Role of Copper Cabling in Datacentres

White paper

Introduction

Structured cabling certainly has its place in contributing to the making of a green data centre. Good cable management practices improve passive airflow, but beyond this it is also important to look at what we can accomplish via higher bandwidth. Virtual servers and blade servers are more-efficient per unit of storage than traditional equipment, but now with a significant portion of data being stored on a single device, the need for higher-bandwidth cabling to this device is critically important.

For server virtualisation, in which several applications may be running simultaneously on a single machine, having high-bandwidth and redundant cabling is a must. A virtualised server affects many more users than a traditional server that spends much of its time idle. That is a major reason why the industry is seeing much higher demand for higher-bandwidth technologies, such as Category 6, Category 6a, laser-optimised fibre, and singlemode fibre. Balancing copper and fibre can solve many data centre network challenges.

Our Copper Datacentre solutions are designed to deliver optimum performance, specifically developed for data centres. With its extended range of patch cords and panels, Datatronix offers its customers an unmatched solution that allows you to protect your data centre investments. From High-density solution that maximises the rack unit space available for data centre to enabling excellent air circulation critical for reliable and sustainable networks, Datatronix Copper Datacentre Solutions assures its users with premium network performance.

This white paper gives a complete overview of Datatronix Copper Datacentre Solutions and its applications.

What is Datacentre?

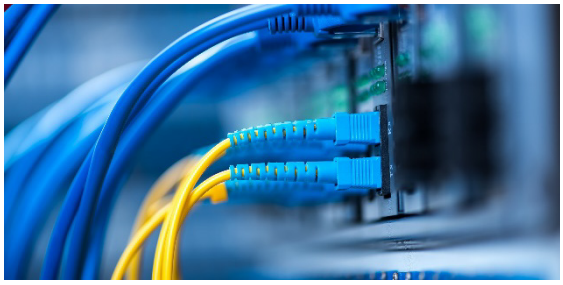
Data centres are facilities that store and distribute the data on internet. With an estimated 100 billion plus web pages on over 100 million websites, data centres contain a lot of data. With almost two billion users accessing all these websites, including a growing amount of high bandwidth video, it's easy to understand but hard to comprehend how much data is being uploaded and downloaded every second on the internet.

A data centre, as defined in TIA/EIA-942, Telecommunications Infrastructure Standard for Data Centres, is a building or portion of a building whose primary function is to house a computer room and its support areas. The main functions of a data centre are to centralise and consolidate information technology (IT) resources, house network operations, facilitate e-business and to provide uninterrupted service to mission-critical data processing operations. Yes, it is what we used to call the computer room before it grew to fill buildings! Data centres can be part of an enterprise network, a commercial venture that offers to host services for others or a co-location facility where users can place their own equipment and connect to the service providers over the building's connections.

Every such connector-connector link introduces an additional undesirable loss of optical signal, referred to as insertion loss. This loss depends mostly on the quality of execution (geometrical parameters) of the fibre optic ferrule, located in every optical connection, which is defined by a parameter called concentricity of ferrule. The better the concentricity of ferrule, the smaller the losses (lower insertion loss), which in turn results in a better quality of the optical signal transmission.

Key Elements to Consider when Designing a Datacentre

Data centres that deliver critical services for businesses have always been concerned with costly downtime.



A data centre solution that considers and designs for the below five key elements; performance, time, space, experience and sustainability, will be reliable, flexible, scalable and efficient in many ways.

1. Performance

   - To maximise network performance, make informed decisions about the three parts of the infrastructure structured cabling, racks and cabinets and cable management.
   - Select a cabling solution with co-engineered cable and connectivity to maximise channel performance. Look for flexible and scalable rack, cabinet and cable management solutions that can accommodate higher weight thresholds, have adjustable rails and wider vertical managers, along with integrated cable and airflow management options for better protection and airflow. The physical support solution should support copper and fibre media.

2. Time

   - Data centres are growing in size and complexity but often require faster deployment times. They must be able to adapt quickly and easily to support changing business requirements. Selecting infrastructure solutions that optimise time, result in faster deployments, reduced cost, and easier moves, adds and changes.

3. Space

   - Space is a premium aspect in the data centre. The infrastructure system should optimise space.
   - Infrastructure systems must be designed for greater flexibility and scalability enabling the data centre to be designed to be right-sized.

4. Build Experience

   - The quality of the data centre build experience can be enhanced by selecting the right partner.
   - During the design phase, the data centre design must provide guaranteed performance while providing flexibility and scalability for tomorrow's needs. In general, the solutions should be modular for customisation to meet specific needs and there may be special requirements that require additional customisation. During the installation phase, the solution needs to be easy to install, quick to deploy and easy to manage.

