Global vision.

Local knowledge.

Cisco Connect 2019

Serbia, 19th March 2019

Cisco Connect 2019 Service Provider

Next Generation Cable Access Architectures

Transforming Cable Infrastructure Owners to Services Owners

Bojan Nedelcev
Product Sales Specialist Cable Access - South East Europe
March 19, 2019

Agenda

Your Cable Access journey

- The new normal: Digitization is changing everything
- What this means for your business
- What your business could look like tomorrow
- An introduction to Cable Access Services
- Others ‘know’ the network. We built it.
- The Cisco Difference

Cable Fast Facts

Global IP Traffic
is expected to triple from 2015 to 2020

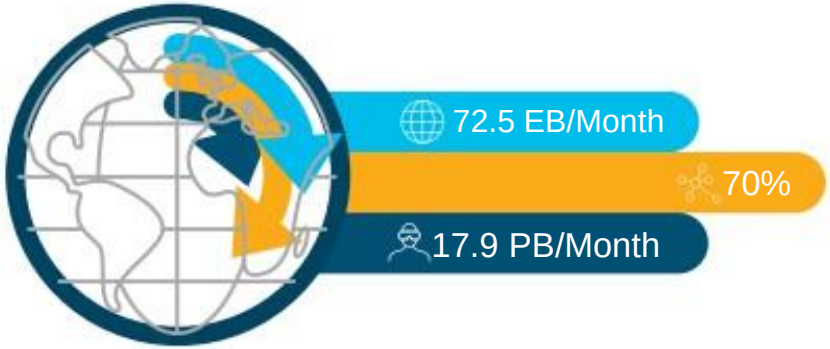
IP Video Traffic
will account for 82 percent of traffic by 2020, up from 70 percent today

Virtual Reality
traffic will increase 61-fold between 2015 and 2020

Wearables
will increase 5x by 2020, up from today's 97 million devices that are generating 15 petabytes per month

UHD TV (4K TV)
will be 20.7% of IP VoD traffic in 2020, up from 1.6% today

Look back at 2016



Sneak peak into 2020

The new normal: Digitization is changing everything

Digitization is disrupting every business model

amazon.com	UBER zipcar	Spotify PANDORA	NETFLIX hulu
Retail	Automotive	Music	Television/Media
airbnb	Google facebook	TESLA MOTORS	GE imagination at work
Hotel	Print advertising	Connected cars	Connected aviation

Are your cable access networks ready?

- Silo-based and unmanageable
- Multiple overlay networks
- Extensive power and cooling expenes
- Difficult to scale up

Your challenge

- Meet the growing demands of customers
- Take on over-the-top and cloud-based competition

What We're Hearing from Service Providers

Speed, Flexibility, and Profitability

Redefining The Cable Network

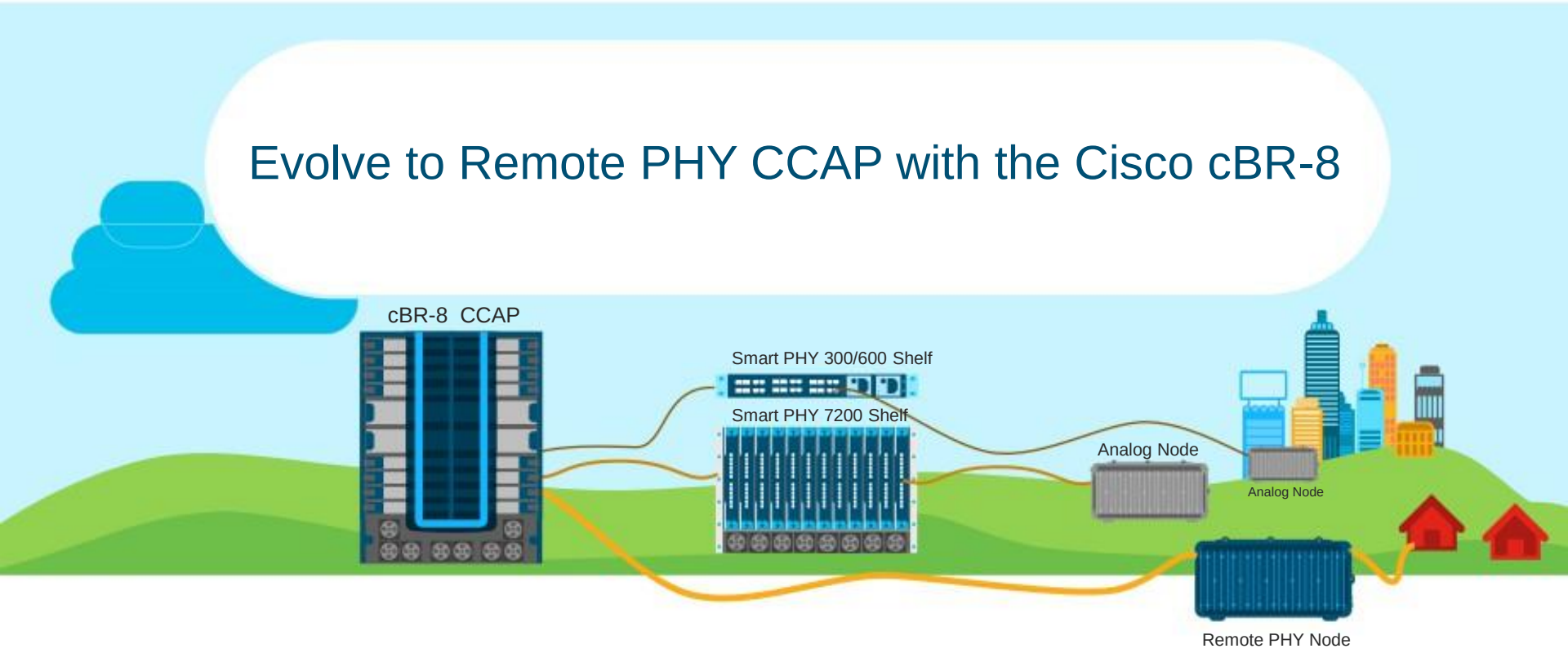
Digitalize, Virtualize, and Automate

Digital + Software & Automation

- Digitalize the access network with Remote PHY and a robust IP network
- Ensure interoperability, standards based, open protocols, ready to leverage automation
- Benefits: Lower operating costs and deploy new services faster

