Most Probable Cause (MPC) for MNO

Advanced Root Cause Analysis with Automation

Mobile Network Operators (MNOs) face several new challenges as their networks evolve to meet the needs of their subscriber's usage patterns and quality expectations. MNOs are also tasked with the complexity of building out 5G services while continuing to support today's LTE/VoLTE, IMS and other legacy mobile networks services. It is critical that their support and operations team have access to a holistic view of their network and individual subscribers use on a daily basis.

MNOs need end-to-end visibility to address a multitude of operational issues, detect problems in real time, and proactively respond to changing network and market dynamics to avoid future performance and security issues. MNOs need a single analytics solution that utilizes machine learning (ML) algorithms to quickly identify problematic areas of their network and the underlying root causes to provide superior quality of services to their customer base.

Most Probable Cause (MPC)

The Ribbon's Most Probable Cause (MPC) application is part of the wide-ranging Analytics portfolio. MPC enables customers to use machine learning algorithms to address service providers' root cause analytics when troubleshooting network performance and security issues across 5G, LTE/VoLTE, VoWiFi, IMS and Fixed Voice communications network. The MPC application brings forth pre-built ML algorithms and automation to provide end-to-end network troubleshooting and enable service providers to quickly diagnose and resolve network related issues.

MPC Benefits Service Providers:

- Descriptive Analysis - looking at the past for trending patterns
- Predictive Analysis - looking at the future for areas that might become a problem
- Prescriptive Analysis - action oriented for policy enforcement and orchestration

Mobile networks generate huge amounts for data that can only be ingested with a scalable analytics architecture that includes machine learning. With Ribbon's ML-based Most Probable Cause application, MNOs now have 3 deterministic approaches to identifying root causes of network or subscriber issues.

Ribbon's MPC allows your operations team the following new approaches:

1) Descriptive: looking at the past for trending patterns
2) Predictive: looking at the future for areas that might become a problem
3) Prescriptive: This is action oriented for policy enforcement and orchestration

In this case, MPC utilizes machine learning to infer relationships between problem areas and underlying protocols, dimensions, and metrics. For example (Figure 1), in a VoLTE environment MPC automates service assurance by reducing the analysis time which reduces Mean Time to Resolution. By looking at the relationships between various call failures or quality of experience issues with the RAN, core transport, network elements and even down to the end-user devices, Ribbon's MPC application enables MNOs to understand potential impact areas to their networks and subscribers.

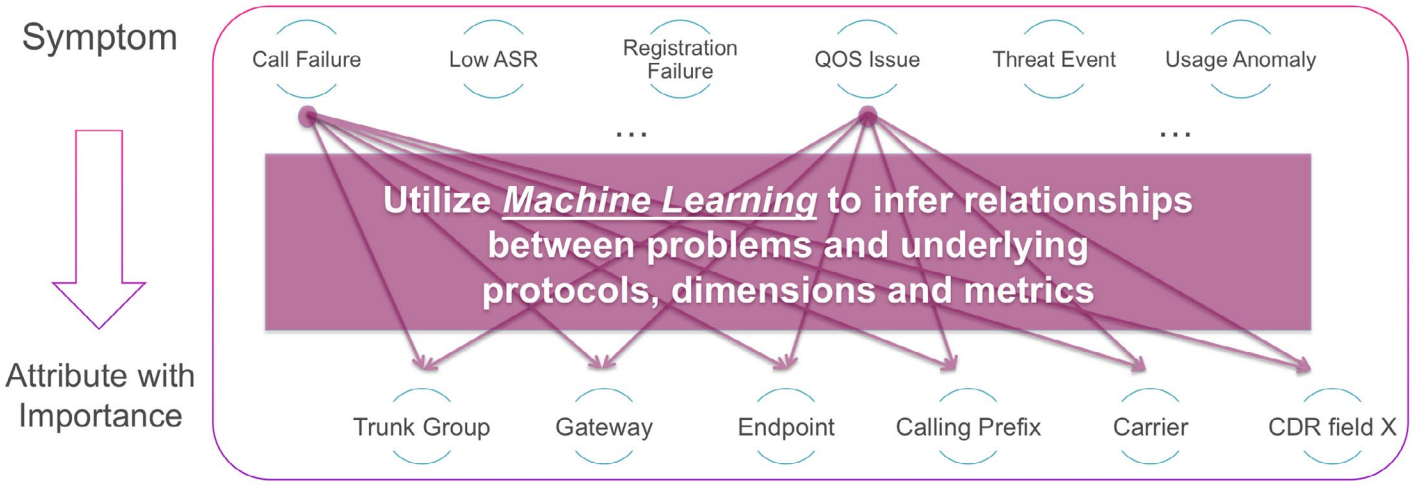

Figure 1 – Automated troubleshooting with MPC, reducing Mean Time to Resolution & Mean Call Handling Time in a VoLTE network

