NOKIA

Enlighten your LAN
with the Nokia Optical LAN solution

As businesses contemplate how to introduce a new generation of services, improve productivity, lower costs and build a competitive advantage, they are faced with tough decisions about the performance and capacity of their existing local area networks (LAN). With connectivity demanded by devices and users increasing from megabits to a gigabit, 10 gigabits and beyond, new copper cables and switches are often recommended for better performance. However, this upgrade is labor and cost intensive.

The logical alternative is to install a fiber-based network that can lighten the load on your LAN, handling speeds well beyond a gigabit. Nokia Optical LAN is a fiber-based solution that meets the needs of the modern-day business while providing a cost-effective evolution as speeds continue to increase. Nokia Optical LAN delivers significantly better performance than a traditional copper-based LAN, enabling network convergence, simpler operations, greater speeds per user, and up to 50% savings in costs.

Bringing the LAN up to light speed

Today's local area networks use a copper architecture and often separate networks are used to carry different services. The copper deployment model creates an environment that is wasteful and inefficient to maintain, leading to crowded equipment rooms, complex wiring closets and increased high-volume air conditioning (HVAC) requirements.

Nokia Optical LAN brings the LAN up to light speed. The advanced performance means all voice, data and video services can be supported on a single fiber distribution architecture with the right user experience. Optical LAN's Quality of Service (QoS) and high bandwidth allow organizations to converge voice, video and data all onto the same fiber network allowing more efficient maintenance, cabling and overall performance. Optical LAN is also light on infrastructure and energy: its single distribution platform significantly reduces network complexity, the amount of equipment needed, and power consumption.

PON: the technology behind Optical LAN

Optical LAN is based on a technology called Passive Optical Network (PON). PON has already been deployed by all the world's largest telecommunications carriers and serves millions of users worldwide. It has quickly established itself as the gold standard for delivering a new generation of services. Among other benefits, PON provides an enormous amount of bandwidth with GPON — 2.5 Gb/s downstream and 1.25 Gb/s upstream and XGS-PON – 10Gb/s downstream and 10Gb/s upstream — over a single strand of glass.

PON architecture uses purely passive components such as splitters between the optical line terminal (OLT) and optical network terminal (ONT), reducing the chance of equipment failure. In Optical LAN, the core underlying technology is still Ethernet, with GPON Encapsulation Mode (GEM) used as the packaging format. GEM packages the IP packets efficiently with minimum overhead as they transit between the OLT and ONT.

Each fiber optic cable can be shared by up to 64 ONTs, minimizing the amount of fiber cabling required. Although multiple users share the same passive optical network (PON), robust QoS and bandwidth mechanisms ensure that the traffic is correctly prioritized and peak bursts enabled, so that each user or device gets the bandwidth they need.

Nokia Optical LAN solution highlights

Blueprint driven

Nokia delivers a pre-validated set of services applicable to Optical LAN along with the hardware and software specifications. The Nokia Optical LAN blueprint covers interoperability with various other eco-system components like VOIP Phones, Voice PBX, Wi-Fi Access Points, Authentication Servers, etc. The service definition and underlying equipment part of the Nokia Optical LAN blueprints are validated at Nokia labs to ensure the system supports the smooth roll-out and operation of services.

A sample set of services defined in the Nokia Optical LAN blueprint:

- Desktop Data Service
- IP Voice Service
- Wi-Fi Access Point Service
- Security Access Control Service
- Digital Signage Service
- Surveillance Service
- Public Announcement/Intercom Service
- IPTV Service
- Analogue (POTS) Voice Service

7360 ISAM FX OLT

The foundation of the Nokia Optical LAN solution is the 7360 ISAM FX OLT with:

- Line cards that support GPON and XGS PON
- Features to support Layer-2 and Layer-3 network deployments
- 802.1x based user authentication supporting port/MAC/MAB
- DVLAN or dynamic VLAN assignments for user services
- QoS architecture to support the QoS guarantees for user services
- Type-B PON protection

7368 ISAM ONT

The solution comprises of ONTs that meet every need:

