

# eVelocity<sup>®</sup> Intelligent Optical Transport

## eVelocity is a rack and stack 100G coherent bandwidth-on-demand solution in a low power 1RU form factor

### FEATURES & BENEFITS

- Provides 100G coherent line-side optics with 240Gb of client-side connectivity in a compact 1 RU form factor
- Bandwidth-on-demand with packet shaping using statistical multiplexing
- Digital ROADM and FlexArc technology, provides add/drop functionality in addition to point-to-point, ring and mesh topologies
- Lower power consumption and smaller footprint reduces operating expenses (or OPEX)
- Offers bandwidth management at Layer 1, providing QoS for data demanding applications
- Interoperable with lit service or dark fiber
- Proven success with 7+ years in service with zero downtime
- No licensing fees
- Seamlessly integrate XKL's 10G products with 100G coherent products for future bandwidth upgrades

The eVelocity platform provides up to 96 channels of 100G Ethernet, 9.6 terabits of line-side bandwidth per fiber pair. Through the statistical multiplexing feature, the platform provides up to 11.5 terabits (23 terabits with firmware update) of client-side connectivity, providing the flexibility to allocate bandwidth on demand. Each eVelocity system is packaged in a 1RU chassis, providing bandwidth densities that are needed in data center space, metro applications, as well as regional and long haul applications.

eVelocity uses a first-of-its-kind, OSI Layer 1 statistical multiplexing algorithm that allows for the dynamic allocation of bandwidth on an as-needed basis. The virtualized interfaces enable seamless capacity growth as bandwidth demands increase. The eVelocity platform uses physical ports with soft-assigned priorities along with statistical multiplexing to provide QoS control, flexible bandwidth allocation, and maximize line utilization. An oversubscription ratio of 2.4:1 is available in each 1RU system. Firmware and gateway updates will enable a 4.8:1 oversubscription capability.



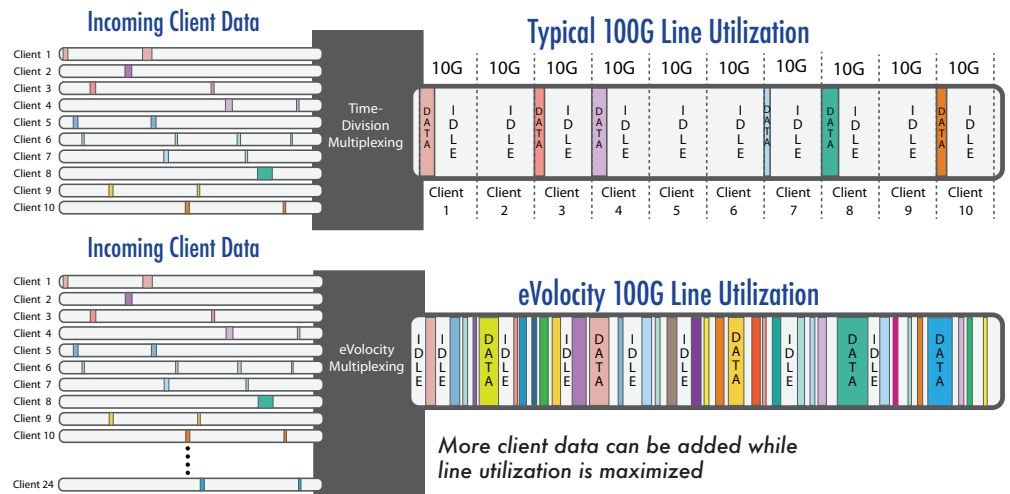
DQT100 Transponder



DQM100 Muxponder

### Statistical Multiplexing

The eVelocity platform allows you to run at true line rates. With traditional Time-Division Multiplexing (TDM) there is a great deal of idle frames in the form of bloated interpacket gaps. These idle frames cannot be reclaimed and, therefore, bandwidth is lost. TDM does not discriminate between idle and data packets, resulting in very inefficient line utilization. Network administrators typically design their networks such that router and switch ports run between 15% to 50% of line capacity. A 10G port running at 50% utilization will be idle half the time. The eVelocity platform allows operators to reclaim this lost bandwidth by aggregating multiple client streams, discarding the idle Ethernet packets and filling the line-side 100G pipe.



## Bandwidth Management at the Optical Layer

In addition to the statistical multiplexing component of the platform, network administrators can also soft-assign a class or priority level to each client port for quality of service. Priority levels can be adjusted at any time. Using a deficit weighted round robin algorithm (DWRR), the eVelocity platform has four class levels. These soft-settable classes give the operator control over each port.

