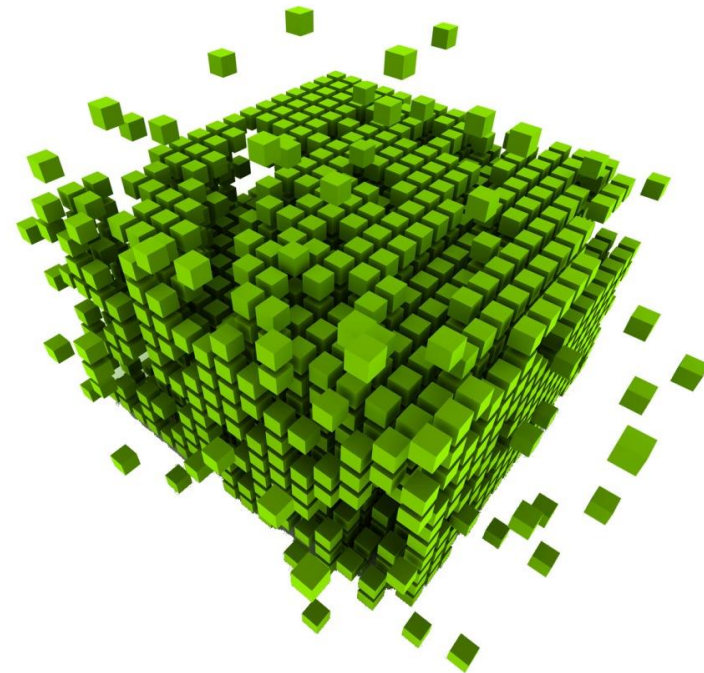


# ZebraTester

## Handling of "Dynamically-Exchanged Session Parameters"

English Edition



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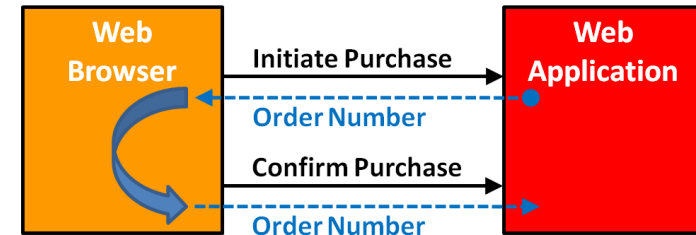
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# 1 Overview

This document explains how the handling of **dynamically-exchanged session parameters** can be configured in the ZebraTester GUI.

## 1.1 What are "dynamically-exchanged session parameters"?

Some web applications use unique values to keep track of each individual session. These "session-context" values are usually dynamically generated CGI- or form-parameter that are exchanged between the web application and the web browser. If you would repeat the same web surfing session you would observe that the values of these session-tracking parameters are constantly updated by a more or less random algorithm. A good example could be a purchase order number in web shop application. If during a load test execution ZebraTester would simply echo the session-tracking values that were observed during the test recording stage, the load test run would fail.



The values of these dynamically-exchanged session parameters are always generated by the web server first and sent to the web browser. The web browser will then send these values back to the web server as part of future page requests. In other words: if a parameter value is not issued by the web server first, that value is NOT to be considered as a dynamically-exchanged session parameter for the scope of this documentation. For example, user names and passwords which are entered in login forms are NOT dynamically-exchanged session parameters.

In contrast to session cookies which are automatically handled by ZebraTester, "dynamically-exchanged session parameters" require some manual configuration to allow ZebraTester to locate and handle these parameters. ZebraTester's **Var Finder** menu will assist you with the task of **finding and handling these dynamically-exchanged session parameters in an intuitive and simple fashion.**

## 1.2 Why "dynamically-exchanged session parameters" require manual configuration in the ZebraTester GUI?

Correctly understanding and processing these dynamic session values is a requirement for ZebraTester to simulate hundreds or even thousands of web user sessions from only one computer system.

During the execution of a load test ZebraTester simulates only the strictly required functionality of a web browser. As an example the automated handling of session cookies occurs with no on-screen rendering and without relying on a JavaScript engine. In a nutshell ZebraTester simply simulates the network traffic that is usually generated by a web browser, without the need that for each simulated user to run a browser instance.

Doing so is **up to hundred times more efficient** from a CPU/memory requirement point of view then using real web browser instances. This allows ZebraTester to simulate hundreds or even thousands of web users from a single machine.

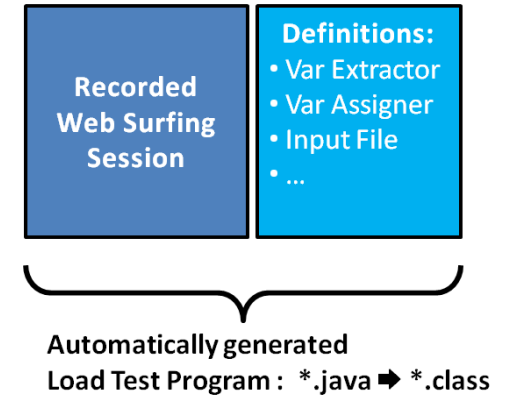
**This is a technical solution that allows you the execution of high-performance load tests with minimal hardware resources.**

### 1.3 How does the manual configuration work?

The manual configuration of a "dynamically-exchanged session parameter" works in such a way that the parameter's value is extracted into a variable (Extract Var) when it is first received from the web application. The value of the variable is then sent back to the web application in subsequent requests (Assign Var).

During the manual configuration of this process - i.e. when extracting of a value into a variable, as well as when assigning a variable to a parameter - the ZebraTester GUI behaves as if the displayed value is already dynamically-exchanged. **In reality the GUI only creates a definition of how that specific value needs to be extracted to a variable and then assigned to subsequent requests.** These definitions are then incorporated in the automatically generated load test program and executed at run time during the load test for each simulated user. The definitions are also stored in the \*.prxdat files as an integral addition to the recorded web surfing session. This means that the core of a recorded web surfing session is not modified by creating definitions and remains still "intact" in the original condition.

You can always delete any previously created definition, without the need to record the web surfing session again.



The usage "dynamically-exchanged session parameters" is heavily dependant on the technologies used by the application you are planning to test. Some web applications exclusively rely on cookies for session tracking purposes and don't require you to manually configure handling of session parameters. On the other hand there are web applications that heavily rely on these session parameters and even a simple application made up of a few web pages might use a number of "dynamically-exchanged session parameters". Most of the "dynamically-exchanged session parameters" are purely technical in nature and do not correspond directly to end-user data fields which are displayed in the web browser.

**After recording a new web surfing session, you have always to check whether "dynamically-exchanged session parameters" are used or not used by the web application.** This is can be done by calling the **Var Finder** menu.

As you will see the following example, the ZebraTester GUI assists you with **powerful features** in order to quickly and easily handle "dynamically-exchanged session parameters".

## 2 Illustrated Example

**Hint:** Before you start the configuring dynamically-exchanged session parameters you should delete or filter-out all unwanted URL calls from your recorded web surfing session. For example, you should delete all calls to Google Analytics because you just want to stress your web application, not Google Analytics.

Click on the **Var Finder** menu after you have deleted or filtered-out all unwanted URL calls in Main Menu:

PRX: Main Menu - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://127.0.0.1:7990/dfischer/webadmininterface/htdocs/index.html?applyFilter=1&filterCache=1&filterError=1

PRX: Main Menu

Proxy Sniffer Web Admin Main Menu Professional Edition V4.5-B

Help Web Tools Page Scanner Personal Settings Project Navigator Load Test Jobs Generate Load Test Analyse Load Tests Refresh Display

Page Break: 3 sec. ±35% Insert

Recorded Items: 32 Recording State: STOPPED

Recorded Session (BS\_TEST\_BKT\_Noteneingabe.prxdat) 'Test Noteneingabe'

Filter:  No Binary Data (Images ...)  No CSS, JS (Only HTML)  No Cached Data (304)  No Errors Host: Apply Filter Save Export Var

| Item          | Test | Offset   | Position                | Content Size                      | Time  | HTTP Request ← HTTP Response                                       |
|---------------|------|----------|-------------------------|-----------------------------------|-------|--|
| 0             | [0]  |          | Page #1: Seite aufrufen | user's think time: 3 seconds ±35% |       |  |
| 1             | [1]  | 0.00 sec |                         | 17'736 bytes                      | 47 ms | GET http://a4ou-www-evento06-b.be.ch/BS_TEST/ ← 200 (OK) TEXT/HTML |
| <b>Total:</b> |      |          | <b>0.41 sec</b>         | <b>17'736 bytes</b>               |       | <b>1 Request , 43.68 kbytes/sec</b>                                |
| 3             | [2]  |          | Page #2: Anmelden       | user's think time: 3 seconds ±35% |       |  |

The **Var Finder** menu scans briefly the recorded web surfing session and as a result displays a list of all CGI parameters and all HTML form parameters that are sent via HTTP(S) requests to the web application. The list includes all the **parameter names** as well as their **parameter values** (column "Recorded Value").

Note here that each **combination** of **parameter name AND parameter value** is shown **only once** in the list. The column "First Assign" shows in which URL this combination was sent for the first time to the web application.

**Hint:** review the column "**Host**" to verify that only the hostname of the server you want to load test is listed. If you find unwanted hostnames, return to the main menu and delete or filter-out the unwanted URL calls. Then click on the **Refresh Icon** in the Var Finder menu (top right corner).

**Instructions for using the Var Finder:**

- First - before using the Var Finder - [delete](#) or [filter out](#) all unwanted URL calls to external web servers such as advertising servers or session tracking servers (for example Google Analytics). This can be performed in the Proxy Sniffer Main Menu. After that you can disable the column **Host** in the list below.
- Then call this Var Finder Menu again and review the column **Recorded Value** in the list below. Try to judge which values could be [dynamically-exchanged session parameters](#). If a value is a large number or a cryptic string it is probably a dynamically-exchanged session parameter.  
Hint: Parameters which are named `__VIEWSTATE` or `__EVENTVALIDATION` are always dynamically-exchanged session parameters.  
On the other hand, recorded values which contain a user name or a password of a login account entered in a HTML Form are normally not dynamically-exchanged session parameters. In such a case you can use a [Input File](#) to assign an own username and password for each simulated user.
- For each potential dynamically-exchanged session parameter, click on the icon on the left hand of the **Parameter Name** and follow the instructions.

To get an overview about which parameters are already processed as a dynamically-exchanged session parameter you can click on the Refresh Icon at the upper right corner of this window. Already processed parameters are characterized in that a variable name is shown in the column **Var Name**.

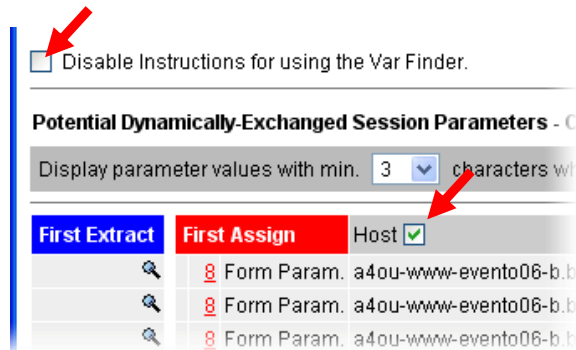
Disable Instructions for using the Var Finder.

**Potential Dynamically-Exchanged Session Parameters - Condensed List of all transmitted HTML Form and CGI Parameters, composed overall recorded URLs:**

Display parameter values with min.  characters where min.  of all characters are in ASCII-HEX range '0'..'F'  Include File Paths

| First Extract | First Assign | Host                                       | Var Name | Parameter Name   | Recorded Value  |
|---------------|--------------|--|----------|--|---|
|               | 8            | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>__VIEWSTATE</code>   | <code>AwEPDwULLTEzODU5OTQ3NjYpZBYCZg9kfglCAw9kFhoCAw8WAh4EVGV4dAUNRXZlbnRvIEJT</code> |
|               | 8            | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>__EVENTVALIDATION</code>   | <code>AwEVBwKJkZcBgkYytHeCwLDxaG9AgKbvO7HDwLq4o7+DwLs4sHSDAKpis6RCWOkjuRk4x8Q</code>  |
|               | 8            | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>ctI00\$ThemePicker1\$ddlTheme</code>   | EventoBlue  |
|               | 8            | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>ctI00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$UserName</code>                  |   |
|               | 8            | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>ctI00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$Password</code>                  |   |
|               | 8            | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>ctI00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$LoginButton</code>               | Anmelden  |
|               | 12           | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>node</code>  | <code>df1c8450-c721-4fb7-ab2b-e9dbce1f501d</code>                                     |
|               | 12           | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>TabKey</code>  | WebTab_MeineAnlaesseDoz   |
|               | 15           | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>ctI00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_ExpandState</code>  | ennnnnnnn   |
|               | 15           | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>ctI00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_SelectedNode</code> | <code>ctI00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView2</code>      |
|               | 15           | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>__VIEWSTATE</code>   | <code>AwEPDwUKMTI3MZYyNjY1OA9kFgJmD2QWAgDD2QWHAIDdxYCHgRUZxh0BQ1FdmVudG8gQlM</code>   |
|               | 15           | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>__EVENTVALIDATION</code>   | <code>AwEWKgnNm4zICwKkYytHeCwLDxaG9AgKbvO7HDwKegfWWDAL6ruLZDgK01ubaCwLEpp6nAwL</code> |
|               | 15           | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>ctI00\$webPartMode</code>  | Ansichtsmodus   |
|               | 15           | a40u- <a href="#">www-evento06-b.be.ch</a> |          | <code>ctI00\$WebPartManager1\$SuchregisterWP1\$ctI10</code>                                  | Anlassnummer  |

In the Var Finder menu you can also **turn off** the option to the **displays the help text** and **hide the column "host"**.



