LANactive

FIBRE TO THE OFFICE

FLEXIBLE AND SCALABLE
LAN INFRASTRUCTURES

Nexans

IP CONVERGENCE

How can we deliver more data and power to devices over longer distances?

> ***Our departments are wide apart, but where do I house even more active equipment?***

SPACE

Struggling with limited space for technical rooms or large cable bundles?

> ***Our racks and cable pathways are filled to capacity – how to add more cables and active equipment in the same space without causing problems?***

MAINTENANCE

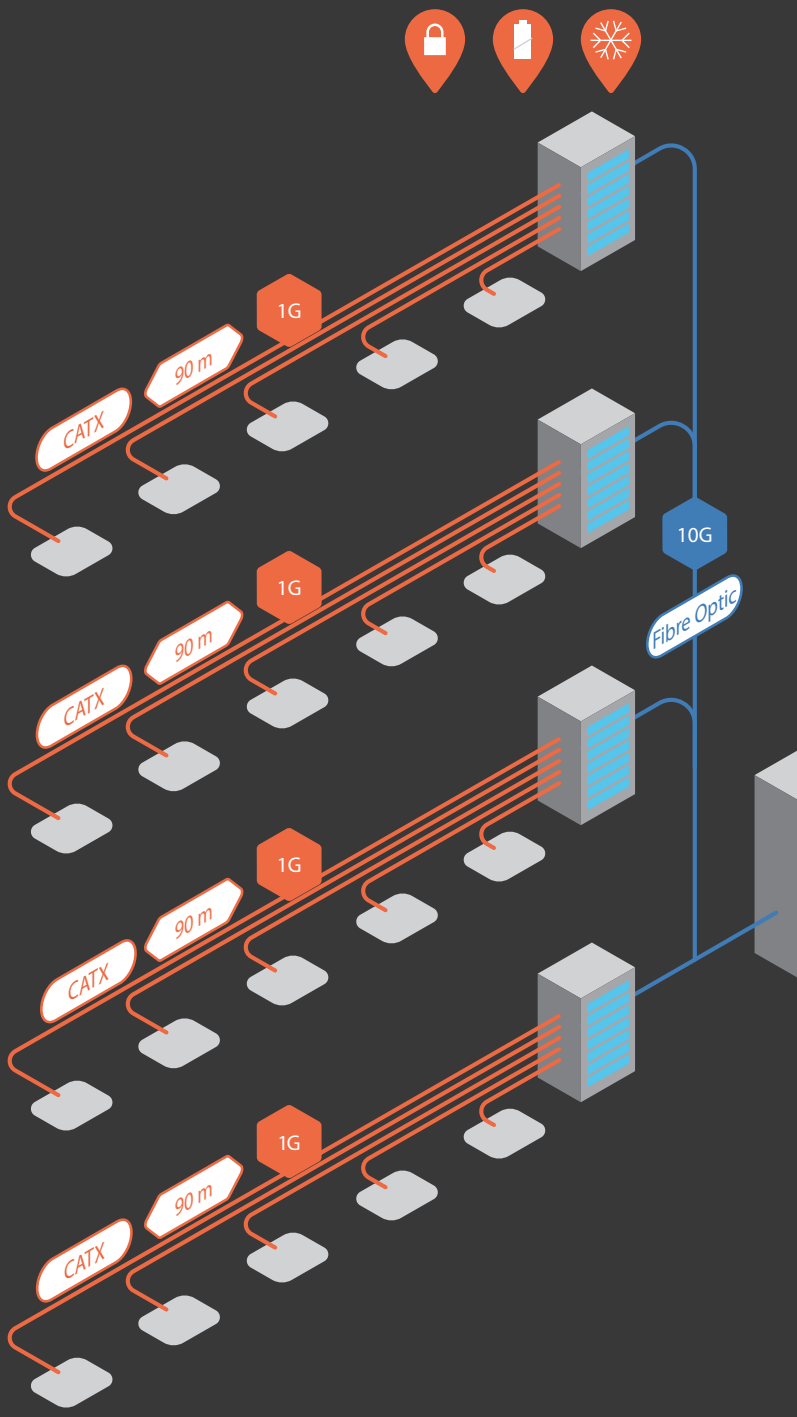
Manage more ports with less staff?

> ***The more user ports we add, the greater the potential for chaos seems to become...***

ENERGY

Reduce energy consumption as the number of devices increases?

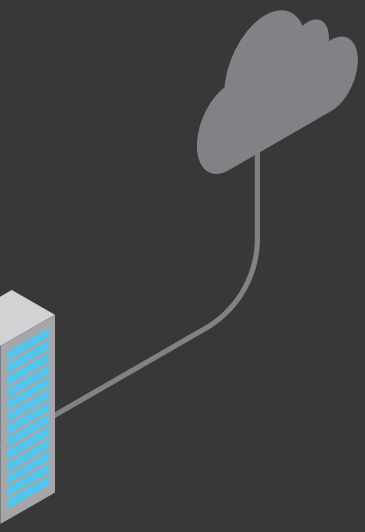
> ***How to expand our IT network to accommodate more devices and applications, whilst also sticking to our sustainability goals?***



Challenges with traditional LAN

From complexity to flexibility

The number of applications running on networks keeps increasing each year. Server virtualisation, cloud computing, IP telephony, IPTV, security services, video conferencing and more require higher bandwidth, signal continuity and network scalability. IP convergence is also boosting the need for lasting infrastructures. However, when trying to keep up with today's network evolution and projected future developments, IT managers face several challenges.



TOTAL COST OF OWNERSHIP

How to optimise CAPEX and OPEX?

Increasing data traffic is bringing new requirements for LANs... How do we accommodate growing demands whilst bringing network traffic protection to a next level?

FLEXIBILITY

How to add user ports, increase bandwidth and power when needed?

How do we combine the best, most enduring performance with the highest degree of physical system scalability and flexibility?

REDUCED SPACE

Cabling volume decreases significantly and there's less active equipment. No additional technical rooms are required, which means more useable area, additional savings and less environmental impact.

FEWER COMPONENTS

Fibre is laid vertically from a central building distributor to the office floor. From there, the cable runs horizontally to an active switch installed at the workplace or service consolidation point, close to Wireless LAN Access Points, cameras or other devices. FTTO does away with 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.

BETTER POWER DELIVERY

Thanks to implemented Power over Ethernet (PoE/PoE+) functionalities, VoIP phones, Wireless LAN Access Points 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 wattage.

