Research Note

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# Amdocs Autonomous Network Operations

## aOS and the Agentic Telco

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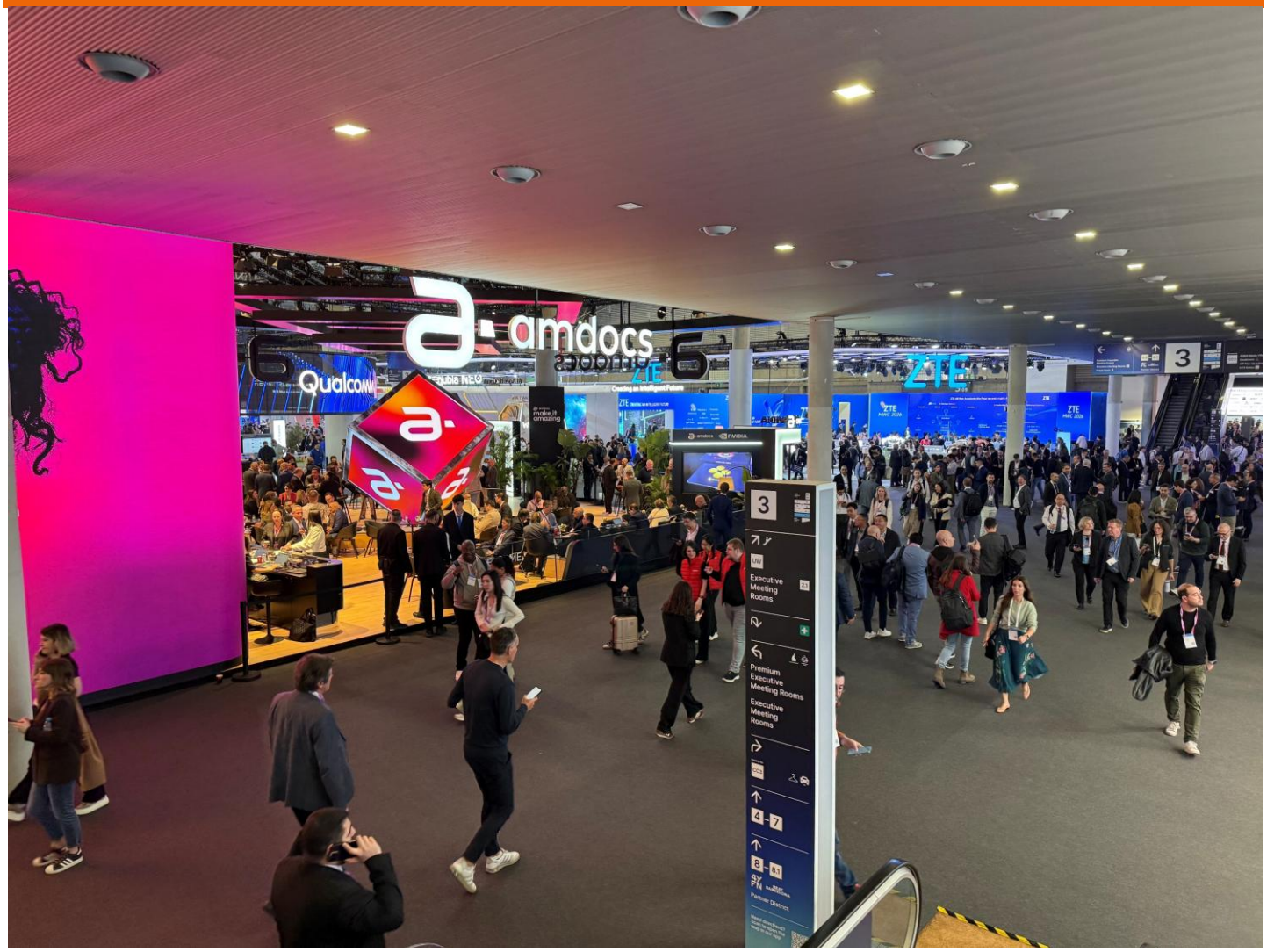


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# EXECUTIVE SUMMARY

Amdocs is positioning itself as a critical Agentic AI operations supplier for **autonomous network operations**. Amdocs combines credible OSS/BSS heritage, deep telecom domain expertise, and an emerging agentic AI framework (aOS) designed to shift network operations from alarm-centric to problem-centric models – and from script-based processes to a reasoning-based system.