The next step is to identify which of the shown parameters are actually dynamically-exchanged. Usually they can be identified quite easily:

- If you see in the "Recorded Value" column a **parameter value** that you have **entered yourself in an HTML form** while recording the web surfing session, this is not a "dynamically-exchanged" parameter. For example, the data entered for a login account (username and password) are not "dynamically-exchanged session parameters".
- If the **parameter value** is a **cryptic string** or a **cryptic number**, this is almost always a "dynamically-exchanged session parameter". For example a value like "wEWBwKJkZ/cBgKyytHeCwLDxaG9AgKbvO7HDwLq4o7".
- If the **parameter value** is a **long number** and you have not entered this number into a HTML form, it is often a "dynamically-exchanged session parameter" (for example the number "56481"). Here you can also try to guess the meaning of the parameter name. For example, if the parameter has the name "EventID", this is probably a "dynamically-exchanged session parameter".
- If the **parameter value** is a **short number**, this is often not a "dynamically-exchanged session parameter" (for example the number "1001"). Note here that short simple numbers are often references (keys) of database records, and that their parameter names often resemble the name of the DB-Keys.

**Hint:** If you can contact a developer of the web application you can ask him or her to tell you if a parameter is "dynamically-exchanged". However, this is often not necessary because you can find out by yourself with a little bit of effort – as shown on the next pages in this document.

In this example, the values of a few candidate "dynamically-exchanged session parameters" are highlighted in **yellow**:

PRX: Var Finder - Mozilla Firefox

http://127.0.0.1:7990/dfischer/webadmininterface/DataRecordVarFinderPopupWeblet?modifyShowHostAction=1

Proxy Sniffer Web Admin **Var Finder**  Show Instructions for using the Var Finder.

Potential Dynamically-Exchanged Session Parameters - Condensed List of all transmitted HTML Form and CGI Parameters, composed overall recorded URLs:

Display parameter values with min. 3 characters where min. 0% of all characters are in ASCII-HEX range '0'. 'F'  Include File Paths

| First Extract | First Assign | Var Name | Parameter Name   | Recorded Value  |
|---------------|--------------|----------|--|---|
| 8             | Form Param.  | ---      | __VIEWSTATE  | /wEPDwULLTEzODU5OTQ3NjYpZBYCZg9kFgICAw9kFhoCAw8WAh4EVGv4d...          |
| 8             | Form Param.  | ---      | __EVENTVALIDATION  | /wEWBwKJkZcBgKyytHeCwLDxaG9AgKbvO7HDwLq4o7+DwLs4sHSDAKpI...           |
| 8             | Form Param.  | ---      | ctl00\$ThemePicker1\$ddlTheme  | EventoBlue  |
| 8             | Form Param.  | ---      | ctl00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$UserName   |   |
| 8             | Form Param.  | ---      | ctl00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$Password   |   |
| 8             | Form Param.  | ---      | ctl00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$LoginButton  | Anmelden  |
| 12            | CGI Param.   | ---      | node   | df1c8450-c721-4fb7-ab2b-e8dbce1f501d                                  |
| 12            | CGI Param.   | ---      | TabKey   | WebTab_MeineAnlaesseDoz   |
| 15            | Form Param.  | ---      | ctl00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_ExpandState                               | ennnnnnnn   |
| 15            | Form Param.  | ---      | ctl00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_SelectedNode                              | ctl00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView... |
| 15            | Form Param.  | ---      | __VIEWSTATE  | /wEPDwUKMTI3MzYyNjY1OA9kFgJmD2QWAgIDD2QWHAIDDxYCHgRUZXht...           |
| 15            | Form Param.  | ---      | __EVENTVALIDATION  | /wEWKgKNm4zICwKyytHeCwLDxaG9AgKbvO7HDwKegfMWDAL6ruLZDgK0...           |
| 15            | Form Param.  | ---      | ctl00\$webPartMode   | Ansichtsmodus   |
| 15            | Form Param.  | ---      | ctl00\$WebPartManager1\$SuchregisterWP1\$ctl10   | AnlassNummer  |
| 15            | Form Param.  | ---      | ctl00\$WebPartManager1\$SuchregisterWP1\$ctl11   | Suchen  |
| 18            | CGI Param.   | ---      | IdAnlass   | 56481   |
| 22            | Form Param.  | ---      | __VIEWSTATE  | /wEPDwULLTE2NzI2NjQ4MjkpZBYCZg9kFgICAw9kFhoCAw8WAh4EVGv4d...          |
| 22            | Form Param.  | ---      | __EVENTVALIDATION  | /wEWHALVqujDAKyytHeCwLDxaG9AgKbvO7HDwKegfMWDAL6ruLZDgK01...           |
| 22            | Form Param.  | ---      | ctl00\$WebPartManager1\$gwpBrn_QualifikationDurchDozenten1\$Brn_QualifikationDurchDozenten1\$ddlGradingScale | 1001  |
| 22            | Form Param.  | ---      | Comment_846317   | Test  |
| 22            | Form Param.  | ---      | 846317   | 1002  |
| 22            | Form Param.  | ---      | 845171   | 1006  |
| 22            | Form Param.  | ---      | Comment_850885   | Test  |
| 22            | Form Param.  | ---      | 850885   | 1010  |
| 22            | Form Param.  | ---      | ctl00\$WebPartManager1\$gwpBrn_QualifikationDurchDozenten1\$Brn_QualifikationDurchDozenten1\$btnSave         | Speichern   |
| 26            | CGI Param.   | ---      | IdAnlass   | 56481   |


Done

These are the parameters **\_\_VIEWSTATE**, **\_\_EVENTVALIDATION**, **node**, **IdAnlass** and **IdAnlass**.



In many cases, "dynamically-exchanged session parameters" can be **automatically handled**. Now go through the potential candidates you have identified in the Var Finder and click on the  V-icon next to the parameter name:

| First Extract | First Assign  | <input type="checkbox"/> | Var Name | Parameter Name                |
|---------------|---------------|--------------------------|----------|-------------------------------|
|               | 8 Form Param. | ---                      |          | __VIEWSTATE                   |
|               | 8 Form Param. | ---                      |          | __EVENTVALIDATION             |
|               | 8 Form Param. | ---                      |          | ct100\$ThemePicker1\$ddlTheme |

The parameters **\_\_VIEWSTATE** and **\_\_EVENTVALIDATION** are often used in Windows web server applications. After clicking on the  V-icon you should see a success message indicating that ZebraTester was able to correctly handle the parameter. The highlighted success message is shown:

Once the **VIEWSTATE** and **EVENTVALIDATION** parameters have been configured for automatic handling the Var Finder menu will look as shown below. Please note that it only took you 2 mouse clicks in order to configure dynamic handling of your session parameters!

PRX: Var Finder - Mozilla Firefox

http://127.0.0.1:7990/dfischer/webadmininterface/DataRecordVarFinderPopupWeblet

Proxy Sniffer Web Admin **Var Finder**  Show Instructions for using the Var Finder.

Potential Dynamically-Exchanged Session Parameters - Condensed List of all transmitted HTML Form and CGI Parameters, composed overall recorded URLs:

Display parameter values with min. 3 characters where min. 0% of all characters are in ASCII-HEX range '0'. 'F'  Include File Paths

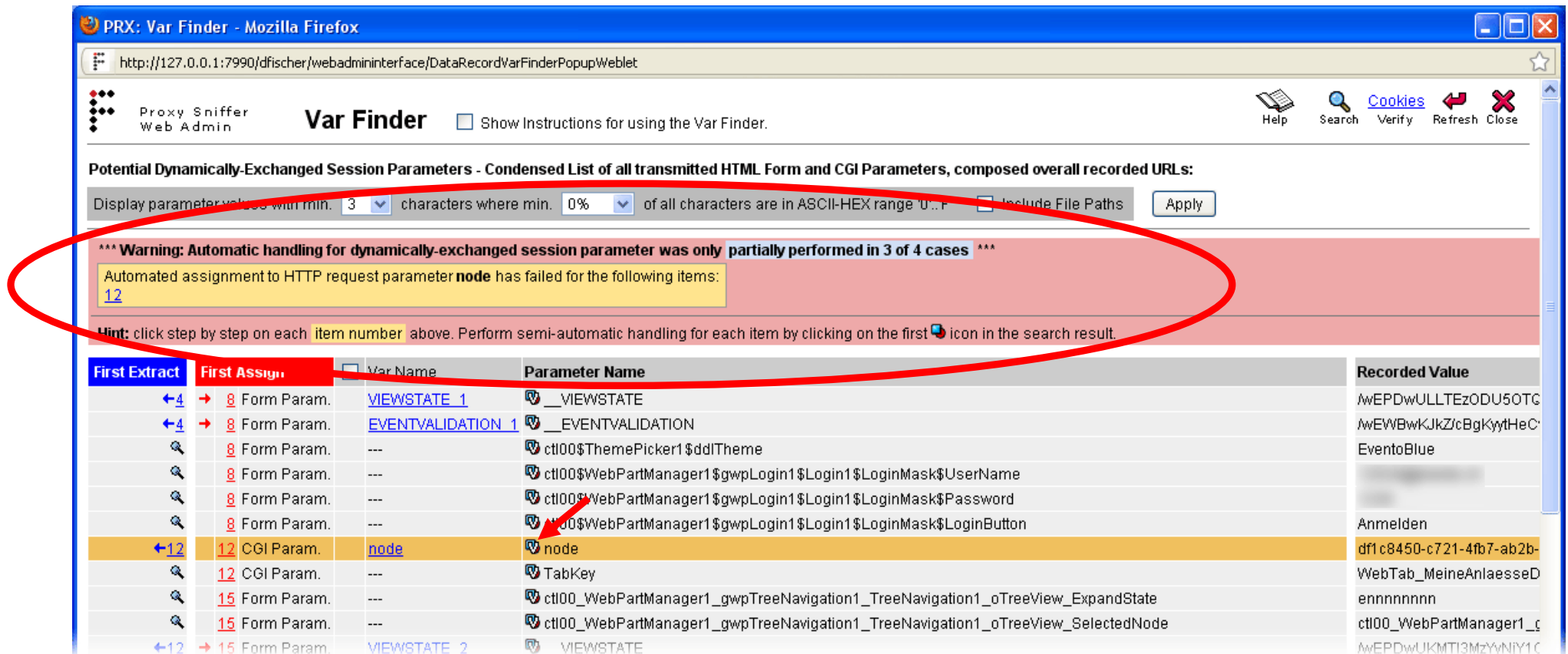
OK: Automatic handling for dynamically-exchanged session parameter **\_EVENTVALIDATION** successfully performed. No further is action required for this parameter.

| First Extract | First Assign | Var Name          | Parameter Name   | Recorded Value  |
|---------------|--------------|-------------------|--|---|
| ←4            | →8           | VIEWSTATE 1       | __VIEWSTATE  | /wEPDwJULLTEzODU5OTQ3NjYpZBYCZg9kFgICAw9kFhoCAw...        |
| ←4            | →8           | EVENTVALIDATION 1 | __EVENTVALIDATION  | /wEWBwKJkZtcBgkYytHeCwLDxaG9AgKbvO7HDwLq4o7+Dv...         |
|               | 8            |                   | ct100\$ThemePicker1\$ddlTheme  | EventoBlue  |
|               | 8            |                   | ct100\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$UserName   |   |
|               | 8            |                   | ct100\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$Password   |   |
|               | 8            |                   | ct100\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$LoginButton  | Anmelden  |
|               | 12           |                   | node   | df1c8450-c721-4fb7-ab2b-e8dbce1f501d                      |
|               | 12           |                   | TabKey   | WebTab_MeineAnlaesseDoz                                   |
|               | 15           |                   | ct100\$WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_ExpandState                              | ennnnnnnn   |
|               | 15           |                   | ct100\$WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_SelectedNode                             | ct100\$WebPartManager1_gwpTreeNavigation1_TreeNavigati... |
| ←12           | →15          | VIEWSTATE 2       | __VIEWSTATE  | /wEPDwJUKMTI3MzYyNjY1OA9kFgJmD2QWAgIDD2QWHAIDt...         |
| ←12           | →15          | EVENTVALIDATION 2 | __EVENTVALIDATION  | /wEWKqKNm4zlCwKytHeCwLDxaG9AgKbvO7HDwKegfWW...            |
|               | 15           |                   | ct100\$webPartMode   | Ansichtsmodus   |
|               | 15           |                   | ct100\$WebPartManager1\$SuchregisterWP1\$ctl10   | Anlassnummer  |
|               | 15           |                   | ct100\$WebPartManager1\$SuchregisterWP1\$ctl11   | Suchen  |
|               | 18           |                   | IDAnlass   | 56481   |
| ←18           | →22          | VIEWSTATE 3       | __VIEWSTATE  | /wEPDwJULLTE2NzI2NjQ4MjkpZBYCZg9kFgICAw9kFhoCAw...        |
| ←18           | →22          | EVENTVALIDATION 3 | __EVENTVALIDATION  | /wEWHALVjuquIDAKytHeCwLDxaG9AgKbvO7HDwKegfWW...           |
|               | 22           |                   | ct100\$WebPartManager1\$gwpBrn_QualifikationDurchDozenten1\$Brn_QualifikationDurchDozenten1\$ddlGradingScale | 1001  |
|               | 22           |                   | Comment_846317   | Test  |
|               | 22           |                   | 846317   | 1002  |
|               | 22           |                   | 845171   | 1006  |
|               | 22           |                   | Comment_850885   | Test  |
|               | 22           |                   | 850885   | 1010  |
|               | 22           |                   | ct100\$WebPartManager1\$gwpBrn_QualifikationDurchDozenten1\$Brn_QualifikationDurchDozenten1\$btnSave         | Speichern   |
|               | 26           |                   | IdAnlass   | 56481   |

Done

Left still remains the handling of the parameters **node**, **IDAnlass** and **IdAnlass**.

If the following warning message is displayed after clicking on the  V-icon (as shown in the below example for the **node** parameter):



PRX: Var Finder - Mozilla Firefox

http://127.0.0.1:7990/dfischer/webadmininterface/DataRecordVarFinderPopupWeblet


Proxy Sniffer Web Admin **Var Finder**  Show Instructions for using the Var Finder.



















