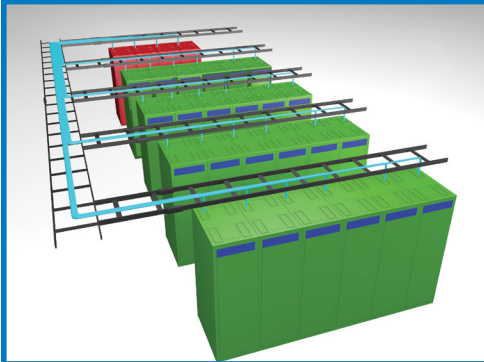
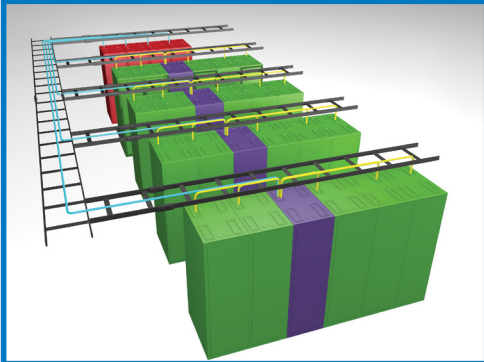


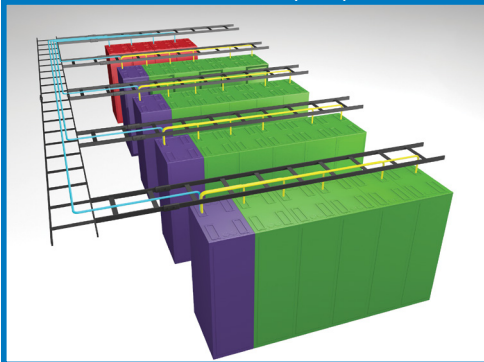
TOP OF RACK (ToR)



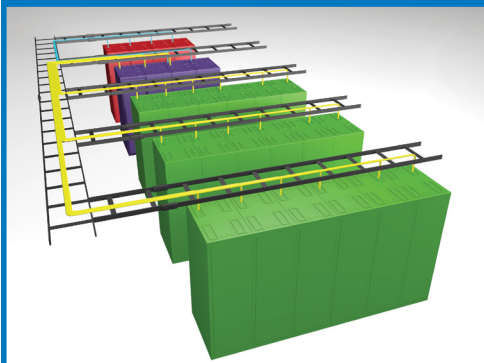
MIDDLE OF ROW (MoR)



END OF ROW (EoR)



CENTRALIZED CABLE



### > WHAT IS IT?

Multiple network cabling architectures are available to provide connectivity to the various spaces within the data center.

#### ER – ENTRANCE ROOM

The space where the carrier circuits and demarcation equipment are located. For security reasons it is typically in a separate room than data center computer room.

#### MDA – MAIN DISTRIBUTION AREA

The space where core layer equipment such as routers, LAN/SAN switches, PBXs and Muxes are located.

#### HDA – HORIZONTAL DISTRIBUTION AREA

The space where aggregation layer equipment such as LAN/SAN/KVM switches are located.

#### EDA – EQUIPMENT DISTRIBUTION AREA

The space where access layer equipment such as LAN/SAN/KVM switches and servers are located.

#### ZDA – ZONE DISTRIBUTION AREA

The space where a consolidation point or other intermediate connection point is located.

### NETWORK CABLING ARCHITECTURES

#### Centralized

LAN/SAN switches are consolidated in a centralized MDA and HDA row.

#### ToR – Top of Rack

LAN/SAN switches are located within the EDA cabinet or rack. HDA is not used in this configuration.

#### EoR – End of Row

LAN/SAN switches are located at the end of the network row within an HDA cabinet or rack.

#### MoR – Middle of Row

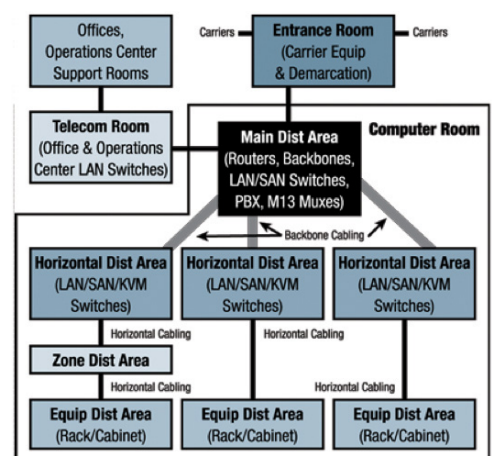
LAN/SAN switches are located in the middle of the network row within an HDA cabinet or rack.

