

Enhancing AI-Native Network Transparency with Explainable AI (XAI)

XAI facilitates organizational trust in Juniper's AI-Native Networking Platform

Build trust and improve network performance with real AI solutions

[See how →](#)

The challenge

Fear, uncertainty, and doubt (FUD) with AI

Adopting any system to find answers or make decisions, especially those with real-world impacts, requires a high level of trust. When the practice of “AI washing”—implying that a product or service is AI-driven when AI’s role is tenuous, absent, or simply bolted on to an existing solution—becomes apparent and somewhat ubiquitous, any organizational trust that has been established can quickly be diminished.

The capabilities you need

Transparent and trustworthy AI

XAI is a set of processes and methods that allow users to understand and trust the results and output created by AI/ML algorithms. It helps mitigate the practice of “AI washing” while surfacing an AI’s relevant strengths and weaknesses. In the complex world of networking, XAI helps demystify AI processes, ensuring transparency, trust, and better, more confident decision-making.

● Transparency

Clear, interpretable insights into AI decision-making processes help ensure users understand the how and why of the decisions the AI makes

● User trust and adoption

By making AI decisions transparent and understandable, XAI builds user trust and confidence, promoting wider acceptance and adoption of AI technologies

● Enhanced decision-making

By providing clear explanations and context, XAI enhances decision-making processes, enabling users to make informed choices and optimize network performance

● Operational efficiency

Clear, actionable insights help reduce the time and effort required to diagnose and resolve network issues, leading to more efficient operations and improved overall performance

The answer

Juniper’s explainable AI

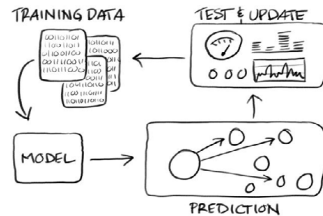
The range of models behind Juniper’s XAI helps provide clear, interpretable insights into AI-driven network operations. This transparency builds trust, enhances security, and improves overall network performance.

How it works

The transformative power of XAI

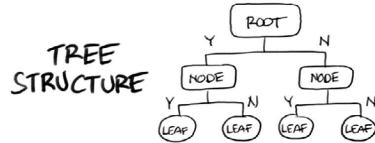
The following set of XAI processes and methods are at the heart of Juniper’s transparent, trustworthy AI-Native Networking solutions, enhancing everything from Wi-Fi management to network anomaly detection. They help explain to users, AI practitioners, and customers how our AI solutions achieve answers on par with human domain experts.

Core capabilities



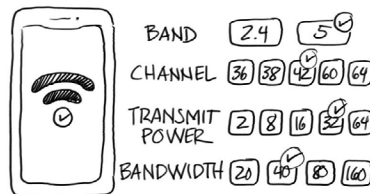
Natural language processing (NLP)

Juniper’s NLP capabilities enhance user interactions by enabling natural language queries and commands. This allows network administrators to troubleshoot issues, configure settings, and extract insights using everyday language, making network management more intuitive and accessible.



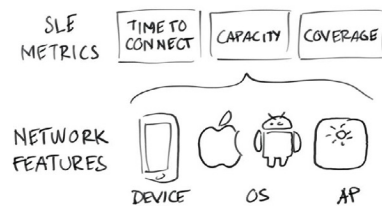
Decision tree algorithm

Juniper’s decision tree algorithms analyze network data to detect issues like faulty cables and AP (access point) health. By examining features such as frame errors and one-way traffic, these algorithms pinpoint problems efficiently, ensuring effective troubleshooting and improved network reliability..



Reinforcement learning

Juniper uses reinforcement learning to dynamically optimize RF (radio frequency) in real time, adapting to changes in a site’s RF characteristics. This ensures the best possible Wi-Fi coverage, capacity, and connectivity, enhancing network performance and user experience.



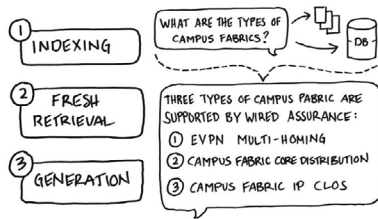
Mutual information algorithm

Juniper uses mutual information algorithms to identify relationships within network data. This helps detect anomalies, optimize resource allocation, and improve predictive maintenance by uncovering hidden patterns and correlations, leading to proactive and efficient network management.



SHAP (SHapley Additive exPlanations)

Juniper's SHAP implementation helps IT teams improve application experiences by providing clear, interpretable insights into AI models. This aids in managing network latency, bandwidth, and troubleshooting connectivity issues for applications like Zoom and Microsoft Teams.



Large language models (LLMs)

Juniper's Marvis uses LLMs and retrieval augmented generation (RAG) to help network engineers, architects, and NetOps quickly extract actionable information from documentation. This streamlines day-to-day activities, enhancing efficiency and productivity.

Why Juniper

The NOW Way to Network

Juniper Networks believes that connectivity is not the same as experiencing a great connection. Juniper's AI-Native Networking Platform is built from the ground up to leverage AI to deliver exceptional, highly secure and sustainable user experiences from the edge to the data center and cloud. Additional information can be found at Juniper Networks (www.juniper.net) or connect with Juniper on [X](#) (Twitter), [LinkedIn](#), and [Facebook](#).

More information

More information

To learn more about Juniper's explainable AI (XAI), visit <https://www.juniper.net/us/en/dm/explainable-ai.html>

For a better understanding of XAI, visit <https://www.juniper.net/us/en/research-topics/what-is-explainable-ai-xai.html>

Take the next step

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More insights

The key to trusting AI and adopting AIOps.

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