



“Having New Eyes”

The Power of Application
Observability

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Agenda



- Please define Observability
- The 'before times'
- Observability+
- Prerequisites

Marco Coulter

Technical Evangelist

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Marco Coulter is passionate about the experience that humans have when interacting with technology. A former startup CTO, Marco led the data science organization at 451 Research; managed global engineering and operations organizations at several major banks and hospitals. He earned him the nickname "tech-whisperer" for his skills in translating business drivers for techies and technical concepts for business leaders. When taking the rare break from technology, Marco can be found harvesting fresh vegetables from his apartment garden.

Defining observability

Ummm. ...

A word cloud featuring various technology and observability-related terms. The words are arranged in a roughly circular pattern and are color-coded. The largest word is 'splunk' in orange. Other prominent words include 'sumologic' in orange, 'Technologies' in orange, 'bmc' in pink, 'Need' in green, 'Lightstep' in cyan, 'StackState' in pink, 'honeycomb' in green, 'newstack' in pink, and 'VMWare' in cyan. The words 'New-Relic', 'Observability', 'AppDynamics', and 'Twitter' are also present, written in a curved path across the middle of the cloud.

splunk
sumologic
Technologies
bmc
Need
Lightstep
StackState
honeycomb
newstack
VMWare
New-Relic
Observability
AppDynamics
Twitter



Observability
metrics
can
systems
performance
monitoring
ops

What does this code do ... ?

The 'before times'

The Dev vs Ops wars



App Man Adventures - www.appdynamics.com © 2011

Clear as mud

```

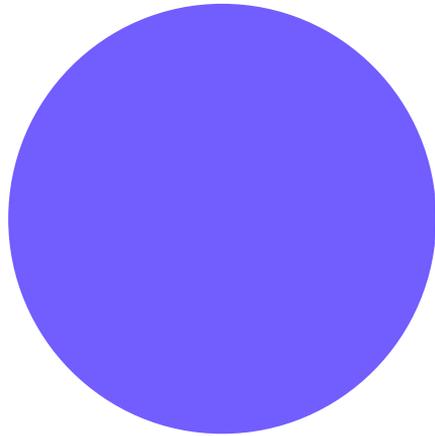
Processes: 441 total, 2 running, 439 sleeping, 1771 threads
Load Avg: 1.35, 1.43, 1.67  CPU usage: 1.62% user, 2.96% sys, 95.41% idle  SharedLibs: 48M resident, 106M data, 51M linkedin. MemRegions: 137147 total, 7116M resident, 257M private, 1883M shared.
PhyMem: 230 used (3833M wired), 924M unused. VM: 294G used, 1922M framework vsz, 0(0) swpains, 0(0) swpouts. Networks: packets: 1669787/110 in, 12651546/5332M out.
Disks: 7276188/760 read, 8048025/29000 written.

PID  COMMAND           %CPU  TIME           #TH  #PO  #PORT  MEM    PURG  COMP  DOPP  PID    STATE  BOOSTS  %CPU_ME  %CPU_DP  UID  FAULTS  COW  MESSAGES  MESSAGES  SYSRSSD  SYSRSSD  CSW
17518  top                 0.0    00:01:24.1/1  0  25  476K+  0B   0  17518  17466  running  #0[1]  0  0.0000  0.0000  0  7396+  403  437780+  218850+  25374+  25590+  372+
17463  Terminal           5.3    00:04:45.14  7  416  161M+  41M  0B   0  17463  1  sleeping  #0[24]  0  0.00197  0.68952  501  293249+  499  17228+  376+  29161+  41419+  15140+
238    WindowServer      5.2    02:29:01.10  4  2249  810M+  13M+  0B   0  238  1  sleeping  #0[1]  1.01273  0.00114  88  871975+  38023  65708787+  31266468+  28240759+  11805756+  48968893+
299    TouchBarServer    2.5    04:23:21.58  4  564  38M+  3288K+  0B   0  299  1  sleeping  #0[1]  0.00000  0.00003  0  104516+  11766  2110440+  150195+  206535+  4544399+  7122833+
0     kernel_task      2.1    02:11:09.238/0  0  0  234K+  0B   0  0  0  running  0(0)  0.00000  0.00000  0  1182780  0  164984728+  136024213+  0  376271196+
158    hidd              1.0    35:01:51.8  3  356  628K+  0B   0  158  1  sleeping  #0[1]  0.04089  0.14625  261  587852+  176  4651748+  4491218+  4763756+  15975849+  17160879+
17686  com.apple.SL      0.7    00:00:22.2  1  89  428K+  0B   0  17686  1  sleeping  #0[194]  0.32562  0.32566  501  4304+  237  158+  4298+  933  486+
17496  Appex             0.7    00:01:08.11  7  237+  69M+  0B   0  17496  1  sleeping  #135-[2]  0.03100  0.20387  501  59839+  438  2693+  1942+  9579+  7431+  2812+
17445  Safari            0.4    00:18:14.15  10  739  177M+  10M  0B   0  17445  1  sleeping  #91-[23]  0.08055  0.03100  501  169305+  833  47264+  15908+  511949+  128174+  134186+
157    bluesoft          0.4    03:33:57.4  2  1743  12M  0B   0  157  1  sleeping  #0[1]  0.14668  0.00000  0  68377  267  828327+  4664823+  3192159+  9947331+  292199+
416    sharingd         0.2    05:14:42.5  1  313  25M  135K+  0B   0  416  1  sleeping  #0[1]  0.00000  0.14660  501  181925  671  1533208+  501499+  259218+  6659464+  2638348+
4891   Dropbox          0.1    05:33:44.141  2  816  260M  0B   0  4891  1  sleeping  #0[7246]  0.00000  0.00000  501  878451  64434  264892  74108  3782141+  688132+  1402113+
4117   Dropbox Web     0.1    02:16:37.16  1  358  70M  0B   0  4091  4091  sleeping  #0[5]  0.00000  0.00000  501  62340  1229  338084+  27244+  12435+  3859216+  43535+
340    seed            0.1    21:50:44.2  2  1 385  23M  16M  0B   0  340  1  sleeping  #0[1]  0.00000  0.17000  501  11212217+  334  3885883+  1039367+  7406503+  6040827+  2312835+
17507  com.apple.WM     0.1    00:02:54.9  4  133  180M  10M  0B   0  17507  1  sleeping  #0[687+  0.00000  0.00000  501  57613+  1252  13407+  0911+  10479+  32517+  13079+
347    pld             0.1    02:15:09.3  2  110  892K+  0B   180K  347  1  sleeping  #0[57564+  0.00000  0.15192  501  100083  176  54525+  7602+  220645+  493308+  483893+
17499  StopTheMadness  0.1    00:00:09.5  3  144+  385K+  0B   0  17499  1  sleeping  #0[25+  0.00000  0.04458  501  4395+  287  984+  239+  2122+  2848+  1832+
489   Siri            0.1    00:37:17.4  2  174  525K+  0B   0  489  1  sleeping  #0[1]  0.00000  0.11452  501  11173  319  22891+  18349  134729+  482376+  151118+
255    airport        0.1    05:08:56.10  8  432  19K+  0B   1455K  255  1  sleeping  #0[40[22]  0.00000  0.05410  0  139704  294  384498+  1033169+  7157843+  3390443+  2939468+
4012  storagekitd     0.1    01:02:14.7  7  93  9 4212K  0B   0  4012  1  sleeping  #0[1261]  0.00000  0.00000  0  19239  196  272840+  0  0  1140424+  465862+  969818+
349    cloud          0.0    00:27:17.12  2  484+  299+  761K+  0B   0  349  1  sleeping  #0[56[1]  0.00000  0.00000  501  665613  623  174630+  639731+  14848821+  4747202+  374338+
115    powerd         0.0    02:04:21.3  2  121  3772K  0B   0  115  1  sleeping  #0[1]  0.00000  0.06387  0  384091+  387  148099+  46283+  154627+  1659477+  180030+
138    launchservic  0.0    02:21:21.4  4  361  12M  0B   164K  138  1  sleeping  #0[481263+  0.00000  0.04888  0  327099  190  2825513+  77338+  564650+  2199671+  164112+
17394  AppleUSRTD     0.0    00:00:13.3  3  266+  796K+  0B   0  17394  1  sleeping  #0[1]  0.00000  0.00000  270  814+  124  2167+  1238+  1809+  821+
338    SystemUIServer  0.0    02:38:08.0  2  332  24M  88K+  0B   0  338  1  sleeping  #0[4276]  0.00000  0.00000  501  146484  326  144521  18352  456772+  145095+
617    SiriNServe    0.0    00:08:01.6  2  266  4828K  0B   0  617  1  sleeping  #0[19336+  0.00000  0.01912  501  15529  326  28892+  43308+  99419+  366782+  73846+
236    mDNSResponder  0.0    01:37:59.5  1  82  652K+  0B   0  236  1  sleeping  #0[1]  0.00000  0.00000  65  18280  184  7879+  31768  4670673+  138326  883324+
588    unistallid    0.0    00:14:17.4  2  274  70K+  0B   0  588  1  sleeping  #0[1]  0.00000  0.00000  74  1429414  24  1429414  74  1429414  24  1429414  74  1429414
588    AMPDeviceAg    0.0    07:11:26.13  2  348  47M  0B   31M  588  1  sleeping  0(2)  0.00000  0.00000  501  143740  443  289541+  41831  2745327+  957759+  1479243+
17503  com.apple.WM     0.0    00:00:05.5  2  97  72M  0B   0  17503  1  sleeping  #0[24+  0.00000  0.00000  501  33517  339  2544+  1158+  4931+  7863+  3158+
4110  Dropbox Web     0.0    00:19:31.9  1  358  70M  0B   0  4091  4091  sleeping  #0[1]  0.00000  0.00000  501  293249  499  17228+  376+  29161+  41419+  15140+
161    AiPlayPCM     0.0    03:12:19.7  6  252  52M  0B   0  161  1  sleeping  #0[1]  0.00000  0.00000  0  138286  313  2112620+  968212+  2014985+  1797881+  1666487+
1  launchd        0.0    11:26:40.2  1  3780  39M  0B   0  1  0  sleeping  #0[1]  0.00000  0.02843  0  203459  10857  4769335+  1261410+  580896+  9965769+  1021874+
328  UserEventAg    0.0    02:11:24.2  2  943  474K+  0B   0  328  1  sleeping  #0[1]  0.00000  0.00000  501  98274  729  28192+  98407+  52718+  12283  74711+  184318+
635  SafariBookma  0.0    01:05:08.6  4  76+  66M+  0B   0  635  1  sleeping  #0[1]  0.00000  0.00000  501  68197  262  192884+  22872  131697+  618037+  824861+
362    ViewIDeGate   0.0    00:10:42.3  2  914  2912K  0B   16K  362  1  sleeping  #0[8039+  0.00000  0.01777  501  17629  199  27721+  39231+  171480+  37621+  12095+
426  useractivity  0.0    01:56:54.2  1  137  602K+  0B   180K  426  1  sleeping  #0[7245]  0.00000  0.00000  501  4597  231  148372  33887  121749  38887  121749  38887  121749
411  TextExpande    0.0    00:41:49.7  2  383  66M  13M  0B   0  411  1  sleeping  #0[19326+  0.00000  0.01940  501  154978  788  248322+  54536+  8021+  588553+  342087+
326  ViewIDeGate   0.0    00:06:51.2  2  65  1992K  0B   0  326  1  sleeping  #0[2954+  0.00000  0.01718  0  4770  180  10240+  3801+  6208+  27363+  6483+
418  cloudkitd     0.0    01:36:49.2  1  129  304K  0B   3098K  418  1  sleeping  #0[3]  0.00000  0.00000  501  2270  270  98407+  14939  1676  1676  1676  1676
17800  com.apple.WM   0.0    00:00:15.5  2  102  38M+  0B   0  17800  1  sleeping  0(4)  0.00000  0.00000  501  26663+  388+  2835  821  2865  2106+  518+
17502  com.apple.WM   0.0    00:00:06.5  2  112  100M+  888K+  0B   0  17502  1  sleeping  #0[1]  0.00000  0.00000  501  50127+  626+  3808  7972  7748  3476+  53911+
17503  PassD         0.0    00:15:09.4  2  958  100M  888K+  0B   0  17503  1  sleeping  #0[65]  0.00000  0.00000  501  145609  8929  5830+  10378  10378  12212+  180428+
442  commerce     0.0    00:49:43.3  3  132  19M  92K  1228K  442  1  sleeping  0(66)  0.00000  0.00000  501  81313  279  52616  22428  322793+  11273  280659+
17350  QuickLookUIS  0.0    00:00:08.4  2  140  346K+  0B   0  17350  1  sleeping  #0[26]  0.00000  0.00000  501  4164  268  938+  284  1778  1887  667+  66580+
457    SafariCloud   0.0    00:41:08.0  3  58  895K+  0B   0  457  1  sleeping  #0[1]  0.00000  0.00000  501  4549  188  127840+  107  25458+  472794+  66580+
3282  lsd           0.0    00:21:23.4  4  3 586  781K+  64K  208K  328  1  sleeping  #0[6167+  0.00000  0.01244  501  69974  2323  377633+  98851+  586143+  385535+  199739+
498  PAM_Extensio  0.0    00:04:41.4  2  194  472K+  0B   0  498  1  sleeping  #0[1681]  0.00000  0.00000  501  12511  341  63761+  10383  6077  150229  78278  3476+
119  load          0.0    04:11:24.1  2  66  14M  0B   0  119  1  sleeping  #0[1]  0.00000  0.00000  0  659212  254  103394+  119246+  20773+  127085+  151921+
113  config       0.0    00:51:06.10  3  589  13M  0B   0  113  1  sleeping  #0[1]  0.00000  0.00000  0  295211  397  891391  22845  131880+  1033283  490801+
122  notify      0.0    01:57:54.2  1  423  590K+  0B   0  122  1  sleeping  #0[1]  0.00000  0.00447  0  2426  80  496391+  123861+  251846+  452118+  1205172+
1359  sandbox      0.0    00:19:31.1  2  66  14M  0B   0  1359  1  sleeping  #0[1]  0.00000  0.00000  0  8857  178  8857  178  8857  178  8857  178
268  SubmIDiagin  0.0    00:42:08.3  1  73  19M  13M  288  1  sleeping  0(0)  0.00000  0.00000  0  22467  225  17428  5734  153843+  2795  94306+
17448  com.apple.WM   0.0    00:02:07.9  2  125  32K+  388K+  0B   0  17448  1  sleeping  #0[1]  0.00000  0.00000  501  21403  364  8080+  3262  6728+  3189  21434+
514  TextExpande    0.0    01:34:17.3  1  167  15M  20K  0B   0  514  1  sleeping  #0[2286]  0.00000  0.00000  501  22769  148  10759  1532  6454  4684+  54692+
144  locationd    0.0    01:34:17.3  3  248  12M  164K  180K+  144  1  sleeping  #0[21800]  0.00000  0.00000  285  265184  326  335142  96427  497094  172657+  497094  419339+
489  EmojFunction  0.0    00:14:00.4  2  243  19M  48K+  0B   0  489  1  sleeping  #0[8366]  0.00000  0.00000  501  33329  405  19352  4161  18510  41200+  166801+

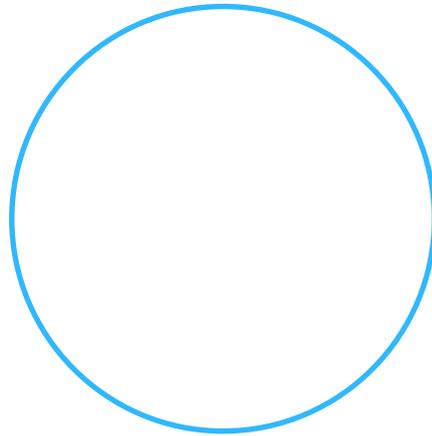
```



