

Whitebox Solutions with Open Source:

ONF-Stratum

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DNI NETWORKING ROADMAP

ODM

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Disaggregated

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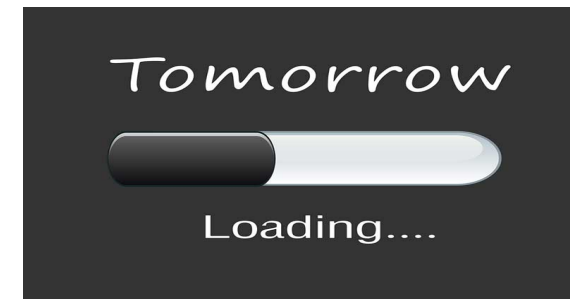


SDN



Open Solutions

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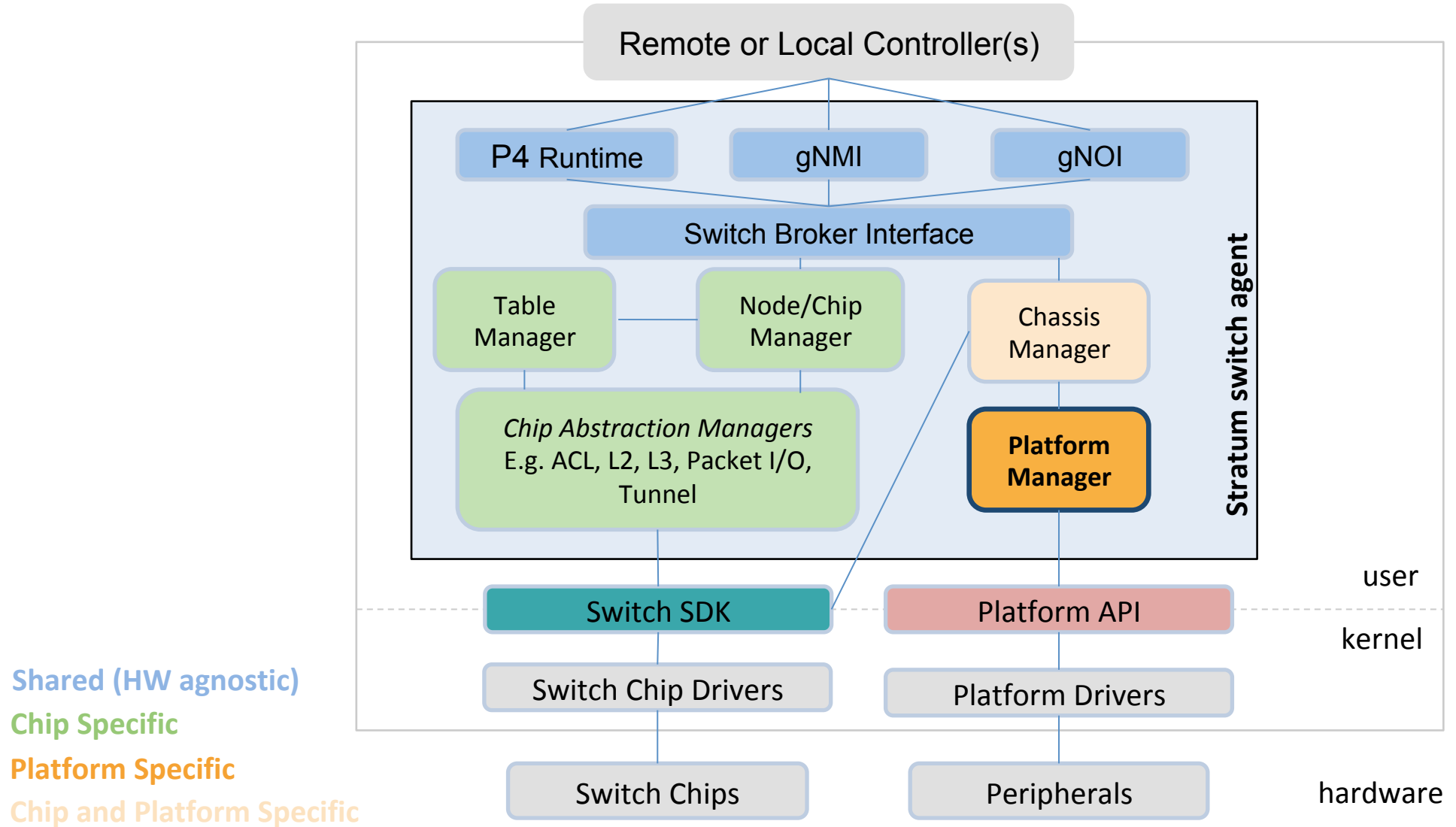
Brief introduction on the Platform manager architecture for Stratum

