Accelerate cloud and composite application delivery

Eliminate development and testing delays with HPE Service Virtualization

Do you have project teams compressing release cycles in fast-moving Agile sprints? Are mobile, cloud and composite application projects being delayed by development and testing teams dealing with constrained and unavailable services, and application components?
Enter HPE Service Virtualization, designed to enable your teams to create, develop and test against virtual services that simulate real service behavior with no constraints, available anytime.

HPE Service Virtualization removes development and test wait time to deliver composite applications and software composed of integrated shared services faster. It enables application teams to deliver business value faster by supporting composite application architecture where teams decouple technologies into smaller units of functionality that are rapidly assembled to meet user demand quickly. Composite application architecture promises reuse and rapid integration, empowering Agile teams to develop, test and deliver new capability rapidly, meeting the needs of an ever-impatient business stakeholder.

However, companies embarking on composite application initiatives, such as service-oriented architecture, cloud service integration, and orchestrated business processes, will soon realize that these approaches come with inherent constraints. The challenge comes from interdependency which inherently exists between functional components resulting in delays for developers and testers that can limit expected responsiveness and may risk cost overruns and on-time project delivery.

Adding to the complexity facing development and testing teams is that, composite applications often span organizational boundaries both internally in an organization and externally via services provided by third-party vendors, such as cloud service providers. Shared and cloud-delivered services often bring security and access limitations and constrained availability due to already being in production or being outside the corporate firewall, making their access for development and testing difficult, if not impossible. In addition, shared services may be sandbox services accessed by multiple departments often at the same time and as such, they present constraints due to overlapping demand and required scheduling of access to services. Third-party and cloud services present constraints as a result of their business model—a pay-per-transaction access approach, often too costly for development and testing teams. Occasionally a service's implementation may not even exist, also causing delays for development and testing. And finally, shared services may be a component of a production system or have compliance and privacy restrictions on their data, and as a result, not allowed for testing.

About HPE Service Virtualization

All the constraints described previously are real issues for today's fast-paced development and testing teams. HPE Service Virtualization is expressly designed to help constrained teams progress on their application delivery objectives. HPE Service Virtualization software enables project teams, including both development and testing teams, to work on limited or unavailable services by providing a simulated, virtual environment. Virtual services help teams manage the costs and complexity of application development, and functional and performance testing for distributed, loosely coupled composite applications and service oriented systems whether they are accessed in-house and via the cloud.

By having the ability to create and use a simulated model of unavailable or constrained services, testers lower the time required for test preparation and API, integration and complete end-to-end testing.

HPE Service Virtualization also helps performance and load testing teams working to modify performance behavior of services to test otherwise hard-to-achieve limit conditions. By having the ability to test against virtual services which are not subject to the same performance constraints as production services, teams have key data and insight to accelerate composite application load testing, problem isolation and to identify problematic areas more rapidly.

Developers benefit as well as they can dramatically speed up prototyping with the ability to quickly create functional mockups, reuse simulated services from other projects, or have local simulation copies of third-party services.

Composite application testing limitations

- Service still under development:
  - Only design documentation available
  - Project teams in the middle of implementation—Service not functional due to some defect
- Shared services available for testing only in limited capacity at off-peak hours:
  - Business-critical system available only at night
  - Production services can't be accessed outside of release window
  - Production data under security or compliance access restriction
- Need to access a third-party service, unsuitable for high-volume functional or performance testing:
  - Vendor does not allow load testing
  - Cost per transaction too high
  - Service unstable, others have access and make changes

Figure 1. Composite application testing limitations

Hybrid composite applications need virtualized services

With HPE Service Virtualization software, application teams create virtual services that can replace targeted services in a composite application or multistep business process. The simulation of the actual component's data and behavior enables developers and testers to begin performing functional or performance testing even when the real services are not available, data access is restricted, or not suitable for the particular test.

