

## Linksys Streamlines Supply and Demand Chain to Achieve Operational Excellence While Fueling New Business Growth

Founded in 1988, Linksys, a Division of Cisco (NASDAQ: CSCO) is the recognized global leader in Voice, Wireless and Ethernet networking hardware for consumer, SOHO and small business users. Linksys is dedicated to making networking easy and affordable for its customers, offering innovative, award-winning products that seamlessly integrate with a variety of devices and applications.



success story

### OVERVIEW

Benefiting from the steady and substantial growth of the home and small business networking market, Linksys has built an impressive product portfolio and today manages over one thousand products--across a very complex extended value chain.

However, amidst aggressive growth, it's often easy to overlook inefficiencies that can be accepted as the "status quo" cost of doing business. Despite Linksys' illustrative growth, Mark Payne, vice president, worldwide operations for Linksys, realized the potential to truly revolutionize the way Linksys actively managed its inventory and sales forecasts by streamlining the company's entire supply and demand chain.

This was not an easy undertaking. It required changes in conventional thinking about how to approach sales and operations planning (S&OP), while making new technology investments. The results have been impressive and far-reaching within Linksys, and across its network of partners, suppliers and customers. Linksys realized a direct impact on its bottom line within one year of implementing Symphony Metro's FS&OP solution and has also gained significant new efficiencies in both sales forecasting and inventory management that have a profound impact on customer satisfaction.

This case study outlines the inventory management and sales forecasting challenges that Linksys faced amidst aggressive growth, the next generation processes and solutions that were put in place, and the real-world results that have been reflected in the company's balance sheet and materialized in increased customer satisfaction levels.

*"It is important for us to have a system and process in place that helps reduce the impact of demand volatility on the supply chain, while decreasing inventory and maintaining a high level of customer service."*

-- Mark Payne, Vice President  
Worldwide Operations, Linksys

### LINKSYS FAST FACTS

- Founded in 1988
- Acquired by Cisco in 2003
- 1800 product SKUs
- 900 employees worldwide
- Serving 80 countries across Europe, the Middle East, Asia, Africa and the Americas

SYMPHONY METRO SOLUTION  
FS&OP Manager™

PARTNER

IBM Global Business Services (GBS)

# Managing Growth Requires Breaking the Status Quo, Not Accepting It...

## THE BUSINESS CHALLENGE

In Linksys' early days, growth was easier to manage with a low SKU count, simple supply chain network, and a manageable supplier base. Overall, it was relatively easy to manage the S&OP process. Yet as the company developed, it had to grapple with a larger product portfolio, a more complex and continually-changing supply chain network, and a larger supplier community, all with increasing demand for its products.

Because Linksys had achieved significant growth over the years, many of the processes that were considered "best practices" began to show signs of inefficiency. For instance, the realities of customer demand and inventory availability rarely aligned with projections causing a high level of nervousness in the supply chain. This translated into the classic situation of causing a high level of expedited orders for some products and excess inventory for others.

From an organizational standpoint, Linksys was not unlike most businesses of their size and scale – they had a dedicated global forecasting team assigned with generating a monthly demand signal; they had access to inventory positions; they had a manufacturing resource planning (MRP) system to support the purchasing and procurement teams signaling production requirements to suppliers; and they had various weekly and monthly meetings to facilitate the process of balancing supply with demand (S&OP). Yet even with these systems and processes in place, the business could only actively manage the top 200 SKU's which left a significant number of products unmanaged from an operational planning perspective. For Linksys, managing this growing business resulted in three inherent problems:

### People - Unclear Ownership or Accountability

The old S&OP process was owned and primarily driven by the demand forecasting and product management teams. Attendance by other functional groups was sporadic and when they did attend, engaged participation was rare.

### Process - No Process Focus or Cadence

The old S&OP process was conducted on a monthly basis and was only focused on the top 200 SKUs in the business. Reactive firefighting was a common activity that took valuable time away from proper business analysis and forward looking planning.

### Technology - No Single Version of the Truth

The old S&OP process was driven largely by spreadsheets, with supporting roles from a demand planning and MRP solution. Proliferation of spreadsheets throughout the business and within each functional group resulted in many different versions of reality without a common integrated view of information or truth.

