The Value of Automating Network Operations to Realize the Full Potential of IoE

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IDC OPINION

This white paper illustrates how the Internet of Everything (IoE) presents a significant opportunity for vendors and enterprises to bring together endpoints and individuals and the data they generate to deliver greater efficiency and integration from business and industrial processes. Unfortunately, the benefits of IoE are accompanied by increased infrastructure complexity and management challenges. For enterprises to realize the full potential of IoE without potential complexities, they must ensure that they carefully consider operational processes and tools that facilitate optimal deployments. IDC finds the following:

- The IoE brings people, devices, and data closer together, but it also increases network complexity and management challenges, which can slow the progress of the adoption of IoE.

- The network must evolve and embrace automated operational processes to realize the benefits of IoE.

- Leveraging tools that provide predictive, proactive, and even preemptive analytics coupled with automation of network processes and services will pave the way for moving into IoE.

IN THIS WHITE PAPER

This white paper discusses and analyzes the value of automating network operations and processes as a prerequisite for success in Internet of Everything initiatives. Markets discussed in this white paper include datacenter and network infrastructure as well as network consulting and professional services designed to integrate and support network operations. The white paper provides an overview of the key trends, opportunities, and challenges involved in automating network operations and processes in pursuit of IoE business objectives. The white paper also reviews Cisco Services offerings in this space.

SITUATION OVERVIEW

The Internet of Everything can be defined as the network that connects people, data, processes, and things. It presents a seemingly endless opportunity for vendors and enterprises to bring together all endpoints, individuals, and data with the goal of creating more efficiency and integration among business and industrial processes. Financial and productivity benefits are already being experienced with Smart City, transportation and logistics, and industrial and consumer deployments, for example. However, at the core of all these success stories is the need to ensure that network operations and processes are optimized and automated in many cases.

There is a difference between the broader IoE theme and the Internet of Things (IoT). IDC defines the Internet of Things as a network of networks of uniquely identifiable endpoints (or "things") that communicate without human interaction using IP connectivity – be it locally or globally. The IoT brings meaning to the concept of ubiquitous connectivity for businesses, governments, and consumers with its innate management, monitoring, and analytics. IoT is the exchange of data between autonomous "endpoints" in business and industrial processes. The IoE is broader, also encompassing the interactions of individuals (the human dimension) with the endpoints (devices) and the data they generate.

IoE and the Changing IT Environment

It's a truism that the world of IT is in constant change, but there's no question that IT is experiencing a sweeping transformation driven by the growing diversity and volume of application workloads and the technological advances that facilitated them. Virtualization, cloud, mobility, and data analytics effectively have set the stage for the IoE across a number of vertical markets. In this new world of IT, the rate of change is being accelerated further by the continuous delivery and iteration of new applications and application architectures, many of which are being developed to accommodate the quickening proliferation of mobile devices. The IoE, which adds myriad Internet-connected endpoints to the mix, serves to further accentuate these developments.

While tremendous business benefits can be derived from this perpetual IT transformation, management complexity threatens to slow the march toward value realization. There is a need not only to develop, deploy, maintain, and support a steady flow of increasingly virtualized applications but also to provision and manage a burgeoning number of devices in the field. That is to say nothing of the management complexity that is inherent in the data streams that flow to and from devices and endpoints and to and from datacenter-based monitoring systems and analytics. The data traffic in an IoE context is particularly daunting, with north-south traffic flows (from "client" endpoints to servers) compounded by east-west flows (server-to-server traffic) between virtual machines, federated applications, and data analytics.

This scenario complicates the work of the entire IT department, but it carries particularly onerous implications for networking teams. The traditional enterprise network, and especially the datacenter network, was designed to support client/server applications with north-south traffic patterns. The new reality of virtualized applications, hybrid cloud, mobile devices, data analytics, and now the IoE presents challenges that traditional networks – and their operational models and processes – were not devised to meet.

Some of the problem relates to network architectures that were created to support a previous generation of application workloads, but a large measure of the problem involves the manual processes that are used to provision, manage, and support traditional networks. Whereas server and virtualization teams have embraced and benefited from automation tools and automated operational processes, the network has lagged behind, still adhering to command-line interfaces and manual box-by-box methods of operationalizing network infrastructure. Typically, nearly 65-70% of an IT budget is allocated to supporting, managing, and operating IT infrastructure. IDC believes that the use of automation tools and processes can help reduce that operational expense and reapportion resources to more strategic initiatives.

