AI-first networking: Rethink performance, agility and uptime

Highlights

Deliver end-to-end network lifecycle management

Accelerate MTTR and extend MTBI

Optimize OpEx and CapEx efficiency

Prevent disruptive overhaul or vendor lock-in

Build trust with explainable AI

As networks evolve into hybrid, cloud-native and 5G-enabled infrastructures, the complexity of managing them grows exponentially. Today's network operations are overwhelmed by terabytes of telemetry data, billions of logs, and thousands of alarms and tickets daily. Human operators can no longer scale to meet the demands of real-time service assurance, low-latency performance and zero-downtime expectations.

The future of network automation lies in agentic AI—where intelligent agents use context and orchestration to optimize operations, from planning to ongoing performance.

IBM Network Intelligence helps large enterprises and telecom networks automate network lifecycle management, while adopting autonomy at the pace network operators set.

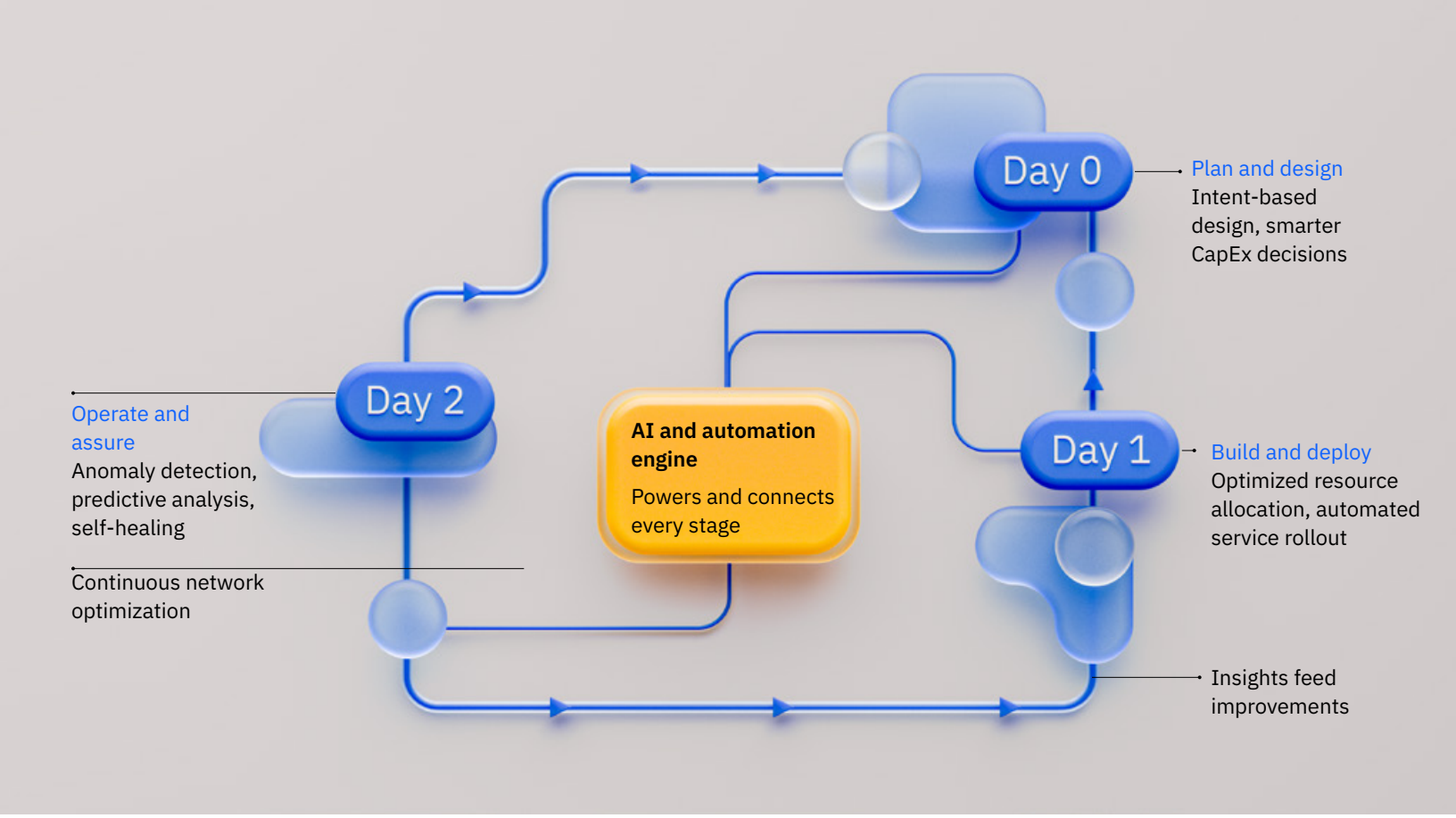
Intelligent network lifecycle management built for modern networks

