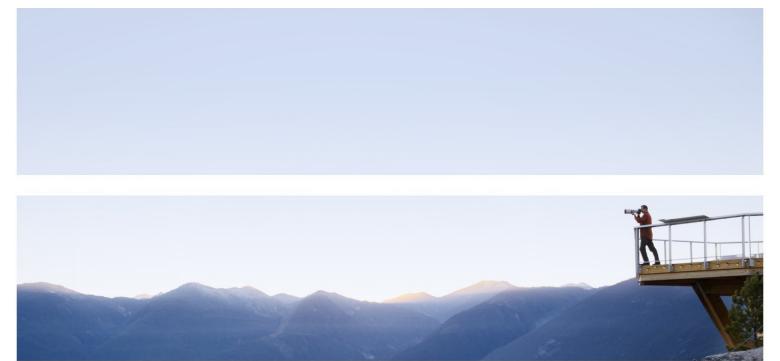


Application Performance Management

Version 9.40, Released August 2017

BPM Monitoring Solutions - Best Practices

Published August 2017





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Chapter 1: Overview

The goal of these case studies is to show how to establish end user monitoring on a cloud application using TruClient for Internet Explorer protocol. These case studies provide the basic instructions required to facilitate the process of building end user monitoring solutions using WYSIWYG protocol.

Where applicable, the case studies are built around monitoring web applications. You can use TruClient for IE or Mobile protocol, depending on your business needs.

Chapter 2: How to Use Script Parameters and Functions

Script Parameters

Generally, parameters are used when values change frequently or you want to easily change them. Instead of changing the content of the script, you can just change the parameters. Script parameters defined in VuGen are seen in End User Management Administration in Application Performance Management (APM).

Name	+	Value	Sensitive
passwd		•••••	×
userName			-

To achieve this, create the parameters in VuGen. Notice that the value for the passwd parameter is marked as sensitive. Let us show you how we did this.

All parameters except passwd are plain text:

- passwd Hidden and encrypted password.
- userName Username in the form of an email address (user@domain.com).
- userNameSurname This parameter is created because in some steps we need to click the full name of the user.

BPM Monitoring Solutions - Best Practices Chapter 2: How to Use Script Parameters and Functions

Parameter List	?
Dessent	Parameter type: Table
	File path: pesswid dat Add Column Add Row Delete Column Delete Row 1 526/33867eed 11435df80d
	Edit with Notepad Data Wizard Columns: Columns Columns Columns Univers Column berniter: Column beiniter: Table information Table information
	Rows delimeter for log display:
	When not enough rows: Use behavior of "Select Next Row" Select next row: Sequential Update value on: Each iteration
	Update value on: Each iteration
	When out of values: Continue with last value
	Allocate Vuser values in the Controller-
New Delete	Close

To encrypt the password, we first need to use the Password Encoder:

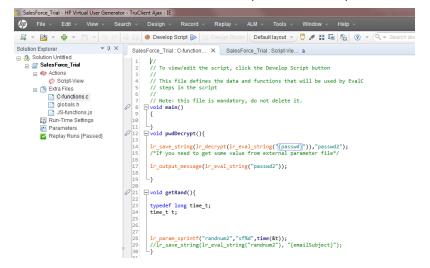
HP OVCM Agent	Control Panel	Password Encoder
HP Software	Administrative Tools	Password: test
IP LoadRunner	Help and Support	Encoded String: 5272b15079ea502c
Virtual User Generator Documentation	Run	Enter the password and click 'Generate' to display
Samples	Windows Security	the encoded string.
Password Encoder	Windows Security	Generate Copy Close Help

The encoded string is then copied to the passwd value.

Script Functions

Functions are used to enhance a script. We use functions to achieve the following goals:

- Decrypt the parameter value and put it in a new parameter that is visible only within the script instance running on VuGen or the /APM instance.
- . Generate a random number that is unique. In this example, we use Time as the random number.



To decrypt this code, we use a C function within the script. Functions are stored in the C function.c file.

BPM Monitoring Solutions - Best Practices Chapter 2: How to Use Script Parameters and Functions

```
void pwdDecrypt(){
lr_save_string(lr_decrypt(lr_eval_string("{passwd}")), "passwd2");
```

}

The function lr_eval_string converts the passwd parameter to a string. Then lr_decrypt decrypts the string and lr_save_string copies the string as plain text to passwd2. This plain text password is contained within the boundaries of the script instance that is executed on the instance.

Another function used is getRand(). It generates a unique Subject text that we can locate later and delete:

```
void getRand(){
typedef long time_t;
time_t t;
lr_param_sprintf("randnum2","bpm%d",time(&t));
}
These functions are used within the script.
```

Chapter 3: Cloud Email Provider - Office 365 Transaction Flow

This case study uses Microsoft Office 365 cloud service. The case study uses one flow/script with the following transactions:

- 1. Login Open a login page, enter your credentials, and confirm that the first page loads.
- 2. Create an email Create a new email and send it with a unique subject to the logged in user.
- 3. Delete the email Check for this unique email, select it, and delete it.
- 4. Calendar Click the Calendar link and verify that the calendar loads.
- 5. **Logoff** Log off from the web application.

The main purpose of running this script is to confirm that the application's processes run successfully. If successful, the transactions complete without any errors.

You can view a sample Office365 script by downloading the following file https://softwaresupport.hpe.com/group/softwaresupport/search-result/-/facetsearch/document/KM00658290.

General Flow

Microsoft Office 365 is a subscription-based online office and software plus services suite which offers access to various services and software built around the Microsoft Office platform. In this flow, we test Microsoft Office 365's email and calendar functionality.

A sequence of transactions creates the business process flow. A transaction is a unit that is measurable by availability and performance. Therefore, we group activities that perform a specific transaction.

To describe and validate these transactions, logically group the transactions into the following steps:

- 1. Login.
 - a. Navigate to https://portal.microsoftonline.com.
 - b. Enter your credentials and confirm that the first page (Inbox) loads.
- 2. Create a new email.
 - a. Click New Mail.
 - b. Enter the email address used to login in step 1.
 - c. Enter a unique subject.
 - d. Send the email.
- 3. Delete the email.
 - a. Refresh and check if the email arrived.
 - b. Select the email.
 - c. Delete the email.
- 4. Calendar

Click the **Calendar** button and confirm that the Calendar page loads.

5. Logoff

Log off from the web application.

The following sections describe how to create these transactions.

A good approach, before using this tool, is to know what we want to achieve. Create a blueprint as follows:

- 1. Run the Office 365 web application in Internet Explorer 910 or later. Perform the steps of the flow and create annotations.
- 2. Determine the boundaries that form the transactions.
- 3. Select which values to assign to the parameters.
- 4. Select what values to protect and encrypt.

Record all the information you collect since it will come in handy later.

We recommend you start using the script. Refer to sections in this document for assistance.

Transaction – Office365_1_Login

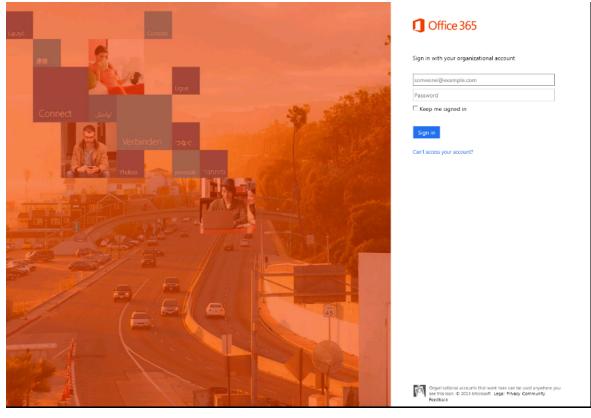
Transaction Editor Webpage D	ialog 💻 🔤
Transactions	Properties
X Office365_1_Login Office365_2_send mail Office365_3_delete mail Office365_4_Calendar Office365_5_Logoff	General Name: Office385_1_Login Apply Start Point I. Action:Navigate to "https://portal.microsoftonline.com" V Event: Action started V End Point V V Step: 7. Action:Click on Sign in V Event: After step ended V
	Close

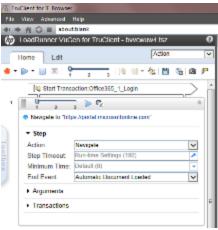
Define the name of the transaction. In this example, we call this transaction "Office365_1_Login". Naming conventions should provide a clear view of the application, the transaction order, and create an overview of the business processes covered by this transaction.

Define the steps and events for the starting and ending points of the transaction. The most appropriate event for the start step is Action started. The most appropriate event for the end step is After step ended.

This transaction contains all the steps required for logging into the Office 365 application.

Navigate to https://portal.microsoftonline.com



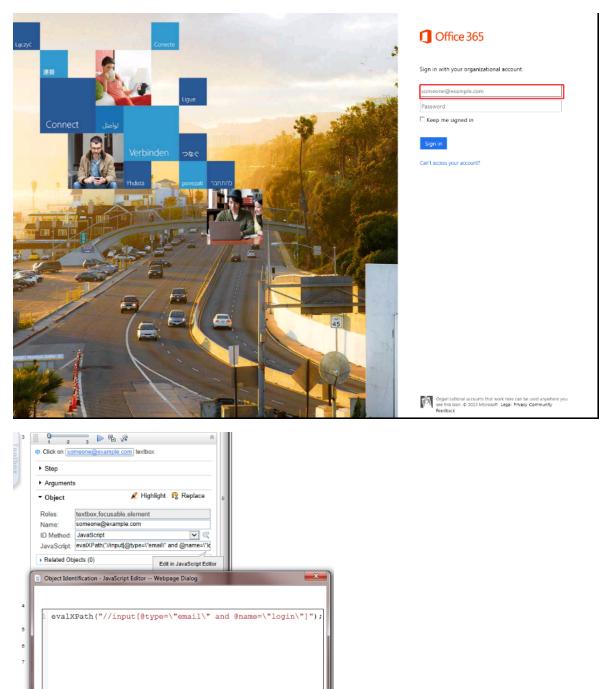


In the Navigation step, specify the URL.

