A message-queuing framework for STAR’s online monitoring and meta-data collection

Content:
We report our experience on migrating STAR’s Online Services (Run Control System, Data Acquisition System, Slow Control System and Subsystem Monitoring) from direct read/write database accesses to a modern non-blocking message-oriented infrastructure. Based on the Advanced Messaging Queuing Protocol (AMQP) and standards, this novel approach does not specify the message data structure, allowing great flexibility in its use. After careful consideration, we chose Google Protocol Buffers as our primary (de)serialization format for structured data exchange. Such migration allows us to reduce the overall system complexity and greatly improve the reliability of the meta-data collection and the performance of our online services in general. We will present this new framework through its software architecture overview, providing details about our staged and non-disruptive migration process as well as details of the implementation of pluggable components to provide future improvements without compromising stability and availability of services.

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