Amdocs aOS, agentic operating system for telco, is part of a broader adjustment in market positioning for Amdocs as it looks to respond to changes in customer demand: shorter, faster, more outcome-based (not milestone-based) projects - and to align with its customers in establishing a comprehensive AI-centric business and execution model.

# THE STATE OF AUTONOMOUS NETWORK OPERATIONS

Operators are under sustained pressure to reduce operational complexity, accelerate mean-time-to-resolution (MTTR), enhance customer experience and unlock efficiency gains in capital-intensive businesses with thin margins. Across Appledore's global operator perception study of top CSPs, 78% cite network autonomy as a strategic priority within their three-year roadmap. Yet the reality on the ground remains sobering: most operators remain at autonomy maturity levels 1–3 (reactive alarm handling to rule-based automation within narrow domains). L4–L5 autonomy (self-managing systems with minimal human intervention) remains aspirational for all but a handful of operators.

The industry increasingly recognizes that progressing from even advanced levels of automation to autonomous operations represents a significant leap, not merely an increase in degree. The “autonomy chasm” that Appledore has highlighted is a very real challenge.

But in order to leverage more advanced forms of AI, CSPs must overcome three critical obstacles:

1. **Data fragmentation** across legacy and cloud-native network stacks creates incomplete operational context; reconciling data across OSS, inventory, assurance, and domain-specific tools remains tedious.
2. In terms of effort spent, **integration complexity trumps algorithmic sophistication**—operators spend far more effort stitching disparate systems together than tuning ML models.
3. **Trust** remains a critical concern; chief technology and operations officers demand transparency, auditability, and clear human control mechanisms before entrusting critical network operations to autonomous agents.

At the same time, the level and predictability of costs (and return on investment) are also high on operators’ list of concerns, particularly in relation to the latest agentic AI developments. As vendors demonstrate agentic workflows for root cause analysis and anomaly detection, token consumption and compute requirements are proving substantially higher than early projections.

aOS is Amdocs response to all these challenges, combining its traditional large scale complex OSS, BSS and IT systems integration expertise with its AI/GenAI investments and strategic partnerships (Nvidia, Microsoft, Google Cloud, AWS).

## AMDOCS POSITIONING AND CREDENTIALS

Amdocs enters the autonomous operations market with significant strengths. Over four decades, the vendor has accumulated deep domain expertise in telecom operations, resulting in a credible OSS and inventory management heritage. Unlike pure-play AI startups or hyperscalers learning telecom as they build, Amdocs already understands the language, workflows, and failure modes of networks and the network operations centers that oversee them. This contextual knowledge underpins its aOS framework (an evolution and expansion of its earlier amAIz platform) and positions Amdocs as a credible bridge between legacy operational systems and emerging agentic paradigms.

That said, Amdocs faces headwinds, such as the prevailing perception it has a sophisticated solution that is slow to innovate and expensive to integrate. For Amdocs to succeed in autonomous network operations, it must credibly overcome the legacy perception and articulate a clear path to modular, cloud-native deployment. Its new aOS packaging and presentation is in part designed to do just that – including more explicit messaging on openness and flexibility. Contrary to public knowledge on deployments, Amdocs has evolved towards cloud-native but press releases related to at least 2 large tier 1 CSPs have not been made public. This lack of awareness is working against Amdocs with regards to the overall market perception.

The market for agentic AI in telecom is in the very early stages and proof points will go a long way to establishing relevance and credibility in a market that is moving quickly.

## THE AOS FRAMEWORK: ARCHITECTURE AND DIFFERENTIATION

Launched in early 2026 Amdocs' Agentic Operating System (aOS) for Telco is positioned as a distinct layer of AI capabilities with a strong workflow emphasis, across both network and business processes – aOS is designed to fit around existing BSS/OSS domains, rather than replace them. The framework can be applied to separate business areas. The intention is to help customers industrialize genAI and enable more end-to-end use of agentic AI.