Potential Dynamically-Exchanged Session Parameters - Condensed List of all transmitted HTML Form and CGI Parameters, composed overall recorded URLs:

Display parameter values with min. 3 characters where min. 0% of all characters are in ASCII-HEX range  Include File Paths

\*\*\* Warning: Automatic handling for dynamically-exchanged session parameter was only partially performed in 3 of 4 cases \*\*\*

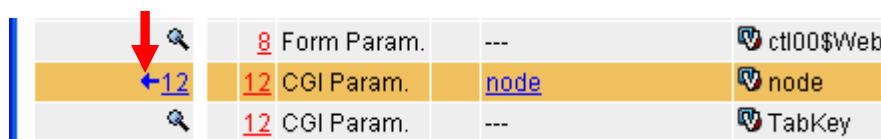
Automated assignment to HTTP request parameter **node** has failed for the following items:  
[12](#)






Hint: click step by step on each item number above. Perform semi-automatic handling for each item by clicking on the first  icon in the search result.

| First Extract  | First Assign   | Var Name                          | Parameter Name   | Recorded Value           |
|--|----------------|-----------------------------------|--|--------------------------|
| <a href="#">←4</a>   | 8 Form Param.  | <a href="#">VIEWSTATE_1</a>       |  __VIEWSTATE  | /wEPDwULLTEzODU5OTG      |
| <a href="#">←4</a>   | 8 Form Param.  | <a href="#">EVENTVALIDATION_1</a> |  __EVENTVALIDATION  | /wEWBwKJkZfcBgKyytHeC    |
|   | 8 Form Param.  | ---                               |  ct100\$ThemePicker1\$ddlTheme  | EventoBlue               |
|   | 8 Form Param.  | ---                               |  ct100\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$UserName                   |                          |
|   | 8 Form Param.  | ---                               |  ct100\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$Password                   |                          |
|   | 8 Form Param.  | ---                               |  ct100\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$LoginButton                | Anmelden                 |
| <a href="#">←12</a>  | 12 CGI Param.  | <a href="#">node</a>              |  node   | df1c8450-c721-4fb7-ab2b- |
|   | 12 CGI Param.  | ---                               |  TabKey   | WebTab_MeineAnlaesseD    |
|   | 15 Form Param. | ---                               |  ct100_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_ExpandState   | ennnnnnnn                |
|  | 15 Form Param. | ---                               |  ct100_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_SelectedNode | ct100_WebPartManager1_   |
| <a href="#">←12</a>  | 15 Form Param. | <a href="#">VIEWSTATE_2</a>       |  __VIEWSTATE  | /wEPDwUKMTI3MzYyNjY1C    |

This indicates that the automatic handling of the parameter **node** partially failed. The text of the error message says that the value of the **node** parameter cannot be automatically assigned to the HTTP request of item number 12.

The best approach in such cases is to first get an **overview** of all URLs in where the **value** assigned to **node** occurs. For this purpose you can use the **Search Overall** menu which searches a text fragment over the entire recorded web surfing session.



|   |               |                      |  |
|---|---------------|----------------------|--|
|  | 8 Form Param. | ---                  |  ct100\$Web |
| <a href="#">←12</a>   | 12 CGI Param. | <a href="#">node</a> |  node       |
|  | 12 CGI Param. | ---                  |  TabKey     |

With a mouse click on the blue arrow [←](#) in the "First Extract" column, the **Search Overall** menu is directly invoked with the **value** of parameter **node**.

**PRX: Search Overall Visible Items - Mozilla Firefox**

http://127.0.0.1:7990/dfscher/webadmininterface/PopupSearchRecordedDataWeblet?action=search&searchTextWebAdminHashtableAttributeName=varFinderSe

**Search Overall Visible Items**

Search ASCII Text:   Match Case  Include URL-Encoded Values

Inside:  HTTP Request Header  HTTP Request Content  Not Inside:  Referrer  Cookies

**Item 9** GET http://a4ou-wwww-evento06-b.be.ch/BS\_TEST/

|                             |          |              |   |
|-----------------------------|----------|--------------|---|
| ← Found in Response Content | Line 164 | Position 713 | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;TabKey= |
|-----------------------------|----------|--------------|---|

**Item 12** GET http://a4ou-wwww-evento06-b.be.ch/BS\_TEST/Evt\_Pages/SuchResultat.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&TabKey=

|                             |          |              |   |
|-----------------------------|----------|--------------|---|
| → Found in Request Header   | Line 1   | Position 47  | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&TabKey=WebT |
| ← Found in Response Content | Line 34  | Position 70  | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;TabKey= |
| ← Found in Response Content | Line 189 | Position 841 | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;TabKey= |

**Item 15** POST http://a4ou-wwww-evento06-b.be.ch/BS\_TEST/Evt\_Pages/SuchResultat.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&TabKey=

|                             |          |              |  |
|-----------------------------|----------|--------------|--|
| → Found in Request Header   | Line 1   | Position 48  | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&TabKey=WebT  |
| ← Found in Response Content | Line 34  | Position 70  | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;TabKey=  |
| ← Found in Response Content | Line 189 | Position 841 | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;TabKey=  |
| ← Found in Response Content | Line 405 | Position 95  | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;TabKey=  |
| ← Found in Response Content | Line 414 | Position 99  | MA.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;IDAnlas: |
| ← Found in Response Content | Line 414 | Position 322 | MA.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;IDAnlas: |
| ← Found in Response Content | Line 414 | Position 793 | en.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;IDAnlas: |

**Item 18** GET http://a4ou-wwww-evento06-b.be.ch/BS\_TEST/Evt\_Pages/Brn\_QualifikationDurchDozenten.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&IDAnlass=56481

|                             |          |              |  |
|-----------------------------|----------|--------------|--|
| → Found in Request Header   | Line 1   | Position 65  | en.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&IDAnlass=56  |
| ← Found in Response Content | Line 25  | Position 88  | en.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;IDAnlas: |
| ← Found in Response Content | Line 124 | Position 157 | en.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;IDAnlas: |
| ← Found in Response Content | Line 168 | Position 841 | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;TabKey=  |

**Item 22** POST http://a4ou-wwww-evento06-b.be.ch/BS\_TEST/Evt\_Pages/Brn\_QualifikationDurchDozenten.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&IDAnlass=56481

|                           |        |             |   |
|---------------------------|--------|-------------|---|
| → Found in Request Header | Line 1 | Position 66 | en.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&IDAnlass=56 |
|---------------------------|--------|-------------|---|

**Item 23** GET http://a4ou-wwww-evento06-b.be.ch/BS\_TEST/Evt\_Pages/MessagePage.aspx

|                             |          |              |   |
|-----------------------------|----------|--------------|---|
| ← Found in Response Content | Line 167 | Position 703 | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;TabKey= |
|-----------------------------|----------|--------------|---|

**Item 26** GET http://a4ou-wwww-evento06-b.be.ch/BS\_TEST/Evt\_Pages/Brn\_QualifikationDurchDozenten.aspx?IDAnlass=56481

|                             |          |              |   |
|-----------------------------|----------|--------------|---|
| ← Found in Response Content | Line 168 | Position 703 | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;TabKey= |
|-----------------------------|----------|--------------|---|

Total 18 Results

Done

---

**Item 9** GET http://a4ou-wwww-evento06-b.be.ch/BS\_TEST/

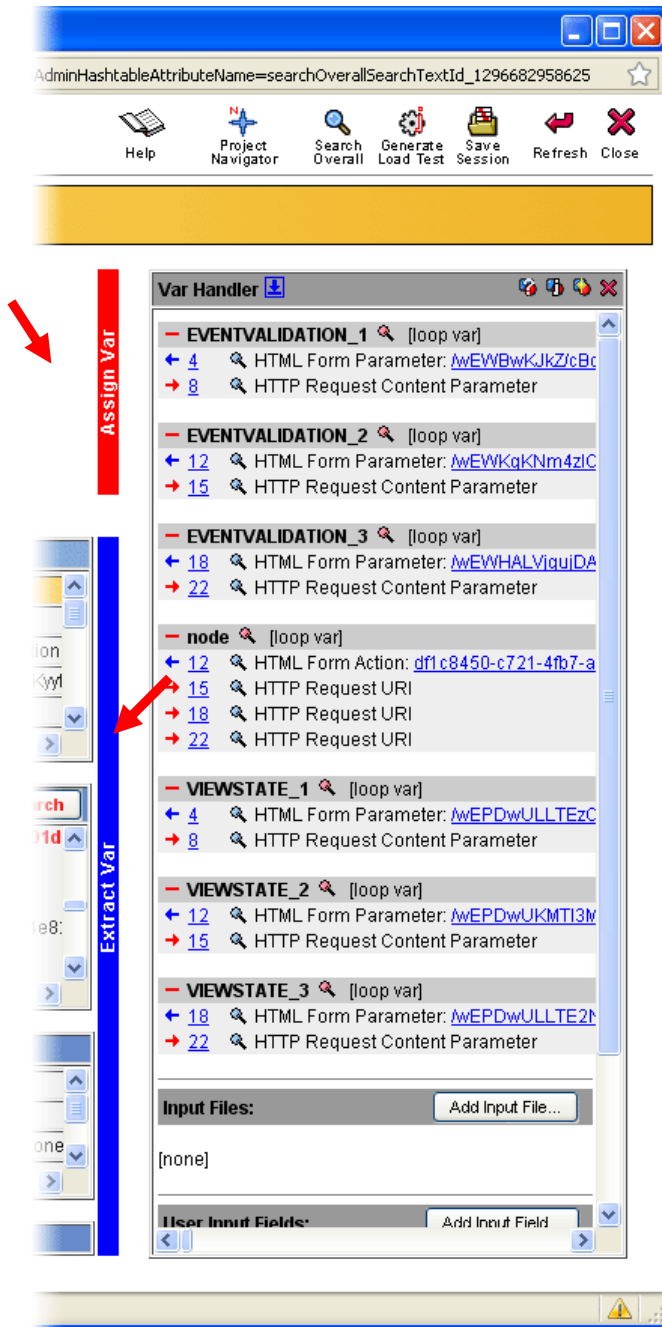
|                             |          |  |  |
|-----------------------------|----------|--|--|
| ← Found in Response Content | Line 164 |  |  |
|-----------------------------|----------|--|--|

In the content of the **Search Overall** menu you can see that the value of the parameter **node** was **received** first from the web application in item number 9 (URL no. 9). This is represented by the blue arrow to the left ←.

We also see that the parameter value of **node** is **sent back** to the web application in the items 12, 15, 18, and 22. These transmissions are represented by the red arrow to the right →.

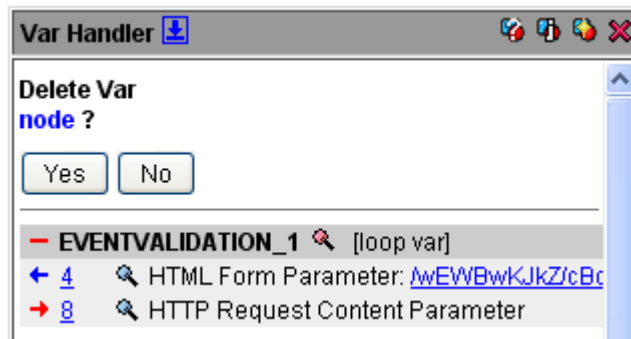
Because the error message in the Var Finder menu indicated that the automatic assignment did fail for item 12, the value of the parameter was probably extracted too late by the automatic algorithm (after, or in the response of item 12). But the value needs to be extracted in the response of item number 9.

By clicking on the **URL Details / Var Handler** link you can check in the "**Var Handler**" area which definitions have been automatically created:

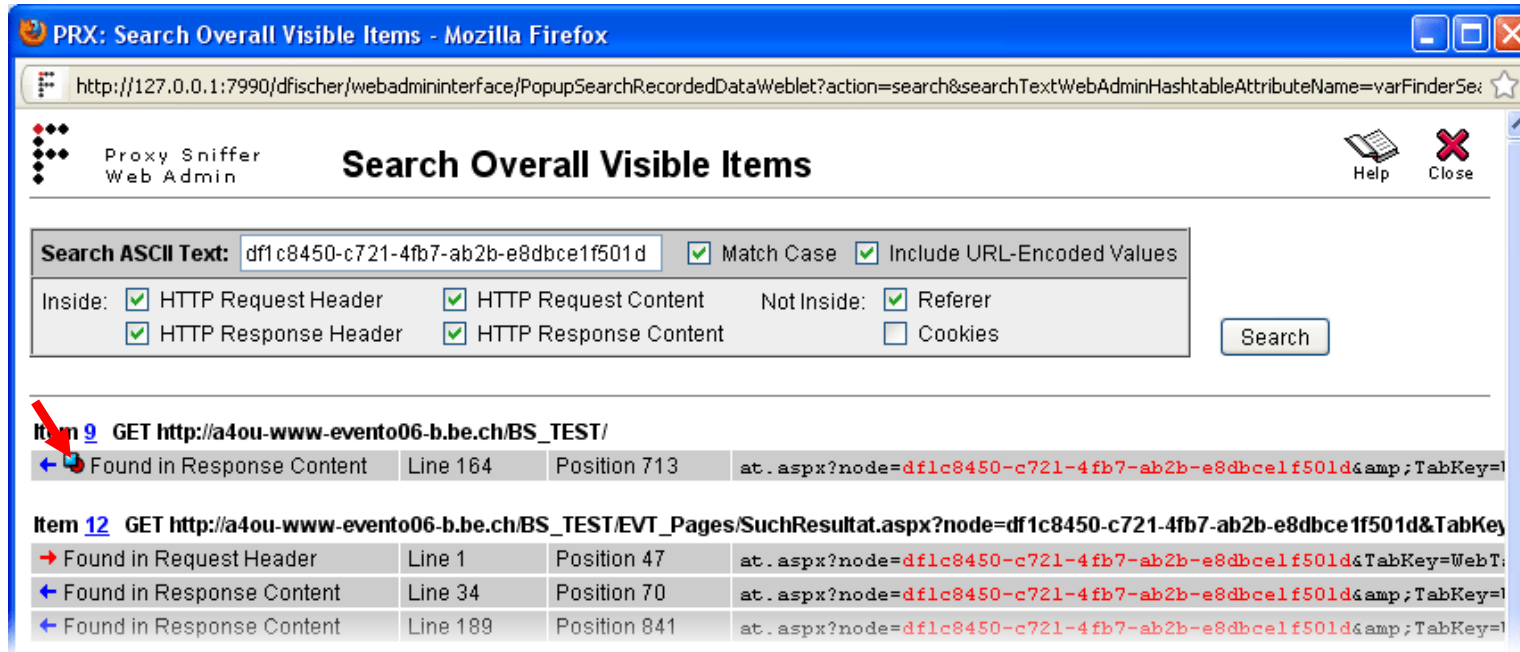


As the extraction of the value of the **node** parameter by the automatic algorithm occurred too late it has to be manually extracted in item 9. After that the value should also be manually assigned to the corresponding HTTP(S) request-parameter in item number 12.

