

SOASTA CloudTest™ Release Notes Build 6562.48

Aug 17, 2013

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Build 6562.48

This release [[requires new TouchTest Driver](#)] and also [[requires new TouchTest Web](#)].

Bugs Fixed

(CloudTest): Location lower properties panel not showing correctly

A display issue was encountered while viewing the Location lower properties panel.

62413: (TouchTest): TouchTestWeb scroll does not record scroll offset value (amount of scroll)

During a TouchTest Web recording session, the scroll offset value was unexpectedly not recorded.

62407: (CloudTest): Cannot combine widgets when dragging out from the left widget bar

An attempt to combine widgets on a dashboard unexpectedly failed.

62392: (TouchTest): Cannot record web actions on Android 4.0 ICS (i.e. Kindle Fire HD)

An attempt to record web actions on a Android 4.0 unexpectedly failed.

62088: (TouchTest): ApiDemos Custom Number Picker doesn't play back correctly

A composition using a tap action on a custom number picker failed to playback as expected.

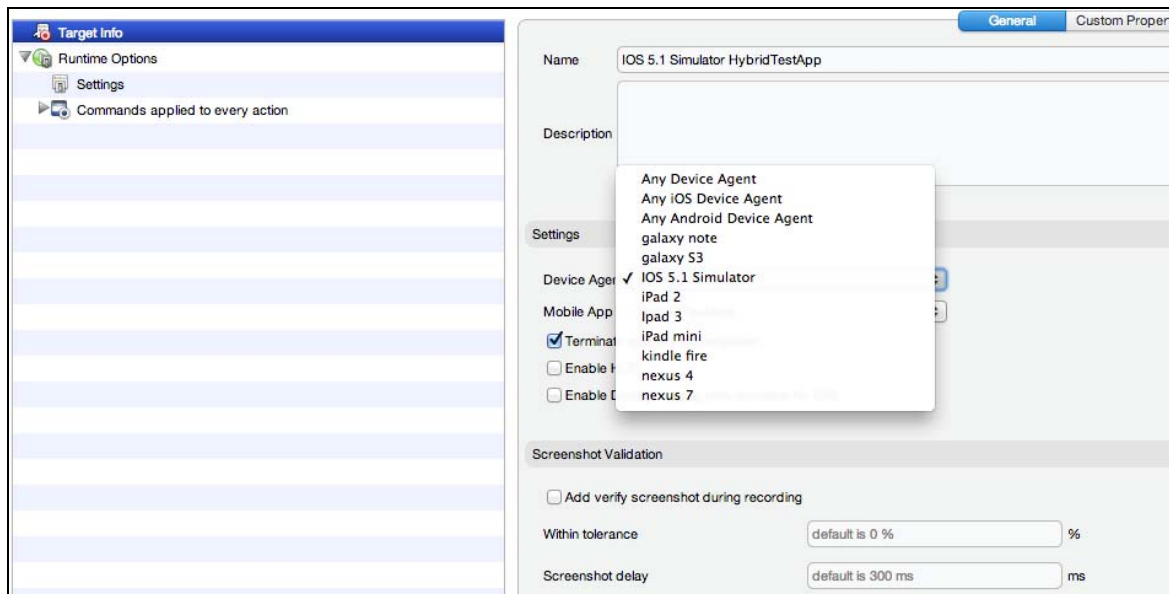
Build 6562.46

TouchTest

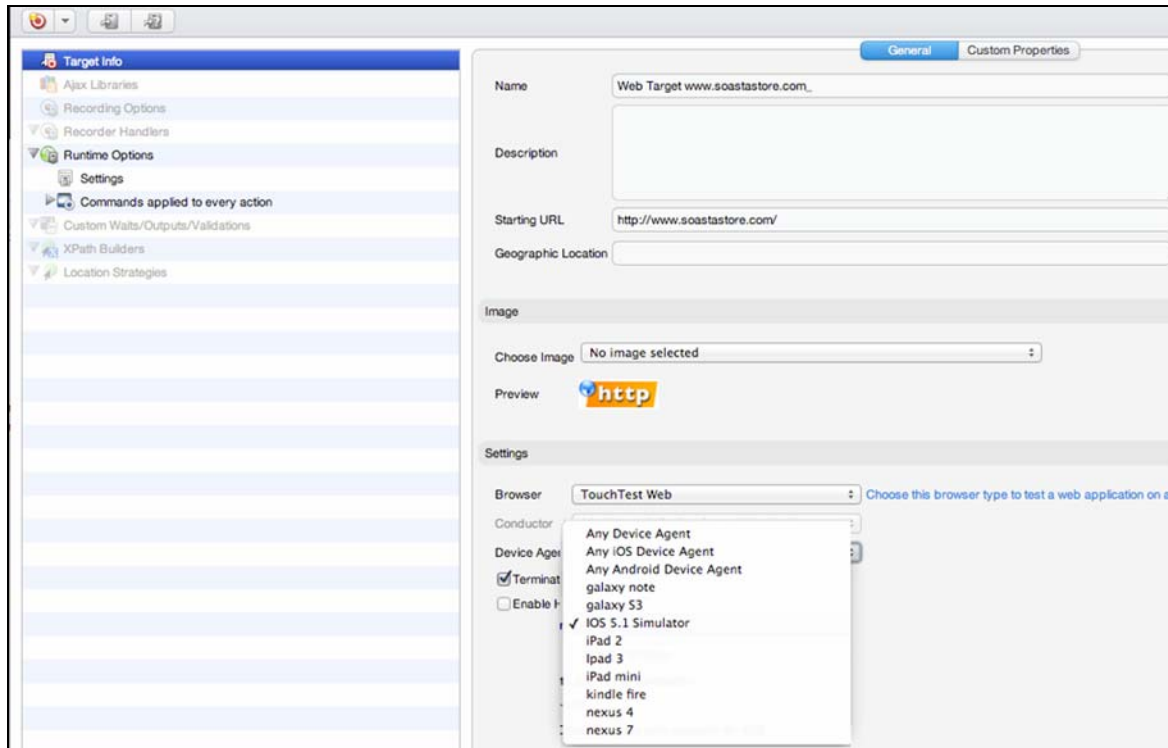
New Target settings for "Any iOS/Android Device Agent"

TouchTest and TouchTest Web users will now find two new settings in the Target Editor for native and mobile device agents.

For native apps, the Settings section, Device Agents list now includes two new settings—Any iOS Device Agent and Any Android Device Agent.



For mobile web pages, the Settings section, Device Agents list now includes two new settings—Any iOS Device Agent and Any Android Device Agent.



Bugs Fixed

62354: (mPulse) Null Pointer Exception clicking on "All" in country dropdown for Globe

This null error occurred while selecting "All" in the Globe widget's Country dropdown.

62336: (TouchTest) Android: TouchTest should show proper message to the user when SSL isn't configured properly [\[requires new TouchTest Driver\]](#)

As of this release, in the event of an SSL error on the server side, a user-friendly error message is shown in TouchTest Agent prior to session termination.

62330: (TouchTest) Android: TouchTestAgent doesn't work properly on Android 4.2.2 and 4.3 [\[requires new TouchTestAgent app\]](#)

TouchTest for Android didn't work as expected on Android 4.2.2 and 4.3 due to an SDK issue.

62324: (TouchTest) Android: TouchTestAgent doesn't proceed when SSL certificate is not signed or expired [\[requires new TouchTestAgent app\]](#)

In the event of an SSL certificate error or an expired certificate, TouchTest Agent would fail and exit. This fix is related to the fix for Case 62336.

62229: (CloudTest) The DestinationID attribute value " is not a valid long integer

This error occurred in the Clip Editor lower panel, Message Editor.

61883: (mPulse) Globe - Exceeds Boundaries

A display error occurred within the mPulse Globe widget causing it to exceed its allotted space.

61851: (TouchTest) Upgrade from SOASTA 29 results in Device Agent OS is null

Composition results will now display the correct platform information when Device Agents are selected at the Track Level or through a system property.

60808: (TouchTest) Validation shown passing in Jenkins but actually failed

Adding non-fatal Transport errors to be output in Jenkins results.

Build 6562.42

This release [[requires new TouchTest Driver](#)].

Bugs Fixed

62217: (mPulse): include timezone filter on mPulse Dashboard.

Because there was no time zone filter on the mPulse Globe dashboard, the dashboard would default to GMT, thus pulling in a different set of data than that necessary to correlate the heat map feature introduced in the prior release. This fix adds a time zone filter to the mPulse Globe dashboard.

62213: (mPulse): Some fly-to locations were inaccurate

Favorites listed on the surface of the Globe widget were not passing through the override list.

62211: (TouchTest): Android OnEditorActionListener broken

This fix repairs an underlying problem with the OnEditorActionListener that might potentially affect TouchTest users.

62049: (mPulse): missing "Operational Dashboard" and "mPulse Globe" dashboard in new tenants

After creating a new tenant, the default dashboards: Operational Dashboard and mPulse Globe, were missing.

61968: (TouchTest): Android Done button on Numeric Keypad doesn't record type action

This fix augments the fix reported in the prior release.

Build 6562.40

This release [\[requires new TouchTest Driver\]](#) and also [\[requires new TouchTest Web\]](#).

mPulse

Dashboard Improvements

Timer and Metric data now available on the WebGL Globe

This release introduces Timer and Metric data to the mPulse Globe widget. Timer settings were formerly limited to the Globe dashboard level.

A new Timer & Metric drop down now appears on the top-right menu on the Globe surface.

☒ Timer & Metric Heatmap

Minimum Sessions for Bounce Rate: 30

Page Load

0 through 3 seconds: [Green] [Yellow] [Red]

100 through 5 seconds: [Yellow] [Yellow] [Yellow]

200 higher: [Yellow] [Red] [Red]

DNS Resolution

0 through 100 milliseconds: [Green] [Yellow] [Red]

100 through 200 milliseconds: [Yellow] [Yellow] [Yellow]

200 higher: [Yellow] [Red] [Red]

TCP Connection

0 through 100 milliseconds: [Green] [Yellow] [Red]

100 through 200 milliseconds: [Yellow] [Yellow] [Yellow]

200 higher: [Yellow] [Red] [Red]

SSL Handshake

0 through 500 milliseconds: [Green] [Yellow] [Red]

500 through 750 milliseconds: [Yellow] [Yellow] [Yellow]

750 higher: [Yellow] [Red] [Red]

Back-End Time

0 through 400 milliseconds: [Green] [Yellow] [Red]

400 through 750 milliseconds: [Yellow] [Yellow] [Yellow]

750 higher: [Yellow] [Red] [Red]

Check Timer & Metric Heatmap to enable this feature. Doing so will result in global heat zones being shown on the Globe (for example, the Australian desert).

Accept the default settings per metric or enter new ranges for color correspondence to customize the display.

Set the color range that corresponds to the length of time for any of the following timer attribute settings:

- **Page Load Colors** – Set the color range for the default timer on page **load** time (renamed, was "**Load Time Colors**" in the prior release)
- **DNS Resolution Colors** – Set the color range for the default timer on **DNS** resolution (e.g. the time it takes to resolve a **DNS** name to its IP address)
- **TCP Connection Colors** – Set the color range for the default timer on the

Transmission Control Protocol (TCP) connections in a session.

- **SSL Handshake Colors** – Set the color range for the default timer on SSL Handshake.

Scroll down to view the remaining color range options

- **First Byte Colors** – Set the color range for the default timer on the first byte received in a session.
- **Front-end Time Colors** – Set the color range for the default timer on front-end time. Frontend time is client-side time such as the additional time it takes to fully render any content.
- **DOM Loading Colors** – Set the color range for the default timer on **loading** the DOM (e.g. after the client has finished **loading** all window frames, objects, and images).
- **DOM Ready Colors** – Set the color range for the default timer on the DOM ready status. This event represents the moment when the browser has fully processed the DOM structure of the HTML document.

Globe Widget Settings for Metric and Timer

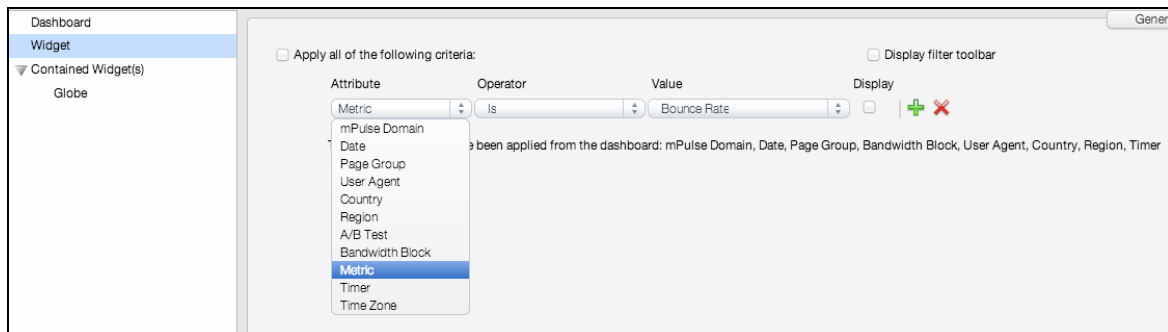
Additionally, the Globe legend now includes additional surface-level settings.

Beacon Load Time (sec) – This legend was formerly known as Load Time (sec) and presents a visual cue for load time by color.

Beacons per Dot – This legend presents a visual cue to the number beacons per dot.

Timer Page Load (sec) – This legend presents a visual cue for page load time by color.

Additional Timer and Metric filters are now available in the Widget-level Filter tab.



Visualization improvements for retina displays on the WebGL Globe

This release also includes visual improvements for users on retina displays.

Globe default favorites list updated

The Default favorites list has also been updated for this release.

Bugs Fixed

62040: (TouchTest): Android TTD: scroll not recorded

A prior Android fix was reverted. This also fixes an issue in the Clip Editor.

61968: (TouchTest): Android: Done button on Numeric Keypad doesn't record type action

An expected type action was not recorded during an Android recording session.

61875: (CloudTest): Unable to upgrade CloudTest to SOASTA 34

An attempt to upgrade from SOASTA 22 to SOASTA 34 unexpectedly failed.

61821: (TouchTest): After flashing ROM, and boot, TouchTest didn't work until we force kill app

TouchTest became unresponsive after flashing ROM and reboot.

61737: (mPulse, CloudTest, TouchTest): Improved dashboard load time performance

This fix improves dashboard load time performance.

61116: (CloudTest): Large Seed Data file successfully uploads but contents are not displayed in Seed Data Object.

Uploading a very large Seed Data file resulted in display issues in the Seed Data user interface.

60228: (TouchTest): Scrolling doesn't get recorded on Android

Scrolling actions were not recorded as expected on Android.

54163: (TouchTest): Problem playing back type without prior click

There was an issue here with the type action when the keyboard wasn't already open.

52707: (CloudTest): Recording messages with OAuth authentication weren't properly matching existing targets

A discrepancy in OAuth messages resulted in this error.

Build 6562.32

Bugs Fixed

61900: (TouchTest) Max VUs greater than 0 should not "CloudTest-ize" the UI

This fix provides the ability to customize Max Virtual Users (Max VUs) in TouchTest-only environments.

61863: (CloudTest) "f.empty is not a function; JS line 1246"

This script error occurred in dashboards.

61856: (CloudTest) "Cannot read property 'style' of null"

This JavaScript error occurred in the Result Details dashboard.

61758: (mPulse) Globe Beacons stop rendering when rotation is toggled on/off

When rotation was toggled on or off from the "Star" drop down menu in the Globe view, all beacons would stop rendering.

61636: (mPulse) Cannot read property 'MapView' of undefined

This error occurred in the Globe widget.

61629: (TouchTest): Android TTW - TouchTestWeb record native tap as click [\[requires new TouchTest Web\]](#)

This fix augments the earlier fix reported for this case.

61570: (mPulse) Uncaught TypeError: Cannot read property 'MapView' of undefined; JS line 12290

This error occurred in the Globe widget.

61526: (TouchTest) Android: TTActivityManager should cache activity for an edge case

Switching to another mobile app during a recording session would result in a crash when the Record button was clicked in Clip Editor to stop recording.

61012: (mPulse) TypeError: this.m_oGlobe.countryData is null; JS line 3330

This error occurred while opening a dashboard.

56390: (TouchTest) App exits and device returns to TouchTest Agent
[\[requires new TouchTestDriver\]](#)

This fix augments the earlier fixes reported in this case.

Build 6562.28

Bugs Fixed

61819: Fix for iOS TouchTestWeb viewport scaling problem [[requires new TouchTest Driver](#)][[Requires new TouchTest Web](#)]

A layout problem occurred in an HTML document that required scaling (e.g. due to a huge width).

61750: iOS Hybrid Click Duration / LongPress [[requires new TouchTest Driver](#)][[Requires new TouchTest Web](#)]

This fix adds improved support for long presses.

Build 6562.23

Bugs Fixed

61745: (TouchTest) AutomationUnhandledExceptionError -[__NSArrayM objectAtIndexedSubscript:]: unrecognized selector sent to instance [[requires new TouchTest Driver](#)]

This error would occur on playback of a mobile test with a given tap action.

61507: (TouchTest) UIWebView Not Ready using iPad simulator [[requires new TouchTest Driver](#)]

TouchTest Web was unable to inject scripts into the web view while recording on an iPad Simulator.

61502: (TouchTest) Apps that use GoogleAdMobAds crash during recording [[requires new TouchTest Driver](#)]

An iOS application that used an advertisement rendered inside a webview would crash during recording right after such an advert was displayed.

61475: (TouchTest) Android TTW refactor the WebViewClient injection [[requires new TouchTest Driver](#)]

This fix introduces further improvements to script injection triggered by loadURL (e.g. before web pages load).

58547: Storing Properties using Xpath extraction does not work on Android simulator [[requires new TouchTest Driver](#)]

This fix removes XPath ID resets that were not correctly placed, resulting in this error. Now, TouchTest will find all nodes that match the given locator.

Build 6562.19

This release [[requires new TouchTest Driver](#)] and also [[requires new TouchTest Web](#)].

Bugs Fixed

61740: (TouchTest): Cannot call method 'removeChild' of null

The Android Hybrid keyboardReturn playback timed out.

61738: (TouchTest): hybrid keyboardReturn doesn't show up in clip

An expected keyboardReturn action didn't show up in the clip.

61733: (CloudTest): Collection chart improvements

This fix includes various improvements and fixes to the Average Collection Duration widget, including a calculation error that caused the chart to be off by 1 minute when aggregating by minutes.

61727: (CloudTest): "Cannot read property 'm_oLeftAxis' of undefined" when viewing the Average Response Time chart

This error would occur if the dashboard included the Average Response Time chart.

61629: (TouchTest): Android TTW - TouchTestWeb record native tap as click.

A tap on the TouchTestWeb title bar from within the app would unexpectedly record a click.

61621: (TouchTest): Optimal locator is not choosing text for UILabel

Clicking a text area on a given mobile page would capture only classname=UIView where it should've also captured text that would make the locator actually work.

61612: (TouchTest): On iOS only, hybrid was doing the implicit wait for readyState complete

A click was unexpectedly performed before scroll in a given hybrid page, thus causing the test to fail.

61475: (TouchTest): Android TTW stabilization

This fix includes refactoring of the WebViewClient injection for Android.

61354: (TouchTest): TTW Android too sensitive on some websites, not recording scrollView

The scrollView was not recorded as expected along with some other issues while recording via the native view of TouchTest Web.

61335: (TouchTest): Scale Android TTW pages to match real browser page

This fix scales the TouchTest Web page to match a real browser page.

61006: (TouchTest): TTD Android webType not recorded when using the return key

When a user hit the return key on the keyboard the webType did not get recorded.

58424: (TouchTest, CloudTest): Clip Editor shrinks all columns down to really small size for certain users

Clip Editor columns in List view were inexplicably left aligned for a given user.

Build 6562.16

This release [[requires new TouchTest Driver](#)] and also [[requires new TouchTest Web](#)].

Bugs Fixed

61481: There is no webView for the web command or action tapping on settings

Clicking a tab in a mobile app failed to produce the expected result while doing mobile recording (e.g. no webView).

61475: Android TTW - refactor the WebViewClient injection

The WebViewClient injection was not completed before loading an URL, thus resulting in this error.

61421: "Cannot read property 'shortname' of undefined"

This script error would occur in dashboards where the Fundamentals widget was included.

61332: Can't record Go Button with TTW Android

Attempts to use TouchTest Web for Android to record from a site that had a Go button would unexpectedly fail when the web view was scrolled.

61114: waitForViewChange will not be added when we record a webSelect

Each time a window is opened/closed in an Android mobile app, a waitForViewChanged is added; however, it should be ignored for pending actions like webSelect recording.

61006: TTD Android webType not recorded when using the Return key

When user hit the return key on the keyboard the webType did not get recorded as expected.

57870: Cannot read property 'style' of null

Additional null checking has been added to detect further occurrences of this issue.

57257: JS script error for empty result in Result Details widget

This script error occurred within an empty result.

Exception while saving webPan from lowerPanel in Clip Editor

This error would occur in the Clip Editor lower panel on save.

Build 6562.11

CloudTest

TouchTest

This release [[Requires new TouchTest Driver](#)] and also [[Requires new TouchTest Web](#)].

This release includes a major update to iOS and Android TouchTest Web, as well as to TouchTest Hybrid. All TouchTest Web actions and actions on UIWebViews (iOS) or WebViews (Android) are now recorded using native operating system events as well as played back using native OS events.

Getting the benefits of these enhancements requires installing the new TouchTest Web apps from the CloudTest Welcome page, and rebuilding your hybrid apps with the latest TouchTest Driver.

CloudTest

SCommand – New 'owner' parameter for Delete command

The Delete command now includes an additional parameter, owner. Refer to [SCommand Reference](#).

Switching Tenant Improvements and Tenant Folders (CloudTest Pro/Enterprise)

Users with access to more than one tenant will find an improved Change Tenants dialog box in this release.

Additionally, users can create Tenant folders via the context menu in the Central > Tenants list.

mPulse

Configure Domain box improvements

The Configure Domain box now enforces page group limits.

Bugs Fixed

61343: Widget loading indicator not showing

When a widget is loading, there's supposed to be a square loading icon in the upper left -- it's not showing up, which is causing some dashboard UI tests to fail.

61125: Composition Editor getting stuck in circular reference loops

The issue was fixed by caching nested clip information instead of always going to the repository even for clips that had been processed already. Brought the time to add the clip from 10 minutes to 5 seconds.

61031: Chart title not being set correctly when new chart widget dragged out

The widget display name of a Top N chart was not displayed as expected once added to the dashboard.

61030: Chart title not being dynamically set correctly when chart is replaced

The widget display name was not dynamically updated once the chart was replaced.

60947: Deleting and Re-adding the same clip in a composition adds the same custom properties again

The custom properties were unexpectedly added to this map every time a clip was loaded into a composition.

60864: Invalid API key can cause excessive CPU usage on the Main

A large number of Boomerang requests with an invalid API key was the likely cause of a simultaneous spike in the CPU usage on a main instance.

60797: TypeError: 'undefined' is not an object (evaluating 'a._canvas.width'); JS line 11778

This script error happened in an mPulse dashboard.

60725: Uncaught TypeError: Cannot read property 'length' of undefined; JS line 13737

This script error happened in the Globe widget.

60609: Standardize the rule to count requests through the widgets of the dashboards

The Fundamentals widget now includes App Actions in the request count (and will also include DB actions). Error Analysis now shows only message and scripts in its total line. Also, the widget now shows the request count for messages and scripts when there are no errors.

60470: Unable to get property 'toLowerCase' of undefined or null reference - no checkin

An error occurred during a Clip Editor recording session.

60034: Can't Right Click Delete Device Group

An attempt to right-click and Delete a Device Group unexpectedly failed.

58958: A Soap fault has occurred. faultString: Exception: java.lang.NullPointerException

This error occurred in the Clip Editor lower panel Message Editor.

58945: Can't playback the clip and composition

A band failure prevented the playback of a mobile test composition.

58042: Handle decimals in timers (custom & standard)

mPulse will handle decimals from navigation timing and custom timers.

58857: Issues with Metrics Over Time Widget

When selecting and zooming on adjacent time series widgets, the metric over time widget would break.

57801: Cannot read property 'length' of undefined

This error occurred in the Central > Welcome page.

57717: The XML document is not well-formed

This timing error occurred in CloudTest Lite, Central.

57515: Changes to scripts inside containers don't follow save as in new clip.

Script changes were lost in a new clip created from the clip holding changes if using Save As.

57492: 'undefined' is not an object

This likely timing error occurred in the Composition Editor, Play tab.

57483: Bad Gateway JS error

This error occurred in TouchTest Lite while trying to change a user password.

57457: Address already in use

A dashboard servlet error occurred.

54298: Changing aggregation period also changes session expiry time

Change the time that we hold session data in memory to have it's own config setting and can be a different value than the aggregation period. Default to 30 minutes plus 2 minutes.

Build 6512.56

Bugs Fixed

58843: (mPulse) Android TTW - Trying to record a specific website returns a 500 because it trims the URL

The Android TouchTest Web incorrectly trimmed a URL at an equal sign, thus resulting in this error.

Build 6512.54

Bugs Fixed

60714: (mPulse) jQuery Script error changing filters or widget settings in Operational Dashboard

This error occurred while using the Edit Panel to change mPulse dashboard settings.

60669: (CloudTest) "this.m_aDataset.push" script error viewing charts

This error likely occurred occurred due to a chart going away quickly after it was initialized.

60592: (CloudTest) Collection Count Roll-ups

The Collection Analysis widget no longer includes top-level metric rollups. This fix also removes the bytes sent/received and errors from the Grouped version.

58854: (mPulse) Issues with Y-Axis on Page Load Time Over Time Widget

Queries are now returned in milliseconds (ms) rather than in seconds. This change allows the Y axis to act much better. Dashboards will still display values in seconds if they get over 1000 ms.

58547: (TouchTest) Storing Properties using Xpath extraction does not work on Android

Xpath values are now properly extracted for output all element property values.

58222: (mPulse) gl is not defined; JS line 3230

This "gl is not defined" script error would unexpectedly appear in mPulse Central.

58054: (CloudTest / mPulse) DashboardEditor.updateWidgetTitle only works the first time

The Dashboard Editor couldn't tell the difference between a widget that had been renamed explicitly by the user versus one that had been renamed dynamically via a previous call. As a result, only the first call worked, and subsequent ones would silently fail.

58008: (mPulse) Object [object Object] has no method 'sparkline'

This script error was related to bytes received and errors within the Grouped version.

Build 6512.45

Bugs Fixed

Auto-detect time zones and pare down the time zone list

As of this release, the Time Zone list will be pared to a shorter list based on auto-detection of the user's time zone.

60488: When a clip is opened from a double click on an action in the Result Details the action in the clip should be expanded

As of this release, Clip Editor folders will be expanded to display a child action.

60440: Input Field very small when creating new wait

A layout issue occurred with the input field for a Wait.

60417: Null pointer when no time zone

This null pointer would occur if a Dashboard had no time zone.

