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# Netcracker Positioning for an Important Role in an Open RAN Era

December 22, 2020

## INTELLIGENCE ALERT

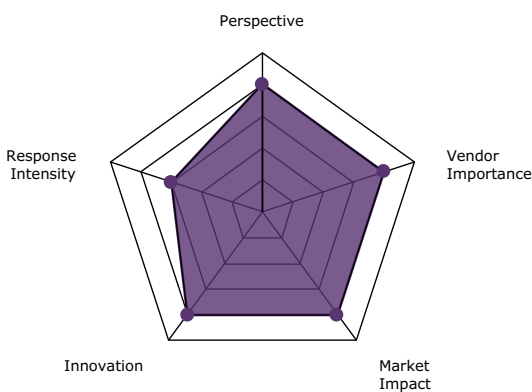
### REPORT SUMMARY

Netcracker has widely expanded the focus of its Netcracker 2020 Digital BSS/OSS portfolio into Open vRAN. Though nascent, Open vRAN will become an increasingly vital piece of a holistic end-to-end orchestration and automation proposition.

## QUICK TAKE

### EVENT RATING

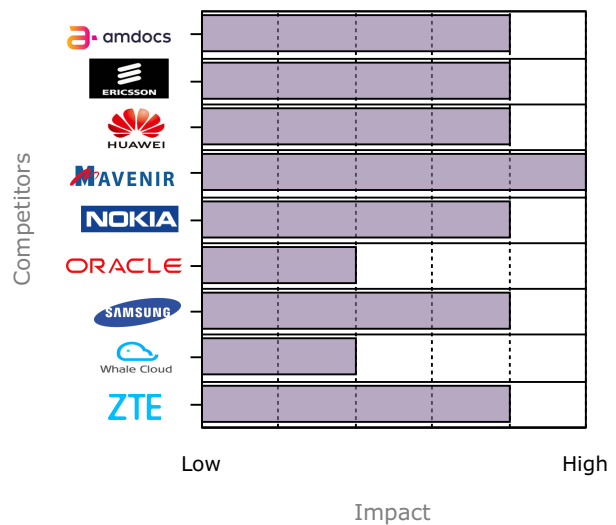
**Event Rating**



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### COMPETITIVE IMPACT

**Competitive Impact**



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## COMPETITIVE POSITIVES

- Netcracker announced an enhanced focus on open virtualized RAN (vRAN) that includes RAN-related digital OSS enhancements, end-to-end radio resource orchestration, and new operational models.
- Netcracker's focus on Open vRAN orchestration and automation represents a natural expansion to the company's Netcracker 2020 Digital BSS/OSS portfolio introduction earlier this year.
- Netcracker is offering a well-organized focus on Open vRAN that encompasses comprehensive and automated vRAN lifecycle management support.
- Netcracker has invested heavily in open APIs and DevOps support that will be crucial for supporting the multi-vendor environment envisioned by operators in deploying Open vRAN solutions.
- Netcracker's reference architecture- developed in partnership with parent company NEC (an active Open vRAN player) as well as Dell, Red Hat, and Altiostar- should provide an early roadmap for operators formulating initial Open vRAN deployment plans.

## COMPETITIVE CONCERNS

- Radio resource management is a new area for Netcracker. It will need to continue to burnish its credentials managing new radio resources such as non-real time radio intelligence controllers (RICs) and centralized self-organized networks (SONs) in order to earn operator confidence.
- Netcracker will need to reiterate to operators how its orchestration in the radio domain will align with management of other network domains to create a comprehensive approach that will be crucial in 5G network slicing.
- Netcracker will need to convince reluctant (mostly brownfield) operators that it is up to the task of supporting legacy, virtual, and containerized radio networks through a long period of legacy operations.
- In order to further demonstrate open vRAN's emerging ecosystem, Netcracker may want to consider additional reference architectures or demonstrations that showcase additional partners.

## EVENT SUMMARY

September 14, 2020-- Netcracker announced that it has updated its Netcracker 2020 Digital BSS/OSS portfolio with support for management and orchestration of the 'Open vRAN' domain. Open vRAN encompasses a variety of emerging solutions in which RAN software runs on general-purpose servers and is supported by radio hardware from an ecosystem of supporting partners. Netcracker's Open vRAN Domain Orchestration solution includes support for RAN financial and technical planning and design, Open vRAN activation and configuration of physical and virtual/cloud-native network functions, ongoing lifecycle management, and continuous RAN network optimization. Netcracker also announced an Open vRAN reference architecture along with partners NEC, Dell, Red Hat, and Altiostar.

## MARKET ALERT

### Netcracker Open vRAN Domain Orchestration Summary

#### OSS needs to change to support Open vRAN

Open vRAN is a highly disruptive technology that will bring many benefits to CSPs, especially during the evolution to 5G. By opening up the RAN to multiple vendors and virtualizing the software, costs will be significantly reduced, highly dynamic services will be enabled and the RAN domain will experience far greater levels of innovation.