Transform the Cable Headend

Cisco Remote PHY Portfolio



Cisco Remote PHY Portfolio

cBR-8 RPHY Core

- iCCAP or RPHY Core
- Enablement with D-PIC

Remote PHY 7200 Shipping

- Medium to large hubsite
- 7RU 72SG
- 12+1 HA

Remote PHY 300/600 Shipping

- Small hubsite
- Compact design
- 1RU 3/6 SG

GS7000 iNODE w/ Remote PHY 120

- High-output, fiber deep node
- Intelligent Node
- 1x2 RPD

GS7000 BAU w/ Remote PHY 220

- Standard output, BAU node
- 2x2 RPD

FDX Capable iNODE w/ Remote PHY 120

- FDX Capable Node
- Will operate in Legacy or FDX Mode (future)

Use Case 1 - RPHY Shelf

Remote PHY Shelf

Compact Shelf

High density Shelf

Med/Large Hub RPHY Shelf

Small Hub RPHY Shelf

ax

Home/Offices

Consolidation to leverage CMTS Capacity

- Provides hub site consolidation
- Increased scaling and density
- Lower power consumption and smaller footprint
- Increase in supported segments on the CMTS (2x/4x)
- Enables DOCSIS 3.1 for rural regions
- Linear fiber from headend for better MER and D3.1 modulation profiles
- Enables transition to Cloud Native CMTS

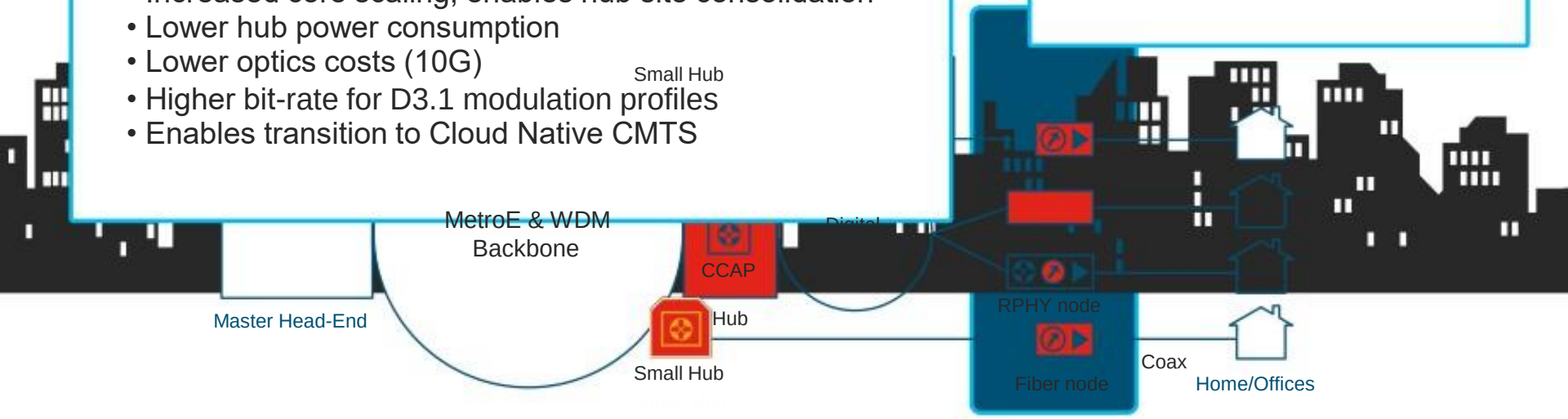
Use Case 2 - RPHY Nodes

Consolidation to leverage CMTS Capacity

- Enables Ethernet to the node which increase plant value
- Increased core scaling, enables hub site consolidation
- Lower hub power consumption
- Lower optics costs (10G)
- Higher bit-rate for D3.1 modulation profiles
- Enables transition to Cloud Native CMTS

Remote PHY Nodes

SHO Node BUA Node iNode



The Cisco Remote PHY Solution

- Open Standards compliant, the only *standard* in town…
- First company to submit R-PHY Code for the OpenRPD Project
- Only company to be at *EVERY CableLabs InterOp* with both a core and RPD
- First company to bring multiple Remote PHY Devices (RPDs) to market
  - GS-7000 1x2 and 2x2 BAU RPD
  - RPD Shelf in compact and full HA modular form factors
- Minimal Core Changes
  - Change the RFPIC to a DPIC on the cBR8
  - Instantly doubles the number of Service Groups to 16 per LC
  - Virtual Splitting and Combining capabilities

Interoperability - Core and RPD

cisco Compatible

Cisco Core

CISCO

ARRIS

MAXLINEAR

harmonic

TELESTE

VECTOR TECHNOLOGIES

intel

casa systems

BROADCOM

PBN

BKtel

vecima

SED
a division of CALIAN Ltd.

