From DevOps to BizOps?

Adegbenga Amusa

HPC Developer, BNP Paribas

Stéphane Lapie

Sales Engineer, Splunk Inc.

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Presentation subject to minor changes

[08/02/2016]

This presentation is currently being reviewed by BNP Paribas Communication services.
It is subject to minor changes.

Please do not share its content publicly until final version is submitted.

Many Thanks,
Stéphane Lapie
slapie@splunk.com

Presenters

Adegbenga Amusa

Stéphane Lapie
Presales Engineer – 2 Years @Splunk
Specialized in App Delivery, IT Ops and Cloud
Went from Dev, to Ops to Presales
(was working with Adegbenga @ BNP Paribas)

Once upon a time in a Financial Institution…

A group of people was working on enhancing some…

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And like many Services there was…

Customers

Business

- Requirements
- Service Definition

Development

- Implementation
- Validation & Testing

Operations

- Application Monitoring
- Incident Management

Service

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This group of people was bound to transform the Service

Structurers

Risk Analysts

Quant Analysts

Data Analysts

Business Analysts

Risk Calculation

Application Support

Java, C++, Cuda Developers

Risk Systems

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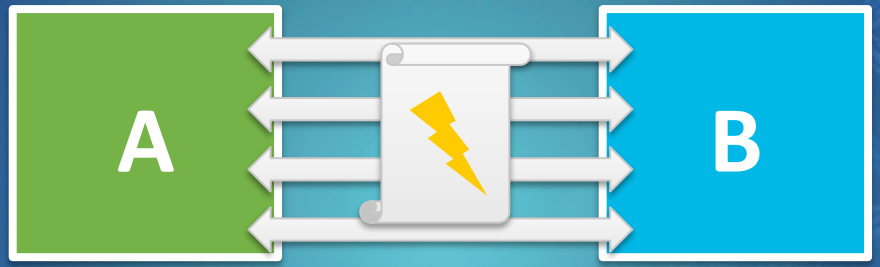
Risk Calculation
Counterparty Risk



- Many Simulations
- Many Parameters
- Many Regulations
- *… may be slow to calculate*

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Structurers

Risk Analysts

Quant Analysts

Data Analysts

High Customer Expectations

- **Fresh** information
- Accurate information
- Compliance with **Market Regulations**
- Fully parametrized **on-demand Simulations**
- **Long term Simulations**
- Quick results *(understand instant)*
- **Ease of Use** !!!
- Integrated with the **many other systems**
- …

Risk Calculation

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A New Project was born

Goal:
Rebuild the Calculation Engine to use highly parallel computing on Graphical Processing Units

- Much Quicker Calculations
- Much More Simulations Capabilities
- Easier Models Implementation
- *Reduce Hardware and Middleware cost*

Project Codename:

HPCE

High Performance Compute Engine

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A New Project was born

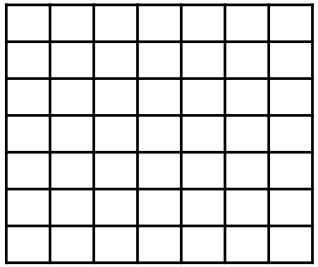
CPU v GPU in a nutshell

Complex and
Different Tasks

few very-smart cores

CPU / SMT

many cheaper cores



GPU / SIMT

Not so Complex
Scalable Tasks

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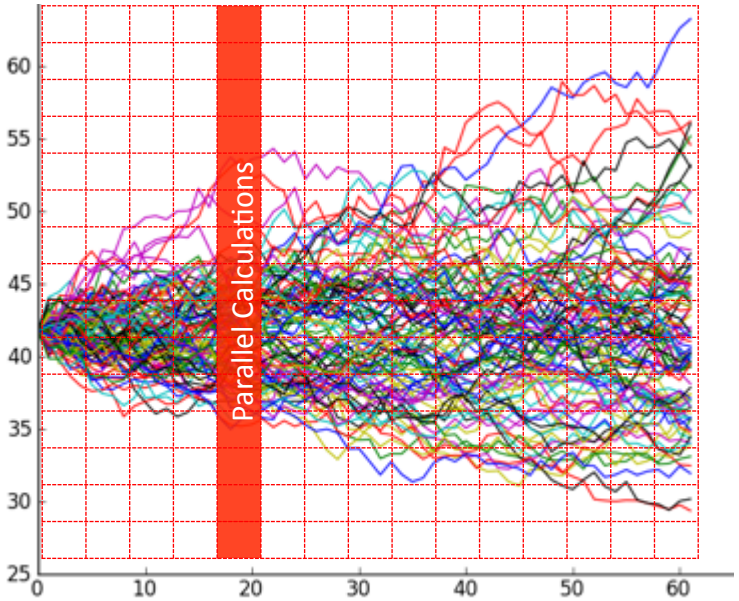
A New Project was born

CPU v GPU in a nutshell

Monte Carlo methods

Simulation to calculate
Value at Risk



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Project's Timeline

From Zero to Hero…

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Project's Timeline

From Zero to Hero…

- **Fast Forward**

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Project's Timeline

From Zero to Hero…

- **Fast Forward**

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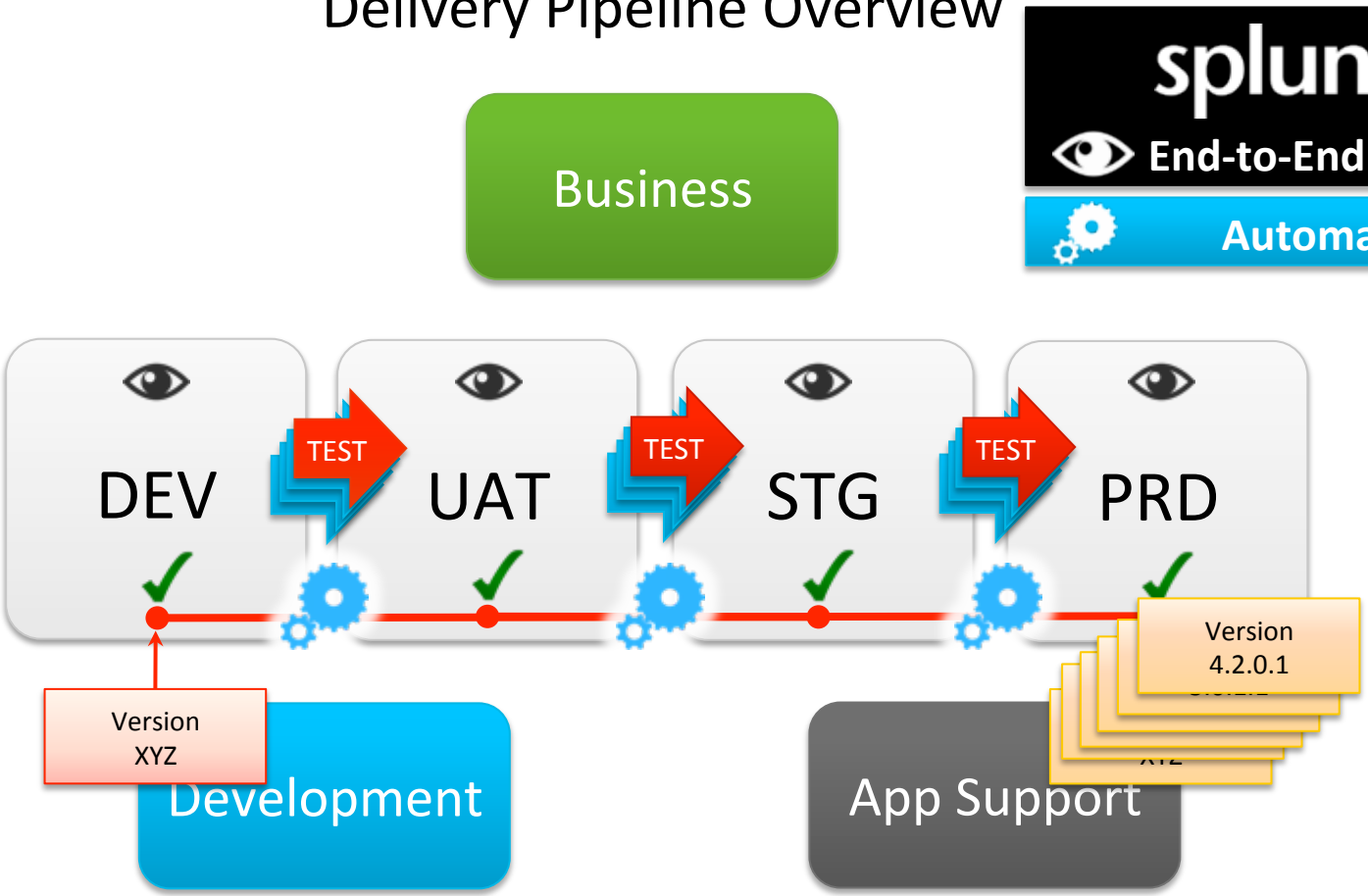
Delivery Pipeline Overview



Step #1

Open Access to Environment's Data

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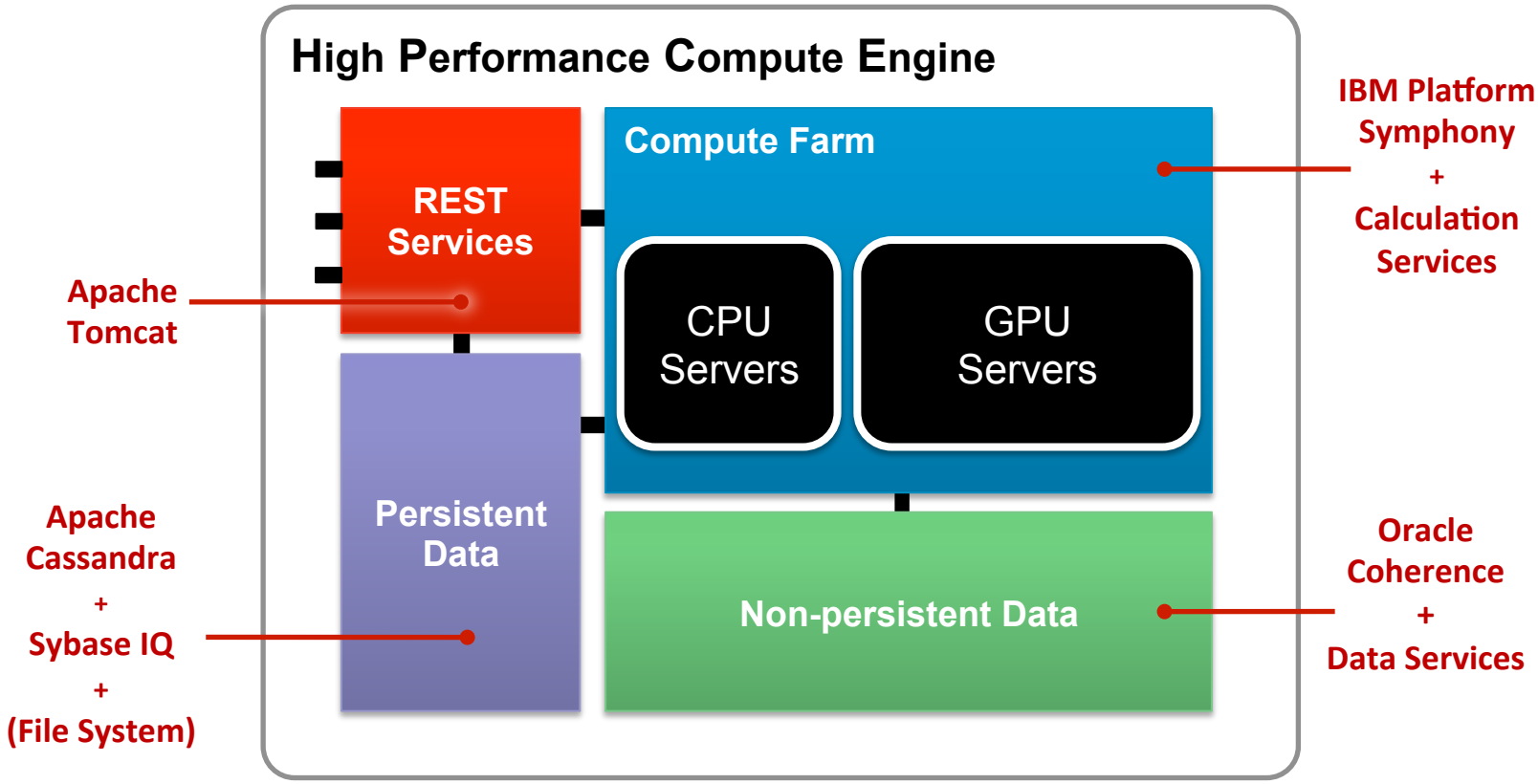
What is Delivered



