

# REPLICATOR

## Optical Multicasting



### Features...

- Optical signal multicast
- 40/100Gbps port replication
- No electrical conversion
- Plug-n-play simplicity
- Protocol and data rate agnostic
- Built-in APIs for integration into existing networks

### Benefits...

- Prevent congestion
- Lower costs
- Reduce latency
- Lossless multicast
- Future-proof your network

There are many scenarios in today's networks that require the replication of an optical signal, also known as optical multicasting. Some of those scenarios include video feeds or data streams that need to reach multiple endpoints simultaneously. In other scenarios an expensive 40/100Gbps port may need to be replicated. In either case, current multicasting solutions create potential problems associated with congestion, cost, and latency.

### What are the problems with existing solutions?

Multicast is a common feature of many switches with electrical backplanes, however, with data rates at 40Gbps and above, multicasting becomes an expensive and resource intensive endeavor. 100Gbps interfaces are still relatively expensive, so multicasting a 100Gbps signal adds significant cost.

In addition, multicasting 40/100Gbps signals in the electrical domain may rapidly exhaust the backplane resources. For example, a L2/3 switch receives a 100Gbps signal over 4x25Gbps wavelengths. Once received, a gearbox is used to take the 4x25Gbps optical signals and convert them to 10x10Gbps electrical signals. Each of those signals has a dedicated lane within the backplane. So, if you want to multicast a single signal 8 times, 80 lanes will be required. When extrapolated multiple times, it is easy to see that even with Terabit backplanes congestion will likely occur.

Another area of concern with multicasting that exists in even lower speed 1-10Gbps networks is latency. Anytime a signal is taken from the optical domain to the electrical, some amount of delay in packet processing will be added, which creates latency. This can cost financial institutions \$100s of millions of dollars every year. For video distribution, this can increase synchronization issues between multiple feeds.

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

Two of the strongest trends in networking today are 100Gbps networking and latency reduction. Since congestion can also be a cause of latency, the only way to avoid both of these problems is to move the multicasting function into the optical domain. M2 Optics' S.M.A.R.T. optical solutions provide an efficient, low-latency approach for optical signal multicasting regardless of protocol, data rate, or fiber type.

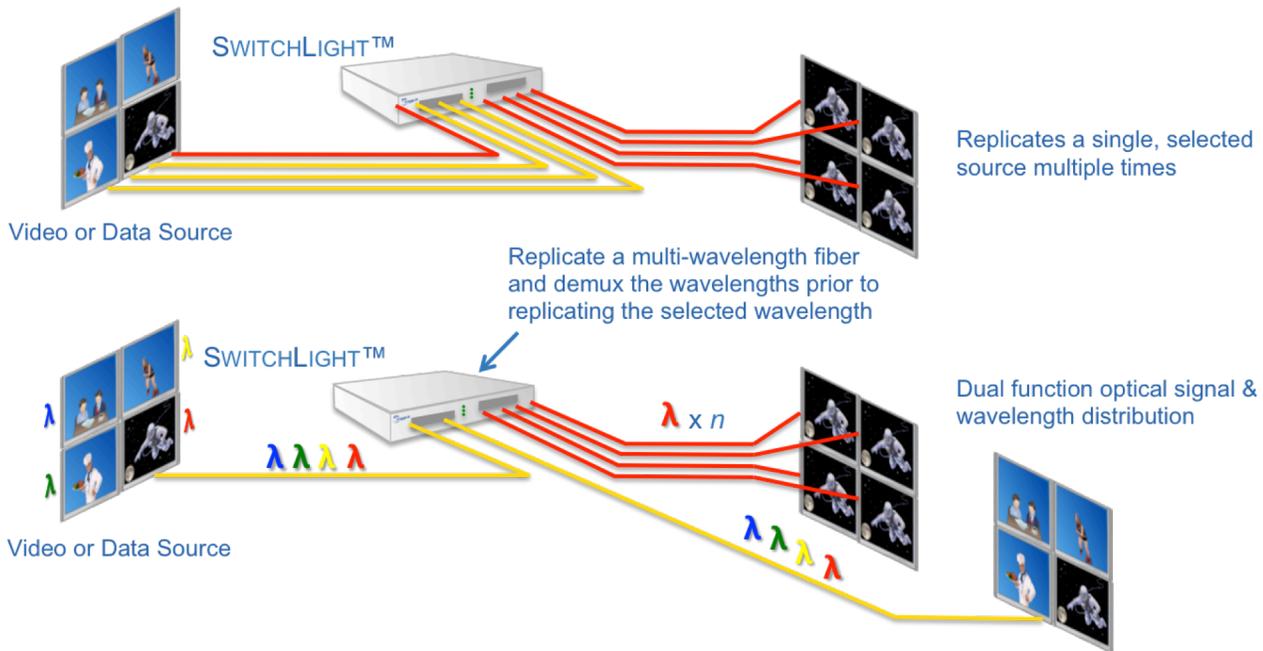
- **Prevent congestion.** SWITCHLIGHT™ reduces the number of lanes needed for optical multicast and port replication in existing OEO (Optical-Electrical-Optical) switches.
- **Lower costs.** Using SWITCHLIGHT™ to replicate an expensive 40/100Gbps port decreases the per port cost of multicasting optical signals by eliminating the need to provide multiple 40/100Gbps interfaces.



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- **Reduce latency.** SWITCHLIGHT™'s all-optical solution eliminates the electrical conversion that 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 your network.** 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 Video or Data Multicast Application



M2 Optics' **S.M.A.R.T.** optical solutions offer a cost-effective and resource efficient means for addressing many of the problems associated with optical signal multicasting and/or optical port replication. 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](http://www.m2optics.com).