

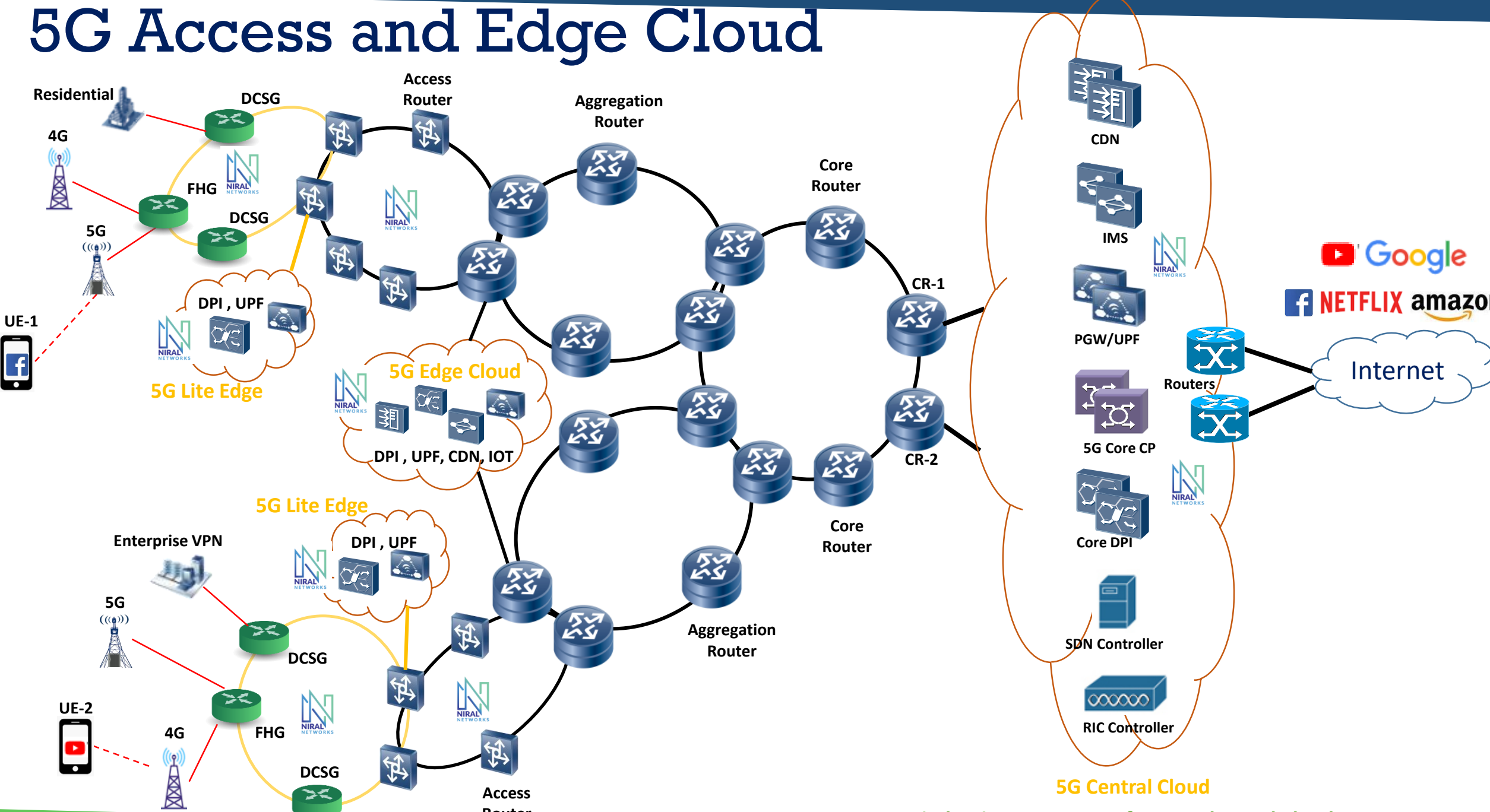
Niral Open Product Frameworks

Curated, Open Source, Disaggregated Solutions

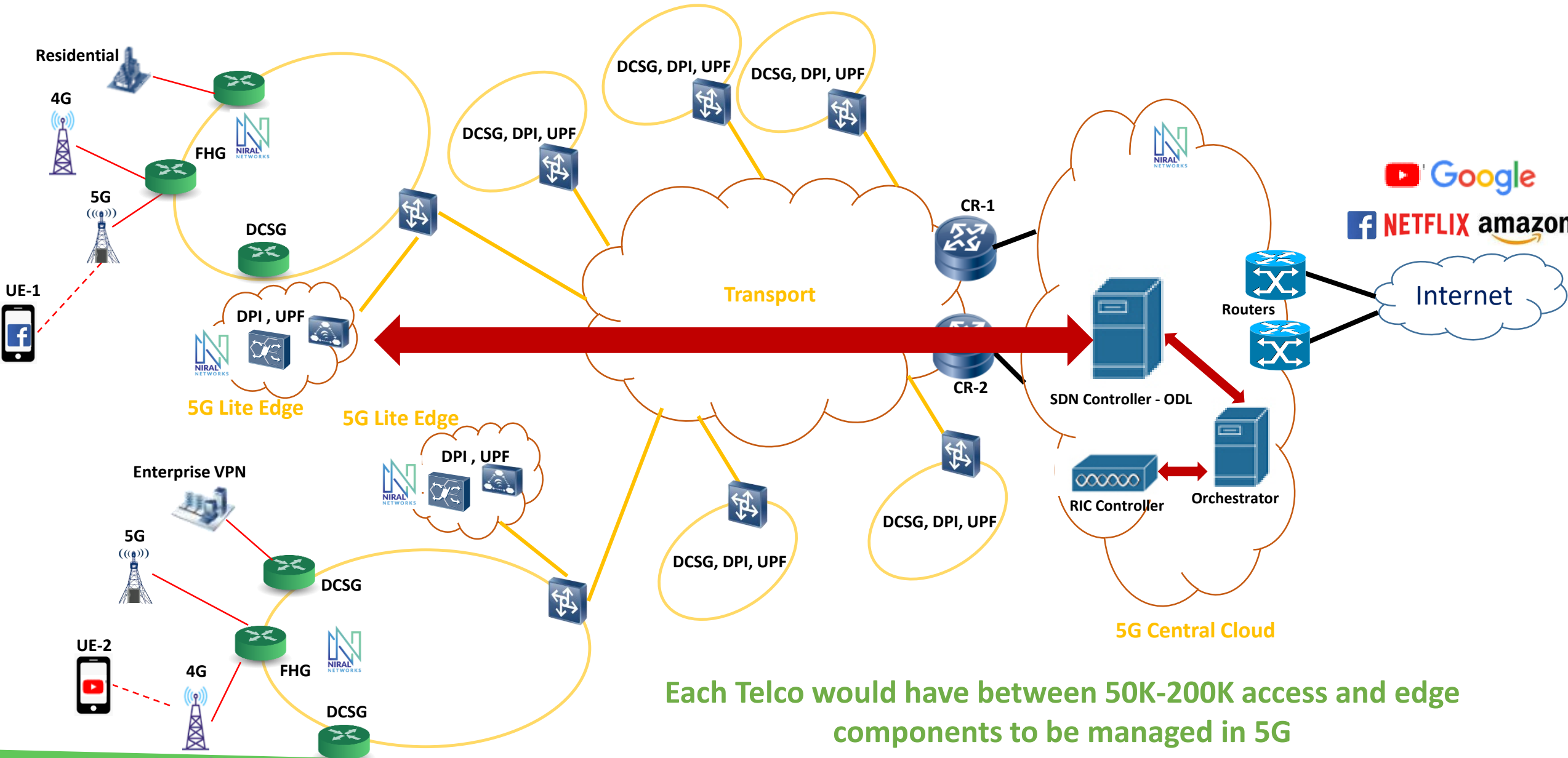
abhijit@niralnetworks.com

Networks aims to partner in
Telecom/Internet/Cloud Operator's Transformation
from **Vendor Controlled** to **Vendor Agnostic**
by embracing
Curated, Open Source and **Disaggregated**
Product Frameworks