59200: Split or Combine by Dimension for Collections Started on toggles between By Location, By Parent Container is not available

The Collections Started chart should allow split by parent container just like the Collections Completed one does.

58760: Cannot read property 'maxManualVUCount' of undefined

This error occurred while entering numbers into the Time or VU inputs in a dashboard that was not active. Now, a running composition and an initialized dashboard must both be present.

58586: Android webType types everything in lowercase

The webType action replayed all text in lower case.

58474: Cannot read property 'vus' of undefined

This error happened in the Virtual User Ramp Controller if a user dragged the sliders or diamond around while the dashboard was switching to a new result and hadn't been fully initialized yet.

57645: Phone number input doesn't type all the digits in the value

The `getOutput()` text will no longer be overwritten by the last property value. Instead, it will now return a full comma delimited list of all elements as was intended.

56143: Expected ')'; JS line 4

The App Action JSON parameters being passed to the Add Validation were messed up with regards to quotes.

53928: Reporting Passed Validation in Jenkins

This fix removes the excessive VCPASS and VCFAIL that were included in Jenkins results output.

Build 6512.36

Bugs Fixed

59274: Locator not found on mobile app

A JSON-formatted locator was not found as expected. Now, JSON format locators are serialized before using them for element lookup.

58789: Add rate of per second to Fundamentals collections rate

This fix adds "per second" to the rate choices in the Fundamentals widget, Collections Rate filter. This is simply calculated by taking the per-minute and dividing by 60.

58560: Format error converting number from delete all dependencies

This error occurred while using the Delete All Dependencies feature.

58538: New drop-downs are slow with lots of entries

Dropdowns in mPulse that had long lists (i.e. a long list of page groups) would take inordinately long to load. Now, optimizations in the dropdown display code will make it load much faster for long lists.

58284: Compare Results Dashboard Wizard Has lots of empty space

This layout issue caused the Compare Results Dashboard wizard to include empty space.

58278: Android composition runs continuously in CI

The lock on task queue for TouchTest tasks will no longer wait for the queue to be filled if it isn't empty.

58179: Response times from results.xml

When Clip Element Details are exported as a CSV, App Actions and all types of clip elements that should be exported in it were not. This fix also adds in all names for CSV exports from sCommand.

58054: DashboardEditor.updateWidgetTitle only works the first time

The Dashboard Editor couldn't tell the difference between a widget that had been renamed explicitly by the user versus one that had been renamed dynamically via

a previous call. As a result, only the first call to `updateWidgetTitle` worked, and subsequent ones would silently fail.

58027: Asset names in Unicode(regional) characters are not displayed correctly

Unicode character sets didn't display repository assets as expected.

57997: RUM selects bottleneck

This fix includes a data model change to timestamp-related code.

57935: Report is not getting generated and Average collection duration widget is taking more than 30 minutes to load

This fix limit all charts to a max of 100 series just like is done with the Error Types over Time chart.

57797: Locator Tool frame is off for hybrid app

The frame for the Locator Tool was not in the correct position in a hybrid app.

57511: The "OK" pop-up is back

The "OK" Alert modal dialog unexpectedly reappeared after having been eliminated.

56575: TypeError: this.m_oRecordTarget is undefined; JS line 3506

This error occurred while using the Locator tool during a browser recording session.

Build 6512.21

Bugs Fixed

58482: Unable to deploy HP Cloud servers without specifying a zone

Deploying an HP Cloud server would unexpectedly fail if no zone was specified.

58428: CloudTest New Custom Property, UI does not scroll to New

After adding a new custom property, the UI does not scroll to display it.

58389: Hybrid recording problem on Android 17 [[requires new TouchTest Driver](#)]

Recording in hybrid Android apps would fail if running Android 17.

58342: Copy paste of actions is not getting the latest edits

Pasted app actions do not include un-saved changes made to the original.

58339: Moving actions from one case to another inside a Switch renames the action

Moving a named app action from one case statement to another inside of a switch statement result in that app action being renamed.

58319: Toolbar Filter not displaying all options

Some rendering issues occurred within the dropdowns on widget surfaces.

58161: Result name and description prompt never appears

The expected Result name and description prompt never appeared.

58083: Filters on "Time" do not appear correctly

Checking the display checkbox on time filters resulted in an incorrect time display.

57969: TouchTestAgent Error using TouchTest Lite

Some attempts to register an Android device on touchtestlite.soasta.com unexpectedly failed.

57946: TypeError: [].inject is not a function

This JavaScript error occurred while recording browser actions.

56935: Swipes not recognized on Android app [[requires new TouchTest Driver](#)]

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Swipes were not recognized on an Android app when wrapped in ViewPager.

56243: Unable to get value of the property '1': object is null or undefined; JS line 2352

This JavaScript error occurred in the Target Editor when using Internet Explorer.

53928: Extra validations shown in Jenkins

This fix turns off reporting of VCPASS validations for App Action and Browser Action, which will prevent additional reporting of validations that were not defined by a given user as part of a given test clip.

Build 6512.10

Bugs Fixed

58131: Invalid Set-Cookie Header

A set-cookie format was not handled as expected.

57994: Script content getting deleted

Using the Expand All feature in the Clip Editor would unexpectedly delete script content that had been added since the prior Save.

57905: Viewing the list of audit records could hang the browser

Viewing the Central > Auditing list unfiltered would hang the browser.

57789: WebUI record button does not work a second time in a single session

The Record Browser button stopped working after having already started and stopped one recording.

57360: Generated report has an extra column

An extra, untitled column appeared in exported results in Word.

Build 6512.7

Bugs Fixed

57975: Clip editor crashed when changing from verifyWebScreenshot to verifyScreenshot

This error occurred while changing a validation from verifyWebScreenshot to verifyScreenshot.

57973: Clip Editor asks to retake native screenshot for web screenshot

The "Retake Screenshot" button was not hybrid-aware as expected.

57936: Fundamentals widget shows effective throughput as 0 when 14 messages were sent in 97 seconds

Now, CloudTest shows a fractional value when the throughput is less than 10.

57934: Grids are showing status as Loaded

Opening and closing a grid left the status set to "Loaded".

57892: Login Screen doesn't show incompatible browser list for IE8

The minimum browser requirements were not being properly shown in IE8.

57761: Monitor charts fail with 1-day aggregation

Monitor charts failed when the time range was set to several days.

57133: Locator based screenshot error on Android

Using the Locator tool to select a screen shot region did not work on certain Android apps.

56512: Check server passes with invalid URL

As of this release, CloudTest now automatically remove spaces from server URLs and host names

56390: App exits and device returns to TouchTest Agent [\[requires new TouchTestDriver\]](#)

This fix augments the earlier fix reported in SOASTA 14.

Build 6512.2

Bugs Fixed

57811: elementColor accessor should show textColor for UILabel

The elementColor accessor will now show textColor for UILabel.

57791: Invalid web locator recorded [\[Requires new TouchTest Driver\]](#)

An invalid Xpath locator was recorded, thus preventing a successful test.

57765: Recording a new clip using Record Mobile Web on android gives App update required

Recording a new clip using "Record Mobile Web" failed on an Android device when the "App update required" pop-up appeared.

57638: Loading composition on external RSDB Error

This error occurred while loading a Composition using a separate Results Database

57371: Server and Location and not valid attributes for RSDBs

This error occurred while sorting the Central, Results Databases list by server or location.

56893: Cannot read property 'PreActionWaits' of undefined

This error occurred in the Clip Editor, lower panel Message Editor.

56811: Locator-based screenshots get fuzzy [\[Requires new TouchTest Driver\]](#)

An attempt to use screenshot validation via Locator unexpectedly failed.

56789: Problem with HP Cloud Grid deployment

Multiple "400 Bad Request" errors occurred while trying to deploy a grid using HP Cloud.

56389: Android Webview does not load TTW scripts

Hybrid apps were not working on Android API level 17.

56114: "java.lang.NullPointerException" error while attempting to record

This null pointer error prevented recording in a mobile app.

54919: Renaming screenshot validation fails

A successful verifyScreenshot would fail if its name was changed (e.g. from verifyScreenshot-1 to some other name).

54170: Unity/OpenGL framework iOS app records but does not play back.

The recorded offset of an item in an app using the Unity/OpenGL app was unexpectedly expressed as a negative causing playback of the recorded content to fail.

Build 6472.40

Bugs Fixed

56992: Hybrid App not waiting for webpage to load before moving on (Hybrid app) [[Requires new TouchTest Driver](#)]

A test clip recorded from a hybrid app would visibly move on to the next action before the page for the current action loaded.

56986: Multiple elements not being recorded in Hybrid App [[Requires new TouchTest Driver](#)]

The issue was that the `shouldStartLoadWithRequest` method was on a different class than the other delegate methods. Swizzling was picking up the wrong method and so it was never getting called, which then caused failed notifications when actions were recorded.

56170: Unable to verify `verifyWebBodyText` and `verifyWebElementPresent`

A regression occurred that caused validations on web body text and on web element present to fail.

Build 6472.36

Bugs Fixed

57428: TT Fails to identify the locators

TouchTest did not record natively any web element or native element because of web intercation (e.g. the picker following a webSelect. [[Requires new TouchTest Driver](#)]

57376: Aborting a result is processed incorrectly by a RSDB that shouldn't be involved

When an RS receives an abort request it checks to see if it is processing that result and if not then it just returns.

Build 6472.31

Bugs Fixed

57452: (TouchTest) Problem with native tap for keyboard / alert views in landscape mode

A problem with the coordinate translation for popup views in Landscape mode caused touchBegin to be in a different location than touchEnd.

57362: (CloudTest) Image missing on "All" drop-downs in Dashboard Edit panel

The arrow image was measuring the input box's height to see how tall to be, but when the filter was shown when the lower panel first comes up, the input's height is 0 because it is not visible yet, so the image was getting drawn with 0 height. Now, it uses the ideal height, and doesn't do any measuring.

57356: (CloudTest) Chart legends in generated reports are not color coordinated with series

This issue was a side effect of the new Legend styles. Removing the colors from the legend text also removed it from the legend in the generated image. Now, the report generation will always use text colors, and the legend will continue to never use text colors.

57307: (mPulse) Nonexistent RUM domain ID errors found in server log

Blank dashboards were shown for certain domains.

57228: (mPulse) Time Zone issues

Incorrect data was shown for +GMT time zones.

57222: (TouchTest) "TypeError: this.m_oChaseButton is undefined"

This Composition Editor, Play tab error occurred while running a mobile tests.

57184: (CloudTest) Selenium server not installed by default for report generation in main ISO

The underlying report generation tool was not included in ISO versions as expected.

57054: (mPulse) Data in Geography Widget doesn't match data in country table

The data seen in the Geography widget didn't match up with data from the Country table.

57014: (mPulse) Load time in Metrics and Timers does not match load time in summary widget

The load time reported in the metrics and timers widget is different (lower) than what is seen in the default summary (Median Load Time) widget.

57004: (CloudTest) Copy & Paste for locator using Global Property does not get saved

A Locator that was added into an action or one of its accessors using the Global Property list (via the Property Chooser) could not then be successfully copied into another action. The pasted locator would disappear after saving and reopening the clip.

56812: (TouchTest) Tolerance for screenshot is not active

The Tolerance (%) field didn't work as expected.

56753: (CloudTest) Script error: "e is null" when right-clicking nodes in Library

Using a right-click to access the context menu from the Central, Library list would result in this error.

56557: (TouchTest) Adding extra character in username / password while playback [[Requires new TouchTest Driver](#)]

An extra character was unexpectedly added to the entered value in the username / password fields, resulting in this error.

56388: (TouchTest) Android TouchTest Driver: Recording "type" not working with next and many text inputs

Type actions were not working with next links and many text inputs on Android.

55134: (TouchTest) playback issue

A background screen didn't get focus after completion of a popup confirm action.

Chart rendering bug when drawing bar charts of 1 pixel width

This release resolves a chart-rendering issue where bar charts were of 1 pixel width (e.g. they weren't really visible).

Build 6472.24

Bugs Fixed

57234: Can't create reports in current SOASTA update

A report generation error occurred in bar chart rendering in the prior release.

57220: Touchtest recording wrong attribute for WebTouchUp action

Xpath attributes were unexpectedly recorded for a WebTouchUp action.

57141: Dashboards page has two table headers

The Dashboards page unexpectedly displayed two table header columns.

57019: Error trying to do a mass target change

This error occurred while trying to use the Mass Target Change feature on a clip created in a prior release.

56989: StoreWebElementText gets text even when not visible on screen) [[requires new TouchTest Driver](#)]

Elements were not recorded in a Hybrid app as expected.

56915: Clip recording would hang browser in longer recording sessions

The Recording HTTP into Clip Editor feature would unexpectedly hang the browser session.

56816: Time Zone filter not shown in mPulse Lite

The Time Zone filter is now shown in all default dashboards (except the Globe) and will default to UTC instead of Pacific Time.

56701: Tables have no columns

This fix changes default selections for Metrics By Dimension and Timers and Metrics widgets, as well as for the Performance Breakdown and Operational Dashboards. This also fixes case 56858.

54407: 'console' is undefined; JS line 2109

This error occurred in the Clip Editor, Outputs form.

53928: Extra validations shown in Jenkins

This fix turns off reporting of VCPASS validations for App Action and Browser Action, which will prevent additional reporting of validations that were not defined by a given user as part of a given test clip.

31351: Session Template Package Wizard scrambles the parameters

The parameters of a given session were scrambled in the resulting template so that the playback of the test clip would fail.

Build 6472.16

Bugs Fixed

57125: Invalid Set-Cookie header in response (Unable to parse expiration date)

The "Invalid Set-Cookie header in response" error when the "expires" attribute is wrapped in double-quotes.

57111: Wrong icon class in the "cannot delete object" dialog

A clip element icon displayed for a message clip in the Cannot Delete Object box.

57104: Dashboard name extends beyond the tab

A layout problem occurred in the tab for an open dashboard in the Composition Editor, Play tab.

57099: Column data not aligned in Dashboards view

The columns in the Central, Dashboards list were not aligned as expected.

56923: iOS 7 iOS7 crash or freeze during recording [[requires new TouchTestDriver](#)]

This fix bumps the iOS 7 version to 46 and is required for iOS 7 recording to work.

47088: Top N charts limit is now 15

Top *n* charts now uses a drop-down to set the "Limit" in the Dashboard Edit Panel, Settings node for the given widget. The Limit is now raised from 9 to 15 (e.g. as in Top 15).

Build 6472.12



Upgrading to this version will require upgrading TouchTest Driver in all apps. For TouchTest Driver upgrade steps, click [here](#).

Bugs Fixed

Issue running Results Service migrations using the About box in a Single-instance Environment

This release fixes a problem while running Results Service migrations using the About Dialog in a single instance environment.

56923: iOS 7 iOS7 crash or freeze during recording [[requires new TouchTestDriver](#)]

This stack overflow error occurred on Swipe gesture swizzling.

55287: Local instance failure

If it took longer than 10 minutes to create a Result at the start of Composition execution, and nothing had been checking the status of the Composition or Playlist for at least 10 minutes (no U/I status displays), then the Composition would be erroneously considered to be idle and would be unloaded.

Build 6472.10



Upgrading to this version will require upgrading TouchTest Driver in all apps. For TouchTest Driver upgrade steps, click [here](#).

Bugs Fixed

56874: Numerous Errors Reported during Migration to SOASTA 14

This release increases the maximum image size to 500k from 1k.

56841: Result export for Basic .CSV Bytes Sent and Bytes Received are reversed

The Bytes Sent and Bytes Received data were unexpectedly reversed in a CSV export from the Fundamentals widget.

55830: "Cannot read property 'type' of undefined" script error in mPulse

An error occurred in the Metrics by Dimension widget in an mPulse Dashboard.

56709: "Cannot call method 'removeAttribute' of null" script error in mPulse

This error occurred in an mPulse Dashboard after switching to another application and then returning to Chrome.

56708: "row is null; JS line 838" script error in mPulse

This schema error occurred in an mPulse Dashboard.

55289: Cannot register iOS 7 devices [\[requires new TouchTestDriver\]](#)

This Device Agent registration error was fixed by not using cookies for Safari and iOS preferences communication; now, an URL query parameter is used instead of a cookie.

Build 6472.5



Upgrading to this version will require upgrading TouchTest Driver in all apps. For TouchTest Driver upgrade steps, click [here](#).

Bugs Fixed

56777: include collections rate in CSV and report generation

The output values for Collections Rate were not included in CSV export or report generation.

56759: Seed value for generated property values of type random doesn't vary by enough

Maestro ensures that each virtual user that is generating random property values gets a different seed. However, although the seeds were different, they were not sufficiently unique when used as a random object(s) in a composition that was run multiple times (e.g. eventually the same values would reappear).

56397: MATT fail when parsing custom_rules.xml

The Make App Touch-Testable will now give a better error message if it fails to parse custom_rules.xml file in a given project.

56390: App exits and device returns to TouchTest Agent [\[requires new TouchTestDriver\]](#)

If a testable app crashes while recording, future attempts to record may fail.

56292: Script not showing compile error and says "Saving" forever

Using a try without a catch would cause the Script Editor to fail with this error.

56282: DNS lookups failing with "java.nio.channels.ClosedByInterruptException"

While stopping a composition, some DNS lookups would fail internally with this exception. Since the composition is stopping, these are now suppressed.

56276: "Address already in use" errors when browsing the UI

This error would occur because some connections were not being closed after SOAP requests.

56194: MATT: Tiapp.xml file is overwritten when configuring for multiple devices

The Tiapp.xml file was overwritten while configuring a Titanium project supporting both iOS and Android and also creating the mobileAppObject.

56187: waitForViewChange recording error

Multiple waitForViewChange wait actions were unexpectedly recorded but only one is allowed. Now, only one will be recorded for a given action as expected.

56186: Using wizard to generate Switch property based on a Transaction fails

Using the Property Chooser wizard to set a custom property on a Switch from an existing Transaction custom property failed to generate output that works.

56116: "400 Bad Request" error when trying to create an object using the Repository REST API

An unexpected HTTP 400 error would occur while trying to create an object via the Repository REST API.

56008: Recording a pinch crashes the testable app [[requires new TouchTestDriver](#)]

Performing a pinch action would crash the app, dropping the user back at the TouchTest Agent screen.

55954: Dynamic ramp takes a long time if there are lots of servers

In environments that were made up of more than 100 servers, the Virtual User Ramp Controller would become very slow.

55904: TouchTest Web Touch Locator not recording locator [[requires new TouchTestDriver](#)]

Attempts to use the Touch Locator tool while editing a mobile web test clip would fail to produce the expected result.

55850: Cookies not handled properly when the query string includes a "/" character

A trailing slash that was part of the query string for a given cookie was not correctly extracted.

55863: Parallel renewal with repeat count of 1 causes improper inheriting of property values

If an item is set to repeat in parallel with a repeat count of exactly 1 and with repeat renewal enabled, then subsequent renewals of that 1 repeat erroneously inherited the Custom Property values of the prior renewal.

55792: Error message returned from Maximum Image Size is missing how to solve the error

The MakeAppTouchTestable utility will now post a reference to the CloudLink article, [How do I resolve the MakeAppTouchTestable "Exception while creating image object" error?](#)

55645: Can't find variable: oRefTypeImage; JS line 51

This Custom Property variable error occurred in CloudTest Lite.

55140: Extra text null added to validations [\[requires new TouchTestDriver\]](#)

The TouchTest Driver unexpectedly added a null to validations in some circumstances.

Build 6367.129

Bugs Fixed

56194: MATT: Tiapp.xml file is overwritten when configuring for multiple devices

The Tiapp.xml file was overwritten while configuring a Titanium project supporting both iOS and Android and also creating the mobileAppObject.

56142: Page Views is overflowing into the Sessions counter

The Page Views section of a summary chart overflowed its boundary.

56046: WebUI Recoding extra "link="

WebUI recording unexpectedly added an extra link= in the object identifier. For example if the identifier was supposed to be link=Store, the result would be link=link=Store.

55999: APP 360: SOASTA Tenant values overrode org_id

The tenant Appcelerator org_id was unexpectedly overridden by SOASTA tenant values.

55896: ISSEs that refer to transactions with a colon in their name generate "invalid substitution specification" error

Colons in transaction names are now handled as expected.

55867: Message description being set to "SOASTA_EMPTY"

After renaming a message in Clip Editor, List view, inspecting it in the lower panel revealed its description text was set to "SOASTA_EMPTY."

55848: Deleting several targets exceeds maximum URL length

Target removal would unexpectedly produce this error, after which the session would become unresponsive.

55672: Session Template Package Wizard Never finishes on Berlinetta Update 8

Running the Session Template Package Wizard on a given clip would never complete.

55392: Unable to start recording apps in CloudTest (Record button is disabled)

If the default selected device was not Connected when the Choose a Device Agent box launched, choosing a device with Connected status before the apps loaded would prevent the Record button from becoming active.

Cloud Service: Default monitors created for grids will now include HTTP requests/sec

Default monitors will now automatically include the HTTP Requests per Second metric.

Build 6367.126

Bugs Fixed

55862: Can't dynamically ramp a Track that starts with repeat count zero

Legacy code from when ramp up was precluded in a Track that started with a repeat count of zero prevented use of the Virtual User Ramp Controller.

55841: Uncaught TypeError: Cannot call method 'setAttribute' of null; JS line 1525

Additional null check code was added on the Dashboard Edit Mode to detect further occurrences of this issue.

55804: setStepper doesn't show parameters in expanded clip editor

The parameters of an action didn't appear as expected in the expanded Clip Editor, List view, although they did display in the Clip Editor lower panel.

55730: Tenant drop-down needs Max Width

The Tenant drop-down lacked a Maximum Width, which resulted in a garbled display when a very long name was encountered.

55677: Property unable to be set because of scope, but ONLY on the 2nd time through

A scope error would occur while setting a property for the second time.

55671: Number in Password prevents tenant switching

A password that included a number unexpectedly prevented a user from switching tenants.

54174: IOS Device Mismatch Error after MATT [\[Requires new TouchTestDriver\]](#)

A device mismatch error occurred due to an underlying compression error after applying the MakeAppTouchTestable utility to a project. Now, TouchTestDriver will send the data un-compressed if compression fails for some reason.

Build 6367.118

Bugs Fixed

55723: TTW Browser crashes using Touch Locator [[Requires new TouchTest Web](#)]

The TouchTest Web browser would crash when invoking the Touch Locator tool.

55696: Data Template in Tenant Editor is empty

The data template for tenant creation in mPulse was unexpectedly empty. Now, this dialog box is populated with the default template information.

55693: Missing field validation in Tenant editor for Max users

The mPulse tenant requirement for maximum number of users (e.g. Max Users) wasn't enforced as expected. Now, the dialog will prompt the user if Max Users isn't entered.

55571: UI lets you customize existing dashboards when "Can create dashboards" is false

The "Can create dashboards" privilege granted by the Tenant Admin wasn't enforced as expected. Additionally, this field is now labeled "Allow custom dashboards."

Build 6367.116

Bugs Fixed

55381: Unable to import Mobile Apps using obfuscated scommand

An attempt to upload a mobile app via a Jenkins CI script using scommand would unexpectedly fail.

49829: Auto login failed error when trying to connect device to CloudTest instance

An attempt to connect to the CloudTest server in mobile Safari would result in this "TouchTest Agent Auto Login failed" error.

Added "SCommand QC Integration VB Script" to downloads section in Welcome page

The integration script for HP Quality Center is now available on the CloudTest, Welcome page, Downloads section (as described in the [TouchTest for Quality Center Tutorial](#)).

Build 6367.113

Bugs Fixed

55420: MATT is unable to configure custom_rules file in a custom directory

The MakeAppTouchTestable utility can now configure the custom_rules file in a custom directory.

Build 6367.110

Bugs Fixed

55375: Add TouchTest Agent and TouchTest Web Android apps to Welcome Page in CloudTest

The TouchTest Agent and TouchTest Web Android apps are now available via the CloudTest, Welcome page, Downloads section rather than via the Google Play Store.

55300: Consecutive NPEs in logs for "no data" dashboard

Consecutive null pointer exceptions would occur during creation of a Berlinetta dashboard.

55260: Clip editor auto capture screenshot timing error

A timing error occurred that would sometimes prevent auto-capture of screenshots.

54305: Action name in expanded clip editor

The Action name will now appear across the expanded row for a given action.

50918: MATT process breaks WordPress iOS App

The MakeAppTouchTestable utility will now support and preserve Linker Flags inherited from baseConfigurationReference files.

Build 6367.107

Bugs Fixed

55288: A single Script using multiple Custom Modules only actually uses the first module when played

A single Script referring to multiple Custom Modules only actually used the first module when played.

55262: Deleting a tenant as a tenant admin does not clean up Results Service objects

Results Service objects didn't also delete related objects such as domains, results, and monitors.

55252: Uncaught TypeError: Cannot read property 'style' of null; JS line 11452

This JavaScript error happened in the mPulse Globe dashboard.

55130: Duplicating a System Dashboard when in Composition Play or Results tab caused a JavaScript error

An attempt to clone a system dashboard using the approved method unexpectedly failed.

55124: Null check if supplied filter isn't valid

Additional null checking code has been added to detect further occurrences of this issue.

55090: Can't Revoke a Device Agent from Device Clouds Section

A user with privileges was unable to revoke a Device Agent (using the Cenral, Device Clouds list).

54925: Changing action from tap to pan loses the Locator

Changing an action from tap to pan would cause the Locator to disappear if the lower panel Action Editor was open. Minimizing the panel would reveal the locator once again, but the Locator wouldn't display if the panel was open.

54919: Renaming screenshot validation fails

After adding a screenshot validation using id= as a locator, changing the resulting default name of a verifyScreenshot would cause this error.

Build 6367.98

Bugs Fixed

55175: TouchTest iOS registration fails when the server's host name starts with "touchtest"

This error occurred on a server whose name began with the name TouchTest.

55001: Error when trying to sort device agents

An error occurred while trying to sort in the Device Agents list.

54960: MATT should fail if Android app is not ready for either Eclipse or Ant build

The MakeAppTouchTestable utility will now fail gracefully if the Android project does not support an Eclipse build as well as an Ant build.

54834: JS error while recording app actions (Cannot read property 'src' of undefined)

This JavaScript error occurred while recording app actions.

54830: Cannot call method 'insertSupplementScreenshot' of null

A regression occurred which prevented insertion of a screenshot.

54780: w is undefined; JS line 1421

This script error occurred when dragging comments in the Clip Editor.

54687: MakeAppTouchTestable: Unexpected error, cannot proceed. Unable to find AppDelegate file

Fixed the error message in case of AppDelegate file not being found. We now tell the user about the existence of -appdelegatefile argument in the MakeAppTouchtestable utility.

49016: 'FlowControl' is undefined; JS line 1

Various undefined errors occurred in the Result Details dashboard in Internet Explorer.

Build 6367.94

Bugs Fixed

54997: Locators parsing error by Android TTD on wait/output [\[Requires new TouchTest Driver\]](#)

An Android locator parsing error occurred.

54817: MakeAppTouchable does not respect launchURL argument for Titanium apps

The MATT utility failed to correctly use the launchurl argument for Titanium apps.