### > WHY IS IT IMPORTANT?

The selection of the network cabling architecture is driven by both the technical and financial factors of the data center design. In general, ToR architectures are better suited for data center environments requiring low latency and high-performance server connections where EoR and MoR architectures look to optimize cost and flexibility.

### ANSI/TIA-942-A

#### Basic Data Center Cabling Topology



### LEGEND

- MDA
- Fiber Cable
- Switch
- EDA
- Copper Cable
- HDA

# TECHNOLOGY APPLICATION GUIDE

## Network Cabling Architectures for Data Centers



Network Cabling Architecture	Application	Pros	Cons
Centralized	Traditional cabling architecture where network switching is centralized in a row of HDA cabinets and racks. Due to shorter reach requirements, OM3/OM4 multimode cabling is used for backbone connections between MDA and HDA and Category 6A cabling between HDA and EDA. Typically deployed in small to medium sized data centers (<20K ft <sup>2</sup> /1.8 m <sup>2</sup> )	<ul style="list-style-type: none"> <li>- Simple to design, implement and maintain</li> <li>- Minimized network bottleneck</li> <li>- Good port utilization</li> <li>- Easy device management</li> </ul>	<ul style="list-style-type: none"> <li>- Large number of cables</li> <li>- Cable overlaps</li> <li>- Difficulties in cable pathway design</li> <li>- Lack of scalability</li> </ul>
EoR – End of Row MoR – Middle of Row	Utilizes a traditional MDA-HDA-EDA cabling topology, but the HDA is physically located at the end or middle of EDA cabinet row. OM3/OM4 multimode cabling is used for backbone connections and Category 6A cabling between HDA and EDA. Typically deployed in small to medium sized data centers (<20K ft <sup>2</sup> /1.8 m <sup>2</sup> )	<ul style="list-style-type: none"> <li>- Fewer number of cables than direct-connect architectures</li> <li>- Good scalability</li> <li>- Cost effective compared to top of rack (ToR)</li> </ul>	<ul style="list-style-type: none"> <li>- Increased management overhead</li> <li>- Network stability risks due to potential Layer 2 loops that cause broadcast storms</li> </ul>
ToR – Top of Rack	Cabling connects ToR switch to server within the EDA cabinet or rack. Cable types include direct-attached cabling (DAC), OM3 multimode optical fiber jumpers, and Category 6A rated patch cords. OM3/OM4 multimode or singlemode cabling is used for backbone connection between EDA and MDA. Cabling architecture is deployed widely in hyperscale and cloud data centers (>100K ft <sup>2</sup> /9.3K m <sup>2</sup> ) where performance is at a premium over cost.	<ul style="list-style-type: none"> <li>- Efficient use of floor space</li> <li>- Excellent scalability</li> <li>- Easy cable management</li> </ul>	<ul style="list-style-type: none"> <li>- More switches to manage</li> <li>- More server-to-server traffic in aggregation layer</li> <li>- Higher network equipment costs (redundancy)</li> <li>- Creation of hotspots due to higher density power footprint</li> </ul>

### WHY ANIXTER?

- With a technical sales force and experts in our Technology Support Services team we are devoted to cabling and security solutions.
- The broadest infrastructure offerings to fit your current and future industrial communication and control, network cabling, security application, data center and enterprise cabling needs.
- Our footprint supports our customers' and suppliers' operations around the globe.



### LIST OF APPLICABLE INDUSTRY STANDARDS

- ANSI/TIA-942-A – Telecommunications Industry Standard for Data Centers
- ISO/IEC 24764 - Generic Cabling Systems for Data Centres
- ANSI/BICSI 002 - Data Center Design and Implementation Best Practices

### Technical Expertise

PARTICIPATION ON STANDARDS AND INDUSTRY COMMITTEES

ASIS  
SIA  
ONVIF  
ESA  
BICSI

- > INFRASTRUCTURE SOLUTIONS LAB™
- > SOLUTIONS BRIEFING CENTERS
- > TECHNICAL SOLUTIONS GROUP



### Technology Alliance Partners<sup>SM</sup>



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