5G Access and Edge Cloud

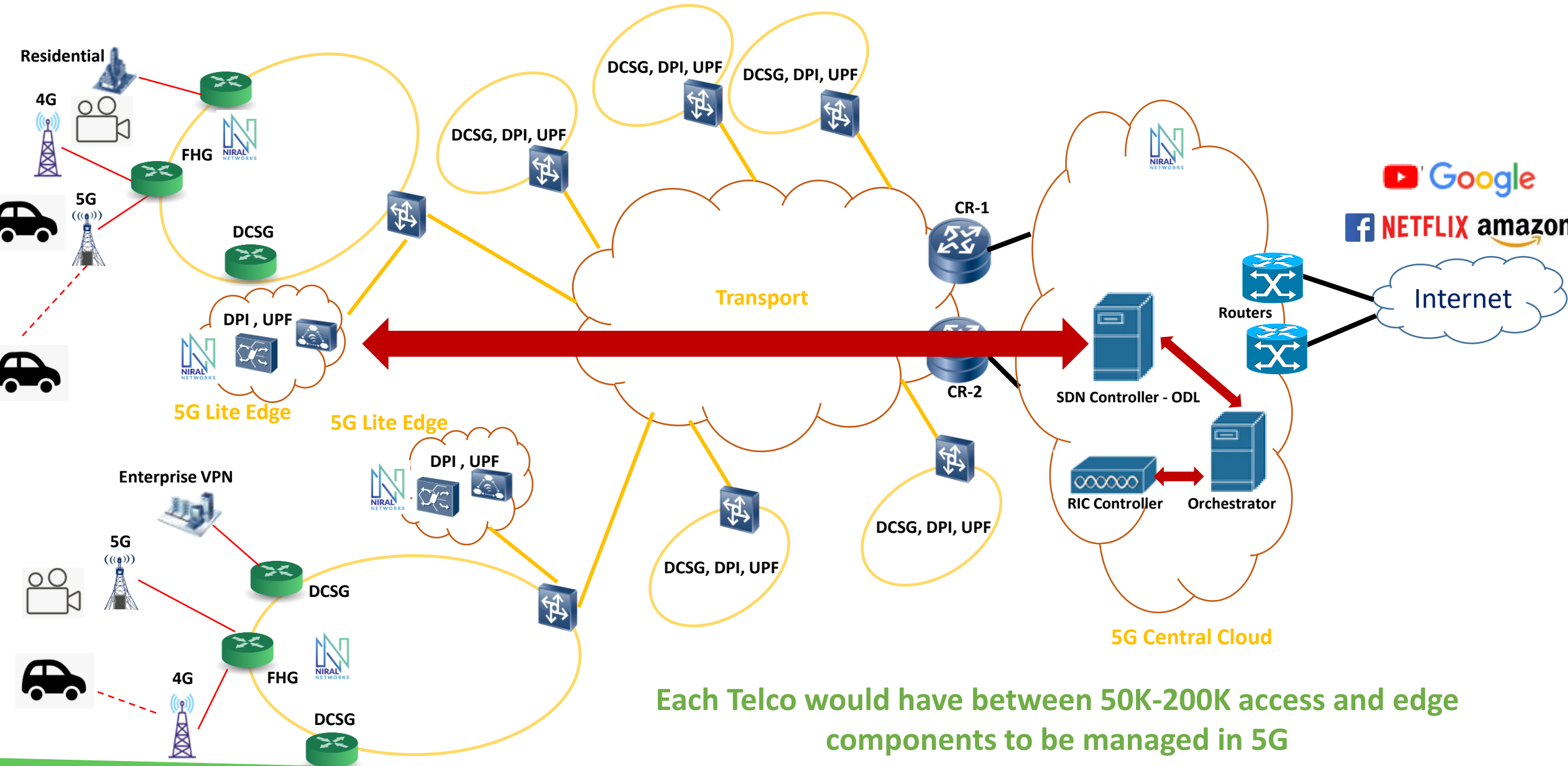


ODL Use-case – Configuration & Device Management –Netconf/Yang



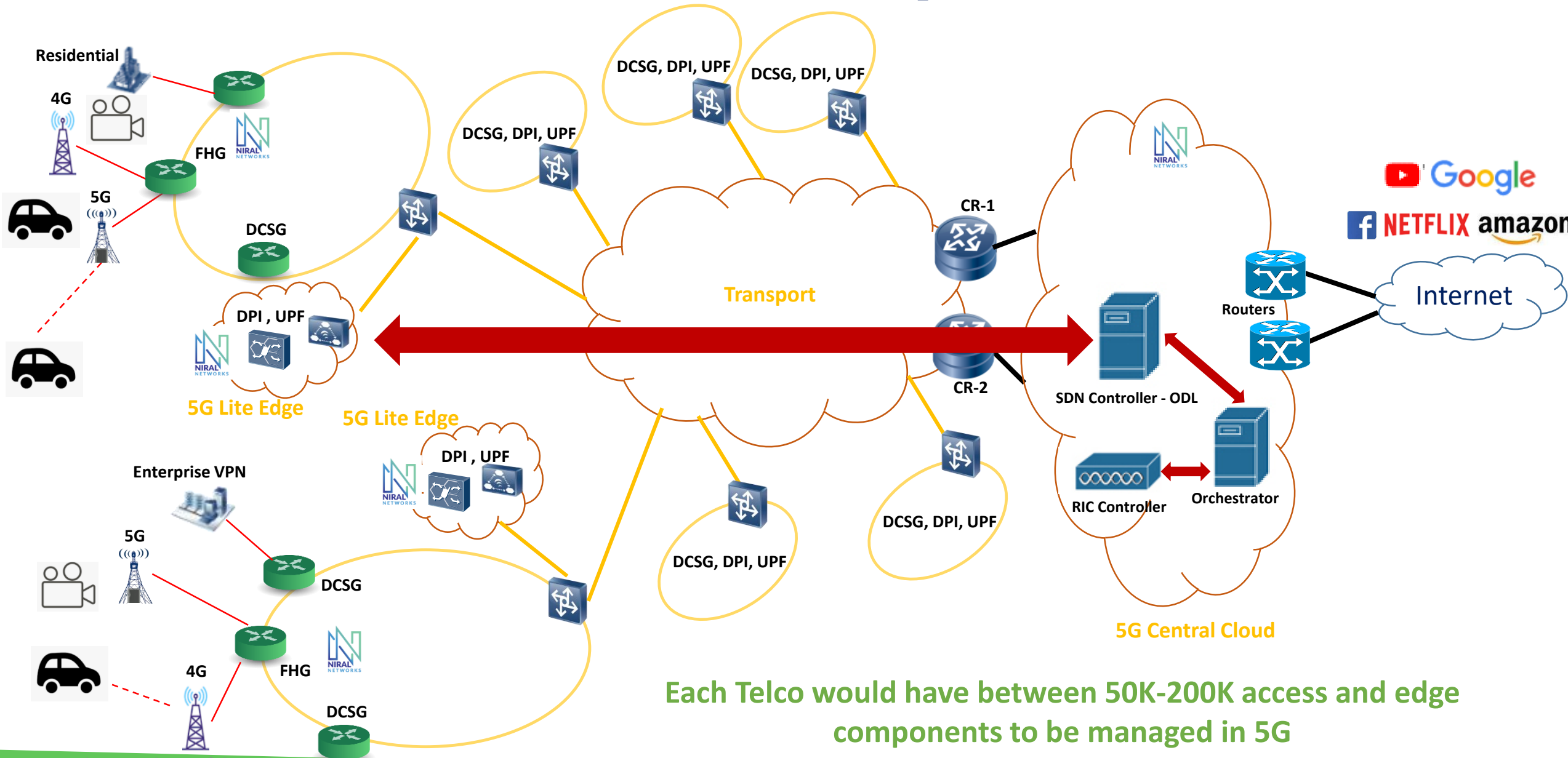
Each Telco would have between 50K-200K access and edge components to be managed in 5G

ODL Use-case – Transport Time-Slicing – BGP-LS/PCEP



Each Telco would have between 50K-200K access and edge components to be managed in 5G

ODL Use-case – Network Analytics - IPFIX



Each Telco would have between 50K-200K access and edge components to be managed in 5G

NiralOS - 3 step approach to Open Networking

Disaggregation



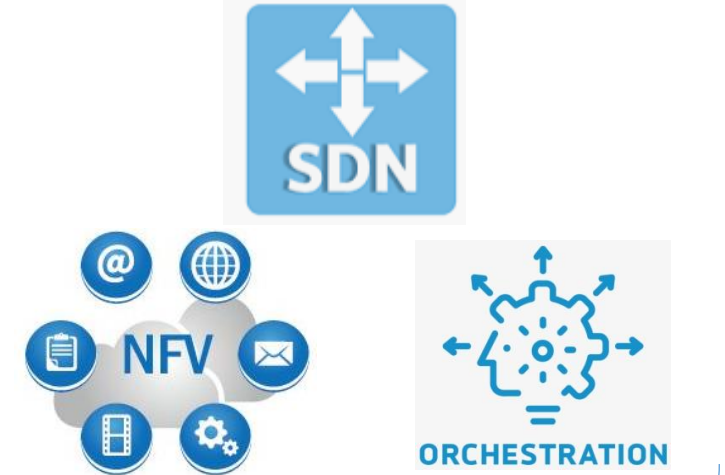
Integrate customer choice of Whitebox Hardware and Third-Party Software to NiralOS

Open



Curate best-of-breed open source to make NiralOS robust, scalable, feature rich and standard compliant

Curation + Support



Customize NiralOS to customer's requirement and provide flexible support

NiralOS = Curated + Open Source + Disaggregated Product Frameworks

Niral makes it easy to deploy and support open networking

Lifecycle of Niral Product Frameworks

Niral Open Source Curation



Operator Collaborated Curation



Operator Driven Disaggregation



Niral Flexible Support

Work with Open Source Ecosystems to build and integrate Open Source Software and curate it to make it robust, scalable, feature rich and standard compliant

