

SIG Talk: Quality & Testing - Testing Tools

February 13, 2018

Today's Speakers:



Scott Moore
Scott Moore Consulting
TransactIQ



Chris Trimper
EQA Automation Architect
Independent Health

YOUR INDEPENDENT MICRO FOCUS SOFTWARE USER COMMUNITY

Webinar to begin shortly





vivit

Discover the independent Micro Focus software user community where you can share, collaborate, exchange, and grow



COMMUNITY



SIG Talk: Quality & Testing – Testing Tools

February 13, 2018



Welcome to



YOUR INDEPENDENT MICRO FOCUS SOFTWARE USER COMMUNITY



2018 SIG Talk Schedule

March 13, 2018	Tips & Tricks
April 10, 2018	Proven Practices
May 8, 2018	Testing Tools
June 12, 2018	Tips & Tricks
July 10, 2018	Proven Practices
August 14, 2018	Testing Tools
September 11, 2018	Tips & Tricks
October 9, 2018	Proven Practices
November 13, 2018	Testing Tools
December 11, 2018	Tips & Tricks

If you are interested in **participating as a SIG Talk speaker** for one of our 2018 Quality and Testing topics or want to **suggest a speaker or topic**, please take a moment to [answer our survey](#).

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Hosted By



Chris Trimper
Enterprise QA Automation Architect
Independent Health

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Today's Speakers



Scott Moore
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Webinar Housekeeping



A screenshot of a webinar interface. The main area displays a presentation slide titled "Building the DevOps Tool Chain" dated "January 17, 2017". The slide features the Vivit logo and the text "Discover the independent HPE software user community where you can share, collaborate, exchange, and grow". The slide is divided into sections with images and text: "ADVOACACY" (sic) with a lightbulb, "COMMUNITY" with people shaking hands, "Solutions", "SUCCESS Vision", and "EDUCATION" with a group of people. On the left, there is a sidebar with a "LOGO/PICTURE" section showing the Vivit logo, a "Q&A" section with "Ask a question" and an "Ask" button, and a "DOWNLOAD FILES" section with a table showing "No file Found". At the bottom, there is a status bar with "Dial-In #: VoIP or 415-926-7795 or International Numbers Conference ID: 0866-2702 User ID: 280895".

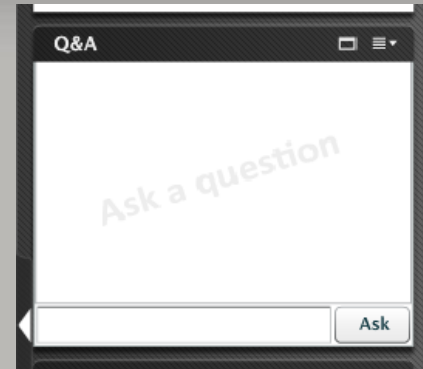
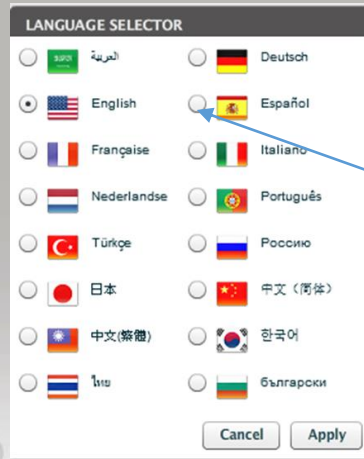
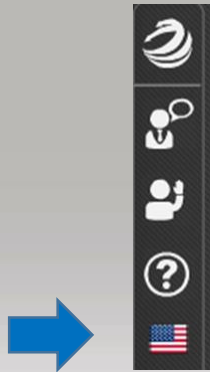
- This “LIVE” session is being recorded
- Recordings are available to all Vivit members
- To enlarge the presentation screen, click on the rectangle in the upper right hand corner of the Presentation pane

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Webinar Control Panel

- Session Q&A:
Please type questions in the Q&A pane and click on “Ask”
- Choose the language in which you would like to ask your questions



Tweet Your Questions



#vivitsigtalk

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Scott Moore

PERFORMANCE TESTING IoT

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TRANSACTIQ™

Performance Testing IoT

Overview and Demo

Agenda

- IoT Overview/Introduction
- Performance Testing Challenges
- MQTT
- CoAP
- Testing Demo
- Best Practices

