

CASE STUDY

Service Providers
Data Center



Driving business transformation by cloudifying the network

In collaboration with Intel, AT&T fast tracks its move towards an agile, scalable, and programmable next-generation network, embracing cloud as an architecture and business model

Planning your own business and network transformation?

Then follow this advice from Andre Fuetsch, President AT&T Labs and Chief Technology Officer:

- Make sure your workforce can adapt as technology changes. The organizations that are willing to relearn and retool, are the ones that will thrive
- It's about speed and getting it into production in a measured way that still makes security a priority
- Become active in open source communities. Old world standards are too slow. It's important to get involved with faster, more agile approaches

AT&T is the industry leader in network transformation, while Intel is the catalyst. Twelve months ago, AT&T joined forces with Intel to work together on transforming AT&T's network. The result has been a dramatic transformation of AT&T's business and an acceleration of its journey towards a more flexible, software-centric and cloudified network. In the process, Intel and AT&T have also made huge progress in setting standards to advance business and network transformation across the industry.

Challenge

- Data traffic across AT&T's network has risen dramatically, primarily due to the rise in video streaming
- Accommodating this data growth while providing service reliability and meeting customer demand for innovative new services is critical to AT&T's business success
- Increasing network capacity through hardware was no longer physically nor economically viable

Solution

- AT&T began an ambitious network transformation program underpinned by Network Function Virtualization (NFV), Software-Defined Networking (SDN), cloud technology and development methodologies
- The company, collaborating with Intel, focused on driving innovation and lowering total cost of ownership (TCO) through accelerated technology adoption

Results

- Software-centric, cloudified approach allows AT&T to react to customer demand and roll out new services quickly and with greater agility
- Customers benefit from a better experience and have greater control over the way they manage services
- Early access to Intel® technologies accelerates availability of new services and lowers TCO
- Collaboration on open source projects drives innovation and accelerates the industry move towards NFV



Dramatic growth in data traffic

On an average business day, AT&T's network carries 150 petabytes of data traffic. This represents a staggering [growth of 250,000 percent](#) since 2007. According to Andre Fuetsch, President AT&T Labs and Chief Technology Officer, these dramatic increases are not forecast to stop, or even slow, any time soon. "Over the next five years, we expect to see a further 10x increase in mobile data traffic. The primary driver for this growth is video. Currently [60 percent of our network traffic is video](#) and we expect this to rise to 70-80 percent by 2020." For AT&T this presents a huge technical challenge.

Meanwhile, customer expectations are rising. As users are more and more dependent on communications services, they are increasingly powerless when they don't have access to a given device or network at a given place or time. Accommodating this huge data growth while assuring reliable Quality of Service and the ultimate Quality of Experience is critical to AT&T's success. Also, businesses and consumers have a growing appetite for innovative services that are flexible enough to keep pace with ever-changing trends. AT&T needs to be able to roll out these new services quickly and cost-effectively.

Up until recently AT&T kept up with rising customer and network demands by using increasingly sophisticated, complex routers, switches and other gear. But this was not feasible over the long-term. "We were asking a network model designed years ago for modest and predictable increases in voice traffic to adapt to a world of streaming videos, high-definition games, and photo-intensive social media. Now that we are predominantly a data company, and most of that data is video, to move capacity around to where it's needed with hardware alone would not be possible. It's just not agile enough. We needed another way," says Fuetsch.

Moving towards a software-centric, cloudified network

In 2015 AT&T embarked on an ambitious journey to transform its network infrastructure through NFV and SDN.

"We decided to take more of a top-down approach by building our scalability, flexibility and resilience in software built on top of standard Intel-based server hardware," says Fuetsch. "Previously we were doing the exact opposite. Our hardware was bulletproofed and we had a very thin layer of software running on top. Now, with a software-centric approach, we can react faster and with greater agility to move capacity to where we need it most. Also, we're no longer tied to specific vendors, which gives us more choice in the market and the ability to select best of breed."