IBM Network Intelligence is engineered to support the entire lifecycle of network operations—from initial design to ongoing optimization. Intelligence is embedded into every phase, ensuring networks are not only aware of their state, but also actively improve it in real time.

Driving value from Day 0 to Day 2
IBM Network Intelligence is built to deliver intelligent automation and insight across the network lifecycle—Day 0, plan and design; Day 1, build and deploy; and Day 2, operate and assure.

On Day 0, AI accelerates strategic planning, design and modernization efforts by leveraging historical analytics, best-practice inference and intent-based service design. Intent-based design with natural language inputs and graph-based models are designed to automate network architecture generation, reducing planning time. Key capabilities include vendor swap simulation, coverage and capacity planning, and self-configuration or self-protection. These innovations can contribute to faster go-to-market strategies, more efficient CapEx allocation and reduced design complexity.

Day 1 capabilities include network feasibility checks, resource reservation, fallout management and predictive traffic modeling through digital twins.



Day 2 operations are powered by semantic-aware deep learning and agentic AI, enabling incident reasoning and automated generation of remediation suggestions. Differentiators such as domain-specific foundation models, network-aware knowledge graphs and LLM-powered workflows enable proactive, adaptive service assurance. This can reduce manual workloads considerably, extend MTBI, minimize downtime and ensure networks are continuously optimized for performance and efficiency.

Start with Day 2: Accelerate your journey from automation to network autonomy
Kickstart your automation to autonomy journey with Day 2 operations by integrating AI into your current network operations. This step lays the foundation for an autonomous future.

Lower MTTR beyond the benefits of automation
Automation eliminates repetitive data collection and configuration actions; AI goes deeper by generating root cause hypotheses across systems.

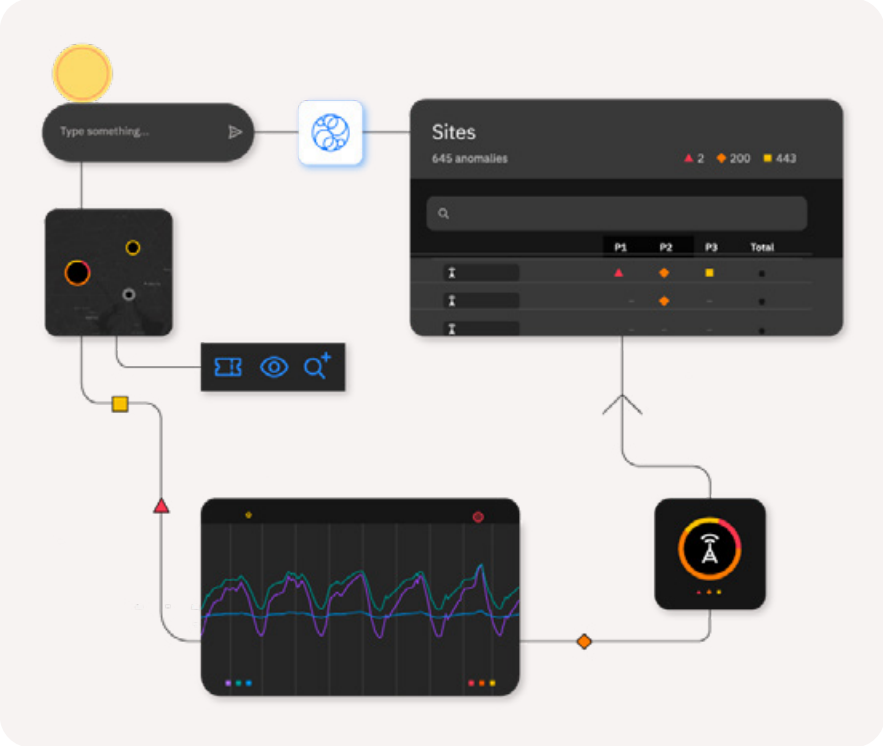
Reduce operational costs
Automation reduces the time spent on each ticket; AI drives further cost savings by focusing on a smaller number of relevant tickets.

