



The CSCO's roadmap to a decision-ready supply chain

Redesign the supply chain operating model
to make plans executable, turn signals into
action, scale AI, and sustain performance

Modernizing the operating model while the network keeps moving

Supply chain leaders have spent years absorbing one disruption after another: tariff shifts, supplier constraints, logistics bottlenecks, demand swings, labor pressure, cyber risk, and rising cost-to-serve.

The issue is no longer whether volatility will continue. It will. The more urgent question is how to modernize the operating model—*now*—while keeping the global network running.

For many organizations, execution teams are compensating for gaps the planning system was never designed to close. Chief supply chain officers (CSCOs) recognize the symptoms: premium freight, emergency sourcing, excess buffers, schedule churn, manual workarounds, and constant expedite drills. These interventions are heroic in the moment, but over time they create operating model debt: more complexity, greater reliance on short-term fixes, and less capacity to execute the major upgrades today's supply chain operations demand.

Leadership's *commitment* to change is clear: 73 percent of supply chain executives are planning a comprehensive operating model transformation within the next three years, according to the 2026 KPMG US Supply Chain Survey¹. But while the intent is there, the mechanics can be daunting.

Moving from ambition to execution

Many companies are investing in tools and capabilities to address the challenge. In fact, 84 percent of survey respondents say their supply chain operations are now fully digital¹.

But “digitized” doesn’t always mean decision-ready. Plans are still built on assumptions the network can’t execute. Signals surface critical problems but fail to trigger clear actions. AI pilots prove value in isolated pockets, then fail to scale amid fragmented systems and workflows. The breakdown comes when the forecast has to become action—in the plant, on the warehouse floor, across transportation lanes, with suppliers, or in front of customers.

Meaningful transformation requires more than turning on another software platform. It means redesigning how the network makes, routes, executes, and improves decisions. That starts with a four-step roadmap to modernize the supply chain that:

- 1 Stabilizes planning and execution around real constraints
- 2 Turns signals into executable workflows
- 3 Scales AI through prioritized use cases
- 4 Sustains performance through a continuous operating rhythm

The result is a supply chain built to keep moving through volatility—one that can decide faster, adapt with more confidence, and protect service, inventory, and margin when the next disruption hits.



A four-step roadmap for modernizing supply chain execution

Leadership knows that change is urgently needed. Improving supply chain operational efficiency and reducing costs was the top transformation goal cited in our survey¹. But building a new operating model without grinding the business to a halt is a difficult needle to thread. You can't simply pause the global network to rearchitect it. The work must happen while orders are moving, supplier commitments are changing, and teams are meeting service commitments.

Modernizing the operation means building a unified decision architecture that translates intelligent insights into practical execution across sourcing, manufacturing, logistics, planning, and customer service. The strongest roadmaps don't start with an enterprise-wide rebuild. They start where the plan is breaking most often, the same trade-offs keep resurfacing, and better orchestration can quickly reduce cost, risk, and operational friction.

Four connected steps can help leaders put that transformation in motion.



Step 1: Stabilize execution with constraint-aware planning

Legacy planning often breaks because it assumes conditions the network can't execute. Supplier lead times shift, labor availability changes, logistics capacity tightens, and production constraints move faster than the plan. If those realities are missing from planning intelligence, the output may look optimized—but it's not usable.

Stabilizing execution starts by bringing those real-world conditions into the planning logic before teams are asked to execute against it. The goal is a usable plan that reflects the latest conditions and helps teams act before costs escalate.

This is where AI can strengthen planning. Organizations know they need accurate constraints, but many struggle to maintain them at scale—across thousands of SKUs, customers, suppliers, and lanes. AI-enabled monitoring can spot network-disrupting changes sooner, flag assumptions that are drifting from reality, and prioritize the updates most likely to affect service, cost, and margin.

Diagnostic: Where is your supply chain plan breaking?

Before launching another planning tool or AI use case, identify where the current system starts to lose trust. Ask five questions:

- 1 Where are cost and service breaking down?** Identify the product category, supplier network, or operating area generating the most premium freight, excess inventory, late changes, or other leakage.
- 2 Which constraints are changing faster than the plan can absorb?** Focus on assumptions—such as lead times, capacity, labor, or transportation availability—that are drifting from reality.
- 3 Where is the constraint volume too large to manage manually?** Determine where AI-enabled monitoring could keep assumptions current and trigger the actions most likely to improve service and margin.
- 4 Which signals arrive too late to change outcomes?** Trace critical supplier, inventory, demand, and transportation signals to find where delays or handoffs prevent teams from acting—*before* cost or service is affected.
- 5 Who owns the trade-off when the plan breaks?** Clearly define the final decision owner when service, margin, inventory, and risk conflict.

