

NHP & The next-gen compute ecosystem

Unlocking the rollout of future technologies with edge and AI

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*“With 5G expanding and 6G on the horizon, clinging to classic infrastructure models will only slow us down.
It’s time for NHP to lead—not just support—the transformation.”*



Outdoor Coverage

Built-to-Suit

Colocation

Flexi Tower



Indoor Coverage

In-Building Solutions

Wi-Fi-as-a-Service



Coverage-as-a-Service

Outdoor CaaS

Indoor CaaS

Enterprise Connectivity*



O&M-as-a-Service

O&M-as-a-Service*



Smart Infrastructure

Smart Pole & Kiosk

EV Charging Infrastructure*



TAWAL Connect

Fiber to the Tower

Microwave to the Tower



NetCo Services

Private Networks*

Network-as-a-Service

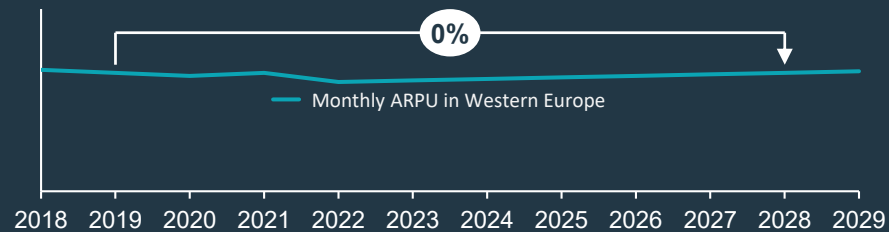
Infrastructure-as-a-Service (COTS)

Pure TowerCo

Becoming NetCo

Technology is growing increasingly complex and CapEx-intensive, while telecom services are becoming increasingly commoditized.

MNOs aim cost reductions, but active sharing is not desirable



- TCO for active equipment continues to climb
- ARPU remains flat or declining
- Escalating spectrum costs are further inflating the overall expense



Reality Check

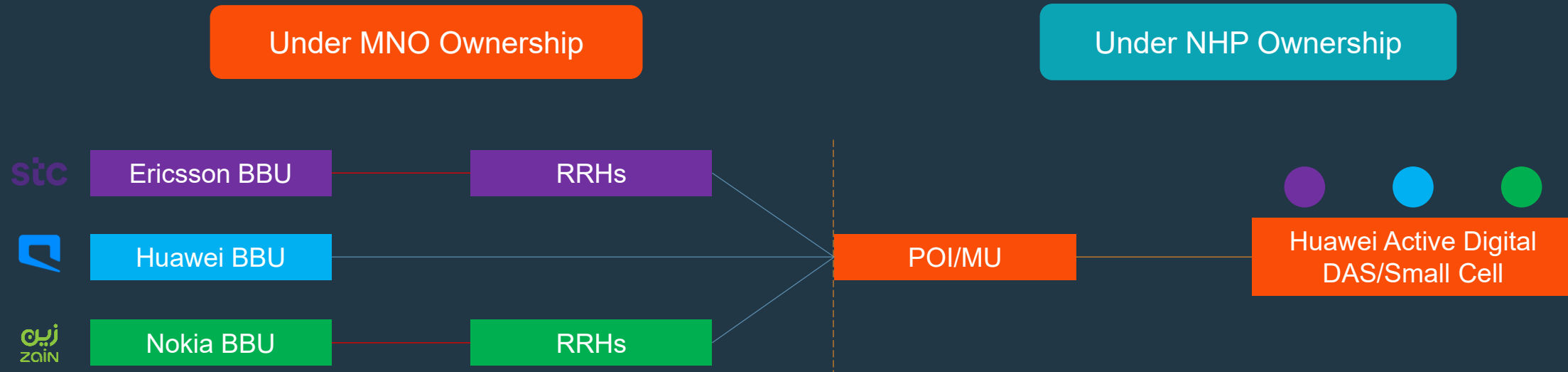
- Majority of global 5G deployments still rely on 4G core (NSA)
- C-band spectrum dominates, balancing coverage and capacity
- 5G specialized use cases are still below expectations



6G Preparations

- Further increase in Capex and OpenX requirements
- Propagation challenges exceed those of current mmWave
- Heavy reliance on software-based upgrades (Cloud RAN) Relevance

Current IBS architecture and Challenges



Legacy / Traditional RAN Challenges

- Requires **separate racks** and a **large physical space**
- High power consumption** and **intensive cooling needs**
- Results in **increased CapEx and OpEx**
- Limited scalability** — not future-ready for emerging technologies
- Creates **strong vendor lock-in** and limits flexibility

How can we overcome the challenges?

