Proxy Sniffer V4.5
Release Notes
English Edition
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1 V4.5 Release Notes

1.1 New Functions and Features

Proxy Sniffer V4.5 contains the following new features:

Major Release V4.5-A:

- HTTP Requests of a recorded web session can now be edited, which allows you to modify the recorded data directly inside the GUI. HTTP Request Header Fields can now be added, modified or deleted in the GUI, and the Content Data of HTTP(S) POST requests can now be replaced completely. The assignment of variables to parts of the request data is still supported as yet, even when the recorded data have been modified.
- The GUI supports now to extract the HTTP Status Code into a variable (heretofore this was only possible by writing an own Plug-In).
- The GUI supports now to extract the whole received Content Data of a HTTP Response into a variable (heretofore this was only possible by writing an own Plug-In). If the Content Data are received in a compressed data format they will be automatically decompressed before they are stored inside the variable.
- During the execution of a load test, Spot Samples of the received Content Data of URL Calls can now be stored as files on disk. The sampling rate for storing the content into files can be configured in the GUI and can contain the following values: 100%, 10%, 1% and 1‰. For example, this functionality can be used to manually verify the consistence of PDF documents which are generated on-the-fly by a Web Server.
- Variables whose values are extracted from a HTTP(S) response can now (optionally) survive the end of the current loop of a simulated user and can then be used in the next loop of the same user for assigning a value to a HTTP(S) request. To use this feature you have first to define such a variable as a "stand alone" variable by using the Scope "user var" (instead of the implicitly applied Scope "loop var"). After that you can extract the value for such a variable in a normal way.
- If during the execution of a load test a value of a variable could not be extracted from a received HTTP(S) response a fatal error was always reported and the current loop of the simulated user was aborted. The GUI supports now to configure each variable in such a way that these kinds of errors can be ignored. This effects that the simulated user continues to execute the current loop. A predefined "Substitute Value" can be assigned to the variable which is applied if such an error occurs. The "Substitute Value" can be a fixed text or a number, or can be any other variable.
- The run-time behavior inside of an "Inner Loop" can now be affected per simulated user by defining "break" and "continue" conditions per URL. **Break** means: jump out of the Inner Loop. After a "break", the simulated user will call the next "page break" or rather the next URL behind the end of the Inner Loop. **Continue** means: jump back at the start of the Inner Loop, without calling the subsequent URL Calls of the Inner Loop within the current iteration. The triggering of "break" and "continue" jumps can be based on a received HTTP status code, or can be based on a matching or absent text fragment of the HTTP response content. Furthermore, "break" and "continue" jumps can also be triggered solely based on the value of any variable.

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As a further option, "Inner Loops" can now be configured in such a way that a "red" fatal error is reported in cases if all iterations of an Inner Loop have been executed by the simulated user (no "break" was made in any iteration before the last iteration). If such a "red" fatal error is reported, the simulated user will abort the current "Outer Loop" and will start the next "Outer Loop" (jump at the start of the web session).

The "Project Navigator" menu has been supplemented with a file filter which allows to narrow the view of the displayed files.

To get a better overview about the load test results the "Project Navigator" shows now the result files (*.prxres files) with a colored background. The background color depends on the measured "session failure rate": green: ≤ 0.5%, yellow: ≤ 2%, red: > 2%.

All time diagrams in the "Load Test Result Detail" menu are showing now additional information when moving with the mouse over such a diagram. In addition, "retroactive" real-time comments can be added by clicking inside such a diagram. Each real-time comment is shown in all time diagrams of the "Load Test Result Detail" menu and is also shown in the PDF report.

Analogous to the GUI functionality, self-written Plug-ins can now trigger "break" and "continue" jumps in Inner Loops during the execution of a load test.

Self-written Plug-ins can collect additional (own) measuring data and can add such data in form of additional XY-diagrams to the load test result. The programming of such a functionality is very easy, but the corresponding documentation was up to now incomplete. This is now corrected. Chapter 3.4.3.6 of the revised "Load Test Plug-In Developer Handbook" contains additional information.

A new predefined Plug-In named "Remove Cookie" is now delivered as part of the the Proxy Sniffer installation kit. This Plug-In allows during a load test to remove a previously received cookie from the cookie store of a simulated user.

1.2 Errors Fixed

The following errors are fixed in version 4.5-A:

- The structured access to received JSON data – used when extracting values for variables in the GUI – was not possible if the JSON data have not been enfolded by a JSON root object (for example if a "raw" array of JSON data was received). This bug is now fixed. If required a virtual JSON root object is automatically created by the GUI as well as during the execution of a load test.

- If variables have been assigned to parts of XML data some extra line breaks have been added to the content of the XML request. This does not violate against the XML specification but some Web Server do not accept such extra line breaks and are responding in such a case with an "500 Internal Server Error". This bug is now fixed in such a way that not any line break is send to the Web Server if a variable is assigned to the XML request data.

- A heavy stability problem of the GUI did occur on some Windows operating systems starting approximately since April 2010. This had the effect that sometimes the stored data of a web surfing session (*.prxdat files) became corrupt and could no longer be loaded by the GUI. Some Workarounds are now realized to avoid this problem. In addition the GUI store-function contains now an integrated check to ensure that the stored data are not corrupt. Note: this kind of error did not occur on Unix-like systems.

- Some customers which had used a leased line (such as ADSL) with an unstable internet connection could not start load tests in the Amazon Cloud if more that approximately 8 cloud-based load generators have been combined to a load-generating cluster. Some Workarounds are now
realized allowing to start and to monitor load test jobs on remote Exec Agents even in cases when the internet connection from the GUI to the load generators is unstable.

- In some cases malformed Java code was generated if nested Inner Loops have been defined in the GUI. The order of the Inner Loops was mixed up and therefore the compilation of the Java code did fail. This bug is now fixed.

- If more than one Exec Agent process is started on the same operating system the real-time monitoring in the GUI displays in rare cases wrong measured values (the stored load test result file contains always correct measured values – only the real-time monitoring is affected). In addition it can happen under such conditions that a load test job cannot be aborted manually. This problem can now be avoided by using the new Exec Agent startup parameter \[-internalmonitorports <port-range-start>:<port-range-end]\]. The revised V4.5 "Application Reference Manual" contains on page 15 further information.

Please note that this problem does not occur if only one Exec Agent is started per operating system. In general we do not recommend to start several Exec Agents on the same system – each single Exec Agent is always able to execute several load test jobs in parallel at the same time, independently from which GUI they are triggered. You should only start more than one Exec Agent on the same system if you require to run several versions of the Proxy Sniffer product in parallel.

Additionally, the following errors are fixed in version 4.5-F:

- Several errors regarding to the handling and processing of raw binary data of HTTP(S) request have been fixed in the following GUI menus: "Var Finder", "URL Details / Var Handler" and " Generate HTTP(S) Load Test Program".

- The Firefox Recoding Extension (V2.0) supports now Firefox version 4.* (V2.0 can also be used for Firefox version 3.*)

### 1.3 Version 4.5 Compatibility

<table>
<thead>
<tr>
<th>Previous Version Data Files / Starting from Version 4.3-C</th>
<th>Compatibility with Version 4.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recorded Web Surfing Sessions (&quot;*.prxdat&quot; files)</td>
<td>Compatible</td>
</tr>
<tr>
<td>Created Load Test Programs (&quot;*.java&quot; and &quot;.class&quot; files)</td>
<td>Compatible</td>
</tr>
<tr>
<td>Load Test Results (&quot;*.prxres&quot; files)</td>
<td>Compatible</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Previous Version Data Files / Version 4.0, 4.1 and Version 4.2</th>
<th>Compatibility with Version 4.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recorded Web Surfing Sessions (&quot;*.prxdat&quot; files)</td>
<td>Compatible</td>
</tr>
<tr>
<td>Created Load Test Programs (&quot;*.java&quot; and &quot;.class&quot; files)</td>
<td>NOT Compatible ¹</td>
</tr>
<tr>
<td>Load Test Results (&quot;*.prxres&quot; files)</td>
<td>Compatible</td>
</tr>
</tbody>
</table>

¹ Workaround: you can load any old web surfing session ("*.prxdat file) into V4.5 by using the Project Navigator. After that you have to generate and compile the load test program again before you can run it on V4.5.
1.4 Installation Notes for the Upgrade to Proxy Sniffer V4.5

Before upgrading, start first the existing Proxy Sniffer version and delete all Load Test Jobs on all Exec Agents by using the Jobs Menu. After deleting all Jobs, the existing Proxy Sniffer version must be stopped and un-installed.

Proxy Sniffer Version 4.5 can then be installed. During installation, select the same installation directory that was used in the previous version in order that the contents of the "MyTests" sub-directory continues to be accessible from the Project Navigator.

Ensure that all additional Exec Agents (Load Generators) are also upgraded to the new Proxy Sniffer Version. Mixing different Proxy Sniffer versions for the GUI and the (remote) Exec Agents is not supported, and will lead to errors when starting Load Tests.

In case if you have installed the Firefox Recoding Extension, we recommend that you check if you run the latest version 2.0 of the Add-On. Upgrade instructions: first uninstall the old version of the "Firefox Recoding Extension". After that download and install the latest version from https://www.proxy-sniffer.com/download/PrxRecExt1.xpi.

Please note: it is strongly recommend that you hide in Firefox the "Proxy Sniffer Toolbar" when the Proxy Sniffer Console is not running.