For autonomous network operations, aOS consists of three layers:

- The lowest layer comprises **systems of record:** OSS, inventory management, and assurance platforms that serve as the authoritative source of network state. (Amdocs is keen to highlight that its aOS vision does not insist that these systems are Amdocs' own OSS products.)
- Above is the **cognitive and agent layer**, anchored by a digital twin that reconciles and contextualizes operational data from disparate sources, and populated by AI agents that reason about network state and recommend (or, in scoped contexts, execute) remedial actions. This layer allows for a mix of large and small language models, according to what is most effective (and cost-effective in terms of token consumption). At the heart of this is the "Cognitive Core" – under the hood this is the amAIz platform that it has invested heavily in to build and refine over several years.

- The topmost layer is the **agentic workplace**, where agentic workflows execute a range of network operations processes, from network planning and optimization to fulfilment, troubleshooting, root cause analysis, and resolution actions.

The digital twin and ontology approach is the differentiating core (and Amdocs' multi-step approach to building that has multiple patents pending). Amdocs begins with a generic network ontology per domain (transport, MPLS, RAN, etc.), then ingests data from multiple CSP sources and (using agents) cleans the data and auto-reconciles inconsistencies, escalating unresolvable conflicts to human operators. This process yields a CSP-specific ontology that enables accurate, context-aware network modelling.

Amdocs further addresses gaps in historical datasets using synthetic data generation, targeting rare but operationally critical events (e.g., cascade failures, resource exhaustion under load). The continuously updated digital twin becomes the substrate for operational inference, enabling agents to reason at a level of semantic richness that is unavailable in traditional rule-based automation.

## THE AGENTIC NOC: ROOT CAUSE ANALYSIS AND PROBLEM RESOLUTION

The evolution to an Agentic NOC and SOC transforms operations from a cluttered dashboard of disjointed alarms into a "problem-centric" workflow. Instead of reacting to symptoms, the system identifies and resolves root causes through coordinated agentic reasoning, and reports actions taken.

For example, a **Problem Resolution Workflow** consists of five core agent-driven components:

1. **Identification:** Detecting anomalies and clustering related alarms.
2. **Diagnosis:** Correlating events with topology to find the true root cause (e.g., a specific configuration change).
3. **Impact Analysis:** Determining the "blast radius" to identify exactly which subscribers and services are affected and what is the level of impact.
4. **Recommendation:** Suggesting the optimal repair path based on historical and synthetic training – also considering priority of problem based on impact analysis.
5. **Verification:** Confirming the fix has successfully returned the network to a healthy state.

To govern these actions, Amdocs employs a "Human-in-the-Loop" (HITL) vs. "Human-on-the-Loop" (HOTL) model. The choice of autonomy can be governed by variables such as:

- **Impact:** The scale of service disruption (e.g., high-impact backbone vs. low-impact regional cell).
- **Probability:** The AI's confidence level. If the AI confidence is below a determined threshold, the system automatically triggers a HITL requirement, regardless of the impact.

