

2012 / 2013

Data Centre Solutions

Better Technology Through Innovation

HellermannTyton
Network Sciences

Data Centres

As the demand for data centre capacity increases, so do the internal demands on the data centre. The data centre now faces a number of issues that all impact the success, profitability and operational effectiveness including:

- Data storage capacity
- Speed of return on investment
- Infrastructure performance
- Power consumption
- Temperature control
- On-site security
- Environmental impact

HellermannTyton understands these issues and, as a leading structured cabling manufacturer, has produced a range of products and solutions that help address them.

Reduce Installation Times

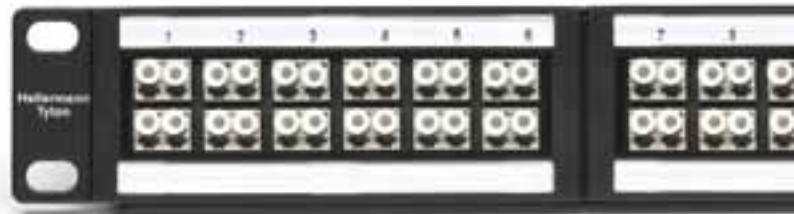
Speed of installation is one of the most important factors for a data centre owner or manager. The quicker the infrastructure is up and running, the quicker the data centre is ready for use by its parent company or available to be sold as a data storage facility to a client.

Through **RapidNet**, the pre-terminated and pre-tested solution from HellermannTyton, it is possible to reduce installation times by up to 85% with copper and 95% with fibre compared to traditional field terminated systems.

Space Efficiency

Space within a data centre now comes at a premium. It is important to use the available space as effectively and as efficiently as possible. The more space and connectivity that can be offered within any rack space is a benefit to both customer and data centre owner.

HellermannTyton offer a number of products that address the issue of space within a data centre. From the 1U 48 port high density patch panel, through to MTP fibre RapidNet cassettes and ZeroU-RapidNet ready cabinets.



Performance

The new **Deca¹⁰** range including Cat6A copper and fibre offers uncompromised support for 10G applications. Elsewhere, through the established Cat6 and Cat5E standards compliant ranges, HellermannTyton offers high quality network infrastructure for areas where 10G performance is not essential.

On-site Security

In addition to the reduced installation times seen with the RapidNet system, data centres will also benefit from minimised security risks as less engineers are required and they are on site for reduced periods of time.

Environmental Impact

At **HellermannTyton** we work hard to be a greener company. In addition to achieving ISO:14001 accreditation for environmental management, we continually assess our performance as a business and the impact our business has on the environment.

Since we began evaluating, measuring and seeking to reduce our environmental footprint, we have reduced our energy and solvent usage and, through working with our supply base and internal initiatives, we have greatly increased our recycling activities thereby reducing the amount of waste sent to landfill.

The HellermannTyton RapidNet solution carries its very own environmental credentials as a pre-terminated system. At the factory, each cable is pre-terminated and cut to its specified length, minimising bulk cable waste. On-site, RapidNet is ready to be installed and can be supplied on re-usable plastic drums resulting in minimal packaging waste.

Our products are manufactured in the UK and therefore we have shorter logistics paths resulting in a reduced carbon footprint and less environmental impact.



The Data Centre Standard – TIA-942

Aimed at the data centre designer, TIA-942 was introduced in 2005 with the intention of addressing data centre infrastructure, covering site and space layout, cabling infrastructure, tiered responsibility and environmental considerations.

Site and Space Layout

When allocating space within a data centre, it is important to consider the flexibility to accommodate future relocation and expansion requirements. The data centre should be designed with much consideration towards the space needed now and flexible 'white space' for the future which will allow room for additional racks and cabinets.

The TIA-942 standard also recommends the specific functional areas as outlined below and illustrated overleaf. These areas should be designed to anticipate growth and create an environment where equipment can be upgraded with minimal disruption and downtime.

- Entrance Rooms
- Main Distribution Area (MDA)
- Key Distribution Area (KDA)
- Horizontal Distribution Area (HDA)
- Equipment Distribution Area (EDA)



Cabling Infrastructure

TIA recommends the use of laser optimised OM3 multi-mode fibre for any backbone cabling because of its capability to support higher network speeds and bandwidth over longer distances whilst being more cost effective to implement than single-mode fibre.

