Embrace the cloud to be a digital enterprise

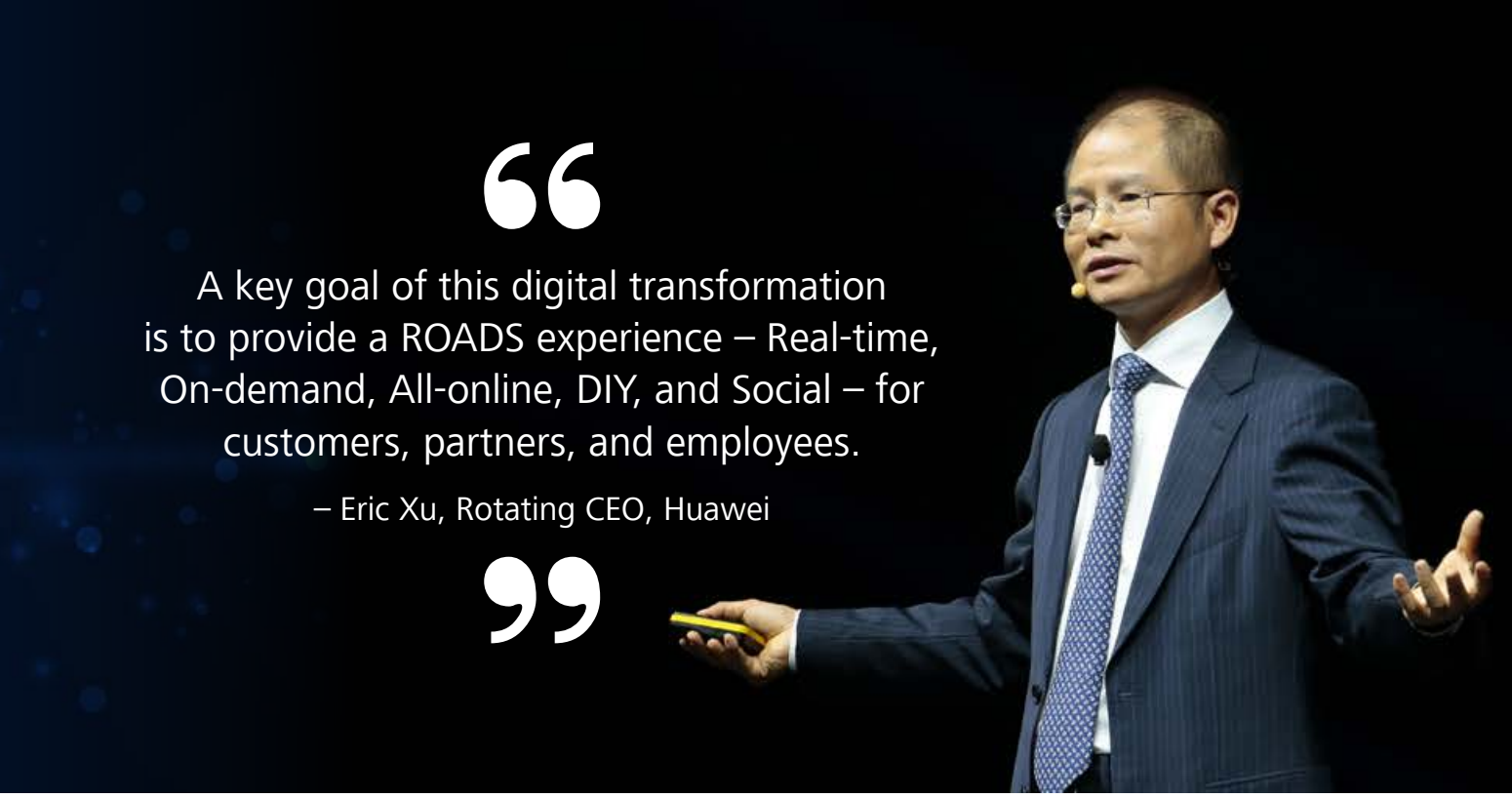
Scan for mobile reading

On the second day of HUAWEI CONNECT 2016, Huawei's Rotating CEO Eric Xu asserted that going digital is an essential strategic choice for every enterprise. The key goal of transformation is to provide a ROADS experience for customers, partners and employees. But, the road ahead isn't easy.

