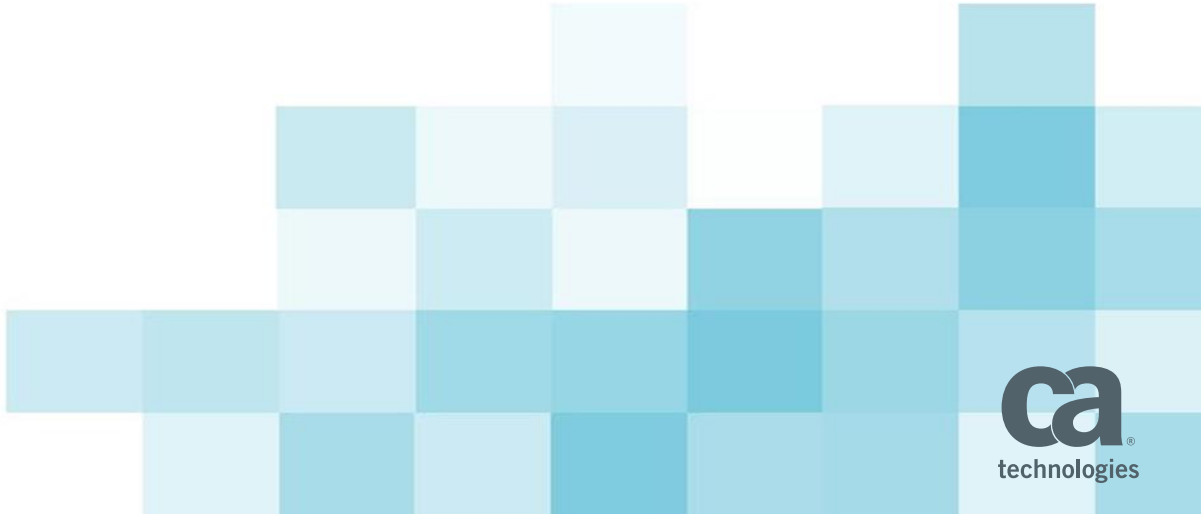


EM DevXchange 11 & 12th May 2016

Using CA APM Browser Agent

Stig Skilbred, Sr. Presales Consultant

May 12th, 2016



Introduction to Browser Agent

- Browser Agent is a component that accessorizes APM Java Agent and provides visibility into the client's browser view of things.
 - Automatic JavaScript insertion on HTML responses to capture client side metrics.
 - Browser affiliated metrics
 - Page
 - AJAX
 - JavaScript Function
 - Business transaction context
 - Transaction Tracing
 - Correlated with the corresponding Introscope trace
 - JavaScript Extension Framework



We'll have a look at ...

1 Browser Agent – How does it work?

2 Browser Agent – How to implement it?

3 Browser Agent – Metrics, Transactions & Visual

4 Browser Agent – Extending to your needs

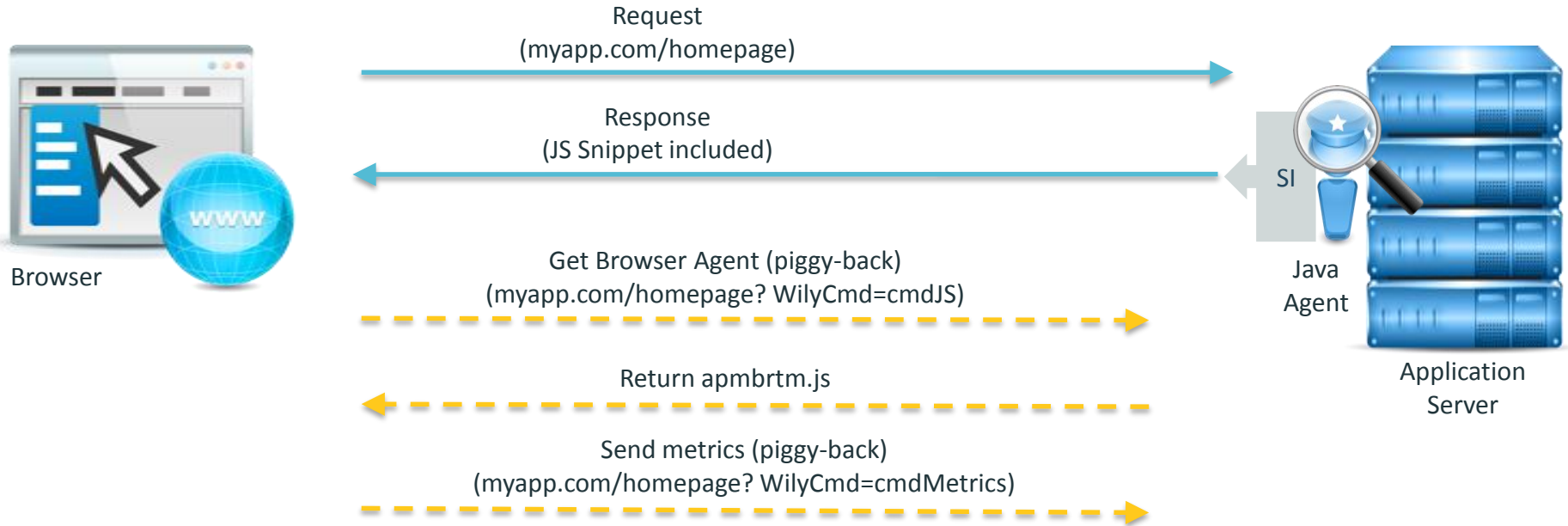
5 Q&A

Browser Agent

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How does it work?

