

NOKIA

Network-in-a-box

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Get to Fast Faster 2025

Agenda

1. Nokia Network-in-a-box
2. Access network solution
3. IP aggregation and BNG
4. Summary and questions

Broadband market landscape



New fiber deployments

- Brownfield copper replacement
- Underserved broadband areas
- Government / private funding



Target services

- Gigabit residential broadband
- 10 and 25G business services
- Open access/ISP wholesale



Target market

- Tier-3 CSPs and underserved communities in rural America
- Pre-validated solutions that can be rightsized for your network

Network-in-a-box

Fixed access

- Home devices
- Fiber access
- Management

IP routing

- Aggregation
- BNG, CG-NAT
- BGP peering
- DDoS security

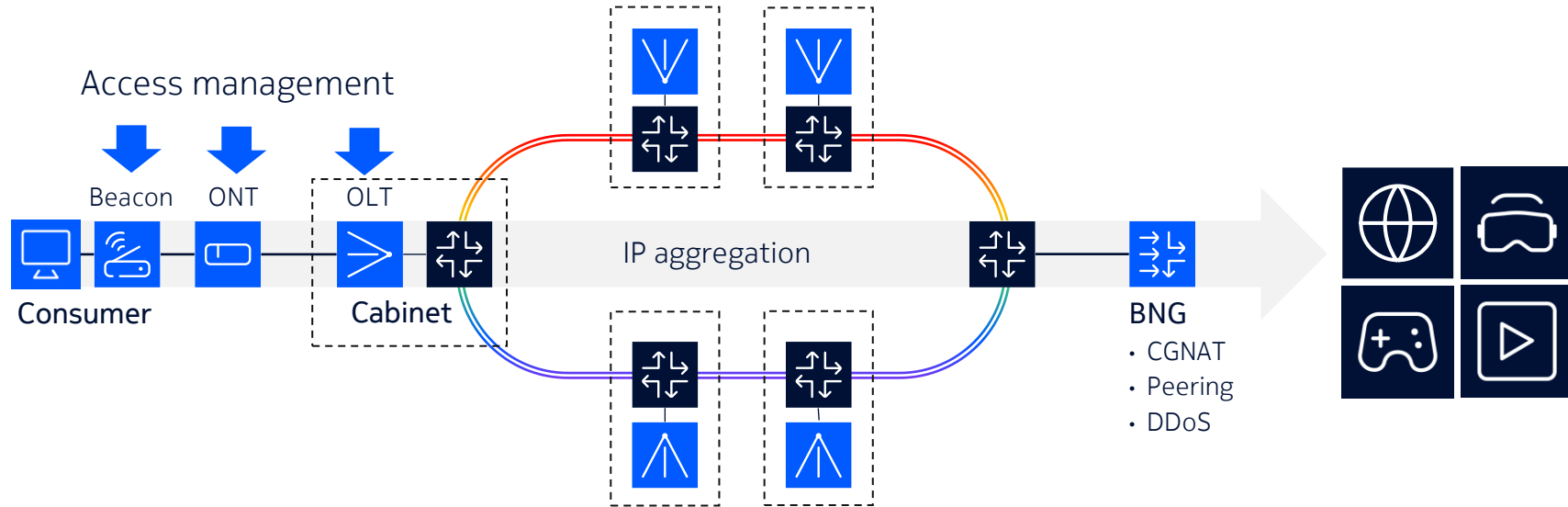
Services

- Design
- Integration
- Support

Complete

- Pre-validated
- Configurable
- BEAD-ready
- Buy America

Network-in-a-box components



Network-in-a-box is unique in that it covers all your needs

Networking platforms

Sized right and available now

- Broad range of Lightspan PON OLTs including cabinet and strand mounted platform options
- GPON / XGS ONTs, whole home Wi-Fi beacons, Gateway ONTs and voice/data ONTs