54814: Cannot read property 'type' of undefined

This error occurred while trying to add permissions to an existing object.

54808: Unable to start a device monitor

Due to an error in the underlying layer, mobile monitoring unexpectedly failed.

54576: Inverted "Collections Completed" chart

The chart appeared upside down in a generated report.

54573: Dynamic Ramp: changing hold state doesn't enable Apply button

The Virtual User Ramp Controller's Apply button didn't become active when a user changed the hold state of a slider but did no other modifications.

54478: "Insufficient privileges" error while trying to start a monitor using Conductor

After installing a new Conductor, successfully creating and testing a monitor group using that Conductor, this Insufficient Privileges error occurred when trying to use it.

Device stuck in CONNECTED status

The TouchTest Agent on a given device became stuck in Connected state.

Build 6367.83

Bugs Fixed

54572: Editing target by uploading a certificate and then trying to enter password throws error

Revising a target to include a client-side certificate caused this error upon entering the password.

54477: this.m_oSliders is undefined; JS line 9918

Added a check for if the sliders have been initialized to the server callback handling function, before the check was only done before a server call was made.

54464: Parsing version numbers failed [\[Requires new TouchTestDriver\]](#)

If the Titanium module directory contained a sub-directory other than the version directory, parsing of the version numbers failed. Now, the error is caught, the directory is skipped, and the test continues.

54401: Composition Editor Display: Pacing checkbox reverts to unchecked

The issue had to do with when the random rate inputs were being enabled. The code used to enable the constant input first, then switch to random, but the code checks the enablement of the random inputs to see whether it is indeed set to random, so it saw no constant setting and a disabled random setting which resulted in the corresponding pacing/inter-repeat delay checkbox to be unchecked. The fix was to enable the correct set of inputs all the time.

54240: isAccessible failing for an ID on Android. [\[requires new TouchTestDriver\]](#)

An id underlying a tap would fail in an Android app because although it was present in the Xml Hierarchy, Android XML was not including it in the TableView IDs. This is now handled.

54184: Negative server hours in Grid Manager

The Grid Manager unexpectedly displayed server time as a negative number.

54095: Keyboard return events not working as expected [[requires new TouchTest Driver](#)]

Titanium apps will now support Keyboard return events with the keyEvent value of 3.

TouchTest Web failure when absolute is specified in CSS class name

TouchTest Web would fail if the site in display used an absolute in a Cascading Style Sheet (CSS) class name.

Build 6367.73

Bugs Fixed

54303: mPulse dashboard error if there are no domains defined

If no mPulse domains had been created this error would occur in the Domains drop-down.

54301: Cannot call method 'getId' of undefined

This error would occur if the user added a browser or app action, expanded the List view, and then clicked Undo.

54285: Y axis of Page Load chart shows 1s but should be at 2

The min value was not being forced to be an increment of the min interval and would throw off the chart. Before this fix the value of a point would not line up with the Y axis label for narrow spreads.

54252: Load Time by Minute is truncated after migrating to Berlinetta

Using the Time Zone widget filter produced unexpected results after migrating to Berlinetta.

54192: Allow ByMinute Aggregate to be turned off

The ability to turn off the By Minute aggregate processing of beacons has been added for this release.

54180: Android build does not record from keypad for location

TouchTest was unable to record types from TIUISearchBar.

54179: Error during Test execution

There was an old line of code that referenced Composition, which is not loaded if you go straight to the play tab. This is in some error handling code that happens when there is a break in communication between the client and server, so something did happen to cause this part of code to be hit, but now you should see a "Play Failed" message instead of this error.

54156: App crashes when adding screenshot validation [[requires new TouchTest Driver](#)]

The app would crash if verifyScreenshot validation was set and the user then clicked Touch Locator and capture screenshot.

54150: iOS TTD freezes when recording placeholder [[requires new TouchTest Driver](#)]

The TouchTestDriver for iOS would briefly (e.g. 1s) freeze the main thread of an app while recording a placeholder.

54148: Italia iOS TTD null as locator [[requires new TouchTest Driver](#)]

The Locator tool did not show the recorded locator (text=(null)) because textStartsWith and textEndWith properties were getting saved with the selected strategy "text" when set from recursion.

54129: Right-side label should be "Page Views" not "Page Load"

The Load Time vs. Page Views widget unexpectedly presented "Page Load" as its right-side label.

54112: storeElementPropertyValue does not capture the elements on Android

TouchTest was unable to call the getTouchTestID() method on subclasses of TTNativeElement.

54082: 100% CPU + Massive Memory Utilization

Displaying messages in the Result Details dashboard's Cover Flow would take inordinately long in a very large test.

53943: Time scale missing on vertical axis

The vertical time scale was missing on some CloudTest charts.

53653: Grid launch looked incorrect, but worked

The Grid's server check was incorrectly failing on a build mismatch error because it was comparing the wrong build number.

53261: Swizzling UIApplicationDelegate.didFinishLaunchingWithOptions to return YES validation [[requires new TouchTest Driver](#)]

Support for swizzling has been added. This is required for iOS to call openURL().

53147: The clip element 'd50cb908-a883-48e8-a761-8034ac9e4849' does not exist

There was a window when the UI wasn't blocked after the user clicked to delete a target from the Clip Editor.

52000: this.m_oExpression is undefined; JS line 2062

This error would occur if the user opened an If or Switch in the lower panel, and then switched from icon to list mode (or vice versa).

49234: Starting a Grid with zero Maestros defined at a Location causes null pointer exception

A null pointer exception would occur if Grid start occurred when there were no locations.

Build 6367.58

Bugs Fixed

54146: NPE in Fundamentals when using Collections Rate

This null pointer exception occurred in the Fundamentals widget while using the Collections Rate metric.

54143: Error keys not sufficient with large numbers of servers

Error IDs were coming out as Other when the number of servers was very large.

54142: "Edit Advanced Settings" and the enablement of those settings gets out of sync

The Composition Editor lower panel Play Settings tab, Edit Advanced Settings checkbox wasn't getting unchecked when the other checkboxes were disabled.

54133: Unable to start monitor, mobile app not configured

Mobile Apps list in Monitor Dashboard will work with Device Agent exclusion list principle.

54069: Globe widget does not maximize correctly

The Globe widget didn't maximize to use the entire dashboard space available.

54044: DOM Loading scale should be millisecond

The Geography widget's DOM loading scale is now shown as milliseconds.

54043: Customer IOS keypad Tap and Type invokes the keypad twice [\[requires new TouchTest Driver\]](#)

In a project that lacked the code that commonly detects if the keyboard is already open when an action attempts to invoke it, playback would fail.

Now, a condition has been added on the type app action that will request a keyboard display only if the keyboard is not displayed.

53985: Importing object with Access Control List (ACL)

An ACL error occurred wherein the order of ACL entries mattered on which ACL (tenant or user) took precedence.

53925: Maximum virtual users per server being interpreted incorrectly

Maestro incorrectly interpreted the "Maximum Virtual Users per Server" field in the Virtual User Ramp Controller's Track Distributions section as the total maximum across all servers for that Distribution.

53893: Filing Fogbugz cases in case of MATT failure

The MakeAppTouchTestable utility will now file bug reports in the event of a failure.

53892: Custom Rules file is not always present in every build

The MakeAppTouchTestable command will now fail with a useful error if the build.xml file does not contain an import task for the custom_rules.xml file.

53842: Cannot call method 'getAttribute' of undefined

This widget logic error occurred while viewing an mPulse Dashboard.

53762: Can't combine performance by minute charts with various timers

When combining performance by minute charts that have filters such as page group or timers, filters were lost in the process. This meant users were unable to see multiple timers or multiple pages in one widget.

53644: Configure STALE-WHILE-REVALIDATE and STALE-IF-EERROR

As of this release, proxies and browsers will use stale cache while revalidating or on error.

53502: TouchTestable Droidfish is recording only menu presses, no actual moves on chessboard [\[requires new TouchTest Driver\]](#)

After making Droidfish touchtestable, only menu presses and no actual chess moves were recorded.

53359: Android app not recording

The Post_Compile task was not run by Eclipse giving the illusion of a successful post_compile step.

52986: Tried disabling the "Create snapshot on tear down" checkbox when my environment was running

This error occurred while an environment was running and the user checked "Create snapshot on Tear Down."

52461: iOS/Android touch locator: show in priority the views with ID [\[requires new TouchTest Driver\]](#)

If a view without a touchTestID was on the top of one with an ID then it was not shown by the intended priority. Now, a tolerance of 20px is used to resolve the closest views (parent/direct child) that have touchTestIDs.

52269: Central->Cloud->Reserved IP Addresses: Sorting By Any Column Does NOT Change Sort Tip Element

Sorting in the Reserved IP Addresses list didn't update the sort column as expected.

51927: Can't revert to Load mode after doing custom changes

The issue was that when the play mode button was set to show "Custom", internally it still was set to "Load", so when you select load again nothing happens because the handlers fire on change, and nothing had changed. The fix was to update the internal state as well as the display.

51866: Uncaught TypeError: Cannot read property 'm_strWindowFitType' of null; JS line 8450

Additional null checking has been added to detect further occurrences of this likely timing error.

50422: Uncaught TypeError: Cannot read property 'className' of null; JS line 1290

Additional DOM null checking has been added to detect this likely timing error.

47681: Composition Editor Properties width cannot be resized

Rather than make the tree/pane border resizable, tip text has been added to the items in the Composition Editor, Property tree. As a result, the whole name of an item in the tree can be seen by mouseover on the item(s).

Build 6367.34

CloudTest

Test Execution

Dynamic Ramp Adjustment (Virtual User Ramp Controller)

This release introduces manual Dynamic Ramp Adjustment, by which the *current goal* for a playing composition can be remixed to arrive at a *new goal*. Runtime changes to the current goal don't take effect until the new goal is applied.

Each CloudTest test composition has a ramp plan that consists of the Distributions of its Tracks and their ramp settings. A ramp plan has a goal, which is a total sum of Virtual Users (VUs) that is reached at mid-point for a given ramp.

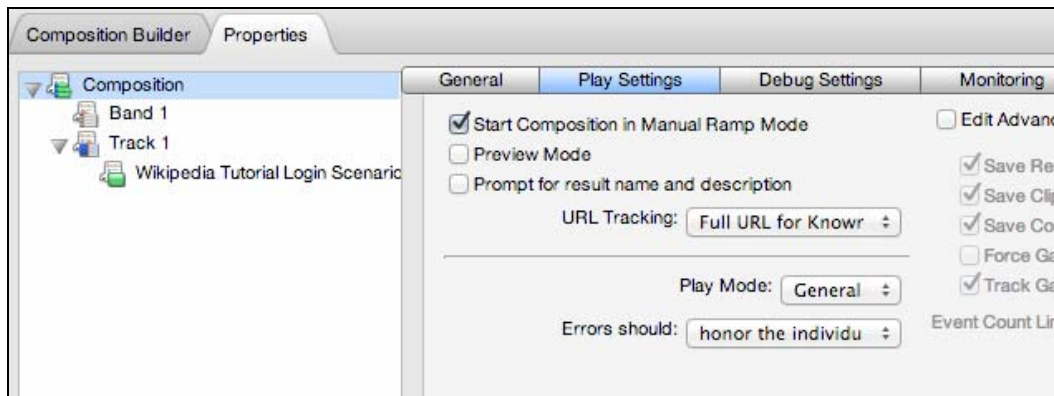


A ramp plan that exists at composition runtime is the *current goal* or *planned ramp* and continues to be in effect until some other plan is applied. In the shot above,

the planned ramp (green line) of 100 VUs was nearly reached when the tester determined to take manual control and increase the VUs. This is the point in the graph where the blue and green lines separate.

Defining a *new goal*, which is to say, dynamically adjusting the *current goal* on-the-fly using a manual remix technique, is the job of the new Virtual User Ramp Controller widget.

TIP: A Composition can also be started in Manual Mode by checking Start Composition in Manual Ramp Mode in the Composition properties, Play Settings tab (shown below). When a composition starts in Manual Ramp Mode, all of its Distributions start out at zero users and remain at zero until the controller is used to change something.



Since in many load test scenarios the test doesn't go "according to plan" (or the tester has no clear idea how the test will perform) this new ability to manually take control of a ramp during runtime is a huge leap forward.

In prior releases, the user would need to use the Pause Ramp feature, tweak ramp settings, re-save, and then proceed accordingly. Now, with manual dynamic ramp adjustment, the user can take full control of the existing "ramp plan" for a load test *while the composition plays*.

Virtual User Ramp Controller

By presenting both the *current goal* of the composition's ramp plan (top left) during runtime, and its *new goal* (top right), if any, the Virtual User Ramp Controller visually depicts the control of large load- and performance-tests in the cloud (as well as the potential impact of applied and not-yet-applied changes to the ramp plan during runtime).

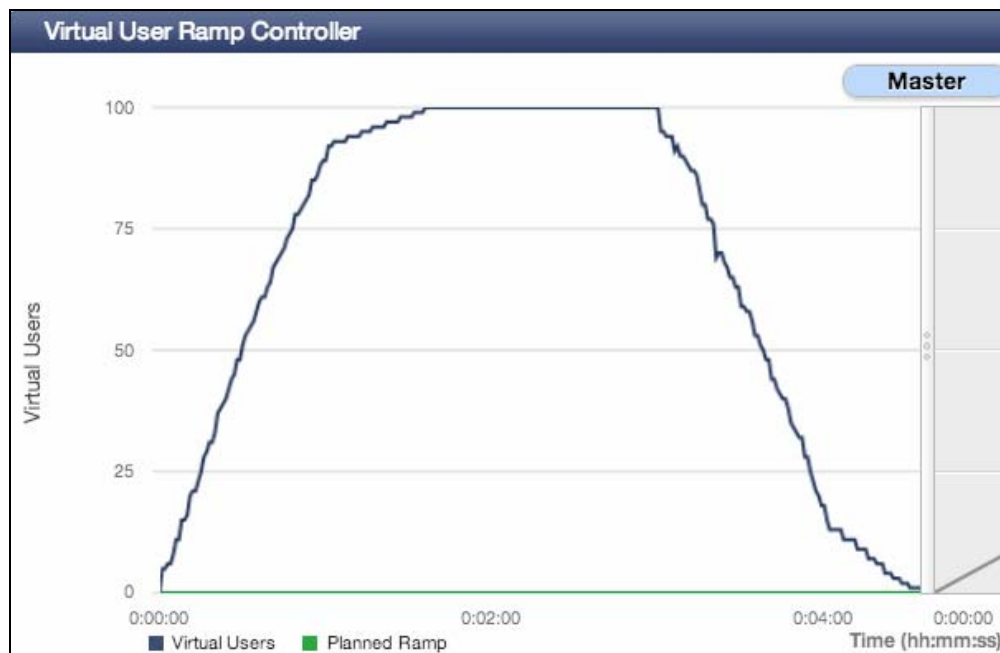
The Controller has the following features:

- A line chart (upper left) that displays the actual users and goals

TIP: Add the controller to a dashboard in the Composition Editor, Play tab before beginning play. Use the Maximize icon on the controller toolbar to maximize into the full browser window.

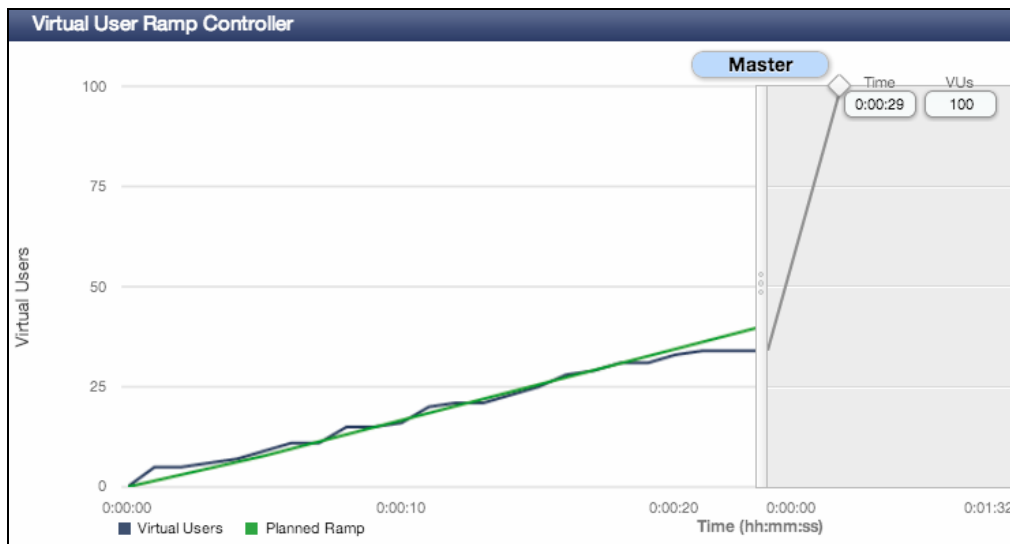


Before play, the controller visually represents the current ramp settings, if executed (e.g., 100 VUs will be reached around 1:45 seconds, etc.).

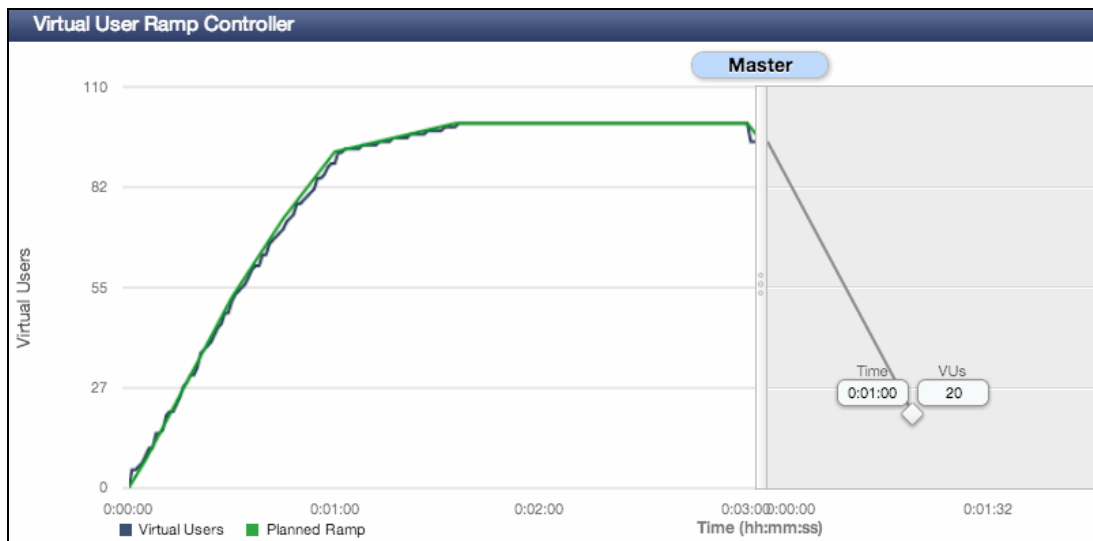


The green line represents the planned ramp as it executes and is flat above since the composition is not yet playing.

Once play ensues, the timeline starts and the ramp begins. The blue and green lines will be closely correlated in most cases. The ramp will morph along the timeline as VUs come up.



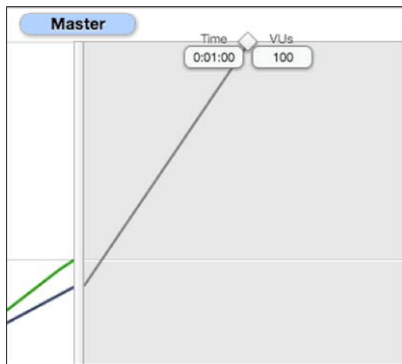
Once the VUs are reached, the ramp will plateau and if no changes are applied the ramp down will begin at the specified time—all according to the *current goal* of the ramp plan.



- A line chart (upper right) that is null before play begins.



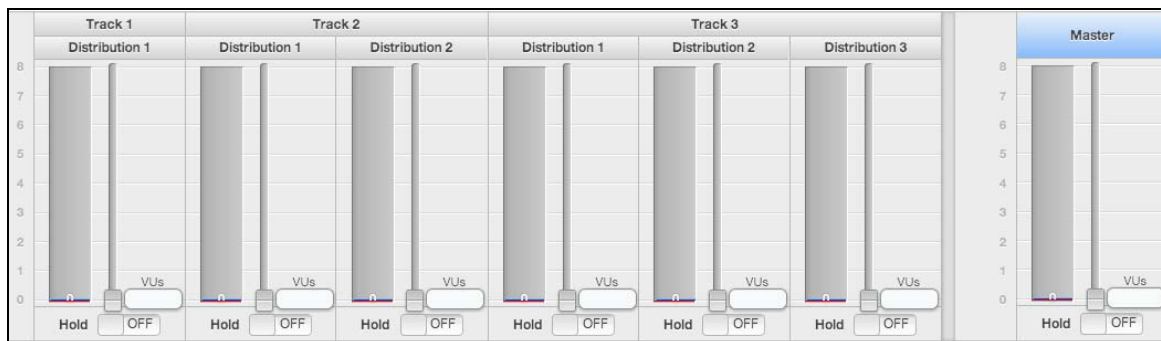
- Once play begins, the chart shows the current goal (time/VUs) of the planned ramp on its current arc.



The user can drag the goal's "handle" or type a new ramp goal to represent a possible change in the ramp's current goal.

- A middle mixing section that has a Master mixer (middle right), and an additional mixer for *each* Distribution of each Track that has parallel repeat renewal set (all sliders are text enabled and accept user-entered values).

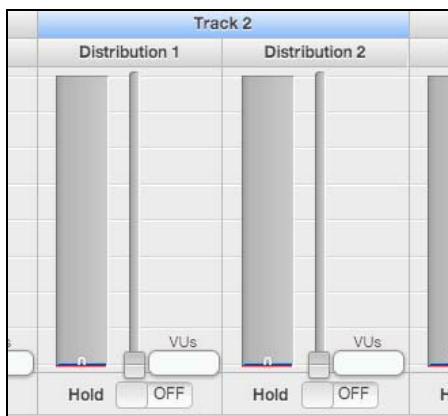
When the controller is first opened, the Master track is selected (blue highlighted).



Use the Master slider to control VUs for the entire composition or use the Distribution's slider to increase or decrease its level.



Select at the track level (i.e. Track 2) to enter changes for all its distributions (shown below).



Or, click into a given distribution within a track to edit only its VUs.



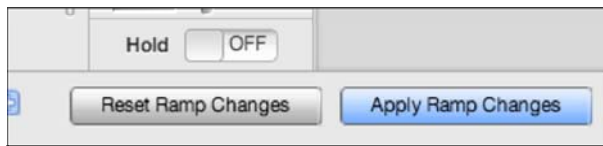
Alternately, enter the VUs into the text slider's entry field.

TIP: Only Distributions of Tracks that use parallel repeat renewal have a per Track control.

- A Hold button for each mixer; placing a Track on hold puts each of its Distributions on hold. Hold only applies to each Distribution and doesn't cross Distributions. Toggle the Hold button to the "On" position to enforce that value for the given Distribution, or use the Master control to alter the ramp plan for the composition at-large.



- A Reset Ramp Changes button that will undo non-applied changes and restore the prior state of the Controller.

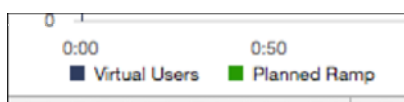


- An Apply Ramp Changes button that will apply and begin to execute ramp plan changes
- A Mode indicator (bottom right) that displays whether the composition is under "Automatic" (e.g. using the current goal) or "Manual" control.



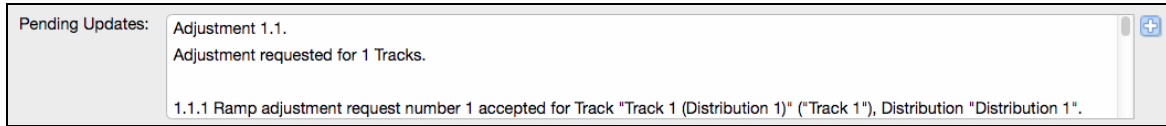
Note: Since the widget communicates directly with the underlying Load Server(s), any applied changes are pushed to a given server so as to dynamically control the ramp (once Apply Ramp Changes is clicked).

- A Legend that indicates the current goal for VUs as a blue line and the current "ideal ramp" as a green line. The scale shown is based on the actual ramp's scale.

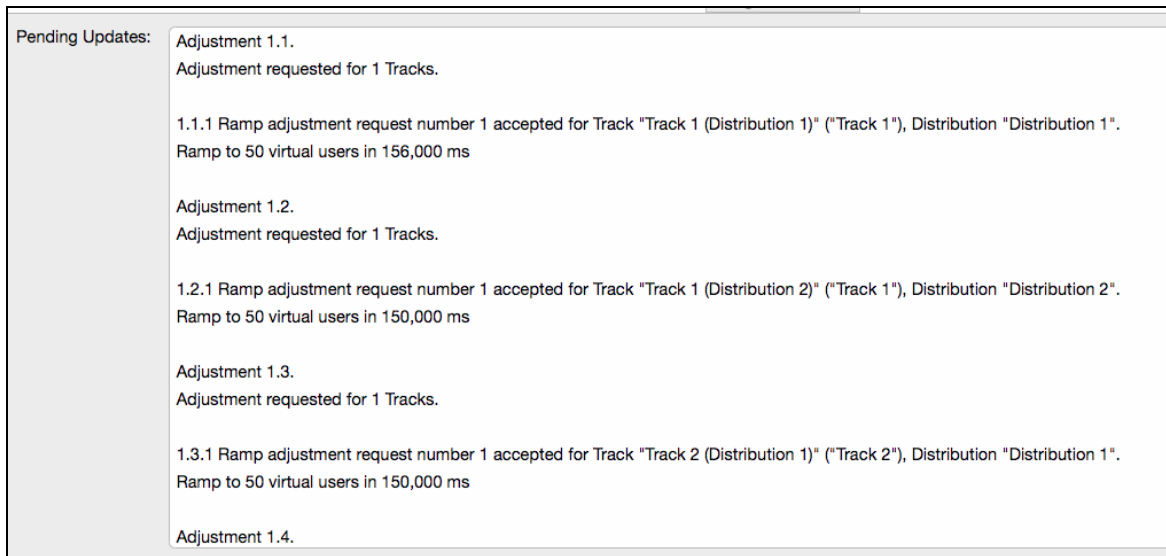


- A Ramp Notifications section that displays the underlying Load Servers activity *after* apply.

Once again, actual changes don't occur until they are *applied*. Once applied using the Apply Ramp Changes button, pending updates are shown and the test proceeds under manual control.



Click the Plus (+) icon to expand the section and show more detail.



