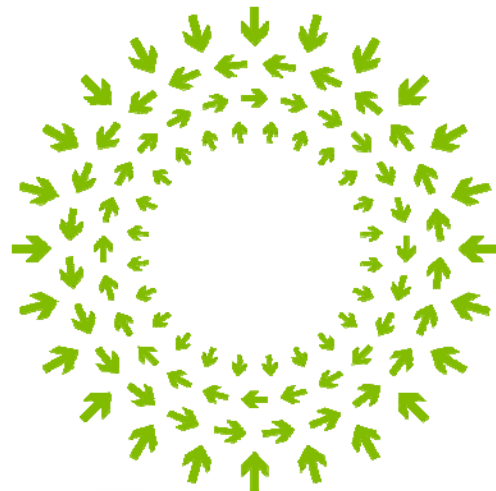


# Open Access – AT&T Specs

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**OPEN**  
Compute Project



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## 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

Remove/reduce 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.

# G.Fast Specifications

16 Port DPU

8 Port DPU

4 Port DPU

Single Port DPU



## G.Fast 16 Port DPU

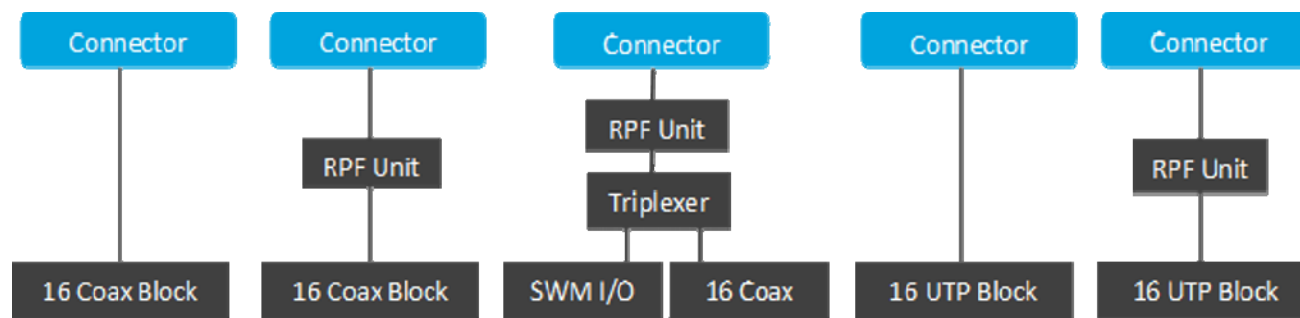
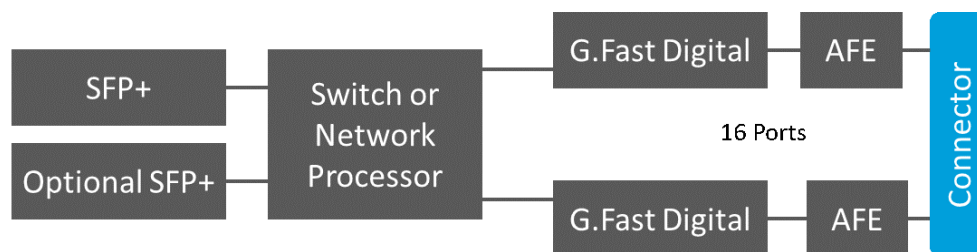
### MDU applications

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



## G.Fast 8 Port DPU

### MDU Applications

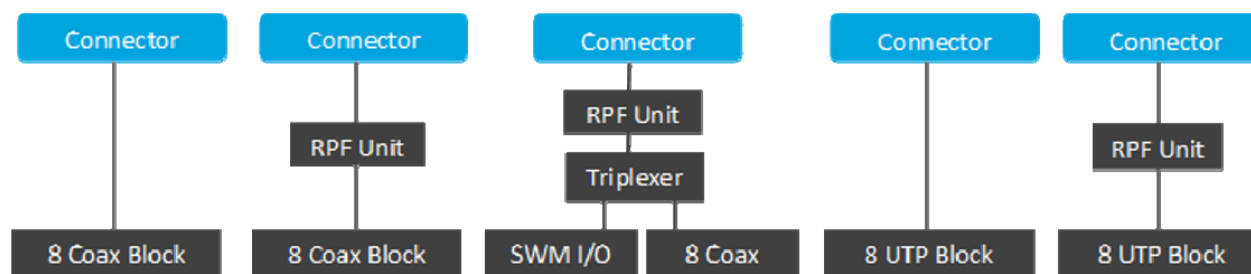
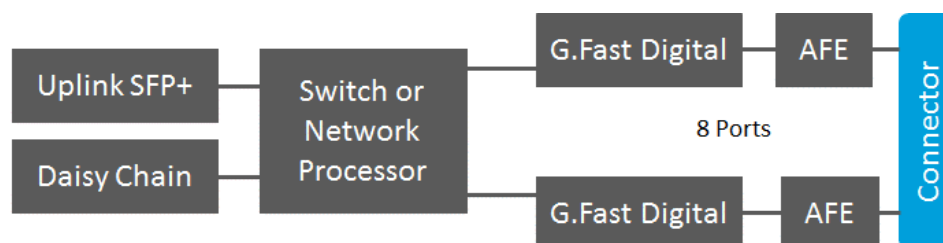
Similar to 16 port unit except half the scale

