Link Management Protocol Extensions for Grid Property Negotiation

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Introduction

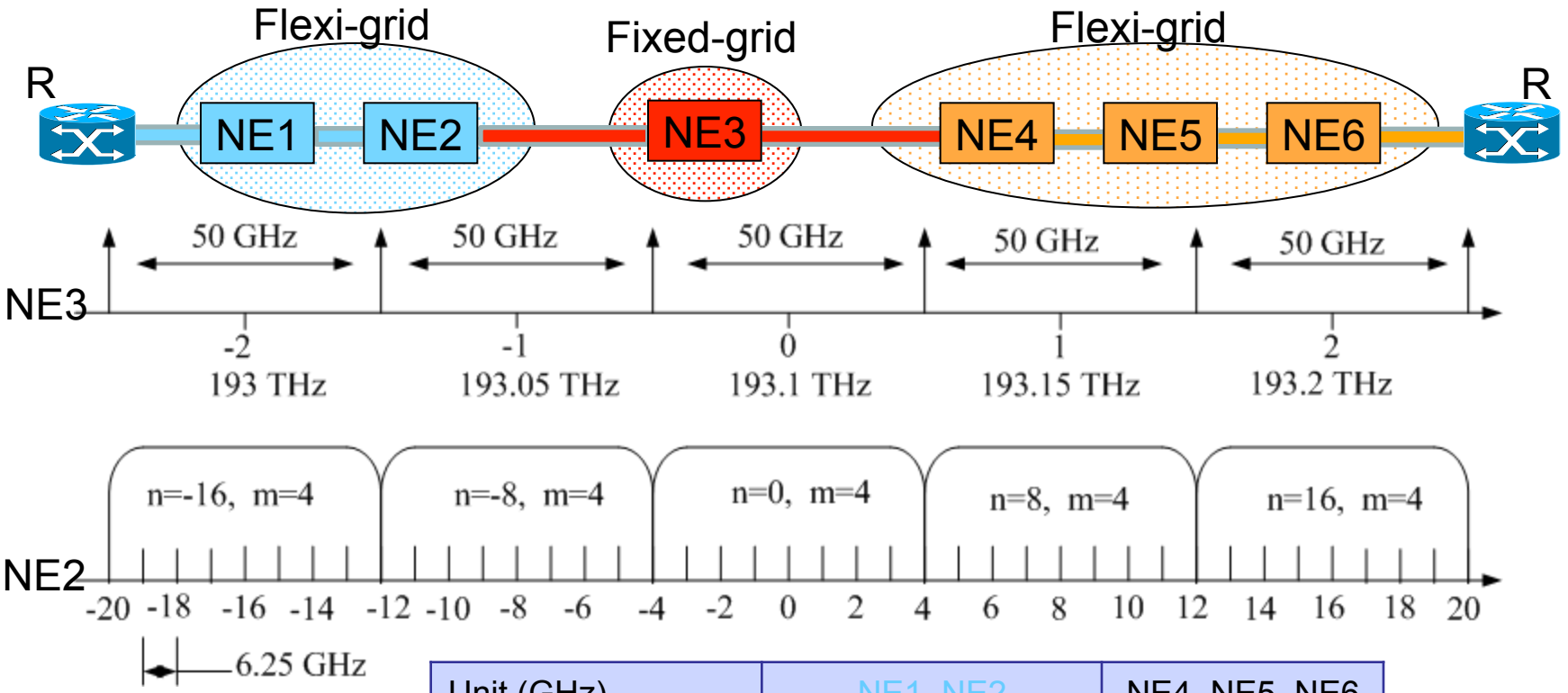
Problem statement

- During the practical deployment procedure, there is an interworking problem between fixed-grid DWDM and flexible-grid DWDM nodes.
- Even two flexible-grid optical nodes may have different grid properties.

Solution

Extends the Link Management Protocol (LMP) to negotiate link grid property between the adjacent DWDM nodes before the link is brought up.