For horizontal cabling, the TIA-942 standard recommends installing the highest capacity media available to reduce or avoid the need for re-cabling in the future. A high quality Category 6 system will provide adequate performance in most situations but consideration should be given to the 10 gigabyte performance of a Category 6 Augmented system (Cat6A) for the horizontal cabling.

Tiered Reliability

In order to determine specific data centre needs, the TIA-942 standard defines data centre availability tiers which have been based upon information provided from the Up-Time Institute.

- Tier 1** – Basic: 99.671% availability
- Tier 2** – Redundant Components: 99.741% availability
- Tier 3** – Concurrently Maintainable: 99.982% availability
- Tier 4** – Fault Tolerant: 99.995% availability

The standard describes each of the four tiers detailing architectural, security, electrical, mechanical, and telecommunications recommendations. The higher the tier, the higher the availability. Tier descriptions also include information such as raised floor heights, watts per square foot and points of failure.

Environment

The TIA-942 standard makes several environmental considerations. These include fire suppression, humidity levels, operating temperatures and architectural, electrical and mechanical system requirements, some of which are dependent on the desired reliability tier above.



HellermannTyton in the Data Centre

HellermannTyton's mission is to ensure that specifiers, across the globe, have a genuine choice of standards compliant cabling systems that are tried and tested technologies packaged together in a way that enables the specifier to get the most out of their data centre space, minimising installation time of the cabling infrastructure and most of all helping meet the business drivers. The selection of products on these pages will help achieve this.

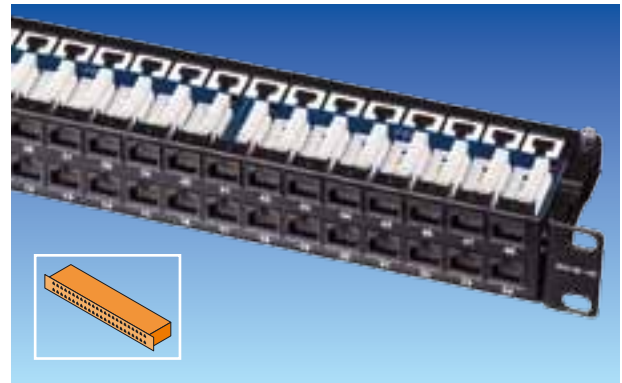
RapidNet



RapidNet, the flexible, pre-terminated system ideal for patching connectivity between switches and server cabinets.

- Pre-terminated, pre-tested 'Plug and Play' system
- No on-site termination required
- Reduce installation time by up to 95%
- Available in Cat6A, Cat6, Cat5E and Fibre
- Faster investment to revenue stream
- Increased security – fewer engineers on site
- Cut 'downtime' dramatically in a 'business as usual' project

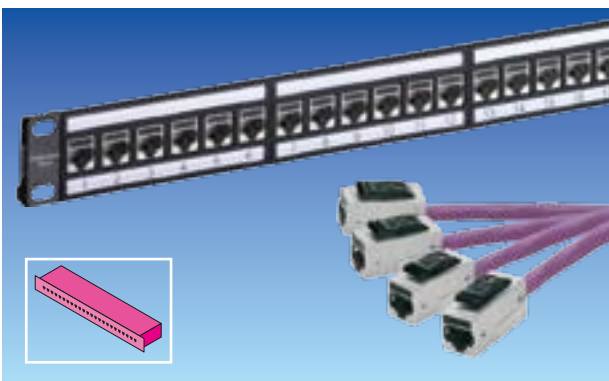
EcoBand



EcoBand - helps relieve the pressure on space within a data centre by offering high density connectivity with 48 copper ports in 1U of space. Available in Cat5E and Cat6 providing an efficient patching solution for any data centre.

- High density 48 port panel
- Screen printed numbering system
- Pre-assembled with rack-snaps for easy installation
- Available in Cat6 and Cat5E
- Rear cable management

Deca¹⁰ Cat6A Copper



Deca¹⁰ - with its 10G capability - can be implemented as a backbone connection or for future proofed connectivity between switch and server.

