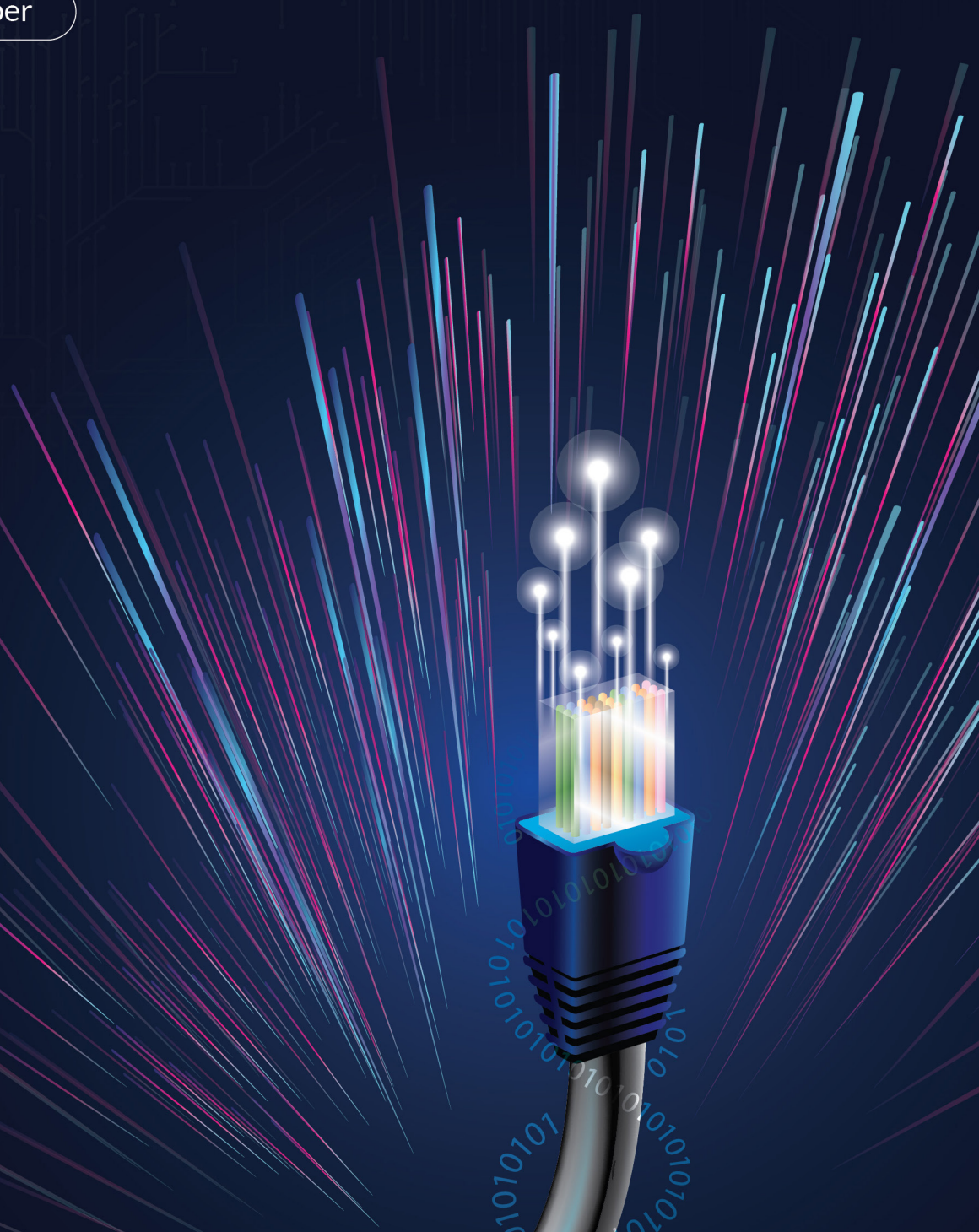


Revolutionise Your Local Connections with FALCON

White paper



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Introduction



The interconnection of devices is a fundamental concept in computer networking and technology. In its most basic yet complex state, lies how these devices are all interconnected.

