Terabit Switch Chips & Software for SDN & the White Box Era

EXECUTIVE SUMMARY

The industry is moving to cloud-based services with virtual functions implemented on servers in data centers. These virtualized solutions require significantly higher bandwidth between servers and between applications running on the servers and users. Switches are the key link, providing low latency packet forwarding, network virtualization and overlay capabilities to maximize performance in virtualized network environments based on software-defined networking (SDN) and network functions virtualization (NFV). Data centers operated by cloud and communications service providers are now the key market for switches, and this has had a major impact on the design of the switch chipsets already available and those that are in development.

Software developers have introduced enhanced network operating systems and stacks with support for SDN that will run on a wide range of hardware platforms. This development enabled a new market for "white box" switches using merchant switch chipsets and open software interfaces. This market is now taking a further step forward with system manufacturers and service providers looking for programmable chipsets that can be easily programmed through open software interfaces or using open packet processing languages, such as Programming Protocol-independent Packet Processors (P4).

The shift to cloud services and virtualized networks has created significant new opportunities for switch device vendors, switch system manufacturers and service providers. The industry is moving toward open platforms, open software and white box switches. Industry leaders are sharing switch designs through OCP and other organizations and many service providers are using third-party or open switch operating systems. Flat switch architectures are easily implemented using integrated Ethernet switch devices, and this approach provides low latency switching between servers and to DCI systems connecting between data centers.

The range of switch devices from different vendors on offer in 2017 is significantly higher than it has been at any time in the last 10 years. The use of open interfaces enables service providers and switch system developers to use switch devices from multiple vendors and support them using a single operating system.

Terabit Switch Chips & Software for SDN & the White Box Era details and analyzes high-performance Ethernet switch devices, embedded SDN and operating system software and innovative IP solutions, identifying the key requirements and highlighting the advantages they hold for equipment manufacturers and service providers. The report also reviews vendor strategies and surveys component features, performance and flexibility in this important market.
The switch chipset market is defined by three key trends: a shift to cloud services, the development of white box switches and network virtualization. The shift to cloud services has dramatically increased the importance of data centers and made data centers the key market for switch chipsets. Virtualization using technologies, such as SDN and NFV, are also shifting much of the network functionality onto servers with switches handling the physical forwarding of packets between servers.

Excerpt: Data Center Switching

Terabit Switch Chips & Software for SDN & the White Box Era is published in PDF format.