AI Troubleshooting for Industrial Networks

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Help Operational Technology (OT) teams maximize production uptime with an on-premises AI agent that detects network issues, diagnoses root causes, and provides clear remediation guidance for OT teams to resolve network issues quickly and efficiently.

Product overview

In industrial environments, production depends on sustained network connectivity. Every connected device on the plant floor, from robots, sensors, and controllers, to HMIs and safety systems, relies on that network to function to keep operations running. When connectivity fails, OT teams need to identify the source of the problem quickly, but troubleshooting often requires escalation to network specialists who are not always available on site.

AI Troubleshooting for Industrial Networks is an ambient AI agent purpose-built for industrial operations. Part of Cisco AgenticOps (soon to be available through Cisco Cloud Control), it continuously monitors the OT environment, detects network issues, gathers evidence from Cisco industrial switches, diagnoses the most probable cause, and delivers step-by-step guidance that any frontline OT team member can act on immediately without networking expertise.

Designed to run on-premises, AI Troubleshooting for Industrial Networks keeps sensitive operational data within the facility. It draws on switch syslog messages, show command output, configurations, and LLDP topology to build context and provide grounded recommendations.

The result is accelerated time to resolution and achieving peak production uptime. Frontline OT teams, like maintenance technicians, are equipped to resolve common network issues independently and reduce escalations to network specialists, effectively closing the gaps that made network-related downtime more costly and prolonged than necessary.

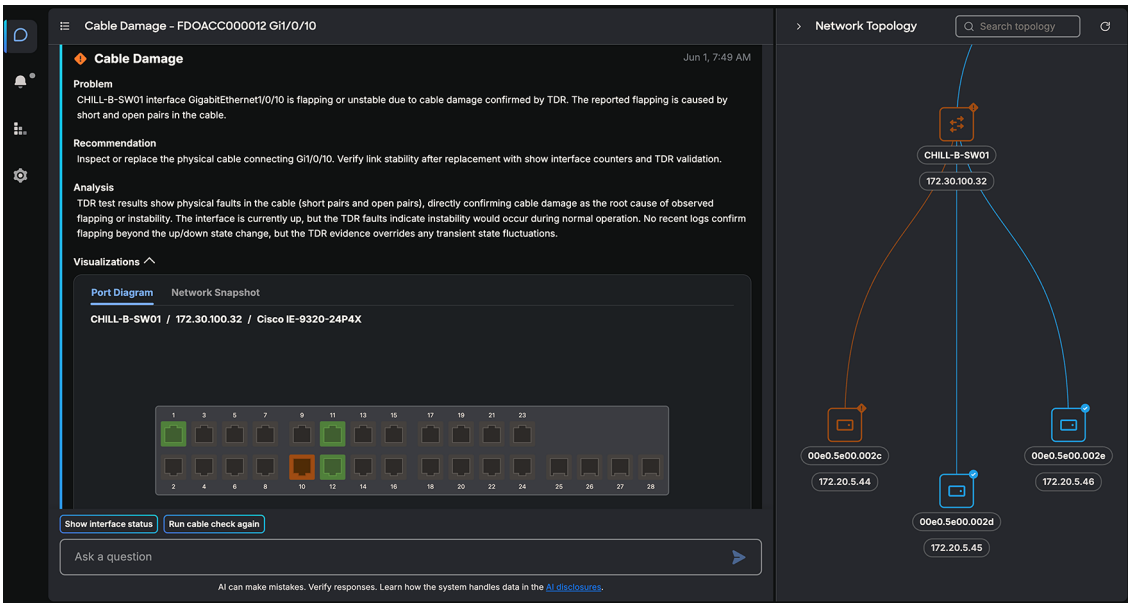


Figure 1. Alert with guided remediation

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Features and benefits

Table 1. Features and benefits

Feature	Benefit
Ambient monitoring	• Alerts users before issues escalate into longer outages by continuously monitoring industrial network signals.
Root-cause diagnosis with step-by-step remediation guidance	• Identifies likely causes faster than manual investigation by correlating topology, device state, syslog, and configuration evidence. • Helps frontline teams understand what happened and what to do next by using plain-language guidance, topology views, asset names, and operational context. • Helps users validate findings before acting by showing how conclusions were determined from verified network data.
Natural-language conversational interface	• Lets users ask natural-language questions about devices, connections, VLANs, and network state without logging into switches.
Interactive network topology	• Helps teams identify affected switches, interfaces, endpoints, and locations by showing searchable topology maps.

Troubleshooting OT network issues

AI Troubleshooting for Industrial Networks focuses on common access-layer and industrial network issues that slow down industrial production. Instead of presenting technicians / OT teams with a long list of raw alarms, the agent groups related evidence, identifies the likely fault domain, and explains what to check next.

Table 2. Issue coverage

Issue detected	Examples
Endpoint offline or degraded	Port down, err-disabled port, endpoint moved, VLAN mismatch, device unreachable, duplex or error issues
Link, cable, and media faults	Link down or flapping, copper cable faults, fiber/SFP issues, unsupported or degraded transceivers
Power over Ethernet (PoE) and endpoint power	PoE disabled, power budget exhausted, port power limit issue, powered device not detected

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Issue detected	Examples
Switch power and health	Power supply issue, input power loss, redundancy degraded, voltage warning, CPU or memory pressure
Power-loss events	Dying gasp, input-power fault, device dark after power loss or unplugging

Proactive troubleshooting for common OT network issues

AI Troubleshooting for Industrial Networks detects common access-layer and industrial network issues, gathering evidence necessary to determine the most likely root cause. Initial troubleshooting detection capabilities include offline assets, damaged cable or SFP issues, VLAN mismatch, duplex mismatch, Layer 2 NAT misconfiguration, PoE failures, switch health, and switch power supply issues.

