WHITE PAPER

Tuning a Career in Performance Testing

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Abstract

Today, performance testing has become a niche' skill which has high demand, but it is becoming increasingly difficult for organizations to acquire and retain the right talent pool in this domain. Monotony sets in quite early for performance testing professionals and thus it becomes very challenging to keep them motivated and committed to projects. Also, in many organizations there is a lack of clarity amongst them on further learning opportunities and career paths for their professional growth.

This paper proposes a model or career framework that addresses the problem of the lack of clarity on possible career maneuvers, issues related to motivation and retention in performance testing. This model will also help performance testing professionals understand their options of vertical or horizontal career growth paths. Also, it discusses looking beyond the "tool" to grow in the performance testing profession.

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Introduction

In the last decade there have been phenomenal changes in the IT landscape like changes in the application architecture from desktop to client server, then to the internet and finally the evolution of the cloud. These changes have caused parallel changes in business users' requirements, which has led to organizations investing much more in performance testing than previously. Performance testing is a niche' skill, hiring and retaining people with the needed skill set has become a bigger challenge for project managers. Most project managers get amateur, performance testing enthusiasts, who have not really worked on enterprise performance testing projects, but have only been trained or have the working knowledge of one performance testing tool. Also, it eventually becomes difficult to keep them motivated and committed to a project for a long duration. The lack of a common body of knowledge for performance testing professionals leaves not only the managers, but even the testers perplexed about their career paths. Within a couple of years, most performance testers complain about boredom with their monotonous work.

The following strategies can be taken into consideration for building a career model that would facilitate motivating and retaining performance testers by making their jobs more interesting and exciting.

1. Build an apt team
2. Define clear career paths
3. Make work more challenging and rewarding
4. Focus beyond the "tool"
5. Induce an "innovation" culture within the teams

Build an Apt Team

Success of a team would depend on having the right mix of skilled people in the team for various roles and competency requirements.

What qualities need to be looked at for hiring a performance testing professional? A performance tester should have competencies of a good developer, DBA, network architect and a business user perspective as well. Apart from that, he needs to be inquisitive, have good analytical, statistical and presentation skills that would enable him to interpret performance test results effectively. A positive outlook, willingness to learn and patience to endure the monotony of the job are behavioral traits desired in a performance tester.

The team should have a mix of people who are good at performing varied roles. There is a need for people who have at least one of these capabilities - building an apt performance testing strategy, creating work load models, creating test scripts/ scenarios, executing scripts, monitoring and reporting test results.

Define a clear career path

A formal career path for a performance tester should be formulated. All performance testers should then be educated on the same with the information readily available to them as well. With this information the performance testing professionals will always know their next step on their chosen path, vertically or laterally. They need to be aware that there is much more to their performance testing career than just being a "tool mechanic". A five tier career model on performance testing is defined below based on competencies, needed skill set and activities performed at each level.

Tier 1: A **Performance Tester** executes test scripts, monitors statistics, reports the results and

- Performs identified performance tests like load, stress, endurance etc.
- Ensures the generation of the required workload at various points.
- Monitors and captures performance statistics of various system components like servers, databases, etc.
- Collects & reports defects and test results.

A performance tester needs to have the knowledge of at least one standard industry performance testing tool.

A performance tester with sound problem analysis skills, a conceptual understanding of the network, operating systems, web servers & database architecture helps him identify and report the issues of a system being tested & application servers and factors that impact the network output.

Tier 2: A **Performance Test Analyst** gets involved during the designing of the test script and

- Understands the available workflows for test script generation.
- Records/customizes scripts for simulating business transactions.
- Creates test scenarios for the simulation of online, batch and interface traffic loads.
- Builds the testing environment.

A performance test analyst needs to have advanced knowledge of performance testing tools and techniques which would help him create test scripts.

He should have a good understanding of performance testing concepts which includes concurrency, code profiling, scalability, latency, throughput, system architecture and test conditions. He should be proficient in at least one programming language and have a sound knowledge on database, SQL and stored procedures etc.

Tier 3: A **Performance Test Specialist** creates performance test strategy and workload models.

A performance test strategy is the roadmap that is followed through a performance testing project. It contains details on the load simulation approach, the needed testing tools, the test environment setup, the parameters to be monitored, etc. The performance test specialist is also responsible for building workload models. Workload models are a varied mix of transactions, created to simulate scenarios that match profiles and patterns of real time usage. Inaccurate modeling can lead to incorrect load simulation and an eventual production failure.

He needs to have a broad vision that encompasses the business risks and a comparative analysis on various industry tools, which would help him create an effective strategy for performance testing. A sound knowledge in statistics, various application protocols and the concepts of load balancing are competencies looked for in a performance test specialist.

Tier 4: A **Performance Test Architect** is responsible for performance engineering or performance characterization.

