



Global Crossing Optical

Lambdasphere
Lambdaline
Managed Fibre

Global Crossing Optical

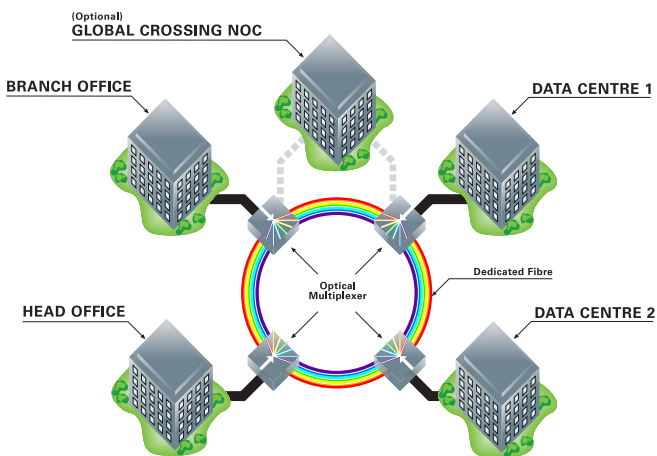
What are Global Crossing Optical Services?

The optical network within and between data centres is the critical fabric that interconnects many data centre components users, applications, network clients, open system servers, mainframes, appliances, and storage. A well-planned inter data centre network optimises application availability and performance, secures resources from compromise, provides continuous user access, and underpins business continuity. More than 20 of the UK's leading financial institutions rely upon Fibernet optical services to meet these needs.

The three services in the Global Crossing Optical portfolio range from basic construction of inter site private fibre networks through to the design, construction, equipment supply, installation and ongoing management of complex multi sited optical networks in campus, metro, national and international configurations.

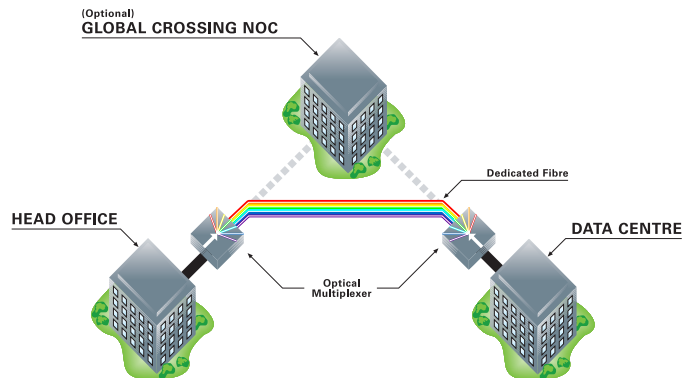
Service Options

Global Crossing Lambdasphere - High Bandwidth delivery, distance no object



- Specifically designed for customers that require bulk delivery of high bandwidth transparent ESCON, FICON, LAN and SAN services between multiple sites.
- The sites don't have to be close together, Fibernet have live customers that are successfully carrying SAN traffic over very long distances - enough distance to ensure that an event that might affect both primary and secondary datacentres within an individual metropolitan area does not affect the operation of tertiary centres located long distances away, perhaps in rural areas.
- Services supported include Ethernet 100, 1000, 10000Mb, ESCON, FICON, Sysplex, FiberChannel 1000, 2000, SDH STM4c, STM16c, STM64c.

Global Crossing Lmbdaline - The cost effective Metro solution



- The cost effective solution for customers who require point to point delivery of transparent LAN and SAN services.
- Suitable for sites up to 40km apart.
- Services supported include Ethernet 100, 1000, 10000Mb, ESCON, FICON, Sysplex, FiberChannel 1000, 2000, SDH STM4c, STM16c, STM64c.

Global Crossing Managed Fibre - The 'Do It Yourself' option

- Construction of private network facilities in single or dual diverse pairs of optical fibres between two or more buildings. Fibres may be routed in dedicated or shared ducts, according to customer needs and route availability.
- Installed and tested with the latest optical test equipment to determine its optical characteristics and optical "budget". This will enable calculation of the number and type of line cards that can be deployed.
- Specific fibre network builds can be undertaken by Fibernet's own network planning and civils teams to ensure that Managed Fibre customers achieve a precise match for their functional, performance, resilience and budgetary needs.

