



ONF Meetup 2022

**Fiber Access: How Standardization and Orchestration
are driving the Gigabit PON**

Mobilizing the fixed access network by Layer-3 tunneling

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BISDN - whiteboxing networks

Company history and current standing



2012: Self-funded and independent since inception

- Initial growth via R&D for service providers
- 13 employees by Q1 2022
- Mix of industry veterans (3 PhDs) and young engineers, multi-disciplinary team

2017: Product development of BISDN Linux whitebox operating system

- Latest release 4.4.1 on Jan. 20, 2022

2019: Carrier solutions based on BISDN Linux 

- XGS-PON OLT in partnership with
- BNG: Broadband Network Gateway in partnership with 
- Legal Interception Gateway in partnership with (and for) 

2021: Open Core strategy for BISDN Linux

- Free and open source network OS
- Value-added applications for telco functions and system integration
- Demonstrations of vOLT @Swisscom, LI-Box @DT, vBNG @BBWF (w/ Vodafone+Intel)

BISDN vOLT Controller

Whitebox switch + Tibit pluggables exposed as conventional chassis/frame/port system

Topology abstraction into single virtual OLT (vOLT)

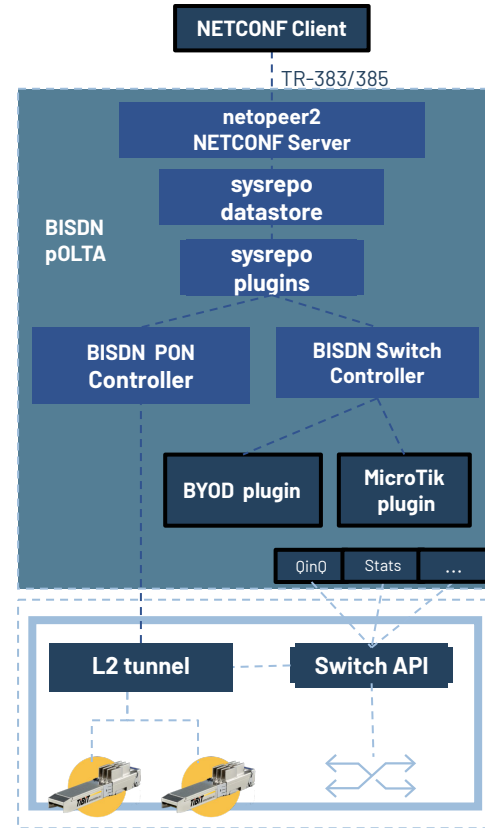
- netconf/yang TR-383/385

Deployment options:

