

businessintelligence

# Managing the e-Supply Chain

**Cisco Systems**  
**Complimentary Case Study**

# CASE STUDY: CISCO SYSTEMS

## Abstract

Cisco Systems has developed a scalable business model that enables the company to meet the challenges posed by continued explosive business growth. It has created a new form of supply enterprise, termed an 'ecosystem', that seamlessly links together customers, employees, contract manufacturers and other supply chain partners into a multi-site, multi-location electronic network, based on the practices and technology of the Internet.

This case study details:

- [The context](#) that shaped the development of Cisco's ecosystem business model.
- How the company links together customers, resellers, suppliers and partners through its [Cisco Connection Online \(CCO\) Web portal](#).
- How [Cisco's Manufacturing Connection Online \(MCO\)](#) extranet facilitates a virtual manufacturing and interconnected supply chain strategy.
- An overview of the [issues involved in designing an ecosystem model](#) and the benefits thereof.

[Insights are provided by James Crowther](#), customer business solutions manager, enterprise, and [Christian Treille](#), customer business solutions manager, service providers, together with key learnings from managing an ecosystem business model.

## Context

Headquartered in San Jose, California, Cisco Systems designs and sells the equipment needed to build Internet technology-based networks: remote dial-up access servers, routers, switches and network management software. Cisco has the top market-share in 16 of the 20 markets in which it competes and is number two in the remaining four.

Cisco is thought to be the fastest-growing business corporation in history – reaching a market capitalization of US\$100 billion in only 12 years (it took Microsoft 20 years to attain a similar market capitalization). It was this almost exponential growth that forced the company to reinvent its business model.

By the mid 1990s, Cisco's managers found that they simply could not increase production capacity fast enough to meet demand. James Crowther, customer business solutions manager, enterprise, explains:

“We realized that growth depended on our ability to scale manufacturing, distribution and other supply chain processes quickly. We also realized that we would require the services of far more people than we could reasonably expect to recruit in time. It was at that point that the idea of a new business model emerged.

“Cisco decided to turn itself into a Web-enabled company. We outsourced most of the manufacturing and logistics activities, and used networking technology to link suppliers and distributors tightly to our in-house processes. This left us free to concentrate on our real strengths: new product development, looking after customer needs and brand management.”

In Cisco’s case, using the Internet to re-engineer the organization did not mean pasting a thin dot-com veneer on to a bricks-and-mortar company. However, in the words of Peter Solvik, Cisco’s chief information officer, “it is about fundamentally transforming the company from the inside out”. Cisco used Internet-based technology to transform its entire supply chain into an extended enterprise system – or what Cisco calls ‘an ecosystem’.

Cisco’s Internet ecosystem seamlessly links customers, prospects, partners, suppliers and employees in a multi-party, multi-location electronic network. This e-network not only acts as the glue holding together all the internal operations of the supply chain, but also enables all the parties involved to present a unified face to the outside world, with the result that all the working parts look and act as if they are one company. At the heart of Cisco’s ecosystem are two portals:

- [Cisco Connection Online \(CCO\)](#)
- [Manufacturing Connection Online \(MCO\)](#).

## Cisco Connection Online (CCO)

Crowther explains:

“Customer Connection Online is essentially a web portal to information stored in Cisco’s enterprise resource planning [ERP] databases, legacy systems and client/server systems, and acts as a comprehensive resource for our customers, resellers, suppliers and partners.”

CCO has four key components:

- **Market-place:** a dynamic on-line catalogue used by more than 10,000 authorized representatives of direct customers and partners to configure Cisco products on-line. It contains a suite of applications for order processing that enables customers to configure, price, route and submit orders.
- **Status Agent:** gives Cisco’s salesforce, direct customers and partners immediate access to critical information on the status of orders.
- **Customer Service:** for non-technical information.
- **Technical Assistance and Software Library.**

Christian Treille, customer business solutions manager, service providers, outlines how CCO has automated the customer ordering process:

“Once the product is configured, customers can obtain pricing information for their selection from the pricing agent. Order placement allows customers to drop their selections into a shopping cart in Cisco’s virtual market-place. An invoice agent allows customer accounts payable staff to track invoices on-line. A service order agent lets users obtain information about specific service orders. This application also connects directly to the freight forwarder’s tracking service so that customers can determine in real time exactly where their orders are in the shipping process.”

In the past, one-third of all faxed orders contained errors that delayed processing. With the introduction of CCO, customers rarely make purchasing mistakes. After customers plug in their Cisco configuration and account information, the system will alert them if, for example, they have selected software that is not compatible with their hardware.

CCO has allowed the company to lower the overall cost of taking orders, as well as minimize customer frustration. By automatically capturing orders at the configuration stage, Cisco has reduced the number of orders that require reworking from 15 per cent to less than 2 per cent.

