Ciena is a corporation headquartered in the U.S. with more than 25 years of industry leadership and approximately 5,700 specialist employees in 32 countries. The company supports more than 1,300 of the world’s largest, most reliable networks. In 2019, Ciena shipped and delivered more than $3.2B worth of equipment, services, and software to their worldwide base of telecom, content provider, and enterprise customers. As a global supplier of equipment and services used for critical infrastructure, Ciena takes very seriously the security of the supply chain that supports its business.

A global supply chain based in North America

Ciena is certified to TL9000 standards and employs a global supply chain, leveraging Contract Manufacturers (CMs) and Electronics Manufacturing Services (EMS) in multiple countries around the world. To provide scale, cost-efficiency, and redundancy, key providers have a robust geographically distributed footprint. Ciena works with a North – South (U.S. – Guadalajara, Mexico) and Asia (Thailand) model for its supply chain.

This global supply chain has been consciously built to minimize Ciena’s exposure to China and takes a focused approach to security while leveraging EMS partners in multiple countries around the world. In support of its security posture, Ciena Corporation has been a certified partner in the Customs-Trade Secure Supply Chain for Governments.

Four major contract manufacturing partnerships: Flextronics, Sanmina, Celestica, Fabrinet

Distribution from US, Canada, Mexico and Thailand
Partnership Against Terrorism (C-TPAT) program since July 2009. Key providers such as Flextronics, Sanmina, Celestica, and Fabrinet have robust global footprints, advanced optical capabilities, and manufacturing and distribution in dual locations. Ciena employs strong contractual terms, with over 80 percent of sales costs covered through contracts that define specific service and agility levels. The company also builds in business continuity clauses, which are supported by Ciena employees’ audit and pilot actions at EMS partner locations.

### Robust continuity of supply

To maintain a high-performance supply chain and assure continuity of supply, Ciena performs a robust and multi-faceted set of actions:

- Suppliers are selected based on technology, scale, expertise, and solid financial status. These criteria drive the most effective way to ensure the availability of strategic components. Once a supplier is selected, Ciena continually monitors and controls their performance.

- Ciena uses supply chain inventory, in the form of finished goods, safety stock, and VMI programs, as well as die banking for components. This inventory is held at EMS partners, and suppliers provide a supply buffer for both frequently purchased finished goods and long lead-time components.

- Wherever possible, Ciena uses second sourcing to distribute both the geographic and economic risks of single suppliers.

- A Security of Supply (SOS) program is maintained on key components.

As an example, Ciena’s continuity of supply strategies—including dual sourcing, inventory and supply pipeline, and rapid requalification of second sources via dedicated engineering team and supply management specialists—helped mitigate the customer impact resulting from both the earthquake in Japan and the flooding in Thailand.

Continuity of supply is vitally important. But unless the supply chain is also trusted, it cannot be considered secure. Ciena takes many actions to make sure the components it uses come from vetted vendors, and that they have not been adulterated.

### Robust supply chain security

The majority of Ciena’s products are based on Ciena’s own proprietary design and manufacturing processes. Any products manufactured by Contract Manufacturers are tested on Ciena-owned assets, with Ciena-developed and -controlled test software. The materials come from trusted sources, including Original Equipment Manufacturers (OEMs), Original Component Manufacturers (OCMs), and franchised distributors.

**Geographical Manufacturing Capabilities**

- Manufacturing expertise with Flex, Sanmina, and Celestica – Mexico, Thailand and Canada
- Leveraging robust internal security and controls

**Supplier Performance Monitor and Control**

- Weekly reviews of fully automated supplier dashboard and quarterly business reviews

**Safety Stock / Vendor Managed Inventory**

- Finished goods and component level
- Maintained at Ciena, contract manufacturer and supplier locations

**Buffer Stock and Die Banking**

- A supply held at suppliers as a reserve to safeguard against unforeseen shortages or demands

**Second Sourcing**

- Primary focus at component level
- Programs in place to ensure continuity of supply
- Used for critical components with no flexibility from Supplier or Contract Manufacturer and managing passive components

**Distribution Inventory – Service Fee Model**

- A supply held at suppliers as a reserve to safeguard against unforeseen shortages or demands

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**Distribution Inventory – Service Fee Model**

- A supply held at suppliers as a reserve to safeguard against unforeseen shortages or demands
For all these sources, the same strict rules apply to avoid counterfeit parts. Once qualified, CMs, OEMs, OCMs, and franchised distributors are considered trusted supply sources and are on-boarded using comprehensive quality control and verification procedures. Component brokers pose the highest levels of risk of exposure to counterfeit or suspect electronics parts. Therefore, Ciena’s procurement procedures require the company’s manufacturing partners to purchase components from OEMs, OCMs, and authorized distributors. Occasionally, components may be purchased in accordance with Ciena’s Independent Distributor Procedure. Components from a non-franchised source or an independent distributor are approved only after being subjected to strict policies and requirements, including:

- Source validation
- Documentation inspection
- Packaging inspection
- Physical inspection
- Ciena product test

Ciena deploys the highest levels of control within its supply chain and manufacturing operations to ensure counterfeit parts cannot enter.

As a supplier of equipment and services for critical infrastructure, Ciena adheres to a holistic set of security processes. The company continually conducts supply chain risk assessments and takes whatever actions are necessary to mitigate identified risks. Ciena’s business and manufacturing partners are held to strict controls, including rules on personnel and process security, continuing education that includes fraud and security awareness training, and IT security standards. These items—in addition to physical controls for on-site access and security, as well as security and inspections of products during shipping—enable Ciena to maintain best industry practices for supply chain security.

**Built to industry quality standards**

Ciena’s Quality Management System (QMS) leverages the company’s high level of industry experience and processes to win, retain, and satisfy customers. To accomplish this objective, Ciena continually reviews its processes to evaluate their effectiveness, foster ongoing improvement, and establish a standardized approach through which Ciena customers can expect and receive consistent products, solutions, and services across product lines all around the world. Ciena is accredited to TL9000:2016, which is built on ISO9001:2015 and is specifically tailored for the telecommunications industry. Ciena also maintains accreditation to ISO14001:2015 and OSHAS 18001:2007. Ciena’s accredited programs are audited by BSI, an ANAB-accredited external auditor. (Copies of the various certifications are available upon request.)

For vendors and suppliers, Ciena employs a qualification process that consists of capability audits, performance audits, and first article inspections. Ciena enacts source
selection and fair value procedures, Tier 1 supplier evaluation and management procedures, and supplier engagement model procedures that outline the criteria and process for selection, evaluation, and re-evaluation of external providers. Product quality and global commodity management maintain records of the results of these evaluations and any necessary actions arising from them.

Finally, Ciena has an extensive Product Life Cycle that manages the design, testing, and release of all products and services. There are many in-process requirements defined by the Master Deliverables list of the project plan, including code inspections, NPI processes, and first article inspections. Prior to product release, a product Verification Team executes a suite of tests evaluating operational performance to design requirements, regression testing, stress testing, OSMINE, and other certifications as required. Cyber security and vulnerability screening are addressed utilizing Nessus, Codenomicon scans, and ongoing, vigilant monitoring of the Homeland Security National Vulnerability Database for new threats. Most products have NIAP/Common Criteria and/or U.S. DoD JITC certifications.

Summary
Ciena takes a comprehensive approach toward maintaining the security and continuity of its supply chain. From a geographically diverse set of manufacturing sites in North America—with a goal of minimizing exposure to China—to a robust set of security processes that apply to design, sourcing, manufacture, and transport, Ciena employs a holistic set of controls to assure the integrity of its products.