

Applicability of GMPLS for fine grain OTN

draft-lin-ccamp-gmpls-fgOTN-applicability-00

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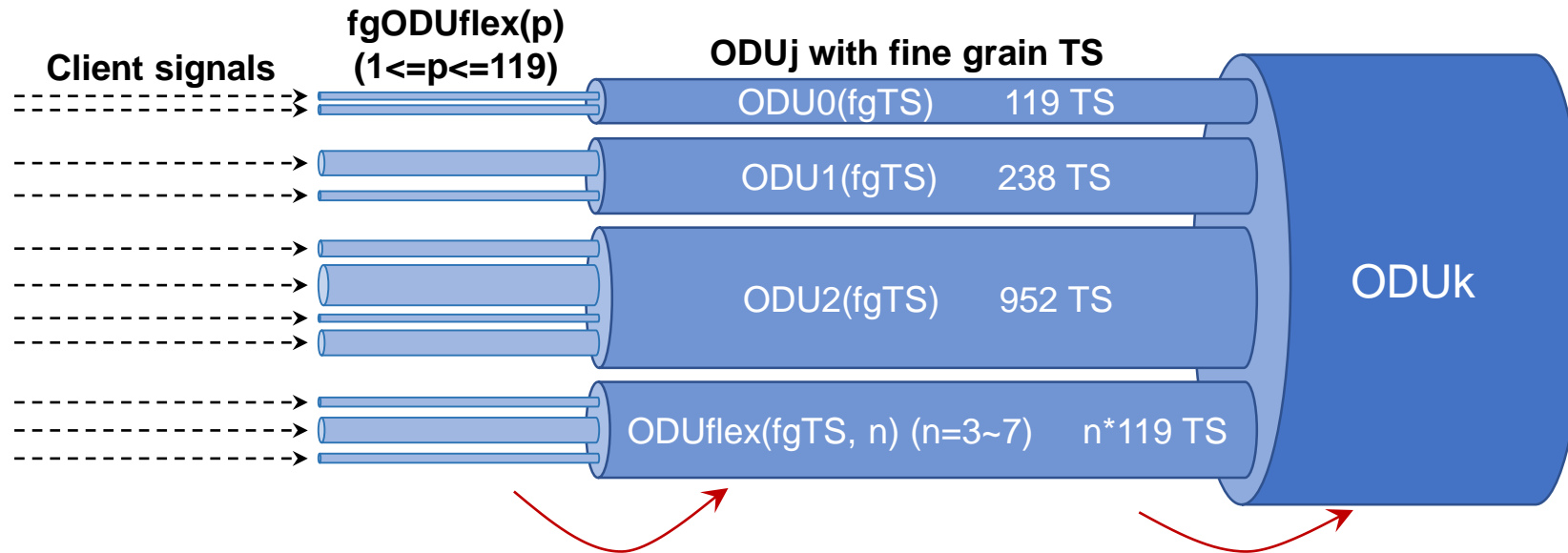
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fgOTN Introduction

- **G.709.20**: provides an overview of fgOTN functions, **consented in Dec. 2023**
- **G.709 (Edition 6.7)**: Defines OTN interfaces, including fgOTN, **consented in Dec. 2023, published in Mar. 2024**