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



## G.Fast 4 Port DPU

## SFU Applications

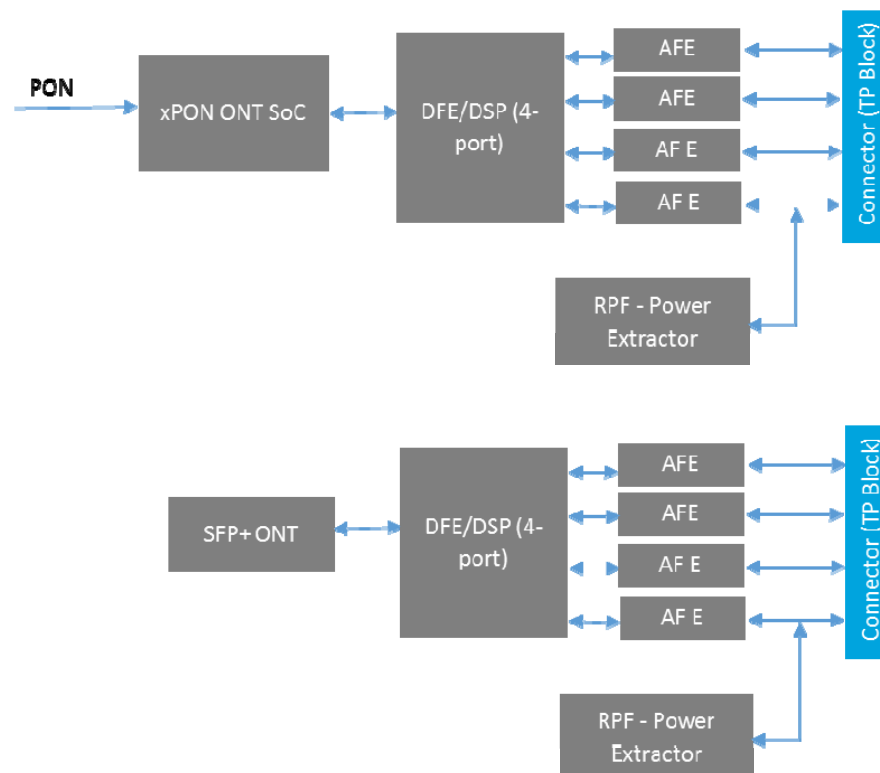
Design two common “logic boards?”

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

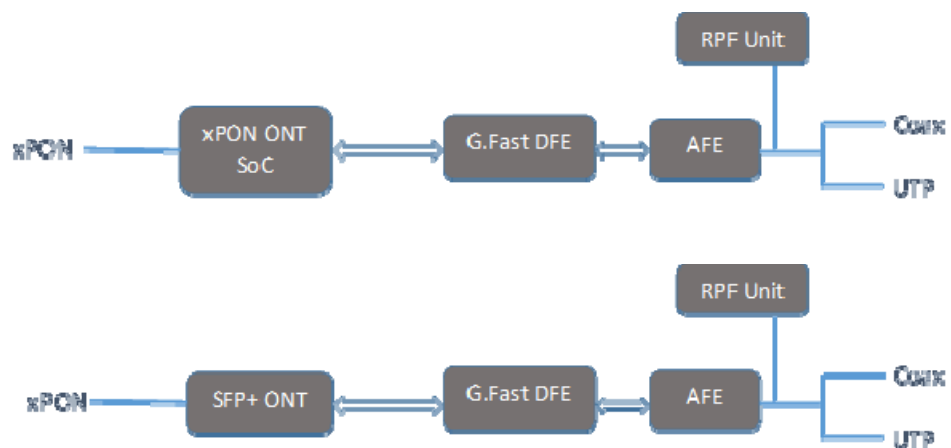
### SFU Applications

Design two common “logic boards?”

