

# Service Virtualization, API Testing, Test Environment Management

## RELEASE NOTES



### **Parasoft Virtualize, SOAtest, Environment Manager**

With the current release, Parasoft introduces a consolidated platform uniting API testing, service virtualization, and test environment management. The new product capabilities allow an organization to “shift left” the testing effort and accelerate the SDLC to meet the growing time-to-market pressure for software applications.

Parasoft’s enterprise-grade API Testing solution for testing end-to-end transactions through complex dependent environments (e.g., message brokers, databases, mainframes, ERPs, and other endpoints) has been leading the industry since its introduction in 2002. Now, through its integration with Parasoft’s award-winning service virtualization and test environment management functionality, organizations can provide access to complete test environments significantly earlier in the SDLC—dramatically increasing test automation efficiency.

The release features new functionality across the common framework, as well as a host of new product-specific capabilities in Parasoft Virtualize, SOAtest, and Environment Manager. Key new functionality introduced in the common framework includes:

- » Next-generation virtual asset and test creation delivers the most logical and concise set of generated service virtualization and test assets.
- » Advanced data relationships help users incrementally grow data sets and streamline data management.
- » Effortless handling of REST services and JSON payloads with advanced automation.
- » Rapid browser-based creation and management of test and service virtualization assets from Environment Manager.
- » Centralized visibility into the entire ecosystem across servers and environments.
- » REST API for creating and editing service virtualization and test assets.
- » Framework for developing and sharing custom tools via Parasoft Marketplace.
- » Expanded platform/protocol support through Parasoft Marketplace.

The product-specific release notes will detail how each of the products take advantage of this platform as well as outline product-specific enhancements.

# Parasoft Virtualize Raises the Bar for Test Automation Efficiency

Parasoft, the industry leader for easily and rapidly simulating complex test environments, allows organizations to test software earlier and more completely. In this release, Parasoft Service Virtualization takes test automation efficiency to the next level, enabling the industry's most sophisticated virtual assets to be created and ready for testing in a matter of seconds.

## Next-Generation Virtual Asset Creation

This release introduces a host of improvements to help enterprises rapidly create the most accurate and flexible virtual assets for simulating high volumes of complex traffic, then continuously evolve these assets throughout the lifecycle.

- » **Enhanced engine and UI for creating virtual assets:** For enterprises that need to simulate high volumes of complex traffic, Parasoft has introduced new technology that enables rapid creation of sophisticated virtual assets which are easily managed, extended, and updated.

The new engine is designed to distill even extremely complex traffic into the most logical and concise set of virtual assets. Advanced traffic analysis highlights grouping strategies that can be easily extended. A broad array of data and performance profiles can be applied instantly. This enables the team to rapidly simulate the exact conditions they need for testing—now and as use cases evolve.

- » **Advanced data relationships:** New functionality for discovering and defining data relationships enables the creation of interconnected data sets. By optimizing reuse and streamlining data management/updating, this helps users understand and efficiently augment their data sets.
- » **Templates for sharing and reusing traffic mappings:** Templates allow users to specify traffic mappings once, then share and reuse them—increasing both consistency and productivity.

## Easier, More Flexible Traffic Recording

Based on user feedback, this release extends Parasoft's intuitive recording interface with new functionality and UI enhancements that make complex traffic recording simpler than ever.

- » **Secondary proxy endpoints:** Improved management of secondary proxy endpoints enables traffic to be more easily redirected to an alternative proxy when the primary connection fails to provide a valid response.
- » **Global JMS connections:** Users can now globally define multiple JMS connections, which can be used to rapidly configure the recording proxy settings and virtual asset deployment settings.

## APM Integration for Virtual Asset Performance Profiles

To provide real-world performance characteristics to the virtual asset, Parasoft integrates with APM solutions and extracts performance profiles by interrogating the APM solutions. The performance profiles can then be associated with a virtual asset, then applied or switched without modifying the virtual asset (e.g., through Environment Manager). Out-of-the-box support is available for AppDynamics and dynaTrace.

