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On the Radar: Netcracker GenAI Telco Solution



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Summary

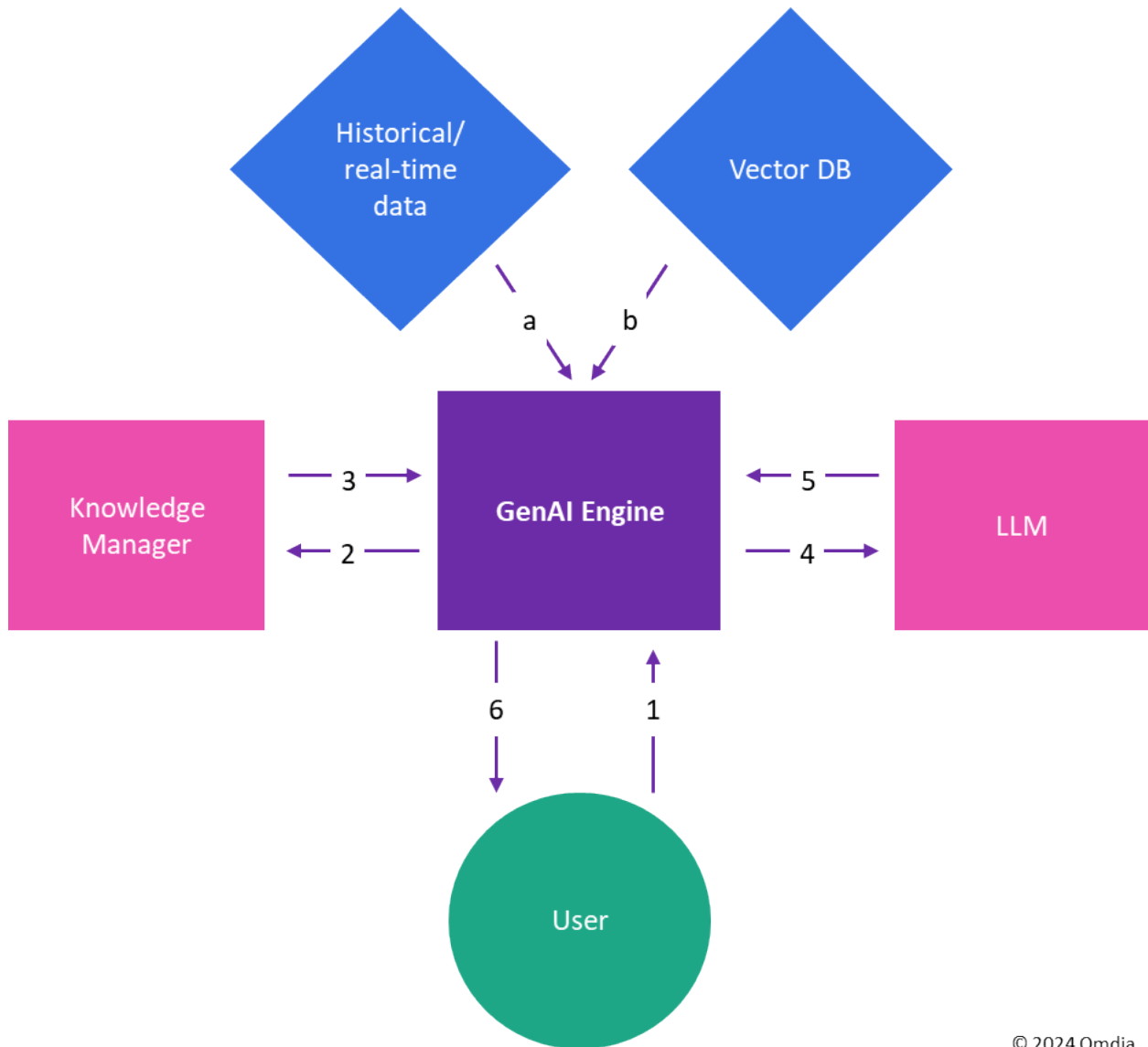
Catalyst

Generative AI (GenAI) stands poised to revolutionize how communications service providers (CSPs) operate their networks, support their customers, and run their businesses. Large language models (LLMs) trained on generic data will work for the most basic functions, but what CSPs need is the ability to leverage their own proprietary data. Products such as Netcracker's GenAI Telco Solution bring telco-specific data models and associated knowledge to GenAI workflows so CSPs can tap into the power of LLMs while leveraging their own data and keeping it secure. Because of its extensive experience delivering telecom IT systems, Netcracker understands the complex relationships between the various types of data CSPs must leverage to extract the most valuable insight from it.

Omdia view

Netcracker's GenAI Telco Solution is part of an emerging category of products that aim to help CSPs leverage generic LLMs by providing telco-specific data and insight. **Figure 1** shows a typical functional architecture of such a solution.

