

## Solution Spotlight

# Pica8: Made-to-Order Networks for Applications

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### Introduction – Market Overview

Networks need to serve the needs of higher level IT goals. Performance, manageability, and security are important qualities that enable networks to support application goals. It makes sense to engineer the network to meet application needs, but traditional networks are often too rigid, and need to be ‘made-to-order’ to support today’s applications. Adopting software-defined networking (SDN) technologies is a potential solution to these needs.

### Market Research

According to ESG research, 42% of IT professionals surveyed indicated that cost reduction was one of the biggest drivers behind their organization’s use or potential adoption of SDN technology, making it the most popular response. However, other benefits are not all in core technical infrastructure areas: 33% cited security improvement, 30% network function virtualization, 28% self-provisioning and agility, and 27% indicated the fact that it allows them to align use of server virtualization with network virtualization is one of the biggest drivers.<sup>1</sup> ESG believes that customers recognize that while SDN can lower costs, that is not the only factor, citing benefits in better business agility, security, and IT functions. Given that, let’s look at how some solutions can provide benefits in both categories.

#### TOP 5 REASONS FOR USING SDN TECHNOLOGY



Cost reduction, **42%**



Improve network security through segmentation of networks, **33%**



Network function virtualization (NFV), **30%**



Self-provisioned networks and agility, **28%**



Align use of server virtualization with network virtualization, **27%**

### Market Overview Conclusions

Choosing a platform that combines both traditional routing/switching and SDN offers a flexible path towards achieving the benefits of SDN while preserving existing traditional network topologies and interoperability. Switches that support this hybrid functionality can handle traditional layer-2 and layer-3 traffic while offering SDN capabilities. ESG research asked respondents what their primary reason was for deploying or considering hybrid switches, and the ability to apply hybrid switches to either a standard or SDN environment, giving organizations more flexibility (34%), was the most often cited reason.<sup>2</sup>

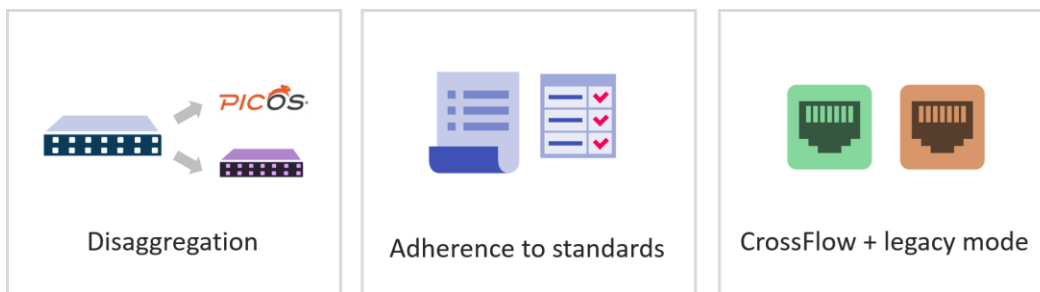
<sup>1</sup> Source: ESG Research Report, [Trends in Data Center Networking](#), February 2016.

<sup>2</sup> Source: ESG Research Report, [Enabler of IT Process Goals](#), to be published.

## Introduction to Pica8's PicOS

PicOS is a network operating system that runs on many bare-metal, white-box network switches, enabling choice of hardware switch providers. It supports hybrid mode functionality through a feature Pica8 calls CrossFlow, supporting traditional layer-2 and layer-3 (legacy port control) while also enabling control by OpenFlow-based SDN controllers, chosen at a port-by-port level. This enables precise traffic engineering control, enabling the introduction of fine-grained network policy and business logic that supports application needs. The hybrid mode means a Pica8 switch can be deployed seamlessly into existing networks today, while enabling a gradual adoption of SDN policies where they make sense.

It can be controlled by external OpenFlow-compatible SDN controllers or be configured locally from the switch. Local programmability is achieved by DevOps tools used to manage the network by configuration through the Linux operating system. This provides familiarity for Linux server administrators and leverages knowledge of common configuration managers such as Puppet or Chef. Therefore, traffic engineering may be achieved through many methods.



## The Bigger Truth

As organizations realize a need to create agile and dynamic data centers to serve the needs of applications, the network needs to evolve. Classic layer-2 and layer-3 are still critical for compatibility. Adding SDN through OpenFlow on the same switch introduces precise traffic engineering instead of a complete lift and shift replacement. Pica8's PicOS is a network operating system that offers this hybrid approach, providing a gradual path toward SDN and the flexibility to build a network that is 'made-to-order.'



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Pica8 offers openness at many levels: more choice related to hardware, ASICs, traditional routing and switching protocols, SDN controllers, and a variety of DevOps methods for controlling its Linux-based switch.

Instead of adopting SDN with an all-or-nothing migration, it is worthwhile to investigate this gradual hybrid approach. This lowers risk and creates an incremental path to adopting SDN.

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