

# vRAN.NXt

Re-imagine & Re-invent

Network of the Future ( NoF)  
with RAN Disaggregation

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WHITEPAPER

# The Insurgence of Virtualization in RAN

The communications industry is entering the next phase of revolution fueled by hyper-automation and virtualization. Hyper-automation unlocks the maximum potential of an enterprise through the usage of technologies that aid in automation, simplification, design, and measurement. On the other hand, virtualization enables organizations to prioritize network traffic and use network resources to their maximum potential.

The convergence of the innovations on the technological front and transformation on the business front is opening up new avenues for telecom companies & enterprises empowering them to revolutionize their network systems. In a not-so-distant future, we shall witness the circulation of massive data streams, implementation of unprecedented IoT use-cases, and highly immersive AR/VR experiences that will spark the next revolution in the telecom industry. 5G, the fifth-generation wireless network will be at the forefront of this revolution, as all the above use-cases would be accentuated by 5G. Telecom companies have to make effective use of 'virtualization' since it is the key to reducing the footprint of hardware deployment needed to cater to these use-cases. Through inducting virtualization technologies, telecom companies can reduce the cost of their network infrastructures and enable a plethora of other benefits by completing service provisioning at a much faster rate.

Though there is a hype around network virtualization, there is no denial of the fact that network virtualization is maturing at a good pace. Considering the hefty investments that 5G shall entail, almost every operator (or communication services provider) across the globe is contemplating the idea of virtualizing their Radio Access Network (RAN). Software companies and OEMs (Original Equipment Manufacturers) are collaborating to develop joint solutions that disaggregate & virtualize the RAN with vRAN (Virtualized radio access network). vRAN will help operators to create networks that are flexible and adaptable, thereby making them well-equipped for the future. Several industry-wide initiatives (the O-RAN Alliance and the Telecom Infra Project) have also been launched to promote the adoption of disaggregated RAN. Initiatives like the O-RAN Alliance focus on the development of open, intelligent, virtualized, and interoperable RAN specifications. The new O-RAN standards would be instrumental in the creation of a more competitive and vibrant RAN supplier ecosystem.

## What is virtualized RAN (vRAN)

vRAN is a solution that transforms the RAN from a proprietary hardware-based network to a software-defined network; making it more flexible, agile, and cost-effective while eliminating vendor lock-ins.



### Benefits with virtualized RAN (vRAN)

The vRAN stack virtualizes & splits network functions of the Base Band Unit (BBU) into real-time vDU (Virtualized Distributed Unit) and non-real-time vCU (Virtualized Central Unit). This enables smart and effective control over the network resources, provides higher flexibility (and scalability) in the network, and results in a massive reduction in the network deployment time.

The approach not only reduces the dependence on specific vendors but also results in a drastic reduction of CapEX and OpEX.

