
OPEN
Compute Project
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ENG. WORKSHOP: PRES.
Open Access – AT&T Specs.

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AT&T

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OPEN HARDWARE. OPEN SOFTWARE. OPEN FUTURE.

OPEN Compute Project

Common Characteristics for all Specs

Disaggregation and SDN Enablement:

Minimal software and state in the box.

Separation of access from aggregation and subscriber management.

Ability to Re-compose into various deployment scenarios for different carriers and services.

Hardware Design Strategies:

Reduced memory – because there is less firmware to support

Removed flash – load the SOC OS from the cloud, so there is no flash maintenance, no minutes of downtime from re-flashing, less power and heat

Removed local aggregation – placed into whitebox switch. This supports engineering the oversubscription and redundancy. Pick 1 or 2 uplinks.

Add BMC – provides ability to reset individual SoCs, gain console, and manage whole box items like fans, power supplies, thermals.

Run control and management software in a separate computer. By using containers and micro-services in cloud compute, we reduce the times that the hardware needs to be rebooted in order to upgrade software or firmware.

NOTE: some designs still include an optional CPU module for times and places where onboard software is desired or required.

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PON Specifications

XGS-PON 16 port pizzabox

XGS-PON 4 port clamshell

XGS-PON single port SFP+

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XGS-PON 16 Port 1RU Device

Pizza box

Previously presented.

Updates

BMC device

Com Express Type 7 Host Module, with access to control and data planes.

PCIe changes

Still Under Consideration

Can we eliminate the PCI Switch (not needed for some Com Express CPUs.) (Dual host?)

Can we run the driver firmware externally, like the Open GPON OLT? (making the CPU optional)

XGS-PON 4 Port Clamshell

Environmental Box

Previously presented.

Updates

BMC functions incorporated in processor.

Open Issues

PCIe switch vs. CPU choice.

Is ComExpress suitable for OSP deployment, and if not, then which single processor is best choice?

Can we run the driver firmware externally, like the Open GPON OLT? (making the CPU a BMC only)

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XGS-PON Single Port SFP+

Pluggable Optic

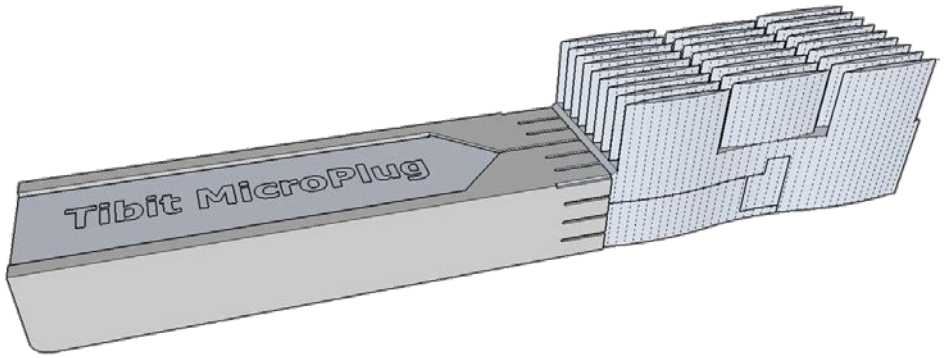
Previously presented

Updates

VOLTHA software support.

Open Issues

None at this time.



