TRENDS IN PERFORMANCE TESTING AND ENGINEERING – PERFORM OR PERISH

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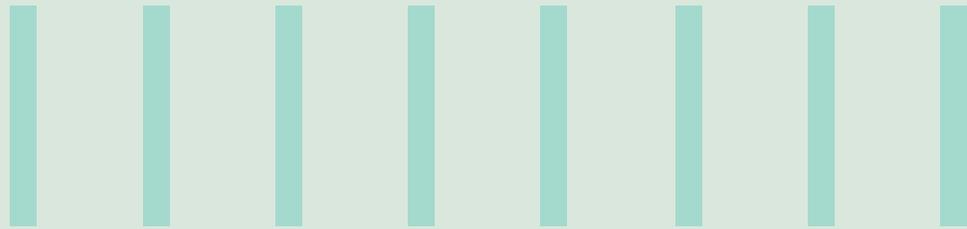
One is spoilt for choices in today's high consumerism and materialistic world leaving the end users both highly excited, vulnerable as well as extremely demanding. The array and diversity of choices is not just limited to technology, gadgets, smartphones, wearable devices, sports vehicles, FMCG goods, white goods, tourism, food choices etc. but is extensible, penetrating in every single aspect of one's day to day life. In today's world, no business can survive if one's product/ service/training or any item is taken to the market without being online – aka Digitization, Mobilization. Stepping two decades back, one wonders how business was being done and reached various parts of the globe!

With intense competition and aggression to extend the market footprint, every organization is launching multiple products or services catering to different user groups, age sectors, geo's based launches, customization, personalization or rather "mood based" coupled with

analytics, user preferences, predictions, etc. Businesses and IT organizations are moving at rapid pace to roll out their launches using the latest cutting edge technology and migration to newer technologies with the sole objective to ensure that they do not only retain their existing customers but also add to their base and be market-dominant leader.

As such, every application that is catering to diverse populations 24x7, 365 days a year must be Available, Scalable for future growth, Predictable and Reliable, lest the end user lose their tolerance. What was earlier 8 seconds being the norm for a page to be rendered has now reduced to less than 2 seconds or milliseconds and almost all launches going the "app" way, the response time expected is to be in milliseconds.

Devops, Agile, SMAC, migration to cloud, VPN, Big Data, MongoDB, Cassandra, - phew – the list is endless with newer technology, tools being launched by the day to address to ever expanding

technology landscape. The rush to absorb these technologies is also increasing leading to high vulnerability on the application's performance. There is a significant change in the way Performance Testing and Engineering including monitoring is being performed which is continuously evolving and becoming more complex.

With increased digitization and mobilization being the norm, data analytics and testing to scale would play a major role in application performance to ensure better customer experience is provided. DevOps and Agile development will "shift left" forcing Performance Testing and Engineering teams to make early assumptions on customer behaviors and their needs, viable experiences and growth spikes to run tests quickly and validate those assumptions. Early predictability leveraging analytics on the application performance will change gears in the way we do or approach performance testing and engineering.

Performance Driven Development (PDD) i.e. PE focus right from requirements to production rollout to post production, monitoring are one of the key trends noticed as it helps in early bottleneck identifications and tuning of the same. With Devops adoption having a close handshake between Development and Operations teams to address real production volumetric, PDD helps achieve it to a large extent. This in turn demands adoption of APM tools and methodologies.

The focus has now shifted for early involvement of Performance Engineering in the application lifecycle – Early Validation of PE proactively and not leaving it to be addressed prior to roll out which was a reactive approach followed earlier. Due to this, the industry is seeing increasing launches of tools/processes supporting proactive PE approach.

Businesses are demanding launches at faster pace with high Availability and Resiliency, yet no compromise on quality and security. All this at less TCO! Automation is the key across all SDLC and widely prevalent in testing types. As such every activity be in NFR gathering phases, scripting, modeling, test environment setup, releases, configuration management, etc. is getting automated which is inclusive of performance testing and engineering activities through these phases as well. Performance Engineering framework adapting to the agile/CI CD methodology for Web-based, Thick Client, batch job-based apps etc. needs to be developed, suited to the ever-changing technology landscape.