Hint: when using the Firefox Web browser please check that you have always enabled the following 3 JavaScript options:

New "GUI License Keys", and new "Exec Agent License Tickets", are required for the installation of Proxy Sniffer V4.5. The Licenses of earlier versions are not valid (earlier than version 4.5-A). Customers possessing an existing valid Upgrade and Maintenance Contract will receive new Licenses at no additional charge during the contract maintenance period.
1.5 Illustrations of New Functions and Features (Major Release V4.5-A)

1.5.1 Editing of HTTP Request Header Fields inside a Recorded Web Session

Hint: In contrast to the majority of menus of Proxy Sniffer, using this menu allows you to modify directly the recorded data. Please note that only static modifications can be done here. If you require that some request header fields are dynamically modified during the execution of a load test, you have first to define or extract variables in the "URL Details | Var Handler" menu and then to use Var Assigner Icons.
1.5.2 Replacing the Content Data of an HTTP Request inside a Recorded Web Session

Note: After a replacement has made, the assignment of variables to parts of the request data is still supported as yet by using the corresponding var assigner icons.

1.5.3 Extracting of the HTTP Status Code into a Variable
1.5.4 Extracting of the whole HTTP Response Content into a Variable and Storing Spot Samples of the Content in Files

[Image of the GUI interface showing HTTP details and variable handling options]

- Extract Whole Response Content to Var
- Note: the whole response content will be converted to a string and assigned to the var.
- Character Set: ISO-8859-1 (HTML, Latin-1)
- Map to Var Name: [VarName]
- Option: Save Raw Response Content in File
  - File Name: [filename].pdf
  - File Sampling Rate: [rate]
- Extract

[Variables defined]

- Input Files: Add Input File...
- User Input Fields: Add Input Field...
- Load Test Plugins: Add Plugins...
1.5.5 Configurable Error Handling if a Value of a Variable cannot be Extracted from a HTTP Response

Note: The "Substitute Value" can be a fixed text or a number, or can be any other variable.
1.5.6 Defining Break and Continue Conditions in "Inner Loops"

- **Start Page** 1
- **End Page** 1
- **Iterations** (InnerLoopCount)
- **Conditions**

**Conditions for Inner Loop "loop 1"**

<table>
<thead>
<tr>
<th>No.</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Break Inner Loop before execution of Item 1 if the Value of the Variable Random &gt; (is greater than) &quot;5&quot;</td>
</tr>
<tr>
<td>2</td>
<td>Continue Inner Loop if the HTTP Response Code of Item 2 is 302 Found</td>
</tr>
<tr>
<td>3</td>
<td>Break Inner Loop if the Response Content of Item 4 contains the Text Fragment &quot;no data found&quot;</td>
</tr>
<tr>
<td>4</td>
<td>Break Outer Loop of Simulated User and report an Error if All Inner Loop Iterations are Completely Executed</td>
</tr>
</tbody>
</table>

OK: New Condition added.

**Add New Condition**

- Break Inner Loop if the HTTP Response Code of Item 1 is 200 OK
- OR
- Break Inner Loop if the Response Content of Item 1 contains the Text Fragment
- OR
- Break Inner Loop before execution of Item 1 if the Value of the Variable InnerLoopCount = (is equal to) 1
- OR
- Break Outer Loop of Simulated User and report an Error if All Inner Loop Iterations are Completely Executed

Done
Additional Hint: If the number of iterations of an inner loop is controlled by a variable, the value of such a variable can also be 0 (zero). A value of zero means that a simulated user does not execute (enter) the inner loop. This can be used in combination with an Input File whose file scope is “new line per user” or “new line per loop” and whose lines contain values of zero and one which are assigned to the variables of the iterations; that is, some of the users skip parts of the recorded web surfing session during the load test.

**Inner Loop 1:**
*Executed by 25% of all Users*

**Content of Input File**

<table>
<thead>
<tr>
<th>Line</th>
<th>Inner Loop 1 Iterator</th>
<th>Inner Loop 2 Iterator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**Input File Settings**
- File Scope: new line per user
- Line Order: randomized
- EOF Action: reopen file
1.5.7 File-Filter in the Project Navigator Menu
1.5.8  Adding of "Retroactive" Real-Time Comments

![Image of load test result detail and statistics diagrams]

**Load Test Result Detail - Statistics and Diagrams**

- **Load Test**:
  - Test ID: Test1
  - Start Date: 29 Dec 2010 16:44:32
  - Users: 5
  - Test Duration: 4:15 min
  - Annotations: ---

**Advanced Test Parameter**
- **Startup Delay per User**: 5000 ms
- **Request Timeout per URL**: 60 sec
- **Statistical Sampling Interval**: 15 sec

**Measured Results**
- **AV Response Time per Loop**: 12.12 sec/loops
- **AV Response Time per Page**: 0.04 sec/page
- **Network Throughput per User**: 45.1 kbps/second

**Overall Test Result**
- **Web Transaction Rate**: 13 calls/sec
- **Session Failure Rate**: 0.0%
- **Total Network Time**: 3.46 min elapsed

**Load Test Result Detail - Modify Real-Time Comments**

- **Real-Time Comments**:
  - Date: 29 Dec 2010 16:48:18
  - Comment: Web Trans. Rate = 13 calls/sec

**Histogram Chart**
- **Web Transaction Rate**
  - **Sampling Interval**: 15 seconds
  - **Number of Successful Complete Web Call per Second**
  - **Number of Errors per Page**
  - **Number of Errors per Page**

![Mouse Click Highlighted on Chart]

- **Mouse Click**: 29 Dec 2010 16:48:18
- 3.46 min elapsed

**JavaScript Function**
### Load Test Result Detail - Statistics and Diagrams

#### Load Test: Test01  Start Date: 20 Dec 2010 18:44:32  Users: 5  Test Duration: 4:15 min  Annotation: ---

<table>
<thead>
<tr>
<th>Advanced Test Parameter</th>
<th>Measured Results: per Single User - per Loop</th>
<th>Overall Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Startup Delay per User</td>
<td>AV Session Time per Loop: 12.12 sec/loop</td>
<td>Web Transaction Rate: 10.0 URL/call/sec</td>
</tr>
<tr>
<td>Request Timeout per URL</td>
<td>AV Response Time per Page: 0.04 sec/page</td>
<td>Session Failure Rate: 0.00 %</td>
</tr>
<tr>
<td>Statistical Sampling Interval</td>
<td>Network Throughput per User: 49.1 kBytes/sec</td>
<td>Total Network Throughput: 1.77 MB/sec</td>
</tr>
</tbody>
</table>

#### Diagrams:
- Diagram: Response Time per Page
- Diagram: Users Waiting for Response
- Diagram: HTTP Keep-Alive Efficiency
- Diagram: Number of Errors per Page
- Diagram: Number of Errors per URL
- Diagram: External Measured Data

#### Users Waiting for Response

The diagram shows the number of users waiting for a response from the system over time. The system rate is 14 calls/second."
2 V4.4 Release Notes

2.1 New Functions and Features

Proxy Sniffer V4.4 contains the following new features:

Minor Release V4.4-G:

- A new Var Extractor Wizard allows you to extract variables in an easy way from any HTTP(S) response content which is received in ASCII text format (for example from unstructured HTML data). This new Var Extractor Wizard can be used as a workaround if structured data access to the received response content is not possible (for example to extract values from dynamically generated JavaScript code).
- The Var Finder menu which is used to detect and to post-process dynamically exchanged session parameters has been improved to be more user-friendly.
- A new Cookie Verifier allows you to detect if the recorded session contains cookies which are transmitted to the web server in HTTP(S) requests before they are received from the web server in HTTP(S) responses. Note: in such a special case you can use the Proxy Sniffer Plug-in named Cookie Injector to predefine a cookie in the cookie store of the simulated users.
- The external load generators in the Amazon cloud (EC2) can now be started and stopped directly from the Proxy Sniffer GUI. The Amazon EC2 API is now fully integrated into Proxy Sniffer and allows you to use the predefined AMIs of Proxy Sniffer in a convenient way.

Major Release V4.4-C:

- Support for Kerberos Authentication has been added.
- Support for Authentication using PKCS#11 Security Devices (support for smart cards and HSMs) has been added: PKCS#11 Manual.
- Email and SMS Alert Notifications can now be released during the execution of a Job. For example if a predefined threshold of the response times is exceeded, or also if too many errors (session failures) are measured within a configurable interval. Additionally, informative Email and SMS notifications can also be released when a job cannot be started, when a job starts, when a job crashes (internal error) and when a job has been completed.

In addition, more than 150 small enhancements and some bug fixes have been made in Version 4.4. However, none of the new small enhancements are documented.

The Installation and Configuration Guide, the User's Guide and the Application Reference Manual have been revised. The Proxy Sniffer Java API Documentation has been updated.
Important Note: New Java Paths for Proxy Sniffer Version 4.4:

- In the case where you do not use the Proxy Sniffer Console (that is, when you start Proxy Sniffer V4.4 manually from a terminal command line or as a Unix daemon), ensure that the Java CLASSPATH contains the files \texttt{prxsniff.jar}, \texttt{iaik\_jce\_full.jar}, \texttt{iaikPkcs11Provider.jar}, and the Proxy Sniffer installation directory, and the default directory (.).
- The java option \texttt{-Xbootclasspath/p:prxsniff.jar} must NOT be used any longer (Proxy Sniffer version 4.4 will not work if this option is set).

2.2 New Recommendations for Load Generators (Exec Agents)

We recommend to use 64-Bit UNIX-Like systems as Load Generators (for example Linux-Ubuntu, Solaris or Mac OS X systems) and to use/install the official J\textsc{ava} 1.6 (Java 6) 64-Bit version of the Java SDK from SUN Microsystems (Oracle).

For Mac OS X systems: the Java 64-Bit SDK from Apple Inc. is also supported by Proxy Sniffer but this requires that the latest OS X Version 10.6 (Snow Leopard) is installed.

If you run load generators on Windows Systems we recommend that you reconfigure the Virus Scanner on these systems in such a way that the HTTP(S) network data transfer is not scanned for viruses. Scanning for viruses on Disk and scanning for viruses in Emails should still be enabled. For further information see Application Reference Manual chapter 5.1.

