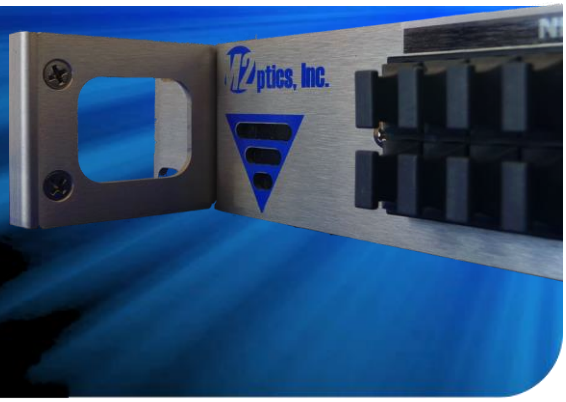
MONITOR

Capture & Distribute



Features…

- High-density, small footprint
- Intelligent taps
- All-optical solution
- Port replication/multicast
- Protocol and data rate agnostic
- Built-in APIs for integration into existing networks

Benefits…

- Save space
- Simplify connectivity
- Capture all traffic
- Lower costs
- Reduce latency
- Distribute traffic efficiently
- Future-proof your network

Network monitoring is a key concern for many companies; however, in recent years, the market has become increasingly more complex as specialized equipment has been brought to market. For example, now there are tools for nearly every kind of monitoring situation. Whether you want to do simple layer 2 filtering and aggregation or Deep Packet Inspection (DPI) there are tools specialized for it. As a result, the term network monitoring is used to describe a number of tasks in today's networks. To understand what the right solution is for a given situation, it is important to break down the functional areas of network monitoring. Generally, network monitoring involves 3 processes:

1. Capture – network taps
2. Distribute – switches
3. Analyze – probes

The first two processes are facilitators that can be used to enhance the monitoring process without impacting the network, all while reducing costs. Of course in many cases, some hybrid devices can perform one or more of these functions. M2 Optics' **S.M.A.R.T.** optical solutions focus on the Capture and Distribute processes with SPLITLIGHT™ and SWITCHLIGHT™.

What are the problems with Capture & Distribute solutions?

The problems with existing solutions for capturing network traffic vary greatly. In some cases, network administrators use Switch Port Analyzer (SPAN) ports on traditional routers or switches to capture network traffic. SPAN ports have several major flaws:

- First ports to drop traffic when backplane congestion occurs
- Packet errors that cause retransmits to occur are not forwarded
- Data rate and protocol dependent on the network

Network taps provide a better solution than SPAN ports; however, current implementations have issues as well, especially in data center environments where the shear number of taps can be quite daunting. Here are some of the issues with current network tap offerings:

- Taps are typically limited to 12 max in a 1 rack unit (RU) shelf
- Tap offerings are limited in terms of type (1x2 in most cases) and power (50:50 or 60:40 are typical)

Problems with distribution depend on the type of equipment used for distribution. If layer 2 switches are used, distribution is limited to the current data rate and protocol making upgrades costly. Although these devices try to reduce latency, any time a signal goes from the optical domain to the electrical, latency is introduced to the network. Furthermore, in dense environments, such as data centers, a large number of ports may be required which can increase costs.

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While the aggregation function provided by these switches can sometimes reduce the number of ports it is totally dependent upon having the same data rate available on the analysis device or probe, which can also increase costs.

If a traditional, high-density, all-optical switch is used, only single-mode fiber environments can be addressed, which eliminates it from many cloud applications. Also, you can only distribute traffic from one source to one analysis device. In other words, there is no integrated multicast function to send traffic from a single source to multiple analysis devices.

Why is M2 Optics' S.M.A.R.T. Solution Better?