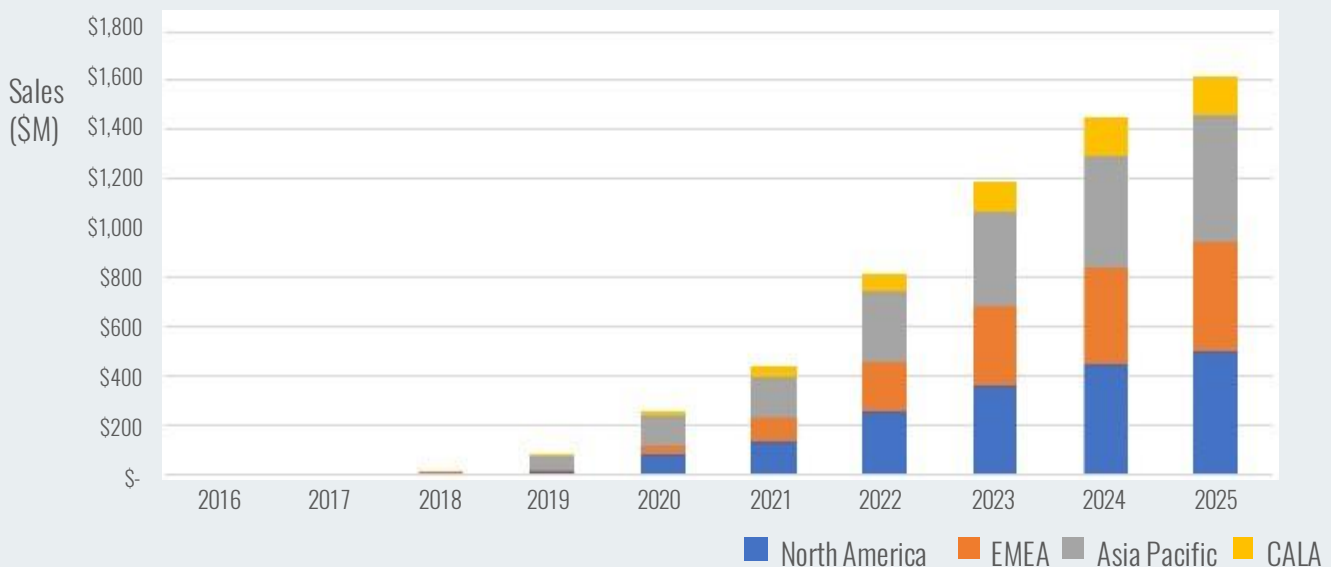
## Opportunities Galore - 5G vRAN

For operators that have 5G on their roadmap, vRAN is an indispensable step towards the future of network transformation. Virtualized 5G RAN will bring down costs & introduce the much-needed flexibility in the networks. It will also open tremendous growth opportunities for the operators to:

- ❖ Scale and automate their networks
- ❖ Introduce new features
- ❖ Develop IoT-use cases
- ❖ Integrate their networks with the private/public cloud

Operators like Rakuten in Japan have taken the pole position in deploying vRAN and demonstrated to the world that vRAN is not only viable but also valuable in improving the scalability and deployability of 5G RANs for network operators. With these successes in the backdrop, the worldwide Virtualized Radio Access Network (vRAN) market is expected to witness unprecedented growth in the future. Investment of up to \$254 Million is predicted in 2020, with the vRAN market expected to grow at a CAGR (Compound Annual Growth Rate) of 67 percent (i.e. \$1.6 Billion by 2025).

