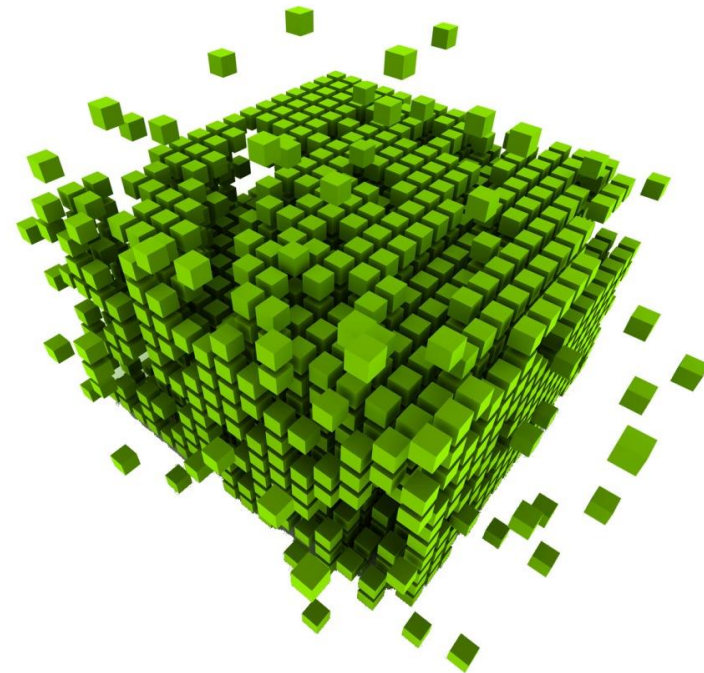




## Handling of "Dynamically-Exchanged Session Parameters"

English Edition



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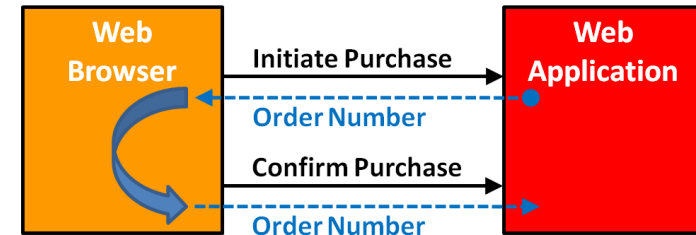
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# 1 Overview

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.

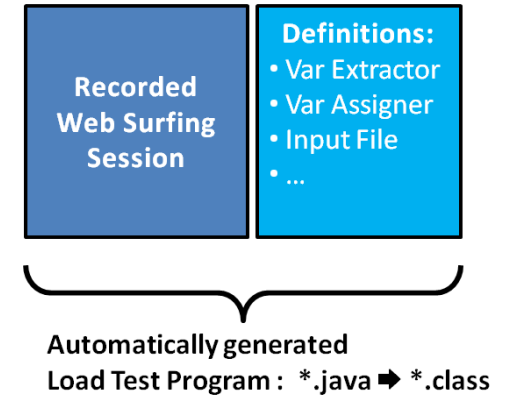
**This is a technical solution that allows you the execution of high-performance load tests with minimal hardware resources.**

### 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.

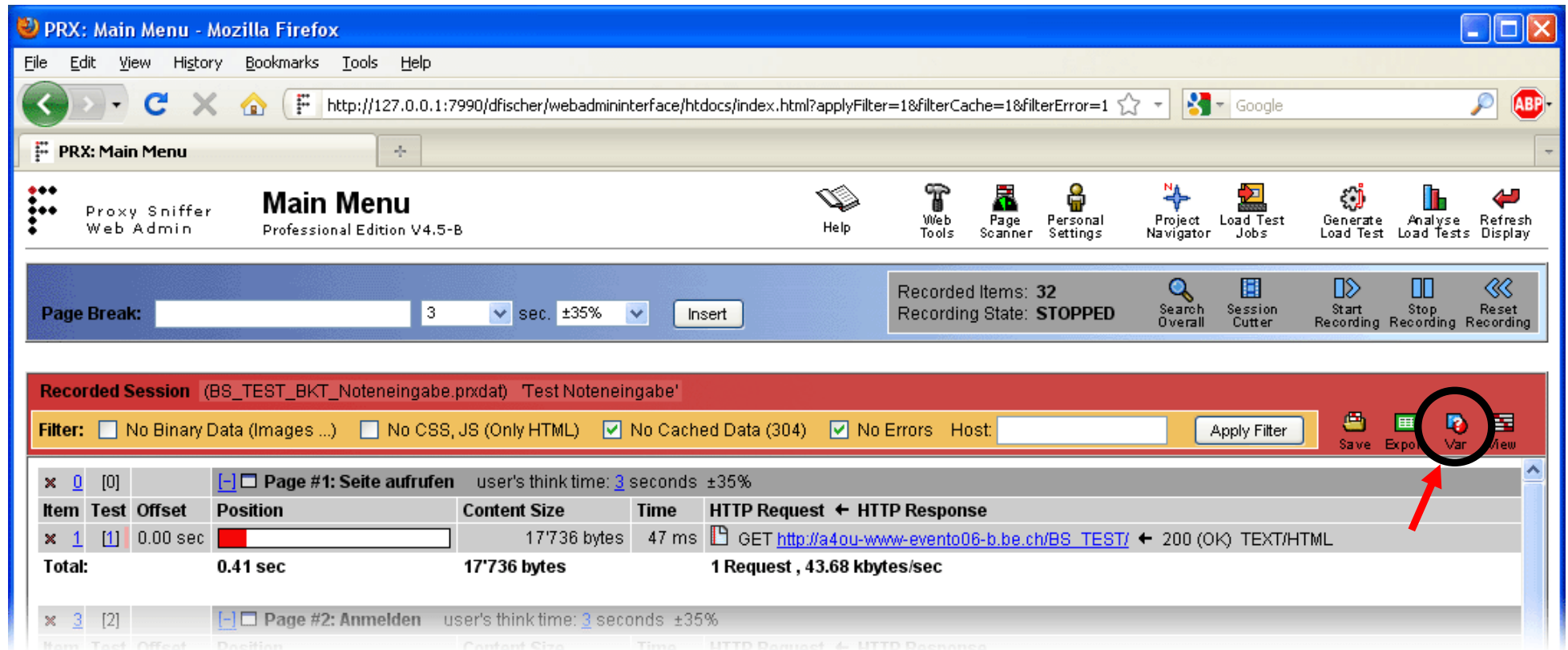
**After recording a new web surfing session, you have always to check whether "dynamically-exchanged session parameters" are used or not used by the web application.** This is can be done by calling the **Var Finder** menu.

