



ACON Group

9/2020





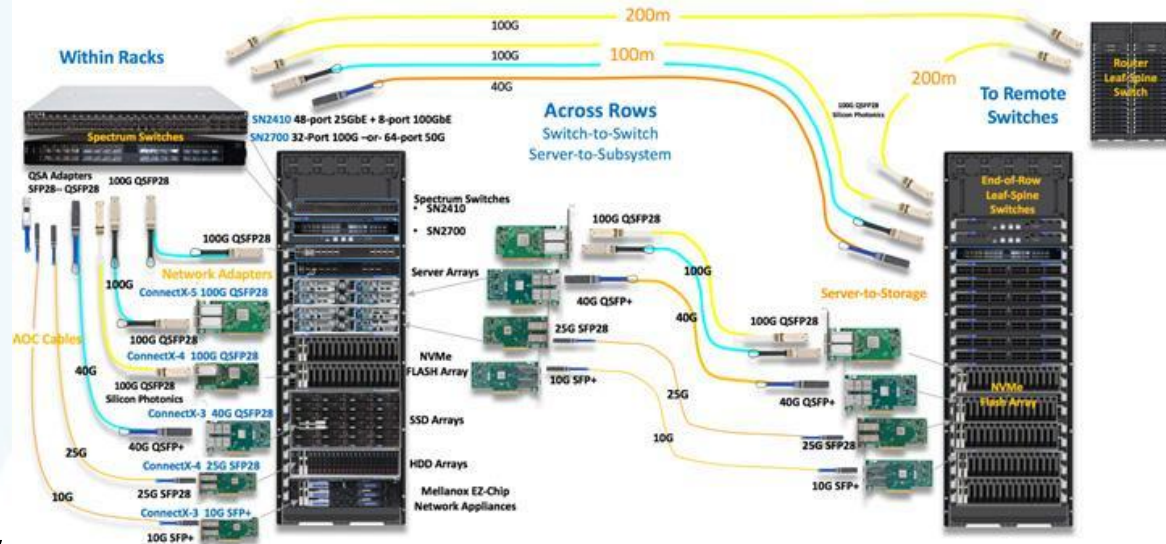
- **Cable Classification**
- **Application by Type**
- **Technical Trend**
- **Standard & Committee**
- **Testing & Verification**

	External	Internal
Active	AOC (Active Optical Cable), & Transceiver Module Length: 10M —>200M Speed: 25G/ 50G/ 100G Signal: NRZ/ PAM4 ACC (Active Copper Cable) Length: 10M below Speed: 25G/ 50G/ 100G Signal: NRZ/ PAM4	N/A
Passive	DAC (Direct Attached Cable) Length: 1M —>3/4M Speed: 25G/ 50G/ 100G Signal: NRZ/ PAM4	Internal Cable Length: 1M —>3M Speed: 25G/ 50G Signal: NRZ/ PAM4

AOC & Transceiver Module

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- **Product (e.g.):** QSFP28 100GBASE-SR4
- **Standard:** IEEE 802.3bj, Infiniband EDR, SFF 8436/8431 etc.
- **Cable:** OM3 MMF 70m or OM4 MMF 100m
- **Testing:** Follow active cable testing process
- **Application:** Server to Server, Server to Storage, Switch to Server, Switch to Router



ACC (Active Copper Cable)

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- **Product (e.g.):** QSFP28 to QSFP28, length: 5m, 7m, 10m
- **Standard:** IEEE 802.3 bj, Infiniband EDR, SFF 8665
- **IC Chip:** Retimer or Equalizer
- **Testing:** Follow active cable testing process
- **Application:** Server to Server, Server to Storage, Server to Switch, Switch to Router

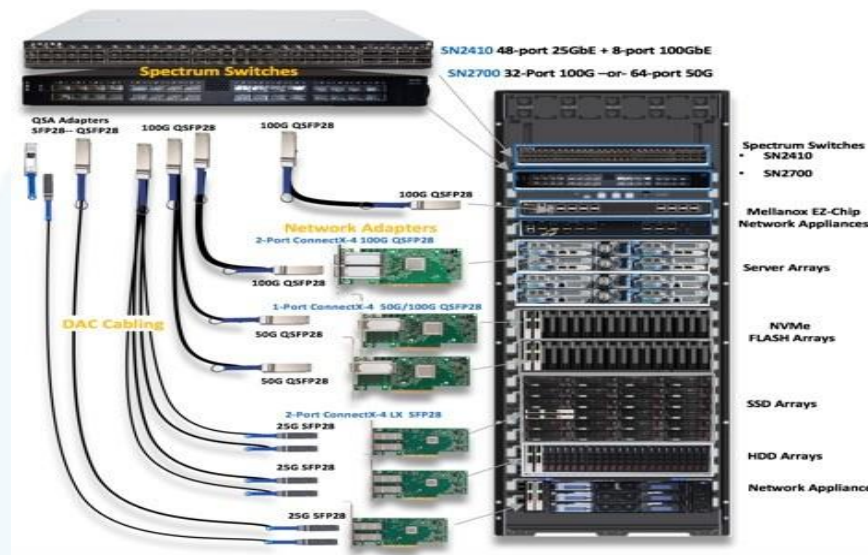
Note: Cable length longer than 10m need to use AOC or Module plus Optical Cable