2.3 Version 4.4 Compatibility

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<td>Created Load Test Programs (&quot;<em>.java&quot; and &quot;</em>.class&quot; files)</td>
<td>Compatible</td>
</tr>
<tr>
<td>Load Test Results (&quot;*.prxres&quot; files)</td>
<td>Compatible</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Previous Version Data Files / Version 4.0, 4.1 and Version 4.2</th>
<th>Compatibility with Version 4.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recorded Web Surfing Sessions (&quot;*.prxdat&quot; files)</td>
<td>Compatible</td>
</tr>
<tr>
<td>Created Load Test Programs (&quot;<em>.java&quot; and &quot;</em>.class&quot; files)</td>
<td>NOT Compatible (^1)</td>
</tr>
<tr>
<td>Load Test Results (&quot;*.prxres&quot; files)</td>
<td>Compatible</td>
</tr>
</tbody>
</table>

\(^1\) Workaround: you can load any old web surfing session (".prxdat file) into V4.4 by using the Project Navigator. After that you have to generate and compile the load test program again before you can run it on V4.4.
2.4 Installation Notes for the Upgrade to Proxy Sniffer V4.4

Before upgrading, start first the existing Proxy Sniffer version and delete all Load Test Jobs on all Exec Agents by using the Jobs Menu accessible via the Project Navigator. After deleting all Jobs, the existing Proxy Sniffer version must be un-installed.

Proxy Sniffer Version 4.4 can then be installed. During installation, select the same installation directory that was used in the previous version in order that the contents of the "MyTests" sub-directory continues to be accessible from the Project Navigator.

Ensure that all additional Exec Agents (Load Generators) are also upgraded to the new Proxy Sniffer Version. Mixing different Proxy Sniffer versions for the GUI and the (remote) Exec Agents is not supported, and will lead to errors when starting Load Tests.

In case if you have installed the Firefox Recoding Extension, we recommend that you check if you run the latest version 1.4 of the Add-On. Upgrade instructions: first uninstall the old version of the "Firefox Recoding Extension". After that download and install the latest version 1.4 from https://www.proxy-sniffer.com/download/PrxRecExt1.xpi.

Please note: it is strongly recommend that you hide in Firefox the "Proxy Sniffer Toolbar" when the Proxy Sniffer Console is not running.

New GUI License Keys, and new Exec Agent License Tickets, are required for the installation of Proxy Sniffer V4.4. The Licenses of earlier versions are not valid. Customers possessing an existing valid Upgrade and Maintenance Contract will receive new Licenses at no additional charge during the contract maintenance period.
2.5 Illustrations of New Functions and Features (Minor Release V4.4-G)

2.5.1 Improved Var Finder und new Var Extractor Wizard

In case if a dynamically exchanged session parameter cannot be handled automatically by the GUI a suggestion is shown to call the Search Overall menu. After that the new Var Extractor Wizard can be used to extract and assign the dynamically exchanged session parameter in an easy way.
Caption (picture above): in the Var Extractor Wizard you should choose a **Unique Text Fragment** whose value will not change during the execution of the load test, and which is located near to the extracted value (column Offset). This unique text fragment will later be used during the load test as an "anchor." After you have selected such a text fragment you can extract the value into a variable by clicking on the **Extract Var** button. The result is shown in the **Var Handler**.
Hint: the **Var Extractor Wizard** can also be called via the search dialogue in the HTTP(S) response content frame of the URL Details menu. In such a case the entered search text must contain the value which should be extracted.
2.5.2 Cookie Verifier

![Cookie Verifier](image)

*Warning*: The following cookies are transmitted to the Web Server before they are received. *TaskID*
2.5.3 Starting and Stopping of external cloud-based Load Generators from the Proxy Sniffer GUI (Amazon EC2 support)

![Proxy Sniffer GUI for EC2 configuration]

Access Configuration for Amazon EC2 Service
- AWS Access Key ID: Your Access Key ID
- AWS Secret Access Key: Your Secret Access Key

Use Outbound HTTPS Proxy for accessing the Amazon EC2 Service
- Proxy Host: 192.168.XX.XX
- Proxy Port: 443
- Proxy Username: Your Username
- Proxy Password: Your Password

Select Amazon EC2 Region:
- us-west-1
- us-east-1
- eu-west-1
- ap-southeast-1

Disclaimer: By using this feature of Proxy Sniffer, you agree that you will verify with a third party EC2 management tool in ALL EC2 regions that:
1. The desired type and number of EC2 instances have been launched
2. The EC2 instances are correctly terminated in all regions upon completion of your load tests
### Proxy Sniffer V4.5 Release Notes

#### Amazon Load Generators

**Region:** eu-west-1

<table>
<thead>
<tr>
<th>No.</th>
<th>Instance</th>
<th>AMI ID</th>
<th>Type</th>
<th>Status</th>
<th>Public DNS Name</th>
<th>Security Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13333338842</td>
<td>ami-87e0976</td>
<td>m1.large</td>
<td>pending</td>
<td><a href="http://25.129:84.eu-west-1.compute.amazonaws.com">http://25.129:84.eu-west-1.compute.amazonaws.com</a></td>
<td>ProxySniffer</td>
</tr>
<tr>
<td>2</td>
<td>13333338844</td>
<td>ami-87e0976</td>
<td>m1.large</td>
<td>running</td>
<td><a href="http://25.129:84.eu-west-1.compute.amazonaws.com">http://25.129:84.eu-west-1.compute.amazonaws.com</a></td>
<td>ProxySniffer</td>
</tr>
</tbody>
</table>

**Note:** For launching new instances you should repeatedly click on the Refresh icon at the upper right corner of this window until you see that all launched instances are in the running state. After that, close this window. Each launched instance will be registered twice as an additional Exec Agent (load generator). The new registered Exec Agents are automatically added to your local defined load generating cluster named Amazon.Poc.Cluster.

**Launch Instances - Add Load Generators (Exec Agents)**

- **AMI ID:**
  - Continue
The Exec Agents and the load releasing cluster **Amazon-Prx-Cluster** are automatically defined when the cloud-based load generators are started.

If you own an **Unlimited Exec Agent Short-Time License** you have to upload this license to the Amazon-based load generators.

This step is not required for already pre-licensed load generators (Subscription to Amazon Product Code).

The Amazon configuration is now completed and you can start your load tests on the **Amazon-Prx-Cluster** from your local GUI.

**Hint:** we recommend that you protect the access to your Amazon load generators.
**Important Note:** Don’t forget to stop (terminate) the Amazon load generators after you have completed your load tests! The usage of the Amazon load generators is charged per hour. Per each start (launch) of a load generator (instance) at least one full hour will be charged.
2.6 Illustrations of New Functions and Features (Major Release V4.4-C)

2.6.1 Kerberos Authentication and Authentication using PKCS#11 Security Devices:

Support for Kerberos Authentication during recording of web surfing sessions.

Support for PKCS#11 Security Devices (smart cards and HSMs) during recording of web surfing sessions.

Access to the SMS and Email Alert Configuration.
Support for Kerberos Authentication during Execution of Load Tests.

Support for PKCS#11 Security Devices (smart cards and HSMs) during Execution of Load Tests.
2.6.2 SMS and Email Alert Notifications

**Alert Notifications - Local Alert Configuration**

- **Default Setting:** [ ] Alerts are enabled by default  [ ] Alerts are disabled by default
  - Generic Message Prefix: [prefix]
  - Message Prefix for Internal Errors: [prefix]
  - Message Prefix for Exceeded Limits: [prefix]
  - Message Prefix for Information Messages: [prefix]
  - Message Prefix for Canceled Alerts: [prefix]

- **Send Email Alerts to SMTP Server**
  - SMTP Server (IP Address or DNS Name): 102.18.4.31
  - SMTP Server Auth. Username: [username]
  - SMTP Server Auth. Password: [password]
  - From Email Address: [email]
  - To Email Addresses: [email]
  - CC Email Addresses: [email]
  - BCC Email Addresses: [email]

- **Send SMS Alerts to Clickatel HTTP Gateway**
  - Clickatel Username: [username]
  - Clickatel Password: ************
  - Clickatel API ID: 3340755
  - To Mobile Numbers: 417 71980320
  - Outbound HTTP Proxy Host: 192.168.0.0/24
  - Outbound HTTPS Proxy Host: [host]
  - Outbound HTTPS Proxy Password: ************

**Alert Conditions:**

- [ ] If a Job cannot be started
- [ ] At the Start of a Job
- [ ] If an Internal Error occurs during the Execution of a Job

**Message Headlines:**
- [ ] Events
- [ ] Errors
- [ ] Warnings
- [ ] Information
- [ ] Canceled

**Alert Conditions:**

- [ ] If the Session Failure Rate is greater than 2%
- [ ] If the Average Response Time per Page is greater than 5 seconds
- [ ] At the End of a Job
- [ ] If the Average Response Time of the Slowest Page is greater than 10 seconds

**Prefix:**
- [prefix]
- [prefix]
- [prefix]
- [prefix]
- [prefix]
- [prefix]
- [prefix]
- [prefix]
- [prefix]
- [prefix]

**Additional Message Prefix:**
- [prefix]
- [prefix]
- [prefix]
- [prefix]
- [prefix]
- [prefix]
- [prefix]
- [prefix]
- [prefix]
- [prefix]

* The values for periodically checked alert conditions are calculated from the measurements collected within the specified interval. Repeated alerts are suppressed. A cancel notification is released if the measurement is less than the threshold.

**Display Alert Configuration:**
- [ ] Alert Configuration
- [ ] Copy Alert Configuration to another Exec Agent

**Done**
Proxy Sniffer V4.5 Release Notes

Timestamp: 10 Jun 2010 01:26:32 UTC
Running Job 82 on "Local Exec Agent", Test01: The AV Response Time per Page of 6.6 sec. exceeds the threshold of 3.0 sec.