Financial institutions have been one of the front runners in IT adoption where they would need to meet the regulatory compliances inclusive of performance. With multiple banking packages/products to choose from trading platforms and investment management products like Appian Way, middle and back-office products like Alteryx, Analytical Workbenches, etc., clients are looking for standard benchmarks/baselines of these products and its impact on PE before rolling out full-blown implementation. With almost all the apps on Mobile channels to interact with their systems, there is an intense need to do PE at every stage, at every component and layer and across all stacks. Few impacting trends seen are:

Omni-channel retail customer experience – Performance testing and engineering to ensure consistent user experience across various touch points for application rewrite or new application development projects.

Technology and infrastructure rationalization – Mostly driven by cost optimization and compliance requirements PT&E done to ensure zero disruption in service and user experience in data center migration/consolidation, technology stack upgrade or movement from on-premise to cloud.

Bulk customer data handling-Retail and institutional customers are given more control to deal with their data. As a result of which interfaces such as dashboard, search, profiles, and homepages are becoming more interactive and data-heavy. PT&E is ensuring the performance SLAs are within acceptable limits in all user interactions.

Tackle Integration Challenges – PT&E has been carried out to deal with scalability and performance issues arising due to enterprise, partner integration, middleware upgrades, etc.

With intense pressure to reduce cost, banks are looking at embracing Clouds, DC consolidation and solutions around it. Consolidation of their LOB's, tools by encouraging COE/NFT factory is setup to reduce cost. Banks are also moving to deploying software's like SAP, PEGA, and Siebel etc. due to their low maintenance cost and better predictable quality compared to home-grown solutions.

Besides, PE for apps hosted in Cloud and Virtualized environments is also picking up due to the on-demand resource provisioning and sharable hardware

infrastructure that minimizes TCO. Performance simulation and Engineering of Day in the Life, for e.g., in a line of business through end-to-end PT of disparate systems analyzed. An example work-flow of a Mortgage loan, Mutual Fund, Credit rating process etc. is assessed for performance simulation.

While the request has always been to have the exact production environment with right volume for Performance testing but the move is to Test Right with the Next Best which has predictable performance on the production environment replayed. Hardware Capacity planning and seamless integration to PT/PE framework especially for new Automated Infrastructure spawning through CHEF/RECIPE, automated platform build-outs and other large Infragistics-related programs owing to Merger & Acquisition, Data Center migration etc.

DB virtualization for PT&E also seems to be another emerging trend, though not implemented on a large scale today as compared to service virtualization. Service virtualization and Agile or component

PT or layered performance testing and engineering also are gaining prevalence as there will be so many components and interfaces in financial products and Production Monitoring, Capacity Prediction Modeling based on that.

Another trend we are seeing in Retail space is that applications built using Microservice, Docker Container etc. which requires tweaking monitoring and analysis approach. An interesting emerging trend is Hybrid datacenter approach i.e. part of the system is hosted in Cloud and while part of it is hosted in a Permanent data center. This would require expanding the list of performance KPI to cover all aspects of both the DCs.In some cases, we are also seeing hybrid datacenter approach e.g. part of system in Cloud and part of it in on permanent data center. Again we need to expand list of performance KPI to cover all aspects of two DCs.

An upcoming hot trend seen is front-end Performance testing and engineering due to RIA/Web 2.0 popularity and to provide same personalized user experience across various media.

Conclusion

For any organization to survive in today's competitive world, it is important that the products/applications are Scalable, Predictable, and Available exciting the user, thereby ensuring loyalty as well as converting to business. However rich the application features are, when functionally tested, if the application is not responding to the expectations of the user, it is but natural to lose the customer.

With changing and demanding trends, it is important that Performance testing and Engineering are considered at all layers and components as well for successive use of the products launched.

Hemalatha Murugesan is currently heading the Performance Testing and Engineering in IVS at Infosys. She has been involved in setting up, pioneering, incubation and evolving emerging testing services like

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