According to Crowther, “CCO is a conduit of information”. For example, on the day a product is introduced, all of its documentation – from manual to marketing to press releases – is immediately posted on CCO. Customers can report problems and submit queries. The Bug Alert feature posts information about software problems within 24 hours of discovery. Customers can search the bug navigator to find information on specific problems.

Through CCO, Cisco is able to eliminate many sundry expenses. In the past, Cisco would send software purchases to its customers on CD, delivered overnight by a freight forwarder. Now, the Technical Assistance and Software Library site enables customers to simply download software over the Internet. Over 50 per cent of Cisco’s software upgrades are delivered via the Internet – in excess of 20,000 per week. In 1999, Cisco saved over US\$500,000 per year in freight forwarding charges.

Over 90 per cent of the company’s orders are now received via CCO. In fact, Crowther puts the figure as high as 98 per cent for some business areas of Cisco EMEA (Europe, Middle East and Asia). Considering that Cisco’s global sales revenues totalled over US\$12 billion in 1999, CCO may well be the world’s most valuable website.

## Cisco Manufacturing On-line

Cisco’s manufacturing system incorporates 34 plants globally, of which only two are owned by the company. The result is a significant contribution to Cisco’s bottom line. The company estimates that in 2000 it saved up to US\$800 million compared to what it would have cost to own and operate all 34 manufacturing plants.

Cisco’s suppliers not only make all of the components and perform 90 per cent of the sub-assembly work, but they also undertake 55 per cent of the final

assembly. Thus, suppliers regularly ship finished Cisco hardware to Cisco customers without a Cisco employee even touching the product. In the words of Cisco executive vice president, Don Lustwin, “you have heard of just-in-time manufacturing, well this is not-at-all [manufacturing](#)”.<sup>5</sup>

The phrase ‘virtual manufacturing’ is commonly used throughout Cisco. As Pete Rukavina, Cisco’s director of global supply chain management, [points out](#):<sup>6</sup>

“For every Cisco manufacturing employee there are six virtual manufacturing employees who use Cisco processes, are measured against Cisco metrics, and are located around the world.”

In explaining the concept of virtual manufacturing employees, Treille cites Jabil, one of Cisco EMEA’s contract manufacturers, located in Scotland, as an example:

“Their employees follow Cisco processes and manufacture product as if produced by Cisco’s own employees, even though they are still on Jabil’s payroll. So, for example, material management, dynamic replenishment and quality assurance are done by Jabil employees using Cisco-developed and Cisco-controlled processes and systems.”

Treille is keen to stress that although process control is centralized as a consequence of the single enterprise system, actual execution is decentralized. One example of centralized process control/decentralized execution is automatic testing. In order to ensure product quality, Cisco has installed automated test cells on all Cisco-dedicated supplier production lines. There are currently 950 test cells worldwide using Cisco-developed technology to automatically configure test procedures for each specific customer order. The use of centrally controlled automatic testing has saved the company the need to deploy test engineers in supplier plants – equivalent to an annual cost saving of US\$108 million.

Cisco’s contract manufacturers, assemblers, distributors and logistics partners connect with Cisco through a supply chain extranet portal called Manufacturing Connection Online (MCO). First deployed in 1999, MCO enables Cisco and its partners to access real-time manufacturing information including data on demand forecasts, inventory and purchase orders. According to Treille:

“Creating MCO involved consolidating the access points of numerous manufacturing information systems into a single user interface. This gives us tremendous leverage. Direct fulfilment is a good example. By using MCO to access Cisco Enterprise Programme (the company’s ERP system), supply chain partners are able to directly monitor customer orders and ship product, without us actually touching an order. The system prompts Cisco to pay for the parts used.

“By directly linking to our suppliers, we have streamlined procurement. That means no more paper purchase orders and no need to expedite delivery, and so purchasing teams can concentrate on more strategic activities such as partnership and business development. That is only one part of the benefit. By working with suppliers in a connected ecosystem we have cut delivery lead times, errors and inventory, and have improved customer satisfaction.”

Through MCO, Cisco has also reduced the time-to-market for new products. Before the creation of an ecosystem-wide new product introduction (NPI) database, new products usually required four or five iterations of prototype design, with each prototype taking at least one week to complete. The NPI database has reduced the time spent collecting product information from one day to 15 minutes, plus a similar step-change saving in the time needed to disseminate it. Cisco believes that this type of positive impact on time-to-market generated an extra US\$388 million in income during 2000.

## Building an Ecosystem

The design of Cisco's ecosystem provides a number of lessons on how to build an electronically enabled supply enterprise. Crowther summarizes some of the critical success factors of ecosystem design:

- many business decisions are outsourced
- success is interdependent on all partners
- there is a scalable infrastructure
- there are many connection points throughout the system
- business requirements dictate connectivity
- there is a focus on system-wide processes and infrastructure.