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Step #2

Create Indicators for each Software Components, one after another…

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Consistent & Re-usable Analytics

Business | App Support | Development

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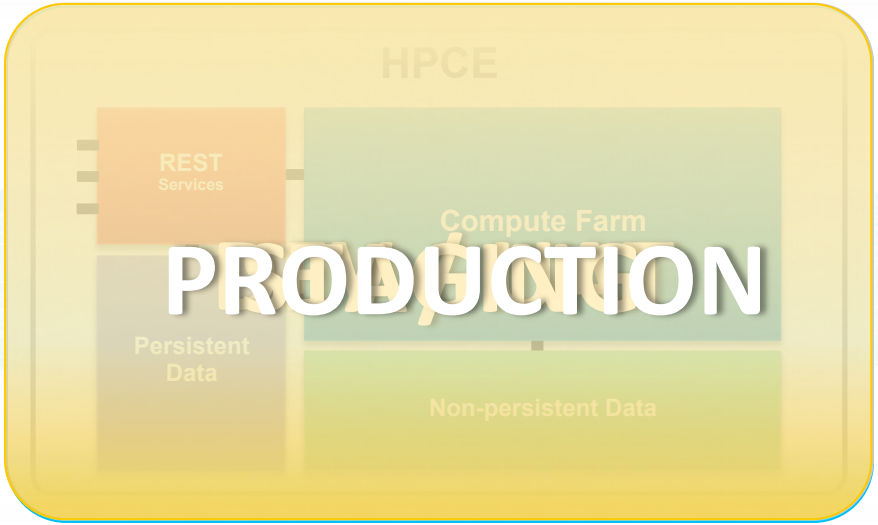
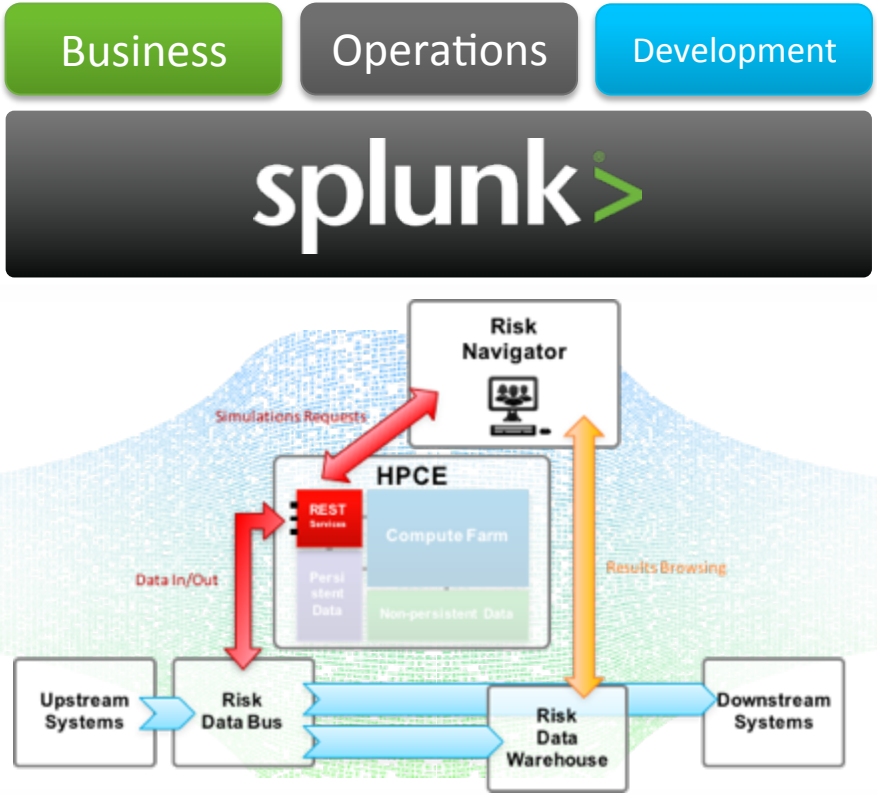


Integration within Risk Systems



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Step #3

Make it repeatable to improve progressively

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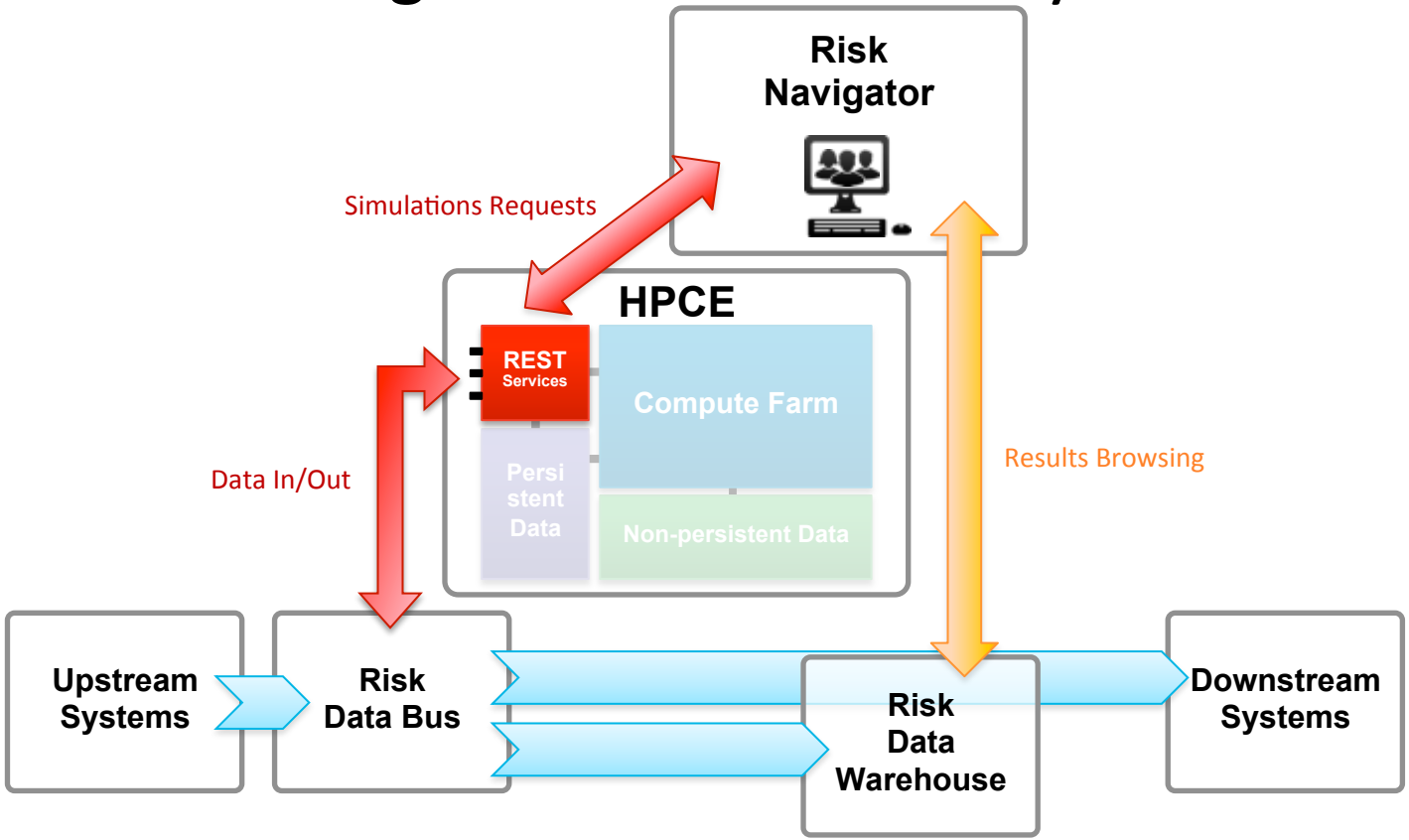
Integration within Risk Systems



