Integrated Streaming Analytics

Overview

In realtime analytics the most critical factor is analysis response time. Substantial latency improvements are achieved by placing a very high performance streaming analytics engine inside the datastore or in the communications path – taking the analytics to the data, not the data to the analytics. DRC Computer's Accelium™ analytics engine can be integrated into both data storage and communication systems to provide streaming analytics capabilities at both point of capture as well as point of storage.

DRC Accelium Accelerator

Upto to 40+ Gbps per accelerator

Very low latency – 20 microsecs

Unique data communications security

Highly scalable – many accelerators per datastore

Background. Traditionally data communications, storage and analytics have been separate functions. Typically the data was moved to the data analytics engine for processing. Two fundamental trends have caused a rethink of this strategy – the massive explosion of data to be analyzed and the response time required to analyze the data.

Streaming Analytics. By placing a high performance compute engine in the datastream complex analysis can be performed on the data in realtime rather than using a conventional store then process model. This results in much more rapid actionable intelligence. Rather than looking for a needle in a haystack the needle is found in the hay before its added to the stack.

DRC Accelium Accelerators can execute complex routines and algorithms at up to 100, or more, times faster than the same routines in software on a CPU. This massive compute power in a single device enables applications that were previously unattainable either economically or performance wise with conventional compute architectures.

Performance Applications. Data analysis leading to rapid actionable intelligence is important to Intelligence and DOD agencies as well as Financial Services organizations. Latency and accuracy are key. Pattern identification and matching are underlying characteristics of these time sensitive applications whether its Monte Carlo simulations, biometrics, inline text analytics, entity identification, correlation and tracking, malware analysis, or many other applications. These types of applications are ideally suited to the massively parallel architecture of the DRC accelerators because they are performance optimized when many operations are executed simultaneously.

The DRC Technology. The Accelium analytics engine is based on an FPGA (field programmable gate array). This device contains over 10,000 compute engines each of which execute on every clock cycle. So applications containing large numbers of elements that can be operated on simultaneously are ideal candidates for substantial performance gains by exploiting the massive parallelism of the DRC technology.

Very Low Power Consumption. DRC accelerators only consume about 25 watts per device even when executing at maximum performance. So if a conservative 30 times acceleration can be achieved versus software then collapsing 30 CPUs at 125 watts each to a single 25 watt accelerator results in substantial power and infrastructure savings.

Is ETL really necessary? The conventional method of data analysis is to extract, transform and load (ETL) the data into a database and then run analytics on this. This is a costly and time-consuming process, and increasingly doesn't meet the time demands of realtime actionable intelligence especially with social media. By performing inline, streaming analytics on the live datastream the need to ETL is obviated, delivering actionable intelligence much faster and at significantly lower costs.

The DRC Difference. With over 200 man-years of experience in developing low latency, high capacity solutions DRC has a unique talent in big data applications. By utilizing a task based architecture DRC has optimized the data management/data analysis balance. The key to the ultra-high performance is distributing processing capacity so that's its available where its needed rather than centralizing it. Moving the processing to the data versus the data to the processor.

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