

## CORIANT IS NOW PART OF INFINERA

# Coriant Aware™ Service Health Check

*Online Optical Performance Check: Network KPIs at Your Fingertips*

## ENSURING CRITICAL EVENT PREPARATION

Key priorities for network operator investments are deploying new services, expanding geographical outreach to new customers, and reducing internal costs to offer lower end-user prices. Less prominent but eventually even more important are investments to improve quality of experience and reduce customer frustration, which can cause additional customer care costs or penalties. The Coriant Aware™ Service Health Check (SHC) empowers operators to effectively prepare and predict critical network situations to ensure quality of service for the end-user.

In today's networks, all service and network planning is done based on the data available at initial deployment. Further network evolution projects are based on error prone planning assumptions that do not reflect the real situation and actual demands in the network. An additional challenge is the changing conditions of the outside plant (OSP) that is exposed to various types of mechanical stress due to maintenance or unforeseeable incidents such earthquakes, fires, etc. Obviously, these events will influence the parameters initially used in the network design phase.

The current industry approach to handle these situations is to include different service margins, in terms of extra dBs of loss the service can afford, during network planning to anticipate such events, such as an aging margin or a repair margin. The result is an inefficient use of resources as different types of margins are stacked just to be on the safe side without considering a more flexible approach. Large service planning margins do not necessarily provide full protection from unexpected outages that can cause deviations from earlier projections. Coriant Aware™ Technology expands service margin monitoring while continuously enabling operators to prepare for potential disruptions and reduce or even avoid customer frustration while improving quality of experience and utilizing the fiber infrastructure more efficiently.

## BENEFITS OF THE CORIANT AWARE™ SERVICE HEALTH CHECK

- **Improve** the customer experience with pre-emptive maintenance to minimize service outage
- **Reduce** operational costs through planned maintenance rather than emergency reactions
- **Enable** visibility of fiber network quality for better network planning including service initiation, restoration, and network upgrades
- **Increase** capacity by identifying segments with excessively high optical safety margin and the applicability of higher transmission bandwidths

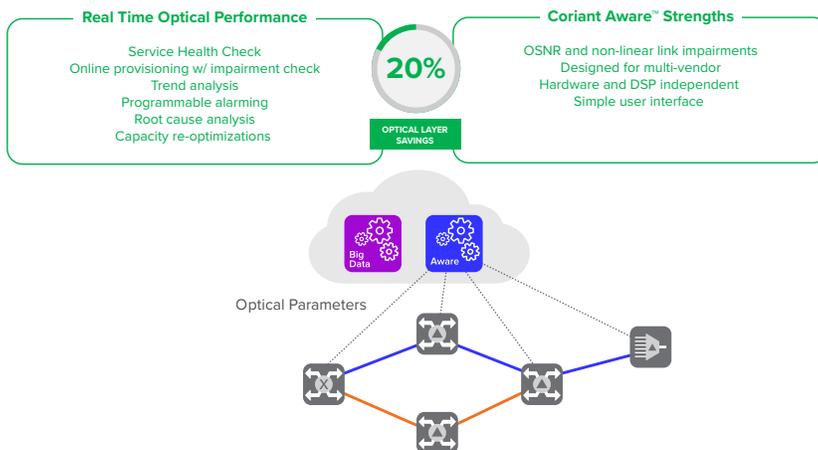


Figure 1: Real-time Optical Performance Check

## EMPOWERING OPERATORS WITH THE AWARE SHC ANALYTICS DASHBOARD

In order to address the deficiencies in the current approach to handling network planning and maintenance, the Aware SHC provides a simple view of each service in the network and monitors its key performance indicators (KPIs), such as SLA level, data rate, and actual service performance figures including bit error rate and Optical Signal to Noise Ratio (OSNR) margin. These KPIs are utilized to adapt service speed or change the used modulation format. As an example, an optical wavelength with good optical margin can be used by a service with a higher bitrate or modulation scheme. Therefore, all services present in the network can be categorized by their individual service robustness index (SRI). Thus, a service with low margin will be marked with a different SRI and the user will be notified. In the Aware analytics dashboard, services are displayed in a simple view, e.g., sorted by the service's target SLA level or by its SRI. Various graphical representations such as color coding and highlighting ensure ease of use and fast reaction to critical situations in the network.

## OFFERING DEEP DIVE ANALYSIS

Each service presented in the Aware SHC dashboard can be further analyzed by a detailed view displaying the actual optical performance parameters. This will help to determine the root cause of unexpected situations in the network and facilitate a quick response. All current service performance data will be recorded and stored for later historical data analysis. In combination with other network and operational data, the Aware SHC deep dive analysis helps operators to understand the correlation of incidents and effects on service quality, such as neighboring service activations, maintenance work on specific sites, etc.



Figure 2: Operators can quickly identify and manage services categorized by the individual SRI

In this way, Coriant Aware™ Technology helps the operator determine network performance in real time not only by analysis of the optical signal's physical characteristics such as OSNR, but also through the advanced parameters of coherent DWDM transmission such as interferences between the individual optical wavelengths, also known as non-linear effects. Going beyond pure OSNR is critical especially in long haul or high-bandwidth optical services, as the pure OSNR figure will not explain the real life margin in the fiber sufficiently. The Aware optical performance model provides an industry-leading residual margin accuracy of up to 0.5 dB.

Aware technology not only enhances operator knowledge of the network and enables improved network performance but also offers the advantages of openness and disaggregation. As optical networks are evolving to multi-vendor networks in the coming years, operators are strongly requesting open interfaces and disaggregated line systems to leverage best-of-breed strategies and ease integration of new products into their operational environment. Aware addresses these changing requirements with an architecture not bound to specific hardware implementations or DSP choices and instead effectively supporting multi-vendor use cases.

## OPTIMIZING OPERATIONS AND IMPROVING THE CUSTOMER EXPERIENCE

The Aware SHC provides operators with a powerful tool that improves the customer experience by early warnings and root cause analysis, leading to fewer services lost due to a degraded signal path. The technology will also identify services that have sufficient margin for upgrade to higher bandwidths without sacrificing robustness of the service. In summary, Coriant Aware™ Technology will enable the operator to obtain full control of the network, optimize operations, and reduce overall network cost.

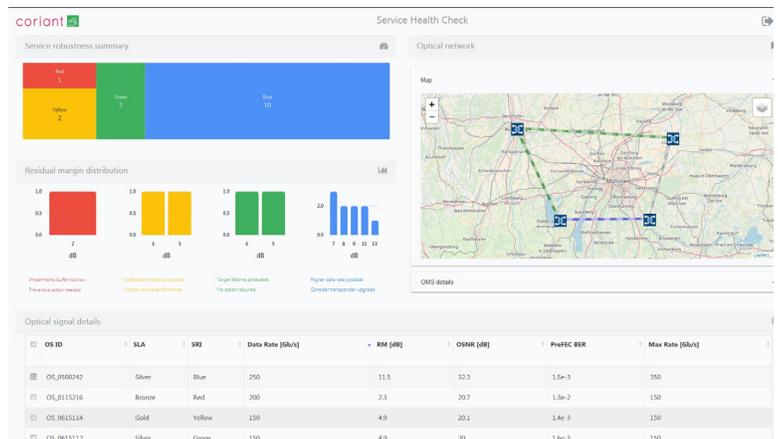


Figure 3: Aware User Interface

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