



Introducing IBM Rational's New Integration Testing and Virtualization Solution

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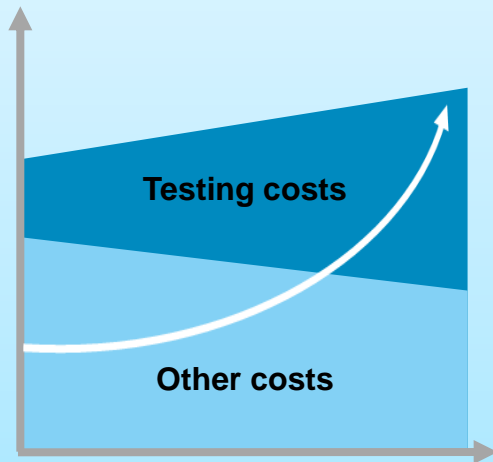
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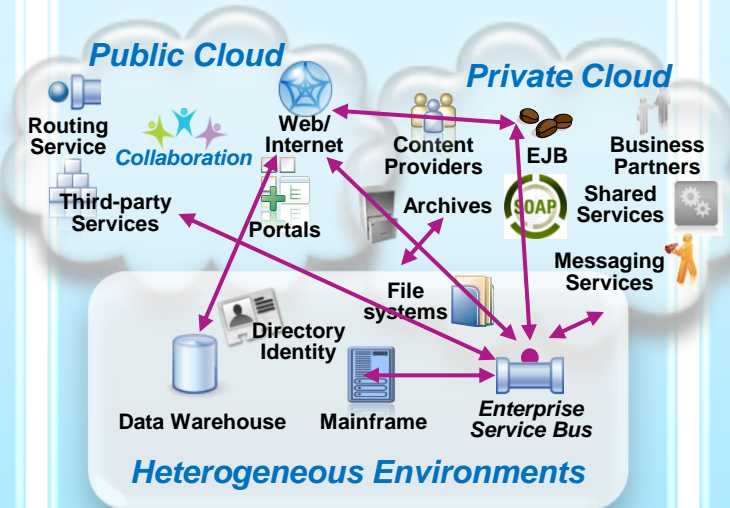
Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.

Application Testing in the Interconnected World

Increasing Cost of Quality



Increasing Development Complexity



Balancing Quality and Speed



13%

The forecasted increase in wages for India IT workforce in 2011

\$5-30 million

The typical investment to build a single test lab for a Fortune 500 company. Most have dozens ...

30-50%

The average amount of time testing teams spend on setting up test environments, instead of testing

* Source: <http://www.sei.cmu.edu/about/message/>

Past Solutions and Limitations

Huge Test Lab Costs

Labor, hardware, and software costs to manage test labs and environments

Longer Cycle Time

Days/weeks wasted waiting on the availability of a test environment

Higher Risk

Availability of test environments hinders developers ability to test properly

- Lots of under-utilized and costly test lab resources
- Development and QA waste a lot of time on unproductive activities: installation, configuration, trial/error, etc.
- A significant portion of the testing effort is pushed late in the process resulting in defects costing 10-100x to fix

IBM Rational Integration Test and Virtualization Solution

A Smarter Solution for Better Quality

Significantly Lesser Test Lab costs

- Test lab infrastructure costs can be reduced by up to 90%
- Labor involved in setting up test environments can be reduced by 80%+
- Reduced or eliminated the cost of invoking 3rd party systems for non-production use, fee-based web services

Reduced Cycle Time

- Test environments can be configured in minutes vs weeks
- More testers can be focused on testing, rather than configuring test environments
- More regression testing can be done independently from the User Interface, during development

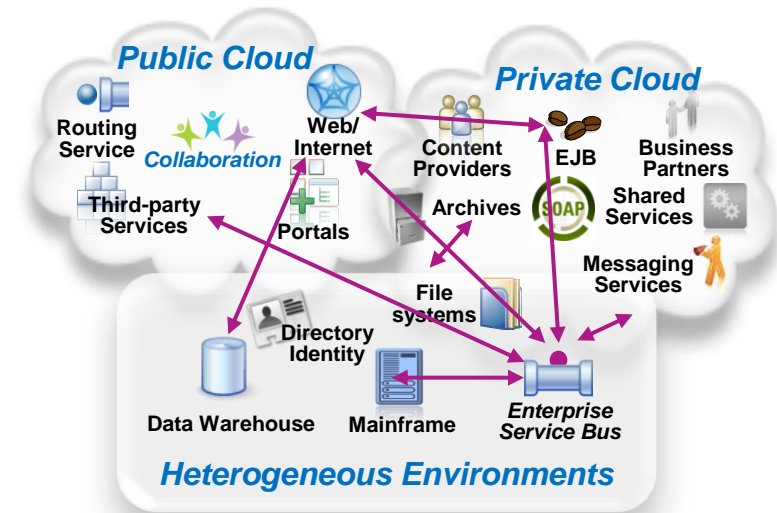
Lower Risk

- Developers have the means to test software earlier at the Service/API level
- Large teams working on different parts of an application or system can effectively do parallel development by virtualizing different parts of the system

