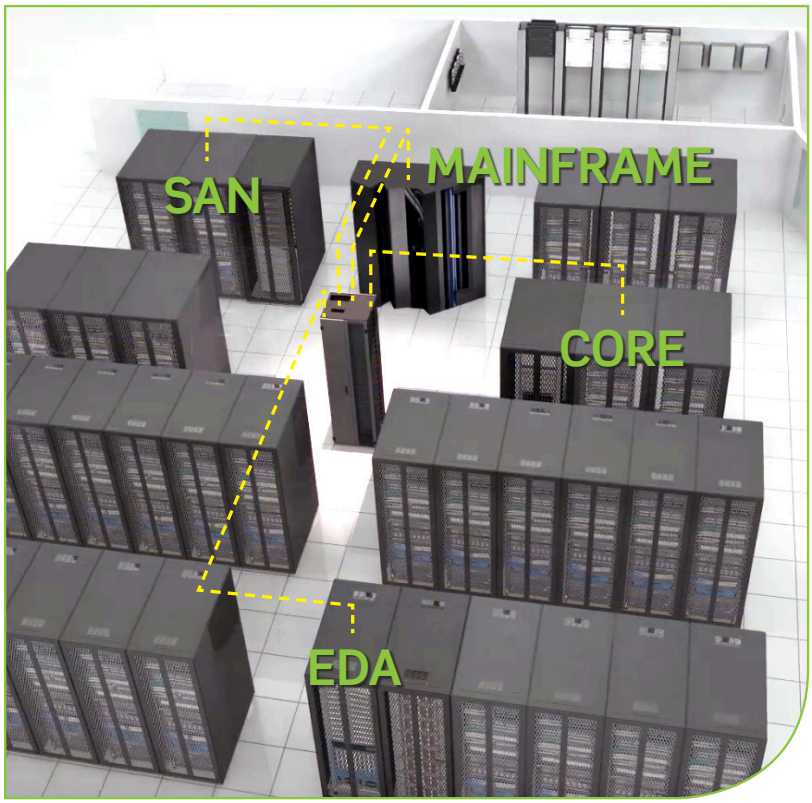
Prepare for Data Center Growth with a Centralized Patching Field



Many companies are at a crossroads between outsourcing or upgrading their data centers. At the same time, they are tasked with lowering capital expenditures and operating expenses. As more businesses look to public cloud services to host their data and applications, they are consolidating their on-premises data centers.

In many cases, this consolidation is not a simple elimination of facilities. Companies and government agencies often require at least some new space to support larger, highly utilized and efficient data center operations. They also need a more centralized infrastructure, and many will purchase new hardware to maximize efficiency gains and equipment lifespan.

A two-tier or leaf-spine architecture addresses these challenges and has become the standard for greenfield data centers. All access switches are connected to every interconnection switch, providing a redundant path. Traffic runs east-west, reducing latency between access switches. This is a very scalable fabric. The leaf-spine architecture has led to an increase in top-of-rack and centralized switching topologies. Both of these topologies result in more fiber in the Main Distribution Area (MDA).

Along with centralized switching, a centralized patching field is installed in the MDA, serving as the main cross-connect patching location for all fiber channels in the data center. It can support cabling from network servers, core switches, the SAN, mainframe, and disk or tape storage.

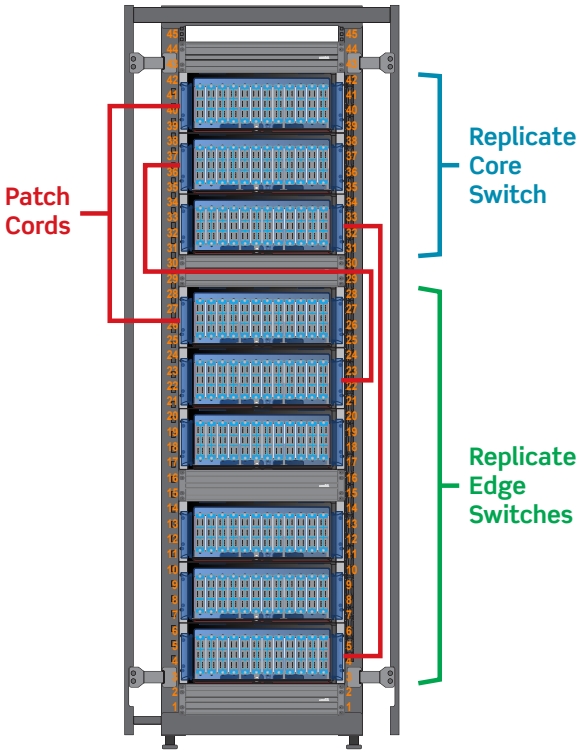
This approach keeps things centralized to make network management easier. In larger facilities, the centralized patching field keeps moves, adds, and changes (MACs) much more manageable. And as a data center infrastructure grows, the management area doesn't. Workers aren't required to go to remote areas of a facility to do connection work: they're able to handle it from the patching field.

Other Benefits to Using a Centralized Patching Field

- A centralized patching field should replicate the switches or respective equipment devices, port for port. This greatly simplifies maintenance and MACs. Also, there is little need to access the cabinets that house high-dollar assets like switches and routers. This makes these assets more secure and minimizes the risk of damage or downtime.

- A centralized patching field does not have to be centrally located. Since it does not require power or cooling, it can be located away from the active equipment in its own floor space, or isolated in a separate room. This frees up premium floor space in the data center for additional revenue-generating cabinets housing switches and servers.