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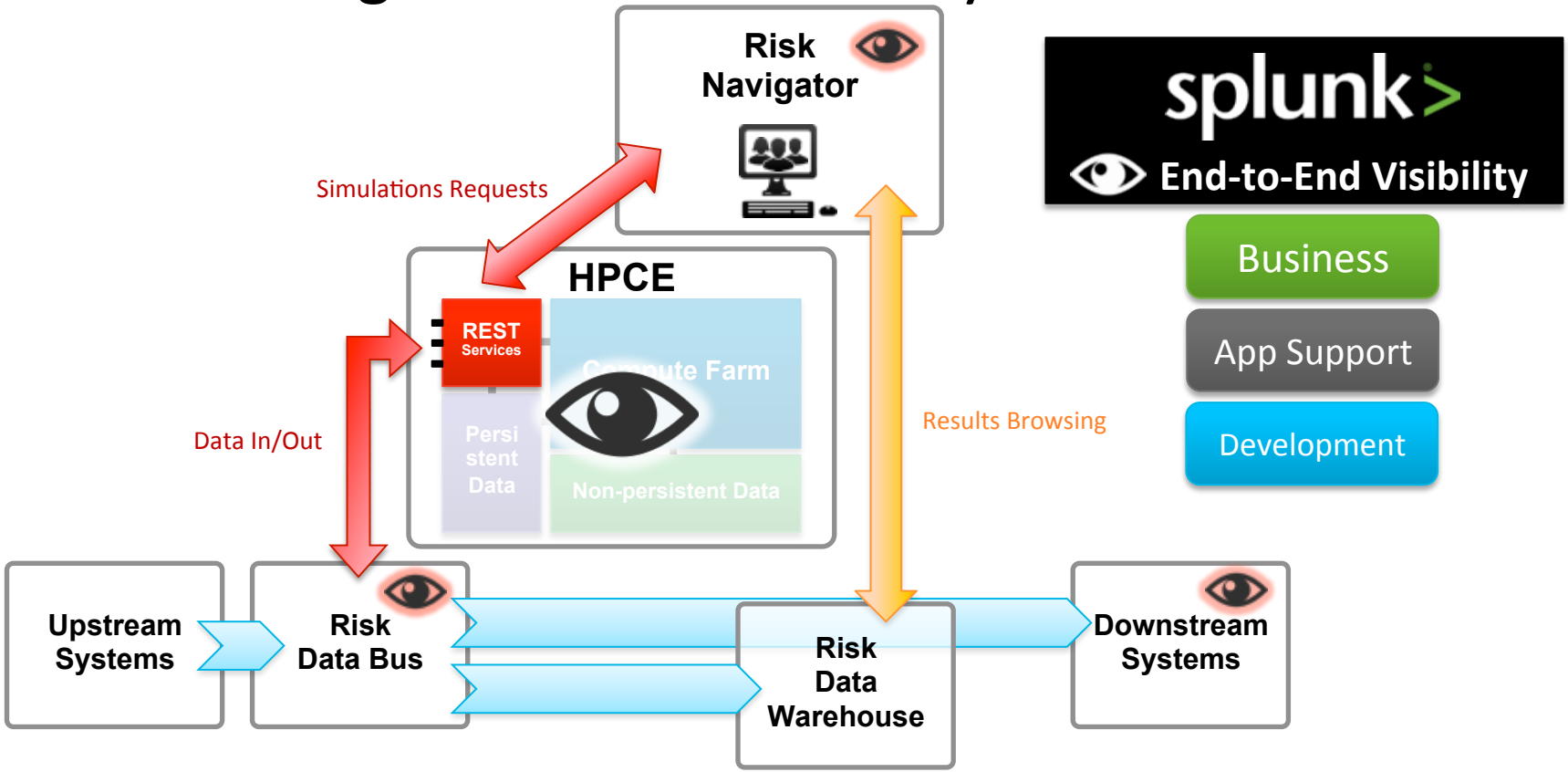
Integration within Risk Systems



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Step #4

Increase the scope to get closer to the “full picture”

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Data Sources Overview

CUSTOM LOGGING

redhat. LINUX

SUBVERSION

TeamCity by JetBrains

Maven Sonatype

JUnit

Apache JMeter

puppet labs

Screenshots

Finally!

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Rest service

Edit | More Info

Development

Select a range time: Last 24 hours

Select a controller: All

Submit

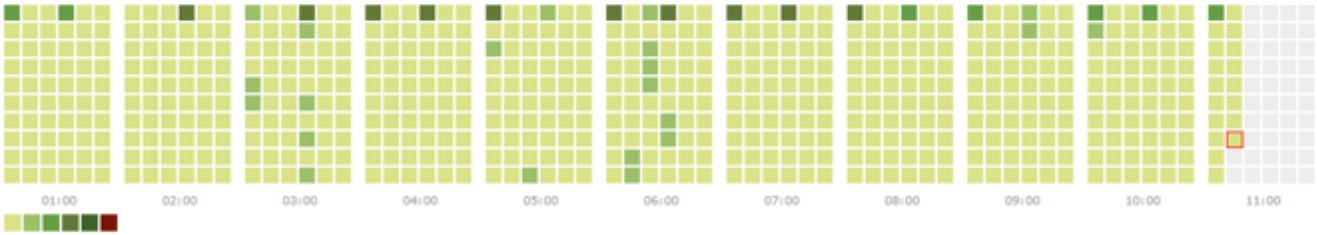
80049

Controllers requests

3.51

AVG controllers response

Controller heatmap



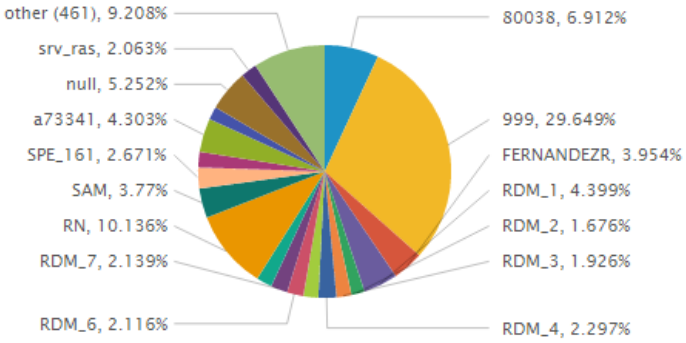
Top rest usage

action	name	submitterId	count	percent
LoadDataController	scenarioSummary	999	18480	29.2%
DataAccessController	counterpartiesAvailable	RN	6215	9.8%
ConfigurationController	getAllConfigurations	80038	4464	7.0%
CalculationEngineController	v2ResponseFrom	null	3307	5.2%
DataAccessController	getSmartDealWithOverrides	a73341	2991	4.7%
EventEngineController	getNodeStatuses	FERNANDEZR	2520	4.0%
ConfigurationController	getAllConfigurations	SAM	2433	3.8%
CalculationEngineController	calculate	srv_ras	1342	2.1%
LoadDealsController	startLink	RDM_1	1156	1.8%
LoadDealsController	endLinkDeals	RDM_1	1145	1.8%

Development

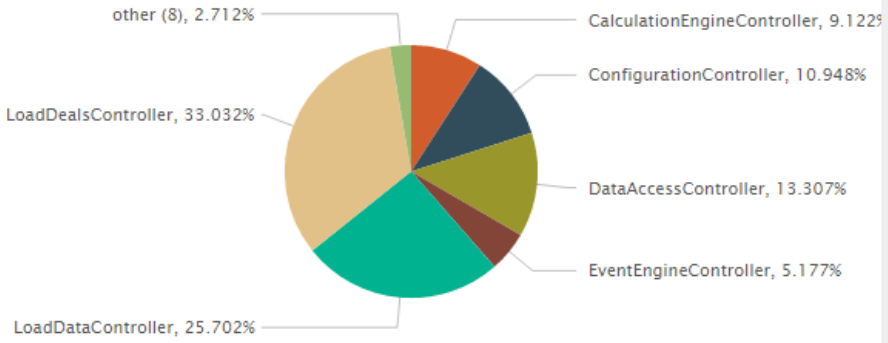
Repartition of submitter

Target : *Controller



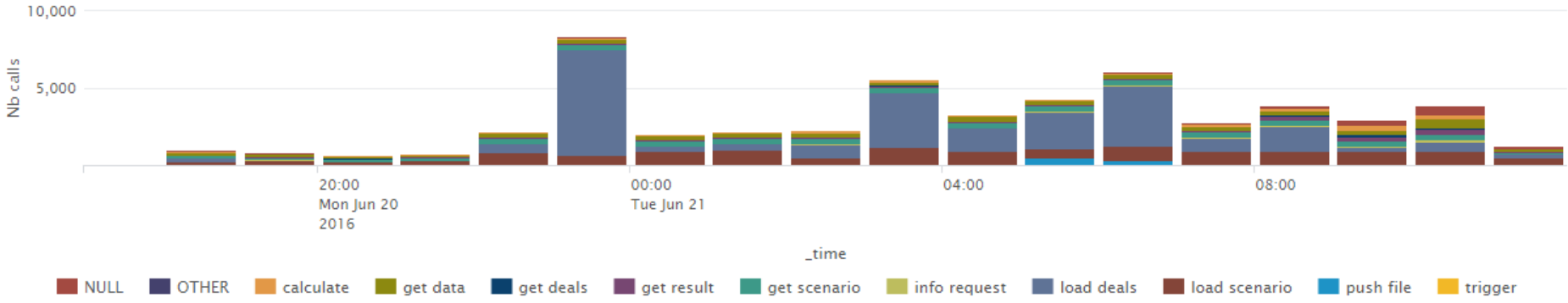
Repartition of controller

Which controller is the most used ?



Number of calls by controllers

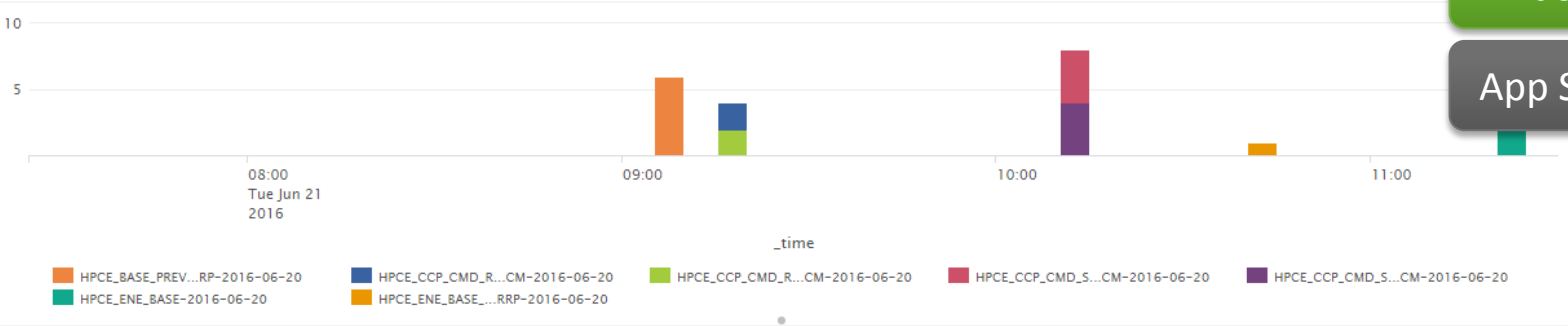
How often controllers are called ?



