Shed Lights into Your Web Applications

Naser Ezzati

Polytechnique Montreal

Tracing Summit 2017 Prague, Czech

Motivations

Challenges: root cause analysis of web applications performance problems

- Several components and layers are involved
 - Web server problem?
 - Code problem?
 - Bad database design? No table indexes?
 - System resource limitation?
- Various debugging tools
- Unified way to analyse them
 - Trace-based approach
 - LAMP stack
 - MEAN stack

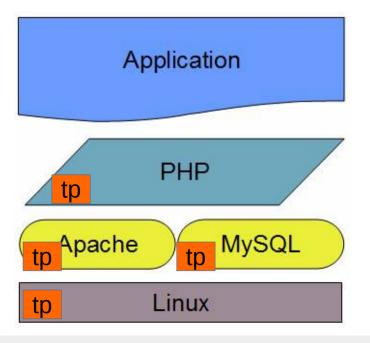
LAMP:



Userspace tracing

You can trace your application

- tracepoints
 - LTTng-UST
 - FTrace



void function(void)

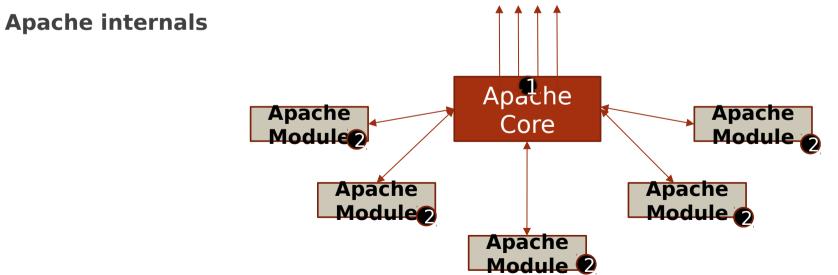
}

```
int i = 0;
long vals[3] = { 0x42, 0xCC, 0xC001CAFE };
float flt = M_PI;
```

1- Apache

Apache LTTng module:

- Hooks LTTng probes into the Apache web server.
- These probes extract runtime information about the web requests and the apache itself
 - Web requests



Web Requests Tracing

Timestamp	Channel	CPU	Event type	Contents
	<srch></srch>	<srch></srch>	<srch></srch>	<srch></srch>
20:49:53.786 561 345	ss_3	3	ust_apache:close_connection	connection_id=16, contextvtid=4236
20:49:53.786 584 375	ss_3	3	ust_apache:suspend_connection	connection_id=16, contextvtid=4236
20:49:53.786 592 518	ss_6	6	ust_apache:accept_connection	connection_id=20, client_ip=132.207.72.9, client_hostname=(null), local_ip=132.207.72.37, local_hostname=(nu
20:49:53.786 596 784	ss_3	3	ust_apache:accept_connection	connection_id=16, client_ip=132.207.72.9, client_hostname=(null), local_ip=132.207.72.37, local_hostname=(nu
20:49:53.786 630 594	ss_3	3	ust_apache:request_entry	connection_id=16, client_ip=132.207.72.9, method=GET, uri=/drupal, protocol=HTTP/1.0, request_info= request
20:49:53.786 640 316	ss_6	6	ust_apache:request_entry	connection_id=20, client_ip=132.207.72.9, method=GET, uri=/drupal, protocol=HTTP/1.0, request_info= request
20:49:53.786 724 371	ss_3	3	ust_apache:request_exit	connection_id=16, status=301, contextvtid=4236
20:49:53.786 749 922	ss_6	6	ust_apache:request_exit	connection_id=20, status=301, contextvtid=4244
20:49:53.786 751 414	ss_3	3	ust_apache:close_connection	connection_id=16, contextvtid=4236
20:49:53.786 763 635	ss_3	3	ust_apache:suspend_connection	connection_id=16, contextvtid=4236
20:49:53.786 777 199	ss_3	3	ust_apache:accept_connection	connection_id=16, client_ip=132.207.72.9, client_hostname=(null), local_ip=132.207.72.37, local_hostname=(nu
20:49:53.786 781 806	ss_6	6	ust_apache:close_connection	connection_id=20, contextvtid=4244
20:49:53.786 798 980	ss_6	6	ust_apache:suspend_connection	connection_id=20, contextvtid=4244
20:49:53.786 809 775	ss_3	3	ust_apache:request_entry	connection_id=16, client_ip=132.207.72.9, method=GET, uri=/drupal, protocol=HTTP/1.0, request_info= request
20:49:53.786 907 271	ss_3	3	ust_apache:request_exit	connection_id=16, status=301, contextvtid=4236
20:49:53.786 933 238	ss_3	3	ust_apache:close_connection	connection_id=16, contextvtid=4236
20:49:53.786 947 884	ss_3	3	ust_apache:suspend_connection	connection_id=16, contextvtid=4236
20:49:53.789 370 776	ss_3	3	ust_apache:accept_connection	connection_id=4, client_ip=132.207.72.9, client_hostname=(null), local_ip=132.207.72.37, local_hostname=(nul
20:49:53.789 408 718	ss_3	3	ust_apache:request_entry	connection_id=4, client_ip=132.207.72.9, method=GET, uri=/drupal, protocol=HTTP/1.0, request_info= request
20:49:53.789 502 508	ss_3	3	ust_apache:request_exit	connection_id=4, status=301, contextvtid=4218
20:49:53.789 528 073	ss_3	3	ust_apache:close_connection	connection_id=4, contextvtid=4218

Properties 💷 Bookmark 🗄 State Syst 🖾 Critical Flo 🤜 Progress 🚍 LAMP call 🗮 Mysql quer 🍐 Flame Gra 🚍 LAMP dep 🕱 XML Time 🗮 Apache m 🗮 LAMP dep 🛱 🗂 Analysis R 🚍 lamptop 🧧

			Ø	🗱 🖓 🛔 👘	🖞 📭 🤿 岸 🌾 🏷	- 🗘 🕂 🔍 🔍 🖻
Inction 🔺	Depl Entry time	20:49:31.940	20:49:31.950	20:49:31.960	20:49:31.970	20:49:31.980
10000connection3/ust/uid/	4					
a 4214						
4215						
b 4216						
				1		
a 4217				-		
					1	
a 4218			_			
B 1010						
a 4219						

