OPEN POSSIBILITIES.

SONiC Automation: Large Scale Deployments Made Easy

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SONiC Automation: Large Scale Deployment Made Easy

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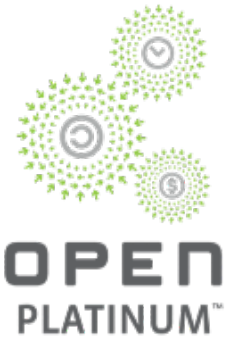


Agenda

NETWORKING

- SONiC for Enterprise Customers
- AT&T and Broadcom's Partnership for Open Networking
- SONiC Management Framework
- AT&T SDDC Solution
- SONiC Integration
- Large-Scale Deployment Made Easy

OPEN POSSIBILITIES.

SONiC: Opportunity and Challenge

NETWORKING

- SONiC has paved the way for Open Networking for Private Clouds
- Initial development and hence deployment has been mega-scaler focussed.
- Broadcom is the largest contributor to SONiC and SAI project after Microsoft.
- Introduced Enterprise Class features
- Many Enterprise customers aspire to adopt disaggregation, but face challenges:

➢ Lack of supported key-turn Automation/Orchestration solutions
➢ Lack of Enterprise Class Support
➢ Lack of in-house expertise

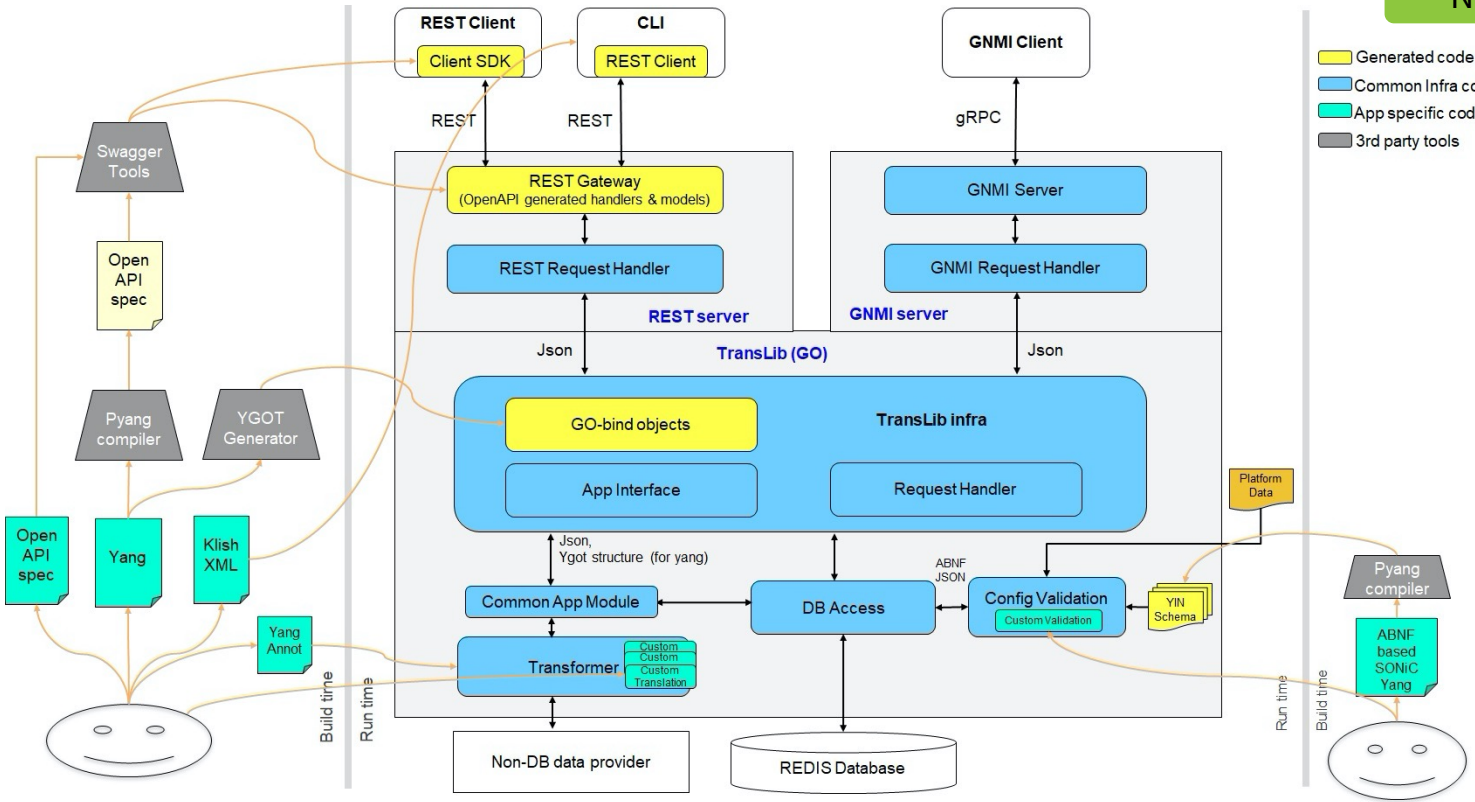
AT&T and Broadcom Partnership

NETWORKING

- AT&T and Broadcom have long been working together to promote Open Networking :
  - Cell Site Gateway Router (OCP Accepted)
  - Distributed Disaggregated Chassis (OCP Accepted)

- AT&T SDDC and Broadcom partnered together to integrate SONiC with AT&T SDN Solution
- Broadcom created a new modern Management Framework for SONiC and contributed back to the community.