G.Fast Specifications

16 Port DPU

8 Port DPU

4 Port DPU

Single Port DPU

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G.Fast 16 Port DPU

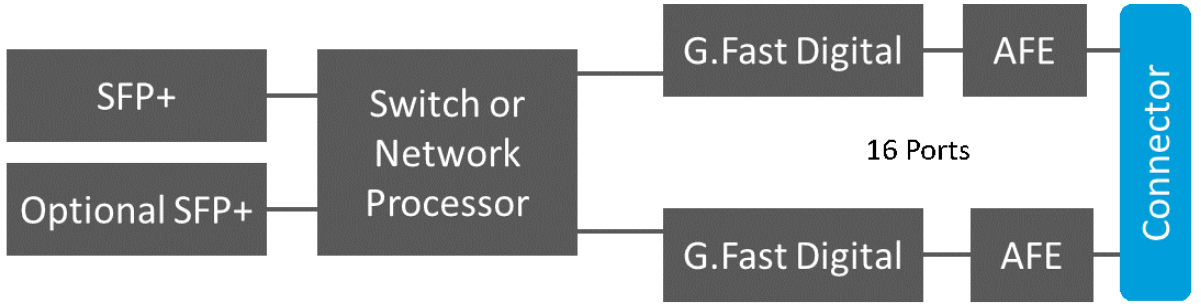
MDU applications

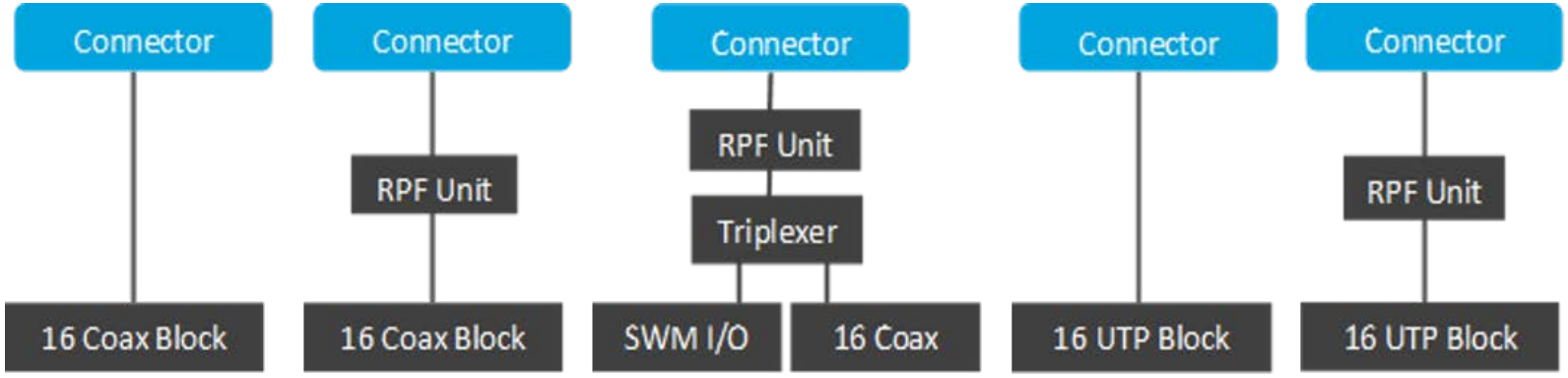
Design one common “logic board”

Create multiple media adapters to fit various deployment scenarios.

Media includes:

- Coax and twisted pair
- Reverse power feed option
- Triplexers to mix video signals over coax





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G.Fast 8 Port DPU

MDU Applications

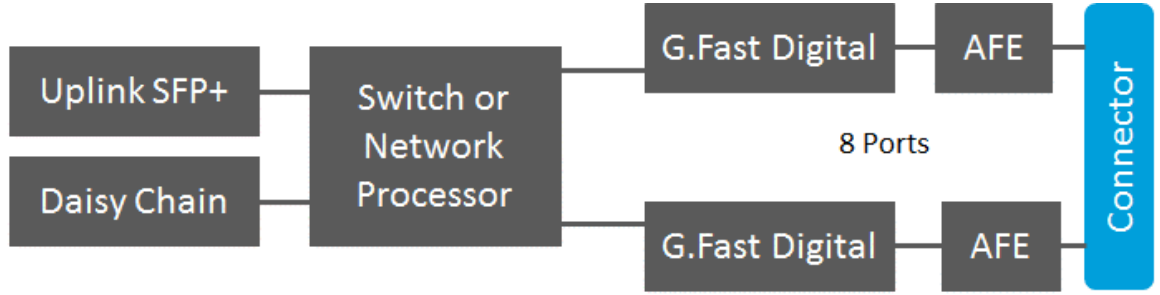
Similar to 16 port unit except half the scale