Features

With both Global Crossing Lambdasphere and Global Crossing Lambdaline solutions you benefit from;

- The latest Coarse and Dense Wave Division Multiplexing (CWDM / DWDM) optical technology.
- A solution that's fully installed and managed end-to-end by Fibernet - removes the headache of DIY solutions.
- The choice of up to 32 protected or 64 unprotected wavelengths per fibre pair.
- DWDM cuts the time required to deploy new services down to weeks or even days removing or greatly reducing planning constraints on organisational change or business responsiveness.
- Protected services - traffic split between worker and protection wavelengths which will switch the fibre path from the primary to the secondary or redundant fibre path within 50ms, so no loss of service in the event of a fibre break.
- Un-Protected services - will enable client device protection.
- The option of working with us to integrate the service into your own network management system if retaining visibility of your Global Crossing Optical network is important to your company.
- The Global Crossing Lambdasphere and Global Crossing Lambdaline services are managed and monitored 24/7 by the staff at our Network Operations Centre.
- Both Global Crossing Lambdasphere and Global Crossing Lambdaline technologies are certified and approved by the worlds leading storage companies. Networks are designed to achieve each customer's individual needs for service level availability.

Saves headaches and money

- We install and manage both equipment and the service, end-to-end, taking away the headache of trying to do it yourself.
- Multiple services across one platform means less equipment for your company to house - so you save on space and power consumption as well as maintenance costs.

High Security Solution

- All Global Crossing Optical metropolitan services are delivered over dedicated private fibres - the service is not shared or contended in any way.

We make it simple - but it's not!

In deploying a DWDM-based network there are some considerations that will affect one's choice of vendor, equipment type, design, and so on. As part of our service design process we will take accountability for and handle all of the following complexities for you:

↳ **Is the DWDM system compatible with the fibre you plan to use?**

Some types of older fibre are not suitable for DWDM use, while newer types, such as NZ-DSF, are optimized for DWDM. Standard SM fibre (G. 652), which currently accounts for the majority of installed fibre, can support DWDM in the metropolitan area. If new fibre must be laid, a type should be chosen that will allow for future growth, particularly as DWDM systems expand into new wavelength regions and higher bit rates.

↳ **What is my migration and provisioning strategy?**

Because DWDM is capable of supporting massive growth in bandwidth demands over time without forklift upgrades, it represents a long-term investment. Both point-to-point and ring topologies can serve as foundations for future growth into mesh topologies. Planning should allow for flexible additions of nodes, such as OADMs, to meet the changing demands of customers and usage.

↳ **What network management tools can I use?**

A comprehensive network management tool will be needed for provisioning, performance monitoring, fault identification and isolation, and remedial action. Such a tool should be standards-based (SNMP, for example) and be able to interoperate with the existing management platform.

↳ **What is my strategy for protection and restoration?**

Designing a protection strategy is a complex process that must take into account many variables. There are hard failures (equipment failures, such as laser or photodetector, and fibre breaks) and soft failures such as signal degradation (for example, unacceptable BER). The former must be addressed through redundancy at the device, component, or fibre level. The latter must be addressed by the system through intelligent wavelength management. Protection and survivability strategies depend upon service type, system, and network architectures. In many networks, they also depend on the transport protocol

↳ **Optical Power Budget**

Optical power budgets, or link loss budgets, are a critical part of planning an optical network. Vendors provide guidelines, or engineering rules, to use for their equipment that must be transferred into initial wavelength design.

↳ **Interoperability Issues**

Because DWDM uses specific wavelengths for transmission, the wavelengths used must be the same on either end of any given connection. As different vendors may use different wavelength numbering schemes this could create issues for transmission between different systems at Layer 1.

Technical Specifications

Client Protocols served

SDH: STM-1, STM-4, STM-16, STM-64
Fast Ethernet, Gigabit Ethernet, 10Gigabit Ethernet
Fibre Channel: 1Gbps and 2Gbps
IBM: ESCON, FICON, ETR, ISC, Sysplex
Video: SDI

Optical Interface options

850nm / 1310nm

Path Protection options

Resilient switch capability - dual separated power feeds
Traffic protection - unprotected, diverse routed, fibre protected, wavelength protected

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