PLATFORM MANAGER ARCHITECTURE



Tiffany Chiang

Krishna Kolakaluri

Switch Agent Architectural Components

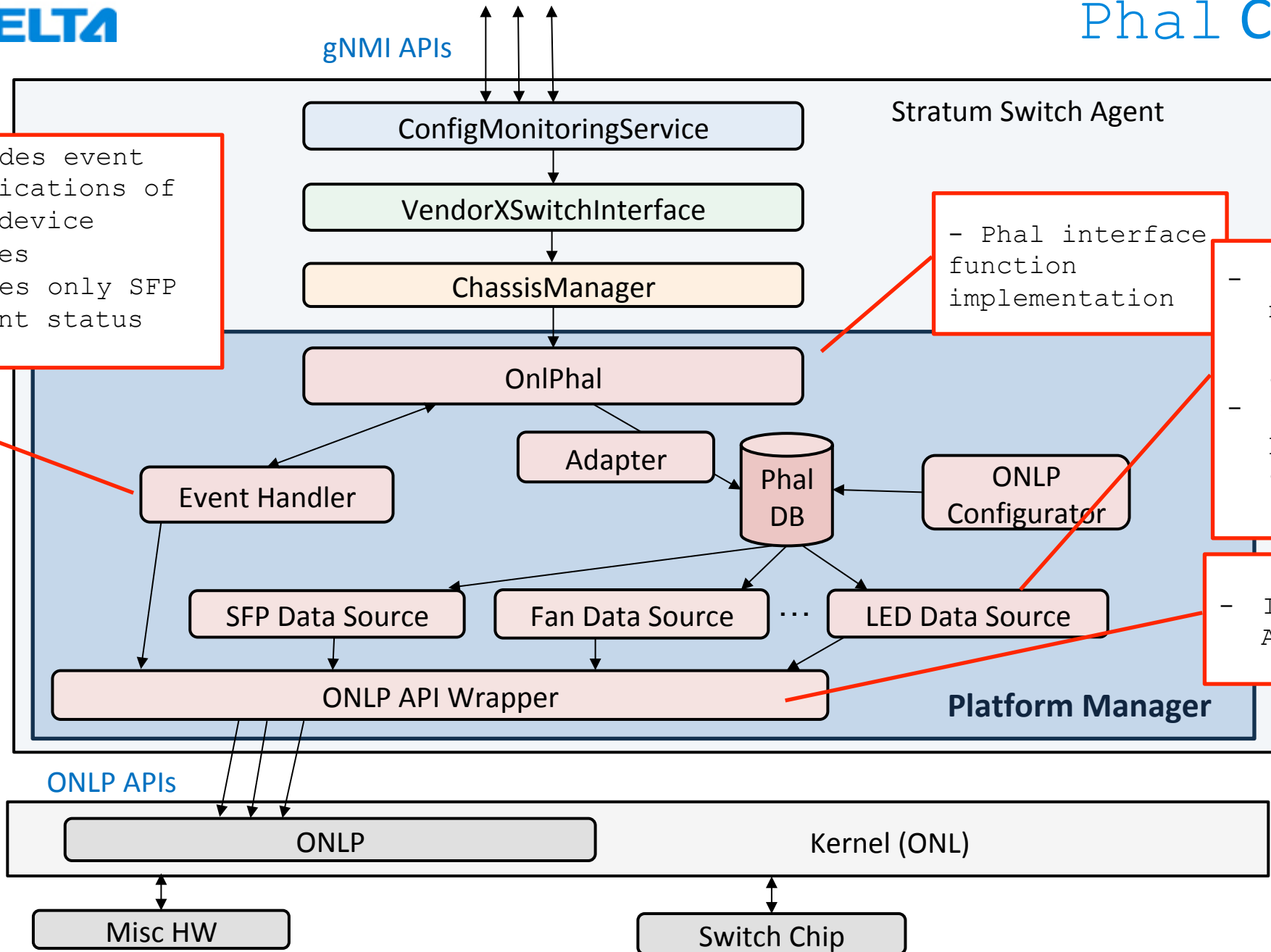


- Manages platform peripherals such as SFP's, Fans, Temperature Sensors, Power supplies, etc.
 - Phal: Abstract class which defines an interface for Platform Hardware Abstraction Layer (PHAL)
 - Leverage Open Network Linux Platform (ONLP) APIs to implement platform functionalities
- Code Contributors: Google (initial code contribution), Delta, Inventec, and ONF

```
class PhalInterface {  
  
    virtual ::util::Status PushChassisConfig(const ChassisConfig& config) = 0;  
  
    virtual ::util::Status VerifyChassisConfig(const ChassisConfig& config) = 0;  
  
