Nokia Network Analyzer – Fiber
Release 19

Nokia Network Analyzer – Fiber (NA-F) is a cost-effective, remote management solution for fiber access networks. It leverages the service provider’s access equipment capabilities to speed up fiber activation, assess network performance, and diagnose faults in the access infrastructure.

This software tool helps service providers reduce OPEX, increase average revenue per user (ARPU) and activation success rates, and improve the overall customer experience.

Key features

- Optical diagnosis and supervision of optical links in the TWDM-PON fiber access network
- Service diagnosis and supervision for monitoring and troubleshooting traffic in the network and Ethernet ports on subscriber optical network terminals (ONTs)
- Embedded Optical Time Domain Reflectometer (OTDR) for enhanced fault localization and optical link loss validation
- Distribution diagnosis and supervision for monitoring and troubleshooting the distribution of the outside plant
Key benefits

- Reduces customer churn
  - In one operator case, 80 percent of the HD help desk calls were related to physical issues
  - Provides a better customer experience through efficient agent-assisted care and field service
- Reduces OPEX
  - Reduces 27 percent of truck rolls related to accidental impacts to neighboring subscribers on the same passive optical network (PON) during repair activities
  - Avoids 6 percent of fiber failures directly related to dirty or loose connectors, and reduces repair costs through early detection
  - Proactively resolves links with malfunctioning transceivers or new ONT software version issues (in one operator case, ONT software version issues were responsible for 15 percent of help desk calls)
- Reduces CAPEX
  - Avoids additional CAPEX related to test heads and probes
  - Avoids return of non-faulty ONTs
- Accelerates time-to-market
  - Reduces issues of never-connected ONTs, duplicate Subscriber Location ID (SLID) links or serial numbers, and not-provisioned link issues during drop activation due to operations support systems (OSSs) or network misalignments
  - Quickly discovers power drop on new ONT installs
  - Improves service activation procedures to avoid late notice, wrong dispatches and SLA penalties by knowing the mean time needed to activate the service in a region and across regions

Overview

New optical services provide subscribers with a substantially higher quality of experience (QoE). To deliver these services with high quality and cost-effectively, service providers need an activation process that meets optical quality of service (QoS) requirements and minimizes the number of connectivity problems as well as their impact. Providers must minimize the number of degradations to prevent service failures where possible, and repair faults quickly and predictably when they occur.

Service providers often have limited visibility into their fiber infrastructure. In addition, field technicians are necessary for physical implementation of the fiber network. Each activity becomes a potential source of human errors affecting other subscribers on neighboring links, making the need for remote management tools even more pressing.

In the home, subscribers can inadvertently create defects. These problems can be as trivial as an ONT being switched off, but often can also be the result of loose connectors or fiber that has been bent or stapled. Nokia NA-F provides unique diagnostic capabilities that enable identification of root causes for issues, dramatically reducing the time and resources required for fault identification and resolution.

Nokia NA-F helps service providers reduce OPEX and increase ARPU through enhanced fault localization. This improves fault escalation efficiency by identifying the right resource to fix the fault and ensuring that the right person has the information to take action. These capabilities improve QoS, helping service providers improve customer satisfaction and reduce churn while increasing the likelihood of selling higher bandwidth services.

Nokia NA-F monitors the PON and optical link from activation to operations. In each phase, it provides insights on the equipment state, subscriber impact and faults present.
In addition, Nokia NA-F provides PON utilization analysis to help identify heavy PON users and proactively detects PON capacity bottlenecks to help with PON capacity growth to meet user demand.

NA-F can be integrated easily with existing OSSs, customer portals, inventory systems and third-party PONs.

By combining NA-F with the Nokia Service Management Platform (SMP), assisted care and field care can get insights and recommendations that help boost first call resolution rates and reduce handling time for access-related issues. Service providers can use these insights to enhance the customer experience and keep their care costs low.

Detailed features

- Automatic and on-demand detection and prioritization of passive faults (pressured fibers, visual bends, loose or dirty or improper connector, loss of signal, feeder cable cuts) and active faults (operational errors, administrative errors, close to saturation ONT and malfunctioning transceivers)
- Fault diagnosis of hybrid PONs (co-existence of GPON and TWDM-PON)
- Automatic and on-demand comparison of the optical power levels for all optical links connected to the same last splitter and/or the same PON
- Automatic near-real-time fault diagnosis of “critical” optical links (e.g., VIP subscribers, business subscribers, mobile backhaul links)
- Link Quality indicator qualifies the optical power levels and the QoS of an optical link over time per service type. This indicator is useful for proactive maintenance and troubleshooting.
- Alarm-driven Link stability indicator to detect the intermittent disruption behavior and reflect the end user’s quality of experience over an extended time window.
- PON utilization provides upstream, downstream unicast and multicast analysis at PON level and at ONT level for congested PONs.
- Key performance indicators (KPIs) to measure PON bandwidth margin and to detect discarded traffic
- Top five ONT bandwidth consumers and normalization of aggregated PON bandwidth to compensate for unavailable optical links. In addition to the list of ONTs with the most discarded bandwidth.
- Advanced reactive analysis for congested PONs with recommendations for fix actions
- On-demand inventory, configuration, operational status and fault diagnosis of ONT subscriber interfaces
- On-demand and periodic monitoring of the out-of-band overlay RF video signal
- Validation of the link loss between OLT port and ONT before ONT activation (uses eOTDR)
- Network-wide dashboard with both logical PON topology view and embedded GIS view of the physical topology, providing physical location of faults and impacted branches
- Northbound integration interfaces to feed big data platforms and third-party OSSs/BSSs with fiber topology, and inventory, operational and fault data
- Optical infrastructure-centric database to support inventory queries, correlate and localize faults, and support historical trend analysis
- Topology and inventory audits to detect PON provisioning inconsistencies and outside plant documentation issues
- Fault troubleshooting and visibility at the level of the fiber distribution hub housing multiple splitters with a detectable degraded hub fault
- Automatic identification of free splitter ports in a given fiber terminal to facilitate the installation of drop fibers and ONTs
- Support of user tags to facilitate the communication between the different NAF users involved in the troubleshooting lifecycle
Nokia Access Network Management family of products
- Nokia Access Network Analytics
- Nokia Customer Service Console
- Nokia Field Technician Console
- Nokia Network Analyzer – Copper
- Nokia Network Analyzer – Fiber
- Nokia Service Management Platform

Learn more
NA-F is an integral component of the Customer Care portfolio. Customer Care lets you consolidate your device management and customer care activities across fixed and mobile services. It helps you reduce OPEX and total cost of ownership (TCO) while providing experiences that secure customer loyalty and boost your Net Promoter Score®.

Nokia understands fixed broadband and home networking. We offer global leadership in solutions that seamlessly manage fixed and mobile devices. Our Network Analyzer is the trusted choice of more than 120 service providers managing 100 million access lines.

Learn more about the Customer Care portfolio at:

Supported fiber access technologies
- GPON
- TWDM-PON (NG-PON2)
- XGS-PON

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