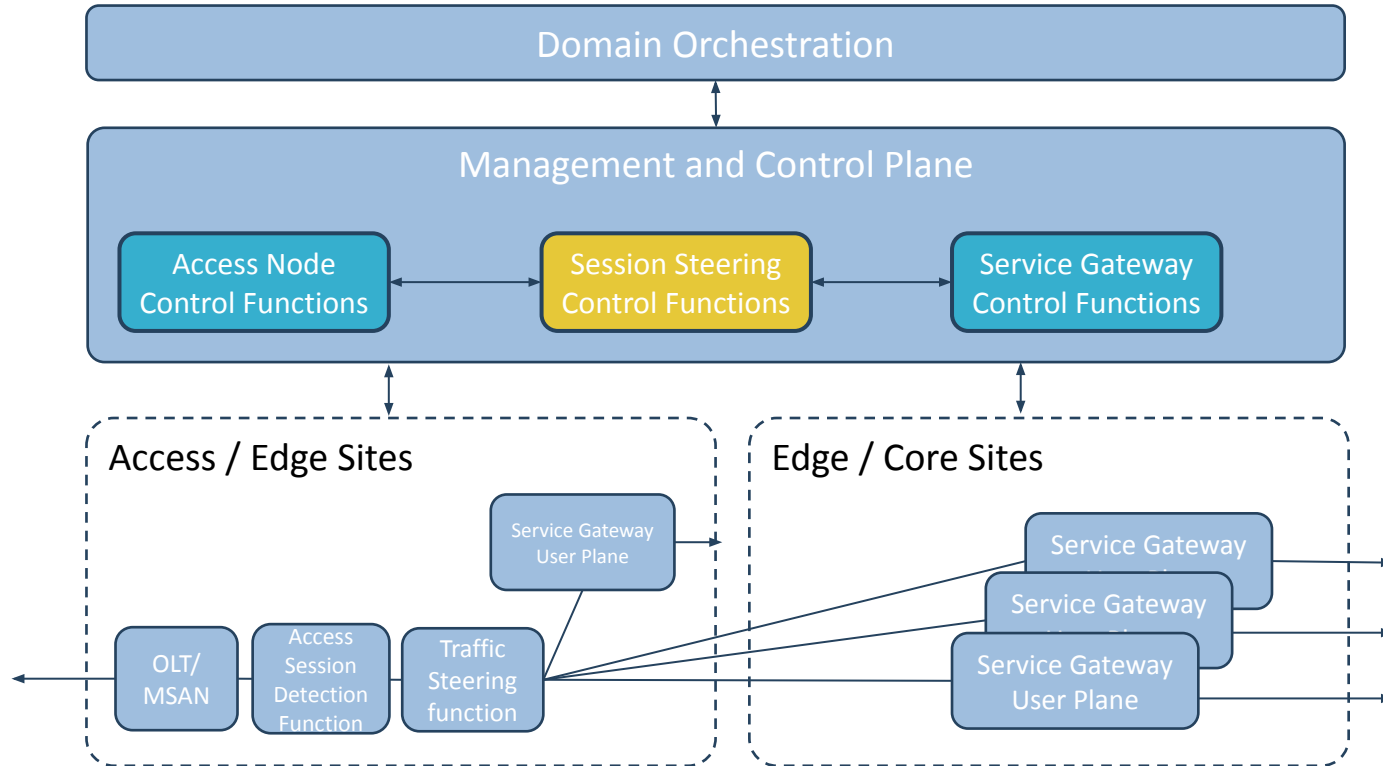
1. single switch (running BISDN Linux)
 - currently in lab trial at three European Carriers
2. carrier cloud
 - six lab trials in preparation for '22
3. public cloud