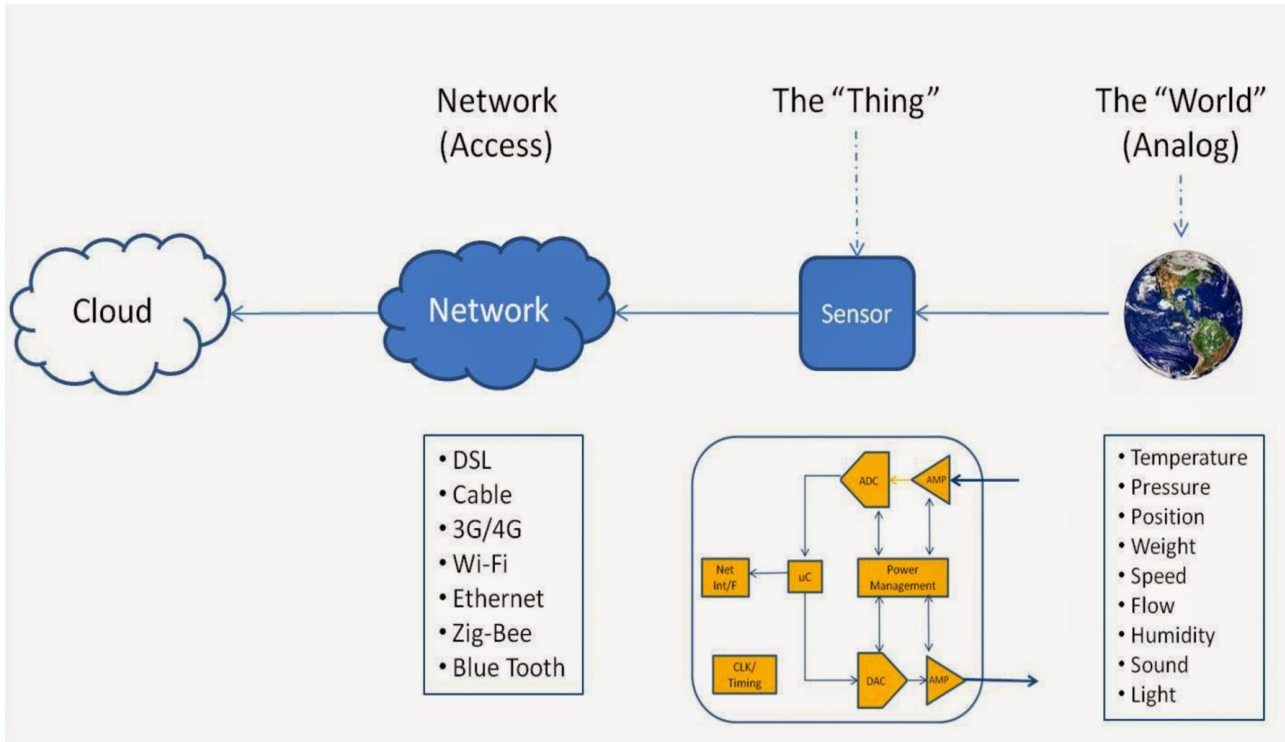
About Me

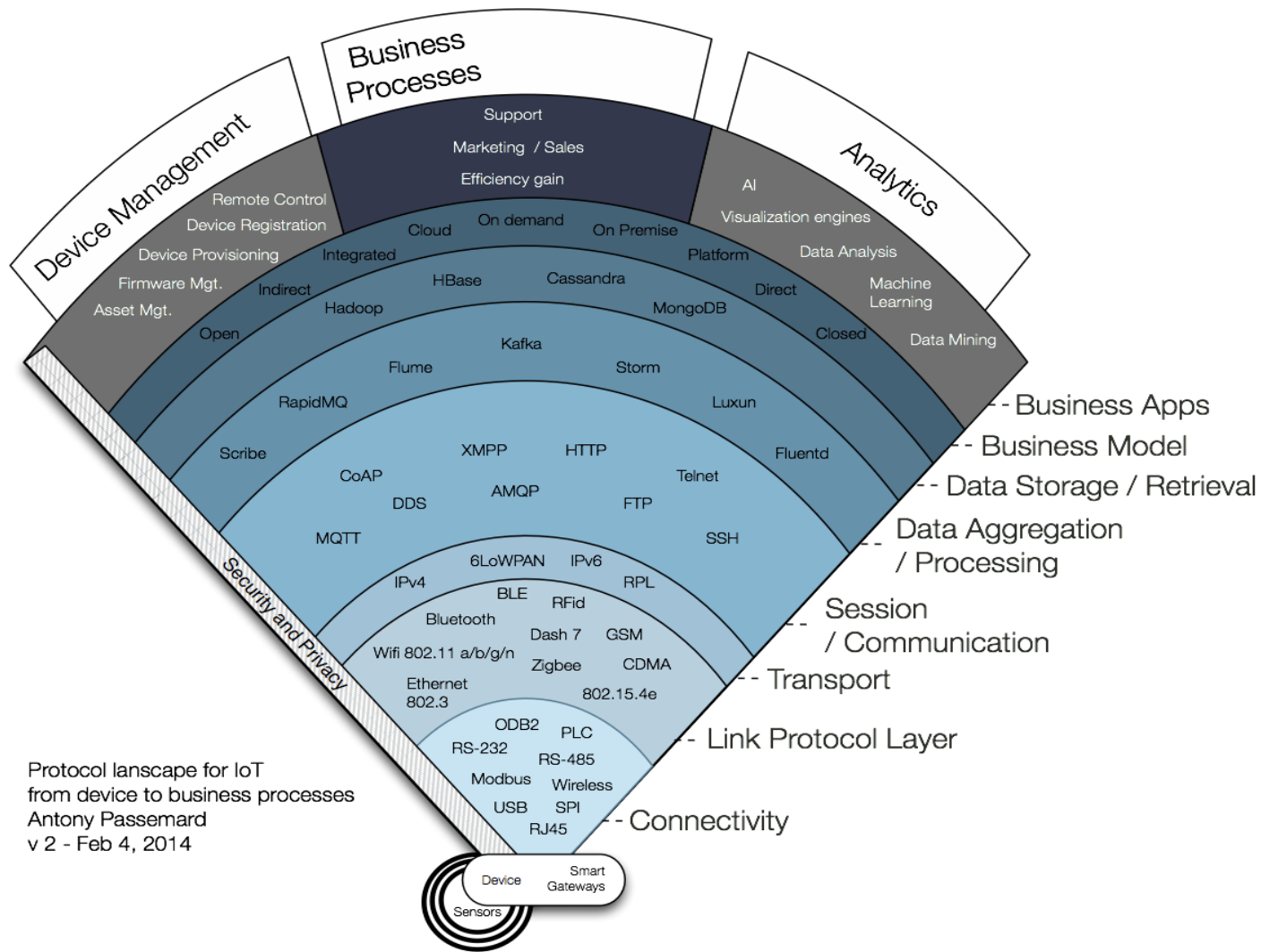


- CTO
- Software Engineer Across the Lifecycle (SEAL)
- Performance Engineering Community



IOT Architecture - High Level





Protocol lanscape for IoT
 from device to business processes
 Antony Passemard
 v 2 - Feb 4, 2014

Data Transport Layer Protocols

<i>Protocol</i>	<i>Transport</i>	<i>Messaging</i>	<i>QoS</i>	<i>Constrained Networks</i>	<i>Security</i>	<i>Sponsor</i>
MQTT	TCP	Pub/Sub	3 Levels**	Good	TLS; SSL	MQTT.ORG OASIS
CoAP	UDP	Rqst/Rspnse	Yes, but optional	Excellent	DTLS	IETF
XMPP	TCP	Pub/Pub Pub/Sub (by extension)	None (needs extension)	Fair	TLS; SSL; XEP-0198	XMPP Standards Organization IETF
AMQP	TCP	Pub/Sub	Yes, sophisticated	Poor	TLS; SASL	OASIS
HTTP/ REST	TCP	Rqst/Rspnse	TCP	Fair	TLS; SSL	IETF
MQTT-SN	UDP	Pub/Sub Rqst/Rspnse	2 Levels	Good	DTLS	MQTT.ORG OASIS
HTTP/2	TCP	Rqst/Rspnse	TCP	Fair	TLS	IETF

Challenges

- Front end protocol interoperability
- Performance testing against the link layer
- Testing that replicates a sensor network
- Ensuring end-to-end test coverage

