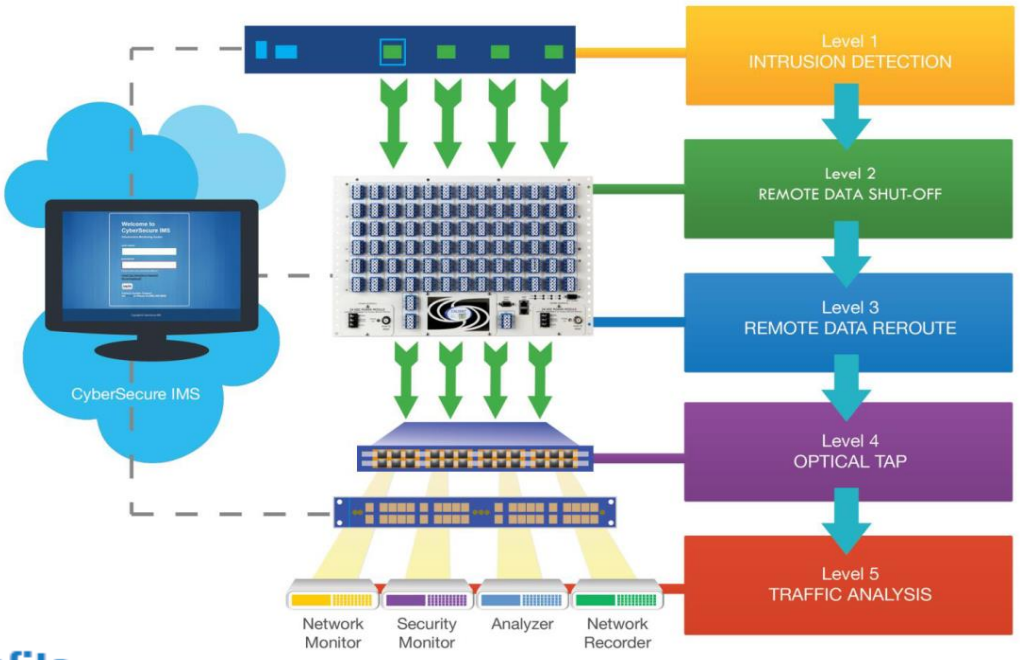
新登場！

光回線をN対Nで切り替える ”オプティカルマトリクススイッチ”

CALIENT 3D MEMS

S160 OPTICAL CIRCUIT SWITCH



Features and Benefits

The explosion of video and other Internet data is driving the demand for flexible, scalable, high-bandwidth networks. CALIENT's S160 Optical Circuit Switch is a reliable and cost-effective solution for these networks because the technology is transparent to data speed, and is protocol agnostic, thus it offers very high bandwidth and configuration flexibility as networks grow in speed from 10Gbps to 40Gbps, 100Gbps, and beyond.

Based on field proven 3D Optical MEMS technology that CALIENT has deployed in more than 100,000 optical connections globally, the new S160 Optical Circuit Switch delivers a sweet-spot of high reliability, small form factor, low power consumption and cost, and ease of use that allows the benefits of true all-optical switching to be realized in a wide range of data center and service provider applications.

Applications

The S160 provides the scalable and protocol independent automated optical switching and management infrastructure for a wide range of Data Center, Service Provider, and Government applications including:

- Flexible, scalable on-demand optical layer optimization in enterprise and cloud computing data centers and metro software defined networks (SDN)
- Rapid disaster-recovery from multiple network failure scenarios in any optical network application
- Remote configuration and restoration of high-value subsea cable networks
- High port count colorless, directionless and contention-less (CDC) ROADMs in fiber-optic service provider networks
- Fiber To The Home (FTTH/FTTP) network automation - automated service activation & testing
- Cyber security: Protection of critical network infrastructure from cyber attacks
- Sharing of high-value testing resources in lab automation & Cyber-range applications
- Software defined optical switching in multi-tenant data centers and co-location facilities

