Solution Profile

September 2023

Netcracker GenAI Telco Solution

Surfing the GenAI Wave

Authors: Patrick Kelly and Ann Kelly

www.appledoreresearch.com

Appledore RESEARCH

Published by Appledore Research LLC • 44 Summer Street Dover, NH. 03820

Tel: +1 603 969 2125 • Email: info@appledorerg.com• www.appledoreresearch.com

Figures and projections contained in this report are based on publicly available information only and are produced by the Research Division of Appledore Research LLC independently of any client-specific work within Appledore Research LLC. The opinions expressed are those of the stated authors only.

Publish date: 25 September 2023

Cover Photo by Patrick Kelly

Introduction

The recent surge of interest in GenAI is unmistakable, with CEOs frequently mentioning it during quarterly conference calls, and marketing departments racing to issue press releases to demonstrate their alignment with the GenAI trend. The industry is quickly advancing to introduce solutions to the market. This includes intelligent content summarization, incident insight and observability, network simulations and optimization, and personalized customer experience modeling. GenAI has some clear business benefits and we think suppliers should be actively surfing the GenAI wave to gain first mover status and establish their role in this expanding ecosystem of suppliers. **Netcracker** is not wasting any time in establishing its presence in the GenAI Telco platform domain.

Monetizing of GenAI is likely to occur through collaborative efforts among suppliers, rather than isolated skunk work projects within CSPs. Telco suppliers possess the essential technical and business domain expertise and core telecommunication products, which, when combined with Large Language Models (LLMs), offer a potent avenue for GenAI realization. The successful implementation of GenAI will depend on a collaborative approach, to avoid the pitfalls of small-scale proof-of-concepts from a single supplier which have limited data sets and poor predictive outcomes.

Transitioning to an AI-driven organization, where AI isn't just an adjunct but is woven into CSP processes, is where Appledore Research believes the industry will realize the promise of GenAI. Such a trajectory requires not just understanding the core tenets of AI, but the meticulous approach to integration, prioritizing data governance, and ensuring AI's production readiness. The promise of GenAI, with long-term automation benefits and enhancing customer experience, stands as an emblem of future possibilities.

Netcracker, with its announcement in early September of its GenAI Telco Solution, is putting a stake in the ground around the commercial viability of GenAI in the telco market—specifically, how to help telcos realize concrete value from GenAI with a focus on time-to-resolution and cost profitability. In a recent briefing with Appledore Research, Netcracker Head of Strategy and Marketing, Susan White, shared how the company's new GenAI Telco Solution enriches Generative AI models with real-time data and instructions to give CSPs access to ready-made use cases that result in immediate business benefits. Of several use cases reviewed in our briefing call, Customer Care is especially compelling because of the impact it can have in bringing down high costs of traditional customer care. Netcracker also articulated the value GenAI can bring in the complex area of network operations.

Company Overview

Netcracker is a long-standing telco vendor with solutions covering digital OSS/BSS, customer engagement, cloud, and AI. The focus of this profile is on **Netcracker GenAI Telco Solution**.

Key customers like Vodafone, T-Mobile, Etisalat and Deutsche Telekom use Netcracker to monetize their cloud-native networks. Integration with hyperscalers Microsoft, Google, and AWS has allowed Netcracker to utilize any popular GenAI models and services.

GenAI model platforms in the telecommunications market must be combined with telco domain knowledge and existing OSS/BSS tools to be effective. Netcracker brings its domain expertise and intellectual property to:

1) Improve customer care, using digital assistants
2) Personalize offers, using the company's catalogs and knowledge of the customer to yield higher sales conversion rates
3) Help technicians work faster, with access to inventory, configuration and planning systems
4) Automate service design, leveraging its active network inventory and assurance systems
5) Improve churn, by integrating with churn analytics, interpreting results, and leveraging LLMs to fine-tune recommendations

Key components of the GenAI Telco Solution include the Telco GenAI Knowledge Management and GenAI Trust Gateway. Netcracker has also developed an extensive knowledge base and library of scenarios that can be deployed for specific use cases. Netcracker has technology integration to leading GenAI model suppliers, including Cohere, Hugging Face, Stability.ai, Midjourney, Anthropic, AI21 Labs, and others, as well as model aggregators including Google Vertex AI, Microsoft access to Open AI, and AWS Bedrock.

