

IPITEK's new DWDM based Dual Gigabit Ethernet transport system provides some of the most economical and reliable transport for GigE available today. The Dual GigE Module multiplexes two full line rate Gigabit Ethernet services onto one lambda for transport over a DWDM system or over a single fiber.

Developed specifically for MSO operators and broadcasters, the Dual GigE can operate in either bi-directional or uni-directional applications. This system is ideal for VOD and Broadcast services and allows extensibility in very reasonable increments.

The ability to simulate a return path allows it to connect to Ethernet switches and essentially "fool" it into thinking a standard Gigabit Ethernet path is available. This saves precious resources by not having wavelengths used in return paths that have no traffic on them.

Its drop and pass feature allows any location to drop the signals and pass them onto the next location. The unit can also split the signal and launch it in two directions for branching topologies

The unit is designed to operate in point-to-point or protected ring applications (OUPSRs). Its integrated dual optical receivers negate the need for an external optical switch and an internal splitter provides dual

FEATURES & APPLICATIONS

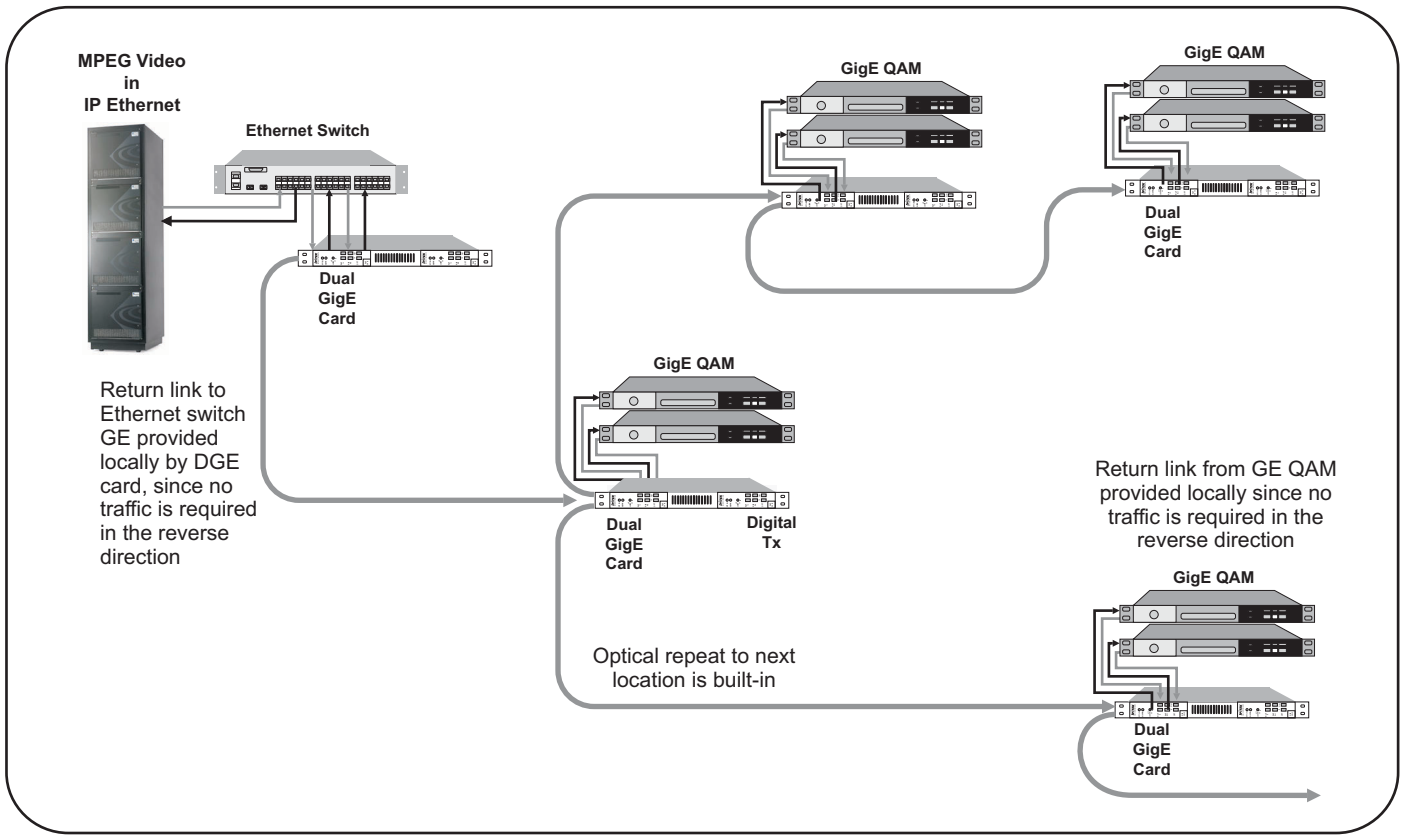
- **Dual Full line Rate Gigabit Ethernet transport on ITU Grid**
- **Developed for MSO's and broadcasters who need uni-directional as well as bi-directional GigE services**
- **Ideal for VOD and Broadcast Gigabit Ethernet services and high-speed data transport**
- **Available as part of a complete DWDM networking system**
- **Protected or unprotected service**
- **NodeWizard managed with SNMP alarm trap notification**