Work with Operator to customize it to their requirement and integrate to their existing Network components

Work Operator to integrate their choice of Whitebox Hardware and Third-Party Software

Continue to provide support, maintenance and develop new features

Niral a key 5G technology player from India



Fig.1: Demographics of various entities on TechSagar

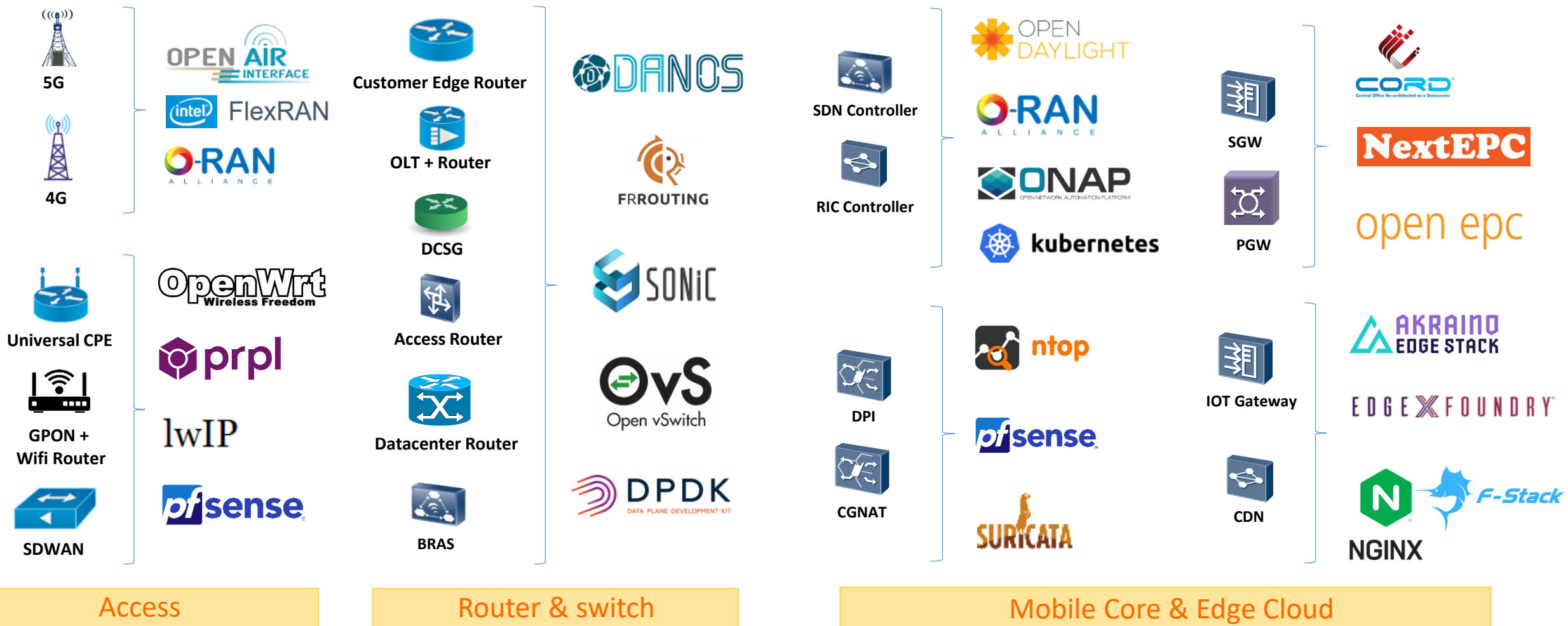
In terms of technology and manufacturing, we have seen so many start-ups and enterprises that are working on 5G already. Some of the examples are – Reliance Jio, Mymo Wireless, **Niral Networks**, VVDN, Tejas Networks, Acliv, Cadence India and Qualcomm India are some of the leading names in the 5G technology space. The Department of Telecommunications (DoT) is also funding a large scale 5G testbed project to encourage Indian startups. Top Indian academic institutes such as IIT-Delhi, IIT-Hyderabad, IITKanpur, IIT-Bangalore, Indian Institute of Science - IISC, are all involved in 5G development.