technetix

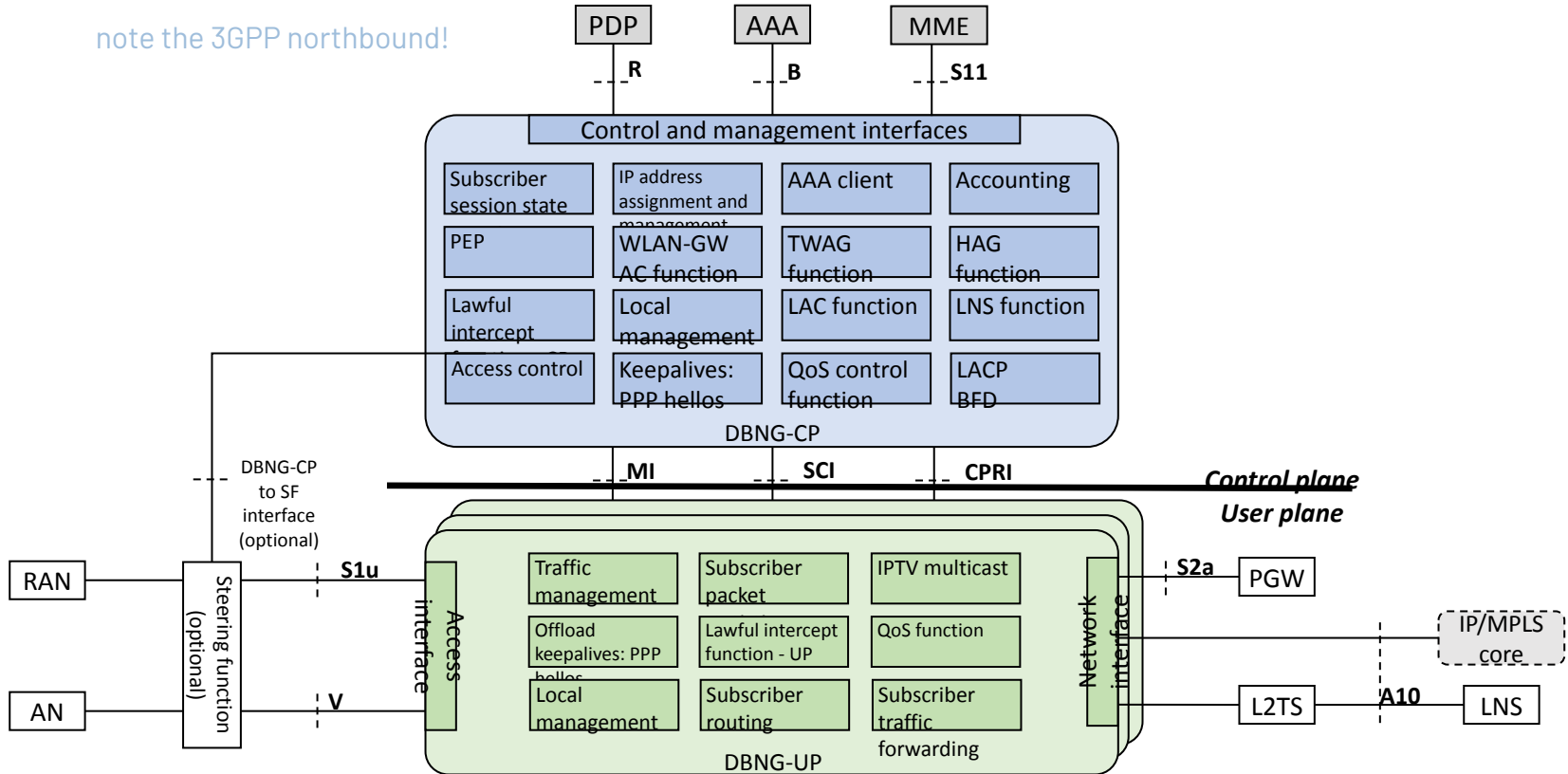


Simplified Architecture of PON access aggregation