The shift: Replace best-case assumptions with a planning architecture anchored directly to the real-world physical constraints of the entire network.

How to get it done

- Start where cost and service are breaking down:** Focus first on the product category, supplier network, logistics corridor, plant, or customer segment where persistent issues are most visible. Identify which constraints break the plan, who owns them, how often they should be refreshed, and what level of change triggers an action.

- **Use AI-enabled monitoring to keep constraints current:** Capture inputs such as actual supplier lead times, carrier performance, production capacity, labor availability, and demand volatility. Use those signals to flag when assumptions are moving outside expected ranges, and prioritize updates with the greatest impact on service, cost, and margin.
- **Connect S&OP and S&OE:** Use sales and operations planning (S&OP) to align the longer-term business plan, and sales and operations execution (S&OE) to manage short-horizon execution. The goal is a tighter operating rhythm that allows teams to adjust the plan before the latest surprise becomes premium freight, missed service, or excess inventory.
- **Map your repeat offenders:** Identify the specific failure points that repeatedly cause plans to break so teams have a rapid-response playbook when things go wrong. If the same supplier, lane, SKU, or customer segment keeps creating exceptions, the issue should be designed into the planning logic—not rediscovered every week.
- **Segment by variability and value:** Classify products, customers, suppliers, and lanes based on demand volatility, margin, service criticality, and supply risk so teams can focus on managing the most critical network constraints first.

Stabilizing execution: A hypothetical scenario

The problem: A heavy equipment manufacturer routinely pays premium freight because its planning tools still assume 30-day lead times for critical components, even though actual delivery times have stretched to 90 days. By the time the issue surfaces, customer orders are already at risk.

The solution: The company focuses on the parts most frequently driving late orders and expedite costs. Teams compare lead-time history, supplier commits, purchase order changes, machine capacity, and open customer orders to identify where the plan is failing. AI-enabled monitoring flags the assumptions most likely to create service or margin risk, while planners and procurement teams coordinate on when to escalate.

The outcome: Updated lead times and capacity limits are embedded into planning rules. Planners shift schedules earlier, escalate high-risk orders sooner, and reserve premium freight for situations where the customer or margin impact justifies the cost.





Step 2: Turn signals into executable workflows

Supply chains don't need more dashboards. They need active signals that generate timely decisions. When a supplier commit slips, demand spikes, or a logistics lane tightens, the right people need to know what changed, what action is required, and how quickly the issue needs to escalate.

That connection is where many supply chains still break down. The data may show that something changed, but it doesn't always reach the team that can act in time to protect cost and service. Visibility is part of the problem, but managing the sheer volume of issues is the bigger challenge. Large supply chains generate more exceptions than teams can manually interpret, prioritize, and route.

AI-enabled triage can help close that gap. Rather than chasing every alert, organizations can use AI to classify exceptions, identify likely causes, estimate service or margin impact, and recommend the next action based on approved rules. That gives planners the context to act faster and focus deeper analysis on the decisions with the greatest business impact.

The shift: Move from passive visibility to signal-to-action workflows that route the right issue to the right owner with the necessary context.

How to get it done

- **Focus on decisions, not dashboards:** Identify the decisions where delay creates the most cost or service risk, such as whether to expedite, reallocate inventory, shift production, or adjust commitments. Then define the signals required to make those decisions with confidence.
- **Establish decision-grade data:** Give planners a trusted view of the inventory, orders, constraints, and commitments that drive decisions. You don't need perfect enterprise data on day one—start with accurate, connected data where critical trade-offs happen.
- **Use AI-enabled triage to manage exception volume:** Classify alerts by urgency, service and cost impact, margin exposure, and who owns the decision. Group related issues so teams can see the full impact of a supplier delay, inventory shortage, or transportation disruption.
- **Trigger actions, not just alerts:** Build workflows that automatically route exceptions based on approved escalation rules. A late shipment for a low-priority order should not trigger the same response as a shortage affecting a strategic customer or high-margin order.
- **Build execution-ready scenario packs:** Use recurring signals—supplier delays, demand spikes, inventory shortfalls, capacity limits—to create scenario packs that show the likely cost, service, inventory, and customer impact of each option.