Business

App Support

Configuration feeds received timechart



10 minutes ago

Configuration Feed Summary

scenario	date	feeds	nb feeds	loadTime second
HPCE_BASE_PREV_SPRD_CRRP	2016-06-20	09:07:27 AM: HPCE_CRD_RAMP_SPREAD_CURVE_DATA_NEW.TXT@HPCE_BASE_PREV_SPRD_CRRP (0.117s) 09:07:27 AM: HPCE_GENERIC_CREDIT_SPREADS.TXT@HPCE_BASE_PREV_SPRD_CRRP (0.200s) 09:07:28 AM: CRDSIM_STATIC_SPREAD.TXT@HPCE_BASE_PREV_SPRD_CRRP (0.166s) 09:07:28 AM: CRDSIM_STATIC_SRT.TXT (0.023s) 09:07:28 AM: CRD_MANUAL_SPREADS.TXT@HPCE_BASE_PREV_SPRD_CRRP (0.161s) 09:07:35 AM: CRD_RAMP_SPREAD_CURVE_DATA.TXT (0.884s)	6	1.551
HPCE_CCP_CMD_REG_WC_EQCM	2016-06-20	09:17:35 AM: HPCE_DYNA_SLAB_CSA.TXT@HPCE_REGULATORY_EQCM (0.192s) 09:17:36 AM: HPCE_ASSET.TXT@HPCE_REGULATORY_EQCM (0.345s)	2	0.537
HPCE_CCP_CMD_REG_EQCM	2016-06-20	09:17:37 AM: HPCE_DYNA_SLAB_CSA.TXT@HPCE_REGULATORY_EQCM (1.790s) 09:17:38 AM: HPCE_ASSET.TXT@HPCE_REGULATORY_EQCM (0.536s)	2	2.326
HPCE_CCP_CMD_SRG_WC_EQCM	2016-06-20	10:11:36 AM: HPCE_DYNA_SLAB_CSA.TXT@HPCE_STRESSREG_EQCM (0.081s) 10:12:10 AM: HPCE_EQT_HISTORICAL.TXT@HPCE_STRESSREG_EQCM (4.252s) 10:12:11 AM: HPCE_ACTIONS.TXT@HPCE_STRESSREG_EQCM (0.166s) 10:12:11 AM: HPCE_ASSET.TXT@HPCE_STRESSREG_EQCM (0.110s)	4	4.609
HPCE_CCP_CMD_SRG_EQCM	2016-06-20	10:11:36 AM: HPCE_DYNA_SLAB_CSA.TXT@HPCE_STRESSREG_EQCM (0.097s) 10:12:40 AM: HPCE_ACTIONS.TXT@HPCE_STRESSREG_EQCM (0.084s) 10:12:40 AM: HPCE_EQT_HISTORICAL.TXT@HPCE_STRESSREG_EQCM (3.944s) 10:12:41 AM: HPCE_ASSET.TXT@HPCE_STRESSREG_EQCM (0.082s)	4	4.207
HPCE_ENE_BASE_OLD_CRRP	2016-06-20	10:42:02 AM: DEAL_REMAP_INFO.DAT@HPCE_ENE_BASE_OLD_CRRP (0.094s)	1	0.094
HPCE_ENE_BASE	2016-06-20	11:22:46 AM: NORM_DFLT_PARAMS_POST_PROCESS.TXT@HPCE_ENE_BASE (0.169s) 11:22:47 AM: DEAL_REMAP_INFO.DAT@HPCE_ENE_BASE (0.184s)	2	0.353

Business

App Support

Scenario: Last 4 hours | all

Date: *

Feed name: *

filter:
- All
- link=deal
- link!=deal
- 0 RDM(link) received
- 0 SPE(deal) received

RDM

0 Feeds link received

0 Link loaded

SPE

2,656 Feeds deals received

34,697 deals received

Sumarize link/load

scenario	date	version	feedId	link	deals	deltaDeals	Nb. deals feeds	Nb. link feeds	RDMMaxTime	RDMMinTime	SPEMaxTime	SPEMinTime
HPCE_OFFICIAL_EQCM	2016-06-20	121996788	STATICS_LST_BP2S_EUROPE_DAT	0	12000	-12000	6	0	0	0	2016-06-21 10:01:15	2016-06-21 09:56:01
HPCE_OFFICIAL_EQCM	2016-06-20	124906085	STATICS_PS_PW_STWWAW_DAT	0	1	-1	1	0	0	0	2016-06-21 10:41:58	2016-06-21 10:41:58
HPCE_OFFICIAL_EQCM	2016-06-20	125877565	STATICS_SLABNY_ALD_DAT	0	5278	-5278	2639	0	0	0	2016-06-21 11:40:41	2016-06-21 11:15:05
HPCE_OFFICIAL_RPO	2016-06-20	116710660	CR_PRD_MBS_DEAL_LVL_TBA_DAT	0	15724	-15724	8	0	0	0	2016-06-21 08:27:34	2016-06-21 08:27:09
HPCE_OFFICIAL_RT	2016-06-17	373309923	FXO_RT_DAT	0	1255	-1255	1	0	0	0	2016-06-21 07:57:45	2016-06-21 07:57:45
HPCE_OFFICIAL_RT	2016-06-20	90644830	FXO_RT_DAT	0	439	-439	1	0	0	0	2016-06-21 11:35:37	2016-06-21 11:35:37

Number of SPE deals loaded by scenario - timechart

SM to Position - performance

Edit | More Info

Development

App Support

Scenario: Last 4 hours | all

Date: *

Select perimeter:
- (•) All
- ( ) IRFX
- ( ) EQCM
- ( ) CRPO/CRPR

-**ReadTime**: time spent in retrieved the data from Cassandra into Coherence

-**ProcessingTime**: time spent to convert a list of SM into a list of java Position object (=xmlConversionTime+xmlParsingTime+dealBuildingTime)

-**XmlConversionTime**: time spent to convert the smartDeal into XML position format

-**XmlParsingTime**: time spent to convert the XML position format into Deal object

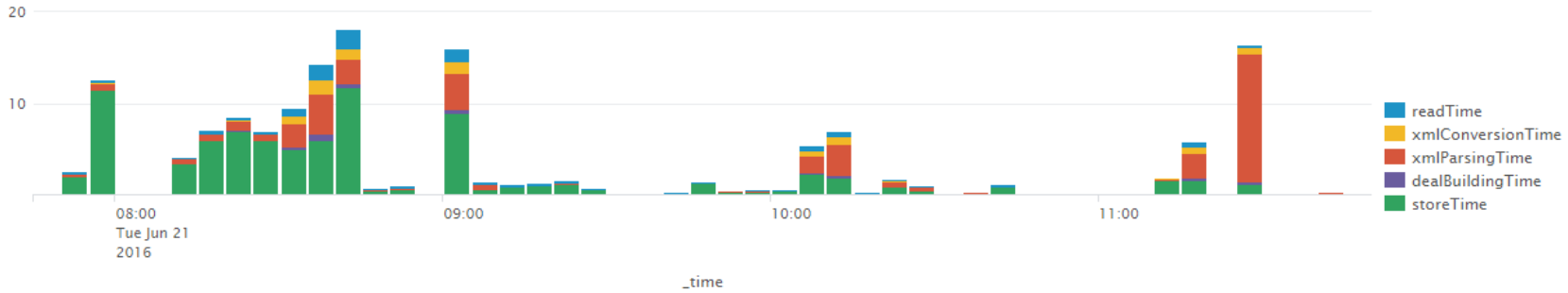
-**DealBuildingTime**: time spent to convert the Deal object into Position object

-**StoreTime**: time spent to attach a list of java Positions to the node and store these Positions in the cache

Convert SM to Position in Coherence (S.)

stats	readTime	processingTime	xmlConversionTime	xmlParsingTime	dealBuildingTime	storeTime	total
AVG (s.)	0.51	2.48	0.47	1.82	0.16	2.38	5.34
MAX (s.)	15.67	229.70	19.40	210.07	3.57	58.37	231.41
SUM (s.)	2049.94	9929.25	1884.38	7292.10	641.63	9555.01	21423.07

Convert SM to Position in Coherence timechart (S.)

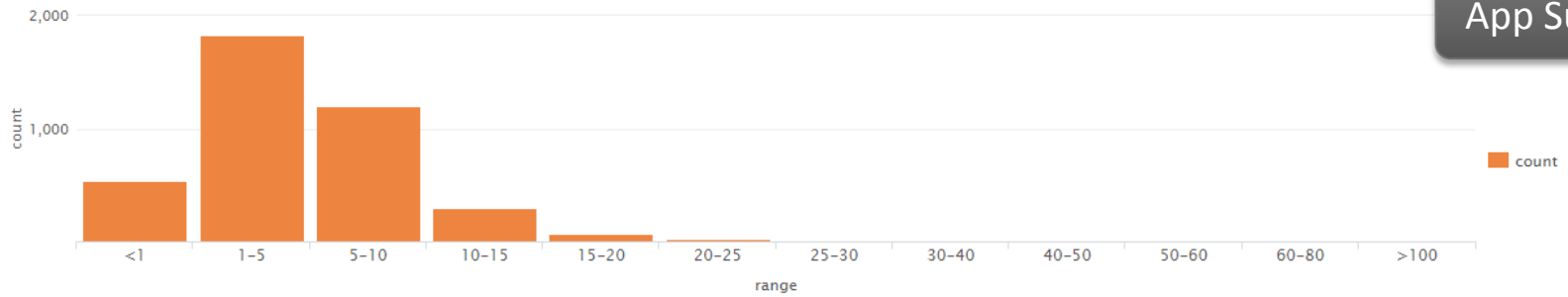


Development

App Support

Convert SM to Position in Coherence rangemap (S.)

Untitled



Longest conversion SM to Position in Coherence (S.)

Untitled

	scenario	date	taskId	sourceId	version	nbDeals	readTime	xmlConversionTime	xmlParsingTime	dealBuildingTime	storeTime	total
:11:02.800	HPCE_OFFICIAL	2016-03-31	84a1bd41-8339-4b3f-8b9d-61db45030071	Global	V0	1080	0.24	19.40	210.07	0.22	1.48	231.41
:38:58.095	HPCE_OFFICIAL	2016-06-20	da39b66a-4f27-4bba-aaee-90054efdf35e	STATICS_STAR_14_DAT	V116376676	1080	5.88	1.11	3.08	0.36	57.24	67.67
:40:16.092	HPCE_OFFICIAL	2016-06-20	7c5dc32b-f6a0-4dff-b6a5-8b336cdfec04	STATICS_STAR_9_DAT	V116376911	1080	9.61	1.05	3.51	0.38	51.87	66.42
:41:58.689	HPCE_OFFICIAL	2016-06-20	8064a7d1-7a00-4383-979f-5087777cb890	STATICS_STAR_4_DAT	V116376647	1080	14.70	1.23	3.31	0.40	46.63	66.26

Business

App Support

Development

Scenario: Last 24 hours | all

Date: all

Extraction result: All | Only extraction with result | Only extraction without result

Extraction processing/ValExp gap: All | CPTY processing/ValExp gap | DEALS processing/ValExp gap

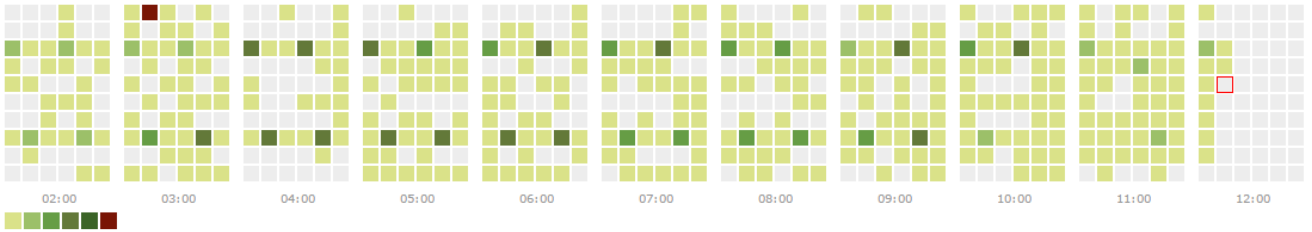
Nb. extraction triggered

41,843

Nb. error extraction triggered

0

Extraction heatmap by minute



Extraction detail by scenario

(Nb. deals filtered = deals filtering during the creation of the dealValExp row ex:AgentUmbrella)