    virtual ::util::Status Shutdown() = 0;  
  
    virtual ::util::StatusOr<int> RegisterTransceiverEventWriter(  
        std::unique_ptr<ChannelWriter<TransceiverEvent>> writer,  
        int priority) = 0;   
  
    virtual ::util::Status UnregisterTransceiverEventWriter(int id) = 0;  
  
    virtual ::util::Status GetFrontPanelPortInfo(  
        int slot, int port, FrontPanelPortInfo* fp_port_info) = 0;   
  
    virtual ::util::Status SetPortLedState(int slot, int port, int channel,  
        LedColor color, LedState state) = 0;  
  
};
```



Phal Components



- Provides event notifications of ONLP device changes
- Handles only SFP present status today

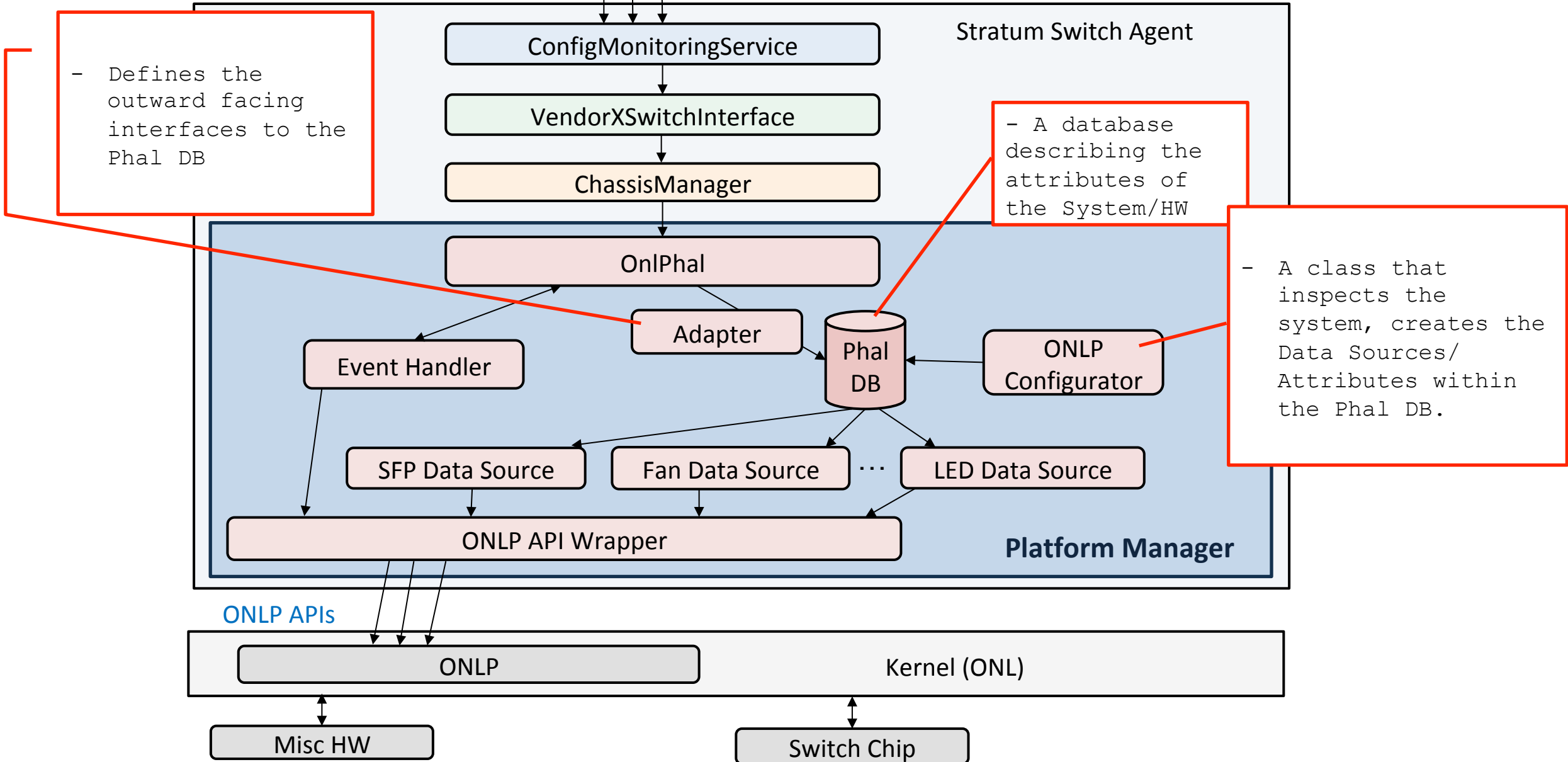
- Phal interface function implementation

