Optical Network Management System

Remote Testing, Network Monitoring, and Service Provisioning Solution for High-Quality Network Performance
JDSU—Enabling Broadband and Optical Innovation

**Improving the world of communications**
Around the globe, communications companies look to JDSU for high-quality, innovative solutions to develop, install, maintain and optimize their networks. JDSU delivers instruments, systems, software, services, and integrated solutions that help communications service providers, equipment manufacturers, and major communications users maintain their competitive advantage at each stage of the network lifecycle.

**Total solutions for fiber optics**
JDSU’s comprehensive portfolio of fiber optic products includes a full line of handheld light sources, power meters, loss test sets, attenuators, and visual fault locators. The suite also offers remote fiber test systems (RFTS), optical measurement systems, optical time domain reflectometers (OTDRs), and a range of dense wavelength division multiplexing (DWDM) test solutions from optical spectrum analyzers to optical network testers.

**Powerful communications at lower costs**
As growing businesses require ever more complex and powerful networks, they are also seeking lower operations costs, rapid recovery times and highly secure networks. To meet these needs, businesses are turning to JDSU’s Optical Network Management System (ONMS) to improve network availability, enhance visibility into network performance and speed service provisioning.
ONMS—Adding Value to the Network

**Real-time network status and performance**

Built to increase workforce productivity and facilitate the management of large optical networks with fewer technicians, the ONMS combines remote testing, network monitoring and service provisioning to deliver high-quality network performance.

The ONMS increases customer satisfaction through improved network availability, simplifies the management of service level agreements (SLAs) and quality of service (QoS), and provides customers with precise information on service status.

The system also enables efficient asset management by assuring high performance levels and the readiness of fiber optic cable for use when required.

The ONMS continuously monitors the network, alerting operators and managers to faults as they occur. Events are logged, and details regarding faults, such as location and type, are provided to the network management center where the appropriate maintenance teams are automatically alerted.

**Improved network availability**

As a result, network downtime, maintenance resource requirements and costs are dramatically reduced, enabling network operators to improve network availability and service quality, while maintaining cost-effective service agreements.

**Improved Asset Management**

More than just a fault-finding system, the ONMS allows network operators to add value to their service offerings with efficient preventative maintenance schedules.

The system continuously monitors the fibers, sending alerts when degradation of the cable starts to affect performance beyond user-set limits. Proactive maintenance carried out with this information forms the basis of efficient asset management that enhances competitive advantage. By monitoring dark fibers, operators can ensure network integrity and guarantee performance levels before systems go live.

The ONMS generates service reports that provide valuable information on the long-term performance of the network. A comprehensive cable documentation database, which includes geographical information, ensures fast location of reported faults.

Cable data entered directly into the ONMS database can be made readily available to engineers and managers for analysis or reference.

Fault and affected customers are clearly identified on map
ONMS Fundamentals

The ONMS comprises a series of OTU-8000 remote test units, a central server, and multiple client stations.

Remote test units
OTU-8000 remote test units are installed at strategic points throughout the optical network.

Each unit includes an optical switch to connect to individual fibers, and one or more optical modules, such as an optical time domain reflectometer (OTDR), for measurement and initial data processing.

Fibers are monitored in real time, 24 hours a day, seven days a week according to user-programmable schedules.

Central server
At the heart of the ONMS is the central server database that stores and manages all the system information.

Data polled from OTU-8000s in the field is mapped to the central database and combined with routing records and geographical information, enabling maintenance teams to access precise fault location details.

Client stations
Client stations provide access to all system data for use by management and engineering centers. They also support the setup and documentation of network structures and provide alarm management and network availability reporting functions.
ONMS—Leading the Field

Comprehensive monitoring
The ONMS monitors the fiber network from a single OTU-8000 stand-alone remote test unit platform.

The OTDR module for the OTU-8000 provides optimized monitoring for all types of fiber optic networks—from FTTx to very long haul. Measured and reference traces are compared. If user-defined limits are exceeded, the system automatically routes an alarm message to the maintenance supervisor.

Web-enabled interface
Users access the ONMS via the familiar environment of a standard Web browser, eliminating the need for additional software or training. It is easy to manage maintenance schedules and contracts with just the right level of information presented in a readily understandable format.

A series of user-defined codes and passwords ensures the security of the system, with a range of privileges assigned from the server station. Customers of dark fiber providers, for example, may be assigned view-only privileges that enable them to check the status of the network at any time.

Live database
For fast, accurate database population, the ONMS uses all data gathered from the field to automatically generate a comprehensive network schematic.

