Data sheet

HP Service Virtualization

Develop and test faster by virtualizing constrained application components

Today's consumers have grown up with the expectation that their experience is mobile, always on, and easily enhanced. Consequently, we have a new style of IT that motivates everyone involved in building, validating, and delivering applications to find new solutions for decreasing time to market, reducing defects in production, shortening software development cycle times, and enabling constrained testing teams to increase test coverage.

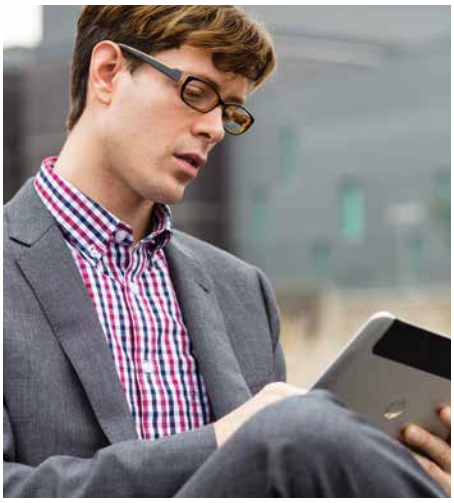
In this new IT environment, your development and testing teams confront a range of challenges. These include compressed release cycles in fast-moving iterations and agile sprints, as well as delays from limited or no access to services and application components. Challenges like these reduce the probability of success for your mobile, cloud-sourced, cloud-delivered, and composite application projects.

How can you overcome these challenges? You need not only the active collaboration of your development, test, and operations teams but also the support of software tools that can create solutions when resources are constrained. HP Service Virtualization software meets this need.

HP Service Virtualization provides you with behind-the-scenes technology targeted at mitigating constraints. It removes development and test wait time that otherwise slows delivery of composite applications, which are composed of integrated shared services and components. HP Service Virtualization is designed to enable your teams to create, develop, and test software against virtual services that simulate real service behavior with no constraints, available anytime.

The challenge of composite applications

If you're embarking on composite application initiatives—such as cloud service integration, service-oriented architecture, or orchestrated business processes—you will soon realize that these approaches not only bring flexibility but also constraints. The challenge comes from interdependency between functional components, which can lead to delays for your developers and testers.



In addition, your development and testing teams often rely on services that are provided by third-party vendors, such as cloud service providers, which may pose security and access limitations. For example, the business model for third-party and cloud-delivered services—a pay-per-transaction access approach—is often too costly for development and testing teams to pay for access to test against the third-party service.

Occasionally a service implementation may not even exist or may be a component of a production system, have compliance and privacy restrictions on its data, and, as a result, may not be allowed for testing. Besides challenges from composite application architecture, application data access can also pose formidable challenges for your development and testing teams. As software becomes more complex and distributed, it also tends to serve more customers and transactions over time and, as a result, generates ever-greater volumes of data.

Typically, there are dozens of data sources in a wide variety of storage containers serving composite applications and orchestrated business processes. When you run functional and performance tests, there is a need to accommodate for the actual data. While sanitization of data for security and privacy is important, the process can often become a large manual effort; and the difficulty of setting up adequate data scenarios from users and out-of-scope systems that will not allow data to be copied can often lead to delays.

When you have a need for big data, stubs and mock-ups are not enough. Your developers can write their own code to stand in for the dependencies in the application, but this approach usually cannot generate the volumes of data necessary when big data is a must for the other phases of the software cycle, including testing.

"We help customers to realize the power of mockup creation and management. [HP Service Virtualization software] is a clear and highly-integrated solution."

—Matthias Scholze, CEO, QMethods, Business and IT Consulting GmbH

Why composite applications need virtualized services

With HP Service Virtualization software, your application teams can create virtual services that can replace targeted services in a composite application or multi-step business process. By simulating the data, performance, and behavior of the actual component, your developers and testers can begin performing functional or performance testing even when the real services are not available, when data access is restricted, when data is difficult to attain, or when the services are not suitable for the particular test.

