

Force10 Networks

IMPROVED PRODUCTIVITY THROUGH LIGHTNING FAST BUILDS



FAST FACTS

Privately Held
HQ: Milpitas, CA
Founded: 1999

Force10 Networks is the pioneer in resilient Gigabit and 10 Gigabit Ethernet switching and routing. Force10's E-Series switch/router was the first product to deliver true line-rate 10 Gigabit Ethernet switching and routing. Today, Force10 is a global company with offices throughout the US, as well as the UK, the Netherlands, Japan, China and Korea. Among Force10 customers are world-leading financial institutions, manufacturing organizations, research networks, media companies, search engines, telecommunication carriers and supercomputer clusters.

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— Arun Viswanathan,
VP of Software Engineering,
Force10

SITUATION:

Improve engineering productivity through faster builds.

Force10 competes in one of the fastest moving high-technology markets. As a result, the company's developers are under constant pressure to meet aggressive release deadlines for new products or upgrades for existing products. Arun Viswanathan, Force10's Vice President of Software Engineering, commented, "If we miss a release, it is not as simple as shipping it later. In this business, slow execution can mean missing an entire product cycle, which can cost the company tens of millions of dollars and competitive leadership."

The software build process is a critical part of the release cycle and an area the company has been looking to improve on for some time. Two "build masters" at Force10 are in charge of maintaining the build process for their Linux-based programming environment. With 50 software developers and engineers across five departments and running over 4,500 builds per week, even small improvements in build speed can have large impacts on the productivity of the organization.

BUSINESS ISSUE:

Hardware and open source software did not deliver.

"Build speed had become a critical challenge. Everyone, including our CEO, recognized that improving build speed was key to getting our products out on time," said Viswanathan.

Force10's builds had increased to over three hours and previous attempts to address the problem had not yielded the desired results. Force10's first attempt was to invest heavily in hardware by providing a dedicated dual CPU build machine for every two developers. This was not scalable, and the problem remained as their software build continued to grow, quickly becoming unacceptably long. The company used GNU Make's -j option to take advantage of the new symmetric multiprocessing hardware. With GNU Make -j, engineers needed to manually maintain their make files so the parallelism did not result in a broken build. Many builds could not successfully utilize GNU Make -j and the benefits were minimal. One build went from 51 minutes before -j to 43 minutes after. "Even though we made an initial dent in our build speed problem, it became clear to me that we needed to find a solution that was faster, more scalable and easier to maintain than SMP hardware with -j," said Viswanathan.

SOLUTION:

ElectricAccelerator® delivers faster builds and easier management.

In March 2004, Viswanathan brought in Electric Cloud to improve Force10's builds and speed up the overall build process. To tackle the problem, Force10 Networks deployed the Electric Cloud solution by installing a cluster of 30 inexpensive Intel-based servers. This scalable solution allows Force10 to easily add more servers to the cluster and continue to speed up builds as their code base grows. In addition, since ElectricAccelerator automatically recognizes and corrects missing dependencies, builds no longer break and manual Makefile maintenance is a thing of the past.

Now all of the developers and build masters at Force10 use the ElectricAccelerator cluster, and the company's three hour build times have been cut by over 80%. "With these results, why would we do builds any other way?" said Viswanathan. "In fact, we don't. ElectricAccelerator is the only way builds are now done at Force10."

In addition to the dramatic speed up of full builds, Viswanathan has also recognized the benefits of accelerating shorter incremental builds. "People can get defocused on their work even when incremental builds take too long," said Viswanathan. "Engineers were losing some productivity either focusing on the build itself or changing gears from project to project while waiting for builds to complete. With ElectricAccelerator, that problem is now gone."

RESULTS:

Improved engineering productivity with Electric Cloud.

In an extremely competitive marketplace, Force10 Networks must innovate quickly and exceed customer expectations consistently. As the high standard for success is continually raised, ElectricAccelerator helps Force10 improve engineering efficiency and speed up new releases to market.

"We estimate a minimum saving of 200 engineer-hours per week with ElectricAccelerator," said Viswanathan. As a manager, Viswanathan recognizes one important benefit of deploying ElectricAccelerator as simply, "people have finally stopped complaining about build times."

ABOUT ELECTRIC CLOUD

Electric Cloud® is the leading provider of Software Production Management (SPM) solutions. Electric Cloud solutions automate, accelerate, and analyze software build-test-deploy processes to optimize both physical and virtual IT environments. The company's patented and award-winning products help development organizations to speed time to market, boost developer productivity, and improve software quality. Leading companies across a variety of industries, including semiconductors, enterprise IT, ISVs, mobile devices, and transactional web sites rely on Electric Cloud Software Production Management solutions to transform software production from a liability to a competitive advantage. To learn more please contact Electric Cloud at (408) 419-4300 or www.electric-cloud.com.

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