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Calsoft Labs developed OpenFlow protocol stack and integrated it with the data center blade server switch client. We were also instrumental in testing the implementation with different open source and commercial controllers.

The Client

The client is a leading supplier of Ethernet, IP, and Application Switches for blade server systems globally. The client's product is an enterprise-class and full-featured data-center switch that delivers line-rate, high-bandwidth switching, filtering, and traffic queuing without delaying data.

The Challenge

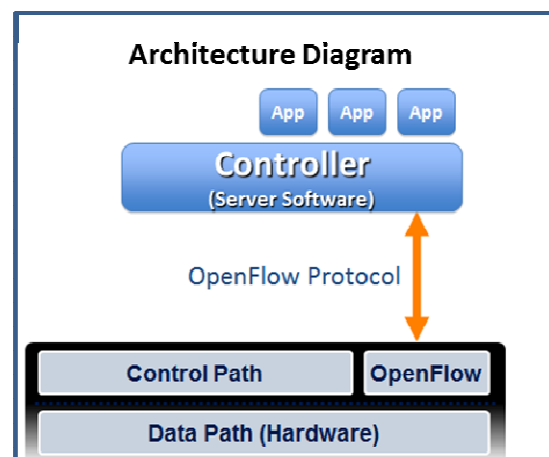
With Software defined networking and OpenFlow gaining momentum, the client wanted to design and implement OpenFlow stack in few of their switch firmware. OpenFlow is a booming networking technology that offers new ways for users to control their networks and which can ultimately transform the very economics of hyperscale data centers.

The Solution

Calsoft Labs' multi-site team of 10 engineers (US & India) started the engagement in 2010. Calsoft Labs provided the end-to-end support for OpenFlow protocol 1.0 implementation including testing and later went on to support for 1.1, 1.2 and some features of 1.3 releases. The implementation was successfully tested with Stanford controller (Open Source) and a customer specific controller.

Calsoft Labs' solution supports OpenFlow Hybrid Mode (OHM) as well as Multiple instances. With Hybrid mode support, the switch can work in either OpenFlow only mode or Hybrid mode (OpenFlow + Legacy) and can switchover from OpenFlow to Hybrid on switch reboot. This feature will help in optimal switch resource usage as in many scenarios OpenFlow will use only partial set of switch ports and the unused ports can be used for legacy switching.

Calsoft Labs' OpenFlow solution enabled the switch vendor to provide standard hooks for controlling the network traffic, without exposing the complexities of the underlying physical network devices and protocols. Using OpenFlow, network traffic can be controlled by a remote server called controller. The controller can make decision on how to handle the packets. For example, it can drop the packet, or it can add a flow entry directing the switch/router on how to forward similar packets in the future.





Benefits to Client

Calsoft Labs helped the client -

- Reduce time to market with proven processes and methodologies
- Achieve their overall objective at a lower cost and with guaranteed support from a proven technology vendor
- Design maintainable and supportable products and ensure ease of upgrades in the future

Technology and Resources

Calsoft Labs' extensive experience in OpenFlow implementation and Software-defined Networking was leveraged for providing the solution.

- OS: Linux
- OpenFlow releases: 1.0, 1.1, 1.2 and 1.3
- Interoperability Testing: Stanford Controller and Commercial Controllers
- Team size: 30

About Calsoft Labs

Calsoft Labs provides specialized concept to market Product Engineering services to product and technology companies in select market segments. Our target markets include Automotive, Consumer Electronics, Industrial Automation, Networking, Storage and Independent Software Vendors (ISVs). Calsoft Labs delivers unmatched business value to its customers through a combination of process excellence, reusable frameworks and technology innovation.

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Contact Us

USA

2953, Bunker Hill Lane, Suite 203, Santa Clara, CA 95054.
Ph: +1 408 755 3000 - Fax : +1 925 249 3031

INDIA

No. 196, Bannerghatta Road, Opposite HSBC, Arekere Circle, Bangalore 560 076.
Ph: +91 80 40343000 - Fax: +91 80 40343111

FRANCE

40 avenue André Morizet,
92514 Boulogne-Billancourt, France.
Ph: +33 (0)1 46 08 70 00 - Fax : +33 (0)1 46 08 70 10

