

China Optics: Lightelligence (1879.HK; NC) Chairman visit: Optical interconnect & computing chips for AI scale-up/ scale-out

We hosted Lightelligence (1879.HK, Not Covered) Chairman in Shanghai on May 22 during our China Tech Tour. Key discussions were around (1) Scale-up expansion, (2) competition advantages, and (3) Optical computing opportunities. Overall, management is positive on the evolution of scale-up architecture to support rising requirement (higher bandwidth, lower latency, etc.) of AI clusters, driven by the migration to super node and more integrated forms (NPO/ CPO). The company is the early entrant of optical computing and interconnect, with accumulated experiences of complex optoelectronic chips design, benefiting from the rising networking opportunities.

Read-across to optical industry: Management's positive comment on company's opportunities in optical scale-out and scale-up market echoes our view on expanding networking market to support the AI infrastructure. We are positive on the AI infrastructure ramp-up and rising computing power per rack, and expect all configurations to enjoy strong growth ahead, opening a larger TAM market. Read more: [Global Optical Networking](#).

Company profile: Lightelligence (1879.HK, Not Covered) offers optical interconnect and optical computing products, supported by its optoelectronic chip technology, featuring cost-effective, low latency, and high throughput. The company's optical interconnect solution is used to connect diverse devices incl. GPU, CPU, GPU, switch and storage chips, and launched distributed optical circuit switch solution (LightSphere X) for interconnect of GPU supernode. On optical computing, the company developed 3D TSV-packaged optoelectronic computing card PACE2.

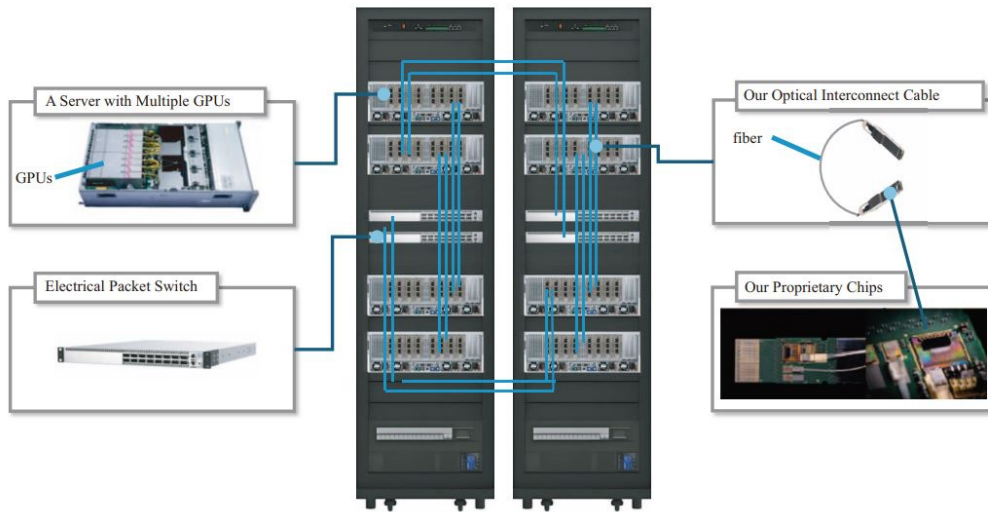
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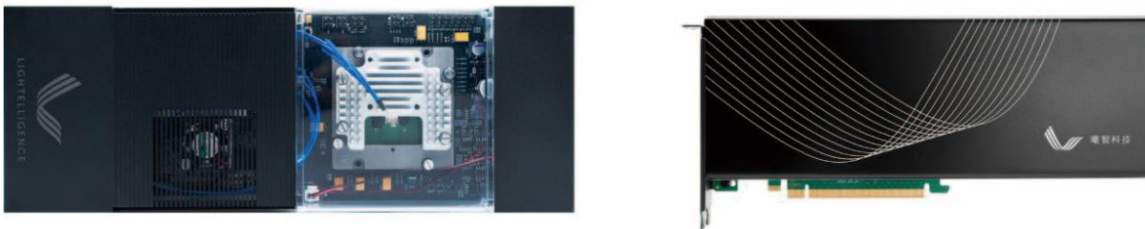
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Exhibit 1: The company’s scale-up EPS solution



Source: Company data

Exhibit 2: PACE optical computing solution



Source: Company data

Key takeaways

1. Scale-up expansion: The company’s interconnect solution could be used for scale-up architecture, supporting the increase in computing power within single server or node. Management highlights the company offers multiple solutions to address clients’ requirement: (1) scale-up EPS with electrical packet switch to support rack-to-rack interconnect with low latency, with fewer change to the original architecture, (2) scale-up OCS with optical circuit switch, which reduces the conversions between optical and electrical and minimizes the power consumption, and (3) From NPO to CPO with higher integration level and shorter to enhance signal integrity and performance.

2. Competition advantages: The company is the early entrant of optoelectronic computing with commercialization experiences, then expanding to optical interconnect business. Management highlights the company’s competitive edge in (1) highly complex optoelectronic chips design: For example, the PACE 2 optical computing chips include 40k+ photonic devices, (2) comprehensive capabilities across PIC/ EIC design and co-package, supported by its accumulated experiences in optical computing processors, and (3) deep partnership to support commercialization: collaboration with major foundry, OSAT, EDA etc. partners to support stable and large-scale shipments of optical solution.

3. Optical computing opportunities: The company launched the third generation of

optical computing product PACE 2 with 128 x 128 optical matrix to support the optical computing cluster. The company is working on the next generation of solution PACE 3 for large-scale commercialization, with 256 x 256 optical matrix for expanding AI scenarios incl. AI inferencing. Mgmt. notes the PACE 3 targets to deliver superior latency and energy efficiency, which is suitable for the LLM decoding.

Disclosure Appendix

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