## Simplified Virtual Asset Management and Updating

Capabilities that simplify virtual asset management and updating include:

- » **New request matching options:** Virtualize now delivers expanded correlation options (e.g., HTTP method), providing more precise control over processing logic and enabling more automated and sophisticated data correlation.
- » **Data source correlation failover:** Enhanced request-matching behavior allows users to more easily configure failover options for responses.
- » **Data reuse:** Sophisticated and fine-grained controls allow for data merge, replace, update and reuse of records in data sets when importing recorded traffic.
- » **Enhanced UI for JSON message representation and manipulation:** The Form JSON tree graphically represents JSON messages, making it easier to consume and manipulate JSON-specific data.

## Environment Manager Centralizes Creation, Management, and Execution of Test and Service Virtualization Assets

The browser-based Environment Manager now provides an integrated platform for creating, managing, and executing test environments and tests. It unites test environment management (test environment setup, visualization, validation, and provisioning), service virtualization (virtual asset creation, configuration, and deployment), and API testing (test creation, management, and execution).

Specific new features introduced in this release make it extremely easy for users to get up and running. Users can now do the following *directly from the web browser*:

- » Stand up a proxy for monitoring transactions.
- » Instant create virtual assets from recorded traffic or API documentation.
- » Automatically deploy these virtual assets on the Virtualize server and within associated test environments.
- » Create and manage API test suites (powered by Parasoft SOAtest, the industry's most complete API testing solution).
- » Define and execute test jobs as well as configure data sets and variables.
- » Associate test jobs with a specific environment configuration then automatically provision that environment upon job execution.
- » Review Virtualize server events (request messages received, response messages sent, errors, server startup/shutdown, and so forth) across multiple servers and environments in real-time.

See the Environment Manager Release Notes for additional details.

## Platform and Protocol Support

In addition to offering an open API for easily adding support for any protocol, Parasoft is also committed to providing the industry's broadest out-of-the-box platform and protocol support. Since version 9.7, Parasoft has introduced the following new and updated extensions (available on Parasoft Marketplace):

- » Tibco Rendezvous
- » Protocol Buffers (protobuf)
- » Copybook
- » MQTT
- » Equifax
- » FIX
- » SWIFT
- » Rabbit MQ
- » SFTP
- » FTP
- » SMTP
- » TCP/IP

## Enhanced Event Visibility

Enhanced event monitoring capabilities introduced in this release include:

- » Environment Manager now provides centralized, real-time monitoring of events across multiple Virtualize Servers and environments—including the ability to generate virtual assets for messages.
- » Event monitoring for custom listeners.
- » Additional logging levels and filtering options.
- » Additional details and data reported (message proxy forwarding issues, custom listeners failing to deploy, etc.).
- » Ability to start and stop event monitoring from the command line and from Environment Manager—without requiring direct Virtualize Server interaction.

## REST API for Remote Virtual Asset Creation and Management

The new REST API allows the creation and editing of both virtual assets and test assets directly on the Parasoft server. This enables third-party integrations, custom programmatic interactions, and access via additional user interfaces such as Parasoft Environment Manager.

## Custom Tools API

The latest release provides a public API for creating new tools that can be hosted and shared on Parasoft Marketplace. Numerous examples are available on Parasoft Marketplace (for example, Multiple Response Generator, Date Math, and Random Number Generator, etc.) Custom tools (as well as scripts, data sets, and other test resources) can be hosted on either your private marketplace or the public Parasoft Marketplace.

## Other

- » Simple headless installation of service packs.
- » Ability to enable/disable data repository caching.
- » Ability to set JNDI properties in JMS deployment configurations.
- » Ability to configure HTTP proxies at the Virtualize message proxy level.
- » Enhanced visibility into auto-generated request matching (data source correlations) within the PVA wizard.
- » Error hit statistics shown in Virtualize UI (e.g. for correlation failures).
- » Support for custom EDI messages.
- » NET Routing Service enables Virtualize to handle messages intended for WCF services.
- » Additional execution options for chained tools.

