White Paper

VIAVI Solutions

EU Directives NIS-2, RCE and KRITIS

1. Initial Situation

1.1 Legal Framework

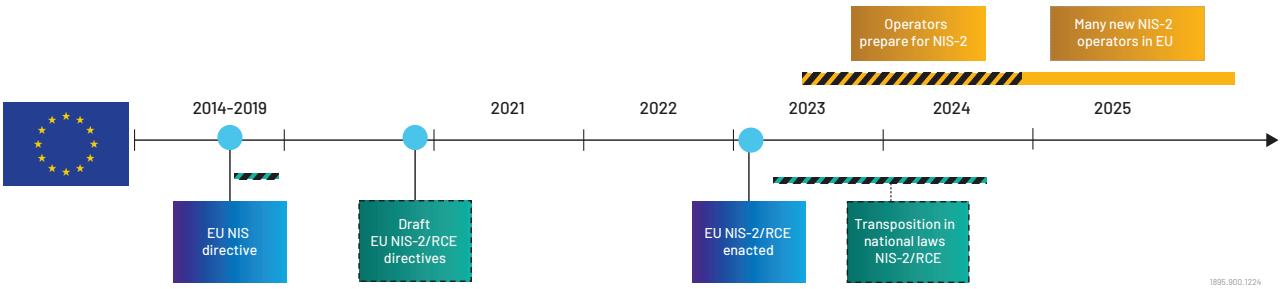
The European Union (EU) and its member states are making significant efforts to accelerate the digitalization of their economies. This digital transformation underscores the critical importance of fiber optic infrastructure. Both the EU and its member states have recognized that secure uninterrupted fiber optic networks are essential not only for internet usage but also for maintaining economic and social stability.

To ensure the uninterrupted operation of critical digital and fiber infrastructure, the Council of the European Union issued guidelines in December 2022, focused on increasing the resilience of digital infrastructure (RCE Directive) and enhancing cybersecurity (NIS-2 Directive). These directives introduce measures across the EU for companies to detect, prevent, and mitigate targeted attacks or other incidents impacting digital infrastructure, thereby minimizing the resulting damage or service outages. By October 2024, EU member states are required to incorporate the content of these directives into national laws.

In Germany specifically, the obligations from the NIS-2 and RCE directives are reflected in the KRITIS umbrella regulation which requires operators of critical infrastructure and facilities to implement security and cyber security in their critical facilities. The KRITIS regulation for Germany identifies and categorizes affected companies in three ways:

1. Sectors and services defined by law to contain critical operators
2. Infrastructure (facilities) specifically used to provide critical services
3. Operators identified as owning critical infrastructure or services

The primary intention behind these measures is to protect the population and the economy from potential disruptions and threats.



Timeline of EU NIS-2 Directive

1.2 Measures

Operators of critical infrastructure, including fiber optic networks, must adapt to the new laws by implementing comprehensive risk management processes. This involves conducting thorough risk analyses, planning and executing risk-reducing measures, and regularly checking their effectiveness. Operators of fiber optic networks, as part of critical infrastructure, may need to adopt new strategies and measures to protect their infrastructure from targeted attacks, environmental disasters, or similar events. If 'proportionate' measures are insufficient and risks remain, additional steps must be taken to minimize potential damage to the economy and society.

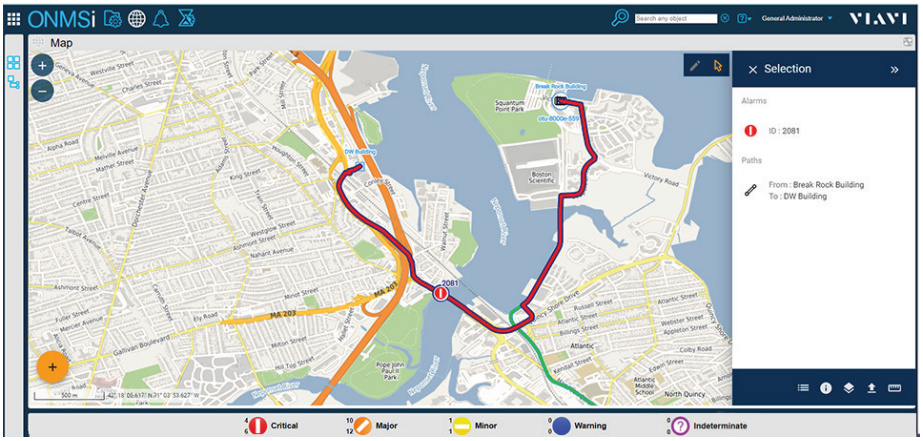
VIAVI Solutions (VIAVI) offers a wide range of solutions designed to prevent network failures, minimize damage, and identify risks from third parties. In collaboration with our integration partners throughout the Germany (D), Austria (A) and Swiss (CH) DACH regions, we provide comprehensive solutions that enable operators of critical infrastructure, such as fiber optic networks and telecommunications service providers, to comply with the new legal requirements.