- Each data source manages one or more system hardware attributes.
- Responsible for providing system and hardware information

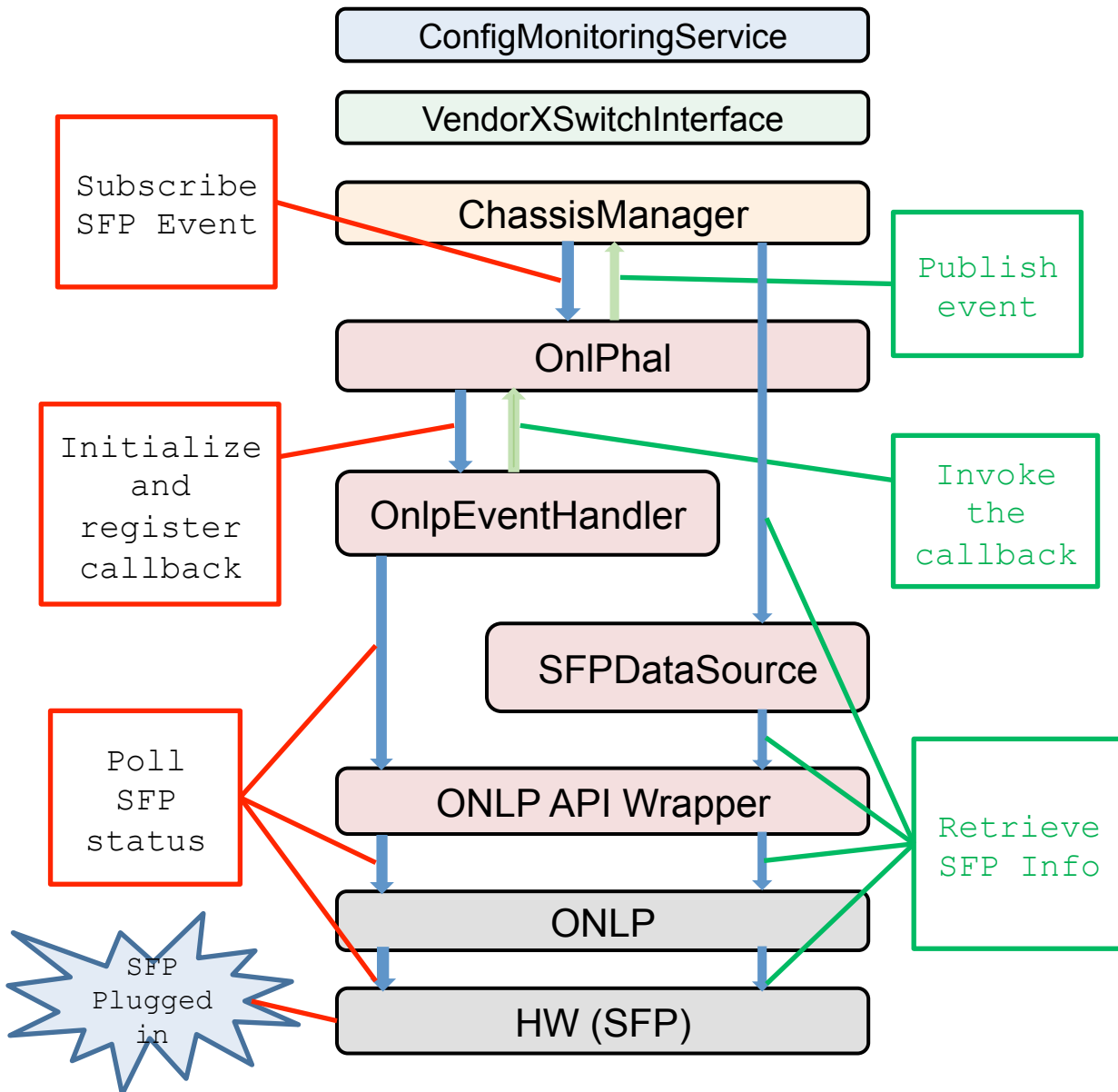
- Implements the ONLP API calls



Phal Components



Phal Event Notification Example



1. OnlPhal initializes OnlpEventHandler and registers event callback.
2. ChassisManager subscribes SFP events by calling RegisterTransceiverEventWriter() function.
3. OnlpEventHandler periodically polls SFP presence status from ONLP through ONLP API Wrapper.
4. OnlpEventHandler detects a new SFP was just plugged in.
5. OnlpEventHandler invokes the callback function provided by OnlPhal.
6. OnlPhal notifies event subscribers by writing the event to the event channel.
7. ChassisManager handles the event and retrieves SFP detail information by calling GetFrontPanelPortInfo() function.



CODE STATUS AND CONTRIBUTIONS

OnlPhal	PhalInterface	RegisterTransceiverEvent, UnregisterTransceiverEvent GetFrontPanelPortInfo, Phal initialization	Implement remaining functions
EventHandler	EventHandler	SFP Event Polling and Notification	Other event notifications
DataSource	SFP Data Source	SFP Data Source	FAN, LED, PSU, Thermal, etc. Data Sources
PhalDB	Attribute DB and Attributes		Add any missing features
Adapter			
ONLP Configurator			