As you can see from the screenshot below a number of steps that assign the node variable in various requests are already present. It is probably more efficient to first **delete** all of the automatically generated handlings for **node** in the **Var Handler** menu and then reconfigure everything:



Then configure the extraction for the value of **node** from the **Search Overall** menu - with a click on the "Var Extract" icon  (item 9):



PRX: Search Overall Visible Items - Mozilla Firefox

http://127.0.0.1:7990/dfischer/webadmininterface/PopupSearchRecordedDataWeblet?action=search&searchTextWebAdminHashtableAttributeName=varFinderSe:

Proxy Sniffer Web Admin **Search Overall Visible Items** Help Close

Search ASCII Text: df1c8450-c721-4fb7-ab2b-e8dbce1f501d  Match Case  Include URL-Encoded Values

Inside:  HTTP Request Header  HTTP Request Content  HTTP Response Header  HTTP Response Content

Not Inside:  Referer  Cookies

Search

**Item 9** GET http://a4ou-wwww-evento06-b.be.ch/BS\_TEST/

|                           |          |              |  |
|---------------------------|----------|--------------|--|
| Found in Response Content | Line 164 | Position 713 | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&TabKey=1 |
|---------------------------|----------|--------------|--|

**Item 12** GET http://a4ou-wwww-evento06-b.be.ch/BS\_TEST/EVT\_Pages/SuchResultat.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&TabKey=1

|                           |          |              |  |
|---------------------------|----------|--------------|--|
| Found in Request Header   | Line 1   | Position 47  | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&TabKey=WebT: |
| Found in Response Content | Line 34  | Position 70  | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&TabKey=1     |
| Found in Response Content | Line 189 | Position 841 | at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&TabKey=1     |

By clicking on the "Var Extract" icon  the "Var Extractor Wizard" is invoked:

The **Var Extractor Wizard** first searches the value of **node** in the response of item 9 (**Recorded Value**, displayed in **blue color**)

After the parameter value was found by the wizard the entire data content of the HTTP response of Item 9 is automatically divided into "unique text fragments", which are presented in a list.

The only thing you need to do is to **select one of the "unique text fragments"**. The selected text fragment will later be used as a "relative anchor" or as a "search pattern" to determine a line-offset to the parameter's value that needs to be extracted.

You can basically select any text fragment. However, you should consider the following two conditions:

1. **The selected text fragment should preferably be located close to the extracted value.** In the column "Offset" you see how close a text fragment is. You should select a text fragment which has only a small negative or positive "offset".
2. **The selected text fragment should be "stable" during the load test execution (static text).** The text fragment itself should not represent a value of another "dynamically-exchanged session parameter".

For example, it would be **wrong** to select the text fragment "**37894ff8-313b-444a-bdd9-675bc4e82926&TabKey**". Instead it is **correct** to select the text fragment "**WebTab\_MeineAnlaesseDoz**" (as shown in this example).

PRX: Var Extractor Wizard - Mozilla Firefox

http://127.0.0.1:7990/dfischer/webadmininterface/PopupVarExtractorTextLinePatternWizard?displayIndex=98;varExtractorWizardRecordedValueId=searchOverallSearchTextId

Proxy Sniffer  
Web Admin

Var Extractor Wizard

Item 9: → GET http://a4ou-www-evento06-b.be.ch/BS\_TEST/  
← 200 (OK) "TEXT/HTML" (30'501 bytes)

Search and Extract Var. Recorded Value = "df1c8450-c721-4fb7-ab2b-e8dbce1f501d"

Search Result: Line 164: Token No. 13 a) Select any Search Result - the first result is already preselected.

| Line | Offset | Unique Text Fragment  | b) Select any Text Fragment near line 164 whose value will not change during load text execution. |
|------|--------|---|---|
| 155  | -9     | cti00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView0 |   |
| 157  | -7     | display:block;  |   |
| 160  | -4     | EVT_Pages/Brn_PersonBearbeitenDoz.aspx?node                         |   |
| 160  | -4     | cti00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView1 |   |
| 160  | -4     | Meine Personendaten   |   |
| 164  | ±0     | WebTab_MeineAnlaesseDoz   | <input checked="" type="checkbox"/>   |
| 164  | ±0     | cti00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView2 |   |
| 164  | ±0     | Meine Anlässe   |   |
| 168  | +4     | EVT_Pages/MeinStundenplanDoz.aspx?node                              |   |
| 168  | +4     | 37894ff8-313b-444a-bdd9-675bc4e82926&TabKey                         |   |
| 168  | +4     | WebTab_LektionenDoz   |   |
| 168  | +4     | cti00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView3 |   |
| 172  | +8     | EVT_Pages/MeinStundenplanDozGrafisch.aspx?node                      |   |
| 172  | +8     | cti00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView4 |   |
| 172  | +8     | Mein Stundenplan (Grafisch)   |   |

Done



After you have selected the text fragment the **Var Extractor Wizard** displays a **success message**. You then have to **enter a name for the variable** in which the value of **node** will be extracted to.

You should use a unique and meaningful name for the variable. The definition of the new variable is then automatically created by the wizard.

At the bottom of the window you'll see **two checkboxes**. Their default values should be left unchanged as a rule. This means that the extracted value is automatically assigned to all relevant HTTP requests.

PRX: Var Extractor Wizard - Mozilla Firefox

http://127.0.0.1:7990/dfischer/webadmininterface/PopupVarExtractorTextLinePatternWizard?displayIndex=9&varExtractorWizardRecordedValueId=searchOverallSearchText

Proxy Sniffer Web Admin

Var Extractor Wizard

Item 9: → GET http://a4ou-wwww-evento06-b.be.ch/BS\_TEST/

← 200 (OK) "TEXT/HTML" (30'501 bytes)

Search and Extract Var. Recorded Value = "df1c8450-c721-4fb7-ab2b-e8dbce1f501d"

Search Result: Line 164: Token No. 13 a) Select any Search Result - the first result is already preselected.

| Line | Offset | Unique Text Fragment  | b) Select any Text Fragment near line 164 whose value will not change during load text execution. |
|------|--------|---|---|
| 155  | -9     | cti00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView0 |   |
| 157  | -7     | display:block;  |   |
| 160  | -4     | EVT_Pages/Brn_PersonBearbeitenDoz.aspx?node                         |   |
| 160  | -4     | cti00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView1 |   |
| 160  | -4     | Meine Personendaten   |   |
| 164  | ±0     | WebTab_MeineAnlaesseDoz   |   |
| 164  | ±0     | cti00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView2 |   |
| 164  | ±0     | Meine Anlässe   |   |
| 168  | +4     | EVT_Pages/MeinStundenplanDoz.aspx?node                              |   |
| 168  | +4     | 37894ff8-313b-444a-bdd9-675bc4e82926&amp;TabKey                     |   |
| 168  | +4     | WebTab_LektionenDoz   |   |
| 168  | +4     | cti00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView3 |   |
| 172  | +8     | EVT_Pages/MeinStundenplanDozGrafisch.aspx?node                      |   |
| 172  | +8     | cti00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView4 |   |
| 172  | +8     | Mein Stundenplan (Grafisch)   |   |

Ok: Successful Cross-Check for Extracting the Recorded Value.  
The Real Value will be extracted during the load test execution for each simulated web session.

c) Map to Var Name: vNode

Assign Var automatically to all HTTP requests which contain HTML form parameters or CGI parameters with the same recorded value.  
 Try URL-encoding

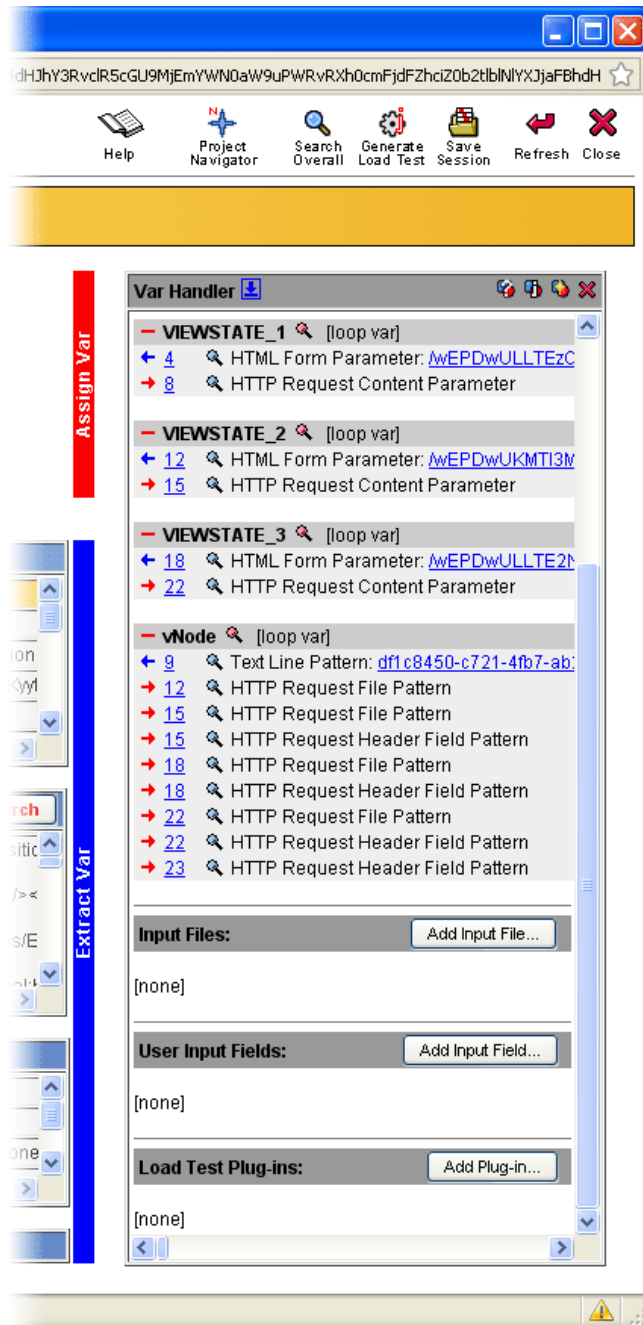
Assign Var automatically to all HTTP requests which contain the recorded value (full binary replacement overall requests).

Extract Var

Done

After clicking on the **"Extract Var"** button the corresponding variable definitions will be created by the wizard and shown in the **"URL Details / Var Handler"** menu.





The manual configuration of the "dynamically-exchanged session parameter" **node** is now complete.

Only the handling of the parameters **IDAnlass** and **IdAnlass** needs to be configured.

Call the **Var Finder** menu again or click on the **Refresh Icon** at the top right corner of the **Var Finder** window.

PRX: Var Finder - Mozilla Firefox  
 http://127.0.0.1:7990/dfischer/webadmininterface/DataRecordVarFinderPopupWeblet

Proxy Sniffer Web Admin **Var Finder**  Show Instructions for using the Var Finder.

Potential Dynamically-Exchanged Session Parameters - Condensed List of all transmitted HTML Form and CGI Parameters, composed overall recorded URLs:

Display parameter values with min. 3 characters where min. 0% of all characters are in ASCII-HEX range '0'.F'  Include File Paths

| First Extract | First Assign | Var Name                                      | Parameter Name   | Recorded Value               |
|---------------|--------------|---|--|------------------------------|
| ←4            | → 8          | Form Param. <a href="#">VIEWSTATE_1</a>       | __VIEWSTATE  | wEPDwULLTEz0DU50TQ3NJY       |
| ←4            | → 8          | Form Param. <a href="#">EVENTVALIDATION_1</a> | __EVENTVALIDATION  | wEWBwKJKZcBgKyytHeCwLDy      |
|               | 8            | Form Param. ---                               | ctl00\$ThemePicker1\$ddlTheme  | EventoBlue                   |
|               | 8            | Form Param. ---                               | ctl00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$UserName   |                              |
|               | 8            | Form Param. ---                               | ctl00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$Password   |                              |
|               | 8            | Form Param. ---                               | ctl00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$LoginButton  | Anmelden                     |
| ←9            | → 12         | CGI Param. <a href="#">vNode</a>              | node   | df1c8450-c721-4fb7-ab2b-e8db |
|               | 12           | CGI Param. ---                                | TabKey   | WebTab_MeineAnlaesseDoz      |
|               | 15           | Form Param. ---                               | ctl00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_ExpandState                               | ennnnnnnn                    |
|               | 15           | Form Param. ---                               | ctl00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_SelectedNode                              | ctl00_WebPartManager1_gwpT   |
| ←12           | → 15         | Form Param. <a href="#">VIEWSTATE_2</a>       | __VIEWSTATE  | wEPDwUKMTI3MzyNJY1OA9kf      |
| ←12           | → 15         | Form Param. <a href="#">EVENTVALIDATION_2</a> | __EVENTVALIDATION  | wEWKkgKNm4ziCwKyytHeCwLL     |
|               | 15           | Form Param. ---                               | ctl00\$webPartMode   | Ansichtsmodus                |
|               | 15           | Form Param. ---                               | ctl00\$WebPartManager1\$SuchregisterWP1\$ctl10   | AnlassNummer                 |
|               | 15           | Form Param. ---                               | ctl00\$WebPartManager1\$SuchregisterWP1\$ctl11   | Suchen                       |
|               | 18           | CGI Param. ---                                | IDAnlass   | 56481                        |
| ←18           | → 22         | Form Param. <a href="#">VIEWSTATE_3</a>       | __VIEWSTATE  | wEPDwULLTE2Nzl2NjQ4MjkPz     |
| ←18           | → 22         | Form Param. <a href="#">EVENTVALIDATION_3</a> | __EVENTVALIDATION  | wEWHALVjqjDAKyytHeCwLDx      |
|               | 22           | Form Param. ---                               | ctl00\$WebPartManager1\$gwpBrm_QualifikationDurchDozenten1\$Brm_QualifikationDurchDozenten1\$ddlGradingScale | 1001                         |
|               | 22           | Form Param. ---                               | Comment_846317   | Test                         |
|               | 22           | Form Param. ---                               | 846317   | 1002                         |
|               | 22           | Form Param. ---                               | 845171   | 1006                         |
|               | 22           | Form Param. ---                               | Comment_850885   | Test                         |
|               | 22           | Form Param. ---                               | 850885   | 1010                         |
|               | 22           | Form Param. ---                               | ctl00\$WebPartManager1\$gwpBrm_QualifikationDurchDozenten1\$Brm_QualifikationDurchDozenten1\$btnSave         | Speichern                    |
|               | 26           | CGI Param. ---                                | IdAnlass   | 56481                        |

Done

As you can see in this example, the parameter **IDAnlass** has the same value as **IdAnlass** (56481). The only reason why the parameter is shown twice is that the developers of the web application have used two different parameter names for the same thing.