- Traffic can easily be redirected at the patching field while equipment gets serviced or changed out, saving time and lowering operating expenditures associated with tech refreshes.



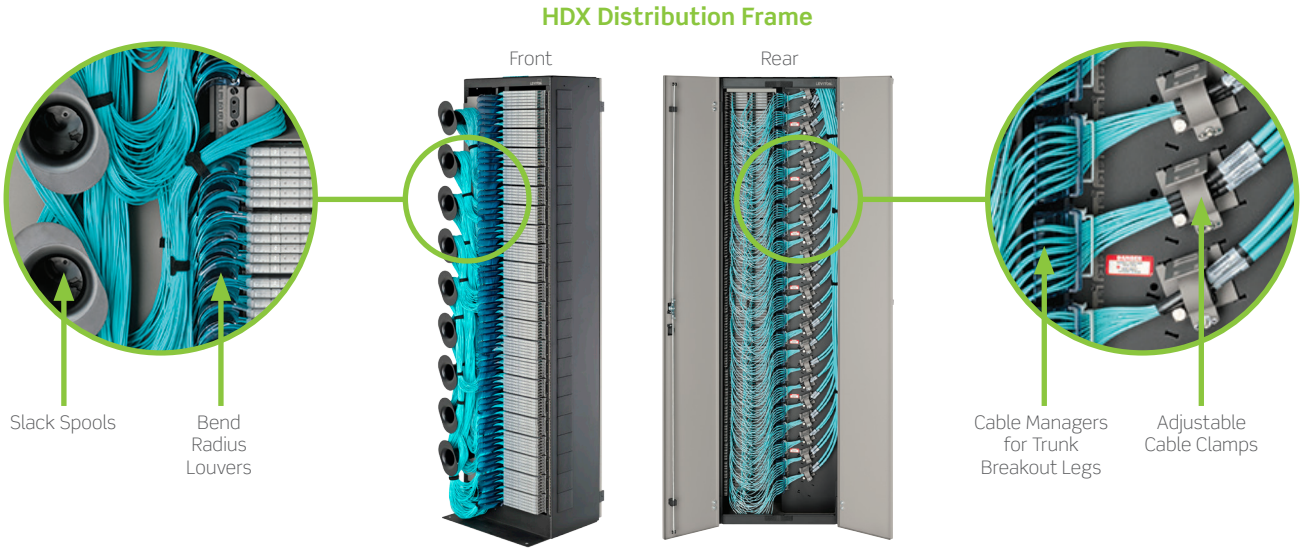
Typically, centralized patching fields present as traditional cabinets or an open frame with no active equipment inside. Traditional 19-inch cabinets maintain a consistent look with other cabinets in a data center.

The image above represents a centralized patching field in a **traditional cabinet**, using 4RU enclosures. The top three enclosures replicate core switches, while the middle and bottom enclosures replicate edge switches.

Ninety-six fibers per rack unit is an optimal density, accommodating up to 3,456 fibers in a cabinet. There are ultra-high-density enclosures available today that can raise that number to more than 5,000 fibers per cabinet. However, managing cords and trunks in such a high-density application with traditional rack enclosures can become challenging. There is little room for adequate slack management, and fiber bend radius become a concern, especially for trunks entering the cabinet.

Distribution frame solutions are most often used by carriers in central offices, where tens of thousands of fibers are being managed. However, in recent years, data centers have begun adopting the frames. They are capable of patching thousands of fibers, and are designed with cable management to alleviate the challenges of higher densities.

For example, the Leviton HDX Fiber Distribution Frame has the ability to patch 3,168 LC fibers or 15,552 MTP fibers on only one 2' x 2' data center floor tile (for raised floor applications), and includes vertical and horizontal cable managers integrated into the frame. It includes slack spools and cable clamps for properly routing cords and trunks, and unique patch decks with trays that handle horizontal cord management.



In contrast, vertical and horizontal cable management solutions for traditional cabinets are sold separately and installed at the job site. Some cabinet manufacturers kit the cable management with the cabinet, but cable management will need to be moved or adjusted horizontally and vertically based on the layout.

Also, a distribution frame leaves a much smaller footprint than a traditional cabinet. The HDX Distribution Frame occupies only one 2x2-foot data center floor tile, while a traditional cabinet occupies up to four data center floor tiles. Even though it takes up a much smaller footprint, the HDX Frame is capable of patching more than 3,000 fibers using LC connections. This is the highest density per square foot for an open frame system. Reducing the footprint while adding density opens up space for additional cabinets dedicated to network switches and servers — the revenue-generating cabinets in a data center.

As with traditional cabinets used for cross-connect patching, a distribution frame replicates core switches in the top half and edge switches in the bottom half. When patching within one frame, the HDX Frame requires only one length of patch cord, at three meters. This means data center managers don't need to stock multiple-length patch cords.

Cabinet or Frame? Calculate Your Savings

Leviton offers an online calculator to help determine how much money and space you can save by using a distribution frame compared to traditional cabinets. The HDX Frame ROii™ Calculator will help you generate a business case for using a frame, showing the return on infrastructure investment over a five-year span. It takes the average cost of data-center floor space — which can range from $35 to $150 per square foot — and factors in the number of cabinets, devices, and channels per cabinet in each zone to help generate your cost savings.

To learn more, go to **Leviton.com/HDX.**

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