- Minimize the HW footprint
- Maximize infrastructure sharing
- Reduce OPEX and CAPEX** by optimizing power, space, and maintenance resources
- Align with Saudi Vision 2030** to enable a sustainable, future-ready digital ecosystem

Currently best Possible options: NHP Models

1.

MOCN



BBU

Same vendor
Active Digital
DAS/Small Cell

2.

MoRAN



BBU

Same vendor
Active Digital
DAS/Small Cell

UK JOTS under the NHP management

3.

Active infrastructure sharing with network differentiation ✓



CU/DU

O-FH

POI/MU

ORAN compliant Active
Digital DAS/Small Cell

- Shared spectrum
- Single Vendor
- No network differentiation
- No MNO control as heavily relying on NHPs
- Compromises on network strategies

- Approx. above all challenges
- Different Spectrum
- Significant reduction in TCO

Unlocking Efficiency and Flexibility Through Cloud-Native and Open Fronthaul Architecture.

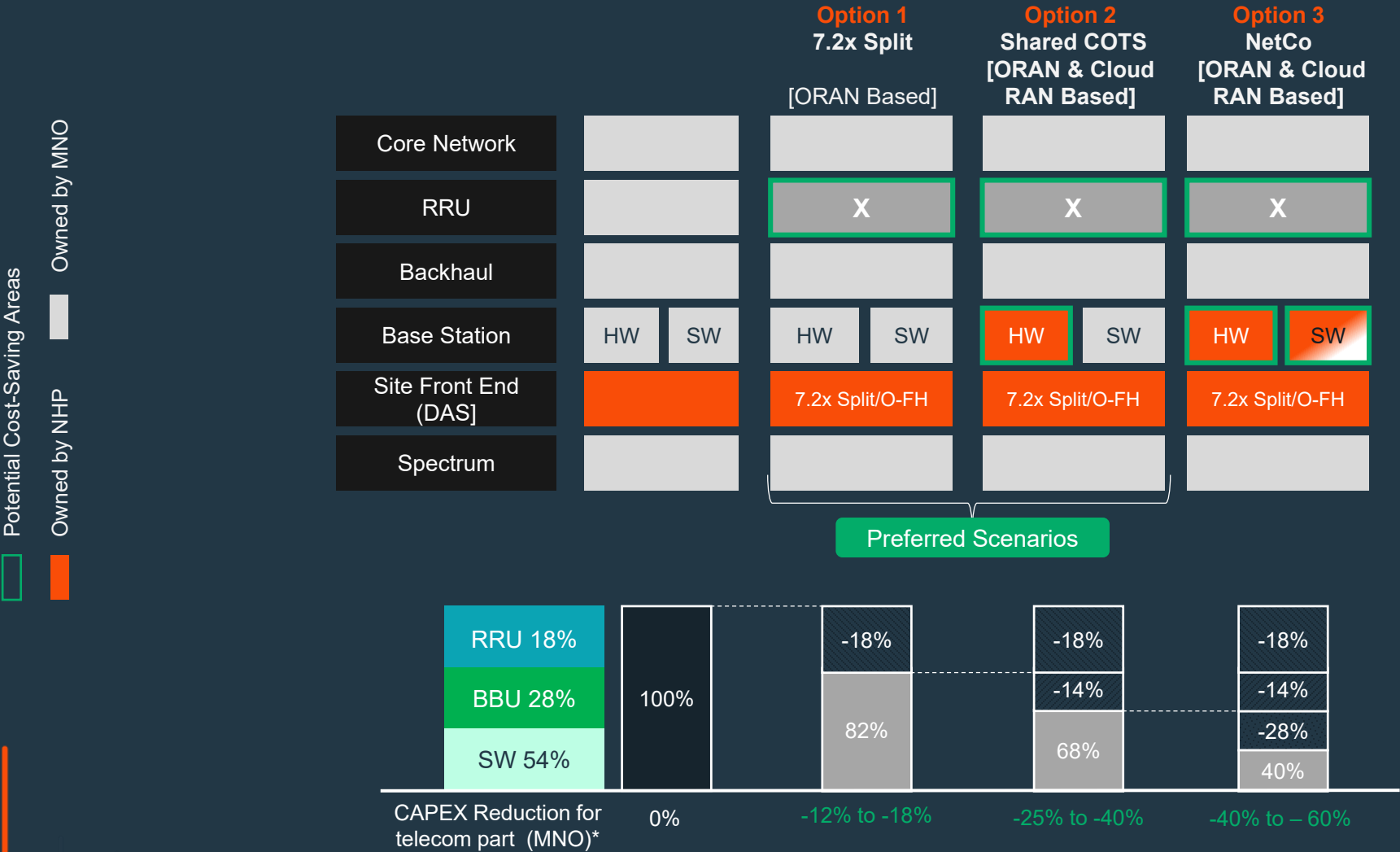


Minimum Requirements: Cloud Native RAN and Open Fronthaul

Proposed Cloud / Open RAN Solution Benefits

- Optimized space utilization — minimal hardware and rack footprint
- Reduced power and cooling requirements for MNO equipment
