Tech profile implementation for EPON support

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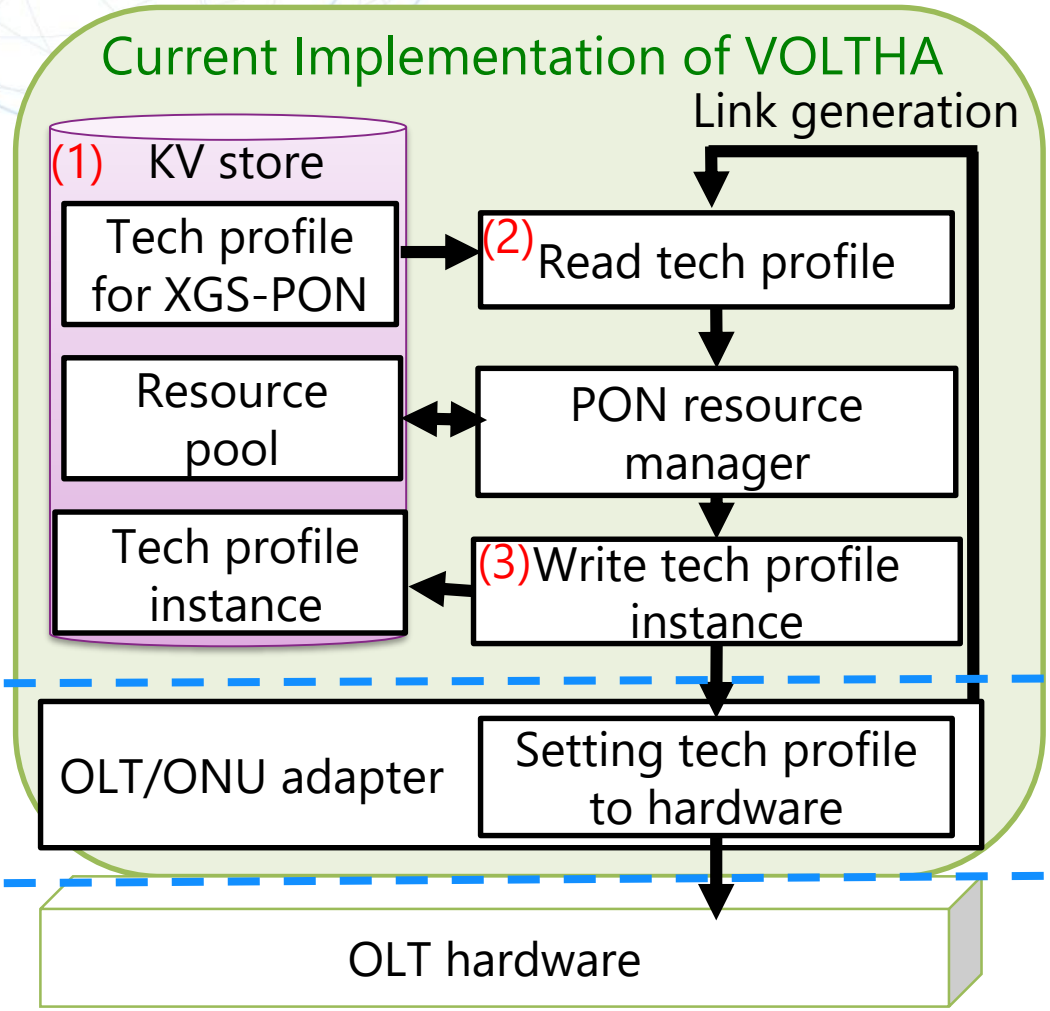
EPON support of VOLTHA

- NTT would like to start contribution for EPON (IEEE PON) support of VOLTHA.