Unfortunately, the network is lagging behind at a time when it is most needed. For organizations to benefit from developments such as the IoE, the network and its operational models must demonstrate agility, dynamism, and elasticity – critical characteristics that can be facilitated only by an automated approach to IT as a service. For the network to meet the challenges posed by IoE and cloud, it must be able to sense and respond to developments and events instantaneously, all of which calls for real-time automation based on predictive analytics.

Cisco recognizes that the IoE necessarily will involve a degree of complexity that cannot be accommodated by traditional network operations and processes. To fully benefit from the value that the IoE can deliver, IT departments must set the stage by simplifying network operations and processes. In doing so, organizations will reduce IT complexity, optimize the value of limited IT resources, and expedite service delivery and value extraction associated with IoE.

Indeed, services automation is the means by which network operations can be simplified in pursuit of IoE business value. In automating IT operations today, enterprises can accelerate toward the IoE of tomorrow.

At this point, it's important to note that business process automation, as well as the automation of IT operations and process, can be a critical ingredient to IoE success. It's essential for the business to take a comprehensive view of the process changes that must be implemented as prerequisites to realize the full range of business objectives related to IoE initiatives. Still, if the challenges are negotiated adroitly, the rewards can be significant.

The benefits that accrue from an automated approach to network operations, consistent with application workload requirements and with the guiding concept of IT as a service, are as obvious as they are ample. They include the following:

- Greater business agility, resulting in faster IT service delivery

- Increased IT operational efficiency and reduced operational costs

- Faster time to IoE opportunity/revenue

- Ensure mission-critical availability and business continuity

- Better capacity planning for future requirements

- Increased business and end-user satisfaction and productivity

Achieving the previously mentioned results is well within reach, but it will require planning, preparation, and a thorough ongoing analysis of where business and IT processes stand today, as well as how they can be simplified through an automated approach to service delivery.

Still, the effort is worth making. By implementing automation as a means to bringing IT as a service to fruition, enterprises will be able to attain significant efficiency gains. More important, however, is that organizations will be able to devote greater attention and resources to revenue-generating IoE services. In that context, automation's relevance is to ensure that operations and infrastructure are fully tuned to the task of delivering on the rich promise of IoE. Automation is an integral means of ensuring that IoE's ends are wholly realized.

Cisco Smart Services as an On-Ramp to IoE

According to IDC data, worldwide network support and deployment services reached over $20 billion in 2013, making the networking segment the largest contributor to the hardware support and deployment services market. At first glance, the day-to-day maintenance tasks may fall in the realm of keeping the lights on, but upon deeper inspection, we find that the information gleaned from observing trends and patterns of incidences is extremely powerful. The capability to harness that information and provide actionable insight is the foundational element of automating the network for higher-value tasks.

Cornerstones of Smart Services

Cisco maintains a leadership position holding more than 40% market share in maintaining or supporting 70% of the networking devices installed around the globe, delivered by Cisco Services or by its partners. This means that Cisco has the opportunity to collect massive amounts of historical and real-time customer data from its installed base of equipment. Some Cisco support services facts are:

- 50 million+ devices installed

- 6 million annual customer interactions

- 1 million+ online interactions

Rooted in a long history of support and maintenance services, Cisco has evolved its services offerings over time to add increased intelligence and value to its customers' devices and networks. The information Cisco has collected relating to networks and devices has been compiled into an expansive database, which has become the foundation for Cisco Smart Services. The evolution of the Cisco Smart Services strategy has been predicated on the company's ability to build atop its traditional technical services to provide proactive, predictive, and, in some cases, preemptive capabilities across technical, advanced, and advisory services. Historical and real-time network information has been coupled with ongoing investments in software and IP to provide actionable strategy and advice for customers and partners.