Connecting signals: A hypothetical scenario

The problem: A global retailer struggles with promotional demand swings that routinely trigger store-level shortages and expedited shipping. Teams can see the demand spike, but the signal often reaches transportation and replenishment teams too late to protect availability without adding cost.

The solution: The retailer focuses on one product category and connects point-of-sale data with weather, local events, promotional calendars, and store inventory signals in a single workflow. AI-enabled triage groups affected SKUs and locations; models service, cost, and margin exposure; and recommends replenishment options based on inventory availability, shipment fees, and customer priority.

The outcome: Standard replenishment moves flow through approved rules, while higher-cost expedites are routed to the right owner with the business case already assembled. The retailer reduces manual triage, uses premium freight more selectively, and protects product availability during peak promotional periods.



Step 3: Scale AI through governed operational use cases

AI pilots typically work best when the environment is narrow, controlled, and well understood. Complications start when that same logic is pushed to a wider scale—across a region, site, supplier network, or product category—where the data, workflows, constraints, and decision rights look different.

Scaling AI in the supply chain means more than replicating a model. It means replicating the operating conditions that make the model useful: the right data, processes, owners, controls, and a clear path from recommendation to action.

That's where many AI programs lose momentum. The model may be accurate, but the business is not ready to use it at scale. Data definitions may vary by region, exception workflows may diverge, and planners can quickly lose trust in the new tools. The pilot may work, but the operating model can't absorb it.

The shift: Move from disconnected AI pilots to governed operational archetypes—repeatable use cases that can be proven, refined, and scaled across similar parts of the network.

How to get it done

- **Define the first operational archetype:** Start with a specific, high-friction decision, such as inventory buffers in a regional hub, substitution logic for a product category, or dynamic routing for a volatile lane. The archetype should be narrow enough to prove value, specific enough to govern, and common enough to scale.
- **Set readiness gates before expansion:** Define what must be true before the use case scales, including data quality, constraint visibility, workflow integration, decision ownership, exception thresholds, cyber controls, and adoption requirements.
- **Prove the path from recommendation to action:** Don't stop at the model output. Test whether the recommendation reaches the right workflow, the right owner acts on it, the action flows back into enterprise systems, and the outcome is measured.
- **Scale by similarity:** Expand first to regions, lanes, suppliers, plants, or product groups with similar constraints and decision patterns. Scaling AI works best when the operating environment is deliberately matched, not loosely assumed.
- **Build the playbook as you go:** Document the data inputs, constraint logic, escalation rules, performance measures, role design, and governance required to run the use case. That playbook becomes the repeatable asset—alongside the algorithm.

Scaling intelligence: A hypothetical scenario

The problem: A pharmaceutical company wants to use AI to improve routing decisions for temperature-sensitive shipments. A pilot program works on one lane, but a broad rollout across hundreds of logistics providers, geographies, and compliance requirements poses too much risk.

The solution: The company treats the first lane as a repeatable use case, not just a test model. Teams define the required data, temperature-monitoring triggers, fallback carriers, escalation rules, and compliance checks. AI recommends routing options based on cost, service risk, lane performance, and temperature requirements, while logistics and quality teams retain approval over high-risk moves.

The outcome: Once the operating model is proven, the company scales the same playbook to other lanes with similar constraints. The value comes from replicating the conditions that make the algorithm executable.



Step 4: Sustain performance with a new operating rhythm

Supply chain transformation doesn't have a fixed finish line. The operating model has to keep improving as new SKUs, changing lead times, supplier variability, and shifting demand test the plan every day. Without active monitoring, even a strong planning environment can drift from reality—and planners start rebuilding trust the old way, through manual workarounds and offline spreadsheets.

Sustaining performance means treating planning and execution as an operating discipline, not a one-time transformation effort. Model drift, parameter accuracy, exception volume, scenario quality, and adoption patterns all need ongoing ownership as the business changes.

AI can help by flagging where the system is losing trust: lead-time drift, repeated planner interventions, exception spikes, or scenario outputs that don't match actual outcomes. It can also assemble options and show the likely service, cost, inventory, and margin impact of each path. But leaders still need clear ownership, shared metrics, and a steady cadence for tuning the model, updating playbooks, and feeding improvements back into the system.