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:



The screenshot shows the PRX: Main Menu interface in Mozilla Firefox. The browser address bar displays the URL: `http://127.0.0.1:7990/dfischer/webadmininterface/htdocs/index.html?applyFilter=1&filterCache=1&filterError=1`. The interface includes a menu bar (File, Edit, View, History, Bookmarks, Tools, Help) and a toolbar with various icons for navigation and analysis. The main menu area contains several sections:

- Page Break:** A section with a text input field containing '3', a dropdown menu set to 'sec.', and a dropdown menu set to '±35%', followed by an 'Insert' button.
- Recorded Items:** A section showing 'Recorded Items: 32' and 'Recording State: STOPPED'. It includes buttons for 'Search Overall', 'Session Cutter', 'Start Recording', 'Stop Recording', and 'Reset Recording'.
- Recorded Session:** A red header bar for the current session '(BS\_TEST\_BKT\_Noteneingabe.prxdat) 'Test Noteneingabe''. It contains a filter section with checkboxes for 'No Binary Data (Images ...)', 'No CSS, JS (Only HTML)', 'No Cached Data (304)', and 'No Errors', along with a 'Host' input field and an 'Apply Filter' button. To the right are 'Save', 'Export', 'Var', and 'New' buttons. The 'Var' button is circled in red with an arrow pointing to it.
- Session Log:** A table displaying recorded items. The first item is 'Page #1: Seite aufrufen' with a user think time of 3 seconds ±35%. The second item is a GET request for `http://a4ou-www-evento06-b.be.ch/BS_TEST/` with a 200 (OK) response. The total time for the first page is 0.41 sec and the content size is 17'736 bytes.

Item	Test	Offset	Position	Content Size	Time	HTTP Request	HTTP Response
0	[0]						
<b>Page #1: Seite aufrufen</b> 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</b>	<b>43.68 kbytes/sec</b>
3	[2]						
<b>Page #2: Anmelden</b> 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**.

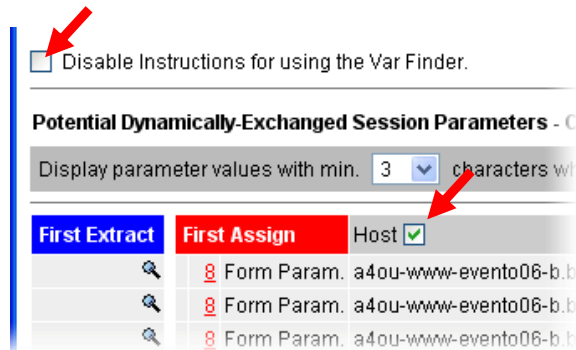
Disable Instructions for using the Var Finder.

**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 Form Param	a40u- <a href="#">www-evento06-b.be.ch</a>		<code>__VIEWSTATE</code>	<code>AwEPDwULLTEzODU5OTQ3NjYpZBYCZg9kfglCAw9kFhoCAw8WAh4EVGv4dAUNRXZlbnRvIEJT</code>
	8 Form Param	a40u- <a href="#">www-evento06-b.be.ch</a>		<code>__EVENTVALIDATION</code>	<code>AwEVBwKJkZcBgkYytHeCwLDxaG9AgKbvO7HDwLq4o7+DwLs4sHSDAKpis6RCWOkjURk4x8Q</code>
	8 Form Param	a40u- <a href="#">www-evento06-b.be.ch</a>		<code>ctI00\$ThemePicker1\$ddlTheme</code>	EventoBlue
	8 Form Param	a40u- <a href="#">www-evento06-b.be.ch</a>		<code>ctI00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$UserName</code>	
	8 Form Param	a40u- <a href="#">www-evento06-b.be.ch</a>		<code>ctI00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$Password</code>	
	8 Form Param	a40u- <a href="#">www-evento06-b.be.ch</a>		<code>ctI00\$WebPartManager1\$gwpLogin1\$Login1\$LoginMask\$LoginButton</code>	Anmelden
	12 CGI Param.	a40u- <a href="#">www-evento06-b.be.ch</a>		<code>node</code>	<code>df1c8450-c721-4fb7-ab2b-e9dbce1f501d</code>
	12 CGI Param.	a40u- <a href="#">www-evento06-b.be.ch</a>		<code>TabKey</code>	WebTab_MeineAnlaesseDoz
	15 Form Param	a40u- <a href="#">www-evento06-b.be.ch</a>		<code>ctI00_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_ExpandState</code>	ennnnnnnn
	15 Form Param	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 Form Param	a40u- <a href="#">www-evento06-b.be.ch</a>		<code>__VIEWSTATE</code>	<code>AwEPDwUKMTI3MZYyNjY1OA9kFgJmD2QWAgIDD2QWHAIDdxYCHgRUZxh0BQ1FdmVudG8gQlM</code>
	15 Form Param	a40u- <a href="#">www-evento06-b.be.ch</a>		<code>__EVENTVALIDATION</code>	<code>AwEWKgnNm4zICwKkYytHeCwLDxaG9AgKbvO7HDwKegfWWDAL6ruLZDgK01ubaCwLEpp6nAwL</code>
	15 Form Param	a40u- <a href="#">www-evento06-b.be.ch</a>		<code>ctI00\$webPartMode</code>	Ansichtsmodus
	15 Form Param	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	/wEWBwKJkZcBgKyytHeCwLDxaG9AgKbv07HDwLq4o7+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	/wEWKgKNm4zICwKyytHeCwLDxaG9AgKbv07HDwKegfMWDAL6ruLZDgK0...
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	/wEWHALVqujDAKyytHeCwLDxaG9AgKbv07HDwKegfMWDAL6ruLZDgK01...
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