ENHANCED SECURITY

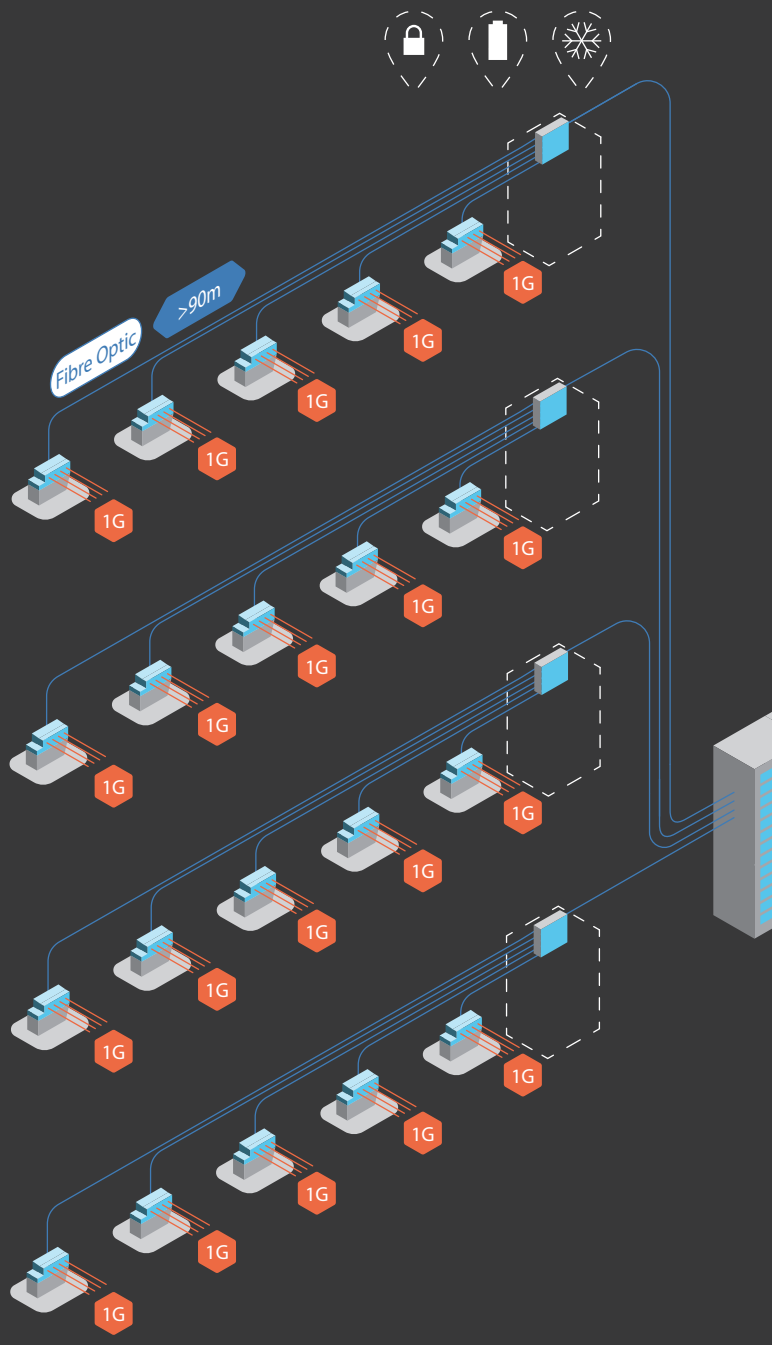
Nexans switches support all relevant security and encryption mechanisms such as IEEE 802.1x, SNMPv3, HTTPs, SSH and SCP. Hardened firmware of switches provides high-level protection against cyber attacks.

HIGHER AVAILABILITY

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 localisation of errors on fibre and copper cable links.

EASIER EXPANSION

FTTO grows with the user's needs and may 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.



SIMPLIFIED

Fibre To The Office

Simplify your network

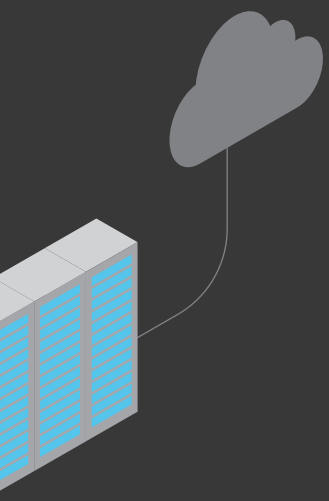
Nexans LANactive is an alternative LAN technology for use in office environments. Passive fibre cabling and active switches are combined to provide Gigabit Ethernet services from the central core switch to an FTTO switch and from there to end user devices.

Although the entire network operates at 1 Gbps, 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.

LANactive switches ensure intelligent conversion from fibre to copper and vice versa. Each switch, installed at the workplace in cable ducts or floor boxes, is equipped with four copper RJ45 user ports to feed end user devices with data and power. Fibre speed, 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.

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

- Easy to install, adjust and repair
- Minimal cable volume and equipment footprint
- Up to 60% faster installation, 70% lower energy consumption, 30% lower TCO
- Highly scalable and flexible
- Increased protection of investments



Zone Distribution Box (ZD Box)

No Floor Distributor needed

LANactive
Switch to the future

Intelligent and robust switches

EASY TO INSTALL

Compact, discreet switches are installed in cable ducts or floor boxes. Despite their small form factor, the switches offer up to four copper RJ45 user ports for delivering data and power to end user devices.

INTELLIGENT CONFIGURATION

Optional memory cards with MAC addresses always store the latest full switch configuration automatically. If a switch needs to be replaced, all you need to do is remove the memory card and insert it into the new switch. No special knowledge or training is required.

ENHANCED ENERGY EFFICIENCY

LANactive access switches are located close to the end user. These replace switches that would normally be located in a floor distribution room, which would require HVAC systems, lighting and so on. The FTTO switch itself consumes a minimum of power for data transmission. Switches also support Energy Efficient Ethernet (IEEE 802.3az), so that energy is only consumed when data is transferred. Nexans EcoMode optimises data transfer modes, based on current user needs and preferences, for even lower power draw. Data transfer rates are manually or automatically reduced from 1,000 Mbps to 100 Mbps according to a preset time schedule.

DATA PLUS POWER

The switch draws current from an external power supply, which can power all connected devices. As this is delivered over a relatively short distance – the last few metres of the network – there is less power loss and less energy is required.