Address blind spots that impact network performance
Complex network issues often defy even the most sophisticated monitoring systems; AI can find root causes for pernicious, difficult to pinpoint performance issues.

Intelligent features that drive business value

IBM Network Intelligence is purpose-built to elevate every phase of network operations—not just by embedding AI into workflows, but by also making the network itself intelligent

It moves beyond traditional automation by leveraging semantic awareness, contextual modeling and domain-specific learning. The result is an AI system that's designed to understand how networks operate, why they fail and how performance degrades—enabling proactive detection before users are impacted.



Contextual UI example for insight visualization and generative AI-based chat interaction

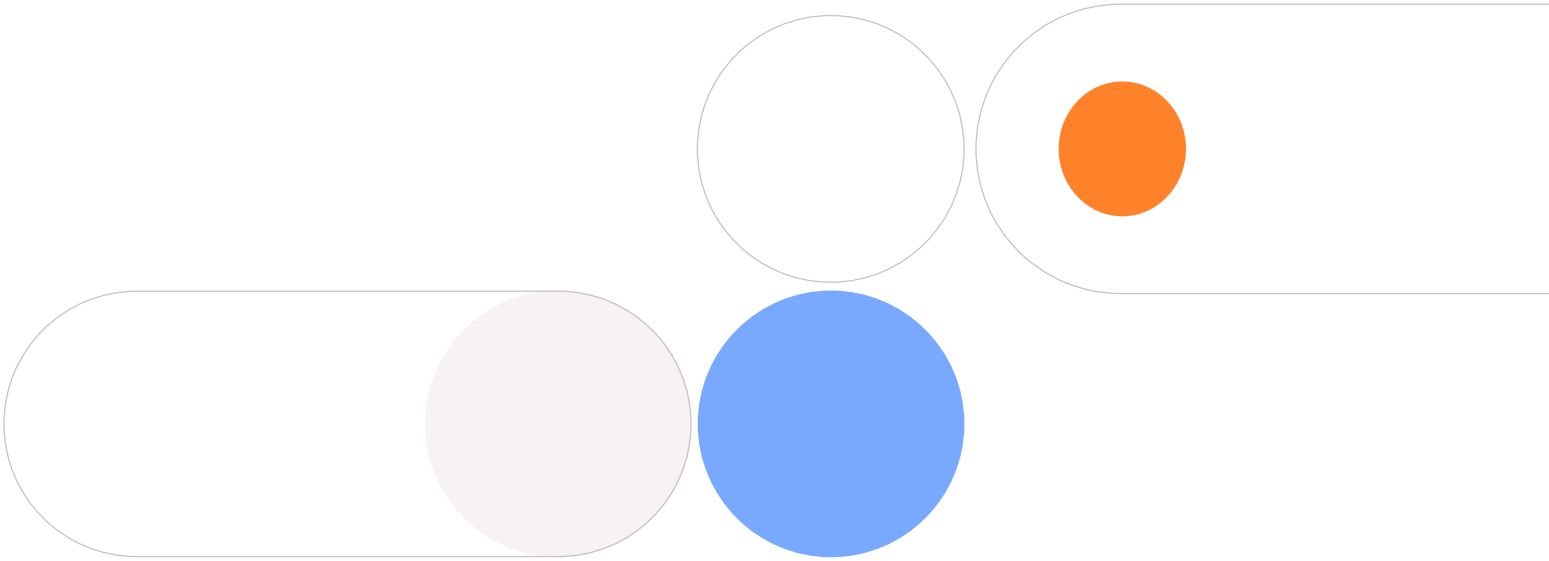
Core components of the architecture

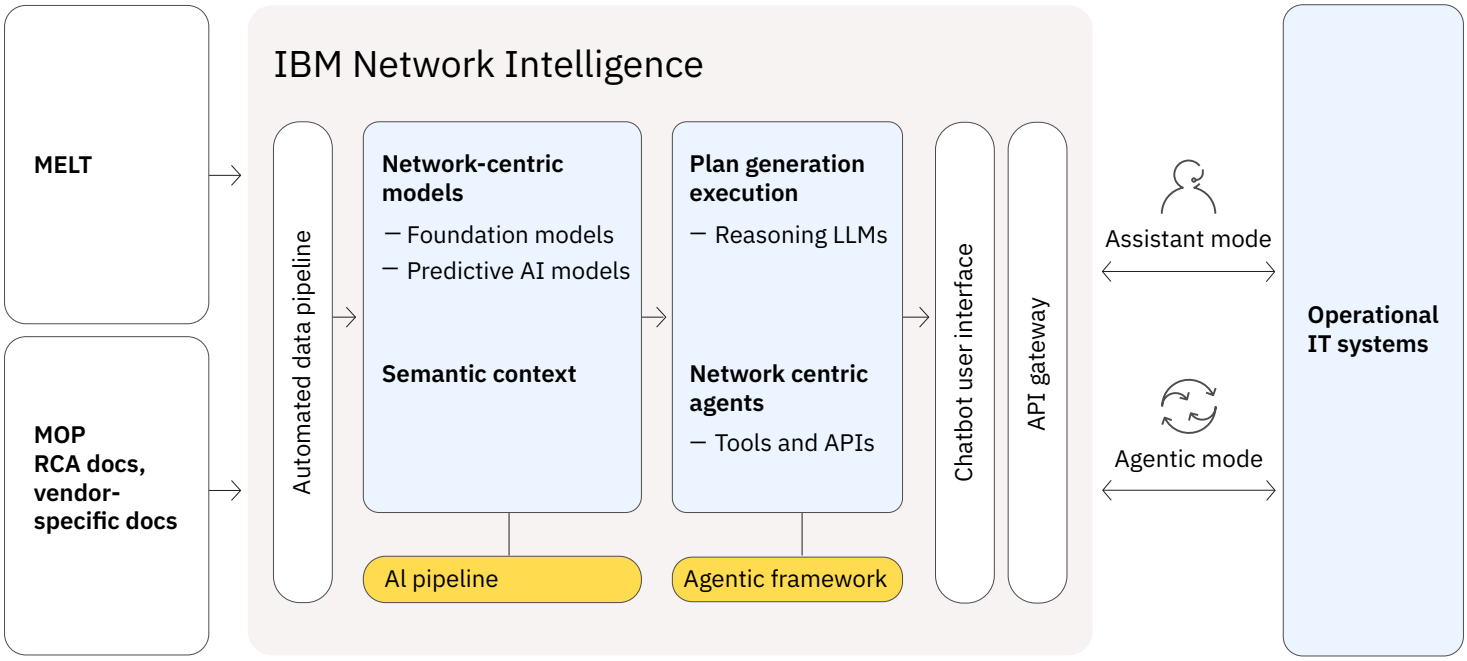
Data pipeline
IBM Network Intelligence employs a scalable streaming data pipeline with the ability to ingest data such as:

Metrics, events and logs

Grounding documents that include a methods of procedure (MOP), operating guides, procedure manuals, worker documents, knowledge base articles and configuration guides

Engineered for no disruptive overhaul or vendor lock-in, it supports multi-vendor and multi-network domains. Flexible data ingestion capabilities connect data sources swiftly with pre-built or custom mechanisms.