“In the before time ...”

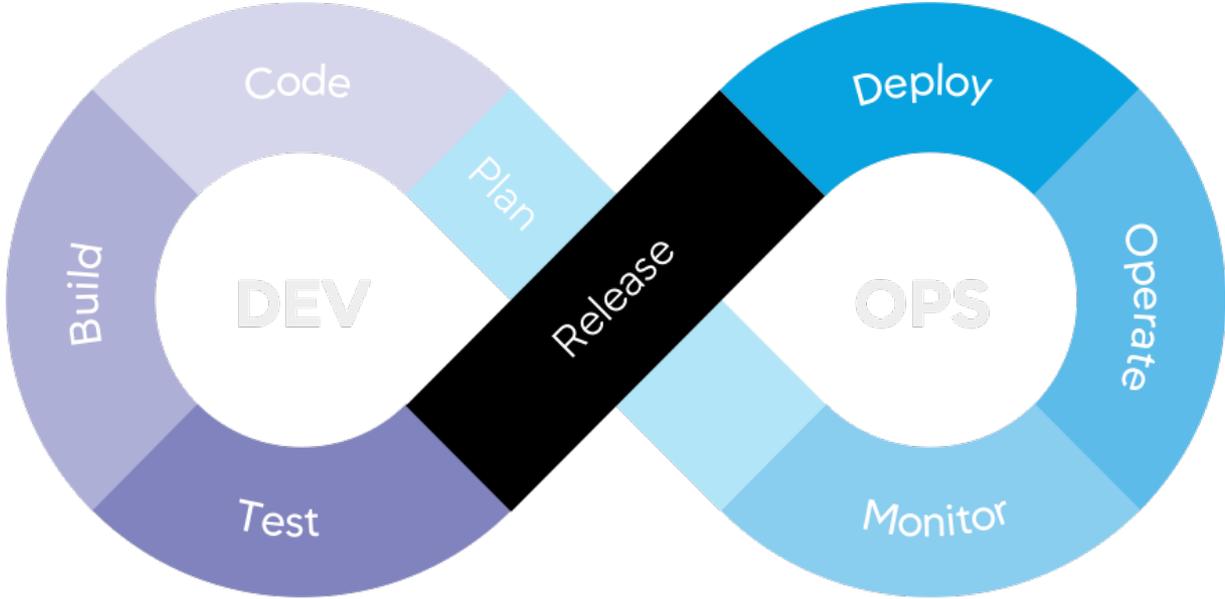


Monitoring

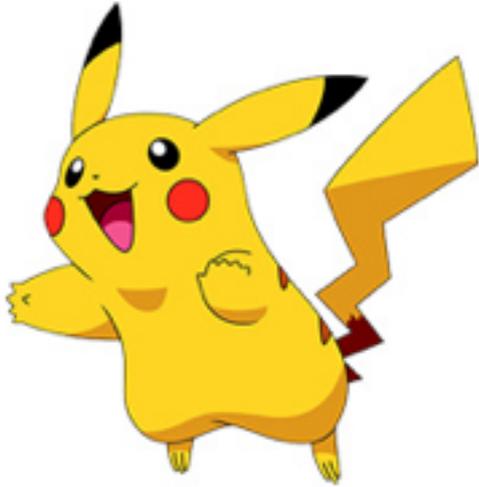


Observability

DevOps is born



Monitoring evolves



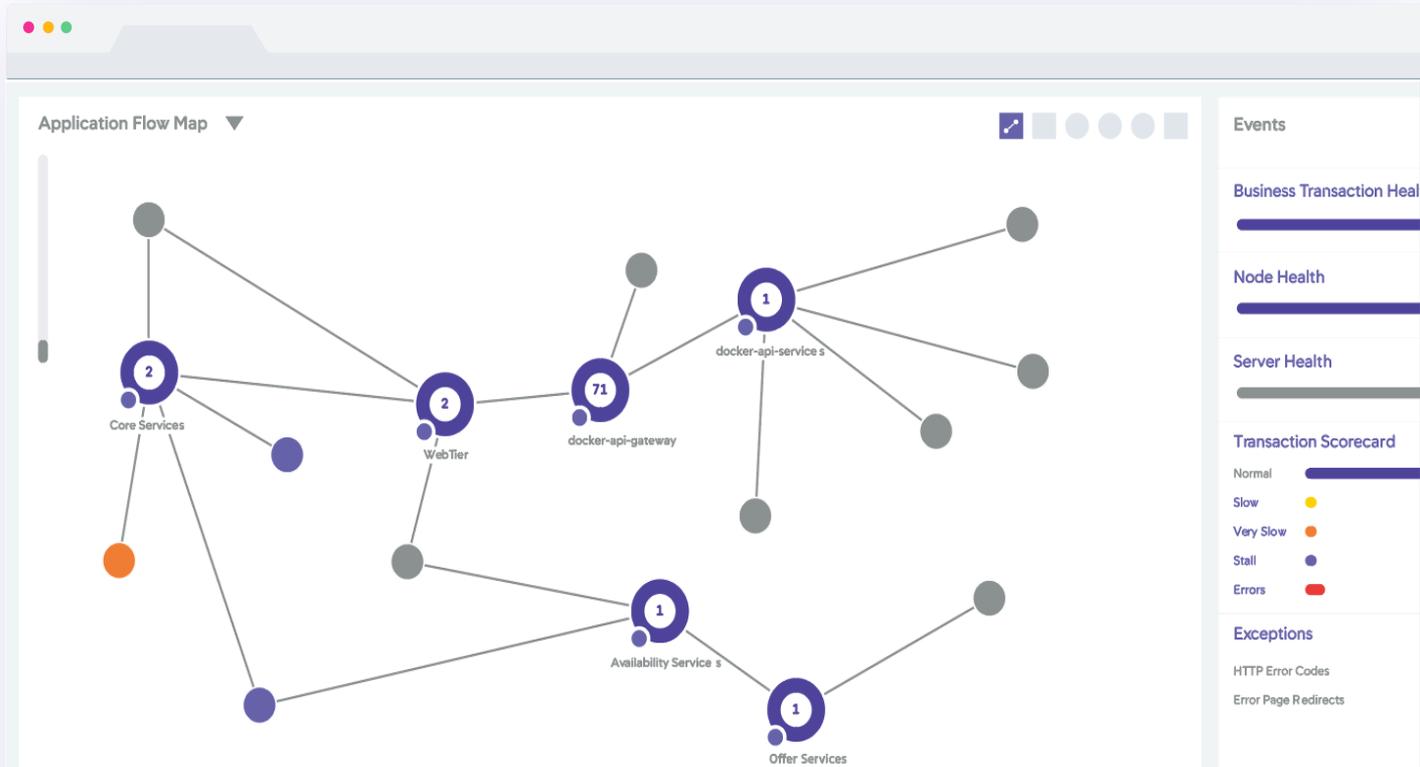
Decentralized code

New York data centers:

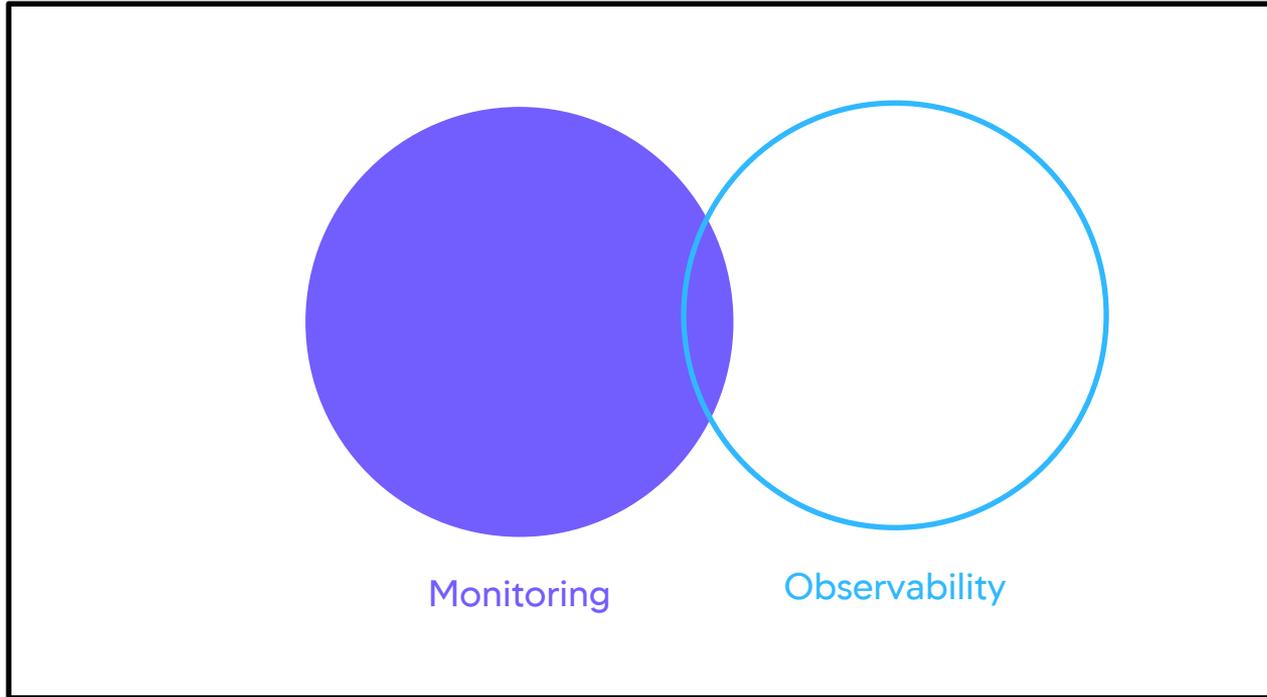


Server name	Role
NYCFE01	Enterprise Edition Front End server
NYCFE02	Enterprise Edition Front End server
NYCFE03	Enterprise Edition Front End server
NYCBE01	Enterprise Edition Back End server
NYCBE02	Enterprise Edition Back End server
NYCBE03	Enterprise Edition Back End witness server
NYCOWAS01	Office Web Apps server
NYCOWAS02	Office Web Apps server
NYCEDGE01	Edge Server
NYCEDGE02	Edge Server

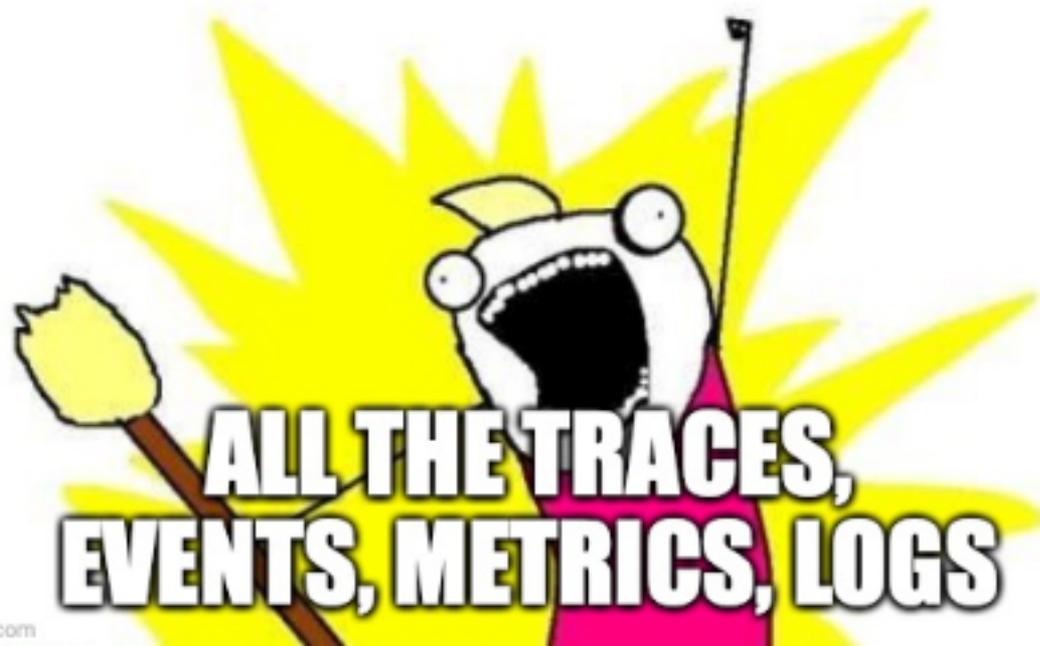
What does this code do ... to infrastructure?



“... a little better all the time ...”



KEEP



imgflip.com

Transaction: f1e492ee-5d6a-4f80-b62c-e4402c06eb60

Summary

User Experience: Very Slow

Execution Time
26.4 s

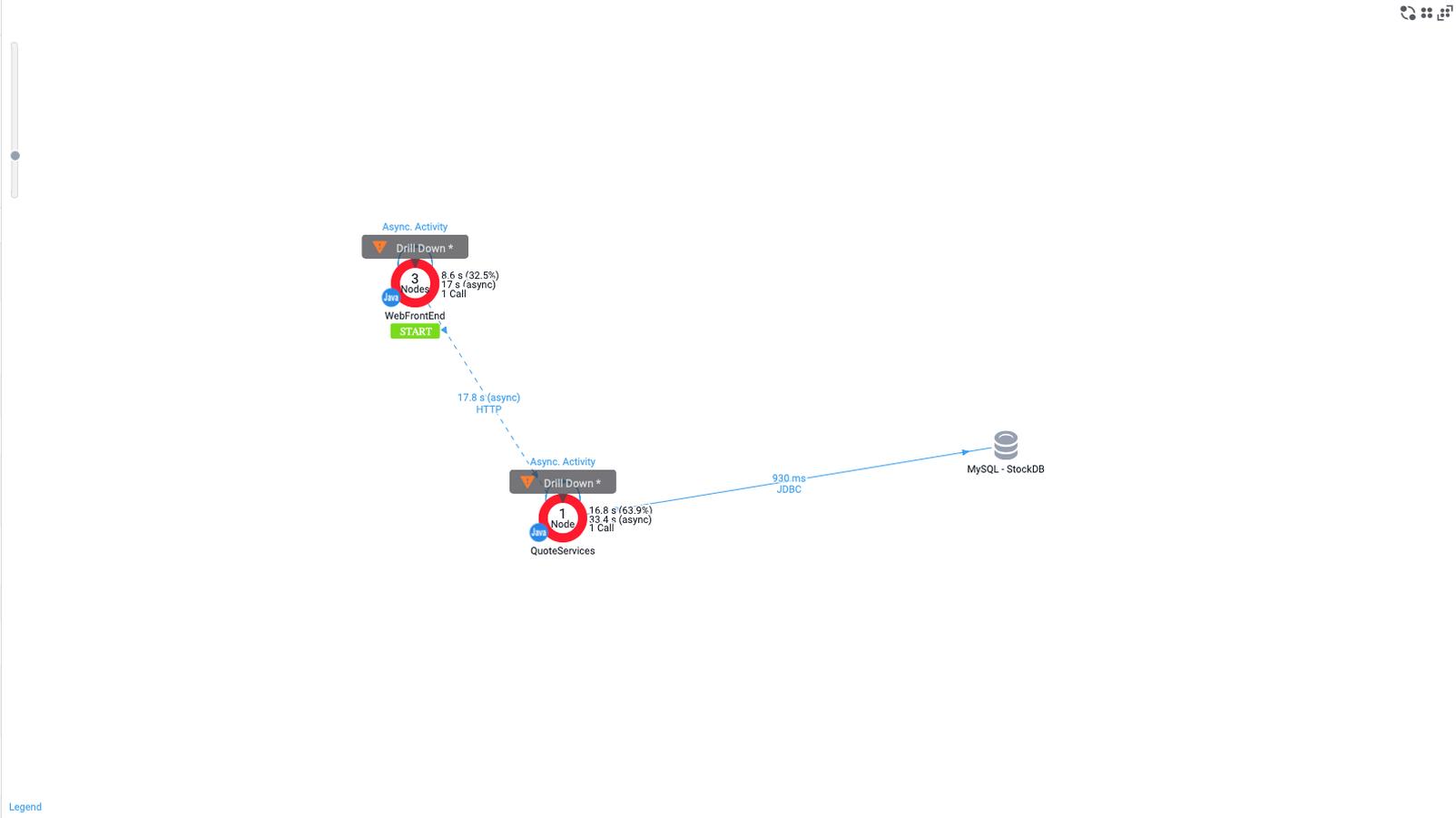
Timestamp
07/30/20 12:08:22 PM

Business Transaction
[Get Quote](#)

