
Network Provider's View

~Rate Adaptation~

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Welcome, Higher Speed Ethernet

We, network providers, provide

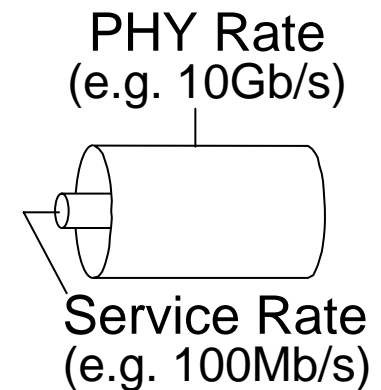
- FTTH services

 - B-PON, GE-PON, ...next 10GE-PON ?

- Layer 2 Ethernet network services

 - Wide area

 - Various menu: from 500kb/s to 1Gb/s



We must always prepare for

- Customer requests

 - More bandwidth, more convenience, lower cost

Higher Speed Ethernet meets the spot !



Transport Network Infrastructure

Network providers build 10Gb/s x N transparent networks

-DWDM systems, ROADM systems, ...

Network providers still use the digital hierarchy

-10Gb/s x n based networks

SDH/SONET: STM-64(10Gb/s), STM-256(40Gb/s)

OTN: OTU2(10.7Gb/s), OTU3(43Gb/s)