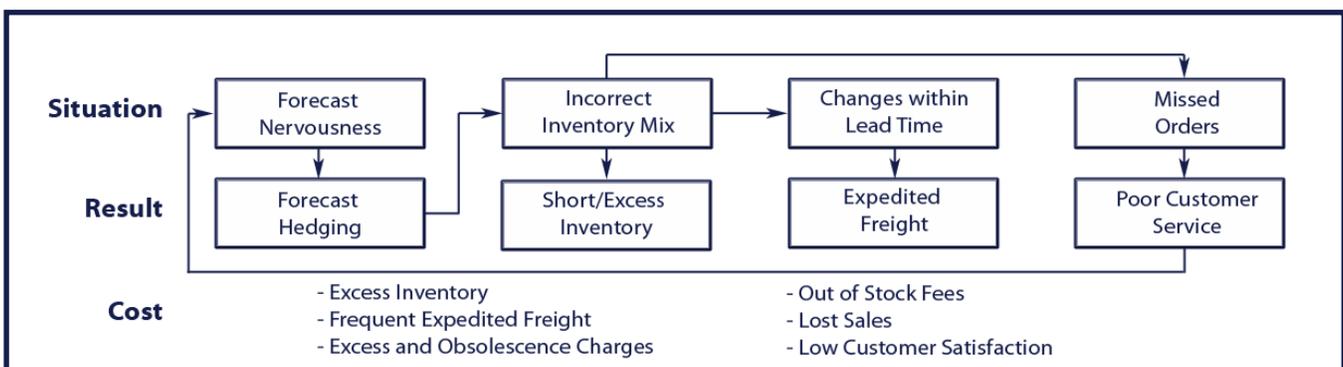
Resulting from these systemic issues were large operational problems that directly impacted the organization's financial performance. Inventory was the vehicle by which the symptoms of the problems were made visible. As with most organizations, there was either too much or too little inventory or the inventory mix was incorrect. Fundamentally at the core of the problem, was a distrust and nervousness surrounding the demand forecast and production schedule. Consequently, the sales organization would hedge and bias their requests for volume to the high side thinking it would ensure sufficient inventory to meet demand. As is generally the case, demand forecasts are by their nature inaccurate so there was usually too much and/or too little inventory across the supply chain network – the incorrect inventory mix sent shockwaves throughout the organization. Demand forecasts would be updated at the last minute, production changes would be made within supplier lead times, and freight was regularly expedited. This never-ending cycle resulted in excess inventory, increased supply chain costs (expedited freight, excess/obsolescence charges, out of stock fees) and poor customer satisfaction (out of stocks, lost sales).

***"Over time, the scale and complexity of our supply chain had grown so much that it became more and more difficult for the organization to manage all its products... while we only focused on the top 200 SKUs, the remaining SKUs were really causing our problems and our processes simply could not handle that scale."***

– Eric Frankenberg, Director  
Sales & Operations Planning, Linksys

### Where to start: Forecasting, Inventory or Production

The model that Payne inherited when he joined the team required Linksys to airfreight nearly 40 percent of its product inventory, and when one \$50 router costs \$5 to airfreight, this adds up quickly. In addition, forecast accuracy at the SKU level was 20 percent for the entire product portfolio, which created huge fluctuations in capacity planning. The existing process and system focused solely on demand shaping and not supply management. Payne knew that the biggest play on P&L performance was asset utilization. "You have to manage inventory, production and sales forecasts simultaneously and independently – a three-variable equation," according to Mark. "However, companies all too often only manage sales forecasts and try to keep inventory levels constant, creating two problems: unpredictable supply side behavior AND poor asset utilization." Because the sales forecast performance was unpredictable, and the production plan was weighted toward the mandated inventory constant the resulting supplier fill-rate was only about 65 percent.