- Significant reduction in CAPEX and OPEX through shared, software-driven infrastructure
- Architectural flexibility to adapt to diverse deployment scenarios
- Enhanced network control and visibility for operators
- Vendor choice freedom — deploy preferred RAN vendors within a shared environment
- Future-ready platform supporting next-generation technologies
- Edge computing with AI enablement for MEC and private 5G use cases

A comprehensive OpenRAN & Cloud RAN solution could result in up to a 60% reduction in CAPEX.

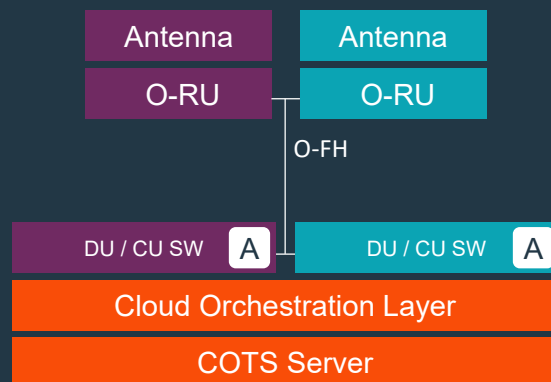


*This is an estimated and high-level cost analysis for a 3-sector site. The Opex will increase depending on the DAS solution.

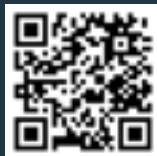
Option 2: To realise the full potential of this vision, further OpenRAN & Cloud RAN-based NW sharing innovations are necessary (Macro, Micro & IBS).

1. Today: Ready for deployment

(Multi-Tenant Solution with Single RAN vendor)



- RAN Management & relevant costs by Lead Host
- MNOs have full control on network
- cost-efficient solutions



LEAP

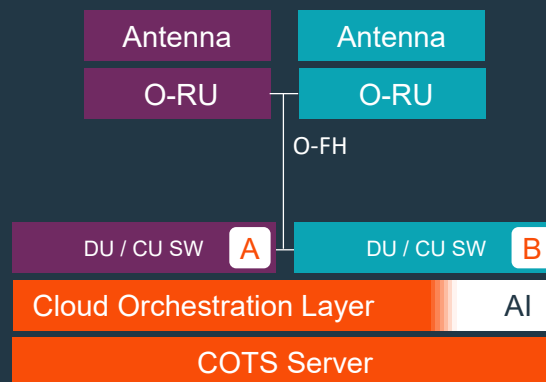
Showcases

DELL Technologies NOKIA

*future research area of the O-RAN Alliance.