Compact, versatile IP aggregation and broadband edge platforms

7750 SR-1



VSR-a



Broadband edge

7250 IXR-X

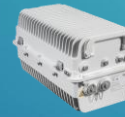


7250 IXR-e



Aggregation

SF-8M



MF-8



MF-2



DF-32



Fiber access

OSP cabinets



WiFi Beacons



Gateway ONTs



Data and voice ONTs



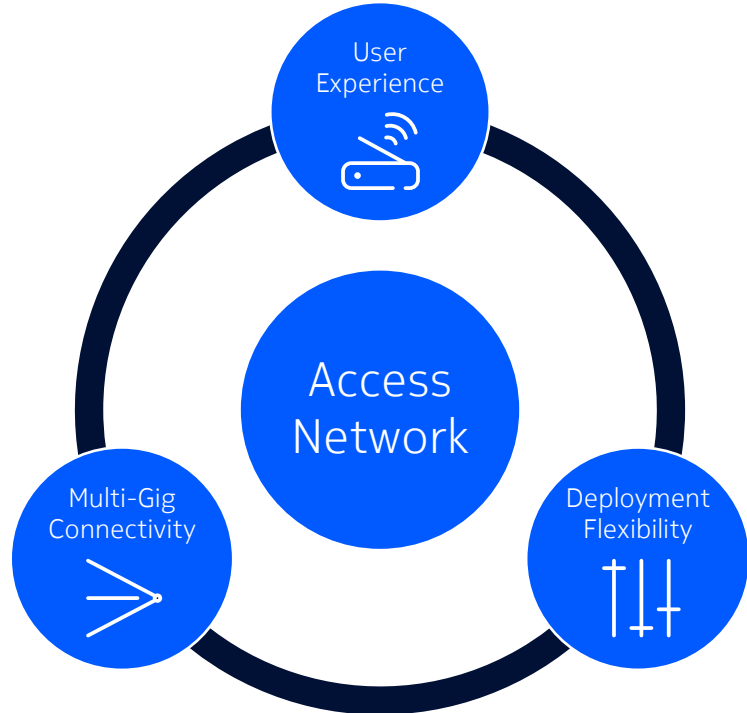
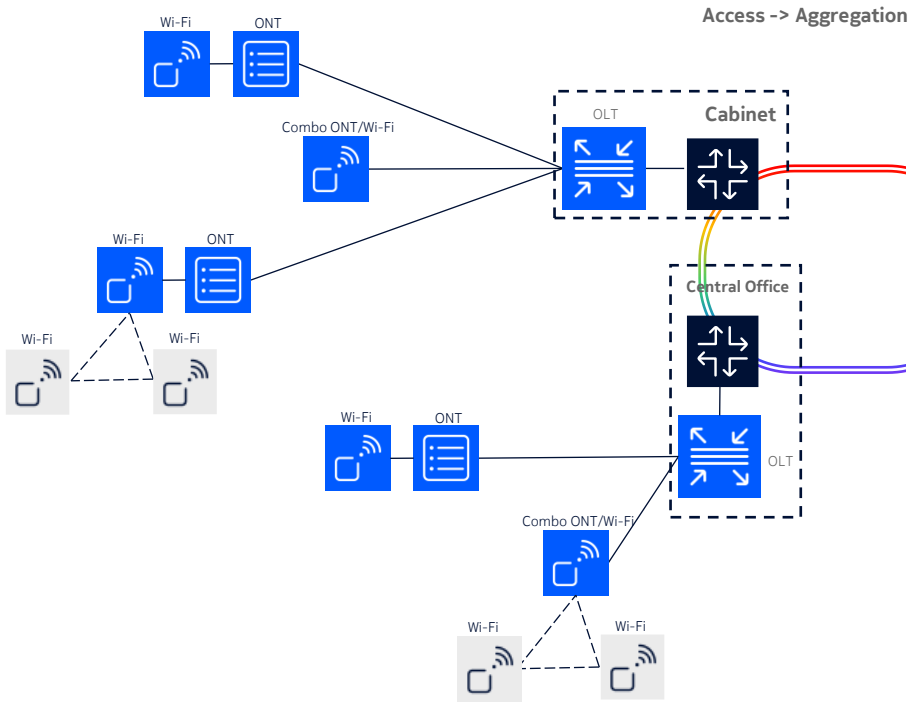
Home devices



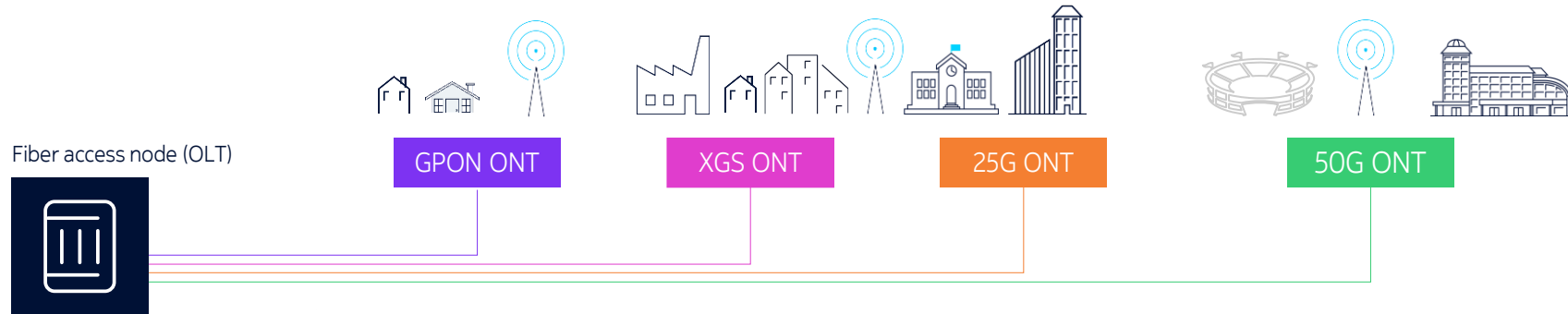
Access Network

Access Network Layer

Main Functions



Protect your broadband investment with fiber



Launch multiple PON technologies from one chassis/line card over the same fiber :