- Full end to end Cat6A solution
- Uncompromised support for 10G
- Compliant and independently tested to TIA/EIA 568-B and ISO/IEC 11801
- Maximum alien cross talk protection
- Available in RapidNet and field terminated solutions
- Future proof network infrastructures
- Delivers higher bandwidth and greater speed

Deca¹⁰ Fibre Pre-Terminated & MTP



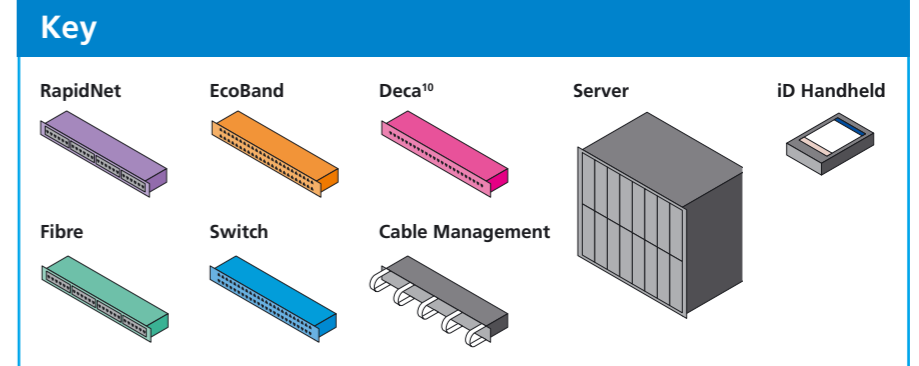
HellermannTyton's OM3 fibre products provide 10G performance over greater distances than Cat6A copper. In a large scale data centre, a fibre backbone is often essential. Available in RapidNet & field terminated solutions, Deca¹⁰ Fibre can be used in all aspects of the data centre.

- Available as MTP, pre-terminated and field terminated solutions
- Standard and high density options for greater use of space
- MTP connection for quick installations where space is limited
- Reduce installation times by up to 95%
- Up to 96 ports per 1U of space using high density LC cassettes

The Data Centre

Entrance Room

The location for access provider equipment and demarcation points as well as the interface with campus cabling systems. The entrance room can be located either inside or outside the computer room (the area of the data centre that houses data processing equipment) however, for security, the standard recommends that the entrance and computer rooms remain separate. Larger data centres may provide multiple entrance rooms to their providers.



Main Distribution Area (MDA)

The MDA is a centrally located area that houses the main cross connect as well as core routers and switches for LAN and SAN infrastructures. The MDA can include a horizontal cross-connect to a nearby EDA (equipment distribution area). Standard compliance requires at least one MDA and also specifies separate racks for fibre and copper.

Key Distribution Area (KDA)