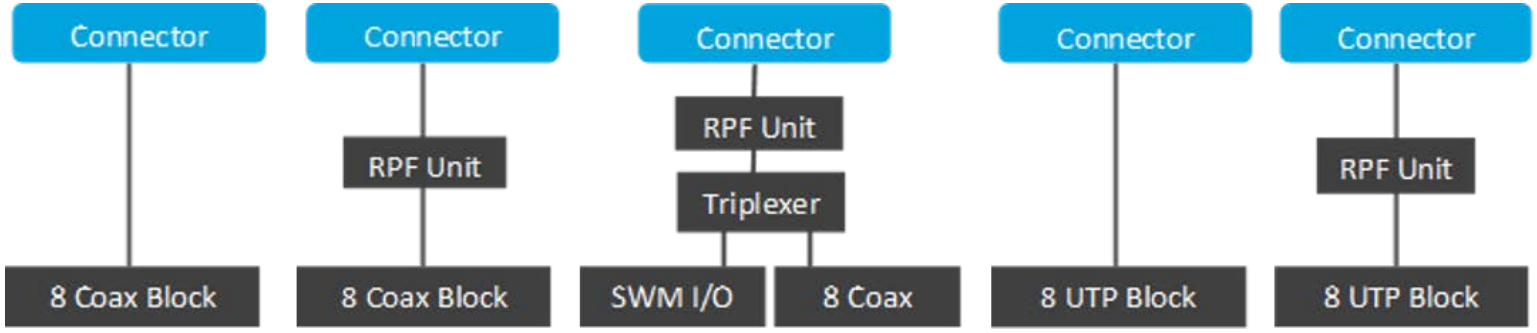
Design one common “logic board”

Create multiple media adapters to fit various deployment scenarios.

Media includes:

- Coax and twisted pair
- Reverse power feed option
- Triplexers to mix video signals over coax





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G.Fast 4 Port DPU

SFU Applications

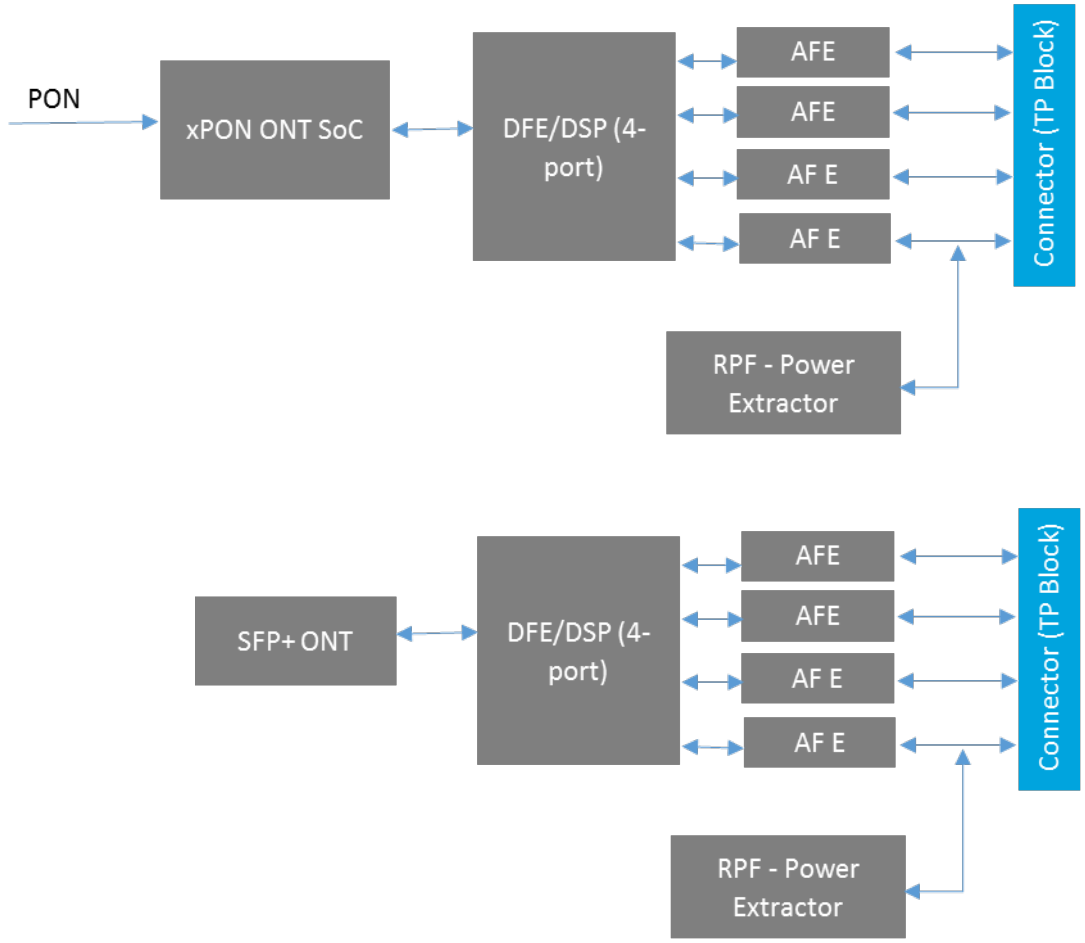
Design two common “logic boards?”