While recording, VuGen automatically selects the appropriate End Event, in this case Document downloaded. The step ends when the process of loading a document completes. In most cases, you can freely select the default values.

If the pages load slowly, you can use a Wait step to make sure the page loads. For information on Wait steps, see "Meaning of Wait Step" on page 83.

Click in the someone@example.com Textbox



You can either select the Automatic or JavaScript ID method.

OK Cancel Help

For the JavaScript ID Method, enter the following in the JavaScript field: evalXPath("//input[@type=\"email\" and @name=\"login\"]"); There are cases when you will change the ID Method, as we will see later.

Type LR.getParam('userName') in someone@example.com Textbox

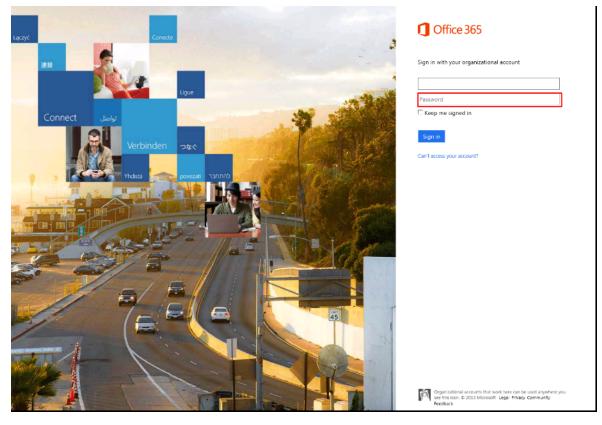
Lacot Consts	Office 365
	Sign in with your organizational account
نوبير Connect نوبير	Password
Verbinden sec	Sign in Carl access your account?
	Cognitizational accounts that work here can be used anywhere you are this task. 6 2023 Microsoft Lagar Physics Community NetBack

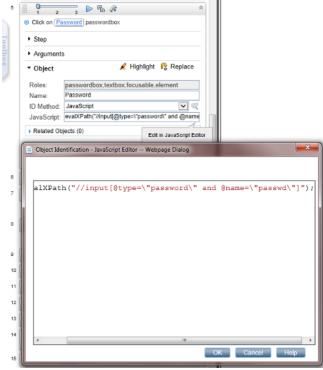
Clear: Default (roa)
 Value: IR gell'exemplaceMerne'), in (corrected@scemple.com)
 Clear: Default (roa)
 Typing Interval. Run time Settings (350)
 Object
 Tomoscienes

Type the username in the **someone@example.com** textbox.

Since we are using parameters, you can enter the *LR.getParam('userName');* command in the **Value** field and the result is the defined username.

Click in the Password Textbox

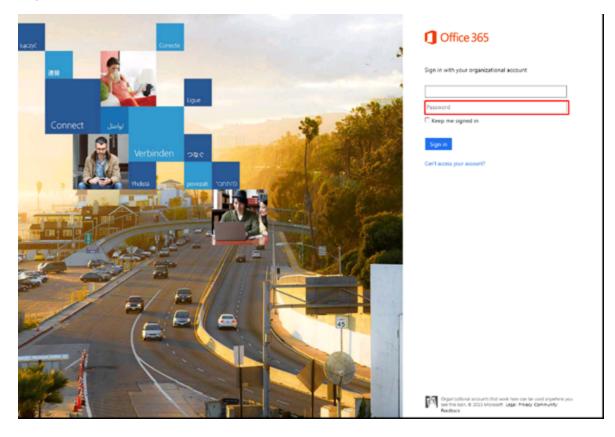




Similar to the *Click in the someone@example.com Textbox* step, you can select the **Automatic** or **JavaScript** ID method.

For the JavaScript ID Method, enter the following in the JavaScript field:

evalXPath("//input[@type=\"password\" and @name=\"passwd\"]");



<pre>2 LR.evalC("pwdDecrypt"); 3 LR.getParam("passwd2"); 9 9 10 11 12 13 14 4</pre>	•	Type ••••••• In Password passwordbox
<pre>* Value: // Calling pvdDecrypt() function for parameter Clear: Default (true) Typing Interval: Run-time Settings (350) // // // Calling pwdDecrypt() function for parameter decryptic 2 LR.evalC("pvdDecrypt() function for parameter decryptic 2 LR.evalC("pvdDecrypt"); 3 LR.getParam("passwd2");</pre>	,	> Step
Clear: Default (ruu) Typing Interval: Run-time Settings (350) JavaScript Arguments Editor Webpage Dialog 1 // Calling pwdDecrypt() function for parameter decryptic 2 LR.evalC ("pwdDecrypt"); 3 LR.getParam ("passwd2");] 4		▼ Arguments
<pre>// Calling pwdDecrypt() function for parameter decryptic 2 LR.evalC("pwdDecrypt"); 3 LR.getParam("passwd2"); 4 // // Calling pwdDecrypt"); 4 // // Calling pwdDecrypt"); 5 // Calling pwdDecrypt() function for parameter decryptic 2 // Calling pwdDecrypt() function for parameter decryptic 2 // Calling pwdDecrypt(); 3 // Calling pwdDecrypt(); 4 // Calling pwdDecrypt(); 5 // Calling pwdDecrypt();</pre>		Clear: Default (true)
<pre>2 LR.evalC("pwdDecrypt"); 3 LR.getParam("passwd2"); 9 9 10 11 12 13 14 4</pre>		JavaScript Arguments Editor Webpage Dialog
14 C	7 8 9 10 11	<pre>2 LR.evalC("pwdDecrypt");</pre>
15 OK Cancel Help	14	٠
	15	OK Cancel Help

Type a password in the **Password** textbox. To display an encrypted password, type the following:

```
// Calling pwdDecrypt() function for parameter decryption
```

```
LR.evalC("pwdDecrypt");
```

```
// This is a parameter with a decrypted value
```

```
LR.getParam("passwd2");
```

The pwdDecrypt() function is defined in C-function.c file:

```
void pwdDecrypt(){
```

```
lr_save_string(lr_decrypt(lr_eval_string("{passwd}")),"passwd2");
```

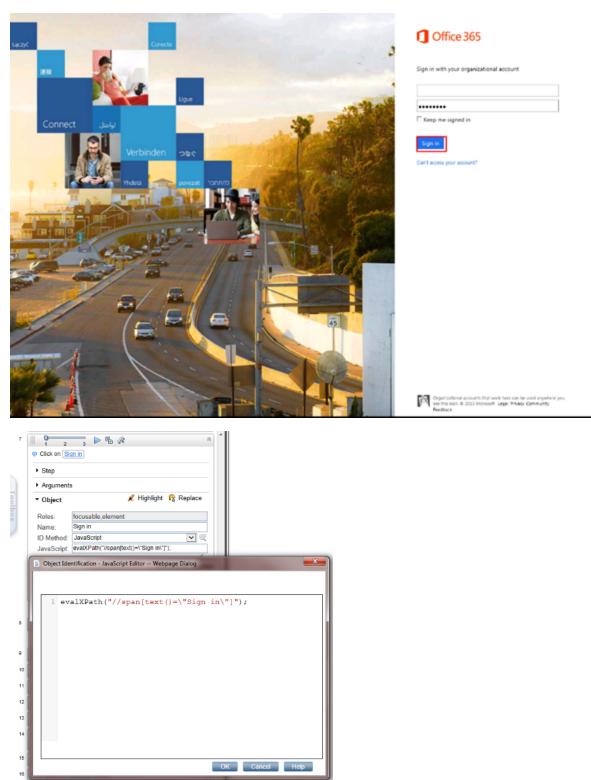
/*If you need to get some value from external parameter file*/

```
lr_output_message(lr_eval_string("passwd2"));
```

}

```
passwd is the parameter defined for external use (APM – EUM) and is encrypted.
passwd2 is the parameter seen only within this script instance.
```

Click Sign In



This is defined as the End step for Transaction Office365_1_Login.

The JavaScript ID Method used is:

evalXPath("//span[text()=\"Sign in\"]");

The **End Event Step** is set to automatic. So in this case, the **End Event Step** is **Step Synchronous network completed**. The step ends when all HTTP requests have completed excluding requests initiated by XMLHttpRequest.

Transaction – Office365_2_send mail

Transaction Editor Webpage Dia	log	X
Transactions	Properties	
÷ X		
Office365_1_Login Office365_2_send mail Office365_3_delete mail Office365_4_Calendar Office365_5_Logoff	General Name: Office365_2_send mail Start Point	Apply
	Step: 9. Action: Click on new mail	v
	Event: Action started	~
	End Point	
	Step: 17. Action: Click on Refresh	~
	Event: After step ended	~
		Close

The name of this transaction is "Office365_2_send mail".

This transaction contains all the steps necessary for sending an email to the logged in user with a unique subject field.

Click New Mail

() Office 365			Darlock Calendar (Hoople 🚥 👘 💌 💌
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Inhas 25	÷	12:58	
Custor [9]			
Sent Items Deleted Items (257)		12.54	
Junichmal			
Neles		1148	
		50.49	
		2/14	
	· ·		
		Tao 21:25	
	•	Tac 21/19	
	÷	Ter-16-64	
	·	Tar-19-54	
	1 C	Tax 1978	
1/085	b	Tae 1048	

Click on D	w.mail)
 Step 	
Argument	5
• Object	💉 Highlight 🛛 😰 Replace
Roles:	element
Name	new mail
ID Method:	Automatic (recommended)
Related Ot	(lects (0)
• Transactio	275

When you click **New Mail**, a form appears for sending a new email. By running the script multiple times, we can confirm that this element is recognized using the Automatic ID method.