- GPON and XGS PON uplink
- Various port densities (1p, 4p, 8p, 24p)
- 1G/2.5G/10G user port rates
- PoE support providing up to 60W power to connected end devices (VOIP phones, Wi-Fi APs)
- LLDP-MED protocol support for discovery and setup of connected devices
- Integrated POTS ports
- Integrated Wi-Fi AP

5571 POL Command Center (PCC)

The 5571 POL Command Center (PCC) provides a web-based and intuitive environment that makes day-to-day operations quick and simple:

- Realistic network view using your floor plans
- Easy navigation to network elements and their physical locations
- Predefined service definitions for each usage type
- Discovery and automatic activation of new optical line terminals (OLTs)
- Automatic activation of new ONTs
- SNMP trap forwarding interface to OSS

Benefits of the Nokia Optical LAN solution

The Nokia Optical LAN solution outperforms traditional copper-based LAN in all the key criteria.

At the speed of light

Fiber passive optical networking (PON) technology harnesses the power of light to provide future-proof performance for thousands of users and devices. Once deployed, the same infrastructure can support all services and transition smoothly to 10 Gb/s (XGS-PON) as demand grows. Fiber is inherently hard to hack, has no crosstalk and is unaffected by electromagnetic interference. Built-in encryption and centralized network intelligence ensure high levels of security and availability.

- High performance
- Low latency
- High reliability and security

Light on energy

Using Quillion, Nokia's highly efficient PON chipset, Nokia Optical LAN cuts energy consumption by up to 40% compared to a traditional LAN. Fiber is by far the most sustainable connectivity option as it uses passive technology and, once deployed, has a lifespan of 50+ years. And Nokia Optical LAN is built on Nokia Broadband Zero principles that minimize its effect on the planet at every stage of the product lifecycle, from design, to transport and packaging, through use, and end of life recycling.

- 40% lower energy consumption
- Circular economy design

Light on infrastructure

As a passive technology with a reach of 20 km, Nokia Optical LAN doesn't need repeaters and uses far less cooling equipment and cabling than a traditional LAN solution. This equates to up to 90% smaller equipment footprint. The single pane of glass management of all optical network terminals (ONTs) and services saves time and money.

- 90% smaller equipment footprint
- 20 km reach
- Simple, centralized control

Light on TCO

All this leads to lower costs thanks to savings in CAPEX, maintenance, power, space, management, service contracts, testing, certification and upgrades. As a single network for all services and devices and the unlimited potential of fiber scalability, Nokia Optical LAN has up to 50% lower total cost of ownership than a traditional LAN.

- 50% lower TCO
- A single network for all services and devices
- Unlimited potential of fiber infrastructure

The Nokia Optical LAN solution

7360 ISAM FX

The Nokia Optical LAN solution is based on the 7360 Intelligent Services Access Manager (ISAM) FX OLT platform, widely regarded as the industry's most innovative and comprehensive solution for fiber networks.

The 7360 ISAM FX is a centralized access point for the entire LAN, capable of serving from hundreds to thousands of users and devices. It has market- leading capacity: a backplane architecture that delivers up to 200 Gb/s to each slot, 2.5 Tb/s switching capacity and 360 Gb/s uplink capacity. The 7360 FX supports GPON and 10G PON to give every user gigabit and multi-gigabit speeds today and can smoothly evolve to next-generation fiber technologies to meet the demands of tomorrow.

The 7360 ISAM FX is available in three size variants (small FX-4, medium FX-8 and large FX- 16) suitable for all types of deployment: office buildings, large enterprises, hospitals, hotels and resorts, university campuses, sports arenas, or any other environment requiring a LAN.

The Nokia approach to passive optical LAN allows organizations to evolve their LAN in a gradual and cost-efficient way, using the same central switch and in-building cabling, while making minimal changes in electronics.

The market leading capacity of the 7360 ISAM FX, enables organizations to:

- Meet service demands with a premium user experience
- Lower operational costs through savings in power, floor space and simpler management
- Get long-term value.

Features

- Supports GPON and 10G PON technology
- Different shelf sizes, containing 4, 8 or 16 line cards
- Flexible density: a GPON card can have 16 ports for high-density. The 10G PON card has 16 ports, each supporting up to 10 Gb/s bitrates. Each port of the GPON and 10G PON line card can connect up to 64 ONTs
- IP/Ethernet access platform supporting Multiprotocol Label Switching (MPLS)
- Advanced traffic management for premium video delivery
- Carrier-grade redundancy: controller and card redundancy, uplink redundancy, Type-B link redundancy
- Managed by the Nokia 5571 PCC (POL Command Center).

