Networking sector

Bandwidth demand in data centers boosted by Sora

Key message

1. We believe Sora, which can generate videos up to one minute in length from text prompts, will stimulate demand to expand from data center services to audio and video platforms, driving up demand for high-speed optical transceiver module products.

2. The size of the output files for Sora will be 10-100 times larger than text exported from ChatGPT. Thus, when users generate videos via Sora, internal server/ GPU computing traffic in data centers will surge, compared to ChatGPT. Moreover, users downloading the generated files will result in spikes to outbound traffic.

3. Videos will be uploaded to audio and video streaming platforms en masse, driving up the non-AI service network bandwidth requirements of traditional data centers.

Event

After Runway (US) launched Gen-2, a generative AI model that can generate novel videos with text, on February 15, OpenAI (US) unveiled a brand new generative AI model, Sora, which can generate videos up to one minute in length from text prompts. We believe Sora will stimulate demand to expand from data center services to audio and video streaming platforms, driving up demand for high-speed optical transceiver module products.

Impact

Sora: Generating images from text prompts. According to OpenAI, Sora is a combination of generative model DALL-E3, and GPT technology, which converts short prompts from users into longer detailed requirement descriptions. In addition to generating videos from text, it also creates video via images, and generates videos from existing clips. Sora currently supports videos in resolutions up to 1920x1080 or 1080x1920 for vertical videos. Single images (frames) up to 2048x2048 resolution can be exported from the service, with additional details being automatically generated by zooming into existing images or videos.

Data traffic pushed up greatly; demand will expand to audio and video platforms. Although OpenAI did not disclose parameter details or image specifications of exported videos, such as the encoding rate, and whether the number of frames per second can be adjusted, we predict: (1) the smallest output format for Sora is an image with 2048x2048 resolution, while the largest is a sixty-second image with 1920x1080 resolution. Therefore, the size of the files will be between several MB to hundreds of MB or more, 10-100 times (1MB=1024KB) larger than text exported from ChatGPT, at several KBs to MBs. Thus, when users generate videos via Sora, internal server/ GPU computing traffic in data centers will surge, compared to ChatGPT. Moreover, users downloading generated files will result in spikes to outbound traffic; (2) we believe that instead of directly using videos made by Sora, creators will generate videos with slight differences by entering different instructions, and then crop and edit the content; and (3) videos will be uploaded to audio and video streaming platforms en masse, driving up the non-AI service network bandwidth requirements of traditional data centers.

Stocks for Action

Share prices of Zhongji Innolight (CN) Suzhou TFC Optical Communication (CN), Eoptolink Technology (CN) and Huagong Tech (CN) fluctuated vigorously after Sora was announced. As Sora will push up demand from data centers for Taiwanese networking and optical communication vendors, we are upbeat on Accton Technologies (2345 TT, NT$564, OP), LuxNet (4979 TT, NT$155, OP) and Elite Advanced Laser (3450 TT, NT$69.2, NR). We are also positive on LandMark (3081 TT, NT$143, N) and EZconn (6442 TT, NT$123, NR), based upon our prediction of users uploading a higher quantity of videos to audio and video streaming platforms, and Gemini 1.5 Pro related beneficiaries.

Risks

Disappointing AI development; risk of a macroeconomic downturn.

Figure 1: Optical communication related plays, product mix and 2023 development plans

