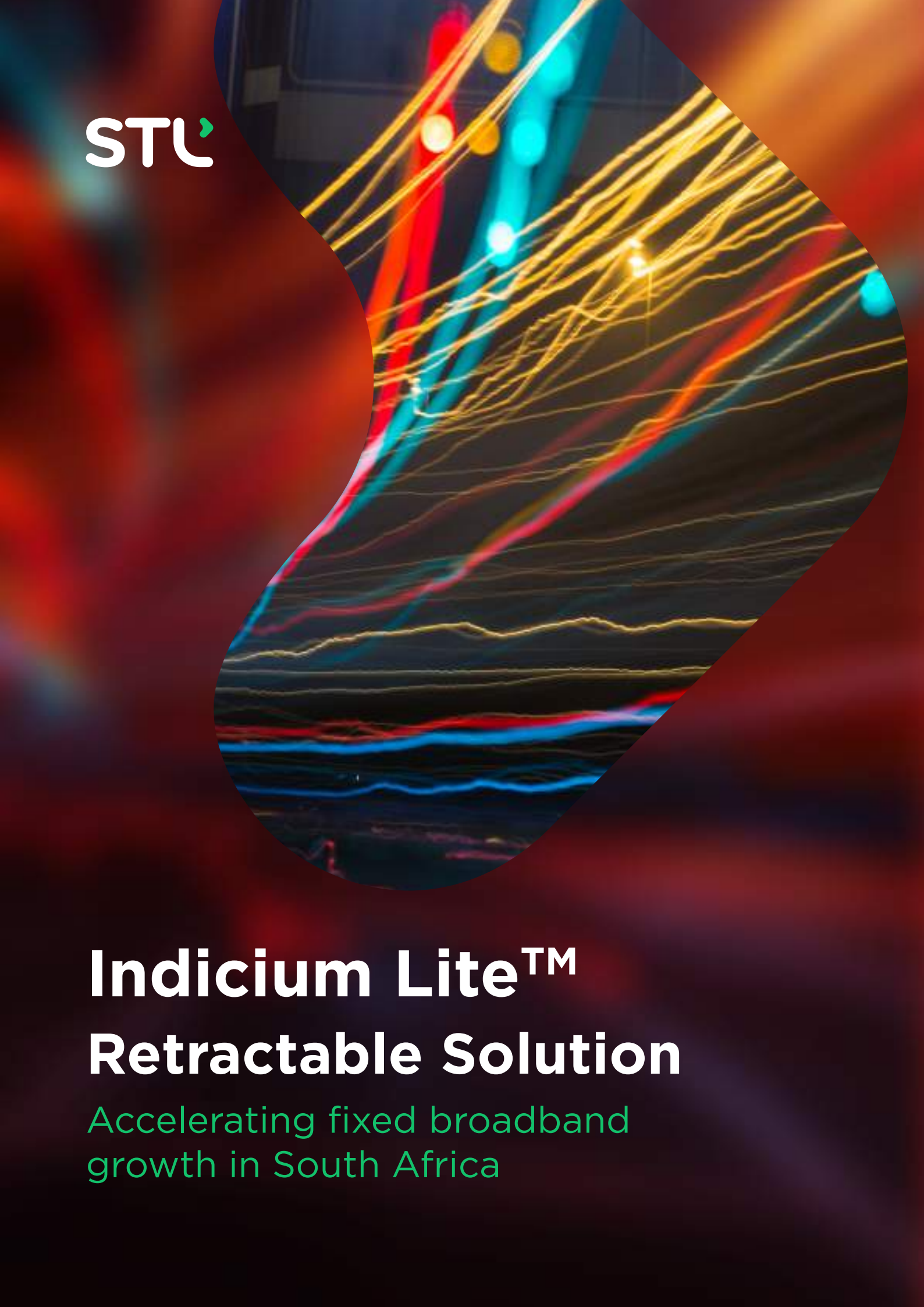




STL

Indicium Lite™

Retractable Solution

Accelerating fixed broadband
growth in South Africa

Achieve 30% faster FTTx rollout with Indicium Lite™ retractable solution

Gigabit broadband network boosts innovation in information and communication technology (ICT) globally. High speed networks make happen things that are not possible with conventional DSL networks. The approach to provide gigabit connectivity to masses may differ from country to country. Every municipality wants to optimize the cost of deploying a gigabit broadband network. As the deployment conditions vary with municipality to municipality, cost effective methods must be adopted to build future proof broadband access networks. FTTH is considered the best gigabit broadband access technology which is available currently for mass rollout.