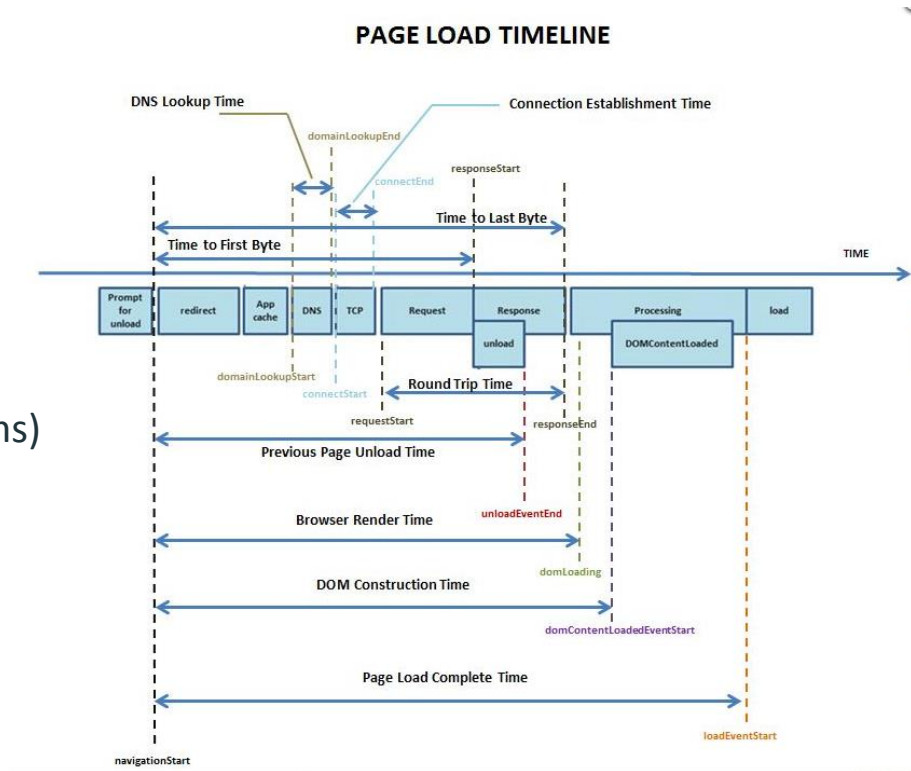
Browser Agent Sequence



Page Load Metrics

W3C Instrumentation

- Average Previous Page Unload Time (ms)
 - Average Browser Render Time (ms)
 - Average DOM Construction Time (ms)
 - Average Page Load Complete Time (ms)
-
- Average Connection Establishment Time (ms)
 - Average DNS Lookup Time (ms)
 - Average Round Trip Time (ms)
 - Average Time to First Byte (ms)
 - Average Time to Last Byte (ms)
-
- Responses Per Interval

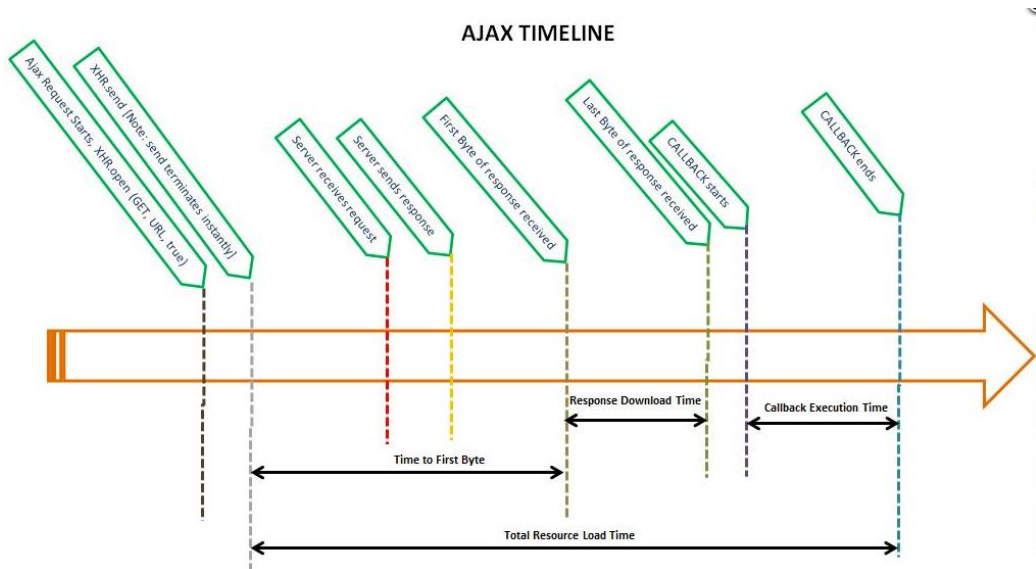


Ajax Metrics

Ajax Instrumentation

- Total Resource Load Time (ms)
- Time to First Byte (ms)
- Response Download Time (ms)
- Callback Execution Time (ms)
- Invocation Count Per Interval

Note: Many frameworks are based on Ajax such as AngularJS. Browser Agent will collect information for these frameworks out of the box.