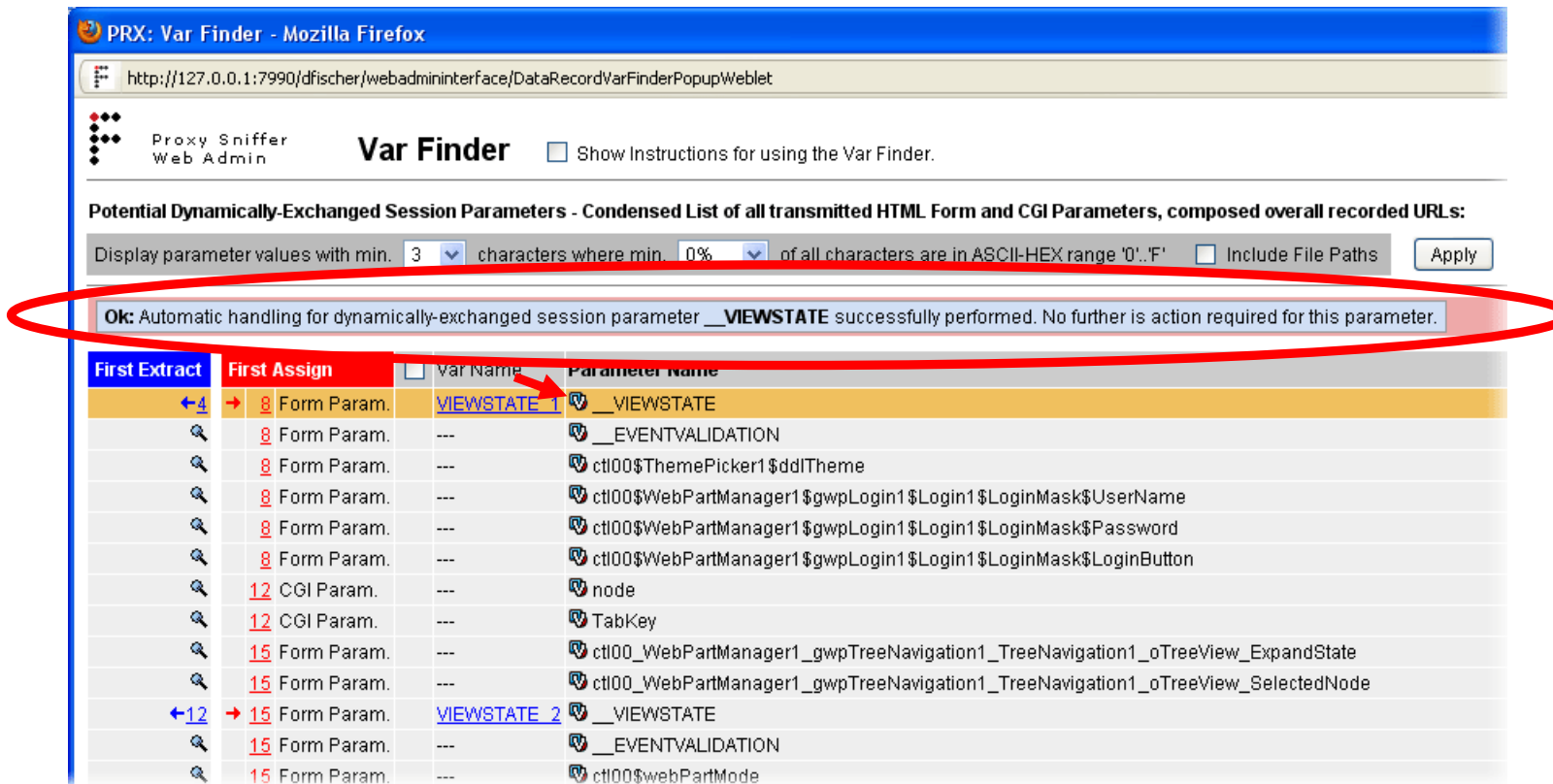
These are the parameters **\_\_VIEWSTATE**, **\_\_EVENTVALIDATION**, **node**, **IdAnlass** and **IdAnlass**.



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:



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 **\_\_VIEWSTATE** successfully performed. No further is action required for this parameter.

First Extract	First Assign	<input type="checkbox"/>	Var Name	Parameter Name
	8 Form Param.	---	<a href="#">VIEWSTATE_1</a>	__VIEWSTATE
	8 Form Param.	---		__EVENTVALIDATION
	8 Form Param.	---		ct100\$ThemePicker1\$ddlTheme
	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
	12 CGI Param.	---		node
	12 CGI Param.	---		TabKey
	15 Form Param.	---		ct100_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_ExpandState
	15 Form Param.	---		ct100_WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_SelectedNode
	15 Form Param.	---	<a href="#">VIEWSTATE_2</a>	__VIEWSTATE
	15 Form Param.	---		__EVENTVALIDATION
	15 Form Param.	---		ct100\$webPartMode

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:

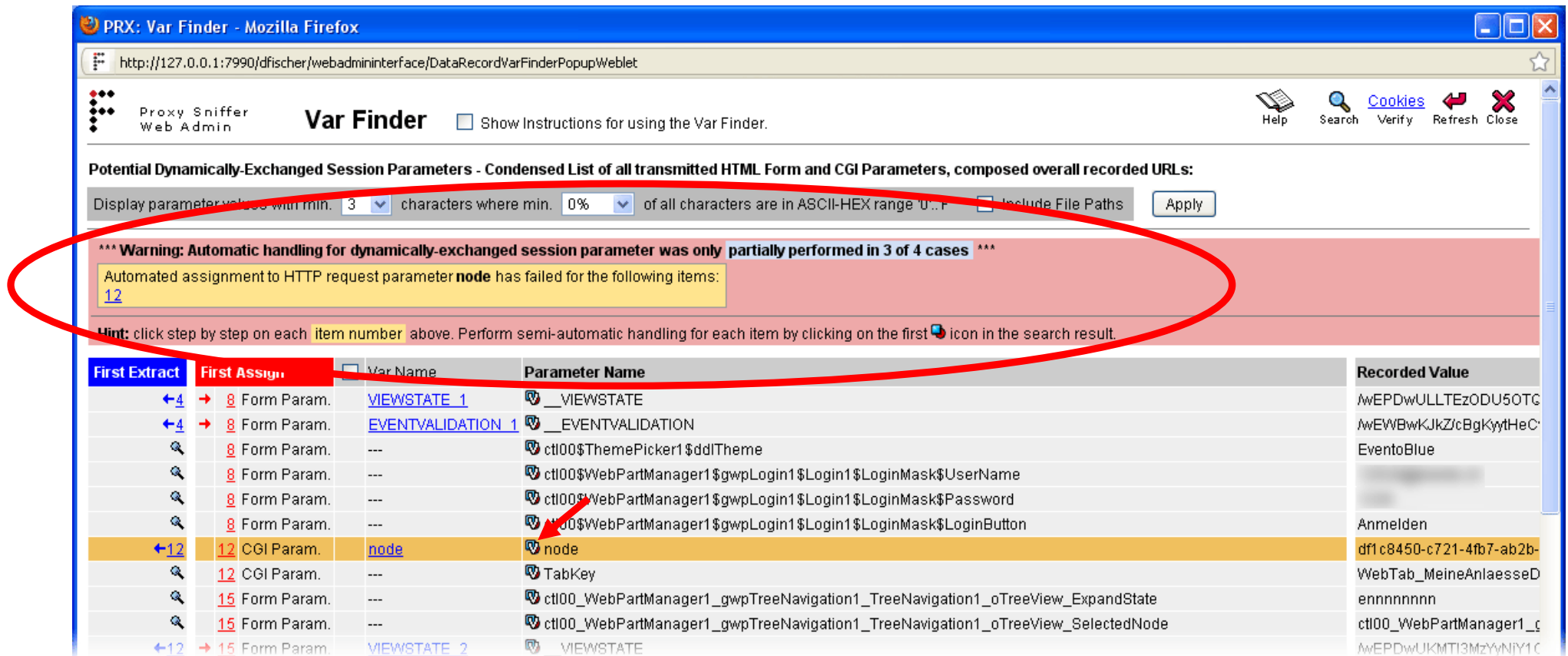
Display parameter values with min. 3 characters where min. 0% of all characters are in ASCII-HEX range '0'. 'F'  Include File Paths

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	Form Param.	<b>VIEWSTATE 1</b>	__VIEWSTATE	/wEPDwJULLTEzODU5OTQ3NjYpZBYCZg9kFgICAw9kFhoCAw...
←4 →8	Form Param.	<b>EVENTVALIDATION 1</b>	__EVENTVALIDATION	/wEwBwKJkZtcBgkYytHeCwLDxaG9AgKbvO7HDwLq4o7+Dv...
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
12	CGI Param.	---	node	df1c8450-c721-4fb7-ab2b-e8dbce1f501d
12	CGI Param.	---	TabKey	WebTab_MeineAnlaesseDoz
15	Form Param.	---	ct100\$WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_ExpandState	ennnnnnnn
15	Form Param.	---	ct100\$WebPartManager1_gwpTreeNavigation1_TreeNavigation1_oTreeView_SelectedNode	ct100\$WebPartManager1_gwpTreeNavigation1_TreeNavigati...
←12 →15	Form Param.	<b>VIEWSTATE 2</b>	__VIEWSTATE	/wEPDwJUKMTI3MzYyNjY1OA9kFgJmD2QWAgIDD2QWHAIDt...
←12 →15	Form Param.	<b>EVENTVALIDATION 2</b>	__EVENTVALIDATION	/wEWKGNm4zlCwKytHeCwLDxaG9AgKbvO7HDwKegfWW...
15	Form Param.	---	ct100\$webPartMode	Ansichtsmodus
15	Form Param.	---	ct100\$WebPartManager1\$SuchregisterWP1\$ctl10	AnlassNummer
15	Form Param.	---	ct100\$WebPartManager1\$SuchregisterWP1\$ctl11	Suchen
18	CGI Param.	---	IDAnlass	56481
←18 →22	Form Param.	<b>VIEWSTATE 3</b>	__VIEWSTATE	/wEPDwJULLTE2NzI2NjQ4MjkpZBYCZg9kFgICAw9kFhoCAw...
←18 →22	Form Param.	<b>EVENTVALIDATION 3</b>	__EVENTVALIDATION	/wEwHALVjuquIDAKytHeCwLDxaG9AgKbvO7HDwKegfWW...
22	Form Param.	---	ct100\$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.	---	ct100\$WebPartManager1\$gwpBrn_QualifikationDurchDozenten1\$Brn_QualifikationDurchDozenten1\$btnSave	Speichern
26	CGI Param.	---	IdAnlass	56481

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 \*\*\*

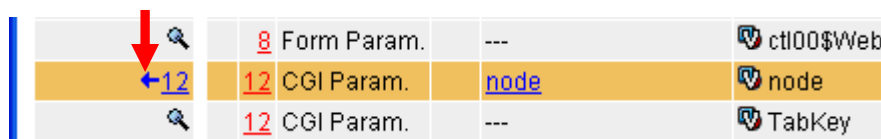
Automated assignment to HTTP request parameter **node** has failed for the following items:  
[12](#)