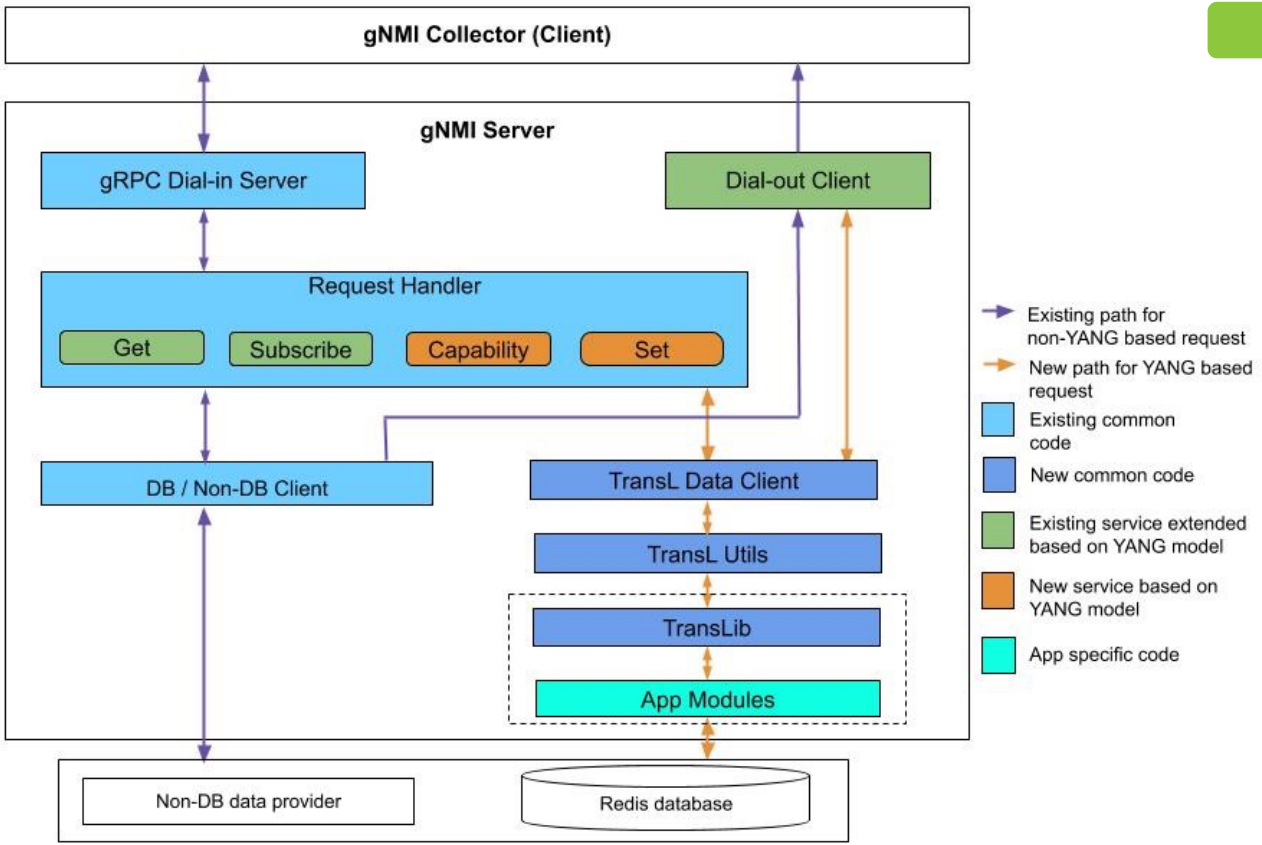
SONiC Management Framework



NETWORKING

Web Link

GNMI Flow


gNMI Collector (Client)
gNMI Server
gRPC Dial-in Server
Dial-out Client
Request Handler
Get
Subscribe
Capability
Set
DB / Non-DB Client
TransL Data Client
TransL Utils
TransLib
App Modules
Non-DB data provider
Redis database
Existing path for non-YANG based request
New path for YANG based request
Existing common code
New common code
Existing service extended based on YANG model
New service based on YANG model
App specific code

Managed Data Center Complexity

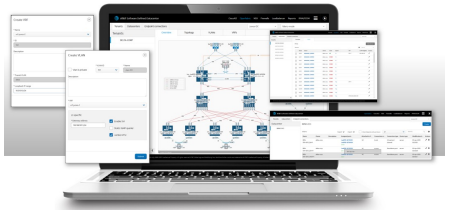
NETWORKING

- AT&T provides managed datacenter service to many customers around the globe
- Challenge how to achieve standardization across heterogenous environments and simplify day-to-day operations
- Automation is obvious answer – but how to run it in a scalable manner ?
- Complexity of vendor solutions grown out of proportion -- it's necessary to bring the simplicity back

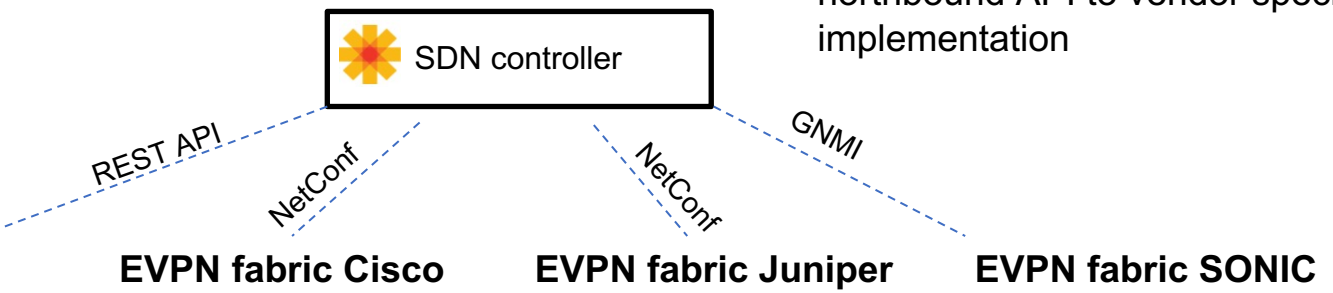
SDN Automation Approach

NETWORKING

SDN portal accessed by AT&T engineers and customers



SDN controller – translates northbound API to vendor specific implementation



EVPN SONiC Integration

NETWORKING

- When we started in early 2020, Sonic was classified by our OPS organization as unsupportable ☺…
- Deep work with Broadcom to develop set of enhancements to make them comfortable
- Sonic was integrated into our SDN controller using GNMI protocol and all necessary northbound RPCs has been successfully tested

SDN controller

- YANG models are converted to Java POJO models
- Automation is driven by Lighty.io based SDN network controller. Lighty is evolution of OpenDaylight that allows to use ODL libraries in plain java SE environment. This is much easier to run in containers
- Controller not only configures the device, but also reads out operational status
- For Sonic, we have implemented custom pre-standard version of GNMI

Call to Action

- SONiC solution is now available from AT&T as a managed service.
- Allows Enterprise customers to adopt Open Networking with a fully managed and supported solution.
- Broadcom's contributions to the management framework of SONiC enables automation/orchestration of the solution.
- Standard GNMI adaptor in lighty is now publicly available – we recommend others to use it.

Reference: https://github.com/PANTHEONtech/lighty/pkgs/container/lighty-rcgnmi

Thank you!