Deliver essential broadband

GPON

for up to 1Gbps service offering

Offer multi-gig service

10G PON

XGS PON and Multi-PON delivers multi-gig services for residents and businesses

Look forward with

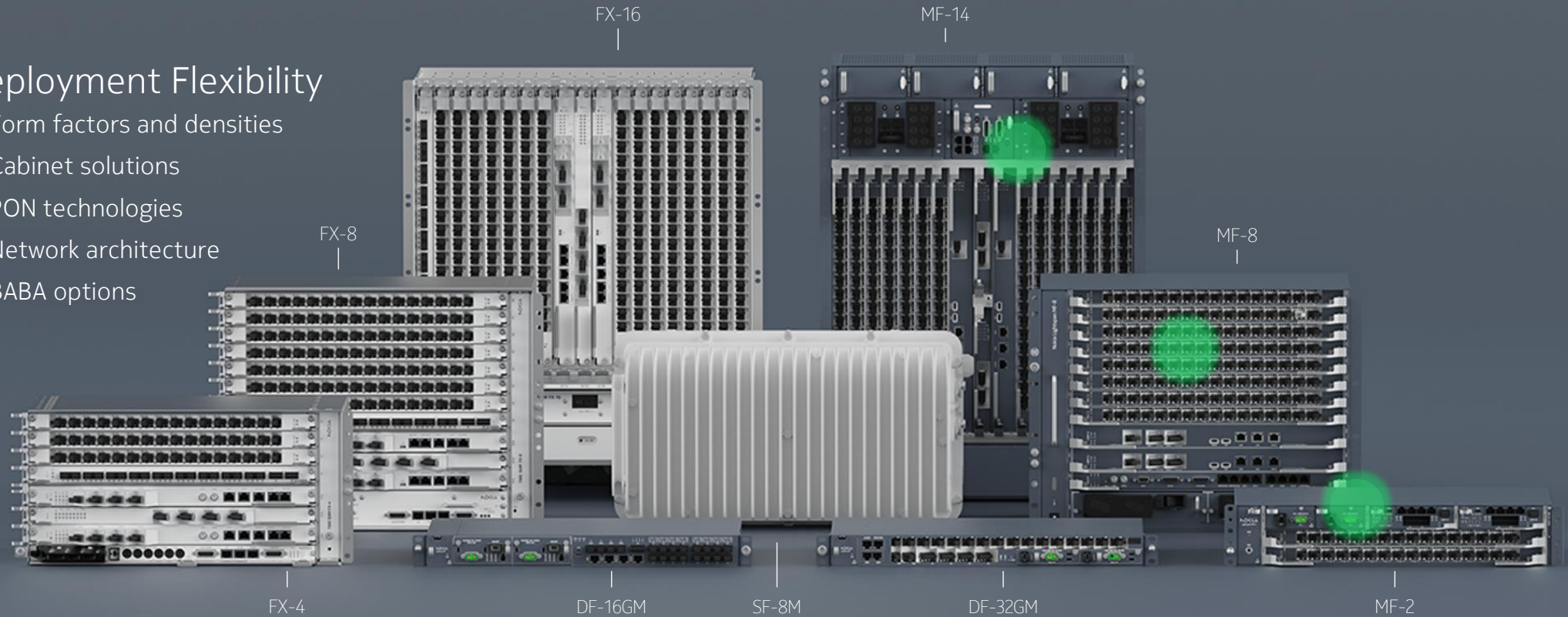
25G/50G

Continue to leverage fiber investment with new PON technologies

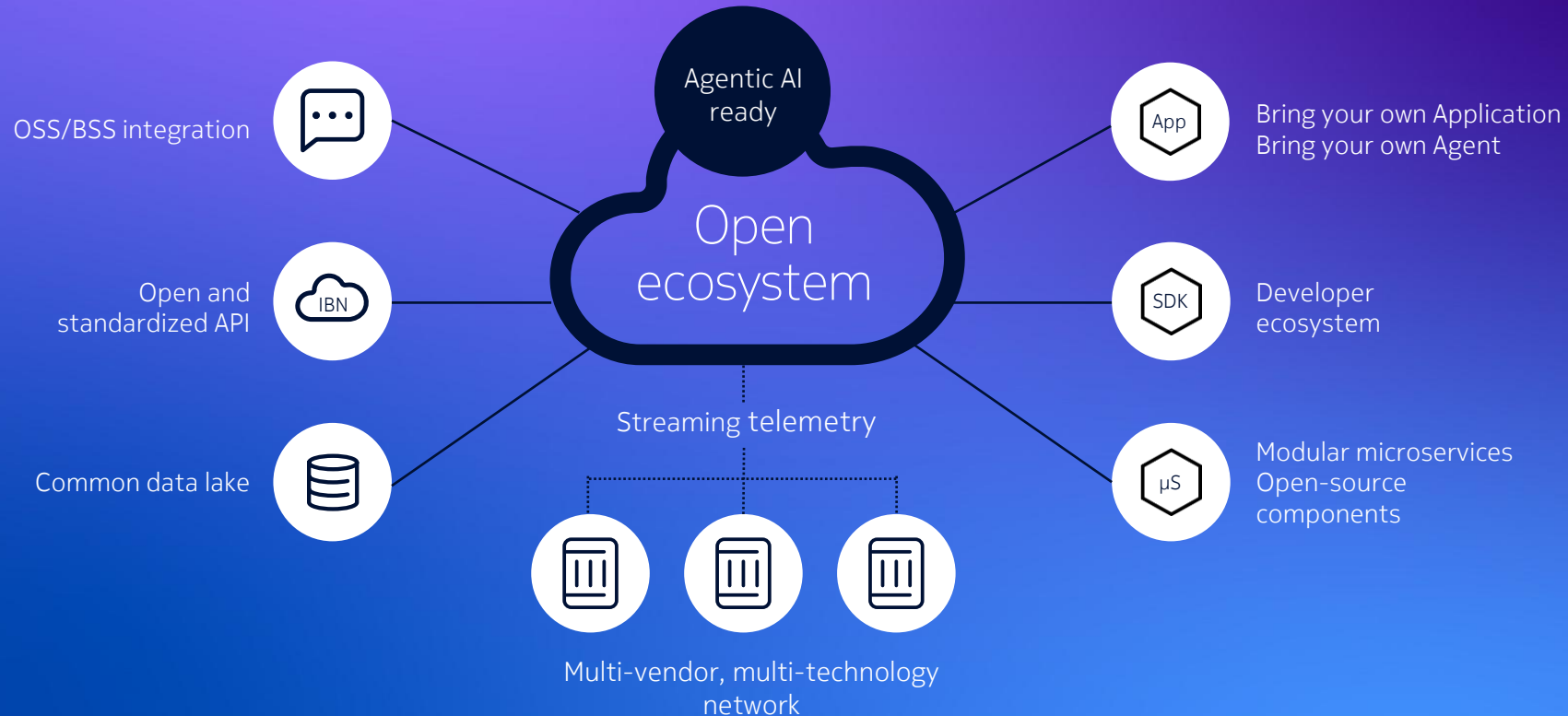
Nokia broadband portfolio

Deployment Flexibility

- Form factors and densities
- Cabinet solutions
- PON technologies
- Network architecture
- BABA options