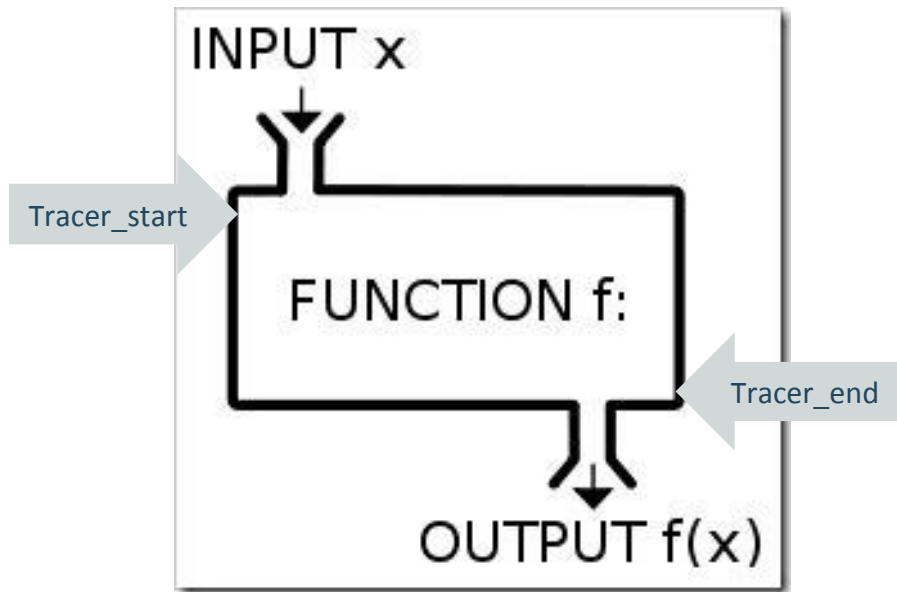


JavaScript Function Metrics

JavaScript Function Instrumentation

- Average Execution Time (ms)
- Invocation Count Per Interval

Note: OOTB we instrument XMLHttpRequest open() and send().
The browser agent can easily be extended to monitor your own JS functions.



Browser Agent

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How to implement it?

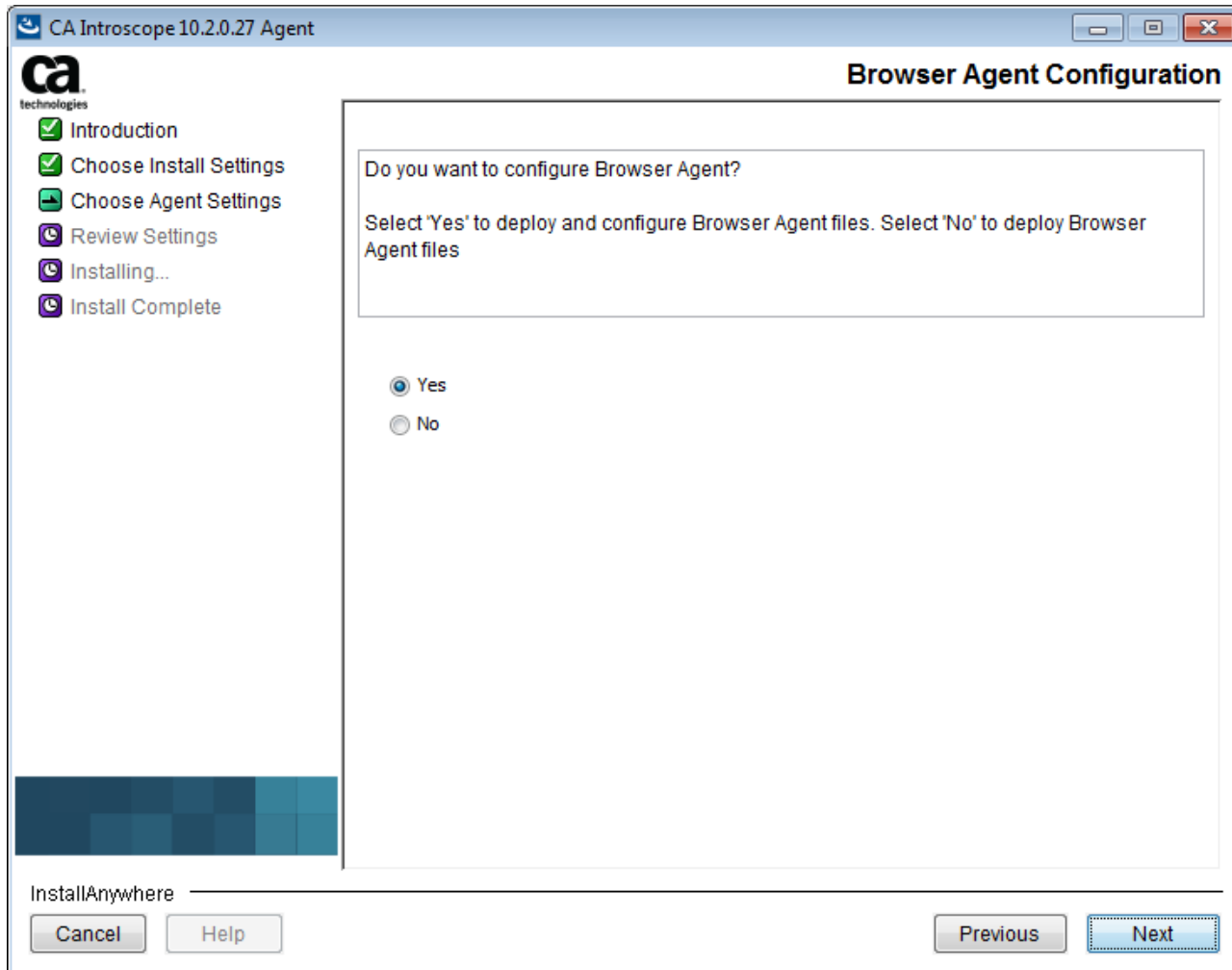
Implementing the Browser Agent



- It's easy, BA is included in the Java Agent
 - Configured with introscopeagent.profile
 - For legacy reasons we still use BRTM in the property names

```
#####  
# BRTM Business Transaction Monitoring properties  
#####
```

```
introscope.agent.browseragent.enabled=true  
introscope.agent.browseragent.snippetInsertionEnabled=true
```