Type LR.getParam('userName') in To Field

() Office 365			Dationk Calendar People ***	· & ?
⊕ new mail	sourch multiand people	Q	NU SEVO 🗶 DISCHID 🔋 MERT 📃	9
	al unread to me f	sepped	. —	
	MECH	CONVERSATIONS BY DATE IN	1a	+
a havanta	<i>u</i>	X P	Co	
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Sent Isean				
Drafts [6]	÷	12/0	nala 🔹 🔍 D 📽 B I U 🗄 🗮 🖄 A s	
 Socidar Profulges; 				
Inface 25		12:58		
Cults [8]				
Sent Items		1254		
Deleted liens 25/1				
Junk broat Neles				
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		2/14		
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		101 61 62		
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		Tec 1644		
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14585		Tae tone		
		14-10-10		
11 7 2	; D R A	9		
Type LR.gelPar	ram("userName") in [<u>To</u> comb	obac		

Arguments Value: UR.gelParam("userNam	
	e")
Clear Debut (Intel)	
Typing Interval: Run-time Settings (350)	
• Object	

To make this script robust, we use parameters. If the username or password is changed at a later time, you do not need to change the script, only the parameter's value. The username is in the form of an email address.

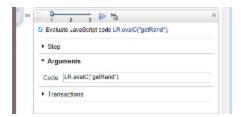
Click in Subject Field

			Darlork Calendar People ***	· @ ?
① new mail	soutch wall and people	Q,	THE STAD IN DISCHOO 🖁 MISSIT 🗮	9
	al unread to me flagge	:1	1.	+
	NECH	CONVERSATIONS BY DATE IN		+
a hearta	<i>u</i>	X P	Ce	
inbox 35		56.00	Salpati	
Sentiseurs				
Drafte [6]	÷	12/15	usika 👘 12 🖷 🛎 I 💇 🗄 🖄 🚣 🦉	
4 Souder Profulped				
Inhex 25	Þ.	1258		
Cubs [9]				
Sent Isens		1254		
Deleted liens 2571	Þ	234		
Junichman				
Neles	Þ.	1148		
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	•	Tec 21:15		
	-			
	Þ	Tac 1844		
	P	Tar-19-M		
		The Dort		
14085				
11013	· · · · · ·	Tae 1048		

 Step 	
Argument	9
• Object	ep Eritor
Roles:	textbox, focusable, element
Name:	Subject
ID Method:	Automatic (recommended)
Related Ob	jeds (0)

Click in the **Subject** field to select it.

Evaluate JavaScript Code LR.evalC('getRand');



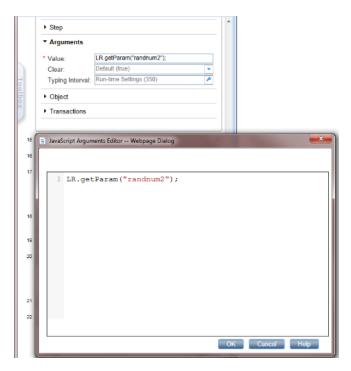
This is a very important step. By calling this function, we create a Subject value.

```
The getRand() function is defined in the C-function.c file:
void getRand(){
typedef long time_t;
time_t t;
lr_param_sprintf("randnum2","bpm%d",time(&t));
}
```

Type //LR.evalC('getRand'); L...am('randnum2'); in Subject Field

(] Office 365			Dation Calendar People	· @ ?
⊕ new mail	soatch wall and people	م	Tatistiko iki kusista 😹 🖂 🖂	9
	al unread to me fragg	sl.	t	+
	NECH	CONVERSATIONS BY DATE IN		
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Sent Items				
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4 Soeder Profulped				
Inface 25		1258		
Custor [9]				
Sent Items		12.54		
Ordeled Revis 25/1				
Junic berail				
Nelcs	Þ	1148		
		50.09		
		2/14		
	Þ	Tao 21:28		
		Tec 21:15		
		Tac 1644		
		Tar-19-94		
	ŀ	Tax form		
14585	· · ·	Tae 1048		

BPM Monitoring Solutions - Best Practices Chapter 3: Cloud Email Provider – Office 365 Transaction Flow



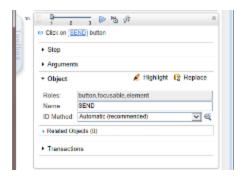
In this step, we acquire the value from the parameter:

LR.getParam("randnum2");

Click Send

① 016:365			Datosk Gliendar (Height	· @ ?
⊕ new mail	south wall and people	م	zi sindi 🛪 dischidi 🔋 Mistri 🚃	9
	al unread to me flagg	est.		
	1804	CONVERSATIONS BY DATE IN	5	+
a haranta	~	×р	Ce	
inbox 35		56.02	Subject: April 1883 3043	
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Drafts [6]	•	12/0		
 Boetder Profulges; 				
Inface 25		12:58		
Dialts [9]				
Sent Items	÷	12.54		
Deleted Rens. 2571 Junic Israel				
Neles		1148		
		50.49		
	•	32.04		
		2/14		
	•	Tao 2125		
		Tac 21:15		
		Tec 1644		
		Tar-19-54		
		100-100		
	1°	Tate 15/18		
14685	P	Tae tova		

BPM Monitoring Solutions - Best Practices Chapter 3: Cloud Email Provider – Office 365 Transaction Flow



Click Send. The Send button is easy to recognize so there was no need for any additional corrections.

Click Settings

Conce 365				Durlock Calendar People ***	· @ ?
⊕ new mail	search mail and people	Q	bpm1383137977		2
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	N804 C	ONVERSATIONS BY DATE -			mark as an read
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		Tao 21:25			
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1/685	*	Tae 1048			
Cleis on Sector Step Aguments Object Roles: but Name: Sec	i be F _X ∂Q i ballon A Highlight i interest tings tions focused be, element tings toraits (recommended)	Replace			

Click Settings to refresh the Inbox and check whether the email arrived.

Related Objects (0)
 Transactions

Click Refresh

(] 01ke365					Durlook Calendar Peop	ks	- 10	?
⊕ new mail	scorch wall and people	Q	bpm138	N SW HAR			ter a-a	2
0	al unread to me face			lppm1585159355	4	NRY #Fox	Setautomoticopties Display settings	
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	Þ	Tac 21:25						
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TAGRS		Tae 1548						

 Step 	
Argument	5
• Object	💉 Highlight 🛛 🔞 Replace
Holes:	clement
Name:	Refresh
ID Method:	JavaScript 🕑 🤄
JavaScript:	evalXPath("//span(lext()=/"Refresh/")");
Related Ob	aute (0)

After clicking **Refresh**, the transaction completes and we confirm that the email arrived. If the email still has not arrived, repeat the previous step (Click Settings) and this step (Click Refresh).

We use the JavaScript ID Method:

```
evalXPath("//span[text()=\"Refresh\"]");
```

Transaction – Office365_3_delete mail

Transaction Editor Webpage Dial	log
Transactions	Properties
+ X	
Office365_1_Login Office365_2_send mail	General
Office365_3_delete mail	Name: Office365_3_delete mail Apply
Office365_4_Calendar Office365_5_Logoff	Start Point
	Step: 18. Action.Evaluate JavaScript code var Sub1=LR.getParam("
	Event: Action started
	End Point
	Step: 20. Action:Click on Delete button
	Event: After step ended
	Close

The name of this transaction is "Office365_3_delete mail".

This transaction contains all the steps necessary for checking and deleting an email that was sent in the current interaction.

Evaluate JavaScript code var Sub1=LR.getParam ('randnum2');

18 1 2	3 🕨 🔁	*
Evaluate JavaSc	ript code var Sub1=LR.getParam("rand	num2");
► Step		
 Arguments 		
Code: var Sub1:	=LR.getParam("randnum2");	JS
 Transactions 	var Sub1=LR.getParam ("randnum2");	

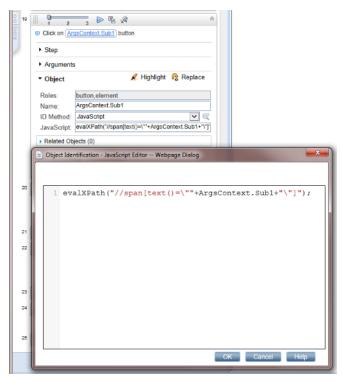
Create the Sub1 variable and get its value from the parameter randum2:

var Sub1=LR.getParam("randnum2");

This variable is used to check (identify) and delete a specific email sent within this interaction. The life span of this variable is within the page. When you change the page, you must re evaluate this JavaScript if you need a value from the *randum2* parameter.

Click ArgsContext.Sub1

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	al unread to me flagg	est.		€ DET - (C	
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Inface 36 Codes [9]	•	12.45			
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Ordered Revis. 25/1	•	12:59			
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	÷	11-01			
	÷	50.08			
	÷	2/14			
	÷	Tac 2125			
	•	Tac 2115			
	×	Tar-19-14			
	•	Lat 15.54			
14085	a.	Tate (SHR			



To identify an object, the name must be set as ArgsContext.Sub1

The ID Method is JavaScript:

evalXPath("//span[text()=\""+ArgsContext.Sub1+"\"]");

The specific email is found.

Click Delete

]_01Ke365				Durlock Calendar People	· Ø ?
① new mail	scorch wall and people	Q	bpm1080139950		2
	al unread to me fac	pçosl		ENKY & WAR	⇒нолихо —
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	÷.	Tac 2125			
	Þ.	Tac 2115			
	,	Tar 19-14			
		Tae Score			
1/085	l	Tae 1549			

 Step 		
Argument	8	
• Object	🗶 Highlight 🤱	Replace
Roles:	button, focusable, element	
Name	Delete	
D Method:	Automatic (recommended)	¥ 8

The **Delete** button is easy to recognize.

This step completes Office365_3_delete mail.

Transaction – Office365_4_Calendar

Transactions	Properties	
	Properties	
+ X		
Office365_1_Login Office365_2_send mail	General	
Office365_3_delete mail Office365_4_Calendar	Name: Office365_4_Calendar	Apply
Office385_5_Logoff	Start Point	
	Step: 21. Action:Move mouse over Calendar	~
	Event: Action started	~
	End Point	
	Step: 22. Action: Click on Calendar button	~
	Event: After step ended	~
		Close

The name of this transaction is "Office365_4_Calendar".

This transaction contains the steps necessary for confirming that the calendar loads.

