Leveraging AI in Domain-Specific NaaS

NAAS ACCELERATOR LIVE PREVIEW

amartus

NTT Communications

TATA
COMMUNICATIONS

GNE

Global NaaS Event
By MEF

MEF Accelerator: Silent Comet

- This is multi-years project. For this year implementation, we intend to target 2 service provider domains (Tata Communications & NTT Communications) for project implementation.

- TCL and NTT Communications are building their own stacks for their networking domains, acting as both service provider & technology supplier.

- Amartus as a technology supplier is building a different stack, that will be applied also to TCL and NTT Communications domains for comparison reason, and to highlight various aspects of AI software development in networking domain

Why this is good as a community project?

- Work together as a community to establish best practices for building RAG-based solutions, including the evaluation of data sources' usefulness for specific domains, methods for measuring solution quality, and strategies for evolving the knowledge base without compromising solution quality.

- The project will remain open to leverage both La LLMs and ML techniques, contingent upon the nature of the data available from domain providers. Remember, LLMs excel in processing unstructured data such as logs and manuals, Machine Learning algorithms offer robust capabilities for analyzing structured datasets and identifying patterns, which can be great for AIOps.

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Why this is good for the industry (Business Value)

- This is the first step for close-loop troubleshooting, which will be essential for a fully automated NaaS.

- Enable users to manage their network operations in a self-managed manner and to have the flexibility to handle everything, not only provisioning their service through a NaaS portal, but also troubleshooting and speeding up RCA in case network issues and eventually making network configuration changes to fix the problem.

Internal business value

No expertise needed for provisioning and troubleshooting. This reduces OPEX

External business value

Enhancing the user experience of customers who can request new services, without the knowledge and expertise of the provider platform and service types. Customers can specify their intent and objectives in writing/text and RAG powered NaaS platform will provision the network to provide the desired outcome.

Next steps

Enterprise users can now, not only provision their own services, but potentially troubleshoot issues, without the need to know the details of service provider domains using the RAG approach

MEF NaaS Accelerator – GNE USE CASES POCs

Supporting inexperienced engineers in network troubleshooting

Goals:

Cost Efficiency
What strategies can we implement to minimize operational expenditure (OpEx)?

Time Efficiency
How to reduce mean time to repair (MTTR) in the dynamic NaaS setup?

Multi-vendor Networks
How can we ensure that the solution works with diverse networks and equipment?

Challenges:

Safeguarding Data Privacy
How can we ensure that private, organization-specific network data is integrated securely?

Simplifying Outcome Consumption
How can we create a solution that is easy to use and features a minimal learning curve?

Approach:

Automate troubleshooting with Gen-AI based copilot

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Objective: Intelligently enhance troubleshooting and speed-up RCA resolution without the need of network expertise

Example: Network connectivity troubleshooting
Identify the potential device failures without the need of network expertise.

Approach:
- Enhancing the output of LLMs with external knowledge using RAG (Retrieval-Augmented Generation) to fetch the domain specific data and augment the LLM's prompt
- LLMs can interact the network environment in real-time to facilitate the tasks.
- Provide a quick and cost-effective way to integrate domain specific knowledge to LLM through retrieval mechanism without needing to customize LLM.

Key points:
- Autonomous troubleshooting
- Intelligent network tools utilization
- Intelligent query the network information
- Network knowledge-based intelligent root cause analysis

I could not reach to my device. Tell me why?

I found the port 12 connected to switch 10.20.124.131 is the potential issue.

TATA COMMUNICATIONS

Network troubleshooting knowledge domain:
The information in the domain is used to augment the LLM's input.

Network topology, diagram

Troubleshooting tools: ping, tracert, nslookup, etc.

LLM

Blueprint for Next generation AI based NaaS

NTT Communications

By integrating generative AI into NaaS, it can enhance the system's intelligence, enabling non-expert users to effectively utilize NaaS. This, in turn, can lead to the widespread adoption of NaaS.
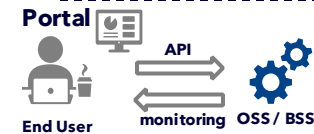
Past | Now | Future

Take a few days to complete an order.

form

End User   mail   Operator   Manual input   OSS / BSS
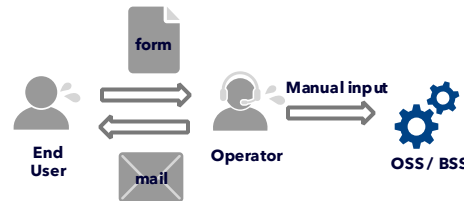
Take a few minutes to complete an order.

Portal

End User   API   monitoring   OSS / BSS

Real time monitoring of entire network

User manual / Ticket system

Following the latest documents using RAG

Portal

End User   Prompts   RAG   LLM   API   OSS / BSS
- monitoring
- traffic information
- log

By enabling operations through natural language, even non-experts will be able to use NaaS effectively.

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