By 2020, over half the world is expected to have access to FTTx, which will make up 80% of broadband connections. Deployment of FTTH for greater capacity per subscriber, will need customized solutions to adapt to the varied landscape of cities.

Every network engineer, while deploying fibre to the Home (FTTH) network, faces a host of problems. Access networks, however well planned, will always have customers complaining about throughput, download speeds and web connectivity. More components, different types of cables, optimal network design and new installation methods will be needed for mass and fast deployment of FTTH. The key problem in a FTTH deployment is the use of multiple cables, their inventory management and subsequent cable wastage at every layer of the network.

Challenges with traditional FTTH cabling solutions

The most common challenges faced during FTTH deployment in MDU (Multi-Dwelling Units) are:

- ◆ 2-3 types of cables required from Point of Presence (POP) to OTO (Optical Terminal Outlet)
- ◆ No fibre module pull or push feature (>10 mtrs)
- ◆ Requirement of skilled man power for field termination (i.e. fibre splicing)
- ◆ Requirement of skilled man-power to follow standard practices during FTTH roll-out
- ◆ Provision for safe and secure storage of excess cable (cable slack)
- ◆ Availability of expensive fibre splicing machine for large scale roll-outs
- ◆ High number of materials/ accessories are need to be handled in the field
- ◆ Network reliability – excess fibre bending leading to unexpected increased bend losses,
- ◆ High splice loss in dusty building shaft environments

STL Retractable Solution optimizes FTTH rollout

The STL Indicium Lite™ Retractable Solution is designed for use in fibre to the home (FTTH) applications. Whilst the cable may be installed into duct systems, the high crush cable sheath also allows for direct burial into reduced depth trenches, as shallow as 30 cm. The individual Thermoplastic tubes can be extracted from the sheath to provide fibres directly to each home without the need for additional fibre connections. Thermoplastic tubes are designed to be retracted from the sheath for lengths as great as 100 mtrs and can then be pushed into alternative micro-ducts for distances up to 30 meters. This manipulation of the fibre units reduces the number sheath cuts, limiting them to convenient access areas and allows the fibre to be presented straight to the home access point.