# ...Thinking Differently Drives Organizational Alignment and Responsiveness

## THE SOLUTION

To address the inherent problems within Linksys, and with the goal of reducing inventory and improving customer service levels, three primary initiatives were set in motion:

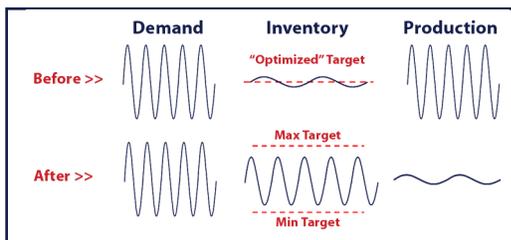
### People - Establish a new organizational structure

Because the organization lacked accountability and an owner for the S&OP process, the first change implemented at Linksys was to establish a new structure focused on the S&OP process. The mission was to include all parts of the business that touched any aspect of S&OP into the process. Clear roles of ownership and responsibility were established, with the former global forecasting team now leading the S&OP process. The functional role of forecasting still existed, but they were given a broader responsibility with a new role of S&OP planning. Accountability across all the different functions was required and people were expected to be knowledgeable and aware of the issues in the business. "I don't know" or "I'm not sure," was no longer acceptable. People were expected to have the information they needed and to have answers.



### Process - Focus on planning and not just forecasting

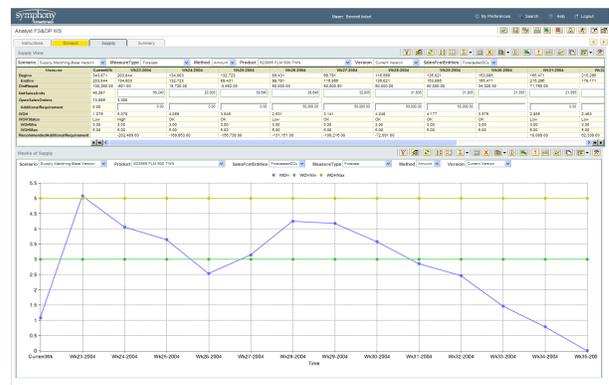
The central focus of the old S&OP process was on demand forecasting and simply relied on inventory management and production planning activities to be derived outputs once the forecast was set. Because the accuracy and organizational trust of the demand forecast was low, Linksys adopted a new approach which accepted the demand forecast for what it was—just a forecast—and shifted the focus to inventory management and production planning activities. The increased attention and efforts on inventory management and production planning was a difficult change that introduced more accountability into the



S&OP process. The new process allowed inventory to fluctuate between upper and lower boundaries using Weeks on Hand (WOH) as the primary measure of compliance. Each S&OP planner was provided a continual forward-looking view of weekly sales forecast, inventory and production for each SKU called a "Gameboard." This gameboard concept developed by Payne allowed each planner to see the impact of demand and supply changes on inventory WOH well into the future so that they were able to make changes or consider tradeoffs with full knowledge of their implications. As a result, Inventory levels of each and every SKU were now actively monitored and managed within the established WOH min/max tolerance. This helped to reduce the nervousness in the supply chain and provided for the delivery of smoother production signals to manufacturing and procurement.

### Technology - Enable the new organization and process to function efficiently and effectively

To enable the new organization and process, Linksys selected FS&OP Manager™ from Symphony Metreo. The new system embraced the gameboard concept allowing the planners to make updates to their WOH plans at the SKU level, and took Linksys out of spreadsheet-proliferation, establishing a single version of the truth across the entire organization. The system is completely closed-loop and provides the planners with forward-looking views required by the new process, while also allowing for "What-If" tradeoff scenarios and the eventual writing back of any resulting changes to the gameboard. It only took a few weeks for Payne's S&OP team to get the gameboards up and running on the new system at which time, the S&OP team conducted a road show with each functional group within Linksys to communicate and train employees. IBM Global Business Services (GBS) played an integral role in implementing FS&OP Manager which quickly became the central supply and demand balancing system for Linksys. In contrast to many systems of its class, the entire project took a small team of 4 people only 12 weeks to put the system into production where positive results were immediately seen.



