

# EPON LinkSec Architecture

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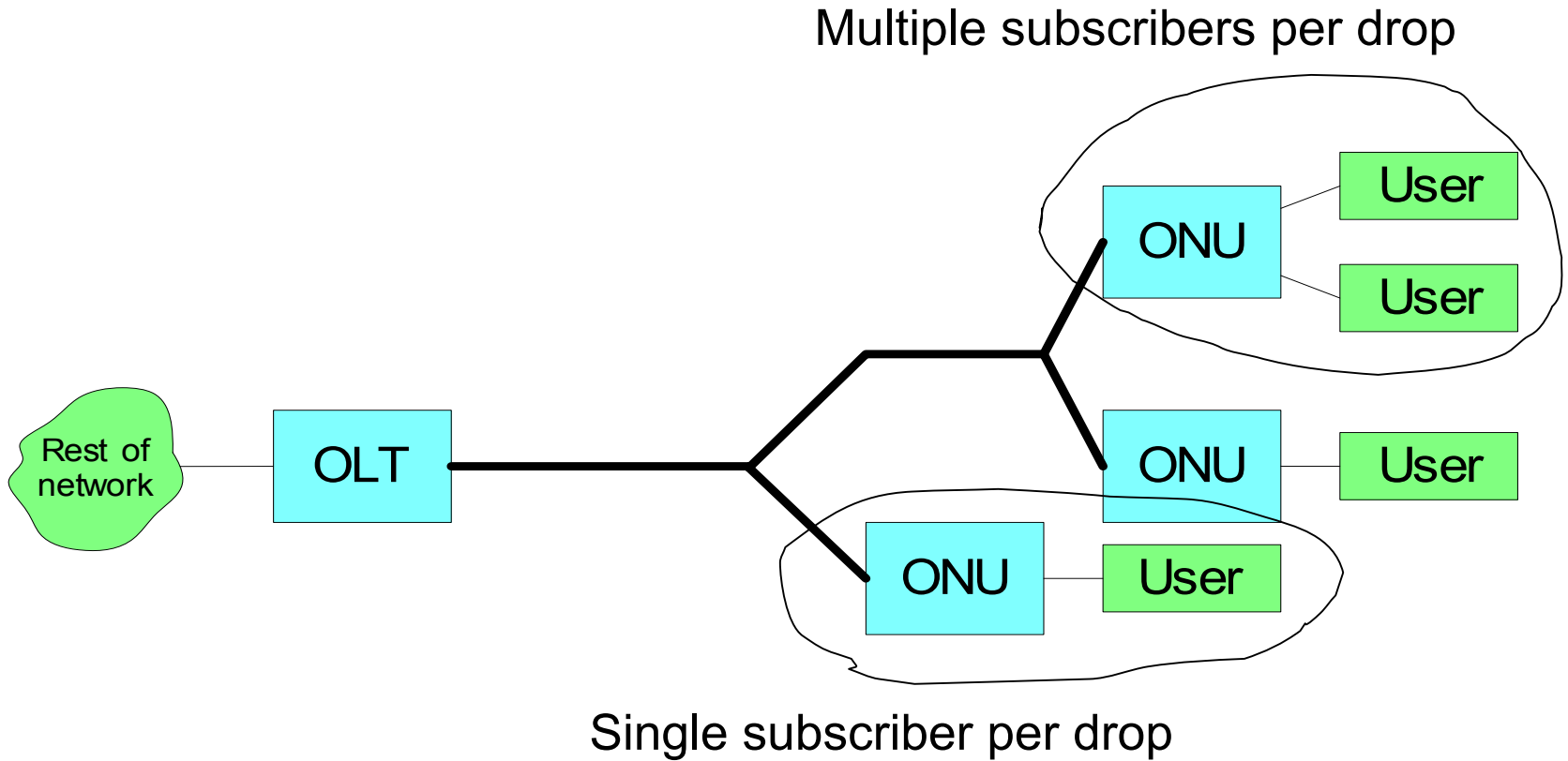
# First the Conclusion

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- EPON is Ethernet!!!
- Same solution for all EFM is applicable under LinkSec
- Still, model is slightly different