FTTH networks in a Point to Point (P2PO) configuration

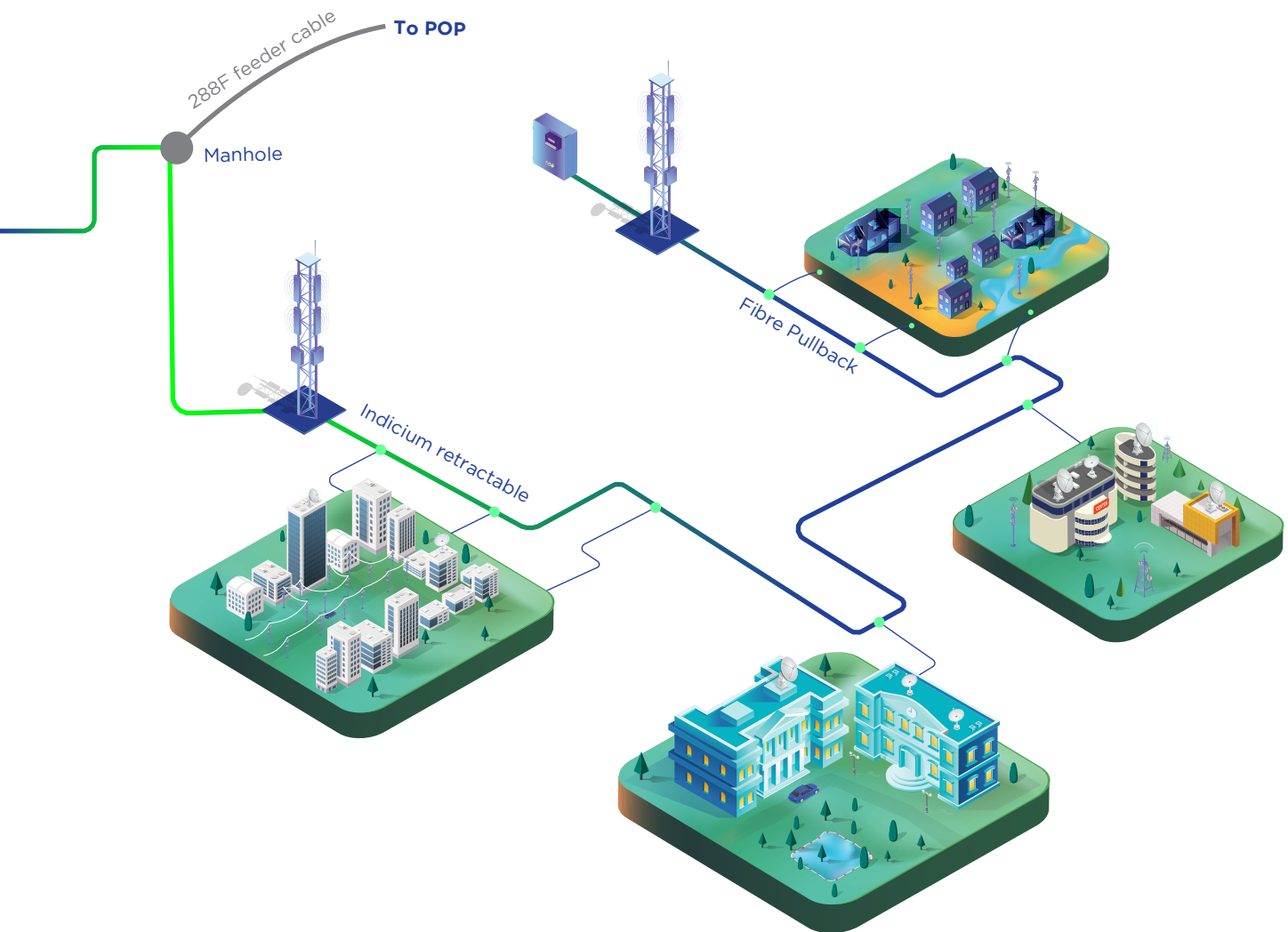


Figure 1

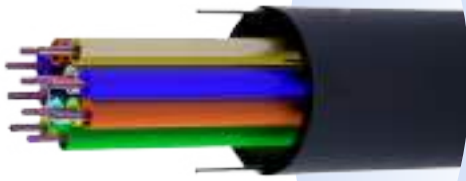
Figure 1 is an example of a backbone installation using the STL Indicium Lite™ Retractable solution. The cable is laid along the length of the FTTH network, passing dwellings suitable for connection. This 'homes passed' technique allows the installer to create a fibre-ready environment without the additional cost of providing fibre to each individual home before the occupier is ready to sign up to the service. An alternative is to lay the cable in a ring format to allow for fibre connection from either end, or alternatively for redundancy cabling to protect against single cable failure. Conventional loose tube cable is provided from the point of presence (POP) to the distribution node or first joint enclosure, where it is spliced to the FTTH pull back cables, enabling their activation.

Direct burial into trenches, as shallow as 30 cm

Indicium Lite™ Retractable

Solution Features

The STL Indicium Lite™ Retractable Cable is designed to provide installers with mechanisms to reduce fibre installation times, including a reduction to the amount of trenching, reduced levels of splicing and ease of handling. A high crush, polyethylene sheath is provided to protect individual fibre units. The sheath accommodates two diametrically opposed glass fibre reinforced plastic (FRP) strength members to reduce torsion and to aid with cable pulling. fibres are provided within thermoplastic tubes to aid fibre manipulation. The cables are provided with either 12 or 24 thermoplastic tubes, offering fibre counts of 24, 48 or 96 fibres. These are constructed with color-coded fibres placed in a thermoplastic tube/module, protected by two embedded strength members for anti-buckling properties and are covered with outer sheath which makes the cable robust and installation friendly.



Product features and benefits

-  Easy fibre mid span, retract and premises drop
-  Suitable for variable drop lengths Upto 100mtrs
-  Fibre unit pulled blown or pushed inside sub duct to consumer premise
-  Low skill and craft friendly installation
-  Zero splice and zero connectors at drop
Increased network power budget
-  Low bend sensitive G657A2 fibre

Whilst it is possible to provide a single dwelling with anything from one to four fibres, the number of fibres will determine the number of times that a thermoplastic tube will be divided into individual fibres, which introduces additional splice enclosures. This document assumes that all the fibres within thermoplastic tubes are intended for a single dwelling.

This cable provides quick connections at a low total cost of ownership, through significant savings on labor and materials. Compared to traditional P2P network solutions, it can be installed using an already existing public infrastructure such as an administration network. It's simple and straightforward concept means that the need for skilled labor is significantly reduced.

Easy fibre pulls upto 100 meters

Optimized South African FTTH Network

In a South African ISP architecture feeder /backhaul network ring is micro cables till 288F cables (they use 14/10mm 7 way and 4 way micro ducts-max depth till 1 metre and 450mm across block). After feeder micro ring a 450mm trench is made which uses retractable cable which gets terminated on Termination box which is installed outside the row house. From this outside box a pre-terminated drop cable goes inside the house.

