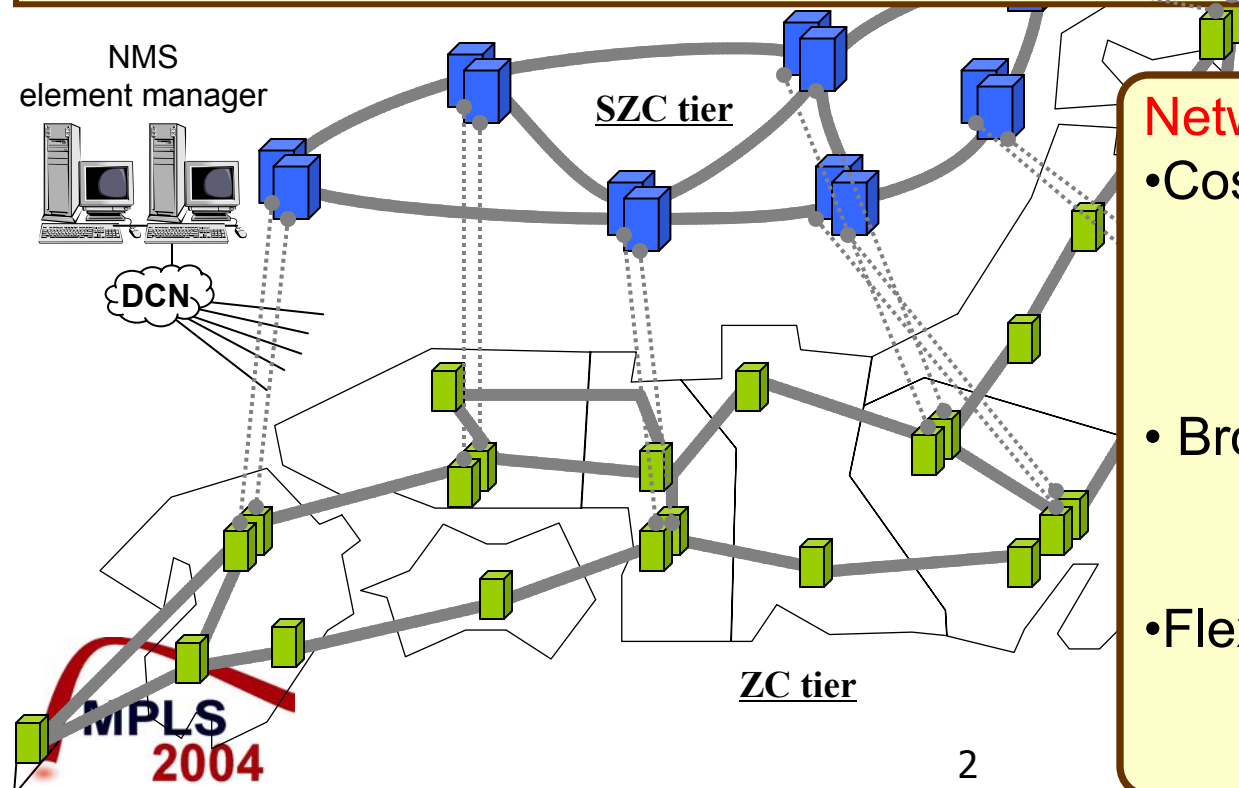# Inter-AS Requirement from L2-MPLS Network

