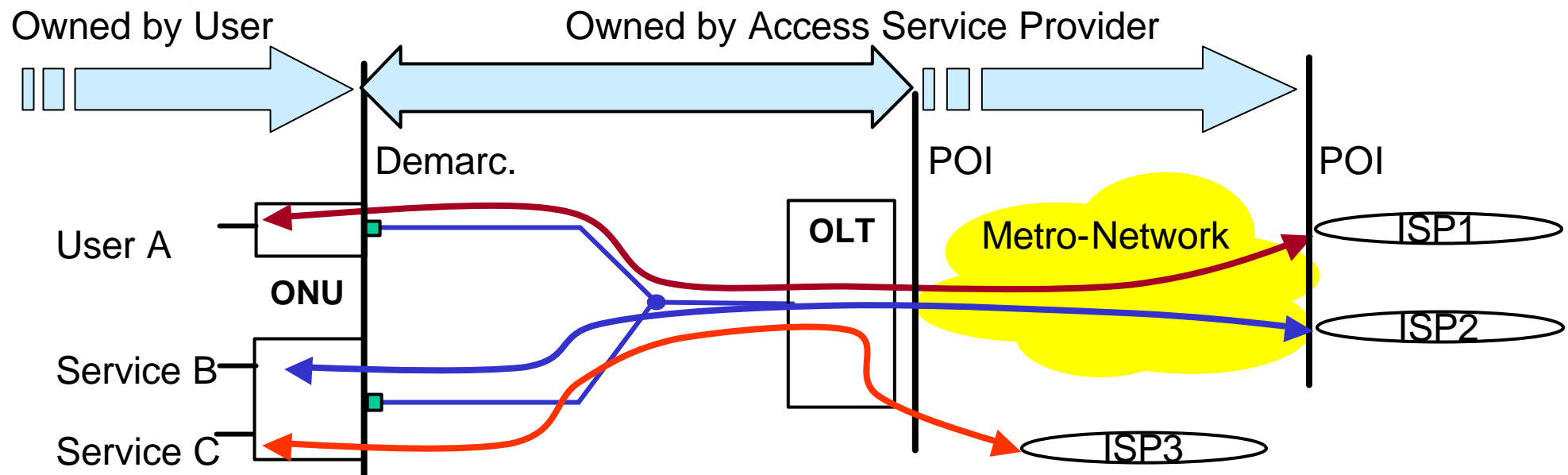

Multiple LLIDs / ONU

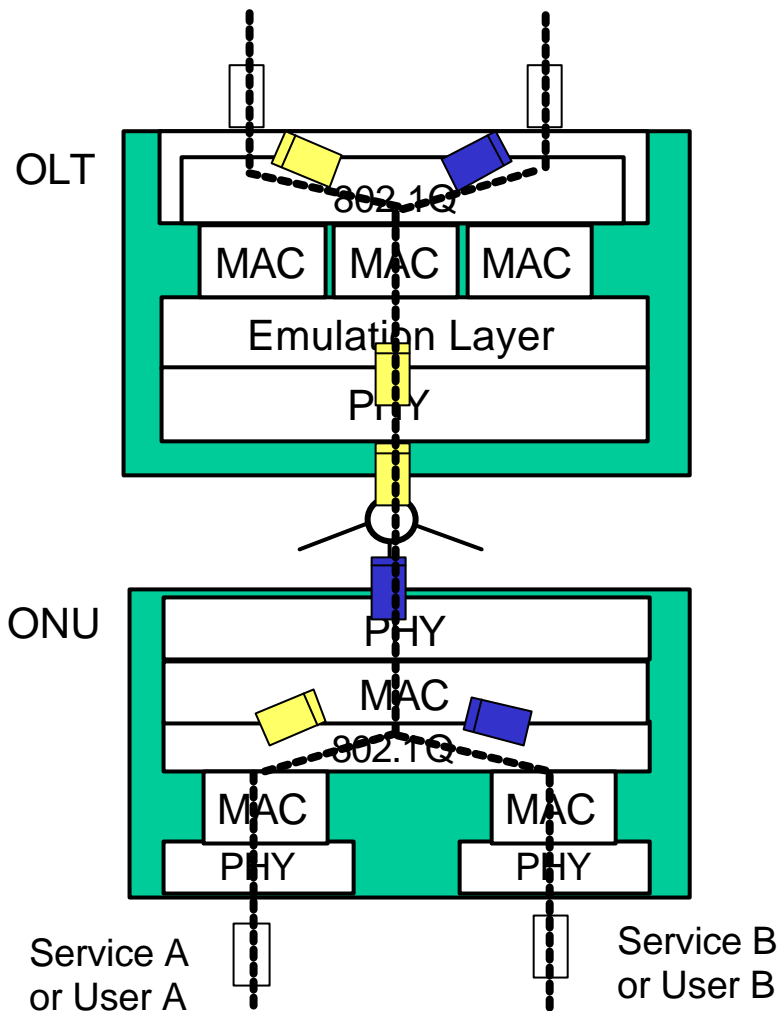
Yukihiro Fujimoto NTT

Open Access Model

- Access Service Provider will not install CPEs
 - Customers prepare their ONU
- POI is basically just behind OLT
 - What type of frame/packet/format/etc you need depends on POI
 - ATM, VLAN-tag, MPLS, L3, Lambda, Physical port.....

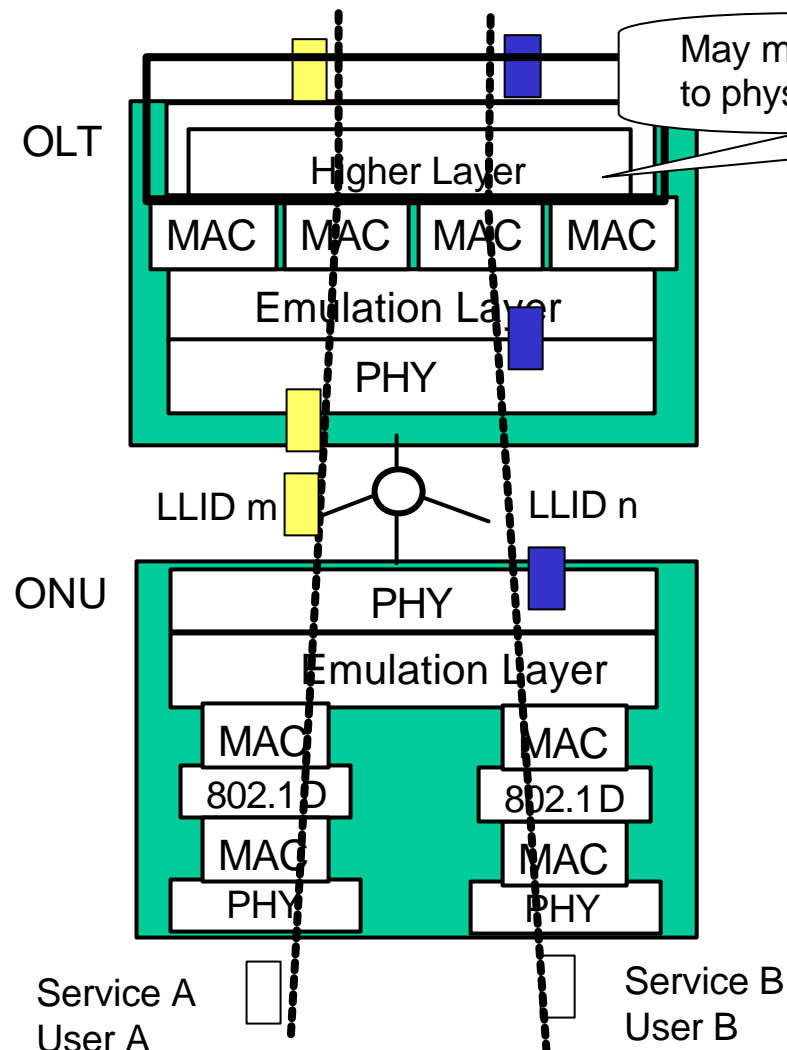


Service Classification/ User Traffic Segregation by VLAN-tags



- Traffic segregation by VLAN
 - Existing technologies
- Bandwidth management by ONU
 - OLT(DBA) assigns total bandwidth (service A + B) to an ONU
 - Bandwidth assignment for each service depends on ONU performances.
 - OLT cannot control each bandwidth
- ONU + Layer 2 switch
 - ONU configuration
 - Who will configure them?