2. Solution to Reduce Risk

2.1 Fiber Integrity Monitoring and Access Control

VIAVI Optical Network Management System (ONMSi), our fiber optic monitoring system, is designed for monitoring both passive and active fiber optic links. This system detects and localizes fiber breaks, fiber tapping and other incidents that negatively impact the infrastructure. By using Fiber Analytics to identify degradations and minimize downtime, the ONMSi ensures the continuous operation of critical networks.

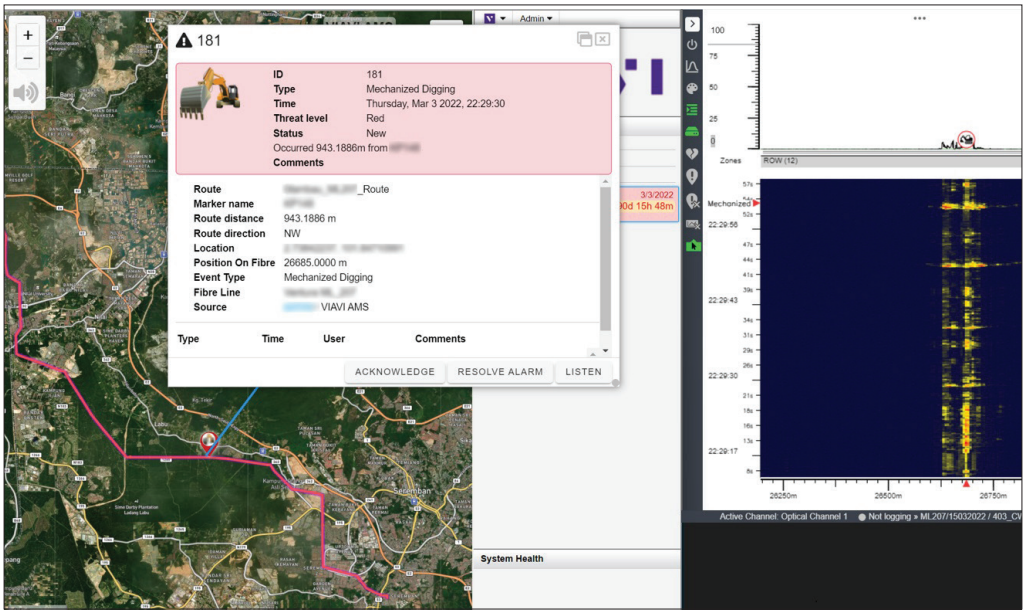
Additionally, ONMSi supports passive, maintenance-free sensors for monitoring access to maintenance shafts and distribution boxes in public spaces. These sensors are essential components for risk reduction in accordance with the RCE directive, providing operators with a comprehensive portfolio to enhance security.



ONMSi: Lit and dark fiber link monitoring, alarming and fault location

2.2 Critical Infrastructure Threat Detection

VIAVI NITRO® Fiber Sensing is a cutting-edge solution designed to revolutionize security and protection across numerous industries. By harnessing the power of optical fibers and fiber sensing technologies (distributed temperature sensing (DTS), distributed temperature and strain sensing (DTSS) and in particular Distributed Acoustic Sensing (DAS)), this state-of-the-art solution offers comprehensive monitoring capabilities. It enables real-time detection, notification and location of threats, intrusions, and anomalies along perimeters, borders, and critical infrastructure. From enhancing security to ensuring regulatory compliance, it delivers unprecedented visibility, ensuring your operations are secure and compliant. NITRO Fiber Sensing provides the critical intelligence needed to swiftly identify and pinpoint threats enabling rapid response.



NITRO Fiber Sensing: Distributed Acoustic Sensing (DAS) for detection and localization of activity near perimeters of critical infrastructure

2.3 Timing and Synchronization in Communication Infrastructure

VIAVI also offers timing and synchronization solutions that play a crucial role in protecting critical data within fiber optic networks, and by extension wireless 5G networks, from outages, espionage and manipulation. For example, high-precision timing and synchronization technology is a key delivering high speed, low latency and high reliability services. Any interruption or corruption of timing signals will impact service capacity and quality, real-time services or ultimately block/stop service altogether. Validating and verifying both timing and synchronization of data is risk-reducing measure vital for minimizing failure risks and ensuring the reliability of critical communication systems.