By Eric Xu, Rotating CEO, Huawei

At the Huawei Cloud Congress (HCC) 2014, I explained why Huawei stepped into the IT sector. It was because cloud technologies and mindsets would reshape enterprise IT architecture and telecom networks. This transformation would present a good opportunity for Huawei to establish a presence in the enterprise and government markets. This revolution would also be key to reinforcing Huawei's competitiveness in the carrier market. I said that in order for Huawei to become an ICT leader, it had to become an IT company first. A year later, at HCC 2015, I elaborated on Huawei's focus in the IT sector: what we do, what we don't, as well as our strategic choices. I also made it clear that Huawei would like to work with all industry partners to build our ecosystem and grow together.

At the HCCs in both 2014 and 2015, I shared



ideas from Huawei's perspective. But, today, I'd like to take a new perspective by looking from the viewpoints of enterprises. I'd like to discuss how we can address issues and challenges in the context of current economic dynamics, and how we can prepare ourselves for the future. My answer to these questions is well captured in the theme of my presentation for today: Embrace and Integrate with the Cloud to Become a Digital Enterprise.

Ken Hu called on everyone to work together to shape the cloud and shape the world. He also said that enterprises would be the main players in the era of Cloud 2.0. Enterprises should be committed to digital transformation and build themselves into digital enterprises.

Many people may ask: What exactly is a digital enterprise? What is the purpose of digital transformation? What value will it create? Today, I will share my thoughts; but, more discussion will be needed across the industry to delve deeper into better answers that are broadly agreed.

To become a digital enterprise, a company needs to build ubiquitous connections spanning its people and things, and at the same time link its employees, customers, partners, and suppliers together. The company's operations should be based on big data and artificial intelligence (AI). On top of that, it needs to automate its business processes with built-in real-time decision making so as to realize simple, efficient, and intelligent operations. A key goal of this digital transformation is to provide a ROADS experience – Real-time, On-demand, All-online, DIY, and Social – for customers, partners, and employees. This is the most difficult part of the journey, but it's a must, as both enterprise customers and consumers will be expecting a ROADS experience when they buy or use products and services from providers.

Harley-Davidson is a good example. It is one of the world's top brands, with the vision of creating unique motorbikes. Through digital transformation, Harley-Davidson has connected all its production lines and is able to assemble over 1,200 components into a motorbike in just 89 seconds. Its manufacturing assembly lines are precise to the second. Before the company embraced digital, the

> The key to becoming digital enterprise is to use cloud technologies and mindsets to innovate business and operating models and improve experience and efficiency.

whole process from online order to delivery took 21 days. After digital transformation, Harley-Davidson can process all orders online and give consumers the freedom to choose their favorite engine models and colors. Now, the order-to-delivery process only takes six hours.

Digital targets

For Huawei, we have a target for digitization. We hope that when consumers order a mobile phone in our online store, they can customize the device the way they like. The order will then be automatically transferred to our production line. After the phone is made, it will be automatically shipped to the consumer. Throughout the order-to-delivery process, only manufacturing and transportation will require time, while other procedures will be finished almost instantly. When this target becomes a reality, imagine how competitive we will be, and what the operating efficiency and customer experience will look like. Companies that are determined to go digital and ultimately become digital enterprises can greatly enhance their customers' experience, their efficiency, and every aspect of their operations; they are more likely to stand out from the competition. Conversely, companies that fail to take action are likely to die in the competition.

So the question is, how can companies become digital enterprises? From my point of view, embracing and integrating with the cloud is the key. The idea is to use cloud technologies and mindsets to innovate business and operating models and improve experience and efficiency. Over the past 10 years, Internet companies that were born in the cloud have delivered superior experience and disrupted the business models of many vertical industries. Just imagine, if traditional companies or industries innovated their business and operating models based on cloud technologies and mindsets, then some of them may not be disrupted. By then, it would be the same customers served and the same products offered, but the business and operating models would be redefined with cloud technologies and mindsets to achieve simple and efficient operations at lower cost.