One possibility would be to extract the value of this parameter by hand - as shown before - by using the Var Extractor Wizard. This would also assign the value of the parameter to all relevant URLs in one step.

To minimize effort you can first try automatic variable handling for both parameters. On success two new variables should be defined (IDAnlass and IdAnlass).

This screenshot shows that the automatic handling of **IDAnlass** was successful:

**PRX: Var Finder - Mozilla Firefox**  
 http://127.0.0.1:7990/dfischer/webadmininterface/DataRecordVarFinderPopupWeblet

Proxy Sniffer Web Admin **Var Finder**  Show Instructions for using the Var Finder.

Potential Dynamically-Exchanged Session Parameters - Condensed List of all transmitted HTML Form and CGI Parameters, composed overall recorded URLs:

Display parameter values with min. 3 characters where min. 0% of all characters are in ASCII-HEX range '0'..'F'  Include File Paths

**Ok:** Automatic handling for dynamically-exchanged session parameter **IDAnlass** successfully performed. No further is action required for this parameter.

| First Extract | First Assign | Var Name    | Parameter Name    | Recorded Value   |                         |
|---------------|--------------|-------------|-------------------|--|-------------------------|
| ←4            | → 8          | Form Param. | VIEWSTATE_1       | __VIEWSTATE  | /wEPDwULLTEzODU5OT      |
| ←4            | → 8          | Form Param. | EVENTVALIDATION_1 | __EVENTVALIDATION  | /wEWBwKJKZ/cBgKyytHeC   |
| ?             | 8            | Form Param. | ---               | ctl00\$ThemePicker1\$ddlTheme  | EventoBlue              |
| ?             | 8            | Form Param. | ---               | ctl00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$UserName   |                         |
| ?             | 8            | Form Param. | ---               | ctl00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$Password   |                         |
| ?             | 8            | Form Param. | ---               | ctl00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$LoginButton  | Anmelden                |
| ←9            | → 12         | CGI Param.  | vNode             | node   | df1c8450-c721-4fb7-ab2k |
| ?             | 12           | CGI Param.  | ---               | TabKey   | WebTab_MeineAnlaesse    |
| ?             | 15           | Form Param. | ---               | ctl00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_ExpandState                               | ennnnnnnn               |
| ?             | 15           | Form Param. | ---               | ctl00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_SelectedNode                              | ctl00_WebPartManager1_  |
| ←12           | → 15         | Form Param. | VIEWSTATE_2       | __VIEWSTATE  | /wEPDwUKMTI3MzYyNjY1    |
| ←12           | → 15         | Form Param. | EVENTVALIDATION_2 | __EVENTVALIDATION  | /wEWKqKNm4ziCwkyytH     |
| ?             | 15           | Form Param. | ---               | ctl00\$webPartMode   | Ansichtsmodus           |
| ?             | 15           | Form Param. | ---               | ctl00\$WebPartManager1\$SuchregisterWP1\$ctl10   | AnlassNummer            |
| ?             | 15           | Form Param. | ---               | ctl00\$WebPartManager1\$SuchregisterWP1\$ctl11   | Suchen                  |
| ←15           | → 18         | CGI Param.  | IDAnlass          | IDAnlass   | 56481                   |
| ←18           | → 22         | Form Param. | VIEWSTATE_3       | __VIEWSTATE  | /wEPDwULLTE2Nzl2NjQv    |
| ←18           | → 22         | Form Param. | EVENTVALIDATION_3 | __EVENTVALIDATION  | /wEWHALVqujDAKyytHeC    |
| ?             | 22           | Form Param. | ---               | ctl00\$WebPartManager1\$gwpBrn_QualifikationDurchDozenten1\$Brn_QualifikationDurchDozenten1\$ddlGradingScale | 1001                    |
| ?             | 22           | Form Param. | ---               | Comment_846317   | Test                    |
| ?             | 22           | Form Param. | ---               | 846317   | 1002                    |
| ?             | 22           | Form Param. | ---               | 845171   | 1006                    |
| ?             | 22           | Form Param. | ---               | Comment_850885   | Test                    |
| ?             | 22           | Form Param. | ---               | 850885   | 1010                    |
| ?             | 22           | Form Param. | ---               | ctl00\$WebPartManager1\$gwpBrn_QualifikationDurchDozenten1\$Brn_QualifikationDurchDozenten1\$btnSave         | Speichern               |
| ←15           | → 26         | CGI Param.  | IDAnlass          | IdAnlass   | 56481                   |

Done

Similarly the automatic handling of **IdAnlass** succeeded:

PRX: Var Finder - Mozilla Firefox

http://127.0.0.1:7990/dfischer/webadmininterface/DataRecordVarFinderPopupWeblet

Proxy Sniffer Web Admin **Var Finder**  Show Instructions for using the Var Finder.

Potential Dynamically-Exchanged Session Parameters - Condensed List of all transmitted HTML Form and CGI Parameters, composed overall recorded URLs:

Display parameter values with min. 3 characters where min. 0% of all characters are in ASCII-HEX range '0'..'F'  Include File Paths

**Ok:** Automatic handling for dynamically-exchanged session parameter **IdAnlass** successfully performed. No further is action required for this parameter.

| First Extract | First Assign | Var Name    | Parameter Name    | Recorded Value   |                         |
|---------------|--------------|-------------|-------------------|--|-------------------------|
| ←4            | → 8          | Form Param. | VIEWSTATE_1       | __VIEWSTATE  | /wEPDwULLTEzODU5OT      |
| ←4            | → 8          | Form Param. | EVENTVALIDATION_1 | __EVENTVALIDATION  | /wEWBwKJkZcBgKyytHeC    |
|               | 8            | Form Param. | ---               | ctl00\$ThemePicker1\$ddlTheme  | EventoBlue              |
|               | 8            | Form Param. | ---               | ctl00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$UserName   |                         |
|               | 8            | Form Param. | ---               | ctl00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$Password   |                         |
|               | 8            | Form Param. | ---               | ctl00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$LoginButton  | Anmelden                |
| ←9            | → 12         | CGI Param.  | vNode             | node   | df1c8450-c721-4fb7-ab2k |
|               | 12           | CGI Param.  | ---               | TabKey   | WebTab_MeineAnlaesse    |
|               | 15           | Form Param. | ---               | ctl00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_ExpandState                               | ennnnnnnn               |
|               | 15           | Form Param. | ---               | ctl00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_SelectedNode                              | ctl00_WebPartManager1_  |
| ←12           | → 15         | Form Param. | VIEWSTATE_2       | __VIEWSTATE  | /wEPDwUKMTI3MzYyNjY1    |
| ←12           | → 15         | Form Param. | EVENTVALIDATION_2 | __EVENTVALIDATION  | /wEWKgKNm4zICwkKyytHi   |
|               | 15           | Form Param. | ---               | ctl00\$webPartMode   | Ansichtsmodus           |
|               | 15           | Form Param. | ---               | ctl00\$WebPartManager1\$SuchregisterWP1\$ctl10   | AnlassNummer            |
|               | 15           | Form Param. | ---               | ctl00\$WebPartManager1\$SuchregisterWP1\$ctl11   | Suchen                  |
| ←15           | → 18         | CGI Param.  | IDAnlass          | IDAnlass   | 56481                   |
| ←18           | → 22         | Form Param. | VIEWSTATE_3       | __VIEWSTATE  | /wEPDwULLTE2NzI2NjQ+    |
| ←18           | → 22         | Form Param. | EVENTVALIDATION_3 | __EVENTVALIDATION  | /wEWHALVjqjDAKyytHeC    |
|               | 22           | Form Param. | ---               | ctl00\$WebPartManager1\$gwpBrn_QualifikationDurchDozenten1\$Brn_QualifikationDurchDozenten1\$ddlGradingScale | 1001                    |
|               | 22           | Form Param. | ---               | Comment_846317   | Test                    |
|               | 22           | Form Param. | ---               | 846317   | 1002                    |
|               | 22           | Form Param. | ---               | 845171   | 1006                    |
|               | 22           | Form Param. | ---               | Comment_850885   | Test                    |
|               | 22           | Form Param. | ---               | 850885   | 1010                    |
|               | 22           | Form Param. | ---               | ctl00\$WebPartManager1\$gwpBrn_QualifikationDurchDozenten1\$Brn_QualifikationDurchDozenten1\$btnSave         | Speichern               |
| ←23           | → 26         | CGI Param.  | IdAnlass          | IdAnlass   | 56481                   |

The **Var Handler Definitions** look now like this:

The Var Handler window displays a list of variable definitions. The **IDAnlass** section is highlighted with a red box. Red arrows point to the following definitions:

- EVENTVALIDATION\_1** [loop var]
  - HTML Form Parameter: [awEWBwKjKZ/cBc](#) (line 4)
  - HTTP Request Content Parameter (line 8)
- EVENTVALIDATION\_2** [loop var]
  - HTML Form Parameter: [awEWKqKNm4zIC](#) (line 12)
  - HTTP Request Content Parameter (line 15)
- EVENTVALIDATION\_3** [loop var]
  - HTML Form Parameter: [awEWHALViguiDA](#) (line 18)
  - HTTP Request Content Parameter (line 22)
- IDAnlass** [loop var]
  - HTML Hyperlink: [56481](#) (line 15)
  - HTTP Request URI (line 18)
  - HTTP Request URI (line 22)
- IdAnlass** [loop var]
  - HTML Hyperlink: [56481](#) (line 23)
  - HTTP Request URI (line 26)
- VIEWSTATE\_1** [loop var]
  - HTML Form Parameter: [awEPDwULLTEzC](#) (line 4)
  - HTTP Request Content Parameter (line 8)
- VIEWSTATE\_2** [loop var]
  - HTML Form Parameter: [awEPDwUKMTI3M](#) (line 12)
  - HTTP Request Content Parameter (line 15)
- VIEWSTATE\_3** [loop var]
  - HTML Form Parameter: [awEPDwULLTE2M](#) (line 18)
  - HTTP Request Content Parameter (line 22)
- vNode** [loop var]
  - Text Line Pattern: [df1c8450-c721-4fb7-ab](#) (line 9)
  - HTTP Request File Pattern (line 12)

**Review of the result:** By clicking on the **parameter value** in **Var Handler** menu the **Search Overall** menu is opened. In there you can check that all the extractions/assignments for **IDAnlass** and **IdAnlass** are correct:

The Search Overall Visible Items window shows the following search results:

| Item    | Method | URL  | Found In                  | Line | Position | Content Snippet                 |
|---------|--------|--|---------------------------|------|----------|---------------------------------|
| Item 15 | POST   | http://a4ou-wwww-evento06-b.be.ch/BS_TEST/Evt_Pages/SuchResultat.aspx?node=df1c8450-c721-4fb7-ab2b                   | Found in Response Content | 414  | 149      | amp;IDAnlass=56481"> C_64005_BZ |
|         |        |  | Found in Response Content | 414  | 843      | amp;IDAnlass=56481">Qualifizier |
| Item 18 | GET    | http://a4ou-wwww-evento06-b.be.ch/BS_TEST/Evt_Pages/Brn_QualifikationDurchDozenten.aspx?node=df1c8450-c721-4fb7-ab2b | Found in Request Header   | 1    | 111      | Old&IDAnlass=56481              |
|         |        |  | Found in Response Content | 25   | 138      | amp;IDAnlass=56481" id="aspnetF |
|         |        |  | Found in Response Content | 124  | 207      | amp;IDAnlass=56481&amp;Print=tr |
|         |        |  | Found in Response Content | 342  | 214      | spx?Idanlass=56481&amp;Modus=Pa |
| Item 22 | POST   | http://a4ou-wwww-evento06-b.be.ch/BS_TEST/Evt_Pages/Brn_QualifikationDurchDozenten.aspx?node=df1c8450-c721-4fb7-ab2b | Found in Request Header   | 1    | 112      | Old&IDAnlass=56481              |
| Item 23 | GET    | http://a4ou-wwww-evento06-b.be.ch/BS_TEST/Evt_Pages/MessagePage.aspx   | Found in Response Content | 294  | 172      | spx?IdAnlass=56481">zur_ck</a>< |
| Item 26 | GET    | http://a4ou-wwww-evento06-b.be.ch/BS_TEST/Evt_Pages/Brn_QualifikationDurchDozenten.aspx?IdAnlass=56481               | Found in Request Header   | 1    | 69       | spx?IdAnlass=56481              |
|         |        |  | Found in Response Content | 25   | 92       | spx?IdAnlass=56481" id="aspnetF |
|         |        |  | Found in Response Content | 124  | 161      | spx?IdAnlass=56481&amp;Print=tr |
|         |        |  | Found in Response Content | 342  | 214      | spx?Idanlass=56481&amp;Modus=Pa |

Total 13 Results

All looks good in this example; the definitions for the assignment of both variables have been created (item 18, 22 and 26). The **Search Overall** menu does not show any additional red arrows pointing right →, which are not covered by a corresponding definition in the Var Handler.

After this step the configuration of all "dynamically-exchanged session parameters" is complete. The parameters `__VIEWSTATE`, `EVENTVALIDATION`, `IDAnlass` and `ldAnlass` were handled automatically, but the parameter `node` had to be manually configured.

| Load Test Input Parameter       | Value                               |
|---------------------------------|-------------------------------------|
| Execute Test from               | Host: Local Exec Agent              |
| Number of Concurrent Users      | 1                                   |
| Load Test Duration              | 1 min                               |
| Max. Loops per User             | 1                                   |
| Startup Delay per User          | 200 Milliseconds                    |
| Max. Network Bandwidth per User | unlimited Downlink unlimited Uplink |

We then strongly suggest to perform a functional test by performing a **trial run of the load test with only one simulated user that executes only one loop.**

**The functional check should successfully complete, i.e. without any errors.**

**You are now ready to perform a load test simulating a larger number of users.**

### 3 Other Ways to Extract and Assign Variables - Structured Data Access

The **Var Extractor Wizard** shown in the previous example extracts the variables using a **text-token-based algorithm**. This algorithm is technology-independent and works for all data that is NOT received in a raw binary format.