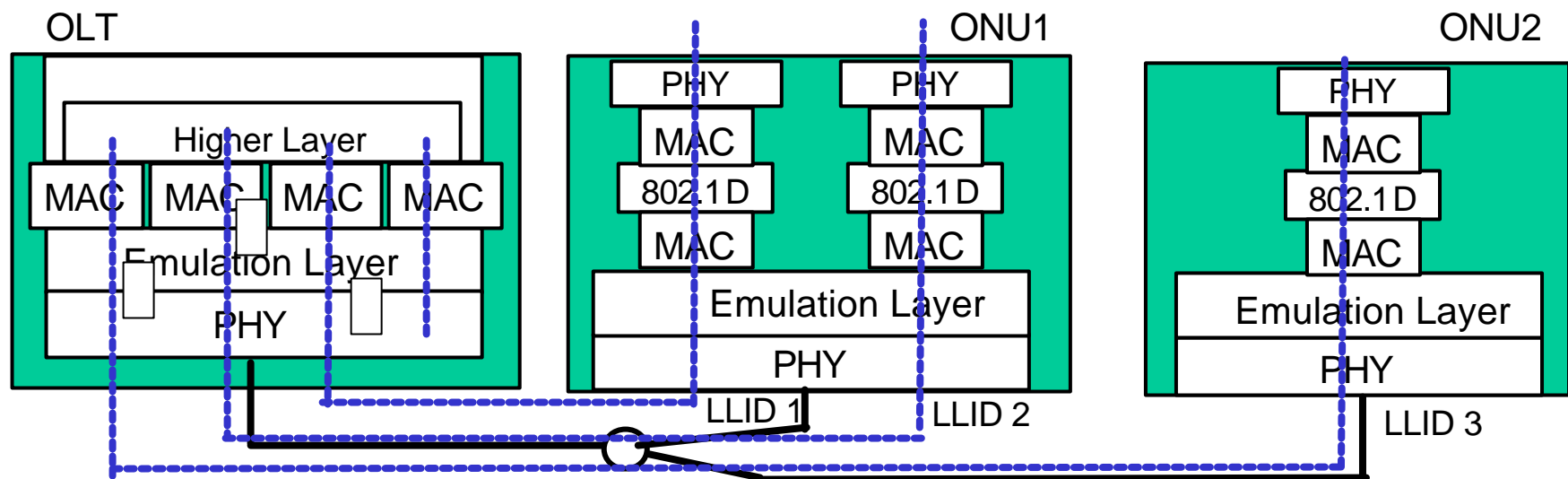
Service Classification/ User Traffic Segregation by LLID



- Traffic segregation in PON section
 - By LLIDs
- Bandwidth management by OLT
 - An LLID can be tied to a service or a user
 - ONU just follows GATEs
 - Bandwidth for service A / B or user A / B are exactly managed by OLT (DBA)

Multiple LLIDs / ONU is

- Multiple LLIDs as virtual multiple ONUs
- Interoperable with Single LLID / ONU



Efficiency vs # of LLIDs

- How many LLIDs will use per PON
 - Taking overheads in to account, operating thousands of LLIDs is not realistic.
 - As same as operating thousands of ONUs with 1:1000 splitter.
 - Current considerable number may be ~256 LLIDs / PON.
 - 16 ONUs with 16 LLIDs / ONU, 32 ONUs with 8 LLIDs / ONU
- Efficiency vs # of LLIDs is service designing issue.
 - Service provider evaluates the parameters for their design.
 - # of LLIDs / OLT, # of ONU, # of LLIDs / ONU, splitting ratio, etc

Summary

- **Multiple LLIDs / ONU and Single LLID / ONU**
 - not conflict, but interoperable
 - Multiple LLIDs / ONU act as virtual multiple ONUs
- **Efficiency vs # of LLIDs is service designing issue.**
 - the parameters for their designing.