## PRs/FRs Resolved

The following IDs refer to reported PRs and FRs:

ID	Description
114022	Resolved an issue where "Append to traffic file" checkbox does not respect changes in remote proxies
113922	Allowed duplicate proxy listen URLs (as long as only one of them is enabled)
113869	Resolved an issue where message proxies remove content-type headers returned from a virtual asset
113833	Added ability to configure data source correlations using headers during asset creation
113759	Enabled Data Repository tool to initialize a data repository from a WSDL without the need for data

ID	Description
113752	Added support for application/soap+msbin1 in proxies by introducing a new service router
113695	Resolved a memory leak on repeated redeployments of all assets
113607	Resolved an issue where values altered in VirtualAssets.xml were not picked up by proxies on a running Virtualize server
113526	Resolved an issue with responder parameterization from data repository list values
113250	Added option to prevent execution of chained request tools if data source correlation is not successful
113160	Resolved an issue with global security setting "Use default Java cacerts file" overriding the message proxies "Trust all certificates"
111497	Resolve an issue with creating PVAs from traffic with circular type hierarchies
111084	Resolve multi-byte encoding issue (Japanese characters) when applying Java virtualization in mixed locales
109923	Added re-connect logic to JMS assets and proxies to enhance reliability when connections are dropped or lost
109750	Resolve issue with deleting temp files created for Custom Message Format
109138	Add ability to specify different Queue Managers for queues within a JMS over MQ Message Proxy
105736	Add ability to define custom grouping when generating a PVA from traffic
86421	Add correlation settings for HTTP Method for REST Virtualization

# Parasoft Environment Manager Integrates Service Virtualization, Testing, and Test Environment Management in Intuitive, Browser-Based UI

Parasoft Environment Manager is now a one-stop destination for a team's service virtualization, testing, and test environment management needs. From a single intuitive interface, users can create virtual assets then immediately start defining and executing end-to-end tests against a combination of real and virtual assets. To ensure test accuracy and traceability, test jobs can automatically provision the exact test environment required for a given test (including any setup actions required), confirm whether all system components are online and operating as expected, and record test scenario execution history with detailed test configuration and test environment settings.

This release allows users to perform the following actions *directly from the Environment Manager interface*:

## **Record and Simulate Traffic**

Previously, Environment Manager supported creation of virtual assets from existing HTTP, JMS, and MQ traffic files. Now, it enables users to configure a message proxy for recording HTTP, JMS, and MQ traffic, as well as start and stop recording on that proxy. If users want to create a virtual asset representing the recorded traffic, they just click a button after recording completes. From this centralized and intuitive interface, it's entirely feasible to record and virtualize meaningful application behavior in less than a minute.

## **Create Virtual Assets and Tests from API Descriptions**

If you have access to an API description such as a WSDL, Environment Manager can automatically generate and deploy virtual assets simulating its behavior. Powered by Parasoft SOAtest, the industry's most complete API testing solution, it can also create and deploy a test scenario validating each of the available operations. The generated assets are configured for flexibility and easy extension/updating.

## **Add, Configure, and Update Test Scenarios and Individual Tests**

From Environment Manager's new Test Scenario management page, users can add, configure, and manage test scenarios and test clients for REST and SOAP APIs. The test configuration interface is designed to help new users rapidly define a core set of tests. In addition, users can review, modify, and extend the team's existing library of test assets. Testing functionality is powered by SOAtest, the industry's most complete API testing solution.

## **Configure and Execute Test Jobs**

Users can now define a library of test jobs with associated environments, then provision the environment and execute the specified tests on demand. This enables users to efficiently create and execute tests in the appropriate environments. For example, a test scenario can use one set of test data and endpoint variables for execution in a development testing environment and another in a system integration testing environment. The job execution history stores the associated test environment settings and variables along with results, enabling complete traceability.