Open architecture
The open architecture design of the ONMS, together with the use of industry-standard SNMP and XML protocols, ensures the smooth transmission of alarm data and cable documentation to other systems. The ONMS smoothly integrates into geographic information system (GIS), operation support system (OSS), and workflow system packages.
ONMS Features

Rapid detection and accurate location of faults
The ONMS enables fast fault detection. In the event of a network problem, the OTU-8000 sends an alarm message to the central server detailing the date, time, distance and nature of the fault. An alarm text box flashes onto the screen, and warnings via e-mail and Short Message Service (SMS) are triggered to alert the operator.

With the GIS option, the operator has direct access to the geographic coordinates of the fault.

Proactive maintenance
The ONMS can be programmed to perform regular proactive maintenance cycles on the fiber network. In this mode, the OTU-8000 performs a detailed scan of the fiber links for signs of degradation and component ageing. The information can then be used to generate customer and management reports.

Comprehensive network documentation
The ONMS manages and documents the network using a GIS and Optical Fiber Mapping (OFM) software to identify and label each fiber and cable. The GIS catalogue includes detailed information such as location, lists of conduits or poles, details of fiber connections, status, equipment service data, end-to-end view, and length. When a fault is detected, the ONMS indicates the geographical location of the fault, the services and customers affected, and a possible alternate route to replace the defective one.

Full analysis functionality over the Web
Offering full test and analysis functionality from any station running industry-standard Web browser software, the ONMS provides tools for remote analysis of the OTDR trace in a readily understandable format on easy-to-use Web pages.

Duty rosters and alarm management
Faults detected by the ONMS are logged on a central server that sends an alarm message with details of the fault to the appropriate maintenance supervisor.

The ONMS duty roster can be used to schedule work shifts and manage maintenance teams, and is easily configured using intuitive drag-and-drop techniques. The duty roster logs individual working hours, taking staff availability and holidays into account. It also stores contact information for each engineer and selects the best contact medium—SMS message, fax, pager, or e-mail—for each staff member.

Fiber trace corresponding to the fiber route on the map
ONMS—Flexible, Effective, Secure

**Designed to grow with your network**
From small, centralized installations to regional networks and national operations, the modular, scalable ONMS grows according to business needs. A minimal configuration installed initially for small-scale maintenance can be expanded easily and inexpensively at a later date with additional OTU-8000s and optical switches. Alternatively, the ONMS can be set up from the start as a multi-user system for large-scale network management.

**Dark and active fiber monitoring**
The ONMS is ideal for monitoring dark fibers and active networks with multi-mode or single-mode cable. The ONMS uses a wavelength different from that of the service transmission to continuously monitor active networks without interruption to services. The system is able to detect and locate nearly 100 percent of faults and degradations on active fiber networks. Monitoring dark fiber is also simple and effective, with the system detecting more than 80 percent of cable faults.

**System security**
The ONMS provides various levels of security to ensure that sensitive data is protected against unauthorized access. The administrator manages all security through a single centralized database, simplifying security administration and reducing the possibility of errors that could result in security loopholes.

**System availability**
The system ensures high availability via a range of advanced solutions from mirroring to a remote hot backup server, a permanent server that is on standby to immediately replace the primary server in case of failure.

OTDR can be used in T-BERD/MTS-8000 and in OTU-8000.
Application engineering
JDSU works closely with customers at the initiation of ONMS projects to assess and identify customer needs, and to recommend the optimum system to meet business requirements.

All relevant details including network topology, dark or active fiber, communication protocols, number and location of OTU-8000s, and required network control workstations, are carefully considered during the process.

An experienced team
A JDSU project manager manages the defined project through to acceptance of the installed system, with the help of a team of experienced JDSU engineers, product managers and system specialists.

Staff training
A wide range of training options are available from JDSU to ensure that engineering staff and field maintenance teams are able to maximize the advantages of the ONMS.

Support services
JDSU’s tailored SystemCare support contracts complement the power of the ONMS with the following benefits:

• Minimizes system downtime through proactive system check-ups and guaranteed turn-around times
• Improves system functionality and keeps systems current with scheduled software enhancements
• Protects investment with continuous system maintenance and updates
• Avoids unexpected expenses with extended hardware warranty and optional on-site repair
• Offers tailored technical support from system experts during business hours or 24 x 7 x 365

Add value to your network
Contact JDSU today to improve network availability, enhance visibility into network performance, and speed service provisioning with the JDSU Optical Network Management System.

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