# Collaboration and Transparency Creates Organizational Responsibility and Results

## THE RESULTS

In just a few months positive results at Linksys could be seen and felt. The new processes and system had an immediate impact and have delivered tangible results to the business. More people and functions are involved in the S&OP process and now heavily rely on the data and information it produces to drive decisions in their own areas of responsibility. More people are knowledgeable about what's going on in the business and can communicate more effectively across the business silos because everyone is working from the same set of numbers. As a result of the improved visibility and knowledge, people are more accountable for their actions and behaviors have changed and are continuing to change. There has been a major fundamental shift within Linksys resulting in the synchronization and alignment of forward-looking Inventory Weeks on Hand. In addition, cross functional access to a single view of the business has provided quantifiable benefits over traditional S&OP approaches where only a handful of analysts have access to the information. Now, all departments have access and visibility into the same data and numbers that drive transparency, accountability and performance across the extended value chain for Linksys. The results have been impressive and far-reaching, spanning inventory, backlogs and expedited shipping just to name a few:

### Inventory Improvements

The new S&OP methodology enabled by FS&OP Manager™ has resulted in Linksys being able to decrease the weeks on hand for inventory by 35%. In addition, the solution has enabled Linksys to draw customer inventory down 30 percent by providing the insight into which inventory moved slowly and understanding product transitions better – a truly remarkable shift.

### Backlog Improvements

The improved supply and demand chain performance has resulted in customer service improvements such as higher fill rates and better on-time performance. Backorders are now at record lows, cut by 60 percent worldwide over a nine month period.

### Expedited Shipment Costs

Expedited shipments went from 35 percent globally to 3 percent, resulting in a 90 percent reduction in costly expedited shipments. This trimmed freight line costs tremendously freeing up working capital and cash significantly for re-investment elsewhere in the company.

## FIRST YEAR RESULTS:

- ◆ Inventory reduced by 35%
- ◆ Customer Inventory reduced by 30%
- ◆ Backlog reduced by 60% globally
- ◆ Expediting reduced by 90% from 35% to 3%
- ◆ Reduction in Excess and Obsolete Inventory of 40%
- ◆ Improvements in Forecast Accuracy from 30% to 70% at the SKU level
- ◆ Supplier fill rate increased from 65% to 95%
- ◆ Actively planning every SKU offered to the global marketplace

## Award Winning Results

The efficiencies the Symphony Metreo solution has brought to Linksys are significant, so much so that Linksys was the recipient of the prestigious Ventana Research 2007 Performance Leadership Award for operational excellence in the supply chain. Linksys was recognized for improving business performance through its new processes in matching forward-looking supply and demand to better manage inventory levels while decreasing the volatile demand on the rest of the supply chain.

***“The combination of the people, process and technology improvements we made changed Linksys from being reactive, to much more proactive and efficient. FS&OP Manager is an integral part of this transformation because it provides us weekly forward-looking visibility of sales, production and inventory at any level of the product hierarchy in a single view. We are truly making decisions on a single version of the truth, and the results are powerful.”***

-- Mark Payne, Vice President

Worldwide Operations, Linksys

## Achieve Operational Alignment with FS&OP Manager

FS&OP Manager™ aligns the entire organization, making it easier for operations to formulate responses to the market, competitive pressures, and unexpected events that further the strategic goals of the enterprise. It monitors the events affecting forward supply and demand, and highlights the changes that have the most significant impact on corporate targets. FS&OP Manager puts advanced analytics and modeling capabilities into the hands of operations decision-makers, capabilities that allow them to monitor performance in real time, model decisions in a collaborative environment, and execute decisions to operational systems with write-back capabilities.

FS&OP Manager brings truly differentiated capabilities to predicting future performance. The unified enterprise-level analytic model allows immediate simulation to compare the impact of multiple scenarios across business functions. Users can share and collaborate on the same live scenario, and version control ensures edits are accepted only where desired. The system is built for maximum ease of use and quick configuration with minimal IT support.

## About Symphony Metreo

Symphony Metreo helps organizations meet their financial goals of Revenue and Margin with innovative solutions that align and synchronize top-down planning with bottom-up execution by focusing on the strategic levers of Price, Volume and Cost. Symphony Metreo serves global enterprises with innovative award winning applications in the areas of Enterprise Pricing, Operations Management and Performance Management. Headquartered in Palo Alto, CA, Symphony-Metreo is a member of the Symphony Technology Group, a \$1.6 billion strategic holding company. For additional information, visit <http://www.symphony-metreo.com>.



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