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	/wEWBwKJkZfcBgKytHeC
	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/dfischer/webadmininterFace/PopupSearchRecordedDataWeblet?action=search&searchText=WebAdminHashtableAttributeName=varFinderSe

Proxy Sniffer Web Admin

### Search Overall Visible Items

Search ASCII Text:   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-www-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-www-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

Item 15 POST http://a4ou-www-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 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&TabKey=1
← Found in Response Content	Line 189	Position 841	at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&TabKey=1
← Found in Response Content	Line 405	Position 95	at.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&TabKey=1
← Found in Response Content	Line 414	Position 99	MA.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&ID&Anlas:
← Found in Response Content	Line 414	Position 322	MA.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&ID&Anlas:
← Found in Response Content	Line 414	Position 793	en.aspx?node=df1c8450-c721-4fb7-ab2b-e8dbce1f501d&ID&Anlas:

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

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

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

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

Item 23 GET http://a4ou-www-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&TabKey=1
-----------------------------	----------	--------------	--

Item 26 GET http://a4ou-www-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&TabKey=1
-----------------------------	----------	--------------	--

Total 18 Results

Done

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 ←.

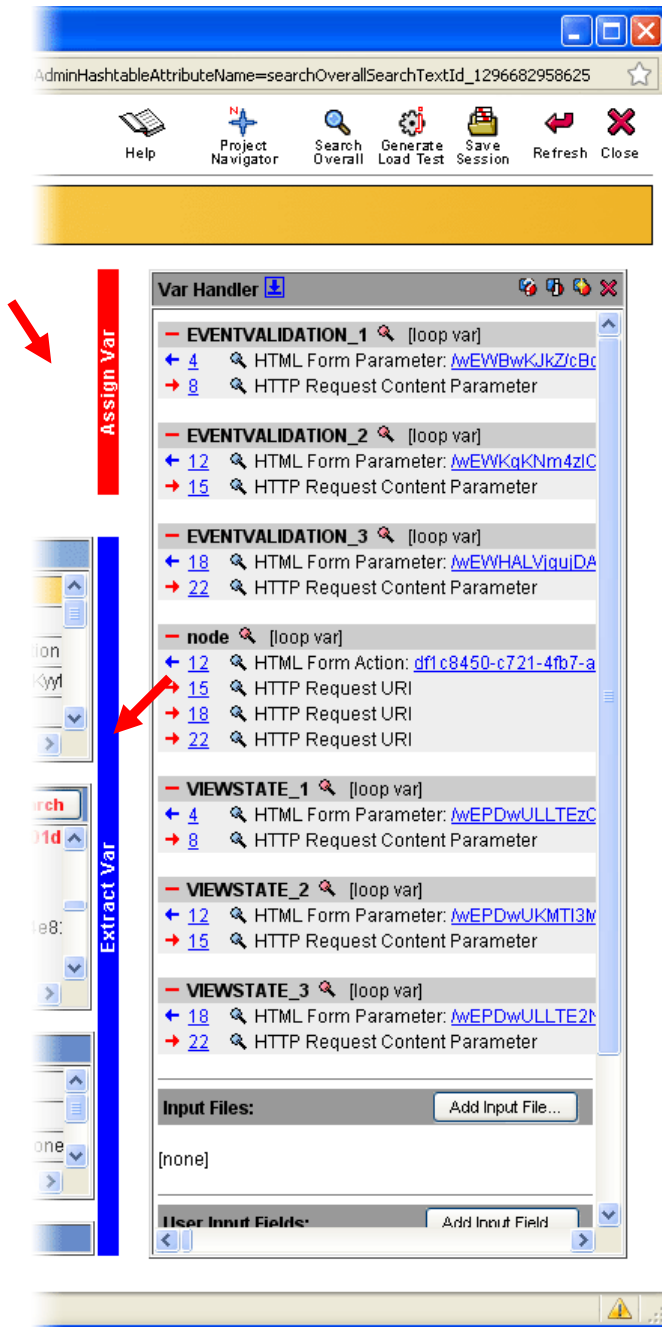
We also see that the parameter value of **node** is **sent back** to the web application in the items 12, 15, 18, and 22. These transmissions are represented by the red arrow to the right →.

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:

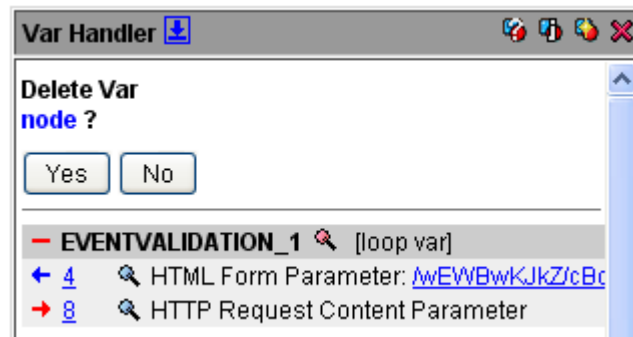
**Item 9** GET <http://a4ou-wwww-evento06-b.be.cl>