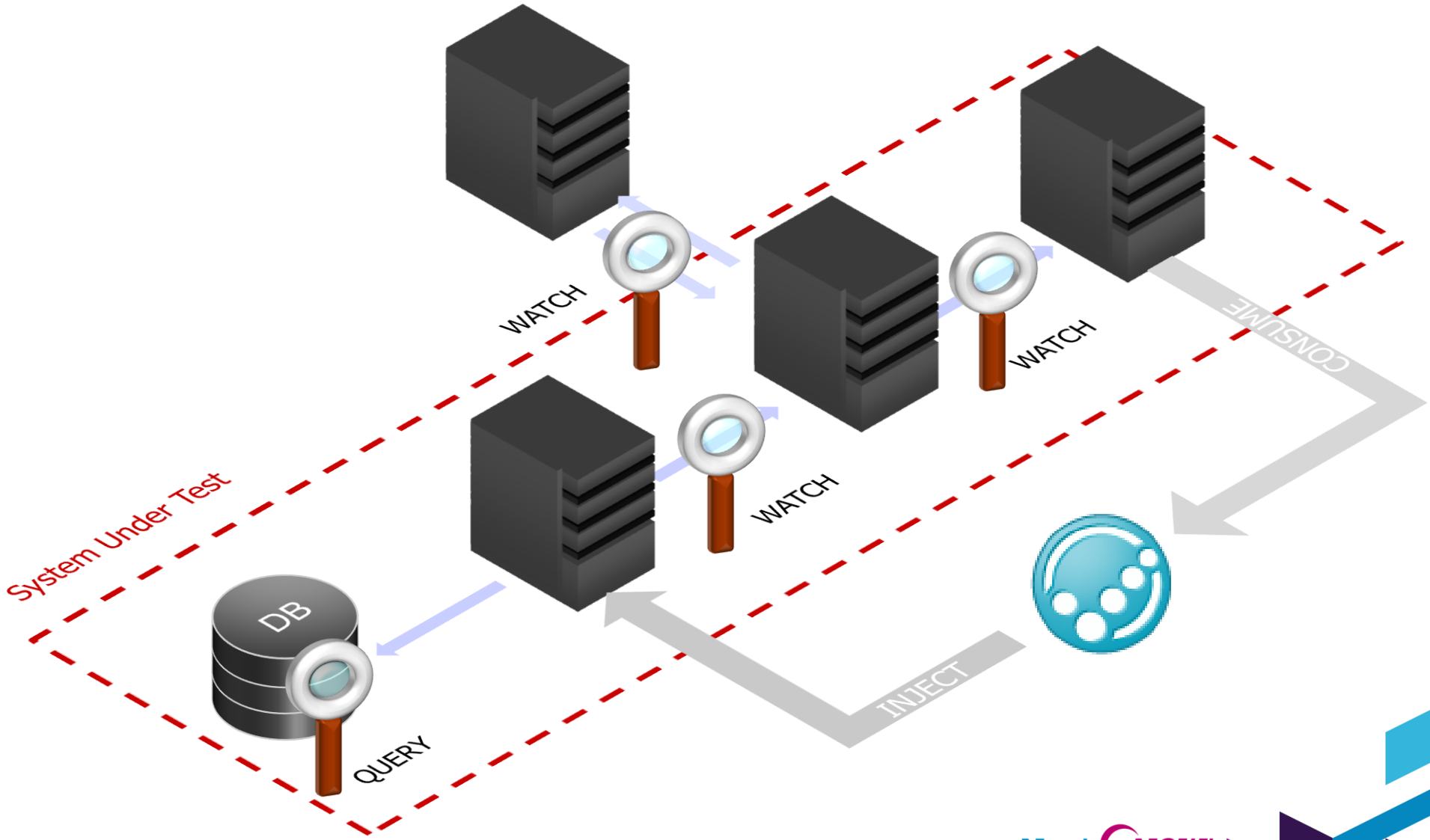
Green Hat, an IBM company

The Future of Testing = IBM Rational + Green Hat

- End-to-end testing for complex business applications using messaging and business process integration technologies
- Ensure the scalability of your messaging infrastructure and applications
- Enable continuous integration testing for agile software delivery