Fibre To The Office: breaking the 90-metre limit

SECURE
Nexans switches provide the ideal basis for secure Local Area Networks. Intelligent Management features increase the security of the network and minimise service costs.

PROVEN DURABILITY
LANactive solutions are based on selected industrial components, which are robust, durable and high-performing. Nexans carries out ongoing quality controls following the latest standards (ISO 9001). The result: an MTBF value (Mean Time Before Failure) of over 400 years.

LESS SPACE
LANactive doesn't require the bulky horizontal copper cable bundles generally used in traditional installations. This improves accessibility whilst reducing cabling volume by up to three-quarters. A considerable amount of room is saved in racks and cable pathways, adding up to considerable space savings on every floor. As fibre cabling requires no electrical grounding or shielding and is slimmer than copper diodes, it has a smaller overall cable diameter.

LONGER DISTANCES
Fibre breaks through copper's 90-metre distance limit. Large distances, spanning hundreds of metres, between buildings, campuses and industrial sites can be easily bridged by fibre.

SCALABLE
This 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.

FACTORY PRE-TERMINATED ASSEMBLIES
Nexans Pre-Term solutions combine ease of installation and outstanding performance. Reducing risk and complexity in the field means time required on-site can be reduced by as much as 60%.

FLAME RETARDANT AND FIRE RETARDANT
Cabling used in an FTTO installation has outstanding flame retardant (IEC 60332-1) and fire retardant (IEC 60332-3) properties. Fibre cables comply with different fire performance classes and three additional criteria (smoke production, flaming droplets and acidity). These have been defined as part of the EU Construction Products Regulation (CPR) that now governs cable usage in buildings. In addition, the reduced cable volume and use of smaller bundles significantly reduces fire load, enhancing safety and making compliance with relevant regulations easier.

NO INTERFERENCE
Fibre needs no grounding or earthing. Unlike copper, fibre is immune to electromagnetic interference and may run along power lines.

Management and monitoring

Centralised, end-to-end management with LANactive Manager and Zero-Touch Configuration

In a traditional fibre or copper network, each network switch needs to be configured manually. This can be a lengthy process, prone to human error. The centralised structure makes managing and servicing networks easier and less costly. Smart device management allows flexible, simple and secure switch configuration from a central location. Any switch can be easily routed to any end user. Large, complex networks with thousands of switches can be managed quickly and easily and faults and configuration errors are rapidly tracked down.

Nexans LANactive Zero-Touch Configuration is a contemporary way of designing, building and operating networks with minimum effort. The use of LANactive GigaSwitches together with the LANactive Manager configuration and management software ensures networks are flexible and scalable.

The main configuration is carried out once and performed centrally. It's not necessary to pre-configure the LANactive GigaSwitches as these will be automatically configured during initial installation.

After connecting a Nexans LANactive GigaSwitch to a network segment, the switch will automatically link to its controller to receive provisioned firmware and configuration. In addition, the LANactive Manager offers enhanced security features for the network.

Interoperability

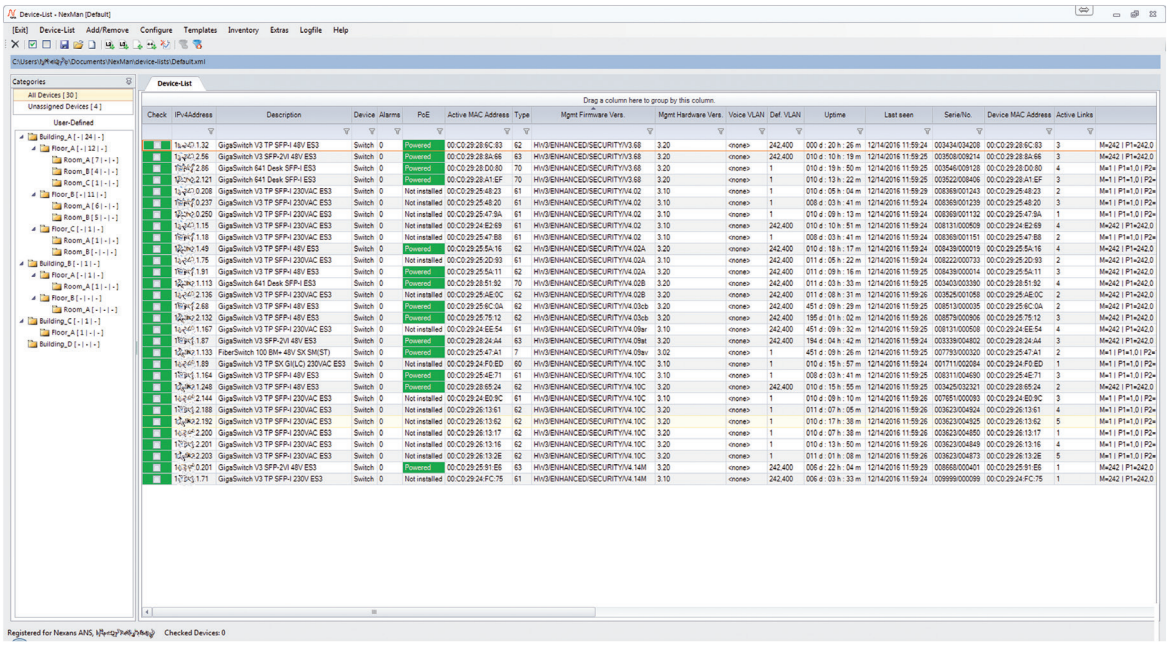
LANactive switches and protocols are interoperable with offerings from other switch manufacturers and work with third party non-Ethernet devices. LANactive also offers full interoperability with various network management systems.