When it comes to embracing and integrating with the cloud, the answer of how to do it is clear. But to actually get there is really difficult. There are many challenges to resolve: the availability of capabilities and talent, interworking between legacy and new

> Deployment is time-consuming, and automatic scaling is difficult. That's why, over the last couple of years, some large enterprises have been thinking of developing or introducing a PaaS platform for all the common functions.

applications, the changes required in processes and software, just to name a few. To tackle all these challenges as enterprises move to the cloud, the solution lies in the cloud itself. Enterprises should explore their implementation strategy from three dimensions: cloud deployment, cloud utilization, and cloud management. Huawei has identified ten issues with enterprise IT and network architecture. The list may not be exhaustive, but any company that intends to embrace digital will encounter these ten issues. Next, I will share my observations on five issues that I believe are critical.

The big five

The first issue is agile development of applications, and it's the biggest headache facing enterprises. How can IT application development evolve in sync with business changes? Yesterday, I learned that Huawei now has 3,000 in-house staff and many more contractors working on internal IT applications. In 2015, Huawei spent 1.5 billion yuan on IT outsourcing. This is a huge investment. I've talked with many companies, and their situation is similar – most have a large team, in-house plus outsourced, working on the development of IT applications. For every IT application brought on board, there's repeated development of the same functions. Deployment is time-consuming and automatic scaling is difficult. That's why over the last couple of years some large enterprises have thought of developing or introducing a PaaS platform for all common functions. However, if every company develops its own PaaS platform, they are again reinventing the wheel, and the PaaS architecture will become fragmented, quite likely with unsatisfactory performance. I think we'll be better off having a PaaS platform with unified architecture to offer both common, standardized services and industry-specific professional services. With a PaaS platform like this, all enterprises – including software developers and system integrators – can focus their efforts on application development.

The second issue is about security, a critical building block for private and public cloud services. Cloud services are widely seen by many as less secure from several aspects. Most important of all, with the cloud data storage is no longer distributed; it becomes centralized, leading to increased exposure to data breaches and illegal access. Resource-wise, applications used to run on different servers which were physically separated. With the cloud, all physical

resources are virtualized, so the security boundary is blurred and the impact of vulnerabilities grows. Building a great wall for segregation might be enough in the past, but now even virtual machines require layers of defense between themselves. Application is another dimension. We all want rapid and agile application provisioning, but that requires real-time security defense, which is not yet in place. In terms of management, flexibility in resource allocation is certainly desirable and is the biggest advantage of the cloud. But it naturally conflicts with pre-configured privilege management. These are the security challenges in the cloud era.

But it's not all bad news. Cloud also brings new advantages to deal with security challenges. It allows us to adopt a systematic, end-to-end response to security threats through comprehensive and deep analysis. In fact, a public cloud, with its huge security investment and rich portfolio of security services, is surely more secure for small and medium enterprises, because single SMEs cannot afford to build an equivalent stack. In my opinion, the key to post-cloud security is to build a full-stack security defense system, which covers physical layers, networks, hosts, applications, and data. End-to-end visibility in enterprise security is needed, and that's exactly what the cloud can bring to the table. Big data and AI will play a role to allow real-time and intelligent risk monitoring and prevention. Last but not least, it's always important to choose trusted partners to work with.

Data centers

Data center architecture is the third challenge. Data and traffic volumes are exploding. Existing DCs, with their multi-layer scale-up architecture, can hardly meet current needs. With existing architecture, DC capacity goes up to hundreds of terabits per second, and there are issues around single points of failure and high power consumption. Maintenance is also a big problem in a large DC with hundreds of thousands of pairs of fiber. These are not the data centers of the future capable of dealing with massive data traffic, storage, and computing. If the notion of cloud can be used to transform DC architecture from scale-up to scale-out, then petabit/s capacity can be realized and way less fiber would be needed. Such a solution is not in place yet, and I hope the industry will work together, adopt the cloud mindset, and scale-out to replace existing DC architecture.

