

## Nokia Passive Optical LAN for hospitals, clinics and healthcare facilities

Deliver holistic patient care with a single, unified, ultra-broadband infrastructure

The best hospitals, clinics and healthcare facilities go beyond providing excellent medical care by enabling a holistic experience for patients, healthcare givers and staff. Delivering that experience requires many operations and management systems to function smoothly and reliably. In addition to linking disparate support systems for a variety of services, such as radiology labs, nursing stations and special care clinics, these systems should enable patient information to be communicated for diagnosis and medical procedures.

They should also support patient monitoring, clinical information, billing, security and access control, as well as other services that are needed for effective daily operations. And they should cater to patient and visitor demands for Wi-Fi® and other internet access connectivity, as well as entertainment (audio, video, TV) and information services for patients paying a premium. Most importantly, because many healthcare functions are mission critical, the network that these systems run on must be fast, robust and reliable.

By integrating all these systems on a single, efficient optical network infrastructure, hospitals, clinics and healthcare facilities can deliver an optimal, holistic patient care experience. They can then leverage that experience as a key differentiator that can lead to happier patients and increased revenues.

A Nokia Passive Optical LAN (POL) solution is an essential part of a best-in-class medical facility. It's the foundation of a single, centrally-managed and future-ready services infrastructure that supports all the operations, management and patient services systems needed to run a medical facility effectively and at a lower cost. And it provides ultra-broadband capacity and carrier class reliability at all times for mission critical services.

## Streamline operations and management systems

A Nokia POL is based on industry standard Gigabit Passive Optical Network (GPON) technology. It is suitable for all types of medical facilities — from small diagnostic clinics to super-specialty and large corporate hospitals. And it is engineered to support all operations, management and patient services with:

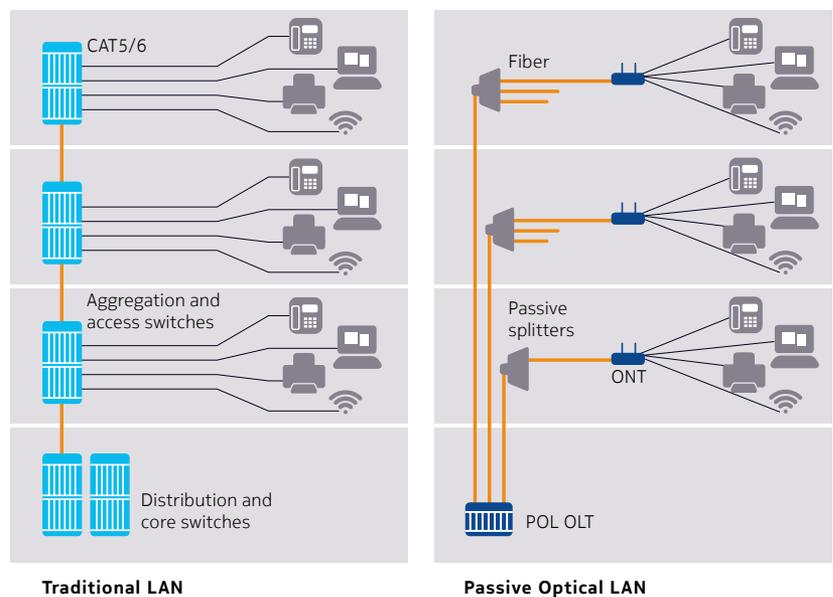
- **Industry-leading ultra-broadband technology** with enough bandwidth to meet all user demands for years to come
- **One integrated network** to run all services today — patient care, monitoring and diagnostics, clinical care, patient records, billing and IT, surveillance and closed-circuit television (CC TV), security and room access control, emergency public address and communication, high speed internet, Wi-Fi, voice, TV and entertainment, digital signage and more — and ready to support any service needed tomorrow
- **A one-time investment** in fiber infrastructure — future-ready for 50 years and beyond
- **No forklift upgrade** — unlike Ethernet-based networks, future bandwidth upgrades on a Passive Optical LAN do not require new cabling or replacement of the access node or switches
- **A completely passive network** between active equipment end points, which provides massive savings in capital expenditures, space, power consumption, air-conditioning needs, maintenance and overall daily operating costs
- **A scalable fiber network**, which can be extended easily to new areas and configured to meet changing needs, such as expansions of operating theatres, recovery rooms, and intensive care units (ICUs)
- **Carrier grade reliability** on a highly secure digital network