In addition to virtualizing inaccessible services, HP Service Virtualization adds measurable value for development and testing by:

- Modeling data, performance, and network behavior; and allowing broader test coverage, as required in negative test scenarios
- Supporting load 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 on applications when moving services to the cloud or consolidating data centers

Frequent composite application development and testing limitations

Developers and testers face many roadblocks in the course of working with composite applications. Common barriers include:

- A service is still under development.
  - Only design documentation is available; the code is not complete.
  - Project teams are in the middle of implementation.
  - The service is not functional due to found defects.
- Shared services are available for testing only in limited capacity at off-peak hours.
  - Business-critical systems are available only at night.
  - Production services can't be accessed outside of the release window.
  - Production data is under security or compliance access restriction.
- Developers and testers need to access a third-party service; unsuitable for high-volume functional or performance testing.
  - The vendor does not allow load testing.
  - The cost per transaction is too high.
  - The service is unstable; others have access and make changes.
- Government security restrictions post challenges.
  - Application programming interface (API) calls cannot be shared.
  - Service codes should be certified to be secure and compliant with government regulations and policies.
- Port restrictions limit service access.
  - In these cases, information will be released to help simulate these services.

During development and test, HP Service Virtualization can be an irreplaceable tool to simulate these services.

Common barriers

- Uncomplete service
- Limited capacity
- Third-party access
- Government security restrictions
- Port restrictions

Enter HP Service Virtualization

All the constraints described previously present delay-producing issues for today's fast-paced development and testing teams. HP Service Virtualization is expressly designed to help constrained teams make progress on their application delivery objectives. HP Service Virtualization captures and simulates the behavior, data, and performance characteristics of dependent systems.

As a result, a virtual service is deployed that represents the dependent system without any constraints, ultimately allowing software to be developed and tested near continuously. Virtual services help your teams manage the costs and complexity of application development, as well as functional and performance testing for composite applications and service-oriented systems, whether they are accessed in house or via the cloud.

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

"Sogeti shortened test cycles by 30 to 50% since automating test-use cases by using HP Service Virtualization."

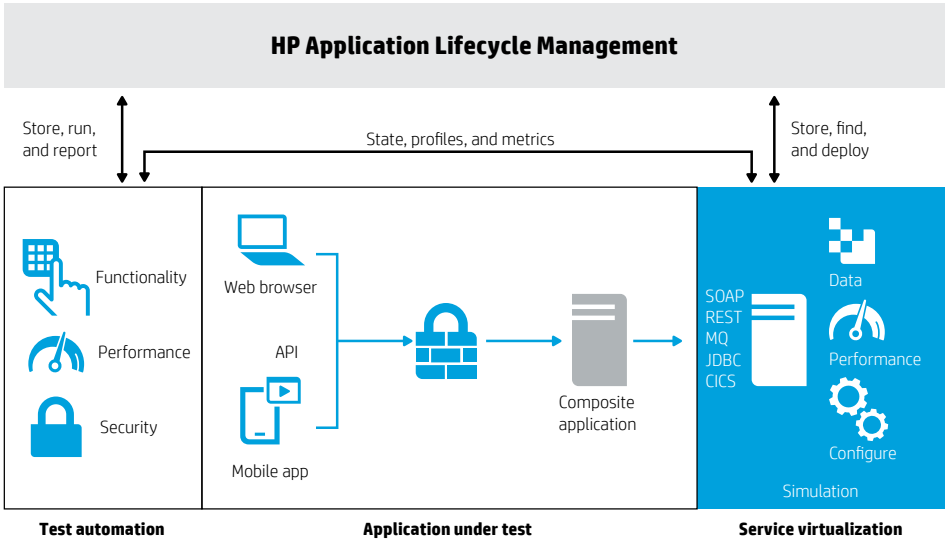
—Marc Tuffreau, IT Professional, Sogeti

HP Service Virtualization innovations

HP Service Virtualization offers:

- A complete, scalable environment for the design and deployment of virtual services for use across co-located and distributed development and testing teams
- Location-independent virtual service management: a simplified web-based administration environment for easy access and management of virtual services across your development and testing teams
- Integration to HP Application Lifecycle Management (HP ALM) and HP Quality Center (HP QC) as a shared repository, simplifying execution of application lifecycle activities; these activities leverage virtual services, including developer tasks, lab management, performance and functional test execution, and defect management
- Support for end-to-end testing of virtual services with enhanced integration to HP testing solutions, including HP Unified Functional Testing (HP UFT), HP LoadRunner (HP LR), and HP Performance Center
- Ability for services to be virtualized faster with scripted rules with no coding required. With the enhanced scripted rules, JavaScript simulation is four times faster. The large scripts can be edited easily with a better GUI and built-in tabs. The new version also includes improved error reporting that allows your team to virtualize services faster.
- Virtualization of a wide breadth of service transports and protocols, from web and service oriented architecture (SOA) services to proprietary middleware technologies, mainframe technologies, ERP, and B2B protocols
- New support for SAP (RFC, IDoc, and XI/PI) and Oracle Advanced Queuing (AQ) virtualization
- Support for modeling data, performance, and network behavior, including complex network models integrated from HP Network Virtualization, based on technology acquired from Shunra, for data manipulation in virtual services, such as masking

Figure 1.
HP Service Virtualization supports near continuous development and test automation in constrained environments.



A unified approach to manage development and testing

HP Service Virtualization can leverage HP ALM and HP QC as a shared repository, where HP ALM provides functional performance and security testing, test and test lab management automation, and test management solutions. By using HP ALM and HP QC as a shared repository, virtual services can be published, versioned, shared, and managed by your distributed teams, along with the rest of your development and testing assets. Automated testing using HP UFT, HP PC, and HP LR is also integrated with HP Service Virtualization, which can easily leverage the virtual services published in HP ALM and HP QC, providing a single point of management and integration.

Breaking logjams that inhibit performance testing

Your performance and load testing teams working to modify performance and network behavior of services can use HP Service Virtualization to test otherwise hard-to-achieve variance and limit conditions. By having the ability to test against virtual services, which are not subject to the same performance constraints as production services, your teams have the key data, insight, and unconstrained ability to accelerate composite application load testing.

In addition, with HP Service Virtualization integration with HP Network Virtualization you can import network models to impact service behavior accounting for critical variables, such as throughput, latency, and jitter. Your performance testing teams will be able to identify bottlenecks more rapidly and isolate problems they may not have found with constrained services. HP Service Virtualization allows for near continuous testing of load, performance, and scalability throughout your development, test, and systems integration cycles.

Accelerate development when services are not yet available

Your developers also benefit from HP Service Virtualization. With the ability to quickly create functional mock-ups, they can dramatically speed up prototyping, reuse simulated services from other projects, or have local simulation copies of third-party services available for quick access in their integrated development environment (IDE).

Measurable value for faster testing

With an easy-to-use, visual, and technically rigorous solution, HP Service Virtualization works within existing development and testing environments. Through its integration with HP automated testing tools—HP Unified Functional Testing and HP LoadRunner—HP Service Virtualization reduces the cost of developing and testing new applications and leverages existing tester skill sets for functional and performance testing. Testing agility improves across the overall application lifecycle by allowing on-demand, 24x7 access to simulated test environments provisioned in your development and test labs.

HP Service Virtualization in action

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

The user creates and edits virtual services in the designer. The virtual services are then deployed to either an embedded or stand-alone HP Service Virtualization Server, where clients can access them and indicate where the simulation takes place.

When the HP Service Virtualization Server is run stand-alone, the server runs independent of the designer(s) connected to it, which provides lab configuration flexibility. The services deployed to the stand-alone Service Virtualization Server continue in simulation, or in their learning process, even when the designer disconnects from the server.

The HP Service Virtualization Server has a web-based portal that allows the services to be stored, grouped by mode, and sorted by name. Also, services can be searched and filtered by key words. From the portal, services can be simulated, stopped, locked, and unlocked. The portal also features a run-time dashboard where real-time service status and consumption can be monitored. Secure user administration is flexible with profile roles and access control lists.

"We've reduced the effort to create simulations by 80 percent, which is a huge amount, and have been able to virtualize services that were still under development."

—Bernd Schindelasch, Leader for Quality Management and Testing, EWE TEL Oldenburg, Germany

Creating the virtual services

With HP Service Virtualization, you can create simulation models in a variety of ways—build rapidly from service interface specifications, record from real or logged communication among components, load from static data sources (that is spreadsheets and databases), or reuse from previously finished testing projects.

