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## **New technologies to optimize optical networks**

- o *Today, operators want to make profit from their fiber-based networks.*
- o *The American MRV and the Israeli Packetlight enter this niche*

No more gigantic investment in optical fiber in the competition for bandwidth. From now on the operators try to make profit of the existing, or select economical solutions to expand their networks, mainly in the domain of access. It is this niche that the American MRV (formerly known as Optical Access) and the Israeli Packetlight can be found.

MRV promotes the coarse multiplexing of wavelength (or CWDM). Its principle is to operate less cutting edge lasers, which are therefore less expensive. The spacing between channels is 20 nm in CWDM, against 0.2 nm in DWDM. Results: the cost per channel is about 40% less expensive in CWDM than in DWDM.

### **MRV enables a combination of CWDM and DWDM**

This solution, therefore, interests the operators, but also the enterprises who want to connect separate sites over metropolitan networks. Instead of subscribing to a connection service supplied by an operator, they can rent dark fiber and install their own CWDM equipment. For example: over 3 years, it costs 1.35 million Euros to connect 2 sites 40 km apart in the Parisian area, using 2 links at 155 Mbps of France Telecom, versus 0.6 million if the enterprise rents dark fiber and realizes the installation and operation of CWDM chassis (including the civil engineering over about 100 m), thus achieving a bandwidth of 8 Gbps.

However, the number of channels is limited to 8 in CWDM, against 160 in DWDM. But it is possible to double the number of CWDM channels by using the new "Zero Water Peak" fibers (G.652.c). Actually, these add the capability of 1330 to 1410 nm. Furthermore, if the traffic suddenly increases, LambdaDriver<sup>®</sup>, MRV's multiplexing equipment, enables the combination of CWDM and DWDM (under certain conditions). Since the latter offers a capacity superior sixteen folds in number of channels, it is enough to change one or more modules in the chassis. The other channels can remain CWDM.

..... (the rest is about Packetlight).