Remixing the Ramp Plan

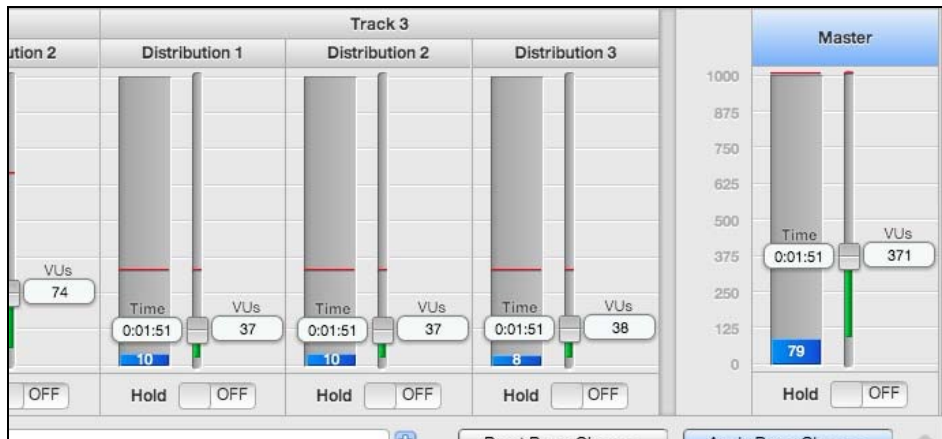
The user can remix the ramp plan either by using a per-Distribution slider or the master-slider.

Changes to the master affect all of the Distributions of Tracks shown.

Whenever a user adjusts the sliders in the controller, changes are calculated and their *potential impact* is displayed as a new "goal" and presented to the user (upper right and in the Master mixer).

Automatic vs. Manual Ramp Control

As with any settings, the ramp plan settings that exist at runtime are *automatically* executed during composition play.



An automatic ramp plan is simply all the existing Start Interval, Maximum Duration, and End Interval settings for the composition's Track(s) or Distribution(s). The ramp plan is comprised of the following settings:

Start Interval – Specify an interval between starts of the repeat(s) of a Track. Causes "ramp."

Maximum Duration – Specify the maximum length that Tracks are to run. Once the maximum has been reached, new repeats will not be created. Note that maximum duration is measured from the start of the first repeat and does not include "ramp down." Ramp down, if any, starts after the maximum duration has been reached.

End Interval – Specify an interval between stops of the repeat(s) of a Track. Causes "ramp down."

For more about Ramp Settings, refer to [Defining Ramps for a Track or Timed Clip](#).

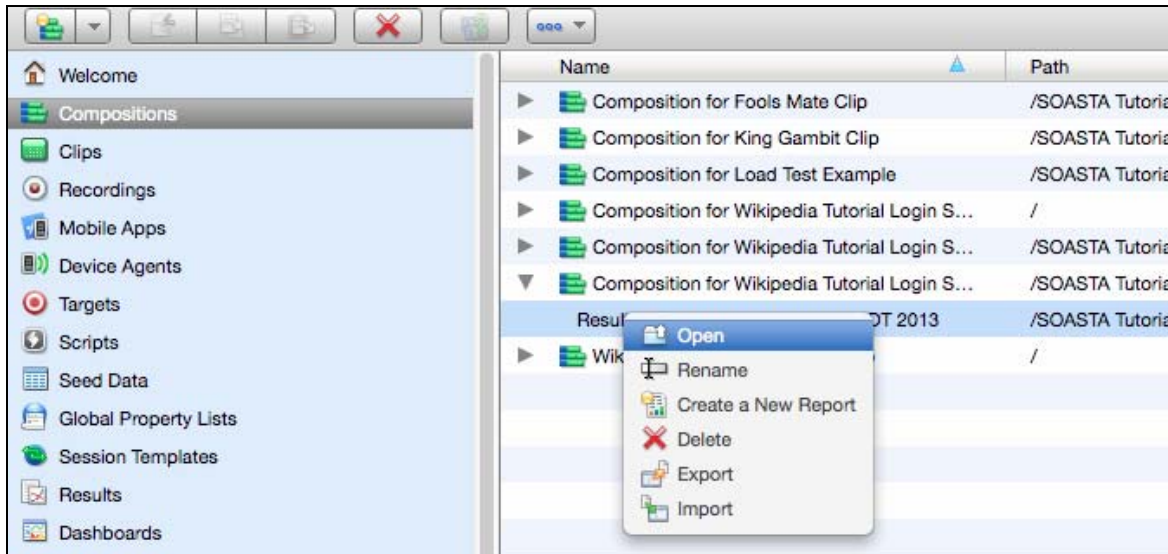
Now, whenever Virtual User Ramp Controller settings are applied to a particular Distribution, or to the Master for all Distributions, the existing automatic ramp plan is *suspended*, and the given Distribution(s) of Tracks come under manual control from that point forward (unless, of course the composition was started under Manual Mode).

Using the Virtual User Ramp Controller

In order to take manual control of a test composition, the Virtual User Ramp Controller widget must first be added to a dashboard.

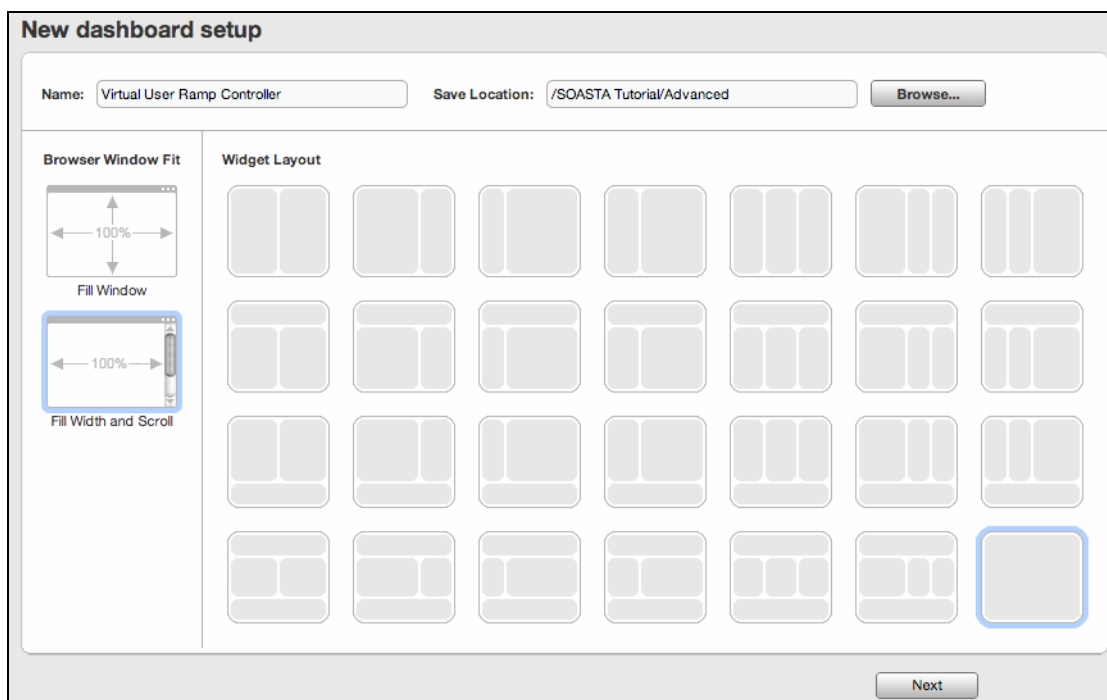
To begin in the dashboard, add the Virtual User Ramp Controller.

1. Right click the composition's latest result in the Central > Compositions list.



2. If necessary, [create a new dashboard](#) for the Virtual User Ramp Controller.

SOASTA recommends that the dashboard layout be "Fit Width and Scroll" with 1 column and one row (lowest right selection). Finish dashboard creation after making layout selection.

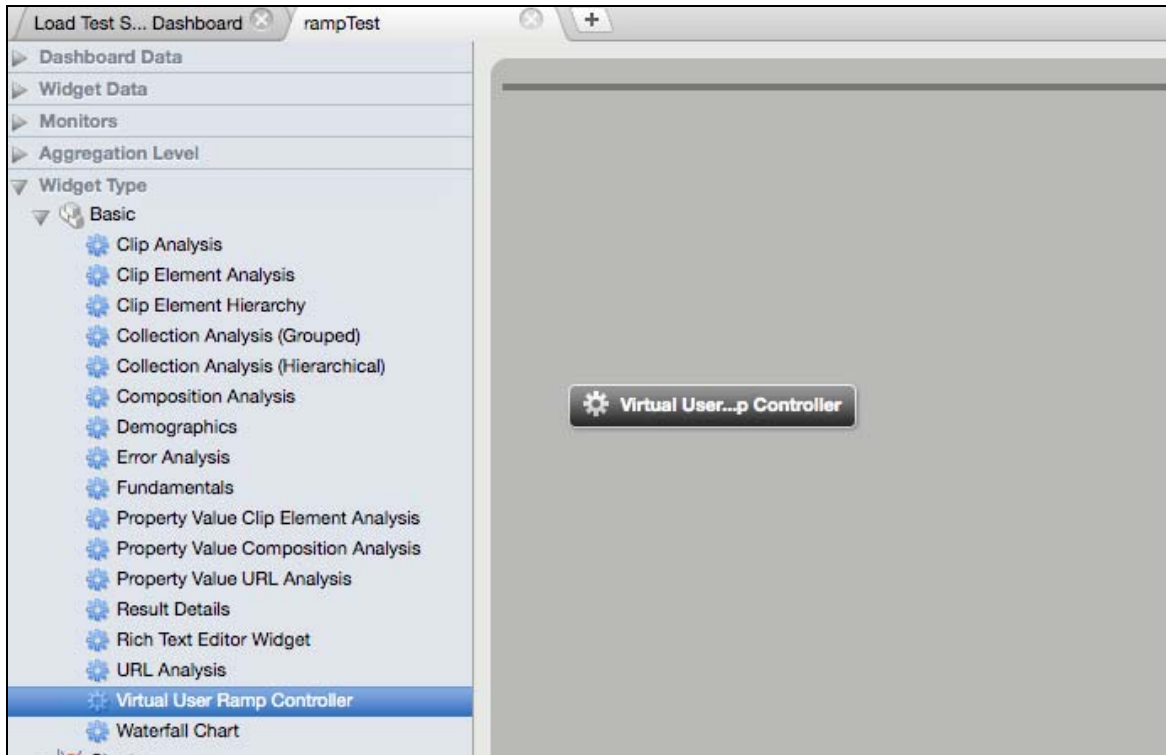


3. In the dashboard, click the Toggle Widget Selection Panel icon to on.



4. Expand the Widget Selection Panel, Widget Type, Basic section and then drag and drop the Virtual User Ramp Controller into place.

The Virtual User Ramp Controller widget appears in the dashboard.



This widget depicts both the currently executing composition ramp and the impact of tentative (not yet applied) changes to that ramp. Each Track that has Parallel Repeat Renewal set will appear in this widget in addition to the Master control.

5. Perform the desired ramp modifications by using Master or by individually controlling a Track (and its Distributions) or a Distribution (within a given Track), using any of the following methods:
 - To manually control Time and VUs drag the goal's "handle" to the VU level and to the desired time on the timeline.



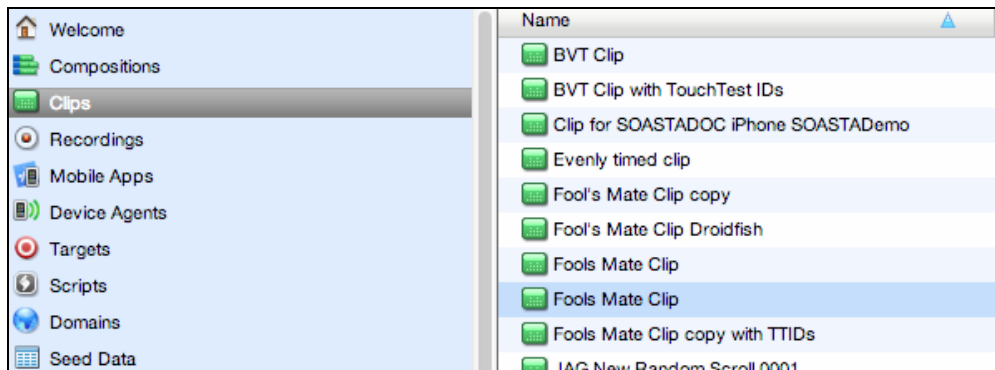
Note that whatever the method of control, the upper right section depicts the impact of this change before apply. Ramp Mode in the lower right is still set to *Automatic* before apply is clicked.

- To manually control all the Tracks/Distributions as one, you can also adjust the Master slider accordingly.
 - To manually control one or more Tracks/Distributions, enable each slider and adjust it accordingly. As with the Master slider, setting a Track's slider will also be depicted in the upper right before apply.
6. Click Apply Ramp Changes to exit Automatic mode and enter Manual mode. Once this is done, the composition is explicitly under the user's control. Click Reset Ramp Changes to abandon the changes and remain in Automatic mode without changes to the composition's ramp settings.

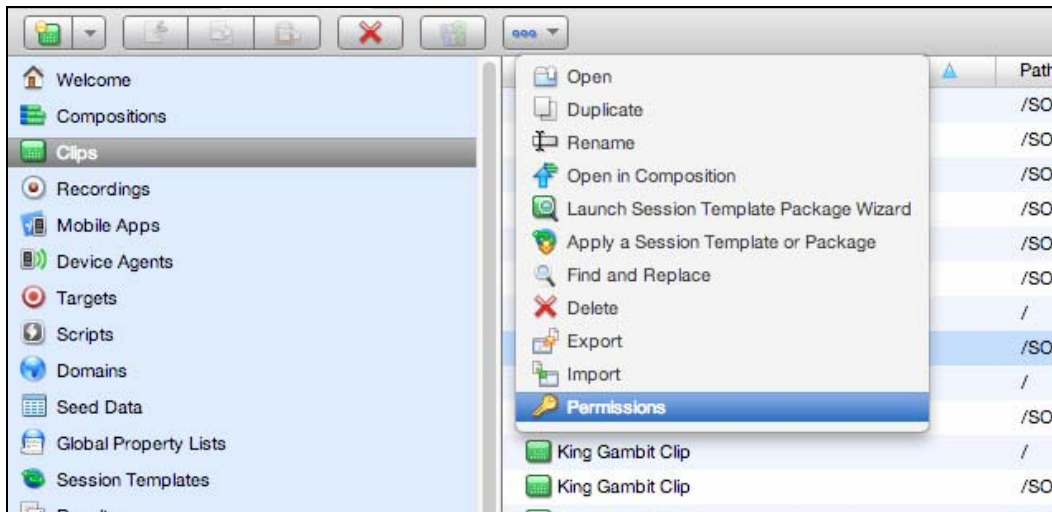
Permissions on Objects and Folders

Permissions can now be set on selected objects and folders in the CloudTest repository. This requires that the current user is the owner of the given object.

1. Open the Central list from which to select the object you'd list to permission. For example, a clip in the Clips list.

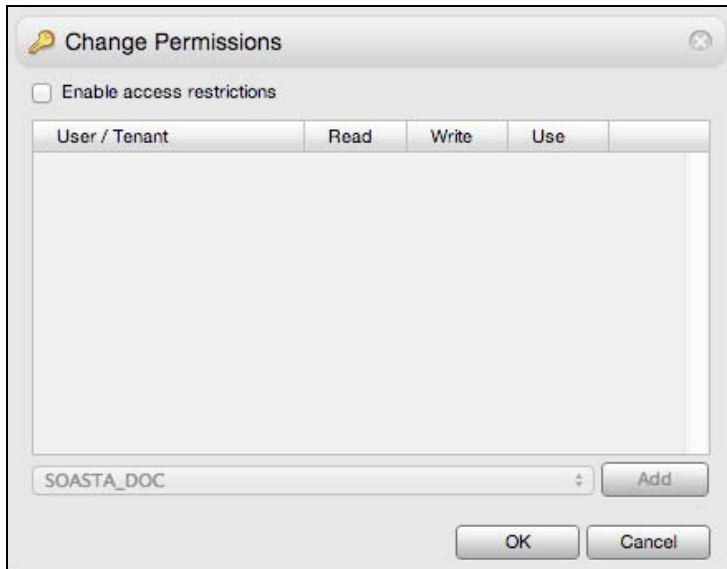


With the object(s) selected, right-click and choose Permissions. This command also appears on the Etc. (...) menu.

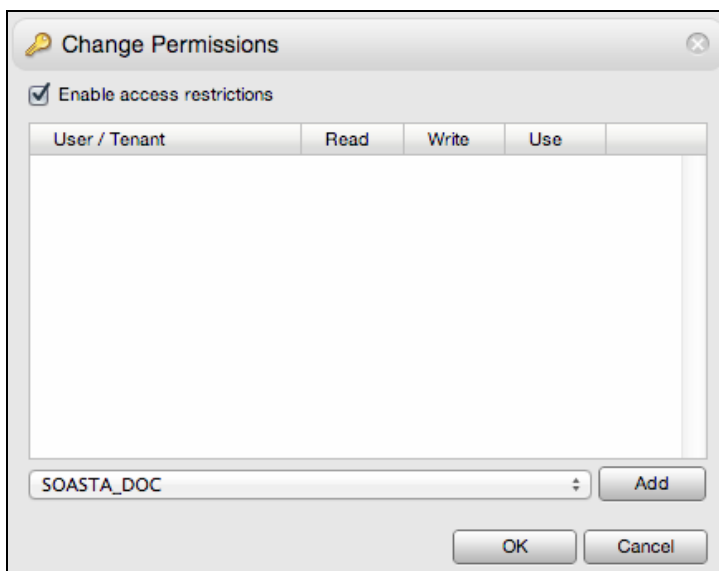


The Change Permissions dialog box appears.

2. Check the Enable access restrictions box.

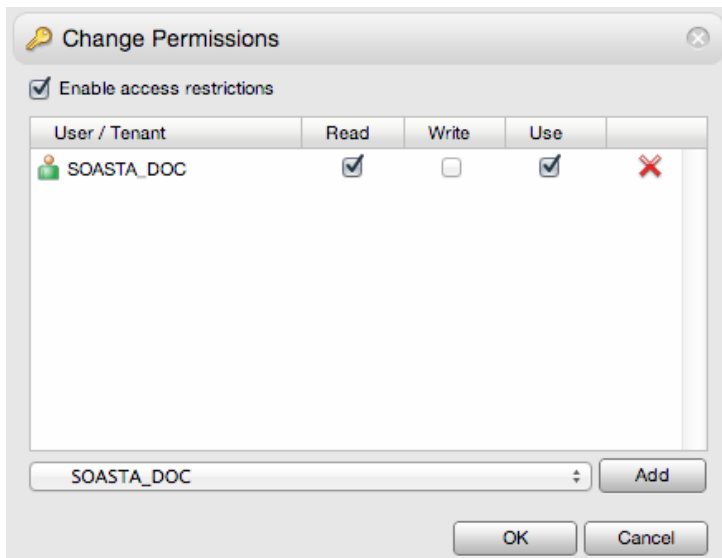


3. Select a tenant or user from the Add selector.



4. Click Add (repeat for as many tenants/users as necessary).

5. For each tenant or user, check the boxes to grant Read, Write, or Use permission.



6. Click OK to complete adding permissions to the selection.

Bypass proxy list for Maestro

A frequent scenario in corporate networks is the necessity to use a proxy to send HTTP requests "outside" (e.g. to our license server), but not to use that proxy for internal traffic. This scenario was especially a problem for CloudTest Lite users in prior releases.

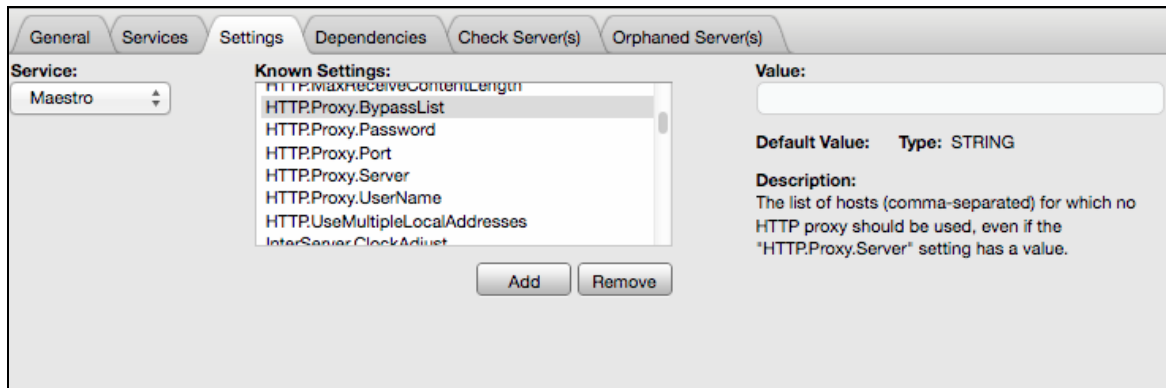
In order to get beyond it, the user had to choose between either:

- (a) Turning on the proxy setting, and losing the ability to run behind-the-firewall Compositions (because the proxy may not handle behind-the-firewall traffic)
- (b) Turning off the proxy setting, and breaking license checks (thus preventing you from playing any Compositions anyway!).

In this release it is now possible to utilize the new HTTPProxy.BypassList service setting to define a bypass proxy list. A list of hosts can be entered using commas to separate one host from another.

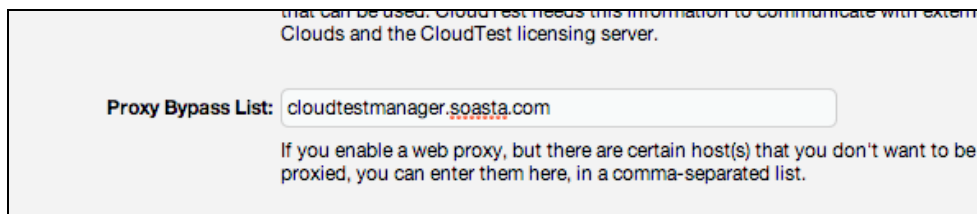
This feature works differently in CloudTest Lite and Pro.

- In CloudTest Pro, Maestro has its own proxy settings that are not used by anything else. So, the user can configure how Composition traffic will be sent, without affecting anything else. Conversely, when configuring a proxy for license checks, it won't affect Maestro, because again, the settings are separate.



Maestro Service Settings are found in Central > Servers > Settings (lower panel).

- In CloudTest Lite, however, there are only the "global" settings that are used for both license checks and Maestro.



Therefore, in Lite, the bypass proxy list—which is found in Central > Site Administration (shown above)--permits users to specify the proxy for some servers (e.g. "cloudtestmanager.soasta.com"), but not for others (e.g. "internal-server.local"). The Bypass proxy list server setting can be overridden at the target level via system property overrides.

Support for AWS Security Groups (CloudTest Pro/Enterprise)

The Results Database Configuration box (visible to CloudTest Pro and Enterprise users) now permits the user to enter Amazon Web Service-configured security groups into the new Security Group field. This feature is provided as a means of utilizing AWS security groups defined via the AWS Security Console.



The screenshot shows the 'Results Database Configuration' dialog box with the 'General' tab selected. The dialog contains the following fields and controls:

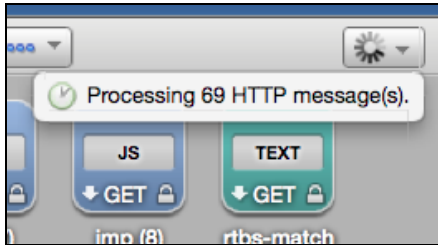
- Name:** A text input field.
- Description:** A large text area.
- Location:** A dropdown menu showing 'Amazon EC2 Japan'.
- Server Class:** A dropdown menu showing 'EC2 Results Database (XL)'.
- Cloud Provider Account:** A dropdown menu showing 'Amazon AWS EC2'.
- Volume:** A dropdown menu.
- Zone:** A dropdown menu.
- Security Group:** A text input field, highlighted with a red arrow.
- Monitor Database:** A dropdown menu showing '(Use Default)'.
- Create snapshot on tear down:** A checked checkbox.

To use an AWS security group for a given Results Service Database, open it in the Results Service Configuration box and enter the name of the AWS group to use. The name must exactly match the name in AWS. Leave this field blank to use the default security group.

Test Creation

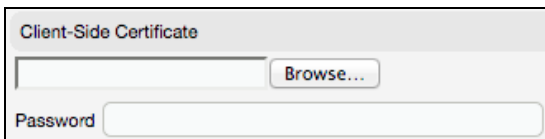
Status Indicator during Clip Editor Recording

The recording Status Indicator will now appear while recording HTTP(S) into the Clip Editor to indicate the status of recording tasks.



Recording with Client Certificates

In prior releases, the ability to utilize a client-side certificate for test playback was offered only at the target level via the Target Editor for HTTP targets.



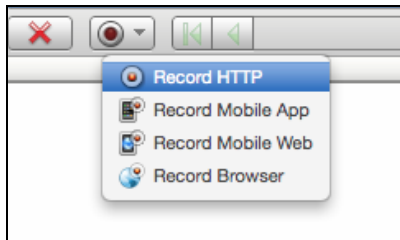
As of this release, users can also specify a "PKCS12" format client-side certificate as part of the HTTP(S) recording process—whether recording is done in the Recording Editor or via the Clip Editor.

A client-side certificate is used to authenticate the client to the server during the recording session using pre-authorized credentials (these credentials also run with your test composition on playback, of course).

Set Up a Client-Side Certificate from the Clip Editor

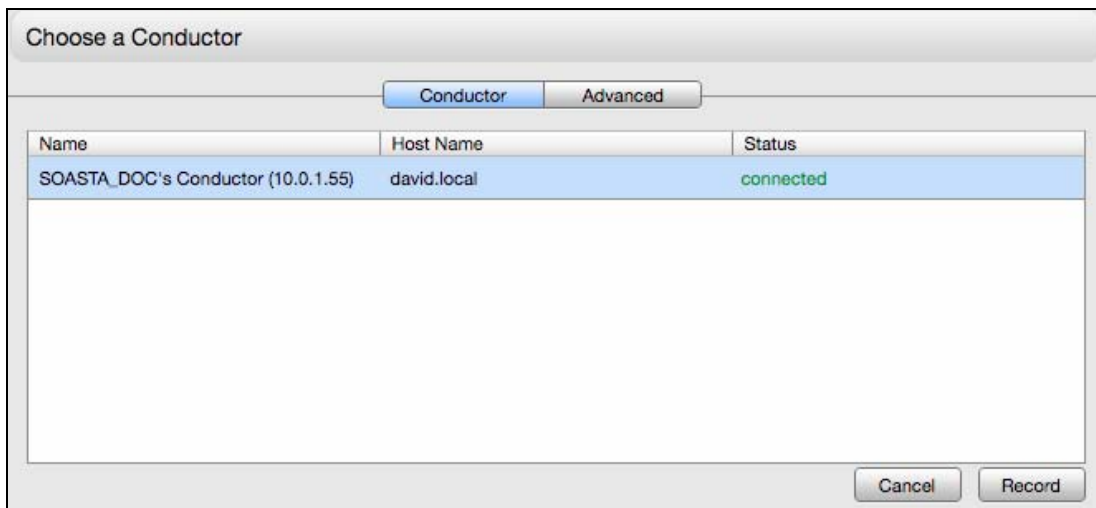
In the following steps, we will specify a client-side certificate as part of doing HTTP recording in the Clip Editor.