## Monitor Virtualize Server Events

Providing centralized visibility into the entire ecosystem across servers and environments, Environment Manager's new Event Viewer displays server events (request messages received, response messages sent, errors, and so forth) in real-time. This viewer provides advanced filtering and the ability to create virtual assets from received messages. In addition to controlling the monitoring of individual components, users can now start and stop all event monitoring on a given Virtualize Server from within Environment Manager.

## Other

- » New hit statistics reporting and analysis.
- » New default location and name for traffic files created by proxies within Environment Manager.
- » Endpoint Report shows both source and destination information for proxies.
- » Optimized environment provisioning through parallelization of provisioning operations.
- » Ability to manage JNDI properties for virtual assets on JMS endpoints.
- » Ability to reuse data sources within Environment Manager.
- » One-click deployment of Marketplace archives including both virtual assets and data repositories.

## PRs/FRs Resolved

The following IDs refer to reported PRs and FRs:

ID	Description
113855	Add option to duplicate the .pva, but reference the original data repository.
113475	Allow stoptime column to use null values
113387	Resolve issue with case-sensitive login in Virtualize desktop
113177	Resolve 404 error on Japanese OS when opening test in Test Scenarios
113060	Resolve issue with exporting hit statistics as CSV
111390	Ensure that forwarding path is not dropped when making proxy instance
110936	Improve handling of Null values with Oracle DB
110856	Add ability to filter hit statistics before being loaded into the page
110848	Add ability to export hit statistics



# Parasoft SOAtest Introduces the Industry's Most Automated and Complete Testing for RESTful APIs

Since 2002, Parasoft SOAtest has been leading the industry with complete enterprise-grade testing for business-critical transactions through APIs, message brokers, databases mainframes, ERPs, browser-based UIs, and other endpoints. Continuing Parasoft's commitment to providing our customers the industry's most powerful testing and validation capabilities through a user-friendly interface, the latest release introduces a host of new technologies for rapidly developing—and continuously executing—tests that ensure the integrity of APIs and API-driven transactions within complex environments. Moreover, the release also extends SOAtest's robust functionality to enhance popular industry-standard platforms, such as HP ALM and Selenium.

## REST Client Tool Usability Enhancements

Based on customer feedback, Parasoft continues to expand and enhance functionality associated with RESTful services and JSON payloads. This release introduces:

- » A new Form JSON view that enables users to easily visualize and manipulate JSON payloads; additionally, XPath enables easy manipulation of JSON data.
- » A powerful engine for creating flexible REST clients from recorded traffic (see below for details).
- » A re-engineered REST Client that streamlines basic REST configuration while providing additional opportunities for advanced configuration.

Specific changes introduced in the REST Client include:

- » Automated tool configuration from given URLs or WADLs.
- » Support for literal, parameterized, or scripted values across tool fields.
- » Support for multipart/form-data.
- » Support for parameterization of HTTP Response codes.
- » Option to GZIP requests/responses.

## Rapid Generation and Configuration of Tests from REST and Other Traffic

- » **Enhanced engine and UI for creating tests:** For enterprises that want to generate tests from high volumes of complex traffic, Parasoft has introduced new technology that enables rapid creation of sophisticated tests which are easily managed, extended, and updated.

The new engine is designed to distill even extremely complex traffic into the most logical and concise set of test assets. Advanced traffic analysis highlights grouping strategies that can be easily extended. A broad array of data profiles can be applied—without requiring any modification to the asset itself. This functionality can be used to create REST Clients, Messaging Clients, SOAP Clients, and EDI Clients (including CSV, plain text, and all other derivatives) from HTTP, JMS, or MQ traffic. It operates on traffic recorded by Parasoft SOAtest, Parasoft Virtualize, or other tools.