Home



Agents



Reports



Packages

Agent Package Builder

Last saved 5/9/2016 5:29 PM

Agent Package

Add and Remove Bundles

Bundle Configuration

Install Instructions

Tomcat + Browser

CANCEL

DONE



Bundles

Available Bundles

Features (7)	
Browser Response Time	10.2.0.27
CEM Support	10.2.0.27
CTG Client	10.2.0.27
Change Detector	10.2.0.27
Change Detector - Windows support	10.2.0.27
Leak Hunter	10.2.0.27
SysView Integration	10.2.0.27

Add

Remove

Selected Bundles

Core (3)	
Command Center	10.2.0.27
EM Connection	10.2.0.27
Java Agent	10.2.0.27
Environment (1)	
Tomcat	10.2.0.27
Features (13)	
CPU	10.2.0.27
EJBs	10.2.0.27
Garbage Collection	10.2.0.27
HTTP Backends	10.2.0.27
JMS	10.2.0.27
JMX	10.2.0.27
JNDI	10.2.0.27
JSF	10.2.0.27

This bundle will insert a JavaScript snippet in your application's pages, and give you detailed metrics about the user's browser's response times.

PREVIOUS

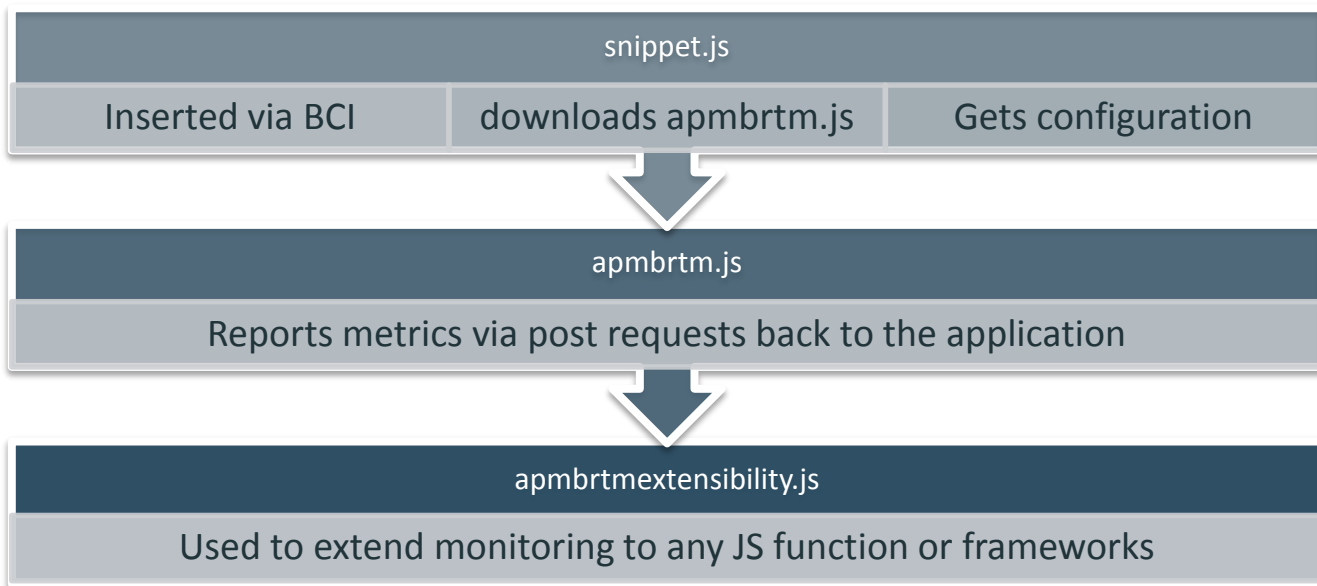
NEXT

Implementing the Browser Agent – cont'd

- More configuration options
 - `introscope.agent.browseragent.snippetInsertionEnabled`
 - `introscope.agent.browseragent.excludeURLList`
 - `introscope.agent.browseragent.includeURLList`
 - `introscope.agent.browseragent.geolocation.enabled`
 - `introscope.agent.browseragent.browserLoggingEnabled`
 - And more (metric frequency, clamps, enable/disable, etc.)
- <https://docops.ca.com/ca-apm/10-2/en/implementing-agents/browser-agent/advanced-browser-agent-configuration>

Browser Agent Files

- `<agent_home>/core/ext/BrtmExt.jar` (BrowserAgentExt.jar)
- `<agent_home>/examples/APM/BRTM/js`



Browser Agent 10.2 Compatibility Update

- App Server
 - Same as Java Agent
- Browser
 - Added support for Microsoft Edge Browser
 - Added support for Mobile Safari 9 Browser
 - jQuery 2.x