Open vRAN will introduce many technology and architecture changes, however, these benefits can only be achieved with a new OSS/orchestration environment that brings automation and agility to the RAN:

**Highly distributed RAN architecture:** By virtualizing the RAN software (eNB) and further disaggregating the eNB into near and far edge locations, the RAN becomes highly distributed. OSS/orchestration systems need to intelligently place resources at the optimal location and provide end-to-end assurance.

**Dynamic cloud/virtual resources:** Open vRAN will comprise physical, virtual (VNFs) and cloud-native functions (CNFs) that need xNF OSS/orchestration to automate design, deployment and lifecycle management events such as scaling, healing and upgrades. Over time, Open vRAN edge nodes will evolve into highly intelligent MEC platforms hosting a variety of value-added services and MEC applications.

**Multivendor:** By opening up the RAN, CSPs will work with more vendors than before and opt for a best-of-breed approach. OSS/orchestration systems need to use open APIs, standards and DevOps tools to simplify onboarding, interoperability and continuous upgrades and optimize costs.

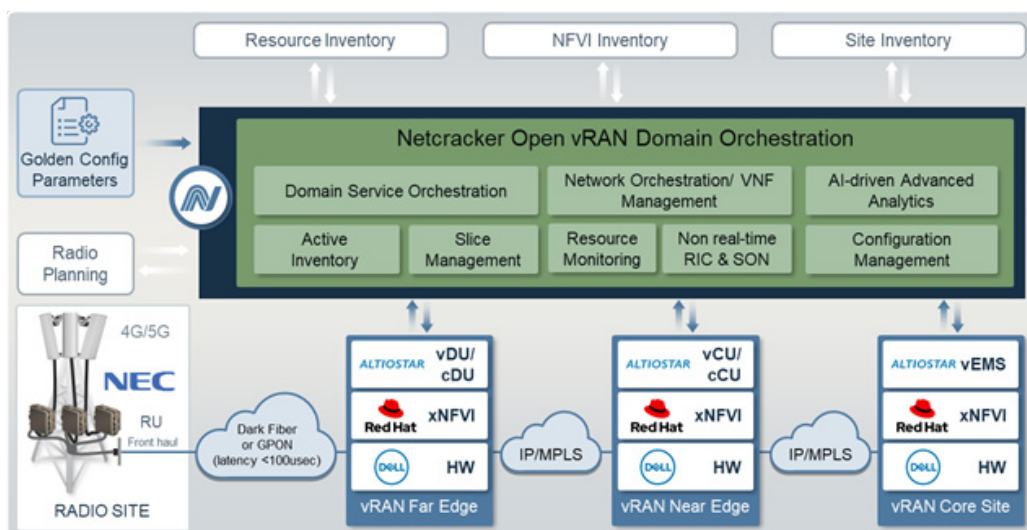
**Evolution to 5G:** Open vRAN OSS/orchestration will need to accommodate both 4G and 5G and enable a smooth evolution to 5G that extends to the RUs, gNBs, RAN sharing and the ability to support dynamic network slicing.

### Netcracker's approach with Open vRAN Domain Orchestration

Netcracker delivers a modernized Digital OSS portfolio, based on the Netcracker 2020 suite, with key attributes that are essential to supporting Open vRAN automation. Netcracker Digital OSS is cloud-native, designed to run on any Kubernetes cloud platform, with open APIs and standards conformance (including 3GPP, O-RAN Alliance and YANG service models), greatly simplifying integration with any Open vRAN vendor. Central to the portfolio is the use of ML/AI/analytics and real-time network discovery to automate lifecycle events, support predictive assurance, automate root cause analysis and optimize the RAN network.

Based on the Digital OSS portfolio, Netcracker has built an Open vRAN Domain Orchestration solution that brings together the orchestration, OSS and analytics functions needed to fully automate all aspects of the RAN domain from planning and design to activation, assurance and optimization. The solution leverages the expertise of Netcracker's parent company, NEC, and pre-integration has been completed with many industry-leading Open vRAN partners such as Altiostar, RedHat and Dell.

Netcracker's Open vRAN solution provides a common automated operations environment for 4G and 5G RAN including gNB and 5G RUs. Service Orchestration for the domain supports the 3GPP Network Slice Subnet Management Function to enable dynamic network slicing that works with cross-domain Service Orchestration for end-to-end network slicing.



**Automated planning and design to meet business KPIs:** Netcracker Active Resource Inventory consolidates information for RAN design and planning from many sources, including radio and network planning, physical RAN, eNB/gNB EMS and NFVI. The consolidated information can be visualized in different ways, including real-time geographic views to highlight the most problematic or business critical RAN zones. Netcracker Planning and Design systems are used to manage the physical RAN assets and include special procedures for acceptance management by reporting discrepancies between the planned and current RAN network.