Test: Test01
Test Arguments: -i ThinkTime "2" -a 200 -c 1000 -h 100 -m 100 -n 100 -p 100 -r 100 -s 100 -t 100 -u 100 -v 100 -x 100 -y 100 -z 100
Concurrent Users: 200
Flanged Test Duration: 3000 min
Max. Loops per User: unlimited

Actual Performance Data
Elapsed Time: 59 sec
Sampling Interval: 1 minute

URL Calls
Total Failed URL Calls: 11079
Total Failed URL Calls: 0
Current TCP Socket Connect Time: 12 milliseconds
Average TCP Socket Connect Time: 73 milliseconds
HTTP Keep-Alive Efficiency: 97.2 % (re-used network connections)

Executed Loops
Total Failed Loops: 222
Total Failed Loops: 0
Current Session Failure Rate: 0.0%
Average Session Failure Rate: 0.0%
Current Session Time per Loop: 18.5 ms/loop
Average Session Time per Loop: 18.5 ms/loop
Current Response Time per Page: 6.6 sec/page

Overall Results
Average Web Transaction Rate: 186.6 URL calls/sec (total server throughput)
Current Users Waiting for Response: 136
Average Network Throughput: 29.0 Mb/sec
Total Transmitted Bytes: 205.9 MB

Response Time of Pages within the Interval of the Last Minute

Page: Response Time (Last Minute)
Page #1: Start Page: 5.0 sec
3 V4.3 Release Notes

3.1 New Functions and Features

Proxy Sniffer V4.3 contains the following new features (Major Release 4.3-C):

- The real time monitoring during load test execution has been substantially enhanced.
- A simple job scheduler has been added which allows to release load tests at a predefined time.
- Support to extract variables from JSON formatted response data has been added.
- Support for the handling of “non fatal errors” during load test execution has been added. Invalid responses from URL calls are captured and reported as usual, but the occurrence of a “non fatal error” does now not abort the current web surfing session (loop) of a simulated user. Instead of this, the simulated users will continue the web surfing session.
- Basic information about each occurred error (each failed URL call) is now captured, independently of how long a load test runs and independently of how many errors already did occur. The basic error information is captured in every case, also if no more memory is left to store full error snapshots. In addition, a new diagram type named “Time Profile of Error Types” shows an overview about what kind of errors did occur at which time.
- All time-based measurement curves which are shown after load test execution contain now additionally a secondary curve inside the same diagram which shows the number of the simulated users.
- Support for receiving or downloading large response data during load test execution has been added (size of response data up to 2 GB).

In addition, more than 100 small enhancements and some bug fixes have been made in Version 4.3. However, none of the new small enhancements are documented.

The Installation and Configuration Guide and the User’s Guide, as well as the integrated online help, have been revised.

New Features in Minor V4.3 Releases:

- Starting from version 4.3-G an additional GUI-based installation kit for Ubuntu (Linux) is available.
- Starting from version 4.3-K predefined load generators (Exec Agents) are available in the Amazon Cloud (EC2). Such load generators can be started instantly and allow our customers to perform load tests ”from the internet”. The corresponding Proxy Sniffer licenses for using the EC2 load generators can be rented on a weekly basis. Further information is at the Proxy Sniffer website available: on the web page EC2.
- The ”Var Finder” and ”Var Handler” menus have been revised and enhanced in version V4.3-O. Both menus show now more information about extracting and assigning dynamically-exchanged variables and both menus have been optimized to be used in a more convenient way.
3.2 Illustrations of New Functions and Features (Major Release V4.3-C)

3.2.1 Improved Real Time Monitoring

**Error Overview (see chapter 3.2.1.1)**

**Response Time Overview (see chapter 3.2.1.2)**

**Statistical Overview (see chapter 3.2.1.3)**

![Project Navigator - Execute Load Test](http://127.0.0.1:7990/dfischer/webadmininterface/PopupDirectoryNavigatorDisplayLoadTestWeblet?filePath864=QzpQG90dW1bnRIJHvU2C8FaW5z)

- **Non-Fatal Errors** (yellow bars)
- **Number of Users Waiting for Response** (purple bars)
- **Web Transaction Rate**
- **Session Failures / Ignored Errors**
- **Number of Users / Waiting Users**

**Test started at 13 Oct 2009 23:18:48 ECT / Estimated test duration 15:00 min / 7:38 min elapsed**

- **Total Parsed URLs:** 10000
- **Total Failed URLs:** 1254
- **HTTP Keep-Alive Efficiency (%):** 95.5
- **AV Web Trans. Rate (URL calls/sec):** 104.7
- **Total Parsed Loops:** 37440
- **Total Failed Loops:** 743
- **Session Time per Loop (sec):** 11.8
- **Users Waiting For Response:** 2 of 200
- **TCP Socket Connect Time (ms):** 0
- **AV Network Throughput (Mbps):** 1.31
- **Total Transmitted Bytes:** 1321497

**Abort Job 188**  
**Progress:** 0%  
**50%**  
**100%**  
**Detailed Statistic**
3.2.1.1 Error Overview (Real Time)

- **Real-Time Profile of Error Types**
  - All failed URL Calls (1294 Errors)
  - Error Snapshot Memory: 20% used

- **Number of Errors on Page #1**
  - Page 42: Web Load and Stress Testing Tool
  - All failed URL Calls (1246 Errors)

- **Number of Errors on Page #2**
  - Page 42: Web Load and Stress Testing Tool
  - All failed URL Calls (61 Errors)
## Direct Access to Corresponding Error Snapshot (Error Detail)

### Error Overview (Real-Time) - Remote Exec Agent - Job 188

<table>
<thead>
<tr>
<th>No.</th>
<th>Error Type</th>
<th>Page Description</th>
<th>URL Index</th>
<th>Error No.</th>
<th>URL</th>
</tr>
</thead>
</table>

---

Direct Access to corresponding Error Snapshot (error detail)
### 3.2.1.2 Response Time Overview per Web Page and for each URL (Real Time)

#### Page 1 Response Time 100% Sampling Rate
- **Average Values:** 19 Oct 2009 06:29:09 (18:29 min elapsed)
  - **Response Time in Milliseconds:**
    - 10:29 min
    - Average Time of 10:29 min

<table>
<thead>
<tr>
<th>Response</th>
<th>5000</th>
<th>4000</th>
<th>3000</th>
<th>2000</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Page 2 Response Time 100% Sampling Rate
- **Average Values:** 18 Oct 2009 20:39:18 (11:39 min elapsed)
  - **Response Time in Milliseconds:**
    - 11:39 min
    - Average Time of 11:39 min

<table>
<thead>
<tr>
<th>Response</th>
<th>5000</th>
<th>4000</th>
<th>3000</th>
<th>2000</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Page 3 Response Time 100% Sampling Rate
- **Average Values:** 18 Oct 2009 20:39:18 (11:39 min elapsed)
  - **Response Time in Milliseconds:**
    - 11:39 min
    - Average Time of 11:39 min

<table>
<thead>
<tr>
<th>Response</th>
<th>5000</th>
<th>4000</th>
<th>3000</th>
<th>2000</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td>0</td>
</tr>
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<td>1</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>3</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Page 4 Response Time 100% Sampling Rate
- **Average Values:** 18 Oct 2009 20:39:18 (11:39 min elapsed)
  - **Response Time in Milliseconds:**
    - 11:39 min
    - Average Time of 11:39 min

<table>
<thead>
<tr>
<th>Response</th>
<th>5000</th>
<th>4000</th>
<th>3000</th>
<th>2000</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<tr>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Proxy Sniffer V4.5 Release Notes

URL [1] Overview (Real-Time) - Remote Exec Agent - Job 188

Response Time: Last 5 Minutes  |  Time Bars: Average Values  |  Elapsed Time: 11:10 min


Measured Values - Calculated Overall URL [1] Calls
- Total Passed URL Calls: 6182
- Total Failed URL Calls: 249
- Average Size (Req + Resp): 31787 bytes
- Max. Response Time: 21566 ms
- Min. Response Time: 4 ms
- Av. TCP Socket Connect Time (100%): 89 ms
- Av. Request Transmit Time: 0 ms
- Av. Response Header Time: 723 ms
- Av. Response Content Receive Time: 3 ms
- Average Response Time: 814 ms

URL [1] Errors: From Start of Test up to Current Time

Real-Time Profile of Error Types for URL [1] (Remote Exec Agent - Job 188)

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3.2.1.3 Statistical Overview (Real Time)

**Concurrent Users** 15 Sec. Sampling Interval (Remote Exec Agent - Job 188)
- Test: started at 18 Oct 2009 20:18:49 (11h48 m n elapsed)
- Users Waiting For Response 15 Sec. Sampling Interval (Remote Exec Agent - Job 188)
  - Test: started at 18 Oct 2009 20:18:49 (11h48 m n elapsed)

**Session Failures** 15 Sec. Sampling Interval (Remote Exec Agent - Job 188)
- Test: started at 18 Oct 2009 20:18:49 (11h48 m n elapsed)

**Web Transaction Rate** 15 Sec. Sampling Interval (Remote Exec Agent - Job 188)
- Test: started at 18 Oct 2009 20:18:49 (11h48 m n elapsed)

**TCP Socket Connect Time** 15 Sec. Sampling Interval (Remote Exec Agent - Job 188)
- Test: started at 18 Oct 2009 20:18:49 (11h48 m n elapsed)

**Network Throughput** 15 Sec. Sampling Interval (Remote Exec Agent - Job 188)
- Test: started at 18 Oct 2009 20:18:49 (11h48 m n elapsed)
3.2.2 Simple Job Scheduler

![Image of Proxy Sniffer V4.5 Simple Job Scheduler interface]

- **Job State:**
  - Scheduled
  - Running
  - Completed

- **Test Arguments:**
  - `-u` 200
  - `-d` 900
  - `-t` 160
  - `-s` delay 208
  - `-m` mops 0
  - `-s` sampling 15
  - `-p` page 100
  - `-r` run 100
  - `-m` mainmem 20
  - `-d` halt

- **Concurrency:**
  - Users: 200
  - Planned Test Duration: 15 min
  - Max. Jobs per User: Unlimited

- **Schedule Job for:**
  - Day: tomorrow
  - Time: 10:00

- **Start Load Test Job**: Button to start the job

---

![Image of Proxy Sniffer V4.5 Exec Agent Jobs]

- **Job Status:**
  - Completed
  - Scheduled
  - Running

- **Test Program & Arguments:**
  - Testing different configurations and parameters for load testing.