When an issue is detected, the agent immediately alerts users with detailed diagnosis, root cause analysis, and guided steps to resolve the issue within an intuitive, natural-language spoken interface. For physical-layer issues, the guidance can help a floor technician act directly. For configuration or network operations issues, it gives network experts above the escalation chain the evidence they need to respond quickly instead of diagnosing the issue from scratch. Industrial context that maps the network to the factory floor.

The agent was purpose-built for the factory floor, extracting network data and presenting insights in simple language that OT teams can easily understand and take action, regardless of their level of networking expertise. It uses topology, connected assets, customizable asset names, and switch faceplate visualizations to help users move from a production symptom to the relevant switch, port, endpoint, or network path.

Network experts can tag devices with familiar names, locations, and production areas, such as line names or machine names. OT users can then ask questions using operational language instead of IP addresses or hostnames.

Grounded AI with deterministic troubleshooting logic

AI Troubleshooting for Industrial Networks is designed to constrain AI reasoning to verified facts from the industrial network. It retrieves live and historical evidence from switch command output, syslog messages, topology, and configurations, then uses validated troubleshooting workflows based on Cisco industrial networking expertise.

Every conclusion is traceable to the steps and evidence used to determine it, so users can see the raw output and diagnostic path behind a recommendation.

On-premises operation for industrial data control

The tool is installed as a virtual machine at the customer site. Customer network credentials, topology, logs, configurations, and sensitive operational data stay on-premises. Quality metrics generated by the agent are sent to Cisco to support performance and quality tracking.

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Platform Support/Compatibility

AI Troubleshooting for Industrial Networks can help monitor and solve network issues related to the following Cisco Industrial Ethernet switches:

- Cisco Catalyst IE3100 Rugged Series switches
- Cisco Catalyst IE3100 Heavy Duty Series switches
- Cisco Catalyst IE3200 Rugged Series switches
- Cisco Catalyst IE3300 Rugged Series switches
- Cisco Catalyst IE3400 Rugged Series switches
- Cisco Catalyst IE3400 Heavy Duty Series switches
- Cisco IE3500 Rugged Series switches
- Cisco IE3500 Heavy Duty Series switches
- Cisco Catalyst IE9300 Rugged Series switches
- Cisco Catalyst 9300 Series switches

Product specifications

Table 3. Product specifications

Category	Specification
Deployment model	On-premises virtual machine deployed at the customer site.
Deployment location	Industrial zone (level 3 of Purdue model) and Area Zone (level 2 of Purdue model)
Network access model	Local network device access; there is no external access to network devices.
Data collection	Show commands, syslog messages, configurations, and LLDP.
Security controls	Role-based access control with administrator and regular user roles.
Cloud tethering	Uses Cisco Cloud for agent software updates and to send agent operational telemetry for quality and performance monitoring

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System requirements

AI Troubleshooting for Industrial Networks is deployed as a virtual image that runs on supported customer-managed data center at the industrial site.

Virtual appliance specifications

Table 4. Virtual appliance specifications

Characteristic	Minimum requirements
CPU	x86 server CPU with 32 cores
Memory	48 GB RAM
Storage	70 GB disk space
Virtualization software	• VMware ESXi (8.0 Update 3 and above) • Nutanix (Prism Central pc.2024.3.1 and above)

System scale

Table 5. System scale

Item	Supported scale
Maximum number of switches per agent instance	50
Maximum number of endpoints per agent instance	600

Operational requirements

Table 6. Operational requirements

Requirement	Description
Deployment package	Virtual machine images provided by Cisco
Monitored Switch firmware	Cisco IOS® XE
Application domain	Requires an application fully qualified domain name (FQDN). If DNS is not available, the access client must resolve the application domain to the VM IP address

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Requirement	Description
Industrial network connectivity	The agent requires SSH connectivity to supported local switches and an account authorized to execute the required show commands (Cisco IOS privilege level 7 or higher, or equivalent command authorization)
Cloud tether access	Cloud software updates and system performance monitoring require outbound access to Cisco cloud services on secure port 443 and an API key provided by Cisco. The agent must be connected to the cloud tether. If tether connection lost, the UI will show warnings for a period of 60 days. If connectivity is not restored within that period, functionality will be deactivated.
Syslog	Switches can forward syslog messages directly to the agent or through a syslog server.
Topology discovery	LLDP must be enabled; it is used to build network topology and connected asset context.
Operational data residency	Customer credentials, topology, logs, configurations, and sensitive operational data stay on-premises.

Licensing, ordering, and warranty

Licensing

AI Troubleshooting for Industrial Networks is currently offered at no charge for a 3-year term. Refer to Cisco General Terms and Offer Supplemental Terms for more details.

Ordering Information

To download AI Troubleshooting for Industrial Networks visit https://www.software.cisco.com.

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Cisco and Partner Services

Services from Cisco and our certified partners can help industrial organizations assess, deploy, and operationalize AI Troubleshooting for Industrial Networks. Cisco and partner experts can support planning, integration, enablement, and ongoing optimization so teams can improve network operations while aligning with industrial requirements. For more information, visit https://www.cisco.com/go/services.

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Learn more

Learn how AI Troubleshooting for Industrial Networks can help your team maximize industrial network uptime and reduce escalations with AI-guided troubleshooting.

Contact your Cisco account team or email askiot@cisco.com.

- At-a-glance overview
- Video: Maximize production uptime with AI Troubleshooting for Industrial Networks
- Blog: Maximizing Uptime: The Power of AI Troubleshooting for Industrial Networks
- Industrial IoT network management and automation

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