Benefits

- Meets increasing LAN demands with high capacity capable of serving 8,000 (on ISAM FX- 4), 16,000 (on ISAM FX-8), and 32,000 (on ISAM FX-16) from a single location (with a 1:32 split ratio, common for optical LAN)
- Allows peak bursts of more than 1 Gb/s per user/ device with Dynamic Bandwidth Allocation (DBA)
- Shelf-size options that support any building/campus size
- Uses common software, line cards and deployment practices across all ISAM FX shelves
- Power-efficient sustainable technology
- Provides a smooth evolution path to next-generation fiber technology using the same platform
- Converges all applications (cloud, IoT, voice, data, video, wireless backhaul, surveillance, etc.) onto a single platform.

7360 ISAM FX-4
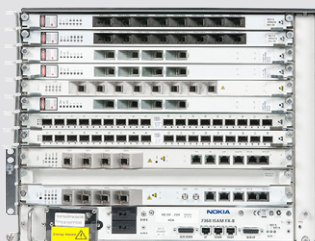
7360 ISAM FX-16

7360 ISAM FX-8

7368 ISAM ONT

Nokia Optical Network Terminals (ONT) are the user access points controlled by the OLT. The Nokia ONT family delivers superior services with high bandwidth to every user. The variety of ONTs meets every need: they can be deployed in a variety of locations and support wired and wireless gigabit and multi gigabit connectivity, power over Ethernet, and a selection of user interfaces.

Features

- Gigabit Ethernet interfaces

- 10 Gigabit Ethernet interfaces

- Ceiling, wall or desk mounted

- Choice of using local power or PoE

- Optics support Received Signal Strength Indication (RSSI) for troubleshooting.

Benefits

- Delivers gigabit and multi gigabit connectivity to endpoint devices

- Enables deployment flexibility, combining fixed and wireless connectivity for 100% coverage

- Prioritizes services per user with the ability to burst up to the full line rate through advanced dynamic bandwidth management

- Guarantees very high quality of service (QoS) and security

- Optimizes the use of electronics, fiber optics and distribution facilities.

The following Nokia ISAM 7368 ONTs are available:

Type	7368 ONT U-490XP-P	7368 ONT XS-010S-Q	7368 ONT G-040P-T	7368 ISAM ONT G-040P-R	7368 ONT G-010S-A
Uplink	GPON or XGS-PON	XGS-PON	GPON	GPON	GPON
User interface	8 x GE or 1 x 10GE	1 x 10GE	4 x GE	4 x GE	1 x GE
PoE	Y	N	Y	Y	N
RGW (L3)	N	N	N	N	N

5571 POL Command Center (PCC)

The Nokia 5571 Passive Optical LAN Command Center (PCC) is an advanced management solution optimized for performance and usability in enterprise environments. As part of the Nokia Optical LAN solution, the Nokia 5571 PCC provides a highly intuitive environment for configuration, auto-activation, fault reporting, troubleshooting, maintenance and much more. The 5571 PCC shields the network manager from the network's complexity and gives an efficient tool for every aspect of day-to-day operations.

The Nokia 5571 PCC takes our experience of managing hundreds of millions access lines and applies it to the unique needs of the LAN. Pre-defined tasks tailored for specific usage types make it easy to activate new services. Adding new endpoints to the network is simple thanks to ONT auto-activation. If any issues do arise, our advanced troubleshooting and alarm management tools will get you straight to the root of the problem.

Features

- Intuitive, feature-rich, web-based user interface
- Realistic network views using your floor plans
- Easy navigation to network elements and their physical locations
- Pre-defined service definitions for each usage type
- Custom service definition and automated provisioning
- Discovery and auto activation of new OLTs
- Bulk copy of provisioned ONTs
- Intuitive alarm views.