Data Transport Protocol Focus



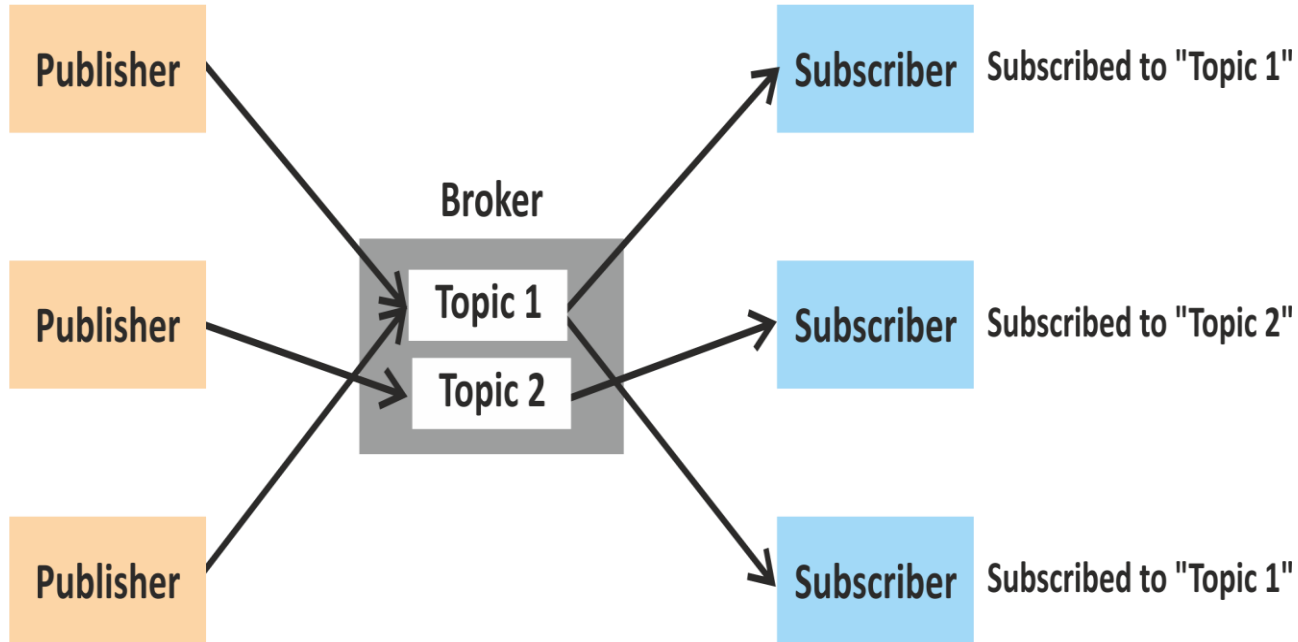
MQTT Protocol Stack

- Origin: 1999
- Transport: TCP
- Messaging: Publish/Subscribe (default), Request/Response with careful design
- Network: IPv6/RPL
- Adaptation: 6LoWPAN
- MAC/Physical: IEEE 802.15.4
- Security: SSL/TLS



MQTT-SN runs over
UDP

MQTT Architecture



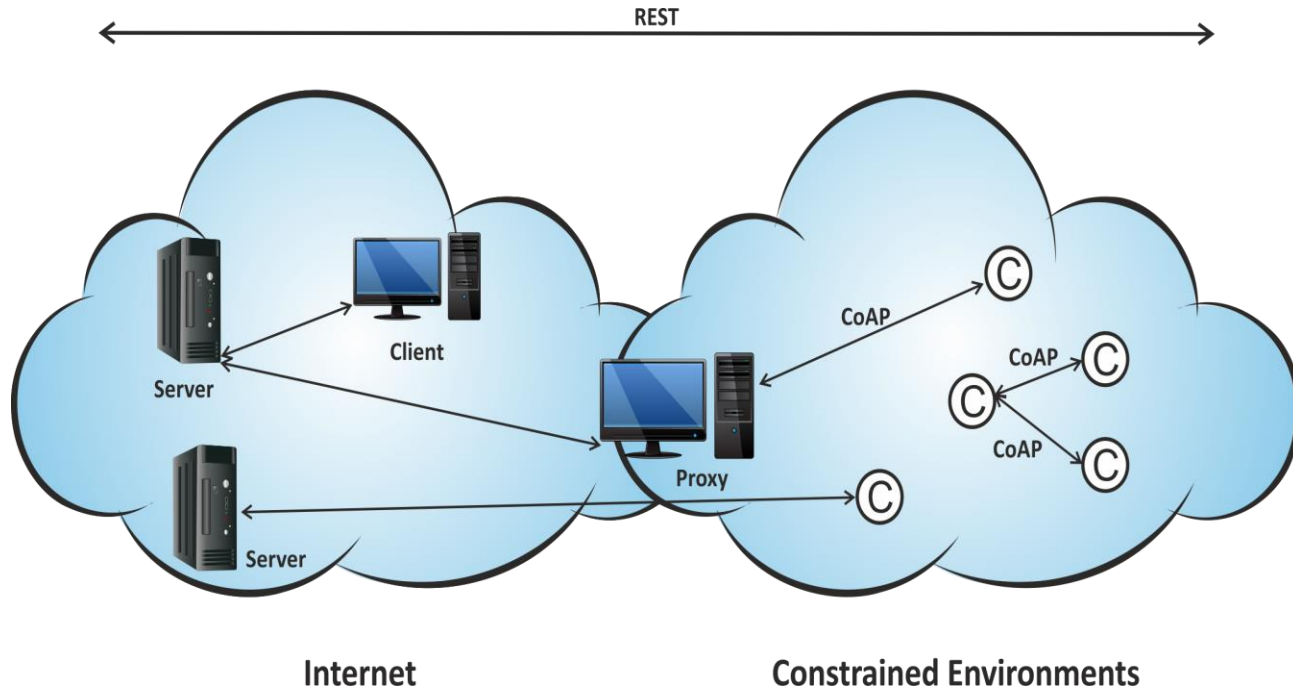
MQTT ATTRIBUTES

- Designed for
 - high volume
 - low bandwidth
 - low energy
- Light footprint
- Event Oriented
- Avoids Polling

CoAP Protocol Stack

- Origin: 2014 (IETF RFC 7252)
- Transport: UDP
- Messaging: Request/Response
- Network: IPv6/RPL
- Adaptation: 6LoWPAN
- MAC/Physical: IEEE 802.15.4
- Security: DTLS

CoAP Architecture



CoAP ATTRIBUTES

- Binary
- Asynchronous transaction model
- Built-In Discovery
- RESTful - request/response, method, etc...
- “HTTP-ish”
 - GET, POST, PUSH, DELETE
 - URI's, MIME types, HTTP response codes
- UDP binding (DTLS) with multicast support
- Simple caching model
- Instead of a broker, it's a PROXY (converts to HTTP)

Current Testing Tools

- Malaria
- MQTT Box/Lens/Stress/Spy
- JMeter (MQTT and CoAP)
- Gatling (MQTT plugin)
- NeoLoad 5.3 (MQTT)
- SmartBear LoadUI NG
- HPE StormRunner (TRUAPI)
- HPE LoadRunner & Performance Center 12.55
- Copper (Firefox CoAP Plugin)
- Locust - PAHO MQTT library and Python



Best Practices

- Holistic approach
 - Litmus between back end (HTTP) and Edge
- Understand the OSI model!
- Ensure modeling is correct
 - Use a real sensor first and baseline
 - Use actual broker/proxy hardware specs
 - Test performance on a pristine network
 - Test performance on the actual network link
 - Model worst case network conditions at volume