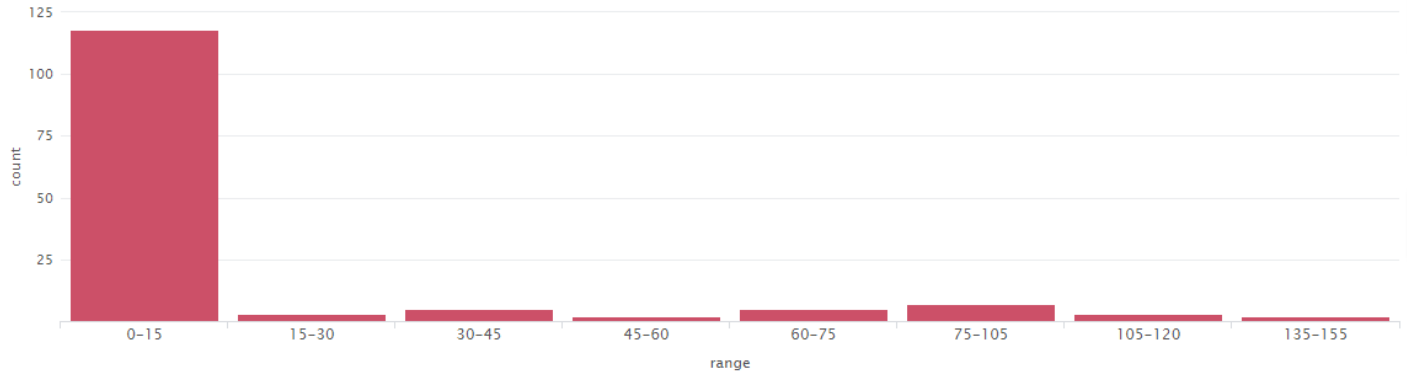
cfg	Nb. extract triggered	Nb. cpty processing	Nb. stCValExp row created	deltaCpty	Nb. deals processing	Nb. dealValExp row created	Nb. deals filtered	deltaDeals
HPCE_ADHOC_STRESS-2016-06-15	97	0	0	0	0	0	0	0
HPCE_ADHOC_STRESS-2016-06-16	77	24741	26190	-1449	743796	709581	34215	0
HPCE_BASE_NO_PV_ADJ-2016-06-14	43	0	0	0	0	0	0	0
HPCE_BASE_NO_PV_ADJ-2016-06-15	97	0	0	0	0	0	0	0
HPCE_BASE_NO_PV_ADJ-2016-06-16	97	0	0	0	0	0	0	0
HPCE_BASE_NO_PV_ADJ-2016-06-17	93	24520	25866	-1346	750670	717011	33659	0
HPCE_BASE_NO_PV_ADJ-2016-06-20	11	6678	6758	-80	202517	197156	5361	0
HPCE_BASE_NO_PV_ADJ_CRRP-2016-06-15	43	0	0	0	0	0	0	0

Business

App Support

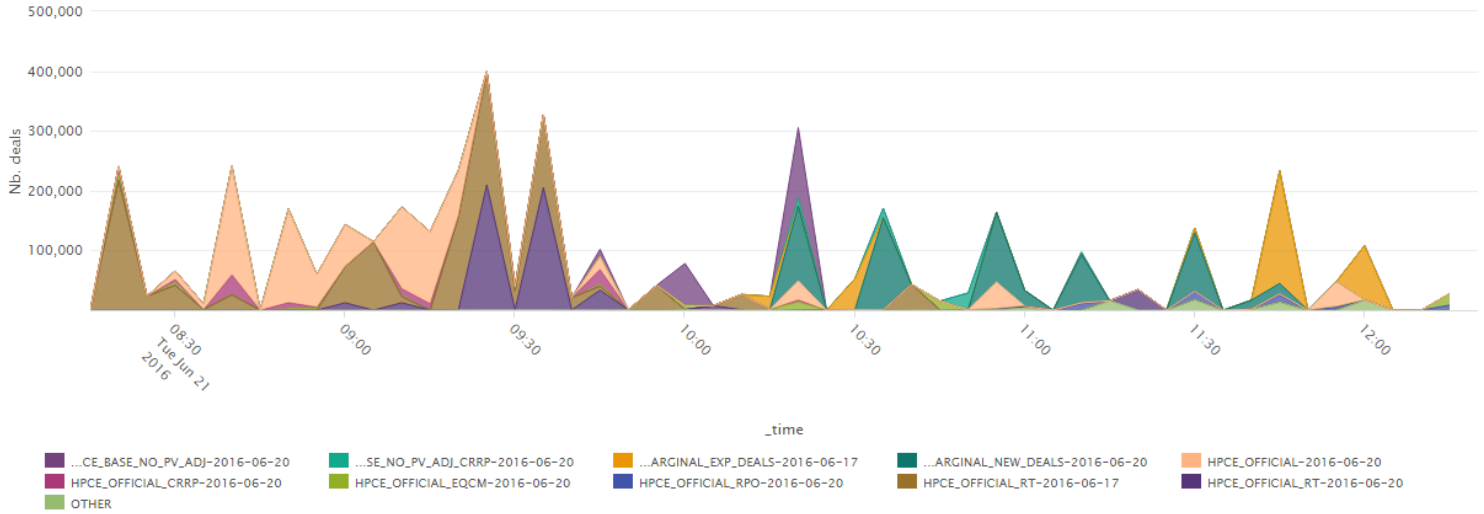
Development

Extract metrics and build rows for DBL (=total) rangemap (S.)



Extraction rate - events per minute (dblProcessingNode)

Nb positions extracted by scenario

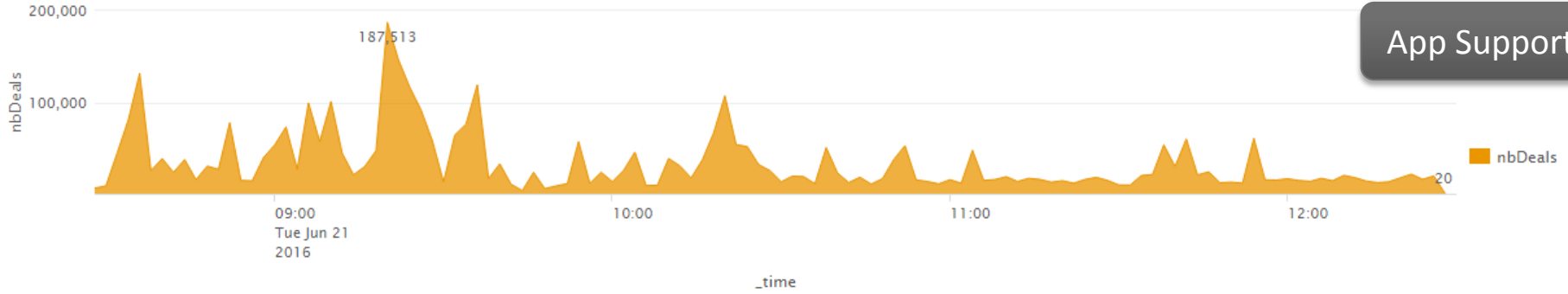


Number of deals calculated by minute

Development

App Support

Calculation Deals



Long running Calculations (>30s)

_time	scenario	date	taskId	delta
2016-06-21 09:40:11.497	HPCE_OFFICIAL_CRRP	2016-06-20	CHASNYK--G-CRD--f2a8f56b-535e-4aaa-b2b9-ee3f53a0ea62	7450.1
2016-06-21 10:16:50.542	HPCE_CAL_S3_MP_CRRP	2016-03-31	PIMCLAXAGENT--G-CRD--b2c55adb-c75f-44d5-84a8-fda3feaa5586	5726.6
2016-06-21 11:16:34.565	HPCE_BASE_NO_PV_ADJ_CRRP	2016-06-20	WMCOBOSAGENT--G-CRD--ee2f5218-ef09-410a-847d-bd1bb6421bbd	5536.0
2016-06-21 09:11:30.266	HPCE_OFFICIAL_CRRP	2016-06-20	BARCLON--G-CRD--d691a43b-20ab-40d0-bb52-d3ab9715fba6	4661.8
2016-06-21 08:52:01.782	HPCE_OFFICIAL_CRRP	2016-06-20	IUTLNYK--G-HOUSE-CLEARING-CRD--90d60f73-10c4-4c04-91ed-67e85658fd0b	4564.3
2016-06-21 08:50:01.979	HPCE_OFFICIAL_CRRP	2016-06-20	PIMCLAXAGENT--G-CRD--ced216e3-11c0-48ee-98fb-c6a0c10e7caf	4430.0
2016-06-21 08:59:50.357	HPCE_OFFICIAL_CRRP	2016-06-20	CITINYK--G-CRD--bab25810-ac0a-43b2-a55e-97b344e34686	4318.4
2016-06-21 10:50:02.936	HPCE_BASE_NO_PV_ADJ_CRRP	2016-06-20	DEUTFRA--G-CRD--7c61f023-5894-4f8f-9594-76cc775c0ea8	3846.4
2016-06-21 08:37:33.000	HPCE_OFFICIAL_CRRP	2016-06-20	MSCSNYK--G-CRD--3b51ecbb-e850-4fd7-a77b-79601b25044b	3712.6
2016-06-21 11:10:51.715	HPCE_BASE_NO_PV_ADJ_CRRP	2016-06-20	SOGEPAR--G-CRD--9ab17de6-2382-45d1-8624-748680f70571	3664.4

« prev 1 2 3 4 5 6 7 8 9 10 next »

Business

App Support

Development

Last 4 hours

Scenario: all

Date: all

Select perimeter: All / IRFX / EQCM / CRPO/CRPR

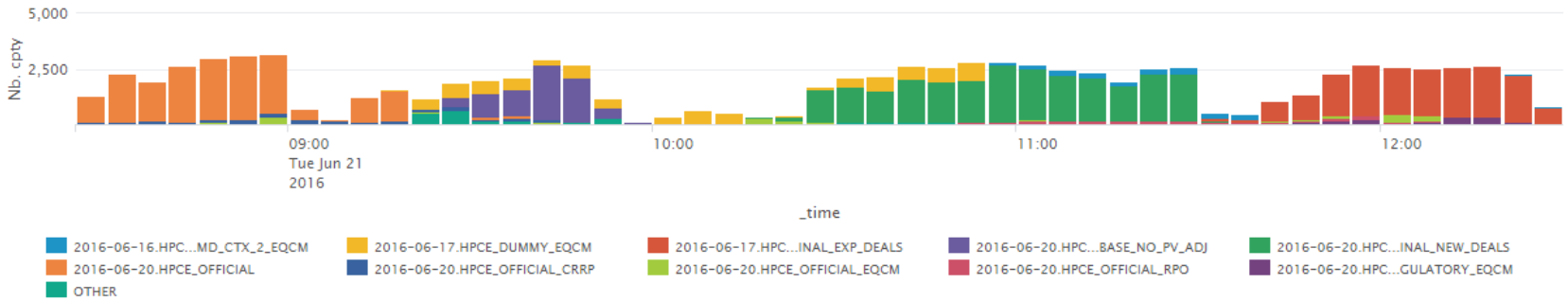
Select mode: All / Batch / Stress / On demand