Move Mouse over Calendar

() Office 365			Dation Calendar People	- 0?
⊕ new mail	scorch wall and people	Q,	bpm1383137977	2
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		2/74		
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		Tec 21:15		
		Ter: 1644		
	,	Tar-19.64		
	1 C	Tax 1978		
14085		Tae 1048		

 Step 	
+ Argument	5
• Object	💉 Highlight 🛛 🔞 Replace
Roles:	element
Name	Calendar
ID Method:	Automatic (recommended)
Related Ob	lects (0)

This section displays how to create an extra step (mouse over) before clicking an element.

Click Calendar

• now mail set and or page A get and or page A Set and or page A	n Office 365			Datook alientin Reeple	· Ø ?
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 Step Argument 	
* Object	s 💉 Highlight 🛐 Replace
Roles:	button, focusable, element
Name:	Calendar
ID Method:	Automatic (recommended)
Related Ot	siects (0)

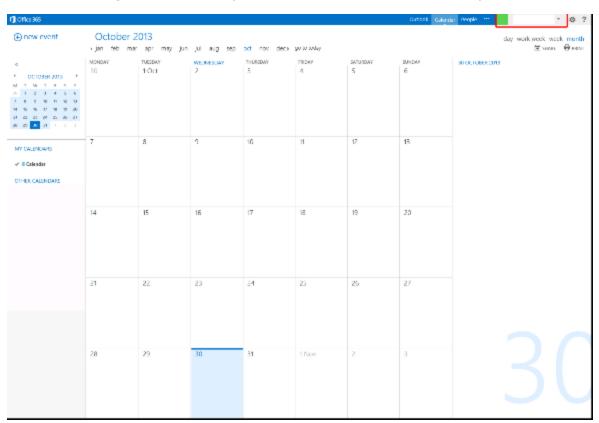
This is the end of transaction "Office365_4_Calendar.

Transaction – Office365_5_Logoff

Transaction Editor Webpage Dia	log 🔤 🗮
Transactions	Properties
+ X	
Office365_1_Login Office365_2_send mail	General
Office365_3_delete mail Office365_4_Calendar	Name: Office365_5_Logoff Apply
Office365_5_Logoff	Start Point
	Step: 23. Action: Click on LR.getParam("userNameSurname") button
	Event: Action started
	End Point
	Step: 24. Action: Click on Sign out
	Event: After step ended
	Close

The name of this transaction is "Office365_5_Logoff".

This transaction contains all the steps necessary for logging off.



Click LR.getParam('userNameSurname')

P	0 2	amadum Ofliac085 5 Topol
	+ Step	Care of State Section Colored To Colored
	Argument	9
	* Object	🔏 Highlight 🔅 Heplace
	Roles	button, focusable, element
	Name:	LR.getParam("userNameSumame")
	ID Method:	Automatic (recommended) 🛛 💌 📽
	 Related Of 	(jects (0)
	Transaction	ans -
	Click on	Sept.cod 🗸
		ansaction:Office365_6_Logoff
	Close ad	and the M

We used another parameter because for logging out of this application you must first click the full user name stored in the parameter *userNameSurname*.

LR.getParam("userNameSurname")

Click Sign Out

() once 365							Surfeek Colori	dar Beople	⊚ ?
Dew event	October 2 Jan feb mar		jul aug sep	oct nov deck	go to today				month Breas
C F CC1044K 2015 F N T W T F F N T W T F F N T W T F F N T W T F F N T W T F F N T W T F F N T W T F F N T T T T K T N T T T T T T T N T <t< td=""><td>MONDAY 30</td><td>TUESDAY 1.Oct</td><td>WEONESDAY 2</td><td>THURSDAY 3</td><td>4</td><td>SATURDAY S</td><td>9000 chenge 6 Foodball 8 Roy Dorrett d 8 Roy 6 Roy 6 Roy 6 Roy 8 R</td><td>stanis Kali</td><td></td></t<>	MONDAY 30	TUESDAY 1.Oct	WEONESDAY 2	THURSDAY 3	4	SATURDAY S	9000 chenge 6 Foodball 8 Roy Dorrett d 8 Roy 6 Roy 6 Roy 6 Roy 8 R	stanis Kali	
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	28	29	30	31	1 Nov	2	3		

 Step Argument 	Shep Editor
 Object 	🔏 Highlight 🚯 Replace
Roles:	element
Name	Sign out
ID Method:	Automatic (recommended)
 Related Ob 	jects (0)
• Transactio	ns

By clicking **Sign out**, we end this transaction and script.

All we need to do now is close the active tab.

Chapter 4: Cloud Email Provider - Gmail Transaction Flow

This case study uses Gmail cloud service. The case study uses one flow/script with the following transactions:

- 1. Login Open a login page, enter your credentials, and confirm that the first page loads.
- 2. Create an email Create a new email and send it with a unique subject to the logged in user.
- 3. Delete the email Check for this unique email, select it, and delete it.
- 4. **Logoff** Log off from the web application.

The main purpose of running this script is to confirm that the application's processes run successfully. If successful, the transactions complete without any errors.

You can view a sample Gmail script by downloading the following file https://softwaresupport.hpe.com/group/softwaresupport/search-result/-/facetsearch/document/KM00658288.

General Flow

Google Mail is another name for Google's email tool, Gmail. Gmail is a free, full-featured email service. Anyone can register for an account. Gmail is also available as part of Google Apps. In this flow, we test the email functionality of Gmail.

A sequence of transactions creates the business process flow. A transaction is a unit that is measurable by availability and performance. Therefore, we group activities that perform a specific transaction.

To describe and validate these transactions, logically group the transactions into the following steps:

- 1. Login.
 - a. Navigate to https://gmail.com.
 - b. Enter your credentials and confirm that the first page (Inbox) loads.
- 2. Create a new email.
 - a. Click Compose.
 - b. Enter the email address used to login in step 1.
 - c. Enter a unique subject.
 - d. Send the email.
- 3. Delete the email.
 - a. Refresh and check if the email arrived.
 - b. Select the email.
 - c. Delete the email.
- 4. Logoff

Log off from the web application.

The following sections describe how to create these transactions.

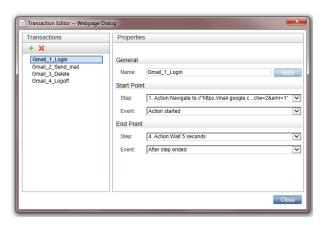
A good approach, before using this tool, is to know what we want to achieve. Create a blueprint as follows:

- 1. Run the Gmail web application in Internet Explorer 910 or later. Perform the steps of the flow and create annotations.
- 2. Determine the boundaries that form the transactions.
- 3. Select which values to assign to the parameters.
- 4. Select what values to protect and encrypt.

Record all the information you collect since it will come in handy later.

We recommend you start using the script. Refer to sections in this document for assistance.

Transaction – Gmail_1_Login

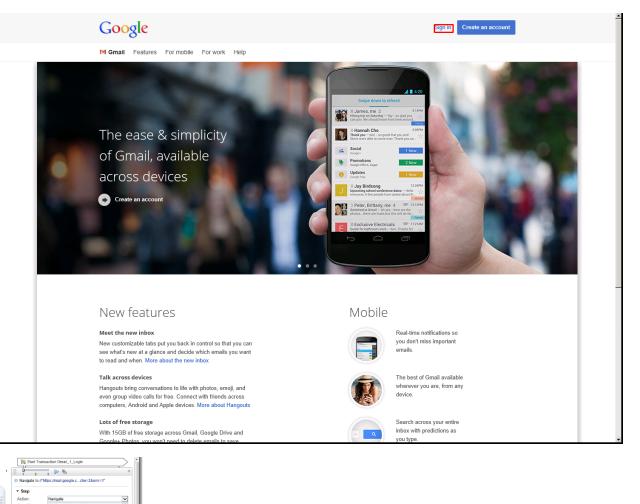


Define the name of the transaction. In this example, we call this transaction "Gmail_1_Login". Naming conventions should provide a clear view of the application, the transaction order, and create an overview of the business processes covered by this transaction.

Define the steps and events for the starting and ending points of the transaction. The most appropriate event for the start step is **Action started**. The most appropriate event for the end step is **After step ended**.

This transaction contains all the steps required for logging into the Gmail application.

Navigate to https://mail.google.c...che=2&emr=1

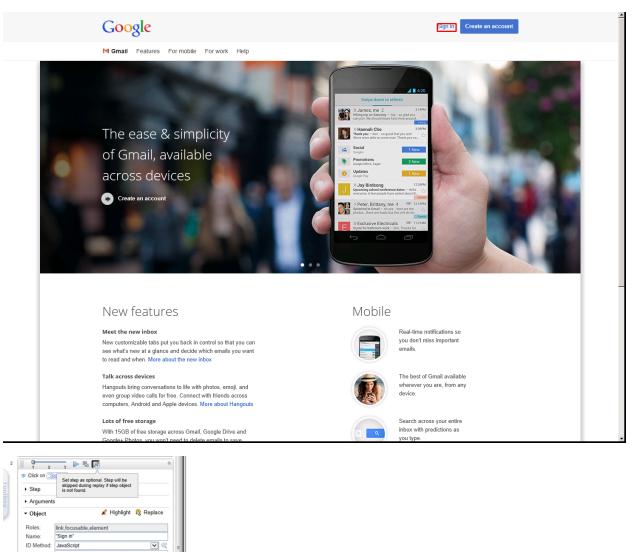


In the Navigation step, specify the URL.

While recording, VuGen automatically selects the appropriate End Event, in this case, **Document downloaded**. The step ends when the process of loading a document completes. In most cases, you can freely select the default values.

If the pages load slowly, you can use a Wait step to make sure the page loads. For information on Wait steps, see "Meaning of Wait Step" on page 83.

Click Sign In



Sometimes the application does not go straight to the login page. Therefore, insert this optional step, just in case. If the Sign in link does not appear, this step is ignored.

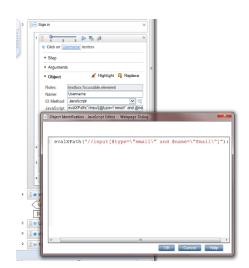
Note: Since providers make changes in their services, you may need to make changes to your scripts to maintain the same outcome.

