

# How to Enable Flawless Fiber Networks with Smarter Testing



# The Challenges of Building the Full-Fiber Future

As fiber deployment accelerates across the globe, new challenges emerge for service providers and their installation teams to keep up with the demand for greater digital connectivity.

While Network Service Providers (NSPs) that install, operate, and manage the fiber are aiming to deploy at scale, the Internet Service Providers (ISPs) who sell the service direct to homes and businesses are rapidly growing their customer service subscriptions.

However, the realities of challenging economic conditions, labor shortages, and the need to build more quickly than new technicians can be trained—together with other real-world fiber issues such as environmental degradation and damaged connections—can massively impact the speed of deployment and the quality of a network.

As the communications industry continues to move towards a full-fiber future, service providers should consider how they can protect their network against these issues now, and for years to come.

# The Solution is to Work Smarter, Not Harder

To prevent failures and reduce expensive re-work, network service providers and their installers need to understand the issues that cause additional signal loss on fiber cables – and how to find them. These faults can include dirty or damaged connectors, bad splices, crossed connections, bending, damaged splitters, and more.

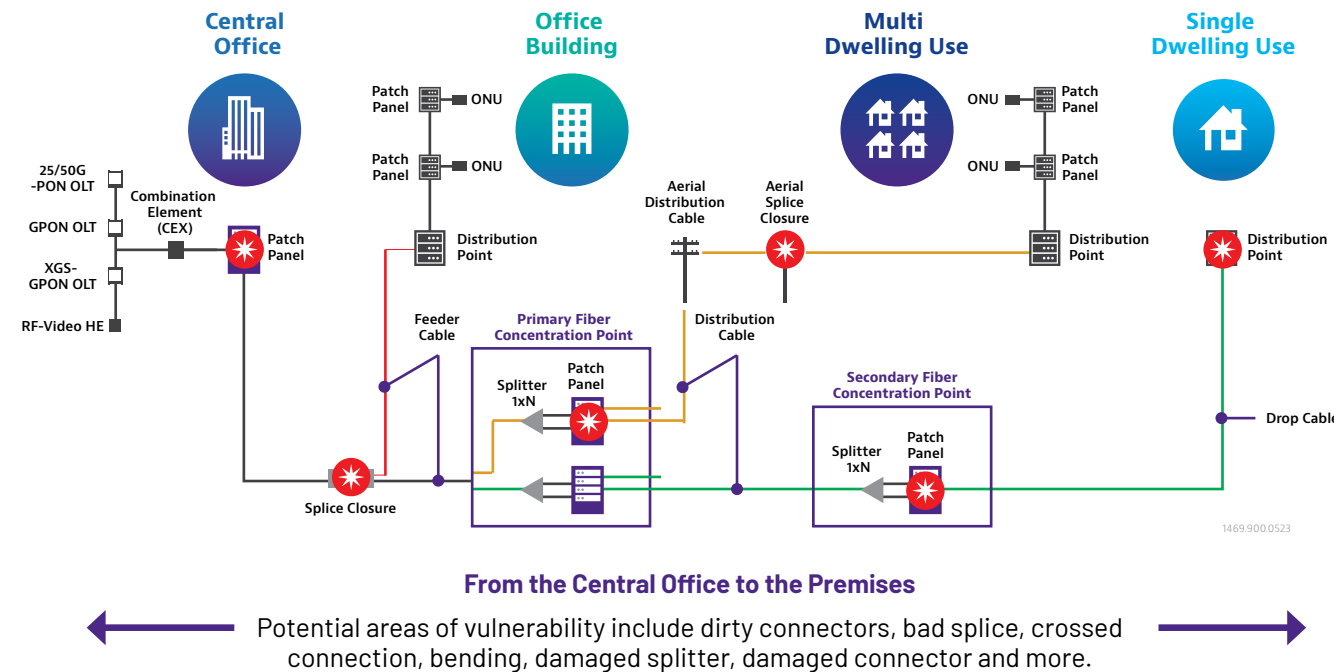
Without proper fiber testing and inspection, some installations have seen up to 30% failure rates on first time installs.

