PERFORMANCE TESTING

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It is a practice conducted to determine how a system performs in terms of responsiveness and stability under a particular workload.

It can also serve to investigate, measure, validate or verify other quality attributes of the system, such as scalability, reliability and

resource usage.

It consists of following factors:

1. Connection time 2. Response Time 3. Throughput 4. Scenarios

Connection Time:

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Time to connect to Server from client

Response Time:

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Is a measure of how responsive an application or subsystem is to a client request

Throughput:

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Indicates the number of transactions per second an application can handle, the amount of transactions produced over time during a test.

Requests per second,calls per day, hits per second, reports per year, etc

Scenarios:

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In the context of performance testing , a scenario is a sequence of steps in your application. A scenario can represent a use case

or a business function such as searching a product catalog, adding an item to a shopping cart, or placing an order.

Bottleneck

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Used to describe a single part of a system that prevents further processing or significantly degrades the performance of the system as a whole

Capacity

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The degree to which a system can perform data processing until performance degrades. For example, the no of new customers being added to database.

Concurrency

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Normally this means the no of simultaneous virtual users driving transactions across the User Journeys in a given performance test scenario,

but can also mean the no of transactions synchronized to happen at exactly the same point.

Key Performance Indicators (KPI)

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The set of targets which set the expected performance targets within the Production system. These may include page response times (e.g.99%

of pages loaded<= 2 seconds), user concurrency, batch processing times, data throughput volumes, transaction failure rates, and underlying

infrastructure behaviour (e.g Maximum Average CPU used, Minimum Free Memory Available, thresholds for remaining physical storage/ disk usage,

loggin space etc)

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Load Testing

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A type of Performance Testing used to evaluate the behaviour of the system or component when the load on the system (via users and transaction)

progressively increases up to and including peak levels

Non-functional requirements (NFRs)

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Requirements that do not relate to the functioning of the system, but to other aspects of the system such as reliability, usability and performance.

Performance Engineering

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Activities designed to ensure a system will be designed and implemented to meet specific non functional requirements. Often takes place

following completion of testing activities that highlight weakness in the design and implementation.

Performance Test Plan

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Typically a written document that details the objectives,scope,approach,delivarables,schedule,risks,data and test envrionment needs for testing

on a specific project.

Performance Testing

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Testing designed to determine the performance levels of a system

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Reliability

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Related to stability, reliability is the degree to which a system provides the same result for the same action over time under load.

Scalability

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The degree to which a system's performance and capacity can be increased typically by increasing available hardware resources within a set of

servers (vertical scaling) or increasing the no of servers available to service requests (horizontal scaling)

Soak Testing

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A type of Performance Testing used to evaluate the behaviour of a system or component when the system is subjected to expected load over a

sustained period of time

Spike Testing

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A type of Performance Testing used to evaluate the behaviour of a system or component when subjected to large short-term changes in demand.

Normally this to test how the system responds to large increase in demand,e.g. User logins, Black Friday-like sales events etc

Stability

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The degree to which a system exhibits failures and errors when under normal usage. For example, erroneous errors when registering new users

under load.

Stress Testing

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A type of Performance Testing used to evaluate the behaviour of a system or component when subjected to load beyond the anticipated workload

or by reducing the resources the system can use, such as CPU or memory.

Transaction Volume Model (TVM)

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A document detailing the user journeys to be simulated , the click-path steps that make up the user journeys associated load/transaction volume

models to be tested. This should include information regarding the geographical locale from where users will be expected to interact with the

system and the method of interaction. e.g. mobile vs desktop

User Journey

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The path through the system under test that a group of Virtual Users will use to simulate real users. It should be noted that key performance

volume impacting journeys should be used as it is impractical to performance test all possible User Journeys, a good rule-of-thumb is to use

20% of User Journeys that generate 80% of the volume.

Virtual User

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A simulated user that performs actions as a real user would during the execution of a test.

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