**Fast activation of multivendor physical and virtual RAN network functions:** Deployment and activation of VNF/CNF resources are automated using Netcracker Network and Service Orchestration at far and near edge sites. Each physical and virtual network element is then configured in a central manner with specific parameters using Netcracker Configuration Management. Netcracker Service Orchestration brings together the physical and virtual assets to enable automated service provisioning and service lifecycle management across the Open vRAN domain. Netcracker uses its extensive DevOps processes, tools and best practices, with CSPs and ecosystem partners in the solution. This new mode of collaboration is vital to simplify the complexity of a multivendor solution and ensure that software updates and new features are implemented quickly.

**End-to-end visualization and optimization to maximize performance:** With Netcracker's Active Inventory, together with Resource Monitoring and AI/Advanced Analytics, information is consolidated from many different sources including real-time topology changes. The information can be displayed in many visual ways to show problems, optimize planning, predict events, simplify analysis and ensure business KPIs can be maintained. Any changes will automatically trigger lifecycle events and optimization processes. Netcracker has also added a new O-RAN complaint function called Non Real-Time RIC and Centralized SON. With this function and Netcracker's AI/ML tools, CSPs can optimize QoE by minimizing drive tests and further improving RAN performance.

### **New revenue growth with MEC applications**

Open vRAN creates new opportunities for CSPs to leverage their investments in edge compute to deploy high performance MEC applications at the network edge with optimal quality and cost efficiency. Netcracker's Open vRAN Domain Orchestration solution incorporates a MEC Orchestration function that is compliant with the evolving ETSI ISG standard (MEAO). MEC Orchestration supports placement and lifecycle management of MEC applications at the optimal edge, region or central location.

### **A proven Open vRAN reference architecture**

Netcracker has partnered with AltioStar, Red Hat, Dell and NEC to create an Open vRAN reusable reference architecture shown in the previous diagram. The architecture details have been published to support and advance CSP Open vRAN PoCs and deployments.

The reference model used the combination of Dell's open hardware as the foundation of the architecture, Red Hat's Open Stack for the virtualization platform and AltioStar's Open vRAN virtualized eNB software. Netcracker provided the end-to-end operations environment through its Open vRAN Domain Orchestration solution to automate VNF deployment, configuration, lifecycle management and radio resource optimization across edge locations. NEC provided the radio units and brought together the overall Open vRAN ecosystem enablement responsible for optimal and best-of-breed vendor neutral model designing, system integration and the delivery of a secure and mission-critical carrier-grade network.

## Analytical Summary

### Perspective

- Positive on Netcracker's introduction of Open vRAN support in Netcracker 2020 Digital BSS/OSS, because disaggregation of the radio domain is coming, bringing new orchestration and management complexity. Virtualization and containerization of a variety of combinations of centralized and distributed baseband processing and radio resources, as well as the requirement of managing legacy physical assets in many brownfield deployment scenarios, introduces a host of challenges that span network planning, activation and provisioning, and ongoing resource management and optimization. In addition, operators looking to a future that includes delivering network-as-a-service and, eventually, network slices will require robust radio resource management and automation in coordination with orchestration of other domains such as core and transport.

### Vendor Importance

- High to Netcracker, because it expands the focus of its Netcracker 2020 Digital BSS/OSS portfolio platform into a crucial area of focus for operators. Network domain orchestration has previously focused largely on core, backhaul, and transport domains; however, radio resource management has largely been left to the radio vendors. Netcracker now has the ability to take the same focus on service lifecycle and resource management into the radio domain and can establish itself as a trusted partner as operators look to establish true end-to-end network visibility that will be required to support emerging 5G use cases, particularly in the enterprise. Netcracker also has an opportunity to provide a strong multi-vendor value proposition that can help it differentiate from traditional network equipment vendors, some of which publicly embrace Open vRAN concepts but all of which still have vested interested in preserving the status quo in radio.

### Market Impact

- High on the OSS and BSS platform vendor market, because while operators are looking to Open vRAN to dramatically alter traditional network architectures, they are concerned about their ability to address the dramatic increase in complexity associated with onboarding, managing, and optimizing these networks. While operators see enormous potential in virtualized RAN, commitments thus far have been limited; planned greenfield deployments by Rakuten in Japan and Dish Network in the U.S. have received a lot of attention, but the attitudes of incumbent operators thus far have ranged from cautious and limited (see Vodafone) to downright hostile (see T-Mobile USA). Solutions like Netcracker's will be crucial to encourage operators to invest more enthusiastically in bringing radio into larger network automation and orchestration initiatives.