Cisco APIC Enterprise Module Simplifies Network Operations

January 2014

Prepared by:

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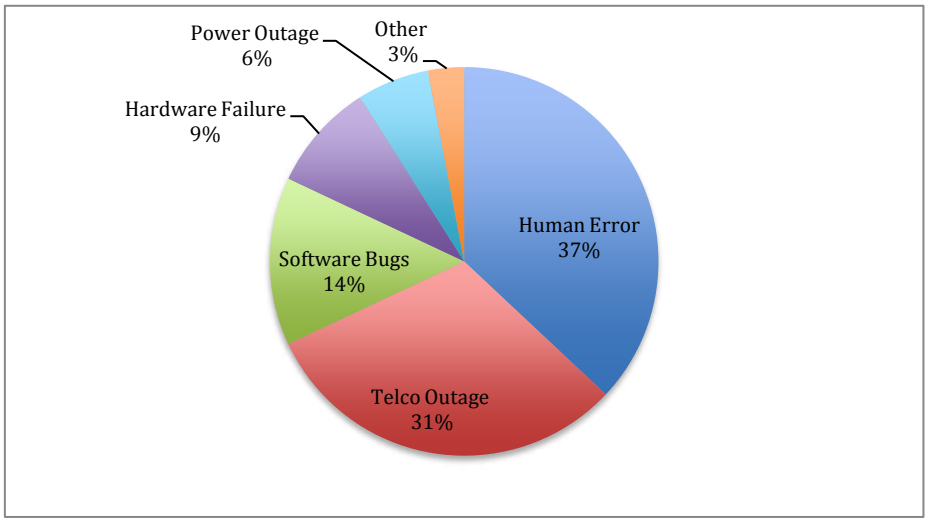
Introduction: Network Complexity Limits IT Innovation

The role of the CIO has changed more in the past five years than any other position in the corporate world. IT leaders are now partners with business leaders and are tasked with helping companies respond to competitive pressures as quickly as possible. In an effort to improve overall IT agility, compute and application technology has evolved significantly through the use of mobility, virtualization and cloud computing. However, the network itself has yet to evolve, limiting the overall agility of IT today. These technology shifts have transformed almost every part of the enterprise. However, to maximize the potential of these investments, the network must also transform. Today's legacy networks are plagued with the following limitations:

- **The lack of network agility limits IT agility.** Legacy IT environments were highly siloed, with the compute and network layers being managed independently. This model had been sufficient because IT operated on a "best effort" model. However, IT is shifting rapidly to mobile and cloud computing—both of which are network-centric compute models. This means the lack of network agility significantly limits overall IT and business agility.
- **Traditional network management is done "box by box."** Historically, network managers have had to manage routers, switches and other network devices on a box-by-box basis through a highly manual, repetitive process. This means that even the most basic network changes can take weeks or even months to complete. Additionally, because there are so many types of devices and network operating systems, the syntax required to make a configuration change could be quite different from platform to platform—making the task even more challenging.
- **Human error is the largest cause of network downtime.** Because the process for making configuration changes is highly manual, it can be error prone, particularly when time is of the essence. According to a 2013 ZK Research Network Management Study, human error accounts for 37% of all downtime (Exhibit 1). Eliminating this would significantly improve overall IT operations.
- **The majority of a company's IT budget is used to maintain the status quo.** Currently, 83% of IT budgets is used to simply maintain the current operating environment. This is up from 75% five years ago. If this trend does not change, almost the entire budget will be used to maintain the status quo within a decade, leaving very little budget for strategic initiatives.

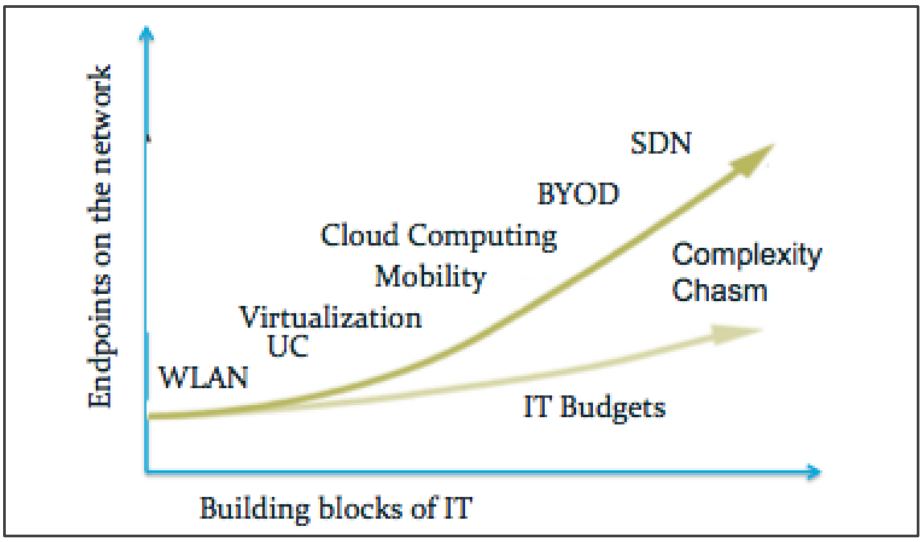
The current state of IT is not scalable because the complexity chasm between the amount of budget required to run IT and the amount that's available continues to grow (Exhibit 2). In order for IT to adapt to the current business climate, it must move to a faster IT model starting with the network.