AT A GLANCE

- Small Size: 160 Ports (Tx/Rx pairs) in 7RU Chassis (LC Connectors)
- Low Power Operation: 45 Watts typical
- Low Cost: Supports deployment in data center, service provider, and government networks
- Ultra-low Latency: All-optical connectivity adds negligible latency.
- Scalable: Supports all data rates to 100 Gbps and beyond
- Reliable: Based on proven 3D MEMS design deployed in over 100,000 fiber terminations globally
- Simple to install, integrate and use: GUI-driven, EMS-ready, supports TL1, SNMP, CORBA, and OpenFlow
- Low loss: 3.6 dB maximum insertion loss
- Built-in power monitoring: Every in/out fiber is monitored providing powerful network diagnostic capabilities

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光回線をN対Nで切り替える ”オプティカルマトリクススイッチ”

Description

The S160 Optical Circuit Switch is a 160 port all-optical (OOO) switch that establishes, monitors and changes connections between single-mode optical fibers using Micro-Electro-Mechanical Systems (MEMS) optical switching. Connections are made between fibers carrying signals with any data rate or protocol. Any input fiber on the S160 can be connected to any output fiber.

The core of the S160 Optical Circuit Switch is the MEMS Switch Module (MSM). Input fibers are connected to the MSM, which establishes connections with any of the desired output fibers. Light tapped from the input and output fibers is fed to the Optical Monitoring Module (OMM) to enable monitoring of existing connections and establishment and optimization of new connections. Light is tapped using fiber tap couplers and mirror drivers control each connection by supplying voltage to each MEMS mirror.

Light is directed from the input fibers to the output fibers using arrays of tiny silicon mirrors that are fabricated using the proven CALIENT MEMS process. An optical signal transmitted through the S160 passes through three sections of the MSM160: the input collimator array, which directs the light from each input fiber to its input mirror; the mirror matrix, an array of MEMS input mirrors and an array of MEMS output mirrors; and the output collimator array, which couples light from each output mirror back into its output fiber. High-quality mirrors and collimators and precise electrostatic control of the position of each mirror, enable switch times of less than 50 ms and optical loss that is less than 3.5 dB for the S160 Optical Circuit Switch.

Users manage and communicate with the S160 Optical Circuit Switch via high-reliability redundant Control Processors. TL1 command sets and SNMPv3 are supported in addition to a CORBA interface and a Web-based Graphical User Interface. An OpenFlow API for SDN applications is also available.

ABOUT CALIENT

CALIENT Technologies is the global leader in Optical Circuit Switching with systems that enable dynamic optical layer optimization in next generation datacenters and software-defined networks. CALIENT's 3D MEMS switches have demonstrated years of reliability, and with more than 100,000 optical terminations shipped, CALIENT has one of the largest installed bases of photonic switches worldwide.

Specifications

OPTICAL

160 Ports In, 160 Ports Out (Each port is TX/RX pair)
Single-mode fiber, setup time: < 50 ms
PDL <0.3 dB, PMD < 10 fs
Chromatic dispersion at 1550 nm (EoL): 0.25 ps/nm
Static cross-talk -65 dB
Input Dynamic range: +5 dBm to -20 dBm
Switching cycles: 10^9
Insertion loss (EoL): min 1.2 dB, typical 2.0 dB, max 3.5 dB
Return loss (EoL): typical 40 dB, minimum 35 dB

ENVIRONMENTAL

Temperature: Operating -5° to 50° C (23° to 122° F)
Non-operating -40° to +70° C (-40° to 158° F)
Humidity: Operating 5% to 90%, non-condensing
Non-operating 5% to 95%, non-condensing

POWER

-48v DC dual redundant (A/B) power supplies
Optional Front or Rear mounting of A & B Power Feeds
Field replaceable power modules
Power dissipation: 45 watts typical

MECHANICAL

Size 17.5"w x 12.2"h x 19"d (445 x 310 x 483 mm)
Weight 45 lbs. (20.5kg), Shipping weight 55 lbs. (25kg)

REGULATORY COMPLIANCE

Safety: UL 60950, EN 60950-1, CSA 69950
EMI / EMC: FCC Part 15 Subpart B, GR-1089-CORE, EN 55022, Class A, EN 55024
Environmental: GR-63-CORE (NEBS), EN 300019
Eye safety: CFR Title 21 Part 1040 Class 1
I/P voltage: ANSI T1.315-2001

RELIABILITY

MTBF > 20 years

MANAGEMENT

Interfaces: Dual Gigabit Ethernet Ports, Serial Console Port, External Alarm Contacts
Web GUI
TL1 Command Set, SNMPv3, CORBA, OpenFlow API

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