Still evaluating options

Media includes:

- Coax and twisted pair
- Reverse power feed



# PON Specifications

XGS-PON 24 port pizzabox

XGS-PON 16 port pizzabox

XGS-PON 4 port clamshell

XGS-PON single port SFP+





## XGS-PON 24 Port 1RU Device

### Pizza box

24 XFP PON Ports, 6 100G QSFP28 Ports

FPGA PON MACs

Redundant Hot Swap AC/DC power modules, Hot Swap Fan Modules

ComE CPU

BMC

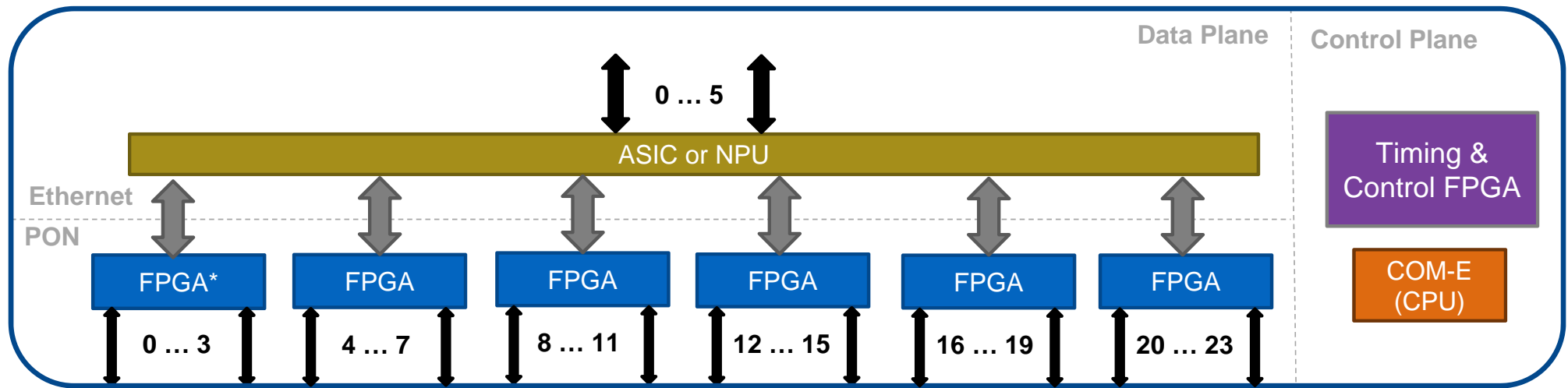


### Still Under Consideration

ASIC or NPU for aggregation

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

# Functional Block Architecture



\*PON ports per FPGA is exemplary

## 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)



## XGS-PON Single Port SFP+

### Pluggable Optic

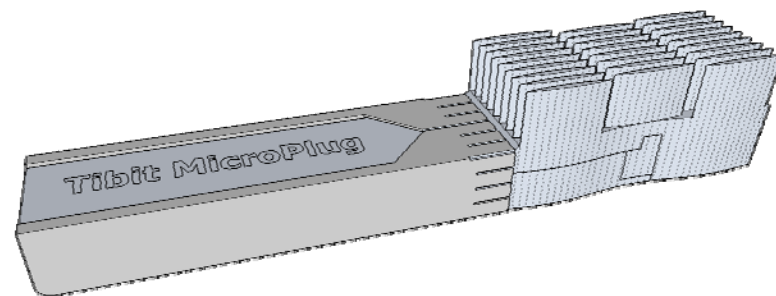
Previously presented

### Updates

VOLTHA software support.

### Open Issues

None at this time.