More Details >

Potential Issues

com.appdynamics.sample.service.BaseService.makeWebRequest	17.8 s
http://quoteServices:8080/rest/quoteServices/getStockQuote/ABC?speed=slow&traffic=heavy	17.8 s
java.util.concurrent.locks.LockSupport.parkNanos	16.7 s
java.lang.Object.wait	16.7 s
Thread Contention - Blocked on java.util.concurrent.locks.ReentrantReadWriteLock\$NonfairSync@4e82847	16.7 s
com.appdynamics.sample.service.BackgroundWorker\$Worker.cryptolock	16.4 s
java.lang.Object.wait	8.5 s
java.util.concurrent.locks.LockSupport.parkNanos	8.5 s
Thread Contention - Blocked on java.util.concurrent.locks.ReentrantReadWriteLock\$NonfairSync@28c5d61...	8.5 s
com.appdynamics.sample.service.BackgroundWorker\$Worker.cryptolock	7.8 s
Query=Select * From Stock Wh	930 ms



Transaction: f1e492ee-5d6a-4f80-b62c-e4402c06eb60 26,366 ms - WebFrontEnd

Execution Time 26.4 s Wait Time 8.5 s Block Time 0 ms Node WebFrontEndNode-2 Timestamp 07/30/20 12:08:22 PM Snapshot call graph contains CPU times - This is a Hotspot call graph

Details Filters Set Root Reset Root Export Search Showing 12 of 12

Name	Time (ms)	Percent %	Thread State	Exit Calls / Thread...	S...
org.jboss.resteasy.plugins.server.servlet.HttpServletDispatcher:service	6 ms (self)	0%			
com.appdynamics.sample.service.WebFrontEnd\$Proxy\$_\$\$_WeldClientProxy:getQuote	0 ms (self)	0%			
com.appdynamics.sample.service.WebFrontEnd:getQuote:169	0 ms (self)	0%			
com.appdynamics.sample.service.BaseService:processCustomerRequest:48	0 ms (self)	0%			
com.appdynamics.sample.service.BaseService:processCustomerRequest:85	0 ms (self)	0%			
com.appdynamics.sample.service.BackgroundWorker:doBackgroundWork:108	0 ms (self)	0%			
com.appdynamics.sample.service.BackgroundWorker:doWorkBackground:86	0 ms (self)	0%			
Constructor of com.appdynamics.sample.service.BackgroundWorker\$Worker:18	69 ms (self)	0.3%			Async. Activity (2)
java.lang.Thread:join:1326	0 ms (self)	0%			
java.lang.Thread:join:1252	0 ms (self)	0%			
java.lang.Object:wait	8,505 ms (s...	32.3%			
com.appdynamics.sample.service.BaseService:makeWebRequest:97	17,785 ms (...)	67.5%			HTTP

Transaction: f1e492ee-5d6a-4f80-b62c-e4402c06eb60 26,366 ms - WebFrontEnd

Execution Time 26.4 s Wait Time 8.5 s Block Time 0 ms Node WebFrontEndNode-2 Timestamp 07/30/20 12:08:22 PM Snapshot call graph contains CPU times - This is a Hotspot call graph

Details Filters Set Root Reset Root Export

Name	Time (ms)	Percent %	Thread State	Exit Calls / Thread...	S...
org.jboss.resteasy.plugins.server.servlet.HttpServletDispatcher.service	6 ms (self)	0%			
com.appdynamics.sample.service.WebFrontEnd\$Proxy\$_\$\$_WeldClientProxy.getQuote	0 ms (self)	0%			
com.appdynamics.sample.service.WebFrontEnd.getQuote:169	0 ms (self)	0%			
com.appdynamics.sample.service.BaseService.processCustomerRequest:48	0 ms (self)	0%			
com.appdynamics.sample.service.BaseService.processCustomerRequest:85	0 ms (self)	0%			
com.appdynamics.sample.service.BackgroundWorker.doBackgroundWork:108	0 ms (self)	0%			
com.appdynamics.sample.service.BackgroundWorker.doWorkBackground:86	0 ms (self)	0%			
Constructor of com.appdynamics.sample.service.BackgroundWorker\$Worker:18	69 ms (self)	0.3%			Async. Activity (2)
java.lang.Thread.join:1326	0 ms (self)	0%			
java.lang.Thread.join:1252	0 ms (self)	0%			
java.lang.Object.wait	8,505 ms (s...)	32.3%			
com.appdynamics.sample.service.BaseService.makeWebRequest:97	17,785 ms (...)	67.5%			HTTP

makeWebRequest:97

Name	com.appdynamics.sample.service.BaseService.makeWebRequest	Self Time 17,785ms	67.5%
Type	POJO		
Class	com.appdynamics.sample.service.BaseService	Total Time 17,785ms	67.5%
Method	makeWebRequest	Details: Block: 0 ms, Wait: 0 ms	
Line Number	97		

Exit Calls

Type	Details	Count	Time (ms)	% Time	From	To
HTTP	http://quoteServices:8080/rest/quoteService...	1	17784	67.5%	WebFrontE...	QuoteServi...

HTTP Exit Call Drill Down into Downstream Call

Time 17,784ms
From WebFrontEnd
To QuoteServices
Details http://quoteServices:8080/rest/quoteServices/getStockQuote/ABC?speed=slow&traffic=heavy

Properties

Start Time 1596125663575

Execution Time 17.8 s Wait Time 16.7 s Block Time 0 ms Node QuoteServicesNode Timestamp 07/30/20 12:08:30 PM Snapshot call graph contains CPU times - This is a Hotspot call graph

Details Filters Set Root Reset Root Export Search Showing 12 of 12

Name	Time (ms)	Percent %	Thread State	Exit Calls / Thread...	S...
org.jboss.resteasy.plugins.server.servlet.HttpServletDispatcher.service	105 ms (self)	0.6%			
com.appdynamics.sample.service.QuoteServices\$Proxy\$\$\$_WeldClientProxy:getStockQuote	0 ms (self)	0%			
com.appdynamics.sample.service.QuoteServices:getStockQuote:57	0 ms (self)	0%			
com.appdynamics.sample.service.BaseService:processCustomerRequest:85	0 ms (self)	0%			
com.appdynamics.sample.service.BackgroundWorker:doBackgroundWork:108	0 ms (self)	0%			
com.appdynamics.sample.service.BackgroundWorker:doWorkBackground:86	0 ms (self)	0%			
Constructor of com.appdynamics.sample.service.BackgroundWorker\$Worker:18	27 ms (self)	0.2%			Async. Activity (2)
java.lang.Thread:join:1326	0 ms (self)	0%			
java.lang.Thread:join:1252	0 ms (self)	0%			
java.lang.Object:wait	16,715 ms (L...	94%			
com.appdynamics.sample.service.BaseService:queryDB:44	0 ms (self)	0%			
com.appdynamics.sample.service.MySQLConnection:queryDB:32	930 ms (self)	5.2%			JDBC

Execution Time 17.8 s Wait Time 16.7 s Block Time 0 ms Node QuoteServicesNode Timestamp 07/30/20 12:08:30 PM Snapshot call graph contains CPU times - This is a Hotspot call graph

Details Filters Set Root Reset Root Export

Name	Time (ms)	Percent %	Thread State	Exit Calls / Thread...	S...
org.jboss.resteasy.plugins.server.servlet.HttpServletDispatcher.service	105 ms (self)	0.6%			
com.appdynamics.sample.service.QuoteServices\$Proxy\$_\$\$_WeldClientProxy:getStockQuote	0 ms (self)	0%			
com.appdynamics.sample.service.QuoteServices:getStockQuote:57	0 ms (self)	0%			
com.appdynamics.sample.service.BaseService:processCustomerRequest:85	0 ms (self)	0%			
com.appdynamics.sample.service.BackgroundWorker:doBackgroundWork:108	0 ms (self)	0%			
com.appdynamics.sample.service.BackgroundWorker:doWorkBackground:86	0 ms (self)	0%			
Constructor of com.appdynamics.sample.service.BackgroundWorker\$Worker:18	27 ms (self)	0.2%			Async Activity (2)
java.lang.Thread:join:1326	0 ms (self)	0%			
java.lang.Thread:join:1252	0 ms (self)	0%			
java.lang.Object:wait	0 ms (self)	0%			
com.appdynamics.sample.service.BaseService:queryDB:44	16,715 ms (L...	94%			
com.appdynamics.sample.service.MySQLConnection:queryDB:32	930 ms (self)	5.2%			JDBC

queryDB:32

Name: com.appdynamics.sample.service.MySQLConnection:queryDB
Type: POJO
Class: com.appdynamics.sample.service.MySQLConnection
Method: queryDB
Line Number: 32

Self Time: 930ms (5.2%)
Total Time: 930ms (5.2%)
Details: Block: 0 ms, Wait: 0 ms

Exit Calls

Type	Details	Count	Time (ms)	% Time	From	To
JDBC	Query=Select * From Stock Where ID = ?	1	930	5.2%	QuoteServ...	MySQL - St...

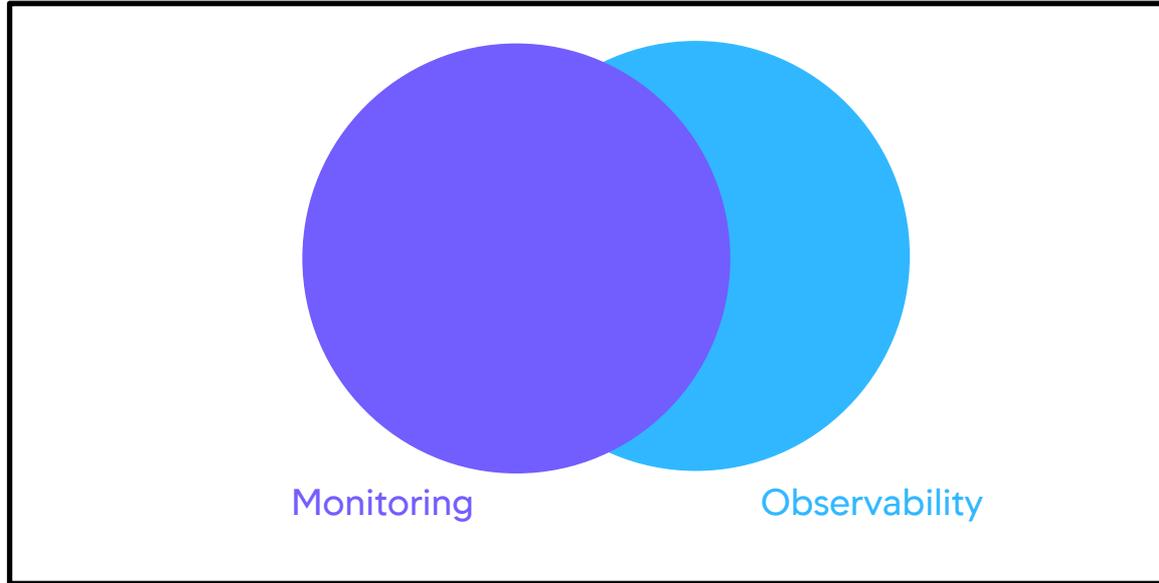
JDBC Exit Call

Time: 930ms
From: QuoteServices
To: MySQL - StockDB
Details: Query=Select * From Stock Where ID = ?