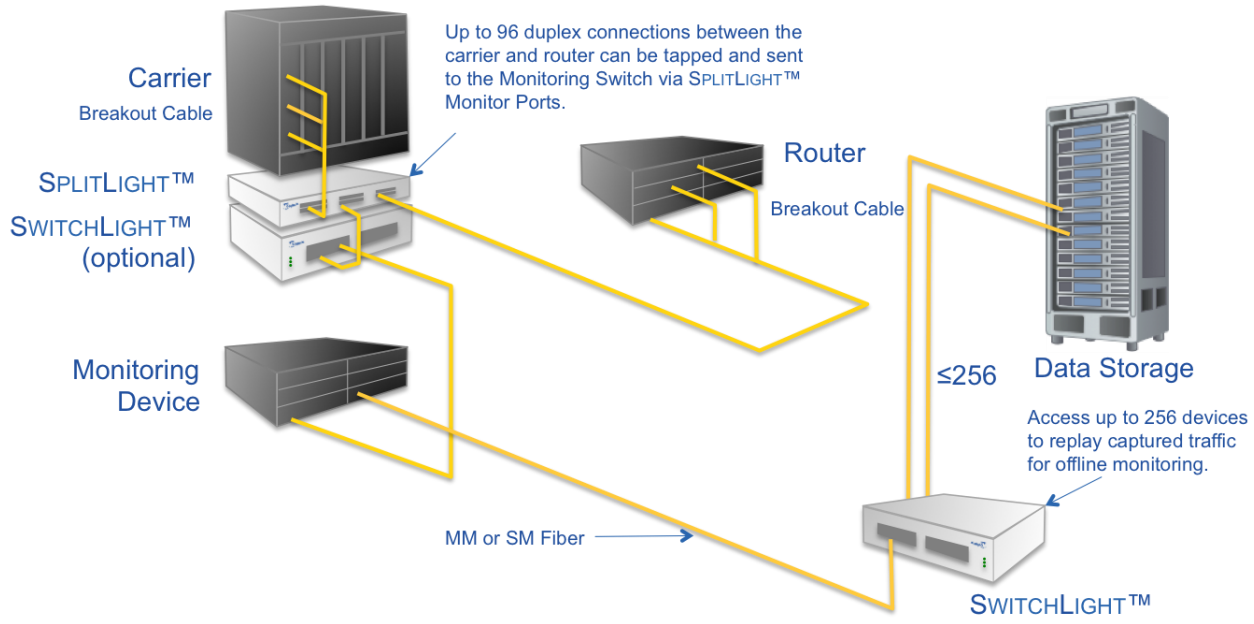
M2 Optics' **S.M.A.R.T.** optical solutions offer two products to address the Capture and Distribute processes: SPLITLIGHT™ and SWITCHLIGHT™. SPLITLIGHT™ is designed to provide the highest density network tap device in a single RU to capture any type of traffic regardless of protocol, data rate, or fiber type. Furthermore, SPLITLIGHT™ supports multiple tap types (1xn, n=2/4/8/others), any power ratio (50:50 to 99:1) and can be customized to mix and match these within a single chassis.

SWITCHLIGHT™ provides a high-density 1 or 2RU solution for distributing traffic to a single analysis device or to multiple devices through its integrated multicast function. Likewise, SWITCHLIGHT™ can be used to distribute traffic from multiple storage devices to/from a single analysis device. In addition, SWITCHLIGHT™ may act as a hybrid device integrating "intelligent" taps to give you complete control of the distribution process even when your needs change. Furthermore, SWITCHLIGHT™ separates itself from other devices providing the distribution function through its ability to handle any data rate, protocol, or fiber type. Finally, with integrated application programming interfaces (APIs), SWITCHLIGHT™ fits seamlessly into existing networks.

The following list describes some of the advantages of using M2 Optics' **S.M.A.R.T.** optical solutions:

- High-density. SPLITLIGHT™ provides the highest density network tap solution in a single RU.
- Intelligent taps. SWITCHLIGHT™ integrates "intelligent" taps preventing connectivity issues in the field.
- Dropless capture. Whether SWITCHLIGHT™ or SPLITLIGHT™ is used, all traffic will be captured and forwarded for analysis.
- Lower costs. Using SWITCHLIGHT™ to distribute traffic can reduce the number of ports required on analysis devices. Furthermore, SWITCHLIGHT™ provides a cost effective way to access storage devices on-demand for data retrieval.
- Reduce latency. SPLITLIGHT™ and SWITCHLIGHT™ eliminate the electrical conversion that optical-to-electrical-to-optical (OEO) switches require to ensure that optical signals are multicast or replicated at the speed of light.
- Lossless multicast. SWITCHLIGHT's lossless multicast is truly unique as it is the first all-optical, plug-n-play solution for optical multicast and/or port replication that can eliminate the added insertion loss associated with these functions.
- Future-proof. Being data rate and protocol agnostic, SWITCHLIGHT™ eliminates the need for upgrades for the foreseeable future. SWITCHLIGHT's standard APIs also make integration into existing environments pain-free.

Figure 1: Example of a Network Monitoring Application with Storage and Retrieval Function



M2 Optics' **S.M.A.R.T.** optical solutions offer a cost-effective, flexible, and resource efficient means for capturing and distributing data in network monitoring applications. To learn more about M2 Optics' **S.M.A.R.T.** solutions, contact us at 919-342-5619 or visit us on the web at www.m2optics.com. .