---

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3.2.3 Extract of Variables from JSON formatted Response Data

See [http://www.json.org](http://www.json.org) to learn more about JSON.
3.2.4 Support for Non-Fatal Errors

**Recorded Sessions**

<table>
<thead>
<tr>
<th>Filter Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Binary Data</td>
<td>Images (&gt;)</td>
</tr>
<tr>
<td>No OBB, JS</td>
<td>Only HTML</td>
</tr>
<tr>
<td>No Cached Data</td>
<td>204</td>
</tr>
<tr>
<td>No Errors</td>
<td>Host</td>
</tr>
</tbody>
</table>

**Recorded Items:** 27

**Recording Size:** STOPPED

**Sample Sessions**

1. **Page 1:** Web Load and Stress Testing Tool: Proxy Sniffer
   - Users think time: 5 seconds ±5%
   - Test: HTTP Request → HTTP Response
   - Verification: Response Verification
   - Sample Request/Response:
     - GET http://www.example.com/index.html
     - Response: Text/HTML

2. **Page 2:** Web Load and Stress Testing Tool: Proxy Sniffer
   - Users think time: 5 seconds ±5%
   - Test: HTTP Request → HTTP Response
   - Verification: Response Verification
   - Sample Request/Response:
     - GET http://www.example.com/sitemap.xml
     - Response: Application/HTML

3. **Page 3:** Web Load and Stress Testing Tool: Proxy Sniffer
   - Users think time: 5 seconds ±5%
   - Test: HTTP Request → HTTP Response
   - Verification: Response Verification
   - Sample Request/Response:
     - GET http://www.example.com/sitemap.xml
     - Response: Text/HTML

**Additional Information:**

- Proxy Sniffer V4.5
- Release Notes
- English Edition
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- Page 44 of 87
Load Test Result Detail - Error-Snapshots - Sorted by Date & Time

Test: Test1, Start Date: 13 Oct 2008 13:17:55, User: 200, Test Duration: 15:23 min, File: Test1_130408_131755_200a.pmag

URL [9], Error 1: Network Connection aborted by Server

- Error Time: 13 Oct 2008 13:26:59 (9.46 min after start date)
- Current Thread: 8906054
- Error Log: "Network Connection aborted by Server"

HTTP Request Details

- HTTP/1.1
- Host: 192.168.4.5
- Connection: Keep-Alive

HTTP Response Details

- Status Code: 200
- Content-Type: text/html
- Content-Length: 0

Error Log:

- Network Connection aborted by Server
3.2.5 Secondary Curve of Simulated Users

No. | Sample Measured on | Offset [ms] | Offset [microsec] | Response Time [ms] |
---|-------------------|-------------|-------------------|--------------------|
1 | 13 Oct 2009 13:18 00.671 | 3628 | 003 828 | 52 |
2 | 13 Oct 2009 13:18 00.828 | 3655 | 003 886 | 28 |
3 | 13 Oct 2009 13:18 01.093 | 4250 | 004 258 | 30 |
4 | 13 Oct 2009 13:18 02.265 | 5422 | 005 422 | 31 |
5 | 13 Oct 2009 13:18 03.093 | 4250 | 004 258 | 30 |
3.2.6 Support for Receiving or Downloading Large Data

The support for receiving or downloading large data is provided by two new plug-ins called “Large Response Content” (can be assigned to one or more specific URLs) and called “Large Response Content (All URLs)” (automatically applied to all URLs).

![Load Test Plug-in Details](image)

**Load Test Plug-in Details**

**Plug-in Class:** LargeResponseContentAll

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>File</td>
<td>C:\Dokumente und Einstellungen\Project\ProxySniffer\MyTests\Plugins\LargeResponseContentAll.allclass</td>
</tr>
<tr>
<td>Last Modified</td>
<td>09 Sep 2009 16:09:57</td>
</tr>
<tr>
<td>Plugin Type</td>
<td>Load Test Plug-in</td>
</tr>
<tr>
<td>Plugin Name</td>
<td>Large Response Content (All URLs)</td>
</tr>
<tr>
<td>Construct Scope</td>
<td>per loop</td>
</tr>
<tr>
<td>Execution Scope</td>
<td>bound to every URL</td>
</tr>
<tr>
<td>Execution Order</td>
<td>before (at start of scope)</td>
</tr>
<tr>
<td>Allow Multiple Usage</td>
<td>no</td>
</tr>
</tbody>
</table>

**Input Parameter**

<table>
<thead>
<tr>
<th>No</th>
<th>Name</th>
<th>Type</th>
<th>Assign From</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Max. Stored Content (Kibibyte)</td>
<td>optional</td>
<td>variable</td>
</tr>
</tbody>
</table>

**Output Parameter**

None

**Plug-in Description**

Allows to receive response content data of a large size (up to 2 GB) for all URLs. Note that the response data for all URLs are read as usual during load test execution, but that only a part of them are stored internally. This means that error snapshots which are made in case of failures may not contain all received response content data.

**Input Parameter “Max. Stored Content (Kibibyte)”**

Limits storing of the receiving content data up to the given value in kibibyte. (1 is unlimited, recommended values are between 64 and 256, the default value is 128).

**Note 1:** Received content data in compressed form are not automatically decompressed when this plug-in is used AND when the limit of max. stored content data has been exceeded.

**Note 2:** The real size of the stored content data may be smaller or larger than the specified maximum value.
3.3 Illustrations of Solved Bugs (V4.3-C)

3.3.1 Avoiding Double Clicks during Acquiring Cluster Job Results
3.3.2 Incorrect Diagram when the Network Connection of the Web Server was temporarily interrupted

If no network connection can be established to the web server, the sampling data of the TCP Socket Connect Time (network establish time) are no longer shown as zero values. Instead of this they are now shown as a pink colored rectangle.
3.3.3 Incorrect Diagram of Session Time when temporarily only Failed Sessions have been measured

When between two sampling intervals only (new) failed session have been measured (number of failed sessions > 0) – AND no successful completed sessions have been measured, the curve of the session time is now interrupted (broken) instead of drawing a blue line between the sampling intervals.
3.4 Modified Functions

During load test execution, as well as in the diagrams shown after a load test has been completed, the values for the “Session Time” as well as the values for the “TCP Socket Connect Time” (network establish time) are no longer calculated and shown as “floating average values”. Instead of this the actual, real (transient) values of the measured points in time are shown.

3.5 Modified Phrases (GUI)

- The phrase “Network Establish Time” has now been replaced by the phrase “TCP Socket Connect Time”.
- The phrase “Outstanding Requests” has now been replaced by the phrase “Users Waiting for Response”.

3.6 Version 4.3 Compatibility

<table>
<thead>
<tr>
<th>Previous Version Data Files / Version 4.0, 4.1 and Version 4.2</th>
<th>Compatibility with Version 4.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recorded Web Surfing Sessions (&quot;*.prxdat&quot; files)</td>
<td>Compatible</td>
</tr>
<tr>
<td>Created Load Test Programs (&quot;<em>.java&quot; and &quot;</em>.class&quot; files)</td>
<td>NOT Compatible</td>
</tr>
<tr>
<td>Load Test Results (&quot;*.prxres&quot; files)</td>
<td>Compatible</td>
</tr>
</tbody>
</table>

Hint / Workaround: all generated load test programs (".java") as well as all compiled load test programs (".class") of older Proxy Sniffer versions are not compatible with V4.3. However – as a workaround – you can load any old web surfing session ("*.prxdat") into V4.3 by using the Project Navigator. After that you have to generate and compile the (old) load test program again before you can run it on V4.3.
3.7  Installation Notes for the Upgrade to Proxy Sniffer V4.3

Before upgrading, start first the existing Proxy Sniffer version and delete all Load Test Jobs on all Exec Agents by using the Jobs Menu accessible via the Project Navigator. It is important that there be no Job Entries shown in the Job Menu before the upgrade is made. After deleting all Jobs, the existing Proxy Sniffer version must be un-installed.

Proxy Sniffer Version 4.3 can then be installed. During installation, select the same installation directory that was used in the previous version in order that the contents of the "MyTests" sub-directory continues to be accessible from the Project Navigator. Alternatively, a new installation directory can be used, and the contents of the previous version's "MyTests" sub-directory can be copied to the new "MyTests" directory after installation.

Ensure that all additional Exec Agents are also upgraded to the new Proxy Sniffer Version. Mixing different Proxy Sniffer versions for the GUI and the (remote) Exec Agents is not supported, and will lead to errors when starting Load Tests.

New GUI License Keys, and new Exec Agent License Tickets, are required for the installation of Proxy Sniffer V4.3. The Licenses of earlier versions are not valid. Customers possessing an existing valid Upgrade and Maintenance Contract will receive new Licenses at no additional charge during the contract maintenance period.
4 V4.2 Release Notes

4.1 New Functions and Features (Minor Release V4.2-P)

4.1.1 Firefox Recoding Extension

A new Firefox Extension allows the recording of web surfing sessions in a more convenient way. The recording extension is displayed as a Firefox Toolbar, named “Proxy Sniffer Toolbar”, in the upper part of the web browser window.

The following actions are automatically executed by this extension when recording is started:

1. The cache of the web browser is cleared.
2. All cookies in the web browser are cleared.
3. The proxy configuration of the web browser is set to 127.0.0.1 (port 7999 for http and port 7997 for https) to support the recording of the web surfing session. The old (original) proxy configuration of the web browser is saved, and later restored when recording is stopped.

The “Firefox Recording Extension” Handbook (PDF) describes the installation and the usage of this extension in detail.