JavaScript: evalXPath("//a[text()=\"Sign in\"]");

Related Objects (0)
 Transactions

Click in Username Textbox

Google	
One account. All of Google. Sign in to continue to Gmail	
Final Pessword Sign in V Stay signed in Need help? Create an account Create an account for everything Google Med Personal Per	
acy & Terms Help	English (United States)



Google Pri

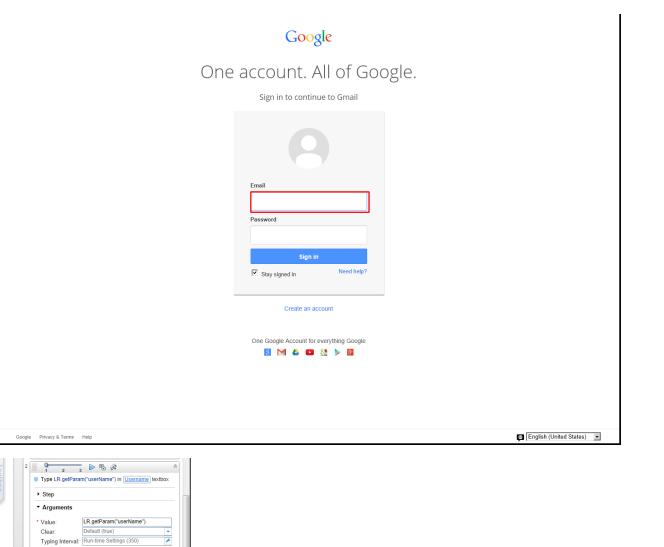
You can either select the Automatic or JavaScript ID method.

For the JavaScript ID Method, enter the following in the JavaScript field:

```
evalXPath("//input[@type=\"email\" and @name=\"Email\"]");
```

There are cases when you will change the ID Method, as we will see later.

Type LR.getParam('userName') in Username Textbox



Since we are using parameters, you can enter the LR.getParam("userName"); command in the Type the

Since we are using parameters, you can enter the LR.getParam("userName"); command in the Value field

field and the result is the defined username.

Type the username to the **Username** textbox.

Step Ed

ObjectTransactions

Click on Sign in button

Type ••••••
 In Password

username to the Username textbox.

and the result is the defined username.

Type ********************** in Password Textbox

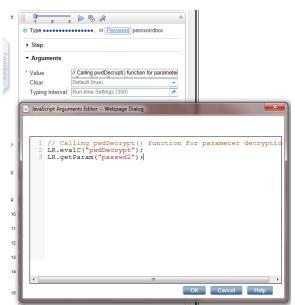
	Google	
	One account. All of Google. Sign in to continue to Gmail	
	Email Parsword Sign in Stay signed in Ned help? Create an account Create an	
Google Privacy & Terms Help		🗊 English (United States) 💽
5 • • • • • • • • • • • • • • • • • • •	nd fname=\"passwd\"]") /	
<pre>alkPath("//input[gtype=\"password\" a % % % % % % % % % % % % % % % % % % %</pre>	in finite (based()))	

Similar to the *Click in Username Textbox* step, you can select the **Automatic** or **JavaScript** ID method.

OK Cancel Help

For the JavaScript ID Method, enter the following in the JavaScript field:

evalXPath("//input[@type=\"password\" and @name=\"passwd\"]");



Type a password in the **Password** textbox. To display an encrypted password (so no one can see it), type the following:

```
// Calling pwdDecrypt() function for parameter decryption
```

```
LR.evalC("pwdDecrypt");
```

```
// This is a parameter with a decrypted value
```

```
LR.getParam("passwd2");
```

The pwdDecrypt() function is defined in C-function.c file:

```
void pwdDecrypt(){
```

```
lr_save_string(lr_decrypt(lr_eval_string("{passwd}")),"passwd2");
```

```
/*If you need to get some value from external parameter file*/
```

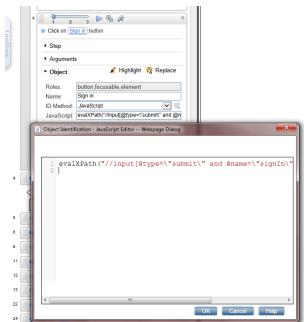
```
lr_output_message(lr_eval_string("passwd2"));
```

```
}
```

passwd is the parameter defined for external use (APM – EUM) and is encrypted. passwd2 is the parameter seen only within this script instance.

Click Sign In

	Google	
One	account. All of Google. Sign in to continue to Gmail	
	Email Password	
	Sign in Stay signed in Need help? Create an account	
	One Google Account for everything Google	
Google Privacy & Terms Help		English (United States)



This is defined as the End step for Transaction "Gmail_1_Login".

The JavaScript ID Method used is:

```
evalXPath("//input[@type=\"submit\" and @name=\"signIn\" and @value=\"Sign in\"]");
```

The End Event Step is set to automatic. So in this case, the End Event Step is **Step Synchronous network completed**. The step ends when all HTTP requests have completed excluding requests initiated by XMLHttpRequest.

Transaction – Gmail_2_Send_mail

Transaction Editor Webpage Dial	og	×
Transactions	Properties	
+ X		
Gmail_1_Login Gmail_2_Send_mail	General	
Gmail_3_Delete	Name:	Gmail_2_Send_mail Apply
Gmail_4_Logoff	Start Point	
	Step:	5. Action:Click on COMPOSE button
	Event:	Action started
	End Point	
	Step:	24. Action:Click on Send button
	Event:	After step ended
		Close

The name of this transaction is "Gmail_2_Send_mail".

This transaction contains all the steps necessary for sending an email to the logged in user with a unique subject field.

Click Compose

Google			~ Q	+Vugen 🏭 🛕 Share 🎴
Gmail -	· · C More ·			1–5 of 5 < > 🔯 -
СОМРОЅЕ	Primary	Social 1 new Google+ leam	Promotions +	1
Inbox (4) Starred	🗌 🕁 📄 me	gmail1382948531		Oct 28
Important	🗌 📩 📄 me	vugent@gmail.com		Oct 27
Sent Mail Drafts (1,317)	🗌 📩 📄 Vugen Jednostavan	gmail111		Oct 27
▶ Circles	🗆 📩 📄 me	Gmail1382767431		Oct 26
More +	🗌 📩 📄 me	Gmail 1		Oct 21
Φ	0 GB (0%) of 15 GB used Manage		©2013 Google - <u>Ierms & Privacy</u>	Lasf account activity: 1 minute ago Open in 1 other location: <u>Defains</u>
Name: COMF	E button K Highlight 12 Replace			

When you click **Compose**, a form appears for sending a new email. By running a script multiple times, we can confirm that this element is recognized using the Automatic ID method.

Related Objects (0)
 Transactions

Type LR.getParam('userName') in To Field

Google						+Vugen 🏭 🍂 Share
Gmail -	□ · C More ·					1–5 of 5 < > 🗘 -
COMPOSE	Primary	Google+ team	Promotions		+	
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Important Sent Mail	🗌 📩 📄 me	vugent@gmail.com				Oct 27
Drafts (1,317)	🗌 🚖 📄 Vugen Jednostavan	gmail111				Oct 27
▶ Circles More ◄	🗌 ☆ 📄 me	Gmail1382767431				Oct 26
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New Hangout				New Message To Subject		L 🖉 X Cc Bcc
0	0 GB (0%) of 15 GB used Manage		©2013 Google - <u>Ter</u>		ī 0 +	Ť V
	tParam("userName") it (true) Step Editor					

To make this script robust, we use parameters. Therefore, if the username or password is changed at a later time, you do not need to change the script, only the parameter's value. The username is in the form of an email address.

The ID method used in this example is JavaScript:

```
evalXPath("/html/body/div[14]/div/div/div/div[1]/div[3]/div[1]/div[1]/div/div/div/div[3]
/div/div/div[4]/table/tbody/tr/td[2]/form/div[1]/table/tbody/tr[1]/td
[2]/div/div/textarea");
```

But this is not a good example, so it is better to use Firebug.

BPM Monitoring Solutions - Best Practices Chapter 4: Cloud Email Provider – Gmail Transaction Flow

Argument	ents
 Object 	🖉 Highlight 🚯 Replace
Roles:	textbox, focusable, element
Name:	То
ID Metho	
JavaScri	pt: evalXPath("/html/body/div[14]/div/div/div[1]/div[3]
Dbjec	t Identification - JavaScript Editor Webpage Dialog 📃 🛁
d[2]	/form/div[1]/table/tbodv/tr[1]/td[2]/div/div/textarea")
d[2]	<pre>/form/div[1]/table/tbody/tr[1]/td[2]/div/div/textarea")</pre>
d(2)	<pre>/form/div[1]/table/tbody/tr[1]/td[2]/div/div/textarea"}</pre>
2	/form/div[1]/table/tbody/tr[1]/td[2]/div/div/textarea"
1	/form/div[1]/table/tbody/tr[1]/td[2]/div/div/textarea";
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1 2 3 2	/form/div[1]/table/tbody/tr[1]/td[2]/div/div/textarea"
1 2 3 2	/form/div[1]/table/tbody/tr[1]/td[2]/div/div/textarea"
1 U 2 0 3 0 2 0 4 0	/form/div[1]/table/tbody/tr[1]/td[2]/div/div/textarea";

Click Subject Field

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Important	🗌 🙀 📄 me	vugent@gmail.com			Oct 27
Sent Mail Drafts (1,317)	🗌 ☆ 📄 Vugen Jednostavan	gmail111			Oct 27
▶ Circles More ▼	🗌 🕁 📄 me	Gmail1382767431			Oct 26
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BPM Monitoring Solutions - Best Practices Chapter 4: Cloud Email Provider – Gmail Transaction Flow

	Step								
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•	Object		🙎 Highligi	it 😰 Replac	Ð				
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	Name:	subjectbox							
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4	[21/di								
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3	[3]/01	v/div/div[4]/table/	tbody/tr/	td[2],	form/	div[3]	/input")	;
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2	[3]/41	v/div/div[4]/table/	tbody/tr/	'td[2],	form/	div[3]	/input")) ;
2	[3]/41	v/div/div[4]/table/	tbody/tr/	'td[2],	form/	div[3]	/input")) 7
	[5]/41	v/div/div[4]/table/	tbody/tr/	'td[2],	form/	div[3]	/input")) 7

Click in the Subject field to select it. The ID method used is JavaScript:

evalXPath("/html/body/div[14]/div/div/div/div[1]/div[3]/div[1]/div[1]/div/div/div/div[3] /div/div/div[4]/table/tbody/tr/td[2]/form/div[3]/input");

But this is not a good example, therefore, it is better to use Firebug usage:

evalXPath("//input[@placeholder=\"Subject\" and @name=\"subjectbox\"]");

Evaluate JavaScript code LR.evalC('getRand');

Evaluate JavaScript code LR.evalC("getRand");	
▶ Step	
✓ Arguments	
Code: LR.evalC("getRand");	
Transactions	

This is a very important step. By calling this function, we create a Subject value.