ONLP API Wrapper	Wrapper Class	GetSfpBitmap, GetSfpInfo, GetOidInfo, etc.	Implement remaining ONLP APIs

 Google Code Base  Current Implementation  Future



Opportunity for Community Contribution

- Implement Data Sources to access other ONLP devices: fan, PSU, LED, and thermal sensor
- Complete Phal DB: the Attribute Database
- Implement Adapter
- Implement ONLP Configurator
- Implement remaining APIs in ONLP API Wrapper
- Enhance Build process: building Stratum image with ONLP library for various platforms

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[Code](#) [Issues 17](#) [Pull requests 1](#) [Projects 0](#) [Wiki](#) [Insights](#)

Branch: dev/delta1

Commits on Oct 25, 2018

- Changing from UpdateValues to UpdateValues without lock and cache.**
KrishnaKolakaluri committed 5 days ago 7b67195 [Code](#)

Commits on Oct 24, 2018

- Merge branch 'dev/delta1' of https://github.com/opennetworkinglab/stratum**
KrishnaKolakaluri committed 6 days ago a821bbc [Code](#)
- Added GetFrontPanelPortInfo logic.**
KrishnaKolakaluri committed 6 days ago 68646af [Code](#)
- Changed the type flag for the GetOidList API.**
tiffany-chiang committed 6 days ago 86b98e5 [Code](#)
- Added implementation of GetOidList API to wrapper.**
tiffany-chiang committed 6 days ago e6adfb8 [Code](#)