DAC (Direct Attach Cable)

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- **Product (e.g.):** QSFP28 to SFP28*4 fan out cable
- **Standard:** IEEE 802.3 bj, Infiniband EDR, SFF 8665, etc.
- **Wire Gage:** 30AWG below 3m, 26AWG below 5m
- **Testing:** Follow passive cable testing process
- **Application:** Server to Server, Server to Storage, Server to Switch

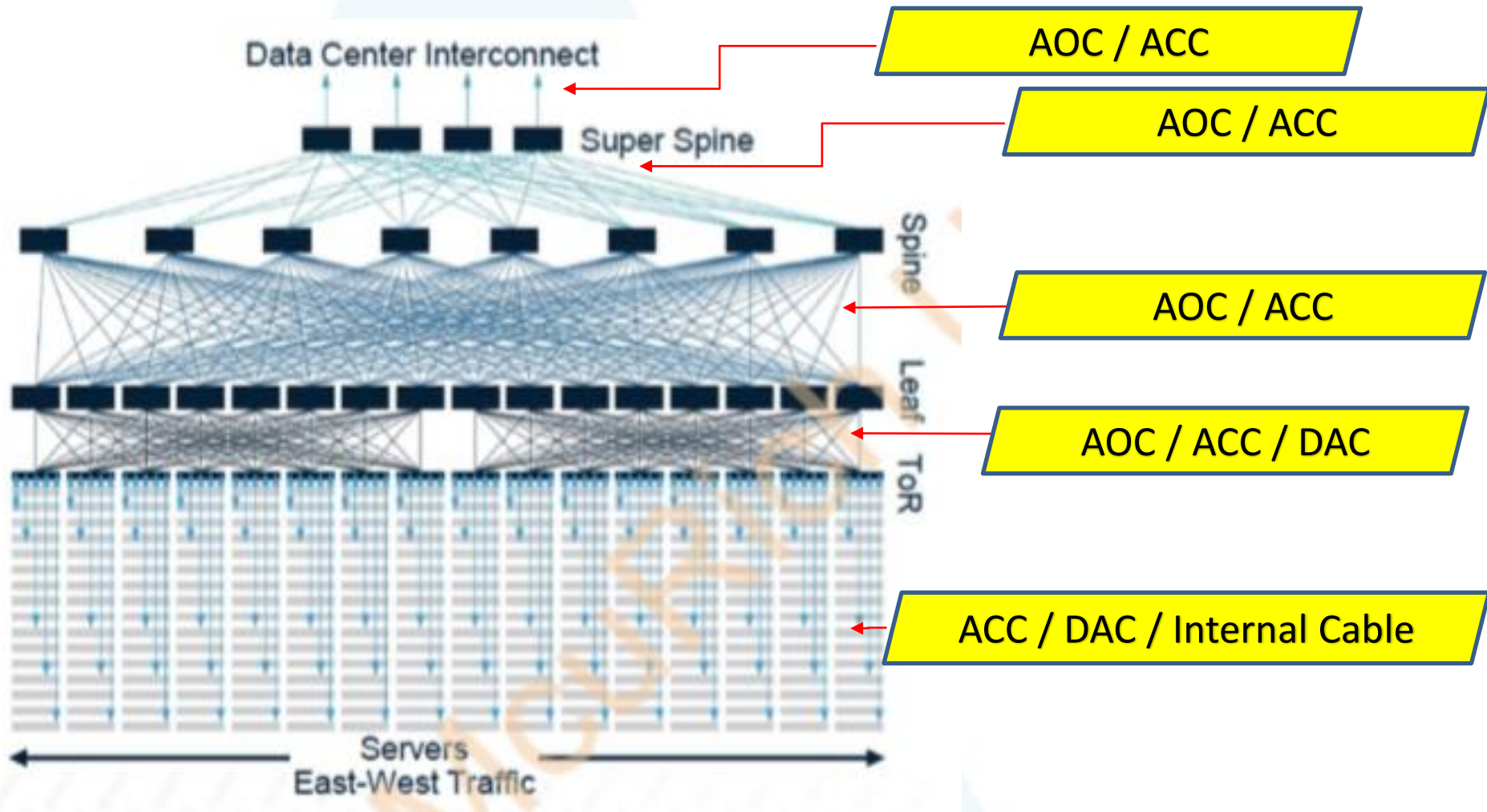


- **Product (e.g.):** SlimSAS 8i
- **Standard:** SFF-8654, 85ohm and 100 ohm
- **Length:** SAS 3.0/4.0, PCIe 3.0/4.0 1m length
- **Testing:** Follow passive cable testing process
- **Application:** Server internal, Storage internal, Switch internal



