#smartconnection

Fibre To The Office

Flexible digital infrastructure for the hospital of the future

aginode

Improving efficiency with a flexible digital infrastructure

How can your IT network support innovations in healthcare and align with budget constraints? By being expandable, agile and flexible, fully able to support your hospital's needs as they evolve, today and into the future.

As the population ages and more people are living with chronic disease, the pressure on healthcare providers continues to grow. New advanced therapies improve care and clinical outcomes, but add to hospitals' technology and IT demands. At the same time, healthcare budgets are facing restraints, meaning that hospitals need to find new ways to provide more care services, with fewer resources.

Digitisation in healthcare is the key, enabling new clinical approaches and technologies that can optimise processes and the use of resources. Digital data and applications provide greater clarity into process efficiency and the impact and effectiveness of treatment paths, enabling more efficient ways of working and better patient outcomes. Healthcare professionals, working with electronic patient records, need reliable access to the platforms and data they use, across wards and devices. Today, the network truly is the backbone of the entire hospital.

The challenge for hospitals today is to constantly adapt, to new healthcare services, data-intensive technologies and increasing patient volumes. Your IT network needs to support these evolutions, and be ready to handle developments in the future. Aginode LANactive is an alternative LAN technology for use in hospitals that allows you to build a flexible digital infrastructure, positioning you to meet the challenges of today, and tomorrow.

FTTO: the alternative approach to traditional LAN

LANactive offers an alternative approach to traditional LAN using Fibre To The Office (FTTO) topology and active switches to provide standard Ethernet services to devices via standard copper-based RJ45 technology.

Using Fibre To The Office (FTTO) topology, fibre is laid vertically from a central building distributor to the different floors in your hospital. From there, the cable runs horizontally to a FTTO switch installed at the workstation or service consolidation point, close to Wireless LAN Access Points, cameras or other devices.

LANactive switches ensure intelligent conversion from fibre to copper and vice versa. Each switch, installed at the workstation in cable ducts or floor boxes, is equipped with four copper RJ45 user ports to feed terminal devices with data and power. Highest bandwidth, reliability and long distance coverage are coupled with the Ethernet benefits of copper. This solution meets current and foreseeable network requirements in terms of flexibility, cost efficiency and network interoperability.

Data throughput is uncompromised. Although the entire network operates at 1Gbps, throughput is as good as - or better than - that of a traditional network setup featuring floor distributors and an aggregated high-speed backbone. Performance is further supported by non-blocking switching and switches with 20 Gbps backplane.

Regardless of their size and complexity, FTTO networks can be easily and cost-effectively managed from a single location with the LANactive Manager configuration and management tool from Aginode. Precise mapping of current infrastructure status makes it possible to track and repair faults or configuration errors quickly, saving considerable time.