# EPON Deployment Model

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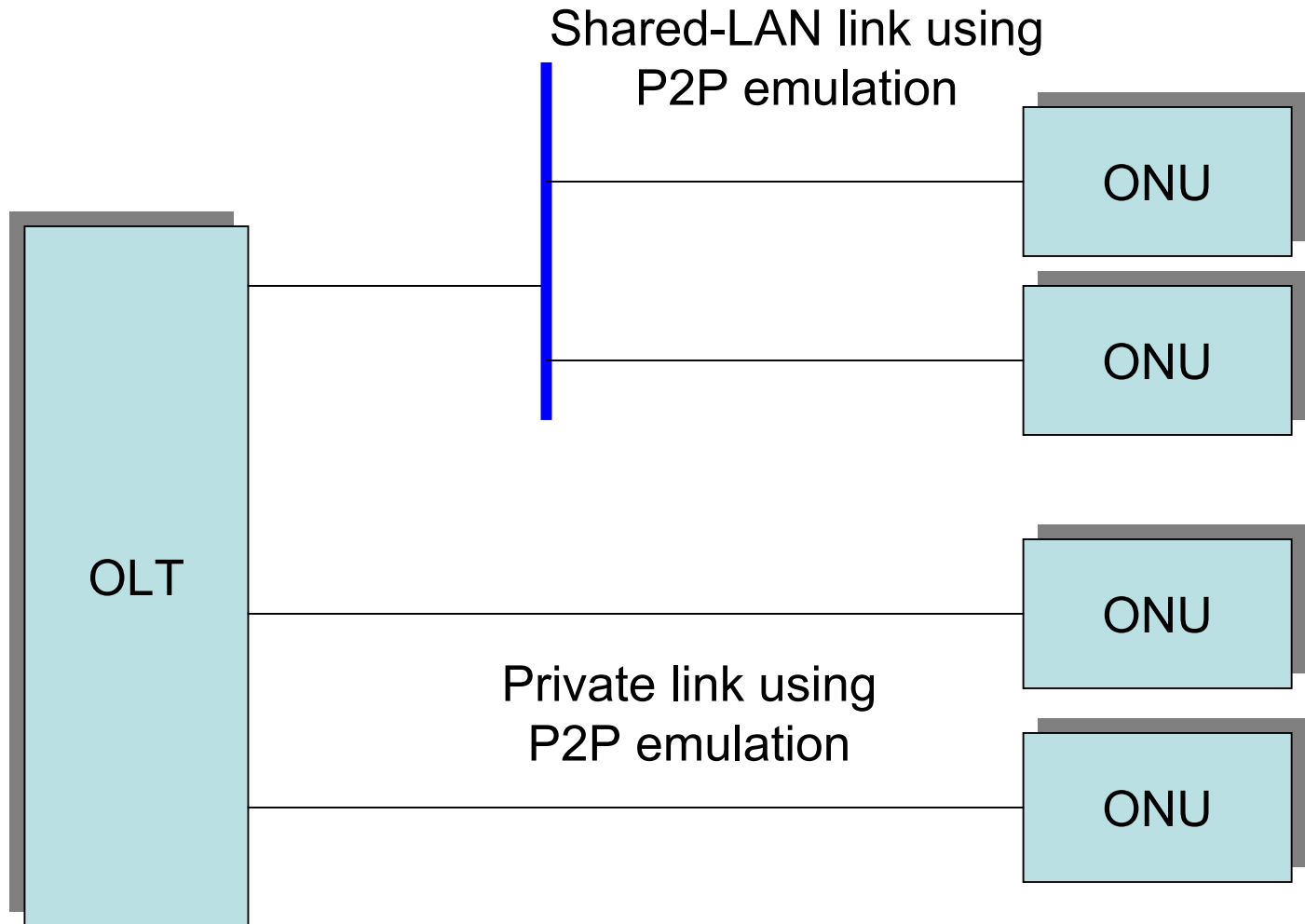
# Deployment Topology Considerations

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- EPON is used in access networks
  - Link owned by Service Provider
  - Subscriber and provider are not peers
- ONU may serve a single subscriber
  - Fiber to the home
- ONU may serve multiple subscribers
  - Curb ONU or basement ONU

# EPON Network Model

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# Network Model Considerations

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- EPON is a distributed switch
- Uplink transmission from an Optical Network Unit (ONU) is received only by Optical Line Terminal (OLT)
- Downlink transmission from an OLT is destined to either:
  - A specific ONU
  - All ONUs
  - All ONUs but one
- Traffic between ONUs is reflected through OLT
- This creates an emulated shared LAN or P2P link

# Provider View of EPON Security

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- Commercial success of EPON depends on security
- Provider side
  - Billing for access
  - Content protection
- Customer side
  - Basic right of privacy
- Protection objectives
  - User traffic confidentiality
  - Unauthorized access to network
- Proprietary solutions must be avoided

# Derived Technical Requirements

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- OLT handles secure connection with each ONU
- Each connection must have a different security configuration (encryption key, authentication, ...)
- ONU registers and de-registers itself – port allocation is dynamic
- Authentication could be one-sided
- One exception (common to EFM – under discussion): OAM and MPCP messages are generated in MAC, and are below .1↔.3 interface



# Summary

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- EPON Network model is identical to other network models
- EPON can and should use the general LinkSec architecture
- EPON commercial success requires a standardized security solution
- Sooner is better!