In addition to virtualizing inaccessible services, HPE Service Virtualization adds measurable value by:

- Allowing broader test coverage, such as negative test scenarios
- Supporting testing when a slow response time is needed for testing a specific scenario
- Allowing testing of business and data services when security and compliance requirements restrict access
- Allowing teams to create virtual services from cloud and third-party components by introspecting interfaces and recreating behavior
- Simulating impact to applications when moving services to shared private cloud

Measurable value for faster testing

HPE Service Virtualization delivers an easy-to-use, visual, and technically rigorous solution that works within existing development and testing environments. It reduces the cost of developing and testing new applications and leverages existing tester skill sets through its integration with Hewlett Packard Enterprise automated testing tools for functional and performance testing—HPE Unified Functional Testing and HPE LoadRunner. Testing agility improves across the overall application lifecycle by allowing on-demand, 24x7 access to simulated test environments, provisioned in the development and test labs. Without delays caused by constraints, testers can test more and release faster with the confidence of hiwgh quality.

Implementing virtual services

HPE Service Virtualization software is comprised of two components: HPE Service Virtualization Designer and Server.

The user creates and edits virtual services in Designer. They are then deployed to either an embedded or standalone HPE Service Virtualization Server where clients can access them, and where the simulation takes place.

When the Service Virtualization Server is run standalone, the Server runs independent of the Designer(s) connected to it providing lab configuration flexibility. The services deployed to the standalone Service Virtualization Server continue in simulation or in their learning process, even when the Designer disconnects from the server.

Using HPE Service Virtualization

Simulation models can be created in a variety of ways. They may be rapidly created from service interface specifications, recorded from real or logged communication among components, loaded from static data sources, spreadsheets, and databases, or reused from previously finished testing projects.

HPE Service Virtualization capabilities include:

- Create simulations of real-world application behavior
- Expose virtual services for parallel development and early functional testing
- Create functional and performance simulation models with the help of step-by-step wizards
- Support a wide array of message formats including Web Services/SOAP, XML, text and binary, REST and COBOL
- Support a wide array of transports including HTTP(s), MQ, JMS, TIBCO EMS, IMS Connect, and CICS
- Virtualize database access including JDBC and manipulate resultant virtual data services
- Expose the simulation model as a live service while allowing safe access and authentication for testing
- Modify data and performance models easily according to changes in test conditions and performance needs
- Define and visualize topology diagrams to understand dependencies and boundaries of underlying systems on the level of remote API calls
- Trigger creation of functional and performance simulation models from virtualized topology

Figure 2.
HP Service Virtualization
Designer in simulation mode

- Measure the accuracy of the simulation against real model behavior
- Provide understanding of overall test conditions in consolidated reports
- Store and invoke simulation models directly from HPE Application Lifecycle Management (ALM) software via Unified Functional Testing and Load Testing components to ease test environment setup, execution, and analysis of results

Benefits

HPE Service Virtualization is easy to get started with and works within existing development and testing environments.

Benefits include:

- **Faster release cycles:** HPE Service Virtualization allows parallel development and early functional testing by removing delays caused by restricted access or the creation of customized stubs.
- **Reduced budgets required to run and manage complex test environments:** HPE Service Virtualization reduces infrastructure costs including hardware, software licenses, and maintenance by supporting multi-team and center of excellence (COE) use for shared virtual services.
- **Decreased third-party expenses:** HPE Service Virtualization allows reduction of reduces third-party costs incurred by running repetitive functional and performance tests that access pay-per-use components. Manage third-party costs by allowing creation of local simulated instances of third-party components.
- **Reduced risk by engaging quality teams early:** HPE Service Virtualization allows testing earlier in the cycle, without the necessity of having the end system ready. As a result, it helps to identify defects at a time when they are cheaper and quicker to fix.
- **Decreased risk with broader test coverage:** HPE Service Virtualization allows testing for malicious back-end system behavior. Allow functional and performance engineers to imitate negative behavior or breakdown of dependent systems. By having the ability to change back-end performance characteristics, it also allows them to optimize application performance and find the best deployment configuration.

Leverage HPE Service Virtualization across HPE ALM

HPE Service Virtualization is a component of the HPE Applications portfolio and integrates with HPE ALM and HPE Quality Center. HPE ALM and Quality Center users gain enhanced access to shared virtual services for earlier functional testing and more complete service performance validation for composite applications.

The integration of HPE ALM with HPE Service Virtualization allows users to set up and control virtual environments, and change simulation status, as well as functional and performance characteristics of virtualized services, directly from automation tools. Users can then consolidate simulation results directly into their real-time test reports for offline analysis and provide a consolidated evaluation of application performance and functionality.

Learn more at
Quickly establish and provide access to limited or no-availability services through a simulated, virtual environment. To know more about HP Service Virtualization, visit hp.com/go/SV.

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