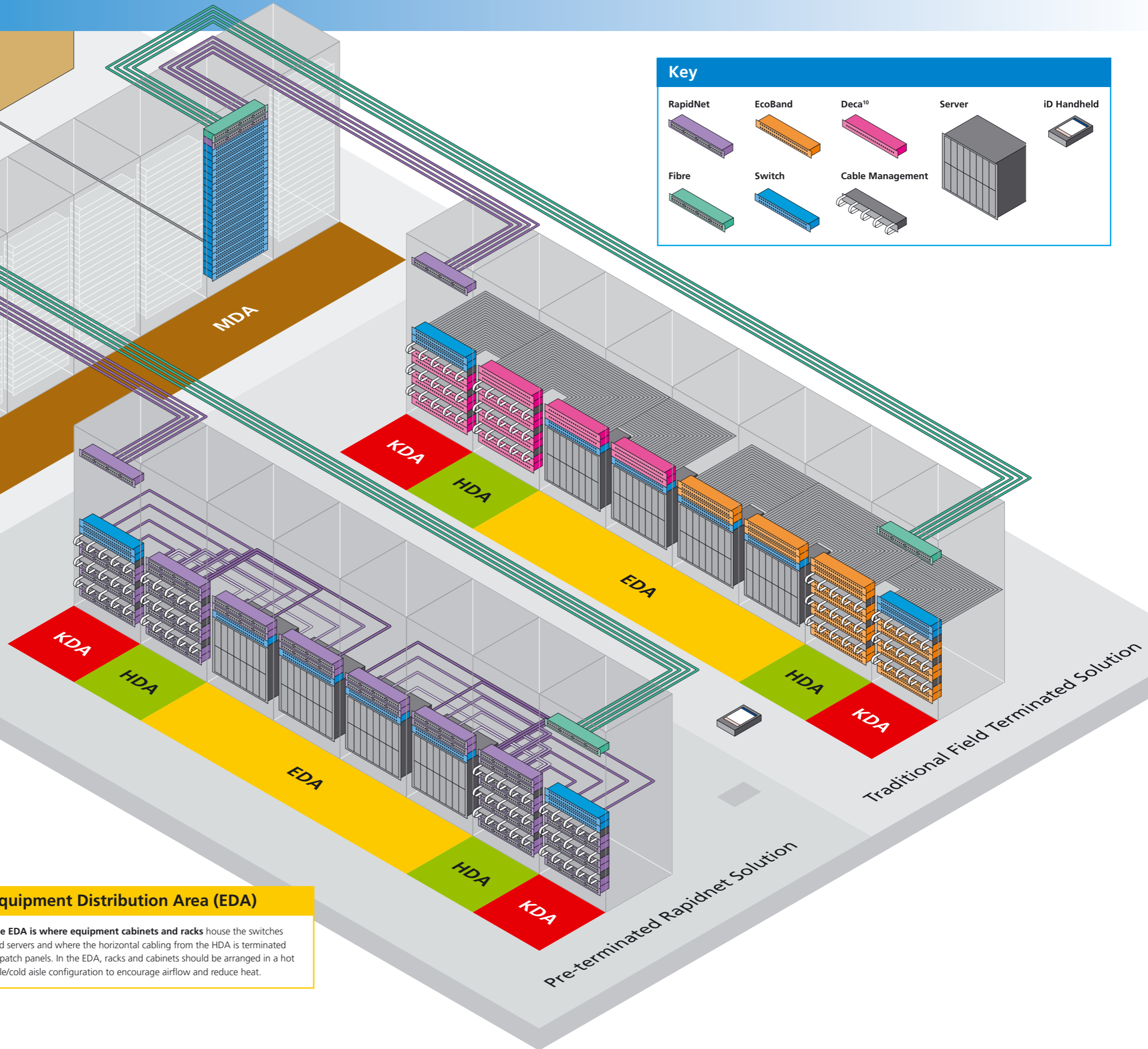
The KDA sits between the main and horizontal distribution areas. The KDA provides the data centre with a high density switch area that connects to the high density patching in the HDA. Accommodating both fibre and copper as specified by the standard, the KDA should be located close to the HDA to minimise patch cord lengths.

Horizontal Distribution Area (HDA)

The HDA serves as the distribution point for horizontal cabling and houses cross-connects and active equipment for distributing cable to the EDA. As with the MDA, the standard specifies that fibre and copper are installed in separate racks. The standard also recommends locating switches and patch panels close to each other to minimise patch cord lengths. An HDA is limited to 2000 points/connections and the number of HDAs in a data centre is determined largely by the size of the data centre.

Equipment Distribution Area (EDA)

The EDA is where equipment cabinets and racks house the switches and servers and where the horizontal cabling from the HDA is terminated at patch panels. In the EDA, racks and cabinets should be arranged in a hot aisle/cold aisle configuration to encourage airflow and reduce heat.



iD - Intelligent Infrastructure Management



iD - The cost effective & flexible solution for managing your network infrastructure within the data centre. iD also removes the margin for error on any move adds or changes (MACs) that occur in the data centre over time.

- Record information that you want to maintain by scanning a barcode
- Visualise your entire network on screen
- Tracks and records the presence and location of assets within the facility
- Complete up-to-date records of the entire data centre configuration
- Uses handheld technology for ease of use
- All HellermannTyton products can be supplied with barcodes

Zero U Cabinets



Zero U - the space saving solution for Data Centres

- is a RapidNet ready cabinet that can save up to 20% of rack space in the data centre by utilising the zero-u space, presenting vertical connectivity and allowing more space for active equipment.