fgODUflex into ODUj(fgTS) multiplexing

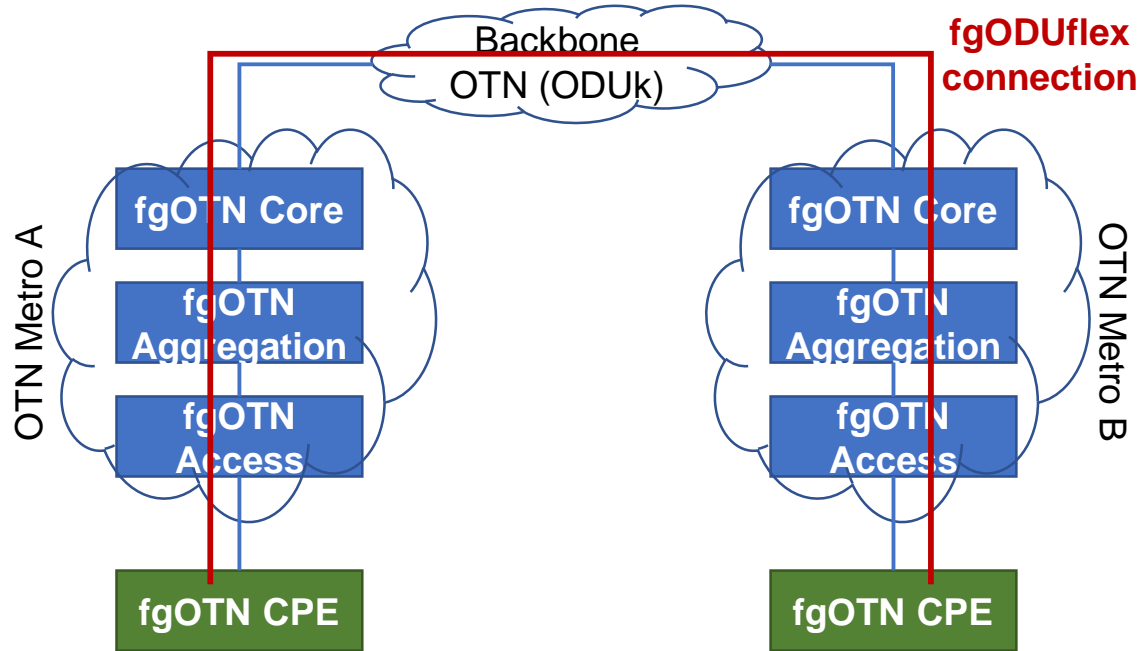
- fgTS BW = ~**10Mbit/s**
- ODUj(fgTS) has **(1~8) * 119** fgTSes (**at most 952** fgTSes)
- An fgODUflex occupies **1~119** fgTSes (10Mbit/s ~ 1.2Gbit/s)

ODUj(fgTS) into OTUj/ODUk mapping/multiplexing

- Same as ODUj into ODUk multiplexing, or ODUj into OTUj mapping
- Using 1.25Gbit/s or 2.5Gbit/s TS

Typical Scenarios of fgOTN

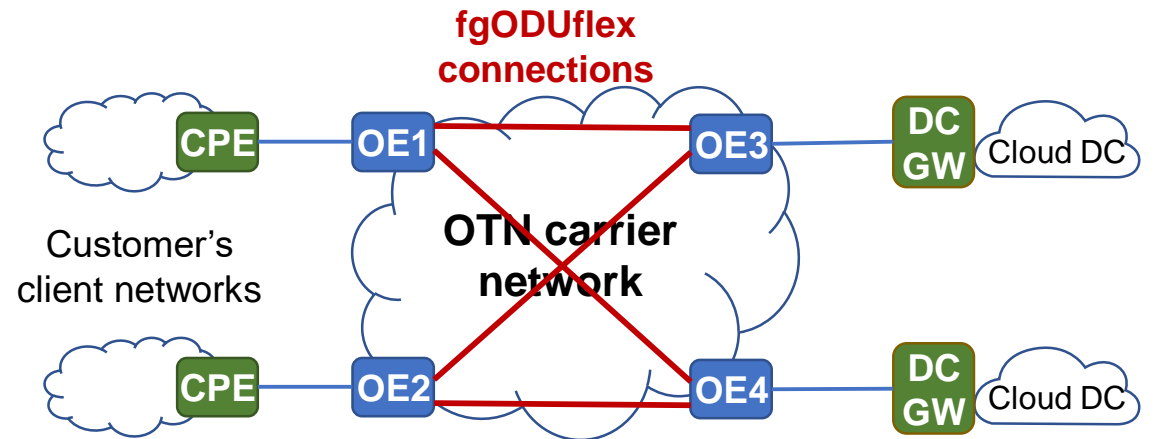
P2P Private Line Service



From: ITU-T G.709.20

- fgOTN used for P2P sub-1G private line services
- An alternative solution to SDH (phasing out)

MP2MP Private Network Service



From: draft-liu-ccamp-optical2cloud-problem-statement

- OTN-based private network services
- MP2MP connectivity, connecting multi-customer branches and multi-Cloud DCs

Connection Control Consideration

1

New Signal Types

- fgODUflex
- ODUj(fgTS)
- ODUflex(fgTS, n)