Still evaluating options

Media includes:

- Twisted pair
- Reverse power feed option

Aggregation switch removed or partly supported through PON uplink silicon.



G.Fast Single Port DPU

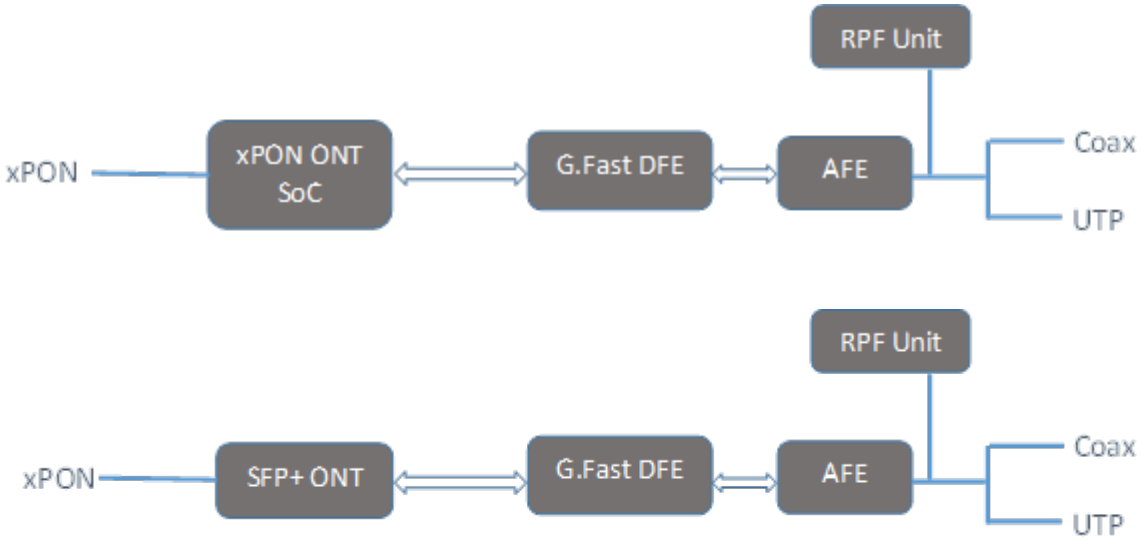
SFU Applications

Design two common “logic boards?”

Still evaluating options

Media includes:

- Coax and twisted pair
- Reverse power feed



Open Software Stack

ONOS

VOLTHA

VOLT Driver

Reminder what we have.

Applications allow developing high level features and functions rapidly and independent of underlying access media type.