- » **Advanced data relationships:** New functionality for discovering and defining data relationships enables the creation of interconnected data sets. By optimizing reuse and streamlining data management/updating, this helps users understand and efficiently augment their data sets.
- » **Templates for sharing and reusing traffic mappings:** Templates allow users to specify traffic mappings once, then share and reuse them—increasing both consistency and productivity.

## Test Creation, Management, and Execution from Environment Manager

Environment Manager is now a one-stop destination for a team's service virtualization, testing, and test environment management needs. From a single intuitive interface users can create virtual assets then immediately start defining and executing end-to-end tests against a combination of real and virtual assets.

From Environment Manager's new Test Scenario management page, users can add, configure, and manage test scenarios and test clients for REST and SOAP APIs (powered by SOAtest). The test configuration interface is designed to help new users rapidly define a core set of tests. In addition, users can review, modify, and extend the team's existing library of test assets.

Additionally, users can define a library of test jobs with associated environments, then provision the environment and execute the specified tests on demand. This enables users to efficiently create and execute tests in the appropriate environments. For example, a test scenario can use one set of test data and endpoint variables for execution in a development testing environment and another in a system integration testing environment.

The job execution history stores the associated test environment settings and variables along with results, enabling complete traceability.

*Parasoft Virtualize is not required to use the testing capabilities in Environment Manager.*

See Environment Manager Release Notes for additional details.

## Web UI Playback with Selenium WebDriver

With SOAtest 9.8, Parasoft has added support for the industry-accepted Selenium WebDriver framework so that users can experience the Selenium framework's benefits within the context of Parasoft's robust enterprise-grade platform for end-to-end-testing and validation. Selenium provides:

- » Closer fidelity to user actions in recorded scenarios
- » Support for Safari
- » Support for HTML 5

Users can take advantage of SOAtest's enterprise-grade, easy-to-use test creation, execution, validation, and management capabilities while creating Selenium-powered web tests.

New tests are configured to play back with the Selenium driver; the legacy native driver is also available for existing test scenarios.

## HP ALM 12 Support

Parasoft SOAtest has extended its integration with HP ALM / Quality Center to support HP ALM 12. SOAtest test cases can be mapped to specific requirements in HP ALM, then executed by clicking a button within HP ALM. Results can then be reviewed from HP ALM.

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- » Protocol Buffers (protobuf)
- » Copybook
- » MQTT
- » FIX
- » SWIFT
- » SFTP
- » TCP/IP

## Other

- » Load Test integration with AppDynamics and Dynatrace APM solutions
- » New Marketplace tools, including Appium Mobile Executor, Selenium Executor, JUnit Executor, Selenium Screenshot
- » XML Sort tool now allows users to recursively sort all nodes as well as sort specific nodes, simplifying the diffing process for structurally-changing payloads.
- » Simple headless installation of service packs.
- » Ability to enable/disable data repository caching.
- » Full support for Internet Explorer 10 and 11.

## PRs/FRs Resolved

The following IDs refer to reported PRs and FRs:

ID	Description
113349	Ensure that browser contents have styles applied for angularJS applications
112909	Ensure that Validate for Load Test cookie behavior matches browser behavior
111700	Allow a data source value to reference an environment variable from Form XML
111608	Resolve org.jdom.JDOMException after running XML Diff
110542	Resolve errors thrown by the recommended Extensibility API for BrowserContentsInput
110029	Resolve issue with reporting traffic for all data repository rows
109733	Resolve issue with Chrome Browser not appearing for Web Functional Testing on Mac
109677	Support PUT requests in web load testing
109662	Resolve issue with SOAtest hanging when creating Messaging/CSV clients with particular request messages
109574	Resolve NullPointerException after an extraction fails if the extraction does not use a custom column name
89454	Create argument to specify range of rows from a data source for testing
89315	Allow \${project_loc} without project name in data source path
89246	Support additional operators for browser validations: not equals, less than, greater than.