Figure 1, highlights an example on how the Ribbon Analytics MPC application utilizes machine learning to infer relationships between problems and underlying protocols, dimensions and metrics across different data sources in a VoLTE network. The MPC application provides proactive analysis (**Figure 2**: Dashboard) on performance issues relating to network, devices, and individual users. MPC in a mobile network can be used to automatically identify signaling issues, media failures, or customer QoE issues by providing ML models for each symptom category.

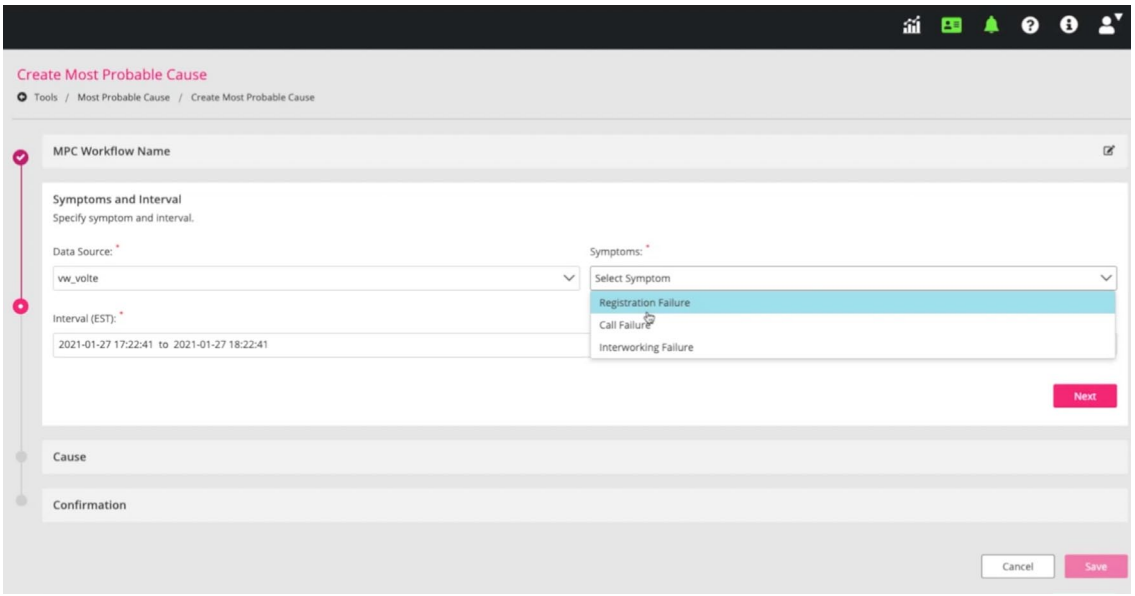

Figure 2 – Dashboard highlighting call failures in VoLTE network drilled-down to device level

Issue Resolution in Minutes

With Ribbon Analytics Most Probable Cause (MPC) application MNOs can diagnose complex networking issues across all possible contributors such as network domains, devices, and end-users. These new ML applications automate operators service assurance efforts by inferring relationships between problem areas and underlying protocols, dimensions, and metrics. This reduces critical analysis time and vastly reduces Mean Time to Repair, from weeks to minutes.

- Ribbon's new Most Probable Cause applications leverage ML algorithms and automation to provide end-to-end network monitoring and enable service providers to quickly diagnose and resolve network related issues.
- Ribbon's MPC applications reduce the amount of time it takes to detect, resolve, or recommend prescriptive actions from hours and days to minutes, dramatically improving MTTD and MTTR.
- The MPC applications integrate seamlessly into the Ribbon Analytics portfolio and can incorporate third party data feeds to create deeper inferences on potential, existing and future network problems.

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