Cisco RPD

casa systems

ARRIS

CISCO

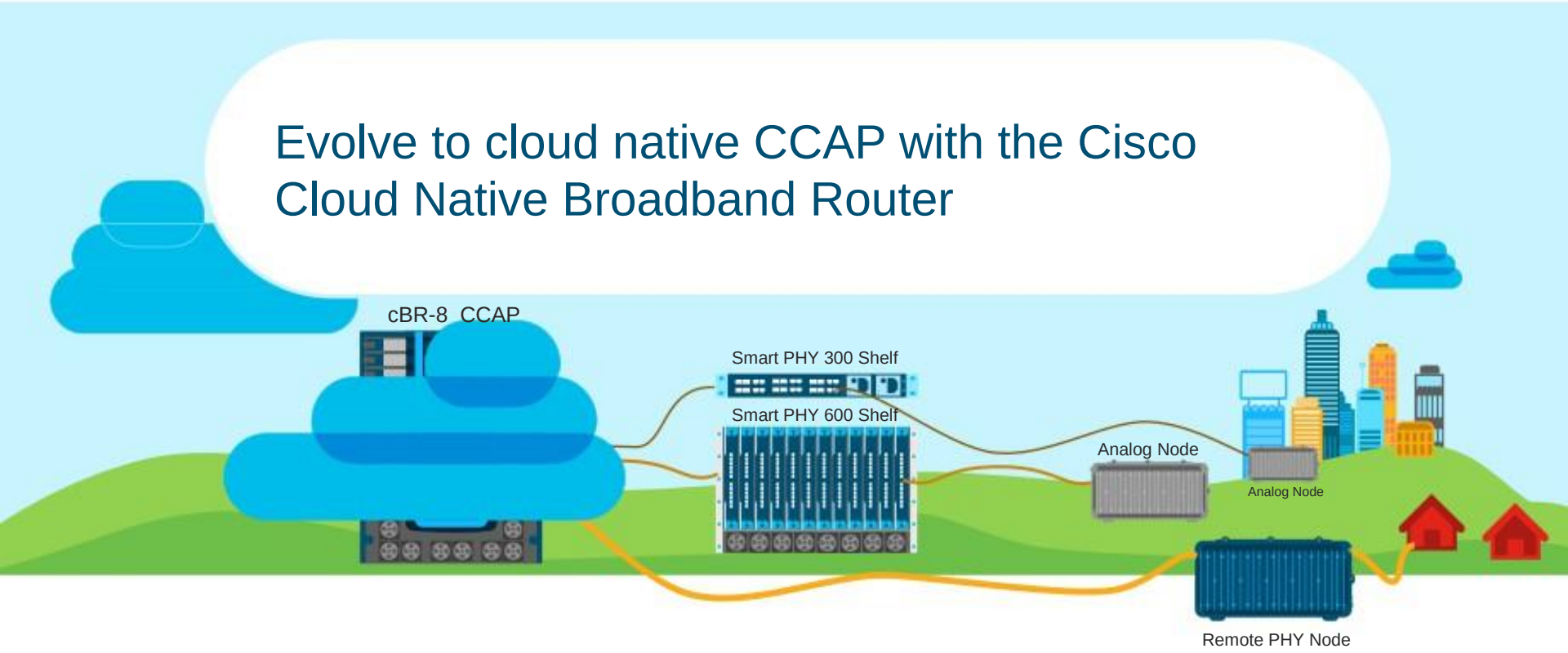
harmonic

Cloud Native Broadband Router cnBR

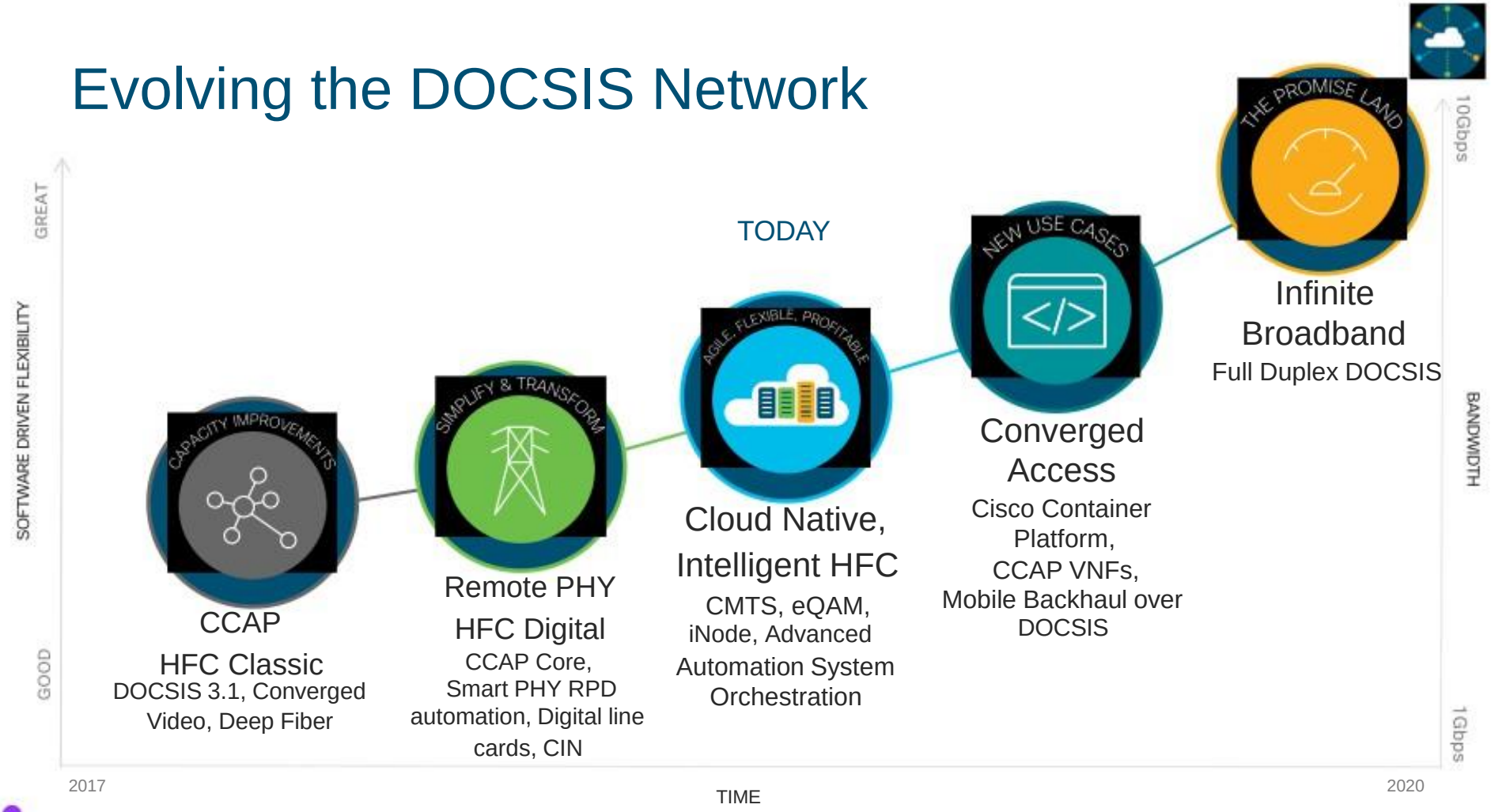
Transforming Cable Infrastructure Owners to Services Owners

