Taking Control of DC Cabling for Optimal Performance

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Agenda

• Bandwidth Challenges
• Data Center Challenges
• New Architectures for Consideration
• What that mean for Infrastructure
• Why Optical Distribution Frames
• Network Benefits
Data Center Challenges

With more and more optical connections to contend with, the challenge becomes how to add optical density while still maintaining proper accessibility, flexibility and manageability at the lowest possible cost.

- fiber counts
- density
- space resulting in potentially reduced availability and higher cost of operation.
The connected world
Internet of Things (IoT)

25 BILLION DEVICES WILL BE CONNECTED TO THE INTERNET OF THINGS BY 2020.

90% OF THE WORLD’S DATA WAS CREATED IN THE LAST 2 YEARS;
66% IS IN THE CLOUD

MACHINE LEARNING IS NECESSARY TO PROCESS THE ONSLAUGHT OF IOT DATA & TURN IT INTO VALUABLE INFO TO MAKE MEANINGFUL ACTIONS

ARTIFICIAL INTELLIGENCE OR MACHINE LEARNING IS ALREADY IN USE:
Big Bandwidth Challenge

- BIG DATA IS EXPECTED TO GROW 800% WITHIN THE NEXT 3 YEARS.
- ANNUAL GLOBAL DATA CENTER IP TRAFFIC WILL GROW FROM 3.1→8.6ZB BETWEEN 2013 & 2018.

TODAY’S EXISTING DATA NETWORKS AND PRESENT INFRASTRUCTURES ARE NOT READY FOR SUCH LOADS.

Source: Reuters and Cisco, 2013
Digital Transformation Requires an Agile Data Center

Data center managers need to eliminate problems

- **Downtime**
  - Human error
  - System failure
  - Natural disasters
  - Security breaches

- **Insufficient bandwidth**
  - Entering the DC
  - Within the DC

- **Latency**
Private Cloud
Can a hyperscale design be universal?

- **Scalable designs**
  - Architected to be resilient to failures
  - Requires minimal manual intervention
  - Upgrades can be made on the fly

- **Commodity Hardware**
  - White box servers and switches

- **Software Defined Networks**
  - Network Function Virtualization (NFV)
Hyperscale Practices

In Common?
• Uniform x86
• Local HDD and Flash
• Software driven
• Scale-out design

What is absent?
• Storage Networks
• SAN/NAS controllers
• Separate Storage management

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Modern Network Architecture for Enterprises

N-Tier Data Center Design
(Traditional Approach)

Core and Pod Design
(Hyperscale Approach)

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Fabric Networks

Software ties Compute, storage and control networks together
The attempt to address these issues by using high-density patch panels can make the problem worse, if not done correctly.

The solution has two parts:

– Choosing a different cabling architecture.
– Having the right cross-connect solution

Haven’t we all seen these situations before?
A Better Solution

In order to meet these challenges today...

• Equip facilities for future growth
• Cross connects in the MDA.
  – Optical Distribution Frame (ODF) solutions have been available for years
  – used primarily by telecommunication providers
  – similar challenges now facing data center operators
  – ODFs manage data center cabling
Why Optical Distribution Frames

• ODFs are optimized for cabling, not for equipment
• Solve large data center cable management problems:
  – those caused by migration towards parallel fiber-optic applications
  – those caused by the expected growth of the data center itself.
• More fiber in the data center
  – optimized for cable management
  – offering bend radius protection for fiber patch cords
  – over-length storage
Network Benefits

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
• Reduced operations costs
• And these advantages:
  – Easy Servicing
  – Increased Availability
  – Optimal Flexibility
  – Enhanced Security
  – Intelligence
Key Take-Aways

- Have a migration plan
- With more connections comes more fiber, density and space constraints
- Brace for new architectures
- Consider a cross connect to manage connections
- ODFs can provide exceptional cable management and reduced operations costs
Thank You