

# 100 Gb WDM

- **100 Gb WDM assembles many 1 Gb to 10 Gb services into a single wavelength**
- **It supports Ethernet, Fibre Channel, SDH, InfiniBand a.o.**
- **OTU4 standard ensures error-free transport with very low latency**
- **Advantageous for longer distances**
- **Gets transmitted across the entire fibre network of GlobalConnect**

100Gb WDM is an extension of GlobalConnect's WDM product, which imposes certain requirements to compatibility and range. Specifications for 10 Gb relating to quality, security, redundancy and no overbooking also pertain to 100 Gb.

## Standards

According to OTN (an optical network standard) OTU4 (Optical Transport Unit) is transporting a 100 Gb ethernet-signal with a speed of 112 Gb/s. A key advantage of OTN-transport is that it actually delivers error-free transportation with very low latency.

Its typical application is for clients' servers, which deliver ODU4 (Optical Data Unit). OTU4 can transport up to 100 pcs Gigabit or 10 pcs 10 Gigabit Ethernet signals. The standard includes forward error correction.

OTU4 can also transport STM64, MPLS or IP packets with generic framing.

Moreover it supports ODUFlex signals like Fibre Channel FC2, FC4, FC8 (and the special FC12 which can be transported within 10 Gb) and InfiniBand. Today GlobalConnect do not support FC16. ODUFlex is transparent for VLAN and MPLS tunnels.

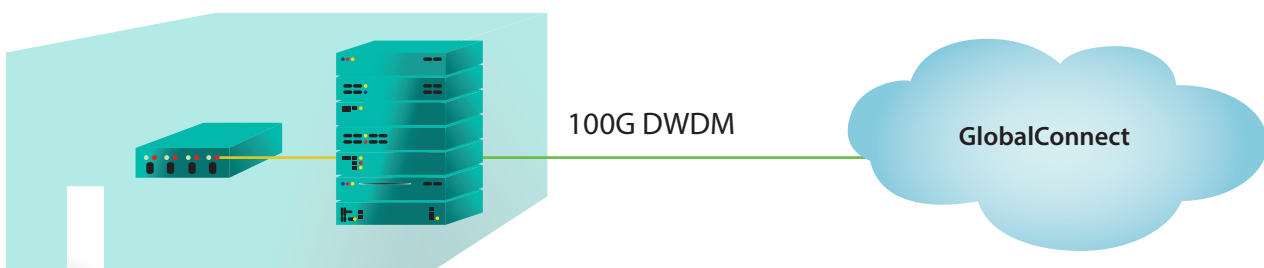
## Delivery

Distance from your location to GlobalConnect access point determines the equipment to be used.

On the line side GlobalConnect 100 Gb WDM is being transported within the same bandwidth as 10 Gb WDM. This of course has the greatest impact on long distances where a 100 Gb WDM strains the backbone with only one tenth of 10 pcs 10 Gb WDM.

## For 100 Gb Ethernet the following standards for transceivers apply:

Customer equipment is in a GlobalConnect PoP



**Figure 1:** Customer equipment is in a GC PoP, and <100 m from customer equipment to GlobalConnect transceiver.

Customer equipment: 100 GBase-SR10 over multimode fibre max 100 m.

# Technical data

There are less than 10 km resp. 40 km from customer site to GlobalConnect PoP.



**Figure 2:** Up to 10 km to GlobalConnect PoP with LR4 and up to 40 km to GlobalConnect PoP with ER4-transceiver.

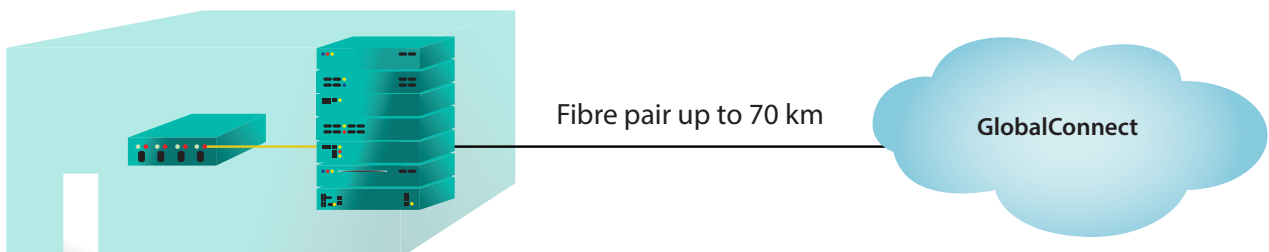
Customer equipment: 100 GBase-LR10 over singlemode fibre within 10 km to GlobalConnect PoP, 100 GBase-ER10 over singlemode fibre within 40 km to GlobalConnect PoP with appertaining fixed frequencies and baud rates. It is irrelevant if you use equipment from Cisco, IBM, Dell etc.

GlobalConnect's transponders on the customer side accept up to 10 pcs 10 Gb ports. The signal is taken further forward over 100 Gb Coherent DWDM to the receiving end.

Distance from customer equipment to GlobalConnect PoP must be taken very seriously.

Included in the 100 Gb service is a fibre pair from customer premises to nearest GlobalConnect PoP.

There are up to 70 km from customer site to GlobalConnect PoP. If the distance to a GlobalConnect PoP is greater than 40 km, a multiplexor with tunable lasers (which can reach 70 km) has to be set up with the customer.



**Figure 3:** GlobalConnect will set up a multiplexor with the customer. There are between 40 km and 70 km to GlobalConnect PoP.

Customer equipment: 100 GBase-SR10 with FSP-lasers are applied for the locally set up GlobalConnect multiplexor. Included in the 100 Gb service is a fibre pair from customer premises to nearest GlobalConnect PoP. If you already have installed a fibre pair to a GlobalConnect PoP, this solution will be economically advantageous.

Distance to GlobalConnect PoP	Customer transceiver	Fibre type	GlobalConnect equipment with customer
<100 m	100GBase-SR10	Multimode	
< 10 km	100GBase-LR10	Singlemode	
10 – 40 km	100GBase-ER10	Singlemode	
40 – 70 km	100GBase-SR10	Multimode	Multiplexor med tunable laser

In any case a pair of fibres shall be employed between your premises and GlobalConnect PoP.

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