Fibre To The Office
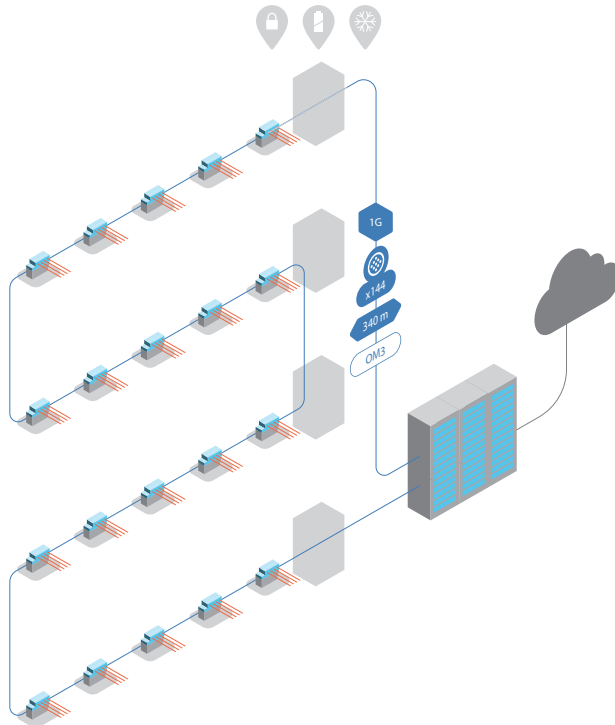
Traditional LAN

Passive fibre cabling and active switches are combined to provide Gigabit Ethernet services from the central core switch to an FTTO switch and from there to end user devices.
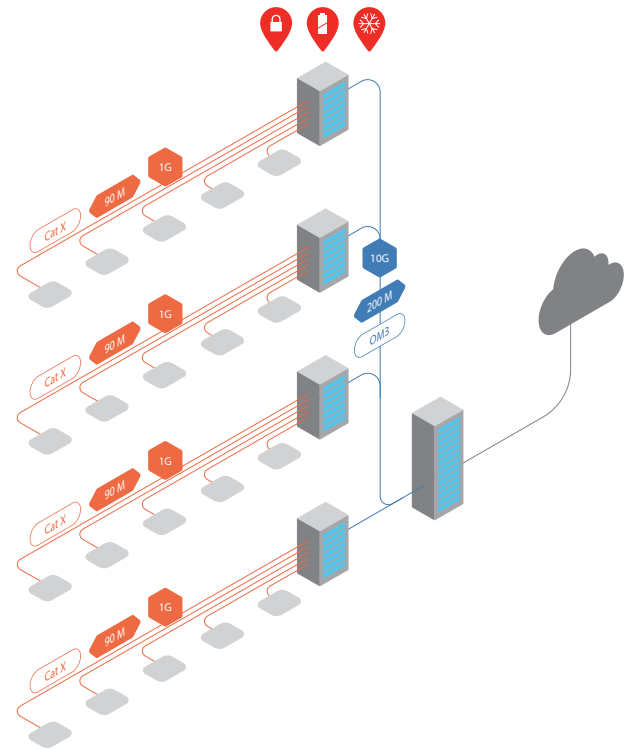
FTTO eliminates the need for floor distributors, separate fibre backbone, active equipment, patch panels and racks or cabinets on each floor, as well as large volumes of horizontal copper cabling.

Lower Ceilings

Smaller cable ducts & zone distributors
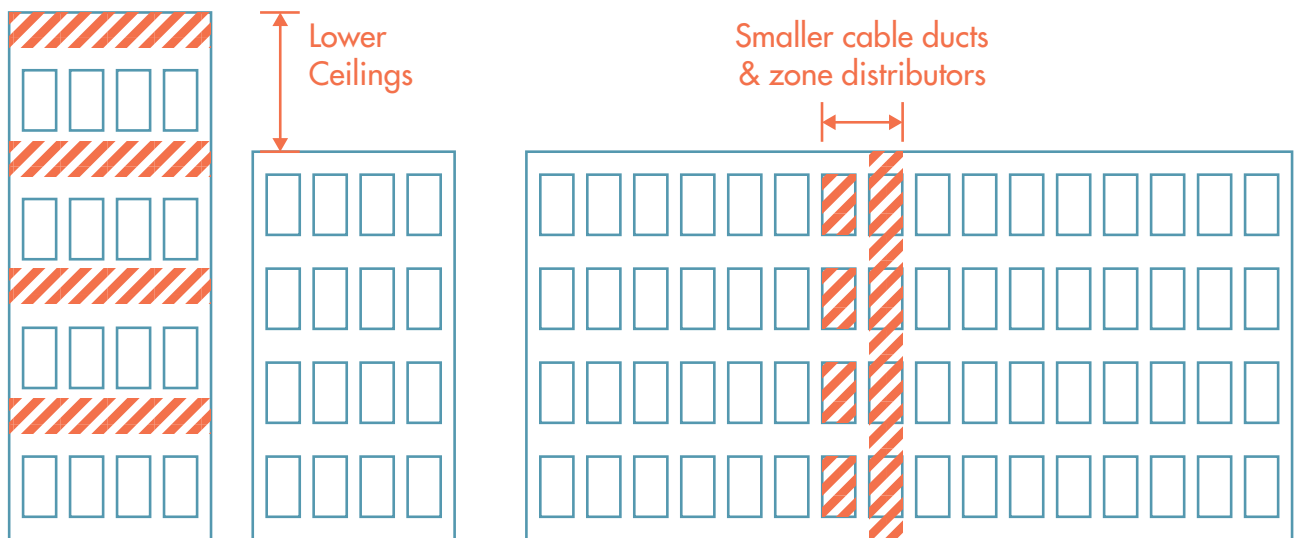
Why use FTTO for your hospital?