Browser	10.1	10.2
IE	v10, 11	V10, 11, Edge
Firefox	v30x	v30x
Chrome	v30x	v30x
Mobile Safari	iOS 7.x, 8.x	iOS 7.x, 8.x, 9.x

Browser Agent

-

Metrics, Transactions & Visual

Metrics by Business Transaction Definition

ca APM WebView

HOME CONSOLE INVESTIGATOR TOOLS MANA

Triage Map Metric Browser

Business Segment

ShoppingCart

ShopJewelry via Chrome

ShopPendants

BlamePoint Tracer Metrics

- Average Response Time (ms)
- Concurrent Invocations
- Errors Per Interval
- Responses Per Interval
- Stall Count

Page Load Metrics

- Average Browser Render Time (ms)
- Average Connection Establishment Time (ms)
- Average DNS Lookup Time (ms)
- Average DOM Construction Time (ms)
- Average Page Load Complete Time (ms)
- Average Previous Page Unload Time (ms)
- Average Round Trip Time (ms)
- Average Time to First Byte (ms)
- Average Time to Last Byte (ms)
- Responses Per Interval

AJAX Metrics

- Callback Execution Time (ms)
- Invocation Count Per Interval
- Response Download Time (ms)
- Time To First Byte (ms)
- Total Resource Load Time (ms)

JavaScript Function Metrics

- Average Execution Time (ms)
- Invocation Count Per Interval

Browser

- Average Browser Render Time (ms)
- Average Connection Establishment Time (ms)
- Average DNS Lookup Time (ms)
- Average DOM Construction Time (ms)
- Average Page Load Complete Time (ms)
- Average Previous Page Unload Time (ms)
- Average Round Trip Time (ms)
- Average Time to First Byte (ms)
- Average Time to Last Byte (ms)
- Responses Per Interval

Page Load Metrics

AJAX Call

localhost/8443

/apm/acc/agent

- Callback Execution Time (ms)
- Invocation Count Per Interval
- Response Download Time (ms)
- Time To First Byte (ms)
- Total Resource Load Time (ms)

/apm/acc/agent/1

/apm/acc/agent/1/agentUpdateTasks

Ajax Metrics

JavaScript Function

XHR_Send

- Average Execution Time (ms)
- Invocation Count Per Interval

JS Function Metrics

Metrics by Dynamically Discovered URL

ca APM WebView

HOME CONSOLE INVESTIGATOR TOOLS MANA

Triage Map Metric Browser

Business Segment

ShoppingCart

localhost/5080

Webpage URLs

Page Load Metrics

Average Browser Render Time (ms)

Average Connection Establishment Time (ms)

Average DNS Lookup Time (ms)

Average DOM Construction Time (ms)

Average Page Load Complete Time (ms)

Average Previous Page Unload Time (ms)

Average Round Trip Time (ms)

Average Time to First Byte (ms)

Average Time to Last Byte (ms)

Responses Per Interval

AJAX Metrics

localhost/5080

Callback Execution Time (ms)

Invocation Count Per Interval

Response Download Time (ms)

Time To First Byte (ms)

Total Resource Load Time (ms)

JavaScript Function Metrics

XHR_Open

Average Execution Time (ms)

Invocation Count Per Interval

XHR_Send

Average Execution Time (ms)

Invocation Count Per Interval

Browser

- Average Browser Render Time (ms)
- Average Connection Establishment Time (ms)
- Average DNS Lookup Time (ms)
- Average DOM Construction Time (ms)
- Average Page Load Complete Time (ms)
- Average Previous Page Unload Time (ms)
- Average Round Trip Time (ms)
- Average Time to First Byte (ms)
- Average Time to Last Byte (ms)
- Responses Per Interval

Page Load Metrics

AJAX Call

localhost/8443

/apm/acc/agent

- Callback Execution Time (ms)
- Invocation Count Per Interval
- Response Download Time (ms)
- Time To First Byte (ms)
- Total Resource Load Time (ms)

/apm/acc/agent/1

/apm/acc/agent/1/agentUpdateTasks

Ajax Metrics

JavaScript Function

XHR_Send

- Average Execution Time (ms)
- Invocation Count Per Interval

JS Function Metrics

Browser Agent in Investigator TypeViews

ca APM WebView

Time Window: Live Change Start Time: (0) admin (Logout) | Help

HOME CONSOLE INVESTIGATOR TOOLS MANAGEMENT

SuperDomain > natrade01 > Tomcat > TradeServiceAgent (*... > Business Segment Mount Agent...

Metric Browser

Overview **Browser** General Traces Errors Search Metric Count Differential Analysis

Service	Transaction	Page Load Complete	DOM Construction	Round Trip	Browser Rendering	Responses
Trade Service	Trade Options via Chrome	91	80	64	73	4
Trade Service	Login via Firefox	88	77	60	71	6
Trade Service	Login via Chrome	86	75	57	68	6
Trade Service	Place Order via Firefox	69	58	41	52	5
Trade Service	Place Order via Chrome	64	56	41	51	6
Trade Service	View Orders via Chrome	61	49	33	43	6

Page 1 of 1 | Displaying 1 - 6 of 6

Host	URL	Page Load Complete	DOM Construction	Round Trip	Browser Rendering	Responses
apmdemo/7080	/TradingService	0	0	0	0	0
apmdemo/7080	/ReportingService/ServletA7	0	0	0	0	0
apmdemo/7080	/ReportingService/ServletA6	0	0	0	0	0