← Found in Response Content Line 164

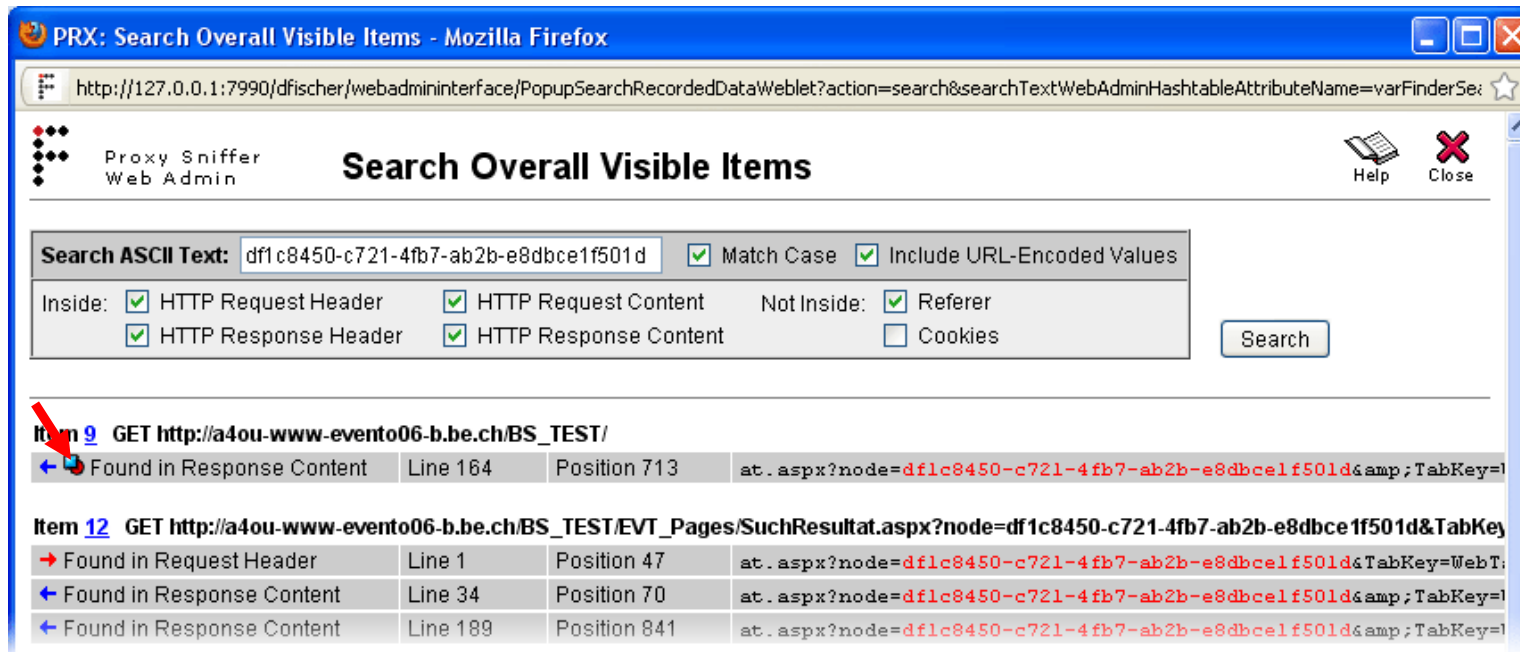


As the extraction of the value of the **node** parameter by the automatic algorithm occurred too late it has to be manually extracted in item 9. After that the value should also be manually assigned to the corresponding HTTP(S) request-parameter in item number 12.

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).

Line	Offset	Unique Text Fragment
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&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)



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=searchOverallSearchTex

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
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)

b) Select any Text Fragment near line 164 whose value will not change during load text execution.

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.

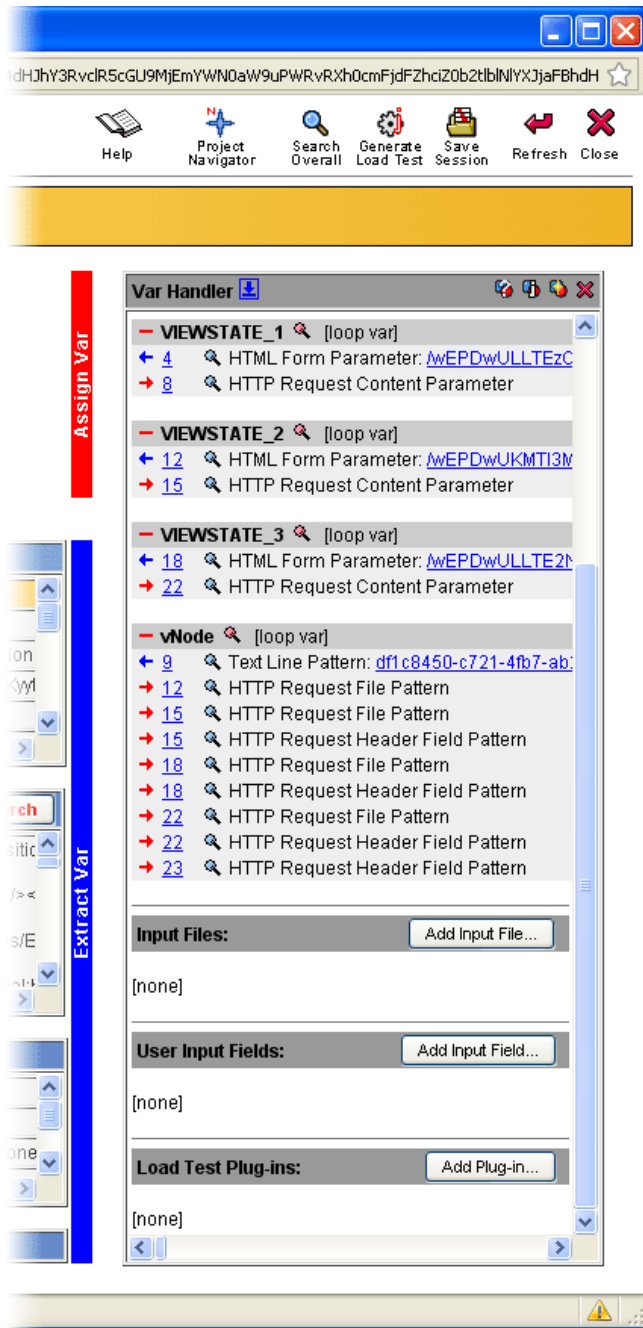
c) Map to Var Name: vNode

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.