Healthcare is evolving rapidly, and hospitals have to manage constant change. Whether you are planning a new hospital or refurbishing an existing one, choosing an FTTO approach for your network offers significant cost benefits.

Fewer components, less space required for cabling and zone distribution

With FTTO, cabling volume decreases significantly and there's less active equipment. No additional technical rooms are required, which means more useable area, additional savings and reduced environmental impact. Particularly when planning for a new hospital, opting for FTTO from the start can significantly reduce your building costs.

Better power delivery, ready for more wireless connectivity

Thanks to implemented Power over Ethernet (PoE/PoE+) functionalities, VoIP phones, WAPs and IP cameras are powered directly from the switch. In accordance with IEEE 802.3at and IEEE 802.3af, FTTO can easily accommodate increasing PoE wattages.

Enhanced security, higher availability and easy redundancy

Aginode switches support all relevant security and encryption mechanisms such as IEEE 802.1x, SNMPv3, HTTPs, SSH and SCP. Hardened firmware of switches provides high-level protection against cyber attacks.

In the event of network downtime, any consequences will remain local. In practice, that means only a specific workstation or small section of the network will go down. Cable diagnostics will pinpoint the exact location of errors on fibre and copper cable links.

FTTO makes it easy to set up ring topologies wherever there is a need for redundancy at the user level. Intelligent managed switches automatically switch data traffic to a 'healthy' fibre path, should a link fail. This guarantees the highest network availability to connected end users, with easy servicing and short uplink time, allowing hospitals to provide the highest levels of patient care.

Easier expansion: grow as you need

FTTO grows with the user's needs and can easily be adjusted to new technologies and applications. An optical fibre network has a very long operational life expectancy. It helps protect your investment, while accommodating future demands.

The solution offers high bandwidth reserves, and if required, significant redundancy can be built in right up to the outlet. As a result, you can develop the entire network step-by-step in accordance with current or expected requirements.

LANactive offers cost savings and guaranteed performance, thanks to the simplicity of the concept, which reduces complexity and enables fast and easy rollouts, maintenance and expansion. The pay-as-you-grow model ensures that expenditures align with your current requirements.

Choose fibre for latency and flexibility

WITHOUT REDUNDANCY

Physical Star structure using pre-terminated solutions: fast installation times

In sizeable FTTO installations with a large numbers of fibre terminations, pre-terminated solutions are often used to meet stringent project time requirements. Our Pre-Terms consist of a full dielectric round cable terminated with LC connectors on either end. These can be quickly installed between the central distributor and the zone distribution box. From here, workplaces are connected using pre-assembled patch cords. From here, workplaces are connected using two or four fibres.

- Pre-terminated fibre assembly (up to 24 fibres) between the building distributor and zone distribution boxes
- High flexibility for future add-ons and changes
- Pre-assembled patch cords to the workplaces (switches)
- Physical Ring structure using extractable bundle technology: maximum flexibility of the infrastructure

By using new cabling solutions such as high-density fibre cables with extractable bundle technology, the required effort for the cable installation decreases considerably whilst redundancy is provided. A high-density fibre cable (up to 144 fibres) can be drawn in a loop through selected parts of the building. At any location along the cable, demarcation boxes points can be added at the start of the project or later on. The cable is terminated with pigtails and adaptors inside the box. Patch cords make the connection towards the switch. A high-density fibre optic cable is installed from the central distributor to a junction box.