5. Sustainability

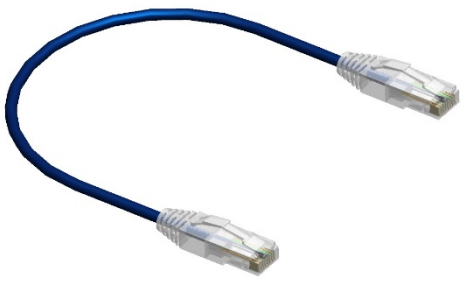
   - Sustainable designs offer choice and flexibility in space design, reducing installation time, material waste on site, etc. They should ensure optimal energy efficiency and performance.
   - To help reduce the impact on the environment is to use solutions derived from products with RoHS (Restriction of Hazardous Substances) compliance.

Copper Datacentre Solution – Slim, Flexible & Reliable

Considering all the above elements Datatronix offers Copper Datacentre Solution range which include Copper 30 AWG Micro Patch Cords and Slim Patch Panels.

Copper Micro Patch Cords 30 AWG

Available in Category 6 and Category 6A, Datatronix U/UTP Unshielded Twisted Pair 30 AWG Micro Patch Cords are slimmest in the market. They are Slimmer than normal patch cords with unique flexibility.



Features:

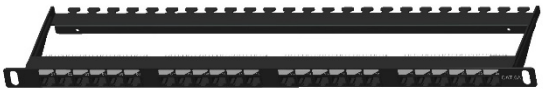
- Slim: Unique micro outer jacket 3.8±0.3mm with up to 30% reduction in diameter

- Flexible: Special grade of highly durable yet flexible stranded copper
- Gold Plated Contacts: High grade 50µm to maximise connections
- Unique Boot Design: Prevents entanglement during re-insertion
- Space saving: Easier cable management, especially on high-density panels
- Availability: Multiple colours and lengths
- Performance: proven and 100% factory tested
- Standards Compliance: ISO/IEC 11801: 2002/Amd.2:2010, ANSI/TIA/EIA-568-C.2, ISO/IEC 60603-7, RoHS, REACH and SvHC

Designed with stranded conductors makes a MICRO patch cord extremely flexible yet tough enough for demanding high density environment. At nearly half the diameter of regular cables you can save valuable space in your cable management space. Slimmer patch cords in high density data centre enable excellent air circulation which is critical for reliable and sustainable networks.

Copper Slim Patch Panel

Available in Category 6A, Datatronix 19'' 0.5U 24 Port & 1U 48 Port UTP RJ-45, 180° rack mountable Slim patch panel are used for High-density design, expanding your capacity by space saving in the rack.



CAT6A 0.5U 180° UTP RJ-45 Slim Patch Panel 24 Port

CAT6A 1U 180° UTP RJ-45 Slim Patch Panel 48 Port

Features:

- Slim: High density – 24 ports in 0.5U and 48 ports in 1U height
- Contact Area: High grade 50µm gold plated
- Panel Frame: Aluminium Alloy
- Housing Material: PC UL94v-0, high impact flame retardant plastic
- Bracket: SPCC powder coating in black colour
- PCB: FR-4, 1.6mm thickness
- Jack Wire: 0.35mm phosphor bronze gold over nickel plating
- IDC conductor: 0.5mm phosphor bronze, tin-plating
- Contact Compatibility: Accommodates 26 to 23AWG solid
- Wiring Blocks: Universal for easy termination and colour coded for easy cable lacing Integral rear cable management
- Standards Compliance: ISO/IEC 11801: 2002/Amd.2:2010, ANSI/TIA/EIA-568-C.2, ISO/IEC 60603-7, RoHS, REACH and SvHC

Rack space can be re-deployed for equipment installation or increasing cable ports with additional Datatronix 0.5U & 1U SLIM patch panels. Well suited for high density applications.

Conclusion

It is understood that structured cabling will continue to play a key role via improved cable management and increased bandwidth, allowing users to store, manage, and access information within the data centre. Copper structured cabling solutions will continue to be fundamental throughout the data centre infrastructure.

There is no one-size-fits-all solution for cabling infrastructure in a data centre. It breaks down to what best fits the layout, scope, bandwidth needs, scalability, manageability, and budget of a specific facility. But as emerging data centre architectures create a need for more flexibility and scalability using high-speed copper links, the demand for faster gigabit performance in a smaller footprint will continue to grow. Datatronix Copper Datacentre Solutions, Micro Patch Cords and Slim Patch Panels are designed being more cost-effective, flexible, reliable and space saving.

A data centre solution should be designed with connected infrastructure in mind; guaranteed performance, saving time, optimising space, enhance experience by utilising resources and enabling sustainability.

www.datatronix.com - sales@datatronix.com

This white paper has been produced by Khushbu Solanki, on behalf of Datatronix