TRANSACTIONTM

contact@transactiq.io

<http://transactiq.io>



@transactIQ



THANK YOU SCOTT

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Chris Trimper

PERFORMANCE ANALYSIS WITH SPLUNK

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Topics

Splunk


Perf Tests

Results

Dashboards

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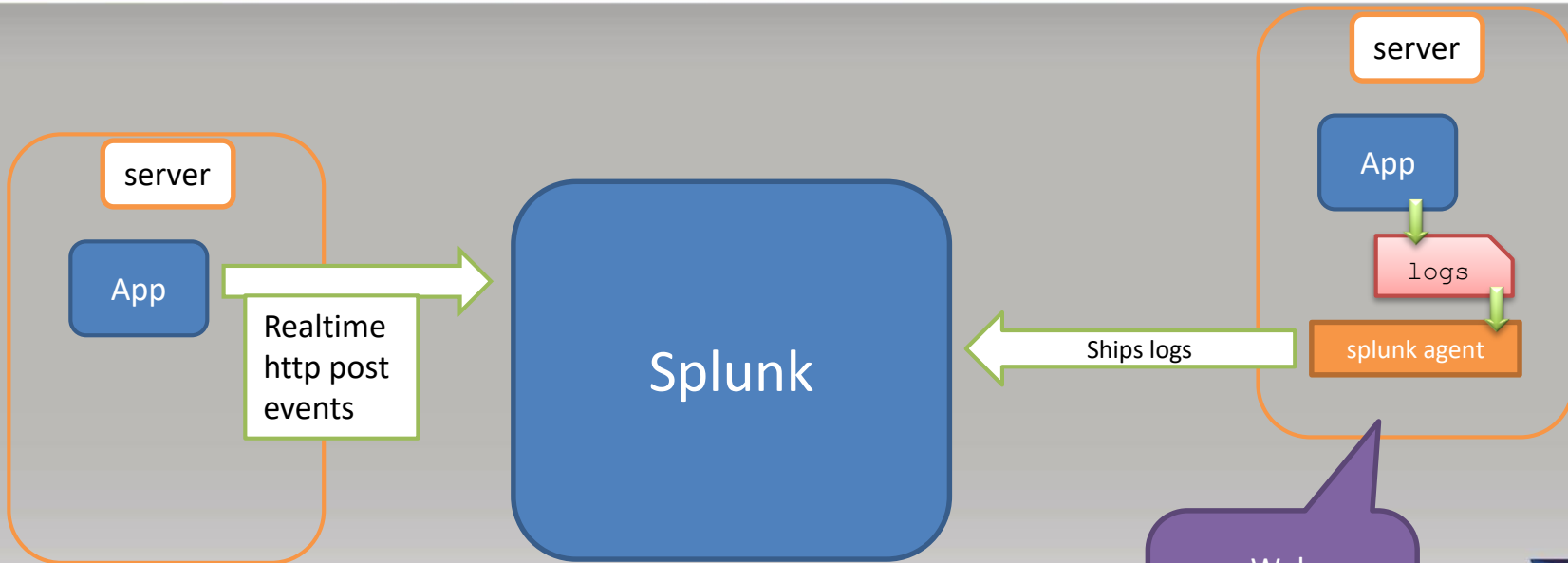
...makes it simple to collect, analyze and act upon the untapped value of the big data generated by your technology infrastructure, security systems and business applications—giving you the insights to drive operational performance and business results.

SPLUNK

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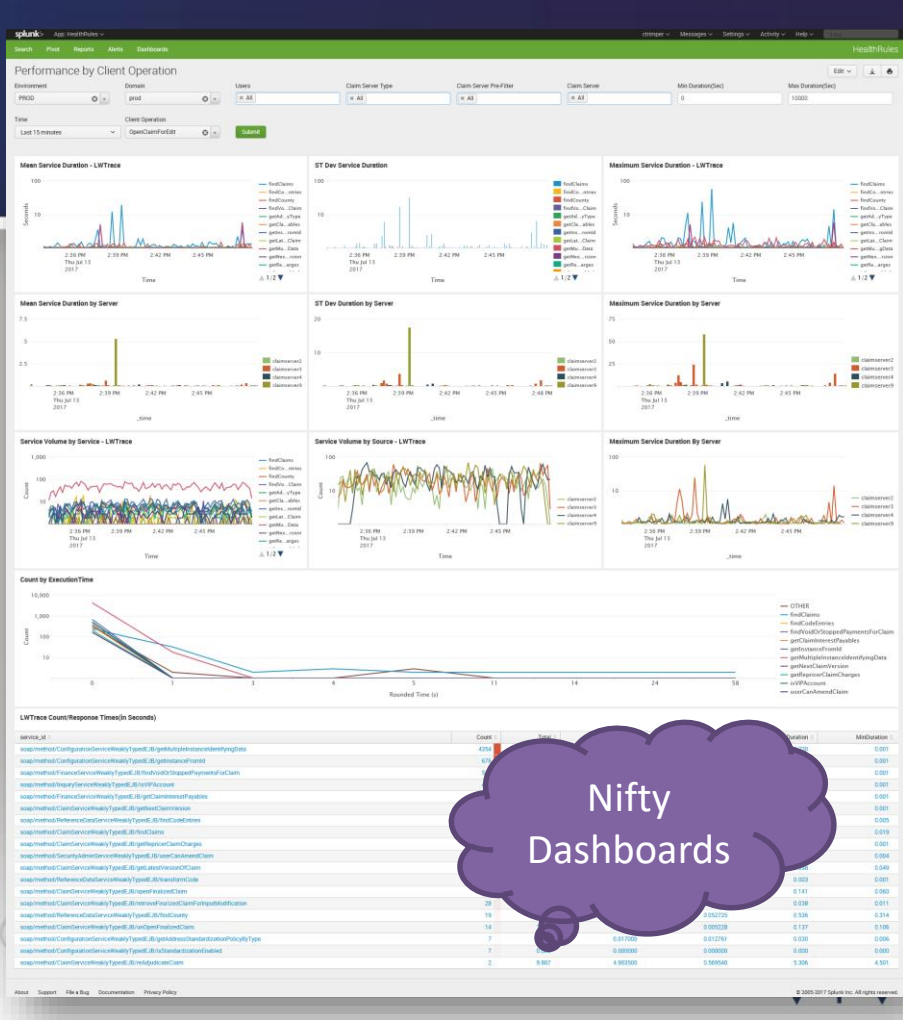
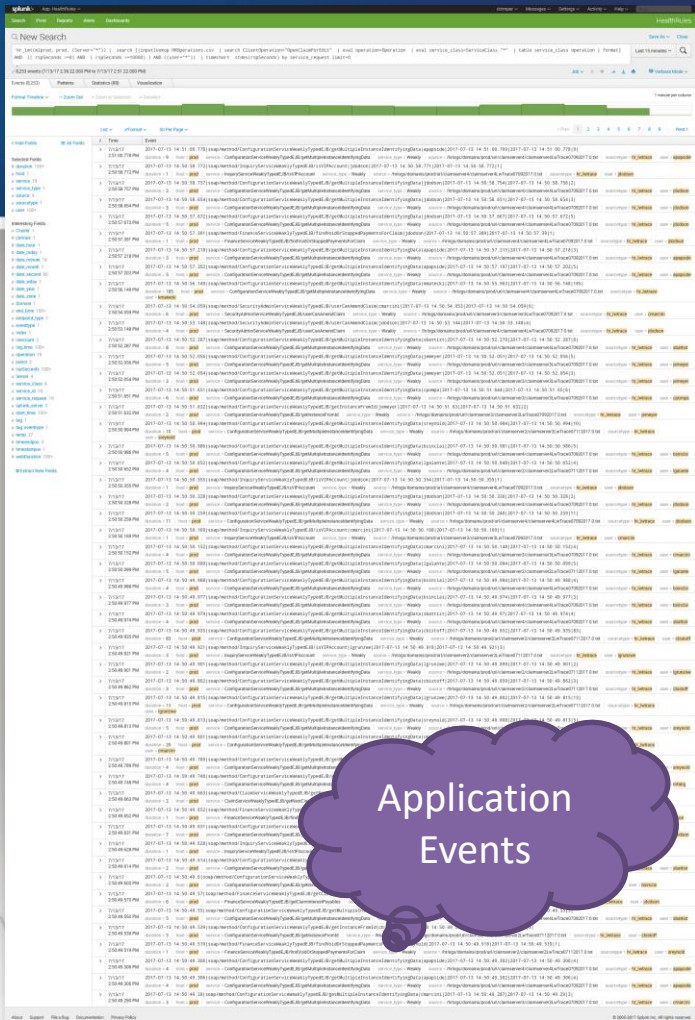