- Up to 576 active user ports with only one cable
- High flexibility of the infrastructure
- Easy scalability
- Minimum cable volume

WITH REDUNDANCY

FTTO makes it easy to set up ring topologies wherever there is a need for redundancy at the user level. Intelligent managed switches automatically reroute data traffic to a 'healthy' fibre path, should a link fail. This guarantees the highest network availability to connected end users. In fact, up to 1,152 active user ports with full redundancy could be serviced with a single cable. Furthermore, the uplink time is shorter.

The following topologies use two building distributors and feature a star connection with Mini-Rings of up to four switch systems.

- Pre-Terminated - Physical Star Structure
- Redundancy = high availability of the network
- Pre-terminated fibre assembly (up to 24 fibres) between the building distributor and zone distribution boxes
- Short installation time
- High flexibility for future add-ons and changes
- Pre-assembled patch cords to the workplaces (switches)

Fibre Extraction - Physical Ring Structure
- Redundancy (for building distributors and work places)
- Up to 1,152 active user ports with full redundancy can be realised with only one cable
- Maximum flexibility
- Minimum cable volume
- Maximum network availability by using ring topologies and full redundancy (RSTP/MSTP)
- Highly cost effective solution
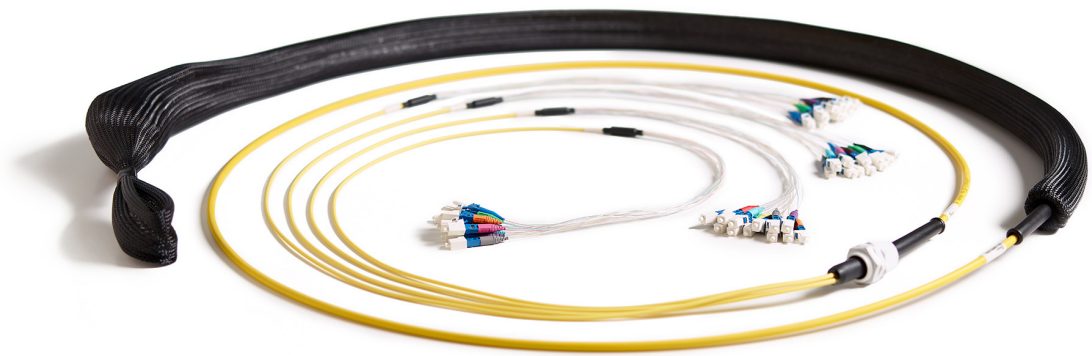
LANactive V5 switches: boosted to the next level

The LANactive V5 switch is designed to meet the changing requirements of your hospital environment, boosting power, security, reliability and wireless connectivity.

Quick and reliable traffic of increasing numbers of data packets

The extended switching buffer of 512kByte offers quick and reliable traffic of increasing numbers of data packets.

More options in terms of redundancy and network performance

The 3 uplink and 4 user ports offer flexibility to connect the FTTO switches to the central equipment e.g. redundant via 2 fibre optic cables or aggregating the 2 SFP uplinks to double the bandwidth to 2Gbps. An RJ45 port additionally supports Power over Ethernet according to the IEEE 802.3at standard and can be used to power for example a Wireless LAN Access Point. Also the RJ45 uplink enables an integration of the FTTO switch in an already-existing copper infrastructure to duplicate copper ports.

Accelerated switching and management combined in one chip

New switching technology combines switching and management in one processor, maximising the interfaces between switching and management and minimising incompatibility and implementation errors, resulting in a secure and available application. The processing of the management functions is significantly accelerated and it opens up new possibilities for the processing of data packets in the direct way, without additional interfaces. This makes the switch manager more powerful.

