FUSION Ethernet Virtual Wavelengths

Low-cost alternative for wavelength services

Wavelength Services: The Carrier's Pain

Carriers with fiber-optic networks, especially the Tier 1´s, offer wavelength services to their customers. The name of the service stems from the Wavelength Division Multiplexing (WDM) technique, enabling physical wavelengths across an optical network. Typically, the service involves an OTN-framing and a dedicated transport channel across the carrier's network.

Dedicated transport channels have high production cost, as vacant capacity cannot be shared with other services, like Ethernet. However, Ethernet services do not fulfill the latency requirements of wavelength services.

While current service offerings have a trade-off between throughput efficiency, service transparency and isolation, virtual wavelengths avoid this trade-off.

FUSION Ethernet Virtual Wavelengths

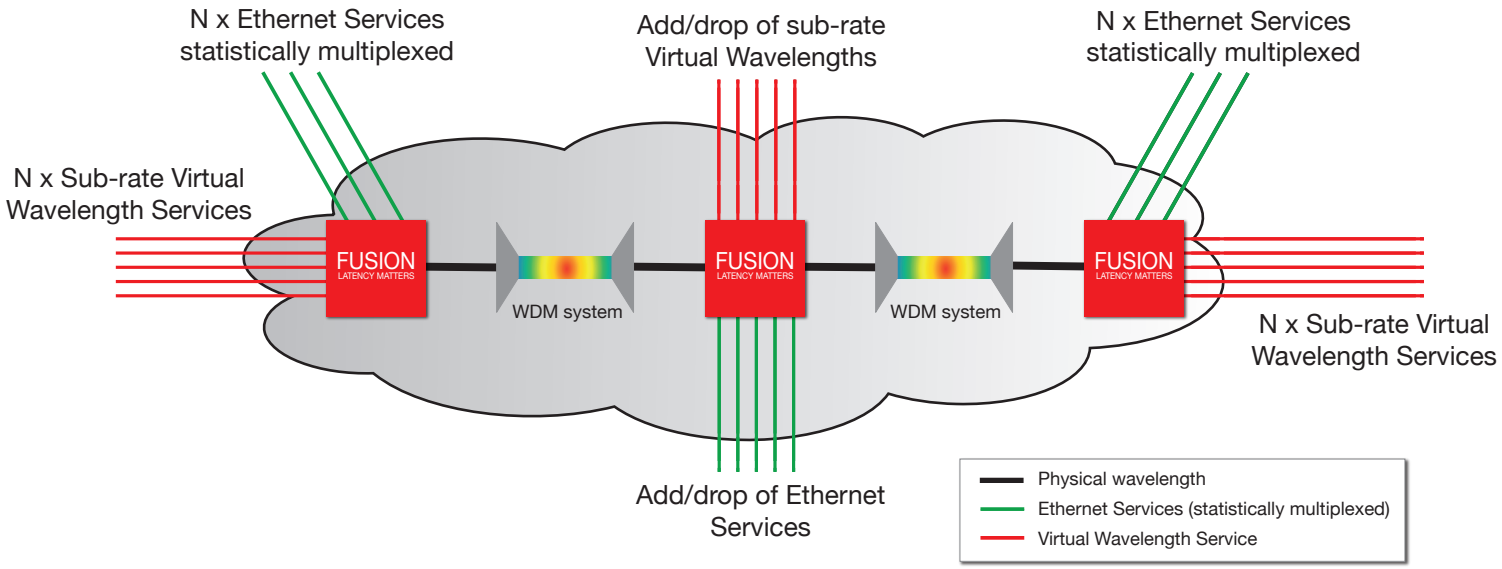
FUSION deterministic Ethernet IP Cores enable Ethernet Virtual Wavelength services empowering Ethernet to fulfill the capacity and latency requirements of a wavelength service. Ethernet systems integrating FUSION IP Cores offer deterministic transport with timing transparency. The quality of service characteristics for Ethernet Virtual Wavelengths are similar to the connection-oriented Time and Wavelength Division Multiplexing technologies (SDH, WDM, OTN): low and fixed latency, ultra-low latency variation and no packet loss. The throughput efficiency is higher as in packet networks, i.e. similar to the high-throughput and low cost connectionless Ethernet services.

Ethernet Virtual Wavelengths enable carriers to bring down production cost of wavelength services to the level of Ethernet services because dedicating physical wavelengths or similar is no longer needed.

FUSION Network Application Use-Case

The application example illustrates the case of enabling wavelength services offering multiple Ethernet Virtual Wavelengths. Lower rate (sub-rate) EWVs are multiplexed on the same physical wavelength. Additionally, add/drop of Ethernet Virtual Wavelengths at intermediate sites is enabled. Thus flexible service provisioning and efficient network dimensioning is supported. Additional Ethernet traffic may be statistically multiplexed into the same physical wavelengths.

Unlike existing solutions offering wavelength services, and in common with packet networks, FUSION allows efficient utilization of the network through statistical multiplexing. As for conventional Ethernet networks, additional lower priority traffic may be added through interfaces of any rate, e.g. 1, 10 or 100 Gb/s Ethernet.



Comparison of Wavelength Service Solutions

Property		Alien Wavelength	Transponder	Muxponder	Fusion
Transparency	Bitrate	Yes/distance (e.g. dispersion compensation)	No/weak	No/weak	No
	Protocol	Yes	Product dependent	Product dependent	Ethernet
	Timing	Yes	Typical	Product dependent	Yes
Reliability & Performance	Loss detection	No	Product dependent	Yes	Yes
	Protection	No	Product dependent	Product dependent	Yes, sub-ms ring protection
	Monitoring (OAM)	Weak (power monitoring)	Medium, high for OTN-based	Medium, high for OTN-based	High
Cost		High	High (dedicated)	Medium (dedicated)	**Low** (shared)

TransPacket Products

Our offering includes FUSION IP Cores supporting 1G, 10G, and 100G Ethernet interfaces, and a NETCONF/YANG embedded software enabling seamless integration in an SDN solution. Evaluation boards and software are available for test purposes.

About Transpacket

Transpacket (www.transpacket.com) has patented and developed a unique technology for optical Ethernet transport with extremely low and fixed latency. Transpacket defines new market rules for packet based data traffic by both satisfying QoS from wavelength- and TDM-based networks, and offering the high utilization and good performance expected in packet based networks. The products offer significant value for applications within fibre metro and backbone networks, mobile infrastructure, energy and utility markets, transport, data centers, trading and online gaming. The company's headquarter is in Oslo.

TransPacket FUSION Key Advantages

LOW AND FIXED LATENCY

- *Ethernet Aggregation with fixed and low latency*
- *Mix time-critical and non time-critical traffic*
- *Performance independent of load*

COEXISTENCE

- *Compatibility with Ethernet legacy deployment*
- *PDV preserved when crossing alien networks*

TRANSPARENT SYNCHRONIZATION

- *Built-in synchronisation*
- *Transparent transport of synchronisation*

PRECISION OAM

- *Accurate measure of packet loss and delay*
- *Fault and Performance monitoring via NETCONF*

ULTRA-FAST PROTECTION

- *Scalable sub-millisecond ring protection*
- *Supporting high availability Ethernet services*

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