Web
SOA
Web Logic
'Custom'

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ANALYSIS



SPLUNK :: Helpful Links

- <http://docs.splunk.com/Documentation>
- <http://docs.splunk.com/Documentation/Splunk/6.6.2/Data/WhatSplunkcanmonitor>
- <http://docs.splunk.com/Documentation/Splunk/6.6.2/Data/Howdoyouwanttoadddata>
- http://docs.splunk.com/Documentation/Splunk/6.6.2/Data/WhatSplunkcanmonitor#Types_of_data_sources
- <http://docs.splunk.com/Documentation/Splunk/6.6.2/SearchReference/SQLtoSplunk>
- <http://docs.splunk.com/Documentation/Splunk/6.6.2/Viz/CreateCharts>

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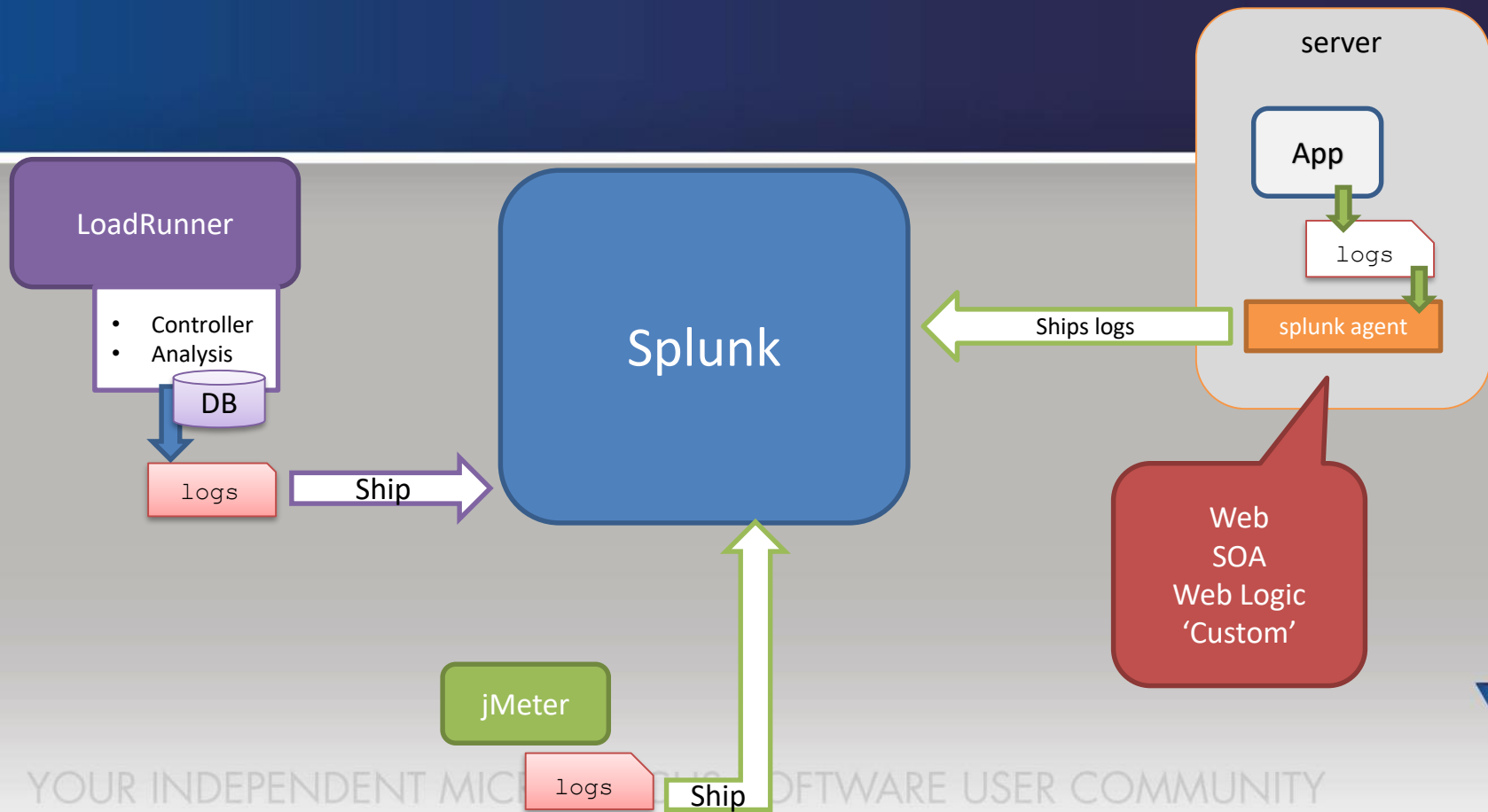


Performance

- Project specific requests
- Daily test runs
- Handful of applications / dozens & dozens of tests