Facts, Figures, and Financials

Netcracker was founded in 1993 and is headquartered in Waltham, Massachusetts. In 2008, it became a wholly owned subsidiary of NEC Corporation.

Excluding infrastructure systems, in 1HFY23 (Oct '22), NEC Global orders increased by 34%, referencing large project wins by Netcracker, a strong indicator of expected growth.

Table 1: Company Summary

Name	Netcracker Technology
Year founded	1993
Headquarters	Waltham, Massachusetts
CEO	Andrew Feinberg
Company Type	A wholly owned subsidiary of NEC Corporation
Employees	15,000
Product segments	BSS, OSS, Customer Experience, Orchestration, Automation Products and Services
Geographic focus	Global
Inventory products	Active Resource Inventory, Consolidated Resource Inventory, and Service Inventory

Source: Appledore Research

Table 2: Company Events and Acquisitions

Year	Event	Company	Comments
2016	Acquisition	Coraltree	BSS, CRM, rating, billing, inventory management
2011	Acquisition	Subex	Acquired Subex' NetProvision, NetOptimizer, and Vector products covering provisioning and service activation, extending Netcracker's presence in end-to-end fulfilment.
2008	Acquired	NEC	

Source: Appledore Research

Partnerships and Ecosystem

Table 3: Partner Summary

Year	Partner	Description	Comments
2023	Google Cloud	Integration of GenAI Telco Solution with Google Cloud Vertex AI	Netcracker strengthens partnership with Google Cloud to advance Generative AI in telecom
2023	Microsoft	Integration of GenAI Telco Solution with ChatGPT	Netcracker expands collaboration with Microsoft to deliver high-value Generative AI solutions to telecom operators
2020	Amazon/AWS	Full stack digital OSS, BSS, Orchestration on AWS	Cloud-native containerized digital services enablement platform optimized for AWS
2020	Red Hat	Full stack digital OSS, BSS, Customer Engagement	Cloud-native containerized digital services enablement platform integrating Red Hat OpenShift and Enterprise Linux
2020	Google Cloud	Full stack digital OSS, BSS, Orchestration on Google Cloud	Cloud-native containerized digital services enablement platform optimized for Google Cloud
2020	Microsoft Azure	Full stack digital BSS, OSS Customer Experience and AI on Microsoft Azure	Cloud-native containerized digital services enablement platform optimized for Microsoft Azure

Source: Netcracker

Customer Traction

Netcracker has over 100 customer deployments. Recent examples are shown in the table below.

Table 4: Customer Summary

Year	Customer	Deal Type	Product(s)	Location	Use Cases
2023	Zain	Direct	**Managed Services** and full stack cloud-based BSS/OSS	Saudi Arabia	5G Services, B2B services
2023	SLT Mobitel	Direct	**Converged Revenue Management**	Sri Lanka	Revenue Management, Real-time charging
2023	Telenor	Direct	**Converged Revenue Management**	Norway	BSS, Revenue Management
2022	Etisalat	Direct	**Active Resource Inventory**, Assurance, AI/ML, MEC/NFV, Service Orchestration & Management	UAE	Domain Orchestration Private 5G Services
2022	Swisscom	Direct	**Active Resource Inventory**, Digital OSS, Service Orchestration & Management	Switzerland	Next-Generation Digital OSS and Professional Services
2022	Vodafone	Direct	BSS2Cloud (**Hybrid Resource Management**, Digital BSS, Digital OSS, Cloud BSS, Revenue Management, Lifecycle Management, Infrastructure Management)	Hungary	FMC, SMB, Improved UX
2022	Deutsche Telekom	Direct	Service Orchestration: (**Service Inventory,** Service Orchestration & Management, Catalog, Test and Assurance)	Germany	Service and Revenue Acceleration
2021	Maxis	Direct	Digital OSS (**Network Inventory**)	Malaysia	Automation, Fulfilment
2021	Globe	Direct	Digital OSS (**Active Resource Inventory**, Service Orchestration & Management)	Philippines	OSS Transformation Digital Transformation SDN/NFV

Year	Customer	Deal Type	Product(s)	Location	Use Cases
2021	DISH Network	Direct	Digital OSS/BSS (Fulfilment, Contracts, Billing, **Resource Management**, Service Orchestration & Management)	USA	Transport and Services Automation & Management
2021	Segra	Direct	Digital OSS (**Active Resource Inventory**, Planning, Management & Design)	USA	Improve Operations and Enhance Customer Experience

Source: Netcracker

GenAI Strategic Partnerships

In **September 2023**, Netcracker announced a strategic partnership with Microsoft to integrate its GenAI Telco Solution with ChatGPT, stating that the solution leverages OpenAI's ChatGPT through Azure OpenAI Service to create high-value use cases by harnessing valuable telecom data and knowledge.

