Ph-EX: Optical Node Utilizing Wavelength Converter
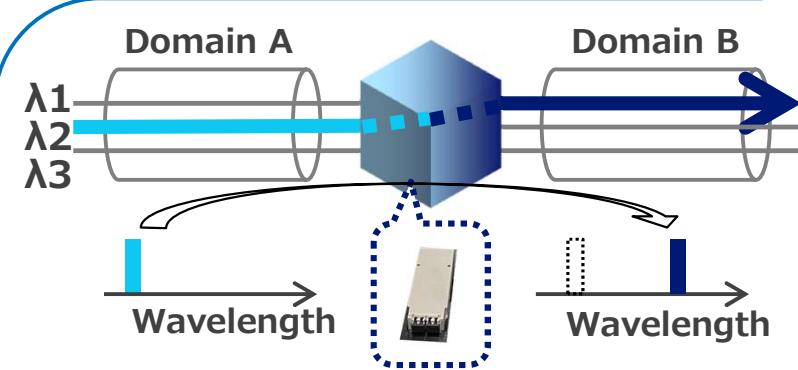

Ph-EX

APN

Ph-EX

NTT

① Wavelength conversion

(Single wavelength converted from/to an arbitrary wavelength)
→E2E optical connections across multiple network domains

② Inter-band wavelength conversion

(Multiple wavelengths simultaneously converted from one band to another)
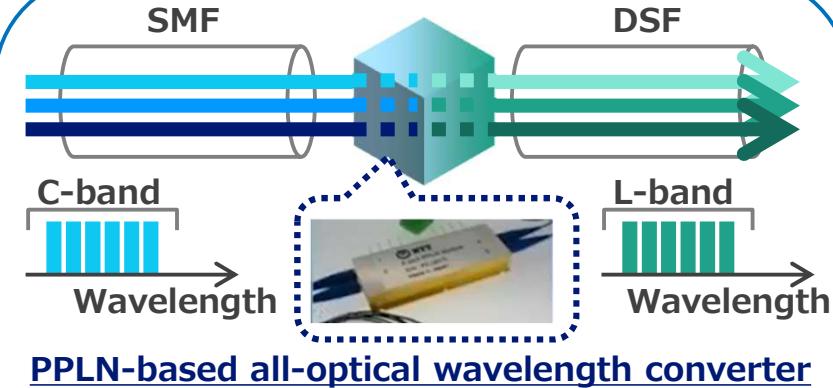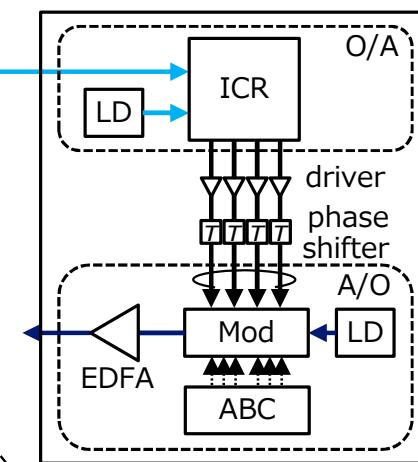→E2E optical connections utilizing existing facilities

Domain A   Domain B

$\lambda 1$
$\lambda 2$
$\lambda 3$

Wavelength   Wavelength

Optical-Analog-Optical wavelength converter

Wavelength conversion

OEO — Reduced by approx. 90% — Power consumption

OEO — Reduced by approx. 99% — Latency

O/A

LD   ICR

driver
phase shifter

A/O

EDFA   Mod   LD

ABC

SMF   DSF

C-band   L-band

Wavelength   Wavelength

PPLN-based all-optical wavelength converter

Inter-band wavelength conversion