Company	Ticker	Product Mix 2021	Product Mix 2022	Product Description	2023 Product Development Plan
LandMark Optoelectronics	3081 TT	- Epi-wafers 98.6% - Others 1.4%	- Epi-wafers 99.3% - Others 0.7%	- InP LD epi-wafers: mainly used in optical communication and data transmission - PD epi-wafers: mainly used in optical communication - GaAs LD epi-wafers: mainly used for high-power laser machining, sensor, and data centers	- more than 50Gbit/s DFB epi-wafers - more than 50Gbit/s EML epi-wafers - 6'' multi-structured VCSEL - High-power DFB Laser epi-wafers - High-sensitivity SPAD epi-wafer - Single photon APD epi-wafer
Browave	3163 TT	- Branch 41.3% - WDM 34.8% - OIN 14.3% - AMP 8.8% - Others 0.7%	- Branch 30.5% - WDM 47.8% - OIN 13.3% - AMP 8.3% - Others 0.1%	- Branch focuses on the XGS PON market - the WDM product group focuses on the telecommarket and Cable TV broadband - OIN focuses on data center applications, including MPO and AOC - AMP focuses on the telecommunications market	- Integrated wavelength mux/demux - Mini isolator/circulator - 2D fiber/collimator array - Fiber Harness - Automatic multi-channel alignment - CPO Fiber Connection Module
TrueLight	3234 TT	- Chips and components 60.1% - Optical transmission and connection modules 37.4% - Others 2.5%	- Chips and components 71.3% - Optical transmission and connection modules 25.8% - Others 2.9%	- VCSEL、FP/DFB、PIN/PINTIA for optical fiber communication, 4G/5G mobile communication base station interconnection, cloud data center, 3D Sensing/Near-Field Sensing/Flood Illumination	- VCSELs for various applications - 10Gbps and 25Gbps FP/DFB die, PIN/APD and OSA - High-Power DFB Light Sources - 10G EPON/XGPON/XGSPON BOSA - 100G QSFP28 SR4/400G QSFP56-DD SR8 - 56G/112G GaAs PD, 56G/112G InGaAs PD
FOCI	3363 TT	- Fiber jumpers 78.7% - Micro-optical fiber devices 7.0% - Fiber couplers 4.5% - Other passive products 3.6% - Fiber connectors 1.5% - Rental receipt 0.6% - Others 4.3%	- Fiber jumpers 76.3% - Micro-optical fiber devices 11.2% - Fiber couplers 4.6% - Other passive products 3.3% - Fiber connectors 1.4% - Rental receipt 0.7% - Others 2.8%	-Produces and sells optical passive components such as fiber jumpers couplers. Its main customers are optical fiber communication manufacturers and communication equipment manufacturers, etc.	- PM FA packaging - CPO - PM coupler - USB3.2、USB4、DP Alt Type C、HDMI2.1 AOC
Elite Advanced Laser	3450 TT	- Power semiconductor 66.1% - Optical information and communication products 33.9%	- Power semiconductor 77.1% - Optical information and communication products 22.9%	- PA is used in computer products, handheld devices, automotive electronics, etc. - Optical communication products are mainly GPON and EPON TO-CAN packaging, mainly used in FTTx, DCs, 4G/LTE base stations, etc. - The main applications of optical information products are video recorders, 3D sensing, auto HUD, and auto LiDAR	- 5G mobile communication related components - Signal AOC cable for high speed computing - Multi-chip modular power management components - GaN on Silicon epi-wafers - Silicon base fiber splicing technologies - Tx components of DWDM thermal control system
Apac Opto Electronics	4908 TT	- Optical transceiver module 93.7% - Connector 0.2% - Others 6.0%	- Optical transceiver module 93.7% - Others 6.3%	- Produces and sells optical transceiver modules and connectors, mainly used in network and communication equipment, data transmission equipment and cable TV network equipment, etc.	- Plan to develop SFP56 SR/LR/ER Transceiver
PCL Technologies	4977 TT	- SFP+ 65.8% - QSFP 26.1% - OSA 5.8% - SFP 2.3%	- SFP+ 54.2% - QSFP 38.8% - OSA 5.0% - SFP 1.9%	- Produces and sells optical transceiver modules and OSA - SFP+/QSFP are mainly used in Telecom/Ethernet/Datacom/Cloud computing /Storage - XFP is mainly used in Telecom/Ethernet/Datacom/Cloud computing - OSA/SFP are mainly used in Telecom/Ethernet	- 64G SMF SFP28 LR Transceiver - 64G MMF SFP28 SR Transceiver - 25G SMF SFP28 BIDI Transceiver - 32G MMF SFP28 SR Transceiver Gen2 - 1.6T CPO Remote Laser Module
LuxNet	4979 TT	- Component & transceiver 82.4% - Chip 8.7% - Others 8.8%	- Component & transceiver 85.3% - Chip 9.4% - Others 5.4%	- Specializes in products and services such as active components of optical communications (chips, TO-CAN, OSA), and OEM services for optical communications'transceiver module - Products are mainly used in 5G transmission and data centers applications	- Focuses 70mW CW LD and advanced packaging technology for 400G+ applications
EZconn	6442 TT	- RF connectors 42.7% - Optical communication 57.3%	- RF connectors 30.1% - Optical communication 69.9%	- RF connectors can be classified into electronic and non-electronic categories. Electronics are mainly used in cable TV STB; non-electronics are mainly used in auto, aerospace, etc. - Optical transceiver modules and OSA are mainly used in network and communication, data transmission and cable TV network - Optical passive components (including jumpers, connectors, etc.) are used in data centers, etc.	- Photonic IC - 50Gbps PON ONU BOSA/Transceiver - 50Gbps PON OLT BOSA/Transceiver - 800G QSFP28-DD SR8
ShunSin Technology	6451 TT	- SiP 40% - Optical TXR 28% - Others 32%	- SiP 75% - Optical TXR 6% - Others 19%	- SiP products are mainly high-frequency wireless communication modules, WiFi modules, LNA, sensors and automotive electronics. - Optical TXR packaging and testing services: mainly used for storage and transmission of enterprise servers and cloud servers	- 800G-2*FR4 Transceiver - 1.6T-OSFP-XD Transceiver - 100G LiDAR Light Source - 51.2T-CPO Transceiver - 5G module packaging for thermal enhancement

Source: Company data; KGI Research

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