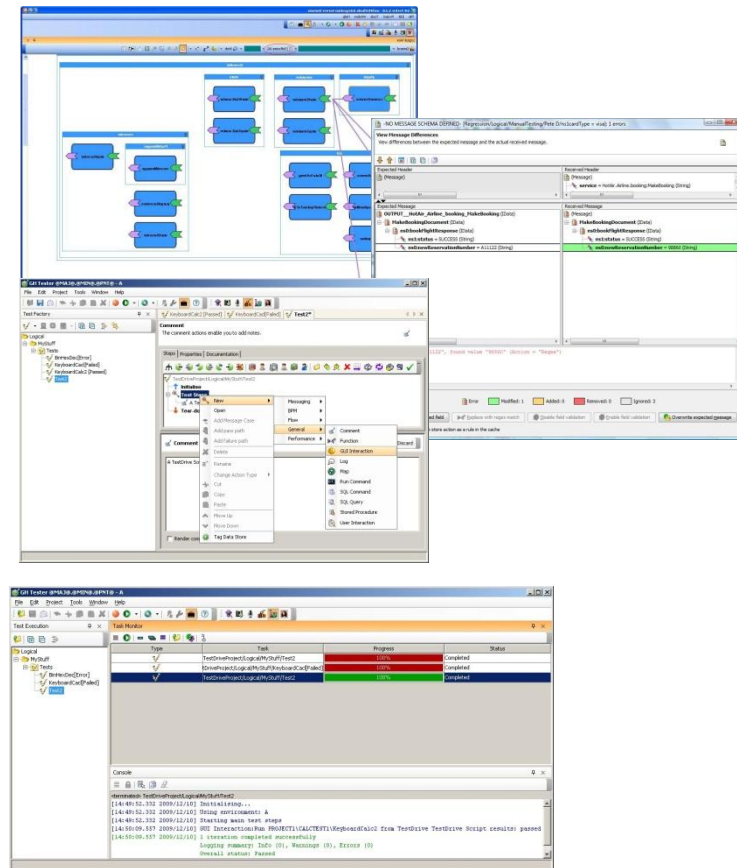


Functional integration testing



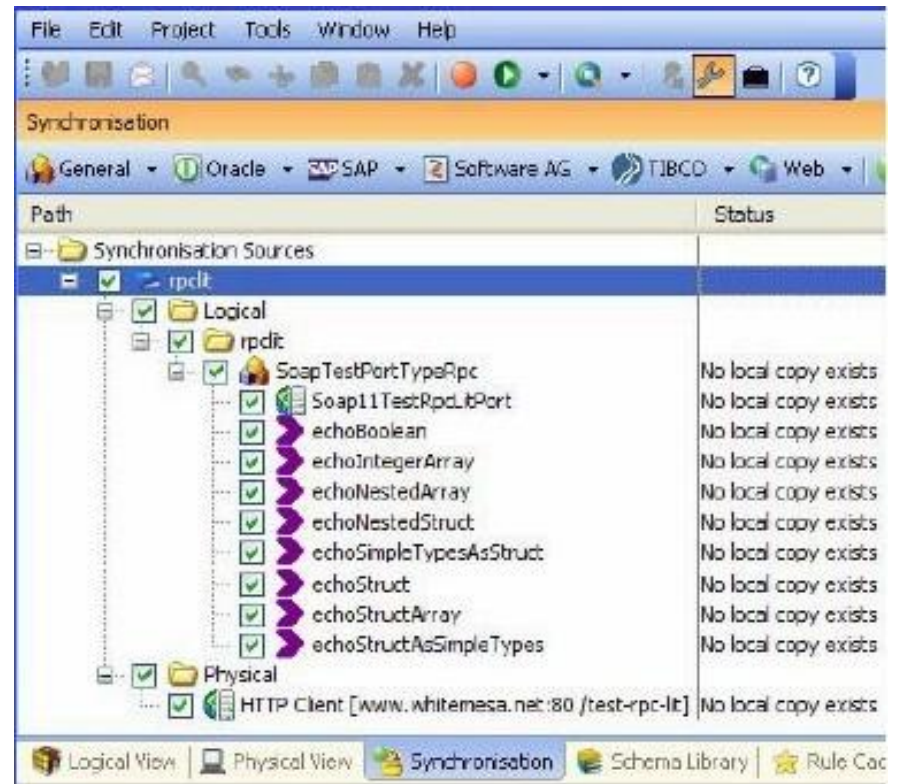
Rational Integration Tester

- Highlights of RIT functionality
- Code-free test creation
- Centralised Environment setup
- Graphical system views
- Flexible test execution
 - Data Driven
- Test Reports
- Allows for Continuous Testing
- Automated Virtualization and Stubs