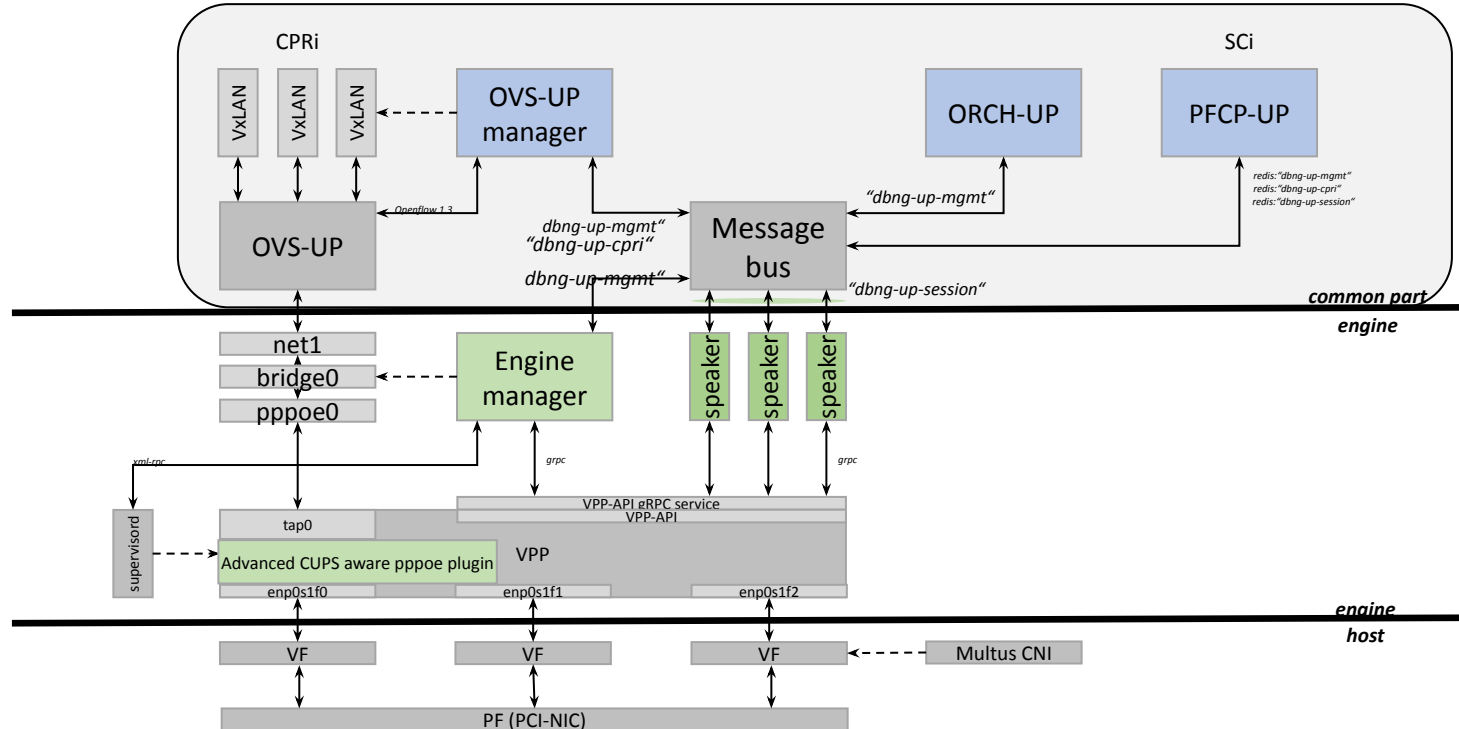
BBF TR-459 Distributed BNG

note the 3GPP northbound!