1. Click the Record button and select Record HTTP.

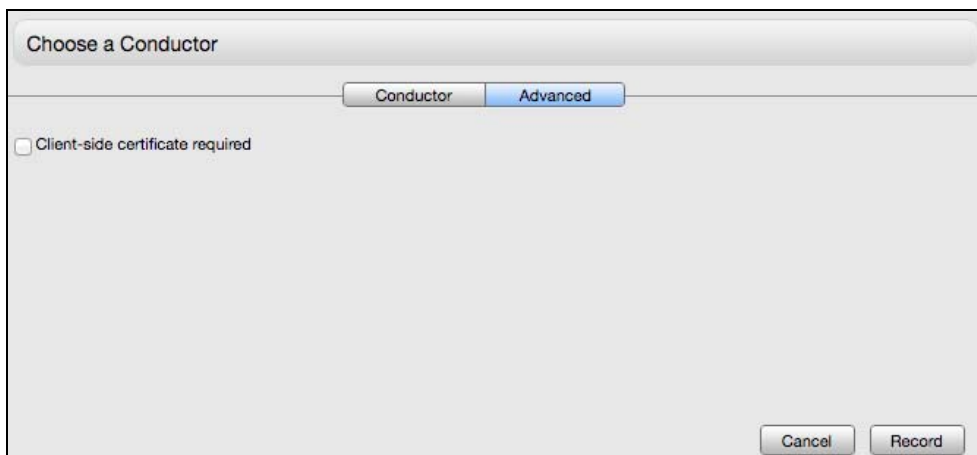


2. In the Choose a Conductor box, select the Conductor to use.

The General tab is used for Conductor selection as in the prior release.



3. Click the Advanced tab (new to this release) and check the Client-side certificate required box to enable this section. Use the instructions in the following section to record using a client certificate.



4. Check the Client-side certificate required box.

5. Click Choose File to select and upload an existing Certificate file.

Choose a Conductor

Conductor Advanced

☒ Client-side certificate required

Certificate file: /Users/jgardner/Desktop/R Browse...

Password:

Confirm:

Host list: production.mydomain.com,staging.mydomain.com

Enter a comma-separated list of host(s) that should receive this certificate.
If this is empty, the certificate will be sent to all hosts.

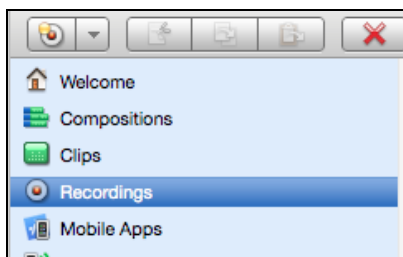
Cancel Record

6. Enter the password and then enter it again in the Confirm field.
7. Specify the host list using commas to separate the hosts. If this is empty, the certificate will be sent to all hosts recorded.

Set Up a Client-Side Certificate from the Recording Editor

In the following steps, we will specify a client-side certificate as part of doing HTTP recording in the Recording Editor.

1. Select Central > Recording and click New to open the Recording wizard.



2. In the New HTTP(S) Message Recording box, select the Conductor to use.
3. Select the HTTP(S) Recording radio button (this feature doesn't apply to Packet-level recording).
4. Check the Client-side certificate required box to display the entry fields.

New HTTP(S) Message Recording

Name: Save Location:

Available Conductors:

Name	Hostname	Created	Last Modified
 corydon's Conductor (10.0.1.4)	corydon-dvd.local		12/05/2011 2:09 pm
 SOASTA_DOC's Conductor (10.0.1.55)	david.local		02/01/2013 11:23 am

Conductor Status: connected

Recording Method: ☒ HTTP(S) Recording ☐ Packet-level Recording

 You will need to use a different browser (such as Internet Explorer or Safari) to generate the traffic that you want to record.

Traffic generated from Firefox will not be recorded unless you manually add the proxy defined in your conductor configuration (labeled "HTTPS proxy listener port").

Certificate: ☒ Client-side certificate required

Certificate file:

Password:

Confirm:

Host list: Enter a comma-separated list of host(s) that should receive this certificate.
If this is empty, the certificate will be sent to all hosts.

[Click here to download the Conductor Installer](#)

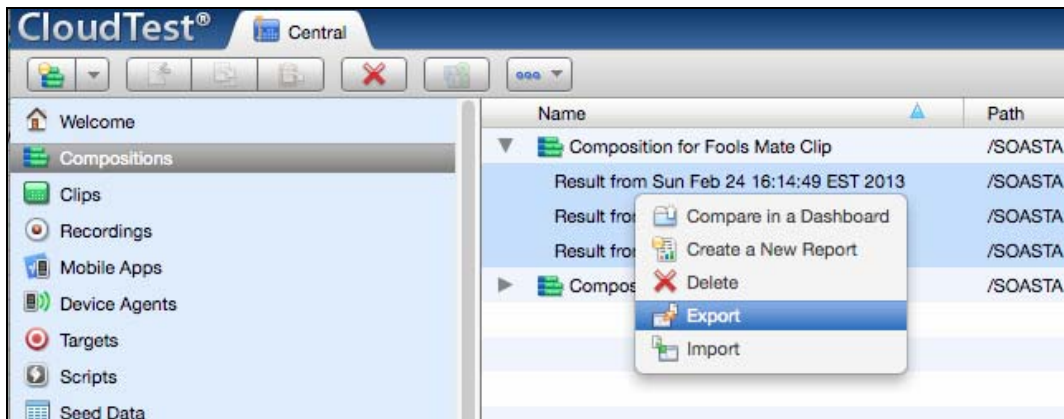
5. Click Browser to select an existing Certificate file.
6. Enter the password and then enter it again in the Confirm field.
7. Specify the host list using commas to separate the hosts. If this is empty, the certificate will be sent to all hosts recorded.
8. Click Record to proceed.

Test Analytics

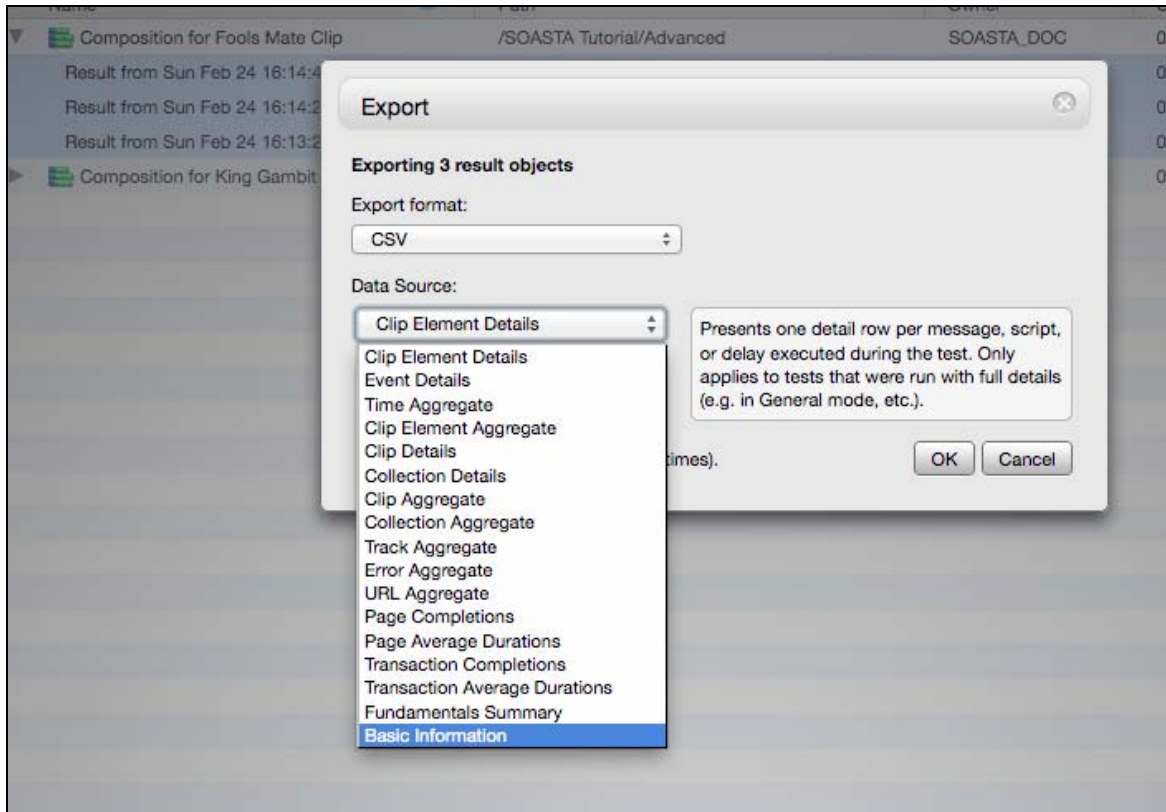
Export Multiple Results to CSV or XML Spreadsheet Format

This release introduces the ability to export multiple results to a CSV file or XML Spreadsheet that is one row per result. The resulting spreadsheet contains the name, composition name, path, status, dates, and lots of total metrics. Many results can be selected for this type of export and they will all be in the same CSV file.

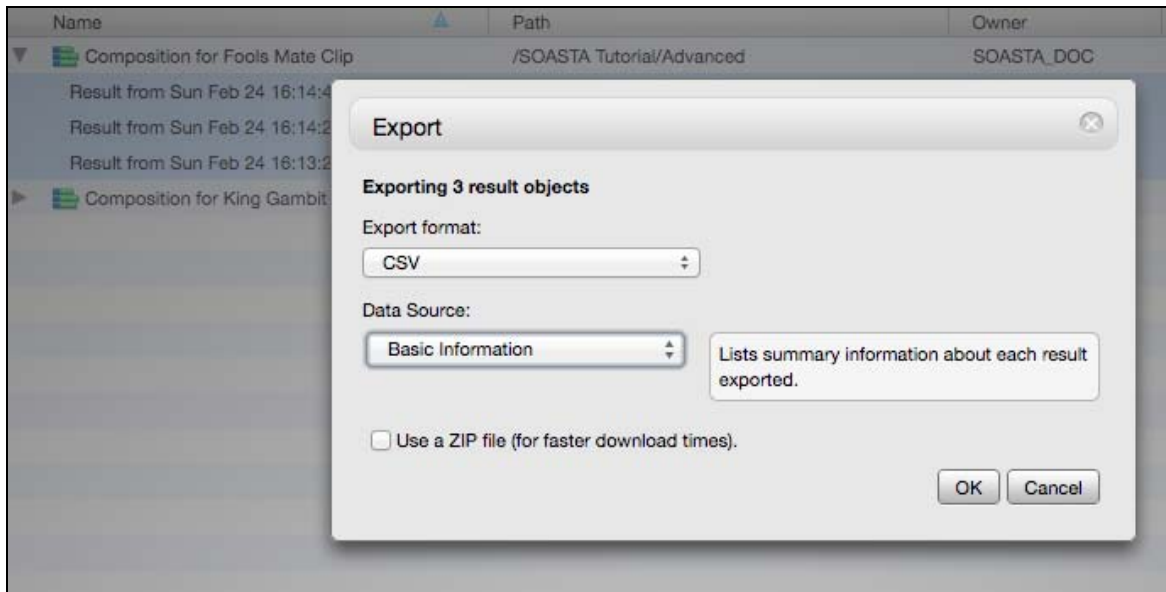
1. In the Central > Composition list expand the composition(s) to select from among their results.



2. Right click the selection to access the Export command.
3. In the Export dialog box, first select either the CSV or XML Spreadsheet export format, and then set the Data Source to "Basic Information."



4. Click OK to complete the export.



- Open the exported CSV in your spreadsheet application to examine its columns. Apply application-specific formatting to fix up the text, if desired.

I	J	K	L	M	N	O	P	Q	R	S	T
Result Name	Composition name at execution time	Path	Status	Result Name	Composition name at execution time	Path	Status	Start	End	Effective Start	Total Time
Result from Sun Feb 24 16:13:23 EST 2014	Draft of Composition for Fools Mate Clip created on February 24, 2013 4:13:05 PM EST	/SOASTA Tutorial/Advanced/Composition for Fools Mate Clip	Completed	Result from Sun Feb 24 16:13:23 EST 2014	Draft of Composition for Fools Mate Clip created on February 24, 2013 4:13:05 PM EST	/SOASTA Tutorial/Advanced/Composition for Fools Mate Clip	Completed	#####	#####	#####	49
Result from Sun Feb 24 16:14:26 EST 2014	Draft of Composition for Fools Mate Clip created on February 24, 2013 4:13:05 PM EST	/SOASTA Tutorial/Advanced/Composition for Fools Mate Clip	Completed	Result from Sun Feb 24 16:14:26 EST 2014	Draft of Composition for Fools Mate Clip created on February 24, 2013 4:13:05 PM EST	/SOASTA Tutorial/Advanced/Composition for Fools Mate Clip	Completed	#####	#####	#####	1
Result from Sun Feb 24 16:14:49 EST 2014	Draft of Composition for Fools Mate Clip created on February 24, 2013 4:13:05 PM EST	/SOASTA Tutorial/Advanced/Composition for Fools Mate Clip	Completed	Result from Sun Feb 24 16:14:49 EST 2014	Draft of Composition for Fools Mate Clip created on February 24, 2013 4:13:05 PM EST	/SOASTA Tutorial/Advanced/Composition for Fools Mate Clip	Completed	#####	#####	#####	33

For the Basic Information selection in the Data Source drop-down, the following fields are exported:

Basic Information (for Actions)

This export contains information for each test result selected with each result representing a row.

- **Result Name** – The result to which the data in the row corresponds.
- **Composition name at execution time** – The name of the composition in this result.
- **Path** – The repository path of the composition. For example, /SOASTA Tutorial/Advanced/Composition for Fools Mate Clip.
- **Status** – The completion status. For example, Playing or Completed.
- **Start** – The time the composition was fired.
- **End** – The time the composition status became "Completed."
- **Effective Start** – The time when messages/actions were first sent.
- **Total Time** - the sum of the Total times for every message/action attempted to send. Timeouts and other times are included.
- **Result Name** – The name of the result in the row.
- **Browser Actions** – The number of browser actions, if any.

- **Error Browser Actions** – The number of browser actions that produced errors, if any.
- **Checkpoints** – The count of checkpoints in the clip.
- **Controls** – The count of controls in the result.
- **Delays** – The count of delays in the result.
- **Ifs** – The count of If-Then-Else containers in the result.
- **Nops** – The count of "no operation" (Nops) in the result.
- **Scripts** – The count of scripts in the result.
- **Error Scripts** -- The count of error scripts in the result.
- **Switches** – The count of Switch containers in the result.
- **Events** – The count of Maestro events in the result.
- **Status** – For example, Composition completed. Execution of App Action "App Action1" failed. (Band "Band 1" Track "Track 1" Clip "Fools Mate Clip" Target "SOASTA Demo iPad Stockfish")

Basic Information (for Messages)

This export contains information for each test result selected with each result representing a row.

- **Band Name** – The band in which the test clip was executed.
- **Band Index** – The index of the band in the test composition.
- **Track Name** – The name of the track in the test composition.
- **Track Index** – The index of the track in the test composition.
- **Container Name** – The name of the container in the test composition.
- **Container Index** – The index of the container in the composition.
- **Clip Element Name** – The name of the clip in the test composition.
- **Clip Element Index** – The index of the clip in the test composition.
- **Clip Element Name** – The name of the clip element in the test clip. For example, *Message1*.
- **Clip Element Index** – The index of the given clip element within the test clip.
- **Clip Element Type** – The type of clip element, such as message, browser action, delay, checkpoint, or chain.
- **Target Name** – The target name for the given clip element.
- **Operation** – The type of operation. For example, in a SOAP-based WSDL.

- **Server** – The test server that ran this clip element.
- **Location** – The location that was defined for the given test server.
- **Start (Offset)** – The offset time for the clip element.
- **Start (Absolute)** – The absolute time for the clip element.
- **Send Time** – The time the clip element was sent.
- **Receive Time** – The time the clip element was received.
- **Connection Establish Time** – The time at which a connection was established to the target site.
- **Response Time** – The time at which a response was received for the clip element.
- **TTFB** – The average time to first byte.
- **TTLB** – The average time to first byte.
- **DNS Lookup** – The average time for DNS Lookup to complete.
- **Wait for Connection Pool Time** – The total time for the connection pool.
- **Delta From Scheduled Time** – The difference between the scheduled time and the actual time.
- **Delta Scheduled Duration** – The difference between the scheduled duration from send to receive and the actual one.
- **Validation Error** – The number of validation errors for the result.
- **Bytes Sent** – The bytes sent for the result.
- **Bytes Received** – The bytes received for the result.

Miscellaneous

Add Auditing to Site Administrator User (49299)

As of this release, users with the Site Administrator privilege will be able to view the Central > Auditing node and to review auditing records that are listed there.

TouchTest

Test Creation

Expanded Clip Elements in List View

The Clip Editor, List View has been improved to show details of actions in an expanded view, thus replacing the Info Window in List view with inline, easy-to-view display (note that the Info Window gear icon now appears only in Icon view).

In prior releases, there was no ability to quickly view an action's details in a test clip's List view without opening the Info Window or a lower panel editor.

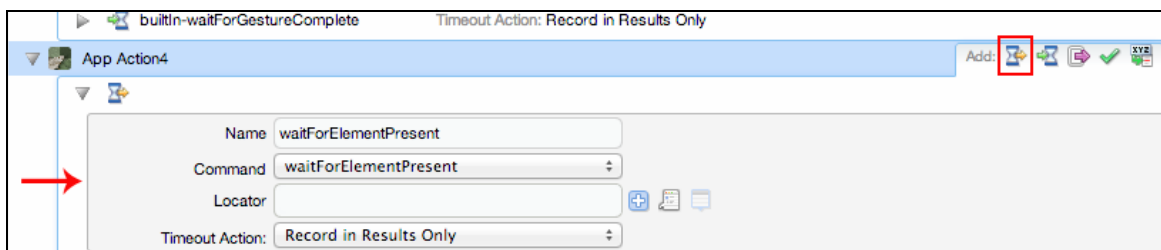
Now, the List view display the components of an action inline whenever the given action is expanded, and provides easy access to its components, including its waits, outputs, validations, and property sets.

For an expanded action, a mouse over will now display the Add toolbar at the top of the section defined by its bounding box. Users can edit an expanded action in List View by expanding it and clicking into its fields.

Adding Pre-Waits

1. In the Expanded view, use the mouse to hover over the clip element.
2. Click the Pre-Wait  icon on the Add toolbar.

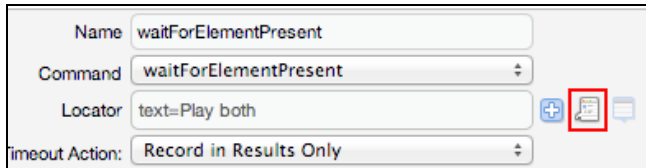
When you do so, a new pre-wait form is added.



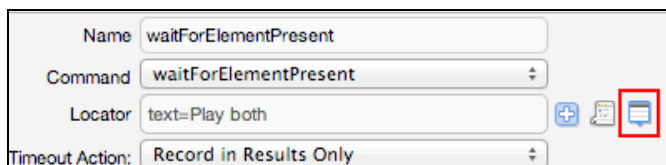
3. The Command drop-down presents the list of available waits. Subsequent parameters depend upon the wait selection made here. Select a wait from

the Command drop-down and enter the information required by the wait form presented.

- Enter a new locator or click the Property icon to select from among available property values using the ISSE Editor



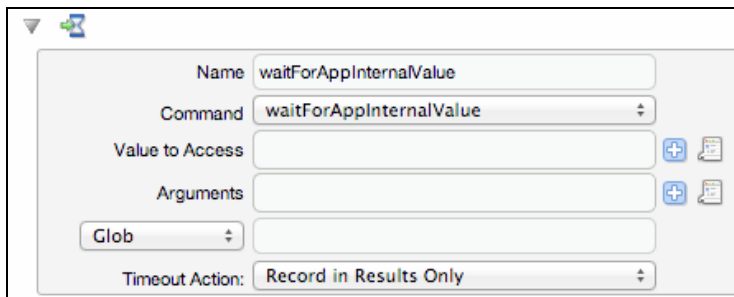
- For those waits that take a locator, you can also use the Locator icon to enter Touch Locator mode. Note that the Locator icon is only active while in record mode.



Refer to [Waits for Browser or App Actions](#) for more about viewing waits using the Info Window or Clip Editor lower panel Action Editor.

Refer to the [SOASTA TouchTest Advanced Tutorial](#) for more about the waits that appear here.

In another example, the *waitForAppInternalValue* shown below takes a *Value to Access*, *Arguments*, as well as a pattern match, and the obligatory Timeout Action.



- Where required, specify a pattern to match.

Many waits compare text by matching the pattern of some text on the page in order to determine if that page is correct. The following pattern match types are offered:

- Exact Match – matches against the string exactly
- Glob – matches against a pattern using Java glob notation. A glob is a limited regular expression pattern. In a glob pattern, * represents any sequence of characters, and ? represents any single character. Many personal computer users are familiar with globs through file matching expressions such as “*.jpg.”

- Regular Expression - matches against a regular expression using Java regular expression notation.

Note: CloudTest script authors should note that the Regular expressions within a CloudTest script (via the RegExp object or the /pattern/ notation) are JavaScript regular expressions. These JavaScript regular expression versions differ in important ways and the two are not interchangeable, so expressions cannot be copied from a CloudTest script to an include/exclude for pages, to a session template, or to a Wait, Property Set, or Validation, and vice versa.

- Script – matches against a value specified by a script

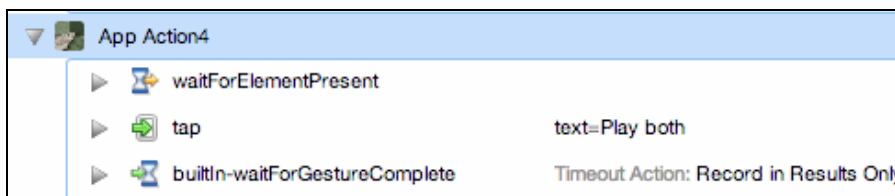
6. Specify a timeout action (or accept the default Record in Results Only).

The Timeout Action drop-down specifies what timeout action to take when the wait condition is not met.

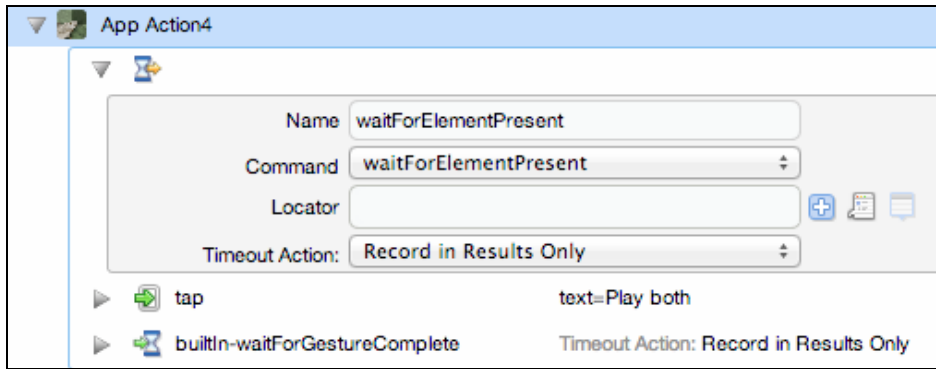
- If the timeout action is set to Record in Results Only, the wait outcome will be recorded in the result, and the test composition will continue whether the wait passes or fails.
- If the timeout action is set to *Fail the Clip*, the test composition will stop if the wait fails.
- If the timeout action is set to Honor the (Browser or App) Action, the wait inherits the parent setting from the action.

Editing Expanded Pre-Waits

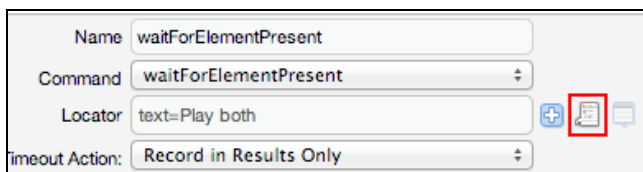
A pre-wait tells CloudTest not to execute an action until a condition is met. Pre-action waits are identified in the expanded clip element by the Pre-Wait  icon.



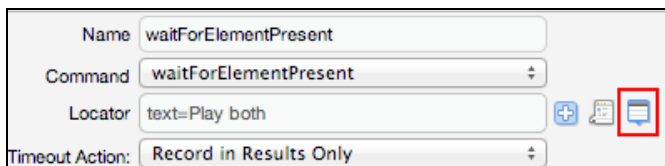
1. Locate the Pre-Wait  icon and expand the wait to examine its attributes.



- Enter a new locator or click the Property icon to select from among available property values using the ISSE Editor



- For those waits that take a locator, you can also use the Locator icon to enter Touch Locator mode. Note that the Locator icon is only active while in record mode.

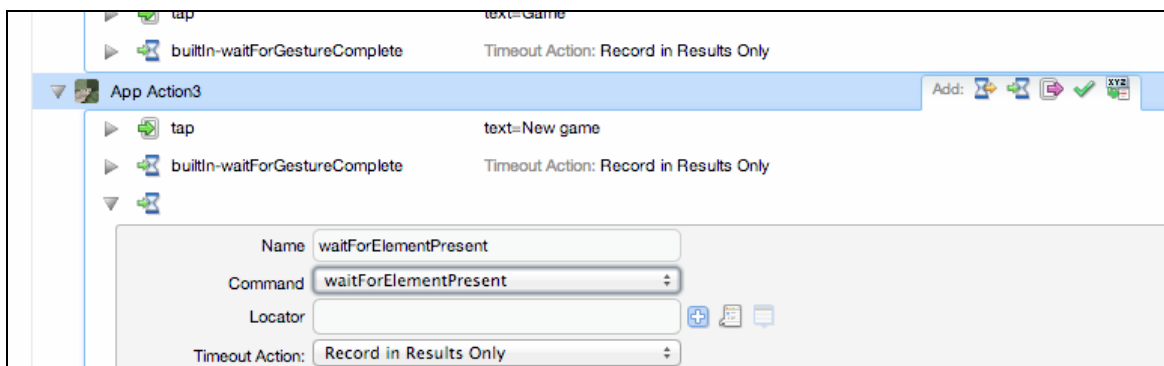


- Refer to [Touch Locator for Mobile Apps](#) for the steps to enter Locator mode on the target device.

Adding a Post-Wait

1. In the Expanded view, use the mouse to hover over the clip element.
2. Click the Post-Wait  icon on the Add toolbar.

When you do so, a new post-wait form is added.



The Command drop-down presents the list of available waits. Subsequent parameters depend upon the wait selection made here.

For example, the default *waitForElementPresent* above takes a locator.