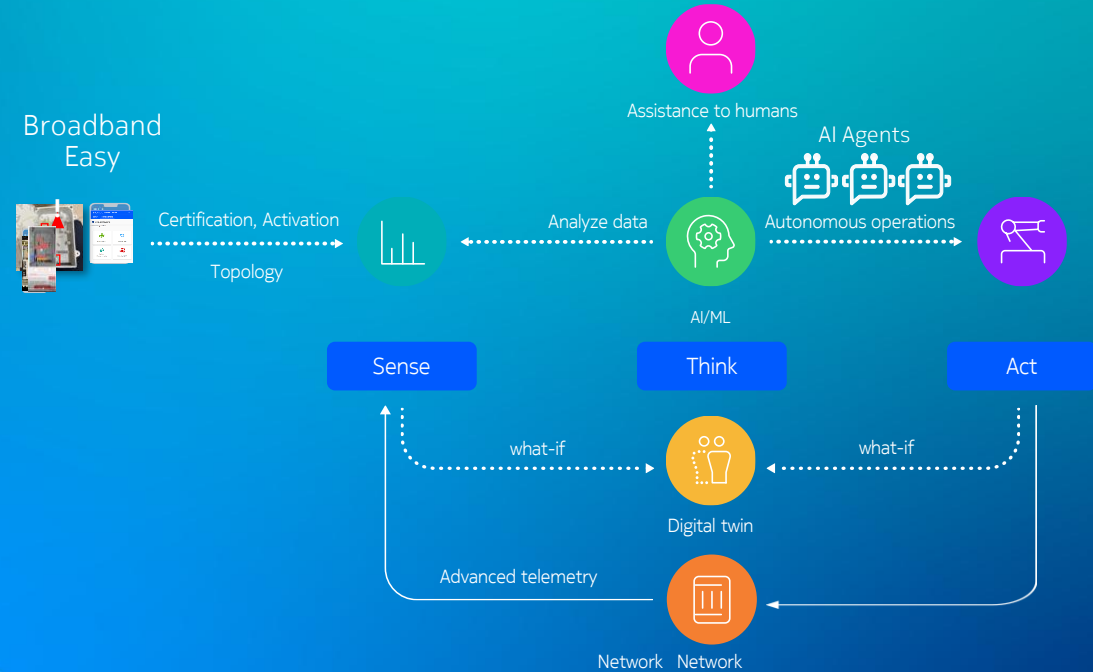


Our Altiplano open framework, consumable for AI



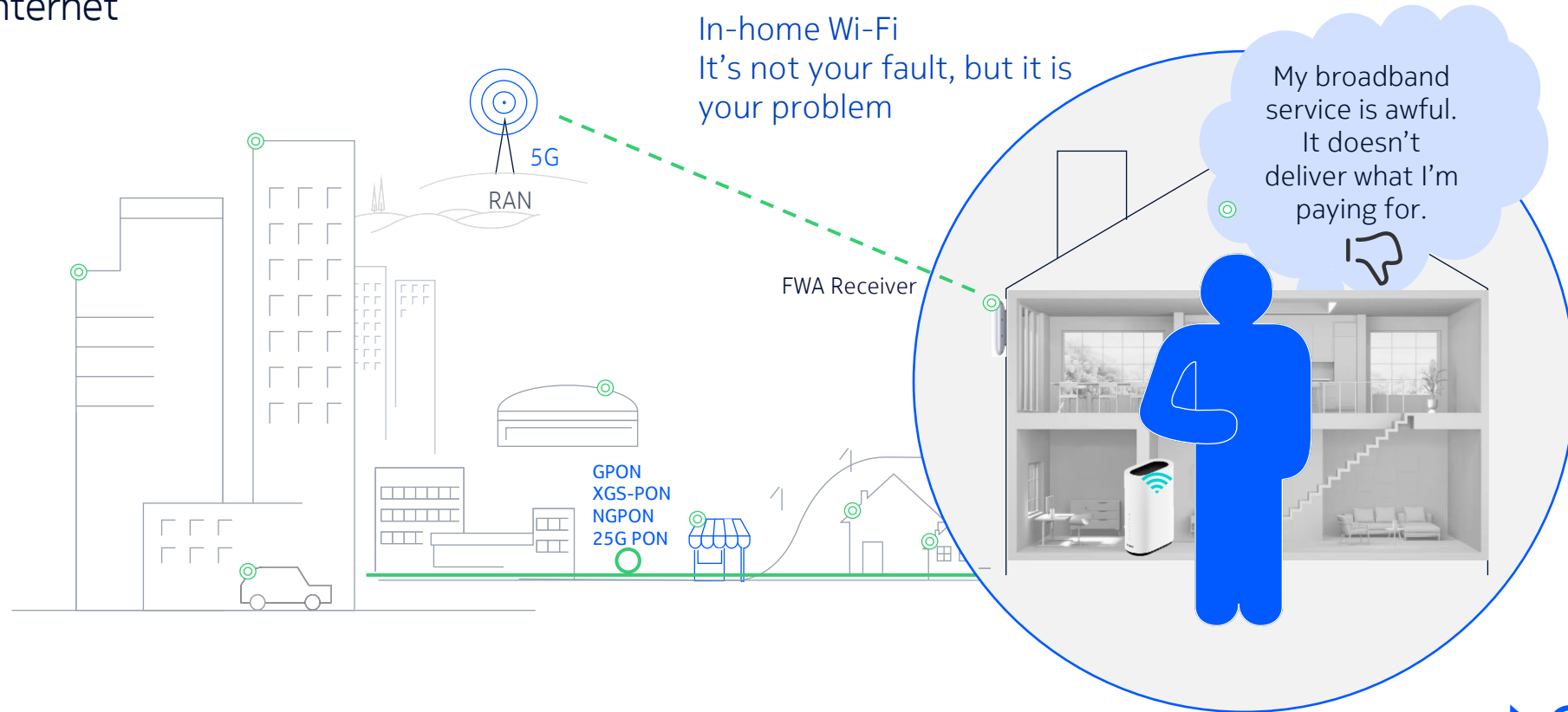
AI decision element in controller for sense, think and act