Note: using this Firefox extension is optional – the recording of web surfing sessions can always be made with any web browser product and any technical HTTP/S client without using this extension → see Proxy Sniffer User’s Guide, chapter 2.
4.1.2  Customized Measurement Reports

All predefined PDF report templates are now disclosed and available in a new Project Navigator directory named ReportTemplates. This allows to customize the generated PDF measurement reports. The most frequent case is that some functionality of a predefined report template is deleted or rearranged and that the layout of the PDF report is adjusted to your own requirements.

The corresponding procedure is described in the new PDF Report Templates Handbook.

4.1.3  Additional Functionality for Remote Management of Exec Agents

Additional functionality for remote management of Exec Agents is now available. This includes also the remote execution of operating system commands and “Page Scanner” calls. Please take a look on the revised chapter 4 of the Application Reference Manual.
4.2 New Functions and Features (Major Release V4.2-A)

4.2.1 Installation Kit for Mac OS X
Included in this release is a new GUI-based Installation Kit for Mac OS X, similar in functionality to the existing Windows Installation Kit.

4.2.2 Improved GUI and better Support for the Firefox and Safari Web Browsers
The user-friendliness of many menus has been significantly improved. In addition, the use of many menus has been enhanced with wizard-like functionality.

The GUI layout, and the management of pop-up windows in the Web Admin GUI, have improved support for the Firefox and Safari browsers. In addition, the Safari browser is now officially supported; however, the preferred Web Browser for the Web Admin GUI is Firefox - also for Windows systems.

Note: Please ensure that Firefox is configured to allow pop-up windows from the current machine (IP address 127.0.0.1). In addition, configure Firefox to allow the following JavaScript options:

4.2.3 Integration with dynaTrace
Proxy Sniffer can now create additional data, during the execution of a Load Test, which can be analyzed with the assistance of the server-side diagnostic tool "dynaTrace". In this way, it is now possible to compare the externally-measured response times with the corresponding activity within a Web Server. In the case of errors – or slow response times – individual HTTP/S calls created by Proxy Sniffer can be traced using "dynaTrace", leading to stable, efficient and optimized server-side programming.

Note: The creation of additional data is an integral part of the functionality of Proxy Sniffer V4.2; however, the diagnostic tool "dynaTrace" is not delivered as part of Proxy Sniffer. For information on the licensing and use of the "dynaTrace" product, refer to the product manufacturer company "dynaTrace software GmbH" (www.dynatrace.com).
### 4.2.4 Additional Plug-Ins

Proxy Sniffer V4.2 includes new "Load Test Plug-ins" which can be integrated using the GUI for a recorded Web Session, and which are called during the execution of a Load Test program.

List of all Plug-Ins delivered with Proxy Sniffer V4.2:

<table>
<thead>
<tr>
<th>Plug-In Designation in the GUI</th>
<th>Plug-In Functionality</th>
<th>Existing / New</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abort Failed Test</td>
<td>Aborts a running Load Test if too many errors occur within a configured time interval.</td>
<td>Existing</td>
</tr>
<tr>
<td>Assign File Data to Request Content</td>
<td>Read the data of a file from disk and assign it to the request content of an URL call (only useful for HTTP/S POST requests and some WebDAV methods).</td>
<td>New¹</td>
</tr>
<tr>
<td>Cookie Injector</td>
<td>Sets a Cookie before, or during, the execution of a Load Test.</td>
<td>New</td>
</tr>
<tr>
<td>Get Cookie Value</td>
<td>Extracts the value of a Cookie into a GUI Variable. This extracted value can be later assigned to a CGI parameter in a succeeding HTTP/S Request (among other targets).</td>
<td>New</td>
</tr>
<tr>
<td>Defer Load Test Start</td>
<td>Delays the start of a Load Test Program for a configured time, expressed in minutes.</td>
<td>New</td>
</tr>
<tr>
<td>Delay Full Load</td>
<td>Limits the load - respectively the number of the simulated users - for a configurable time. After this time is elapsed the load is increased to the originally number of planned users.</td>
<td>New¹</td>
</tr>
<tr>
<td>DNS Round Robin Load Balancing</td>
<td>Supports web servers which are using DNS Round Robin for load balancing</td>
<td>New</td>
</tr>
<tr>
<td>dynaTrace Integration</td>
<td>Creates additional data during a Load Test for analysis using the server-side diagnostic tool &quot;dynaTrace&quot;.</td>
<td>New</td>
</tr>
<tr>
<td>Generic Output File</td>
<td>During a Load Test, writes the values of up to 6 GUI Variables line-by-line to a text file. The file scope is freely configurable - lines can be written per virtual test user, per loop execution, or per URL call.</td>
<td>Existing</td>
</tr>
<tr>
<td>Input File List</td>
<td>Reads from a meta file a list of input files and assigns each simulated user an own input file. The simulated users are reading a new line from their input file each time before they are executing a new loop.</td>
<td>New¹</td>
</tr>
<tr>
<td>Large Input File</td>
<td>Reads data from a large input file which has an unlimited size (&gt; 1 GB)</td>
<td>New¹</td>
</tr>
<tr>
<td>User Synchronization Point 1</td>
<td>Retains all active users at a configurable synchronization point until all of the users have reached this point. After that, the users are rereleased, by applying a configurable deblock delay which is multiplied with the no. of the actual user (0, 1, 2 ...).</td>
<td>New¹</td>
</tr>
</tbody>
</table>

¹ new since version 4.2-H
4.2.5  Guide for Developing Own Plug-Ins

The development of "own" Load Test Plug-Ins has been possible since Version 4.1-C; however, up to now this functionality has not been fully documented. Proxy Sniffer V4.2 provides a new Developer Guide which describes both the automatic creation of a Plug-In program skeleton using the Wizard, and provides details on how to code the internal functionality of a Plug-In.

New in this version is the ability to send E-Mails from within a Plug-In, as well as the ability to insert externally-provided measurement data into Load Test Results using a Plug-In. The externally-provided measurement data is displayed in the Menu "Load Test Result Detail - Statistics and Diagrams" as additional diagrams, and will also appear in the corresponding PDF report. An example Plug-In program is provided in the Project Navigator Directory "Plug-Ins", and this example shows the integration of externally-provided measurement data (file "ExternalMeasuringDataExample.java").

Note: The creation of own Plug-Ins requires knowledge of Java programming.

4.2.6  Additional Configuration Options for Checking HTTP Responses of URL Calls

The Menu "HTTP Response Verification" has been re-designed and re-written. Response checking configuration for entire groups of similar URLs can now be done directly. In addition, it is now possible to specify two valid alternate HTTP Status Codes per URL.
4.2.7 Access to Measurement Results after Temporary GUI License Expiration

New in this release, it is possible to access measurement results via the Web Admin GUI even after a temporary GUI License has expired. This means that these results can be viewed, and PDF Reports can be created for them. When a License expires, the Web Admin GUI switches to a limited access mode.

4.2.8 Additional Diagrams for the Display of Load Test Results

The following additional diagrams will be available and shown for the display of Load Test Results in this release:

<table>
<thead>
<tr>
<th>Menu Option</th>
<th>Additional Diagram(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagram: Response Time per Page</td>
<td>New : 90% Percentile Response Time per Web Page</td>
</tr>
</tbody>
</table>

![Diagram: Response Time per Page](image_url)
Diagram: Response Time per Page

New: Detail Diagrams per Web Page

Diagram: Top Time-Consuming URLs

New: 90% Percentile Response Time per URL
Diagram: Top Time-Consuming URLs

New: Detail Diagrams per URL

Diagram: Outstanding Requests (New Menu Option)

The number of active HTTP/S Requests executing at exactly the same point in time during a Load Test - measured over all simulated users
4.2.9 Additional Diagrams for the Comparison of Load Test Results

New 90% Percentile Comparison Diagrams, per Web Page and per URL, are available in this release for the comparison of Load Test Results. In addition, two new Menu Options are available to enable improved comparison capabilities for performance values, and for errors which have occurred.

90% Percentile Comparison Diagram per Web Page and per URL:
### New – Comparison of Performance Values:

<table>
<thead>
<tr>
<th>Test</th>
<th>Average Session Time</th>
<th>Web Transaction Rate</th>
<th>Network Connect Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1</td>
<td>20 ms</td>
<td>10 Hz</td>
<td>100 ms</td>
</tr>
<tr>
<td>Test 2</td>
<td>25 ms</td>
<td>12 Hz</td>
<td>150 ms</td>
</tr>
</tbody>
</table>

#### Performance Overview

<table>
<thead>
<tr>
<th>Category</th>
<th>Test 1</th>
<th>Test 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passed/Tapped Logs</td>
<td>500</td>
<td>550</td>
</tr>
<tr>
<td>Average Session Time per Loop</td>
<td>30.86 sec</td>
<td>31.62 sec</td>
</tr>
<tr>
<td>Average Response Time per Page</td>
<td>1.33 sec</td>
<td>1.38 sec</td>
</tr>
<tr>
<td>Web Transaction Rate (Hits per Second)</td>
<td>4,567/15 sec</td>
<td>5,678/12 sec</td>
</tr>
<tr>
<td>Average Outstanding Requests</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total HTTP calls</td>
<td>500</td>
<td>550</td>
</tr>
<tr>
<td>HTTP Keep Alive Efficiency</td>
<td>0.33 %</td>
<td>0.30 %</td>
</tr>
<tr>
<td>SSL Session State Efficiency</td>
<td>99.99 %</td>
<td>99.99 %</td>
</tr>
<tr>
<td>Average Network Throughput</td>
<td>1 Mbps</td>
<td>1 Mbps</td>
</tr>
<tr>
<td>Total Transmitted Bytes</td>
<td>20 MB</td>
<td>25 MB</td>
</tr>
</tbody>
</table>
New – Comparison of Errors:

[Image of comparison chart and graphs]

<table>
<thead>
<tr>
<th>Test</th>
<th>Page</th>
<th>Test Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1</td>
<td>test_script.com/User:1</td>
<td>Passed: 31 Failed: 0</td>
</tr>
<tr>
<td>Test 2</td>
<td>test_script.com/User:2</td>
<td>Passed: 31 Failed: 0</td>
</tr>
</tbody>
</table>

[Graph showing error snapshots: Top Error Types]
4.2.10 Overhauled and Improved Display of Load Curve Diagrams

All Load Curve Diagrams are now shown in summary form under one Menu Option. The displays of measurement values for individual Web Pages and URLs have been spun off into two new, dedicated Menu Options, and the Response Times are shown there in tabular form. In addition to mean values for Response Times, new 90% Percentile values are displayed for Web Pages and URLs.