Figure 1: Typical functional architecture of telco GenAI solutions



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Source: Omdia

The numbers in the diagram represent the flow of information from the user to the functional elements that process a request. The letters represent information retrieved from databases to support user requests.

At the heart of the solution is the **GenAI Engine**. The GenAI Engine figures out what combination of data and functions—which one could think of as “recipes”—are needed to fulfill the user’s request. The main functions include:

- Interpreting the user’s request
- Determining what data and functions the user has permission to access
- Selecting the appropriate information from the Knowledge Manager needed to execute the user request
- Retrieving the required data from historical, real-time, and vector databases

- Anonymizing data
- Performing retrieval-augmented generation (RAG) (which uses proprietary data to help LLMs provide more meaningful results), fine-tuning, and prompt engineering
- Requesting information from the LLM
- Validating information received from the LLM

The Knowledge Manager stores the use cases, libraries, catalogs, playbooks, prompts, data requirements, and everything else needed for an LLM to execute a request for a telco-specific use case. The Knowledge Manager is the repository for the “recipes.”

Historical and Real-Time Databases contain various network, customer, billing, usage, device, and other information stored in OSS, BSS, CRM, EMS, and other network and operational systems.

The Vector Database stores company-specific information such as user manuals, process diagrams, and FAQs.

Why put Netcracker’s GenAI Telco Solution on your radar?

Netcracker has extensive experience working across all aspects of a CSP’s back office. This knowledge has been brought into its GenAI solution so CSPs can extract more meaningful and relevant results from standard LLMs and foundational models across a host of use cases, including sales, customer care, business, and network operations.

Market context

Netcracker is one of the leading suppliers of telecom IT solutions used to manage CSPs’ back-office operations, such as billing, customer care, and network management. It competes with other independent software vendors (ISVs) such as Amdocs, CSG, and Oracle and network equipment manufacturers (NEMs) such as Ericsson, Nokia, and Huawei. Hyperscale cloud providers such as AWS, Microsoft Azure, and Google Cloud also offer some telecom IT solutions, with CSPs increasingly delivering network functions from the cloud. The leading LLMs come from OpenAI, Google, Meta, and Anthropic, and the hyperscaler cloud providers are investors in or close partners of many of them. At this early stage, no one has a clear advantage, especially when it comes to the telecom market.

The leading LLMs will suit CSPs for enterprise use cases that are not telco-specific, such as content generation or code development, but will not be as effective for network, billing, or customer support use cases. This is why some believe there needs to be a telco-specific LLM. The Global Telco Alliance, comprised of SK Telecom, SingTel, E&, Softbank, and Deutsche Telekom, aims to develop one. However, it is unclear when it will be available, and early indications are that it will be available only to alliance members. Other CSPs have said they do not see that building an LLM from scratch makes much business sense and are using RAG techniques and fine-tuning to get what they need from the generic LLM models. The solutions from suppliers such as Netcracker essentially provide a productized version of this approach.

As first presented in Omdia’s *Generative AI Software for Telecom: Market Sizing and Forecasts* (see *Further reading*), the main drivers for GenAI in the telecom market are:

- **Improving operational efficiency:** Many of the early GenAI use cases for CSPs focus on taking cost out of the customer care function and automating network operational processes such as planning and assurance.
- **Improving employee productivity and experience:** As with other enterprises, CSPs are looking to GenAI for content generation, code development, and internal knowledge management.
- **Enhancing the customer experience:** GenAI allows CSPs to personalize offers and present them to customers at optimal times to avoid churn or to upsell new services.
- **Widening access through adaptability for downstream development:** GenAI foundational models act as an adaptive base upon which more specialized downstream models and tools can be built. CSPs and their partners are now able to train models using telco-specific information to support telco-specific use cases.

Product/service overview

Key features and benefits

Netcracker's GenAI Telco solution leverages the extensive data in its BSS/OSS, data analytics, and knowledge base systems and supports any third-party data source, including multivendor BSS/OSS.

The platform can work with any commercial or open source GenAI foundation model (large language and other models) to make them valuable for telecom-specific purposes. Depending on the task, many CSPs will need to use multiple models, and most will take advantage of the large, sophisticated commercial LLMs such as Open AI's ChatGPT and Google Gemini.