- Save up to 20% of rack space
- Up to 288 additional ports in copper and 576 in fibre (based on using all 4 mounting posts on a 42U cabinet)
- Accommodates Cat5E, Cat6, Cat6A and Fibre RapidNet
- Improves air flow through cabinet

Glossary

Backbone – can be fibre or copper. The backbone is the central cabling within a network connecting all elements of the network to the main switch or distribution area.

Cabinet – usually an enclosed space to house patch panels and active equipment including servers and SAN's.

Carriers – companies who manage or own the infrastructure to and from properties including data centres, businesses and homes.

Cat6A – Augmented Category 6 – Cat6A copper supports a 10G network and can deliver a 10G performance at 500MHz. Standard compliant to TIA/EIA 568-B and ISO/IEC 11801.

Cat6 – Category 6 – Cat6 copper can deliver 1 Gbp/s and above with transmission characteristics specified to 250MHz. Standard compliant to TIA/EIA 568-B and ISO/IEC 11801.

Cat5E – Enhanced Category 5 – Cat5E copper can deliver 1 Gbp/s and above with transmission characteristics specified to 100MHz. Standard compliant to TIA/EIA 568-B and ISO/IEC 11801.

Cloud Computing – a style of computing in which dynamically scalable and often virtualized resources are provided as a service over the internet. Usually provides common business applications online that are accessed from a web browser, while the software and data are stored on the servers.

Computer Room – the area in a data centre that houses all of the data processing equipment.

Cross Connects – typically a length of cable (copper or fibre) that connects to a provider or network.

Dark Fibre – a fibre optic cable that has been laid for use by telecoms networks but which is not used.

Horizontal Cabling – the copper or fibre patching that connects the switches to the servers or SAN within a data centre or comms room.

Hot/Cold Aisle – a method of cooling servers in data centres in which every aisle between rows of racks is bounded with exclusively hot-air outlets or exclusively cool-air intakes. Air is brought into the cool aisles from underneath and exhausted from the hot aisles overhead. This produces constant air circulation through the racks.

LAN – Local Area Network – a high-speed communications system designed to link computers and other data processing devices together.

Meet Me Room – MMR – a place within a collocation data center where multiple telecommunications companies can physically connect to one another and exchange data without incurring local loop fees.

MTP – Multiple Terminated Push-on – a pre-terminated cable with 12 fibres per MTP connector to ensure faster installation of multiple fibre links. The MTP connector has smaller diameter cables saving space in pathways and racks giving more space for air circulation.

OM3 – the highest specified multimode standard. Fibre produced to its specification will be able to support 10G Ethernet.

PBX – Private Branch Exchange – a privately owned telephone switching system for handling multiple telephone lines without having to pay the phone company to lease each line separately.

Rack – where servers and patch panels are stored in metal racks which are normally 19" wide by 7' tall, this is often known as 'rack space'.

Router – allows connectivity to one or more computers, helping create a network.

SAN – Storage Area Network – a dedicated network that is separate from LANs and WANs. It is generally used to connect all the storage resources connected to various servers.

Switch – a device for transmitting and receiving data from a single element out through a high number of ports to various equipment/devices. A switch typically sends and receives signals through a fibre connection but connects to the various equipment/devices with copper connectivity.

Virtual Dark Fibre – by using multiplexing technology to exploit the range of wave lengths available within fibre, a service provider is able to offer individual wave lengths for rent or sale maximising the use of the frequency ranges by having more than one user on a single fibre.

Virtualization – the practice of taking a core processor that is running at say 20% of its capacity and splitting it into 4 providing the power of 4 processors with their own operating systems running at 80% of the overall core. This method means that more processing power can be achieved in a smaller space.

White Space – the empty or unused space within a data centre. Used to accommodate any expansion requirements to house additional racks or cabinets.

WAN – Wide Area Network – a communications network that makes use of existing technology to connect local computer networks into a larger working network that may cover both national and international locations.

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