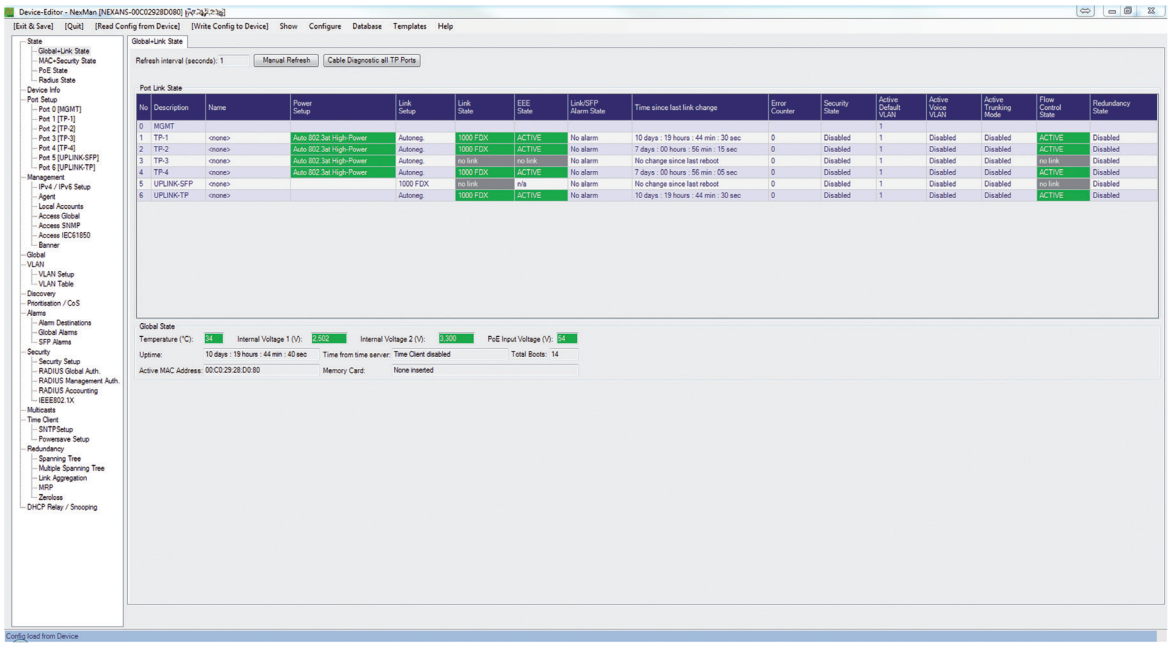
Accurate view with intelligent device lists

Categories can be defined according to a tree structure and devices can be assigned using Drag & Drop. Any number of device lists can be created, for example arranged in different groups, sorted by IP address, MAC address, device name and software version, or imported from environments such as XML, CSV or database. Counting and labelling according to category are also possible, along with various viewing options and creation of Excel or XML inventory lists. The device list is automatically updated through polling and changes are highlighted.

Updates

Device lists, firmware versions, single switch and master configurations and firmware can be stored in selected locations, and one or more devices can receive scheduled configuration and firmware updates. Comprehensive information on update and progress is visible in a log window; this data is stored for later analysis.


Device-List - NexMan [Default]
[Exit] Device-List Add/Remove Configure Templates Inventory Extras Logfile Help
Categories
All Devices [30]
Unassigned Devices [4]
User-Defined
Device-List
Drag a column here to group by this column.
Check IPv4Address Description Device Alarms PoE Active MAC Address Type Mgmt Firmware Vers. Mgmt Hardware Vers. Voice VLAN Def. VLAN Uptime Last seen Serie/No. Device MAC Address Active Links
Registered for Nexans ANS,
Checked Devices: 0

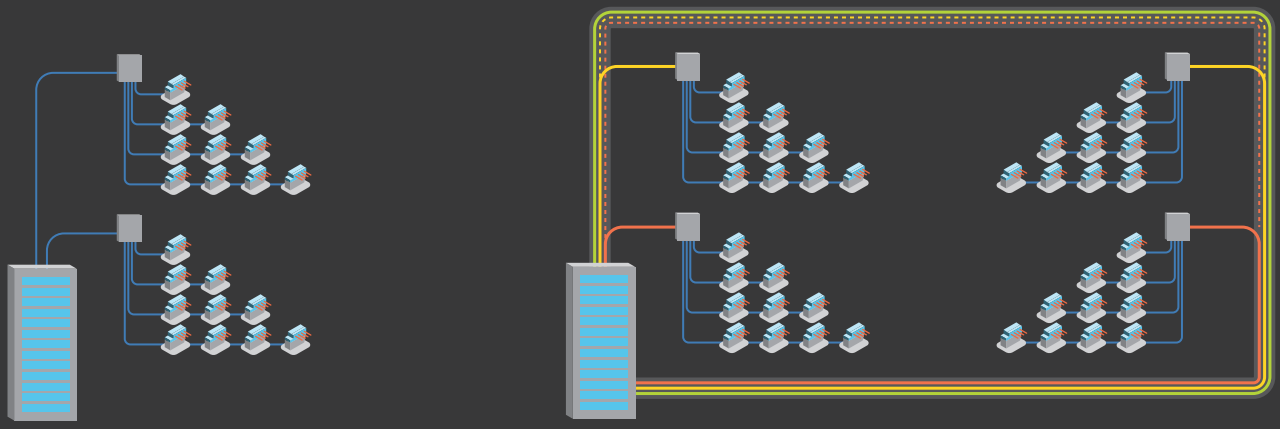

Device-Editor - NexMan [NEXANS-00C02928D080]
[Exit & Save] [Quit] [Read Config from Device] [Write Config to Device] Show Configure Database Templates Help
Global+Link State
Refresh interval (seconds): 1
Manual Refresh
Cable Diagnostic all TP Ports
Port Link State
No Description Name Power Setup Link Setup Link State EEE State Link/SFP Alarm State Time since last link change Error Counter Security State Active Default VLAN Active Voice VLAN Active Trunking Mode Flow Control State Redundancy State
Global State
Temperature (°C): 54
Internal Voltage 1 (V): 2.502
Internal Voltage 2 (V): 3.300
PoE Input Voltage (V): 54
Uptime: 10 days : 19 hours : 44 min : 40 sec
Time from time server: Time Client disabled
Total Boots: 14
Active MAC Address: 00:C0:29:28:D0:80
Memory Card: None inserted
Config load from Device