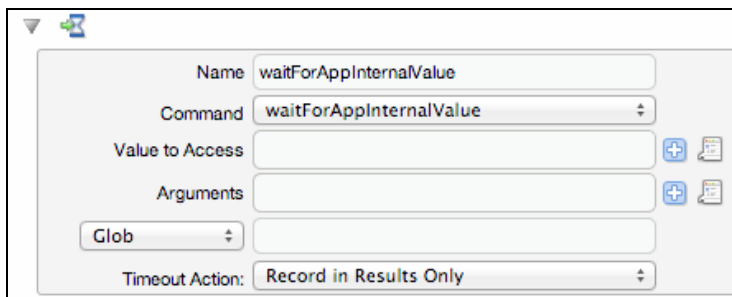
A **Locator** is used to identify a specific element or object for the given action.

It may be the name of an element on the page such as *submitButton*. or a piece in a chess game, such as *classname=PieceImageView[13]*.

Refer to [Waits for Browser or App Actions](#) for more about viewing waits using the Info Window (in Icon view) or by double-clicking it to open the Clip Editor lower panel.

Refer to the [SOASTA TouchTest Advanced Tutorial](#) for more about the waits that appear here.

3. Select a wait from the Command drop-down and enter the information required by the wait form presented.



The screenshot shows a configuration form for the 'waitForAppInternalValue' wait. The form includes the following fields and controls:

- Name:** A text field containing 'waitForAppInternalValue'.
- Command:** A drop-down menu with 'waitForAppInternalValue' selected.
- Value to Access:** An empty text field with a blue plus icon and a document icon to its right.
- Arguments:** An empty text field with a blue plus icon and a document icon to its right.
- Glob:** A drop-down menu with 'Glob' selected.
- Timeout Action:** A drop-down menu with 'Record in Results Only' selected.

In another example, the *waitForAppInternalValue* takes a *Value to Access*, and *Arguments*, as well as a pattern match, and the obligatory Timeout Action.

- Where required, specify a pattern to match.

Many waits compare text by matching the pattern of some text on the page in order to determine if that page is correct. The following pattern match types are offered:

- Exact Match – matches against the string exactly
- Glob – matches against a pattern using Java glob notation. A glob is a limited regular expression pattern. In a glob pattern, * represents any sequence of characters, and ? represents any single character. Many personal computer users are familiar with globs through file matching expressions such as "*.jpg."
- Regular Expression - matches against a regular expression using Java regular expression notation.

Note: CloudTest script authors should note that the Regular expressions within a CloudTest script (via the RegExp object or the /pattern/ notation) are JavaScript regular expressions. These JavaScript

regular expression versions differ in important ways and the two are not interchangeable, so expressions cannot be copied from a CloudTest script to an include/exclude for pages, to a session template, or to a Wait, Property Set, or Validation, and vice versa.

- Script – matches against a value specified by a script

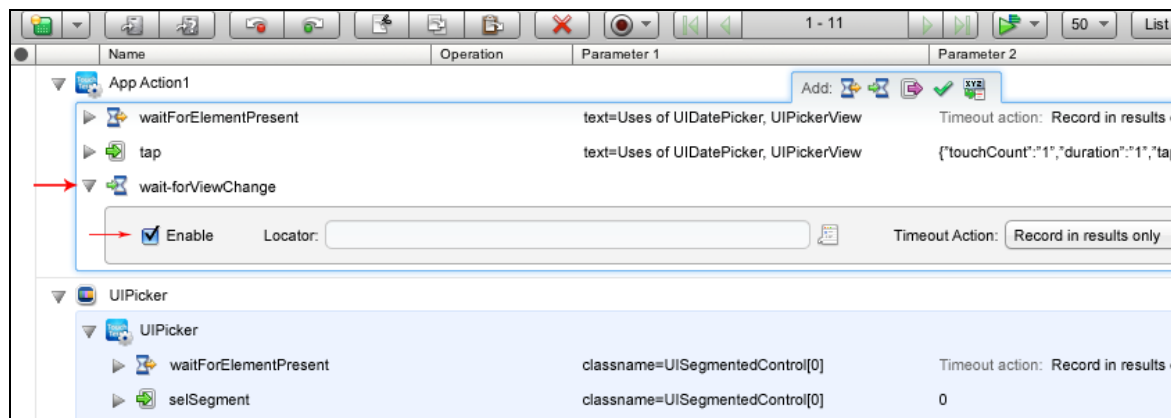
7. Specify a timeout action (or accept the default Record in Results Only).

The Timeout Action drop-down specifies what timeout action to take when the wait condition is not met.

- If the timeout action is set to *Record in Results Only*, the wait outcome will be recorded in the result, and the test composition will continue whether the wait passes or fails.
- If the timeout action is set to *Fail the Clip*, the test composition will stop if the wait fails.
- If the timeout action is set to Honor the (Browser or App) Action, the wait inherits the parent setting from the action.

Editing a Post-Wait

1. In the Expanded action view, use the mouse to hover over the clip element.



2. Locate the post-wait and expand its attributes.

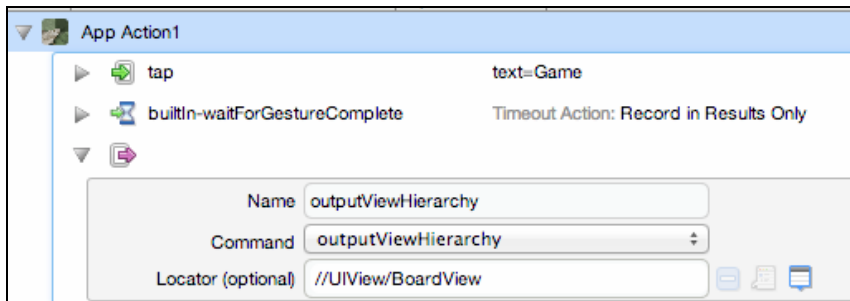
- Check Enable to edit the form. Enable or disable the post-wait, enter a new locator (or use the Touch Locator tool to do so)
- For those waits that take a locator, you can use the Locator icon to enter Touch Locator mode (refer to [Touch Locator for Mobile Apps](#)).

Editing Expanded Outputs

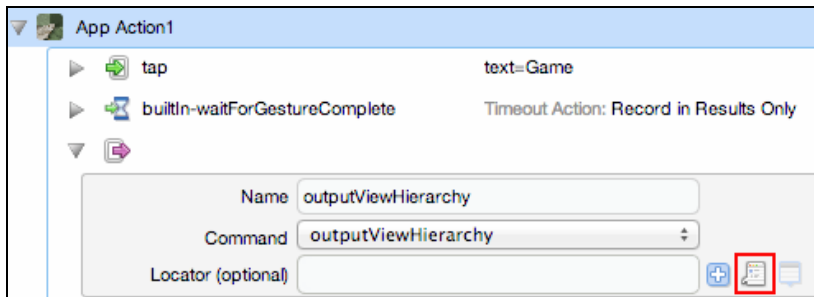
An Output specifies what is to be shown in Result Details for a given action. Typical outputs include captureScreenshot and outputElementText. A single

action can have one or more outputs. Outputs are identified in the expanded action by the Output  icon.

1. Locate the output  and expand its attributes.



- Note that if a Locator has been specified the Property icon is inactive. If the Locator field is blank, you can select from among available property values using the ISSE Editor.



TIP: Leaving outputViewHierarchy returns the entire view hierarchy.

- For those outputs that take a locator, you can also use the Locator icon to enter Touch Locator mode and change the selection. Note that the Locator icon is only active while in record mode.



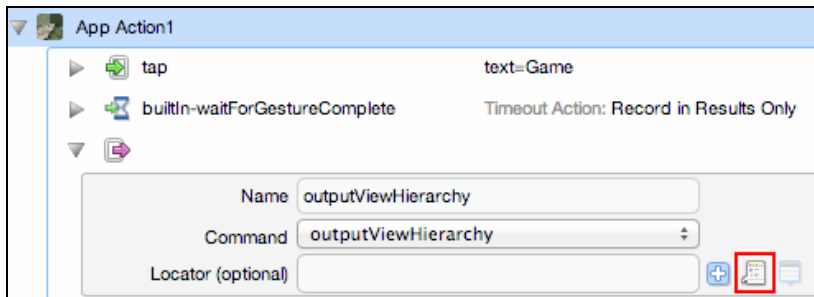
- Refer to [Touch Locator for Mobile Apps](#) for the steps to enter Locator mode on the target device.

Adding an Output

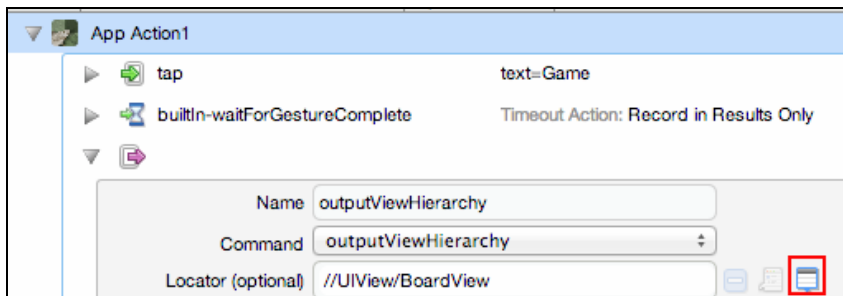
1. In the Expanded view, use the mouse to hover over the clip element.
2. Click the Output  icon on the Add toolbar.

When you do so, a new Output form is added.

The Command drop-down presents the list of available outputs. Subsequent parameters depend upon the output selection made here.



- Note that if a Locator has been specified the Property icon is inactive. If the Locator field is blank, you can select from among available property values using the ISSE Editor.
- For those outputs that take a locator, you can also use the Locator icon to enter Touch Locator mode and change the selection. Note that the Locator icon is only active while in record mode.

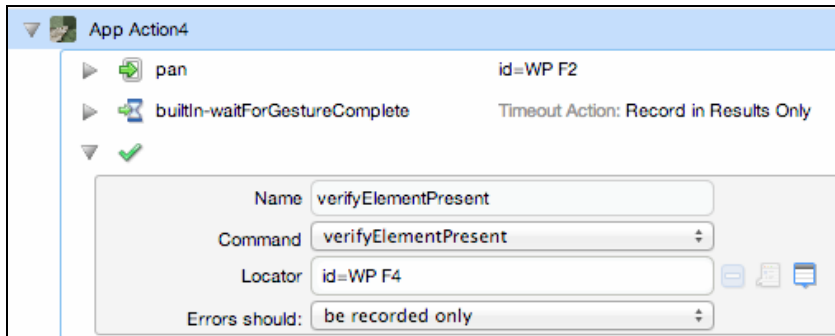


- Refer to [Touch Locator for Mobile Apps](#) for the steps to enter Locator mode on the target device.
- Refer to the [SOASTA TouchTest Advanced Tutorial](#) for more about the outputs that appear here.
- Refer to [Outputs for Browser or App Actions](#) for more about using outputs in the Clip Editor lower panel Action Editor.

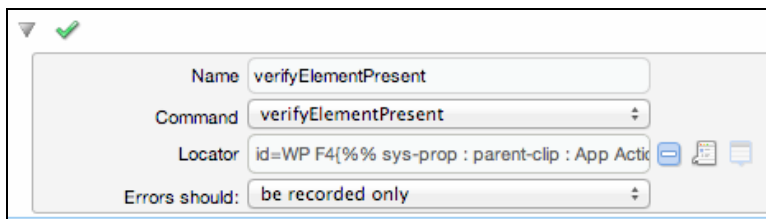
Editing a Validation

Validations are the technique used to verify that a test event occurs as expected. For example, text in a mobile app after a view is loaded.

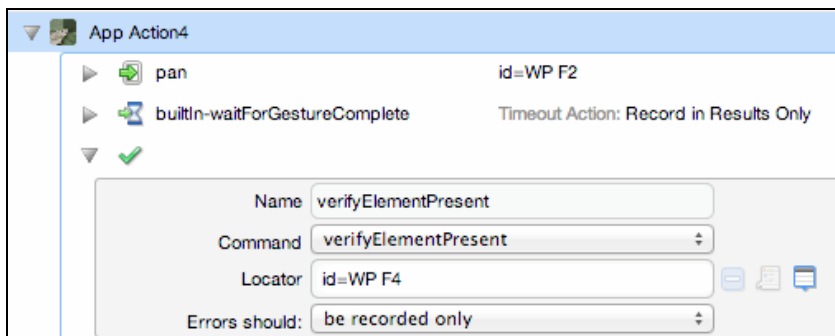
1. Locate the validation  and expand its attributes.



- Note that if a Locator has been specified for a validation that the Property icon is still active. For validations, you can combine locators with expressions selected from among available property values using the ISSE Editor.



- For those validations that take a locator, you can also use the Locator icon to enter Touch Locator mode and change the selection. Note that the Locator icon is only active while in record mode.



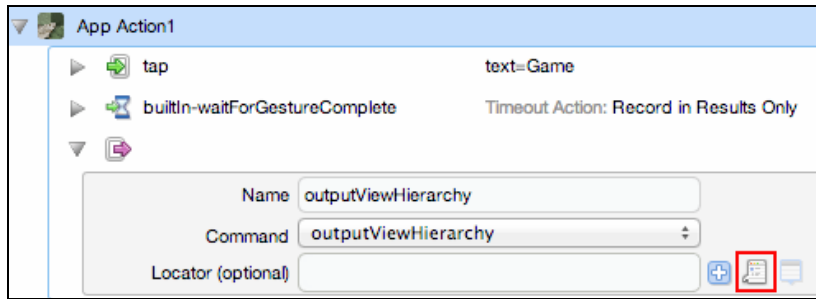
- Refer to [Touch Locator for Mobile Apps](#) for the steps to enter Locator mode on the target device.

Adding a Validation

1. In the Expanded view, use the mouse to hover over the clip element.
2. Click the Validation  icon on the Add toolbar.

When you do so, a new Validation form is added.

The Command drop-down presents the list of available validations. Subsequent parameters depend upon the wait selection made here.

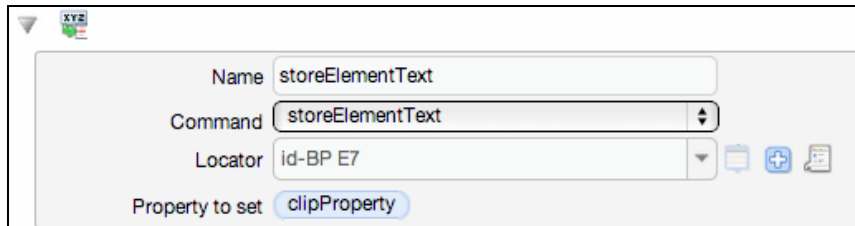


Editing a Property Set

A Property Set provides the ability to take text or data from the Web page or mobile app that you are testing and store it in a custom property for use in a subsequent action.

Using Property Sets you can store the value of an input, the text inside of a table cell, or even complex values such as the result of a JavaScript expression for later use.

1. Locate the Property Set  and expand its attributes.



- Note that if a Locator has been specified for a property set that the Property icon is still active. For property sets, you can combine locators with expressions selected from among available property values using the ISSE Editor.

Adding a Property Set

1. In the Expanded view, use the mouse to hover over the clip element.
2. Click the Property Set  icon on the Add toolbar.

When you do so, a new Property Set form is added.

The Command drop-down presents the list of available property sets to store. Select from among the available property sets or manually enter the property to set (i.e. *clipProperty*).

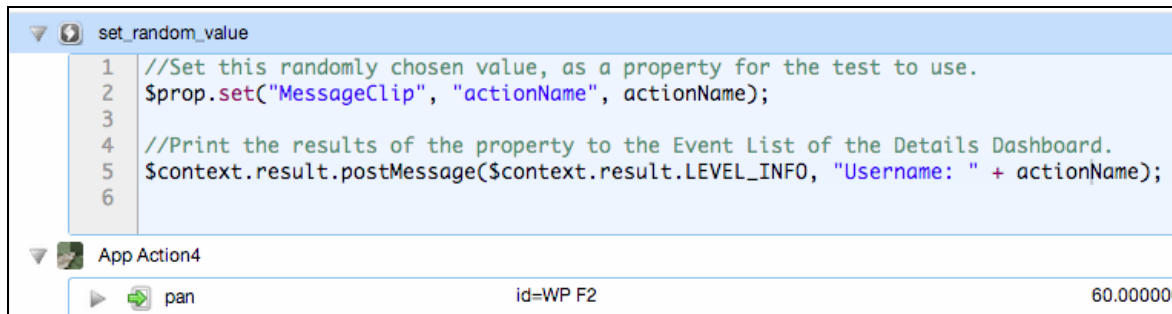


- For those property sets that take a locator, you can also use the Locator icon to enter Touch Locator mode and change the selection. Note that the Locator icon is only active while in record mode.
- Refer to [Touch Locator for Mobile Apps](#) for the steps to enter Locator mode on the target device.

- Refer to [Property Sets in a Browser or App Action](#) for more about using property sets in the Clip Editor lower panel Action Editor.

Edit Linked Scripts in List View

Scripts are also viewable and editable as linked scripts in the Clip Editor list view. Locate and expand the script to view or edit. Note that in editing a lined script you will be editing all instances of that script (a warning will appear to remind you that this is so).



Store All Locators in the Clip When Recording

In prior releases, CloudTest would select a locator during recording to represent a captured browser action or app action. Additional locators, if any, could be rediscovered using the Touch Locator tool. This was most often used when an existing, automatically selected location would fail to produce the desired result.

Now, when recording a mobile app, *all* of the detected locators are sent for each action and stored in the test clip. All TouchTest locators are now stored in the Location drop-down wherever it appears. Additionally, users can now add a locator using the <Add new entry> option in the dropdown.

Locators for a given action can be shown within the Locator drop-down and alternate selections can be used by selecting them from the available locators.

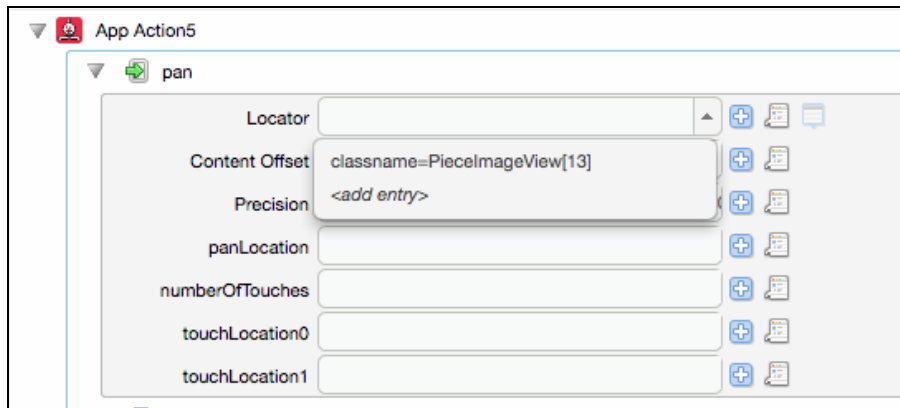
Invoking Touch Locator mode a second time (presumably at a later juncture) will find any *additional* locators, if any. Use Touch Locator mode as a means of refreshing the known locators for an action.

Adding a Locator Entry for a Browser or App Action

It is now possible to enter an additional locator entry to the list of locators for a given action.

1. Open the clip in the Clip Editor, List view.

2. Expand the action whose locator will receive the new entry.



3. Click the Locator drop down and select <add new entry>.
4. Enter the locator text into the Locator field, which is now editable.

Note: An entered value should be a valid locator value based on your acumen and familiarity with the given application—whether browser or mobile.

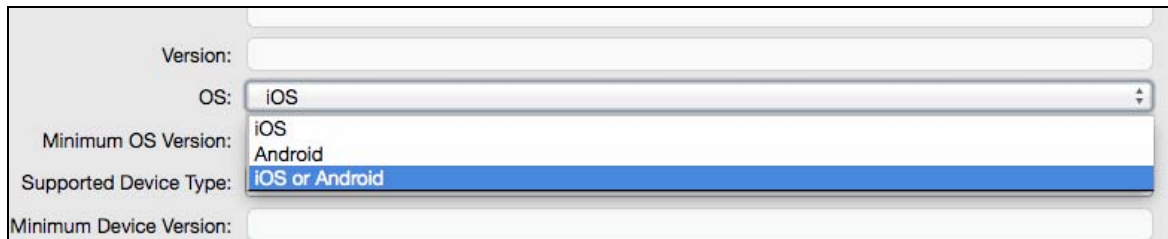
New Mobile App Type: iOS or Android

This release includes the ability to specify a new mobile app type in the Mobile App object for those mobile apps that support both iOS and Android operating systems such as in the Titanium Studio platform.

The MakeAppTouchTestable utility will create Universal App objects for Titanium projects supporting both iOS and Android platforms. You can choose to create Universal App objects for any other type of projects by using the - universalapp flag.

Defining a mobile app as for both platforms, whether by manually creating a Mobile App repository object in CloudTest or by using the MakeAppTouchTestable utility, will permit the user to select *both* iOS and Android devices (or a device cloud that mixes device agents from both platforms) in a test composition that is based on a mobile app set to "iOS or Android."

For the manual method, the user can now specify "iOS or Android" as the OS version in the Mobile App form.



The screenshot shows a form with the following fields and values:

Field	Value
Version:	
OS:	iOS
Minimum OS Version:	iOS
Supported Device Type:	iOS or Android
Minimum Device Version:	

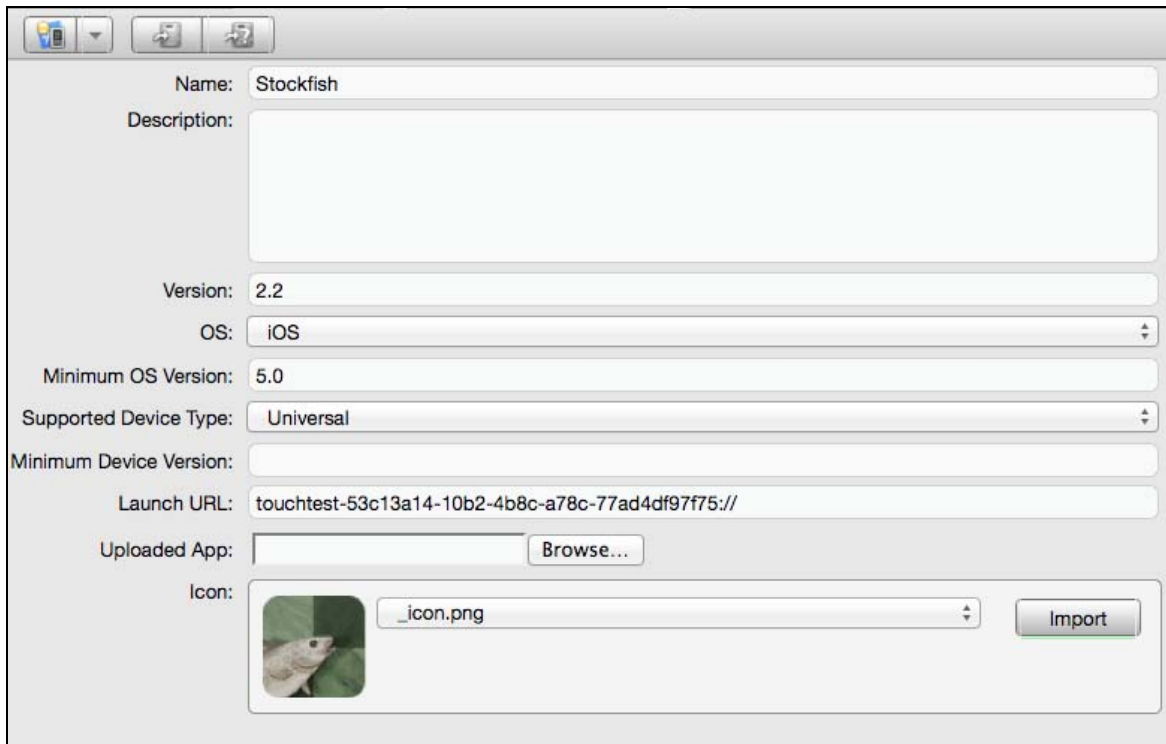
Upload and Download of Mobile App IPAs / APKs

This release introduces the ability to upload iOS application archive (IPA) files and/or Android application package (APK) files for TouchTest users to download from their mobile device(s).

Uploading a Mobile App IPA or APK (Developers)

Use the following steps to provide a mobile app to other TouchTest users.

1. From Central > Mobile Apps, select the mobile app entry from the list and open it.



The screenshot shows a web form for configuring a mobile app. The form has the following fields and controls:

- Name:** Text input field containing "Stockfish".
- Description:** Large text area.
- Version:** Text input field containing "2.2".
- OS:** Dropdown menu showing "iOS".
- Minimum OS Version:** Text input field containing "5.0".
- Supported Device Type:** Dropdown menu showing "Universal".
- Minimum Device Version:** Text input field.
- Launch URL:** Text input field containing "touchtest-53c13a14-10b2-4b8c-a78c-77ad4df97f75://".
- Uploaded App:** Text input field with a "Browse..." button next to it.
- Icon:** A section containing a small image of a fish, a text input field with "_icon.png", and an "Import" button.

2. Click Browse in the Uploaded App field to locate your mobile app to upload.

The screenshot shows the configuration page for a mobile app named 'Stockfish'. The fields are as follows:

- Name:** Stockfish
- Description:** (empty text area)
- Version:** 2.2
- OS:** iOS
- Minimum OS Version:** 5.0
- Supported Device Type:** Universal
- Minimum Device Version:** (empty)
- Launch URL:** touchtest-53c13a14-10b2-4b8c-a78c-77ad4df97f75://
- Uploaded App:** /Users/jgardner/bamboo-h (with a 'Browse...' button)
- Icon:** A preview of the app icon (a green frog) and a text input field containing '_icon.png' with an 'Import' button.

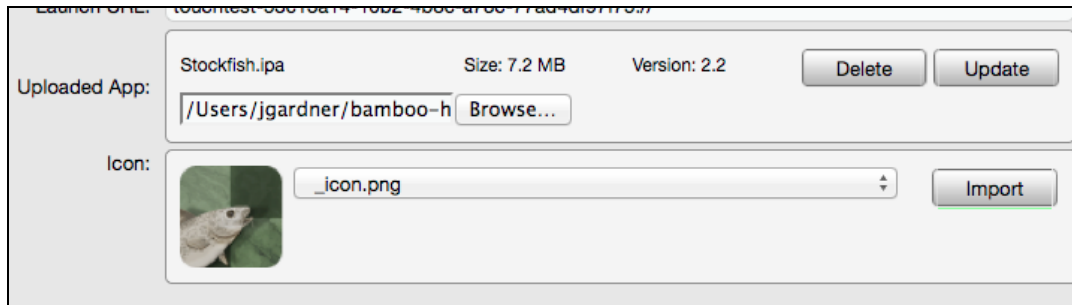
3. Click Save to do the upload. When you do so, the specified file is uploaded and the mobile app detail indicates so.