Crowther believes that the success of Cisco's ecosystem business model owes much to the company's Web-centric culture. He feels that companies seeking to emulate Cisco's ecosystem should be prepared to develop a similar culture. He suggests that, "they could start by taking an IQ test – an Internet IQ test" (as detailed at <http://www.cisco.com/warp/public/750/iq>).

Drawing on expertise with Fortune 1000 executives, Cisco's Internet Business Solutions Group developed an analysis tool designed to assess an organization's ability to migrate to an Internet business model. Cisco's Internet Quotient (IQ) self-assessment test enables users to create a 'net readiness' profile for their organization. Net readiness factors include:

- management vision: senior management is actively engaged and driving an Internet strategy throughout all areas of the company
- business/IT partnership: the company's business and Internet strategies are well integrated
- customer connectedness: the company's Internet applications are driven by customer needs
- ecosystem potential: the company has a track record in building and managing strategic relationships with complementary players
- employee empowerment: employees are encouraged to initiate Internet activities that create new customer value and greater productivity
- executing in Internet time: the company exhibits 'ruthless execution' (three months or less) in the deployment of its Internet strategy
- Internet standards: the company actively participates in Internet standards development in its industry

- developer community: the company is creating opportunities for other companies to profit from its business
- market innovation: third parties are spontaneously adding value to or innovating around the company's Internet strategy.

These statements reveal much about the cultural aspects of Cisco's single enterprise supply chain model. They also demonstrate what the company means when it refers to seeking 'best-of-breed' partners. Cisco expects all of its business partners – existing and potential – to be as net ready as itself.

## Overview

Cisco's approach to building an e-supply chain model is an outstanding example of an organization prepared to think outside its existing boundaries. The company has in fact opened up its internal information systems to suppliers and other supply chain partners, giving their employees the same access rights to information as Cisco employees, and thus enabling the Cisco ecosystem to act as a distributed knowledge management network. This level of network intelligence has allowed Cisco to generate considerable strategic leverage from its supply chain.

To summarize, Cisco's e-supply chain strategy has involved several initiatives. These include:

- A single enterprise system: embracing contract manufacturers, distributors, logistics partners, development engineers, service engineers, sales representatives and customers into a single information system. This enables business partners to manage much of Cisco's supply chain.
- Information sharing in real time: the entire supply chain operates from the same demand signal. This means that any change in one node of the network is immediately transmitted throughout the network.
- Direct fulfilment: whereby most of Cisco's contract manufacturing partners ship directly to customers. Today, suppliers directly fulfil 55 per cent of the company's customer orders.
- Automatic testing: to ensure product quality by creating test cells on supplier production lines. The cells are able to automatically configure test procedures when an order arrives.
- Rapid new product introduction: reducing the number of iterations required during prototype development. Automation and better connectivity has also reduced time-to-market by three months.

Taken together, these initiatives have had an immense impact on value creation. Cisco estimates that in financial year 2000, its interconnected supply chain generated a total of US\$695 million in cost savings (see [Table 1.1](#)).

Cisco's supply chain model has also provided a scalability and agility that allows the company to grow with incredible speed. In the intensely competitive market spaces occupied by Cisco – where the timelines for new product introduction are counted in weeks rather than months or years – the company's

ecosystem has become as great a core strategic capability as its strengths in product design and marketing.

Initiative	Annual savings (US\$)
Direct fulfilment: partner builds and ships direct to customer	15,000,000
Autotest: integrated testing process controls assembly testing throughout supply chain	108,000,000
Single enterprise: transformation of supply base to operate as one entity	170,000,000
Product life cycle:	
Productivity improvements	14,000,000
Income: faster time-to-market	388,000,000
<b>Total</b>	<b>695,000,000</b>

**Table 1.1: Cisco’s Supply Chain Financial Benefits – 2000 Financial Year**

## Key Decisions and Steps

1. Recognizing the need for a **scalable business model** to meet the demands of rapid growth.
2. Deciding to use the **Internet as the foundation of a networked ecosystem** that leverages the collective capabilities of all supply chain partners.
3. Establishing a **virtual manufacturing system of contract manufacturing plants** using Cisco processes, performance metrics and information technology.
4. Using the Internet as the prime customer contact channel (**CCO**) so that customer information and decision-making feeds directly into the supply chain.
5. Creating a supply chain extranet, **manufacturing connection online (MCO)**, that allows all supply chain partners to operate from the same demand signal.
6. Enabling supply chain partners to **directly fulfil customer orders**.
7. Developing a **clear set of guidelines (net readiness)** to help potential supply chain partners understand what adoption of the ecosystem model entails.
8. **Pursuing continuous improvement** of supply chain processes to reduce product time-to-market cycles.