### Global Open vRAN Sales (\$M) Forecast by Geography

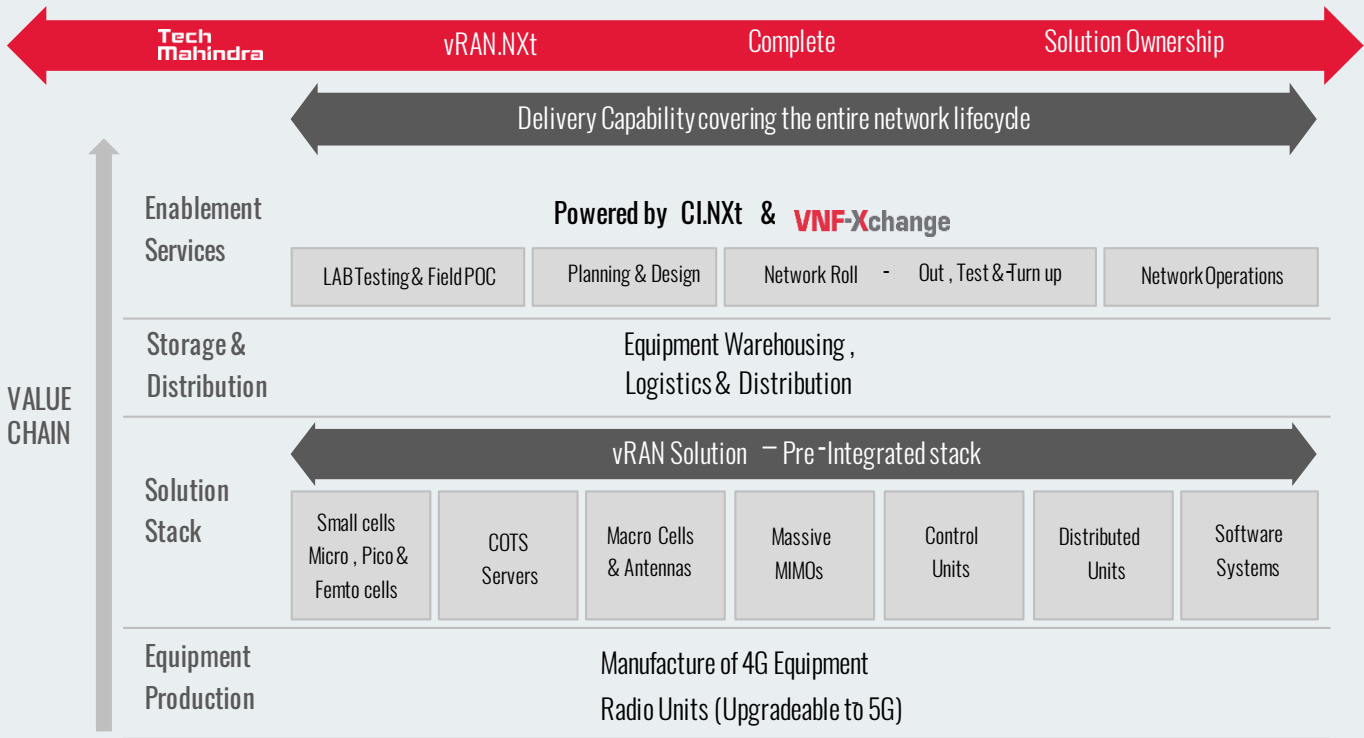


Source: LightCounting Virtual & Open Radio Access Networks 2020

## vRAN. NXt

### Capturing 4 Levels of the Value Chain

Tech Mahindra (TechM), uniquely poised as the world's largest independent provider of network services, has developed an enhanced virtual RAN Offering - vRAN.NXt – to enable its customers accelerate their journey towards 5G & explore next-gen business opportunities. The solution enables the virtualization of LTE access networks and is an indispensable step into the 5G future, as it results in a significant reduction in operational costs.



### Equipment Production

The capabilities of TechM have been augmented by collaborating with local manufactures with whom it works in the areas of 4G/5G networks and realizes new use-cases. Local Manufacturers manufacture radio equipments (i.e. radio units that are upgradeable to 5G) based on IPs and designs provided by TechM. The collaboration helps in addressing the Indian telecom market while exploring the global footprint.



### Solution Stack

With help of TechM's strategic partner ecosystem, it has developed open & disruptive vRAN solution stacks in TechM labs that split the baseband unit (BBU) between two logical units - the vCU & vDU, virtualized over COTS (Commercial-off-the-shelf) Servers. Such a form of disaggregation ensures the highest degree of dexterity in the radio network and opens up the ecosystem for hyper-automation that results in a substantial reduction of costs. To ensure optimum versatility, TechM offers multiple deployment options, along with indoor/outdoor coverage solutions comprising of Macro, Micro & Small Cells, AAS (Active Antenna Systems) and Massive MIMO solutions.



### Storage & Distribution

The existing facilities of local partners are being leveraged for warehousing and logistics to form even distribution channels. These steps help in the facilitation of efficient movement of equipments throughout the entire supply chain.