- Yukio Ito

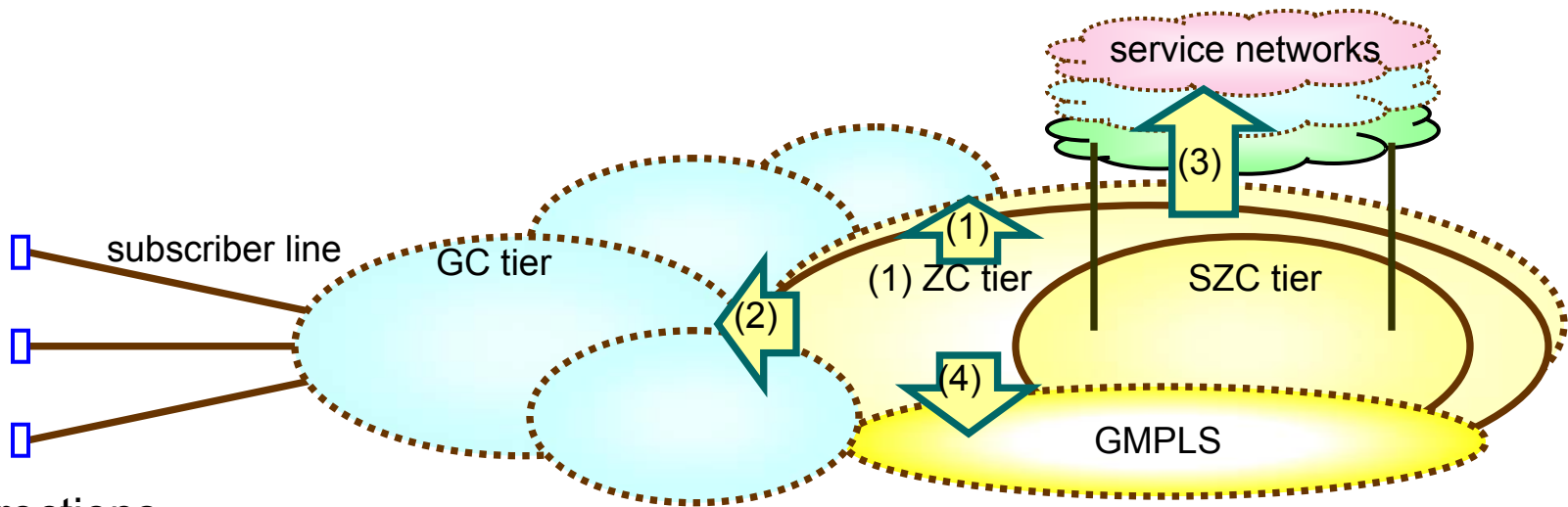# NTT Com's L2-MPLS Network
- IP Infra Network -

- Nation wide network that consists of two tier
- Flexible bandwidth path from 1Mbps to 10Gbps
- Variety of service classes enabled by QoS control
- End-to-end path protection (global protection)

NMS
element manager

SZC tier

DCN
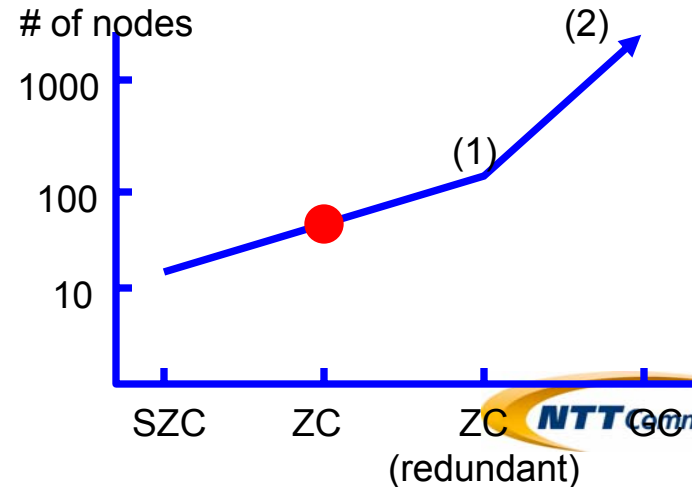
ZC tier

Network Policy

- Cost reduction
  - Statistical multiplexing
  - Multi service convergence
  - Multi layer provisioning
- Broadband
  - GbE connection
    (everywhere, every time)
- Flexibility
  - User friendly interface
  - Usage based bandwidth

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2

Expansion Direction of L2-MPLS Network

service networks

subscriber line

GC tier

(1)

(1) ZC tier

SZC tier

(2)

(3)

(4)

GMPLS

Directions

(1) Redundancy of ZC tier
(2) Expansion toward GC tier
(3) Multi-service accommodation such as ATM/FR
(4) Multi-layer network operation by GMPLS

# of nodes

(2)

1000

(1)

100

10

SZC   ZC   ZC   GC
                      (redundant)

Inter-AS Issues in L2-MPLS Network

When we expand the L2-   network to GC tier,
inter-AS issues will occur...

➢ Large single domain network will be unstable.
 (No more expansion with single domain)
➢ Multi domain network can separate influence of failure.
➢ End-to-end QoS issue in multi domain network
➢ End-to-end path protection/traffic engineering
➢ End-to-end management/OAM function (ex. LSP ping)

Effective solution as soon as possible!!

Abstract Node Approach in Multi Domain Network

AS (Domain) should be treated as Abstract Node.
- ➢ Abstract Node looks like an LSR.
- ➢ The member in the domain is concealed from outside.
- ➢ Access to the member from outside is possible through PCE.
- ➢ Existing protocols can be apply to the protocol between PCEs.

Abstract Node #1   Abstract Node #2   Abstract Node #3

PCE   PCE   PCE

set, get   set, get   set, get

AS (Domain)   AS (Domain)   AS (Domain)

LSP

Inter-domain path protection/traffic engineering

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