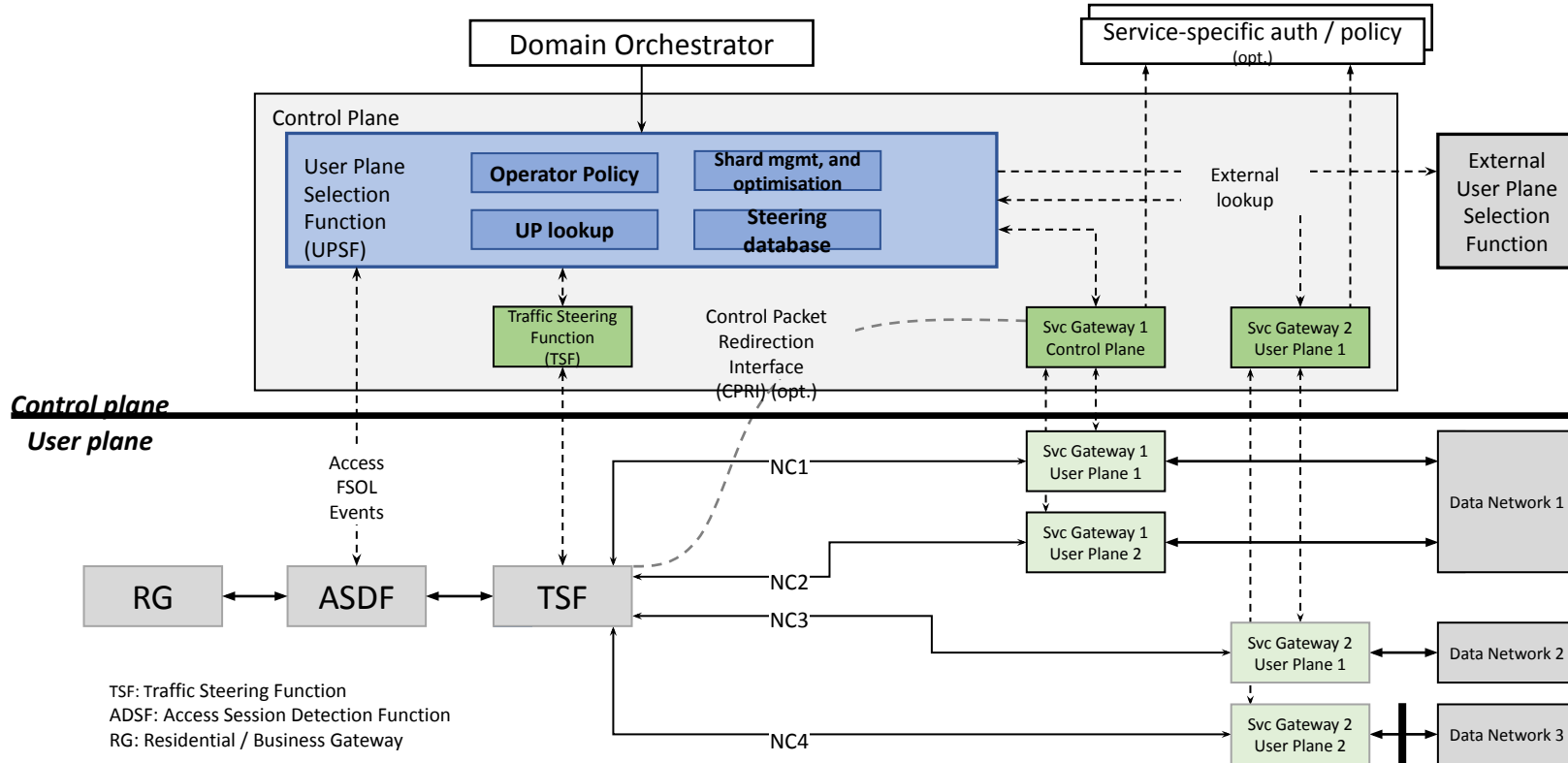


Open Source? Which Part? Which Partners?