Redundancy

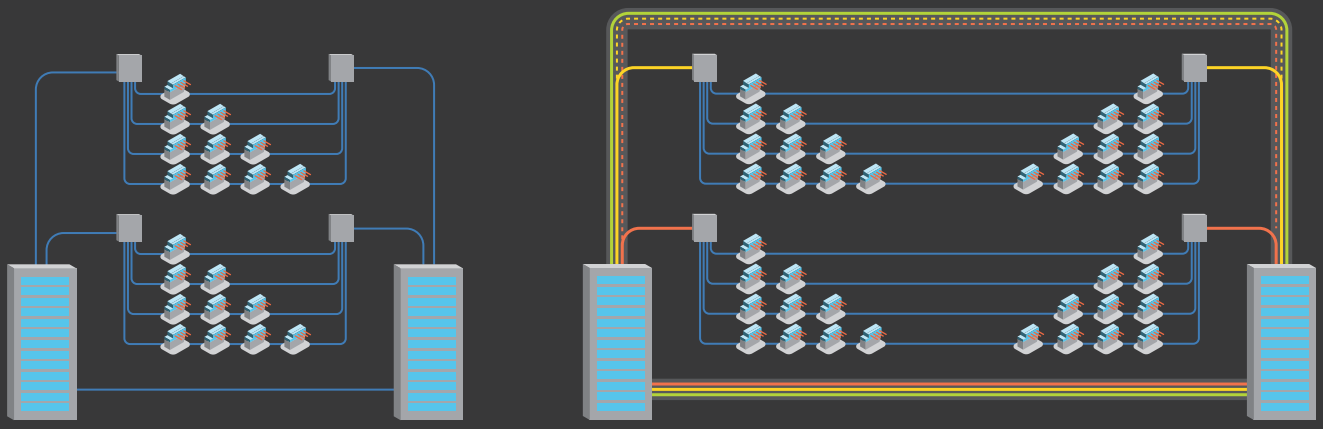
Topologies – with or without redundancy

With fewer components and a clear-cut concept (one fibre cable and several switches per office floor), FTTO allows you to design your network in a way that provides all the flexibility you need. Besides a fast, hassle-free installation, you can enjoy easy scalability as your requirements change and your network needs to expand.

WITHOUT REDUNDANCY



WITH REDUNDANCY



WITHOUT REDUNDANCY

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

In sizeable FTTO installations with a large number of fibre terminations, pre-terminated solutions are often used to meet stringent project time requirements. Nexans Pre-Terms consist of a full dielectric round cable terminated with LC connectors on either end. A high-density fibre optic cable is installed from the central distributor to a junction box. From here, workplaces are connected using two or four fibres. The connection in the zone distribution box is spliced and links to the workplaces use pre-assembled patch cords.

- 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, future zone distribution points can be added. This makes it possible to connect new outlets using pre-assembled fibre optic cables.

- 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 FTTO switches automatically switch 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 small rings of up to four FTTO switches.

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 (FTTO switches)

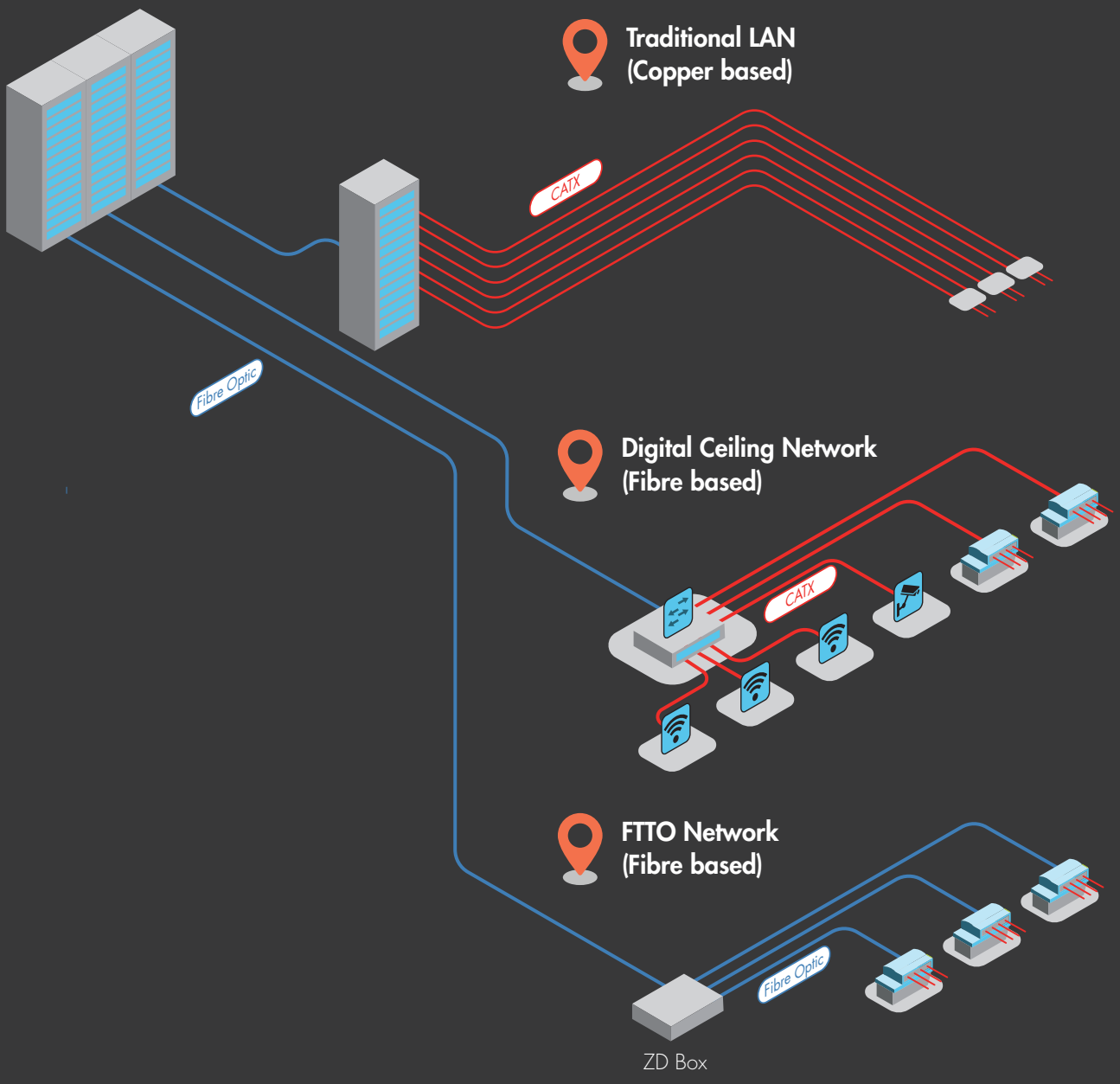
Fibre Extraction - Physical Ring Structure