Exhibit 1: Causes of Network Downtime



Source: ZK Research 2013 Network Management Study

Exhibit 2: The Widening IT Complexity Chasm



Source: ZK Research, 2014

Section II: Fast IT Must Become the Norm

The concept of fast IT embodies IT being agile enough to operate at the speed of business. Instead of IT slowing the business down, it becomes a catalyst for change by enabling the business to change faster than ever before. There are three core principles for fast IT: simplicity, openness and innovation. This model is markedly different from the current IT model, which is highly complex and closed. Fast IT will transform the network in the following ways:

- **Automation replaces manual configuration processes.** With fast IT, the highly manual, repetitive processes are automated, speeding up the rate of change and eliminating human error.
- **Management moves from a box-centric to a network-centric model.** Organizations that shift to a fast IT model will manage the network as a single, holistic entity rather than a collection of boxes that need to be managed independently.
- **Provisioning time is cut by orders of magnitude.** When process automation is combined with the network-centric model, the time it takes to provision the network goes from weeks and months to hours or even minutes in some situations.
- **Closed systems become open and programmable.** Legacy network devices were closed, making it difficult for the network to "talk" to the compute and application infrastructure. With fast IT, the network is open and programmable, meaning application changes can invoke network changes. For example, when a video conference is initiated, the video application could talk to the network to allocate the appropriate QoS level until the session is over.
- **Network data is transformed into business intelligence.** "Big data" and analytics have become a top initiative for business and IT leaders today. Historically, raw network data was used to help understand how the network functioned but had little to do with business performance. With fast IT, network data is transformed into information that can be used to provide business level intelligence.

Section III: The Cisco APIC Enterprise Module Enables Fast IT

Cisco recently augmented its software defined networking (SDN) strategy with the introduction of the Cisco ONE Platform and the Cisco Application Policy Infrastructure Controller (APIC) Enterprise Module. The APIC Enterprise Module broadens the APIC, which was unveiled in late 2013, beyond the DC to the WAN and Access networks. Cisco now has a single controller across the network domains from the DC to the WAN and Access (branch and campus) networks. The APIC Enterprise Module adds network abstraction and automation for WAN and Access network domains. The Cisco ONE Platform and APIC enable ACI (Application Centric Infrastructure) across the end-to-end network (Exhibit 3).

The Cisco ONE Platform is a policy-based management and security platform that abstracts the control functions up to a layer above the network devices. Business and application policy changes can be conveyed to the APIC, which then creates and pushes out network configuration changes to all network devices including routers, switches and security devices across all the network domains. With the WAN and Access domains, the APIC Enterprise Module enables fast IT through the following:

- **Amplification of network intelligence:** The APIC Enterprise Module can interface with applications through a number of different and open APIs including RESTful APIs, OpenFlow, Command Line Interface and onePK.
- **Operates on a wide variety of network devices:** The solution works with new installations as well as existing installations that deploy Cisco Catalyst switches, Integrated Services Routers (ISRs) and Aggregation Services Routers (ASRs).
- **Deployment options:** The APIC Enterprise Module can be deployed as an appliance or as a downloadable software application.

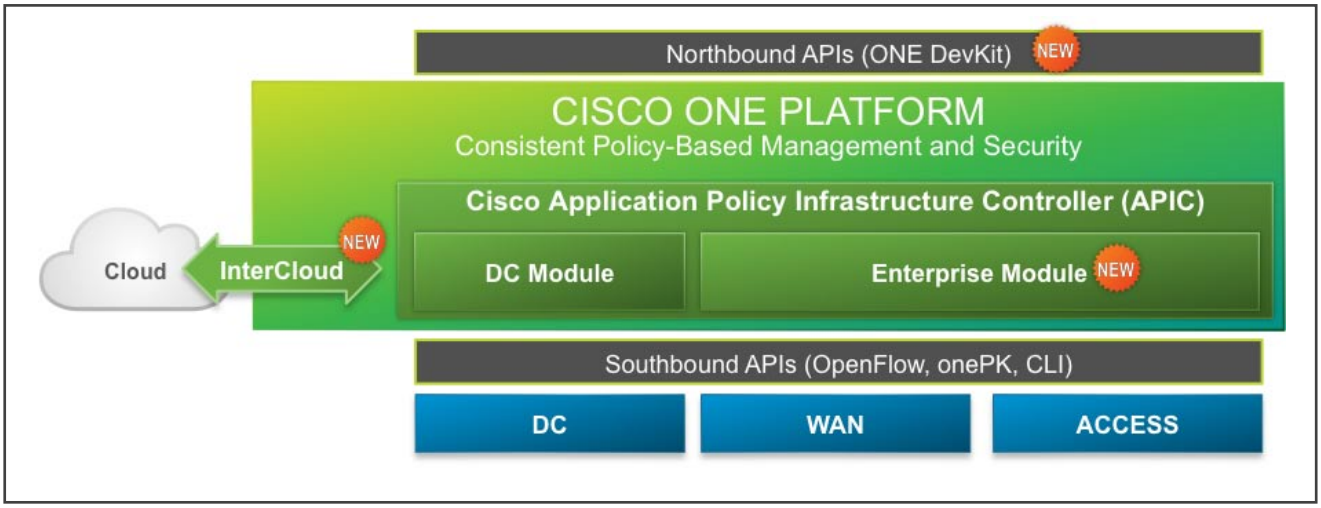
Although the APIC Enterprise Module can address a wide range of issues, IT leaders should focus on solving highly complex and tedious problems to get a rapid return on investment. Based on these criteria, there are three uses cases that organizations can immediately implement to take advantage of the fast IT model:

- **Automation of security:** Implementing network-wide security can be very challenging and a seemingly never-ending task. The APIC Enterprise Module can be used to automate network-wide threat detection and mitigation as well as ACL management.
- **QoS provisioning:** Real-time collaboration is a must for businesses looking to make the most of a highly diverse and mobile workforce, making the use of QoS almost mandatory. However, implementing it manually and box-by-box can be a challenge for even the most experienced network engineer. The APIC Enterprise Module can be used to automate QoS provisioning and even create a "follow me" QoS model to establish a consistent, high-quality user experience.
- **Path optimization:** The WAN is changing, and more organizations are using multiple WAN links to ensure high availability and redundancy. Cisco IWAN Path Optimization can be used to send specific traffic down different WAN paths to improve the performance of mission-critical traffic and lower WAN costs. The APIC Enterprise

Module simplifies the provisioning of IWAN and ensures compliance checking across hundreds and thousands of branches.

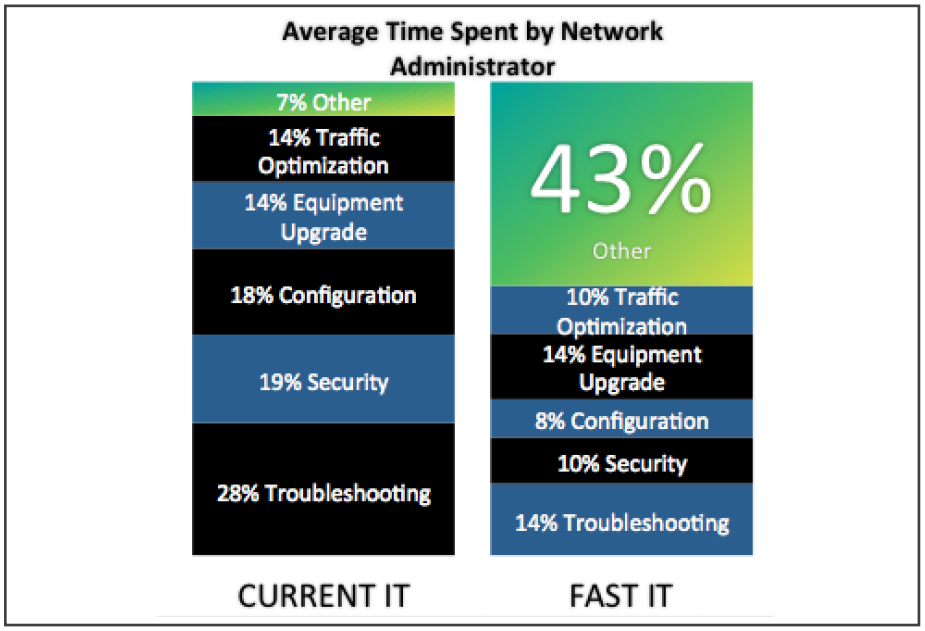
Organizations that deploy the Cisco APIC Enterprise Module will realize a number of benefits including significant time savings over traditional network management. A Forrester Research study recently compared the time spent on certain tasks by a network manager within the traditional IT model and the fast IT model. The study shows that the current IT model consumes 93% of IT's time for network operations, leaving only 7% for innovation and new initiatives. With the fast IT model, Cisco estimates a 500% increase in the time available for new initiatives, rising to 43% from just 7% (Exhibit 4).

Exhibit 3: The Cisco ONE Platform



Source:

Exhibit 4: Current IT versus Fast IT



Source: ZK Research, 2014

Section IV: Conclusion

Today's IT leaders need to focus on enabling business innovation through a highly agile technology environment. However, no amount of investment at the compute and application layer can deliver the necessary level of agility until the network itself becomes a highly agile resource. To accomplish this, organizations should rapidly make the shift to a fast IT model where provisioning time is reduced through automation, downtime is almost eliminated because of a reduction in human error, and resource utilization is improved. Fast IT will provide companies with the necessary open, flexible foundation to transform the business. The new Cisco ONE Platform and the APIC Enterprise Module can evolve the network to provide the level of agility, programmability and openness necessary to fulfill the vision of fast IT.