Also announced in September, Netcracker has integrated its GenAI Telco Solution with Google Cloud's Vertex, enriching GenAI models accessed through Vertex AI with precise telco data and instructions.

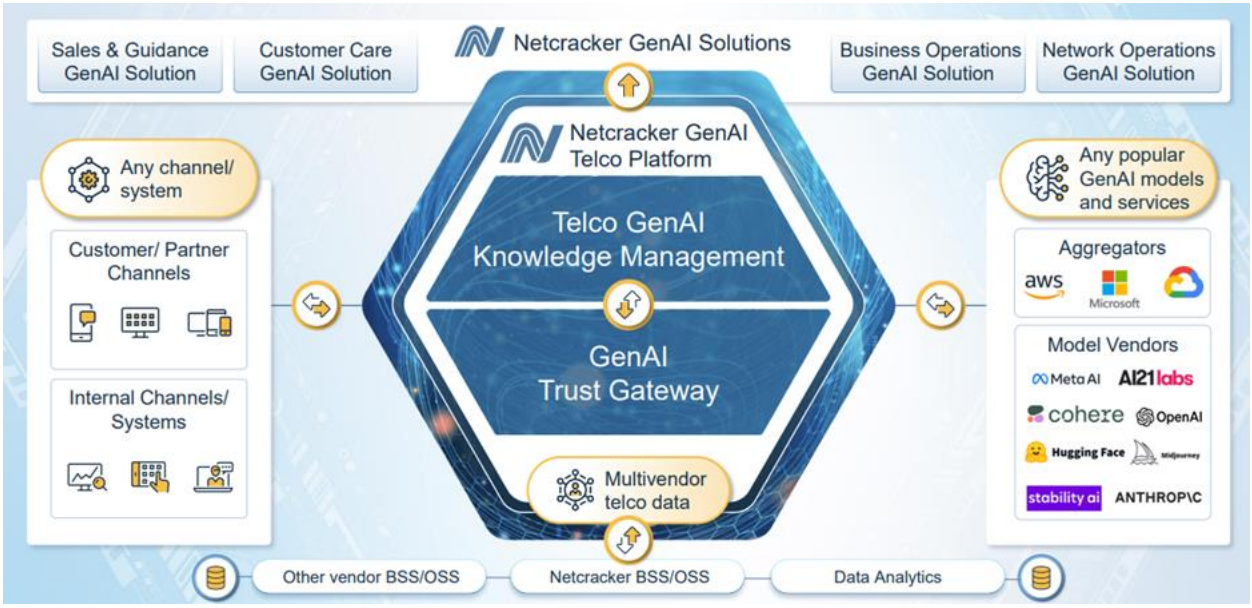
Product

The Netcracker GenAI Telco Solution features:

- **GenAI Telco Platform with:**
  - **Telco GenAI Knowledge Management**
  - **GenAI Trust Gateway**
- **GenAI Solutions: Customer Care, Sales & Guidance, Business Operations, Network Operations**

Together, these platform components enrich any Generative AI model with real-time telco data and instructions, while at the same time protecting sensitive customer data from public models and controlling the accuracy and relevance of model results.

