IBM Software Group

P17 System Testing
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Module 5 : System Testing

Rational. software

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"For my birthday I got a humidifier and a dehumidifier…I put them in the same room and let them fight it out."

Steven Wright, comedian

Module Objectives

After completing this module, you will be able to:

- Define system testing
- Explain the focus of system testing
- List the types of system testing triggers

Defining System Testing

System Testing is the verification of an entire solution, or set of solutions, in predefined system environments. System Testing focuses on answering questions such as: does the solution perform as expected (response time, number of users) in the specific test environment?

You typically perform System Testing using realistic workloads and all required system drivers and supporting applications.

System Testing Focus

System Testing ensures that the product can be implemented, operated and managed seamlessly in a customer production enterprise.

Several types of tests are required to ensure the System Testing is complete:

- Load and stress
- Regression
- Recovery
- Migration
- Usability
- Serviceability
- Functional completeness
- Hardware and software interaction

System Testing Focus
Load/Stress and Regression

Focus	Description
Load and Stress	During load and stress testing, testers simulate realistic workloads by running jobs end-to-end, simultaneously, or a combination of both to stress the system beyond the expected levels that can occur in the customer's environment.
Regression	Regression testing objective is to show that "what used to work, still works". In System Testing regression validates the test cases which verify that new functionality introduced into the system does not affect existing functions.

System Testing Focus
Recovery and Migration

Focus	Description
Recovery	The objective of recovery testing is to show that the overall product is fault-tolerant, robust and reliable.
Migration	The objective of migration testing is to verify that the product can migrate seamlessly into existing system infrastructures from a variety of, if not all, previous ones.

System Testing Focus
Usability and Serviceability

Focus	Description
Usability	The objective is to verify the ease of use of a product, including how easy it is to learn what you need to know as a new user and how easy it is for the knowledgeable or repeat user
Serviceability	The objective is to ensure that the product can be serviced and maintained.

System Testing Focus
Functional Completeness and HW/SW Interaction

Focus	Description
Functional Completeness	When determining the completeness of the product, ask yourself what functions might be missing.
HW/SW Interaction	Because you execute System Testing in realistic environments, you focus on the interaction of hardware and software components throughout the system test.

System Testing Triggers

Five types of system testing triggers describe conditions that can cause a defect to surface during system test activities. These triggers identify the environments or conditions that exist when the entire system or product is integrated. The following are the five types of system test triggers:

- Workload volume or stress triggers
- Startup or restart triggers
- Recovery or exception triggers
- Hardware configuration triggers
- Software configuration triggers

System Testing Triggers

Trigger	Description
Workload volume or stress	Conditions that stress the product beyond the levels expected in production environments
Startup or Restart	A **startup** or **restart trigger** occurs when a system or subsystem is initializing or starting after an earlier shutdown or system failure.

System Testing Triggers (Cont.)

Trigger	Description
Recovery or exception	Occurs when you are testing the system to invoke an exception handler or some type of recovery code.
Hardware configuration	Occurs when you test the system to ensure that functions work correctly under specific hardware configurations.
Software configuration	Occurs when you test the system to ensure that the software functions work correctly under specific configurations.

Module summary

- System testing goes beyond testing functions against requirements and includes verifying that products can be operated in realistic production environments.
- The focus of system testing includes:
  - Load/stress and Regression tests
  - Recovery and Migration tests
  - Usability and Serviceability tests
  - Functional Completeness tests
  - Hardware and software interaction tests
- System testing triggers include:
  - Workload volume or stress triggers
  - Startup or restart triggers
  - Recovery or exception triggers
  - Hardware configuration triggers
  - Software configuration triggers