The shift: Move from a one-time transformation mindset to a continuous operating discipline that keeps planning and execution aligned as the network changes.

How to get it done

- **Assign ongoing ownership:** Define who's responsible for keeping the planning and execution environment healthy as the roadmap expands. This could sit with an internal planning center of excellence, a managed planning layer, or a dedicated cross-functional team responsible for constraints, scenarios, exception logic, and performance.
- **Use AI to monitor drift and adoption:** Track where lead times, supplier performance, forecast bias, or planner interventions are moving away from expected patterns. Use those signals to identify where the planning model needs tuning, where workflows are creating friction, or where teams don't trust the recommendation.
- **Build a continuous improvement rhythm:** Review which recommendations were accepted,

changed, or ignored; which exceptions escalated too slowly; and which constraints caused repeat failures. Use those insights to update planning rules, scenario packs, escalation paths, and decision rights.

- **Redesign supply chain roles:** Shift planners and execution teams away from manual data reconciliation and toward higher-value roles as exception managers, scenario owners, and AI product owners. AI can deliver robust scenario modeling and highlight trade-offs, but people still need to manage the decision across service, margin, inventory, and risk.
- **Align cross-functional success measures:** Establish shared key performance indicators (KPIs) across procurement, finance, logistics, customer service, operations, and planning so teams stop optimizing locally at the expense of the enterprise.

Sustaining performance: A hypothetical scenario

The problem: A consumer electronics manufacturer loses margin because procurement teams are measured heavily on cost reduction, while customer service teams are measured on product availability. Procurement selects lower-cost suppliers that increase lead-time variability. Customer service pushes to protect availability. And planning teams are left to manage the conflict through expedites and excess buffers.

The solution: The company creates a cross-functional operating rhythm that reviews service, cost, inventory, and supplier reliability together. AI-enabled monitoring helps identify patterns behind expedite spend and service misses, while leaders reset KPIs around shared outcomes such as OTIF performance, inventory exposure, cost per shipment, and margin impact.

The outcome: Procurement begins factoring availability constraints and service targets into sourcing decisions. Customer service gains visibility into the cost of late changes. Planning teams stop relitigating the same trade-offs every week, reducing out-of-stock events without adding unnecessary cost.

How to measure progress across the supply chain roadmap

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Every organization's transformation roadmap will reflect its unique starting point, capabilities, priorities, and industry-specific challenges. But across the four steps, progress should be tied to clearly defined business outcomes and KPIs. The examples below provide a starting point for measuring progress at each step.

	Focus	Sample measures
Step 1: Stabilize execution	Plan feasibility	Supplier lead-time variance, schedule adherence, premium freight, expedite frequency, and OTIF
Step 2: Connect signals to action	Execution speed	Exception aging, time to resolution, workflow-based resolution, inventory availability, and cost per shipment
Step 3: Scale AI	Adoption and value	Adoption of recommended actions, automated exception resolution, planner productivity, scenario cycle time, and use-case-specific cost or service impact
Step 4: Sustain performance	Enterprise performance	Inventory turns, working capital, cost-to-serve, repeat exceptions, and sustained OTIF performance

Putting the roadmap into motion

The four-step roadmap provides an end-to-end path for modernizing supply chain operations, with impact that builds across the enterprise over time. But it can't be implemented all at once. For supply chain leaders, that raises two immediate questions: Where do we start? And how do we transform the supply chain while keeping the network running?

To take that critical first step—and set up their new roadmap for success—leaders need to choose the optimal starting point, define how success will be measured, and establish governance from the outset. Three guiding principles can help:

- **Start with a high-value problem:** Target a constrained component, volatile logistics corridor, high-variance category, or supplier network where cost, service, or margin is under pressure. Establish the minimum data needed to improve that area, then build on what works as the roadmap expands.
- **Define success from the start:** Establish a consistent set of operational and business KPIs for the broader transformation, along with measures specific to each use case. Baseline current performance, track whether each initiative improves execution and creates value, and use those results to guide where the roadmap expands next.
- **Set governance before technology:** Define decision rights, exception thresholds, escalation paths, and cross-functional ownership before technology decisions are finalized. Technology can improve the speed and quality of a decision, but it can't resolve ambiguity about who has the authority to make it.

Each proven improvement should provide the data, governance, confidence, and repeatable playbook for the next. Over time, those gains compound—building a supply chain that can make faster decisions, adapt as conditions change, and protect service, inventory, and margin through whatever comes next.