Load Curve Diagram - Overview

![Load Curve Diagrams]

- **Response Time Behavior - Average Time per Hour per Leap**
- **Web Transaction Rate - Hit per Second**
- **Session Failure Rate**
- **Network Traffic - Average Values Correct Time**
- **Concurrent Outstanding Requests**
- **Total Network Throughput**
- **HTTP Usage Efficiency**
- **SSL Cache Efficiency**
Load Curve Diagram – Web Pages:

![Load Curve Diagram - Web Pages](image)

Load Curve Diagram – URLs:

![Load Curve Diagram - URLs](image)
4.2.11 PDF-Reports with Preview Function and Extended Commentary Possibilities

All PDF Reports have been completely re-done, enhanced with additional measurement values, and contain a new Preview Function. Additionally, comments related to test measurement results can - from within the Preview Function - be inserted at various points. All comments are included in the corresponding PDF files. In this way, it is now possible to create complete Load Test reports, including commentary, directly from within Proxy Sniffer, without the need for any additional text editing.

Comment fields are displayed inside the PDF Report Preview in green.

Example: Preview of a Detail Report with Commentary Fields
4.3 Version 4.2 Compatibility

<table>
<thead>
<tr>
<th>Previous Version Data Files / Version 4.0 and Version 4.1</th>
<th>Compatibility with Version 4.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recorded Web Sessions (*.prxdat&quot; files)</td>
<td>Compatible</td>
</tr>
<tr>
<td>Created Load Test Programs (<em>.java&quot; and &quot;</em>.class&quot; files)</td>
<td>NOT Compatible</td>
</tr>
<tr>
<td>Load Test Results (*.prxres&quot; files)</td>
<td>Compatible</td>
</tr>
</tbody>
</table>

4.4 Installation Notes for the Upgrade to Proxy Sniffer V4.2

Before upgrading, start the existing Proxy Sniffer version and delete all Load Test Jobs on all Exec Agents by using the Jobs Menu accessible via the Project Navigator. It is important that there be no Job Entries shown in the Job Menu before the upgrade. After deleting all Jobs, the existing Proxy Sniffer version must be un-installed, and all remaining files in the installation directory deleted by hand - except for the sub-directory "MyTests", which contains all Load Test Programs and Measurement Results.

Proxy Sniffer Version 4.2 can then be installed. Select the same installation directory that was used in the previous version in order that the contents of the "MyTests" sub-directory continues to be accessible from the Project Navigator. Alternatively, a new installation directory can be used, and the contents of the previous version's "MyTests" sub-directory can be copied to the new "MyTests" directory after installation.

Ensure that all additional Exec Agents are also upgraded to the new Proxy Sniffer Version. Mixing different Proxy Sniffer versions for the GUI and the Exec Agents is not supported, and will lead to errors when starting Load Tests.

New GUI License Keys, and new Exec Agent License Tickets, are required for the installation of Proxy Sniffer V4.2. The Licenses from V4.1 are not valid. Customers possessing an existing valid Upgrade and Maintenance Contract will receive new Licenses at no additional charge during the contract maintenance period.
4.5 Errors Fixed

4.5.1 Cookie Names containing Special Characters
In previous versions, a cookie having a colon (":"), in the cookie name would cause automatic cookie handling to fail during a Load Test. This has been fixed.

4.5.2 Missing "Pragma" HTTP Header Fields in created Load Test Programs
In previous versions, the creation of Load Test Program Java code would exclude "Pragma" HTTP Header Fields for recorded HTTP Requests. This has been fixed.

4.5.3 De-constructor for globally-scoped Plug-Ins
In previous versions, the de-constructor of globally-scoped a Plug-In would only be executed at the end of Load Test, after the measurement data had been written to the result file. This means it was not possible to enhance the measurement data with additional values. This problem has been fixed, and the execution sequence changed to allow the inclusion of additional measurement values in the result file.

4.5.4 Error during Configuration Changes to the MyTests Root Directories in the Project Navigator
In previous versions, the Project Navigator session cookie containing the current directory of the Project Navigator was a permanent cookie. When the MyTests root directory was moved to another location by a configuration change, the Project Navigator directory would remain pointing to the old location until all cookies were deleted in the browser. This problem has been fixed, and the Project Navigator session cookie is now a temporary cookie.

*Note: The Project Navigator MyTests Root Directory is taken from the content of the "mytests.dat" file.*

4.5.5 Truncated Annotation Text when Executing Load Test Programs
In previous versions, on Unix-like operating systems (Solaris, Mac OSX, Linux), the value of the Annotation Entry Field (Load Test Comments) during the start of a Load Test Program would be truncated after the first space in the text, and this would also occur in the measurement results. This problem has been fixed.

4.5.6 JavaScript Infinite Loop when Converting Page Scanner Results in Web Sessions
Occasionally a JavaScript infinite loop would occur when loading existing Page Scanner Results using the Project Navigator, and then converting the results into a Web Session. This problem has been fixed.
4.6 Modified Functions

4.6.1 Command Line PdfReport Tool

Various parameters of the command-line "PdfReport" tools have been changed in order to support the new PDF Reports. Some parameters, such as "-perpage", "-resppage", and "-errors", are no longer valid. A complete description of the new parameters can be found in the "Application Reference Manual", updated for this release.

4.6.2 Page Scanner Menu in the Web Admin GUI

The Page Scanner Menu has been separated from the Web Tools Menu. There is now a dedicated icon for the Page Scanner Menu in the Main Window of the Web Admin GUI.
5 V4.1-C Release Notes

5.1 Overview

Proxy Sniffer Version 4.1-C is a new major release based on Java 1.5, instead of Java 1.3 in the previous version. Due to this change, execution speed has improved, and the granularity of Response Time measurements are somewhat more accurate, expressed in terms of milliseconds.

This version includes the following new functionality:

- When a Load Test program is started, a so-called "Job Definition Template" is automatically created and stored as an XML file in the corresponding Project Navigator directory. Later, this same Load Test, with the same input parameters, can be rerun simply by clicking on the XML file, without having to re-enter the input parameters. In addition, many XML files can be zipped into a ZIP Archive, and with a single click on this ZIP Archive file all Jobs contained within will be created.
- A GUI-based generator for the quick creation of templates for Load Test Plug-ins has been added. Load Test Plug-ins are user-programmed extensions to Proxy Sniffer which can be called during a Load Test.
- It is now considerably easier to assign Variables from, and to, values in SOAP and XML files.
- Now real-time commentary can be added during executing Load Tests. These comments are later included in the Diagrams of the Detailed Results, and are also included in PDF Detail Reports.
- During a Load Test, additional data can now be included from external systems using the SNMP protocol; for example, data about CPU load and the memory usage of routers, firewalls and Unix-like operating systems can be made available. These external measurement data are displayed in additional Diagrams in the Detail Results Menu, and are also included in PDF Detail Reports. Note that this feature is not included with the Basic License, and is licensed separately.
- Input files containing missing values on a single line are now supported.

This version contains the following additional functions which were included in non-officially released minor versions since the last major version:

- The "Digest Authentication" login process, as well as the "WebDAV" File Sharing HTTP protocol extensions, are now supported.
- The values of HTTP Response Header and HTTP Request Header fields can now be extracted as Variables, and assigned to Variables.
- Data from Error Snapshots can now be exported.
- The Proxy Sniffer Console Window is now available on Unix-like operating systems.
- Screenshots can now be manually inserted on Page Breaks as additional information to server as a reminder for the respective Web Page. The Screenshots are displayed in the Detail Results Menu (Test Scenario), and are also included in the PDF Detail Report.
The following improvements have been made, and issues resolved, in this release:

- During HTTP File Uploads of ASCII text files, the transferred file contents during the Load Test were sent to the Web Server twice.
- The Web Admin GUI was unstable on computers with extremely fast CPUs.
- Windows Vista support has been improved.

### 5.2 Version 4.1 Compatibility

<table>
<thead>
<tr>
<th>Previous Version Data Files / Version 4.0</th>
<th>Compatibility with Version 4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recorded Web Sessions (&quot;*.prxdat&quot; files)</td>
<td>Compatible</td>
</tr>
<tr>
<td>Create Load Test Programs (&quot;<em>.java&quot; and &quot;</em>.class&quot; files)</td>
<td>NOT Compatible</td>
</tr>
<tr>
<td>Load Test Results (&quot;*.prxres&quot; files)</td>
<td>Compatible</td>
</tr>
</tbody>
</table>

Load Test Programs created by previous versions of Proxy Sniffer are not compatible; therefore, these must be re-created and re-compiled for this release.

### 5.3 Guide to Installation and Upgrade

To perform an upgrade, the previous version of Proxy Server must first be un-installed. Existing recorded Web Sessions and Load Test Results will not be lost, as the "MyTests" sub-directory will not be deleted by an un-installation. After the previous version has been removed, the new version can be installed.

The default settings on the Installation Directory, as well as the Desktop Icons, have been modified in this version in order that Administrator Rights for the installation and use of Proxy Sniffer are no longer necessary - as long as the new recommendations are not changed. During an upgrade, it is recommended that the existing, previous version's installation directory be manually selected in order that the existing data remains accessible by the Project Navigator after the upgrade. If a new installation directory is chosen for the upgrade, all cookies in all Web Browsers must be deleted after the upgrade.