Whether it is a camera using a wireless system or a cable connecting several phones, devices are all linked to a specific point. A local area network (LAN) is what joins a collection of devices together in one physical location such as a university campus, a shopping mall or an office. LANs are designed to enable data and resource sharing among the devices. Typically, they are owned, controlled and managed by a single organisation.

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Challenges in LAN



However, LAN comes with its own set of challenges. With various private services being networked together, there is a case of limited scalability. This means as more devices are interconnected the slower the system becomes.

Another key challenge is security threats, especially if they are not properly secured, this could allow unauthorised users to access personal data or information.

Additionally, copper wiring, particularly in the context of High Speed Internet (HSI), has limitations that make it less suitable for the growing demand for higher-speed transmissions.

Other challenges for LAN include:

- **Interference:** from other electronic devices, nearby networks, or physical obstacles can lower the quality of a wireless LAN.
- **Network Configuration and Maintenance:** Setting up and configuring a LAN can be challenging. Regular maintenance is also needed.
- **Network Compatibility:** Different devices, operating systems, and protocols can create compatibility issues in LANs.



FALCON and its characteristics

As the research and innovation arm of TM Group, TM R&D created a solution that tackles issues concerning LAN while proposing a long-term remedy called FALCON.

FALCON is an end-to-end LAN solution derived from the access network system technology for the LAN segment. Simply put, it is a modernisation and enhancement of LAN, with a Passive Optical Network (PON) as its core element. Optical fibre networking covers various locations and avoids the need for specific telecommunication rooms and spaces for LAN deployment. Using fibre LAN, each room is wired with fibre optic cables instead of the traditional copper wires.

Within the LAN segments, sits a software system that monitors all the devices within the network. Capitalising on fibre LAN infrastructure, FALCON uses a single cable that connects everything together seamlessly.

Another key feature of FALCON is the passive optical LAN which uses point-to-multipoint connectivity in which passive optical splitters are used to enable one single-mode optical fibre cable to serve multiple endpoints.

This feature also allows for a simplified connection for multiple devices or applications in a single infrastructure. Examples of these are cameras, Wifi or even Internet of Things (IoT) devices and sensors.

FALCON as a solution can be utilised in many different market segments such as hotels, offices, university campuses, hospitals, and factories.

Comparisons between fibre LAN and conventional LAN



One of the significant differences between the two can be noticed through its medium, where all fibre optics from the central location could reach the user's end equipment.

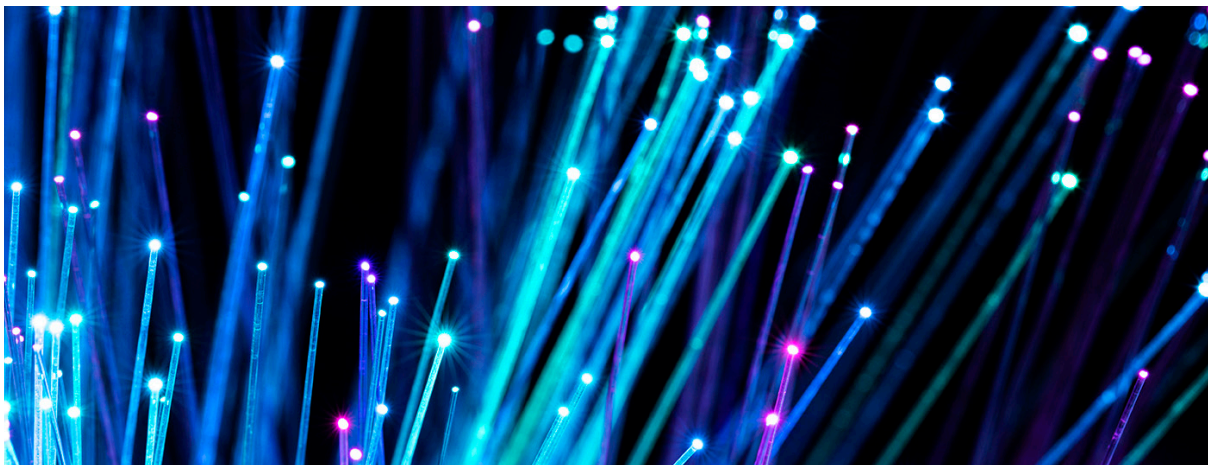
Secondly, conventional LAN uses a form of active network elements. If you were to look at buildings or the locations mentioned above, there would be an Ethernet switch between floors. Fibre LAN through FALCON on the other hand uses fibre cable and components which are passive, and also because it does not require any kind of electrical element that needs to be powered up. Instead, a strong laser signal does the job.