Properties

Start Time: 1596125680425
Query: Select * From Stock Where ID = ?

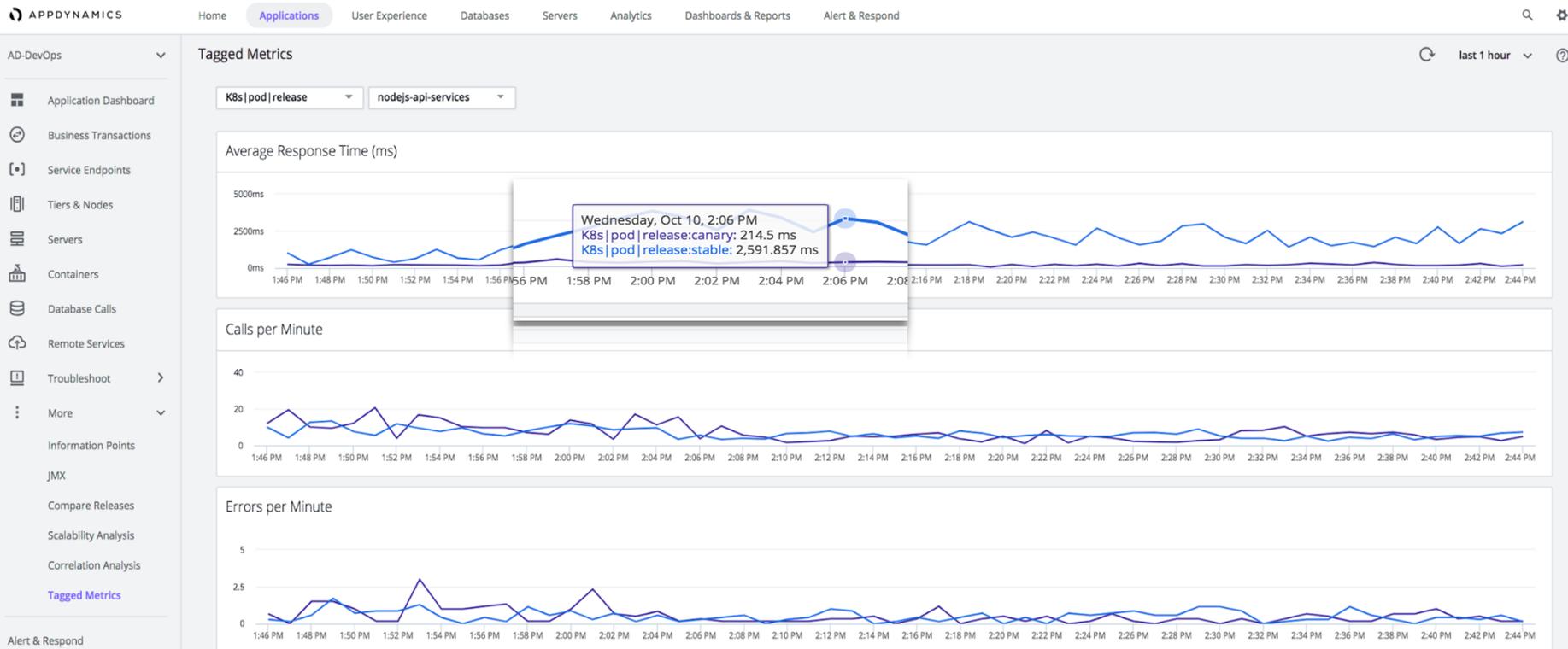
‘ ... getting closer ... ’



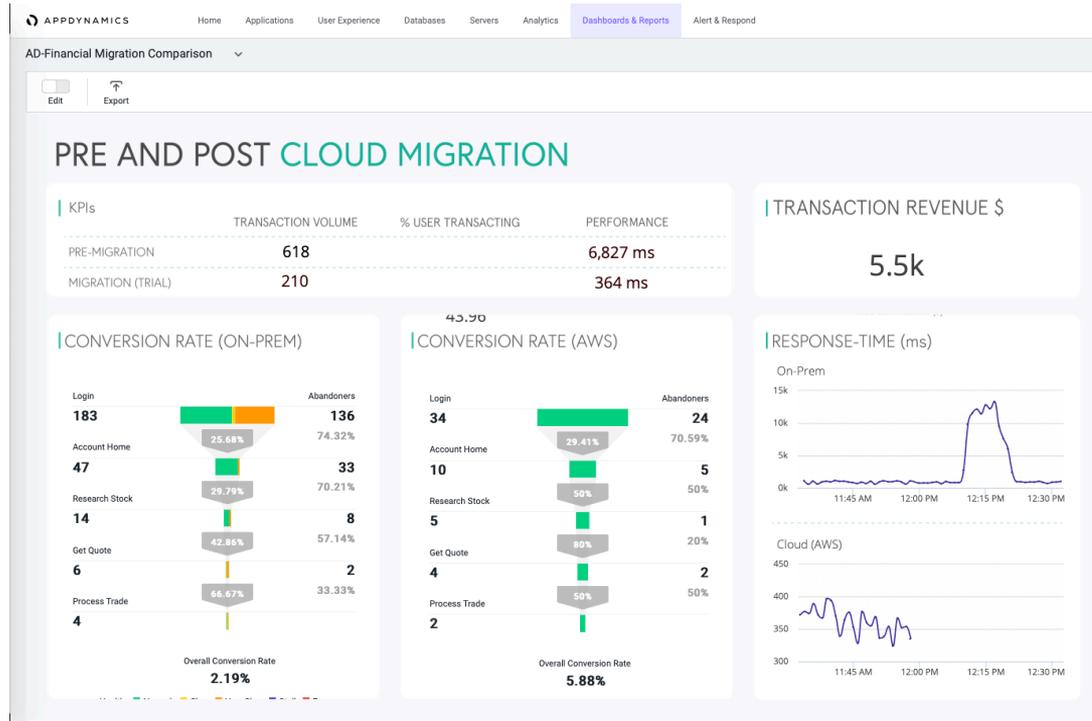
**Observability
Supports
Diagnosis**

**Insight
Supports
Resolution**

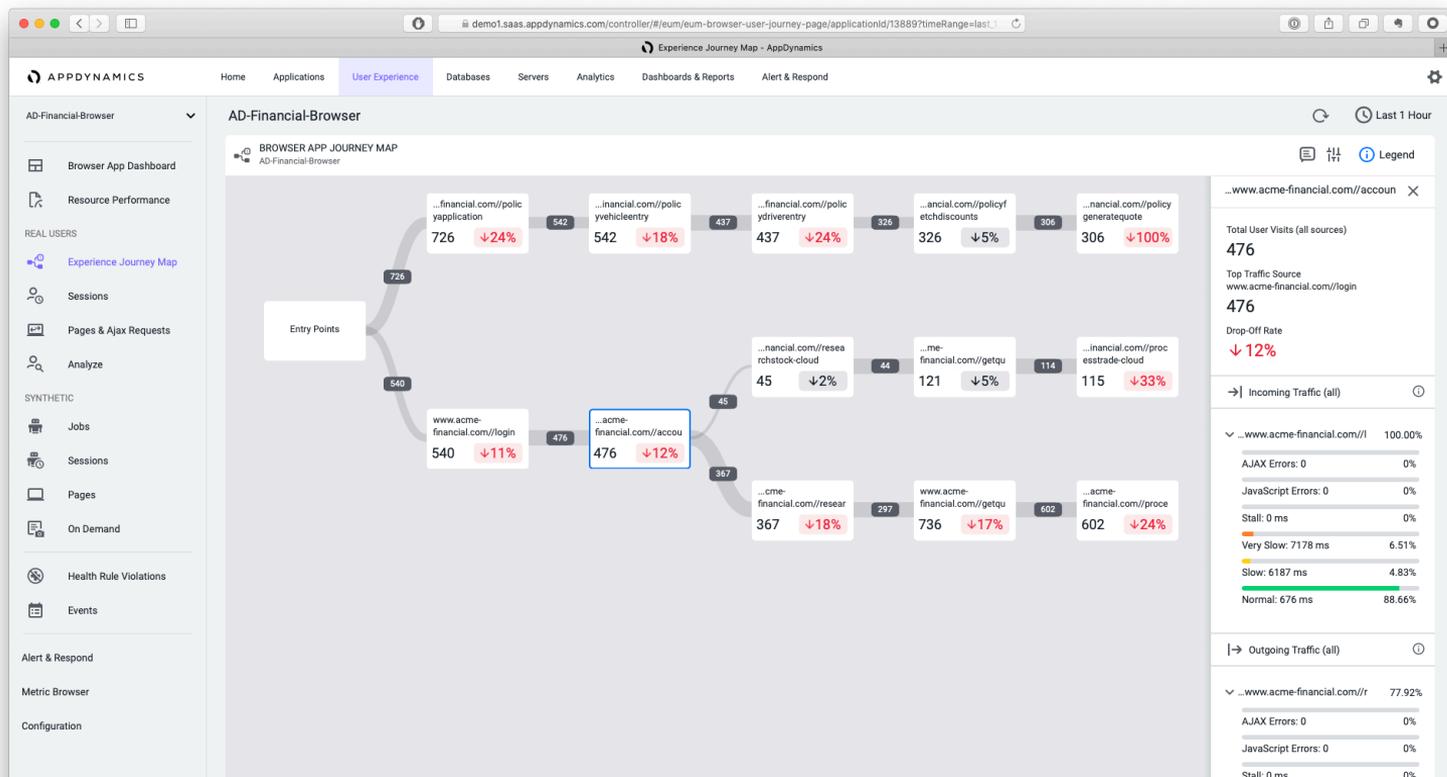
What does this code do ... differently from the last version?'



What does this code do ... across architectures?



What does this code do ... for users?



What does this code do ... now?