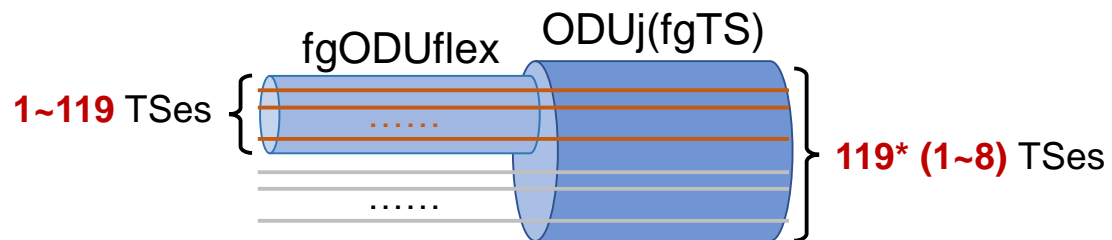
2

New TS Type

- 10Mbit/s fgTS

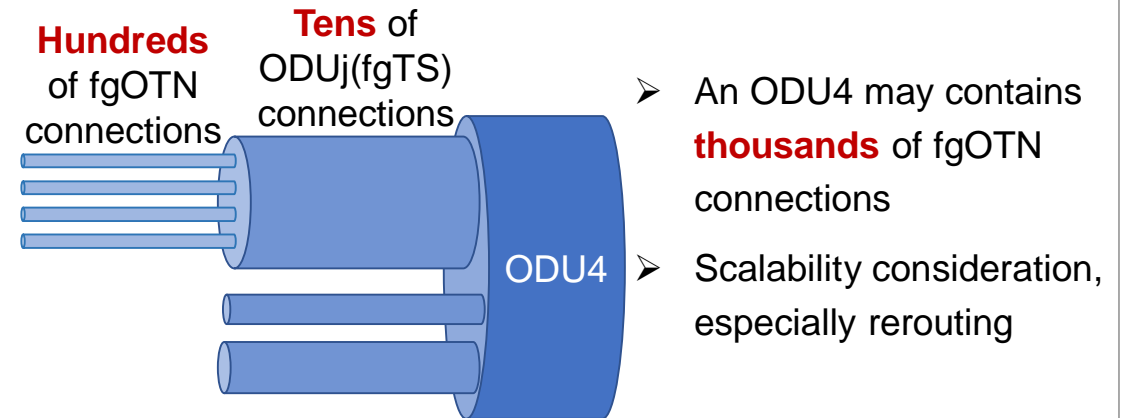
3

New fgOTN Label

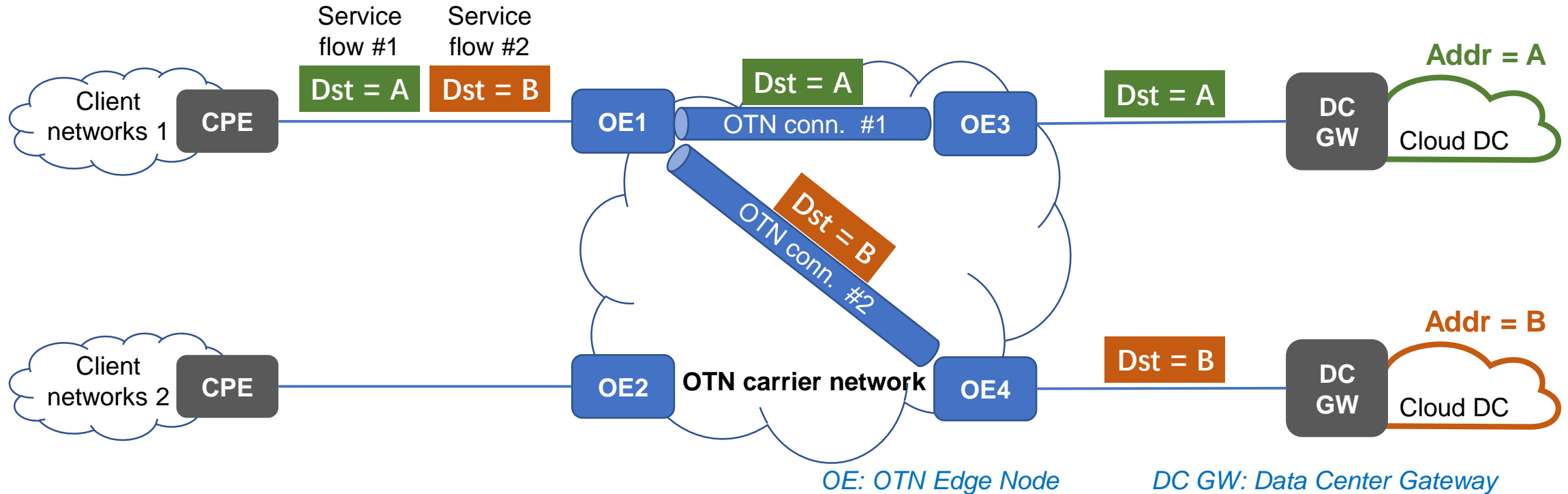


4

Scalability Consideration

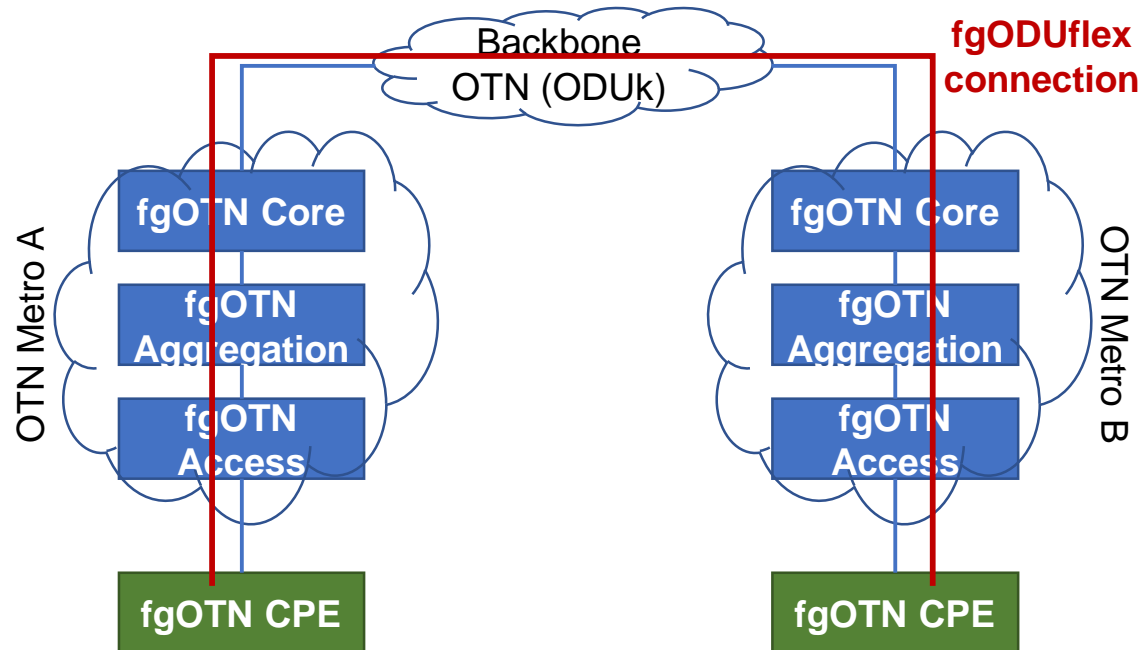


Service Control Consideration



- OE1 needs to map service flow #1 (dst = A) into OTN conn. #1, and map service flow #2 (dst = A) into OTN conn. #2
- New service layer protocol is needed, to help OE1 to know that Cloud DC (Addr=A) is attached to OE3, and Cloud DC (Addr=B) is attached to OE4
- Also see [\[draft-liu-ccamp-optical2cloud-problem-statement\]](#) and [\[draft-han-pce-path-computation-fg-transport\]](#)

Routing Consideration



Scalability Consideration

- fgOTN main scenarios: sub-1G private line/network services for more customers
- OTN network will cover a larger scope of networks
 - Backbone
 - Metro Core
 - Metro Aggregation
 - Metro Access
 - Even including OTN CPE

Next Steps

- More detail research on the applicability analysis and technical gap analysis
- Start protocol extension for fgOTN control
 - Collaborate with [draft-han-pce-path-computation-fg-transport]
- Comments are always appreciated

Thank you