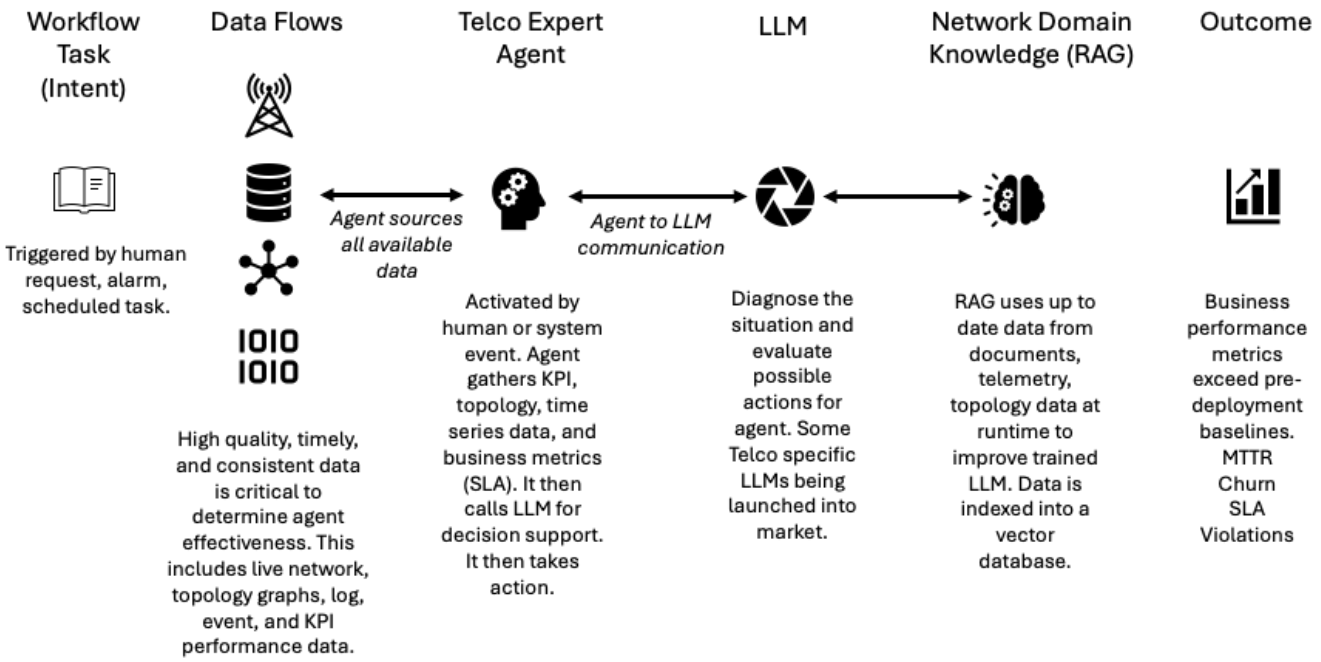
Amdocs mitigates the trust problem with a comprehensive audit trail. Every agentic decision is logged, showing the data sources consulted and the reasoning steps taken. This "white box" approach to agentic AI is essential for establishing the operational trust required for Level 4 autonomy.

## AI AGENTS AND THE PATH TO AUTONOMOUS OPERATIONS

Amdocs advocates a pragmatic view of agentic AI: agents will not replace traditional OSS/BSS applications wholesale but will instead evolve alongside them as domain-specific reasoning engines. Data fragmentation, integration complexity, and operator trust remain persistent challenges that will take time and real-world experience to overcome. Rather than promising a utopian all-knowing autonomous system, Amdocs targets bounded problem domains where agentic workflows deliver clear value: problem-level RCA, anomaly detection and diagnosis, service impact assessment, and resolution recommendation.

Figure 1 below is how Appledore Research has framed the AI Agent taxonomy and key workflow processes.

**Figure 1: AI Agent Architecture**




*Source: Appledore Research*

The operational model shifts from the traditional network operations center (NOC), which is alarm-centric and reactive, to a problem-centric approach. Operators no longer triage thousands of raw alarms; instead, they interact with a prioritized problem set, each enriched with structured summary, agent-generated analysis, confidence scores, and auditable data and workflow trails. This

shift improves operator efficiency and, critically, maintains transparency and human agency—prerequisites for trustworthy autonomous operations.

Control and governance mechanisms are configurable. Autonomy levels can be tuned by confidence threshold, impact threshold, or operational domain: from human-in-the-loop (agents recommend, humans execute) to human-on-the-loop (agents execute if confidence exceeds threshold, escalate otherwise) to fully autonomous (agents execute without human approval within defined domains). This configurability is essential for adoption, particularly in highly regulated industries or when managing critical revenue-generating services.