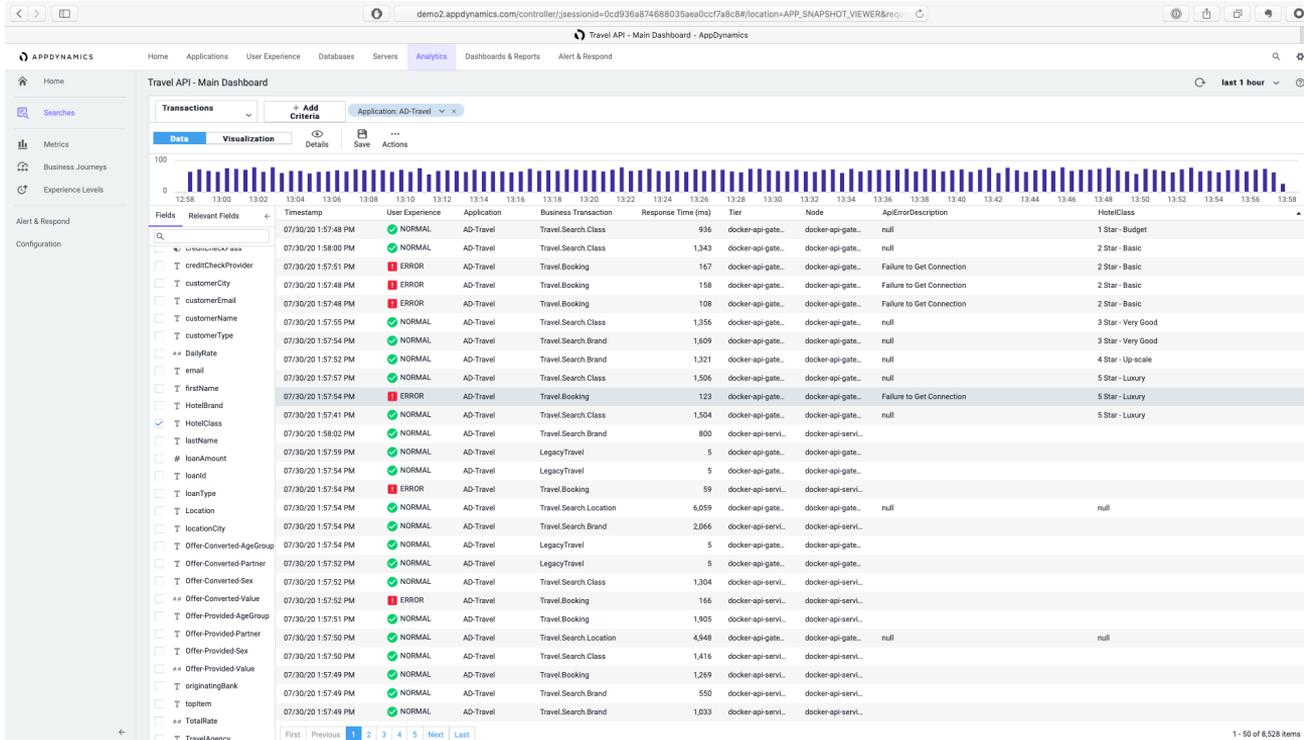
The screenshot shows an IDE window for 'AppDynamics' with a file named 'CreditCheck.java'. The code is as follows:

```
54 // Check FICO score
55 getFICOScore();
56
57 // Decide
58 if (score < 650)
59     approve = false;
60
61
62 double adjustedAmount = this.currentApplication.getAmount();
63
64 // offer platinum members more money based on their credit score
65 if (currentCustomer != null && currentCustomer.getLevel() == "Platinum"){
66     long coeff = MAX_SCORE - currentCustomer.getCreditScore() / MAX_SCORE;
67     double adjustment = this.currentApplication.getAmount() / coeff;
68     adjustedAmount += adjustment;
69 }
70
71 // Update Status
72 updateApplicationStatus(approve);
73
74 message = "Customer ID: " + customerid + " FICO Score: " + score + " Approved: " + approve;
75
76 }
77
78 response.setContentType("text/html");
79 response.setHeader("Access-Control-Allow-Origin", "*");
80 PrintWriter out = response.getWriter();
81 log.info("Credit Check: " + message);
82
83 out.println(message);
84 out.flush();
85 } catch (Exception e) {
86     log.error(e.getMessage());
87     StringWriter writer = new StringWriter();
88     PrintWriter pw = new PrintWriter(writer);
89     e.printStackTrace(pw);
90     log.error(writer.toString());
91 }
```

The right-hand side of the IDE shows the 'Messages (10)' panel. The message data is as follows:

Timestamp	Breakpoint	Hostname	Data
03:34:14:291 PM	CreditCheck.java : 67	processor	CreditCheck.java@67 was hit on processor

What does this code do ... for our business?



Execution Time 114 ms Wait Time 0 ms Block Time 0 ms Node docker-api-services-n1 Timestamp 07/30/20 1:57:54 PM

Details Filters Set Root Reset Root Export

Name	Time (ms)	Percent %	Thread State	Exit Calls / Thre...	S...
org.jboss.resteasy.plugins.server.servlet.HttpServletDispatcher.service	4 ms (self)	3.5%			
com.appdynamics.sample.service.BookingReservation\$Proxy\$\$\$_WeldClientProxy\$bookProperty	0 ms (self)	0%			
com.appdynamics.sample.service.BookingReservation\$bookProperty:151	0 ms (self)	0%			
org.apache.http.impl.client.CloseableHttpClient.execute:57	0 ms (self)	0%			
org.apache.http.impl.client.CloseableHttpClient.execute:82	110 ms (s...	96.5%			HTTP

execute:82

Name	org.apache.http.impl.client.CloseableH ttpClient.execute	Self Time 110ms	96.5%
Type	POJO		
Class	org.apache.http.impl.client.CloseableH ttpClient	Total Time 110ms	96.5%
Method	execute	Details	Block: 0 ms, Wait: 0 ms
Line Number	82		

Exit Calls

Type	Details	Count	Time (ms)	% Time	From	To
HTTP	http://external-services-mock-9999/res...	1	108	94.7%	docker-a...	/reservati...

HTTP Exit Call **1**

Error NoHttpResponseException: external-services-mock-9999 failed to respond
Time 108ms
From docker-api-services
To /reservation/book/fault
Details http://external-services-mock-9999/reservation/book/fault

Properties
Start Time 1596131874134

Answers to unpredictable questions



New Search

Baseline... last 1 hour

1 SELECT * FROM

- transactions
- logs
- browser_records
- mobile_snapshots
- mobile_crash_reports
- web_session_records
- mobile_session_records
- synth_session_records
- iot_records
- mobile_non_fatal_issue_records
- loanapproval

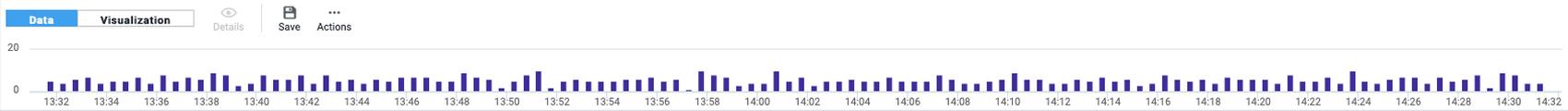
Data Vis Actions



Fields	Relevant Fields	Timestamp	User Experience	Application	Business Transaction	Response Time (ms)	Tier	Node
		07/30/20 2:31:56 PM	ERROR	AD-Travel	Travel.Booking	140	docker-api-services	docker-api-services-n1
		07/30/20 2:31:54 PM	ERROR	AD-Travel	Travel.Search.Class	445	docker-api-services	docker-api-services-n1
		07/30/20 2:31:53 PM	ERROR	AD-Travel	Travel.Booking	101	docker-api-services	docker-api-services-n1
<input checked="" type="checkbox"/>	T Application	07/30/20 2:31:53 PM	ERROR	AD-Travel	Travel.Booking	100	docker-api-gateway	docker-api-gateway-n1
<input checked="" type="checkbox"/>	T Business Transaction	07/30/20 2:31:50 PM	ERROR	AD-Travel	Travel.Booking	54	docker-api-services	docker-api-services-n1
<input type="checkbox"/>	T Error	07/30/20 2:31:49 PM	ERROR	AD-Travel	Travel.Booking	137	docker-api-services	docker-api-services-n1
<input type="checkbox"/>	T Error Code	07/30/20 2:31:49 PM	ERROR	AD-Travel	Travel.Booking	116	docker-api-services	docker-api-services-n1
<input type="checkbox"/>	T Error Detail	07/30/20 2:31:33 PM	ERROR	AD-Travel	Travel.Search.Class	515	docker-api-services	docker-api-services-n1
<input type="checkbox"/>	T Error Type	07/30/20 2:31:33 PM	ERROR	AD-Travel	Travel.Booking	142	docker-api-services	docker-api-services-n1
<input type="checkbox"/>	# Http Time (ms)	07/30/20 2:31:20 PM	ERROR	AD-Travel	Travel.Booking	99	docker-api-gateway	docker-api-gateway-n1
<input type="checkbox"/>	# JMS Time (ms)	07/30/20 2:31:19 PM	ERROR	AD-Travel	Travel.Booking	109	docker-api-services	docker-api-services-n1
<input checked="" type="checkbox"/>	T Node	07/30/20 2:31:18 PM	ERROR	AD-Travel	Travel.Booking	121	docker-api-services	docker-api-services-n1
<input type="checkbox"/>	T requestGUID	07/30/20 2:31:18 PM	ERROR	AD-Travel	Travel.Booking	210	docker-api-gateway	docker-api-gateway-n1
<input checked="" type="checkbox"/>	# Response Time (ms)	07/30/20 2:31:10 PM	ERROR	AD-Travel	Travel.Booking	122	docker-api-gateway	docker-api-gateway-n1
<input checked="" type="checkbox"/>	T Tier	07/30/20 2:31:10 PM	ERROR	AD-Travel	Travel.Booking	151	docker-api-gateway	docker-api-gateway-n1
<input checked="" type="checkbox"/>	T Timestamp	07/30/20 2:31:08 PM	ERROR	AD-Travel	Travel.Booking	84	docker-api-gateway	docker-api-gateway-n1
<input checked="" type="checkbox"/>	T User Experience	07/30/20 2:30:55 PM	ERROR	AD-Travel	Travel.Booking	136	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:30:43 PM	ERROR	AD-Travel	Travel.Booking	156	docker-api-services	docker-api-services-n1
<input type="checkbox"/>	T accountId	07/30/20 2:30:43 PM	ERROR	AD-Travel	Travel.Booking	145	docker-api-services	docker-api-services-n1
<input type="checkbox"/>	T ApiErrorCode	07/30/20 2:30:36 PM	ERROR	AD-Travel	Travel.Booking	142	docker-api-gateway	docker-api-gateway-n1
<input type="checkbox"/>	T ApiErrorDescription	07/30/20 2:30:35 PM	ERROR	AD-Travel	Travel.Booking	126	docker-api-gateway	docker-api-gateway-n1
<input type="checkbox"/>	T BookingOfferCode	07/30/20 2:30:31 PM	ERROR	AD-Travel	Travel.Booking	212	docker-api-services	docker-api-services-n1
<input type="checkbox"/>	T BookingOfferDescription	07/30/20 2:30:29 PM	ERROR	AD-Travel	Travel.Booking	128	docker-api-gateway	docker-api-gateway-n1
<input type="checkbox"/>	# cartTotal	07/30/20 2:30:18 PM	ERROR	AD-Travel	Travel.Booking	145	docker-api-gateway	docker-api-gateway-n1
<input type="checkbox"/>	creditCheckPass	07/30/20 2:30:18 PM	ERROR	AD-Travel	Travel.Booking	137	docker-api-services	docker-api-services-n1
<input type="checkbox"/>	T creditCheckProvider	07/30/20 2:30:09 PM	ERROR	AD-Travel	Travel.Booking	439	docker-api-services	docker-api-services-n1
<input type="checkbox"/>	T customerCity	First Previous 1 2 3 4 5 Next Last						