Apart from the text-token based extractor ZebraTester also supports the following extractor patterns

- Left and Right Boundary Based Variable Extractor

**ZebraTester URL Details / Var Handler**

127.0.0.1:7990/dfischer/webadmininterface/htdocs/dataRecordDetails.html?displayIndex=34

**Recorded Data** Analyse Record/Replay

Item 34 on Page 2 : next page → GET http://cldemo.apicasystem.com/AllTickets.aspx  
← 200 (OK) "TEXT/HTML" (6'258 bytes)

**HTTP Request Header** → ...apicasystem.com:80

|   |  |
|---|--|
| 1 | GET /AllTickets.aspx HTTP/1.1                              |
| 2 | Host: cldemo.apicasystem.com                               |
| 3 | User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.14   |
| 4 | Accept: text/html,application/xhtml+xml,application/xml;q= |
| 5 | Accept-Language: en-US,en;q=0,5                            |
| 6 | Accept-Encoding: gzip, deflate                             |
| 7 | Referer: http://cldemo.apicasystem.com/                    |

**HTTP Response Header**

|   |  |
|---|--|
| 1 | HTTP/1.1 200 OK                        |
| 2 | Server: Microsoft-IIS/7.5              |
| 3 | Vary: Accept-Encoding                  |
| 4 | X-AspNet-Version: 4.0.30319            |
| 5 | Cache-Control: private                 |
| 6 | Content-Type: text/html; charset=utf-8 |
| 7 | Content-Encoding: gzip                 |

**HTTP Response Content** ← Forms Extract (1 Form)

|          |                                      |
|----------|--------------------------------------|
| Form [0] | ***                                  |
| POST     | AllTickets.aspx                      |
| HIDDEN   | EVENTTARGET=                         |
| HIDDEN   | EVENTARGUMENT=                       |
| HIDDEN   | VIEWSTATE=NCsYcSoiCo1ZKQ7vdj57rwsHT# |
| HIDDEN   | VIEWSTATEENCRYPTED=                  |

**HTTP Response Content** ← 6'258 Bytes HTML

```

1 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
2 <html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en">
3 <head><title>
4 All tickets
5 </title><meta http-equiv="X-UA-Compatible" content="IE=8" /><link href="Styles/stylesheet.css" rel="stylesheet" type="text/css
6 <script src="Scripts/GoogleAnalytics.js" type="text/javascript"></script>
7 </head>

```

**HTTP Response Content** ← Unique Hyperlinks Extract

|    |   |
|----|---|
| U1 | /WebResource.axd?d=SwCcMWJbC5HPR0GyMZBQtBVcnGUcMopW87tvI8Ui8R50NU80PEVSNB0QE3yO4B2yncMJIGpp.q |
| U2 | http://ec2-204-236-223-80.compute-1.amazonaws.com/apical/?page=home                           |

**HTTP Response Content** ← Verification Algorithm: [Test String] = "option value="FC Internazionale Milano""

**Var Handler**

← Extract Var Using Left and Right Boundaries

Left Boundary: <option value=""

Right Boundary: "

Occurrence: fixed to 1

Occurrence All:

Random Extraction:

Save Length: 0

Save OffSet: 0

Test Extract

**Recorded Value:** [none]

Hint: This Var Extractor extract a text based on the left and right boundaries inside the HTTP response header/content.

Example: we have to extract user name from several lines :

```

User name: John Watson
Email:

```

Extract Parameters:

|                 |            |
|-----------------|------------|
| Left Boundary:  | User name: |
| Right Boundary: | Email      |

Result: Recorded Value: John Watson

team\_1 [loop var]  
← 34 Regexp Based Pattern: AC Milan

team\_10 [loop var]  
← 34 Regexp Based Pattern: FC Basel 1893

team\_11 [loop var]  
← 34 Regexp Based Pattern: FC Bayern Munchen



- RegExp Based Variable Extractor

The screenshot displays the ZebraTester URL Details / Var Handler interface. The main window shows the details of a recorded HTTP request and response. The request is a GET to `http://cidemo.apicasystem.com/AllTickets.aspx` with a status of 200 (OK). The response is HTML, 6258 bytes. The interface is divided into several panes:

- HTTP Request Header:** Shows request details like Host, User-Agent, and Accept headers.
- HTTP Response Header:** Shows response details like Server, Vary, and Content-Type.
- HTTP Response Content - Forms Extract (1 Form):** Lists form fields such as `EVENTTARGET=`, `EVENTARGUMENT=`, `VIEWSTATE=NCsYcSoiCo1ZKQ7vdj57rwsHTA`, and `VIEWSTATEENCRYPTED=`.
- HTTP Response Content - 6'258 Bytes HTML:** Shows the raw HTML content, including DOCTYPE, meta tags, and script tags.
- HTTP Response Content - Unique Hyperlinks Extract:** Lists extracted URLs like `http://ec2-204-236-223-80.compute-1.amazonaws.com/apical/?page=home`.
- HTTP Response Content - Verification Algorithm:** Shows a test string: `"option value="FC Internazionale Milano"`.
- Var Handler:** A floating window titled "Extract Var Using Regular Expression" is open. It shows the configuration for extracting a value from the response. The RegExp String is `<option value="(.)">`. The Capturing Group is set to 1. The Occurrence is fixed to 1. The Recorded Value is shown as `[none]`. Below this, an example shows how to extract the value `634998513832503642` from a source string using a similar pattern.

Red and blue arrows highlight the "Assign Var" and "Extract Var" actions respectively.



- JsonPath Based Variable Extractor

127.0.0.1:7990/dfischer/webadmininterface/htdocs/dataRecordDetails.html?displayIndex=2&varHandlerContextEncoded=%26action%3DextractVarMenu%26varExtractorType%3D2...

### ZebraTester URL Details / Var Handler

Recorded Data Analyse Record/Replay

Item 2 on Page 1 : Start Page → GET https://snippets.cdn.mozilla.net/us-west/bundles-pregen/Firefox/release/en-us/default.json  
← 200 (OK) "APPLICATION/JSON" (14'806 bytes)

#### HTTP Request Header

|   |  |
|---|--|
| 1 | GET /us-west/bundles-pregen/Firefox/release/en-us/default.json                                 |
| 2 | Host: snippets.cdn.mozilla.net   |
| 3 | User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.15; rv:52.0) Gecko/20100101 Firefox/52.0 |
| 4 | Accept: */*  |
| 5 | Accept-Language: en-US,en;q=0.5  |
| 6 | Accept-Encoding: gzip, deflate, br   |
| 7 | Connection: Keep-Alive   |

#### HTTP Response Header

|   |   |
|---|---|
| 1 | HTTP/1.1 200 OK   |
| 2 | Content-Type: application/json                                |
| 3 | Content-Length: 14806   |
| 4 | Connection: keep-alive  |
| 5 | Date: Mon, 02 Dec 2019 21:58:37 GMT                           |
| 6 | Last-Modified: Mon, 02 Dec 2019 13:34:44 GMT                  |
| 7 | x-amz-expiration: expiry-date="Sat, 01 Feb 2020 00:00:00 GMT" |

#### HTTP Response Content

14'806 Bytes JSON

```
{
  "messages": [
    {
      "template": "eoy_snippet",
      "template_version": "1.0.0",
      "content": {
        "donation_form_url": "https://donate.mozilla.org/?utm_s"
      }
    }
  ]
}
```

#### Var Handler

Extract Var Using JSONPath Expressions

JSONPath Expression: \$.messages[0].template\_version

Occurrence: 1

Random Extraction:

Test Extract

Recorded Value: "1.0.0"

Map to Var Name:

Assign var automatically to all HTTP requests which contain form or CGI parameters with the same recorded value

Try URL-encoding

Assign Var automatically to all HTTP requests which contain the same text pattern (full binary replacement of recorded value overall requests)

Extract

[no variables defined]

Input Files: Add Input File... [none]

User Input Fields: Add Input Field...

Assign Var

Extract Var

- XPath Based Variable Extractor

127.0.0.1:7990/dfischer/webadmininterface/htdocs/dataRecordDetails.html?displayIndex=18

**ZebraTester URL Details / Var Handler**

Recorded Data Analyse Record/Replay

Item 18 on Page 1 : Start Page → GET http://www-db.deis.unibo.it/courses/TW/DOCS/w3schools/xml/guestbook.asp.xml  
← 200 (OK) "APPLICATION/XML" (178 bytes)

**HTTP Request Header**

|   |   |
|---|---|
| 1 | GET /courses/TW/DOCS/w3schools/xml/guestbook.asp                  |
| 2 | Host: www-db.deis.unibo.it  |
| 3 | User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.15; rv:...  |
| 4 | Accept: text/html,application/xhtml+xml,application/xml;q=0.9,... |
| 5 | Accept-Language: en-US,en;q=0.5                                   |
| 6 | Accept-Encoding: gzip, deflate                                    |
| 7 | Connection: Keep-Alive  |

**HTTP Response Header**

|   |  |
|---|--|
| 1 | HTTP/1.1 200 OK                              |
| 2 | Date: Mon, 02 Dec 2019 22:38:26 GMT          |
| 3 | Server: Apache/2.4.10 (Debian)               |
| 4 | Last-Modified: Wed, 11 May 2016 10:19:04 GMT |
| 5 | ETag: "1c5-5328e5efdf600-gzip"               |
| 6 | Accept-Ranges: bytes                         |
| 7 | Vary: Accept-Encoding                        |

**HTTP Response Content** ← 178 Bytes XML

```
<?xml version="1.0" encoding="UTF-8"?><guestbook><guest><fname>Terje</fname></guest><guest><fname>
```

**Var Handler**

← Extract Var Using XPath Expression

XPath Expression

Occurrence

Random Extraction

Test Extract

**Recorded Value:**  
"Terje"

Map to Var Name:

Assign var automatically to all HTTP requests which contain form or CGI parameters with the same recorded value

Try URL-encoding

Assign Var automatically to all HTTP requests which contain the same text pattern (full binary replacement of recorded value overall requests)

Extract

[no variables defined]

**Input Files:** Add Input File...  
[none]

**User Input Fields:** Add Input Field...  
[none]

Assign Var

Extract Var

## 4 New Var Assign pattern

From 5.5-X version, ZebraTester allows you to assign variables using the pattern **{\$Var Name}**, if this pattern is used, all assignment in the request (URI, headers and Content) will be replaced by **{\$Var Name}** pattern, like below screenshots

**Step 1:** Extract a variable using the regex and assign using the **{\$Var Name}** pattern

The screenshot displays the ZebraTester interface for a recorded request. The URL is `127.0.0.1:7990/dfischer/webadmininterface/htdocs/dataRecordDetails.html?displayIndex=49`. The request details show a GET request to `https://cidemo.apicasystem.com/AllTickets.aspx` with a 200 OK response. The response content is HTML, and the variable handler is configured to extract a value using a regular expression `<option value="(.*?)>`. The "Map to Var Name" section shows the "Assign with {\$Var Name} pattern" option selected, with a red arrow pointing to it. The "Recorded Value" is `"Bursaspor"`. The "Extract" section shows the variable `LC` being assigned to a global var and a loop counter.

**HTTP Request Header**

|   |   |
|---|---|
| 1 | GET /AllTickets.aspx HTTP/1.1                                 |
| 2 | Host: cidemo.apicasystem.com                                  |
| 3 | User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.15...)  |
| 4 | Accept: text/html,application/xhtml+xml,application/xml;q=... |
| 5 | Accept-Language: en-US,en;q=0.5                               |
| 6 | Accept-Encoding: gzip, deflate, br                            |
| 7 | Connection: Keep-Alive  |

**HTTP Response Header**

|   |  |
|---|--|
| 1 | HTTP/1.1 200 OK                        |
| 2 | Server: Microsoft-IIS/7.5              |
| 3 | Vary: Accept-Encoding                  |
| 4 | X-AspNet-Version: 4.0.30319            |
| 5 | Cache-Control: private                 |
| 6 | Content-Type: text/html; charset=utf-8 |
| 7 | Content-Encoding: gzip                 |

**HTTP Response Content - Forms Extract (1 Form)**

|          |                                      |
|----------|--------------------------------------|
| Form [0] | ""                                   |
| POST     | ./AllTickets.aspx                    |
| HIDDEN   | EVENTTARGET=                         |
| HIDDEN   | EVENTTARGET=                         |
| HIDDEN   | VIEWSTATE=mAG8S9FoQL25z6OQrJiTaj6tXk |
| HIDDEN   | VIEWSTATEGENERATOR=AE3B0422          |

**HTTP Response Content - Unique Hyperlinks Extract**

|    |  |
|----|--|
| U1 | /WebResource.axd?d=SwCcMWJbC5HPR0GyMZBQBtBVcjnGUcMopW87tvl8Uit8R50NU80PEVSNB0QE3yO4B2yncMJIGpp_g |
| U2 | http://ec2-204-236-223-80.compute-1.amazonaws.com/apica/?page=home                               |

**HTTP Response Content - Verification Algorithm: [Test String] = "option value="FC Internazionale Milano"**

**Var Handler**

**Extract Var Using Regular Expression**

RegExp String: `<option value="(.*?)>`

Capturing Group: 1

Occurrence:  fixed to 6  variable {\$ LC }

Occurrence All:

Random Extraction:

Save Length: 0

Save OffSet: 0

Test Extract

**Recorded Value:** "Bursaspor"

**Map to Var Name:**

Team:   Assign with {\$Var Name} pattern

Assign Var automatically to all HTTP requests which contain the same text pattern (full binary replacement of recorded value overall requests)

Assign var automatically to all HTTP requests which contain form or CGI parameters with the same recorded value

Try URL-encoding

Extract

LC [global var]

LC [loop counter]

**Input Files:** [none] Add Input File...

**User Input Fields:** [none] Add Input Field...

Step 2: The part of request will be replaced by the {\${Var Name}} where variable is assigned

127.0.0.1:7990/dfischer/webadmininterface/htdocs/dataRecordDetails.html?displayIndex=55

**ZebraTester URL Details / Var Handler**

Recorded Data Analyse Record/Replay

Item 55 on Page 2 : Booking → POST https://cldemo.apicasystem.com/AllTickets.aspx?team=\${Team}&test=\${Team} ← 200 (OK) "TEXT/PLAIN" (5'146 bytes)

**HTTP Request Header** → ...apicasystem.com:443

- 1 POST /AllTickets.aspx?team=\${Team}&test=\${Team}
- 2 Host: cldemo.apicasystem.com
- 3 User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.15...)
- 4 Accept: \*/\*
- 5 Accept-Language: en-US,en;q=0.5
- 6 Accept-Encoding: gzip, deflate, br
- 7 ...