This results in expensive re-work to fix the faults, which in turn results in increased operational expenditure (OpEx).

But quick and effective testing can catch these issues prior to the network becoming live. And relative to the total costs for installing and operating a fiber network, testing devices and systems are a disproportionately small fraction of the overall outlay.

Quite simply, efficient testing processes across the network lifecycle save time and money in the long run, while ensuring a better quality of network and service for the end-customer.

Multiple Points of Vulnerability on Fiber Network



“Before anything else, preparation is the key to success.”

- Alexander Graham Bell

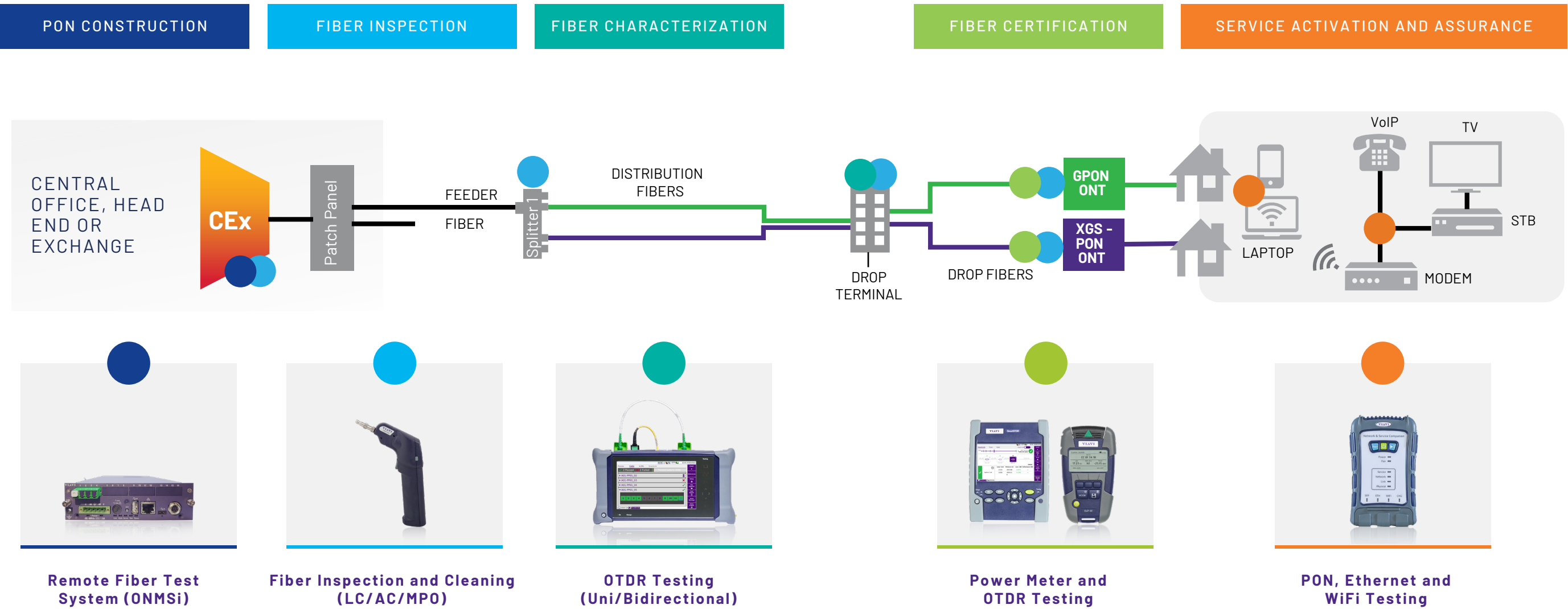


Some fiber installations see a **30% failure rate**, but efficient testing processes can ensure the job is done right, the first time.