Transform the Cable Headend

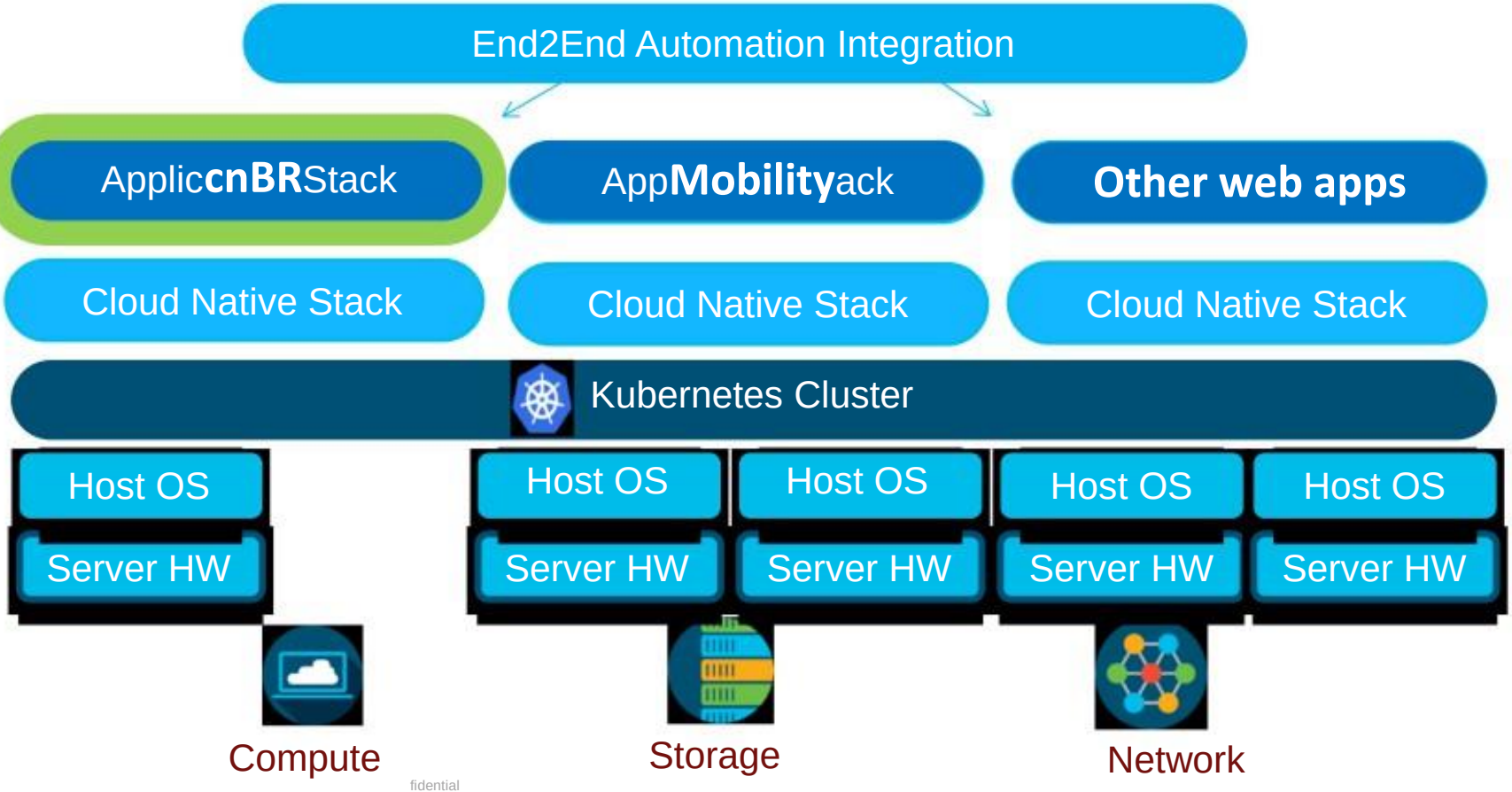
Evolve to cloud native CCAP with the Cisco Cloud Native Broadband Router



Evolving the DOCSIS Network



Enables Convergence At The Edge



The Cisco Cloud Native Broadband Router is…

- Not a lift and shift of legacy, monolithic software
- Not tied to proprietary hardware
- Is open standards based, modular, elastic, composable, and resilient

Why Cloud Native?

Definition

An application designed for the cloud consisting of multiple microservices, that are elastic, resilient, and composable.

Benefits

- Service velocity
- Streamlined Operations (DevOps)
- Non-Stop Service
    - Inherently Resilient and Elastic Scaling
    - In-production validation early and often
- Modular and composable microservices
- Built on open standards

Why Cloud Native versus Virtual Machine

Cloud Native Benefits

Scale Capacity

Operators need the ability to quickly scale network resources and meet the increasing demands for connectivity and bandwidth

Demand for New Services

New market opportunities like the Internet of Things (IoT) and mobility are fueling the need for operators to evolve