The screenshot shows the configuration page for the 'Stockfish' app after it has been uploaded. The fields are as follows:

- Name:** Stockfish
- Description:** (empty text area)
- Version:** 2.2
- OS:** iOS
- Minimum OS Version:** 3.2
- Supported Device Type:** Universal
- Minimum Device Version:** (empty)
- Launch URL:** touchtest-53c13a14-10b2-4b8c-a78c-77ad4df97f75://
- Uploaded App:** A table showing the uploaded file:

Uploaded App	Size	Version	Actions
Stockfish.ipa	7.2 MB	2.2	Delete Update
- Icon:** A preview of the app icon (a green frog) and a text input field containing '_icon.png' with an 'Import' button.

4. To perform an update on an uploaded mobile app, click the Update button and specify the updated file to use.



Note: You can also add your mobile app to its corresponding repository object via the `scommand` utility using the following additional parameters (refer to "`scommand help`" on the command line for more information and syntax):

```
cmd=import
file="/Users/username/Desktop/apps/ios/stockfish/Stockfish.ipa"
username=SOASTA_DOC password=secret
url=http://localhost:8080/concerto mobileappname="Test App 2"
debug
```

5. Once the mobile app is uploaded or updated, notify your users to point their mobile device to the following location for installation:

`http://<CloudTest URL>/concerto/touchtest/apps`

The mobile device user can then proceed accordingly by clicking the Install button for the given mobile app, or in the event that there are multiple apps, they can use Install All.

Downloading a Mobile App IPA or APK (All Users)

Using the address provided to you by a developer (or user responsible for uploading and updating a given compiled mobile app), download the given app to each of the mobile devices you want to use to test it.

1. On the mobile device, open the apps download URL in the browser. This URL is the same as your CloudTest instance with /touchtest/apps appended.

For example, <CloudTest URL>/concerto/touchtest/apps

Note: Some CloudTest setups don't utilize "/concerto". Use the form of CloudTest URL consistent with your server.

When you do so, the TouchTest™ Apps page appears.

Note that iOS devices will only show iOS apps and vice versa for Android devices. The page will never show you apps that you cannot install.

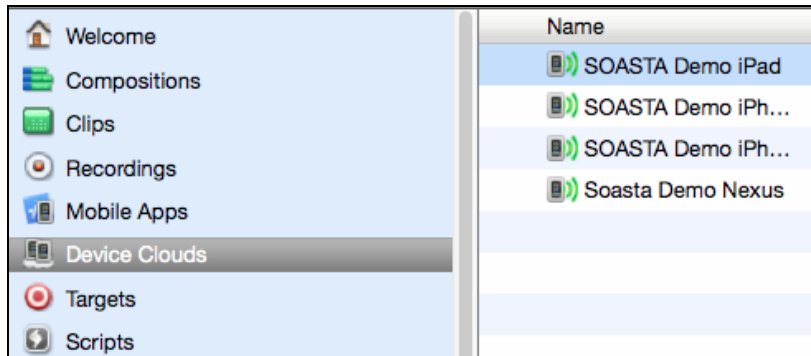


2. Click the Install button to download the mobile app you'd like to test. Use Install All, if applicable.
3. If you are ready to test after install, click Go to TouchTest Agent.

Device Clouds

This release introduces the ability to specify grouped device agents as the location to play a given track in a composition. TouchTest users can now easily specify multiple device agents for composition play.

The Central > Device Agents node is now the Device Cloud node. The Device Clouds list shows both configured Device Clouds and Device Agents.

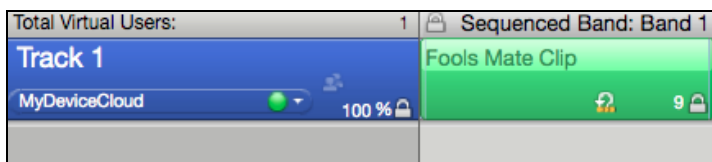


This change reflects the ability to group mobile devices as a device cloud, which can then be specified as the location for a track in a given test composition.



Available Device Clouds are listed separately at the bottom of the Location drop-down list in the Composition Editor.

- To select a device cloud as the track location for devices, click the drop-down per track.

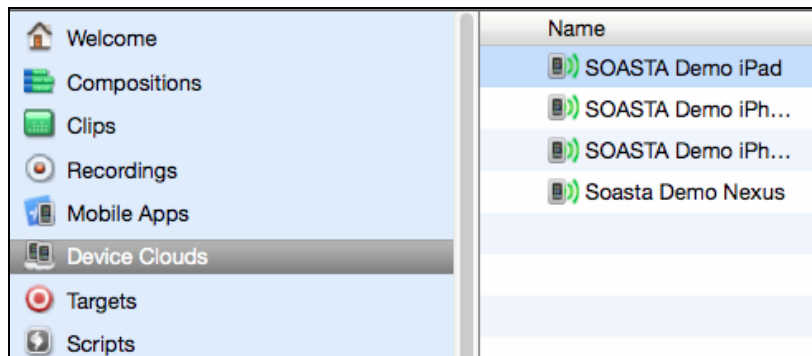


- To select a device cloud at the clip level, first set Select at Clip for the parent track, and then specify the device cloud to use.

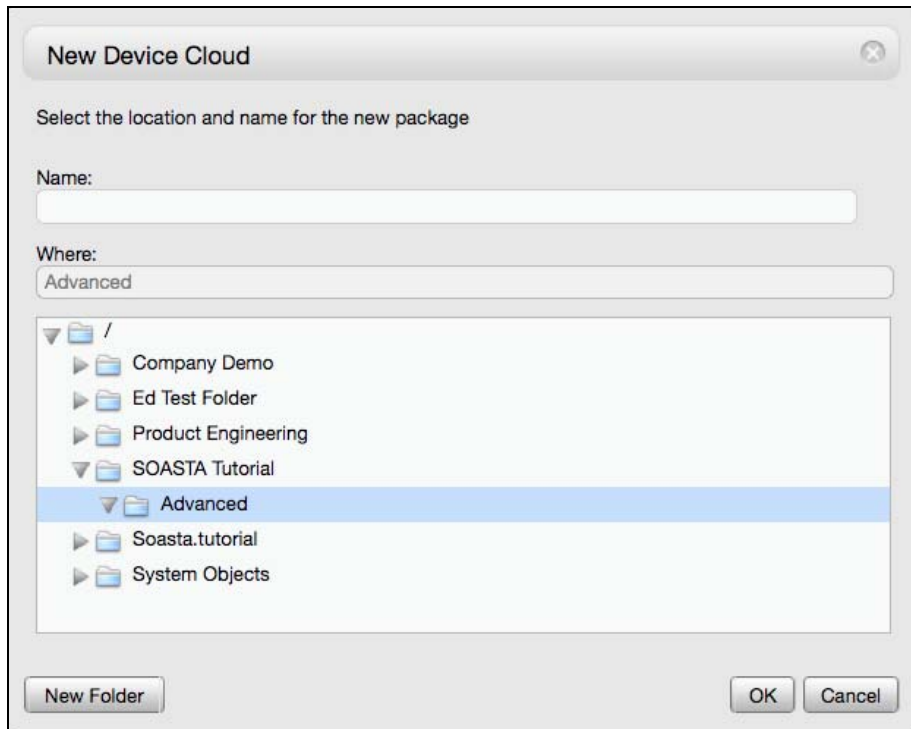


Creating a New Device Cloud

1. With the Device Clouds list showing, select one or more devices to add to a Device Cloud.
2. Select Central > Device Clouds and then click New (leftmost toolbar).



The New Device Cloud box appears.



3. Give the new device cloud a name and click OK to complete the creation of this cloud group.

Once configured, the Device Cloud will appear in the Device Clouds list.

You can add additional device agents to a device cloud by using drag-and-drop to place them into the given device cloud. A device can be in more than 1 cloud.

You can remove a device agent from a device cloud by selecting it and clicking Delete on the toolbar. Note that deleting a device agent from a device cloud does not delete that device agent but only removes it from the device cloud in which it was grouped.

Deleting a device agent will also delete it from all clouds to which it has been added.

Jenkins Plugin Improvements

This release includes numerous improvements to the SOASTA CloudTest Jenkins Plugin, which now automates many tasks that previously required an Execute Shell step.

Prerequisites

The CloudTest plug-in requires Jenkins 1.447 or later.

Global Configuration Options

Before using the plug-in, you will need to provide the CloudTest server information, in the "Manage Jenkins" -> "Configure System" page. This includes the CloudTest URL and a set of credentials. *We recommend creating a dedicated CloudTest account for Jenkins to use.*

The CloudTest password is encrypted before saving it to disk. It is also masked (e.g. "****") in all output generated during builds.

Build Steps

The plug-in adds the following new build steps:

Make App TouchTestable

Adds the TouchTest Driver library to your app's source code. Typically this build step is inserted right before the build step that compiles the app's code (e.g. before the Xcode build step for iOS, or before the "Invoke Ant" build step for Android).

Install iOS App on Device

Silently installs an IPA file on one or more attached iOS devices. This ensures that your tests run against the latest version of your app.

Note: There is no Android version of this build step, because the Android SDK already provides this functionality.

Play Composition

Executes a CloudTest composition, and saves the output in the build's test results. You can include this build step multiple times if there are multiple compositions in your test suite.

Wake Up iOS Device

Wakes up one or more attached iOS devices, and opens Mobile Safari to the most recently viewed page (e.g. TouchTest Agent). This can optionally be used at the beginning of a build, to "prep" the devices for testing.

Note: There is no Android version of this build step, because the Android SDK already provides this functionality.

Reboot iOS Device

Reboots one or more attached iOS devices. This can optionally be used at the end of a build, to "reset" for the next one. *NOTE: there is no Android version of this build step, because the Android SDK already provides this functionality.*

These improvements are detailed in the following tutorials:

[SOASTA TouchTest Jenkins CI for iOS Tutorial](#)

[SOASTA TouchTest Jenkins CI for Android Tutorial](#)

HP Quality Center Integration with TouchTest

This release provides support for integration with HP Quality Center software.

Quality Center users can now download the new `scommandIntegration.vbs` (available from the CloudTest, Welcome page).

For more information about integrating TouchTest mobile app test compositions with Quality Center, see the new [TouchTest for Quality Center Tutorial](#).

This tutorial guides the user through the process of integrating SOASTA TouchTest with the HP Quality Center by using the SOASTA `scommandIntegration.vbs` script in tandem with preconfigured TouchTest compositions.

Miscellaneous

Improved TouchTest Keyboard Support

This release includes improved keyboard support for both iOS and Android keyboard actions via the introduction of two new actions: `keyPress` and `capsLockOn`.

- **keyPress** – Simulates the user tapping the specified key on the keyboard, which must already be visible.
- **capsLockOn** – Simulates the user tapping the Shift key to turn CAPS LOCK on. The keyboard must already be visible.

The addition of these actions widens the possibilities for testing key presses, which allow you to do type operations using a keyboard using a `keyPress` action for each key. For example, a user might want to put a validation or an output in the middle of the type.

Additionally, this release includes enhanced the playback of the original type action to tap each individual key instead of just setting the value of the input.

Improved Support for Swipe Gestures

This release includes significant improvements in TouchTest support for the recording and playback of Swipe gestures.

Improved iframe and page load support (TouchTest Web/Hybrid)

This release includes significant improvements in TouchTest Web and Hybrid support for rendered HTML content that occurs in either iframes or where page content is dynamically loaded.

Improved Support for Hybrid Apps

This release includes improved playback support within Hybrid apps. Hybrid apps include those native apps that contain a UIWebView that renders HTML content. Among the notable improvements for this release are additional support for testing and playback of various alerts, confirmations, and prompts that occur within rendered content.

New TouchTest Agent Login Screen

This release includes significant enhancement of the TouchTest Agent login screen.

Support for PhoneGap 2.3

TouchTest provides support for the [PhoneGap](#) toolkit version 2.3 or later (see Case 49171 in the release notes for 6179.138).

Improved Support for Android's back button (47935)

This release includes improved support for Back button and keyboard actions in Android applications.

Exports for mobile app contain additional information (48064)

In the prior release, exported TouchTest results didn't contain all of the information present in the Result Details dashboard for mobile app tests.

As of this release, exported TouchTest results will contain all of the information including outputs and stored data.

mPulse

The second mPulse release introduces significant improvements in dashboard performance as well as better data delivery in existing widgets in the mPulse dashboard. A new Metric Analysis dashboard is provided in this release along with support for Custom Metrics and Custom Timers and several new widgets for custom data display.

In addition, this release introduces a new Globe Control Panel and many enhancements to Globe animation, as well as a new 'Columbus' or 'flat Earth' projection map in the Globe dashboard that also supports animations and permits users to see all nations at once.

Domain Administrators will find new Configure Domain box tabs for binding their Custom Metric and Custom Timer plugins. Along with these additions are tweaks in browser support and many bug fixes.

Note: Additional Domain inputs for S3 uploads were delivered in Italia
19. Refer to [Amazon S3 Upload Setup for Domain-Specific Beacon Logs](#).

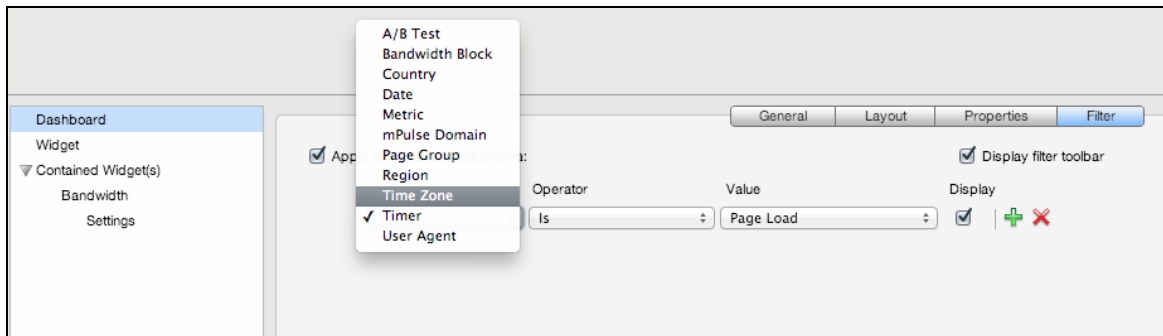
Time Zone Filtering

This release expands Time Zone support to the dashboard level.

Time Zone Filtering by Dashboard

Use the following steps to filter by time zone in a dashboard.

1. For dashboards, select the Filter tab and then choose Time Zone.



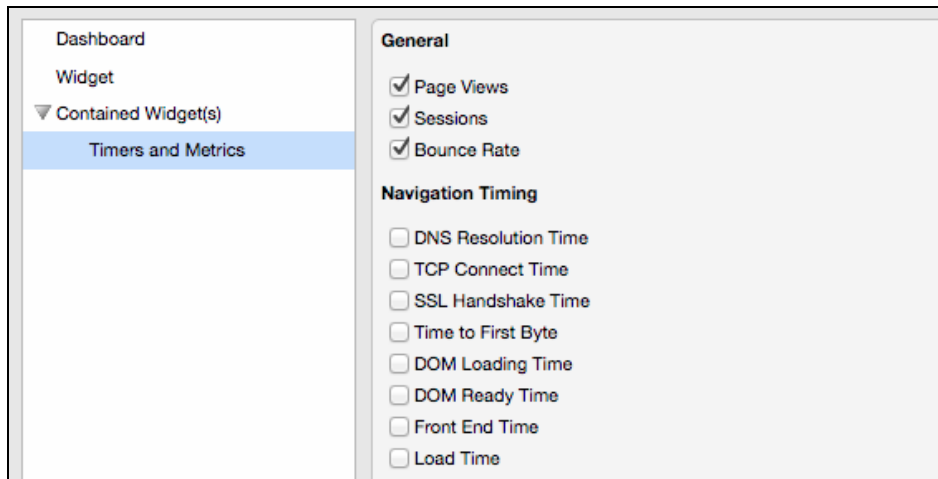
2. Once selected, choose from among international time zones in the Value column.

Navigation Timers

This mPulse release introduces navigation timers. A Navigation Timer measures a portion of the time from a page request to its completion. For example, the TCP Connection Time for the page request.

- **Load Time** – Measures the total time for page loading (this includes frontend time, DOM loading, etc.).
- **DNS Resolution Time** – Measures the time to resolution (e.g. the time it takes to resolve a DNS name to its IP address)
- **TCP Connection Time** – Measures the time for the transmission control protocol (TCP) connection in a session.
- **SSL Handshake Time** – Measure the time for a Secure Sockets Layer handshake for apps that use authentication.
- **Time to First Byte** – Measures the time to the first byte received in a session.
- **Front End time** – Measures the front-end time on the device. Front-end time is client-side time such as the additional time it takes to fully render any content.
- **DOM Loading Time** – Measures the time to load the DOM (e.g. after the client has finished loading all window frames, objects, and images).
- **DOM Ready Time** – Measures the time on the DOM ready status. This event represents the moment when the browser has fully processed the DOM structure of the HTML document.

Navigation timers are presented *by default* in the new Navigation Timing widget and can be turned on optionally in the Timers and Metrics widget edit panel (both widgets are discussed more fully in the Analytics section below).



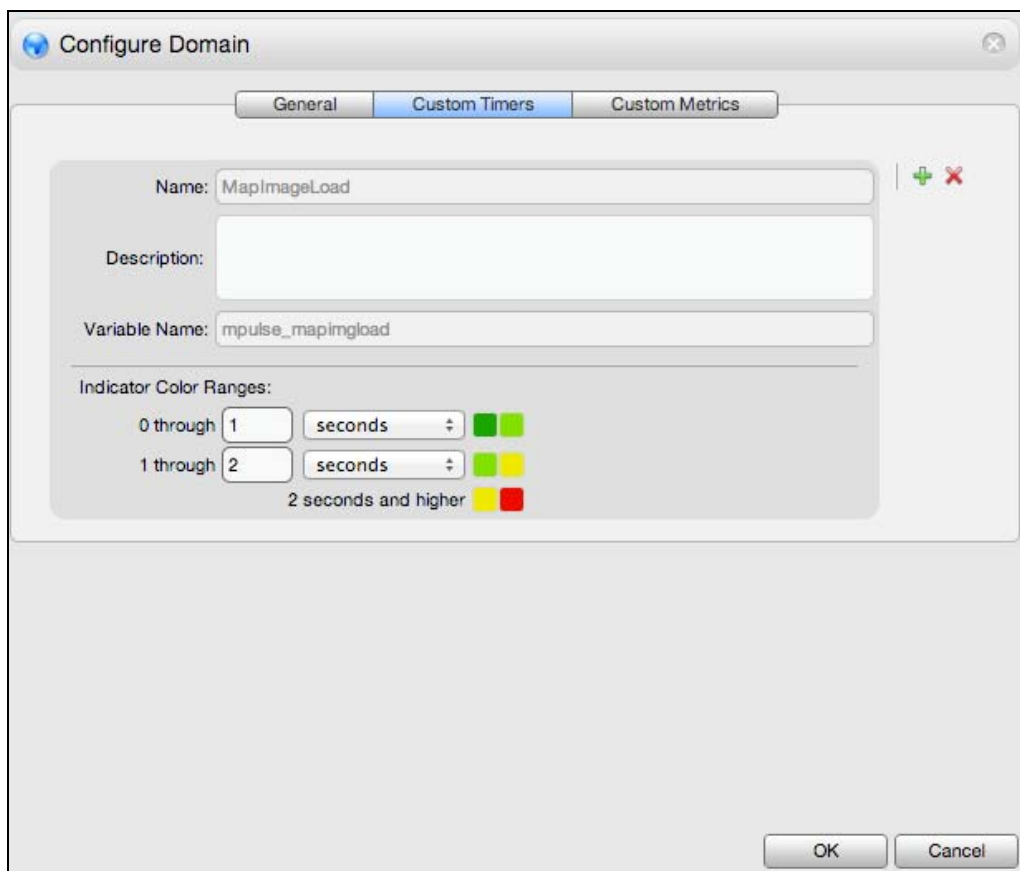
Custom Timers

This mPulse release supports the use of custom timers written as Boomerang plugins. A Custom Timer can be any measurable user-defined value in the page. Once a plugin has been written, the timer can be added to a domain using the Configure Domain, Custom Timers tab. An example of such a plugin is provided in the sub-section below.

Custom Timers tab

The Domain Admin user can now configure the use of a pre-written Boomerang plugin for custom timing in this new tab.

- To access the Configure Domain box, choose Central > Domains (requires Domain Admin privilege).



The screenshot shows a 'Configure Domain' dialog box with three tabs: 'General', 'Custom Timers' (selected), and 'Custom Metrics'. The 'Custom Timers' tab contains the following fields and controls:

- Name:** MapImageLoad
- Description:** (empty text box)
- Variable Name:** mpulse_mapimgload
- Indicator Color Ranges:**
 - 0 through 1: seconds, green indicator
 - 1 through 2: seconds, yellow indicator
 - 2 seconds and higher: red indicator

At the bottom right are 'OK' and 'Cancel' buttons.

Defining a Custom Timer

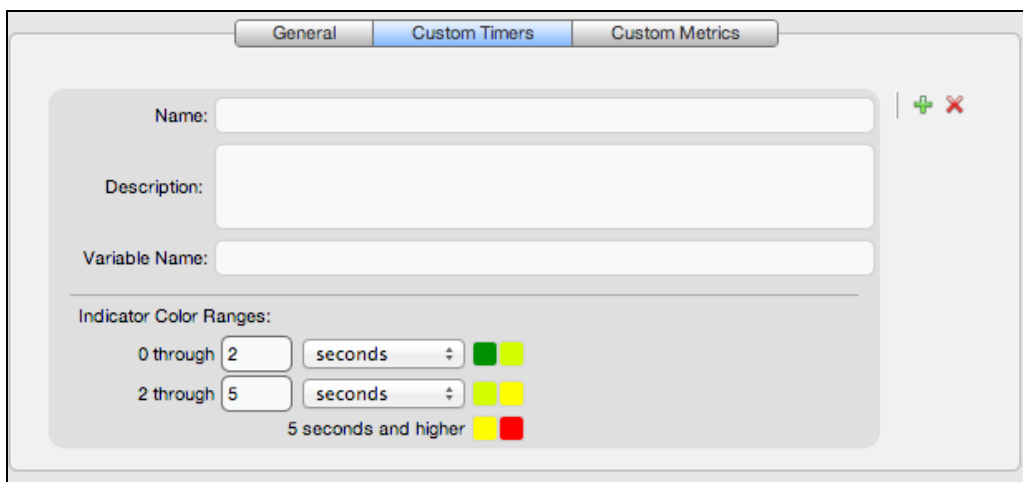
Once written and deployed, the Domain Admin can use the Configure Domain dialog box, Custom Timers tab to bind the plugin to a domain and create the Value for dashboard users to filter by. You will need the variable name for the given Custom Timer plugin.

A custom timer is deployed in your application or site. Once written, create an mPulse repository object for your custom timer to enable its selection by users in dashboard filters.

1. Login as the Domain Admin and click Central > Domains.
2. Locate your domain in the Domains list (or, perform custom timer setup while creating a new domain).
3. In the Configure Domain box, select the Custom Timers tab.
4. Press Click to add a new custom timer.



The Custom Timer form appears.



5. Give the new timer a name (e.g. something related to the name of your plugin, if not its variable name). Note that the name assigned here will appear for user selection in the Dashboard Edit Panel, Filters tab, Values drop-down.
6. Give the new timer an optional description.

Name:

Description:

Variable Name:

Indicator Color Ranges:

0 through	2	seconds	
2 through	5	seconds	
5 seconds and higher			

7. Assign the same variable name to the timer as you did in your plugin code.
8. Set the beacon indicator color range in seconds (or accept the default values shown above).

For domains with a custom timer defined, users can select the Filter tab in the dashboard (or with a widget selected) and then choose Timer to select the custom timer from among the default timers in the Value dropdown.

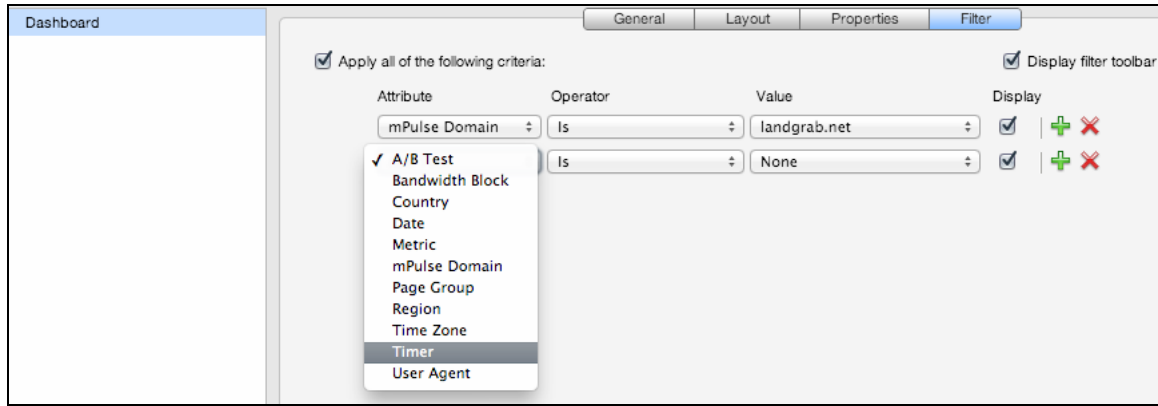
Example Custom Timer

This example plugin measures *something* either before or after boomerang loads, and will block beacon firing until the timer is ready. Attach events when you write your own plugin, set flags, etc.

```
(function() {  
  BOOMR = window.BOOMR || {};  
  BOOMR.plugins = BOOMR.plugins || {};  
  
  var complete = false;  
  var boomerang_loaded = false;  
  var whatever = function() {  
    // this is where you'd do your work.  Attach events, etc.  
  
    // the rest of this could be in a different function that's called at some point later  
    complete = true;  
    if(boomerang_loaded)  
      BOOMR.sendBeacon();  
  };  
  var add_timers = function() {  
    BOOMR.plugins.RT.setTimer("custom0", timer0_value_in_ms);  
    BOOMR.plugins.RT.setTimer("custom1", timer1_value_in_ms);  
  };  
  
  BOOMR.plugins.PluginName = {  
    init: function(config) {  
      // when this function is called, you know that boomerang has loaded,  
      // so maybe set a flag or call a method to set timers.  
  
      boomerang_loaded = true;  
    },  
  
    is_complete: function() {  
      if(complete)  
        add_timers(); // we can put this here because it's idempotent  
      return complete;  
    }  
  };  
  
})();
```

Custom Timer Filtering

- For dashboards with a custom timer defined, ensure that the correct domain is selected in the Filter tab, then choose Timer as the attribute and the custom timer from the Value dropdown.



Default Timer Attribute Values

The following values are now available when the Filter tab, Timer attribute is selected on a dashboard. Note that if you have also added a custom timer that its name will appear in the Values dropdown (i.e. if the domain to which you added it is *also* the selected domain in this dashboard or widget). These attribute values also appear at the widget level for each widget that accepts a timer. The Navigation Timing and Timers and Metrics widgets have their own timer checkboxes (refer to the New Widgets section for more information about timing checkboxes in these widgets) .