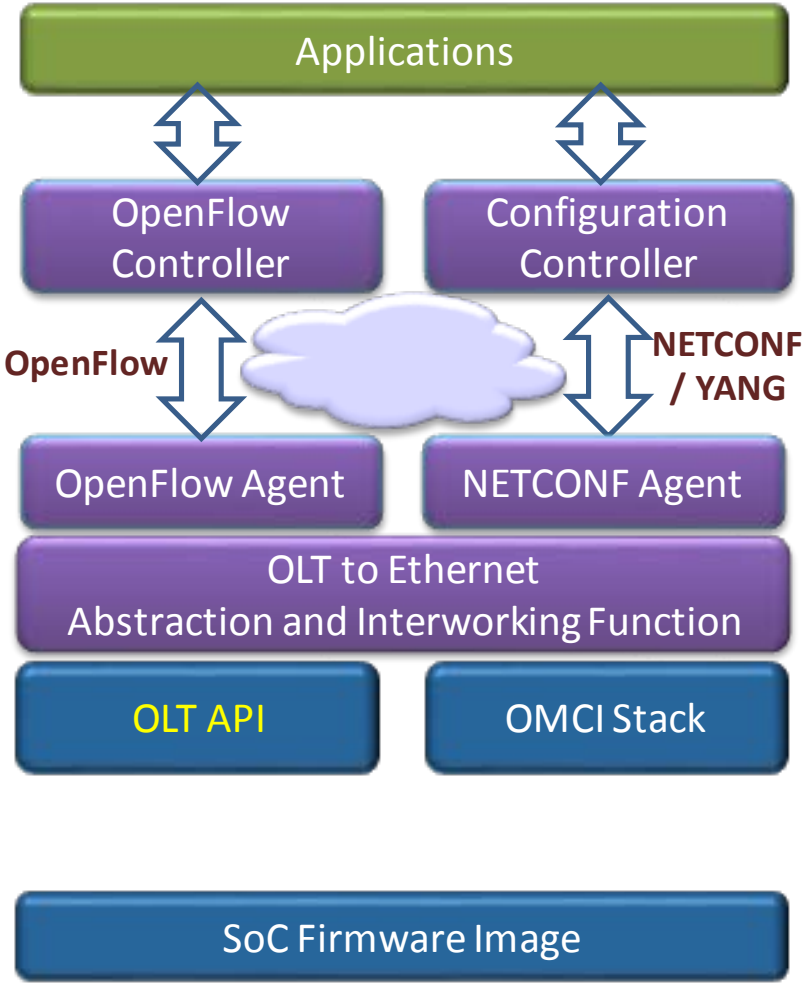
SDN controller contains a distributed scale-out set of operational control plane network state.

Configuration controller maps application state into provisioned network state.

Agents map controllers to silicon APIs, with OF abstraction for control plane (Match-Action) and simplified to Ethernet-centric functions.

Agents make use of Silicon APIs, libraries, and SOC firmware.

… the issue is that there is a fair amount of state in the agents and drivers, that could be better handled if it repeated the HA architecture of the SDN controller.



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VOLT Driver

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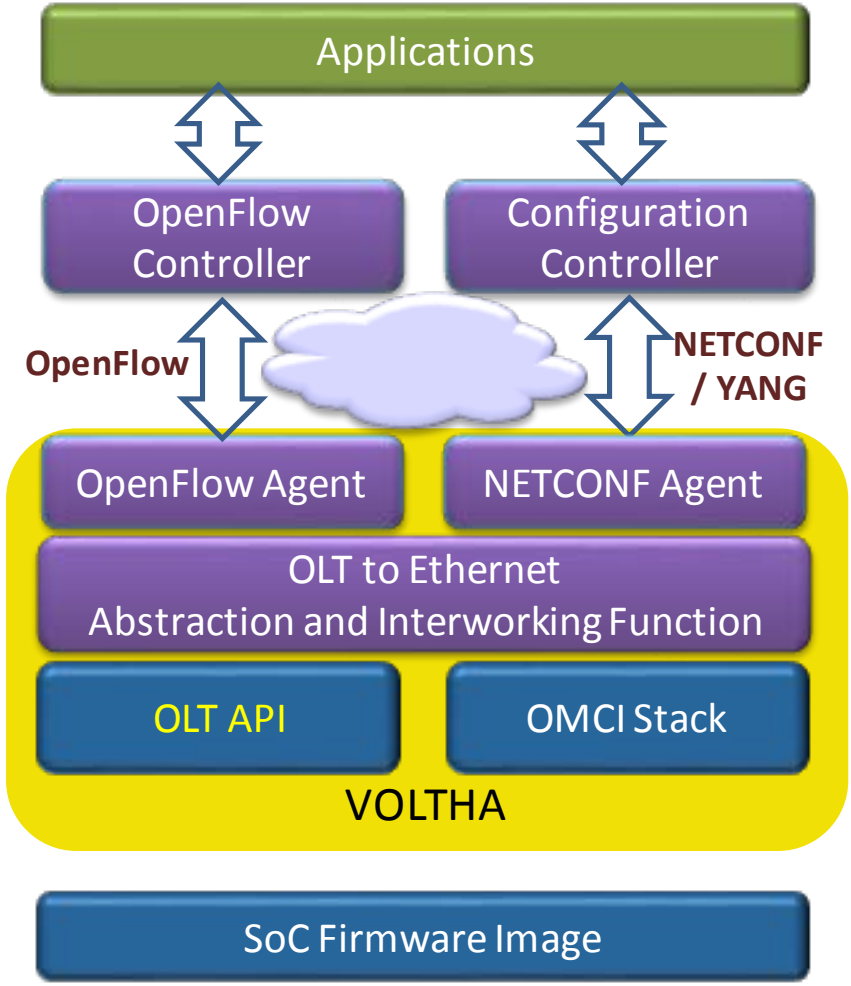