Apache Modules Tracing

Timestamp	Channel	CPU	Event type	Contents
<srch></srch>	<srch></srch>	<srch></srch>	ust_apache:apache_module	<srch></srch>
				path=/usr/local/apache2/htdocs/drupal/index.php, uri=/drupal/index.php, m
11:12:07.494 278 193	channel0_3	3	ust_apache:apache_module_complete	name=handler, src=mod_php7.c, result=0
11:12:07.494 278 607	channel0_3	3	ust_apache:apache_module_exit	name=handler, result=0
11:12:07.494 285 929	channel0_3	3	ust_apache:apache_module_complete	name=process_connection, src=http_core.c, result=0
11:12:07.494 286 217	channel0_3	3	ust_apache:apache_module_exit	name=process_connection, result=0
11:12:07.494 287 452	channel0_3	3	ust_apache:apache_module_entry	name=protocol_get
11:12:07.494 287 781	channel0_3	3	ust_apache:apache_module_exit	name=protocol_get, result=0
11:12:07.494 291 250	channel0_3	3	ust_apache:apache_module_entry	name=protocol_get
11:12:07.494 291 447	channel0_3	3	ust_apache:apache_module_exit	name=protocol_get, result=0
11:12:07.494 291 727	channel0_3	3	ust_apache:apache_module_entry	name=log_transaction
11:12:07.494 292 316	channel0_3	3	ust_apache:request_exit	id=0, status=200
11:12:07.494 292 703	channel0_3	3	ust_apache:apache_module_invoke	name=log_transaction, src=mod_log_config.c
11:12:07.494 312 568	channel0_3	3	ust_apache:apache_module_complete	name=log_transaction, src=mod_log_config.c, result=0
11:12:07.494 312 929	channel0_3	3	ust_apache:apache_module_exit	name=log_transaction, result=0
11:12:07.494 320 420	channel0_3	3	ust_apache:apache_module_entry	name=suspend_connection
11:12:07.494 320 695	channel0_3	3	ust_apache:apache_module_exit	name=suspend_connection, result=0
11:12:07.496 537 029	channel0_3	3	ust_apache:apache_module_entry	name=resume_connection
11:12:07.496 537 342	channel0_3	3	ust_apache:apache_module_exit	name=resume_connection, result=0
11:12:07.496 537 627	channel0_3	3	ust_apache:apache_module_entry	name=process_connection
11:12:07.496 538 076	channel0_3	3	ust_apache:apache_module_invoke	name=process_connection, src=mod_reqtimeout.c
11:12:07.496 538 598	channel0_3	3	<mark>ust_apache:apache_module</mark> _complete	name=process_connection, src=mod_reqtimeout.c, result=-1
11:12:07.496 538 849	channel0_3	3	ust_apache:apache_module_invoke	name=process_connection, src=http_core.c
11:12:07.496 539 461	channel0_3	3	ust_apache:apache_module_entry	name=protocol_get
11:12:07.496 539 721	channel0_3	3	<mark>ust_apache:apache_module</mark> _exit	name=protocol_get, result=0
11:12:07.496 541 165	channel0_3	3	ust_apache:apache_module_entry	name=create_request
11:12:07.496 541 497	channel0_3	3	ust_apache:apache_module_invoke	name=create_request, src=core.c
11:12:07.496 541 942	channel0_3	3	ust_apache:apache_module_complete	name=create_request, src=core.c, result=0

			process_co	nection		
			http_c	ore.c		
post_r	map_to_storag	je i je	fixups	in	handler	
	core.c		mod_dir.c	╉╴┓╂┼	mod_php7.c	
	diro		map_to_storage fi	ma fi		
	coc		core.c	C		

2- PHP

- LTTng probes in PHP
 - Provide detailed information about the PHP requests
- Monitor the entire PHP script execution:
 - 13 tracepoints
 - Start/close a request
 - Function calls
 - Line executions
 - db connections
 - errors/exceptions
 - New PHP function: trace_print
 - arguments
 - request info, function name, file name, class name, line number, etc.
- Trace Compass views:
 - CallStack, Flame Graph, Request lists/response time distribution

Tracepoints

Event	Description
request_entry	Fires when a request starts.
request_exit	Fires when a request exits.
compile_file_entry	Fires when a file compilation starts.
compile_file_exit	Fires when a file compilation ends.
function_entry	Fires when the PHP engine calls a function/method.
function_exit	Fires when the PHP engine returns from a function/method.
execute_entry	Fires when a line code is to be executed.
execute_exit	Fires after execution of a line code.
php_error_entry	Fires just before logging a PHP error
php_error_exit	Fires just after logging a PHP error
php_exception_thrown_entry	Fires just before logging a thrown PHP exception
php_exception_thrown_exit	Fires just after logging a thrown PHP exception
trace_print	A PHP function that you can call from your script to output a string in the trace

LTTng PHP exetnsion

Installation

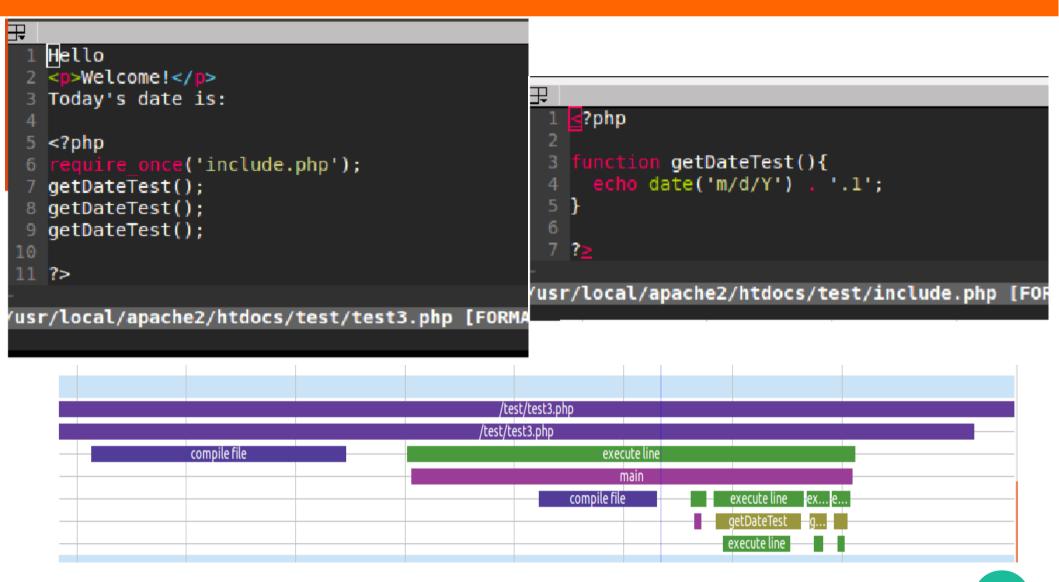
You can build and install the LTTng extension from source which is straightforward:

```
git clone https://github.com/naser/LTTng-php-tracing-module.git
cd LTTng-php-tracing-module
phpize
```

/* Before configuration, make sure you have LTTng 2.X installed in your machine. For installation manual