Calculation overview

type	NB. Scenario	nb. cpty calculated	nb. cpty failed	nb. deals represented	AVG to calculate 1 cpty(s.)	MAX to calculate 1 cpty (	
STRESS IRFX	5	50893	5	1291512	6.6	20	
BATCH IRFX	1	19250	2	927201	5.7	3045.0	1600.6
BATCH EQCM	2	9984	0	78639	12.8	1595.0	1366.2
BATCH CRPO	2	3643	30	163580	79.1	7450.1	88645.6
STRESS EQCM	2	3411	4	94268	24.6	1563.1	3142.0
BATCH RT	2	1465	0	1307300	28.9	2706.2	14847.9
ON_DEMAND IRFX	10	587	0	21180	2.7	345.0	232.1
STRESS CRPO	4	551	3	62819	227.8	5726.6	388224.6
ON_DEMAND EQCM	6	354	0	22978	12.5	881.7	2498.6
ON_DEMAND RT	1	64	0	12184	6.0	127.8	422.9

« prev 1 2 next »

Number of calculation events by minute (number of calculateAll)



Development

Scenario: Last 24 hours | all

Date: *

Select perimeter: All | IRFX | EQCM | CRPO/CRPR

Select mode: All | Batch | Batch + RT | Stress | On demand

elect taskId: *

High level HPCE process

-**getNode**: Retreive one node from Coherence (NodeStore)

-**applyAllPositionLevelOverrides**: time to override all the positions of one Node

-**normingNode**: time to norming one node

-**pricingNode**: time to pricingNode one node

-**pricingTzeroNode**: time to calculate the node at Tzero

-**calculatingMeasures**:time to calculate all the different measures for one node

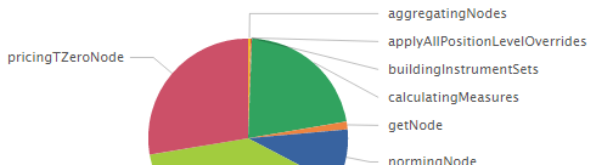
-**aggregatingNodes**: time to aggregating on Node

-**buildingInstrumentSets**: time to attache instruments to one Node

name	rank	Nb. occurrence	NB. task	AVG one execution (s.)	MAX one execution (s.)	SUM all executions (s.)	VARIANCE
getNode	1	65510	65471	0.13	106.93	8809.79	1002215
applyAllPositionLevelOverrides	2	65508	65469	0.02	19.77	1314.04	26938
pricingTZeroNode	3	189724	60948	1.03	1852.36	195669.46	157855590
buildingInstrumentSets	4	190934	56550	0.00	5.44	95.10	492
pricingNode	5	189981	56587	1.56	4612.66	296339.72	1039740828
normingNode	6	14729	8758	5.12	3349.04	75468.33	3359321924
aggregatingNodes	7	62929	60034	0.05	12.20	3066.52	40651
calculatingMeasures	8	120603	60954	1.29	400.72	155714.08	3697596

Calculation CPTY - Histogram (S.)

Longest HPCE process - breakdown



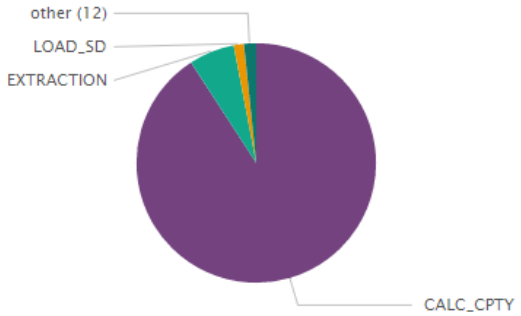
Development

App Support

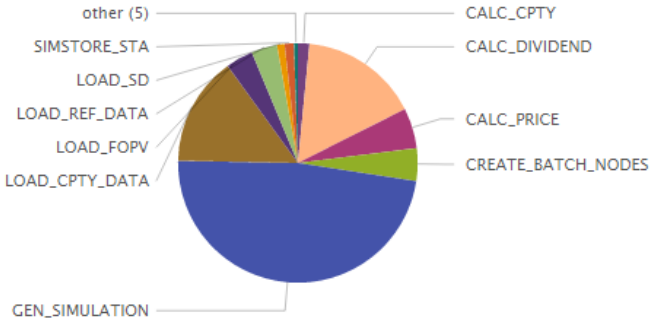
Overview symphony tasks

taskType	NB. tasks	AVG	MAX	SUM	
CALC_CPTY	1023695	11.99	20372.58	6135823.35	14731115
EXTRACTION	69387	0.39	209.70	13453.01	
LOAD_SD	15378	7.78	71.17	59824.04	
CREATE_NODES	9540	0.25	113.02	1176.87	4404
CALC_PRICE	6635	41.73	836.73	138336.53	4043698
CR_SPREAD_CTPY	806	0.09	3.45	37.43	108
CR_SPREAD	616	0.03	1.00	8.37	7
LOAD_REF_DATA	312	26.71	441.78	4166.94	3255265
SIMSTORE_STA	198	9.73	89.66	963.68	427459
CREATE_BATCH_NODES	116	33.87	156.60	1964.54	1550427
GEN_SIMULATION	85	367.69	3203.04	15443.02	407364438
CR_SPREAD_DEFAULT_CPTY	84	3.18	30.63	133.51	24296
LOAD_FOPV	60	28.37	303.09	851.16	5031259
LOAD_CPTY_DATA	44	113.01	823.38	2486.25	46100702
CALC_DIVIDEND	14	123.05	221.84	861.34	5977829

Number of symphony tasks



Longest symphony tasks (AVG)



Calculation - measure

Edit | Mor

Development

App Support

Scenario: Last 4 hours | all

Date: all

Select perimeter: *

Select mode: *

calculatingMeasures avg time

1.29

seconds

calculatingMeasures Max time

438.18

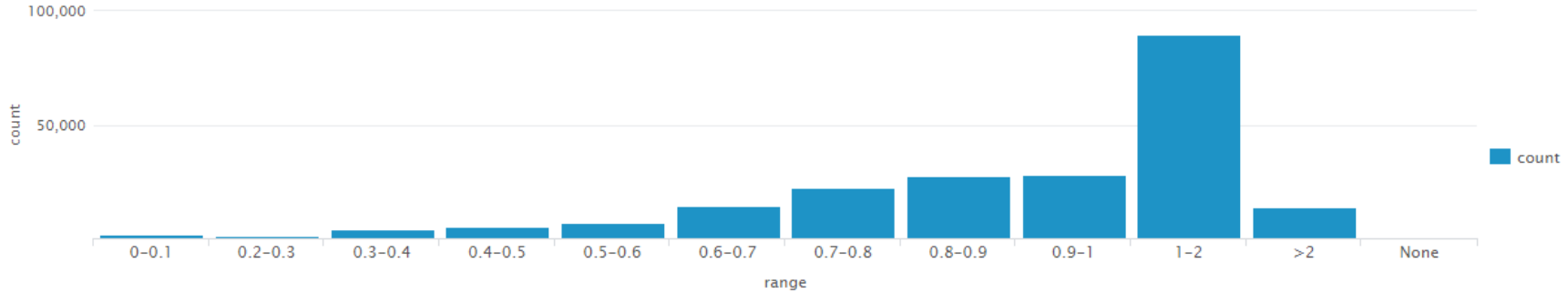
seconds

calculatingMeasures var time

5.49

seconds

Measure calculation - histogram



CalculatingMeasure detail

rank	name	avg(delta)
2	calculateIM	0.035231
5	prepareInitialMargin	0.025082
6	prepareCreditSpreads	0.097126
7	calculateMeasureMetrics	1.149677

Business

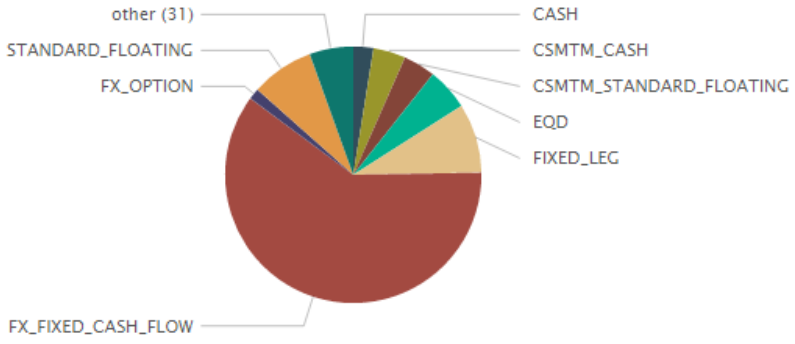
Development

Pricer Table

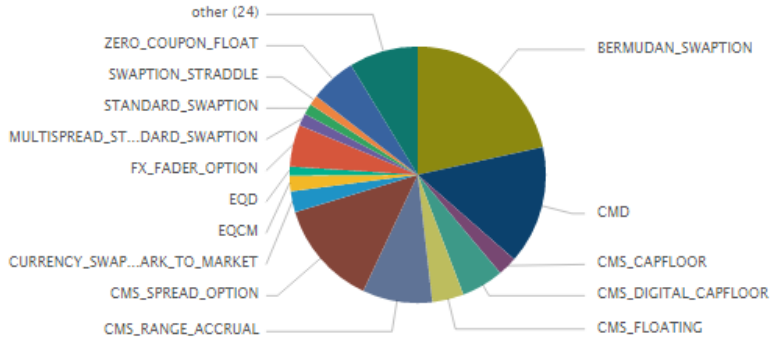
pricer	nbCalls	nbCurrency	nbOfInstru	
MULTISPREAD_STANDARD_SWAPTION	565	3		
FX_SINGLE_BARRIER_IN_OPTION	2455	10	16967	250.19
INFLATION_YOY	1941	4	57494	221.87
CMS_DIGITAL_CAPFLOOR	83	3	11705	192.75
FX_TOUCH_CURRENCY_OPTION	1560	6	2776	140.46
FX_DOUBLE_BARRIER_OUT_OPTION	972	5	3675	84.77
FX_DOUBLE_BARRIER_IN_OPTION	625	3	4756	63.31
CSMTM_FIXED_LEG	250	11	2850	12.25
ZERO_COUPON_FIXED	32	2	32	1.92

« prev 1 2 next »

Number of pricing type



Longest pricing type (AVG)