optical outputs. The unit can also operate seamlessly with external optical switches.

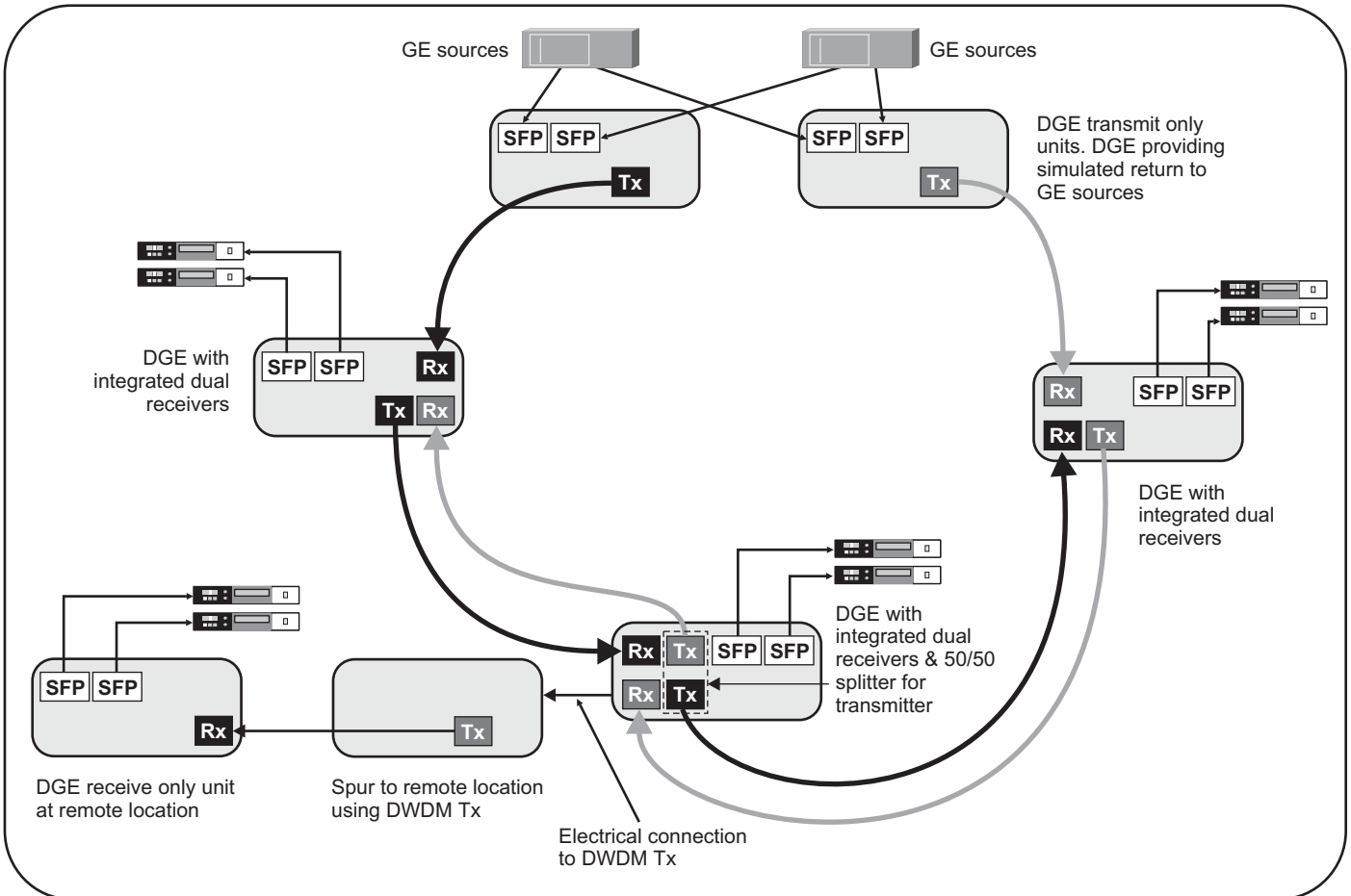
For ease of maintenance, the client-side lasers are SFP (Small Form Pluggable). This allows a failed laser to be replaced without affecting any other services. SFP client side lasers for the Dual GigE are available in multimode, 5 Km single mode, 10 Km single mode, 20 Km single mode and others upon request.