Evolution to AI agents!



Home Broadband evolution depends on residential Wi-Fi

Wi-Fi = Internet



Nokia Corteca

Smarter broadband for a better experience

Corteca (n): from cortex; the core technology and intelligence that connect everything

Corteca for Experience

Deliver unstoppable Wi-Fi

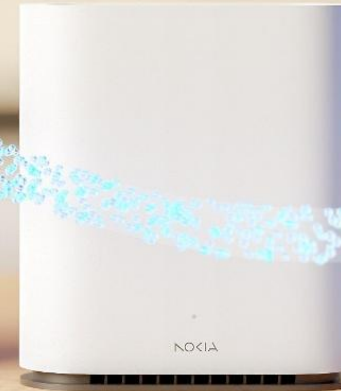
Corteca for Operations

Reduce your OPEX

Corteca for Revenue

Monetize new service offers

Corteca powered devices
Corteca Cloud
Corteca Applications



The Corteca Cloud covers three main groups of use cases



Wi-Fi management

- Real-time monitoring
- Proactive troubleshooting
- Wi-Fi optimization
- Performance monitoring



Device management

- Configuration management
- Software lifecycle management
- Remote diagnostics
- 3rd-party device support



Application management

- Configuration management
- Software lifecycle management
- Troubleshooting

Corteca applications by categories

Security

Gryphon Home, F-Secure Sense, Nokia Anti-Theft

Traffic analysis

WtFast*, Netduma Smartboost*

VPN

OpenVPN, Nokia VPN, Tailscale*

Speed test

FCC Compliance, Ookla Speedtest™, M-Lab Speed Test

Diagnostics

Nokia Fingerprint, Nokia PacketCapture

Ad blocker

Blocky, AdGuard Home

Management

Motive HDM, Altiplano

Multicast IPTV

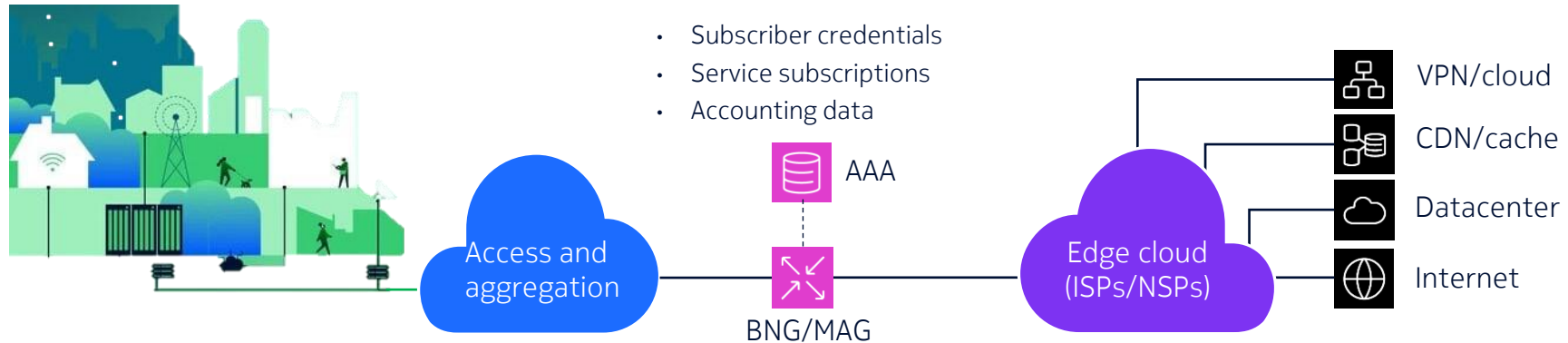
Broadpeak nanoCDN™

- Some applications in Prototype status
- Device IOP is dependent on chipset support, etc.
- All container applications are OCI compliant (prpl-LCM)

IP Network Layer

Delivering broadband access

Multi-Access and Multi-Services Network



Multi-Services metro network

- Residential, Mobile and Business
- Network Monetization

The Multi-Access Gateway controls subscriber access..