## Optimize precious real estate and facilities

A centralized, integrated Nokia Passive Optical LAN (POL) infrastructure has a smaller footprint because it requires less racks, LAN switches, and patch panels (Figure 1). This eliminates the need for telecom equipment closets on each floor or at every 100m, the extra power supplies (mains and UPS) associated with equipment rooms, as well as additional air-conditioning, special cable channels for CAT5/6 cabling (Figure 2) and other support requirements. As a result, medical facilities get a large savings on initial capital expenditures, as well reductions in daily operating expenditures from lower energy consumption and reduced maintenance. And the floor space freed up by eliminating unnecessary equipment can be used more productively for revenue generating patient care facilities.

Once the POL infrastructure is installed — whether for a new network or as part of a network renovation — it will last for generations, ready to support any new service that may come along. The capacity of the infrastructure will be sufficient for years to come, but if higher bandwidth is required in the future, the upgrade will be easy and cost-efficient. There is no need for forklift upgrades. And expansions to new rooms or for new facilities can be made by simply extending the fiber and adding an Optical Network Terminal (ONT) — no major cable runs or additional Ethernet switches/ports are needed.

**Figure 1. Go from many distributed network elements to one central configuration**



**Figure 2. Eliminate bulky cables and reduce cable clutter**





## Simplify management and maintenance

A Nokia Passive Optical LAN provides substantial savings on management and maintenance costs because all operations, management and patient services are integrated onto **one infrastructure** that can be managed from **a single, central location**. As a result, fewer IT staff resources are needed to keep the network up and running. Maintenance is also easier because there are fewer active electronics on the property.

## Support the digital image data explosion

With an optical LAN, every department is better equipped to support the massive amounts of digital data that medical facilities must now manage. This includes patient records and database files, as well as new data from advanced imaging and diagnostic technologies, such as sophisticated CT/PET/MRI scanning equipment that generate very large data files (approximately hundreds of MB) of very high resolution (4k/8k/UHD) images.

A Nokia Passive Optical LAN offers Gigabit capacities today and scales easily to tens of Gigabits tomorrow on the same fiber infrastructure. This provides the high bandwidth required to transmit all digital files to high resolution screens and to record centers in seconds. It ensures critical life-saving information is delivered instantly at all times. And it gives healthcare providers access to vital information when crucial medical decisions in on-going operations depend on it.

## Choose optical networking for upgrades and renovations

Nokia Passive Optical LAN infrastructures are not just for new projects. They are a cost-effective choice for renovations and upgrades to existing facilities.

Because optical fiber is more resilient and supports a smaller bend radius compared to other cabling, it can fit in existing ducts and channels easily. It is inherently resistant to signal and noise interference from other sources,

so it can be run almost anywhere. Once installed, existing legacy services, such as analog voice, or RF-based services, such as TV, surveillance and security, can be migrated to the new optical infrastructure easily to enable a single network for all services. And by replacing old equipment with a more cost-effective fiber infrastructure, a passive optical LAN lowers the overall cost of an upgrade or renovation significantly. It sets the stage for substantial cost savings on network operations and maintenance in the future and frees up precious real estate for other revenue-generating patient care services and facilities.

## Provide holistic patient care

Medical facilities need the highest level of network availability and reliability to deliver holistic patient care. There is no tolerance for system breakdowns. A Nokia Passive Optical LAN solution offers carrier grade reliability and military grade security. It provides significant capital and operational cost savings compared to conventional LAN solutions and the technology base upon which to build world class patient care services.



Nokia Fixed Networks is the market leader in fixed access technologies, providing fiber and copper ultra-broadband solutions to telecom operators, cable operators, municipal governments and enterprises.

Operating in over 130 countries, Nokia has shipped over 16 million Gigabit-capable Passive Optical Network (GPON) ports in over 180 fiber projects worldwide. We power some of the most advanced fiber networks around the world deployed by leading telecom service providers, as well as municipalities, utilities, hospitals, hotels and resorts. We enable our customers to build a competitive advantage, enhance user experiences and accelerate the move to a digital society.

**For more details on how a Nokia POL can contribute to the success of your hospital, clinic or healthcare facility, contact your nearest Nokia partner.**



Nokia 7360 ISAM FX OLT



7368 ISAM ONT G-040P

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