Full PoE support on all 4 user ports

Supporting PoE+ with 30 watts per port and 150 watts per switch, the LANactive V5 switches are prepared for future PoE applications. The result: a secure and available PoE supply that meets the requirements of the standards on all ports, without compromises.

Redundant storage of firmware and configurations and large reserve for future applications

Aginode has expanded the memory in the switches, from 48MByte to 400MByte. This extension allows redundant storage of firmware and configuration and offers a large reserve for the implementation of new software functions. The redundant storage of firmware and configuration offers benefits for updates and upgrades, and prevents the corruption of the files and ensures the operation. The usual crash or defect of the switches is excluded.

Proven design and fully backward compatible

Aginode has only minimally changed the design of the switches. The proven features such as rotatable head, position of interfaces and the dimensions remain the same. Customers can use the new generation of switches in the same way.
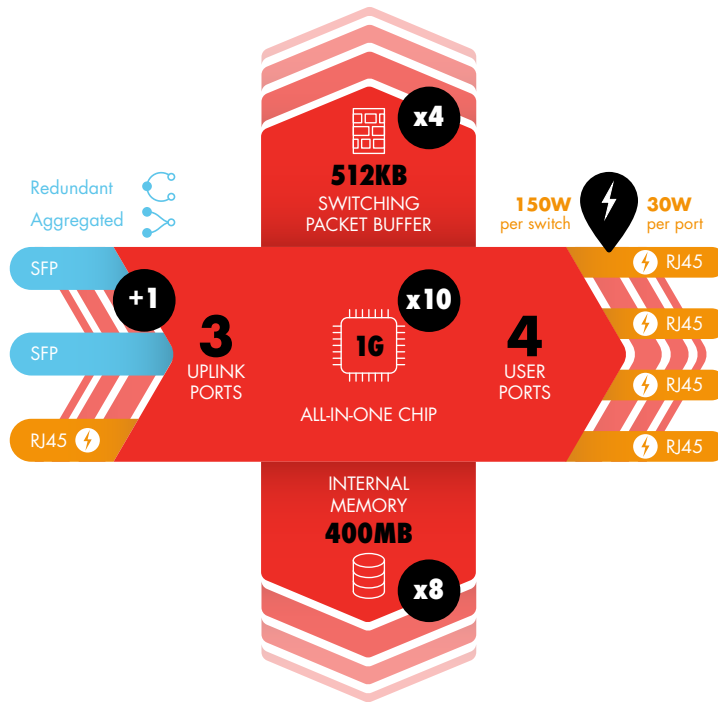
The installation accessories remain the same. Customers can install the new switches in the same environment without having to change it. Your staff doesn't have to be retrained, and the planning can be done under the same conditions. The appearance of the infrastructure remains the same and does not lead to differences.

Compatibility with other vendors

LANactive meets current and foreseeable network requirements in terms of flexibility, cost efficiency and network interoperability, and is compatible with solutions and applications from other vendors. LANactive switches and protocols are interoperable with offerings from other switch manufacturers including products with an Ethernet Interface.

Quick and reliable traffic of increasing
numbers of data packets

More options
in terms of
redundancy
and network
performance

Redundant
Aggregated

SFP

SFP

RJ45

+1

3
UPLINK
PORTS

x4

512KB
SWITCHING
PACKET BUFFER

x10

1G

ALL-IN-ONE CHIP

INTERNAL
MEMORY
400MB

x8

150W
per switch

30W
per port

RJ45

RJ45

RJ45

RJ45

4
USER
PORTS

Full PoE
support on all
4 user ports

Redundant storage of firmware
and configurations and large
reserve for future applications

Proven design and fully backward compatible

Medical switch for life critical applications

Standards such as IEC 80001 and IEC /EN 60601-1 require professional risk management in the hospital with a special focus on implementation and management of IT networks with integrated medical devices and systems.