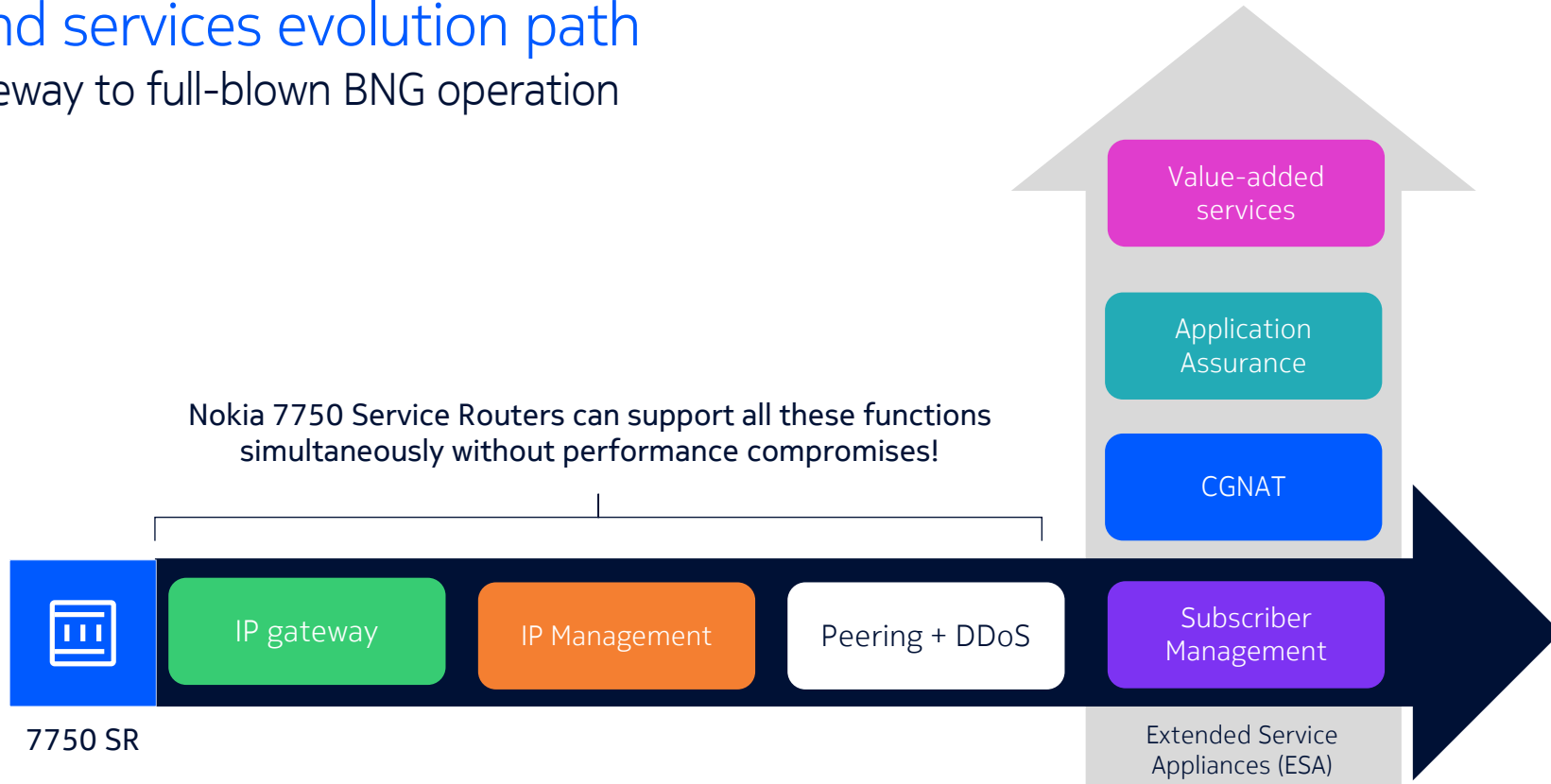
- Broadband Network Gateway
- Fixed-wireless Access Gateway

..to digital services on Internet, in CDNs, and cloud datacenters

- Residential broadband (Internet, IPTV)
- Business/wholesale (Internet, VPN, DC)
- DDoS mitigation

Broadband services evolution path

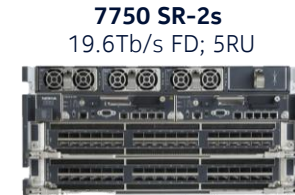
From IP gateway to full-blown BNG operation



Rural and community broadband

Integrated Broadband Network Gateway

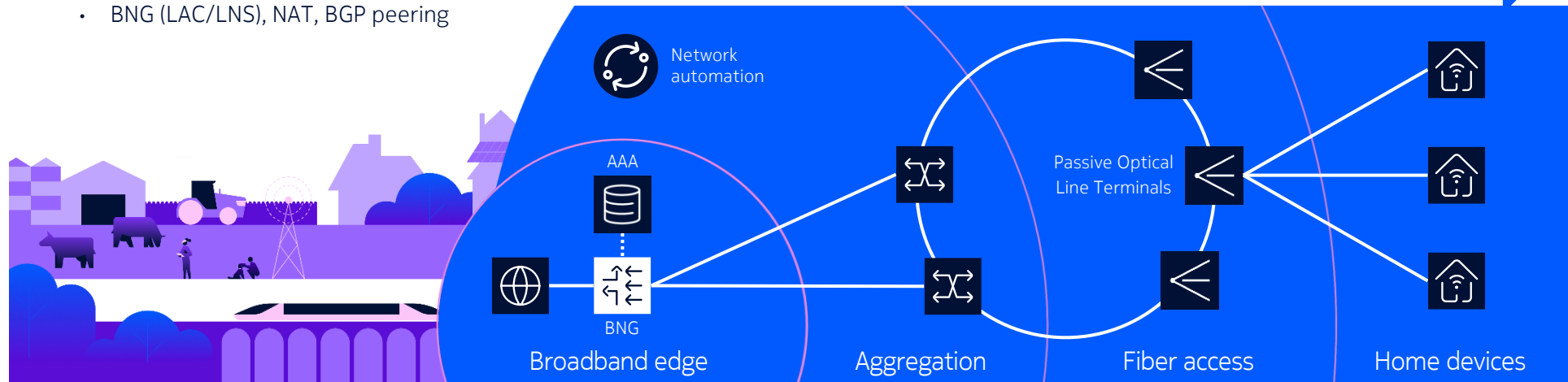
- Combined control and user plane
- Appliance and/or router-based
- Compact, versatile and modular
- BNG (LAC/LNS), NAT, BGP peering