Installation requires the entry of a new License Key specific to this version, and - new with this version - an "Exec Agent License Ticket". For more information, see the next section on the new Licensing Model.
5.4 New Licensing Model

License Keys from previous versions of Proxy Sniffer are not valid for this release. From this version, licenses are divided into two parts. The previous single basic License Key has been re-defined as a "GUI License Key", and confers the right to start the Proxy Sniffer Console and use the Web Admin GUI; however, it does not allow the generation of Load by using Exec Agent Threads or Processes. Beginning with this version, The Exec Agent now requires the presentation of a dedicated license in the form of an "Exec Agent License Ticket". This ticket determines the maximum number of simultaneous (virtual) users allowed to be created by the Exec Agent for Load generation (counted over all simultaneously executing Load Test Jobs of the Exec Agent). The "GUI License Key" is stored in the same "prxsniff.key" file which was used for the storage of the previous versions' basic License Key. The "Exec Agent Ticket" is stored in a new "ExecAgentTicket.dat" file. Both license files are found in the Proxy Sniffer Installation Directory, are ASCII text, and can be edited with any text editor.

If no "Exec Agent License Ticket" is present, the (local) Exec Agent will allow a maximum of 5 simultaneous (virtual) users.

Existing customers possessing a valid Upgrade Option will receive rights according to their Upgrade and Support Contract; that is, these customers will receive new GUI License Keys, and corresponding Exec Agent License Tickets, with this Upgrade.
5.5 New Functionality

5.5.1 Job Definition Templates
5.5.2 Load Test Plug-In Template Generator

Load Test Plug-ins are user-written enhancements to Proxy Sniffer functionality. These Plug-Ins are configured using the GUI "Var Handler", and are called by Proxy Sniffer during a Load Test. This is the only functionality where Proxy Sniffer cannot keep its promise of "no programming knowledge required". The core function(s) of a Plug-In must be created by a user experienced in Java programming. After the Plug-In has been created, it can be used in every Load Test Program, and the use of a Plug-In in itself does not require knowledge of Java programming.

In order to simplify the process of creating a Proxy Sniffer Plug-In, a "Plug-In Template Generator" is available which automatically generates all the Java code necessary for the integration of the Plug-In with the Proxy Sniffer product; thereafter, only the core function(s) of the Plug-In need to be coded by a programmer.

The following illustrations show an example of the creation and configuration of a Plug-In which can be used to calculate the booking date, based on the current date plus two days. The result is output as three Variables containing the Year, Month and Day of the booking date. These Variables can later be assigned to the respective "Booking Input Form" Parameters.

Proceed as follows:

1. Navigate in the Project Navigator to the “Plugins” Directory, and click to activate the “Plug-In Template Generator”.

![Project Navigator](image)
2. Enter the Plug-In Name and Description, and configure the Plug-In Initialization and Execution Scopes. Also enter all Input and Output Parameters which interact with the Var Handler:

![Diagram of Proxy Sniffer V4.5](image-url)
3. Save the entries and then generate the Plug-In Java code. After the code has been generated, the core function(s) of the Plug-In must be implemented in the "public void execute(Object context)" method, either using a text editor or an Integrated Development Environment (IDE). Remove all non-essential sample code, and implement the necessary Java code:

```java
/**
 * Execute plug-in at start of loop (per loop).
 * Intrinsic plug-in implementation.
 */

public void execute(Object context) {
    logVector = new LogVector();
    LoadtestPluginContext pluginContext = (LoadtestPluginContext) context;
    // vvv --- sample code --- vvv
    GregorianCalendar calendar = new GregorianCalendar();
    calendar.add(Calendar.DAY_OF_MONTH, 2);
    vBookingDay = "" + calendar.get(Calendar.DAY_OF_MONTH);
    vBookingMonth = "" + calendar.get(Calendar.MONTH);
    vBookingYear  = "" + calendar.get(Calendar.YEAR);

    // ^^^ --- sample code --- ^^^
}
```

4. Compile the Plug-In, and then navigate back in the Project Navigator to the directory containing the target Recorded Web Session:
5. The Plug-In can now be added using the Var Handler. After this step, the newly-created Variables can be assigned to the form:

Note: The runtime behavior of a Plug-In allows debugging, if at the start of the Job a "Debug Option" containing "debug loops" has been selected. The debug output will be written to the respective Job's "*.out" file.
5.5.3  Improved Support for XML and SOAP Files

XML and SOAP format files are now automatically parsed in the GUI, and displayed in an easy-to-read format. This makes it much easier to extract these data into Variables, or assign Variables to these data. Note that XML and SOAP format files will be parsed during the Test Execution only if and when necessary.
5.5.4 Real-Time Commentary

Comments can be added in real-time, while executing a Load Test. These comments are later included in the Diagrams of the Detailed Results, and are also included in PDF Detal Reports.

Additional data from external systems can now be captured during a Load Test by using the SNMP protocol; for example, data about CPU usage and the memory statistics from routers, firewalls and Unix-like operating systems can be collected and included in the Test Results. These external measurement data are displayed in additional Diagrams in the Detail Results Menu, and are also included in PDF Detail Reports. Note that this feature is not included with the Basic License, and is licensed separately.
5.5.6 Improved Parsing of Input Files

Missing values in Input File lines can now be returned as empty strings. The trimming of empty spaces from the beginning and end of values can now be configured.

5.5.7 Support for the "Digest Authentication" Login Process as well as the WebDAV Protocol

Support for the "Digest Authentication" login process can now be chosen as an option when generating a Load Test program. The WebDAV protocol does not require special handling and is automatically supported.
5.5.8 Extraction and Assignment of Variables in HTTP Header Fields

All values from HTTP Response Header fields can now be extracted into Variables. For HTTP Request Header fields, only a few can be assigned values as most HTTP Request Header fields are automatically managed by Proxy Sniffer.
5.5.9 Exporting Data from Error Snapshots

Export Error-Snapshots / All

Export Options:
- CSV Field Separator
- Decimal Point Character
- Export Data Output
- Export Filename

Display Error-Snapshots (HTML Table)

<table>
<thead>
<tr>
<th>Sequential Nr.</th>
<th>Error Time Offset (ms)</th>
<th>Error Date</th>
<th>Page Nr.</th>
<th>Page Name</th>
<th>URL Index</th>
<th>Error Index</th>
<th>Error Type Text</th>
<th>Status Type</th>
<th>Status Type Text</th>
<th>HTTP Status Code</th>
<th>HTTP Status Code Text</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4831</td>
<td>12 Feb 2008 11:29:43</td>
<td>2</td>
<td>#2 logging in</td>
<td>20</td>
<td>1</td>
<td>203J. Wrong HTTP Status Received</td>
<td>10</td>
<td>Wrong HTTP Status Received</td>
<td>200</td>
<td>OK</td>
<td>POST/recvserver001</td>
</tr>
<tr>
<td>2</td>
<td>4628</td>
<td>12 Feb 2008 11:29:43</td>
<td>2</td>
<td>#2 logging in</td>
<td>20</td>
<td>1</td>
<td>203J. Wrong HTTP Status Received</td>
<td>10</td>
<td>Wrong HTTP Status Received</td>
<td>200</td>
<td>OK</td>
<td>POST/recvserver001</td>
</tr>
<tr>
<td>3</td>
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<td>12 Feb 2008 11:29:43</td>
<td>2</td>
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<td>20</td>
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<td>203J. Wrong HTTP Status Received</td>
<td>10</td>
<td>Wrong HTTP Status Received</td>
<td>200</td>
<td>OK</td>
<td>POST/recvserver001</td>
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<td>10</td>
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<td>POST/recvserver001</td>
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<td>10</td>
<td>Wrong HTTP Status Received</td>
<td>200</td>
<td>OK</td>
<td>POST/recvserver001</td>
</tr>
<tr>
<td>6</td>
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<td>10</td>
<td>Wrong HTTP Status Received</td>
<td>200</td>
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<td>POST/recvserver001</td>
</tr>
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<td>10</td>
<td>Wrong HTTP Status Received</td>
<td>200</td>
<td>OK</td>
<td>POST/recvserver001</td>
</tr>
<tr>
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<td>10</td>
<td>Wrong HTTP Status Received</td>
<td>200</td>
<td>OK</td>
<td>POST/recvserver001</td>
</tr>
<tr>
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<td>20</td>
<td>1</td>
<td>203J. Wrong HTTP Status Received</td>
<td>10</td>
<td>Wrong HTTP Status Received</td>
<td>200</td>
<td>OK</td>
<td>POST/recvserver001</td>
</tr>
<tr>
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<td>20</td>
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<td>203J. Wrong HTTP Status Received</td>
<td>10</td>
<td>Wrong HTTP Status Received</td>
<td>200</td>
<td>OK</td>
<td>POST/recvserver001</td>
</tr>
<tr>
<td>11</td>
<td>14132</td>
<td>12 Feb 2008 11:29:43</td>
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<td>10</td>
<td>Wrong HTTP Status Received</td>
<td>200</td>
<td>OK</td>
<td>POST/recvserver001</td>
</tr>
<tr>
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<td>12 Feb 2008 11:29:43</td>
<td>2</td>
<td>#2 logging in</td>
<td>20</td>
<td>1</td>
<td>203J. Wrong HTTP Status Received</td>
<td>10</td>
<td>Wrong HTTP Status Received</td>
<td>200</td>
<td>OK</td>
<td>POST/recvserver001</td>
</tr>
</tbody>
</table>
5.5.10  Proxy Sniffer Console for Unix-like Operating Systems

The Proxy Sniffer Console is now also available on all Unix-like Operating Systems.
5.5.11 Insertion of Screenshots on Page Breaks

Screenshots can now be manually inserted on Page Breaks as additional information to serve as a reminder for the respective Web Page. The Screenshots are displayed in the Detail Results Menu (Test Scenario), and are also included in the PDF Detail Report.