Benefits

- Reduces operational costs through ease of use.
- Provides clear and up-to-date records of network elements and their physical locations
- Provides reliable and consistent service provisioning through pre-defined service definitions
- Simplifies network growth with automated ONT discovery and activation
- Imports existing Optical LAN services into PCC that were configured using command line interface (CLI)
- Streamlines network changes and upgrades with ONT replacement and move tools
- Verifies your service level agreements (SLAs) using graphed metrics
- Simplifies the search for network issues through intuitive troubleshooting tasks.
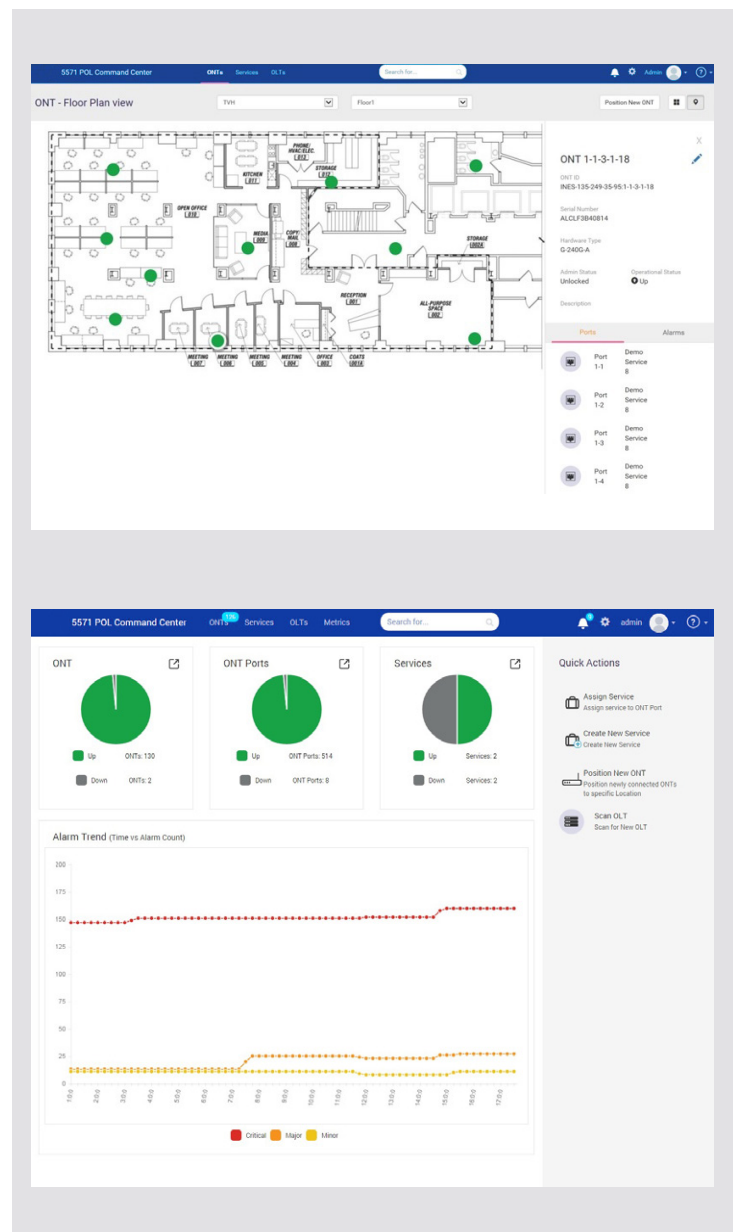
Nokia: bringing broadband innovation to the enterprise

Nokia is the world leader in fixed access technologies. We have 20+ years of broadband experience, and our equipment powers some of the most advanced fiber networks in the world. Our field proven and award-winning solutions serve governments, utilities, businesses and telecom operators worldwide.

The Nokia Optical LAN solution brings your LAN up to light speed, helping you enhance your productivity and slash costs. Contact your nearest Nokia partner today.

About Nokia

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering the future where networks meet cloud to realize the full potential of digital in every industry.

Through networks that sense, think and act, we work with our customers and partners to create the digital services and applications of the future.

Nokia is a registered trademark of Nokia Corporation. Other product and company names mentioned herein may be trademarks or trade names of their respective owners.

© 2024 Nokia

Nokia OYJ
Karakaari 7
02610 Espoo
Finland
Tel. +358 (0) 10 44 88 000

Document code: CID192366 (September)