Cyber risk is now supply chain risk

As supply chains become more digital, cyber risk reaches far beyond system access or data theft. Leaders are no longer asking only whether someone can get into the network. They also need to know whether they can trust the signals, workflows, and automated decisions the network depends on.

The 2026 KPMG US Supply Chain Survey found that cybersecurity was the No. 1 risk identified by supply chain leaders¹. That matters because connected planning expands the attack surface well beyond internal systems. Supplier portals, transportation platforms, warehouse devices, AI agents, and multi-tier partner networks all become part of the operating model.

For CSCOs, risk is multifaceted: It's a corrupted supplier commit, a false logistics signal, a compromised user credential, or an automated workflow that executes based on bad data. In a decision-ready supply chain, cyber resilience must be designed into the operating model before more autonomy is added.

Four cyber questions CSCOs should ask before scaling connected planning:

1. **Which supply chain signals are now business-critical?**
Identify the data feeds and workflows that directly influence allocation, sourcing, production, transportation, and customer commitments. These signals should be treated as operational control points, not just IT assets.
2. **Who or what can trigger a decision in the system?**
As AI agents, supplier portals, planning tools, and warehouse systems become more connected, governance needs to cover humans, machines, and third parties. Identity and access management should be tied to decision authority, not just system access.
3. **Where could bad data create operational harm before anyone notices?**
Look beyond data theft. A manipulated inventory position, supplier capacity update, or demand signal can create premium freight, service failures, compliance exposure, or inventory misallocation.
4. **Are cyber incidents built into the supply chain response playbook?**
Cyber response should be integrated into S&OE and supplier-risk workflows. If any critical system is compromised—supplier, transportation, warehouse, planning—teams need predefined escalation paths, decision rights, and fallback processes to keep operations moving safely.

The bottom line: Cybersecurity can no longer sit outside supply chain planning. As the network becomes more autonomous, trust in the plan depends on trust in the signals behind it.

How KPMG helps CSCOs modernize supply chain execution

Supply chain programs rarely stall because one tool is wrong. They stall because the operating model can't turn insight into action. That is the gap KPMG LLP (KPMG) helps close: connecting planning, data, AI, governance, and physical execution so organizations can make better decisions and carry them through.

KPMG works with CSCOs to identify where value is leaking, redesign the operating rhythm around critical trade-offs, scale AI through governed use cases, and sustain performance as network conditions change. That work can include:

- **Diagnosing where plans break and value leaks:** Identify the lanes, suppliers, nodes, product segments, and workflows where the current model is driving premium freight, expedite spend, excess inventory, service instability, or planner rework.
- **Redesigning the operating model around decisions:** Define the decision rights, escalation paths, roles, workflows, and shared success measures required to connect integrated business planning, S&OP, S&OE, and day-to-day execution.
- **Scaling AI into execution:** Prioritize the use cases with the clearest operational value, define the readiness conditions required to scale them, and connect AI outputs to the workflows, controls, and people responsible for action.
- **De-risking the physical network:** Evaluate network design, sourcing diversification, regionalization, inventory positioning, supplier risk, logistics trade-offs, tax, trade, compliance, working capital, cyber security, and service commitments as interconnected decisions.
- **Sustaining supply chain performance:** Establish the business and operational KPIs needed to measure progress across the roadmap—including planning performance, exception management, AI adoption, service, cost, and margin—and use those results to identify where models, workflows, or decision rules need to be adjusted to maintain momentum.
- **Extending execution capacity through managed services:** Provide hands-on support for daily demand, supply, and inventory planning, scenario modeling, exception management, and ongoing performance monitoring. Our managed services teams can connect with existing client systems and help translate planning outputs into executable decisions, while client leadership retains final decision authority and sets the broader business strategy.



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Chris serves as the KPMG LLP (US) Consulting Leader for Supply Chain & Procurement. In his role, Chris works closely with supply chain, procurement, and operations leaders to turn strategic vision into reality. He is also responsible for identifying our supply chain and procurement priorities, growth areas, and capabilities to best serve our clients. Chris and his teams take advantage of next-generation business models, emerging technologies, and industry experience to enhance supply base engagement and drive results that matter.



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References

¹ KPMG LLP, "The State of Next-Gen Supply Chain: A Leadership Survey," May 2026.

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