New Search

```
1 SELECT * FROM transactions WHERE application = "AD-Travel" AND userExperience = "ERROR"
```

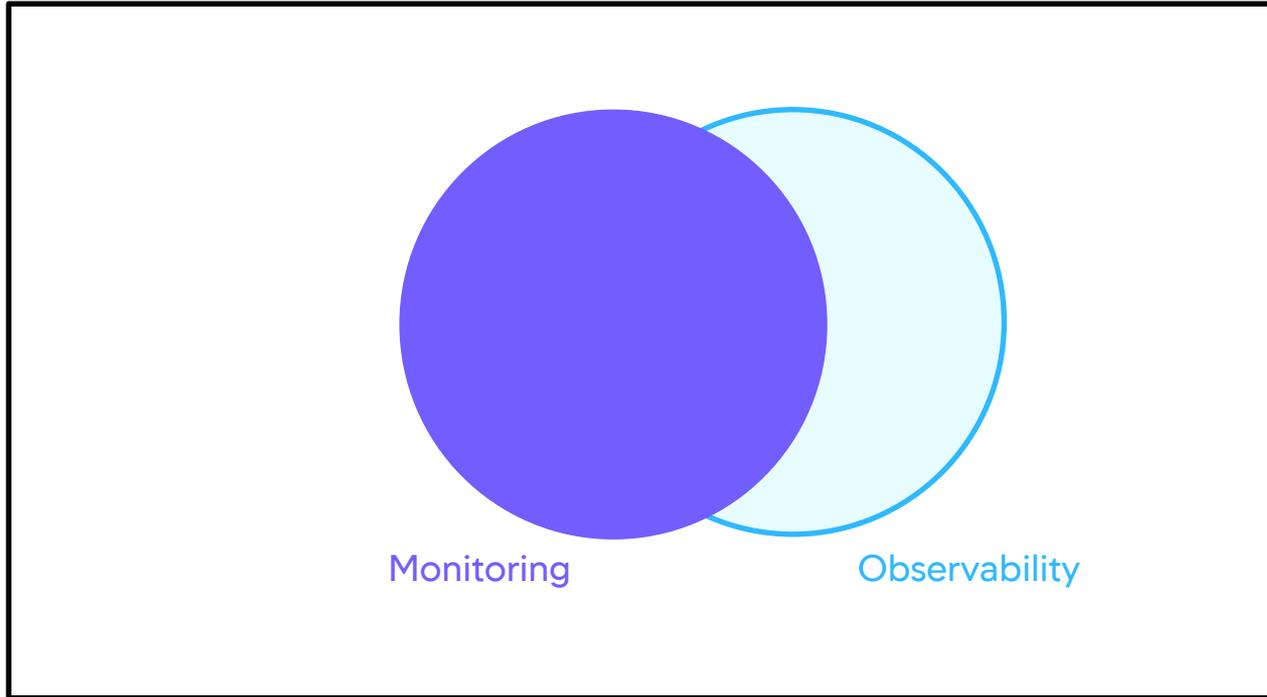


Fields	Relevant Fields	Timestamp	User Experience	Application	Business Transaction	Response Time (ms)	Tier	Node
		07/30/20 2:31:20 PM	ERROR	AD-Travel	Travel.Booking	99	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:31:19 PM	ERROR	AD-Travel	Travel.Booking	109	docker-api-services	docker-api-services-n1
		07/30/20 2:31:18 PM	ERROR	AD-Travel	Travel.Booking	121	docker-api-services	docker-api-services-n1
		07/30/20 2:31:18 PM	ERROR	AD-Travel	Travel.Booking	210	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:31:10 PM	ERROR	AD-Travel	Travel.Booking	122	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:31:10 PM	ERROR	AD-Travel	Travel.Booking	151	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:31:08 PM	ERROR	AD-Travel	Travel.Booking	84	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:30:55 PM	ERROR	AD-Travel	Travel.Booking	136	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:30:43 PM	ERROR	AD-Travel	Travel.Booking	156	docker-api-services	docker-api-services-n1
		07/30/20 2:30:43 PM	ERROR	AD-Travel	Travel.Booking	145	docker-api-services	docker-api-services-n1
		07/30/20 2:30:36 PM	ERROR	AD-Travel	Travel.Booking	142	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:30:35 PM	ERROR	AD-Travel	Travel.Booking	126	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:30:31 PM	ERROR	AD-Travel	Travel.Booking	212	docker-api-services	docker-api-services-n1
		07/30/20 2:30:29 PM	ERROR	AD-Travel	Travel.Booking	128	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:30:18 PM	ERROR	AD-Travel	Travel.Booking	145	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:30:18 PM	ERROR	AD-Travel	Travel.Booking	137	docker-api-services	docker-api-services-n1
		07/30/20 2:30:09 PM	ERROR	AD-Travel	Travel.Search.Class	439	docker-api-services	docker-api-services-n1
		07/30/20 2:30:07 PM	ERROR	AD-Travel	Travel.Booking	109	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:29:54 PM	ERROR	AD-Travel	Travel.Booking	154	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:29:52 PM	ERROR	AD-Travel	Travel.Booking	56	docker-api-services	docker-api-services-n1
		07/30/20 2:29:52 PM	ERROR	AD-Travel	Travel.Booking	79	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:29:51 PM	ERROR	AD-Travel	Travel.Booking	127	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:29:51 PM	ERROR	AD-Travel	Travel.Booking	139	docker-api-services	docker-api-services-n1
		07/30/20 2:29:46 PM	ERROR	AD-Travel	Travel.Booking	110	docker-api-gateway	docker-api-gateway-n1
		07/30/20 2:29:46 PM	ERROR	AD-Travel	Travel.Booking	219	docker-api-services	docker-api-services-n1
		07/30/20 2:29:30 PM	ERROR	AD-Travel	Travel.Booking	102	docker-api-services	docker-api-services-n1

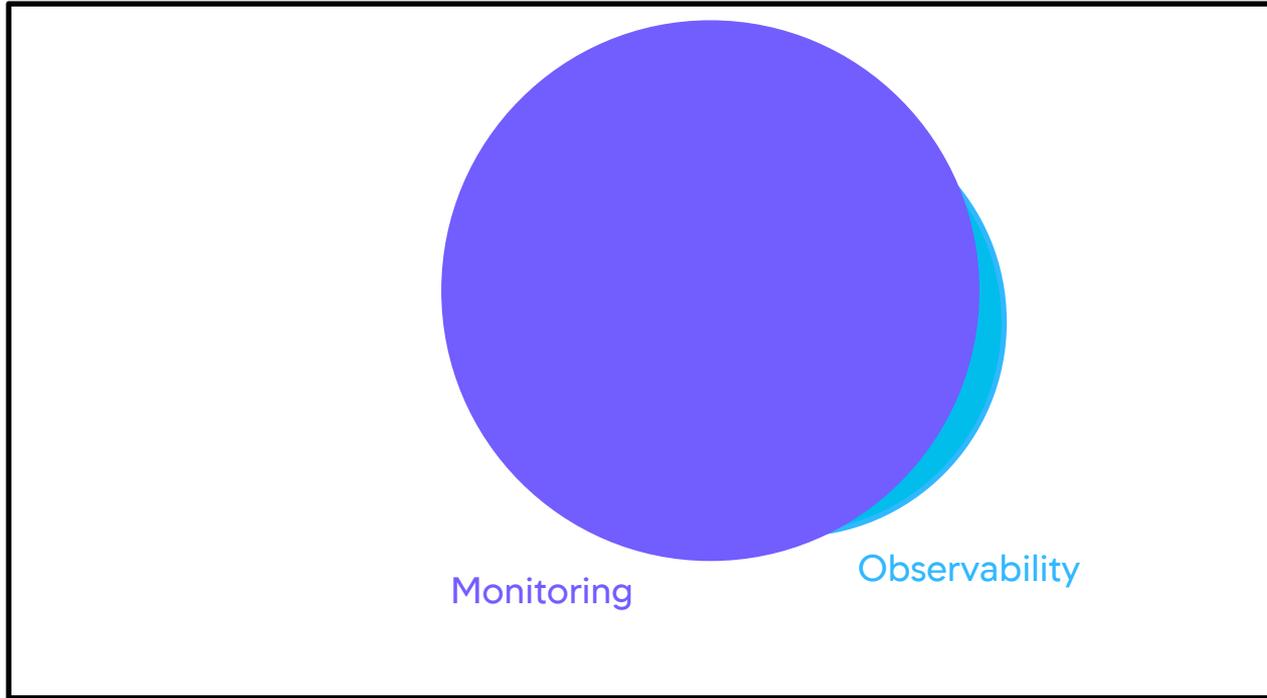
- Fields (14)**
Unselect All
- Application
 - Business Transaction
 - Error
 - Error Code
 - Error Detail
 - Error Type
 - # Http Time (ms)
 - # JMS Time (ms)
 - Node
 - requestGUID
 - # Response Time (ms)
 - Tier
 - Timestamp
 - User Experience

- Custom Method Data (37)**
Unselect All
- T accountId
 - T ApiErrorCode
 - T ApiErrorDescription
 - T BookingOfferCode
 - T BookingOfferDescription
 - # cartTotal
 - creditCheckPass
 - T creditCheckProvider
 - T customerCity

‘ ... getting closer ... ’

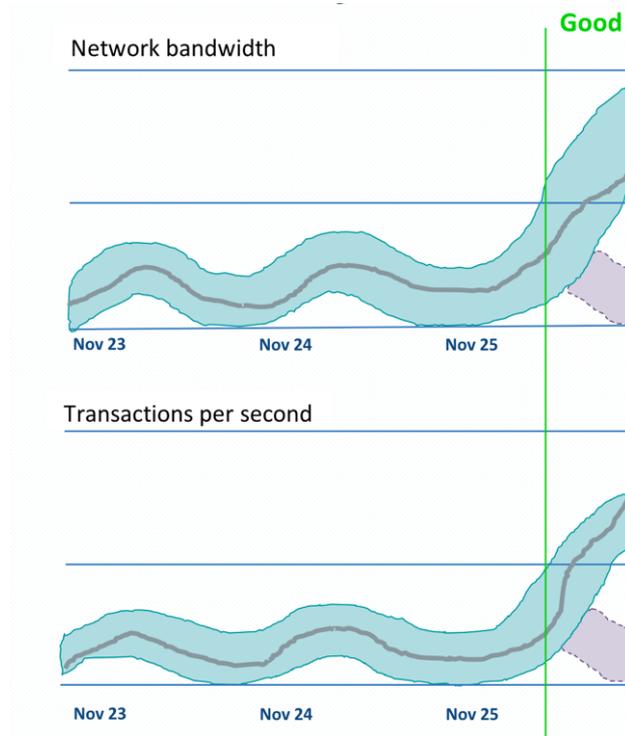


“ ... all that you see ... ”