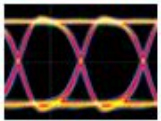
Application by Type

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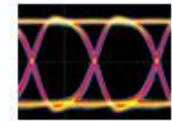
- Higher Signal Speed due to Coding & Density Upgraded

28G NRZ

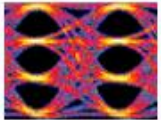


QSFP28*

100Gbps

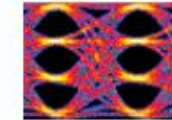


56G PAM4

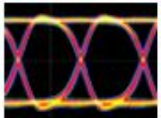


QSFP56*

200Gbps

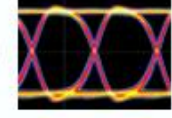


28G NRZ

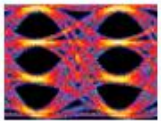


QSFP-DD ***

200Gbps

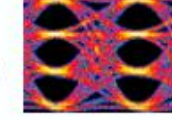


56G PAM4



QSFP-DD ***

400Gbps

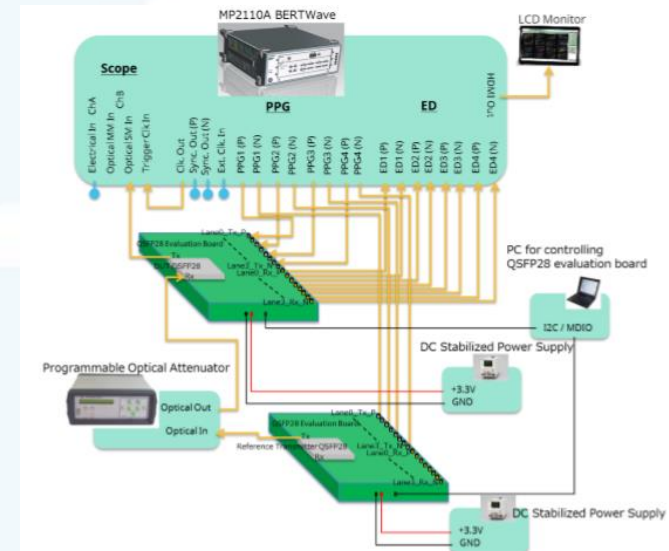
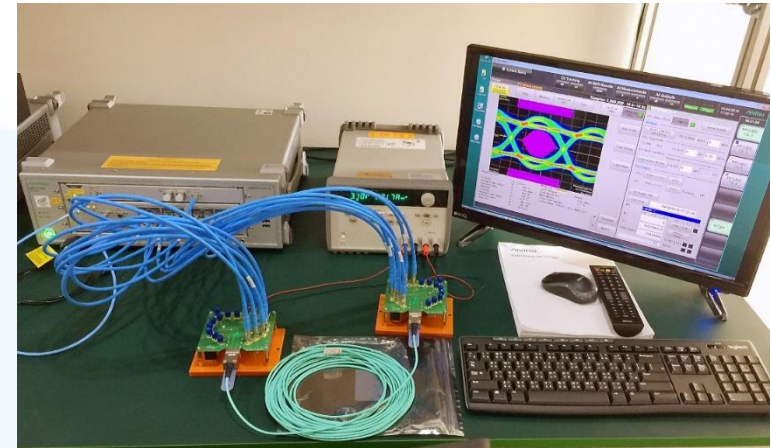




- Frequency/Time Domain & BERT/EYE are the main testing Items



- **Key Test:** BERT, EYE, Jitter
- **Spec:** Follow IEEE
InfiniBand, SFF, PCIe,
SAS standard
- **Testing Equipment:**
PPG/ED/Scope/Test
Board/RF Switch
- **Environment & Reliability:**
Follow standard
- **Test Record:** date code to
store in cloud



- **Key Test:** S Parameter, Impedance, COM, Skew, etc.
- **Spec:** Follow IEEE Infiniband, SFF, PCIe, SAS standard
- **Test Equipment:** VNA/TDR/Test Board/RF Switch etc.
- **Environment & Reliability:** Follow standard
- **Test Record:** date code to store in cloud

