



From Sci-Fi Dream to Self-Managed Reality: Entering the Era of Autonomous Networking

It's 6:17 am in Seattle or Seoul, Copenhagen or Cairo, and a hidden glitch takes down a communications network. Suddenly, it's impossible to perform a search or send texts or make payments — and emergency calls don't go through. The effects are far reaching.

Recent years have seen this very scenario play out around the world. Missed software updates, obscure faults, or cybersecurity events have blacked out internet and mobile services for millions of people — sometimes for hours.

As networks grow more complex customer expectations do too. The tiniest of errors can ripple into widespread outages that disrupt the digital tasks we take for granted every day. And when that happens, costs for service providers climb.

Just how big is the problem? Communications and media companies rack up an average of **\$143 million in downtime-related costs** per year, with nearly one-quarter (\$32 million) stemming from lost revenues.

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But now, next-generation autonomous networks promise a better way: self-directed, self-healing systems that find and fix problems fast. For customers, that means critical services stay operational, without even a hint that something went wrong. And communications and media providers avoid unplanned downtime and unnecessary costs.

Not long ago, autonomous networks sounded like science fiction. But they're on the horizon today — and the industry is ready to forge ahead.

Why autonomous networks matter now

Networks are getting more complex, with billions of devices connected every day. And customers expect faster speeds with flawless service.

Labor-intensive manual network management can't keep up. With autonomous networking, it's possible to predict issues before they occur and orchestrate changes without waiting for humans to intervene — keeping networks operational and quality of service high.

But that's not all. Autonomous networks solve many of the **challenges of conventional network management**, from scalability constraints to cost inefficiencies.

	Traditional network management	Autonomous network management
Scalability	Inability to scale dynamically to match evolving requirements.	Easier to add technologies and scale services to adapt to changing demands.
Operational efficiency	Manual configuration, monitoring, and troubleshooting.	AI and machine learning (ML) for network management with minimal oversight.
Reliability	Prone to human error that can lead to disruptions.	Real-time monitoring and proactive issue management with AI for consistent service quality.
Cost	Higher cost due to significant manual intervention.	More cost-efficient management, freeing teams to focus on higher-value network applications and innovation.
Automation	Static, rules-based automation that needs human oversight to change.	Intent-based models centered on business goals that allow the network to respond without oversight.

Communications and media companies know that autonomous networking is the future — and are eyeing investments in the years ahead.

The **autonomous networking market** is predicted to grow from \$8.6 billion in 2024 to \$38.5 billion in 2032 — a compound annual growth rate (CAGR) of 20.5% during the forecast period.

The road to autonomous networking starts with full-stack visibility

Achieving full **autonomy** can feel like a lofty goal for teams mired in manual work today. But communications and media companies can focus on essential building blocks to start on the way forward.

First, focus on simplifying networks. Legacy infrastructure, siloed systems, and rigid architecture make automation nearly impossible. That's why companies are looking to modernize by moving to cloud-native technologies and modular, open designs.

Then, organizations can automate every step of their stacks for seamless communication. This foundation supports intent-based orchestration — which involves setting a high-level goal and letting the network figure out the best way to achieve it in real time.

Finally, by deploying AI and ML — and ultimately agentic AI and generative AI — organizations can create intelligent workflows to access the right data at the right time, coordinate between multiple AI applications, and trigger actions to support closed-loop automations.

With these core factors in mind, organizations can pursue different paths to their automation goals. For some, zero-touch provisioning may lead the way, while others focus on automating security responses.

"The future of autonomous networking is unfolding step by step. As automation and intelligence take hold, each advance makes networks more efficient, more reliable, and more attuned to customer needs — moving providers closer to truly self-managing systems and a new era of leadership."

Matt Olson,
Global Industry Strategist, Splunk

Whatever direction they take, these **three advancements** guide the way:



Automated monitoring and anomaly detection

With AI-fueled data analysis, the network can identify a baseline, flag anomalies, and prevent disruptions.



Root cause analysis and troubleshooting

Automated tools can detect and correct issues without manual intervention, freeing up teams to focus on strategic network improvements.



Remediation and reporting

Detecting and resolving faults automatically is the key to continuous network operation. Speed is especially critical for security incidents — and security orchestration, automation, and response (SOAR) tools can fast-track, **threat detection** and response. Automation can also accelerate reporting.

These shifts are possible with **cross-stack visibility** that delivers monitoring, anomaly detection, and root cause analysis — all in one place. What's more, this unified approach ensures that AI and ML tools can access the data needed for proactive incident management and network performance optimization.

And those disruptive glitches that knock out service? Autonomous networking can make them a relic of the past. With constant network monitoring and automated detection and fixes, issue resolution can happen before a single person notices.

No dropped calls. No undelivered texts. No frozen payments.

Just seamless service, heightened customer satisfaction, and **digital resilience** that provides a foundation for a future full of innovation.

Forging ahead on the autonomous networking journey with Splunk

Splunk, combined with digital experience and service performance monitoring solutions from Cisco, delivers end-to-end observability and automation, simplified network architectures, and intelligent systems aligned with TM Forum standards.

Service providers can achieve a closed-loop monitoring and execution approach across networks and service layers to empower complex use cases such as gaming experience monitoring and cloud connectivity, improve service level agreement (SLA) adherence, and reduce operating expense (OPEX).

Over time, predictable, repeatable actions powered by AI and ML can automatically address issues — with less manual intervention.

- **Scale reliability:** Resolve incidents quickly and keep customers happy by monitoring customer-facing applications.
- **Minimize impact:** Ensure issues have minimal impact by reducing latency and improving service performance in near real-time with edge computing.
- **Stay ahead of the curve:** Get ahead of network outages by proactively identifying system stressors and reviewing predictive health scores.



SPOTLIGHT

TM Forum Game X Catalyst Project

In competitive gaming — and many of today's applications — slow is the new down. That's why communications and media companies are looking to reinvent their operating models with intelligent, adaptive, automated networks as the way forward.

That's the challenge several industry innovators — including a Splunk + Cisco team — tackled with a **TM Forum Catalyst project**. Dubbed Game X, the Moonshot Catalyst uses competitive gaming as a baseline to envision the path to advanced autonomous networking.

The Catalyst project showcases an autonomous networking solution centered on agentic AI and closed-loop automation to optimize network performance. The objective: demonstrate how to leap to Level 4 of the **TM Forum's autonomous networking maturity model** to deliver real-time, ultra-low latency, experience-centric services.

At the heart of our solution is an intent-driven orchestration framework, built on open standards. By keeping the TM Forum's Open APIs and Open Digital Architecture (ODA) as the foundation, the Game X Catalyst project reveals how communications and media providers can adapt, plugging in new partners and technologies and scaling across geographies.



For communications and media companies, the results of our Catalyst cement their vital role in the high-profile competitive gaming universe. In that sector and others, they're moving beyond being connectivity providers to take center stage as the orchestrators of next-generation, experience-led services.

Gaurav Gupta,
Global Industry Strategist, Splunk

OUTCOMES

Demonstrate

A real-world use case to demonstrate the path to a Level 4 autonomous network that is relevant across sectors.

Validate

Real-world validation of open API standards.

Collaborate

A foundation for new Business to Business to End User (B2B2X) collaborations and service innovations.

Innovate

Vertical innovations in gaming, healthcare, finance, and more.

Learn more about Splunk for Communications & Media



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