The performance test architect skills are niche' in the performance testing arena. He is responsible for performance modeling, benchmarking, capacity planning and infrastructure optimization. He understands the system, analyzes performance scenarios; prepares, verifies and validates performance & workload models, forecasts workload, tunes the system, adjusts system capacity and predicts the system performance. This is an iterative process, in which after the defects are detected, the underlying issue is diagnosed, resolved and re-tested to ensure that the issue has been fixed.

A performance test architect needs to have strong problem solving skills along with a sound knowledge of the relevant and current industry trends.

Tier 5: A **Performance Test Consultant** understands the client's performance requirements and helps them define performance testing objectives. He also aligns the testing objectives to the client's business objectives. A performance test consultant helps identify bottlenecks and make recommendations for enhancing performance. He should have a proven record in solving testing problems for clients, bringing in fresh perspective to situations, suggesting innovative solutions that help solve problems related to an applications' performance and have a good industry or functional domain knowledge.

Strong leadership skills and exemplified project and program management skills are desired traits in him.

Across various tiers, it is imperative that performance testing professionals have skills to collect and present data. Good communication and social skills would enable them to work with various stakeholders involved i.e. developers, application architect, DB/network admin, functional testers and business users.

A functional tester can move to a specialized testing domain like performance testing when he has gained adequate experience across the length and breadth of software testing and system engineering.

Make work more challenging and rewarding

Most performance testing professionals tend to get bored with the monotonous nature of their work. This is especially true, if they are mostly involved in test execution, monitoring and reporting test results. The monotony can be broken by giving them new challenging tasks. To illustrate, let us consider a tester who is involved only in execution. He can be assigned a task for workload modeling with a performance architect. This would be an opportunity for him to learn something new; he will be motivated with a new challenge and the team would also be enabled with a team member who has a new competency.

Also, senior team members can mentor juniors to help them monitor and maneuver their career paths. Another suggestion is giving a sense of control, independence and responsibility by letting them perform a job from start to finish; this will make their work challenging, make them more motivated in working towards the output and being the sole receipt of rewards related to positive outcomes. Also, the manager can have cross training programs so that testers can learn new skills. The diversification of a tester's skills would enable rotation of job roles and thus help in breaking the monotony of a role or task.

Focus beyond the "tool"

What is the most commonly perceived skill set of a performance tester? Most of the times, it is mistakenly considered synonymous to having the knowledge on a performance testing tool, like HP LoadRunner, rational performance tester or any other industry standard tool. Most of the testers also carry this perception, thus tend to get bored with their work, considering that they've already mastered the tool and not learnt anything beyond "the tool". However, in reality, the knowledge of one performance testing tool, accounts for approximately only one-third of total expected skill sets of a performance tester.

Why is building the needed skill set so critical for a performance testing team?

Consider the following scenario –

In line with the belief that the skill set of a performance tester is limited to the knowledge of a "single performance test tool", a project manager for a performance testing project hires people in his team who have been successful at functional automation using industry standard tools. All the testers put in a lot of effort, learning the performance testing tool and working relentlessly on the project for six months. However, a lot of defects are uncovered in UAT, which were missed during system testing.

What could have gone wrong in this scenario? It was obviously not the lack of

effort in "functional automation" by testers, but because there was a lack of the "bigger picture vision" or the "macro- vision", needed for a successful performance test.

One can become competent in the usage of a testing tool in a few months. However, becoming completely proficient in performance testing takes a couple of years. That is why it becomes very important to have the right career model in place for a performance tester. Performance testing professionals need to be made aware of other aspects of performance testing other than only learning and using a tool. These other aspects would include awareness and knowledge on the performance requirement gathering, performance test strategizing, capacity planning, work load modeling and performance engineering activities. They should be able to see a career path in performance engineering or performance consulting after performance testing.

Induce an "Innovative" culture in teams

The focus to increase the depth and breadth of skills of a performance testing team across various tiers is mandatory for fostering and nurturing it for a longer term. It takes years of experience to master skills across various tiers. Even the best of performance testers need to be continuously trained on leading edge technologies used by the applications and undergo detailed architecture level training in order to be effective in their job roles. Organizations should provide adequate opportunities for enhancing and sharing knowledge within an organizational framework by encouraging testers to take industry wide certifications on testing tools or other related technologies. This also increases a client's confidence in testing professionals and adds to the credibility of testing organizations. Many institutes offer testing related certifications, which enables testers to understand performance testing concepts comprehensively. Some vendors also offer tool specific training which is meant only for enhancing the technical skills of performance testers. Managers encouraging testers to create innovative products and improving processes are other aspects that can be looked into. This could include creating reusable scripts that would improve the team's productivity.

Conclusion

It is important to keep the testers informed on the available opportunities in the performance testing space that they can learn from and also help them understand and tread their career paths, where they can grow either vertically or horizontally. By implementing these strategies to cultivate talent and define clear career paths, issues related to motivation and retention of performance testing professionals can be addressed to a significant extent.

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