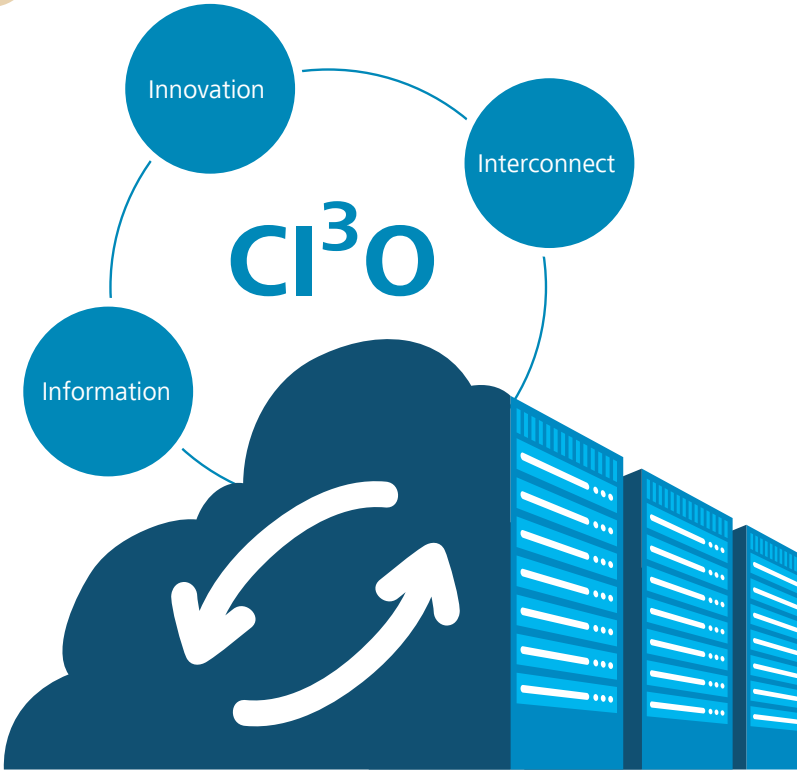
The fourth issue is bandwidth on-demand. As enterprises migrate their data between private and public clouds, or from one public cloud to another, a pressing need is bandwidth on demand. A case in point is Amazon's Snowball, a service which I think the industry should feel embarrassed about. Through express delivery, enterprise customers ship a data-loaded appliance to Amazon, which charges customers US$200 for every 50 terabytes of data. Retrieving the data from the cloud costs between US$1,000 and US$2,000. This physical approach for data transport is neither secure nor convenient. So if we look from the perspective of enterprises, it is important that carriers provide bandwidth on demand so that huge amounts of data can be migrated fast enough between public and private clouds.

The last issue relates to campus network management. Campus networks today are rather complicated, and they need to be managed and maintained by certified professionals. Data configuration has to be done for each piece of equipment. That's the case with Huawei today. We have over 200 branch offices around the world. At every location, we need to assign IT professionals for data configuration. Imagine if we introduced the notion of cloud into campus networks. Network maintenance, policy management, and data

Building a digital enterprise requires not only the commitment of the CEO and management team, but also renewed thinking about the future role and value of the Chief Information Officer (CIO).

configuration could be centralized in the cloud. Enterprises would only need to buy boxes to plug and play. Network O&M would be done either in-house or by suppliers or carriers. In any case, centralized and cloud-based management can significantly bring down the operating expenses of campus networks.

Building a digital enterprise requires not only the commitment of the CEO and management team, but also renewed thinking about the future role and value of the Chief Information Officer (CIO). CIOs used to be responsible for information only, but now they need to become a CI^{3}O who manages information, innovation, and interconnections. Of these three elements, innovation is the most important. As CIOs have the right ICT expertise and can embrace cloud technologies and mindsets over time, they will be in the best position if they glue technical knowledge to their business. So this is the first dimension of CIOs' triple role in the future: driver of innovation in operations and business models. In terms of information, the second I, CIOs have to become leaders in the cloudification of IT architecture. With respect to interconnections, CIOs should play the role of an enabler for interaction between the company and its customers, partners, and employees.



Huawei aims to become an enabler and driver of the intelligent world. To this end, we will stay customer-centric, focus on ICT infrastructure, and provide innovative cloud technology. We strive to become an enabler and preferred partner for enterprise cloudification and digitization; actively contribute to the cloud ecosystem; and promote openness, collaboration, and shared success.