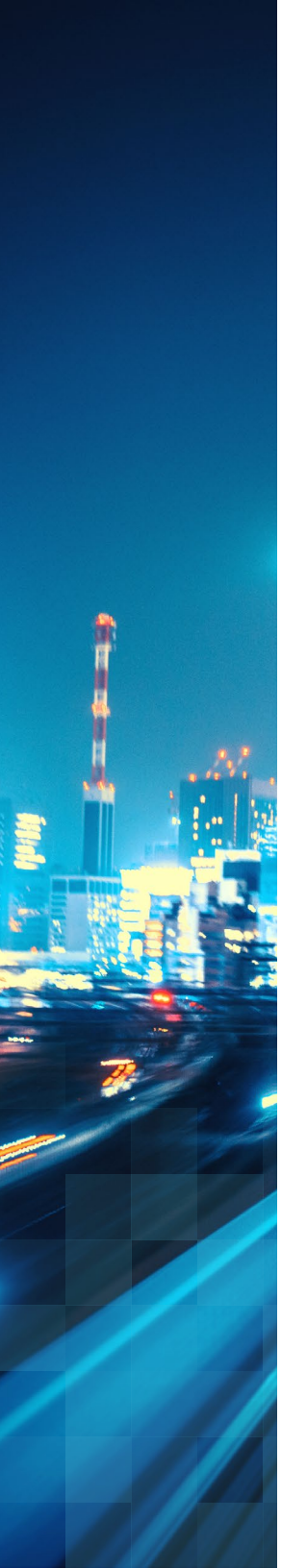
EBOOK

The Who, What, How, When, Where and Why of DevTest

Driving continuous testing with virtual services

ca technologies



Enabling DevTest

Automated, continuous testing speeds up the application delivery pipeline.

The DevTest framework from CA Technologies provides solutions that focus on shortening the development and testing cycles to increase speed to market, improve quality, reduce infrastructure spend, and mitigate risk. Components of the DevTest environment, CA Application Test invokes and verifies functionality at every layer of the application, and CA Service Virtualization simulates unavailable systems by emulating their dynamic behavior, data, and performance. These solutions help create an excuse-free testing environment that uses virtual services to speed up the testing of applications while increasing quality.

Overcoming Testing Challenges

A major challenge for development and QA teams is the inability to quickly and efficiently test components they are working on. Time-consuming, manual testing processes, manual test data management, data volatility, and data sensitivity directly impact the timely delivery of quality applications.

By leveraging test automation and virtual services to simulate unavailable systems across the software development lifecycle (SDLC), developers, testers, integration, and performance teams can work in parallel, taking advantage of increased collaborative opportunities in a DevOps-enabled IT environment. This productive testing environment helps build strong, empowered development and testing teams.

Automated DevTest with virtual services facilitates exploratory testing by enabling testers to create more on-demand test scenarios and conditions without extensive environmental and data provisioning.

Elements that differentiate CA testing with virtual services:

- Parallel development and testing in a DevOps environment
- Shift left to test early and test more in the software lifecycle
- Widest multi-protocol support available
- Simulation of observed behaviors, stateful transactions, and performance scenarios
- Realistic ways to emulate application testing
- Ease of administration

CA Service Virtualization and CA Application Test solution set

You Can Test Continuously With Virtual Services

Quick, highly productive, collaborative chain of testing for the continuous delivery of quality applications

Service virtualization provides testing teams across the application development and delivery ecosystem with a chain of API test capabilities that are automated and easy to maintain—saving time and effort. DevTest with virtual services has the ability to virtualize APIs and drive API tests at any layer, even for unavailable or isolated systems.

Component-level performance testing

Virtualize dependencies to isolate the system under test (SUT) to the desired granularity (and scope to any number of applications or systems) and conduct a performance test at any phase of the SDLC.

Shift left and modularize the ability to performance test to provide more developers and testers with greater insight on the performance of their code earlier in the process.

Codeless testing ability

Use CA Application Test to run tests with no test script or code to write or maintain. Enable developers and non-developers to collaborate on testing with high productivity, even against headless, middle-tier services and apps with no interface.

