

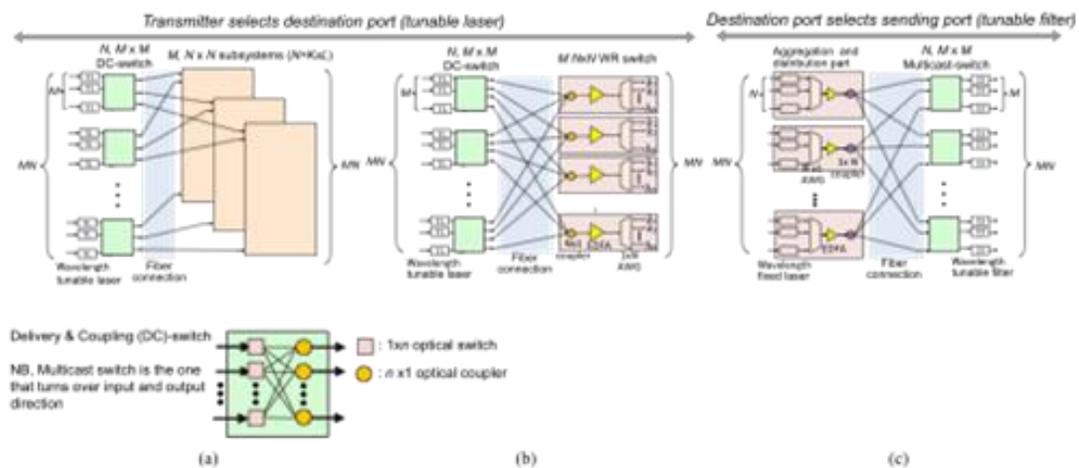
Novel Large-Scale Fast Optical Circuit Switch with High Energy Efficiency

Background:

Applying optical switching to data center networks can greatly expand network bandwidth and reduce electrical power consumption, both of which are needed to meet the explosive traffic increase.

Technology Overviews:

Nagoya University researchers have successfully invented the large-scale fast optical switch, with large port count, which is configured from (1) N wavelength group generator, (2) splitting/selecting unit, and (3) MN tunable filters.



Drawing: Proposed $MN \times MN$ optical switch architectures (a) AWG based wavelength routing switch [33] (b) Tunable laser based wavelength routing switch [35] (c) Tunable filter based wavelength routing switch

Benefits:

This novel optical switch provides:

- Super-fast circuit switching
- Large-port count switching
- Simple switch network architecture, reducing switching stages and the number of transceivers and interconnection fibers
- Large bandwidth
- Efficient power consumption
- Lower device cost and lower operating cost

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Further Details:

Ken-ichi Sato. Realization and Application of Large-Scale Fast Optical Circuit Switch for Data Center Networking. JOURNAL OF LIGHTWAVE TECHNOLOGY, VOL. 36, NO. 7, APRIL 1, 2018

Mungun-Erdene Ganbold *et al.*, 1,024x1,024 Optical Circuit Switch Using Wavelength-Tunable and Bandwidth-Variable Silicon Photonic Filter. OSA Advanced Photonics 2018 Congress, Switzerland, July 2018, Control Number: 2964814.

IP Status: A patent application has been filed.

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