AI pipeline

Network-centric models with time series foundation models (TSFMs)
Ingest and analyze time-series data to generate pertinent insights using a specialized AI model designed specifically for time-series data. Unlike general-purpose large language models, this compact model is engineered to manage high-volume streaming data and focus specifically on networking use cases.

Semantic network context
Improve relevance of insights by grounding them in a network context. Automatically map relationships across various network objects for domain awareness.

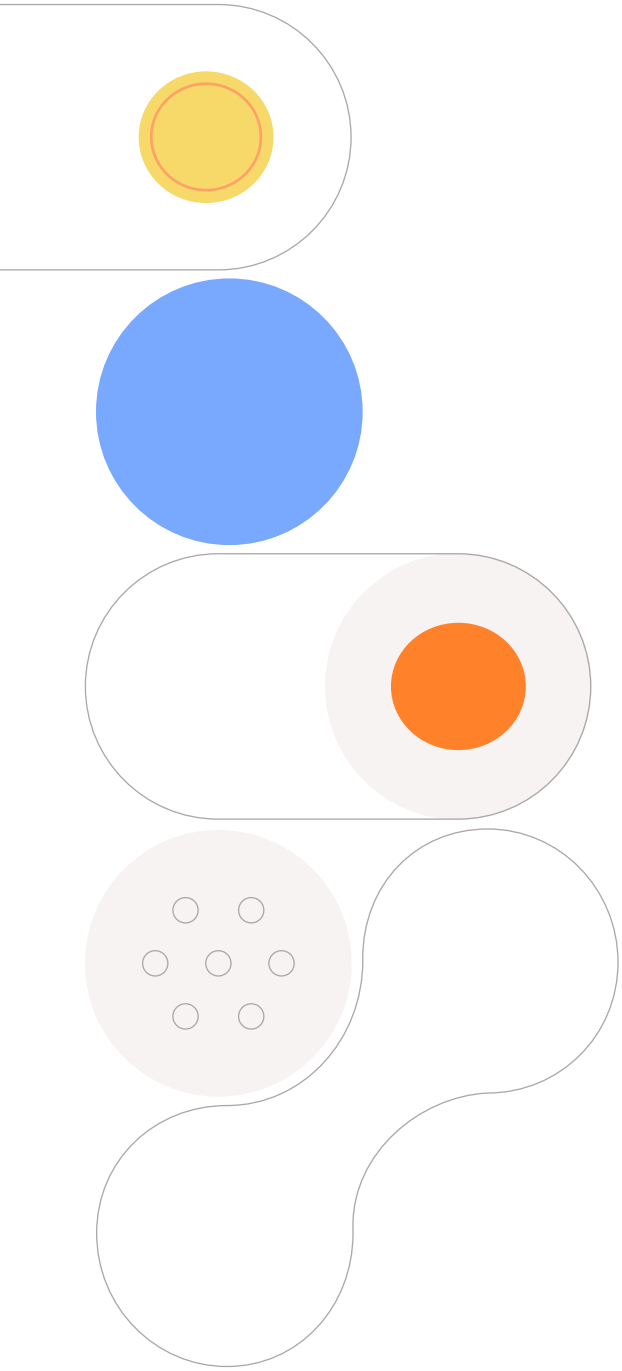
Agentic framework

Plan generation and tools integration
Integrate tools and generate remediation actions with automated workflows.
- Tools operate within existing systems and workflows to help make proactive issue management easy, using function calling to access APIs and a function library to add APIs for quick ecosystem integration
- A grounding documents section allows you to add methods of procedure, network architectures, and vendor specific documents
- Reasoning LLMs facilitate remediation plan generation.