Integration with existing application development processes and test management tools

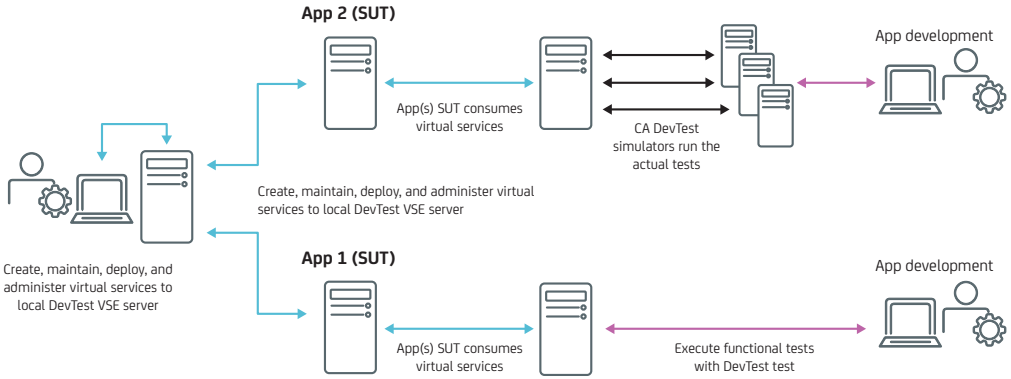
Easily store and launch test cases with CA Application Test as actionable assets alongside source code management (SCM), requirements management, build and issue tracking of test management tools.

Initiate automated tests and results reports with integration into application lifecycle management (ALM) tools.

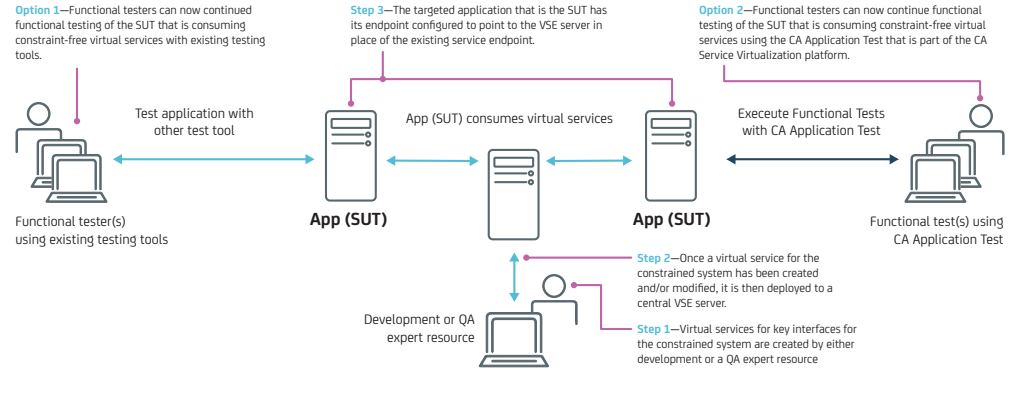
Full stack API testing

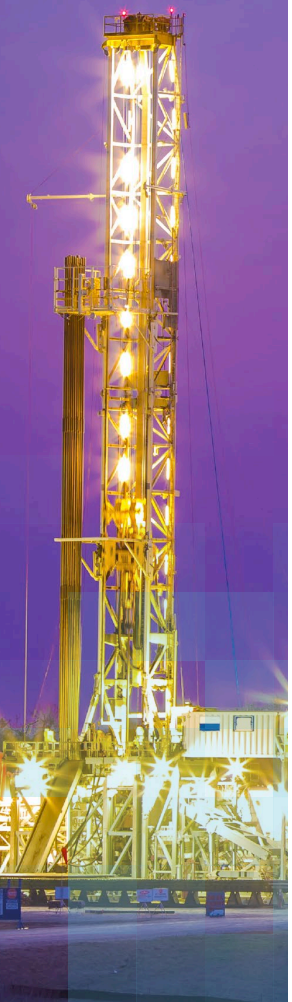
Run tests across the whole stack to validate APIs at every layer of a complex, multi-tiered application, allowing for complex workflows and the stateful behavior needed to achieve genuine reuse of test assets.

Development testing team deployments



Functional testing team deployments





Widest Multiprotocol Support for DevTest Available

May simplify and speed up testing anywhere, anytime.

Service virtualization toolchain capabilities

The DevTest framework from CA gives development and testing teams a single tool to use to run any test, anywhere in the stack, at any time.

CA Application Test builds portable, executable test suites that are easy to chain together to create workflows that save work hours and enable continuous testing.