2. Tomorrow: Testing + R&D needed

(Multi-Tenant Solution with Multi-RAN vendor)



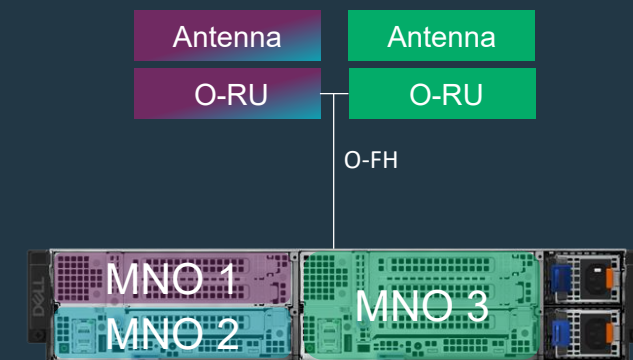
- Individual RAN SW choice creates MNO service differentiation potential
- Higher number of Tenants
- More Flexibility

White Paper



3. In the Future: R&D needed

(Multi-Tenant Shared Macro O-RU Solution with Multi-RAN vendor)



- All RAN-elements shared incl. Antenna & O-RU* creating additional savings
- Unified infrastructure, thus more sustainable and less visually polluting

Global R&D Award
recognizing significant
Research, Development
and Innovation Activity



R&D Award



Different RAN Software Vendor

Same RAN Software Vendor

Neutral Host

MNO 1

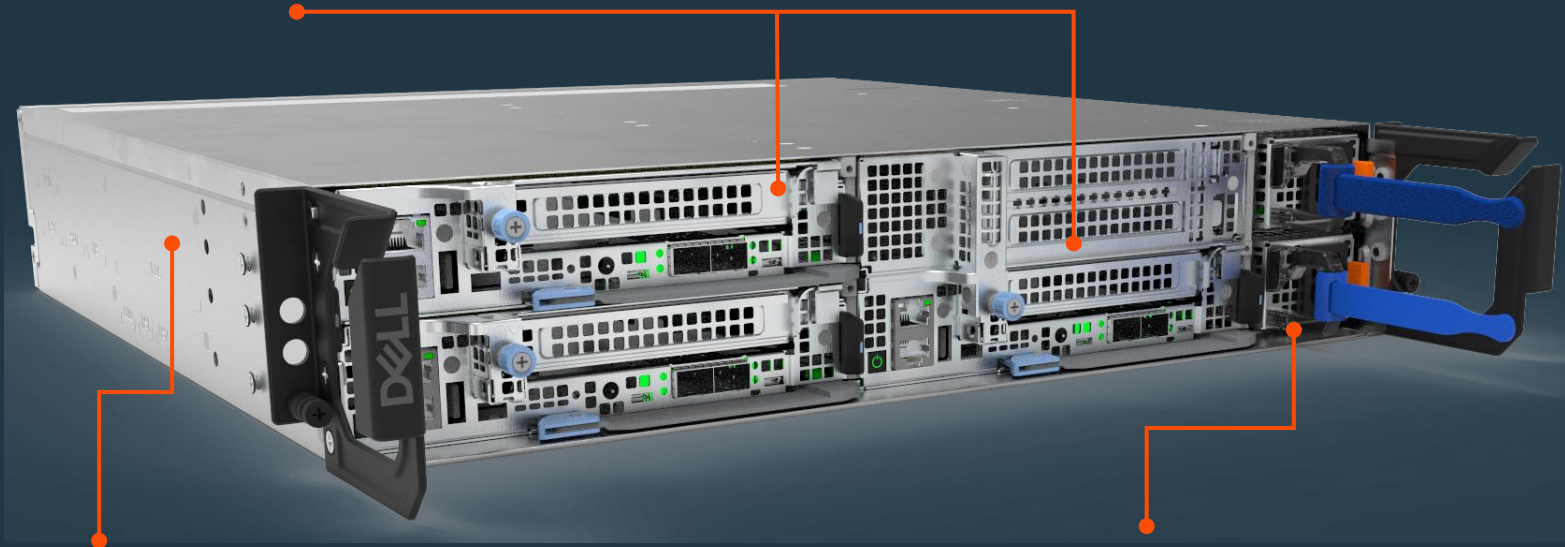
MNO 2

MNO 3

Dell PowerEdge XR8000

Broad range of configurability supporting up to 4 nodes with flexible I/O sled options

- Two 2U half-width sled configurations for Edge / Far Edge and GPU optimized work loads
- 1x 1U half-width sled configuration for dense compute and network edge optimized work loads