The getRand() function is defined in C-function.c file:

```
void getRand(){
typedef long time_t;
time_t t;
lr_param_sprintf("randnum2","bpm%d",time(&t));
}
```

Type LR.getParam('randnum2'); in Subject Field

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	• Step										
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box	Object Transactions										
1											
	15 JavaScript Arguments	Editor Webpa	age Dialog								
	16										

18 10 20 21 22 22 22 0K Cancel Help

In this step, we acquire the value from the parameter:

LR.getParam("randnum2");

LR.getParam("randnum2");

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Sent Mail Drafts (1,318)	🗌 🙀 📄 Vugen Jednostavan	gmail111			Oct 27
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Find friends to chat with			N	ew Message	_ & ×
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Φ				Send <u>A</u> 0 +	1 ·
 Ψ					
Click on Send button					
▶ Step					
Arguments Object	🖉 Highlight 🛛 😰 Replace				
	usable,element				
Name: Send ID Method: JavaScript					
JavaScript: evalXPath("	"//*[text()=\"Send\"]");				
 Related Objects (0) 					
Transactions					
End Transaction:Gr	mail_2_Send_mail				

Click Send. The Send button is easy to recognize so there was no need for any additional corrections.

The ID Method is JavaScript:

evalXPath("//*[text()=\"Send\"]");

Transaction – Gmail_3_Delete

Transaction Editor Webpage Dial	log		×
Transactions	Properties	\$	
+ X			
Gmail_1_Login	General		
Gmail_2_Send_mail Gmail_3_Delete	Name:	Gmail_3_Delete	Apply
Gmail_4_Logoff	Start Point	t in the second s	
	Step:	26. Action: Click on Refresh button	~
	Event:	Action started	~
	End Point		
	Step:	31. Action:Click on button (6) button	~
	Event:	After step ended	~
			Close

The name of this transaction is "Gmail_3_Delete".

This transaction contains all the steps necessary for checking and deleting an email that was sent in the current interaction.

Click Refresh

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Gmail -	_ ▼ C More ▼	Your message ha	<mark>s been sent. <u>View message</u></mark>	1–5 of 5 < > 🌣 -
COMPOSE	Primary	Social 1 new Google+ team	Promotions +	×
Inbox (5) Starred	🗌 🏠 📄 me	gmail1382948531		Oct 28
Important	🗌 🛱 📄 me	vugent@gmail.com		Oct 27
Sent Mail Drafts (1,317)	🗌 🚖 📄 Vugen Jednostavan	gmail111		Oct 27
▶ Circles	🗌 🕁 📄 me	Gmail1382767431		Oct 26
More - Vugen -	🗌 🛣 📄 me	Gmail 1		Oct 21
New Hongout Find friends to chat with Image: Comparison of the state of the stateo	0 GB (0%) of 15 GB used Manage		62013 Google - <u>Terms & Privacy</u>	Last account activity: 1 minute ago <u>Detain</u>

 Step 	
 Argument 	5
 Object 	🙎 Highlight 🛛 🚯 Replac
Roles:	button,element
Name:	Refresh
ID Method:	Automatic (recommended)
Related Ob	iects (0)

If the email still has not arrived, repeat the previous step (Click Settings) and this step (Click Refresh).

Evaluate JavaScript code var Sub=LR.getParam ('randnum2')



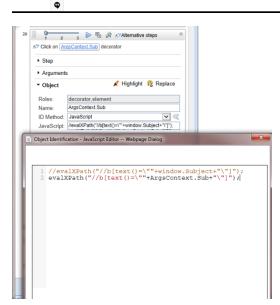
Create the Sub1 variable and get its value from the parameter randum2:

var Sub=LR.getParam("randnum2");

This variable is used to check (identify) and delete a specific account. The life span of this variable is within the page. When you change the page, you must re evaluate this JavaScript if you need a value from the *randum2* parameter.

Click ArgsContext.Sub Decorator

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Important	🗆 🛣 📄 me	gmail1382948531		Oct 28
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Φ				



To identify an object, the name must be set as ArgsContext.Sub.

The ID Method is JavaScript:

evalXPath("//span[text()=\""+ArgsContext.Sub+"\"]");

The specific email is found.

Click Button (6)

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Gmail -	← 0 Î ►· •	More 🔻	1 of 6	s < > _\$_~
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Step
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The **Delete** button (button(6)) is easy to recognize.

This step completes Gmail_3_Delete mail.

Transaction – Gmail_4_Logoff

Transaction Editor Webpage	e Dialog
Transactions	Properties
+ ×	
Gmail_1_Login	General
Gmail_2_Send_mail Gmail_3_Delete	Name: Gmail_4_Logoff Apply
Gmail_4_Logoff	Start Point
	Step: 35. Action:Click on LR.getParam("userName") link
	Event: Action started
	End Point
	Step: 37. Action:Click on Sign out button
	Event: After step ended
	Close

The name of this transaction is "Gmail_4_Logoff".

This transaction contains all the steps necessary for logging off.

Click LR.getParam('userName')

Google		The conversation has been moved to t	• Q	+Vugen 🏭 斗 Share
Gmail •	G More -			1–5 of 5 < >
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Circles	🗌 📩 📄 me	Gmail1382767431		Oct 26
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 Step 	
 Arguments 	5
 Object 	🙎 Highlight 🛛 💦 Replace
Roles:	link,focusable,element
Name:	LR.getParam("userName")
ID Method:	Automatic (recommended)
Related Ob	jects (0)
 Transaction 	ns

We used the same parameter as we did for the Login:

LR.getParam("userName")

Click Sign Out

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Gmail •	□ · C More ·	The conversation has been r	noved to the Trash. <u>Learn more</u> <u>Undo</u>	
COMPOSE Inbox (4)	Primary	Google+ team	Promotions +	Account – Privacy 🖄
Starred	□ ☆ → me	gmail1382948531 vugent@gmail.com		Add account Sign out
Sent Mail	□ ☆ ■ Vugen Jednostavan	gmail111		Oct 27
Drafts (1,317) Circles	🗌 🛱 📄 me	Gmail1382767431		Oct 26
More 🗸	🗌 🏂 📄 me	Gmail 1		Oct 21
Find friends to chat with	0 GB (0%) of 15 GB used Manage		@2013 Google - <u>Terms & Privacy</u>	Last account activity: 2 minutes ago <u>Detaila</u>

BPM Monitoring Solutions - Best Practices Chapter 4: Cloud Email Provider – Gmail Transaction Flow

37	Click on Step	s ▶ ₨ &	*
	 Arguments 	3	
	 Object 	🙎 Highlight 🛛 😰 Replace	
	Roles:	button,link,focusable,element	11
	Name:	Sign out	1
	ID Method:	Automatic (recommended)	
	Related Ob	jects (0)	
	 Transactio 	ns	
	End Tr	ansaction:Gmail_4_Logoff	
8	Close acti	ve tab	*

By clicking **Sign out**, we end this transaction and script.

All we need to do now is close the active tab.

Chapter 5: Cloud CRM Provider -Salesforce Transaction Flow

This case study uses Salesforce cloud service. The case study uses one flow/script with the following transactions:

- 1. Login Open a login page, enter your credentials, and confirm that the first page loads.
- 2. Create item (account) Open a new account with a unique account name.
- 3. Delete item (account) Check for this account, select it and delete it.
- 4. Logoff Log off from the web application.

The main purpose of running this script is to confirm that the application's processes run successfully. If successful, the transactions complete without any errors.

You can view a sample Salesforce script by downloading the following file https://softwaresupport.hpe.com/group/softwaresupport/search-result/-/facetsearch/document/KM00658289.

General Flow

Salesforce is a cloud CRM (Customer Relationship Management).

A sequence of transactions creates the business process flow. A transaction is a unit that is measurable by availability and performance. Therefore, we group activities that perform a specific transaction.

To describe and validate these transactions, logically group the transactions into the following steps:

- 1. Login.
 - a. Navigate to https://login.salesforce.com.
 - b. Enter your credentials and confirm that the first page (Inbox) loads.
- 2. Create a new account.
 - a. Click New Account.
 - b. Enter a unique account name.
 - c. Save the account.
- 3. Delete the account.
 - a. Check that the account was created.
 - b. Select the account.
 - c. Delete the account.
- 4. Logoff

Log off from the web application.

The following sections describe how to create these transactions.

A good approach, before using this tool, is to know what we want to achieve. Create a blueprint as follows:

- 1. Run the Salesforce web application in Internet Explorer 910 or later. Perform the steps of the flow and create annotations.
- 2. Determine the boundaries that form the transactions.
- 3. Select which values to assign to the parameters.
- 4. Select what values to protect and encrypt.

Record all the information you collect since it will come in handy later.

We recommend you start using the script. Refer to sections in this document for assistance.