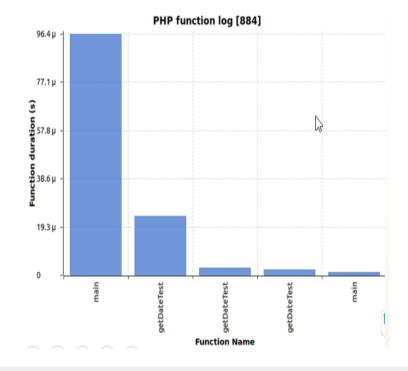
./configure make sudo make install

Example



Example (cntd)

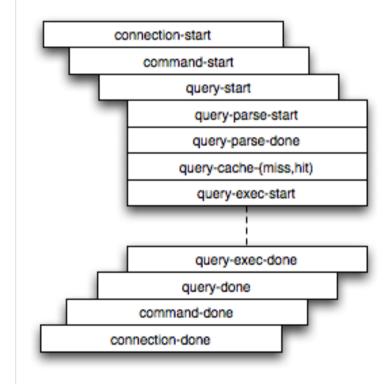
	0.000 000 s	0.000 020 s	0.000 040 s	0.000 060 s	0.000 080 s	т	0.000 100 s	0.000 120 s	0.000 140 s	0.000 160 s	0.000 180 s
34						_					
4											
84											
0						/test/l	test3.php				
1						/test/l	test3.php				
2		compile file				m	ain				
2				getDateTest		compil	o filo				



3- MySQL/MariaDB

LTTng probes in MySQL/MariaDB

- Provide information about query executions
- 60 tracepoints in 200 different locations
 - We hook to the existing probes.
- Monitor the full query execution process
 - DB connections
 - Query execution
 - Query type (select, update, insert, etc.)
 - Query parsing
 - Row-level operations in storage engines
 - Table R/W locks
 - File sorts
 - Cache miss, hit
 - Network I/O
 - More information in the arguments
 - Connection ID, DB name, user, host, etc



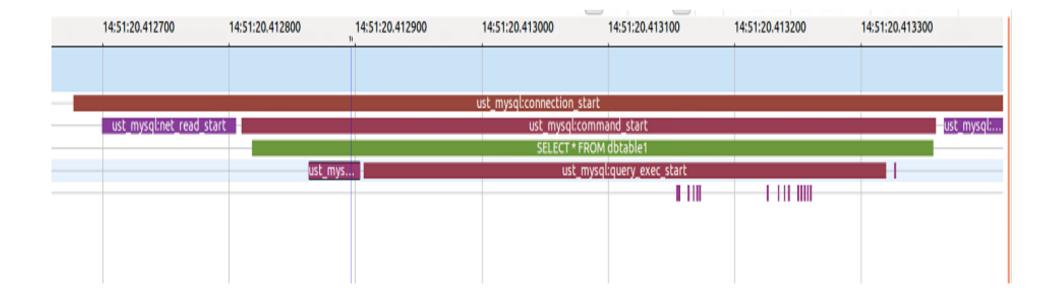
Installtion

./configure --enable-Ittng cmake . make sudo make install

home/naserez \$> lttng list -u | grep "mysgl:" ust mysql:net write done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) enet write start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) inet read done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) net read miss (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) ust mysql:net_read_hit (loglevel: TRACE_DEBUG_LINE (13)) (type: tracepoint) ust mysql:net_read_start (loglevel: TRACE_DEBUG_LINE (13)) (type: tracepoint) imulti delete done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) :multi delete start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) ust mysql:delete_done (loglevel: TRACE_DEBUG_LINE (13)) (type: tracepoint) ust mysql:delete_start (loglevel: TRACE_DEBUG_LINE (13)) (type: tracepoint) :multi update done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) :multi update start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) ust mysql:update_done (loglevel: TRACE_DEBUG_LINE (13)) (type: tracepoint) update start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) insert select done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) insert select start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) ust_mysql:insert_done (loglevel: TRACE_DEBUG_LINE (13)) (type: tracepoint)
ust_mysql:insert_start (loglevel: TRACE_DEBUG_LINE (13)) (type: tracepoint) select done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) select start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) ust mysql:filesort_done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) ust mysql:filesort_start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) filesort done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) shandler unlock done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) L:handler unlock start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) ust mysql:handler_wrlock_dome_(loglevel: TRACE_DEBUG_LINE_(13)) (type: tracepoint) ust mysql:handler_wrlock_start (loglevel: TRACE_DEBUG_LINE_(13)) (type: tracepoint) L:handler wrlock done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) handler rdlock done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) al:handler rdlock start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) ust_mysql:index_read_row_done (loglevel: TRACE_DEBUG_LINE (13)) (type: tracepoint)
ust_mysql:index_read_row_start (loglevel: TRACE_DEBUG_LINE (13)) (type: tracepoint) read row done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) :read row start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) ust mysql:delete row done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) ust mysql:delete row start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) :delete row done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) supdate row done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) update row start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) ust mysql:insert row done (loglevel: NACE DEBUG LINE (13)) (type: tracepoint) ust mysql:insert row start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) query exec start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) :query cache miss (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) :query cache hit (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) ust m query parse done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) query parse start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) :query done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) ust mysq query start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) :command done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) :command start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) connection done (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint) connection start (loglevel: TRACE DEBUG LINE (13)) (type: tracepoint)



Select * from dbtable1;





select * from pfwp_statistics_visitor where id = 273;
(no_cache) T: 407,792 ns

set global query_cache_size=2 * 1024 * 1024;