Accelerate test development

- Synchronize your test project with your application environment
- Create an architectural view of your system to accelerate the development of test assets
- Supported resources include WSDL, webMethods Integration Server, TIBCO BusinessWorks, SAP systems, and Oracle Fusion



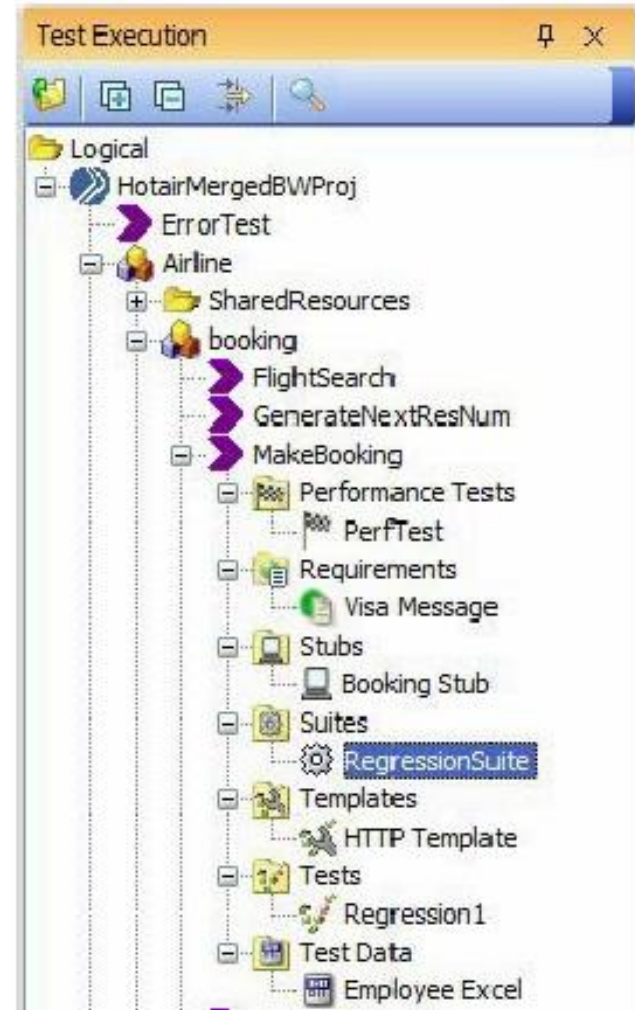
Code-free Test Development

- Create tests using
 - Recorded messages from a live system
 - Message ‘requirements’ defined in the project architecture
 - Forms and wizard-driven UI
- Build your own transports and formatters to deal with your project’s custom messages
- Leverage our library of industry standards for SWIFT, IATA, EDI, HL7 and more