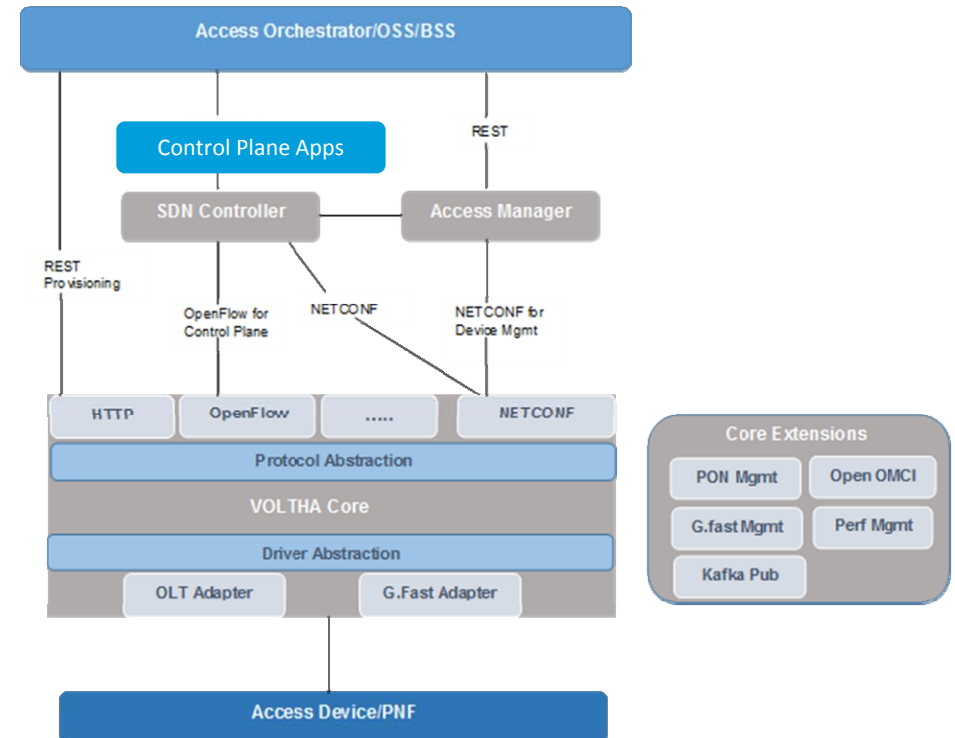
# Open Software Stack

ONOS

VOLTHA



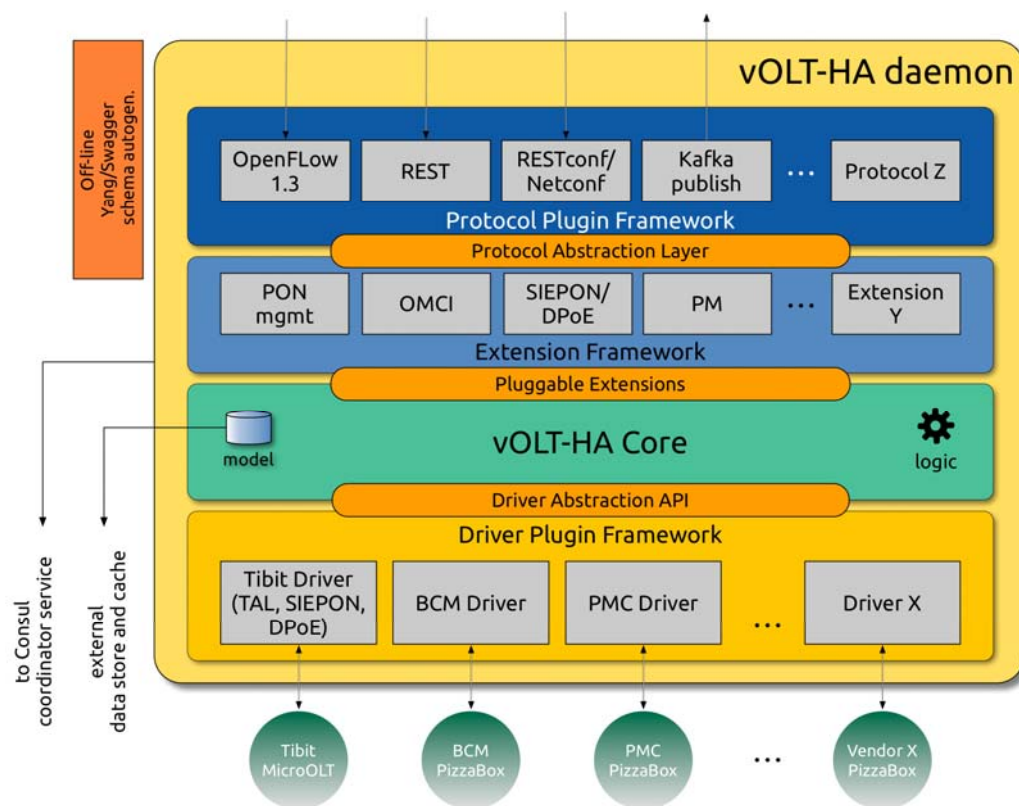
Access manager is a common manager for all access devices that will manage the device capabilities implemented in VOLTHA. It is intended for Access manager to be modular, extensible, vendor agnostic and access technology independent.



## VOLTHA

### 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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