Starting at 1K subs

Up to 64K homes

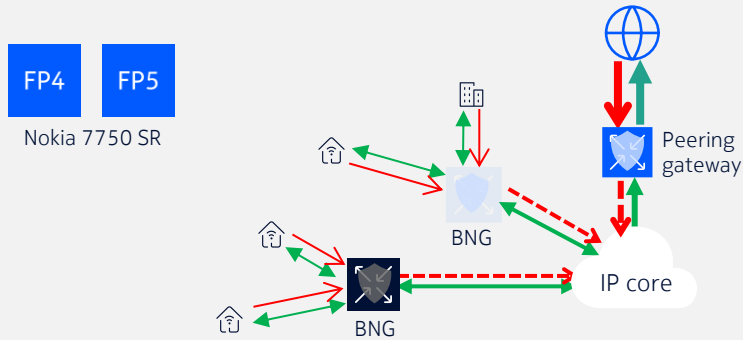
> 64K homes



DDoS security

Layered DDoS mitigation approach

Edge router-based mitigation (L3-4)



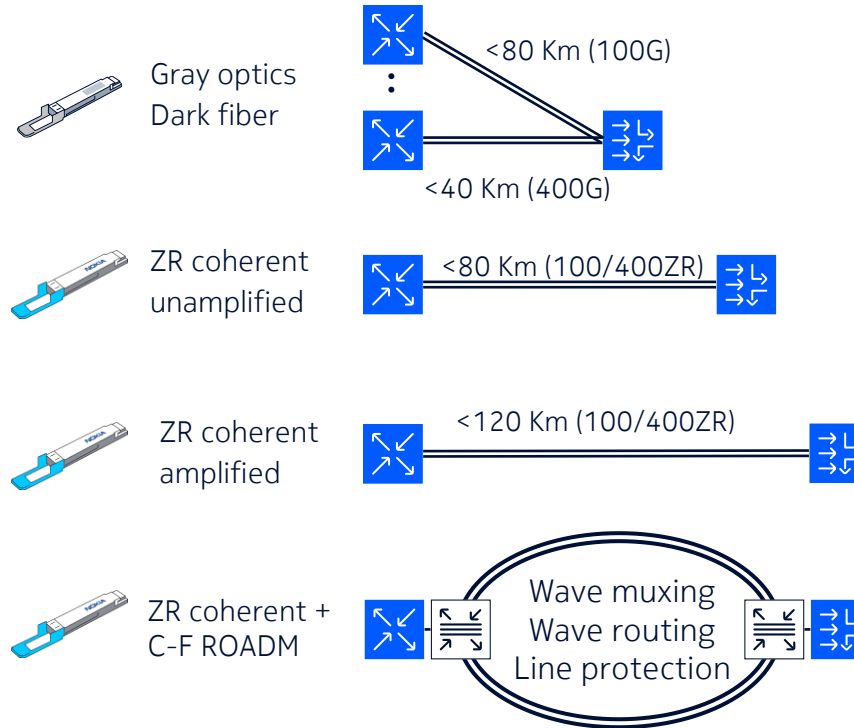
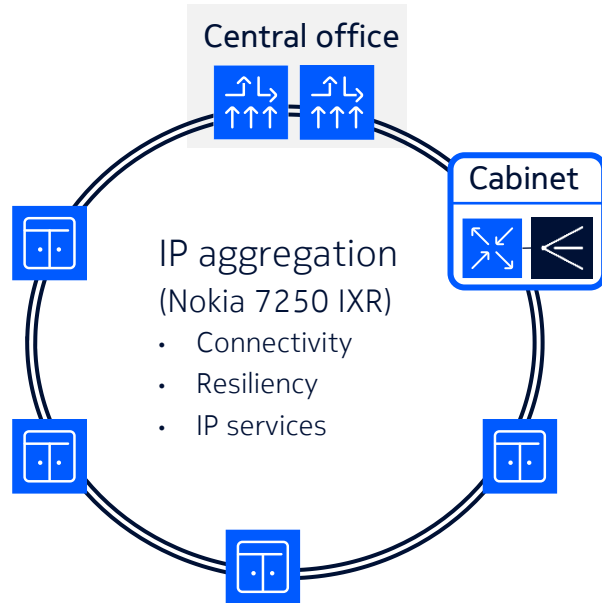
In-line volumetric DDoS mitigation at the edge

- Drop a majority of volumetric DDoS traffic using ACLs on Nokia 7750 SR routers equipped with FP4/5 silicon
- Pre-filtering at the edge significantly reduces the cost and capacity requirements of DDoS scrubbing centers