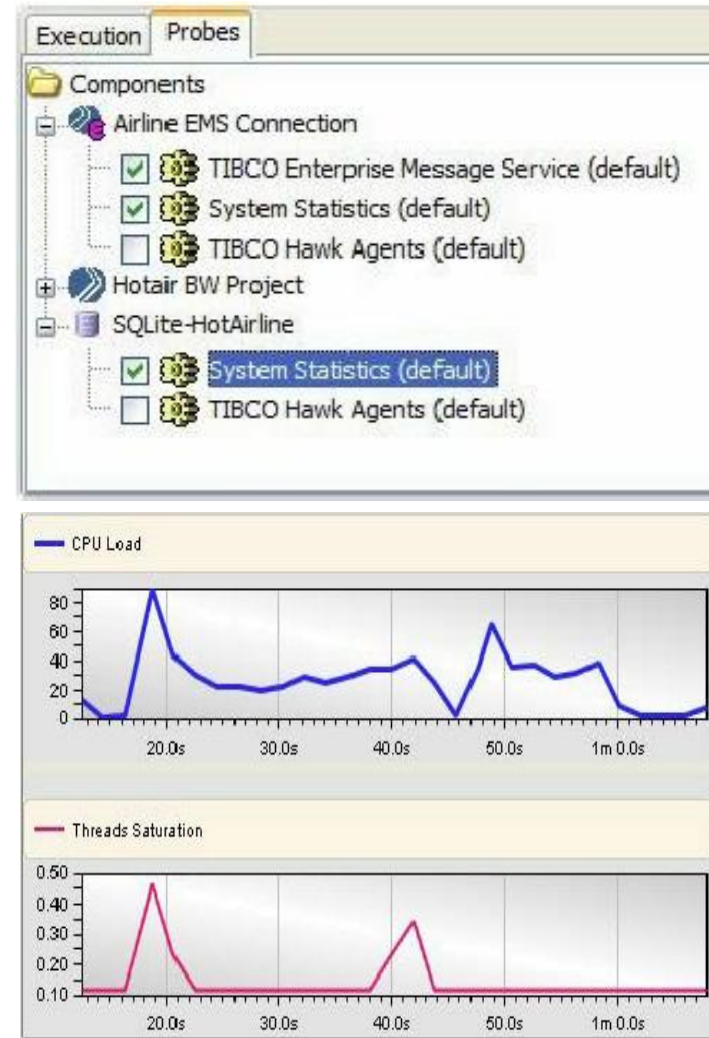
Flexible Test Execution

- Isolate test execution focusing on specific areas of your composite application
- Monitor events and messages in real-time for troubleshooting
- Repair Wizard helps correct validation errors
- Command line execution enables integration with build environments and other systems
- Integrates with Rational Quality Manger (oh, and HP Quality Center too)



Assess System Performance

- Reuse integration tests to develop real-world load scenarios
- Examine system health through a variety of probes
- Combine performance measurements with probe data to identify performance bottlenecks



Blockers for e2e testing

"Too costly to setup a test message feed for test"

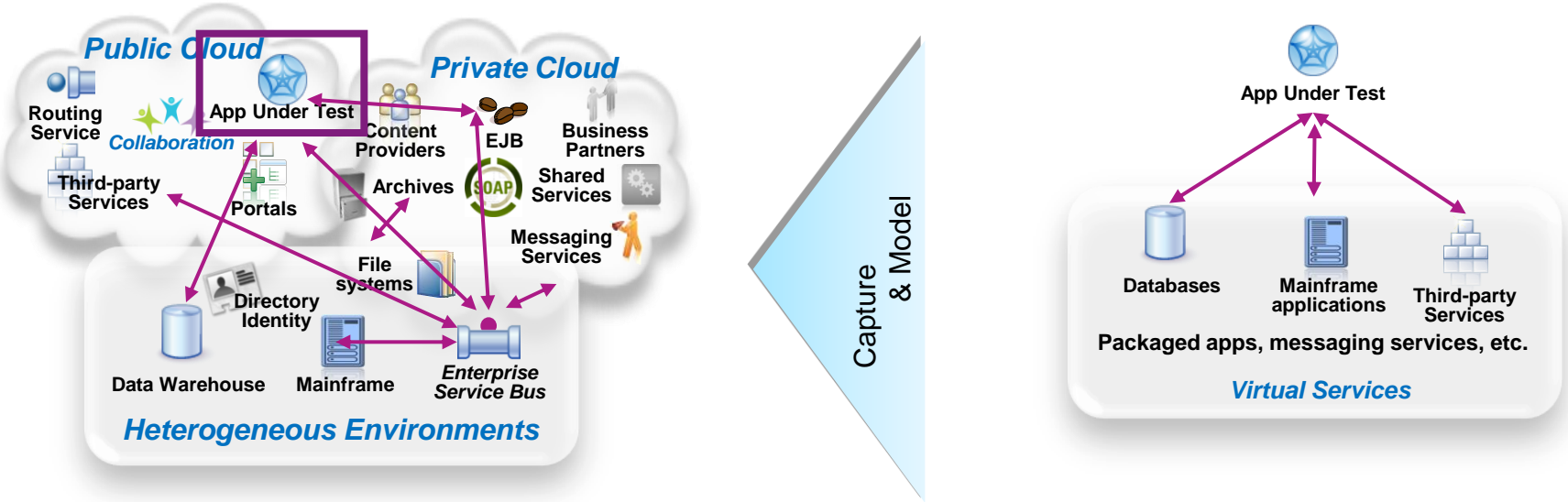
"We're still waiting for them to deploy"

"We don't have anything to test against"

"The environment will be another 3 weeks"

"The dev team hasn't started work on it yet"

What is Test Virtualization?



