FUJITSU

Service Fact Sheet
Fiber Services

Critical services to clear roadblocks from your network's optical highways

Optical fiber connections are the arterial routes of the modern global communications network. The network can only meet the demands of the Internet of Things (IoT), smart technologies, cloud applications, and 5G wireless if the optical fiber infrastructure is optimal.

Before beginning new builds, transformation projects or leasing dark fiber, a complete evaluation of the underlying fiber infrastructure is critical. This provides a picture of the condition of the existing fiber and identifies what needs to be done to meet current performance and reliability standards, as well as how to prepare for future expansions.

Fiber-Focused Support for Complex Projects

Service providers, fiber providers, mobile network operators, enterprise customers, and government agencies all take the reliability of their fiber networks as a given. But according to industry experts, approximately 30% of fiber networks require upgrade or repair, in many cases urgently. Fujitsu can help you determine the health of your fiber, and we can monitor your network to pinpoint new trouble spots when they arise.

Fujitsu offers a suite of services to assess the quality of your fiber network, including fiber characterization, end-to-end continuity testing, and trace analysis. The Fujitsu managed Fiber Assurance service also provides real time monitoring and troubleshooting for fiber faults or problems in your optical network.

Identifying Potential Problems at the Outset

Using our Fiber Services to thoroughly assess the quality of fiber at the beginning of your project ensures that key metrics are met and that

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Four Levels of Fiber Services

- **Fiber Characterization** – Fiber network evaluation and analysis
- **End-to-End Continuity Testing** – Checks to ensure light successfully passes from one end of the fiber span to the other.
- **Trace Analysis** – Complete analysis of fiber testing results performed by your in-house technicians or by third parties
- **Fiber Assurance Service** – Managed service that provides remote proactive fiber monitoring and troubleshooting 24/7/365

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your network will be able to meet critical business requirements. These services save time and money by identifying potential problems up-front that could cause delays during the final test and turn-up phases.

Fujitsu Fiber Services can help you if you are planning to:

- Negotiate new dark fiber deals
- Execute an acquisition or merger
- Build a new network or upgrade existing technology
- Expand the range of wavelengths being used
- Implement higher speed network applications
- Improve the quality of your network

Detailed Evaluation to Ensure the Highest Quality

Fiber networks generally incorporate owned and leased fiber from multiple providers and include both lit and dark fiber. Several problems may occur when combining these networks that can impact the quality of the fiber infrastructure and its transmission capabilities. Some common issues include:

- **Dark fiber** – Problems may only be detected when the fiber is lit.
- **Dirty and damaged connectors** – Oil and dirt can contaminate the connectors and cause signal loss.
- **Splice loss** – Combining different fiber and splice types can cause signal loss and fiber degradation.
- **Bending** – Excessive bending may damage the fiber and cause excessive signal loss.
- **Aging fiber** – Legacy fiber may be brittle or have too many splices which causes a poor signal.

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Ensuring End-to-End Optimal Fiber Performance

Fiber Characterization

The Fujitsu Fiber Characterization service evaluates your fiber infrastructure to make sure all fiber, connectors, splices, laser sources, detectors, and receivers are working at optimum performance levels. The service also determines whether or not the fiber can transport today's data-intensive applications over longer distances.

This comprehensive evaluation consists of a series of industry-standard tests that measure optical transmission attributes and provide a true picture of how your fiber network is functioning. If you are adding dark fiber, our technicians will evaluate how your existing network interacts with the newly added fiber, to ensure the entire infrastructure meets or exceeds expectations.

The following fiber characterization tests are performed using an Optical Time-Domain Reflectometer (OTDR) and a broadband light source:

- Bidirectional Optical Time-Domain Reflectometer (OTDR) – shows the overall health of each fiber strand
- Optical Insertion Loss (OIL) – measures the total light loss (attenuation) across the span, from point A to point Z
- Optical Return Loss (ORL) – measures the reflective light on a span
- Chromatic Dispersion (CD) – measures the amount of dispersion or pulse-spreading over a wavelength
- Polarization Mode Dispersion (PMD) – identifies signal quality issues that are inherent in the fiber

Once the testing is completed, Fujitsu analyzes the data and provides a comprehensive report detailing the health of your network, with full information about problematic areas that were identified along with our repair recommendations. The report includes a full analysis of the fiber infrastructure, as well as complete documentation of all fiber splice points, in addition to panel, rack, and port assignments. The report also highlights any legacy fiber that will not support the higher data rates needed for today's bandwidth-intensive applications.

End-to-End Continuity Testing

Continuity testing is a modified version of fiber characterization testing and includes bidirectional OTDR, OIL and ORL testing. End-to-end continuity testing checks the fiber to make sure the light is successfully passing from one end of the span to the other through all the connectors and splices. If the light does not reach the other end, there is a problem somewhere. Fujitsu analyzes the data and provides a
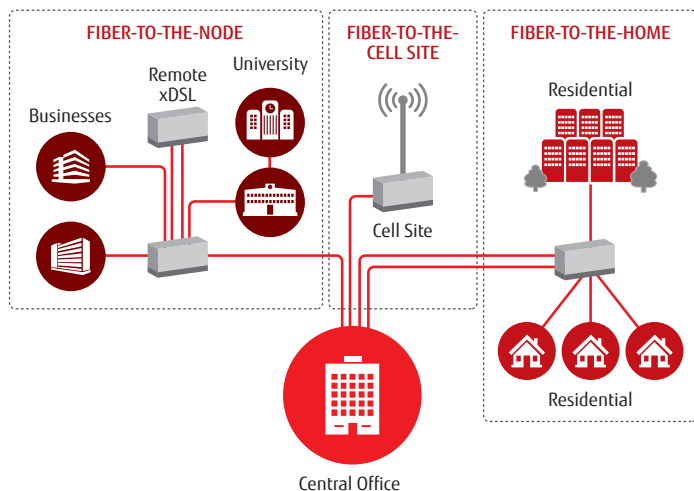
Fiber architecture diagram shows fiber's journey from the central office to various real-world locations.

comprehensive report of the findings. The report summarizes the health of the fiber network, identifies areas that have faulty fiber and suggests corrective actions that need to be taken.

Fiber Trace Analysis

Fujitsu offers the fiber trace analysis service for customers who either choose to perform their own fiber characterization testing or sourced the tests from a third-party. Using the OTDR traces and span loss readings provided, Fujitsu analyzes the data and provides a comprehensive report of the findings. The report summarizes the health of the fiber network, identifies areas that have faulty fiber and suggests corrective actions that need to be taken.

Fiber Assurance Service

Fiber Assurance is a subscription-based managed service that provides remote proactive fiber monitoring, gathering real-time information on fiber integrity, latency and degradation. It quickly detects and isolates faults, and notifies the customer that a repair crew may be required. The service is delivered by our world-class, on-shore Network Operations Center (NOC) and is staffed 24/7/365 by engineers specializing in fiber management, fault detection and repair.

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v1.0/04.19