Existing facilities will keep being used after 100GE

-Replacement

Needs the long range planning

Needs a lot of investments



MAC Rate Preference

10Gb/s x N MAC rate is desirable

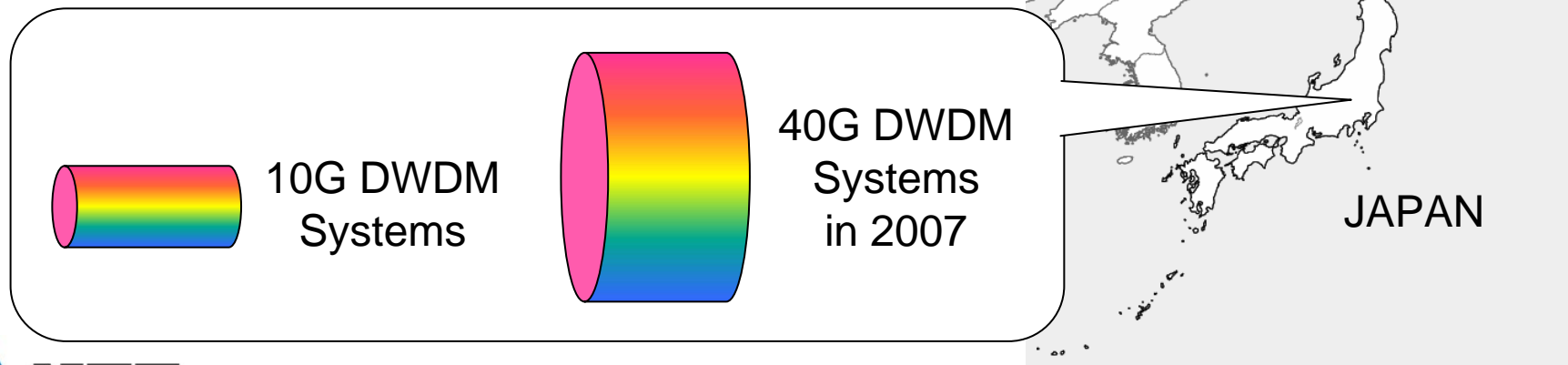
-It suits for existing facilities

100Gb/s MAC rate is good

-It may handle massive traffic in the aggregation points

Additional 40Gb/s MAC rate is preferable

-It matches existing devices and equipment



Key To LAN/WAN Convergence

Easy accommodation of Ethernet into OTN

-It is the most desired for the network providers

One example of the simplest solution

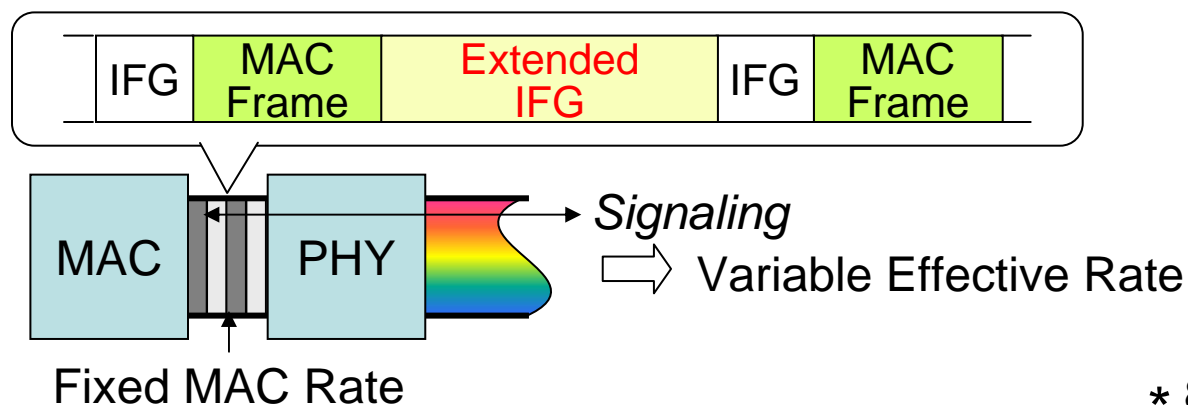
-Rate Adaptation

Can be used to slow down the effective data rate

Can offer 10Gb/s x N rates

Can reduce the number of PMD types