System **dependencies** are a key challenge in setting up test environments:

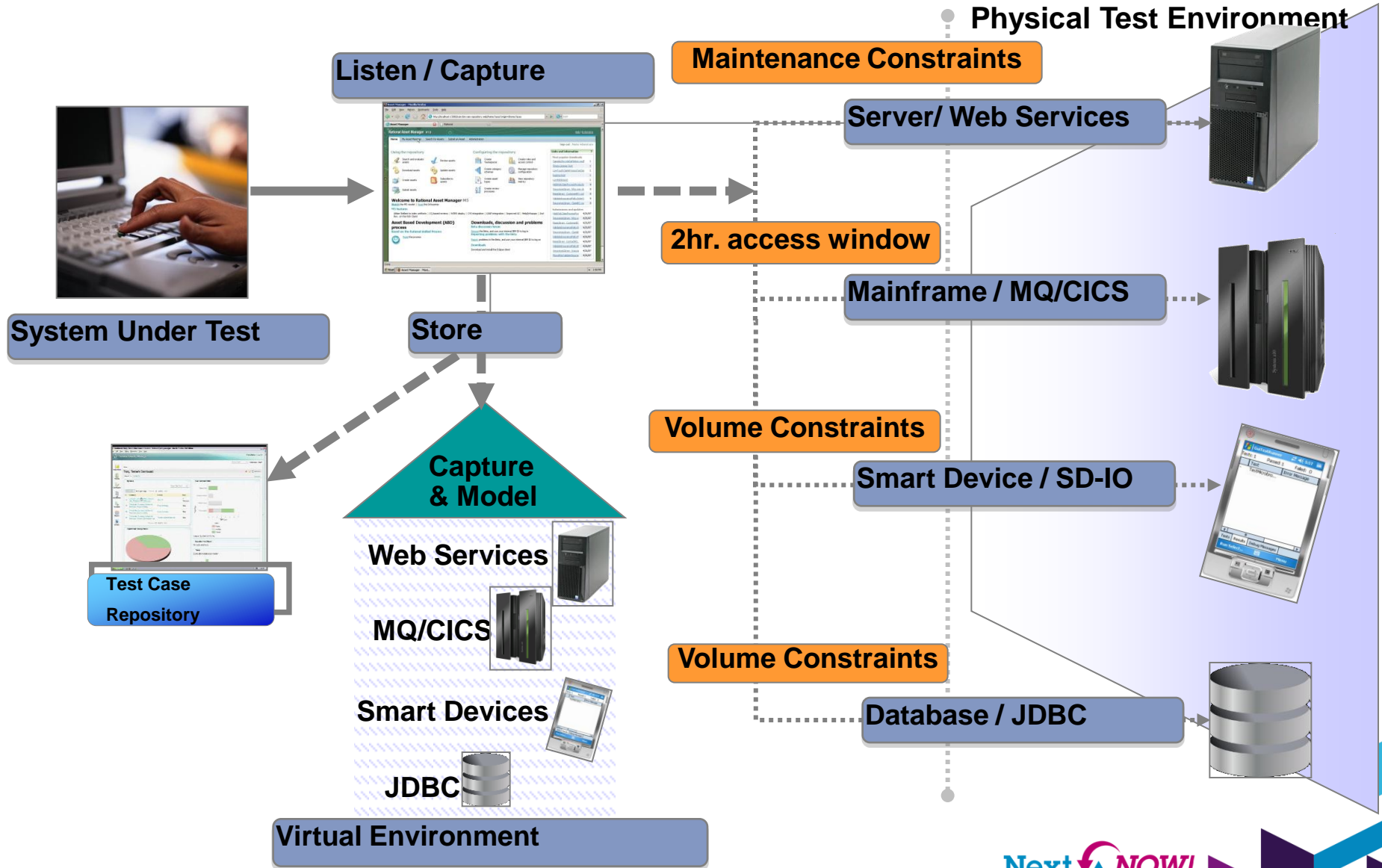
- ▶ **Unavailable/inaccessible:** Testing is constrained due to production schedules, security restrictions, contention between teams, or because they are still under development
- ▶ **Costly 3rd party access fees:** Developing or testing against Cloud-based or other shared services can result in costly usage fees
- ▶ **Impractical hardware-based virtualization:** Systems are either too difficult (mainframes) or remote (third-party services) to replicate via traditional hardware-based virtualization approaches

Test Virtualization enables to create “**virtual services**”:

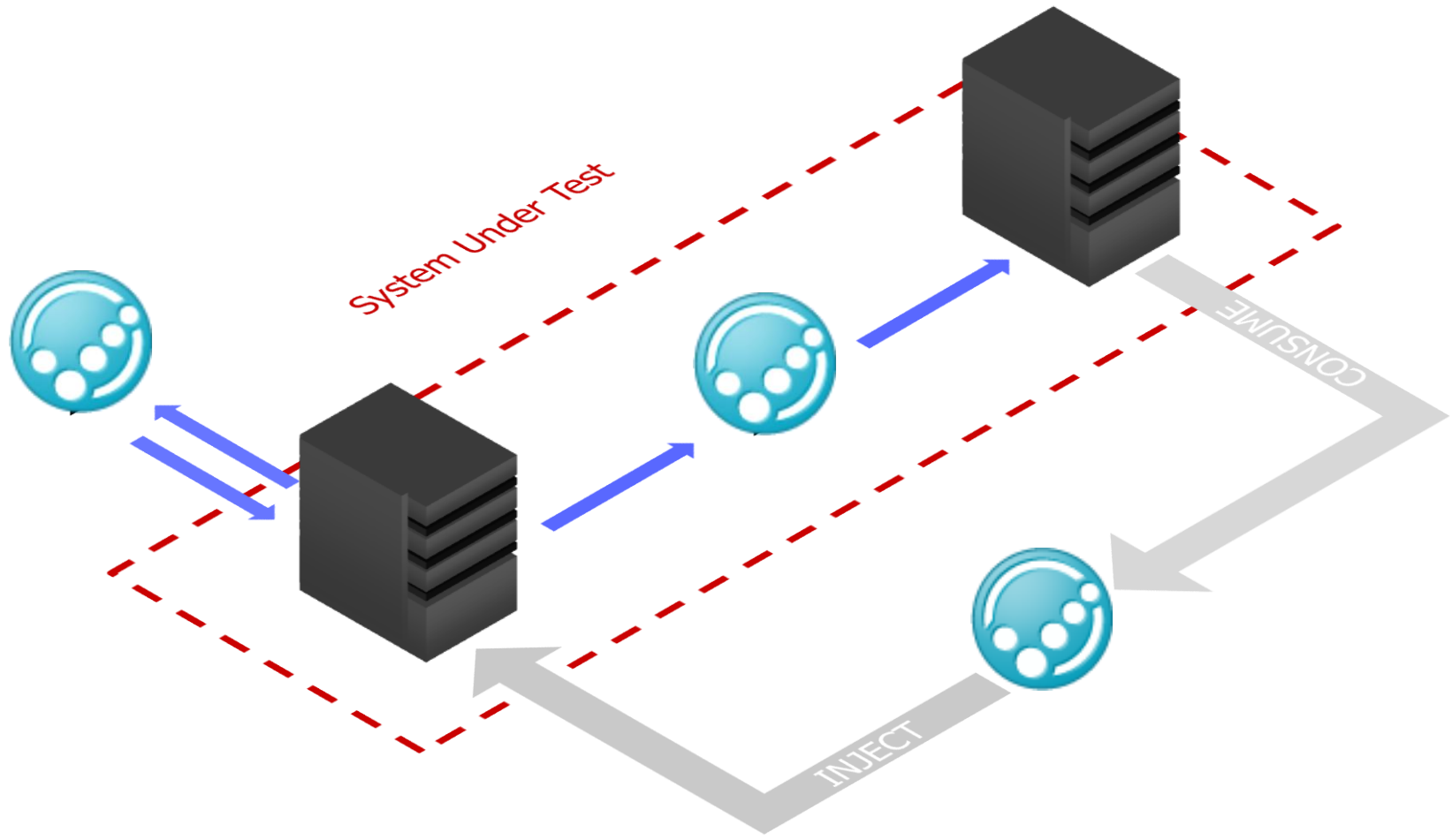
- **Virtual Services simulate the behavior of an entire application or system during testing**
- **Virtual Services can run on commodity hardware, private cloud, public cloud**
- **Each developer, tester can easily have their own test environment**
- **Developer and testers continue to use their testing tools (Manual, Web performance, UI test automation)**

Solution : IBM Rational Test Virtualization Solution

Test Virtualization listens to and captures the behavior and characteristics of back-end systems