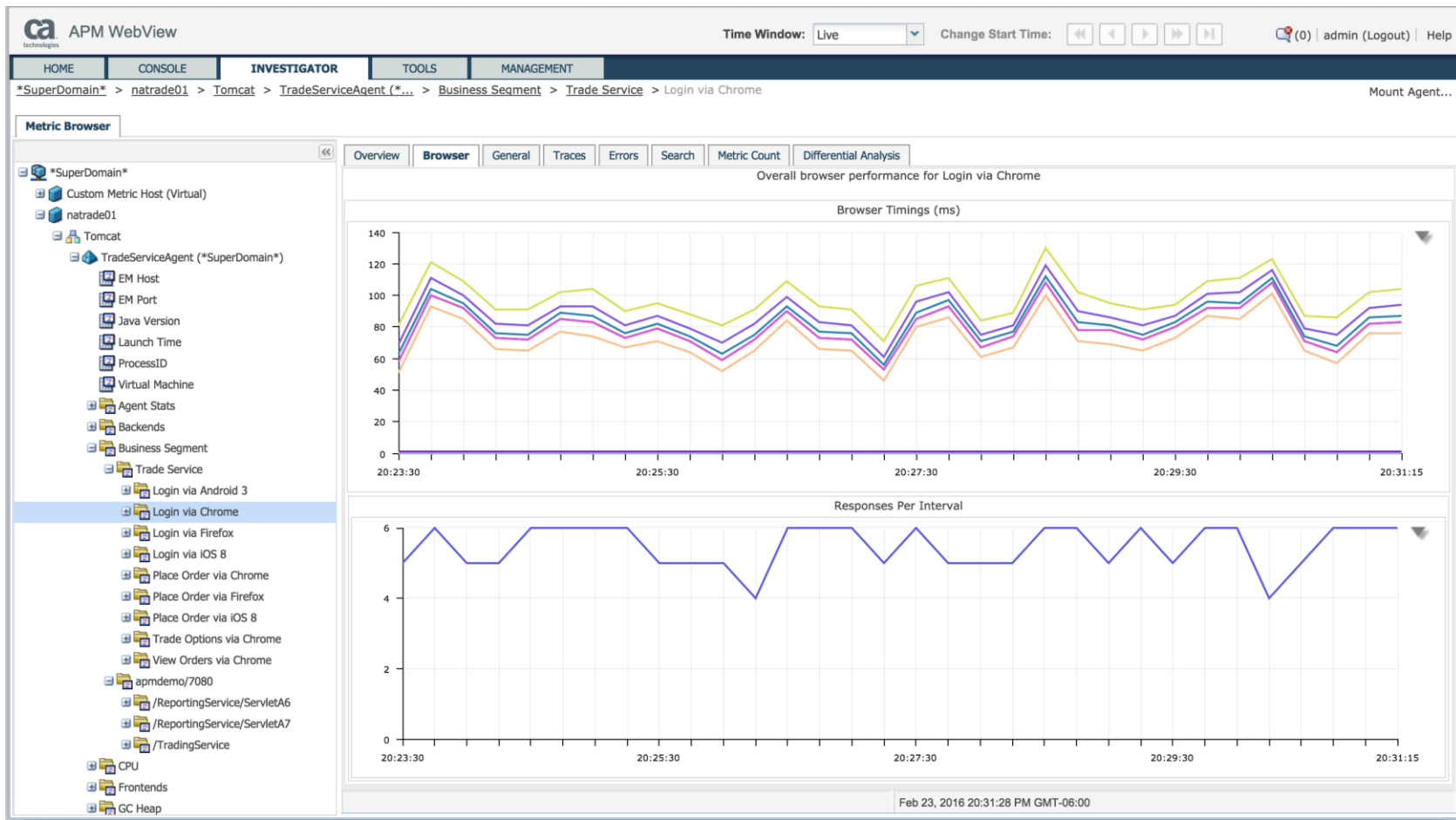
Page 1 of 1 | Displaying 1 - 3 of 3

Feb 23, 2016 20:30:45 PM GMT-06:00

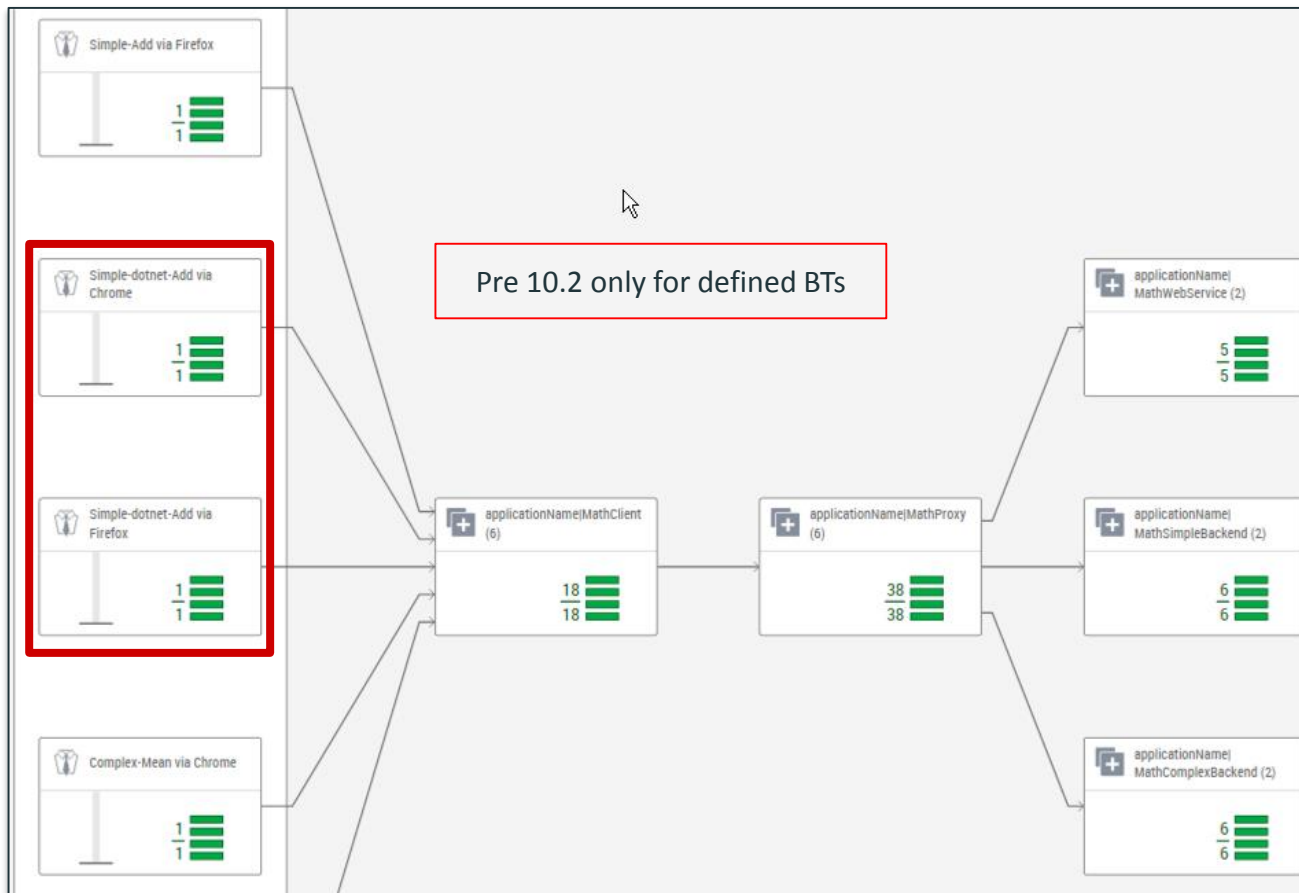
SuperDomain

- Custom Metric Host (Virtual)
- natrade01
 - Tomcat
 - TradeServiceAgent (*SuperDomain*)
 - EM Host
 - EM Port
 - Java Version
 - Launch Time
 - ProcessID
 - Virtual Machine
 - Agent Stats
 - Backends
 - Business Segment
 - Trade Service
 - Login via Android 3
 - Login via Chrome
 - Login via Firefox
 - Login via iOS 8
 - Place Order via Chrome
 - Place Order via Firefox
 - Place Order via iOS 8
 - Trade Options via Chrome
 - View Orders via Chrome
 - apmdemo/7080
 - /ReportingService/ServletA6
 - /ReportingService/ServletA7
 - /TradingService
 - CPU
 - Frontends
 - GC Heap