# Where to Test in Your Network

At VIAVI, we don't believe in more testing, we believe in Smarter Testing. This means utilizing a range of fast, easy-to-use, and automated testing instruments that are powered by the latest cloud technology for job deployment and report management. Throughout the build, activation, and maintenance of a fiber network there are multiple points of vulnerability that require different testing procedures and solutions.

The best testing procedure for each network will differ depending on the topology being deployed, existing workflow processes, and your business model. However, the diagram below shows the most efficient points of testing and inspection across a typical passive optical network (PON).





## Which Testing Solutions to Use in Your Network

### Handheld OTDR Fiber Testers

An Optical Time Domain Reflectometer (OTDR) injects an optical pulse into one end of the fiber and analyzes the returning light signal to detect, locate, and measure events on the fiber under test.

As the OTDR essentially offers a 'high-resolution view' of the fiber under test, this allows a technician to fully certify the quality of the fiber during deployment or find faults during troubleshooting and maintenance.



#### Key solution(s)

SmartOTDR (shown),  
T-BERD/MTS-4000

### Remote Fiber Test Systems

Remote fiber test systems – such as ONMSi from VIAVI – utilize rack-mounted high-resolution OTDR test heads with a centralized software system to enable automated fiber testing at a larger scale and more accelerated pace.

Most remote fiber test systems are used for certifying the quality of a fiber network as it is being deployed, although these systems can also be used for monitoring and maintenance of a fiber network.



#### Key solution(s)

ONMSi Remote Fiber Test System,  
Compact Fiber Test Head  
(FTH-5000/7000/9000 (shown))

### Fiber Inspection Microscopes

Contamination is the #1 reason for fiber network failures – inspecting and cleaning BOTH sides of the fiber connection is the ONLY WAY to ensure that it will be free of contamination and defects. Remember, always inspect before you connect!



#### Key solution(s)

FiberChek Probe (shown), P5000i

### Power Meters

Power meters are used to accurately measure downstream and upstream power (or signal strength), and some power meters can even be used to check if the PON-ID is correct.

Technicians will often be asked to run a basic test for 'no light' or 'low light' in last mile of FTTH deployments to check there isn't a fault restricting signal on the network, and to ensure they're not getting the 'wrong light' either (via PON-ID check).



#### Key solution(s)

SmartPocket OLP-39,  
part of the SmartPocket range

### Service Activation Tools

Service activation tools such as the Network & Service Companion (pictured) allow for on-premise testing of optical fiber, ethernet and WiFi – while automatically consolidating results and submitting reports via the cloud.

These tools ensure the customer is getting the service they paid for in every room of their house/ premise, act as a reference point for the service, and help prevent future (costly) site visits.

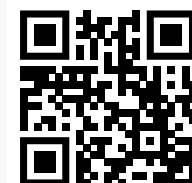


#### Key solution(s)

Network & Service Companion  
(NSC-100/200)

Learn more about the VIAVI fiber test portfolio

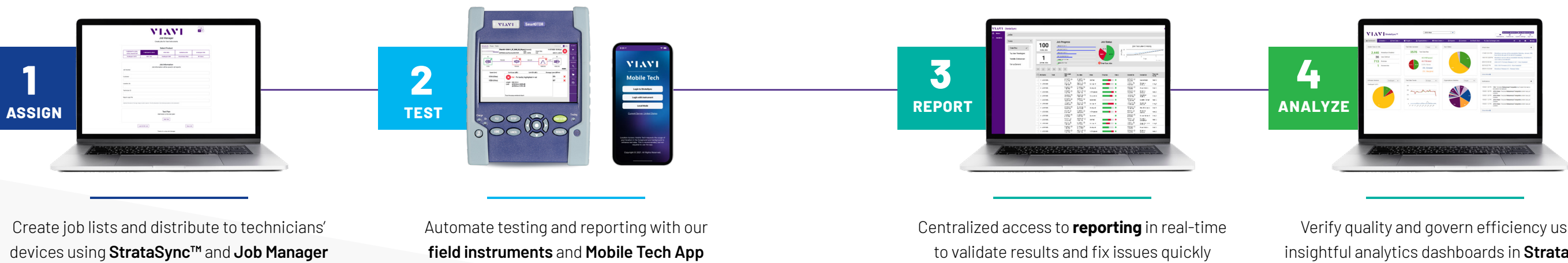
Scan the QR code or visit [viavisolutions.com](http://viavisolutions.com)