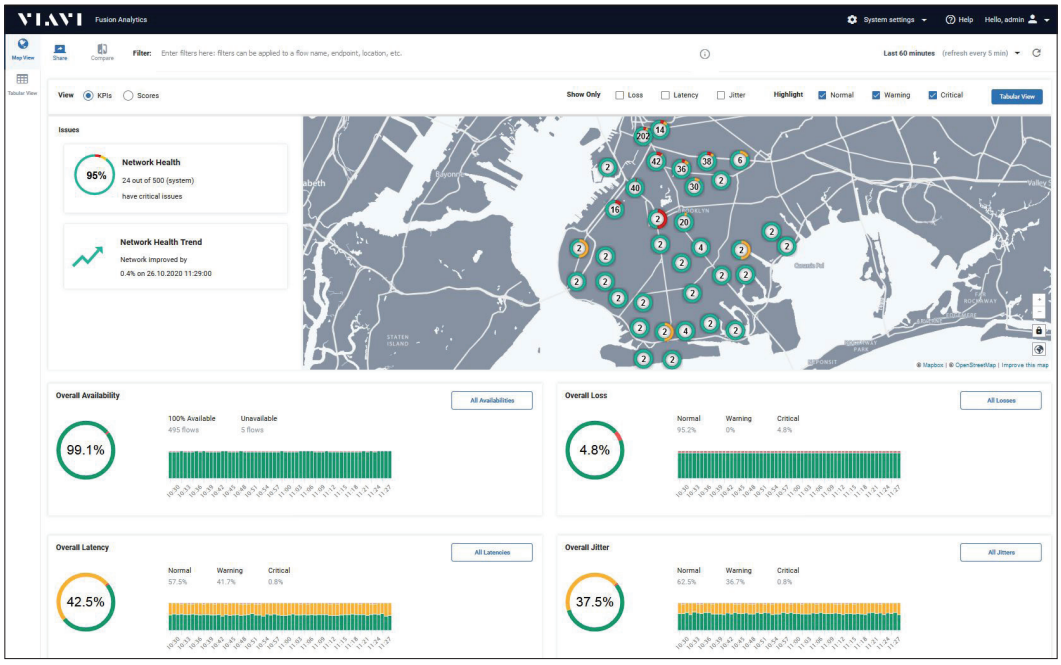
With VIAVI timing and synchronization solutions, the manipulation or disruption of both wired and wireless 5G networks, which are essential for the operation of the Internet of Things, can be effectively prevented. This protection is crucial for maintaining the integrity and functionality of modern digital communications networks.

Network timing and synchronization: Fixed and wireless networks

2.4 Network Testing Layers 2-4

As these regulations mandate stringent security and reliability standards for critical infrastructure and essential services, comprehensive automated network testing and monitoring also helps service providers to enhance their security, operational efficiency and response times. By leveraging a combination of virtualized probes, hardware test heads, smart optic pluggables, portable analyzers and software, Fusion enables centralized testing of new service activations (RFC2544/Y.1564/RFC6349), 24/7 active performance monitoring (TWAMP/Y.1731), and troubleshooting across networks of any size.

It's automated testing and monitoring capabilities ensure that networks are continuously assessed for vulnerabilities and performance issues, helping service providers maintain compliance to regulations. In addition, this centralized test capability significantly reduces the need for truck rolls, which are costly and time-consuming. Instead of dispatching technicians to diagnose issues, service providers can remotely identify and resolve problems, cutting operational expenses and shortening mean-time-to-repair (MTTR). Furthermore, when a physical visit is necessary it allows providers to send the right technician with the right tools to the right location. By providing detailed and accurate test data, Fusion enables service providers to demonstrate adherence to regulatory requirements, thereby avoiding potential fines and enhancing the overall security and reliability of their networks.



'Fusion: Network and service performance analytics dashboard

3. Summary

The EU directives NIS2, RCE and KRITIS have been issued to enhance the resilience and cybersecurity of critical infrastructure. It is now up to the EU member states and the designated 'important' and 'essential' institutions to implement the required measures. VIAVI and its partners provide essential technical solutions and expertise to help operators of critical communications infrastructure comply with these legal requirements, thereby minimizing potential damage to the economy and society.

- ONMSi for monitoring fiber optic cable and infrastructure access control
- NITRO Fiber Sensing for detecting threats, intrusions, and anomalies along perimeters of critical infrastructure
- Network timing and synchronization solutions, to ensure service availability and reliability
- Fusion to remotely test new service activations, monitor performance, and troubleshoot networks of any size

VIAVI is committed to supporting you in futureproofing your company and securing your business operations.

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