select * from pfwp_statistics_visitor where id = 273; (cache_miss) T: 408,858 ns

select * from pfwp_statistics_visitor where id = 273; (cache_hit) T: 42,708 ns

≣ dbcachetest2/ust/uid/1000/64-bit 🛙									- 8
Timestamp C	hannel	CPU E	Event type		Contents				
A <srch> <</srch>	srch>	<srch> <</srch>	<srch></srch>		<srch></srch>				
			ust_mysql:command_done		result=0, thread	_id=17787, contextvl	id=31086		
					contextvtid=3				
23:17:42.575 308 310 ss	s_0		ust_mysql:net_read_done			, contextvtid=31086			
23:17:42.575 315 827 ss	s_0		st_mysql:command_start		thread_id=1778	7, command=3, priv_us	er=root, host_or_ip=	localhost, contextvtid=3108	5
23:17:42.575 324 029 ss	s_0	0 u	ust_mysql:query_start		query=select * fi	rom pfwp_statistics_v	isitor where id = 273,	thread_id=17787, db=my_wiki,	priv_user=rool
23:17:42.575 349 057 st	s_0		ust_mysql:query_cache_miss		query=select * fi	rom pfwp_statistics_v	isitor where id = 273,	contextvtid=31086	
23:17:42.575 351 159 ss	s_0		ist_mysql:query_parse_start			rom pfwp_statistics_v	isitor where id = 273,	contextvtid=31086	
23:17:42.575 393 433 ss	s_0		ist_mysql:query_parse_done		result=0, contex				1
23:17:42.575 395 746 st	s_0		ust_mysql:query_exec_start					thread_id=17787, db=my_wiki,	priv_user=rool
23:17:42.575 433 718 59	s_0	0 u	ust_mysql:handler_rdlock_start	(db=my_wiki, tab	le_name=pfwp_statis	tics_visitor, context.	_vtid=31086	
🗖 Properties 💷 Bookmarks 📧 State Sys	stem Explorer 🔄	Critical F	low View 🕫 Progress 🗏 LAMP	callstack Callst	ack View 🔳 My	rsql query analysis Call	stack View 🛱 🖼 My	rsql query analysis	
					(ji)	↓ ^a _z ↓ ¹ ₉ ↑ 3		₽ ₽ ₽ ₽ ₽ ₽	🤍 🛃 ▽
Function 23:17:42.5	575300	23:	:17:42.575400 23	3:17:42.575500		23:17:42.575600	23:17:42	.575700	
dbcachetest2/ust/uid/1									
▼ to 31086			uct mu	/sql:command_s	stast			ust_mysql:net_rea	d stast
≡ ust_mysql:command ust ≡ select from pfwp_st			select from pfwp			73		ust_mysqt.net_rea	
= select from prwp_st	ust_mysql:	'a		ust_mysql:query					
	use_mysqu		~	ssc_mysququery	_exec_store	8 1 8 1 8 8 8 8 8 9 8 9			
						• • • • • • • • • • • • • • • • • • • •	·		
				[mino				
					miss				
1	I			. [- [1		1
			B	₩ ↓ <mark>a</mark>	1. 18 🛱	> 🕆 🟠 🤜	R & &	🕶 🔒 🤑 🔍 📃	1
16.21.10 62550	0 46.	34.40 6	16:21:40		46:24:40	625000	16.24.40 62500		
16:31:18.63550	0 10:	:31:18.6	535600 16:31:18.6	35700	16:31:18	3.035800	16:31:18.63590	J	
									(
				/hsdm/					
			/h	sdm/index.	oho				
		EDOM	locked_ips WHER				SELECT	d data croate	
	SELECT IF	ROMD	nocked_ips where				SELECT C	d, data, create	
				[1				
					hit				

4- LAMP stack analysis

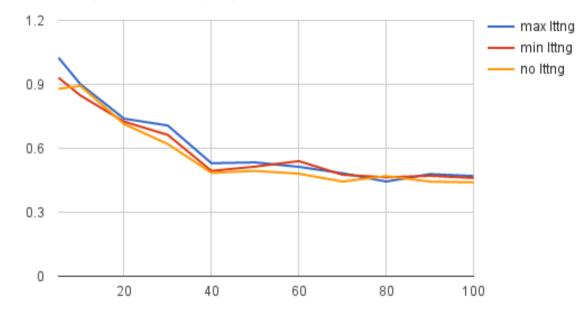
			to 😫 🟠 🤜	k k k - 12 12 12 12 12 12 12 12 12 12 12 12 12
16:31:18.635500	16:31:18.635600	16:31:18.635700	16:31:18.635800	16:31:18.635900
		/hsdm/		
		/hsdm/index.php		
 SELECT	1 FROM blocked_ips WH	ER		SELECT cid, data, create

Flame chart

				🕖 🖗 🕴	↓¹ ₉ 😥 🔅 🛔 👘 🤜	<u>k</u> k k + û ↓ Q Q ₫
16:31:18.597000)	16:31:18.597500		16:31:18.598000	16:31:18.598500	16:31:18.599000
				/hsdm/		
				/hsdm/index.php		
				main		
				drupal_bootstrap		
			_dr	upal_bootstrap_page_cache		
				drupal_bootstrap		
				Irupal_bootstrap_variables		
				variable_initialize		
				cache_get		
				get getMultiple		
d	b_escape_table			db_query		prepareltem
	etConnection		1	query		prepareteen
	enConnection		e p	execute		
	construct			SELECT cid, data, created, expire, se	erialize	
construct	SET NA	SET				
I					1	

Performance

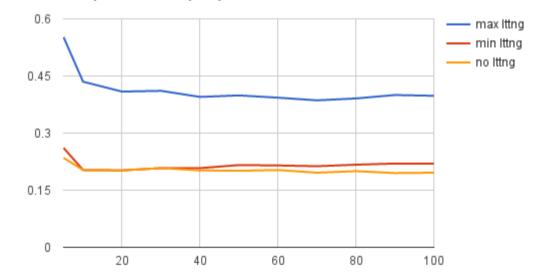
- ab -c [5-100] -n 5000 http://132.207.72.37/drupal
- 28000 lines of code



Response Time (sec)

Performance (the worst case)

- ab -c [5-100] -n 1000 http://32.207.72.37/test/bench.php
- 65,000,000 lines of code



Response Time (sec)

Usecase: PHP Compile prblem

- Multilevel lamp stack view
 - PHP compile problem
- Apache modules
- PHP compile time
- Mysql overhead view
- VM ovearhead view

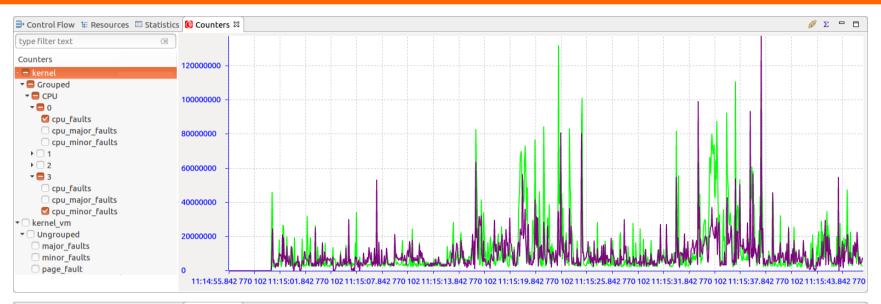
Trace Compass Updates

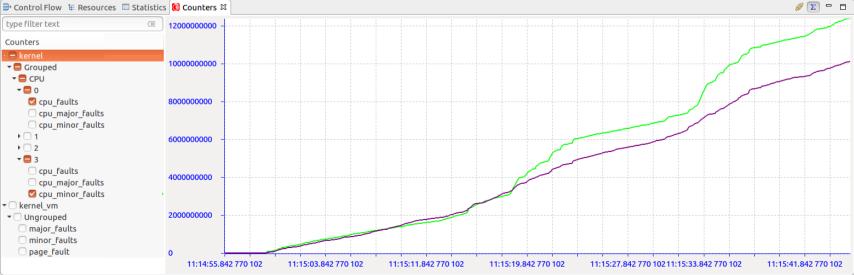
- Incubator
- Multilevel Flame charts
- Multilevel Flame graphs
- VM overhead view
- Critical path using Perf events.
- Counters Analysis