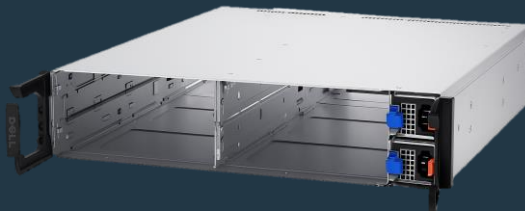


Single socket Intel Xeon per node

- Xeon Scalable processors up to 32 cores
- Xeon Enhanced Edge processors up to 32 cores

Dual 60 mm PSUs

- 48VDC options: 800W, 1100W, 1400W
- 100 to 240VAC options: 1400W, 1800W

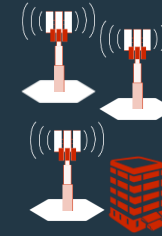


8610t 1U half



8620t 2U half

TARGET WORKLOADS



Centralized RAN

Optimized for centralized hub-sites / LDC deployments of aggregated Distributed Unit (DU) and Centralized Unit (CU) to support the transition to vRAN / Open RAN



Distributed RAN

Extensible to cell site deployments of DU and DU/CU in certain building cabinets and cell site shelters



Network Edge

MEC and UPF use cases to support network optimization, cloud services at edge, time sensitive verticals, applications for mobile users



Artificial Intelligence

Powered by Nvidia L4 GPU and Intel AMX accelerator XR8000 can do Video analytics, inferencing.



vBNG

Manufacturing & Retail Applications: video monitoring and PoS analytics, IoT device aggregation, AI inferencing, OT/IT translation



Leading the Cloud RAN breakthrough: 8720t Next-Gen COTS



Next-generation 2U compute sled for the XR8000 platform



More processing and IO capacity for RAN

Double the port density (from 12 to 24) and more than double the cores (from 32 to 64/72) for **exceptional performance** in Cloud RAN and telecom operations.

Higher performance, higher scalability and TCO reduction

For **first time** open compute can match the capacity of traditional BBUs, delivering unmatched performance and scalability for next-gen mobile networks. 50% less OpEx & CapEx.

Converge All Cloud RAN workloads in a single server

CPSs now have the resources to integrate **all Cloud RAN workloads**, simplifying hardware, boosting energy efficiency, and speeding up deployments.

AI at the Edge — Enabling Intelligence Everywhere, Overcoming Barriers to Scale.

Why AI at Edge



Managing Network Complexity

- Manual ops increase overhead
- AI at the edge cuts troubleshooting
- Boosts OPEX efficiency & 5G performance



AI-Powered Insights

- Edge data turned into business value
- Video analytics & inference opportunities
- New revenue from intelligent services



Ready for the Future

- AI-driven network & customer insights
- Fast response to market dynamics
- Growth beyond traditional services

Challenges for AI Deployment



Hardware Excellence

- Power-efficient for edge operations
- Simple to deploy and manage remotely
- Ruggedized for harsh environments



Resilient & Secure

- Reliable for mission-critical services
- Protects data at the edge
- Operates even with network disruption



GPU-Enabled Intelligence

- Runs LLMs, inference & analytics
- Optimized for real-time performance
- Compact and power-balanced design

XR8000: Intelligent Platform at the Edge: Key Use Cases



Industry

Manufacturing Pain points

- Late detection of anomaly leads to high production cost

How can AI help ?

Sensors can be trained on images and can infer any faults and inform operator

Video Analytics hosted on XR8000 can help customers keep a closer eye on business with real time insights.



Mission Critical

Healthcare Pain Points

- Emergency services are understaffed and needs analysis of medical reports in a short time

How can AI help ?

AI at edge in remote hospitals can help paramedics to analyze scan images and identify medical issues quickly

XR8000 with GPU can host 1000 AV streams at 720p30 for remote surgery



Traffic Monitoring

Traffic Monitoring Pain points

- In developing countries traffic management is becoming complex and difficult to manage

How can AI help ?

Using L4 GPU on XR8000 at the edge it is possible to customize modules such as camera stream management to improve the throughput of Video Analytics

XR8000 Use Case : Artificial Intelligence | Bring Intelligence to the Edge.