The Dual GigE Module mounts in a chassis based system that allows up to 20 GigEs to be transported from a single shelf. Optical switch modules, and EDFA's are also available for this system.

The unit is easily integrated with other modules in the MSP family for use in complex DWDM systems. The module provides network management information via the system's optional Optical Service Channel (OSC). The same NodeWizard® management system that manages IPITEKs HBR-2500, DWDM networks, CQ-5 and CQ-10 and HFC transport systems can manage the new Dual GigE system. As well, it can be monitored from any SNMP-capable NMS. The Dual GigE system also includes Optical Fiber Amplifiers, Optical Switches and Optical Multiplexers and Demultiplexers for DWDM operations from 2 to 40 wavelengths.

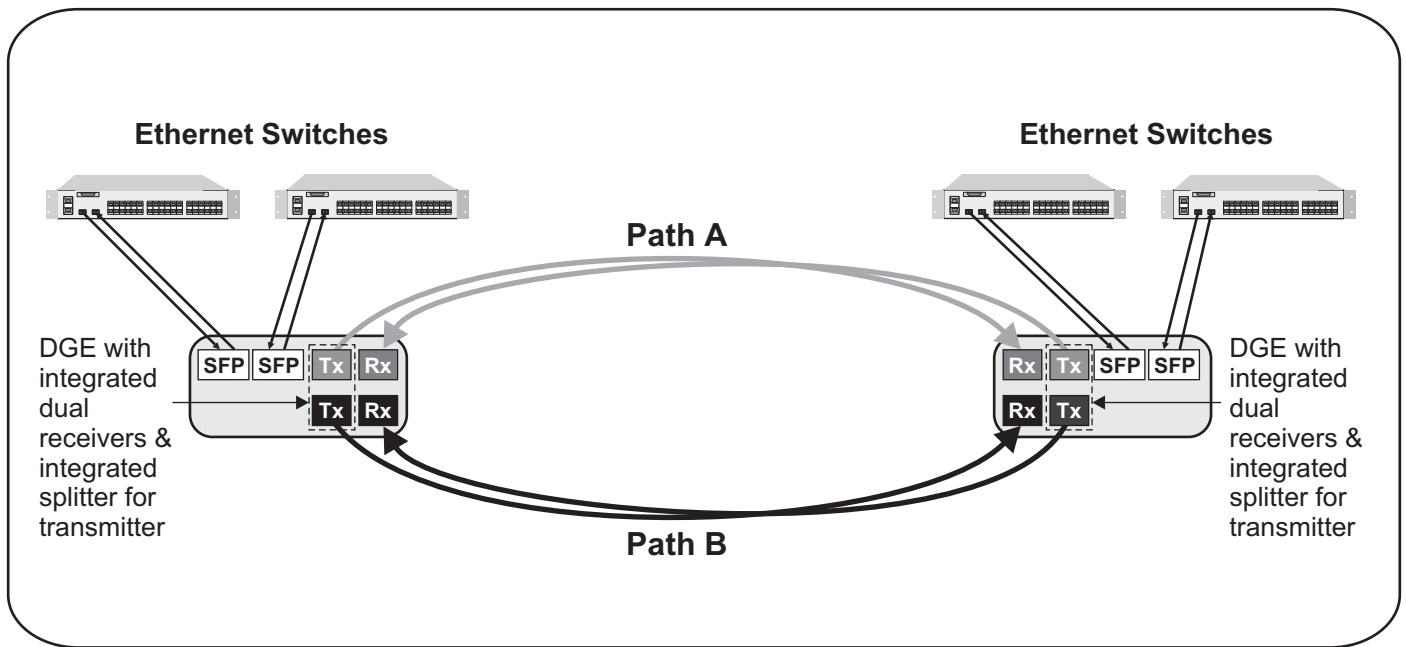


Drop/Pass/Branch Topology



Survivable Broadcast or VOD Ring

A fiber cut or location failure is healed by integrated dual receivers



Protected Bi-directional Path Diverse Topology

SPECIFICATIONS

1000Base-LX

Link budget

1310nm Output Power (L1):	-9.5 dBm min
Receiver Sensitivity(L1):	-20 to -3 dBm
1310nm Output Power (L4):	-4.5 dBm min
Receiver Sensitivity(L4):	-22.5 to 0 dBm
1310nm Output Power (L8):	-2 dBm min
Receiver Sensitivity(L8):	-24 to -3 dBm
CWDM (Ch 47/49/51/53/55/57/59/61):	0 dBm min.
Receiver Sensitivity:	-24 to -9 dBm
Fiber Type:	9 μ SM Fiber
Connector:	LC Duplex
Return Loss:	12 dB min