Select group type

- (•) All
- ( ) GPU
- ( ) OMP

Business

Development

Overview HPCE pricergroup

pricerGroup	nbcall	nbInstruments	avgInstByCall	AVGpricerTime	SUMpricerTime
BERMUDAN_SWAPTION	830	1395	1.680723	6632.403614	5504895
CAPFLOOR	16288	861034	52.863089	123.511358	2011753
CASH	55221	632430	11.452708	37.338422	2061865
CMD	2814	21268	7.557925	3892.717839	10954108
CMS_CAPFLOOR	718	25052	34.891365	686.701950	493052
CMS_DIGITAL_CAPFLOOR	15	2499	166.600000	2219.400000	33291
CMS_FLOATING	1366	43961	32.182284	675.554905	922808
CMS_RANGE_ACCRUAL	217	12297	56.668203	2250.221198	488298
CMS_SPREAD_OPTION	1054	59884	56.815939	3350.508539	3531436
CSMTM_CASH	102081	144089	1.411516	27.408352	2797872

« prev 1 2 3 4 next »

Number of currency by pricergroup

pricerGroup	nbCcy	somename
ZERO_COUPON_FLOAT	1	EUR
CMS_DIGITAL_CAPFLOOR	2	EUR,NONE
FX_DOUBLE_BARRIER_IN_OPTION	2	EUR,USD
ZERO_COUPON_FIXED	2	EUR,NONE
EONIA_FLOATING	3	EUR,NONE,USD
FX_FADER_OPTION	3	AUD,EUR,USD
MULTISPREAD_STANDARD_SWAPTION	3	EUR,NONE,USD
CMS_CAPFLOOR	4	EUR,JPY,NONE,USD
CMS_FLOATING	4	EUR,JPY,NONE,USD
FX_DOUBLE_BARRIER_OUT_OPTION	4	CNY,EUR,NONE,USD

« prev 1 2 3 4 next »

Today | Submit

Development

App Support

Number of hosts using during the time given

76

Number of hosts by services

tag	dc(host)
hpce_cassandra	5
hpce_cg_gpu	50
hpce_dg	31
hpce_rest	3

memory average usage

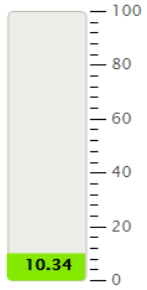
39%

CPU average usage

8%

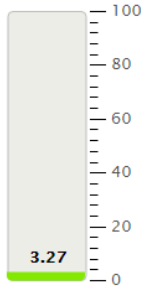
Data grid

CPU (AVG)



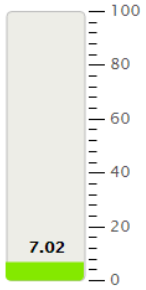
Rest

CPU (AVG)



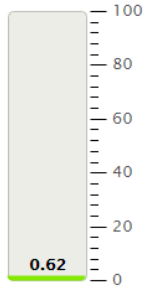
GPU

CPU (AVG)



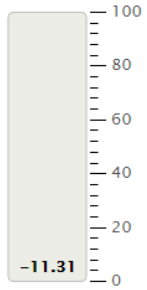
Cassandra

CPU (AVG)



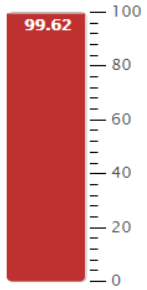
data grid

memory (AVG)



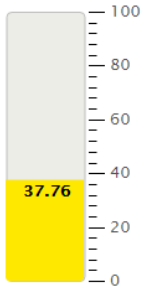
Rest

memory (AVG)



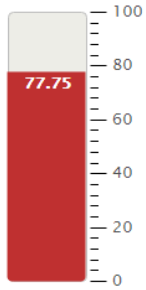
GPU

memory (AVG)



Cassandra

memory (AVG)



Infra - overview

Edit | More Info

Last 4 hours | Submit

Development

App Support

Number of hosts using during the time given

76

Number of hosts by services

tag	dc(host)
hpce_cassandra	5
hpce_cg_gpu	50
hpce_dg	31
hpce_rest	3

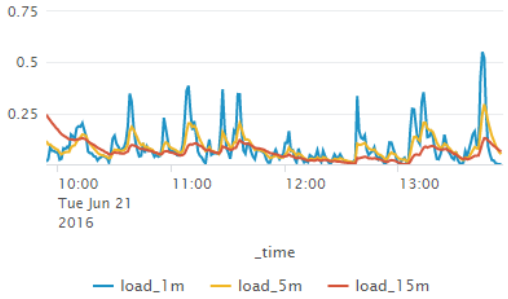
memory average usage

41%

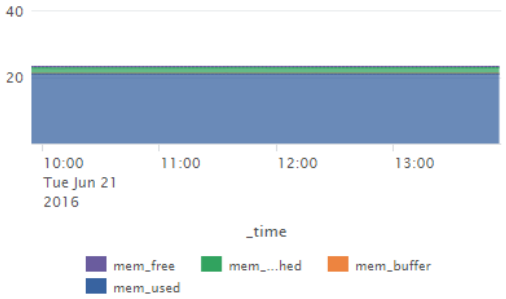
CPU average usage

12%

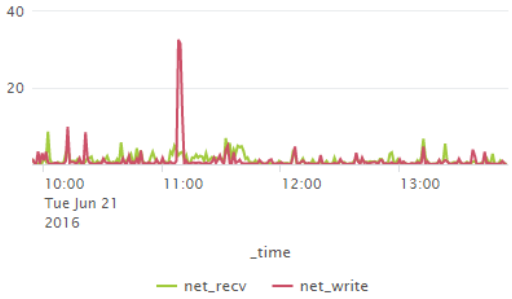
CPU - Rest



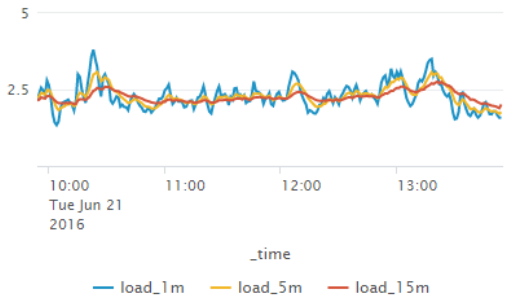
Memory - Rest



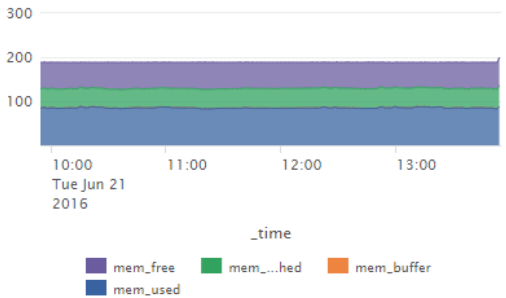
Network - Rest



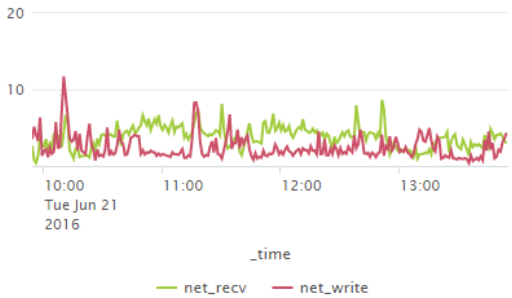
CPU - Compute Grid GPU



Memory - compute Grid GPU

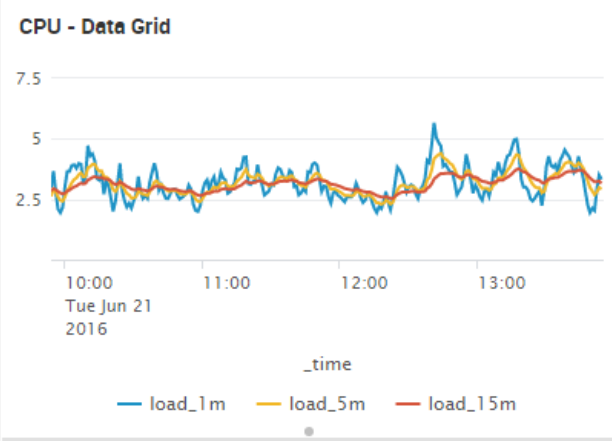


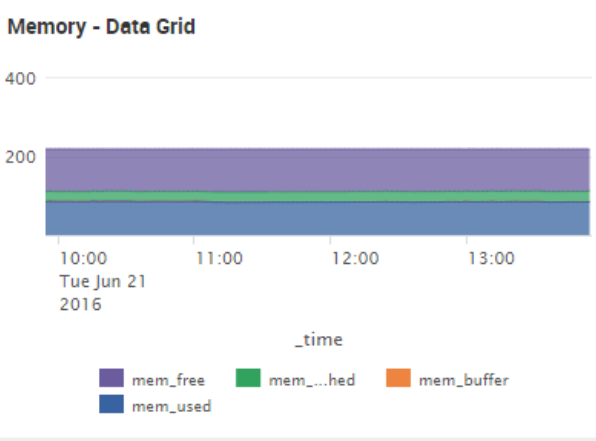
Network - Compute Grid GPU

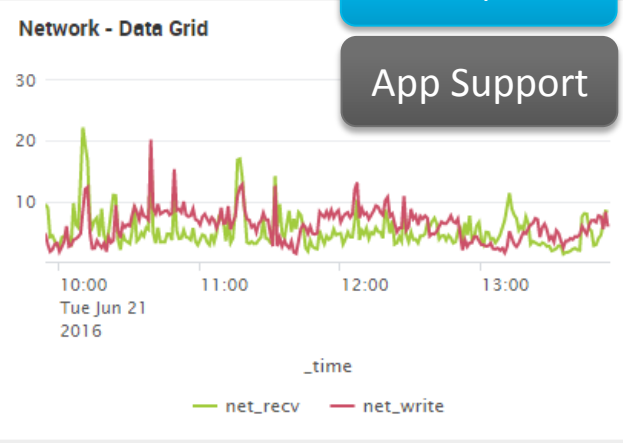


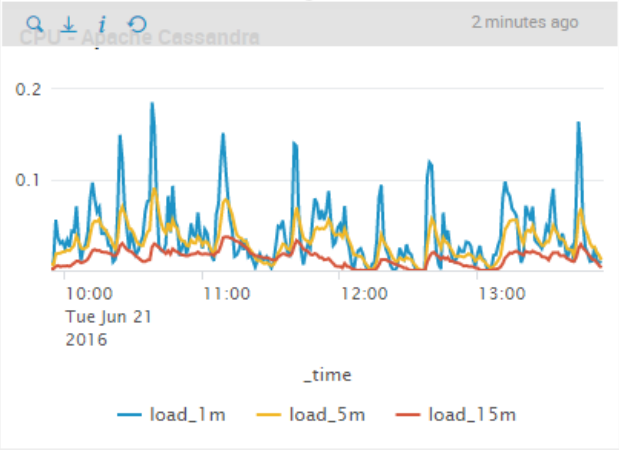
Development

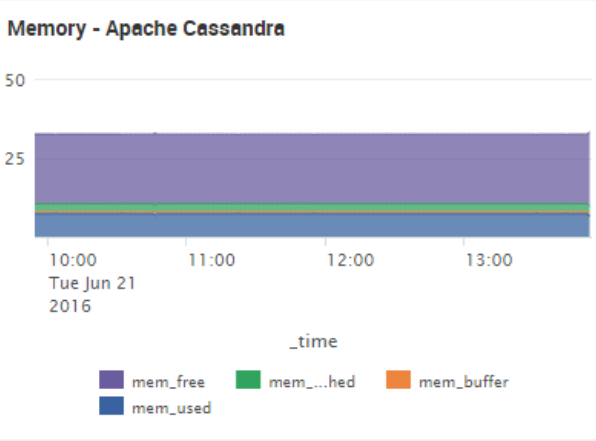
App Support

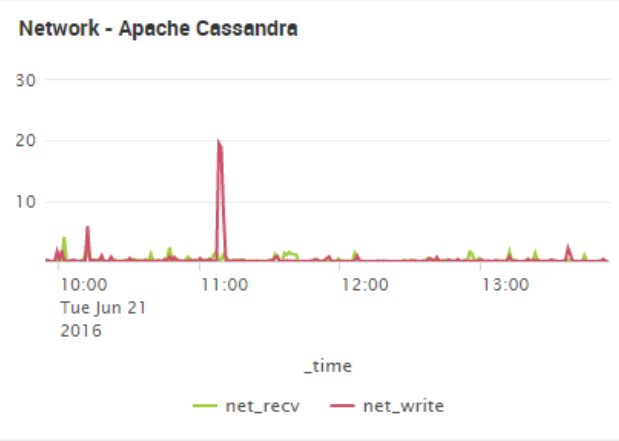












Select a type:

Rest hosts

Select an host:

× ALL HOSTS

Last 4 hours

Submit

Development

App Support

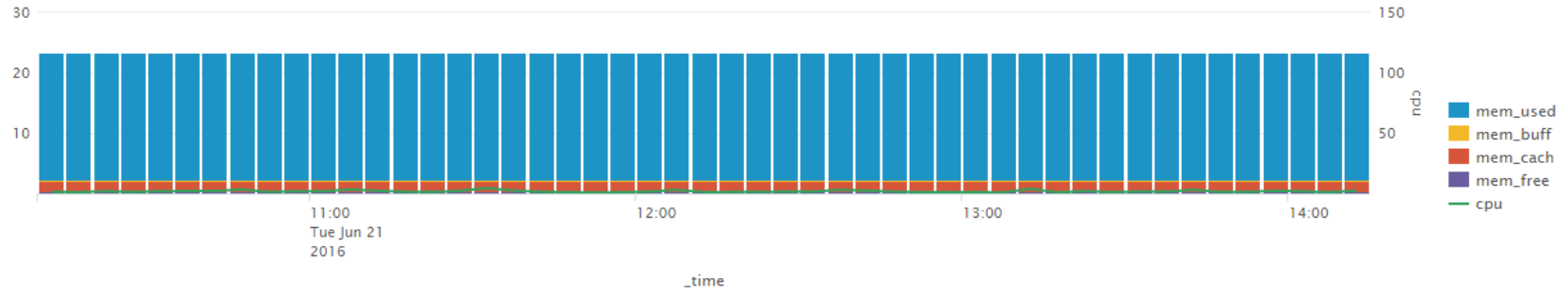
CPU

host	usr	sys	idl	wai	percent	sparkline
parsl1114542	1.4	0.6	97.9	0.1	2.0%	
parsl1114540	1.4	0.4	98.1	0.1	1.8%	
parsl1114541	1.0	0.4	98.6	0.1	1.4%	

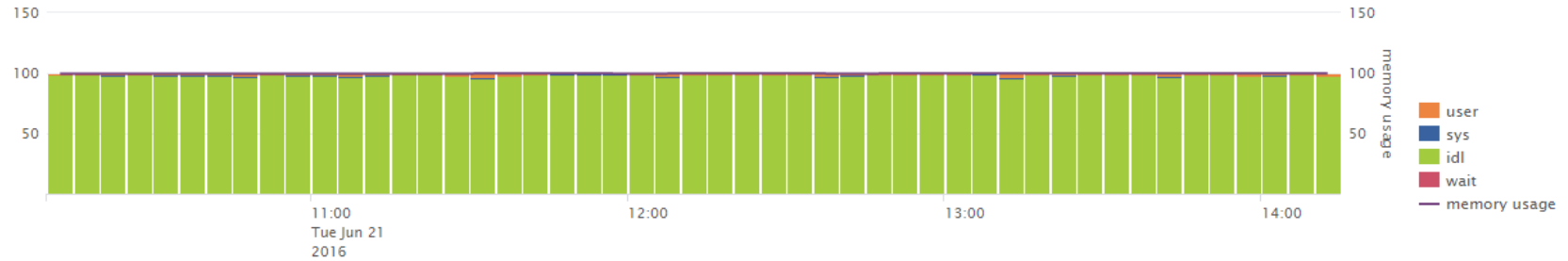
MEMORY

host	used	buff	cach	free	percent	memG
parsl1114541	20.8	0.1	2.1	0.3	99.7%	
parsl1114542	21.2	0.1	1.7	0.4	99.6%	
parsl1114540	21.2	0.1	1.5	0.6	99.4%	

Memory usage



CPU usage



Development

App Support

load

host	avg(load_1m)	avg(load_5m)	avg(load_15m)
parsl1114540	0.073810	0.066398	0.043359
parsl1114541	0.070722	0.062915	0.046530
parsl1114542	0.112831	0.098820	0.069598

a few seconds ago

load

PROC

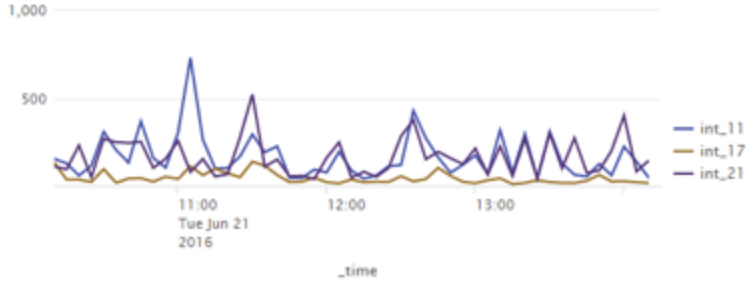
host	proc_run	proc_blk	proc_new
parsl1114541	0.262318	0.009022	0.673838
parsl1114540	0.295628	0.013185	0.616933
parsl1114542	0.352533	0.013879	10.472103

PROC

INT

host	int_11	int_17	int_21
parsl1114540	401.070285	38.388619	19.178348
parsl1114541	55.514226	50.665510	191.212944
parsl1114542	48.955586	42.287300	289.887344

INT



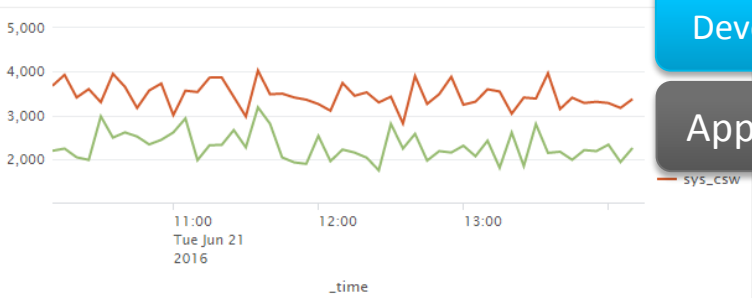
Development

App Support

SYS

host	sys_int	sys_csw
parsl1114540	2442.544656	3896.097372
parsl1114541	2131.176895	3440.084021
parsl1114542	2594.894888	4033.835616

SYS



PAGE

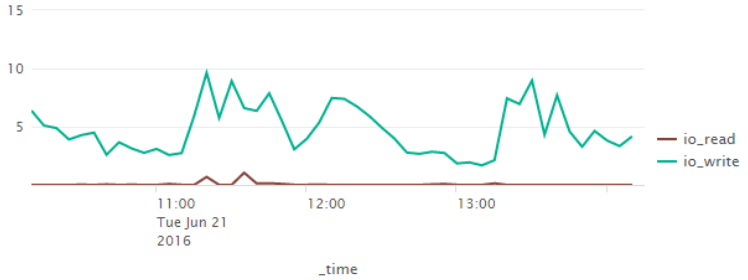
host	pag_in	pag_out
parsl1114540	42.637058	0.000000
parsl1114541	0.000000	0.000000
parsl1114542	68.219292	110.856350

PAGE

IO read/write

host	io_read	io_write
parsl1114540	0.082582	4.179042
parsl1114541	0.004858	4.234559
parsl1114542	0.077724	5.782096

IO read/write



Development

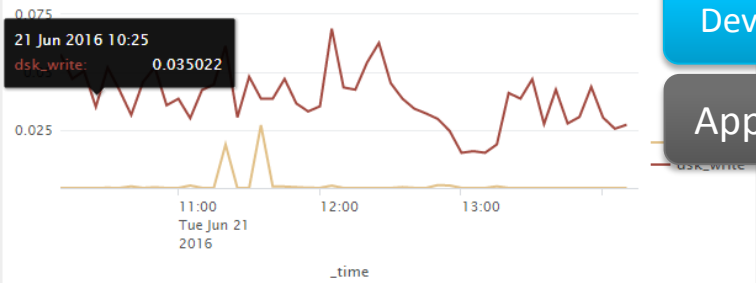
App Support

Disk read/write

host	dsk_read	dsk_write
parsl1114540	0.001897	0.041729
parsl1114541	0.000087	0.033521
parsl1114542	0.001412	0.040463

a minute ago

Disk read/write



Swap

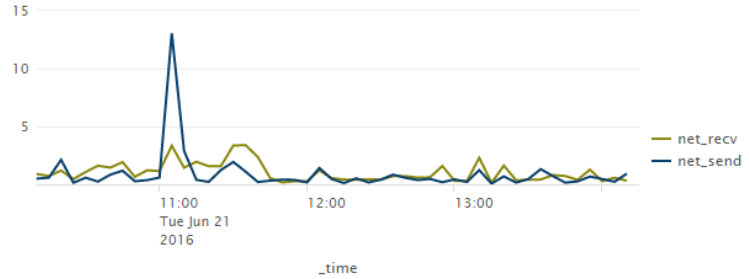
host	swap_used	swap_free
parsl1114540	0.154190	15.842332
parsl1114541	0.099898	15.900000
parsl1114542	0.259971	15.700000

Swap

Net send/receveid

host	net_recv	net_send
parsl1114540	1.015069	1.554394
parsl1114541	1.042909	0.542306
parsl1114542	1.026695	0.544448

Net send/receveid



Wrap-up

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HPCE Project

In (few) Numbers

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Lessons Learned

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Key Take Away

1. Don’t withhold information, **Open access to everyone** (% sensitiveness).
   Share your thoughts and analysis with the other teams.

2. Take time to define the **Indicators that matters**.
   Repeat the operation with Dev, Ops and Biz people.

3. Most Analysis should be **consistent and repeatable**.
   Eventually from the Dev computer ’til Production platform
   (containers can help nowadays).

4. **Don’t rush and try do everything at once**.
   You’ll get there quickly enough if you streamline your efforts.

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THANK YOU

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