**HTTP Request Content** →

```

VIEWSTATEGENERATOR=AE3B0422
VIEWSTATEENCRYPTED=
PREVIOUSPAGE=ZLR5YJNgG_28z3wT_GJVe5VluhNC
ctl00$MainContent$TeamNamesDropDownList=${Team}
_ASYNCPOST=true
ctl00$MainContent$CheckGamesButton=Check Games

```

**Var Handler**

- LC [global var]
- ← [loop counter]
- Team [loop var]
- ← 49 Regexp Based Pattern: [Bursaspor](#)
- 55 HTTP Request Content Pattern
- 55 HTTP Request File Pattern
- 57 HTTP Request Content Pattern

**HTTP Response Header** ←

- 1 HTTP/1.1 200 OK
- 2 Server: Microsoft-IIS/7.5
- 3 Vary: Accept-Encoding
- 4 X-AspNet-Version: 4.0.30319
- 5 Cache-Control: private
- 6 Content-Type: text/plain; charset=utf-8
- 7 ...

**HTTP Response Content** ← 5'146 Bytes PLAIN

```

1 |#|4|30|updatePanel|updShoppingCart|
2 |      0 tickets
3 |      |1791|updatePanel|MainContent_UpdatePanel1|
4 |      <div>
5 |      <table class="gridarea" cellspacing="0" cellpadding="0" align="Center" rules="all" border="1" id="MainContent_GamesGridVi
6 |      <tr style="color:#FFFFCC;background-color:#990000;font-weight:bold;">
7 |      <th scope="col">Check availability</th><th scope="col">Home team</th><th scope="col">Away team</th><th scope="c
8 |      </tr><tr class="nrhn">

```

**Var Handler**

Input Files: [none]

User Input Fields: [none]

Inline Scripts: [none]

WebSocket Plug-Ins: [none]

Load Test Plug-Ins: #1: SupportModularScripts

**HTTP Response Content** ← Verification Algorithm: [Test String] = "|83|updatePanel|MainContent\_UpdatePanel2|"

Also, you can directly go to the request and assign a variable like below screen shot

The screenshot displays the ZebraTester URL Details / Var Handler interface. At the top, the browser address bar shows the URL: 127.0.0.1:7990/dfischer/webadmininterface/htdocs/dataRecordDetails.html?displayIndex=57. The main header includes the ZebraTester logo and the title "URL Details / Var Handler". A toolbar with icons for Help, Project Navigator, Search Overall, Generate Load Test, Save Session, Save Session As, Refresh, and Close is visible.

The "Recorded Data" section shows a list of items. Item 57 is selected, with details: "Booking" → POST https://cldemo.apicasystem.com/AllTickets.aspx → 200 (OK) "TEXT/PLAIN" (6'220 bytes). A red arrow points from this item to the "HTTP Request Content" pane.

The "HTTP Request Content" pane shows the request body: `1 {"team":"Bursaspor"}`. A red vertical bar labeled "Assign Var" is positioned to the right of this pane.

An "Edit HTTP Request Content" dialog box is open, showing the current content: `("team":"{Steam}")`. The dialog has a "SAVE" button and a list of line numbers (1-7) on the left.

The "Var Handler" pane on the right lists various variables and their associated patterns. A blue vertical bar labeled "Extract Var" is positioned to the left of this pane. The variables listed include:

- LC [global var]
- [loop counter]
- team\_1 [loop var]
- viewstate\_1 [loop var]
- viewstate\_2 [loop var]
- viewstate\_3 [loop var]
- viewstate\_4 [loop var]
- viewstate\_5 [loop var]
- viewstate\_6 [loop var]
- viewstate\_7 [loop var]
- viewstategen\_1 [loop var]
- viewstategen\_2 [loop var]



## 5 Variables Rule Configuration

From 5.5-X version, ZebraTester allows you to configure rules which can be applied on recordings to create Vars, Var Extractors and Var Assigners automatically based on those rules. **Configure Var Rules** option can be found in **Personal Settings** page as shown below.

The screenshot displays the 'Personal Settings - Proxy Recorder' window in ZebraTester. The interface is organized into several sections:

- Connect to Next / Cascaded Proxy (Proxy Recorder):** Includes fields for Next Proxy HTTP Host (192.168.0.174), Next Proxy HTTP Port (7997), Next Proxy HTTP Cache disabled (checked), Next Proxy HTTPS Host (192.168.0.174), Next Proxy HTTPS Port (7997), Next Proxy Auth Username, Next Proxy Auth Password, and No Next Proxy for Host/Domain.
- HTTPS Client Certificate Authentication - PKCS#11 Device (Proxy Recorder):** Includes OS-Specific Library (pkcs11wrapper.dll) and Device-Specific Library.
- NTLM Authentication (Proxy Recorder):** Includes Protocol (NTLM v2), Domain (apica.local), Username (Administrator), Password, and CyberArk Command/API URL.
- GUI Settings:** Includes Time Zone (ECT: (GMT +1:00) Berlin, Bern, Paris, Madrid, Rom, Wien), Number Format (123'456.00), and Project Navigator Path.
- Alert Notifications:** Includes a 'Configure Alerts' button.
- Proxy Auto Config (PAC) Settings (Proxy Recorder):** Includes URL of PAC file (file:/Users/sreejith.sreenivasan/Source/Apica/).
- Variables Rule Configuration:** Includes a 'Configure Var Rules' button, which is highlighted with a red arrow.
- Replay Settings:** Includes Number of Loops (2), Character Encoding (UTF-8), Strip Referer Header Field, Strip Accept Header Field to /\*, and User Agent Options (Use Browser, BlackBerry, English).



- **Extract from:** Where to extract the variables from. There are two options - **Response Header** and **Response Content**.  
If Response Header is selected, the var extractors will be created from response headers.  
If Response Content is selected, the var extractors will be created from response content.

**Variables Rule Configuration**

**Add New Rule**

Rule Name:

Variable Prefix:

Extract from:  Response Content  
 Response Header

Rule Type:  Boundary Based Rule  
 Regex Based Rule

Boundary Based Rule details

- **Rule Type:** The type of the rule to be added. There are two options - **Boundary Based Rule** and **Regex Based Rule**.

**Variables Rule Configuration**

**Add New Rule**

Rule Name:

Variable Prefix:

Extract from:  Response Content  
 Response Header

Rule Type:  Boundary Based Rule  
 Regex Based Rule

Boundary Based Rule details

Left Boundary:

- **Boundary Based Rule details:** These details will be used to extract a text based on the left and right boundaries inside the HTTP response header/content.

**Variables Rule Configuration**

**Add New Rule**

Rule Name:

Variable Prefix:

Extract from:  Response Content  
 Response Header

Rule Type:  Boundary Based Rule  
 Regex Based Rule

Boundary Based Rule details

Left Boundary:

Right Boundary:

Occurrence:

Random Extraction:

Save Length:

Save OffSet:

Assign Var automatically to all HTTP requests which contain the same text pattern (full binary replacement of recorded value over all requests)

Assign var automatically to all HTTP requests which contain form or CGI parameters with the same recorded value

Try URL-encoding

Assign with {\$Var Name} pattern

- **Regex Based Rule details:** These details will be used to extract a text based on the configured regular expression inside the HTTP response header/content.



### Variables Rule Configuration

**Add New Rule**

|                 |                                    |              |   |
|-----------------|------------------------------------|--------------|---|
| Rule Name       | <input type="text" value="Rule2"/> | Extract from | <input type="text" value="Response Content"/> |
| Variable Prefix | <input type="text" value="Auto"/>  | Rule Type    | <input type="text" value="Regex Based Rule"/> |

**Regex Based Rule details**

|                   |  |
|-------------------|--|
| RegExp String     | <input type="text" value="&lt;option value=\" {.*}\"&gt;"=""/> |
| Capturing Group   | <input type="text" value="1"/>                                 |
| Occurrence        | <input type="text" value="1"/>                                 |
| Random Extraction | <input type="checkbox"/>                                       |
| Save Length       | <input type="text" value="0"/>                                 |
| Save OffSet       | <input type="text" value="0"/>                                 |

Assign Var automatically to all HTTP requests which contain the same text pattern (full binary replacement of recorded value over all requests)  
 Assign var automatically to all HTTP requests which contain form or CGI parameters with the same recorded value  
 Try URL-encoding  
 Assign with **{\$Var Name}** pattern

- **Assign Var Options:** Allows to configure how the automatically created vars will be assigned. There are two options –
  - Assign Var automatically to all HTTP requests which contain the same text pattern (full binary replacement of recorded value over all requests).
  - Assign var automatically to all HTTP requests which contain form or CGI parameters with the same recorded value. You can also try to match URL encoded text.
  - Assign with **{\$Var Name}** pattern.

If the Assign with **{\$Var Name}** pattern option is checked, all assignment in the request (URI, headers and Content) will be replaced by **{\$Var Name}** pattern.

- Assign Var automatically to all HTTP requests which contain the same text pattern (full binary replacement of recorded value over all requests)  
 Assign var automatically to all HTTP requests which contain form or CGI parameters with the same recorded value  
 Try URL-encoding  
 Assign with **{\$Var Name}** pattern

Once you click on the **Add Rule** button, the new rule will be listed in the **List of Rules** section. By default, the newly added rule will be enabled.

### Variables Rule Configuration 📄 ✖

**Add New Rule**

**Rule Name**

**Variable Prefix**

**Extract from** Response Content ▾

**Rule Type** Boundary Based Rule ▾

**Boundary Based Rule details**

Left Boundary

Right Boundary

Occurrence

Random Extraction

Save Length

Save OffSet

Assign Var automatically to all HTTP requests which contain the same text pattern (full binary replacement of recorded value over all requests)

Assign var automatically to all HTTP requests which contain form or CGI parameters with the same recorded value


Try URL-encoding

Assign with **{\$Var Name}** pattern

**List of Rules**

|   | Rule Name | Variable Prefix | Extract From     | Rule Type           | Status                              |
|---|-----------|-----------------|------------------|---------------------|-------------------------------------|
| - | Rule1     | AutoVarBoundary | Response Content | Boundary Based Rule | <input checked="" type="checkbox"/> |
| - | Rule2     | AutoVarRegex    | Response Content | Regex Based Rule    | <input checked="" type="checkbox"/> |

## 5.2 Modify Rule

Click on the Modify icon  in **List of Rules** section to modify the rule details. **Note:** Rule Type cannot be modified.

**Variables Rule Configuration**

**Modify Rule**



|                 |  |              |  |
|-----------------|--|--------------|--|
| Rule Name       | <input type="text" value="Rule1"/>           | Extract from | <input type="text" value="Response Content"/>    |
| Variable Prefix | <input type="text" value="AutoVarBoundary"/> | Rule Type    | <input type="text" value="Boundary Based Rule"/> |

**Boundary Based Rule details**


|                   |   |
|-------------------|---|
| Left Boundary     | <input __viewstate"="" type="text" value=""/> |
| Right Boundary    | <input type="text" value=""/>                 |
| Occurrence        | <input type="text" value="1"/>                |
| Random Extraction | <input type="checkbox"/>                      |
| Save Length       | <input type="text" value="0"/>                |
| Save OffSet       | <input type="text" value="0"/>                |

Assign Var automatically to all HTTP requests which contain the same text pattern (full binary replacement of recorded value over all requests)  
 Assign var automatically to all HTTP requests which contain form or CGI parameters with the same recorded value  
 Try URL-encoding  
 Assign with **{Var Name}** pattern

**List of Rules**

|   | Rule Name   | Variable Prefix | Extract From     | Rule Type           | Status                              |
|---|---|-----------------|------------------|---------------------|-------------------------------------|
| - |  Rule1 | AutoVarBoundary | Response Content | Boundary Based Rule | <input checked="" type="checkbox"/> |
| - |  Rule2 | AutoVarRegex    | Response Content | Regex Based Rule    | <input checked="" type="checkbox"/> |

## 5.3 Delete Rule

You can delete an existing rule by clicking on the Delete icon  in **List of Rules** section.

## 5.4 Enable/Disable Rule

You can click on the enable button to enable a rule and disable button to disable a rule. Only the enabled rules will be applied on the recording to create automatic vars.

**Variables Rule Configuration**

**Add New Rule**

Rule Name:  Extract from: Response Content

Variable Prefix:  Rule Type: Boundary Based Rule

**Boundary Based Rule details**

Left Boundary:   
 Right Boundary:   
 Occurrence: 1  
 Random Extraction:   
 Save Length: 0  
 Save OffSet: 0

Assign Var automatically to all HTTP requests which contain the same text pattern (full binary replacement of recorded value over all requests)  
 Assign var automatically to all HTTP requests which contain form or CGI parameters with the same recorded value  
 Try URL-encoding  
 Assign with {\$Var Name} pattern

Add Rule Cancel

| Rule Name | Variable Prefix | Extract From     | Rule Type           | Status                              |
|-----------|-----------------|------------------|---------------------|-------------------------------------|
| Rule1     | AutoVarBoundary | Response Content | Boundary Based Rule | <input checked="" type="checkbox"/> |
| Rule2     | AutoVarRegex    | Response Content | Regex Based Rule    | <input type="checkbox"/>            |

### 5.5 Apply Var Rules

Click on the **Apply Var Rules** button in **Main Menu** page once the recording of a session is completed to apply the enabled rules on that recording. It will automatically create Var extractors from Response header/content and Var assigners to Request header/content based on the enabled rules after recording.