First Extract	First Assign	Var Name	Parameter Name	Recorded Value	
←4	→ 8	Form Param.	VIEWSTATE_1	__VIEWSTATE	WEPDwULLTEz0DU50TQ3NJY
←4	→ 8	Form Param.	EVENTVALIDATION_1	__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.	vNode	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.	VIEWSTATE_2	__VIEWSTATE	WEPDwUKMTI3MzyNJY1OA9kf
←12	→ 15	Form Param.	EVENTVALIDATION_2	__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.	VIEWSTATE_3	__VIEWSTATE	WEPDwULLTE2Nzl2NjQ4MjkPz
←18	→ 22	Form Param.	EVENTVALIDATION_3	__EVENTVALIDATION	WEWHLVjqjDkKyytHeCwLDx
	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

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:

**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	/wEWKgKNm4zICwkyytHi
	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	/wEPDwULLTE2Nzl2NjQ+
←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. Within this section, the following definitions are visible:

- Item 15: HTML Hyperlink: 56481
- Item 18: HTTP Request URI
- Item 22: HTTP Request URI

Other sections include **EVENTVALIDATION\_1-3**, **VIEWSTATE\_1-3**, and **vNode**, each with their respective definitions and associated line numbers.

**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 search results for the text "56481". The search was performed in the context of a Proxy Sniffer Web Admin. The results are as follows:

Item	Method	URL	Found In	Line	Position	Match
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

The screenshot displays the ZebraTester interface with the following components:

- URL Details / Var Handler:** Shows the recorded data for a GET request to `http://cldemo.apicasystem.com/AllTickets.aspx` with a 200 OK response.
- HTTP Request Header:** Lists headers such as Host, User-Agent, Accept, and Connection.
- HTTP Response Header:** Lists headers such as Server, Vary, X-AspNet-Version, Cache-Control, Content-Type, and Content-Encoding.
- HTTP Response Content - Forms Extract:** Shows a table of form fields including `__EVENTTARGET=`, `__EVENTARGUMENT=`, `__VIEWSTATE=`, `__VIEWSTATEGENERATOR=`, and `__VIEWSTATEENCRYPTED=`.
- HTTP Response Content - 6'286 Bytes HTML:** Displays the raw HTML content of the response.
- HTTP Response Content - Unique Hyperlinks Extract:** Lists extracted hyperlinks like `/WebResource.axd?d=SwCcMWJbC5HPR0GyMzBQBtBVcJnGUcMopW87tvI8Uit8R50NU80PEVSNB0QE3yO4B2yncMJGpp_g`.
- HTTP Response Content - Verification Algorithm:** Shows a test string: `"option value="FC Internazionale Milano"`.
- Var Handler:** Configured to "Extract Var Using Left and Right Boundaries".
  - Left Boundary:** `id="__VIEWSTATE" value="`
  - Right Boundary:** `"`
  - Occurrence:** Set to "fixed to 1".
  - Recorded Value:** `"pUr0G3P7I+p+1jJ6VVJbZEeOr/xpiWorMdrZz7D4EbTP2++vq4PedsSZI"`
  - Map to Var Name:** `VIEWSTATE_1`
  - Options:** "Assign var automatically to all HTTP requests which contain form or CGI parameters with the same recorded value" and "Try URL-encoding" are checked.
  - Extracted Variables:**
    - `VIEWSTATE_1` [loop var] mapped to HTML Form Parameter `pUr0G3P7I+p+1jJ6VVJbZEeOr/xpiWor` and HTTP Request Content Parameter.
    - `VIEWSTATE_2` [loop var] mapped to HTML Form Parameter `2+TJP7z1j1RDM1Qz0YbEPOlbAfKc1Z` and HTTP Request Content Parameter.
    - `VIEWSTATE_3` [loop var] mapped to HTML Form Parameter `lwEPDwULLTE10TMxMDgyMzAPZBY` and HTTP Request Content Parameter.



• RegExp Based Variable Extractor

127.0.0.1:7990/dfischer/webadmininterface/htdocs/dataRecordDetails.html?displayIndex=38

**ZebraTester URL Details / Var Handler**

Help Project Navigator Search Overall Generate Load Test Save Session Refresh Close

Recorded Data Analyse Record/Replay

Item 38 on Page 1 Start Page GET http://cldemo.apicasystem.com/AllTickets.aspx  
200 (OK) "TEXT/HTML" (6'286 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 10.15; n
4	Accept: text/html,application/xhtml+xml,application/xml;q=0.5
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	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** 6'286 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>
8 <body>

```

**HTTP Response Content** Unique Hyperlinks Extract

U1	/WebResource.axd?d=SwCcMWJbC5HPR0GyMZBQbBVcJnGUcMopW87tvI8Uit8R50NU80PEVSNB0QE3yO4B2yncMJGpp_g
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 Regular Expression

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

Capturing Group: 1

Occurrence: fixed to 1

Random Extraction:

Test Extract

Recorded Value: "AC Milan"

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

VIEWSTATE\_1 [loop var]

38 HTML Form Parameter: pUr0G3P7I+p+1jJ6VVJbZEeOr/xpiWor

42 HTTP Request Content Parameter

VIEWSTATE\_2 [loop var]

46 HTML Form Parameter: 2+TJP7z1j1RDM1Qz0YbEPOIbAfKc1Z

49 HTTP Request Content Parameter

VIEWSTATE\_3 [loop var]

49 HTML Form Parameter: /wEPDwULLTE1OTMxMDgyMzAPZBY

52 HTTP Request Content Parameter

Input Files: Add Input File...

Assign Var

Extract Var

- 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)

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:68.0) Gecko/20100101 Firefox/68.0
4	Accept: */*
5	Accept-Language: en-US,en;q=0.5
6	Accept-Encoding: gzip, deflate, br
7	Connection: Keep-Alive

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_source=..."
      }
    }
  ]
}
```

**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:**  [none]

**User Input Fields:**

Assign Var

Extract Var

- XPath Based Variable Extractor

The screenshot displays the ZebraTester interface for URL Details / Var Handler. The browser address bar shows the URL: 127.0.0.1:7990/dfischer/webadmininterface/htdocs/dataRecordDetails.html?displayIndex=18. The main content area is divided into three sections: HTTP Request Header, HTTP Response Header, and HTTP Response Content. The Var Handler panel on the right is configured to extract a variable using an XPath expression.