[Download complete report](#)

DSCI
PROMOTING DATA PROTECTION
A NASSCOM® Initiative



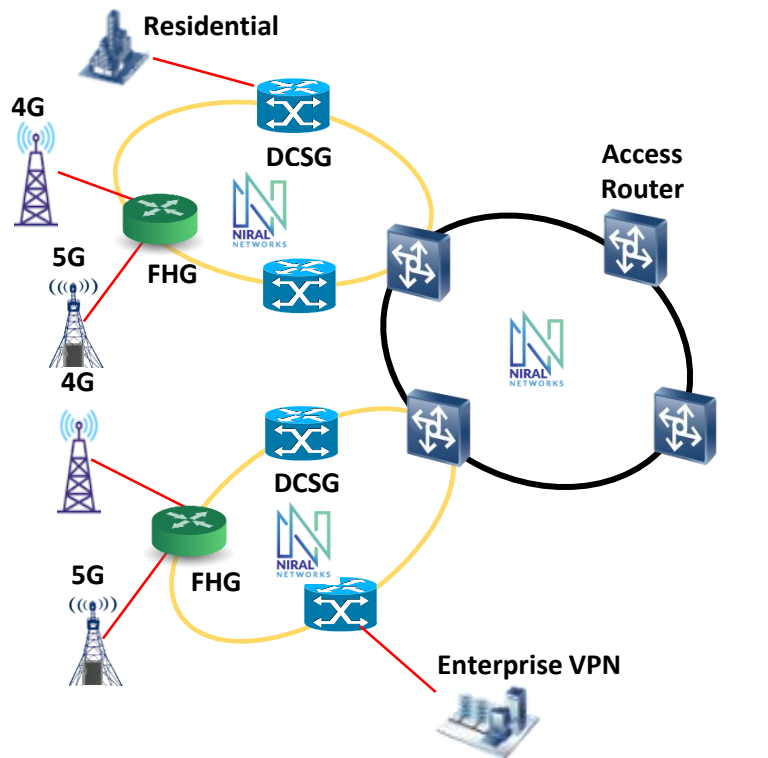
Open source alternative for network deployment



Niral Open Product Framework *curates, integrates and hardens* various open source networking components

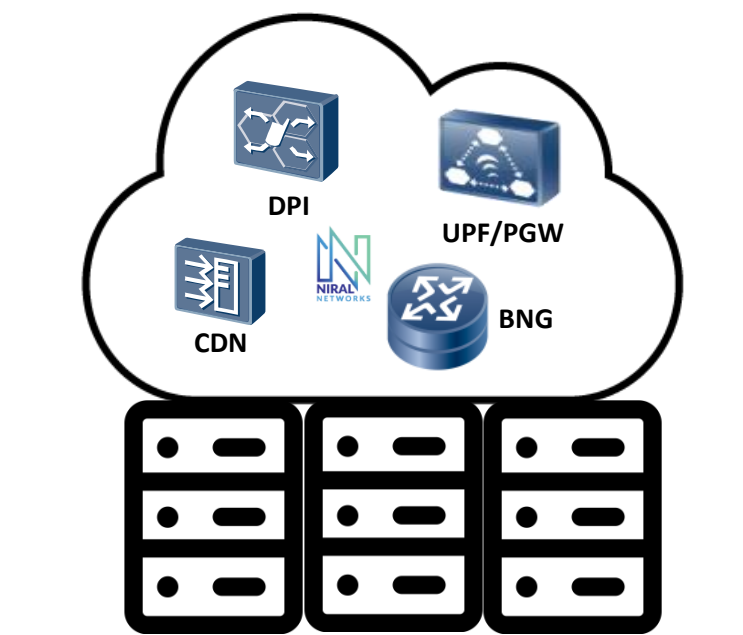
Niral Product Focus

Telco/ISP Access



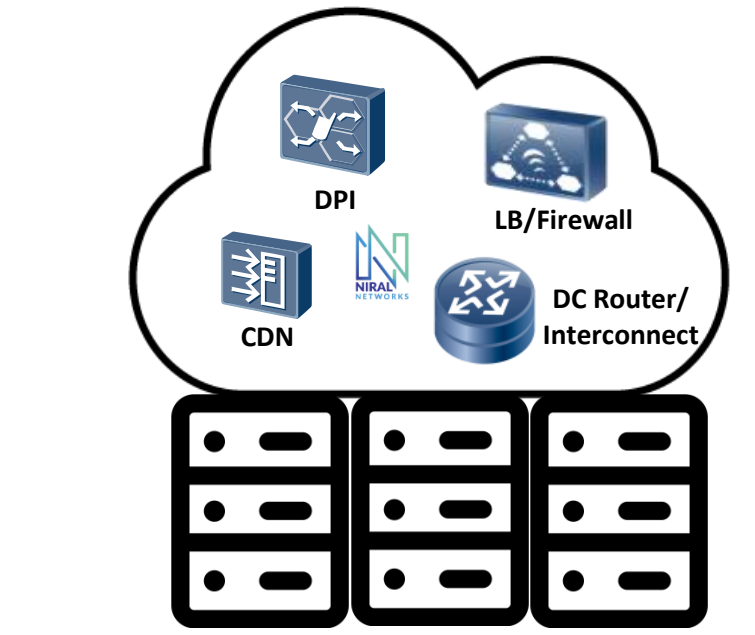
Connectivity to Home, Enterprise, 4G/5G - FHG, DCSG, Access Router