1000Base-SX

Transmit

Optical Output Power:	-9.5 dBm min
Wavelength:	850nm
Fiber Link Length:	550m max (50 μ m MMF) 275m max (62.5 μ m MMF)
Connector:	LC Duplex

Receive

Optical Input Power:	-17 to 0 dBm
Return Loss:	12 dB min
Connector:	LC Duplex

1000Base Copper

(call for availability)

SPECIFICATIONS (Cont'd)

2.5 Gb/s Network Optical Link

Input

Optical Input:	1200-1600nm single mode		
Input Level:	PIN Receiver:	-21 to -2 dBm	
	APD Receiver:	-28 to -8 dBm	
Bit Error Rate:	10E ⁻¹¹ Maximum		

Electrical Output

Data Rate:	2.5 Gb/s
Electrical Signal Level:	400 mV p-p typical
Output Impedance:	50 ohms, SMA jack

DWDM

Optical Output

	Standard 1550nm or 1310nm ITU Grid Lasers	Extended Budget 1550nm ITU Grid Lasers
C-band ITU Channels:	Typical 1530nm-1560nm	Typical 1530nm-1560nm
Wavelength Spacing	100 GHz (40 Channels) 200 GHz (>16 Channels)	100 GHz (40 Channels) 200 GHz (>16 Channels)
Wavelength Tolerance (nm):	0.04 (5 GHz)	0.04 (5 GHz)
Output Power:	1mW (0 dBm) , 5 mW (7 dBm)	1 mW (0 dBm), 5 mW (7 dBm)
Maximum Dispersion:	100Km (1440 ps/nm)	170Km, 200Km, 400Km and 650Km options

CWDM

Channels:	47 thru 61, odd channels (per ITU-T G.694.2)
Output Power:	1mW (0 dBm) uncooled laser, 5 mW (7 dBm) cooled laser
Maximum Dispersion:	80Km (1440ps/nm)

Electrical, Environmental & Mechanical

Powering:	Provided by Network Chassis Power Supply Module
Operating Temperature:	0° C to +50° C standard, -20° to 65°C extended range option
Operating Humidity:	to 90% non-condensing
Storage Temperature:	-40° to +70°, 24 hours
Physical Dimensions:	6"H x 1.4" W x 12.6" D
Weight	3.2 lbs.

ORDERING INFORMATION

MSP-DGE-XXX - XX - XXX - X - XX - XX - XX - XX - X

12 Slot DWDM MSP Compatible Dual Gigabit Ethernet Module	Channels	Rx Config	DWDM Laser	Tx Outputs	Optical Connectors	Port 1 Transceiver	Port 2 Transceiver	Temperature
	XXX=ITU Ch# CXX=CWDM Ch#	00=Tx only 1P=1 PIN Rx 1A=1 APD Rx 2P=2 PIN Rx 2A=2 APD Rx	P01=1mW, 100Km P05=5mW, 100Km E11=1mW, 170Km E12=1mW, 200Km E22=2mW, 200Km E26=2mW, 600Km	0=Rx only 1=1 output 2=2 outputs (50/50 split) ¹	FA=FC/APC FU=FC/UPC LA=LC/APC LU=LC/UPC SA=SC/APC SU=C/UPC EA=E2000/APC	S1=850nm, MM L1=1310nm, SM, 10Km L4=1310nm, SM, 40Km L8=1550nm, SM, 80Km XX=CWDM Ch# (47,49, 51,53,55,57,59,61) CO=Copper ²	S1=850nm, MM L1=1310nm, SM, 10Km L4=1310nm, SM, 40Km L8=1550nm, SM, 80Km XX=CWDM Ch# (47,49, 51,53,55,57,59,61) CO=Copper ²	S=0° to 50°C E=-20°C to 65°C
	A13=Uncooled 1310nm A15=Uncooled 1550nm		CWDM Laser P01=1mW, 80Km P05=5mW, 80Km					

¹Other than 50/50 split, order external splitter with one Tx output

²Call for availability



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