Looking into the user plane



BBF WT-474 Subscriber Session Steering

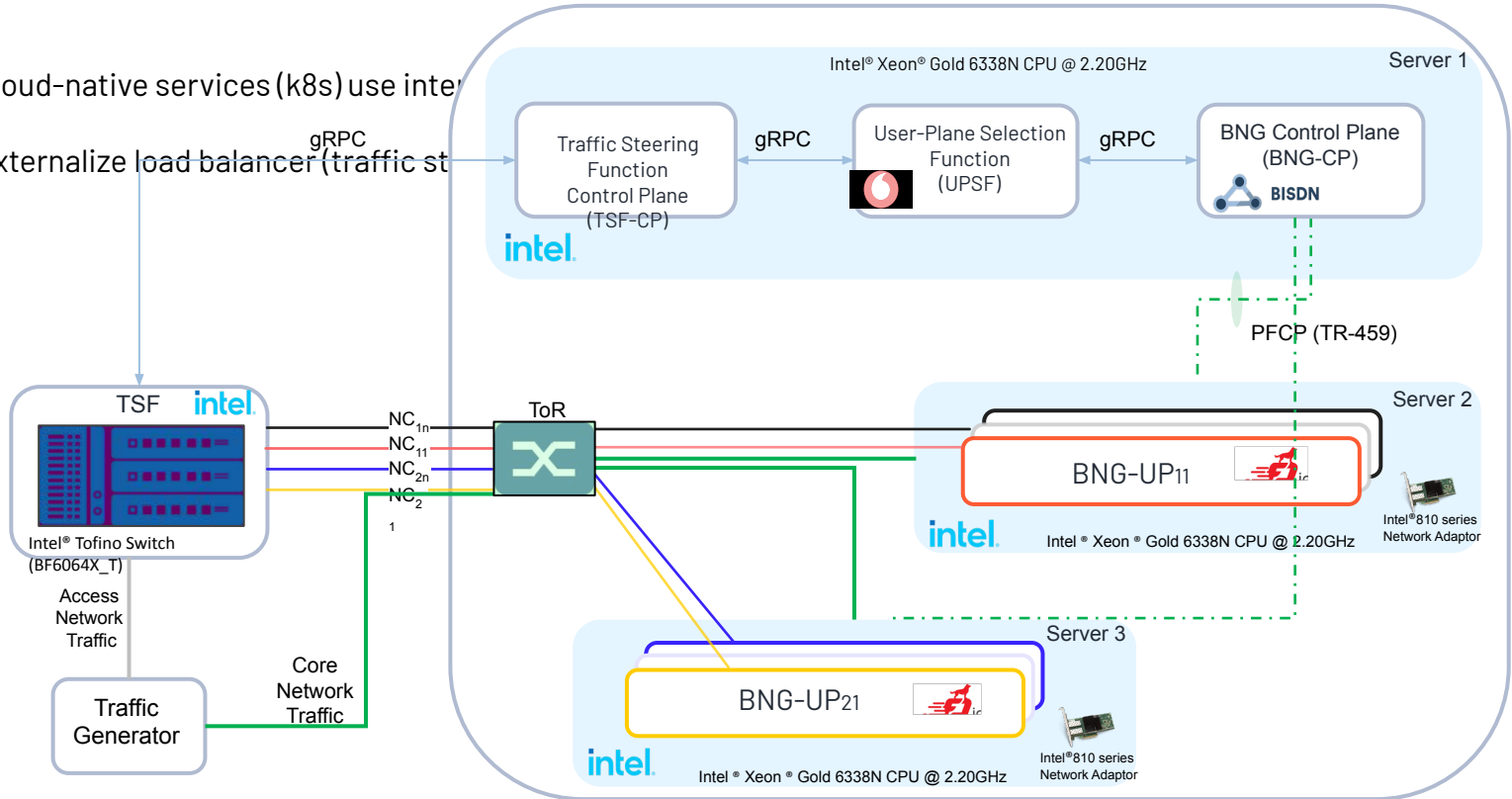


WT 474 main concepts

- Static tunnels ('Network Connections') between Traffic Steering Functions (TSFs) and BNG UP instances
 - **VXLAN** or MPLS PW
- Dynamic assignment of sessions into those tunnels
 - UPSF provides LookUp function via gRPC
- Aggregation of sessions: 'shard' concept groups 'similar' sessions
 - e.g., business or wholesale subscribers can be served by different instances.
- WT-474 introduces session mobility between BNG user planes, allowing:
 - load balancing, scaling up (during peak hours) and down (to save energy)
 - rolling updates / maintenance
 - wholesale

Cloud Infra Demo Setup @BBWF '21: TR-459 + WT-474

cloud-native services (k8s) use intel externalize load balancer (traffic steering)



Summary

who should care and why you should care

- CUPS can be seen as evolution of network disaggregation
 - allows stronger bundling of hardware and software for high-performance packet forwarding
- You should care if you are an:
 - **OLT vendor**
carriers will demand L2 tunnels on OLTs in RFI/RFQs
 - **Network Service Provider**
expect the UPSF to tell the TSF in your network where to send traffic
 - **Internet Service Provider**
be ready to exploit the SSS concept for global footprint
provision PON customers over the internet in remote places