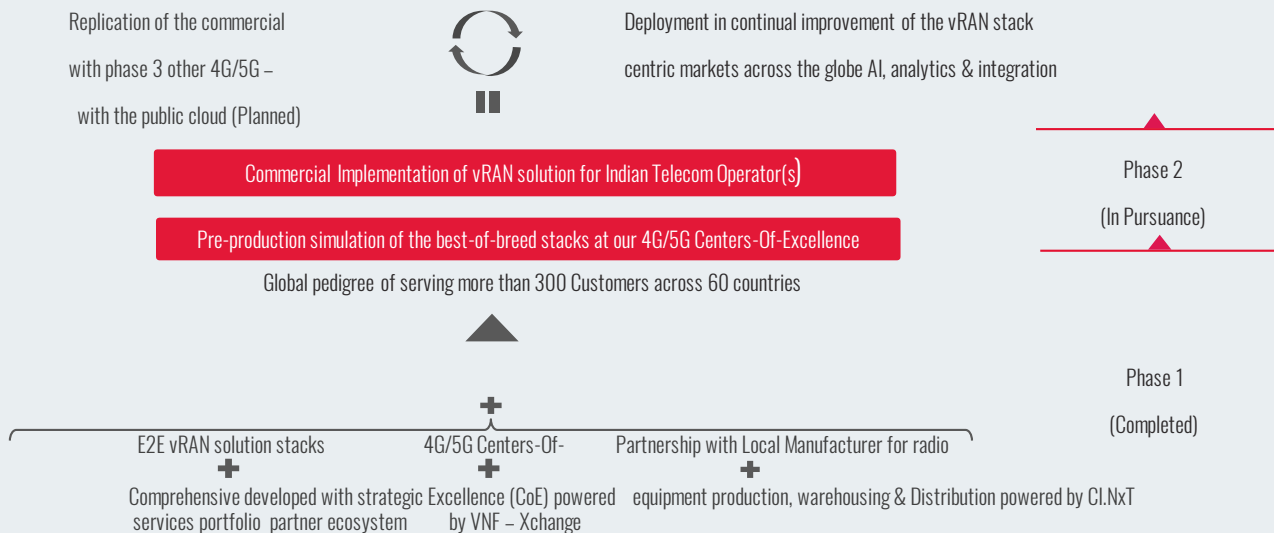
### Enablement Services

TechM's services portfolio spans the entire network lifecycle, right from design and planning to maintenance and management. Platforms & IPs from TechM further strengthens its service capabilities that are vital at every stage of the network life-cycle.

# vRAN. NXt

## A Quantum Leap towards NoF

- ❖ vRAN. NXt from Tech Mahindra is a disruptive offering that brings unprecedented flexibility and agility in the networks. Here are the major advantages of vRAN. NXt:
- ❖ Mitigates potential risks associated with other prevalent offerings in the industry
- ❖ Accelerates time to market while drastically reducing costs and enhancing customer experience.



## Collective Benefits of vRAN.NXt are inclusive of (but not limited to)

- ❖ All-inclusive model which takes complete ownership of the solution development, deployment, and management.
- ❖ Partnership with local manufacturers for radio equipment production, warehousing, and distribution.
- ❖ E2E vRAN solution stacks that are vendor/product agnostic
- ❖ Availability of multiple options related to hardware/software procurement and flexibility to choose from different deployment options makes vRAN.NXt the best-of-breed vRAN solution
- ❖ Open architecture that is 5G-ready and introduces flexibility & agility in the networks; thereby creating countless opportunities for hyper-automation & innovation.
- ❖ Pre-production integration & simulation of vRAN solution stacks at TechM's 5G Centers Of-Excellence (powered by VNF Xchange). These steps help in expediting vRAN's deployment process, as the tested solution is almost ready-for-deployment.
- ❖ Comprehensive services portfolio covering various aspects of the network lifecycle (powered by CI.NxT)
- ❖ Global pedigree of serving more than 300 customers in 60 different countries across the globe

TechM's all-inclusive model has triggered a new wave of technological disruption, giving it a competitive edge in the booming vRAN market. This expertise also helps TechM in expanding its global presence.

Tech Mahindra (TechM) is currently engaging with Indian Telecom operator(s) to implement vRAN.NXt as the Indian market is actively pursuing indigenously made network equipment(s) to gain self-reliance.

With the help of TechM's global nexus of customers, the initial implementation (Commercial deployment/POC) is planned to be replicated across the global markets where 4G/5G investments are thriving to unlock more business opportunities and realize new revenue streams. While TechM expands globally, it continues to add more best-in-class features in vRAN.NXt. With AI/ML in focus, it is working to bring AI/ML powered hyper-automation with a vision to form a fully virtualized solution integrated with the public cloud. These advancements will be helpful in the development and implementation of next-gen use-cases.

As the world forays into the 5G era, Tech Mahindra plans to continue leveraging new-age technologies such as vRAN & enable an unprecedented digital transformation for its customers, establishing new benchmarks of excellence in the process.

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