**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><lname>Beck</lname></guest><guest><fname>
```

**Var Handler**

Extract Var Using XPath Expression

XPath Expression: //fname

Occurrence: 1

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]

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 main title is "URL Details / Var Handler". The address bar shows the URL: `http://127.0.0.1:7990/dfischer/webadmininterface/htdocs/dataRecordDetails.html?displayIndex=2`. The interface 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://schemas.xmlsoap.org/soap/envelope/">
5 <tns:request>
6 <tns:deviceRequest>
7 <tns:devicePrint>version=1&am&om foun=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

```

On the right side, the "Var Handler" panel is visible, showing 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 also visible.

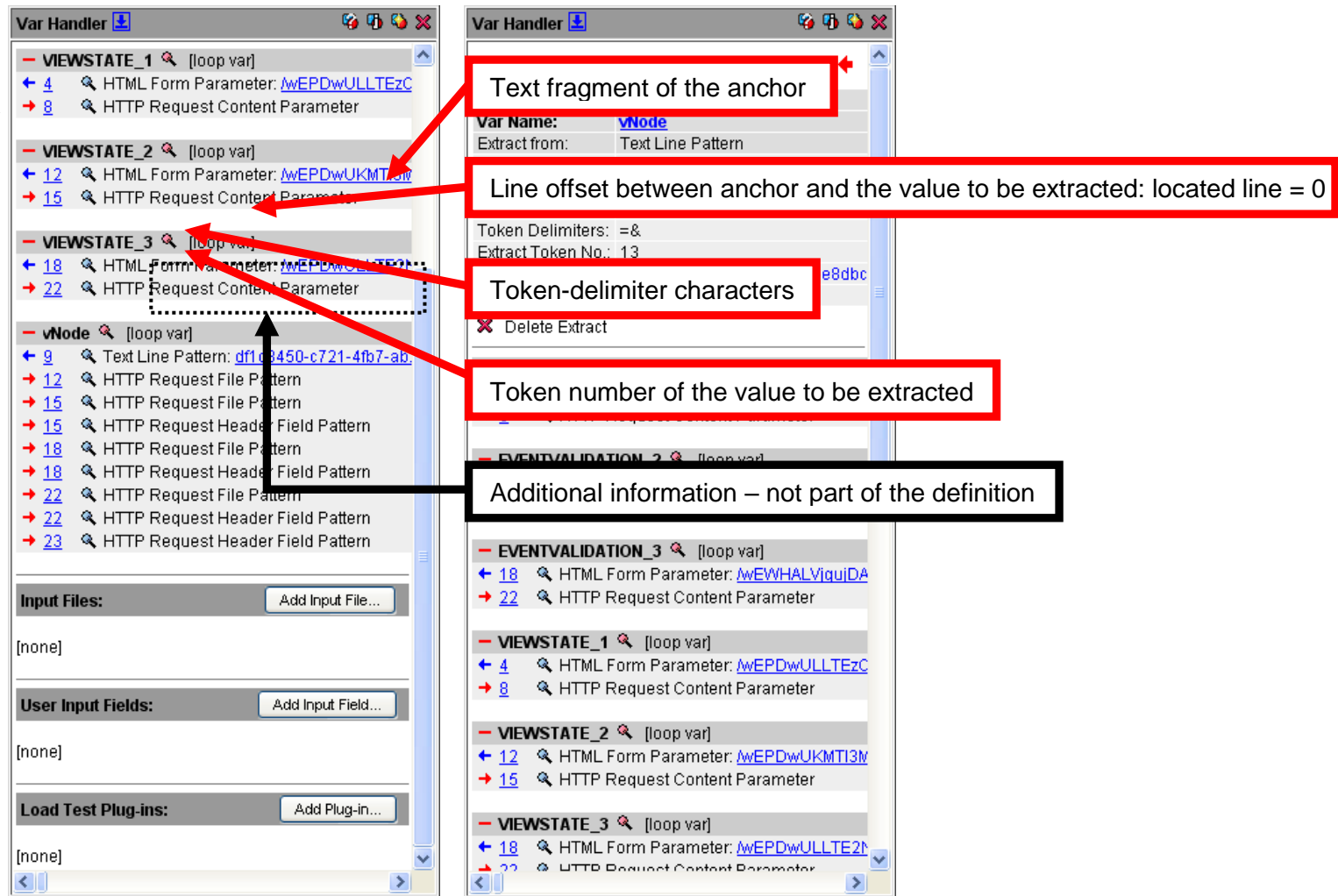
Even in this case the process of defining value extractions is straightforward. The extracted values are then assigned to all relevant HTTP/S requests of the web surfing session. **Further information about structured data access** is provided in the [ZebraTester User's Guide](#).

## 4 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, which is a 'Text Line Pattern'. The configuration includes fields for 'Var Name', 'Extract from', 'Token Delimiters', and 'Extract Token No.'. Red boxes and arrows highlight specific parts of the configuration: 'Text fragment of the anchor', 'Line offset between anchor and the value to be extracted: located line = 0', 'Token-delimiter characters', and 'Token number of the value to be extracted'. A black box highlights the 'Additional information - not part of the definition' section.

Text fragment of the anchor

Line offset between anchor and the value to be extracted: located line = 0

Token-delimiter characters

Token number of the value to be extracted

Additional information – not part of the definition

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&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**.



## 5 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)