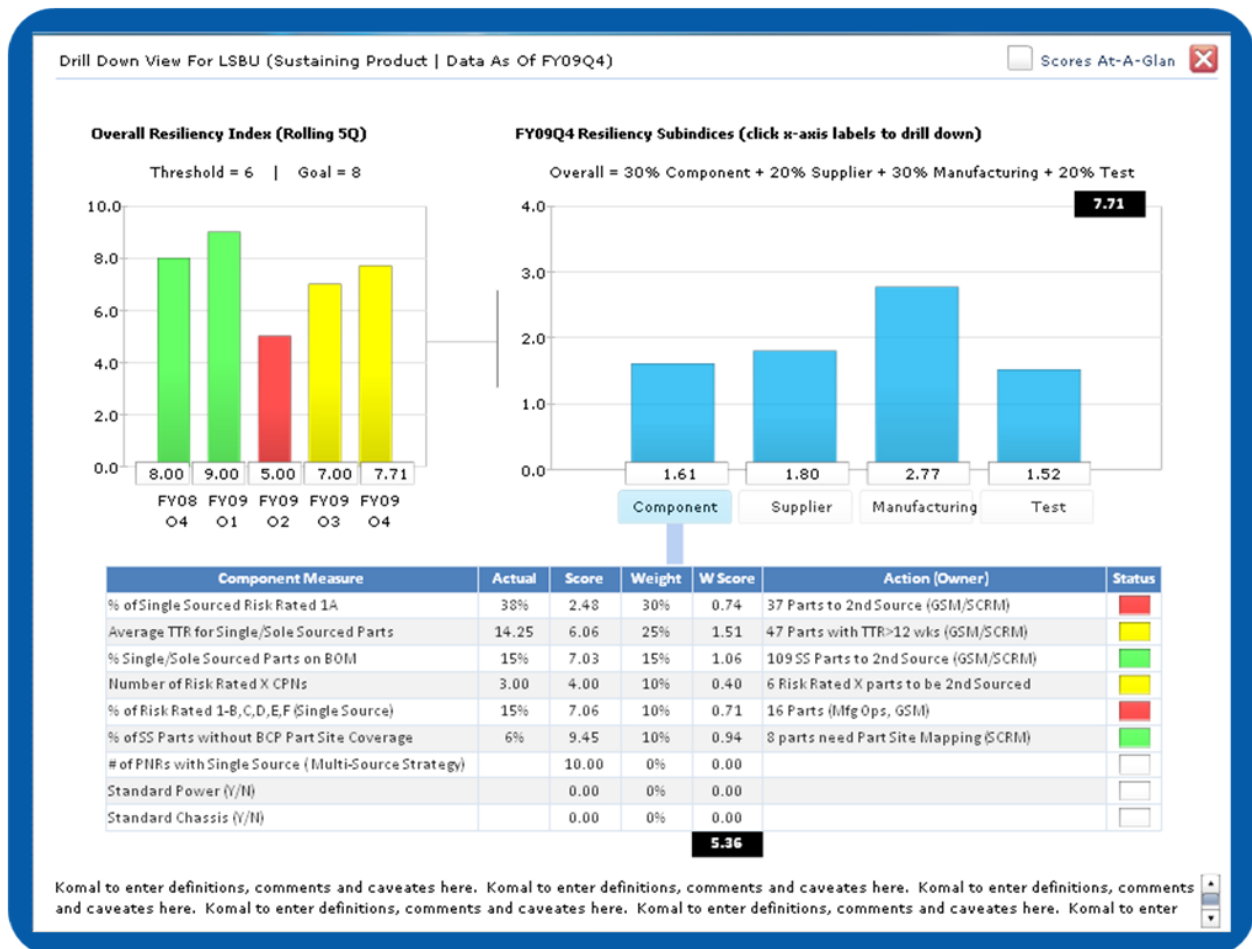
Figure 4. Product Focus



Source: Cisco

By derisking those 100 key products, Cisco no longer had to worry about which incident might cause a problem, yet was still able to have a significant financial impact on the company. The *key to accurately derisking a product is to have an objective risk index that leads to believable and trusted measurement*. Each key product is provided a scorecard (Figure 5).

Figure 5. Product Resiliency Integrated Scorecard Tool



Source: Cisco

Given that it can cost as much as \$1 million to derisk an established legacy product, the ability to derisk during the product design phase is critical. By *providing the engineers with a get-well program instead of a mandate, acceptance was high* and — except where there is a substantial business objective that dictates the need to accept the risk — products are now entering production with relatively low risk indexes. Gartner has found that typical product derisking steps might include:

- Selecting alternative components that might have multiple sources of supply
- Selecting existing components with similar and acceptable performance characteristics, instead of an all-new design
- Substituting a commodity-grade component with additional testing, instead of a premium component and vice versa — whichever has lower risk
- Qualifying additional manufacturing sites
- Specifying alternate test procedures

In the absence of standards and objective metrics around risk assessment and supplier business continuity planning, Cisco took a leadership position in the Supply Chain Resiliency Leadership Council ([www.scrlic.com](http://www.scrlic.com)). This multicompany initiative is working to develop standards for the objective measurement of resiliency that all participants can support and use. This will lower the costs of assessments, improve their accuracy and shorten the time it takes to do them.

## **RECOMMENDED READING**

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"A New Approach: Obtain Business Ownership and Investment Commitment for Business Continuity and Resilience Management Through Key Performance and Risk Indicator Mapping"

"Out of the Ashes: Business Continuity Management Lessons From Iceland's Volcanic Eruption"

### **Note 1**

#### **Cisco Presentation at the Security and Risk Management Summit**

This Case Study is derived from discussions with Cisco and the presentation "Building Resiliency Across the Customer Value Chain" delivered by John O'Connor, Director of Value Chain Solutions and Resiliency at Cisco (session code SEC16\_F7, 20 through 23 June 2010, Gaylord Hotel, National Harbor, Maryland).

### **Note 2**

#### **BCP**

Gartner uses the term "BCP" in a different context than Cisco in the context of this Case Study. Cisco is referring to BCP as an element of its supply chain resiliency program, while Gartner refers to BCP as an overall business activity encompassing IT disaster recovery, supply chain resiliency, natural disaster (including pandemic recovery), as well as physical infrastructure recovery.

### **Note 3**

#### **Time to Recover (TTR)**

Cisco defines TTR as the time it takes to go from total disruption to a return to 100% capacity.

### **Note 4**

#### **Get-Well Plan**

A "get-well plan" is essentially a list of actions the engineers might take to lower the risk index of a product. It might include component substitution, alternate suppliers, different assembly locations, second sourcing and so on.

This research is part of a set of related research pieces. See "'New Normal' Business Demands New Focus on Innovation, Cost, Risk Management and Governance" for an overview.

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