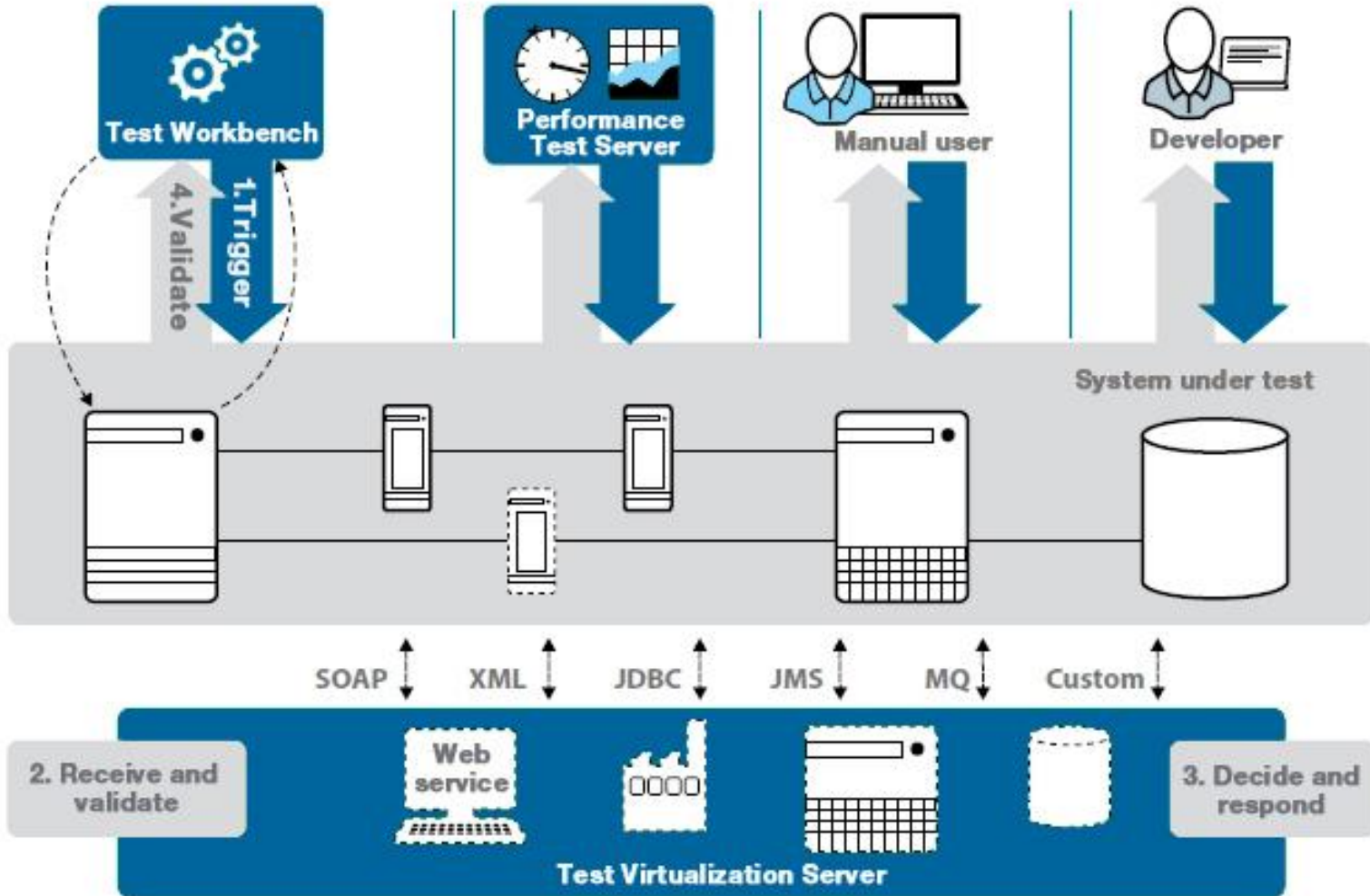
Simulating Internal & External



Virtual Application Types

Basic	Hard-coded response returned for given input
Non-deterministic	One-of-n hard-coded responses
Data driven	Input and/or output data specified in external data source (Excel, file, database)
Model driven, stateful	Input and/or output data kept in data model with complex relationships. Supports CRUD and other stateful behavior
Behavior	Extends model-driven to provide pre-packaged functionality, e.g. shopping basket, real-time data feed, trading exchange, order matching

Automate your tests at any layer of your application



IBM Rational Test Automation Solutions

IBM Rational Test Workbench

End-to-end functional, integration, and performance testing throughout your integration project lifecycle

IBM Rational Performance Test Server

Service and application-level performance testing for your integrated application environment

IBM Rational Test Virtualization Server

Leverage application virtualization to increase agility and deliver cost-effective 24x7 test environments



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