HP Service Virtualization supports the following virtualization capabilities:

- Create simulations of real-world application behavior
- Expose virtual services for parallel development and early functional testing
- Create functional, network, and performance simulation models with the help of step-by-step wizards
- Support a wide array of message formats, including web services/Simple Object Access Protocol (SOAP), XML, text and binary, REST, and COBOL
- Support a wide array of transports, including HTTP(S), MQ, JMS, TIBCO EMS, IMS Connect, CICS, SAP (XI/PI, RFC, and IDoc), and Oracle AQ
- Bring more robust support for SAP RFC/IDOC protocol with SAP RFC (Remote Function Call)/ IDOC (Intermediate Document) implementation
- Virtualize database access, including Java Database Connectivity (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, network, 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
- Measure the accuracy of the simulation against real-model behavior
- Provide an understanding of overall test conditions in consolidated reports
- Store and invoke simulation models directly from HP Application Lifecycle Management
- Get an easy-to-use management interface with support for user roles, profiles, and access control lists
- Assess virtual service behavior with run-time dashboards
- Leverage WebLogic JMS virtualization, and Mutual SSL authentication
- Simulate delayed asynchronous responses with a transactions per second (TPS) metric using the new Performance Batch Simulation
- Improve SV management with Safari browser support
- Gain flexibility—in addition to Microsoft® SQL Server, HP Service Virtualization now also supports Oracle DB for storing data

HP Service Virtualization

- Build
- Record
- Load
- Reuse

Enhanced support for SAP applications with HP Service Virtualization

HP Service Virtualization greatly enhances the support for creating virtual services of constrained SAP environments.

Technical capabilities for SAP include:

- New SAP RFC (Remote Function Call)/IDOC (Intermediate Document) and robust support for SAP RFC/IDOC protocol
- Communication between SAP server/modules
- PI/XI calls to other SAP servers or components
- Third-party application calls SAP server over API
- SAP server calls third-party applications
- SAP database calls

Support for the following SAP technical adapters:

- JDBC (relational database management system)
- Java Messaging Service (JMS)
- SOAP (web services based on SOAP)
- Plain HTTP(S) protocol

Application adapters:

- Remote Function Call (RFC)
- Intermediate Document (IDoc)

Benefits

- Faster release cycles
- Reduced budgets required to provision and manage complex test environments
- Decreased third-party access expenses
- Reduced risk
- Higher quality with broader test coverage

Achieve velocity and quality with the help of HP Service Virtualization

Because HP Service Virtualization works within your existing development and testing environments, it's easy to get started. Service Virtualization is required infrastructure for any development and testing team looking to improve speed of delivery demanded by today's mobile, composite, user-centric applications.

Benefits include:

- **Faster release cycles:** Speed development and testing cycles by removing delays due to restricted access or the overhead of creating customized stubs. HP Service Virtualization allows you to conduct parallel development and early functional testing. You can also reduce cycle time by enabling rapid publishing, accessing, and provisioning of virtual services across teams for around-the-clock development/test access. And by virtualizing constrained SAP enterprise applications, you can achieve faster business application time to market.
- **Reduced budgets required to provision and manage complex test environments:** Reduce 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 access expenses:** Cut third-party costs incurred by running repetitive functional and performance tests that access pay-per-use components. Also, you can manage third-party costs by allowing creation of locally simulated instances of third-party components.
- **Reduced risk:** Test earlier in the cycle or sprint, without the necessity of having the end-system ready. As a result, you can identify defects earlier when they are cheaper and quicker to fix.
- **Higher quality with broader test coverage:** Test for malicious backend system behavior. Your functional and performance engineers can imitate the negative behavior or breakdown of dependent systems; and with the ability to change backend performance characteristics, they can also help optimize application performance and find an excellent deployment configuration.

Enhance your ROI of HP Service Virtualization with HP Professional and Education Services

HP offers a portfolio of Application Lifecycle Management Professional Services, including services for implementing and optimizing Service Virtualization. HP ALM Professional Services provide testing expertise, innovative service delivery models, design, implementation, and education services across the complete HP Applications portfolio. HP ALM QuickStart packages provide HP best practices and knowledge transfer to help you implement HP ALM software, including HP Service Virtualization, in as few as two weeks.

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