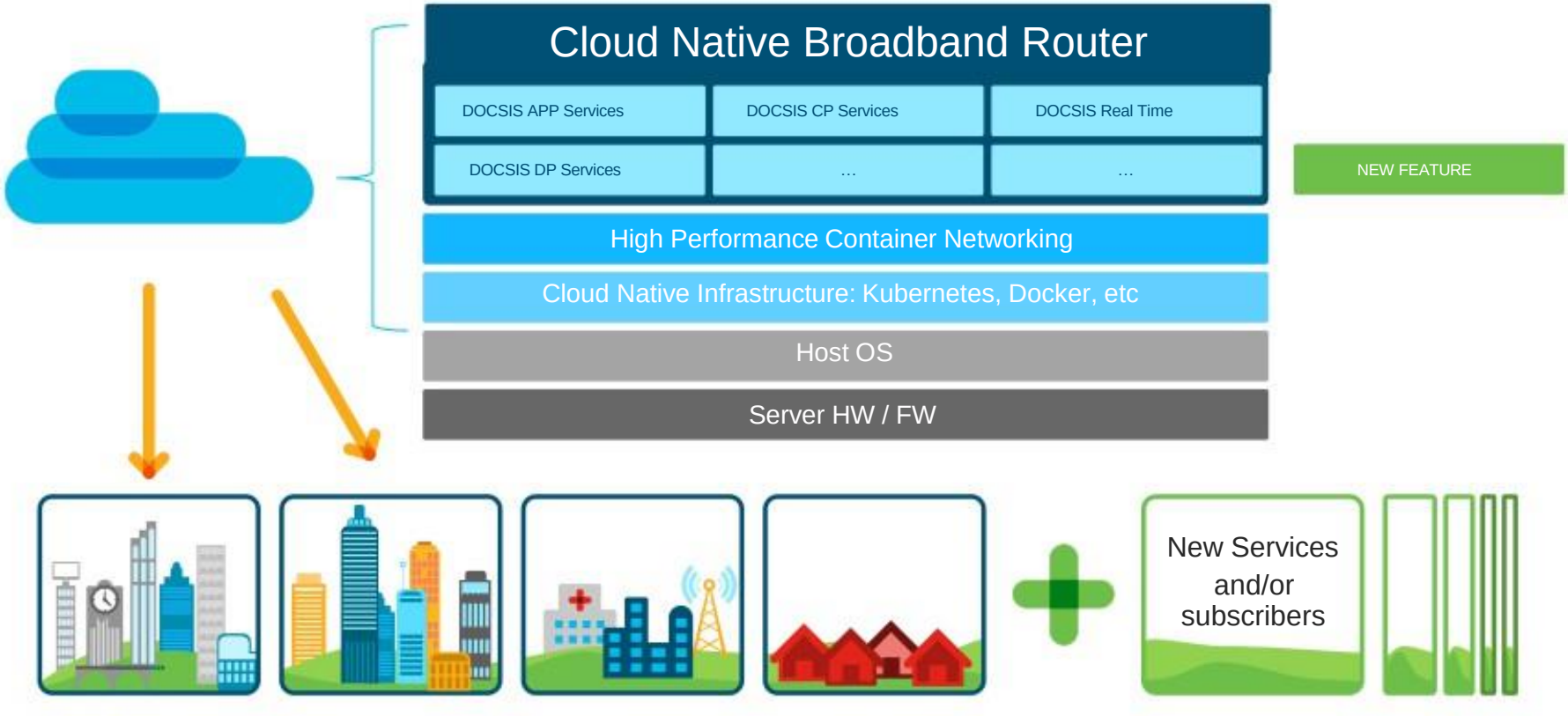
Need for Lower Cost

The need to continue to lower the cost per bit through efficiency, automation, less power, less physical space requirements

Need for Resiliency

Networks are always on and operators are challenged with monitoring, maintaining, and remediating faults, ensuring service availability and reliability for their end users

Transformational



Using Same Building Blocks

- Versatile & Scalable from small to large
- Easily plugs into existing networks
- Uses consistent building blocks throughout
  - Same cnBR software
  - Stackable servers / routers / switches
  - Versatile R-PHY Shelf and R-PHY node products

NCS 55A1-24 or 36-SE

UCS M5 C220 or C240

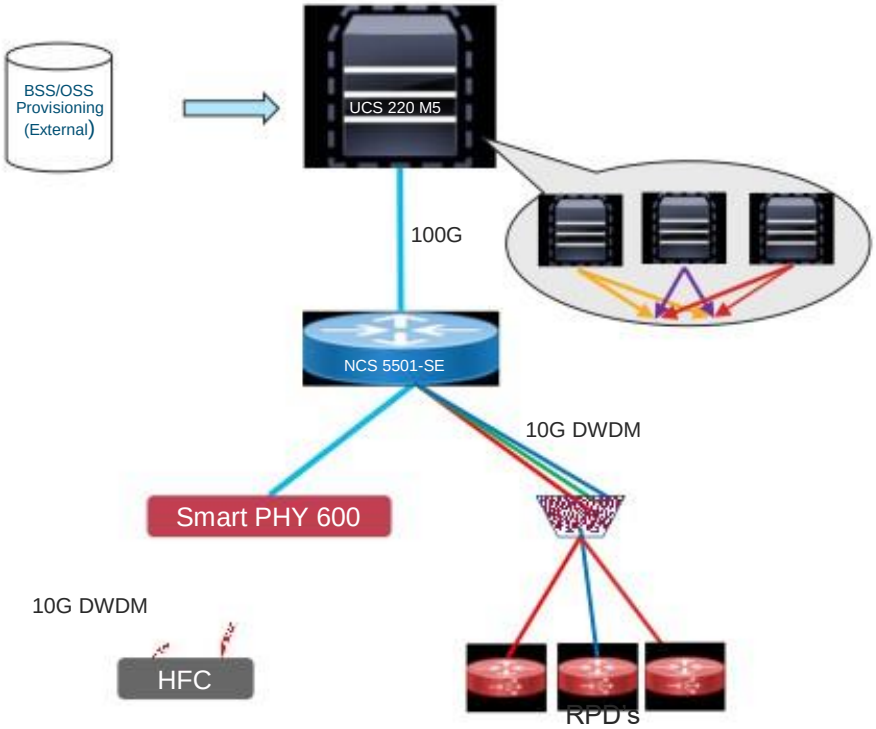
NCS 5501-SE

SmartPHY 300/600

All hardware available today!