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Making Logs from LoadRunner

Setup

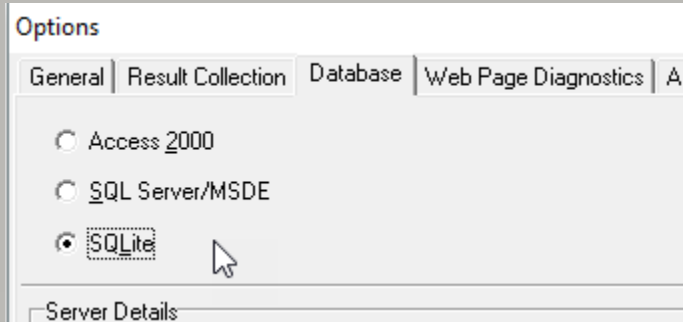
1. Configure LoadRunner Analysis to use SQLite
2. Create a default template for Analysis Controller to Auto Collate Results
3. Controller to Auto Collate Results

Execute

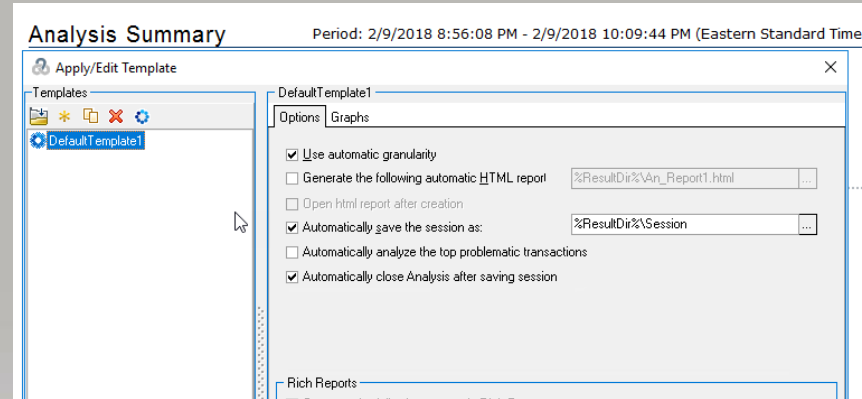
1. Run Controller via Batch / CLI
 - Output folder & Results folder
 - Invoke Analysis / build LRR
2. Using SQLite, dump results to csv using formatted query → Log file
3. Splunk Agent consumes log

LoadRunner Setup

Analysis Tools->Options



Analysis: Tools->Templates



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```
tskill wlrn
echo on
Set temp=%date:~4,2%%date:~7,2%%date:~10,4%%time:~0,2%%time:~3,2%%time:~6,2%

Set scen=combined_integration

"C:\Program Files\Hp\LoadRunner\bin\wlrn.exe" -Run -TestPath
D:\Scenarios\%scen%.lrs -ResultName D:\Results\%scen%_%temp%\res

"C:\Program Files\Hp\LoadRunner\bin\analysisui.exe" -RESULTPATH
D:\Results\%scen%_%temp%\res1\res1.lrr
copy D:\Results\%scen%_%temp%\res1\Session\Session.db D:\sqlite\Session.db /Y

d:
cd sqlite
sqlite3.exe Session.db < splunkcommands_integration
rename d:\splunk\splunk.log lr_splunk_%temp%.log
```

Batch File – Kick of the Process

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```
.mode list  
.headers off  
.once D:/splunk/splunk.log  
.read SplunkLogQuery_Integration.sql
```

SQLite 'Batch'