Our experience on integrating Stratum to Delta platforms

WHITEBOX INTEGRATION

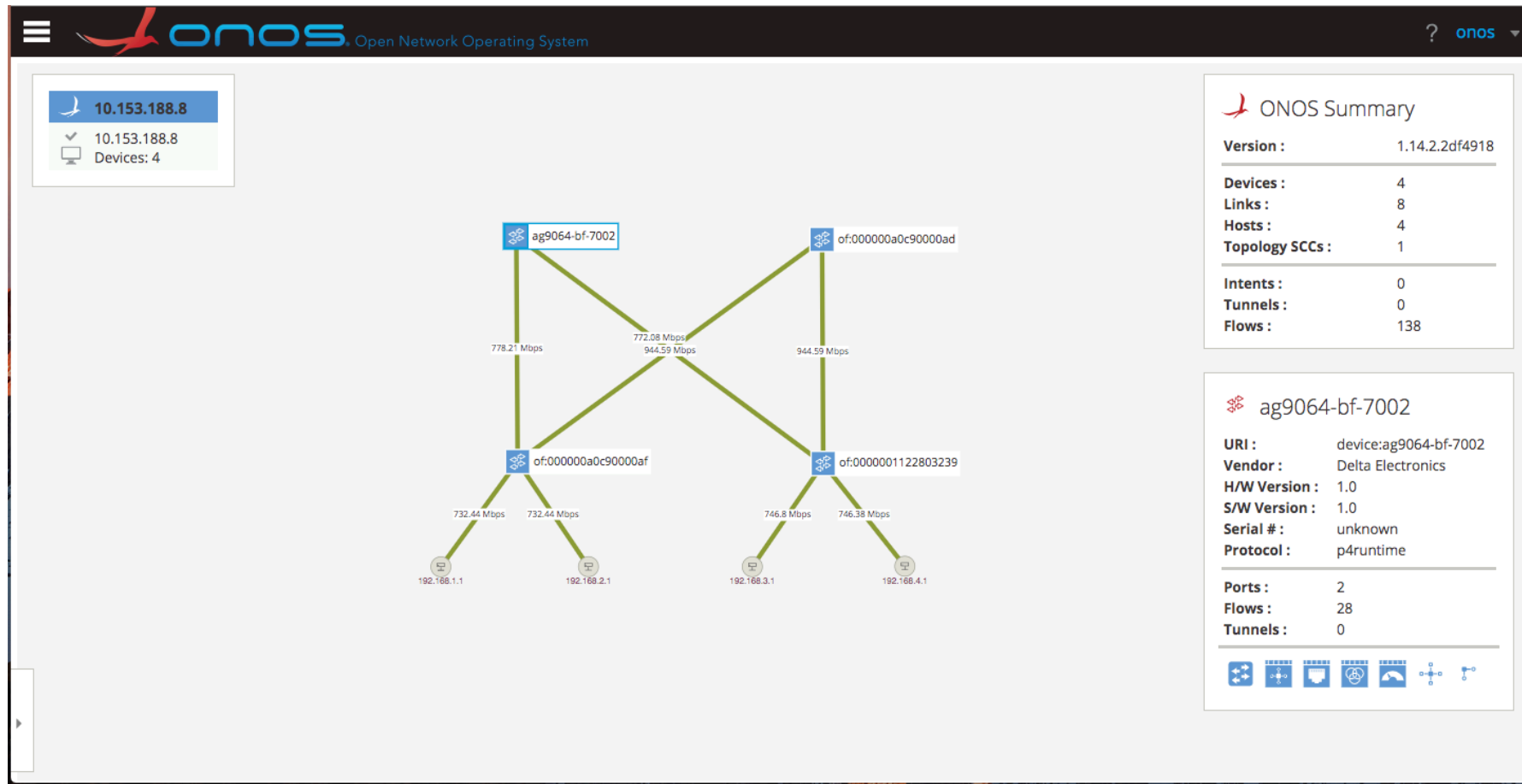


Stratum on Whitebox Switches

Stratum integration overview with Delta Whitebox switch AG9064v1:

1. Developed support for AG9064v1 in ONLPv2.
2. Installed ONL and built the Barefoot SDE and installed on the platform.
3. Built Stratum binary with Barefoot integrated code.
4. Tested Stratum with ONOS controller in a fabric topology using fabric.p4.

Please come to our booth to see the live demo!



The screenshot displays the ONOS Open Network Operating System interface. The top navigation bar includes the ONOS logo and the text "Open Network Operating System". A search bar on the left shows the IP address "10.153.188.8" and indicates "Devices: 4". The main area features a network topology diagram with four controller nodes and four host nodes. The controller nodes are labeled with their URIs: "ag9064-bf-7002", "of:000000a0c90000ad", "of:000000a0c90000af", and "of:0000001122803239". The host nodes are labeled with their IP addresses: "192.168.1.1", "192.168.2.1", "192.168.3.1", and "192.168.4.1". The links between the controller nodes are labeled with their bandwidths: "778.21 Mbps", "772.08 Mbps", "944.59 Mbps", and "944.59 Mbps". The links between the controller nodes and the host nodes are labeled with their bandwidths: "732.44 Mbps", "732.44 Mbps", "746.8 Mbps", and "746.38 Mbps". On the right side, there is an "ONOS Summary" panel with the following statistics:

ONOS Summary	
Version :	1.14.2.2df4918
Devices :	4
Links :	8
Hosts :	4
Topology SCCs :	1
Intents :	0
Tunnels :	0
Flows :	138

Below the summary is a detailed view for the controller node "ag9064-bf-7002":

ag9064-bf-7002	
URI :	device:ag9064-bf-7002
Vendor :	Delta Electronics
H/W Version :	1.0
S/W Version :	1.0
Serial # :	unknown
Protocol :	p4runtime
Ports :	2
Flows :	28
Tunnels :	0

At the bottom right of the interface, there are several icons representing different network functions and settings.



Q&A

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or scan the QR code



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