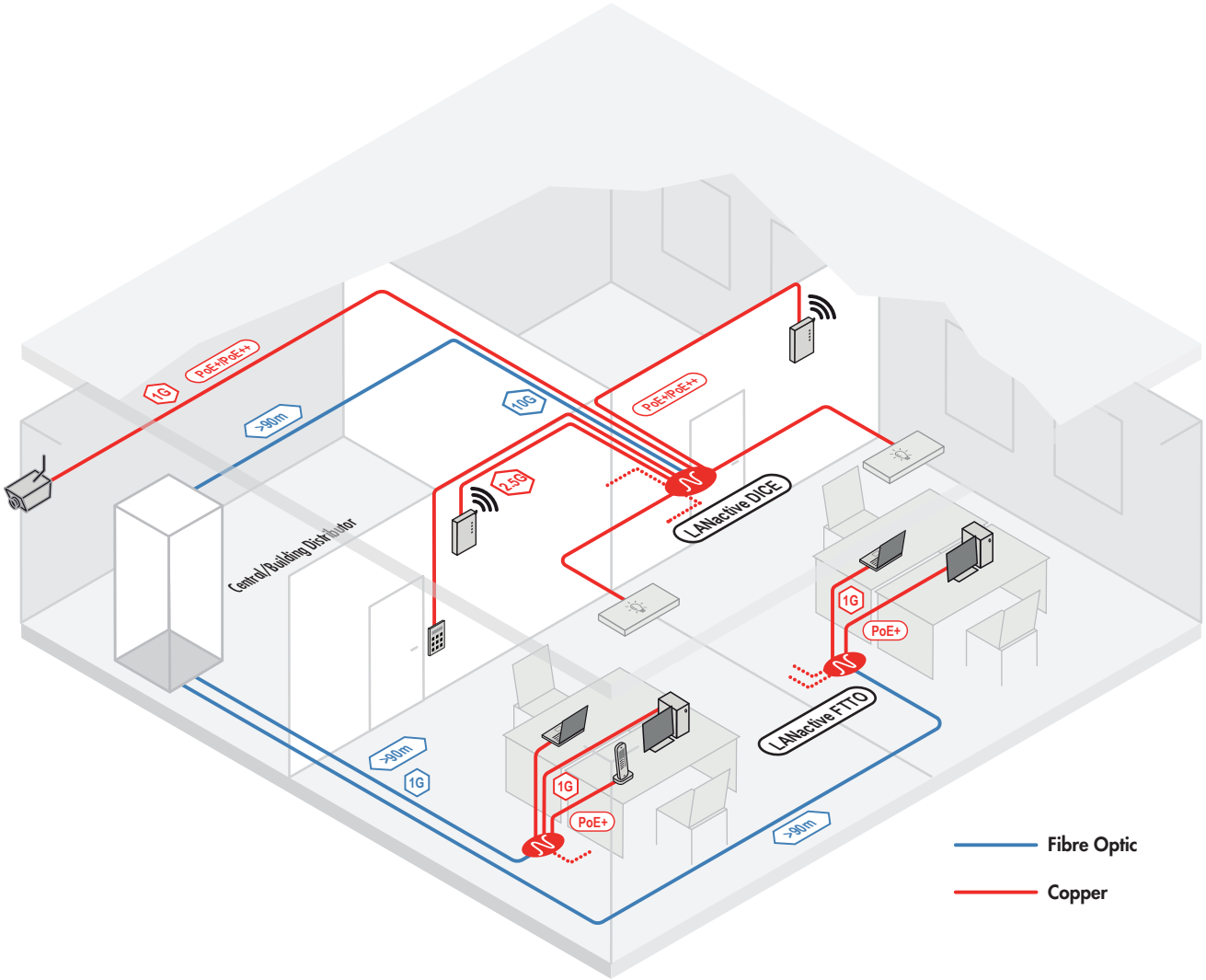
- Redundancy (for building distributors and work places)
- Up to 1,152 active user ports with full redundancy can be realised with only one cable
- Maximum flexibility
- Minimum cable volume
- Maximum network availability by using ring topologies and full redundancy
- Highly cost effective solution

Network flexibility

Fibre in the "Digital Ceiling"

A growing number of IoT devices are demanding ever more powerful networks. Even in offices, schools, universities or hospitals, the Wireless LAN topic is gaining constantly in significance. New Wireless LAN standards are offering bandwidths of over 1 Gbps. This demands a powerful infrastructure to provide the data. The established Gigabit Ethernet standard is reaching its limits for this application. Today, current Wireless LAN access points already have a Multi-Gigabit interface with 2.5 Gbps or 5 Gbps bandwidth.





In addition to the Wireless LAN application, building systems (Smart Building) are also being increasingly integrated into the IP network. In this case, it is not bandwidth that is typically to the fore, but instead the provision of data and power. Applications are: Connected Lighting, smart sensors or heating and air conditioning systems.

Nexans Fibre in the "Digital Ceiling" concept offers the ideal basis for this. In conjunction with the established LANactive FTTO concept, a maximum performance and flexibility of the IT infrastructure is guaranteed.

The Nexans XGigaSwitch is equipped with two 10 Gbps SFP+ uplinks and four 2.5 Gbps for connecting Wireless LAN access points. In addition, four 1 Gbps interfaces for connecting further IP equipment such as monitoring cameras, intelligent lighting or building systems (Smart Building) are available.

Features

- 10 Gbps Uplinks (SFP+)
- Multi-Gigabit RJ45 Ports
- Power over Ethernet (PoE++) with 90W/port
- Maximum Redundancy & Security
- Fanless Design
- Optimised for ceiling and wall installations