With its wide protocol support, CA Service Virtualization can chain together complex scenarios, like encrypted payloads or encoded data embedded inside other date formats. An open software development kit (SDK) is also provided that extends the support to new and customized protocols being supported by either scripting or direct coding.

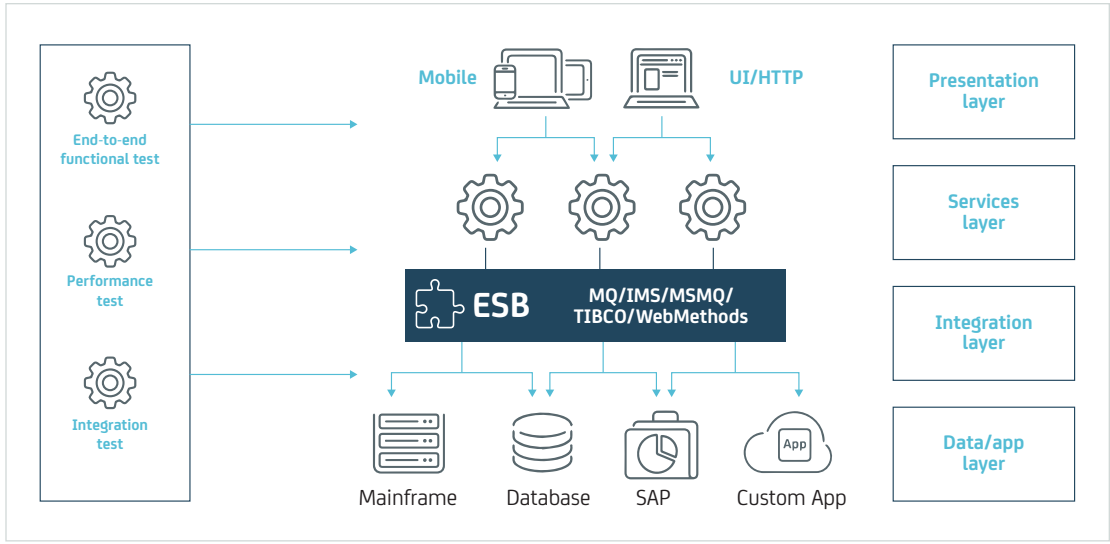
Virtualize anything, test anything

Out of the box, DevTest with CA Application Test and CA Service Virtualization features the **broadest and deepest multi-data protocol support** across front-end, middleware, and back-end technologies.

- Common web services protocols: HTTP, HTTPS, REST, SOAP, XML, JSON
- ESB/middleware protocols: WebSphere® MQ, WebSphere Native, Standard JMS, Tibco JMS, Rabbit MQ
- Mainframe protocols: CICS Link, CICS Transaction Gateway (CTG), IMS Connect, DRDA, Copybook
- ERP protocols: SAP—RFC/Jco, Idoc/Jco
- Database protocols: JDBC
- Financial protocols: SWIFT, EDI/X12
- Proprietary: TCP (Raw Socket), Java™, Scriptable (JSR-223 compliant), Request Manager, (Data-desensitizer)

Any test, anywhere

With CA Application Test, testers can use a single tool to test APIs, UIs, and the layers that feed them.



CA Service Virtualization virtualizes almost any IT asset.

Mainframes & mainframe components	CICS-CICS, DB2®, MQ
Platforms	Oracle, Siebel, TIBCO, SAP, IBM
SOA protocols	SOAP, HTTP, XML, REST, JMS, MQ, UDDI, .NET, JDBC, CORBA, JAVA
Risk solution providers	ChoicePoint, LexisNexis, Actimize
Credit bureau	TransUnion, Equifax, Experian
SMS gateway providers	Clickatell, Skype
Bill payment services	TEP, CheckFree
Card processing services	TSYS, Paypal
Teleconference service provider	WebEx, Intercall
Travel systems (GDS)	Galileo, Sabre

Create Virtual Services for the Test Environment

Easily record, design and import application data.

Virtual Service Environments (VSEs) provide a way for multiple teams to have a number of very current, realistic ways to simulate the test of the application. This enables performance and load testing to be conducted at a component level—just as if that component were hooked into the rest of the solution.

CA Service Virtualization automates the creation of complete software-based environments to simulate observed behaviors, stateful transactions and performance scenarios, not just piecemeal responders or stubs.