Telco Edge/Cloud



Telco Cloud Network Infrastructure - DPI, UPF/PGW, CDN, BNG

Ecom/Banking/DC

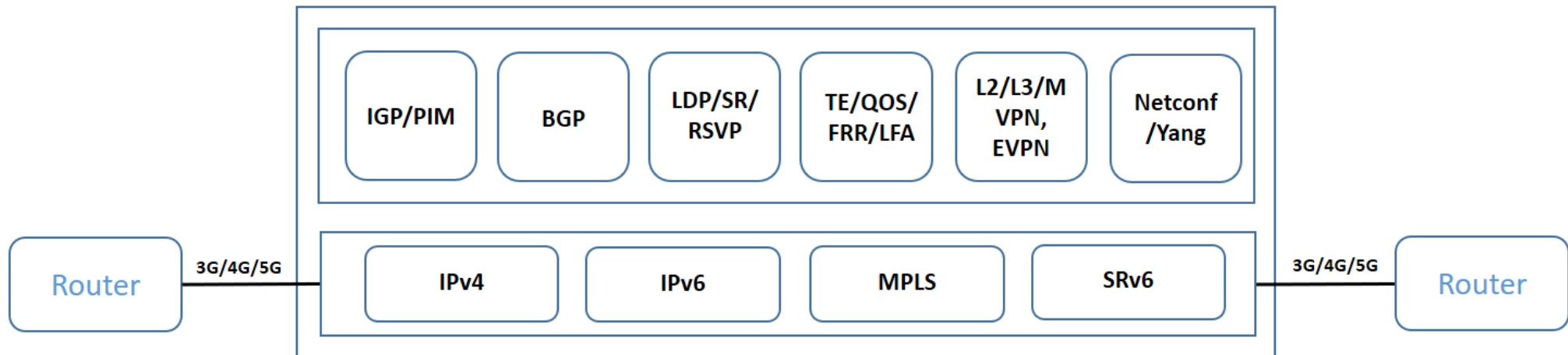


DC Network Infrastructure - DPI, Firewall, Router, CDN, LB Inter DC Interconnect

Niral DCSG Product Framework



NiralOS - Disaggregated Cell Site Gateway



Niral DCSG Whitebox Disaggregation



S9500-30XS

Disaggregated Cell Site Gateway Router

- Full featured, compact Cell Site Gateway Router
- 20 x SFP+ service ports
- 8 x SFP28 service ports
- 2 x QSFP28 service ports
- 1 x RJ45 + Micro USB console/management ports
- 1 x 1000 Base-T Ethernet port for Out-of-Band management
- 1 x USB 2.0 Type-A general purpose port
- GNSS, 1PPS, 10M, ToD, and BITS timing ports

AS5916-54XKS

10G/100G EDGE ROUTER

The AS5916-54XKS is based on Broadcom StrataDNX™ Qumran MX switch silicon, capable of line-rate 800 Gbps Layer 2 and Layer 3 switching. The switch can be deployed either as a top-of-rack switch in a data center, or as a carrier access/aggregation switch, and edge router.

Edge-core
NETWORKS



Niral DPI Product Framework

Niral OS
 Open, Disaggregated DPI SW
 Layer7 Classification, Application Detection, Subscriber Mapping, Subscriber Block, Rate-limit, Shape CDR Collection, Live Statistics, Traffic Mirror, Divert, Lawful Intercept