Transaction – SalesForce_1_Login

Transactions	Properties	
X SalesForce_1_Login SalesForce_2_Create account SalesForce_3_Delete account SalesForce_4_Logott	General Name: SalesForce_1_Login Start Point Step: [1. Action:Navigate to "https://login.salesforce.com/" Event: Step started End Point Step: [2. Action:Log in to Salesforce Event: Action completed	

Define the name of the transaction. In this example, we call the transaction "SalesForce_1_Login". Naming conventions should provide a clear view of the application, the transaction order, and create an overview of the business processes covered by this transaction.

Define the steps and events for the starting and ending points of the transaction. The most convenient event for the start step is **Action started**. The most convenient event for the end step is **After step ended**.

This transaction contains all the steps necessary for logging into the Salesforce application.

Navigate to 'https://login.salesforce.com/'

salesforce
User Name
Log in to Salesforce
□ Remember User Name
Forgot your password? Sign up for free.
Copyright & 2000-2013 salkstone.com, inc. All rights reserved
Start Transaction:SalesForce_1_Login



In the Navigation step, specify the URL.

While recording, VuGen automatically selects the appropriate End Event, in this case **Document downloaded**. The step ends when the process of loading a document completes. In most cases, you can freely select the default values.

If the pages load slowly, you can use a Wait step to make sure the page loads. For information on Wait steps, see "Meaning of Wait Step" on page 83.

Type LR.getParam('userName') in User Name Textbox

salesforce*
Image: Comparison Concord Image: The Summa Sector Secto
2 Log in to Salesforce U 2 2 3 8 8 2 9
Image: Type LR gelParam("userName") in (UserName Iextbox > Step > Arguments • Object Image: Highlight I Replace Roles: textbox.focusable.element Name: UserName UB Method: JavaScript JavaScript Image: Type Ltdentification - JavaScript Editor Webpage Dialog
<pre>valXPath("//input[@type=\"email\" and @name=\"username\"]");</pre>
7 9 9 11 12 12 13 14 15 15 15 15 15 15 15 15 15 15

This step is actually a sub-step of Log in to SalesForce.

You can either select the Automatic or JavaScript ID method.

evalXPath("//input[@type=\"email\" and @name=\"username\"]");

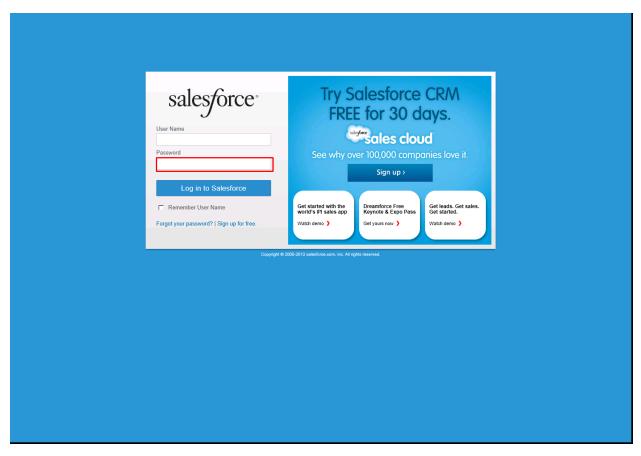
There are cases when you will change the ID Method, as we will see later.

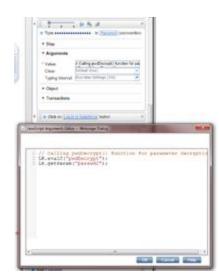
Type your username in the User Name textbox.

Since we are using parameters, you can enter the *LR.getParam("userName");* command in the **Value** field and the result is the defined username.



Type ********************** in Password Textbox





Type a password in the **Password** textbox. To display an encrypted password (so no one can see it), type the following:

// Calling pwdDecrypt() function for parameter decryption

LR.evalC("pwdDecrypt");

// This is a parameter with a decrypted value

LR.getParam("passwd2");

The *pwdDecrypt()* function is defined in C-function.c file:

void pwdDecrypt(){

lr_save_string(lr_decrypt(lr_eval_string("{passwd}")),"passwd2");

/*If you need to get some value from external parameter file*/

lr_output_message(lr_eval_string("passwd2"));

}

passwd is the parameter defined for external use (APM – EUM) and is encrypted. passwd2 is the parameter seen only within this script instance.

Click Log in to Salesforce

	1 6	True Salasforce CDM	
	salesforce	Try Salesforce CRM	
		FREE for 30 days.	
	User Name	sales cloud	
	Password	See why over 100,000 companies love it.	
		Sign up >	
	Log in to Salesforce		
	C Remember User Name	Get started with the Dreamforce Free Keynote & Expo Pass Get leads. Get sales. Get started.	
	Forgot your password? Sign up for free.	Watch demo) Get yours now) Watch demo)	
	oggingin o		
	5 1 2 3 D B 🕅 🛠 🖈		
Toolbox	Click on Log in to Salesforce button		
oolbo	Step Arguments		
X	 ✓ Object ✓ Highlight [®] Replace 		
	Roles: button,focusable,element Name: Log in to Salesforce		
	ID Method: JavaScript 🔍 🥰 JavaScript: evalXPath("//button(@id="Login("));		
	▶ Related Objects (0)		

This is defined as the End step for transaction "SalesForce_1_Login".

The JavaScript ID Method used is:

End Transaction:SalesForce_1_Login

```
evalXPath("//button[@id=\"Login\"]");
```

The End Event Step is set to automatic, and in this case is **Step Synchronous network completed**. The step ends when all HTTP requests have completed excluding requests initiated by XMLHttpRequest.

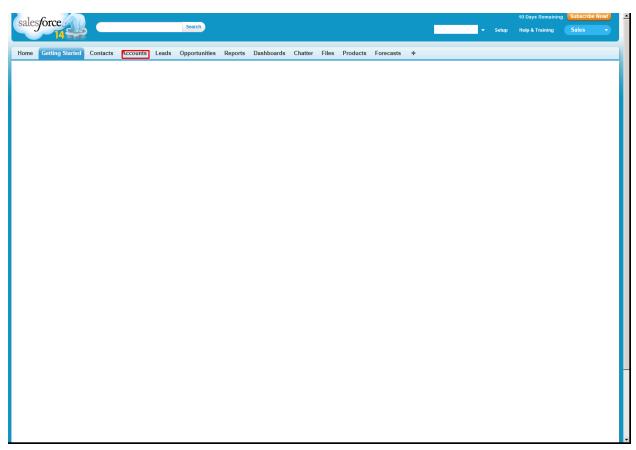
Transaction – SalesForce_2_Create account

Transaction Editor Webpage Dial	log
Transactions	Properties
+ X	
SalesForce_1_Login	General
SalesForce_2_Create account SalesForce_3_Delete account	Name: SalesForce_2_Create account Apply
SalesForce_4_Logoff	Start Point
	Step: 7. Action:Click on Accounts link
	Event: Action started
	End Point
	Step: 12. Action:Save
	Event: After step ended
	Close

The name of this transaction is "SalesFoerce_2_Create account".

This transaction contains all the steps necessary for creating an account.

Click Accounts



Step		
Argument	8	
 Object 	🖋 Highlight 🛭 🔞 Replace	
Roles:	link,focusable,element	
Name:	Accounts	
ID Method:	JavaScript	
	evalXPath("//a(text()=\"Accounts\"]");	

When you click Account, a form appears for listing accounts. By running the script multiple times, we can confirm that this element is recognized with the Automatic ID method.

You can also use the JavaScript ID method:

```
evalXPath("//a[text()=\"Accounts\"]");
```

Click New

enlectorce				10 Days Remaining Subscribe Now!
salesforce	Search		▼ Setup	Help & Training Sales 🔹
14335				
Home Getting Started Contacts Ac	counts Leads Opportunities Reports Dashbo	oards Chatter Files Products Forecasts +		
Accounts				Tell me more! Help for this Page
Home				
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Active Accounts		Import My Accounts & Contacts		
Accounts with last activity > 30 days		Import My Organization's Accounts & Contacts		
Account Owners		Mass Delete Accounts		
Contact Role Report		Transfer Accounts		
Account History Report		Merge Accounts		
Partner Accounts		Sales Methodologies		
Go to Reports »				
	Copyright © 2000-2013 salesforce.com, inc. All r	ights reserved. Privacy Statement Security Statement Terms of Use	508 Compliance	
• <u> </u>	*			
Click on New button				
► Step				
 Arguments 				
▼ Object	.e			
Roles: button,focusable,element				
Name: New ID Method: Autometic (recommended)				

Related Objects (0)

Transactions

When you click **New**, a form appears for creating a new account. By running the script multiple times we can confirm that this element is recognized with the Automatic ID method.

You can also use the JavaScript ID method:

```
evalXPath("//input[@type=\"button\" and @name=\"new\" and @value=\" New \"]");
```

Click Account Name Textbox

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2 🗐 🖲 Type LR.evalC/getRand') varrandnum2'); Sub; in 🔍	(<u>*Account Name</u>) textbox	* =								

Click Account Name textbox.

To make this script robust, we use parameters. Therefore, if the username or password is changed at a later time, you do not need to change the script, only the parameter's value. The username is in the form of an email address.

Type LR.evalC('getRand'); var...randnum2'); Sub; in Account Name Textbox

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By calling this function, we create a Subject value. The getRand() function is defined in C-function.c file: void getRand(){ typedef long time_t; BPM Monitoring Solutions - Best Practices Chapter 5: Cloud CRM Provider – Salesforce Transaction Flow

```
time_t t;
```

lr_param_sprintf("randnum2","sf%d",time(&t));

In this step, we acquire the value from the parameter:

LR.getParam("randnum2");

Click Save

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Click Save. The Save button is easily recognized so there is no need for corrections.

Transaction – SalesForce_3_Delete account

Transaction Editor Webpage Dial	g		×
Transactions	Properties		
+ X			
SalesForce_1_Login SalesForce_2_Create account	General		
SalesForce_3_Delete account	Name: Sale	esForce_3_Delete account	Apply
SalesForce_4_Logoff	Start Point		
	Step: 15.	Action:Click on Accounts link	~
	Event: Act	ion started	~
	End Point		
	Step: 23.	Action:Press "OK" in confirmation dialog	~
	Event: After	er step ended	~
			Close

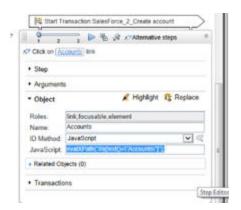
The name of this transaction is "SalesForce_3_Delete account".