These VSEs are available 24/7, on demand, and require minimal setup time and overhead. CA's virtual services provide a solution for IT assets such as mainframes or shared services that have proven resistant to hardware virtualization approaches.

CA Service Virtualization provides a wide variety of mechanisms to easily create VSEs:

Recording live traffic via transport protocols to create a virtual service to execute transactions against a virtual service (like inventory lookup or credit card validation).

Designing artifacts/documents when a live service is unavailable via request/response (RR) pair files in the DevTest Portal to immediately create a corresponding VSE.

Network captures to create a virtual service with a WSDL (or RAML, also WADL, Swagger 2.0 document) that is uploaded when a live service is unavailable.

The virtual services can be edited and adjusted in the VSE. Magic strings can be used for request/response data parameterization. They provide specific, meaningful data, and the flexibility and strictness of how a virtual service responds can be configured to meet the needs of application data requirements.

Maintaining the VSE is made much simpler by the availability of a Learning Mode that allows an existing VSE to add new functionality simply by connecting the VSE to an existing service, and exercising the new functionality.

DevTest portal and workstation

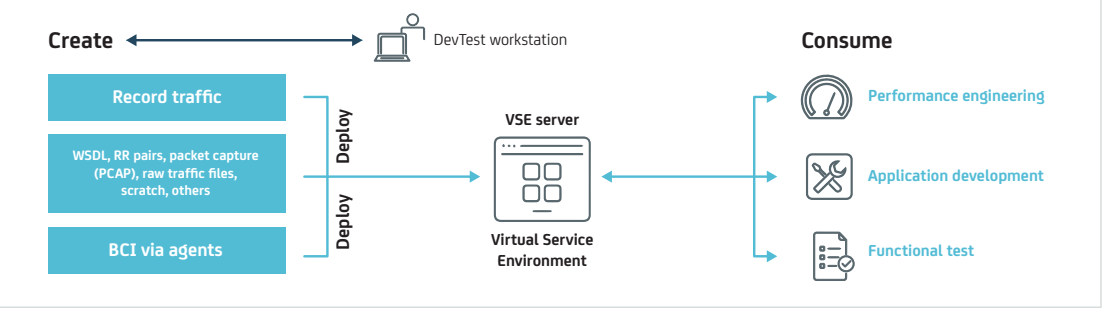
The DevTest platform can be accessed via a web-based portal or locally installed workstation. The DevTest Portal provides simpler access to the most commonly used workflows for DevTest products (CA Service Virtualization and CA Application Test). The DevTest Workstation is the main application for advanced users and contains the full range of functionality available within the DevTest products.

The DevTest portal enables users to create API tests quickly and easily—either by entering the data or by pasting it into the test request and response fields. This RR data can also be imported in bulk from one or more request-response file pairs, and then edited in the portal.

Virtual services are better than mocks and stubs.

- Mocks and stubs are limited to the pre-canned requests and response every time you run the test.
- They need to be manually and repetitively hard coded.
- You can't tell how they'll respond when replicating production-level loads and pushing through thousands of transactions per second.
- They can't scale up to the appropriate load levels needed to replicate the production environment.
- Being Java only, they have limited code coverage and are not able to provide comprehensive code coverage.
- They don't have the ability to add variable information, but only static hard-coded information instead.

Creation and utilization of service virtualization



Use DevTest to Achieve the Testing You Want

Provide best-in-class performance on a highly scalable platform.

The distributed, services-based architecture of the DevTest platform allows users to scale, giving them the flexibility to quickly and easily add more capacity as desired. Furthermore, the best-in-class performance of the DevTest solution maximizes utilization of the underlying hardware; thereby allowing users to optimize capacity on a given platform.

Virtual Services

Magic strings and data support with random test data

CA Service Virtualization takes a heuristic approach in generating dynamic responses. For example, data that is ephemeral in nature, such as time, dates, etc., is automatically refreshed in each response so responses never go stale.

The use of magic strings for request/response is automatically parameterized, so never-seen-before requests can be easily processed and meaningful responses returned. Furthermore, fresh and dynamic test data saves customers time and expense in test data management.

Integration API and command-line interfaces

This is a robust set of RESTful APIs and command-line tools that allow users to programmatically and/or headlessly create, edit, monitor, and manage virtual services. The APIs, in conjunction with the out-of-the-box command line utilities, provide a very powerful automation framework that can be easily utilized within a continuous integration/continuous delivery (CI/CD) paradigm.