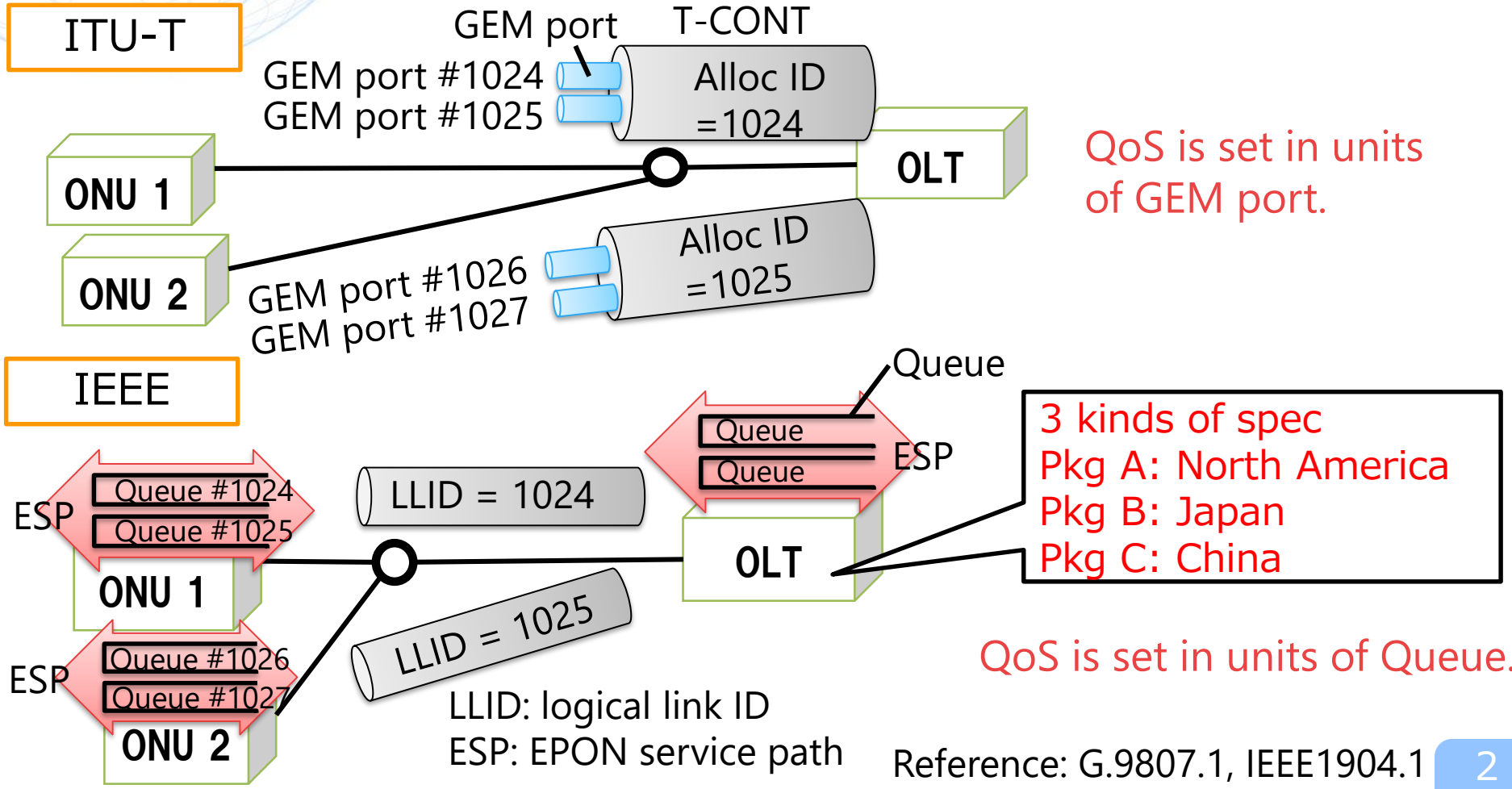
Contribution plan for EPON support until March (i.e. VOLTHA2.3 release)
(1) Tech profile format and reference design for EPON
(2) Read function for format of EPON
(3) Write function for format of EPON

We are asking vendors to develop the OLT adapter.

Correspondence between ITU-T PON and IEEE PON

- Alloc ID ↔ LLID
- GEM port ID ↔ Queue ID

→ PON resource manager can be shared.



Reference: G.9807.1, IEEE1904.1

Traffic type for DBA

Service	Parameters
Constant Bit Rate (CBR)	Unsolicited Grant Size, Nominal Grant interval, Tolerated Grant Jitter, Request/Transmission Policy
Real-Time Polling Service (RTPS)	Nominal Polling Interval, Tolerated Poll Jitter, Request/Transmission Policy
Non Real-Time Polling Service (NRTPS)	Nominal Polling Interval, Minimum Reserved Traffic Rate, Maximum Sustained Traffic Rate, Request/Transmission Policy, Traffic Priority
Best Effort Service (BE)	Minimum Reserved Traffic Rate, Maximum Sustained Traffic Rate, Traffic Priority

Values specified in bandwidth profile

CBR: constant bit rate (fixed-size frame, constant time interval for circuit emulation or mobile backhaul)
RTPS: Real-Time Polling Service (variable-size data, periodic inactivity for IPTV or VoIP)
NRTPS: Non Real-Time Polling Service (without throughput/frame loss guarantees for VPN)
BE: Best Effort (without throughput/frame loss guarantees for best effort service)

Parameters for QoS settings

Items	Parameters
Policer/Shaper	Committed Information Rate (CIR), CBS (Committed Burst Size), Excess Information Rate (EIR), EBS (Excess Burst Size) (specified in bandwidth profile)
Queues	Q size For DBA: Number of Q sets
Scheduler	• Scheduling policy {SP | RR | WRR}, • Priority, Weight • Discard policy {Tail-drop | WTail-drop | RED | WRED} For DBA: • Scheduling policy {fifo | priority first | threshold first} fifo ↔ RR, priority first ↔ SP, threshold first ↔ WRR • Q thresholds