# How to Automate Your Testing Processes

To enable network providers to overcome challenges with network quality, data management and verification, and a skillset bottleneck, VIAVI has introduced a range of automated features to our suite of Smarter Testing solutions.

The automated test processes can be adapted based on an existing method of procedure (MOP), but generally **VIAVI TPA** (test process automation) will follow the four-step process outlined below:



## Automate Your Process

Enable Consistent Test Standards

## Transform Performance

Reduce OpEx and CapEx



## Streamline Workforce Efficiency

Boost Technician Productivity

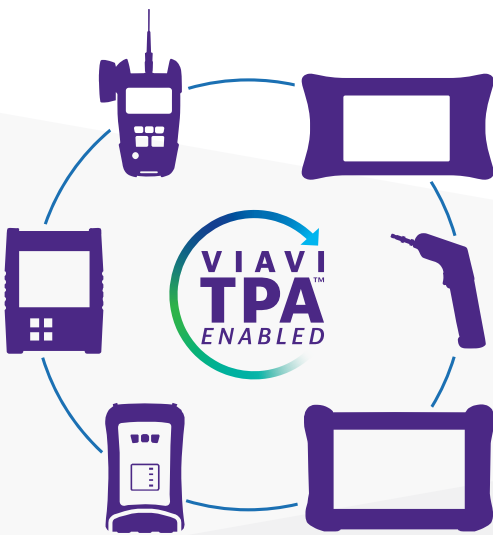
## Real-Time Visibility and Insight

Spot and Address Issues

1525.900.0623

# Introducing VIAVI TPA

Powered by our hosted StrataSync platform, **VIAVI TPA** connects techs and their test instruments together. By leveraging VIAVI TPA, field teams can ensure efficiency and accuracy at every stage of a job, driving operational excellence that translates to reduced costs, a better network, and increased customer satisfaction.



1698.900.1223

Scan to learn more or visit [viavisolutions.com/TPA](https://viavisolutions.com/TPA)



# How to Enable Flawless Fiber Networks with Smarter Testing

## 3 Key Takeaways

### 1 THE ONLY WAY IS TO TEST

Fiber testing is the only way to verify the quality of your network, ensure the service is meeting customer demand, and protect fiber assets for maximum ROI.

### 2 AUTOMATION IS KEY

Automated workflow management is vital to an efficient testing process – from job assignment and running tests to submitting reports and managing data.

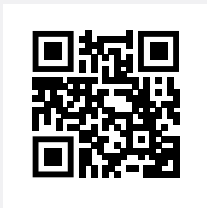
### 3 THERE'S NO "ONE-SIZE-FITS-ALL"

The right test, assurance, and monitoring solutions for your network are entirely dependent on your network topology, operational processes, and business models. However, versatility and adaptability are built into the VIAVI portfolio, with the ability to scale with you as your business grows.



Want to speak to a VIAVI expert about your network test and assurance needs?

Scan the QR code to request a meeting or visit [viavisolutions.com/contact-us](https://viavisolutions.com/contact-us)



# Building on 100 Years of Innovation

VIAVI is a company with a diverse and rich history of technological innovations across various industries. In the past, VIAVI has been known by names such as JDSU and Acterna, but our legacy dates back to 1923 with Wandel & Goltermann.

Today, VIAVI Solutions is a global leader in communications test and measurement and optical technologies – helping enable service providers around the globe deploy flawless fiber networks with Smarter Testing solutions.



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