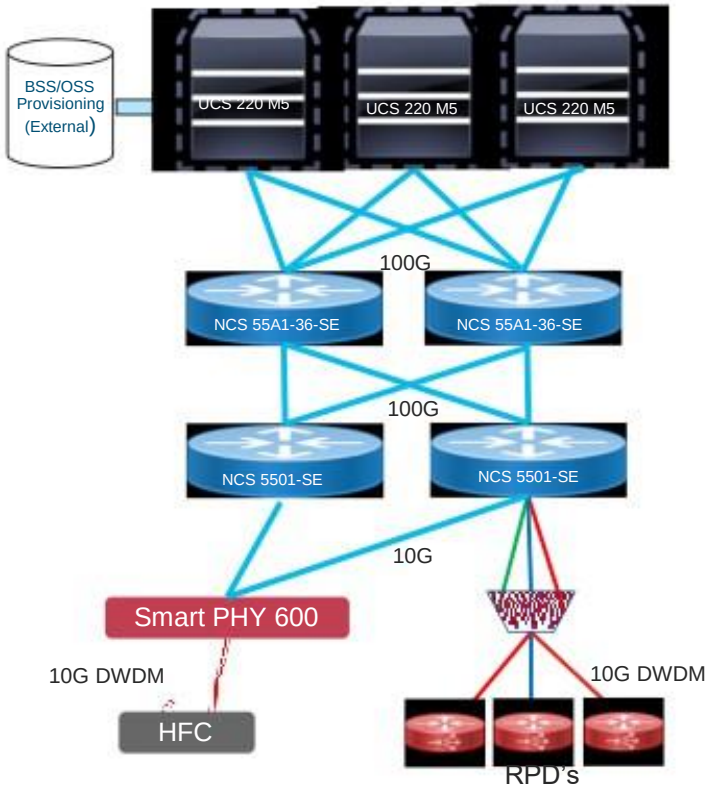
cnBR: Entry Level System, No Redundancy

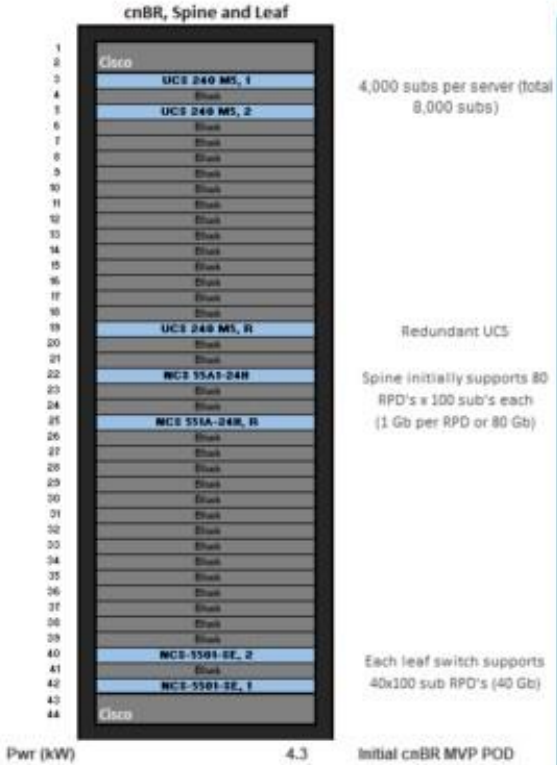
Applications: lab systems, small customer trials, small deployments



- UCS C220 M5 Rack Server
- 1 Switch
  - NCS5501-SE (4x40/100G+40x10G)
- Optional hardware - RPDs, nodes
  - RPD Nodes: GS7000 iNode, GS7000 SHO
  - RPD shelves; Smart PHY 600
- Software
  - cnBR including cnBR dashboards
  - Kubernetes and other 3rd party licenses (via Cisco CCP)
  - SmartPhy for configuring RPDs and iNodes
  - IBU licensing including special rate for lab use and small pilot field trial

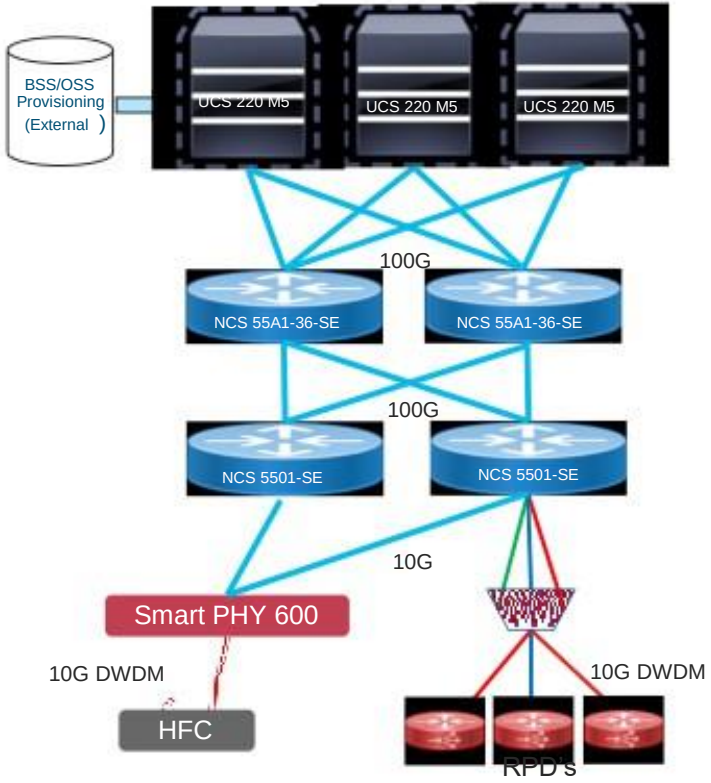
cnBR: Entry Level System, High Availability
Applications: First limited scale deployments with HA

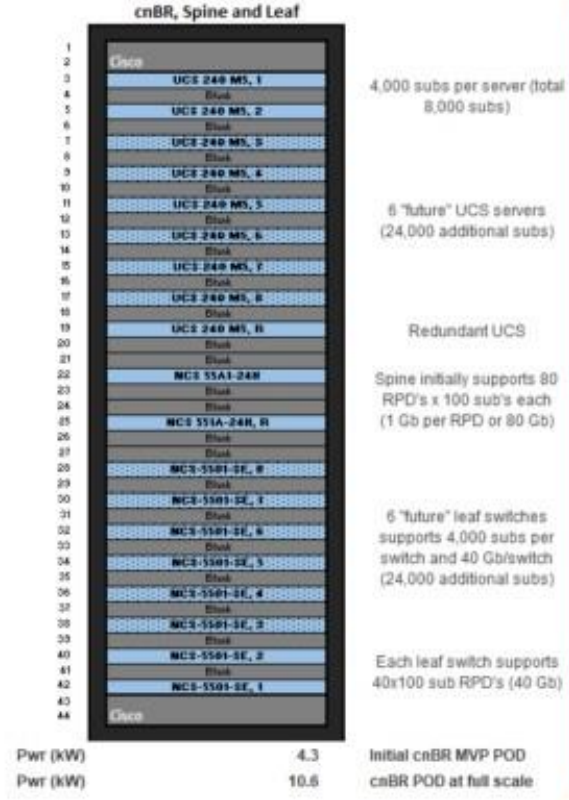




- The 2xUCS MVP offering is initially deployed in the Headend of a small operator
- The initial cnBR POD is scaled to support 8,000 subscribers
  - (4,000 subs per UCS)
- The two NCS-55A1-24H chassis are using 8 of the (24) 100G ports that are available on the Spine
- Two 40 port leaf switches support 80 RPD's and 100x10 Mb subs per RPD
  - (1 Gb/port)

cnBR: Entry Level System, High Availability
Applications: First limited scale deployments with HA