Trace Compass Incubator

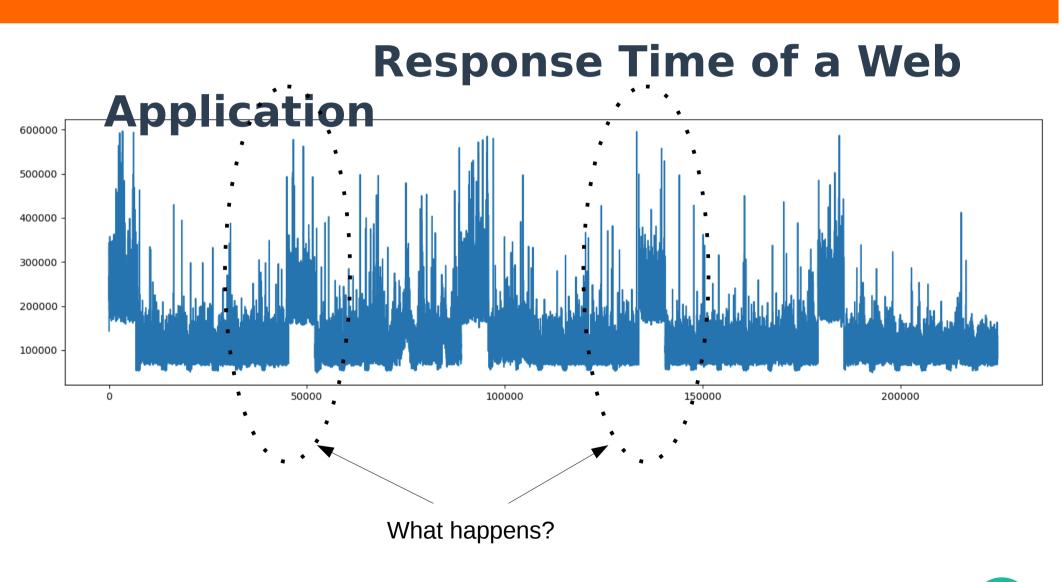
- The features that are under development, but still usable enough to be used and tested by users.
- Whose content relates to a specific trace type or domain of analysis (for example virtual machine analyses) and that no other plugin will depend on.
- The features will never be officially released with a specific version
- Some feature may eventually graduate to the Trace Compass project itself if required
 - https://wiki.eclipse.org/Trace_Compass/Contributor_Guidelines

Trace Compass Counters Analysis





Use-case: PHP OPCACHE Performance Analysis



thora2

PHP Request Anatomy

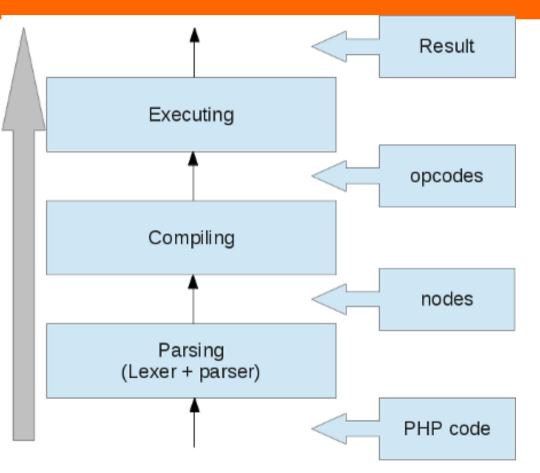
• PHP Is a scripting language

- compiles any file you ask it to run, obtain OPCodes from compilation, run them, and trash them away immediately.
- Parse, compile, execute, forget
 Parse, compile, execute, forget
 Parse, compile, execute, forget

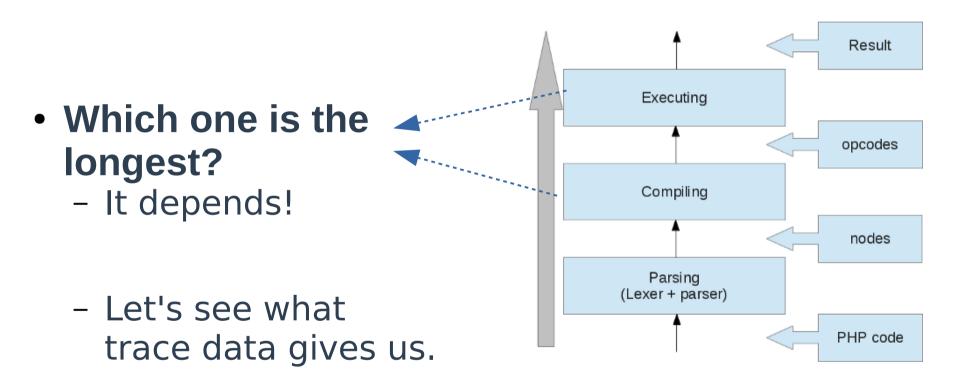
...

PHP "forgets" everything it's done in request N-1, when it comes to run request N.

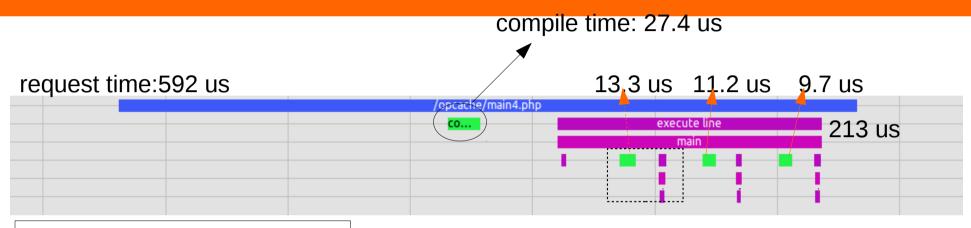
- Even if it calls the same scripts several times.