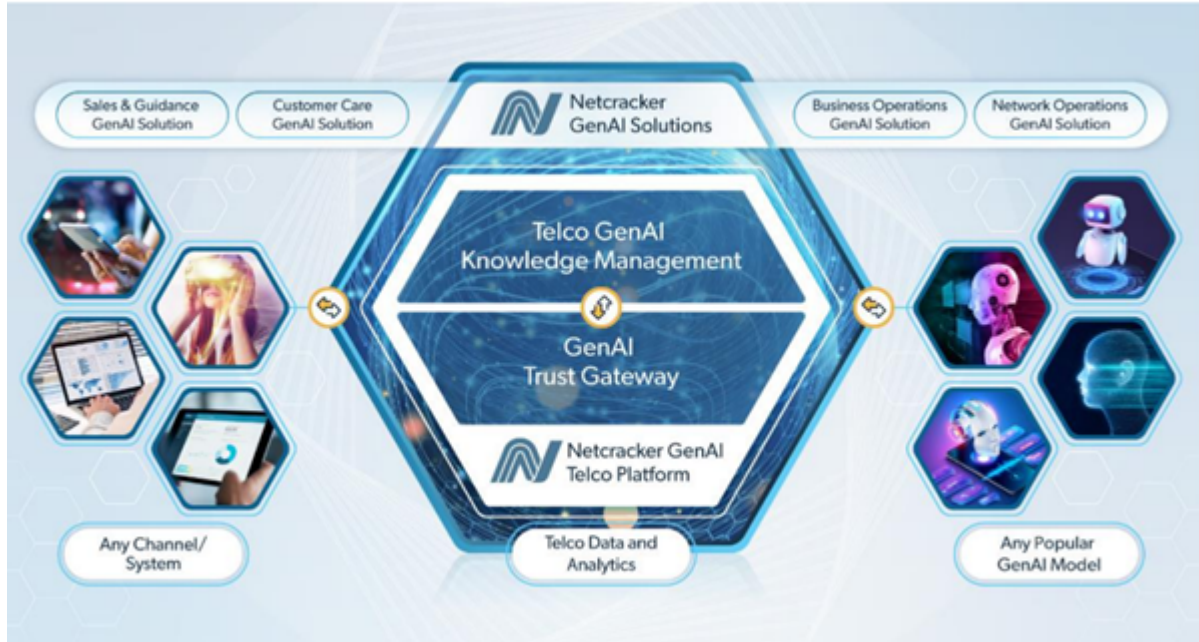
Netcracker's platform provides knowledge and data to the GenAI models in the right format, providing a layer of intelligence, security, and control. Techniques such as RAG, prompt engineering, and model fine-tuning are used to bring the telco domain data to the model, ensuring quality responses. Proprietary telco and customer data is anonymized to ensure that data is not leaked externally. The platform also executes checks and controls to ensure that model responses are correct and relevant to a given context.

Netcracker has created a range of GenAI assistants to address a variety of use cases specific to the telco industry. The assistants are enabled by over 40 ready-to-use scenarios incorporating skills, instructions, and data functions covering all areas of the telco business, including customer care, sales and guidance, internal business operations, and network and service operations and assurance.

Netcracker's platform approach enables telcos to start with a few use cases and a single LLM and gradually expand across the business, bringing in additional GenAI models and broader data integration as needed. Its platform also works with domain-specific on-premises models, including small language models (SLMs) from its parent NEC, to bring in real-time BSS/OSS data, thereby broadening GenAI use across the business.

Figure 2 shows how Netcracker's GenAI Telco platform fits into the larger GenAI ecosystem.

Figure 2: Netcracker GenAI Telco Solution's position in the ecosystem



Source: Netcracker

Components of the GenAI Telco Solution

GenAI Knowledge Management

The GenAI Knowledge Management module incorporates the telco domain expertise used to extract meaningful responses from any public or on-premises GenAI model. Leveraging Netcracker’s decades of telecom IT software experience, its Design Studio and Playground creates and modifies assist scenarios, which support common telco use cases. Knowledge Management has a catalog of assistants and scenarios incorporating skills, prompts, and functions from which use cases are created. It also has a knowledge base supporting RAG with vector search and an ontology-based knowledge graph to call up domain data and real-time operational data. For model fine-tuning, it has a catalog of training data.

GenAI Trust Gateway

The GenAI Trust Gateway module supports the following key functional capabilities, invoked when a user makes a request:

- **Intent:** Understands user intent and maps to the relevant scenario
- **Security:** ML-based detection and obfuscation protects customer data and provides confidentiality
- **Interaction orchestration:** Enriches user prompts with context, data, and instructions using RAG in real time
- **Integration layer:** Integrates with any channel, any telco data/analytics, any GenAI model, and Netcracker’s FM/MLOps environment
- **Observability:** Checks and controls for correctness and relevance to the given context
- **Operational analytics:** 360-degree analytics for KPIs and operational metrics

Use cases

Netcracker supports numerous use cases out of the box across multiple OSS and BSS domains, including:

- **Digital Care Assistants** for B2B and B2C customers explain billing details and new offers and promotions and solve customer network issues
- **Sales Advisers** guide B2B or B2C customers with new offers, quotations, and personalized recommendations to close opportunities faster
- **Business Advisers** aid with catalog configurations, business analysis, and marketing content
- **Digital Operations Assistants** help with fixing network issues, configurations, and integrations, creating network and service designs, and resolving network alarms

Table 1 shows these and other use cases Netcracker supports.