Browser Agent in Investigator TypeViews

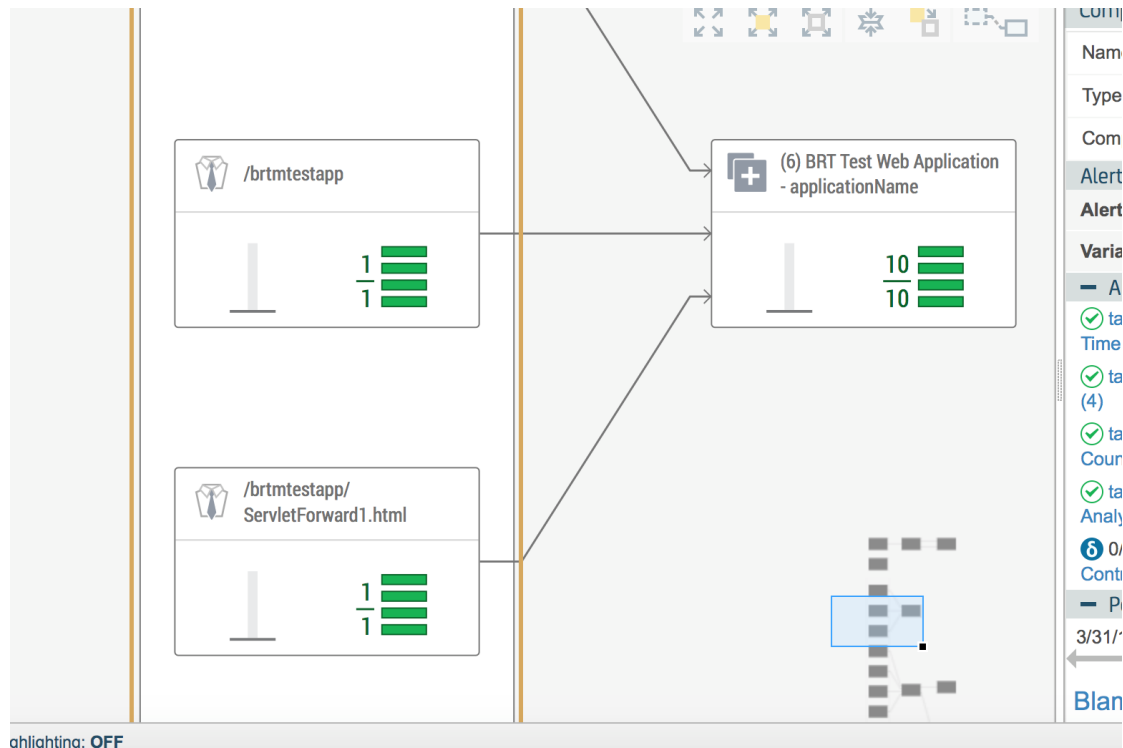


Browser Agent in APM Team Center

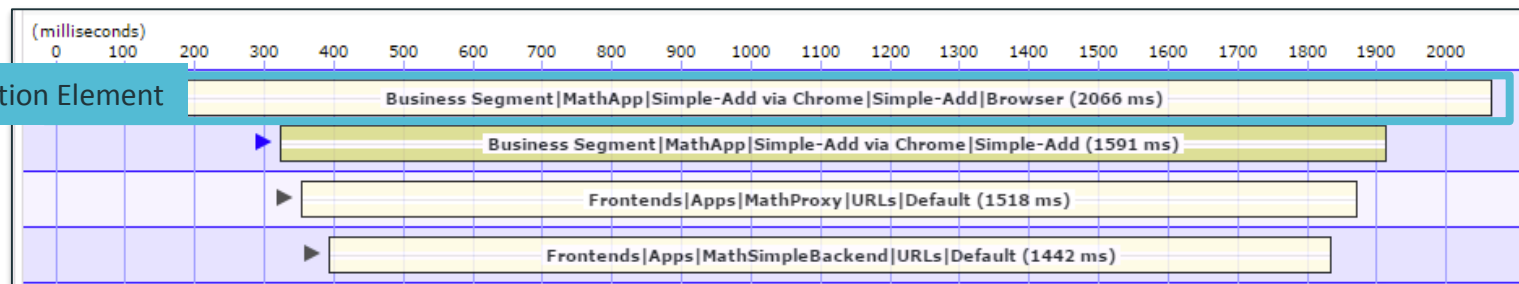


Browser Agent in APM Team Center

As of version 10.2 SP1 Now includes discovered URLs



Browser Agent in Transaction Trace



BA Transaction Element

Properties

BA Metrics

Business Segment|MathApp|Simple-Add via Chrome|Simple-Add|Browser: Average Browser Render Time (ms): 76
Business Segment|MathApp|Simple-Add via Chrome|Simple-Add|Browser: Average Connection Establishment Time (ms): 1
Business Segment|MathApp|Simple-Add via Chrome|Simple-Add|Browser: Average DNS Lookup Time (ms): 9
Business Segment|MathApp|Simple-Add via Chrome|Simple-Add|Browser: Average DOM Construction Time (ms): 2017
Business Segment|MathApp|Simple-Add via Chrome|Simple-Add|Browser: Average Page Load Complete Time (ms): 2066
Business Segment|MathApp|Simple-Add via Chrome|Simple-Add|Browser: Average Previous Page Unload Time (ms): 1967
Business Segment|MathApp|Simple-Add via Chrome|Simple-Add|Browser: Average Round Trip Time (ms): 1664
Business Segment|MathApp|Simple-Add via Chrome|Simple-Add|Browser: Average Time to First Byte (ms): 1954
Business Segment|MathApp|Simple-Add via Chrome|Simple-Add|Browser: Average Time to Last Byte (ms): 1976
Business Segment|MathApp|Simple-Add via Chrome|Simple-Add|Browser: Responses Per Interval: 1

BA Txn Property

BrowsGUID: EE14F6270A82B2672221A8C4BC92A313
Trace Type: Normal
browser type: Chrome
browser version: 44
duration: 2066
geo-location: -255,-255
startTime: 1438513427687

Browser Agent

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Extending to your needs

Browser Agent JavaScript Extension Framework

■ JavaScript Extension

- Stubbed JavaScript Functions
 - Placeholder JavaScript functions with empty function body
- Each extension point has at least 1 stubbed JavaScript function associated with it
 - They are already interleaved and referenced in the core Browser Agent JavaScript code.

■ Extension Points

- Instrument JavaScript functions (in scope)
- Custom Page, AJAX and JavaScript Function metrics
- Miscellaneous metrics
- Arbitrary transaction trace properties
- Name formatting (regex)



Browser Agent JavaScript Extension Points

- **extJSFuncMap**
 - Monitor a specific Java Script function in application window, developers are the intended audience. *Example: Math.Random*
- **extAddCustomPageMetric**
 - Creating a custom metric for the page, *Example: Average DOM depth or heap*
- **extAddCustomJSFuncMetric**
 - Custom function metric. *Example: function argument count*
- **extAddCustomAjaxMetric**
 - Several Ajax metrics provided out of box. Ability to add additional metrics. *Example: Content Length*

Browser Agent JavaScript Extension Points

- **extCollectMiscMetrics, extAddCustomMiscMetric**
 - The miscellaneous extension not covered by the 4 above. *Example: button click counting, Angular watch count*
- **extAddCustomOptionalProperty**
 - Add an arbitrary transaction trace property into all the BA trace components *Example: Previous Page URL*
- **extNameFormatter**
 - JS Regex pattern based metric formatter *Example: Prevent metric explosion on dynamic URLs*


Q & A



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