Cisco continues to invest in its technical and intellectual capabilities to expand upon the foundation of Smart Services. Core foundational elements to Smart Services include:

- Leverage automation and intelligence within devices and networks

- Analyze and correlate real-time customer data coupled with historical databases

- Wrap Cisco's intellectual capital around mined data in a meaningful and actionable way

As a result of bringing together the information gathered from Smart Services and providing that intelligence back to customers through Cisco Services or its partners, the Smart Services portfolio aims to deliver the following customer benefits:

- Using the intelligence gained from software and automation to increase "time to revenue" on strategic and competitive initiatives and allowing CIOs to swiftly and efficiently manage network assets

- Allowing IT departments to utilize their own expensive resources in a more cost-effective manner

- Providing a proactive versus a reactive service experience to speed problem resolution and help better deploy talent across the organization

- Minimizing vulnerability to network risk through proactive security measures

- Increasing customer satisfaction by providing a consistent high-quality level of service to employees, partners, and customers

The data gleaned through Smart Services allows IT managers and their partners to plan more effectively and leverage networking investments more strategically.

Smart Services for the Future of IoE

The foundational elements of Smart Services enable enterprise customers to have actionable insight into their network architecture. This not only is beneficial from a network health perspective but also enables the customer to knowledgeably and intelligently pursue future investments and business initiatives. Having real-time insight into the network infrastructure allows enterprises to make more informed technology, business, and competitive decisions. As the pace of change increases for enterprises, having the right toolsets to understand the impact that new technologies and business requirements will have on the network will be paramount to capitalize on any new initiative. Cisco's vision of Internet of Everything that brings together people, processes, data, and things to create new business solutions can become a reality only if the network infrastructure is operating optimally to handle these new challenges and opportunities. Leveraging automated tools and services, such as Smart Services, provides the insight that will be a requirement to move forward to take advantage of IoE.

CHALLENGES/OPPORTUNITIES

Challenges

While many enterprise customers clearly understand the value that real-time data provides to the health and operational efficiencies of the network as they work toward leveraging the network as a strategic business asset and business differentiator, IDC believes that taking the next step up the value chain in utilizing their network as a launching pad for IoE will be a more difficult journey. Bridging the gap between these two paradigms will be essential to IoE success and will likely require expert professional services to define the business case and to implement the tactical measures to consummate it. Enterprises as well as their network-centric partners will find this journey challenging.

Enterprises will be required to understand the impacts of IoT and the differences and benefits of continuing the journey from IoT to IoE. As IoT and IoE are two different paradigms, where automation plays a significant role in each, the business outcomes are varied. Enterprises in the near term will be challenged to understand the impacts to their infrastructure in each paradigm and align business requirements accordingly.

Another challenge is the very breadth of the IoE that cuts across a wide range of vertical markets, application scenarios, and use cases. To succeed across these vertical markets, which include utilities, automotive, industrials, manufacturing, home automation, and a number of others, Cisco will have to partner extensively with application, analytics, device, and integration partners dominant in each segment. As such, Cisco's ability to form and sustain comprehensive ecosystems will be critical to the company's long-term success in IoE.

Opportunities

Cisco's vision of Internet of Everything, which brings together people, processes, data, and things to create new business solutions, can become a reality only if the network infrastructure is operating optimally to handle these new challenges and opportunities. Leveraging automated tools and services, such as Smart Services, provides the insight that will be a requirement to move forward to take advantage of IoE.

Enterprise customers that take an introspective look at their network investments, tools, and operational policies will be best positioned to take the next steps for moving toward future initiatives of IoT and IoE.

As a leading vendor of network infrastructure that extends from the datacenter across the WAN to the network edge, Cisco is uniquely placed to capitalize on the ubiquity and pervasive connectivity of the IoE. Given its presence and incumbency across network environments and vertical markets, Cisco can develop and implement architectural approaches to IoE-related connectivity, processing, and analytics that other vendors, on their own, would find difficult to match. As such, Cisco can develop competitive differentiation and positioning that would allow it to derive substantial revenue and market share from the IoE.

CONCLUSION

The IoE holds great promise for a growing number of companies across a broad range of vertical markets. It has the potential to make consumers' lives more convenient and satisfying while offering businesses and other organizations a means of leveraging valuable data insights that result from the interplay of devices, applications, and people.

For all its potential and promise, though, the IoE is dependent on the underlying network to provide the architectural and operational foundation for success. The enterprises that derive the greatest gains from the IoE will be those that have anticipated the implications and requirements of the IoE by defining and implementing automated operations and processes as early as possible.

In this white paper, we have seen that manifold benefits derive from an automated approach to IoE network operations, especially when closely attuned to application workload requirements and to the precepts of IT as a service. Customers that understand how best to automate their network, and the operational processes associated with it, will be best placed to tap into the rich vein of informational value in the IoE data deluge.

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