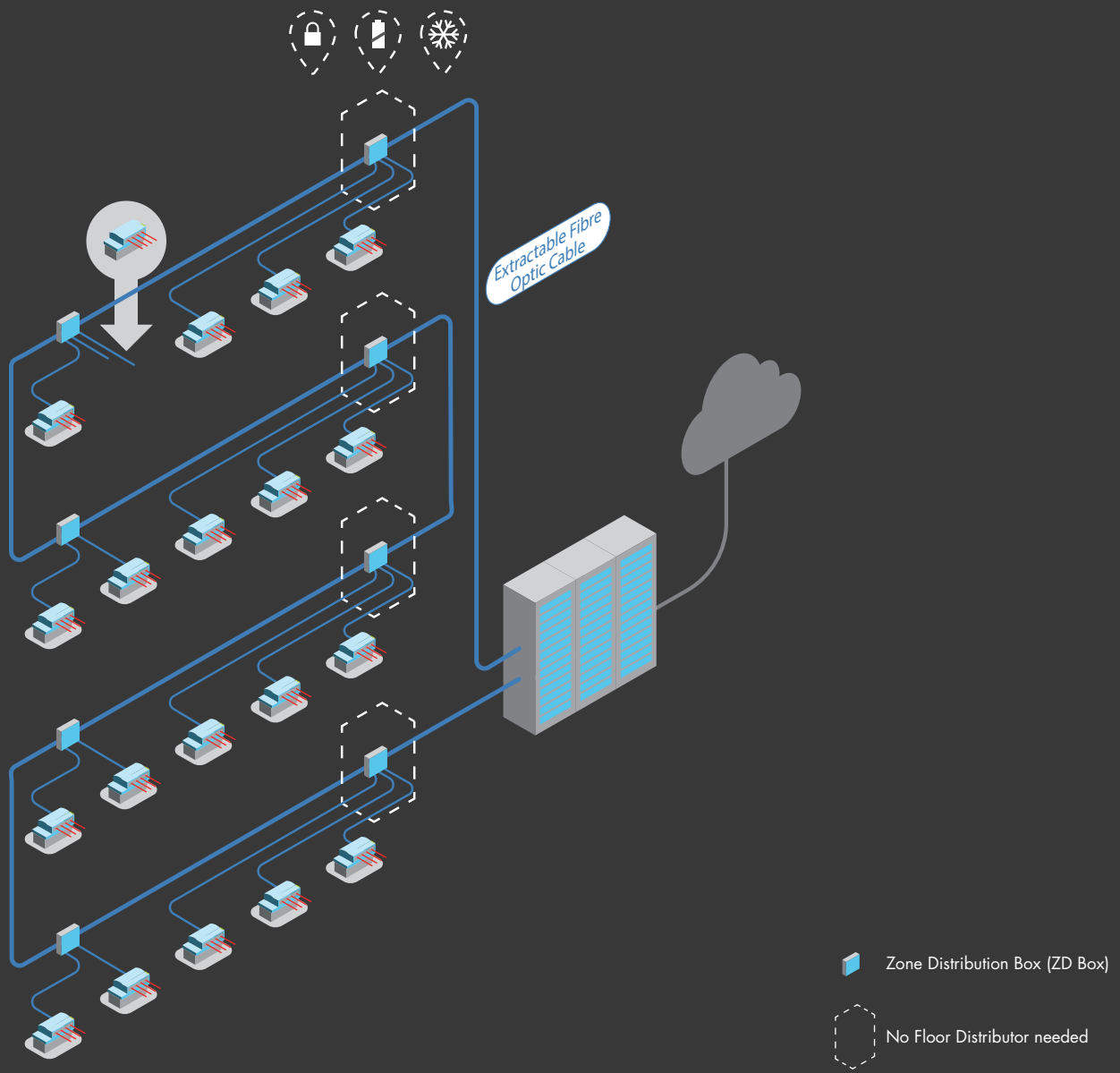
reddot winner 2021

Expand

Add ports, bandwidth and power as you need

Fibre offers high bandwidth reserves, ready for more ports requiring increased bandwidth and power. Upcoming Wireless LAN standards will require a move to higher speeds, combined with higher power levels. With traditional cabling, larger cable bundles lead to a marked increase in heat, which affects performance and lifetime. With FTTO, however, this is not a problem.

Adding ports is easy. Availability of a single fibre bundle with up to 144 connections ensures you will be prepared for future growth. Short link lengths of three to five metres between switch and end devices, and the absence of cable bundles, make all the difference. Depending on topology, you can simply add more zone distribution boxes or extract cabling to expand the network. There's only one type of switch to manage, and no other active equipment. Just install and connect the switch and auto-configure or replace the memory card. This means Moves, Adds and Changes can be carried out with minimal training. Furthermore, downtime is avoided, as there is no need to shut down the network whilst adding capacity.



Sustainable growth

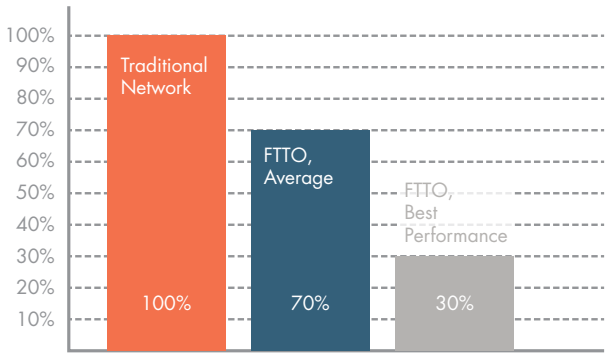
FTTO helps reduce energy consumption and therefore, in parallel, decrease CO2 emissions during the use phase, allowing for a lower carbon footprint.

In a traditional network, all active network equipment must be powered and cooled in distribution rooms housing active floor switches. With FTTO, there's no need for this. The benefits of RJ45 copper cords and fibre cabling are combined for maximum performance with reduced energy consumption. Data is transported over longer distances via fibre optic with lower signal losses. This significantly reduces energy consumption.

FTTO switches consume very little power and support PoE/PoE+, which allows electrical power to be sent along with data over Ethernet cabling. This solution also enables Energy Efficient Ethernet (EEE), according to the IEEE 802.3az standard. EEE is based on the idea that a communication link should only consume power when data is being sent or received. Tests show power savings of 45–80% may be expected.[1]

Nexans EcoMode optimises data transfer rates for specific user needs and preferences. These rates can be manually or automatically reduced (1,000 Mbps -100 Mbps), resulting in extra energy savings. FTTO networks are typically 30% more energy efficient than traditional networks and can, in specific cases, reduce power consumption of IT infrastructures by up to 70%. The more users on the network, and the more applications running, the greater the benefits brought by FTTO.

Power consumption,
traditional network designs vs. FTTO



Simple savings

Choosing LANactive can easily help realise considerable savings in different areas.
Savings are the result of the excellent performance and the simplicity of the concept, which reduces complexity for faster and easier rollout, maintenance and expansion. In addition, the scalability of the system allows you to expand as you grow, making sure expenditure is always perfectly in line with current requirements.

OPEX SAVINGS: 35%

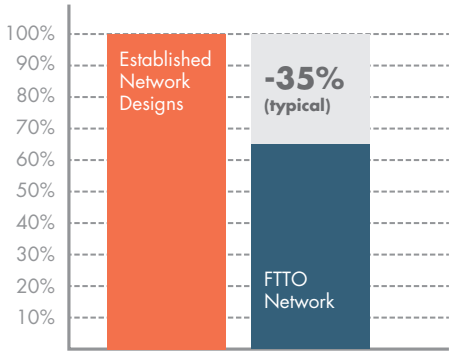
LANactive is extremely flexible and can be expanded with a 'Pay As You Grow' approach. The centralised structure with no floor distributors means less costly and easier servicing of the network. There are no extra service costs for air conditioning, fire protection and UPS. Lower requirements for service, repair and network management lead to additional savings. Downtime is further reduced by standard network security features.