XR8000 – Edge



XR8000

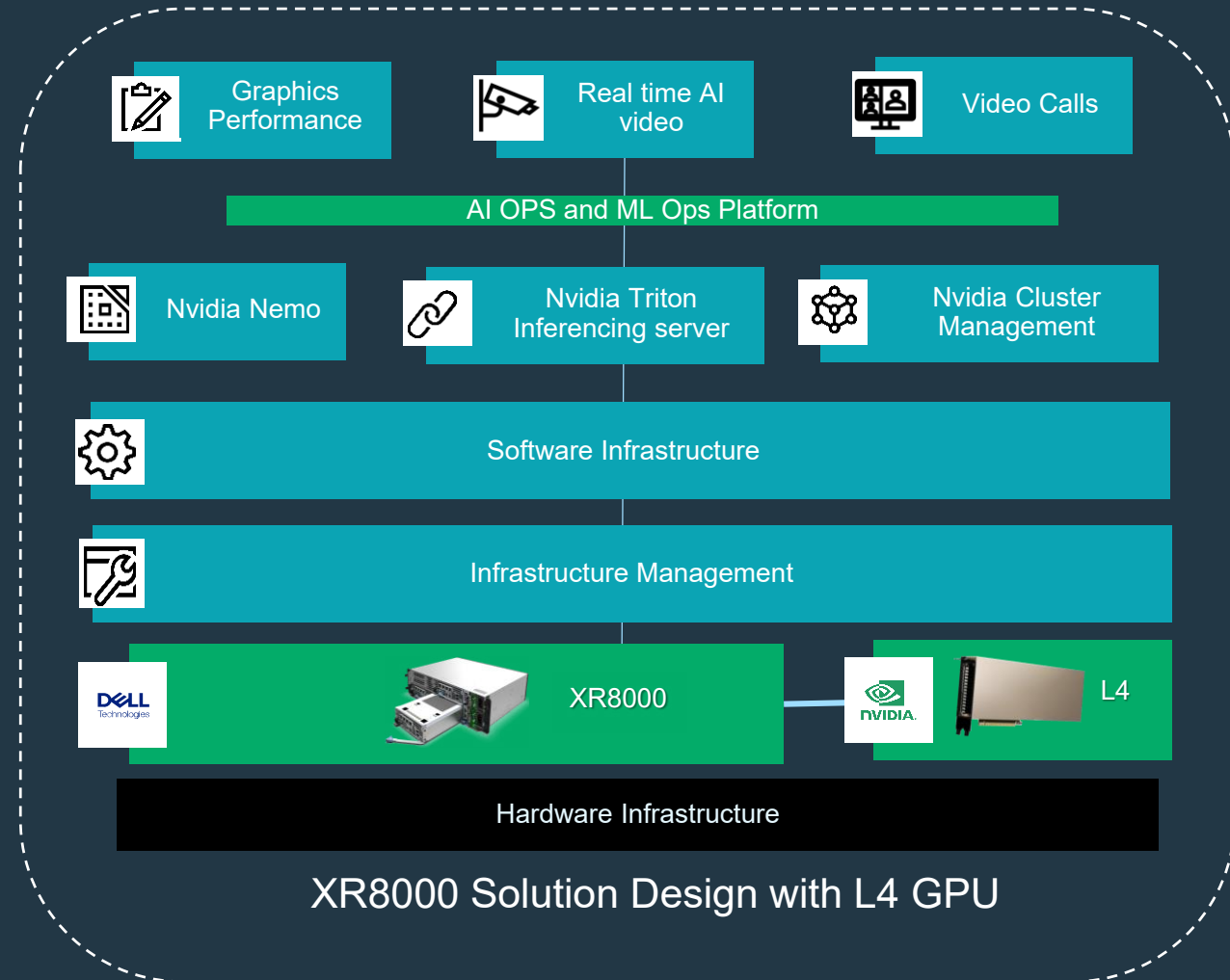
- L4 GPU Support with NEBS Level 3
- Air-Cooled
- Energy Efficient solution for use cases like deep learning , video transcoding, rendering data analytics

Nvidia L4 GPU



L4 GPU

- L4 GPU
- 72W | 24GB | 1 Slot FHHL
- Each XR8620t can host 3 L4 GPU
- Highest GPU dense ruggedized server at edge
- Use Case : Entry Tier Inference at edge
- Image and Video inference , Cloud Gaming and Computer vision





Thank You!