- The 2xUCS MVP offering is initially deployed in the headend of a small operator
- The initial cnBR POD is scaled to support 8,000 subscribers (4,000 subs per UCS)
- The two NCS-55A1-24H chassis are using 8 of the (24) 100G ports that are available on the Spine
- Two 40 port leaf switches support 80 RPD's and 100x10 Mb subs per RPD (1 Gb/port)
- Additional RPD's could be supported by adding Servers and Leaf switches above and below the Spine
- The cnBR POD supports 32,000 subscribers at full scale
- The bandwidth per POD increases from 80 Gb to 320 Gb at full scale (8+1UCS servers)
- The power on the cnBR POD increases from 4.3 kW to 10.6 kW at full scale

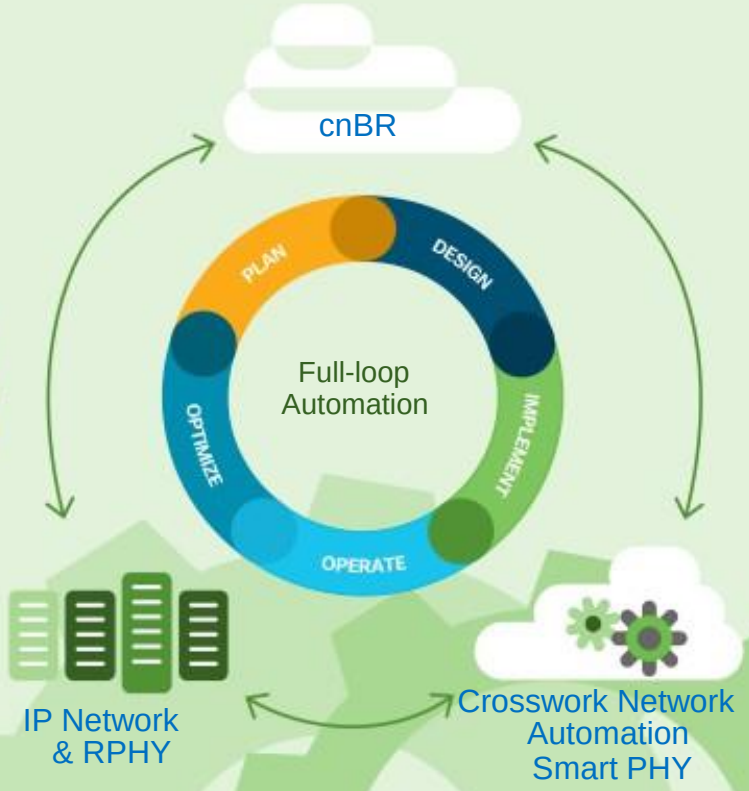
Cloud Native Broadband Router | Automation & Analytics

Purpose

Designed for automation and streamlining operations to manage complexity and unlock feature-service velocity.

Benefits

- Designed to be simple and easy to automate
- Open source tools and development
- Leverage the agility that web/OTT has benefited from
- Provision and scale new services efficiently



Comprehensive Portfolio For Transformation

Automation

- Crosswork Network Automation
- Smart PHY

End to End

HARDWARE

Top to Bottom

SOFTWARE

Transform your entire network with Cisco

Services

Multicloud

- Cisco Container Platform
- CloudCenter
- UCS, HX

IP Edge

- NCS Series
- ASR 9000 Series

CCAP

- Cloud Native Broadband Router NEW
- cBR-8

IP Aggregation

- NCS 5500 Series
- NCS 500 Series

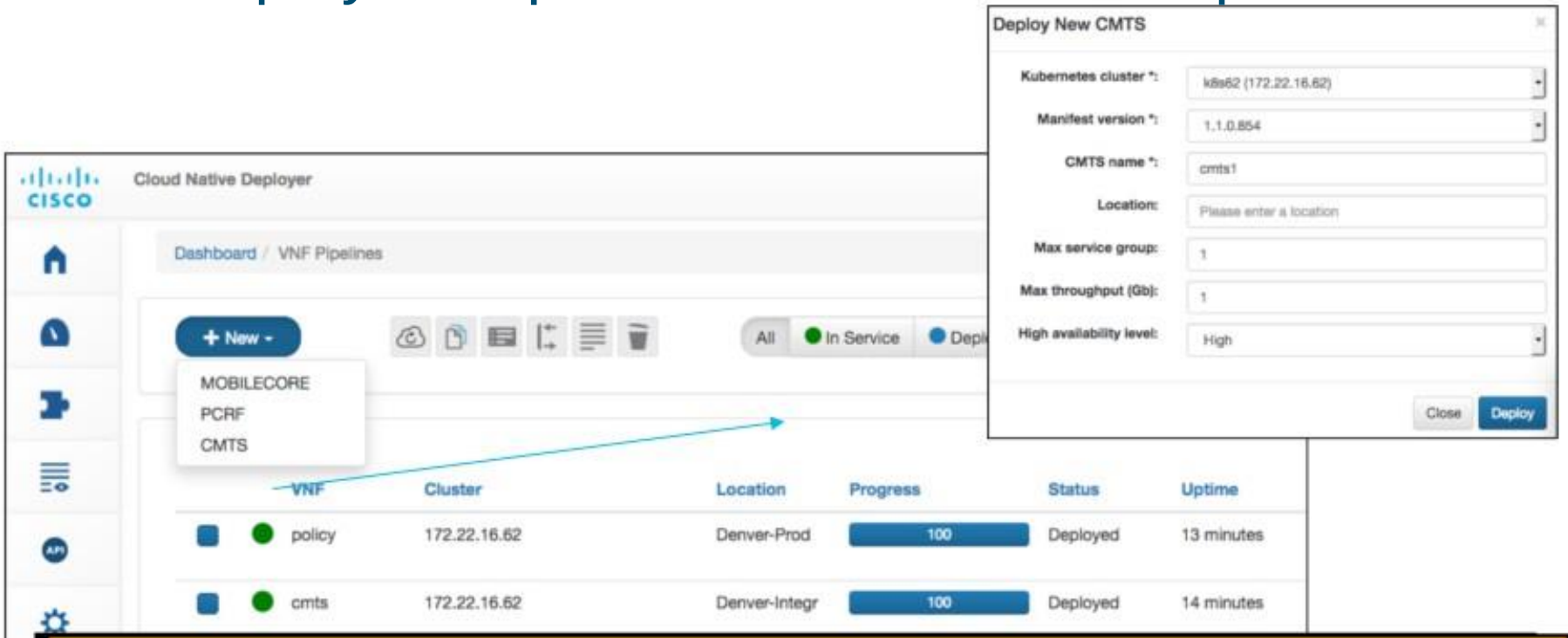
Digital Access

- Remote PHY for Nodes
- Remote PHY Shelves

Hybrid Fiber Coax (HFC)