Auto-updating datasets facilitate usability

CA Service Virtualization provides self-healing of virtual services from live systems showing the user what is "different" and potentially needing to be updated. The user can point back to the actual service without the need to manually decrypt, extract files, open, and send, making them easy to maintain through an application test profile.

Application Testing

Chain tests together

CA Application Test builds portable, executable test suites that are easy to extend, easy to chain into workflows with other tests, and simple to integrate with existing test repositories. With workflows, the results from one test can be used to feed and kick off the next test—saving hours of time and enabling continuous testing.

Continuous validation

This orchestrates the testing and validation aspects of IT, integration workflows, and SOA governance to ensure reliability and instill trust throughout the lifecycle of the application. CA Application Test conducts live regression, functional, and performance monitoring of critical business workflows on a continuous basis, providing an actionable way to enforce that expected business policies are being met.

Virtual services working with virtual test data enabled by test data management (TDM)

Achieve powerful, "industrial-strength" management of virtual services across modern applications with CA Service Virtualization. To do this, join forces with CA Test Data Manager, which automates the test data management process, eliminating the costs, time consumption, and missed delivery targets.

Some benefits of a strong CA Service Virtualization with TDM:

Maintain security and compliance. Get rich data testing without compromising sensitive content by automated masking with CA Test Data Manager's synthetic data creation.

Capture and build robust virtual datasets over time. Automate the synchronization of test data across multiple dependent systems with LISA functional testing. Automated self-updating can reduce the time and cost of testing.

Remove testing bottlenecks along the SDLC. Provide robust virtual datasets so multiple teams can develop and test in parallel without dependencies on live systems or conflicts over shared test data use.

Virtual Service Differentiators for the Test Environment

Usability, performance, protocol support, and enterprise adoption.

CA makes the choice easy: Automated continuous testing of an application simulation in a DevTest environment that accelerates the process that achieves quality results for continuous delivery.

Key differentiators for CA Service Virtualization

Data protocol support	Normalizes data for proper processing across many different protocols and applications. This standardization framework provides a foundation for easily expanding protocol and feature support.
Dynamic string and data support with random test data	Creates names, addresses, and other common test data dynamically when test data is required, reducing (or even eliminating) the need for production data pulls and sanitation.
Conversations and state	Supports stateful conversations, remembering a change made in the backend, and reflecting that change with subsequent requests.
Ease of administration	Simplifies the way virtual services are created, edited, updated, deployed and managed. Virtual services are created a number of ways depending on the level of information you have.
Performance	Supports the high performance of individual system components. It models response times of systems in production-like environments, including the use of data directly from production monitoring systems, such as CA Application Performance Management.
Mainframe virtualization	Virtualizes many mainframe dependencies, including several mainframe access protocols, and within CICS itself. Developers and testers effectively eliminate mainframe access requirements in many cases, reducing complexity and time-lines for software development, testing, and release.
Solution maturity	CA owns the patent that enables service virtualization processes and approaches. US Patent # 8,060,864
Install base	300+ Fortune 1000 implementations

So, what's stopping you?

70% of surveyed IT organizations agree that one of the most important CA Service Virtualization capabilities is the ability to develop and test in parallel[1]

97% of IT organizations surveyed agree: CA Service Virtualization helps improve app quality and reduce the time it takes to get them to market[2]

90% saved in testing costs through the use of automation with CA Service Virtualization and CA Test Data Manager by Direct Line Group[3]

50%+ improvement in delivery speed after switching to CA Service Virtualization by 40% of surveyed IT organizations who used general stubbing and mocking[4]

[1] TechValidate survey of 98 users of CA Service Virtualization, Aug 23, 2016, TVID 9DB-FAA-906
[2] TechValidate survey of 91 users of CA Service Virtualization, Aug 23, 2016, TVID D5D-84C-B82
[3] Direct Line Group video testimonial
[4] TechValidate survey of 20 users of CA Service Virtualization, Aug 23, 2016 TVID 2ES-853-AF1

Resources

Learn more on DevTest enabled by CA solutions.

Excuse-Free Testing

DevTest Solutions 10.0

DevTest Community

Watch CA quick tour videos.

How to create, deploy and maintain virtual services using CA Service Virtualization

How to create and execute automated test cases using CA Application Test

How to generate and inject realistic virtual data using CA Test Data Manager

How to view captured application transaction data for DevTest

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