

DATA CENTERS

A holistic view of the data center and the opportunities to enhance its infrastructure to meet current and future demands

COMMSCOPE®



Chapter 7

Optical distribution frames

Optical distribution frames

Take control of data center cabling for optimal performance

The ever-growing demand for more bandwidth to accommodate a wide array of new applications in the data center is driving higher fiber counts, as more and more data centers are being designed and built to run high-speed applications for LAN/SAN. These high-speed applications are based on fiber-optic transmission, making fiber-optic cabling the predominant transmission medium in the data center now and into the future.



With more and more optical connections to contend with, the challenge becomes how to add optical density to the fiber frame while still maintaining proper accessibility, flexibility and manageability at the lowest possible cost. As data center operators add more fiber-optic cabling, they often face an out-of-control situation in terms of fiber count, density and space—resulting in potentially reduced availability and higher cost of operation.

The attempt to address these issues by using high-density patch panels can make the problem worse, if not done correctly. Trying to fit high-density cabling into cabinets that are designed to house active equipment can result in a tangled “spaghetti bowl” of cabling—especially in configurations where cable management is essentially non-existent.

The solution to the problem has two parts:

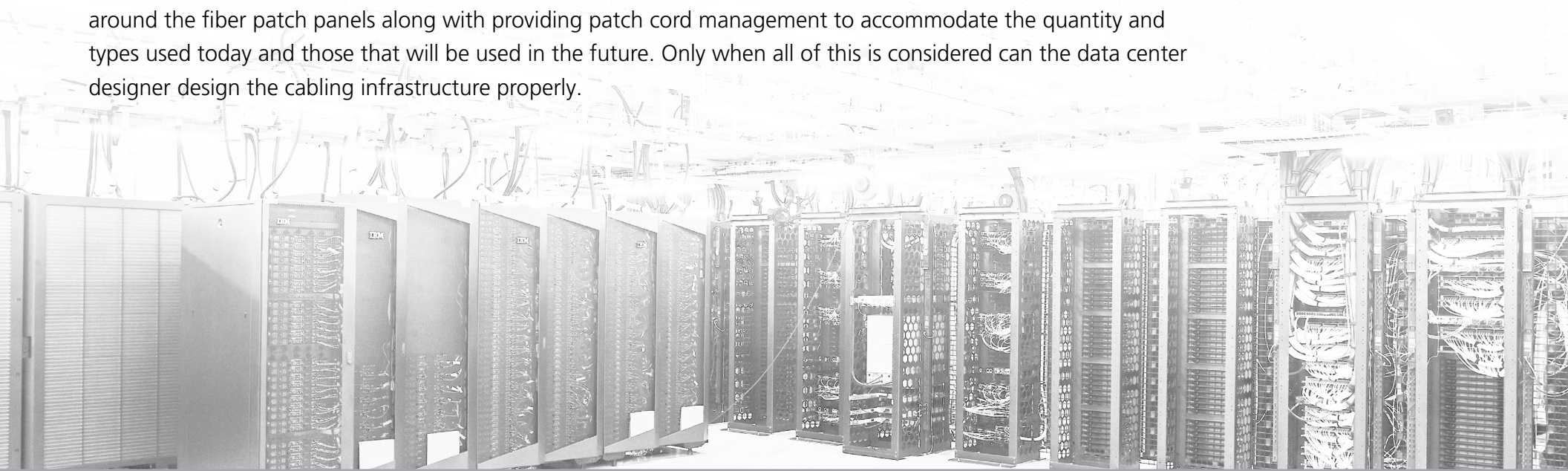
Choosing a different cabling architecture

A centralized cross-connect configuration in the main distribution area (MDA) eliminates patching from the core equipment cabinets. All active core ports from LAN/SAN are mirrored in central cross-connect cabinets—resulting in safer operation and simplified design for future growth.