Aggregation Layer

Functions and connectivity options



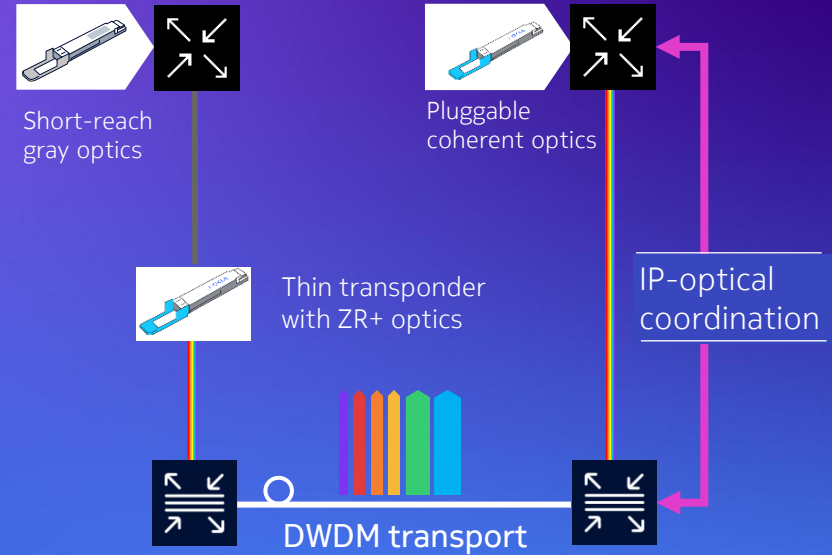
Aggregation Layer

Coherent routing support



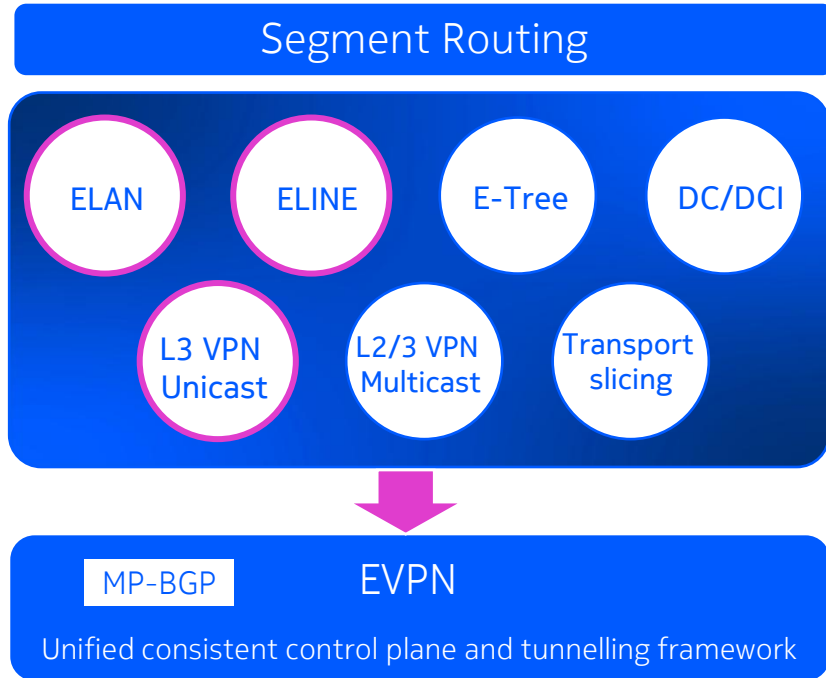
Superior design

Mix and match low-power gray and high-power coherent optics



Ethernet VPN (EVPN)

A standardized model for efficient and effective services



Benefits

- Improved scaling beyond the limits of legacy VPNs with lowered resource consumption
- Improved resiliency for users and applications brings improved uptime
- Consolidation and simplification on a unified MP-BGP control plane
- Full range of enterprise Layer 2 and Layer 3 VPN services

7250 IXR platform details

OLT cabinets



7250 IXR-e (1 RU/ETR)

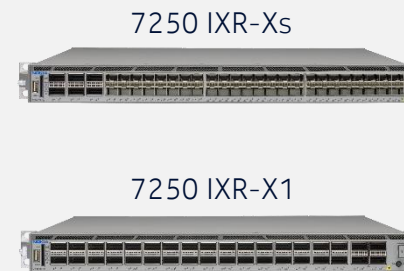
- 64G, 120G or 300G FD
- SFP28/SFP+/SFP 25/10/1GE
- 100G QSFP28

7250 IXR-e2 (1 RU/ETR)

- 100G / 800G FD
- SFP28/SFP+/SFP 25/10/1GE
- 100G QSFP28

Datasheet: www.nokia.com/asset/206825/

Central office



7250 IXR-X (4.8Tb/s 1 RU)

- SFP 50/25/10/1GE
- 100G QSFP28/400G QSFP-DD

Datasheet: www.nokia.com/asset/210319

Summary

Network-in-a-box

Complete solution, out of the box

- State-of-the-art platforms and technology
- Network access, aggregation and core

Configurable for any deployment

- Flexible scaling from 1K to 1M+ homes
- Full portfolio of rich service features

Future proof, evolves with your needs

- Multi-rate GPON, XGSPON and 25G PON
- 100G, 400G and 800GE IP routing / BNG

Save valuable time and money

- Pre-validated solution, one stop shopping
- BEAD compliant, made in America

To learn more please visit: www.nokia.com/fixed-networks/rural-broadband/network-in-a-box/

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