Business customers are now able to access flexible networking services more quickly and with greater control, supporting AT&T's vision of a self-service, user-defined network. For example, AT&T FlexWareSM is a network of on-

demand services that allows businesses to spin up systems and services like a firewall, router switch, load balancer or WAN accelerator where and when they need it. "Using software, they can do this more quickly and efficiently. Previously, ordering, procuring, installing and connecting physical components would have taken much longer," says Fuetsch. Those are great benefits for the customer, but AT&T also benefits from reduced supply chain, logistics and improved time to market for new services.

AT&T set a goal to virtualize and software control 75 percent of its network infrastructure by 2020. During the first year, 2015, it achieved five percent; in the second year, 34 percent; and it expects to reach 55 percent by the end of year three. "This means we'll be hitting the tipping point over 50 percent of the network. At this point we expect to see a lot more acceleration moving forward," says Fuetsch.

Collaborating with Intel

AT&T has a long-standing, close relationship with Intel built around the move to next-generation infrastructure and services. The two have worked together on many projects including packet processing optimization and the development of AT&T Universal Customer Premises Equipment* (uCPE*) – the hardware foundation of AT&T FlexWare.

Continuing the theme of network transformation supporting business innovation, AT&T and Intel have been collaborating on their 5G roadmaps, examining the benefits of using drone technology to improve tasks that currently require a lot of physical labor, for example, airplane inspections, and investigating the use cases made available by bringing compute power to edge devices.

To further accelerate its network transformation journey, AT&T recently aligned with a group of leading technology companies that get early access to Intel technologies, and whose IT practices influence and shape how other companies are thinking about and adopting information technology (IT). With AT&T's increasing focus on early technology adoption and the transformation of its networks to be programmable, scalable and agile, collaborating with Intel was a natural next step.

"Collaboration with Intel gives AT&T early access to Intel technologies like the Intel® Xeon® processor Scalable family, allowing it to build and fine tune solutions that utilize Intel's latest innovations and accelerate time to market – in some cases by up to six months," says Sandra Rivera, Senior Vice-President and General Manager of the Network Platforms Group at Intel. "Meanwhile, AT&T also benefits from better asset utilization and greater programmability and scalability."

Setting future industry standards

Together Intel and AT&T are developing reference architectures and designs that will set future industry standards, drive innovation and accelerate time to market so

customers can benefit sooner. For example, AT&T has just released into the community the code for its Open Network Automation Platform (ONAP), which it expects will become the open source standard for network building, just as Android* is for the smartphone.

“Once you have this programmable platform you can open up the network and let the innovators do their job. They will come up with use cases and applications that we haven’t even envisioned yet,” says Rivera. “At first it was AT&T and Intel working together to build AT&T’s next-generation network. Now it’s AT&T and Intel sharing the outcomes of our long collaboration more broadly throughout the industry allowing everyone to realize the benefits of NFV.”

To further simplify rollout of NFV across the communications industry, Intel has also released Intel® Select Solutions – a set of reference architectures designed to remove a lot of the trial and error in network transformation by outlining workload-optimized NFV solutions.

Discover how you can transform your network

Find the solution that is right for your organization. Contact your Intel representative or visit www-ssl.intel.com/content/www/us/en/communications/network-transformation.html

Spotlight on AT&T

AT&T (www.att.com) is the world’s largest communications company by revenues, delivering advanced mobile services, next-generation TV, high-speed Internet and smart solutions for people and businesses.

It is the largest provider of pay TV in the United States with 25 million linear video subscribers and its high-speed mobile internet network covers more than 400 million people in North America. It delivers advanced services to nearly 3.5 million businesses on six continents, representing 99 percent of the world’s economy. This includes nearly all of the Fortune 1000 as well as neighborhood businesses across the United States.



¹<https://www.equities.com/news/jeff-kagan-at-t-mobile-data-250-000-percent-growth>

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