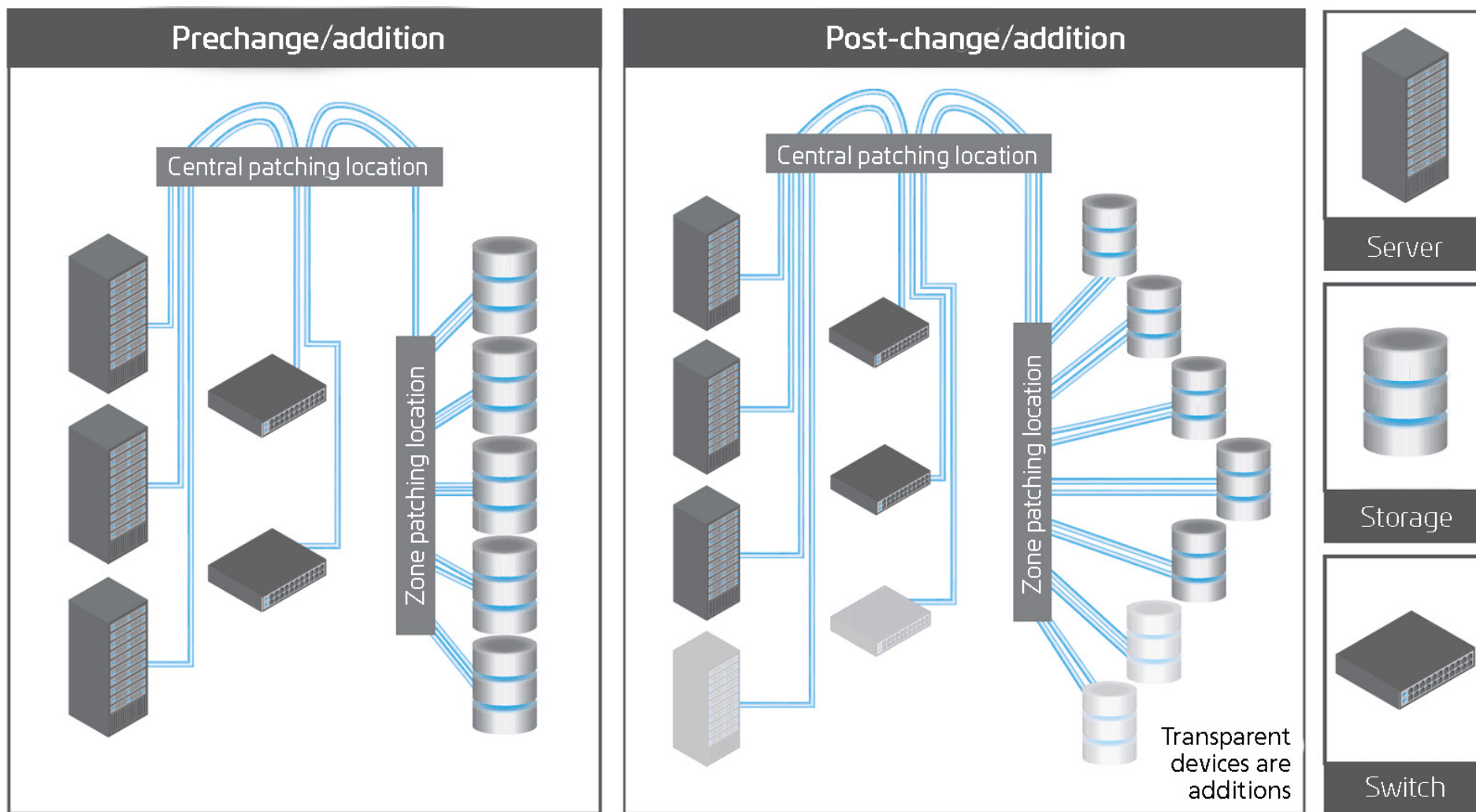


Having the right cross-connect solution

However, they often provide limited cable management for the patch cords connecting to the active equipment. This scenario may be adequate for equipment connectivity, but does not provide cable management needed for cross-connects. A best-in-class cross-connect solution consists of frames or cabinets that have been designed around the fiber patch panels along with providing patch cord management to accommodate the quantity and types used today and those that will be used in the future. Only when all of this is considered can the data center designer design the cabling infrastructure properly.



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To meet these challenges today and equip their facilities for future growth, data centers must be designed with optical distribution frames (ODFs) functioning as cross-connects in the main distribution area (MDA).

A proven telecom solution comes to the data center

Optical distribution frames (ODFs) have been available for years, used primarily in telecommunication providers' central offices, where tens of thousands of optical fibers converge at a single location. With similar challenges now facing data center operators, using ODFs to manage data center cabling has become an effective option.

Since cross-connect ODFs are optimized for cabling, not for equipment, they are able to solve the two largest data center cable management problems: those caused by application migration toward parallel fiber-optic applications, and those caused by the expected growth of the data center itself.

Both of these trends require deploying much more fiber in the data center, resulting in massive patch cord changes in both number and size. ODFs can easily deal with these challenges because they are optimized for cable management, offering bend radius protection for fiber patch cords and over-length storage for efficient use of the ODF—even with thousands of patch cords in it.

Correctly designed, cross-connect ODFs function very effectively as the single point of distribution for all LAN, SAN and telecommunication services in the data center, delivering best-in-class cable management and reduced operations costs, with these advantages:



Easy servicing

Precabled ODFs allow fast moves, adds and changes



Increased availability

Cabling can be added or changed without disrupting running systems



Optimal flexibility

Equipment can be connected regardless of its location



Enhanced security

Requires no direct patching at the switch/SAN director



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