Figure 1: Solution Overview



Source: Netcracker

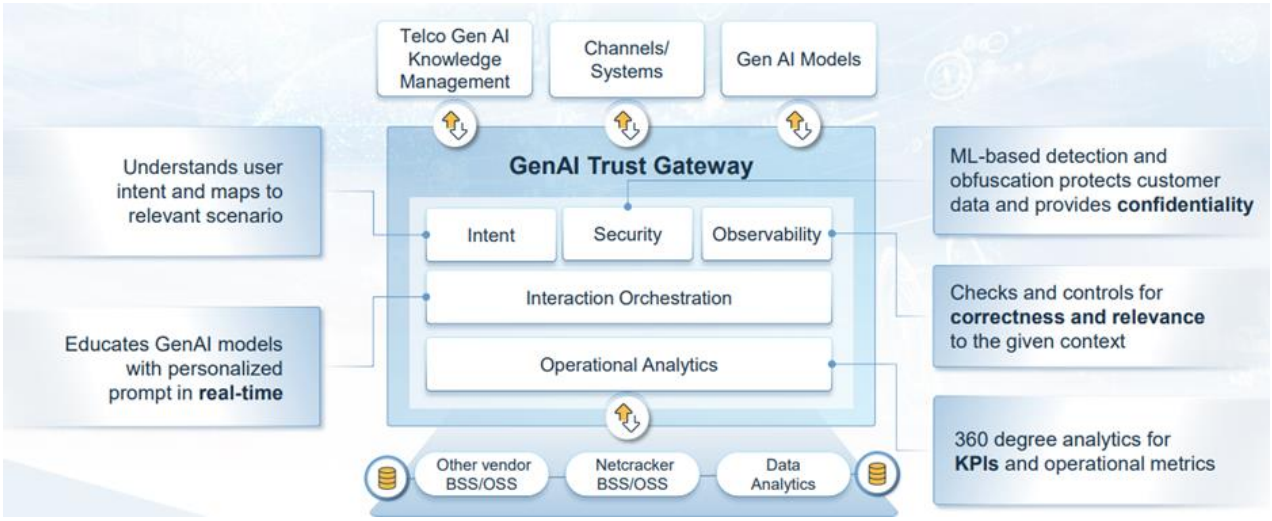
The GenAI Telco Knowledge Management component leverages Netcracker's BSS/OSS expertise to create high-quality responses for Generative AI models. Netcracker has built up an extensive Knowledge Base and leverages knowledge graphs and a vector database to enable "assist scenarios" covering many topics across the business. Netcracker tells us they've already created 40+use cases that CSPs can take immediate advantage of in the areas of Customer Care, Sales & Guidance, Business Operations, and Network Operations.

Figure 2: GenAI Telco Knowledge Management Component

Source: Netcracker

The GenAI Trust Gateway component operationalizes telco processes and provides security and privacy by separating sensitive customer data from GenAI models and establishing strict data access control. Confidential customer data is detected using machine learning for context recognition, then the data is bi-directionally obfuscated with fake information to protect against leaks.

Figure 3: GenAI Trust Gateway Component



Source: Netcracker

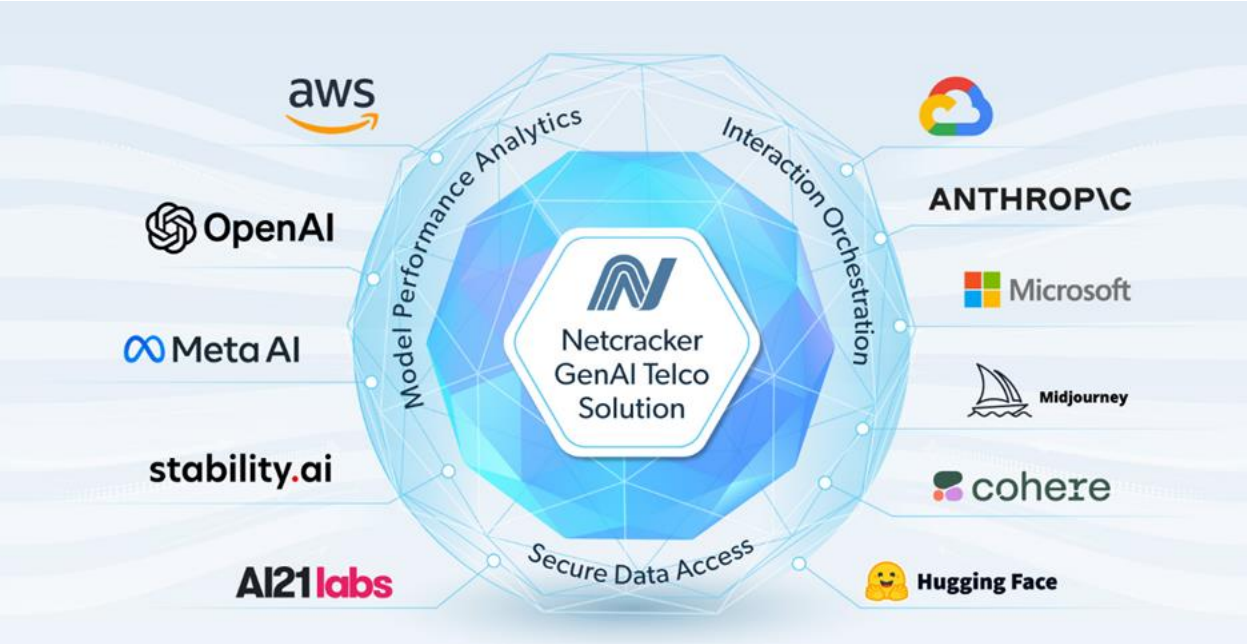
Netcracker's Susan White positions the GenAI Telco Solution at what she calls "the intersection between GenAI Large Language Models, GenAI users that include customers, partners, and telco employees, and proprietary telco BSS/OSS databases."