- GS7000i SmartNodes

cnBR Deploy -Simple, Fast, Consistent Experience



Simple - One-button deployment and lifecycle management

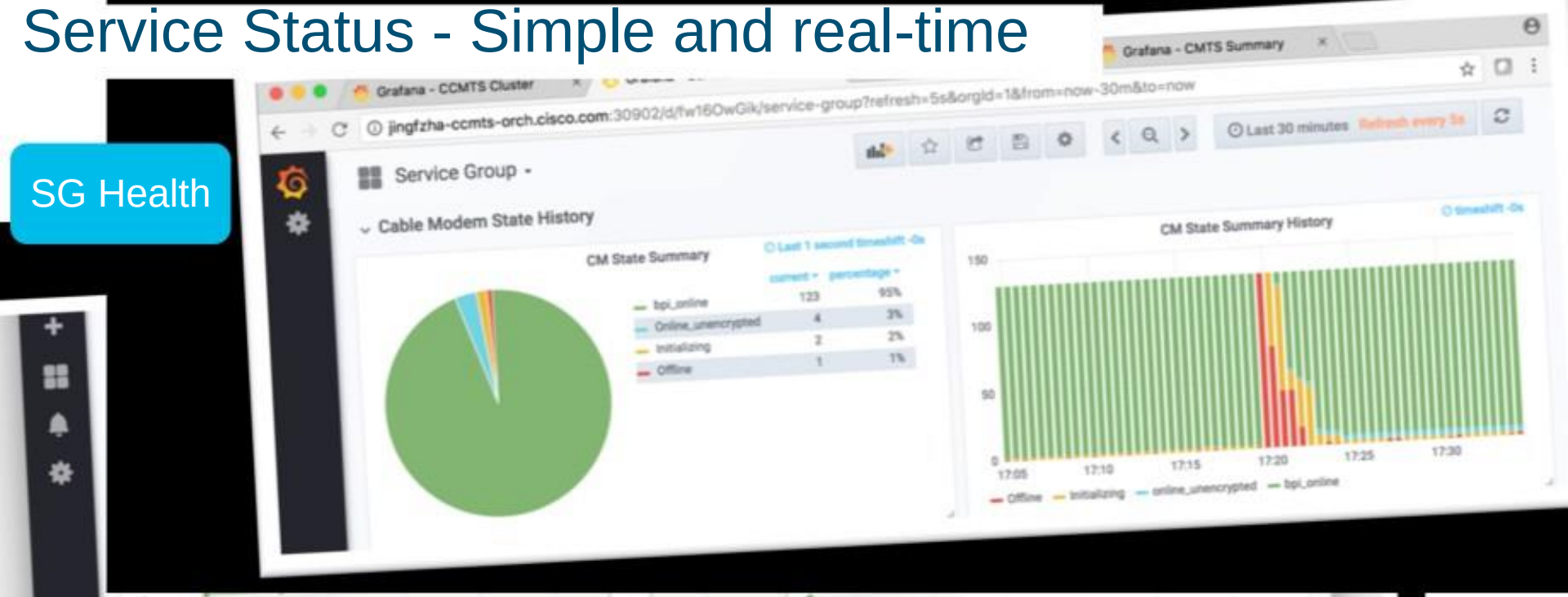
Fast - New cnBR service, from clean K8s cluster to CMs online, in <15 mins

Deployment Monitoring
Consistent Health and Status

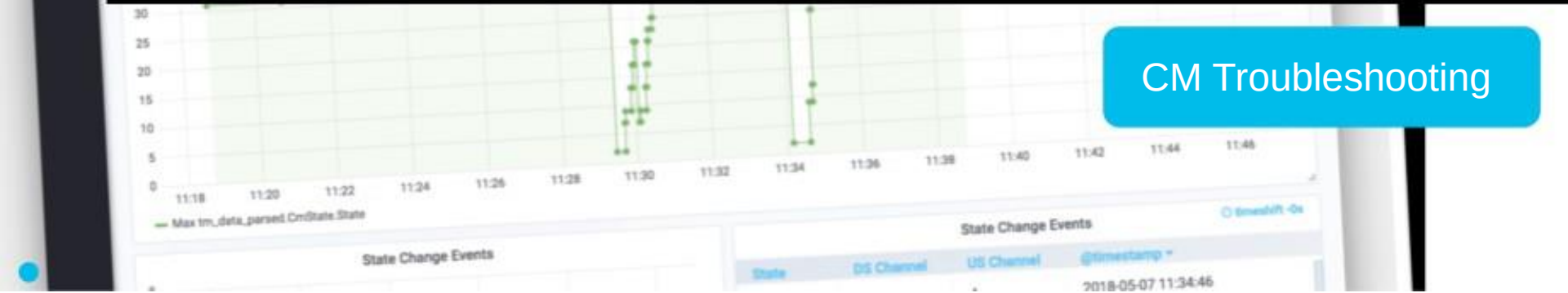
Application	Stage	Cluster	VNF	Layer	Container	Status	Metrics	Logs
PCRF	production	172.22.16.62	policy	...		Ready		
				pcrf	...	Ready		
CMTS	production	172.22.16.62	cmts	...		Ready		
				app	...	Ready		
				cp	...	Ready		
					cmts-cp-arpndproxy-v000-lwwl9	Running		
					cmts-cp-cmmgmt-v000-dp0kz	Running		

Service Status - Simple and real-time

SG Health



CM Troubleshooting



Unprecedented Insight Into Operations

- Streaming vast array of telemetry data
- Data visualization with modern tools
- Actor-based, easily customizable Dashboards
- Ability to rapidly pinpoint problem areas

Popunite anketu, preuzmite poklon na pultu „Informacije” i učestvujte u izvlačenju nagrada na zatvaranju konferencije

Sponzori

Platinum sponzor:

MDS

Zlatni sponzori:

asseco

COMTRADE DISTRIBUTION

ComuTel

INGRAM

SAGA 30

Srebrni sponzori:

algotech

AMBER SOFTWARE

COMTRADE SYSTEM INTEGRATION

comAT

EPSON EXCEED YOUR VISION

TeleGroup

Learning partner:

Fast Lane


CISCO