Proposed EPON Tech Profile

Technology Profile Identifiers

1. Name
2. Profile Type (e.g. "10G-EPON-Pkg-B")
3. Profile Version

Common Instance Control

1. ONU: Single/Multi
2. UNI: Single
3. # GEM Ports (# Queues)

Common with ITU-T PON

U/S Queue Attributes

1. P-bit Map
2. AES encryption {False | True}
3. Traffic type {CBR | RTPS | NRTPS | BE}
4. Unsolicited Grant Size for CBR
5. Nominal interval for CBR/RTPS/NRTPS
6. Tolerated Poll Jitter for RTPS
7. Request/Transmission Policy for CBR/RTPS/NRTPS
8. # Q set (DBA) for BE
9. Q thresholds (DBA) for BE
10. Scheduling policy {SP | RR | WRR}
11. Weight
12. Priority
13. Q size
14. Discard policy {Tail-drop | WTail-drop | RED | WRED}

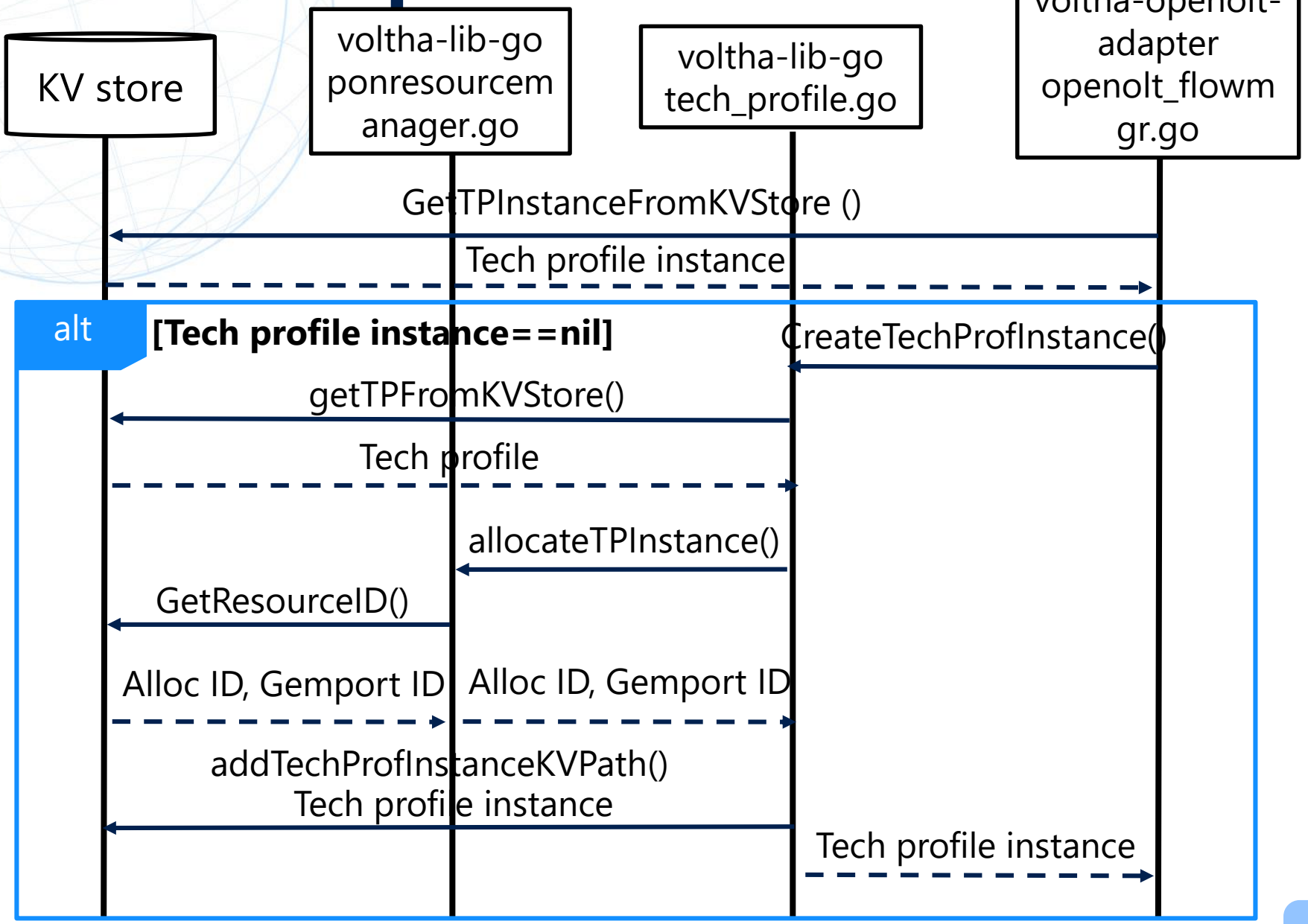
EPON Specification Attributes

1. Package Type {A | B | C | Original spec. | …}

D/S Queue Attribute

1. P-bit Map
2. AES Encryption {False | True}
3. Scheduler policy {SP | RR | WRR}
4. Weight
5. Priority
6. Q size
7. Discard policy {Tail-drop | WTail-drop | RED | WRED}

Current Implementation



Functions I plan to develop