A significant emerging challenge for operators considering increasingly agentic operations is **cost**. Complex agentic workflows (RCA, anomaly detection using multi-shot prompting and tool use) are computationally expensive, with token consumption and inference latency introducing new operational and economic variables. Amdocs acknowledges this candidly; the industry has entered a phase analogous to early cloud adoption, where enthusiasm for novel capabilities will be tempered by rigorous cost optimization pressures. Operators will demand clear ROI metrics: cost per resolved issue, reduction in MTTR, and avoidance of false positives that create operational noise.

## COMPETITIVE MARKET ANALYSIS

The autonomous operations competitive landscape is fragmented and rapidly evolving. **Network equipment providers** (NEPs) have historical strengths in domain-specific automation within their respective domains (RAN, transport, IP routing), but in cross-domain orchestration they face competition from ISVs who have built expertise and technology working at higher levels and across multiple vendor domains.  NEPs have a unique advantage when it comes to supporting operations on their own gear; CSPs may not regard that as extending naturally to third-party infrastructure or providing unified operational context across the network.

**Hyperscalers** command enormous AI/ML infrastructure, talent pools, and cloud platforms but face a steep adoption curve for telecom-specific reasoning. Their go-to-market models favor consumption-based pricing and assume operator willingness to build and maintain telecom-specific extensions to generic AI tooling. For most CSPs, this represents obstacles for time-to-value and capital expenditure.

Amdocs' positioning sits between these poles, trading the specialization of NEPs for cross-domain coverage and the raw AI power of hyperscalers for telecom-grounded semantics.

Pure-play OSS and BSS vendors and emerging automation startups bring focused capabilities but can lack the breadth and 40-year pedigree of Amdocs. Systems integrators (Accenture, Cognizant, TechM) position themselves as implementation partners but rarely control the platform layer and depend on vendor ecosystems to deliver value.

Amdocs’ competitive advantage lies in its ability to serve as the platform consolidator: it owns the OSS, can integrate third-party tools via its digital twin and ontology layer, and is sufficiently large and financially stable to justify multi-year operator investment. Its broad access and experience

allow it to position credible and compelling outcomes across a range of telecom operations processes that would justify a strategic commitment by operators.

However, forward momentum is not guaranteed. Operators increasingly evaluate best-of-breed point solutions and integrate via APIs; if Amdocs cannot articulate and deliver genuine cross-domain value over a collection of specialist vendors, it risks being bypassed on telcos' own self-guided autonomous network operations journeys.

## APPLEDORE ASSESSMENT

In our view, Amdocs gets several things right. The scoping of 'autonomous network operations' as distinct from the broader 'autonomous networks' narrative is intellectually honest and commercially prudent. Amdocs acknowledges the key obstacles (data fragmentation, integration complexity, trust) rather than hand-waving them away. The digital twin and ontology approach, grounded in semantic richness rather than pure statistical ML, is well-suited to telecom's need for interpretable, auditable decision-making. The configurability of autonomy levels and the explicit preservation of human oversight are essential for enterprise adoption.

However, in this emerging market space there are material risks and as-yet-unproven assumptions.

First, the digital twin and ontology layer are architecturally and operationally complex. Amdocs must demonstrate that its approach scales to large, heterogeneous operator networks without requiring excessive manual ontology curation and data engineering effort. Early deployments will be telling – we understand several key customers are working with Amdocs as design partners, so hope to see results from those efforts soon.

Second, synthetic data generation for rare events is promising in theory but unvalidated in production. If synthetic data introduces systematic biases or misses genuine failure modes, agent recommendations could be dangerously misleading. Operators must demand rigorous validation and explainability of synthetic data sources and generation methodologies. Amdocs aligns with these operator requirements through a transparent, explainable approach to synthetic event generation.

Third, the operational cost model for agentic systems in general (not unique to Amdocs) is uncertain. The outcomes achievable from agentic AI in autonomous network operations (while clearly enough articulated by Amdocs) are still largely aspirational, and there are few industry data points regarding costs of AI at scale in network operations. Operators will increasingly ask questions about token costs, compute latency, and the true cost-per-resolved-issue compared to traditional rule-based automation or human-centric troubleshooting.