Flexi-fixed Grid Nodes Interworking

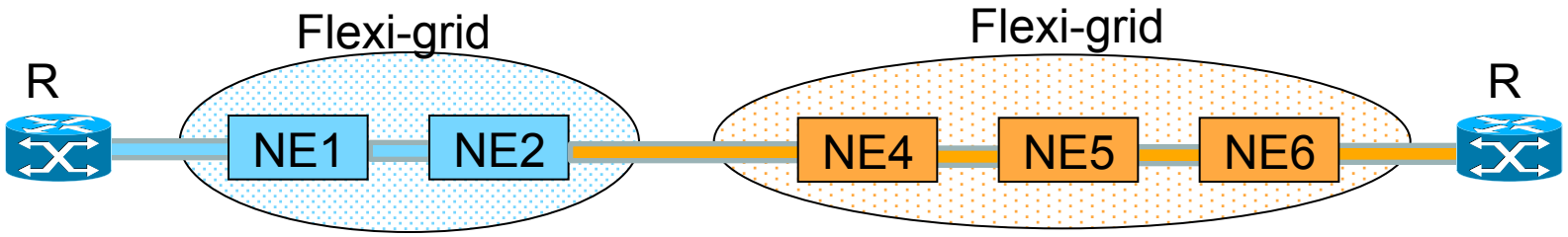


Unit (GHz)	NE1, NE2	NE4, NE5, NE6
Central frequency granularity	6.25	12.5

Configure the flexi-grid nodes in such a way that the central frequencies and slot width parameters are backwards compatible with the fixed DWDM grids:

- Link between NE2 and NE3: fixed-grid with channel spacing of 50 GHz.
- Link between NE3 and NE4: fixed-grid with channel spacing of 50 GHz.

Flexible-Grid Capability Negotiation



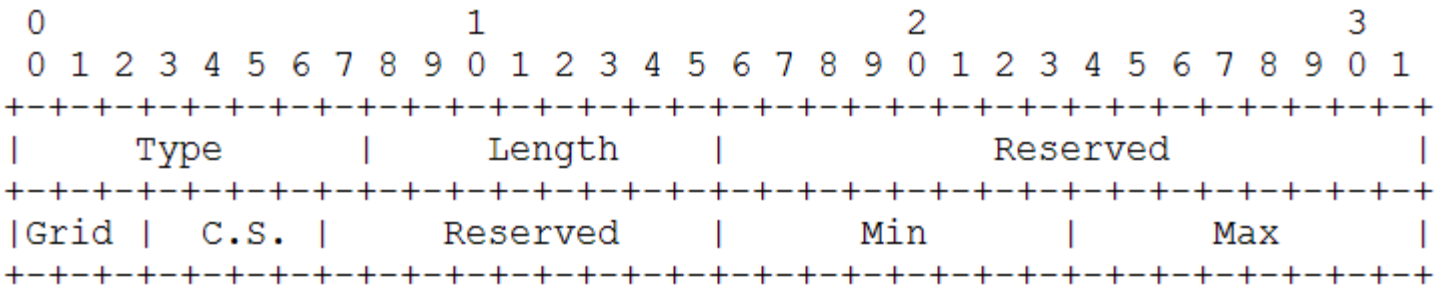
Unit (GHz)	NE1,NE2	NE4,NE5, NE6
Central frequency (slot width) granularity	6.25 (12.5)	12.5 (25)
Slot width tuning range	[12.5, 100]→ [12.5×1, 12.5×8]	[25 , 200]→ [25×1, 25×8]

Link grid property negotiation between NE2 and NE3 :

- Central frequency---align with the larger one→12.5 (25) GHz
- Tuning range---select to be the range intersection →[25,100] GHz

LMP extensions

- Introducing a new DATA_LINK subobject: "Grid property":



Grid	Value
DWDM	1
CWDM	2
Flex-Grid	3

C.S.	Value
100	1
50	2
25	3
12.5	4
6.25	5

Min&Max	Value
m×(slot width granularity)	m

Tuning range from 25 to 100 GHz [25×1,25×4]:
Min=1, Max=4

LinkSummary message exchange procedure is the same as that in RFC 4204.

Next Steps

- Comments/Feedback?

Thanks!