**Note:** All existing Variables automatically created from rules previously and related Var extractors, Var assigners, URL loops, Inner loops, Data points and Users think time in the recorded session will be deleted if any rule is enabled.

**ZebraTester Main Menu**

Page Break: 3 ±35% Insert

Recorded Items: 59 Recording State: STOPPED

Filter: No Binary Data, No CSS, JS (Only HTML and JSON), No Errors, Hosts: cldemo.apicasystem.com

| Item | Test | E | Offset   | Position | Content Size | Time     | HTTP Request  | HTTP Response                   |
|------|------|---|----------|----------|--------------|----------|---|---------------------------------|
| 1    | [1]  | S | 0.00 sec |          | 3'638 bytes  | 296 ms   | GET https://cldemo.apicasystem.com/                           | 200 (OK) TEXT/HTML              |
| 2    | [2]  | S | 0.41 sec |          | 1'996 bytes  | 1'010 ms | GET https://cldemo.apicasystem.com/Styles/stylesheet.css      | 200 (OK) TEXT/CSS               |
| 3    | [3]  | S | 0.42 sec |          | 423 bytes    | 515 ms   | GET https://cldemo.apicasystem.com/Scripts/ScriptAnalytics.js | 200 (OK) APPLICATION/JAVASCRIPT |

All automatically created Variables, Var extractors and Var Assigners can be found in **URL Details/Var Handler** page.

The screenshot displays the ZebraTester interface for URL Details / Var Handler. The main window is divided into several sections:

- Recorded Data:** Shows a GET request to `https://demo.apicasytem.com/` with a 200 OK response.
- HTTP Request Header:** Lists headers such as Host, User-Agent, Accept, and Accept-Encoding.
- HTTP Response Header:** Lists response headers like Server, Vary, X-AspNet-Version, Cache-Control, and Content-Type.
- HTTP Response Content (Forms Extract):** Shows a POST form with hidden fields for `__EVENTTARGET=`, `__EVENTARGUMENT=`, `__VIEWSTATE=`, and `__VIEWSTATEGENERATOR=`.
- HTTP Response Content (HTML):** Displays the raw HTML content of the response, including DOCTYPE, meta tags, and script tags.
- HTTP Response Content (Unique Hyperlinks Extract):** Lists extracted URLs like `/WebResource.axd?d=SwCcMWJbC5HPR0GyMZBQBIBVcJnGUcMopW87vi8Ui8R50NU80PEVSNB0QE3yO4B2yncMJIgpp_q`.
- HTTP Response Content (Verification Algorithm):** Shows a function definition for `doPostBack`.
- Var Handler:** A sidebar on the right showing a list of automatically generated variables:
  - AutoVarBoundary\_1** to **AutoVarBoundary\_6**, each with a Boundary Based Pattern and an associated HTTP Request Content Parameter.


The Var Finder in ZT only displays the values of data contained in CGI parameters and in transmitted HTML forms.

You can also extract variables from other parts of the HTTP(S) responses by using the **structured data access** functions. Structured data access is supported for:

- HTTP host names, HTTP(S) TCP/IP ports, and transfer protocols ("HTTP" or "HTTPS")
- HTTP Request Paths
- HTTP CGI Parameters
- HTTP Redirects
- HTTP Header Fields
- HTML Form Data (inclusive "hidden" form fields)
- HTML Hyperlinks
- JSON Data
- XML and SOAP Data
- WebDAV Protocol Data
- Google Protobuf Data

The corresponding functions for extracting and assigning dynamically-exchanged values are accessible via the **URL Details / Var Handler** menu. Depending on the data format, the following icons are shown in **URL Details / Var Handler** menu:

 for HTTP and HTML Data, and for the WebDAV Protocol Data

 for XML and SOAP Data

 for JSON Data

 for Google Protobuf Data

Example: **structured data access to XML data:**

The screenshot displays the ZebraTester interface within a Mozilla Firefox browser window. The address bar shows the URL: `http://127.0.0.1:7990/dfischer/webadmininterface/htdocs/dataRecordDetails.html?displayIndex=2`. The interface is titled "URL Details / Var Handler" and includes a navigation bar with icons for Help, Project Navigator, Search Overall, Generate Load Test, Save Session, Refresh, and Close.

The main content area shows the details of an HTTP request and response. The request is a POST to `http://` with a status of 200 (OK) "TEXT/XML" (2'070 bytes). The request header includes:

```

1 POST
2 Host: localhost:8000
3 Content-Type: text/xml; charset=utf-8
4 Content-Length: 2721
5 SOAPAction: "updateuser:UpdateUser_6_0"

```

The request content is XML:

```

1 <?xml version='1.0' encoding='UTF-8'?>
2 <soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
3 <soap:Body>
4 <tns:updateUser xmlns:tns="http://...">
5 <tns:request>
6 <tns:deviceRequest>
7 <tns:devicePrint>version=1&am&om foua=mozilla/

```

The response header shows:

```

1 HTTP/1.1 200 OK
2 Server: Apache-Coyote/1.1
3 Content-Type: text/xml; charset=utf-8
4 Transfer-Encoding: chunked
5 Date: Sun, 05 Dec 2010 23:48:32 GMT

```

The response content is XML:

```

1 <?xml version='1.0' encoding='utf-8'?><soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
2 </ns1:reasonDescription><ns1:statusCode>200</ns1:statusCode></ns1:statusCodeHeader><ns1:deviceManagementRespc

```

The Var Handler panel on the right shows the configuration for the session. It includes a list of variables:

- `userID` [global var]
- `[loop counter]`
- `1` XML Request Data
- `2` XML Request Data

Below the variables, there are sections for "Input Files", "User Input Fields", and "Load Test Plug-ins", each with an "Add" button. The "Assign Var" and "act Var" buttons are visible on the right side of the interface.


Even in this case the process of defining value extractions is straightforward. The extracted values are then assigned to all relevant HTTP/S requests of the web surfing session. **Further information about structured data access** is provided in the [ZebraTester User's Guide](#).

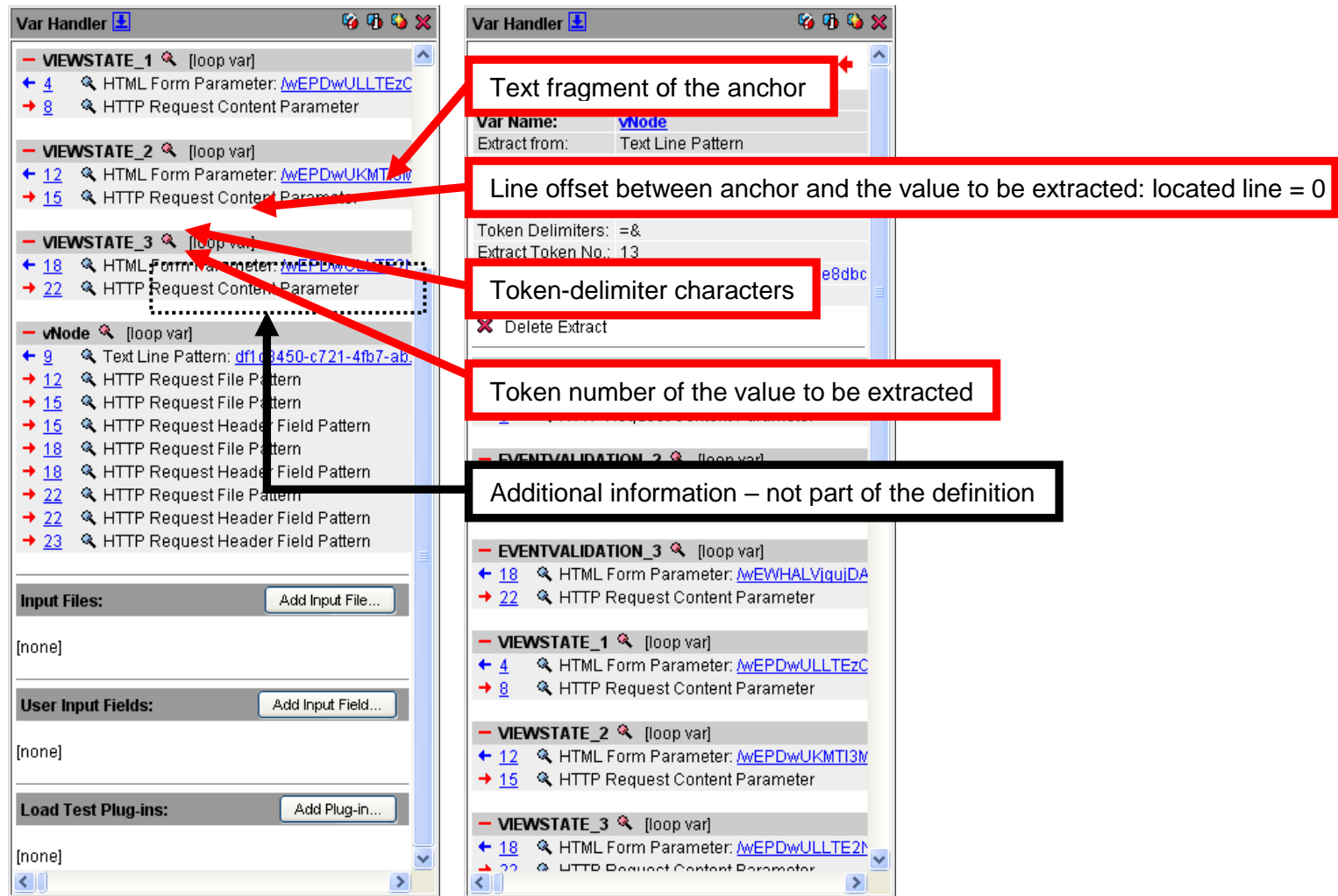
## 6 Appendix A: Inner Working of the Text-Token-Based Algorithm (Var Extractor Wizard)

The **text-token-based algorithm** which is used in the **Var Extractor Wizard** works as follows:

1. First, the content of the URL response is automatically divided into lines (separated by <CR> and/or <LF> characters).
2. The value that has to be extracted will be searched automatically in the lines. The line numbers which contain the value to be extracted are memorized and used for further calculations.
3. All lines of the content are then automatically divided into text in fragments (called tokens). The separator characters, which stand between the tokens, are automatically determined (so-called token-delimiter characters).
4. All text fragments which occur only once in the URL response are displayed in the GUI. This is the list of the "unique text fragments" from which **a text fragment can be selected in the GUI by a mouse click**. Note that text fragments that contain the value to be extracted are not shown in the list. Furthermore, text fragments which are a subset of any other text fragment are also not shown in the list.
5. The selected text fragment is now used as an "anchor" to extract the value. A positive or negative line offset is calculated between the anchor and the value to be extracted.
6. Within the line which contains the value to be extracted, the token number of the value to be extracted is calculated.
7. All information which is required to extract the value during the load test execution is now available:
  - a. The Text fragment of the anchor.
  - b. The line offset between anchor and the value to be extracted (this can be a negative value, or zero, or a positive value)
  - c. The token-delimiter characters which are applied in the line of the value to be extracted
  - d. The token number of the value to be extracted
8. Finally, an automatic cross-check is made which simulates the runtime behavior to verify that the information used to extract the value is correct. **The result of the cross-check is displayed in the GUI.**
9. **The name of the variable in which the extracted value will be stored can now be entered in the GUI.** Additionally, you can also choose whether the extracted value (or rather its variable) should be automatically assigned to all relevant HTTP/S requests in the web-surfing session.
10. **With a simple mouse-click on the "Extract Var" button the corresponding definition is now generated.**



**Note:** in the **Var Handler** menu you can view the "internal configuration data" of the **variable extract definition** which was generated by the **Var Extractor Wizard**. This can be done by clicking at the corresponding magnifying glass icon :



The image displays two screenshots of the 'Var Handler' application. The left screenshot shows a list of variables including VIEWSTATE\_1, VIEWSTATE\_2, VIEWSTATE\_3, and vNode. The right screenshot shows the configuration for the 'vNode' variable, with several fields and annotations:

- Text fragment of the anchor:** Points to the 'HTML Form Parameter' field in the left screenshot and the 'vNode' label in the right screenshot.
- Line offset between anchor and the value to be extracted: located line = 0:** Points to the 'Extract from:' field in the right screenshot.
- Token-delimiter characters:** Points to the 'Token Delimiters:' field in the right screenshot.
- Token number of the value to be extracted:** Points to the 'Extract Token No.:' field in the right screenshot.
- Additional information – not part of the definition:** Points to the 'Delete Extract' button in the right screenshot.

Example: content of line 166 of a URL response:

```
<td><div style="width:10px;height:1px"></div></td><td></td><td class="navigation-inhalt
ctl100_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_2"
onmouseover="TreeView_HoverNode(ctl100_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_Data, this)"
onmouseout="TreeView_UnhoverNode(this)"><a class="ctl100_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_0
navigation-inhalt_ctl100_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_1"
href="EVT_Pages/SuchResultat.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&amp;TabKey=WebTab_MeineAnlaesseDoz"
id="ctl100_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView2" style="border-style:none;font-size:1em;">Meine
Anlässe</a></td>
```

**Note:** During the execution of a load test ZebraTester does not search for line 166. Instead the line that contains the anchor is searched again at runtime. After that a relative line jump is made to the line which contains the value (line offset). This means that the algorithm works correctly even if the anchor is found at runtime in a different line than where it was when recording the web surfing session. However the extraction of the value will fail, if the line offset between the anchor and the value to be extracted is at runtime different than it was when recording the web surfing session, or if the token number of the value to be extracted is not the same as when recording the web surfing session. Therefore we recommend that you always use **structured data access** to extract values when possible. On the other hand, based on the experience of many successful performed load tests of our customers, we can conclude that the **text-token-based algorithm works surprisingly reliably** in almost all cases.

**Additional note:** When the **Var Finder** menu displays a **success message** for extracting and assigning a "dynamically-exchanged session parameter" this indicates that the parameter is handled by using **structured data access**.

## 7 Manufacturer

### Apica

Manufacturer's Web Site: <http://www.zebratester.com/>

Apica Support: [support@apicasystem.com](mailto:support@apicasystem.com)

Apica Sales: [sales@apicasystem.com](mailto:sales@apicasystem.com)