Retractable Installation Steps Summary:

- Step 1:** Route Survey – Main focus on mid-span access chamber location and distance from boundary wall and fibre dropping planning
- Step 2:** Installation of mid-span chambers
- Step 3:** Installation of 40/33mm duct and diversion micro duct (3.5/7mm) to customer house boundary wall
- Step 4:** Installation of retractable cable by pushing installation method
- Step 5:** Installation of cable tapping box ,window cut and pull back of module inside mid-span chamber
- Step 6:** Installation of boundary wall box
- Step 7:** Fibre module pushing to boundary wall box through diversion micro duct 3.5/7 mm
- Step 8:** Splicing/termination of fibre module in boundary wall box
- Step 9:** Testing and result record

Reduced total cost of ownership by 35%



Upto 33% reduced trench



Easy to make window cut

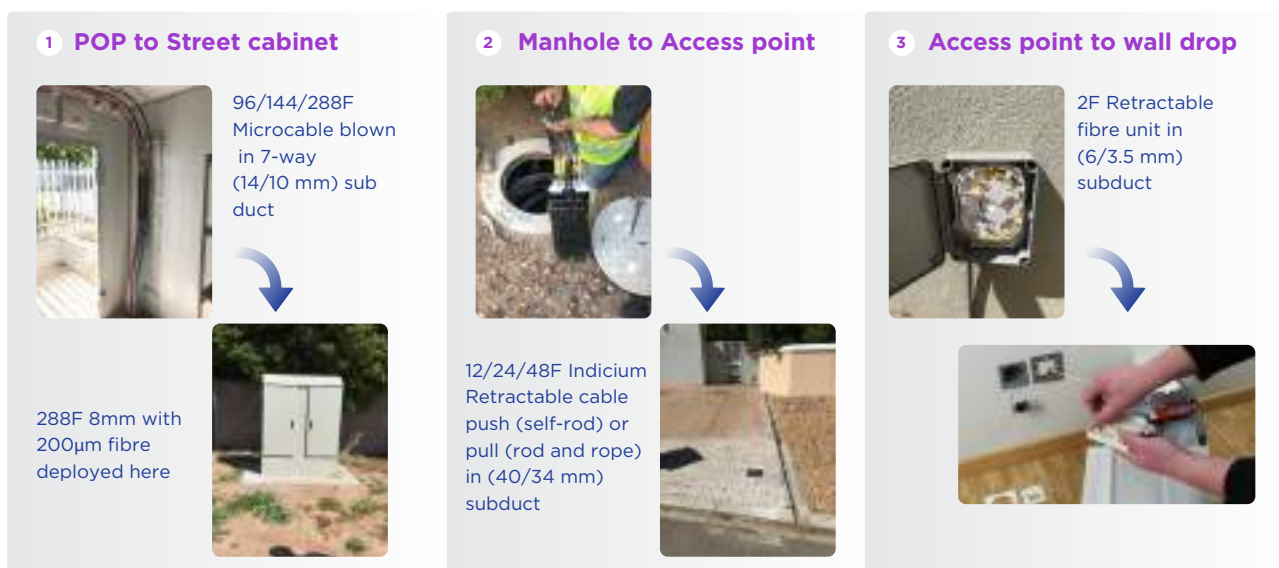


Semi skilled worker required



Easy fibre pulls upto 100mtrs

Network designed with built in spare duct and fibre capacity for future expansion