The solution provides ready-made use case scenarios—currently, more than 40 out-of-the-box assist scenarios are available—that CSPs can put into practice immediately, mixing and matching automated prompts and responses based on dynamic access to required data sources. Generative AI-driven prompts and responses are contextually aware and personalized to users, based on Netcracker's understanding of what a user requests in a given scenario.

An example: John Doe wants to know why his bill is so high on his latest statement. Using pre-populated "enrichment and education" data and parameters, the Netcracker solution instructs whichever GenAI LLM is being used to answer each of John's questions based solely on retrieving and analyzing his last four bills. Netcracker tells the GenAI model where to go to retrieve this information, by compiling specific instructions. This enables the GenAI model to then give John accurate responses on a real-time basis. The solution also includes a built-in "I cannot help" response if there is not a suitable assist scenario, as well as a user feedback loop.

CSPs purchase each Netcracker use case assist scenario based on their needs, then choose which Generative AI model to use alongside the Netcracker GenAI Telco Solution.

Figure 4: Compatible Generative AI Models



Source: Netcracker

Specific to the Customer Care use case, the Netcracker GenAI Telco Solution is expected to improve, by up to 50%:

- first contact resolution
- time-to-resolution
- customer satisfaction
- self-sufficiency
- cost-per-contact

Appledore Analysis

Strategy

In a 2020 report, "The Power of the AI-Driven Telco", Appledore predicted rapid growth in the use of AI in telecom, forecasting worldwide spend by telcos in excess of US $5 Billion on AI software in 2025. At that time, we cautioned vendors to be precise with their value propositions, and buyers to look for solid, relevant references from their vendors.

Both pieces of advice have become even more important—and even more difficult—with the latest developments in GenAI. Netcracker has taken an important step forward in commercializing GenAI in the telco framework using its rich set of use cases and strong partnerships with Microsoft, Google, AWS, and model supplier partners Hugging Face, OpenAI, Cohere, and others.

Netcracker has a well thought out strategy to leverage its own datasets and model suppliers to improve business outcomes for customer care, revenue optimization, and network operations.

We consider AI, in its current state, as having the potential to become a high value tool used for specific tasks to solve difficult business problems. It is important to look at AI in the context of the business problem and the results that you want to achieve that yield faster, cheaper, and more accurate results than current workflow tasks or traditional IT tools. Netcracker has a coherent plan to bring together its deep understanding of the telecom subscriber and the operation of the network with leading AI model and cloud platform suppliers. It is doing this while governing its use and adhering to data privacy laws.

Most CSPs will grapple with the high cost of data acquisition and use of LLMs to achieve the target business outcomes for improvements in subscriber experience. Organizations applying AI for specific functions will need training data to train the AI tool, input data to test and run the AI system, and feedback data for improving the accuracy of the AI tool. Netcracker is shifting the risk away from the CSP in its Telco GenAI Knowledge Platform to deliver improvements in the business outcome. Its GenAI Trust Gateway ticks the box to protect data privacy and regulatory laws on the use of personal data.