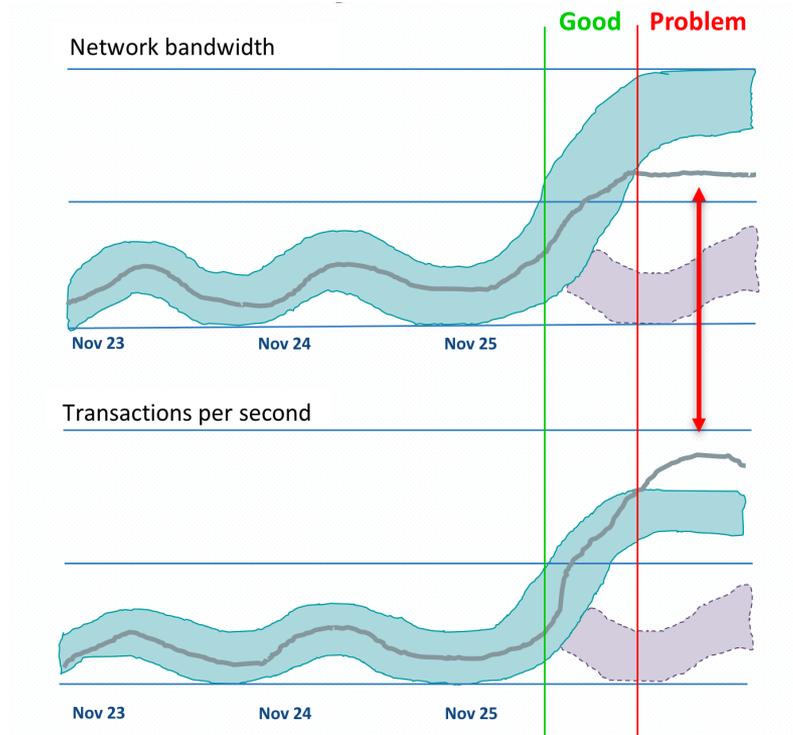


Observability+ with AIOps

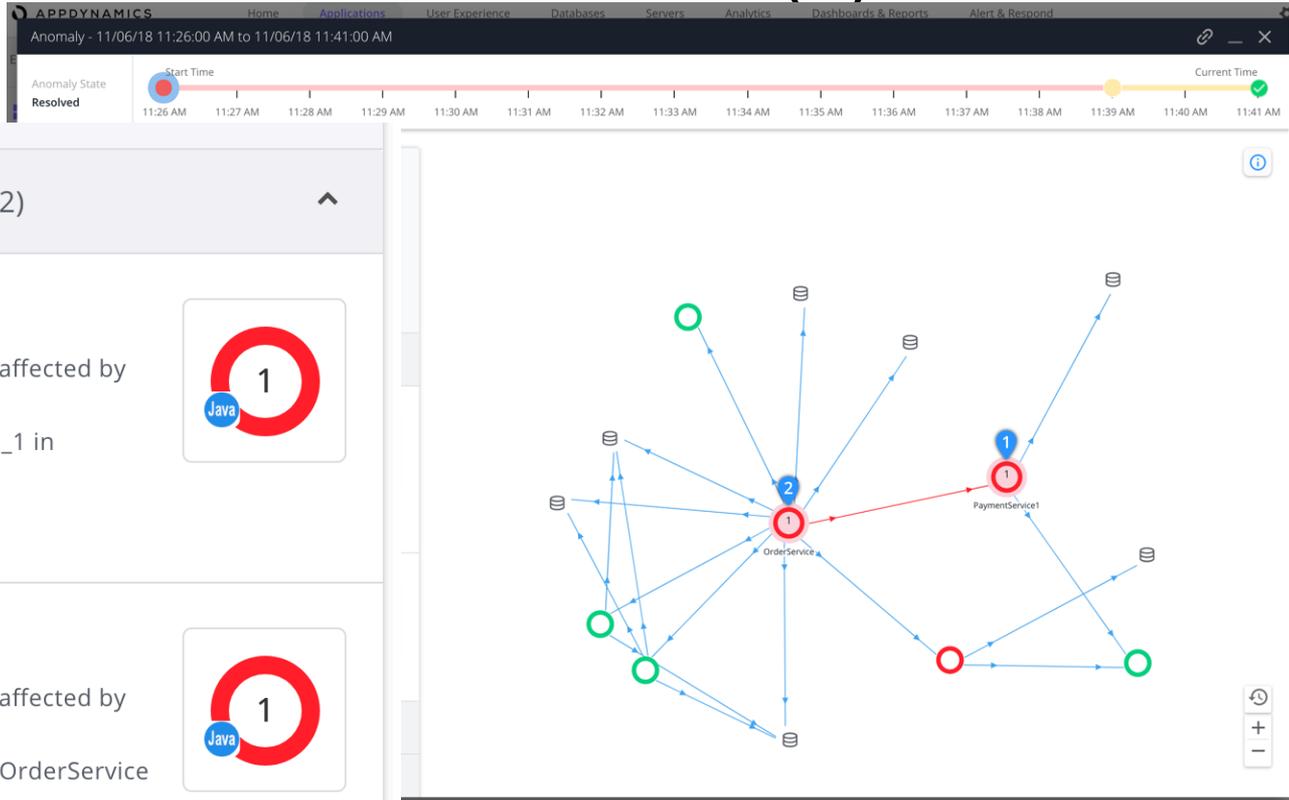
AI Ops: Contextually Correlate Metrics



AI Ops: Contextually Correlate Metrics



AI Ops: Automated Root Cause(s) Analysis



Central Nervous System

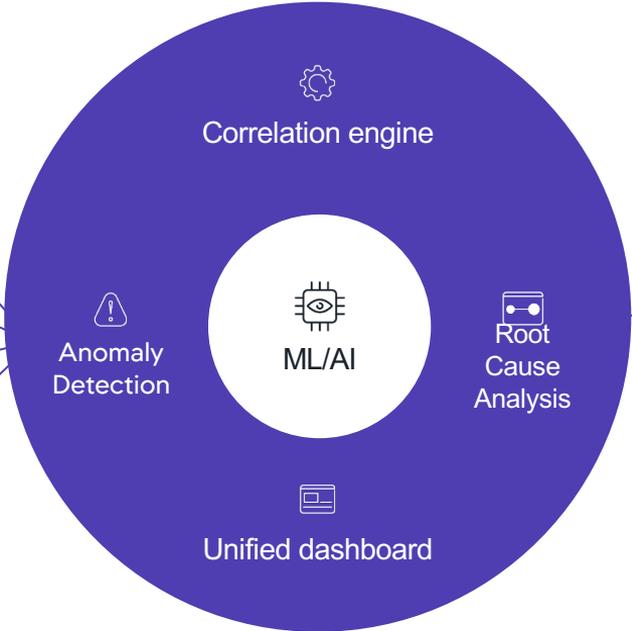
Visibility

Insight

Action

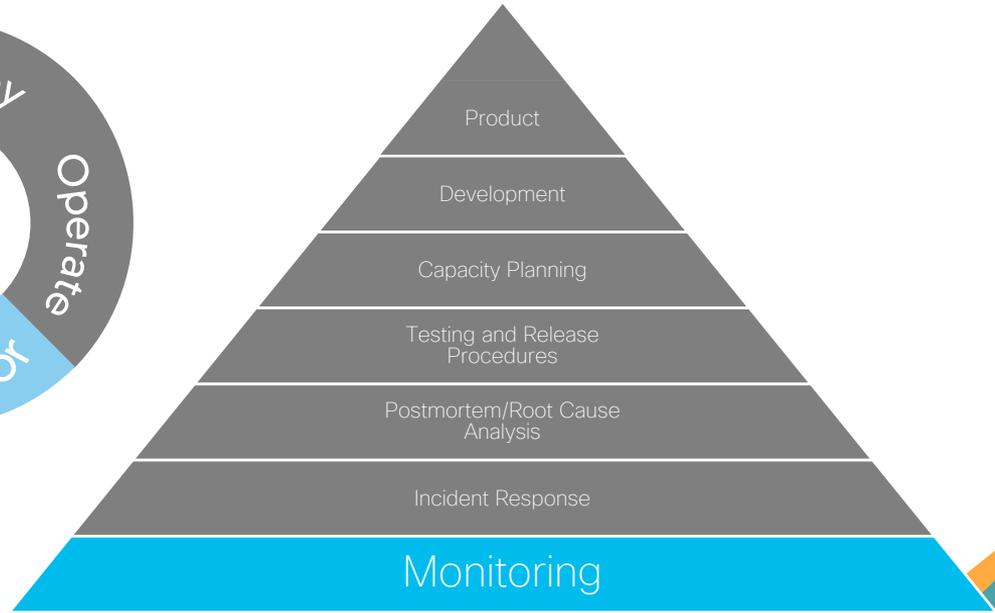
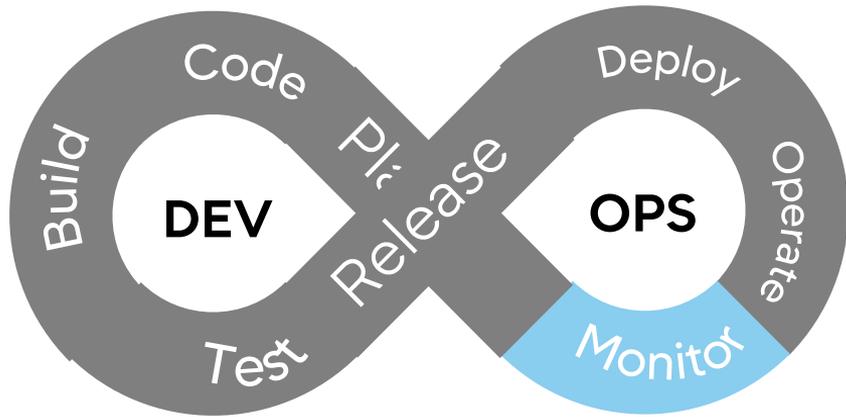


Time series and events data



Prerequisites to observability

Monitoring for DevOps & SRE



“experience with performance tuning and monitoring has moved ... to a 39% must-have skill ranking.”

Source: DevOps Institute | 2020 Upskilling: Enterprise DevOps Skills Report

Answer what does this code do ...

- To infrastructure
- To performance
- Differently from the last version
- By transaction
- Across architectures
- With third parties
- For users
- Right now, live

**“Discovery is not in
seeking new landscapes
but in having new eyes”**

MP

**“Observability is not in
adding new products
but in having new eyes”**

MC

Links



- Accelerating Digital Transformation In Turbulent Times
- <https://bit.ly/accelturbulent>
- AppDynamics Provides Comprehensive Observability
<https://bit.ly/obs-serverless>
- Central Nervous System (and AIOps strategy)
<https://www.appdynamics.com/central-nervous-system/>
- Slowdown is the New Outage
<https://bit.ly/slowdownoutage>
- Doctors Without Borders https://bit.ly/msf_dwb

THANK YOU!

Meet Me in the Network
Chat Lounge for Questions