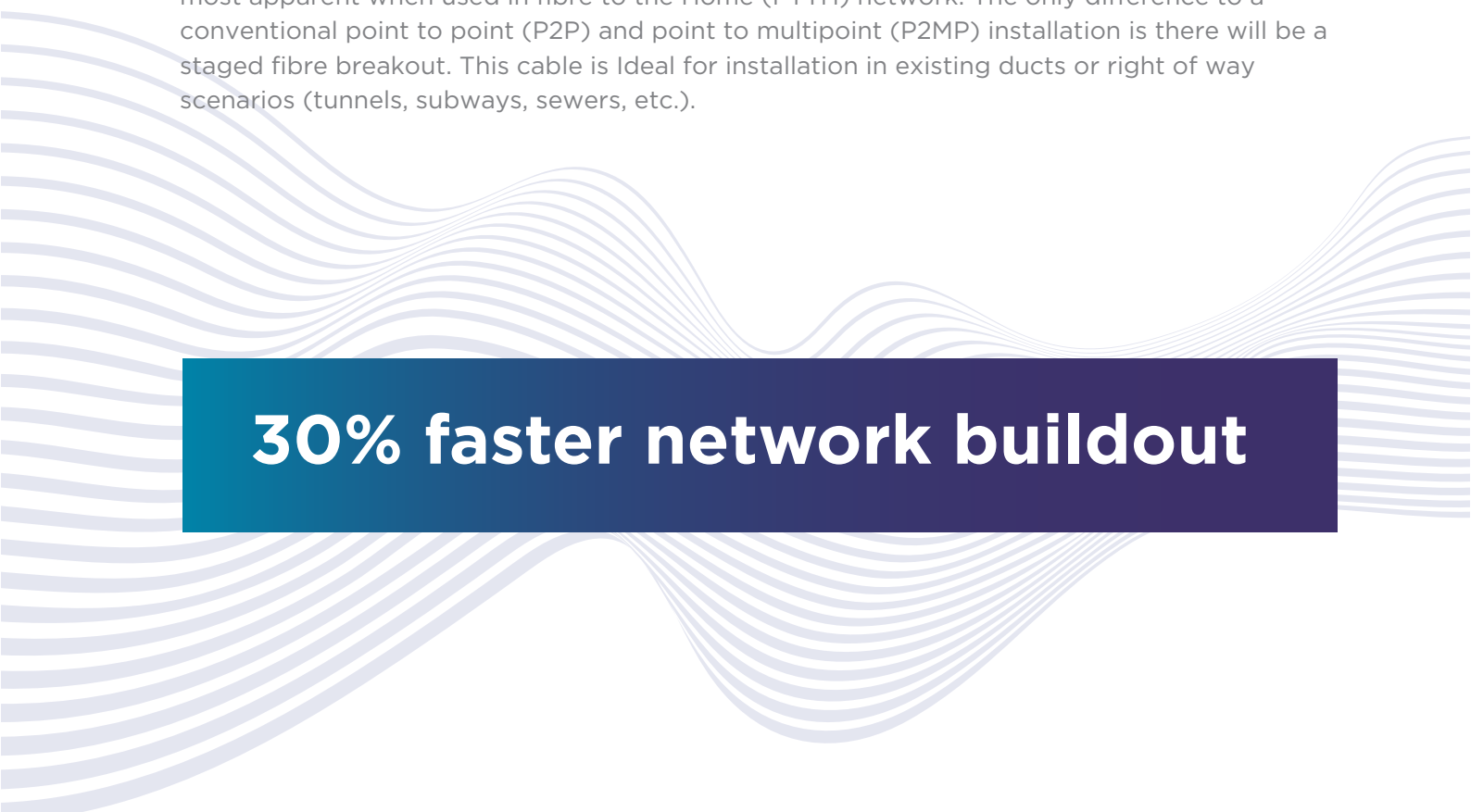


Network Design – P2P PON

This FTTH SDU solution is a combination of innovative STL Indicum Lite™ Retractable cable technology, together with planning and installation excellence.

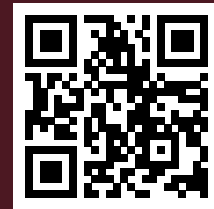
Conclusion

In summary, the STL Indicium Lite™ Retractable Solution provides the installer with significant benefits. The methods described previously reduce installation times significantly, whilst also reducing the cost of installation. Additionally, there is less pressure to connect directly to the home on day one because accessing the fibre at a later date is significantly easier and cheaper than conventional cabling systems. The benefits that the cable design offers are most apparent when used in fibre to the Home (FTTH) network. The only difference to a conventional point to point (P2P) and point to multipoint (P2MP) installation is there will be a staged fibre breakout. This cable is Ideal for installation in existing ducts or right of way scenarios (tunnels, subways, sewers, etc.).

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30% faster network buildout

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STL is a global leader in end-to-end data network solutions.

We design and deploy high-capacity converged Fibre and wireless networks. With expertise ranging from optical Fibre and cables, hyper-scale network design, and deployment and network software, we are the industry's leading integrated solutions provider for global data networks. We partner with global telecom companies, cloud companies, citizen networks and large enterprises to design, build and manage such cloud-native software-defined networks.

STL has innovation at its core. With intense focus on end-to-end network solutions development, we conduct fundamental research in next-generation network applications at our Centres of Excellence. STL has strong global presence with next-gen optical preform, Fibre and cable manufacturing facilities in India, Italy, China and Brazil and two software-development centres.



**Mobility
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Modernization**



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