Operates with a function like Link Fault Signaling*



Fixed MAC Rate

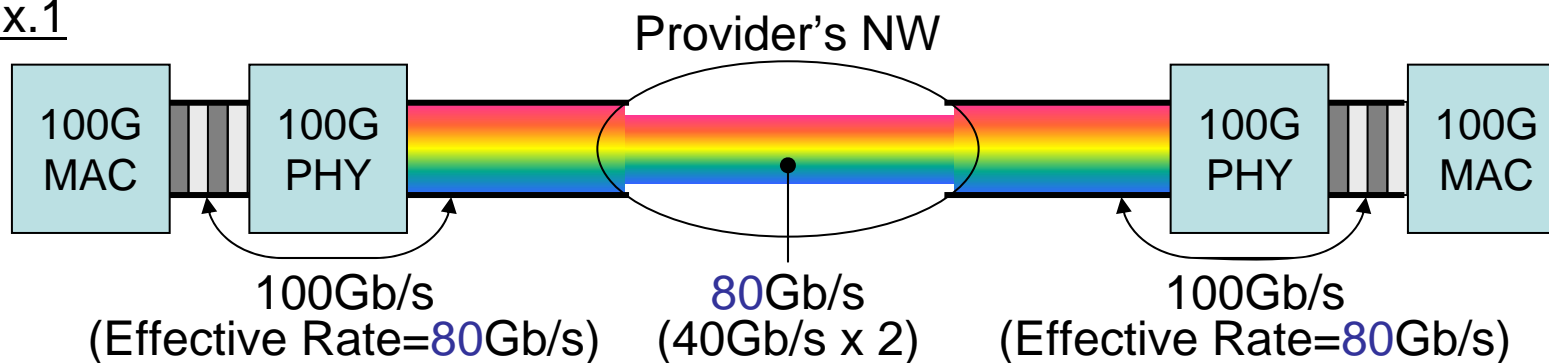
* 802.3ae 46.3.4

Example of Rate Adaptation

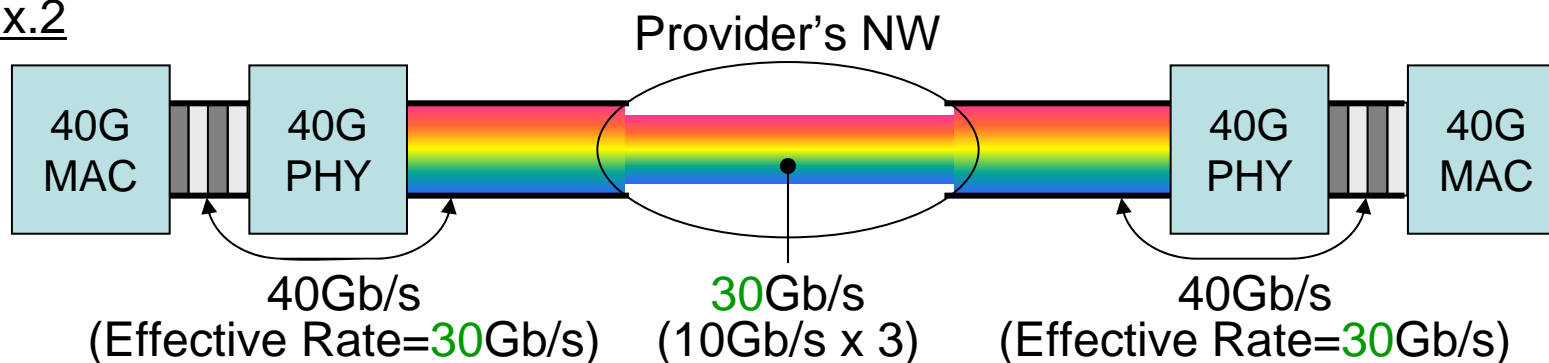
If effective data rate fits access and backbone network 'pipe'

- It may simplify network equipment
- It may reduce operation, management, maintenance costs

Ex.1



Ex.2



Resiliency with Rate Adaptation

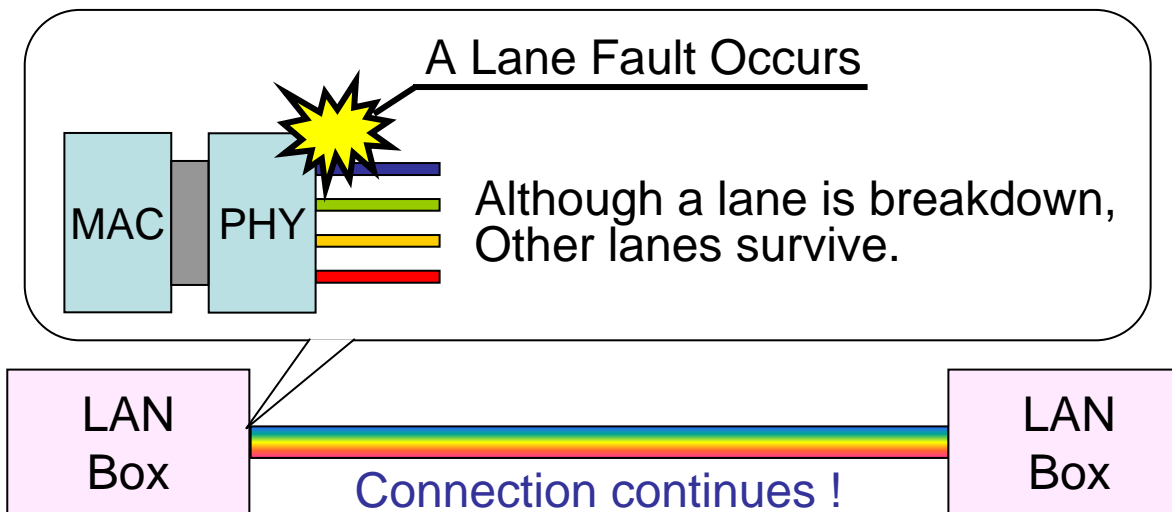
Rate Adaptation has various potentials

e.g.

If PMD understands rate adaptation signaling,

-“Resiliency” can operate

Its function may offer non-stop using



Summary

We welcome an additional 40G-MAC Rate

We recommend an objective:

- Support rate adaptation at MAC/PLS service interface