Network-centric agents: AI agents and assistants
Engineered for networks, AI agents and assistants are aligned with network operations processes.

Agents assist in diagnosing anomalous behavior. Some agents, such as retrieval augmented generation (RAG) and function-calling agents, aid in iterative hypothesis investigation and plan generation, helping teams move from anomalies, what, to actions, why, with greater speed and confidence.

AI assistants provide guided troubleshooting paths, triage support and human-in-the-loop options. Move from AI-assisted operations toward full autonomy at your own pace by gradually adopting agent-driven actions.



Intelligent capabilities are built into the architecture, are accessible from day one and evolve with the network over time. The intelligence is explainable, the automation is adaptive, and the system is ready for the scale, complexity and pace of tomorrow’s digital infrastructure.

Network-native intelligence
Unlike generic AIOps tools or rule-based systems, this solution is purpose-built for network operations. Its models come pre-trained on network data, unlocking relevant insights and actions at scale.

Explainability and trust
Designed to make every AI decision explainable, operators can see why a detection was made and what action was taken as AI agents do their work.

Interoperability and scalability
The architecture is designed to seamlessly plug into any environment across network domains, vendors, solutions and deployment models. It is engineered to scale with your network and adapt as your operations evolve. Built-in guardrails and AI scaffolding facilitate safe execution.

Time to value (TTV)
Through modular deployment, pre-trained domain-specific models such as TSFMs and rapid integration capabilities, IBM Network Intelligence aims to deliver first measurable ROI within weeks.

OpEx-efficient network growth
By automating routine tasks, providing intelligent insights and enabling agentic problem-solving, the solution supports network growth without a proportional increase in operational costs.