PHP Request Anatomy (2)

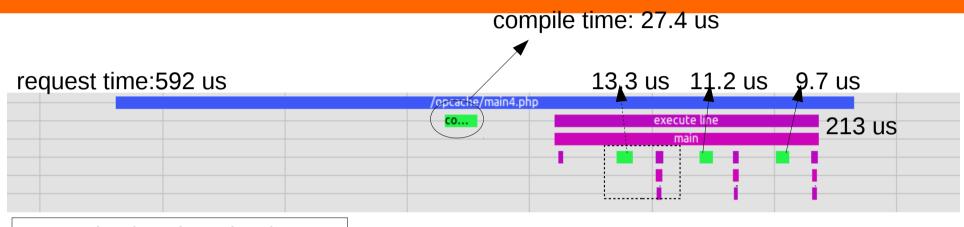


Compile Time Analysis



```
1 <?php /*main4.php*/
2
3 $x = rand(0,1000);
4
5 echo $x.PHP_EOL;
6 $xy = 123;
7 include 'folder1/'.$xy.'.php';
8 include 'folder2/'.$xy.'.php';
9 include 'folder3/'.$xy.'.php';
10
11 echo $x.PHP_EOL;
12 ?>
```

Compile Time: UST Events



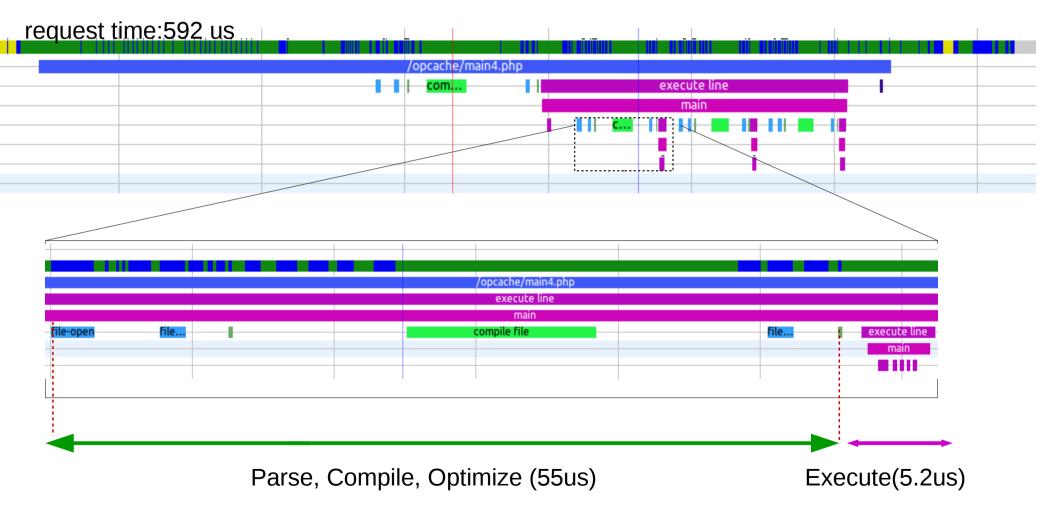
```
1 <?php /*main4.php*/
2
3 $x = rand(0,1000);
4
5 echo $x.PHP_EOL;
6 $xy = 123;
7 include 'folder1/'.$xy.'.php';
8 include 'folder2/'.$xy.'.php';
9 include 'folder3/'.$xy.'.php';
10
11 echo $x.PHP_EOL;
12 ?>
```

Compilation time: 60us (\sim 10 % of the request time)

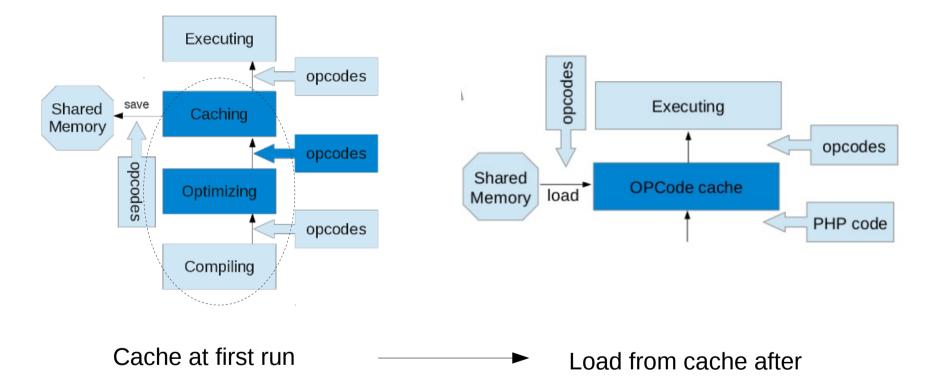
But, let's go deeper!

Kernel + UST Events

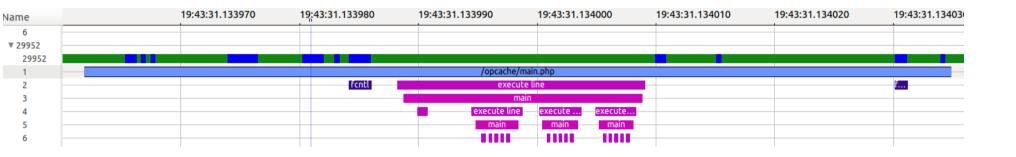
Now looks much more!



Solution: Opcode Cache (Opcache)



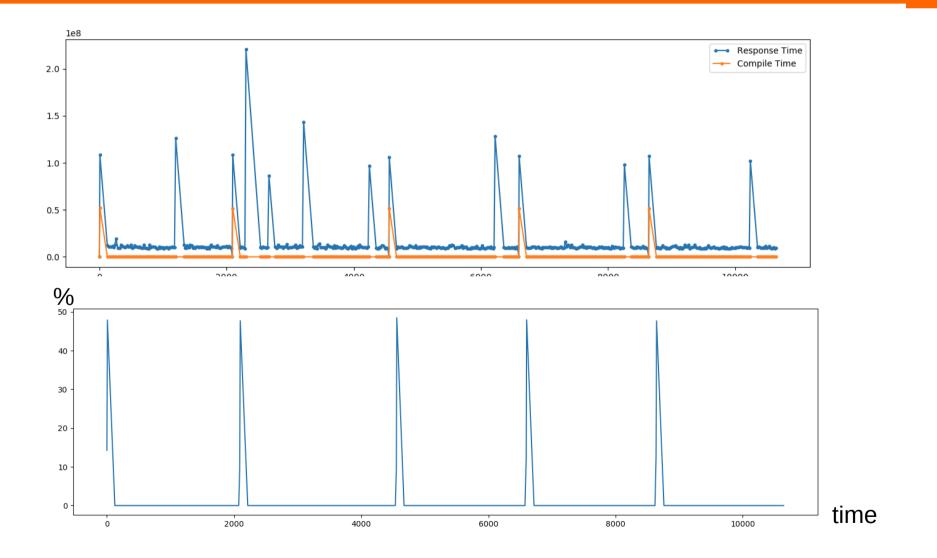
Solution: Opcode Cache (Opcache)