Technical Specifications	
<b>Physical dimensions</b>	<b>Height:</b> 1RU <b>Width/Depth:</b> 16.9"/27.25" (29.5" with cable relief) <b>Weight, minimum:</b> 32lbs
<b>Optical Wavelengths</b>	<b>Client Optics:</b> QSFP+: 40GBase-SR4 (4 x 850nm), 40GBase-PSM4 (4 x 1310nm), 40GBase-LR4 (CWDM: 1271nm, 1291nm, 1311nm, 1331nm) <b>Line-side Optics:</b> DWDM: CFP (DP-QPSK Coherent, 1533.47nm-1561.42nm, 50GHz spacing). Non-DWDM: CFP (100GBase-SR10, 100GBase-LR4)
<b>Architecture</b>	Statistical multiplexing Dynamic bandwidth allocation Soft-enabled weighted round robin priority scheduler Maximizes channel utilization Alien wavelength support Media converter
<b>Power Requirements</b>	<b>Power input AC:</b> 100-240V AC, 50/60Hz <b>Power input DC:</b> -48 to -60V DC <b>Power consumption, typical:</b> 2 line-side CFP: 180W 1 line-side CFP: 164W

## Interface and Path Protection

The eVelocity platform provides interface protection as well as path protection. Customers can access the interface or path protection by providing an alternate route for their client-to-waves. If an interface goes down, all traffic will automatically switch to the protected interface or path. The statistical multiplexing algorithm will enable this failover to occur with minimal packet loss (depending on how oversubscribed the interface will be). Once the failing interface or path is restored, the customer can configure the automatic restoration of the traffic or require manual intervention before switching back to the primary path.

An alternative protection scheme is to use the integrated optical switch. This provides a very cost effective means to support a protected point-to-point link.

## Model Solutions

There are two base models in the eVelocity platform, the DQM100 and the DQT100. Both models provide the same statistical multiplexing capabilities, oversubscription features, etc. The DQM100 systems are appliances that allow customers to integrate EDFA amplifiers, filters, optical switches and any other components that are required for any particular topology. These models are ready to grow up to 40 channels with the addition of a DarkStar® Band Combiner (DBC) device.

The DQT100 systems are fully tunable and allow for a customer to grow to 9.6 terabits of line-side bandwidth. These systems are easily stacked and, when combined with a DMD96 DarkStar Mux/Demux device, can support 96 100G DWDM waves on a single fiber pair.

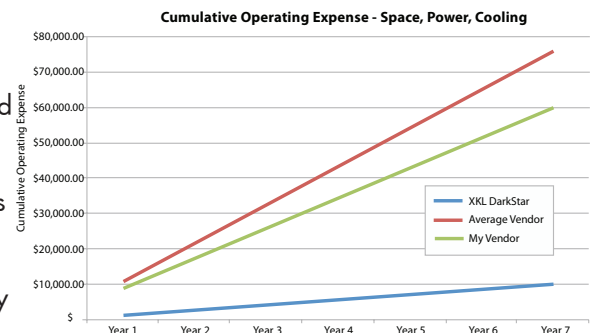
## Digital ROADM and FlexArc Technology

eVelocity integrates a feature that provides add/drop functionality with soft select configuration and the ability to accommodate an array of different topologies including rings, point-to-point and mesh. Utilizing any-to-any mapping and XKL's flexible architecture (FlexArc) allows for more control when designing and deploying networks. This capability is soft configured and available with DQT100 models.

## Reduce Recurring Costs

No licensing fees and low power consumption means low monthly power costs and low operating costs, due to the simplicity of the DarkStar platform. With more than seven years in the field with no downtime or required maintenance windows,

XKL's family of products are designed for efficient network deployments and are easily managed by existing IT staff.



## Seamlessly Integrate 100G Products with 10G Products

Forecasting bandwidth can be a tricky endeavor, but facilitating the next big capacity upgrade to your network is made simpler with the XKL family of products. The DarkStar family is designed with the future in mind so you can easily add 100G products to an existing 10G network. The integration of 10G on-off keying modulation, 100G DP-QPSK coherent modulation and future 16QAM/64QAM modulation schemes require careful design choices early on in the development of optical networking equipment.

## Intelligent Optical Transport

Visit us at [www.xkl.com](http://www.xkl.com), call us at 866.802.2777 (USA toll free) or +1.425.497.6590 to design a solution that best fits your bandwidth needs

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