Building Competitive Advantage With Automation

ISPs can use autonomous technologies to help networks grow with companies as their business needs and markets change.

By Sean Robertson / *ADTRAN*

Since the introduction of the first public switched telephone network, networks have continually evolved. Through the various stages of development – from fixed endpoints in the early days of the internet to today's broadband networks that connect mobile users to massive data centers and bandwidth behemoths such as Netflix, Amazon and Facebook – networks have adjusted to accommodate new demands. The once-static infrastructure is undergoing a more profound transformation than ever before.

The latest incarnation is autonomous networks, a trend that has been building for some time. An autonomous network runs without much human intervention; it can configure, monitor and maintain itself independently. As business and residential subscribers' networks become more complex than ever, internet service providers (ISPs) can harness this evolution of networking by committing to providing networks that can grow with companies as their business needs and markets change.

In addressing the needs of tomorrow, ISPs must understand that today's world is hyper-connected, reliant on complex infrastructures and multicloud environments, connected through a mesh of networks. But modern network demands create new challenges for ISPs. To advance, teams need to start moving away from manual efforts and start harnessing the power of artificial intelligence (AI) and machine learning (ML) to drive automation and self-healing networks.

To succeed with AI and ML, companies must have full network visibility. The networking community hungers for disruptive ideas to address the unsustainable economics of present-day networks. Today, operational complexity is increasing exponentially as traffic continues to explode and new devices proliferate. Meanwhile, rising operational costs and slower time to revenue squeeze margins for traditional service providers.

The answer to this problem is taking shape in the form of AI-driven networks, a new approach model that will eliminate operational complexity regardless of the type and volume of network traffic. ISPs must act quickly to incorporate disruptive technology that advances AI and ML concepts to transform static networks into dynamic, programmable environments that are predictive, proactive and automated.

The reality is that to be successful, companies cannot build a new future on old technologies. The days of closed, proprietary networks and vendor lock-in are over; the market demands new solutions that are open, intelligent, agile and secure. The investment companies make into any new technology also requires that they leverage their resources to quickly learn and understand the power of automating workflows. Fortunately, the ability

for ISPs to automate and optimize operations on the fly and build sustainably within a standards-based approach is becoming the new norm, which is exactly what data-driven ISPs need today.

MOVING BEYOND PREDICTIVE ANALYTICS

AI-driven networks will take the tedious job of data mining out of the equation, focusing on proactive problem resolutions. As ISPs get into more complex things in which people don't really understand all the correlations or how they correlate, AI can help draw the correlation – in a fraction of the time it would take network operations teams. The future network will self-configure, monitor, manage, correct, defend and analyze with little human intervention, providing more time for service providers to innovate their businesses.

Traffic spikes on today's networks can cause goliath challenges in determining the problem, ranging from a new video game release to widespread streaming of national events to distributed denial of service (DDoS) attacks. Luckily, ML algorithms are becoming more intelligent, interpreting vast amounts of network traffic behavior data to predict performance issues before subscribers are affected. The reality of networking software today is that ISPs need tools that intelligently analyze and adapt, providing immediate security during DDoS attacks and increased bandwidth to support traffic surges.

THE JOURNEY TO PROACTIVE PROBLEM RESOLUTION

AI-driven networks powered by ML algorithms will be the end state of a progressive journey beginning with data collection and visualization, leading to automated event correlation and programmability and allowing networks to run autonomously.

The ability for ISPs to leverage their software investments to automatically intervene and correct issues that they identify before they become noticeable to subscribers will be key to addressing the digital customer experience revolution.

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DEFINING THE FUTURE NETWORK WORKFORCE

Advancements in automation and AI technologies often invoke fears of job displacement. Conversely, the introduction of AI will free network staff from repetitive manual tasks, meaning customer support personnel will spend less time troubleshooting performance issues and running networks and more time working strategically and developing innovation that secures businesses and drives them forward.

As the internet of things (IoT) gathers steam, these emerging software tools will be in high demand to make sense of the deluge of incoming data. For ISPs and technology vendors, it will be imperative to implement ML algorithms that filter out the normal and allow service providers to focus on the anomalous, the unexpected and the dangerous.

Companies considering choosing a vendor with AI and ML claims to their technology should be sure to investigate the company's longevity in the market, along with its strategic software partners, to evaluate whether a long-term customer relationship offers an easy ability to scale over time. Those that make the early investment in AI capabilities need to understand that in the not-so-distant future, applications and hardware technology will become less artificial and more intelligent. When selecting a partner to define a future network, companies should consider three critical components:

- **Open:** Unlock new innovations for your unique software environment and business. If you can imagine it, you can build it.
- **Programmable:** Combine the full telemetry of the network on a single platform, retaining unique data to power applications that can provide exclusive insights or integrate with an organization's key processes – making teams more effective.
- **Scalable:** Understand what's happening in increasingly complex and interdependent systems so engineers can find and fix issues fast and know where to drill in further and investigate root causes of trouble.

Where ML shows its real value is in the ability to rely less on vast amounts of data and more on top-down reasoning that more closely mimics how humans approach problems and tasks. ML products will have more efficient reasoning, ready expertise and common sense.

As technology vendors continue to substantially invest in AI and ML development to set the foundation for autonomous networks, the feedback from early adopters will form the basis of AI-driven tools for the next five years. Transforming networks into dynamic, programmable environments that are predictive, proactive and automated will be key for service providers of the future. ❖

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