The LANactive Medical switch corresponds to the full extent of the standard IEC / EN 60601-1 and enables secure connection of digital medical devices. With integrated galvanic isolators on all ports, the switch prevents the transmission of unwanted voltages and currents between parts of a medical electrical system. They are connected directly to the network interface, where power sources and dangerous leakage currents may occur.

The switch is particularly easy to disinfect, so it can be used without restriction in operating rooms and intensive care units. The LANactive Medical switch offers proven interoperability with the systems of leading medical hardware manufacturers and manufacturers of network components.

For life critical applications in medical environments, the LANactive Medical switch guarantees maximum security and safety to both patients and equipment, while staying within stringent budgets for procurement, management, service and maintenance.

Technical Specification

- 4 integrated passive isolators for the user ports
- Patient protection of 2 MOPP with overvoltage protection of up to 4 kV
- Excellent electromagnetic compatibility (for use in laboratories, X-ray stations, in operating theatres)
- High power performance: guaranteed 1 Gigabit per second per user port
- Advanced IT security features (SNMPv3, IEEE 802.1x, RADIUS, SSH, HTTPS, etc.) and AES encryption (128 bit)
- MTBF over 400 years

System warranty and solution guarantee
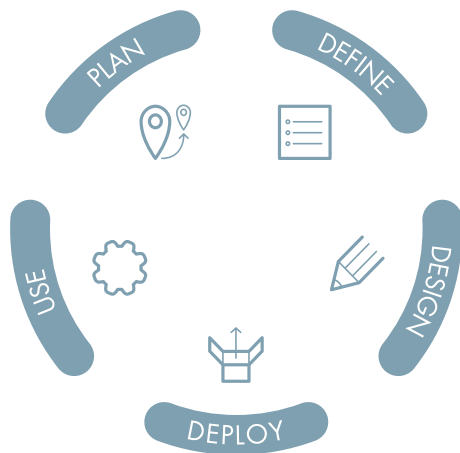
Engage is Aginode' commitment to assisting customers in every step of building an agile IT infrastructure.

PLAN

Keeping you up-to-date on the latest innovations, helping you plan ahead for future changes.

- Technology updates & insights
- Newsletters
- Peer-to-peer network
- Strategy support / specialist knowledge & outlook
- International roll-out

DEFINE

Sharing our expertise in defining state-of-the-art specifications and solutions.

- Solution specifications
- Cabling categories and grades, standards and systems
- Bill of materials
- Requirements review, product catalogue and stock listing
- Customer catalogue

DESIGN

Supporting you in designing robust, flexible and scalable systems.

- Infrastructure design support
- Floor, room, cabinet and patching diagrams
- Proof of concepts
- Starters' kits and simulated installation mock-ups in Lab
- Product customisation and development
- End-user training

DEPLOY

Blueprinting your infrastructure for cost-effective and accurate installation, assisting you on-site and ensuring warranties.

- Pre-configurations
- Pre-terminated assembly, tailor-made labelling and detailed deployment guidelines
- Logistics
- Contractor distribution channel management
- Single point of contact
- Toolkit training, surveys, partner training and support
- On-site audits
- Parts & applications warranty and labour warranty
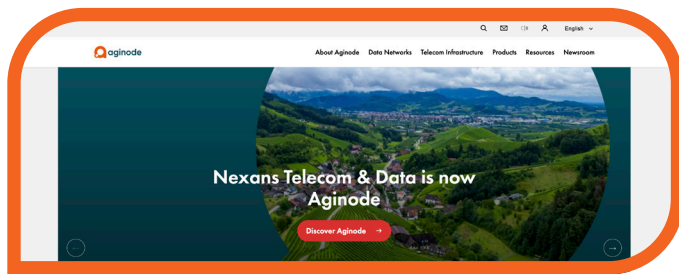
USE

Offering training, monitoring and fast repair, replacement and third-level support.

- System monitoring
- MACs
- Repair services
- Hardware replacement services
- Third-level support service incl.
- Software update services
- Local support service
- Support portal

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