This transaction contains all the steps necessary for checking and deleting an account that was created in the current interaction.

Click Accounts

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▼ Account Summary				

BPM Monitoring Solutions - Best Practices Chapter 5: Cloud CRM Provider – Salesforce Transaction Flow



Click **Account** to open a form that lists the accounts.

By running the script multiple times, we can confirm that this element is recognized with the Automatic ID method.

You can also use the JavaScript ID Method:

```
evalXPath("//a[text()=\"Accounts\"]");
```

Evaluate JavaScript code var Sub1=LR.getParam ('randnum2')



Create the Sub1 variable and get its value from the parameter randum2:

```
var Sub1=LR.getParam("randnum2");
```

This variable is used to check (identify) and delete specific email sent within this interaction. The life span of this variable is within the page. When you change the page you must evaluate this Java script again if you need a value from the *randum2* parameter.

Click ArgsContext.Sub1

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	Click on [<u>ArgsContext Sub1</u>] link Step Arguments Object			

To identify an object, the name must be configured as *ArgsContext.Sub1*.

The ID Method is JavaScript:

evalXPath("//a[text()=\""+ArgsContext.Sub1+"\"]");

The specific account is found.

Click Delete

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Click on Delete button Step															
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The **Delete** button is easy to recognize.

🖋 Highlight 🛛 🚯 Replace

Object

Related Objects (0)
 Transactions

 Roles:
 button,focusable,element

 Name:
 Delete

 ID Method:
 Automatic (recommended)

This step completes SalesForce_3_delete account.

⊻ ≪

Transaction – SalesForce_4_Logoff

Transaction Editor Webpage Dial	og
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SalesForce_1_Login SalesForce_2_Create account	General
SalesForce_3_Delete account	Name: SalesForce_4_Logoff Apply
SalesForce_4_Logoff	Start Point
	Step: 31. Action:Click on User menu
	Event: Action started
	End Point
	Step: 33. Action:Click on Logout link
	Event: After step ended
	Close

The name of this transaction is "SalesForce_4_Logoff".

This transaction contains all the steps necessary for logging off.

Click User Menu

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When you click the arrow next to the user name, a dropdown menu appears.

The ID Method is JavaScript:

```
evalXPath("//div[@id=\"contentWrapper\"]/div[1]/table/tbody/tr/td[3]/div/div
[2]/div/div/div[1]/div[1]");
```

You might want to use Firebug here.

Click Logout

Accounts Home Iew: [All Accounts]	_	eads Opportunities	s Reports	Dashboards	Chatter File	Products	Forecasts	+	My Profile My Settings Developer Console Logout	Setup	10 Days Remaining Subscribe No Help & Training Sales Tell me morel Help for this Pag
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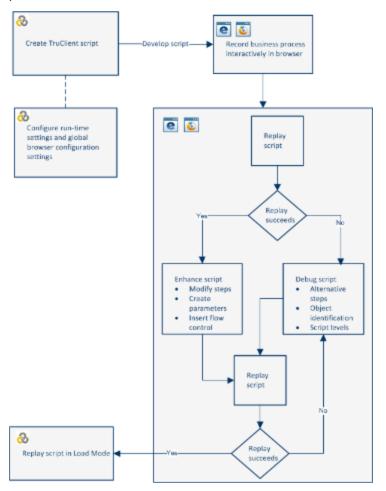
Click Logout to end this transaction and script.

End Transaction:SalesForce_4_Logoff

The optional JavaScript ID Method is: evalXPath("//a[text()=\"Logout\"]");

Appendix A: About TruClient for IE Protocol

The Ajax TruClient protocol interactively records scripts as you navigate through your business process. This enables TruClient to easily record and replay dynamic, complex web based applications and create user friendly scripts. Scripts are created in real-time and steps can be seen in the TruClient sidebar as they are performed.



Based on LoadRunner's innovative Ajax TruClient technology, TruClient Mobile Web enables you to test web applications designed for mobile devices. With this protocol you can:

- Simulate various mobile browsers.
- Develop scripts that are recorded on the user level making them clear and easily maintained.



Appendix B: Time to Value

There are a few concepts that can speed things up when creating Office 365 scripts.

Use Firebug Lite

Firebug Lite is a third-party utility that provides many valuable development tools. You can edit, debug, and monitor CSS, HTML, and JavaScript live in any web page. You can access this utility by selecting **Advanced** > **FireBug Lite** or by pressing **F12** while in TruClient's IE browser.

If other default ID methods fail during the replay, you can use Inspect mode in Firebug Lite to select the evalXPath() that will choose the correct object based on the HTML. This is useful when it comes to tricky objects.

Standard Steps

When you look at the script, you will notice that some steps repeat often. We can group these steps as follows:

- Navigate (navigate to a URL) below
- "Click Object (Link, Textbox, Button, or Decorator)" on the next page
- "Type in Text Object" on the next page
- "Evaluate JavaScript" on page 82

Navigate

Keep in mind when navigating to a defined URL, the End Event value defines when this step finishes. An End Event can be one of the following:

- Action Completed The step ends when its action is completed. An example of an action is clicking a button.
- DOM load The step ends when the process of loading a document completes.
- DOM content loaded The step ends when the HTML parsing of the document completes.
- Step network completed The step ends when all HTTP requests have completed including requests initiated by XMLHttpRequest.
- Step synchronous network completed The step ends when all HTTP requests have completed, excluding requests initiated by XMLHttpRequest.
- **Dialog opened** The step ends when a dialog box is opened.

We recommend that you set the End Event to Automatic, as seen in this script.

BPM Monitoring Solutions - Best Practices Appendix B: Time to Value

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Navigate to "http://www.second.com/second-se second-sec	s://portal.microsoftonline.com"	
▼ Step		
Action:	Navigate	\checkmark
Step Timeout:	Run-time Settings (180)	*
Minimum Time:	Default (0)	-
End Event:	Automatic:Document Loaded	~
 Arguments 		
Transactions		

Click Object (Link, Textbox, Button, or Decorator)

Two things are important for the Click on Object step:

- Arguments
- · Object settings

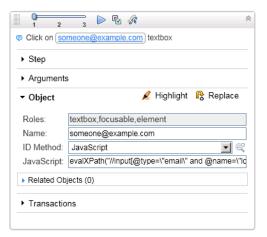
The X and Y coordinates are defined relative to the object in the Arguments settings. If the coordinates are left empty, the click is executed in the middle of the object.

If the object is not recognized with the ID Method set to automatic, you will need to use the JavaScript ID Method. It relies on finding the required element or string in the HTML code. When you select the JavaScript ID Method, you can get:

- Straight forward syntax: evalXPath("//input[@type=\"email\" and @name=\"login\"]");
- Suspicious syntax:

```
evalXPath("/html/body/div[5]/div/div[2]/div[3]/div/div[1]/div[6]/div/div/div[3]/div
[2]/div[1]/div[7]/div/div/input");
```

When confronted with suspicious syntax, use Firebug Lite as described in Use Firebug Lite on page 90.



Type in Text Object

Argument values can be plain text or a parameter. Examples are:

- Plain text "this is plain text typed in a text box"
- Getting a value from a parameter LR.getParam("passwd2");

BPM Monitoring Solutions - Best Practices Appendix B: Time to Value

 Step 		
 Arguments 		
* Value:	LR.getParam("passwd2");	
Clear:	Default (true)	Step Edito
Typing Interval:	Run-time Settings (350)	≁
 Object 		

Evaluate JavaScript

By evaluating JavaScript, you can call a function, for example:

LR.evalC("getRand");

Or define a variable that will be used later:

```
var Sub1=LR.getParam("randnum2");
```

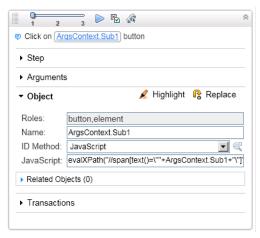
1	2 3
🛛 Evalua	ate JavaScript code var Sub1=LR.getParam("randnum2");
 Step 	
▼ Argu	ments
Code:	var Sub1=LR.getParam("randnum2");
▶ Trans	sactions

Variables and ID Methods - How to Combine

To use a defined variable to find a specific and unique object:

- 1. Record the step by clicking that object.
- 2. To make a script more robust, make those changes:
 - Change Object name to: ArgsContext.Sub1

Change JavaScript ID Method to: evalXPath("//span[text()=\""+ArgsContext.Sub1+"\"]");



Meaning of Wait Step

A Wait step is useful when you want to wait for a very heavy page to load and you do not want to timeout while waiting. Just put a Wait step after this load step and enter the number of seconds to wait.

Another example of when to use a Wait step is when a dialog box is in the script. This dialog box can be any of the following:

- Alert
- Authentication
- Confirmation
- Prompt
- Prompt Password

Put a Wait step between the step that caused the dialog box to open and the dialog box itself. In this way, you give the dialog box step time to complete.

1 2 3 🕨 🔂 🕼	*
Click on Delete button	
▶ Step	
► Arguments	
► Object	
▶ Transactions	
Wait 1 seconds	*
	*
Press "OK" in confirmation dialog	
▶ Step	
► Arguments	
 Transactions 	

Appendix C: TruClient Best Practice

For more about TruClient best practice, see: http://tchelp.saas.hpe.com/en/Latest/Content/TruClient/_tc_c_ truclient_overview.htm

Send Documentation Feedback

If you have comments about this document, you can contact the documentation team by email. If an email client is configured on this system, click the link above and an email window opens with the following information in the subject line:

Feedback on BPM Monitoring Solutions - Best Practices (Application Performance Management 9.40)

Just add your feedback to the email and click send.

If no email client is available, copy the information above to a new message in a web mail client, and send your feedback to docteam@hpe.com.

We appreciate your feedback!