

The Development Of The Testbed For Iiot Applications With High Availability

Recent trends in net-centric systems motivates the development of information management capabilities that ensure the right information is delivered to the right place efficiently within specified time-range to satisfy the quality of service (QoS) requirements in many different environments such as smart factory plant, air-traffic management control, etc. To support these information management capabilities, the Object Management Group has adopted Data Distribution Service (DDS), which is a standard for distributed middleware communication technology that enables business-critical information management systems to share information in real time by utilizing publish/subscribe communication pattern. A well-planned design of the DDS system is an essential requirement before the implementation phase begins, but the resources, such as software and learning materials for this relatively new concept, are limited and scarce. The current research of our laboratory is to provide a robust simulation software, named as Testbed, that could run an experiment of DDS's system design and will give a precise performance result and evaluation to the user's DDS system design.

Testbed 1.0 goals :

1. To create a test platform in NCU laboratory for ADLINK Company that consist of IIOT equipment and software.
2. Users can analyze the IIOT device dataflow characteristic in the Industrial 4.0 smart factory automation or even based on the existing production line by using simulation in the Testbed system. Testbed use Prismtech Vortex OpenSplice to construct Data Distribution Service (DDS) system. Simulation will generate a performance report that shows the Message latency and loss rate in the user's system design (Profile setting). It also shows the possible dataflow bottleneck based on the certain user's requirement and give recommendation to change the Quality of Service (QoS) setting to improve its performance.
3. To provide a good and friendly graphical user interface (GUI) for the users. Testbed system should give a meaningful data and information that will help the user to analyze and further improve their system design.
4. Testbed should be able to be used in many Industrial IoT test platform cases.

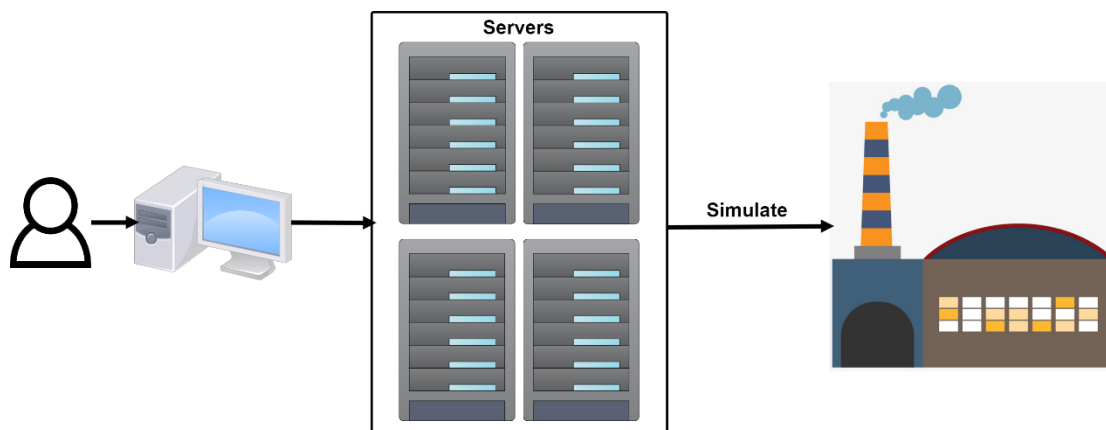


Figure 1 User will use testbed through the website and run simulation using server & virtual machine to simulate factory's plant system design