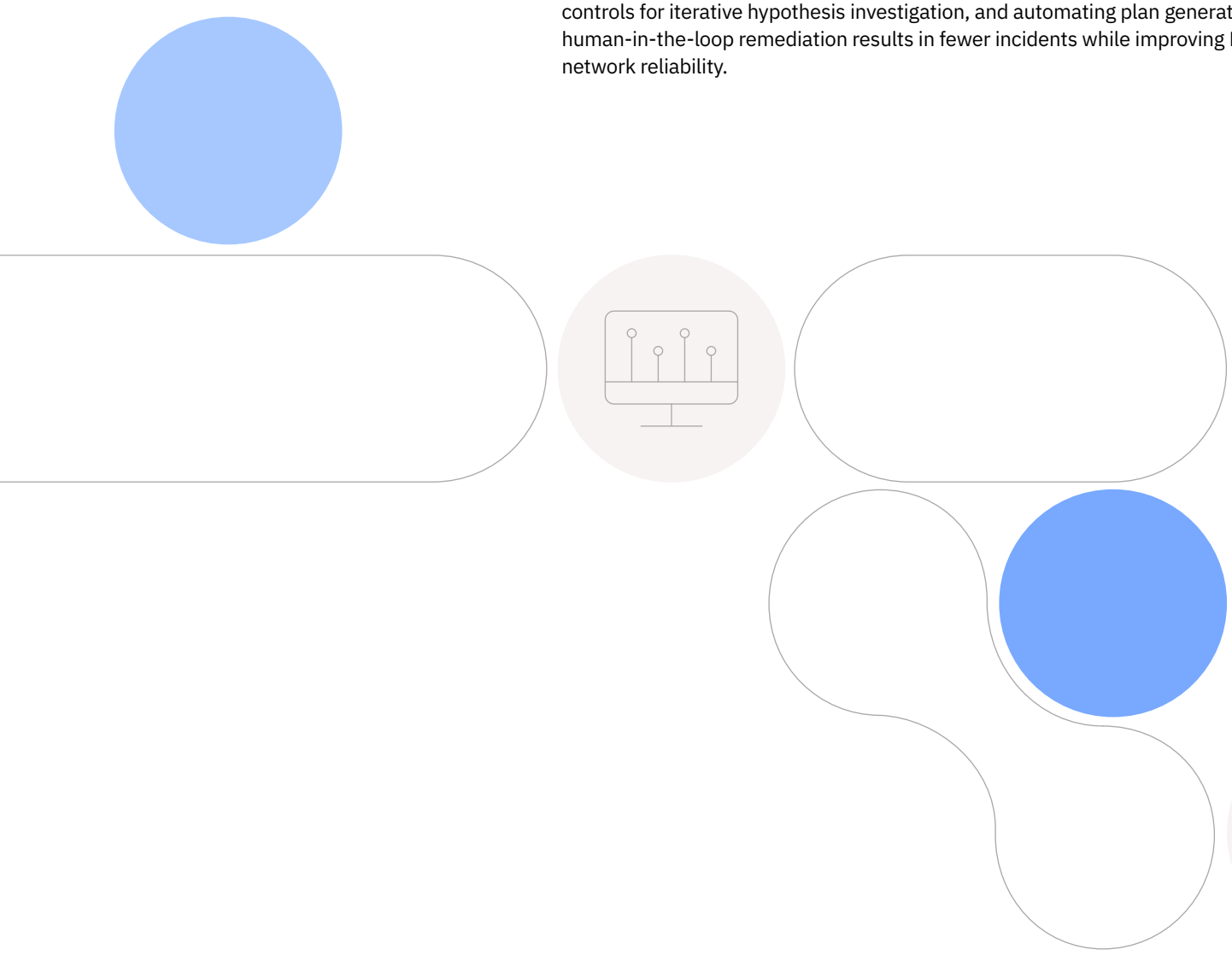
Measurable results

Built into IBM Network Intelligence is a continuous focus on two of the most critical metrics for operations teams: Mean Time to Resolve (MTTR) and Mean Time Between Incidents (MTBI). By accelerating diagnosis, MTTR is reduced, lowering service downtime and the operational drag of incident handling. Just as critically, using semantic understanding and pattern-based learning, the solution is designed to suppress recurring noise and address underlying issues, resulting in improved MTBI and fewer repeat incidents.

This network-native AI architecture enables measurable gains across key operational and financial metrics:

Fewer false positives
By specializing in time series patterns and network semantics, the model lowers the number of false positives and filters out noise, surfacing only high-confidence, actionable insights.

Improved MTBI
Leveraging TSFMs to game out possible outcomes, reasoning LLMs, agents and controls for iterative hypothesis investigation, and automating plan generation for human-in-the-loop remediation results in fewer incidents while improving MTBI and network reliability.



Built for scale, optimized for trust and adoption

Powered by intelligent automation
IBM Network Intelligence is designed for organizations striving for advanced-level network autonomy goals, such as managing complex, high-stakes networks, tier 1–2 telcos and managed service providers.

Ideal deployment scenarios include:

Enterprise network transformation

Operational efficiency programs targeting OpEx savings

As networks become mission-critical, downtime and slowdowns are no longer justifiable. Technical leaders must move beyond reactive firefighting to intelligent, performance-driven operations. Network-native AI is now essential—not just for resilience, but for continuous optimization, automation and delivering always-on digital experiences. This is AI that understands your network—and acts on it.

Built to optimize trust and adoption
IBM Network Intelligence isn't merely another AI solution based on LLMs that are inherently probabilistic, making the agents dependent on them probabilistic as well. Trust is at the core of our commitment to building responsible AI for networks. We reduce the risk of AI's incorrect decisions and the effort needed to rectify AI errors by implementing guardian models to help safeguard against training and inference risks, and by including strategic human intervention at key junctures within the AI workflow to enhance accountability and accuracy.

Automate smarter with IBM Network Intelligence.

Learn more →

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