Competition

The market for GenAI and AIOps is diverse, with all telecommunication suppliers actively investing in the technology. In addition to traditional telco suppliers data platform specialists, hyperscalers, and IT solutions suppliers are bringing products to market. The market in telco can best be segmented into seven categories:

1. NEPs (Network Equipment Providers): Nokia, Ericsson, Huawei, Cisco, Ciena, NTT, Samsung, Juniper
2. Service Assurance Suppliers – Infovista, Mycom, Elisa
3. Probe Suppliers – Netscout, Spirent, Viavi, Anritsu, RADCOM
4. Niche Suppliers – Guavus, Anodot, Anthropic
5. Data Platforms – Snowflake, Datadog
6. Hyperscalers – Google, Microsoft and AWS
7. Large ISVs – IBM, Amdocs, Netcracker, Oracle, SAP,CSG

The expanded market also includes AI model suppliers like Hugging Face, Anthropic, Stability.ai, and others. Enterprise AI application platforms such as Palantir and C3.ai are also active in the telecommunication market.

Netcracker will face strong competition from Amdocs, IBM, Oracle and others in its core market for BSS/OSS full solution providers. NEPs will have a significant advantage in the operation of the network where they are the primary infrastructure supplier. Niche suppliers will be capable of outmaneuvering Netcracker for specific point solutions in the test, assurance, and optimization of the network where CSPs are not looking for a tightly integrated platform.

Risk of GenAI Tools

Large Language Models can hallucinate, generating inaccurate information which poses a significant risk, especially in functions like telecom network operations. For example, as LLM outcomes rely on statistics rather than logic, they might include reasoning errors. They also present limited knowledge due to infrequent updates, and biases inherited from training data.

Security concerns, such as prompt injection and data tampering, are also paramount. Additionally, considerations like safeguarding sensitive information and protecting intellectual property rights all contribute to the complexity of the GenAI practical implementations. Navigating these challenges requires a delicate balance between commercial interests, ethical considerations, the practical capabilities of technology, and adherence to regulatory compliance.

Potential for GenAI

GenAI offers a range of potential applications for telecom operators and vendors, customer-facing functions being the most obvious area to benefit. For customer service, the enriching of Foundation Models using telecom-specific data and context has the potential to improve the quality of responses and enable personalized offers.

In network operations, GenAI can provide automatic incident documentation and the generation of troubleshooting scripts. It can also replace traditional manuals with interactive guidance for installation and provides troubleshooting recommendations, enhancing overall efficiency.

CSPs should embrace GenAI and collaborate with companies like Netcracker to augment workflow tasks. GenAI should serve as the co-pilot for customer care, technicians, and network engineers to improve business outcomes for the customer.

SWOT Analysis

The following analysis is specific to the profiled product and does not reflect a SWOT analysis of the broader company portfolio.

Strengths
• Netcracker has deep IT telecom domain expertise (30 years), with high R&D investment and organic technology development.
• BSS/OSS data integration in the solution provides real-time data ingestion for high-value complex use cases.
• Embedded robust security protects sensitive customer data against leaks.
• Personalized AI prompts for specific telecom tasks and business processes.
Weaknesses
• Data input from layer 1-7 packet processing and passive probe suppliers to better understand subscriber experience.
• Not clear how some model suppliers are utilized in key aspects of the offer.
Opportunities
• Continue to expand technical partnerships with assurance suppliers that offer datasets not readily available in current platform.
Threats
• Potential threats from core suppliers that could achieve both cheaper and improved business outcomes in the use cases cited. The market is in early stage phase and therefore we expect rapid advancements as the technology matures.
• Business models changes which include M&A, exclusive/preferred partnerships, and new entrants to the market.

Conclusion

Appledore is positive on the Netcracker GenAI offer and we think customers can benefit from Netcracker's strong domain knowledge and pre-packaged solutions. Netcracker has designed a solid GenAI solution that incorporates the key tenants necessary in deploying AI/ML in production:

1) Governance in data usage and maintaining privacy
2) Delivering positive business outcomes
3) Controlling risk and high development cost through its use of relevant data inputs and use case models

Insight and analysis for telecom transformation.

@AppledoreVision

Appledore Research

www.appledoreresearch.com

info@appledorerg.com

+1 603 969 2125

44 Summer Street Dover, NH. 03820, USA

Appledore RESEARCH