Loads from cache

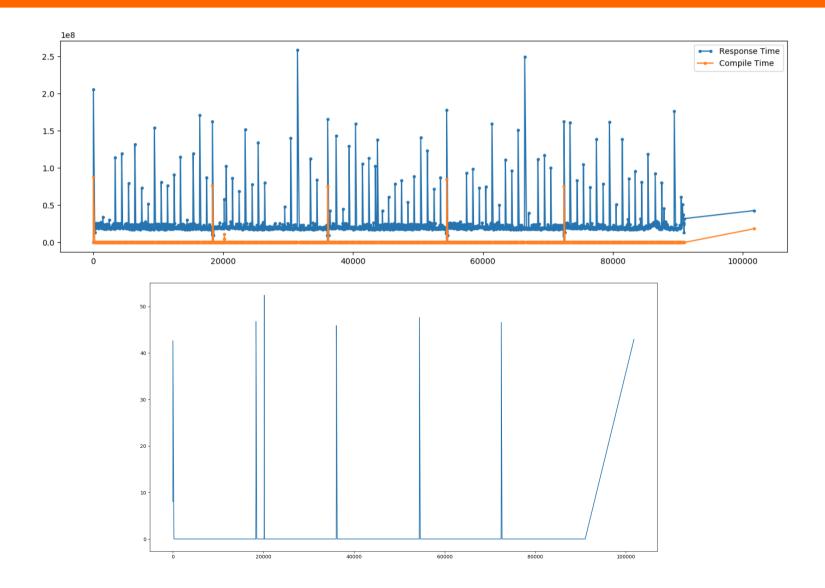
Resoponse time: 592 us --> 73 us (with caching)

Compile Time: Drupal

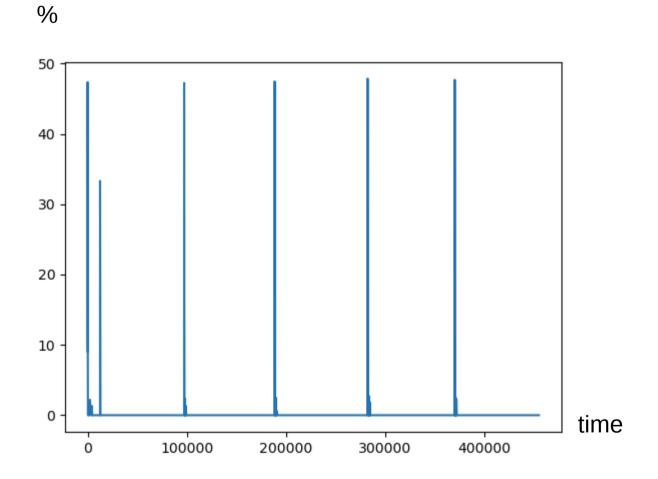


34

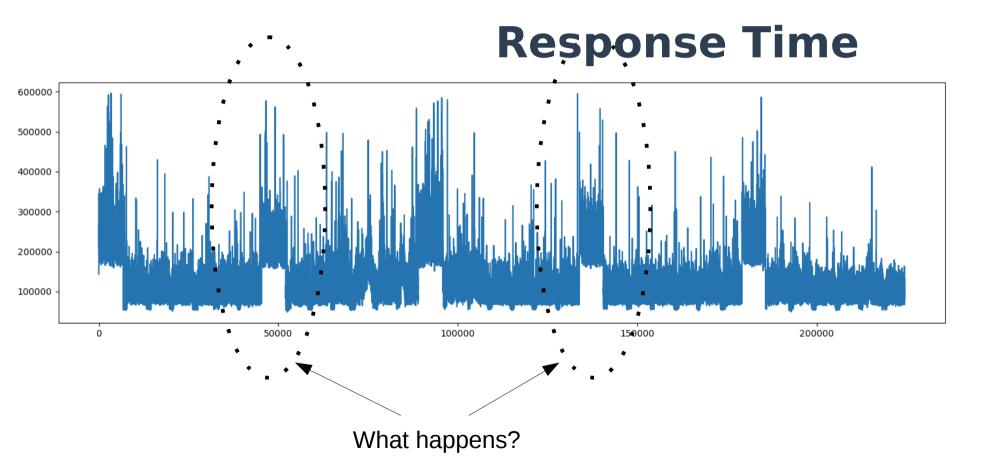
Compile Time: WordPress

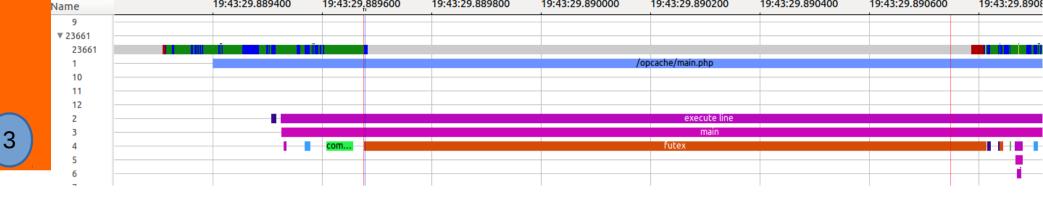


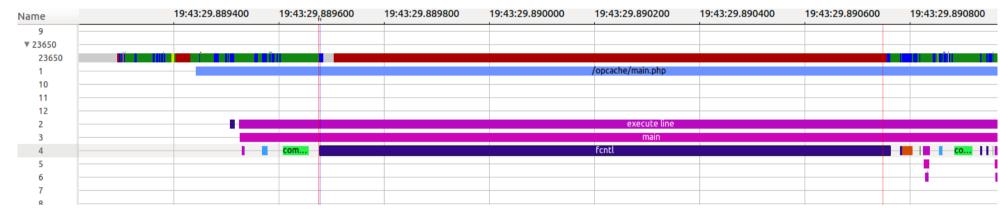
Compile Time: MediaWiki

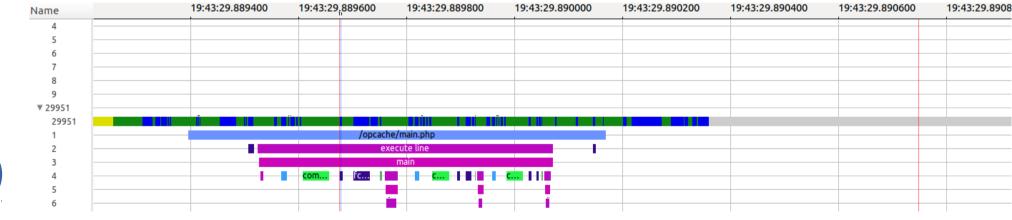


Let's back to our example





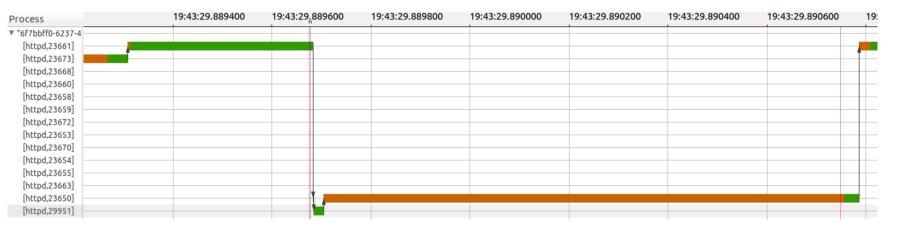




19:43:29.889000	19:43:29.8	89500	19:43:29.890000	19:43:29.8905	:43:29.890500 1	

(1

Critical Flow



Every PHP process that is willing to write into shared memory will lock every other process willing to write into shared memory as well.

