Intro:

Hi everyone, I am Kewei. I am one coop student from uOttawa, I have been with the team for 6 months now, and today I am goona introduce my works about using the AI dashboard to monitor services performance and identify root causes for various metrics.

It will be divided into two different aspects, staring with data monitoring and visualization, then goes to the root cause analysis.

For the data monitoring, here I concentrate on performance counters and heartbeat, select key metrics from these two workbooks to create a comprehensive overview.

The dashboard allows you to filter template by based on variables, choose different time, and customize plots according to your interest. And I have added trending lines for a quick understanding of the overall data trend. Here the two types of approximation lines --- moving average, representing the average value over selected periods, and the long-term trend line – illustrating changes over the entire time span.

Also the different memory and heartbeat queries, along with detailed query history events, top users and workbooks.

Then we goes to the next part about finding the root cause analysis. Still we focus on the performance counter and heartbeat workbook, and to in the following presenting I will use the processor time from rapidresponse as our target variable, to find the correlation between this specific metric with others.

Correlation Analysis:

Here we enter the computation phase of our process. The biggest issue with our current data is that due to server storage settings, we can only retain a month's worth of data. This is insufficient for any standard time series computation. If we aim to achieve our goal of diagnosis - that is, to find the root cause, we must resort to some unconventional methods. The solution here is to employ a variety of mathematical computations. I will first calculate the correlation, then proceed with causality and inference, and finally, we will examine the results obtained from all these computations collectively.

While statistical correlation does not definitively establish causality, it remains a valuable tool for incident diagnosis. It often provides engineers with valuable insights for causal analysis. Correlation relationships, although not necessarily pinpointing the root causes of incidents, can serve as intermediary indicators, offering useful information that can lead to the identification of the root causes. Thus, despite its limitations, correlation analysis plays a crucial role in the process of incident diagnosis and root cause analysis.

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Problem, not question

I am goona show three different methods we do right here, as a beginning.

在开头说我们这次just focus on one that is the processor time,

Remove math, just approach and why, interesting results.