Fourth, while Amdocs' OSS credentials are strong, the vendor has limited track record deploying autonomous operations at scale, as the industry is still in its early days. The aOS framework is credible on the whiteboard; production deployments will be the proving ground. Operators should expect several months timeline from pilot to meaningful autonomy in production – though specific KPI improvements often emerge earlier.

Finally – and certainly not unique to Amdocs – organizational and change management challenges arising from ambitious AI adoption programs tend to be understated in vendor narratives. Shifting from a reactive, alarm-centric NOC to a proactive, problem-centric operations model requires substantial retraining, process redesign, and cultural change within CSPs. Vendors and operators alike often underestimate this work. To be fair, Amdocs has more experience than most of complex, large-scale projects.

## RECOMMENDATIONS FOR CSPS

Operators evaluating Amdocs for autonomous operations should follow this guidance:

1. Start with a **scoped pilot in a bounded domain** (e.g., transport network RCA or MPLS anomaly detection) where there is clear operational pain and measurable KPIs. Avoid big-bang deployments. Insist on 9-to-12-month pilots with clear success criteria and defined escalation paths.
2. **Rigorously validate the digital twin and ontology layer**. Demand transparency on how data is reconciled, where inconsistencies are escalated, and how synthetic data is generated and validated. Request references from operators at similar scale and complexity.
3. **Model the full cost basis,** including compute, tokens, integration effort, and operator training. Request itemized ROI projections and insist on post-deployment audits to validate actual cost-per-issue-resolved and MTTR improvement. Build in contingency for cost overruns.
4. **Establish clear governance and control mechanisms upfront.** Define autonomy levels by domain and impact threshold; configure human-in-the-loop for revenue-critical services and escalation procedures for edge cases. Build operator familiarity through low-stakes use cases before expanding autonomy.
5. **Plan for organizational change.** Invest in operator retraining, workflow redesign, and cultural messaging around the shift to problem-centric operations. Treat the adoption of autonomous operations as much as an organizational change initiative as a technology implementation.
6. **Maintain optionality in the broader ecosystem.** Evaluate Amdocs' roadmap for interoperability with best-of-breed point solutions (e.g., specialist RAN automation vendors, hyperscaler ML platforms). Avoid vendor lock-in by ensuring APIs are open and data portability is feasible.

# CONCLUSION

Traditional telecom automation relies on static, prescriptive workflows authored by engineers. These workflows assume stable environments and predictable failure modes. None of those assumptions hold in modern, cloud-native, multi-vendor networks.

AI agents replace this model with intent-driven execution:

- Humans define what outcome is required (restore SLA, optimize performance, avoid outage)
- Agents determine how to achieve it
- Workflows are dynamically composed at runtime
- Outcomes are measured and fed back into future decisions

This marks a transition from rule-based automation to adaptive operations. Importantly, it also shifts value away from monolithic OSS stacks toward platforms that can expose data, policies, and control points in a consumable way.

However, operators must approach agentic, autonomous network operations with some rigor. Pilots must be scoped, success criteria defined, and costs transparently modelled. As the industry enters the cost-optimization phase of autonomous operations deployment, those who validate the approach early and build operational muscle will gain competitive advantage; those who over-invest in overhyped capabilities will find themselves defending expensive, under-performing implementations.

Amdocs is a credible, well-positioned player in the autonomous network operations market, with differentiated domain expertise, an architecturally sound aOS framework, and clear messaging about both the opportunity and the constraints.

*Our research focuses on AI, Automation, Observability, Digital Enablement, Open RAN, Edge, Cloudification, Network Security, and Post Quantum. Contact us directly to speak with one of our Principal Analysts.*

## About the Authors

Patrick has more than 25 years of experience in product management, business development, and technology consulting. He has advised executives and developed actionable business plans to help hundreds of technology companies profit in high growth software segments of the market. He has published research in the areas of cloud economics, virtualization of the network, AIOps, network orchestration, analytics, service assurance, and customer experience management.

Patrick founded Appledore Research Group in 2014 to focus on the business impact of cloud and virtualization in the telecommunication market. Prior to Appledore, he was Research Director at Analysys Mason and held many technical roles in the field supporting both enterprise and service provider customers.

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