Critical Flow

B Contro	l Flow 🔚 Resource	s 🔲 Statistics	s 🔄 Critical Flo	w View ध्र					:	= 💧 📭 🔫	5 B B B	• 🗘 🤂 🖲), ⊂, ₁ ∕⊳ ⇔†	▽ □ □
Process	21:32:32.500	21:32:33.000	21:32:33.500	21:32:34.000	21:32:34.500	21:32:35.000	21:32:35.500	21:32:36.000	21:32:36.500	21:32:37.000	21:32:37.500	21:32:38.000	21:32:38.500	
▼ "6f7bbfi														
[httpd -														
[httpd -						<u> </u>	Î T	- <u> </u>					Î	
[httpd -													î	
[httpd -						<u> </u>								
[httpd -						₹↑ 1								
[httpd -						*			IÎ I					
[httpd -						**						111		
[httpd -														
[httpd -						- 1 1			11. 1					
[httpd -									11 1	in tin ti	niî Yatat i Yani		¥	Tiri Yil Y
[httpd -														
[httpd -							¥				_			
[httpd -							•				_			
[httpd-							1				_			
[httpd -							•		1		_			
[httpd -							†	1		1			\ †	
[httpd -							†		<u> </u>				Î	
[httpd-							<u> </u>				¥			
× Bookr						5	043-ср							



Modules to install:

https://github.com/naser

Traces and XML files:

https://github.com/naser/tracingsumit2017

Trace Compass:

http://tracecompass.org

LTTng:

http://lttng.org/

Thank you

n.ezzati@polymtl.ca

Other Slides

Python Analysis

			Ļ						
limerange: [2016-09-14 20:40:37.751341541]	2016-09-14 20:4	1:29.596591398]							
Apache Top:		, , , , , , , , , , , , , , , , , , , ,							
Time Range	Response Time	(% Spectin php and mysq	l)			TID	Method	URI	
[20:41:20.984309151, 20:41:24.693434577]	3709125.426	/	86.325 %,	mysql: 13.65.	%)	9111	GET	132.207.72.37/polyfab	/wiki/load.php
20:40:54.261234556, 20:40:57.787529428]	3526294.872	(apache: 0.022 %, php:	90.633 %,	mysql: 9.344 %)	8955	GET	132.207.72.37/polyfab	
[20:41:14.983114689, 20:41:18.172910580]	3189795.891	(apache: 1.529 %, php:	58.017 %,	mysql: 40.454	%)	8929	GET	132.207.72.37/polyfab	/wiki/index.php/Ressources
[20:41:09.021468218, 20:41:11.921474018]	2900005.80	(apache: 0.030 %, php:	91.352 %,	mysql: 8.617 %)	8927	GET	132.207.72.37/polyfab	/wiki/load.php
[20:40:50.227325472, 20:40:53.077147564]	2849822.09	(apache: 0.025 %, php:	66.012 %,	mysql: 33.964	%)	8950	GET	132.207.72.37/polyfab	/wiki/load.php
[20:41:20.989529057, 20:41:23.818049619]	2828520.5	(apache: 0.148 %, php:	79.904 %,	mysql: 19.948	%)	8931	GET	132.207.72.37/polyfab	/wiki/load.php
[20:40:54.262046633, 20:40:57.076147767]	2814101.13	(apache: 0.035 %, php:)	88.118 %,	mysql: 11.847	%) 📄	8956	GET	132.207.72.37/polyfab	/wiki/load.php
[20:41:03.544898170, 20:41:06.304035476]	2759137.30t	(apache: 0.076 %, php:	65.918 %,	mysql: 34.006	%)	8916	GET	132.207.72.37/polyfab	/wiki/index.php/Informations
[20:40:48.142448383, 20:40:50.868722822]	2726274.439	(apache: 0.130 %, php:)	64.437 %,	mysql: 35.433	%)	8946	GET	132.207.72.37/polyfab	/wiki/index.php/Accueil
[20:41:17.789501232, 20:41:20.249221766]	2459720.534	🛶 apache: 0.050 %, php: 🛛	82.078 %,	mysql: 17.873	%;	9041	GET	132.207.72.37/polyfab	/wiki/load.php
Fotal: 10									
?hp Тор:									
Fime Range	Response Time	(% Spent in mysql)	TID	Method	URI				SQL TID(s) No of SQL Query
[20:41:20.984898904, 20:41:24.693296362]	3708397.458	(mysql: 13.658 %)	9111		/polyfab	Juiki /1	and also		4407,4414 50
[20:40:54.261875801, 20:40:57.787383105]	3525507.304	(mysql: 9.347 %)	8955		/polyfab /polyfab				4371,4376 58
[20:41:15.031814970, 20:41:18.172828398]	3141013.428	(mysql: 41.082 %)	8929				ndex.php/Ress		4396,4397,4398 203
[20:41:09.022227546, 20:41:11.921356875]	2899129.329	(mysql: 8.620 %)	8927		/polyfab			Sources	4390,4395 49
[20:40:50.227976347, 20:40:53.077093164]	2849116.817	(mysql: 33.972 %)	8950		/polyfab				4363,4365,4366 80
[20:41:20.993614041, 20:41:23.817945338]	2824331.297	(mysql: 19.977 %)	8931		/polyfab				4410,4413 58
[20:40:54.262955699, 20:40:57.076061031]	2813105.332	(mysql: 11.851 %)	8956		/polyfab				4372,4375 49
[20:41:03.546893396, 20:41:06.303932328]	2757038.932	(mysql: 34.032 %)	8916				ndex.php/Info	ormations	4377,4378,4379 159
[20:40:48.145928370, 20:40:50.868668015]	2722739.645	(mysql: 35.479 %)	8946				ndex.php/Accu		4358,4359,4360 167
[20:41:17.790576746, 20:41:20.249076101]	2458499.355	(mysql: 17.882 %)	9041		/polyfab				4401,4405 49
Total: 10					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				