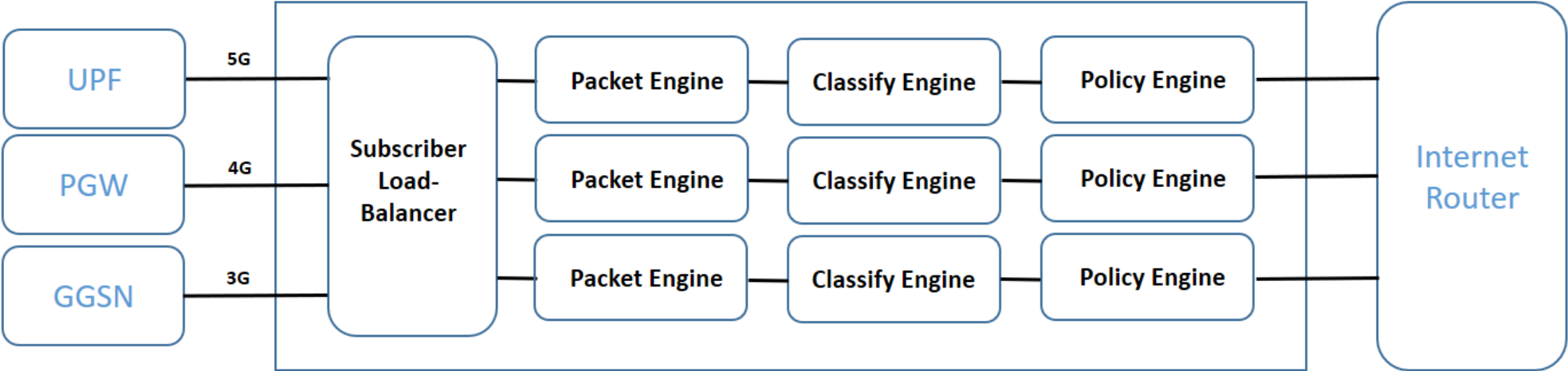


Niral Curation
 Customization for Customer
 Custom Software Feature
 Netconf, REST Integration to OSS/BSS/AF/PCRF
 Telemetry, Statistics Integration
 SDN Controller Integration



Niral Disaggregation
 HW choice of Customer
 x86 server with Intel DPDK port
 NXP ARM server HW
 Any Whitebox HW

NiralOS - Deep Packet Inspection



Niral FHG Product Framework

Niral OS

Open, Disaggregated FHG SW
MPLS, Routing Protocol, ROE,
TimeSync, 7.2x Split, PHY Processing,
CPRI/eCPRI, OTN Processing



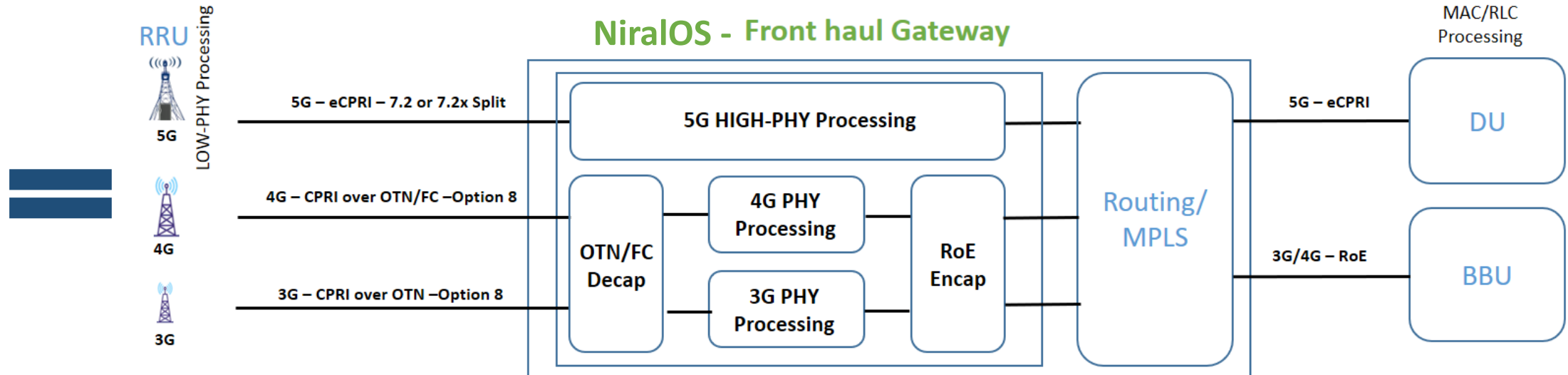
Niral Curation

Customization for Customer
Custom Software Feature
Netconf, REST Integration to
OSS/BSS/AF/PCRF
Telemetry, Statistics Integration
SDN Controller Integration



Niral Disaggregation

HW choice of Customer
x86 server with Intel DPDK port
NXP ARM server HW
Any Whitebox HW



Benefits of Niral OS – Redhat Model



- ✓ Zero CAPEX
- ✓ Open source software and hardware
- ✓ Collaborative feature development
- ✓ Security vulnerability "backdoor" scrutiny by wider audience
- ✓ Customization controlled by Operator
- ✓ Subscription Model

Vendor-agnostic approach enabling faster innovation



Can't wait to learn more, drop us an email - info@niralnetworks.com

<https://www.niralnetworks.com>