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```

SELECT
strftime('%Y-%m-%d %H:%M:%f', lr_times.LR_Start_Seconds + (e.[End Time] - e.Value), 'unixepoch') || ' ' ||
"ApplicationName=" || '' || upper(substr(s.[Script Name], 1, Instr(s.[Script Name], '_') - 1)) || ' ' ||
"Environment=" || '' || "IT" || ' ' ||
"ScriptName=" || '' || s.[Script Name] || ' ' ||
"TransactionName=" || '' || m.[Event Name] || ' ' ||
"TransactionStatus=" || '' || t.[Transaction End Status] || ' ' ||
"TransactionStartTime=" || '' || strftime('%Y-%m-%d %H:%M:%f', lr_times.LR_Start_Seconds + (e.[End Time] - e.Value),
'unixepoch') || ' ' ||
"TransactionEndTime=" || '' || strftime('%Y-%m-%d %H:%M:%f', lr_times.LR_Start_Seconds + e.[End Time], 'unixepoch') || ' '
' ||
"ResponseTime=" || '' || e.Value || ' ' ||
"VirtualUserID=" || '' || v.VuserID || ' ' ||
"LoadGenerator=" || '' || h.[Host Name] || '' as SplunkLogString
FROM event_meter e,
event_map m,
TransactionEndStatus t,
Script s,
VuserID v,
Host h,
(
select datetime(r.[Start Time] - r.[Time Zone], 'unixepoch') as StartTime,
datetime(r.[Result End Time] - r.[Time Zone], 'unixepoch') as EndTime,
r.[Start Time] - r.[Time Zone] as LR_Start_Seconds
from Result r
) lr_times
WHERE e.[Event ID] = m.[Event ID]
and e.Status1 = t.Status1
and e.[Script ID] = s.[Script ID]
and e.[Vuser ID] = v.[Vuser ID]
and e.[Host ID] = h.[Host ID]
order by lr_times.LR_Start_Seconds + (e.[End Time] - e.Value);

```

2017-07-11 22:04:49.400 ApplicationName="HE" Environment="UAT" ScriptName="he_soa_getCountOfFailedCVCsForUser_1" TransactionName="Action_Transaction" TransactionStatus="Pass" TransactionStartTime="2017-07-11 22:04:49.400" TransactionEndTime="2017-07-11 22:04:49.410" ResponseTime="0.0096428394317627" VirtualUserID="Vuser4" LoadGenerator="d01qcaplrg04"

2017-07-11 22:04:49.400 ApplicationName="HE" Environment="UAT" ScriptName="he_soa_getCountOfFailedCVCsForUser_1" TransactionName="he_soa_getCountOfFailedCVCsForUser" TransactionStatus="Pass" TransactionStartTime="2017-07-11 22:04:49.400" TransactionEndTime="2017-07-11 22:04:49.410" ResponseTime="0.0095667839050293" VirtualUserID="Vuser4" LoadGenerator="d01qcaplrg04"

2017-07-11 22:04:49.477 ApplicationName="HR" Environment="UAT" ScriptName="hr_opensingleclaimfromworkbasket_1" TransactionName="hr_3_openclaimforedit" TransactionStatus="Pass" TransactionStartTime="2017-07-11 22:04:49.477" TransactionEndTime="2017-07-11 22:04:51.936" ResponseTime="2.45911598205566" VirtualUserID="Vuser4" LoadGenerator="d01qcaplrg01"

2017-07-11 22:04:49.499 ApplicationName="HE" Environment="UAT" ScriptName="he_soa_findProviderTaxonomy" TransactionName="he_soa_findProviderTaxonomy" TransactionStatus="Pass" TransactionStartTime="2017-07-11 22:04:49.499" TransactionEndTime="2017-07-11 22:04:49.764" ResponseTime="0.265201091766357" VirtualUserID="Vuser2" LoadGenerator="d01qcaplrg03"

2017-07-11 22:04:49.499 ApplicationName="HE" Environment="UAT" ScriptName="he_soa_findProviderTaxonomy" TransactionName="Action_Transaction" TransactionStatus="Pass" TransactionStartTime="2017-07-11 22:04:49.499" TransactionEndTime="2017-07-11 22:04:49.764" ResponseTime="0.265201091766357" VirtualUserID="Vuser2" LoadGenerator="d01qcaplrg03"

2017-07-11 22:04:49.594 ApplicationName="IHWEB2" Environment="UAT" ScriptName="ihweb2_loadpdf_fromproductpage.1" TransactionName="IHWeb2_LoadPDF_FromProductPage" TransactionStatus="Pass" TransactionStartTime="2017-07-11 22:04:49.594" TransactionEndTime="2017-07-11 22:04:49.865" ResponseTime="0.271103858947754" VirtualUserID="Vuser2" LoadGenerator="d01qcaplrg03"

2017-07-11 22:04:49.594 ApplicationName="IHWEB2" Environment="UAT" ScriptName="ihweb2_loadpdf_fromproductpage.1" TransactionName="IHWeb2_Load_Evolve_PDF_From_LargeGroupPlans/Evolve.aspx_Page" TransactionStatus="Pass" TransactionStartTime="2017-07-11 22:04:49.594" TransactionEndTime="2017-07-11 22:04:49.865" ResponseTime="0.271066188812256" VirtualUserID="Vuser2" LoadGenerator="d01qcaplrg03"

2017-07-11 22:04:49.683 ApplicationName="HR" Environment="UAT" ScriptName="hr_createsubscription_1" TransactionName="hr_3_clickaddmember" TransactionStatus="Pass" TransactionStartTime="2017-07-11 22:04:49.683" TransactionEndTime="2017-07-11 22:04:49.797" ResponseTime="0.114021301269531" VirtualUserID="Vuser2" LoadGenerator="d01qcaplrg02"

2017-07-11 22:04:49.729 ApplicationName="HR" Environment="UAT" ScriptName="hr_openclaimforedit_preview_1" TransactionName="hr_closeclaim" TransactionStatus="Pass" TransactionStartTime="2017-07-11 22:04:49.729" TransactionEndTime="2017-07-11 22:04:50.313" ResponseTime="0.584069967269897" VirtualUserID="Vuser5" LoadGenerator="d01qcaplrg01"

2017-07-11 22:04:49.823 ApplicationName="HE" Environment="UAT" ScriptName="he_soa_getMultipleHRLStrings" TransactionName="he_soa_getMultipleHRLStrings" TransactionStatus="Pass" TransactionStartTime="2017-07-11 22:04:49.823" TransactionEndTime="2017-07-11 22:04:49.842" ResponseTime="0.0187625885009766" VirtualUserID="Vuser4" LoadGenerator="d01qcaplrg01"