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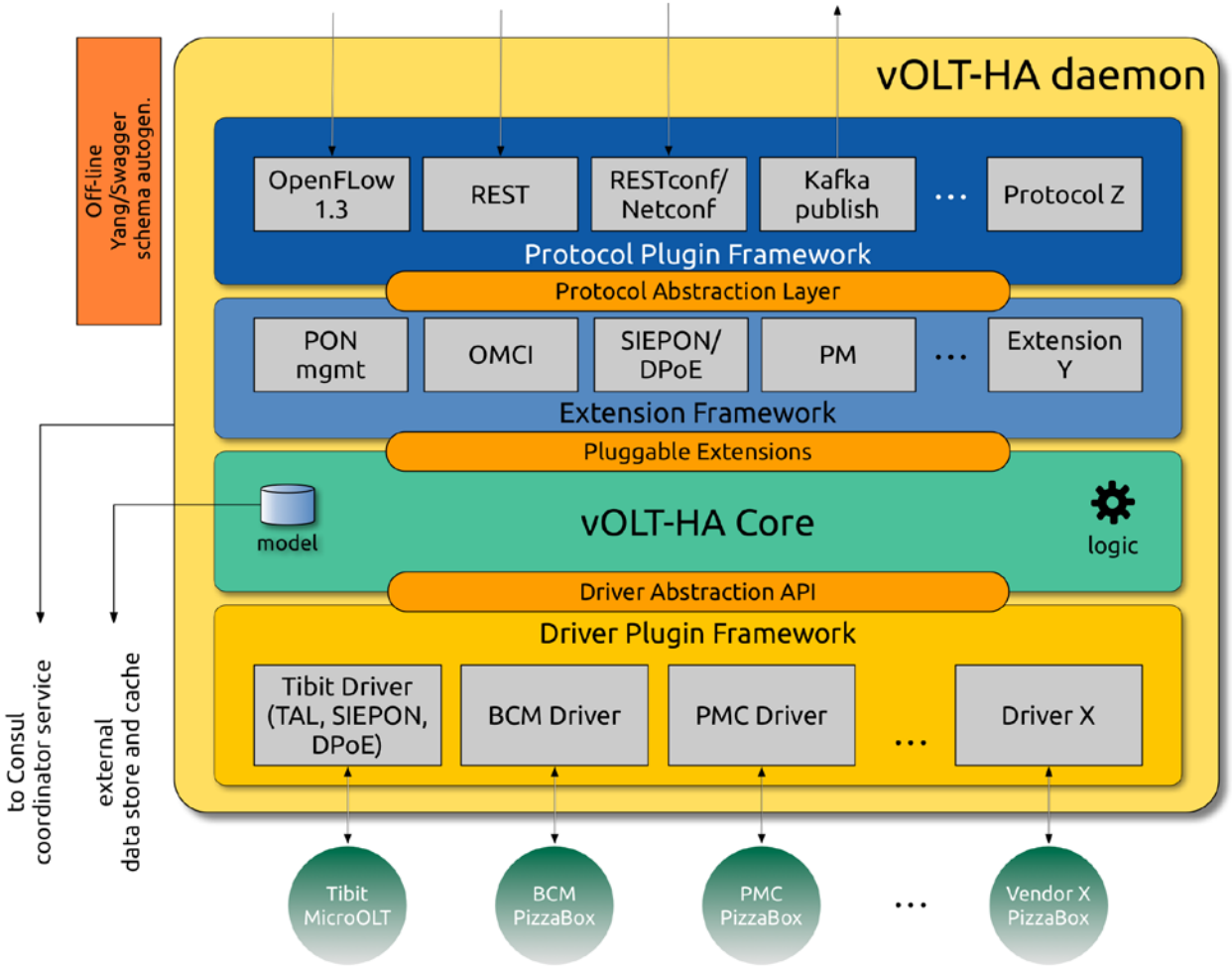
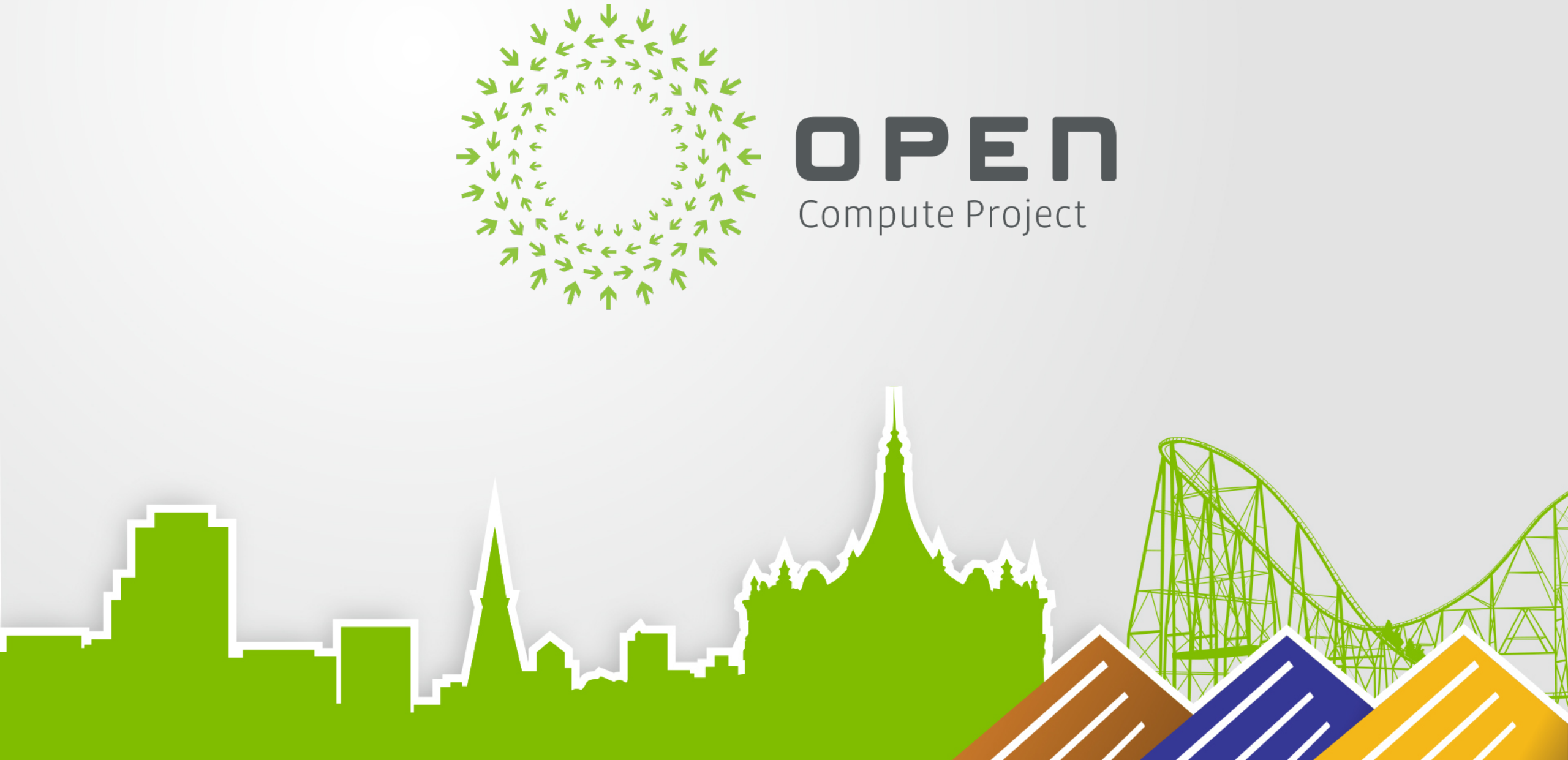
Open Source Driver

- Uses pipeline and configuration models in the Core
- Accepts extensions for protocol-specific models.
- Uses Protocol Buffers to “compile” northbound protocols.
- Allows Drivers (like SAI) to provide capabilities to the model, and also allows exposing extensions.
- Work underway for PON
- G.Fast and aggregation Si in planning stage

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