Third, its reachability or potential distance covered is far wider and longer than that of conventional LAN. LAN's regular distance is up to 100 metres, it is extendable but only by using an intermediate switch to relay the signal further.

FALCON covers up to 20 kilometres without any repeater, this is also the international standard of embedded technology. This shows how seamless fibre LAN is, even if the area or space is large, all you need is a single strand of fibre to be placed at whichever point a Wifi might be mounted.

On top of that, unlike a traditional LAN network, fibre LAN can serve multiple services in a single platform also known as triple play service. This means it can carry different types of services, be it data, video or voice types of service. Hence the need for one single strand rather than three different types of cables that are tailored to do only one role for each medium.

For monitoring purposes, FALCON is designed with an Integrated Dashboard Monitoring System that can monitor the network elements as well as the end applications devices.



Why do we need FALCON @ fibre LAN?

Fibre LAN is becoming increasingly popular these days for various reasons. Besides being important to integrate these devices together from an operational perspective, there are many reasons from a user point of view too.

Typically with traditional LAN, each application and network management function has its own designated screen for monitoring and management. But now pairing integration and smart solutions, FALCON can simplify that role with ease. For example, instead of monitoring numerous screens, now a person only requires one single screen to monitor. This not only improves efficiency but also reduces the possible downtime of networks. If there were any issues, having a single integrated medium can also reduce deployment and fixing costs.

Additionally, the total costs in the long term tend to be lower because less active equipment in the network, like switches, is needed. A FALCON CPE translates the laser signal to an electrical signal for the users, without any additional network components in between. Apparently, reflects on the reduction of the number of components within its network.

Furthermore, being a passive network solution, fibre LAN does not require a cooling system to lower the temperature of the network equipment like it would be needed in a typical LAN network system. The fibre LAN does not require proper ventilation or specific rooms where it can be placed and utilised. Thus, makes the solution sustainable and green.



Conclusion



To conclude, the adoption of fibre LAN technology is not just a matter of keeping up with the times; it's a critical step toward creating faster, more reliable, and future-ready network infrastructures. As data rate demands continue to grow, and as businesses and individuals increasingly rely on the Internet for work, education, entertainment, and communication, the importance of fibre LAN has become even clearer.

Fibre LAN offers the promise of high-speed, low-latency, and secure data transmission. By embracing FALCON for fibre LAN solution as its fundamental technology, we are not only enhancing our connectivity but also future-proofing our networks for the technological advances yet to come. As we stand on the cusp of the next wave of digital transformation, fibre LANs are not just important; they are the conduit to a future where the possibilities of data and communication are limitless.

Creator of Smarter Ecosystems for a better Malaysia

Established in 2000, TM R&D is the innovation arm for TM Group focusing on creating smarter ecosystems to make business and life easier for a better Malaysia. TM R&D's solutions are clustered around four (4) pillars namely Intelligent Platforms, Data Brokerage, Connectivity/Tools and IR4.0/Digital Solutions.

Growing from strength to strength since 2016, TM R&D has won multiple global awards and generated more than 2,800 Intellectual Property Rights (IPRs) and 1,400 digital assets to-date.

TM R&D's innovations are all developed in-house and cut across multiple verticals such as Utilities, Retail, Agriculture, Healthcare and Education with safety and productivity as the top priority.

As TM R&D continues to expand beyond connectivity and into smarter digital ecosystems, its role in TM has become more prominent and exciting.

We are looking for remarkable people to join us. People who are courageous enough to push boundaries, curious enough to experiment with new technologies, and who have the determination to drive new ideas forward. A new opportunity awaits you here in TM R&D.

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