Switches feature PoE/PoE+ and Nexans Eco Mode dynamically accommodates the user´s current needs. Use of 1 Gbps instead of 10 Gbps helps cut energy costs even further. Consumption per user port is less than 2 Watt, or less than 5 Watts per switch (with Energy Efficient Ethernet activated).

It prevents network problems and downtime considerably, depending on a project's topology. Network administration, service and maintenance of the network are greatly simplified. A network with thousands of switches can be operated by a single administrator.

By taking technical rooms out of the equation, power consumption and service requirements are reduced.

OPEX* Operational expenditure



*typical > 200 Ports

*includes: Services for Infrastructure, Network Management Costs, Care Packs, Repair Services

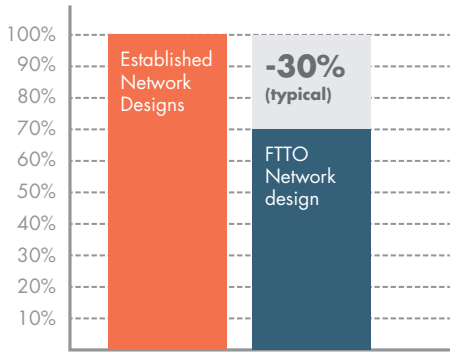
CAPEX SAVINGS: 30%

Compared to a more traditional solution, a LANactive installation saves on investments in floor distributors and high-speed backbone. These are replaced by an easily and quickly installed high-grade fibre cabling and FTTO access switches.

Less active and passive equipment means lower acquisition costs.Long-lasting effects and amortisation make the cost of acquisition and installation particularly attractive.

Installation is 60% faster than traditional network designs, thanks to the fact that FTTO requires fewer passive components. Pre-Term solutions and high-density optical fibre cables with extractable bundle technology decrease the effort required for installation whilst providing redundancy.

CAPEX* Capital expenditure



*typical > 200 Ports

*includes: active and passive components, installation services and building costs

Moves, Adds and Changes are easily implemented without interruption.

Furthermore, smart and easy monitoring of all cabling and connected devices ensures informed decision-making, whilst also saving on time and cost through faster fault tracking and improved maintenance.

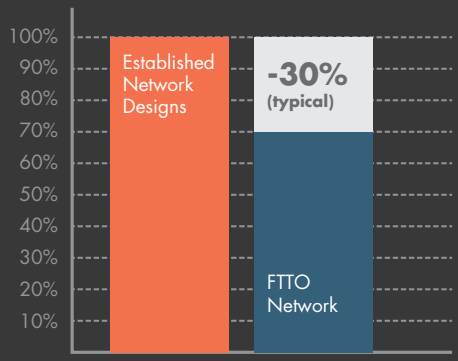
Conclusion

TCO SAVINGS: 30%

It is possible to reduce network issues and downtime considerably, depending on a project's topology. Network administration, service and maintenance of the network are greatly simplified. A network with thousands of switches can be operated by a single administrator.

By taking technical rooms out of the equation, power consumption and service requirements are reduced. What's more, reducing active equipment for data subdistribution and monitoring lowers the risk of potential failovers.

TCO* Total Cost of Ownership



Why choose LANactive?

People & devices

As the number of end users and devices grows, more bandwidth is needed to support reliable high-speed Wireless LAN access. Converged applications such as access control, surveillance cameras and video conferencing are also driving demand for bandwidth as well as power.

The number of power-hungry connected devices in public buildings will explode, driven by the Internet of Things. Digital infrastructure must be ready to accommodate this.

High-speed and secure wireless is indispensible and even becoming 'mission critical' in more and more areas. Catering for such developments requires more data and power throughout the campus.

Building conditions

Most campuses consist of multiple large buildings with different functions where cabling requirements exceed copper's 90-metre limit. Older buildings often have limited space for technical rooms or large cable bundles and require stringent fire safety protection.

As digital technologies become more important in the operating theatre, availability is paramount. Downtime is simply not an option. LANactive allows for redundancy in each treatment area.

Space-saving aspects make FTTO ideal for old university buildings. Smaller cable bundles, less hardware and absence of technical rooms free up valuable space and improve fire safety.

Flexibility

Requirements are driven by technologies such as IoT, cloud and increasing numbers of larger files. At the same time, every industry is facing a marked need to optimise IT resources.

LANactive allows a single employee to manage thousands of ports using a single end-to-end solution. The only training required is learning to work with one type of device.

Building usage is likely to change over time. The number of people and devices may increase or decrease and new applications may be introduced. LANactive's scalability enables a 'Pay As You Grow' approach.

Why Nexans?

Nexans' premium high-tech networking solutions have proven their reliability in countless applications worldwide. Nexans offers over 35 years of experience in research, development and production of FTTO switches and network design. All solution components are designed and manufactured by Nexans in Germany.

Customers include top global companies and institutions, from airports, utilities, industrial plants, hospitals and railway companies to universities, ministries and the financial sector. Nexans guarantees exceptional product quality and offer end users and partners extensive support.

Nexans' Engage program provides support to a global customer base, through all stages of even the most complex projects. Key Account Managers act as a single point of contact, providing instant access to an extensive network of regional offices, experts, advisors and partners. Nexans can provide valuable support right across the board – from planning and design optimisation to logistics and on-site technical support. A network of trained system integrators and specialised installers in various countries ensure smooth implementation.

- Market pioneer for FTTO systems with proven track record
- Technology leader and innovation driver
- 'Made in Germany' quality
- Tailor-made concepts and customisation
- Integrated concept including accessories, software features
- First class global support

OFFICES

Alsembergsesteenweg 2 b3
1501 Buizingen
Belgium

Bonnenbroicher Strasse 2-14
41238 Mönchengladbach
Germany

Immeuble Le Vinci
4 allée de l'Arche
92070 Paris La Défense Cedex
France

Office 1703, Jumeirah Bay Tower - X3
Jumeirah Lake Towers
PO Box 634339
Dubai
United Arab Emirates

www.nexans.com/LANsystems