2017-07-11 22:04:49.916 ApplicationName="HE" Environment="UAT" ScriptName="he_soa_getCountOfFailedCVCsForUser_1" TransactionName="Action_Transaction" TransactionStatus="Pass" TransactionStartTime="2017-07-11 22:04:49.916" TransactionEndTime="2017-07-11 22:04:49.927" ResponseTime="0.0109386444091797" VirtualUserID="Vuser4" LoadGenerator="d01qcaplrg04"

2017-07-11 22:04:49.916 ApplicationName="HE" Environment="UAT" ScriptName="he_soa_getCountOfFailedCVCsForUser_1" TransactionName="he_soa_getCountOfFailedCVCsForUser" TransactionStatus="Pass" TransactionStartTime="2017-07-11 22:04:49.916" TransactionEndTime="2017-07-11 22:04:49.927" ResponseTime="0.0108397006988525" VirtualUserID="Vuser4" LoadGenerator="d01qcaplrg04"

Performance data format

- Scenario / script / transaction
- Sub-transaction
- Timings
- Status
- Meta data

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Log Event Breakdown

2017-06-19 22:04:12.092

ApplicationName="IHWEB2"

Environment="UAT"

ScriptName="IHWeb2_EmployerLogin"

TransactionName="IHWeb2_EmployerLogin"

TransactionStatus="Pass"

TransactionStartTime="2017-06-19 22:04:12.092"

TransactionEndTime="2017-06-19 22:04:12.741"

ResponseTime="0.649106025695801"

VirtualUserID="Vuser1"

LoadGenerator="d01qcaplrg01"

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i	Time	Event	
▼	7/13/17 10:08:35.612 PM	2017-07-13 22:08:35.612 ApplicationName="SIEBEL" Environment="UAT" ScriptName="siebel_changeaddress_hr_1" TransactionEndTime="2017-07-13 22:08:35.650" ResponseTime="0.038081169128418" VirtualUserID="Vuser2"	
Event Actions ▼			
Type	<input checked="" type="checkbox"/> Field	Value	Actions
Selected	<input checked="" type="checkbox"/> ApplicationName ▼	SIEBEL	▼
	<input checked="" type="checkbox"/> ResponseTime ▼	0.038081169128418	▼
	<input checked="" type="checkbox"/> ScriptName ▼	siebel_changeaddress_hr_1	▼
	<input checked="" type="checkbox"/> TransactionName ▼	siebel_logout	▼
	<input checked="" type="checkbox"/> host ▼	D01QCAPLRC02	▼
	<input checked="" type="checkbox"/> source ▼	D:\splunk\vr_splunk_combined_uat_07132017.log	▼
	<input checked="" type="checkbox"/> sourcetype ▼	loadrunner	▼
Event	<input type="checkbox"/> Environment ▼	UAT	▼
	<input type="checkbox"/> LoadGenerator ▼	d01qcaplrg02	▼
	<input type="checkbox"/> TransactionEndTime ▼	2017-07-13 22:08:35.650	▼
	<input type="checkbox"/> TransactionStartTime ▼	2017-07-13 22:08:35.612	▼
	<input type="checkbox"/> TransactionStatus ▼	Pass	▼
	<input type="checkbox"/> VirtualUserID ▼	Vuser2	▼
	<input type="checkbox"/> eventtype ▼	nix-all-logs	▼
	<input type="checkbox"/> index ▼	perftest	▼
	<input type="checkbox"/> linecount ▼	1	▼
	<input type="checkbox"/> splunk_server ▼	d01msplkidx02.independenthealth.com	▼
Time ⬇	_time ▼	2017-07-13T22:08:35.612-04:00	

Pre-reqs for Splunk'ifying Data

- 1.Splunk
- 2.Known index / source
- 3.Data size
- 4.Desired retention
- 5.Delivery method
- 6.Desired data elements / content

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Demo

LOOKING AT SPLUNK

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DASHBOARDS FOR VISUALIZATION

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Response Analysis & Trending

Trends with Max Peaks



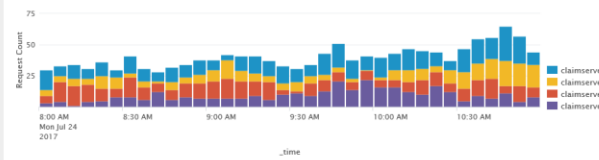
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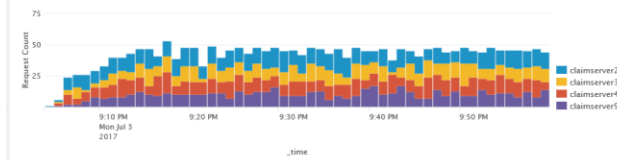


Volume and Response Comparisons

Prod Service Volumes by Server



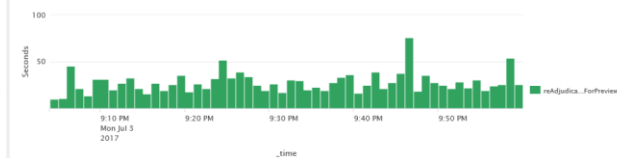
UAT Service Volumes by Server



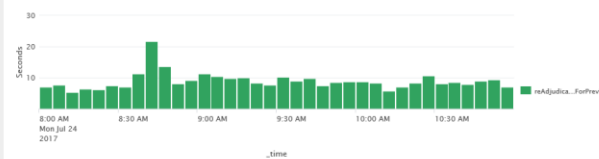
Prod Average Duration by Service Request



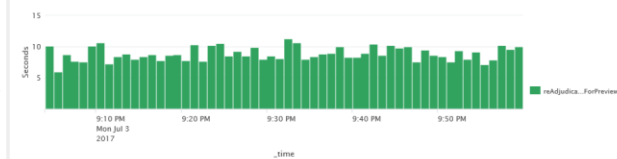
UAT Maximum Duration by Service Request



Prod Average Duration by Service Request



UAT Average Duration by Service Request



Production

Pre-Production

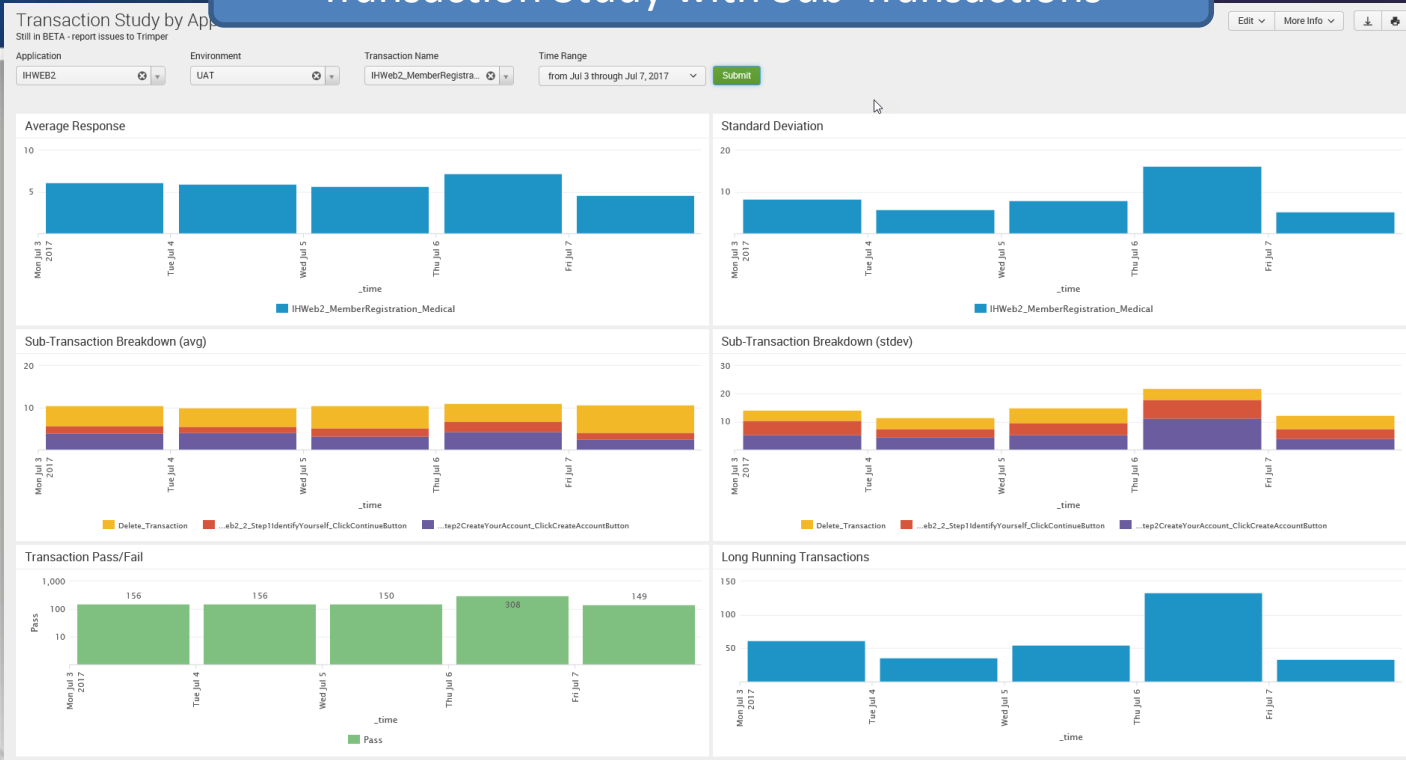
Before

After

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Transaction Study with Sub-Transactions



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Upcoming Vivit Webinars

February 14, 2018

How to Build an Efficient Security Operation Center with the ArcSight SIEM

7:00 - 8:00 AM PDT (Los Angeles), 10:00 - 11:00 AM EDT (New York), 16:00 - 17:00 CET (Frankfurt)

<http://www.vivit-worldwide.org/events/EventDetails.aspx?id=1057043>

February 28, 2018

Unlock your ALM Investment – Micro Focus ALM and ALM Octane

9:00 - 10:00 AM PST (Los Angeles), 12:00 PM - 1:00 PM EST (New York), 18:00 - 19:00 CET (Frankfurt)

<http://www.vivit-worldwide.org/events/EventDetails.aspx?id=1071812>

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Thank You

- Please complete the short survey
- For more information, go to:

www.vivit-worldwide.org

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Thank You
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