



## CASE STUDY: CADENCE DESIGN SYSTEMS

### Cadence Design Systems Re-Designs Data Center with Foundry Networks



[WWW.CADENCE.COM](http://WWW.CADENCE.COM)

#### SUMMARY

Today's electronic devices keep getting smaller and lighter. Consumers want compact personal devices that fit in their pockets, and slim, sleek electronics that suit their homes' design. Developing eye-catching and innovative electronics demands small, but powerful, semiconductors and circuit boards. Engineers depend on electronic design automation tools from Cadence Design Systems to speed the production of integrated circuit and system designs.

The engineers at Cadence Design Systems need a high-performance network to develop and test the tools that help create the world's most advanced semiconductors and circuit boards in consumer electronics, networking, telecommunications equipment, and computer systems.

#### OBJECTIVE

Cadence Design Systems realized that consolidating resources in its data centers would go a long way toward reducing operational costs. By upgrading its network, Cadence could get the additional bandwidth it needed—and introduce cost-saving measures that would lower power consumption, preserve precious real estate in the wiring closets, and better utilize its server resources.

“Performance per rack unit and data center real estate are key concerns of ours. We are constantly trying to analyze ways to maximize performance and minimize space,” says Dan Salisbury, vice president of global IT for Cadence Design Systems. “After an extensive search, we determined that Foundry's solutions provided us with the best combination of port density and redundancy features to utilize less space and increase system resiliency.”

#### SOLUTION

Cadence Design Systems chose high-performance solutions from Foundry Networks to enhance its global data centers. The NetIron® MLX router powers the data center's backbone, directing traffic across 2,000 servers. These feature-rich routers offer a rare blend of advanced routing services, unparalleled service flexibility, and wire-speed performance on up to 640 1-GbE ports or 128 10-GbE ports in a single system.

The BigIron® RX switches aggregate traffic from more than 500 servers with ample capacity to support additional servers. The 48-port 10/100/1000 BigIron increases the non-blocking Gigabit Ethernet capacity to 768 ports for a single system and 2,304 ports in a standard 7-foot rack. These high density configurations support Cadence Design Systems' bandwidth-intensive applications while delivering excellent service quality.

#### INDUSTRY

Design Automation

#### COMPANY DESCRIPTION

Founded in 1988, Cadence Design Systems is the world's leading EDA technologies and engineering services company. It has offices in China, India, Europe, Russia, Israel, Japan, Korea, Taiwan, and North America. Cadence serves the \$1 trillion-plus worldwide electronics market, which is increasingly being driven by consumer-oriented products. The major vertical market segments include computers, wired and wireless communications, and consumer electronics, such as multimedia and personal entertainment devices. Globally, these account for 75% of electronics equipment revenue and more than 90% of semiconductor revenue.

#### OBJECTIVE

- Deploy a state-of-the-art centralized data center
- Consolidate 12 server rooms into one data center
- Manage traffic from bandwidth-intensive engineering applications
- Establish a data center that leverages server aggregation

#### SOLUTION

- Foundry Networks' NetIron MLX multi-service backbone routers power the Cadence high-performance data centers
- The BigIron RX switches aggregate the servers in the data center

#### RESULTS

- Server consolidation will help Cadence better utilize its resources and reduce total cost of ownership
- Cadence can aggregate more than 500 servers and accommodate additional servers without compromising performance
- The Cadence data center can expand to meet increasing business demand and future technological advances

## RESULTS

Since adding the BigIron RX and NetIron MLX networking solutions, Cadence Design Systems has significantly increased its bandwidth capacity. The design automation leader has a high-performance network that can easily support the company's engineering tools and tests as well as its standard corporate applications.

Upgrading to the Foundry equipment introduces a number of cost reductions to the data center environment. In its India data center, Cadence Design Systems consolidated 12 server rooms into one data center, which can house approximately 2,500 servers. The switching infrastructure from Foundry is at the core of the data center and the consolidation point of the LAN for the entire campus. The high-density configurations are also well suited for Cadence Design Systems' high capacity server farms where the number of servers and compute nodes can demand non-blocking interconnect solutions that scale well beyond 500 GbE ports.

Consolidating servers conserves server resources and reduces management and support requirements. The BigIron RX switches and NetIron MLX router contribute to lower operational expenses in the data center too. Power consumption has become a major issue within expanding data centers, and companies are seeking ways to reduce expensive energy bills.

Both the BigIron RX switches and NetIron MLX routers demand much less power than competing products, and the feature-rich Foundry solutions pack significant port density in each module without eating up tons of rack space. These efficiency factors lead to lower power and cooling expenses.

With the NetIron MLX routers and the BigIron RX in the data center, Cadence Design Systems has an extremely reliable and highly available network. The NetIron MLX Series features an advanced N+1 redundant switch fabric architecture that continues to operate at peak performance even in the case of a switch fabric card failure. The redundant fabric architecture is complemented by comprehensive hardware redundancy for the management modules, power supplies, and cooling system. The IronWare™ operating system, which powers the NetIron MLX Series, offers hitless management failover with BGP and OSPF graceful restart capabilities, as well as hitless (in-service) software upgrades that enhance both system and network availability.

The BigIron RX system is designed for non-stop operation, supporting 1:1 management module redundancy, N+1 switch module redundancy, M+N power module redundancy and N+1 fan redundancy. Additionally, BigIron RX Series supports hitless software upgrades and graceful restart routing for fast convergence in the event of a management module failure.

The NetIron MLX Series adds an extra layer of security in the data center with Multi-VRF routing, which allows network managers to deploy multiple secure routing domains. These multiple domains isolate traffic among different servers and enforce strict server access policies without creating complicated MPLS-based VPNs. The BigIron RX platform with IronShield™ security offers protection against denial of service and supports user authentication, MAC port security, sFlow, SNMP v3, and BGP-Guard.

With the BigIron deployed in the data center, Cadence Design Systems can aggregate more than 500 servers without compromising performance.

As Cadence Design Systems adjusts to future market demands, the robust Foundry networking solutions will adapt to the addition of technologies such as server blades and other innovations, and it will support expanding bandwidth needs. The BigIron RX and NetIron MLX families offer the highest non-blocking 10-GbE and GbE port densities available today, protecting Cadence's capital investment for years to come.

**“ PERFORMANCE PER RACK UNIT AND DATA CENTER REAL ESTATE ARE KEY CONCERNS OF OURS. WE ARE CONSTANTLY TRYING TO ANALYZE WAYS TO MAXIMIZE PERFORMANCE AND MINIMIZE SPACE. AFTER AN EXTENSIVE SEARCH, WE DETERMINED, THAT FOUNDRY'S SOLUTIONS PROVIDED US WITH THE BEST COMBINATION OF PORT DENSITY AND REDUNDANCY FEATURES TO UTILIZE LESS SPACE AND INCREASE SYSTEM RESILIENCY.”**

– Dan Salisbury  
Vice President of Global IT  
Cadence Design Systems

## FOUNDRY NETWORKS

Foundry Networks, Inc. (NASDAQ: FDRY) is a leading provider of high-performance enterprise and service provider switching, routing, security and Web traffic management solutions, including Layer 2/3 LAN switches, Layer 3 Backbone switches, Layer 4-7 application switches, wireless LAN and access points, metro and core routers. Foundry's customers include the world's premier ISPs, metro service providers, and enterprises, including e-commerce sites, universities, entertainment, health and wellness, government, financial and manufacturing companies. For more information about the company and its products, call 1.888.TURBOLAN or visit [www.foundrynet.com](http://www.foundrynet.com).

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