Table 1: Netcracker GenAI use cases

Sales and guidance	Customer care	Business operations	Network operations
Digital Sales Adviser B2C	Digital Care Assistant	Business Analysis Assistant	Digital operations technician
Digital Sales Adviser B2B	Business Assistant B2B	Marketing Communicator	Automated service re-designer
Telco Ecosystem Guide	Agent Partner B2C	Catalog Assistant	Prompt-driven network design
			Network auto-pilot

Source: Omdia

Company information

Background

Netcracker is a wholly owned subsidiary of NEC. It provides a portfolio of products and services that include Customer Engagement, Digital BSS, Digital OSS, AI & Data Analytics, and Professional Services.

Netcracker’s GenAI Telco solution is part of its AI & Data Analytics suite: a unified, cloud native, business-friendly solution for end-to-end data analytics with an ecosystem of integrated products, services, and applications. Leveraging the latest AI/ML technologies, it also includes a Data Analytics Platform and MLOps, with out-of-the-box use cases across all areas of the telco business. The solution also spans consulting, SI, and managed services.

Netcracker takes a data-driven approach to extract the maximum value of data across its entire portfolio. It leverages cloud data ecosystems, blending on-premises, telco, and public cloud to drive value extraction from data assets. Netcracker is continually expanding its cloud data ecosystem through partnerships with

top-tier telecom companies, hyperscalers, NEC global digital product units, application developers, SIs, and other cloud players to enrich and grow its end-to-end (E2E) data analytics and AI offerings.

Current position

Netcracker launched its GenAI Telco Solution in September 2023. It soon followed with announcements of partnerships with all three of the major hyperscalers—AWS, Microsoft Azure, and Google Cloud—along with pre-integrations with Cohere, Hugging Face, Anthropic, Midjourney, AI21, Stability.ai, and NEC Cotomi SLMs. T-Mobile Wholesale and Etisalat by e& are early customers for Netcracker’s solution.

While it is certainly encouraging to see some early adopters, it remains to be seen how quickly the market will develop. There are a host of data management and skill set issues that will need to be addressed. Also, CSPs, like those in the Global Telco AI Alliance, are looking to develop their own solutions, which may limit the addressable market for solutions like Netcracker’s. That said, Netcracker’s close relationships with the hyperscalers that are driving much of the AI development means it will gain valuable insights as the market continues to evolve.

Analyst comment

As a longtime leading telecom IT supplier, Netcracker will be on any CSPs’ shortlist of GenAI solution suppliers. It understands the complex relationships between the disparate types of data CSPs must work with and has made available many key use cases that will help CSPs extract value from that data.

However, this market is evolving quickly, and CSPs are not necessarily going to rely on their traditional telecom IT software suppliers. The Global Telco AI Alliance, made up of SK Telecom, Deutsche Telekom, e&, Singtel, and Softbank, is developing its own telco-specific LLM. Other CSPs, such as Vodafone, are engaging directly with LLMs and using prompt engineering and RAG to get more meaningful results out of the more generic models. CSPs have been quite vocal about not wanting to become too dependent on the hyperscale cloud providers, and many are trying to build up their own AI skills so they can have more control over what they see as a key strategic capability.

That said, not all CSPs will have the ability to do so, so the opportunity for vendors like Netcracker remains healthy. It stands to benefit from its relationship with NEC and proximity to the CSPs in the Asia & Oceania region, many of whom have made AI development a key strategic priority. Having early adopter customers will give Netcracker valuable insights to help enhance its solutions while also giving it proof points to share with potential customers waiting on the sidelines for evidence of GenAI’s value.

In such a rapidly evolving market, the winners will be determined by usability, out-of-the-box use cases, and success stories from customers who demonstrate meaningful business benefits. Netcracker appears well-positioned to be one of them.

Appendix

On the Radar

On the Radar is a series of research notes about vendors bringing innovative ideas, products, or business models to their markets. On the Radar vendors bear watching for their potential impact on markets as their approach, recent developments, or strategy could prove disruptive and of interest to tech buyers and users.

Further reading

[*GenAI in Telecoms: Survey and Report – 2024*](#) (February 2024)

[“GenAI in telecom operations – living up to the hype”](#) (July 2023)

[*Generative AI Software for Telecom: Market Sizing and Forecasts*](#) (October 2023)

[*Netcracker Service Offering Review: 2023*](#) (September 2023)

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