- Page Load** – Set a timer on the total page load (this includes frontend time, DOM loading, etc.).
- DNS Resolution** – Set a timer on the time to resolution (e.g. the time it takes to resolve a DNS name to its IP address)
- TCP Connection** – Set a timer on the transmission control protocol (TCP) connection in the session.
- SSL Handshake** – Set a timer on a Secure Sockets Layer handshake for apps that use authentication.
- First Byte** – Set a timer on the first byte received in a session.
- Front End Time** – Set a timer on the front-end time on the device. Frontend time is client-side time such as the additional time it takes to fully render any content.
- DOM Loading** – Set a timer on the time to load the DOM (e.g. after the client has finished loading all window frames, objects, and images).

- **DOM Ready** – Set a timer on the DOM ready status. This event represents the moment when the browser has fully processed the DOM structure of the HTML document.

Custom Metrics

This mPulse release supports the use of custom metrics written as Boomerang plugins. Custom metrics are user-defined values that refer to a business goal, or to a Key Performance Indicators (KPIs) such as revenue, conversion, orders per minute, widgets sold, etc. An example Custom Metric is provided in the sub-section below.

Custom Metrics tab

The Domain Admin user can now configure the use of a Boomerang plugin for custom metrics in this tab.

- To access the Configure Domain box, choose Central > Domains (requires Domain Admin privilege).

Configure Domain

General Custom Timers **Custom Metrics**

Name: LandGrab Score

Description: Player's overall score in all games.

Variable Name: mpulse_lgscore

Color Range:

Data Type: Number Sample: 12,345

Decimal Places: 0 ☒ Use Thousands Separator

Name: LG Coins

Description: How many LG coins does this user have currently.

Variable Name: mpulse_lgcoins

Color Range:

Data Type: Currency Sample: \$123.45

OK Cancel

Defining a Custom Metric

This mPulse release supports the use of custom metrics written as Boomerang plugins. Your metric can be added to your domain using the Configure Domain, Custom Metrics tab. An example of such a plugin is provided in the sub-section below.

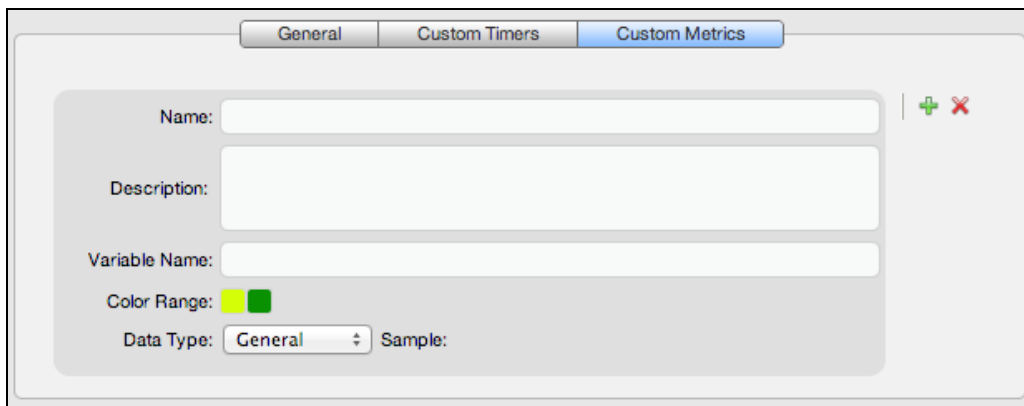
Once written and deployed, the Domain Admin can use the Configure Domain dialog box, Custom Timers tab to bind the plugin to a domain and create the Value for dashboard users to filter by. You will need the variable name for the given Custom Metric plugin.

A custom metric is deployed in your application or site. Once written, create an mPulse repository object for your custom metric to enable its selection by users in dashboard filters.

1. Login as the Domain Admin and click Central > Domains.
2. Locate your domain in the Domains list (or, perform custom timer setup while creating a new domain).
3. In the Configure Domain box, select the Custom Metrics tab.
4. Press Click to add a new metric.

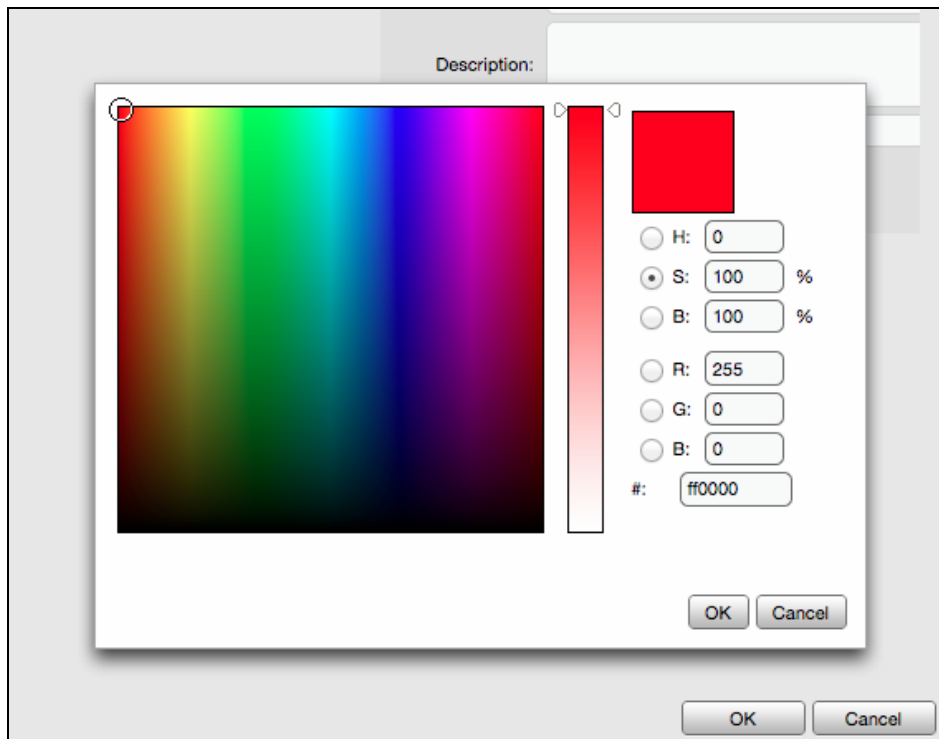


The Custom Metric form appears.



5. Give the new metric a name (e.g. something related to the name of your plugin, if not its variable name). Note that the name assigned here will appear for user selection in the Dashboard Edit Panel, Filters tab, Values drop-down.
6. Give the new metric an optional description.

7. Assign the same variable name to the timer as you did in your plugin code.
8. In the Color Range area, click the first Color Range box to set a starting color for the range.

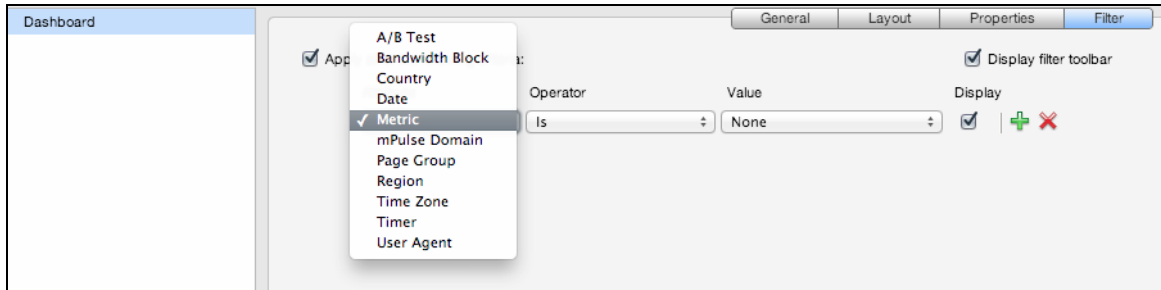


9. Set the ending value of the Color Range as well.
10. Assign the correct Data Type to your Custom Metric from among General, Number, Currency, or Percentage.

The completed form should look like this.

Custom Metric Filtering

- For widgets with a custom metric defined, ensure that the correct domain is selected in the Filter tab, and then choose Metric as the attribute and the custom metric from the Value dropdown.



Example Custom Metric

Define a Custom Metric variable in your page. This JavaScript variable name may be name spaced.

For example, use LOGN.cmet1 or custom_metric1. This variable must be globally readable.

```
LOGN = {}; // don't use var to ensure it's global  
LOGN.custom_metric1 = 10;
```

Aggregate APIs for mPulse

This release introduces Aggregate APIs for mPulse. This API is a unified REST API that allows mPulse customers to fetch aggregate data and receive a JSON response with mPulse data. New data sets, navigation timing, custom timers and metrics introduced in this release (Berlinetta) are supported.

Data for a given date is aggregated per minute for the given 24-hour period. Data returned will always be limited to one calendar day in the timezone. If the date is 'today' it is still aggregated per minute, only from midnight to the current time (e.g. the time of the query).

Note: For instance, the Summary widget shows the summary data for the whole day if it's before today or since midnight today. In this case, summary data is for all minutes on that day. Other instances where this is the case are widgets for page groups, browsers, A/B tests, and bandwidth.

For some charts, such as the Last 30 Days chart on the "Load Time vs. Page Views widget, it is necessary to call the Summary API 30 times (or the correct number of days for the given month) to get all the summary aggregate data for the time period.

Drilldowns are supported but not all combinations (mostly dimensions) are supported. For example, drilldowns by page groups + browsers + A/B tests are supported. When a drilldown by a combination is not supported, its response will contain no data.

This API uses HTTP in the following ways:

- HTTP Put is used to get a security token that is used in subsequent queries.
- HTTP Get is used to retrieve the aggregate data.

Authentication and Response Status Codes

To use the new REST APIs, callers will issue a request using the CloudTest URL to get a security token from the CloudTest instance via its RepositoryService at the following location:

`<CloudTest URL>/concerto/services/rest/RepositoryService/v1/Tokens`

TIP: Depending on the CloudTest instance and how it is setup you may need to append '/concerto' as part of your CloudTest URL while in other cases leaving it off will successfully connect to the login page

for that instance. Simply open your server in a browser and use the same URL found there.

For example (using curl):

```
curl -X PUT -H "Content-type: application/json" --data-binary
'{"userName":"<user name>", "password":"<password>"}'
http://<CloudTest URL>/services/rest/RepositoryService/v1/Tokens
```

Will get the response:

```
{"token": "d196b2e339b14e7bd283b12fc5dd9785f9ca9259"}
```

The security token's validity period is 5 hours of idleness

If the user name or password is invalid, an HTTP status code "401" (unauthorized) and empty response is returned.

Aggregate API Response Codes

The Aggregate API uses the following simple response status codes:

- 200 (OK)
- 400 (bad request)
- 401 (unauthorized)

Note: If the security token is invalid, HTTP status code "401" (unauthorized) and empty response will be returned. The token lasts 5 hours, if idle.

- 500 (internal error)

REST API URLs

Once a security token is acquired, it is used in all subsequent queries within the validity period.

The URLs for accessing the REST API use the token, the CloudTest instance, the domain, the query type(s), and any optional parameters that go with the query type, and take the following format:

```
/concerto/mpulse/api/<domain>/<query type>?<optional parameters>
```

If curl is used, the command line looks like this:

```
curl -H "Authentication: <security token>"
http://<host>:<port>/concerto/mpulse/api/<domain>/<query type>?<optional
parameters>
```

API Query Types

This Aggregate API has the following query type and query type parameters for collection of aggregate data.

- summary
- histogram
- sessions-per-page-load-time
- metric-per-page-load-time
- by-minute
- geography
- page-groups
- browsers
- bandwidth
- ab-tests
- timers-metrics (for navigation timing, custom timers, and custom metrics)
- metrics-by-dimension

Query Type Parameters

Use the following parameters to get the desired aggregate data.

Optional Query Type Parameters (All query types)

Date	The date parameter is specified in "YYYY-MM-DD" format (ISO 8601). The current day is assumed if it's absent.
timezone	The timezone parameter is specified as a string value, which must be the same as those on the drop-down list on the mPulse dashboard (default: UTC). Timezone names must be parse-able by Java (i.e. US/Eastern, Europe/London, Asia/Shanghai, etc.). The popular timezone names are listed here .
country	The country parameter is specified as the 2-character code; this parameter must be present if region is present.

<code>region</code>	The region parameter is specified as a 2-character code (i.e. a US state or Canadian province); used with country.
<code>page-group</code>	The page-group parameter is specified as the page group name on the given domain (e.g. where page groups are implemented for a given site use the exact page group's name).
<code>user-agent</code>	The user-agent parameter is specified as the browser's user agent string.
<code>test</code>	The test is specified as the A/B test name in use on the given domain.

metric-per-page-load-time Parameters

The metric-per-page-load-time query type has the following additional options by specifying the `metric` parameter:

- 'BounceRate' ('BounceRate' is the default if the parameter `metric` is absent.)
- A custom metric name must be specified. Up to ten custom metric names can be defined for a domain per customer.).

metrics-by-dimension Parameters

For the metrics-by-dimension query type, `dimension` is a required parameter.

Additional valid options are:

Additional options for metrics-by-dimension include:

- `page_group`
- `browser`
- `country`
- `bw_block`
- `ab_test`

bandwidth Parameters

For the bandwidth query type, specify the `bandwidth-block` parameter using one of the following valid options per request.

- 0 -- Less than 64Kbps
- 1 -- 64-512 Kbps
- 2 -- 512 Kbps - 2 Mbps

- 3 -- 2 - 6 Mbps
- 4 -- 6 - 10 Mbps
- 5 -- 10 - 100 Mbps
- 6 -- 100 - 1000 Mbps

For example, the following URL is for the summary data of the “64 – 512 Kbps” bandwidth block:

```
curl -H "Authentication: <token>" 'http://<CloudTest
URL>/concerto/mpulse/api/soasta.com/bandwidth?date=2013-05-10&bandwidth-
block=1'
```

JSON Response Formats

The default response format for this API is JSON.

All time values are in milliseconds unless noted otherwise.

Getting a Security Token

Specify a username and account to get the security token used in later queries.

```
curl -X PUT -H "Content-type: application/json" --data-binary
'{"userName":"<username>", "password":"<password>"}' http://<CloudTest
URL>/services/rest/RepositoryService/v1/Tokens
```

Will get the response:

```
{"token": "da7be4d72030656559f3e41a98924a6b2a544730"}
```

Use this token in each of the subsequent queries. Examples for each query type are provided below

Responses by Query Type

summary Query and Response

Note the time zone for the first example below is UTC while the second is PT.

UTC example:

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/summary?date=2013-05-10'
```

Will get the response:

```
{"median": "1539", "moe": "1410.7486366194114", "n": "2520", "p95": "13199", "p98": "52940"}
```

Pacific Time example:

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/summary?date=2013-05-10&timezone=US/Pacific'
```

Will get the response:

```
{"median": "1309", "moe": "1568.5234402570175", "n": "2264", "p95": "12449", "p98": "59999"}
```

Drilldown example

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This last example is a drilldown of summary accomplished by a combination of page group, user agent, and A/B test. The parameters of page group, user agent, and A/B test are in the URL.

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/summary?date=2013-05-
10&page-group=Home&user-agent=Chrome/26&test=B%20Test'
```

Will get the response:

```
{"median": "1799", "moe": "840.5539460033176", "n": "15", "p95": "3599", "p98": "
6927"}
```

histogram Query and Response

The following query,

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/histogram?date=2013-05-
10'
```

Will get the response:

```
{"chartTitle": "Number of
Samples", "chartTitleSuffix": null, "datasetName": "RumHistogram", "reportTyp
e": "RumHistogram", "resultName": "RumHistogram", "series": "{series:
[{name: \"Number of Samples\", aPoints:
[{s:130,e:140,c:1},{s:150,e:170,c:1},{s:210,e:230,c:3},{s:230,e:250,c:6}
,{s:250,e:300,c:16},
{s:300,e:350,c:28},{s:350,e:400,c:40},{s:400,e:450,c:54},{s:450,e:500,c:
56},{s:500,e:550,c:86},{s:550,e:600,c:62},{s:600,e:700,c:153},{s:700,e:8
00,c:133},
{s:800,e:900,c:105},{s:900,e:1050,c:148},{s:1050,e:1200,c:125},{s:1200,e
:1350,c:104},{s:1350,e:1500,c:111},{s:1500,e:1650,c:106},...,{s:300000,e
:450000,c:13},{s:450000,e:600001,c:3}], kValue: 150, buckets: 134}]}"}
```

Note: In the response, the names 's' and 'e' are start and end times of a bucket. The name 'c' is the beacon count.

sessions-per-page-load-time Query and Response

The following query,

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/sessions-per-page-load-
time?date=2013-05-10'
```

Will get the response:

```
{"chartTitle": "Sessions", "chartTitleSuffix": null, "datasetName": "RumSessi
onsPerPageLoadTime", "reportType": "RumSessionsPerPageLoadTime", "resultNam
e": "RumSessionsPerPageLoadTime", "series": "{series: [{name:
\"Sessions\", aPoints:
[{x:250,y:1},{x:300,y:1},{x:350,y:5},{x:400,y:0},{x:450,y:5},{x:500,y:5}
,{x:550,y:10},{x:600,y:30},{x:700,y:29},{x:800,y:24},
{x:900,y:33},{x:1050,y:42},{x:1200,y:26},{x:1350,y:27},{x:1500,y:45},{x:
1650,y:33},{x:1800,y:31},{x:1950,y:14},{x:2100,y:20},{x:2250,y:14},{x:24
00,y:17},{x:2550,y:20},
{x:2700,y:25},{x:2850,y:9},{x:3000,y:14},{x:3150,y:15},{x:3300,y:11},...
,{x:9000,y:1},{x:9300,y:2},{x:9600,y:2},{x:9900,y:0}],
pointCount:51,statistics:{yMin:0.0,yMax:45.0,ySum:604.0,yAvg:11.84}]}"}
```

Note: In the response, 'x' is load time and 'y' is beacon count.

metric-per-page-load-time Query and Response

If the optional parameter 'metric' is not present, then "BounceRate" is assumed.

The following query,

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/metric-per-page-load-
time?date=2013-05-10'
```

Will get the response:

```
{ "chartTitle": "Bounce
rate", "chartTitleSuffix": null, "datasetName": "RumBounceRatePerPageLoadTim
e", "reportType": "RumBounceRatePerPageLoadTime", "resultName": "RumBounceRa
tePerPageLoadTime", "series": "{series: [{name: \"Bounce Rate\", aPoints:
[{x:230,y:0.0},{x:250,y:0.0},{x:300,y:0.0},{x:350,y:0.0},{x:400,y:0.0},{
x:450,y:0.0},{x:500,y:0.0},{x:550,y:0.0},
{x:600,y:0.0},{x:700,y:0.0},{x:800,y:0.0},{x:900,y:0.0},{x:1050,y:26.315
78947368421},{x:1200,y:0.0},{x:1350,y:0.0},{x:1500,y:65.11627906976744},
{x:1650,y:77.41935483870968},{x:1800,y:0.0},{x:1950,y:0.0},..., {x:9900,y
:0.0}], pointCount:52, statistics:{yMin:0.0,yMax:77.41935483870968,ySum:16
8.85142338216133,yAvg:3.25}}] }" }
```

In the response, 'x' is load time and 'y' is the bounce rate. For instance, when load time is 1500 milliseconds or 1.5 seconds, the bounce rate is 65%.

The following example is for the custom metric 'DifferentMetric'. Use the "Metric Analysis" Dashboard to view the given custom metric on SOASTA's mPulse dashboard.

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/metric-per-page-load-
time?date=2013-05-10&metric=DifferentMetric'
```

Will get the response:

```
{ "chartTitle": "Bounce
rate", "chartTitleSuffix": null, "datasetName": "RumBounceRatePerPageLoadTim
e", "reportType": "RumBounceRatePerPageLoadTime", "resultName": "RumBounceRa
tePerPageLoadTime", "series": "{series: [{name: \"DifferentMetric\",
aPoints:
[{x:230,y:0.0},{x:250,y:0.0},{x:300,y:0.0},{x:350,y:0.0},{x:400,y:0.0},{
x:450,y:0.0},{x:500,y:0.0},{x:550,y:0.0},
{x:600,y:0.0},{x:700,y:0.0},{x:800,y:0.0},{x:900,y:0.0},{x:1050,y:0.0},{
x:1200,y:0.0},{x:1350,y:0.0},{x:1500,y:0.0},{x:1650,y:0.0},{x:1800,y:0.0
},{x:1950,y:0.0},
{x:2100,y:0.0},{x:2250,y:0.0},..., {x:9900,y:0.0}], pointCount:52, statisti
cs:{yMin:0.0,yMax:4.9E-324,ySum:0.0,yAvg:0.0}}] }" }
```

by-minute Query and Response

The following query,

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/by-minute?date=2013-05-10'
```

Will get the response:

```
{ "chartTitle": "Time in ms", "chartTitleSuffix": "per
Second", "datasetName": "RumPerMinuteLoadTimes", "reportType": "RumPerMinute
LoadTimes", "resultName": "RumPerMinuteLoadTimes", "series": "{series:
[{name: \"\", aPoints:
[{x:1368144000000,y:884,label:\"\",userdata:\"<br>Margin of Error:
<b>0s</b><br>Beacons: <b>1</b>\"},
{x:1368144120000,y:2265,label:\"\",userdata:\"<br>Margin of Error:
<b>0s</b><br>Beacons: <b>1</b>\"},
{x:1368144180000,y:799,label:\"\",userdata:\"<br>Margin of Error:
<b>0.654s</b><br>Beacons: <b>7</b>\"},
{x:1368144240000,y:1247,label:\"\",userdata:\"<br>Margin of Error:
<b>0s</b><br>Beacons: <b>1</b>\"}, ... ,
{x:1368230340000,y:541,label:\"\",userdata:\"<br>Margin of Error:
<b>0.31s</b><br>Beacons: <b>2</b>}],
pointCount:893,statistics:{yMin:291.0,yMax:360533.0,ySum:5401983.0,yAvg:
6049.25}}}" }
```

In the response, 'x' is the milliseconds since epoch (Jan. 1, 1970) in the particular time zone. It is the minute on the date. In the same response, 'y' is the load time by the minute. The time unit is milliseconds.

For instance, 1368144000000 is 12:00 AM on May 10, 2013 in UTC.

geography Query and Response

The following query,

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/geography?date=2013-05-10'
```

Will get the response:

```
{ "data": "[\"{\\\"region\\\":null,\\\"timerMOE\\\":\\\"5184.044836157274\\\"\\\",\\\"timerN\\\":\\\"3\\\",\\\"timerID\\\":\\\"PageLoad\\\",\\\"timerMedian\\\":\\\"6899\\\",\\\"country\\\":\\\"AP\\\"}\\\",\\\"{\\\"region\\\":null,\\\"timerMOE\\\":\\\"4860.454023977595\\\",\\\"timerN\\\":\\\"2\\\",\\\"timerID\\\":\\\"PageLoad\\\",\\\"timerMedian\\\":\\\"8099\\\",\\\"country\\\":\\\"AR\\\"}\\\", ... ,\\\"{\\\"region\\\":null,\\\"timerMOE\\\":\\\"7686.776579051528\\\",\\\"timerN\\\":\\\"99\\\",\\\"timerID\\\":\\\"PageLoad\\\",\\\"timerMedian\\\":\\\"1559\\\",\\\"country\\\":\\\"GB\\\"}\\\", ... ,\\\"{\\\"region\\\":null,\\\"timerMOE\\\":\\\"2323.954437125479\\\",\\\"timerN\\\":\\\"1101\\\",\\\"timerID\\\":\\\"PageLoad\\\",\\\"timerMedian\\\":\\\"1115\\\",\\\"country\\\":\\\"US\\\"}\\\",...}\" ]"
```

The following two additional examples show drilldowns by country and region. The first example is done for US and Kentucky (KY).

The following query,

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/geography?date=2013-05-10&country=US&region=KY'
```

Will get the response:

```
{ "data": [ [ { "region": "KY", "timerMOE": 1233.0071602691528, "timerN": 4, "timerID": "PageLoad", "timerMedian": 1499, "country": "US" } ] ] }
```

This second example is for Manchester (MN) in UK (GB).

The following query,

```
curl -H "Authentication: e7747ea4ef8de17cf1f85f8a2d2b97ff454f92d3"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/summary?date=2013-05-10&country=GB&region=MN'
```

Will get the response:

```
{ "median": "0", "moe": "447.3221159039646", "n": "20", "p95": "0", "p98": "0" }
```

Please refer to the country and region code list provided below for further explanation of using country and region codes with this API.

page-groups Query and Response

The first example below is for all page groups.

The following query,

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/page-groups?date=2013-05-10'
```

Will get the response:

```
{ "columnNames": [ "Page Group", "Median Time (ms)", "MoE (ms)", "Measurements" ], "data": [ [ [ "Other...", "1401", "1832.6238860839994", "1415" ], [ "Home", "1979", "3358.757554470734", "291" ], [ "CloudLink-Home", "760", "8559.61907470158", "147" ], [ "Solutions", "1469", "3898.009897484204", "136" ], [ "Knowledge Center", "2369", "657.0906750429908", "127" ], [ "Company", "1679", "2486.37998109181", "119" ], [ "Products", "1537", "3553.46931905977", "73" ], [ "CTL Download", "1439", "23461.788132263067", "70" ], [ "Customers", "1574", "422.40662585033317", "34" ], [ "CloudLink-Forums", "2399", "2546.6963088574053", "26" ] ] ] }
```

This second example shows how to drill down by the page group “Other...”.

The following query,

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/page-groups?date=2013-05-10&page-group=Other...'
```

Will get the response:

```
{ "columnNames": [ "Page Group", "Median Time (ms)", "MoE (ms)", "Measurements" ], "data": [ [ [ "Other...", "1979", "1832.6238860839994", "1415" ] ] ] }
```

browsers Query and Response

The following query,

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/browsers?date=2013-05-10'
```

Will get the response:

```
{ "columnNames": [ "\"User Agent\"", "\"Median Time (ms)\"", "\"MoE (ms)\"", "\"Measurements\"" ], "data": [
  [ "\"Chrome/26\"", "\"1378\"", "\"1720.725420589072\"", "\"1484\"",
  ],
  [ "\"Firefox/20\"", "\"1746\"", "\"4260.579469274893\"", "\"490\"",
  ],
  [ "\"IE/9\"", "\"2009\"", "\"1622.476918145682\"", "\"117\"",
  ],
  [ "\"Safari/6\"", "\"1521\"", "\"1360.4817578240484\"", "\"101\"",
  ],
  [ "\"IE/8\"", "\"2474\"", "\"1661.1823762028603\"", "\"62\"",
  ],
  [ "\"IE/10\"", "\"2099\"", "\"1367.2480806801561\"", "\"45\"",
  ],
  [ "\"Firefox/17\"", "\"1161\"", "\"296.4259139848743\"", "\"39\"",
  ],
  [ "\"IE Mobile/9\"", "\"38717\"", "\"0.0\"", "\"1\"",
  ],
  [ "\"Other/null\"", "\"15486\"", "\"0.0\"", "\"1\"",
  ],
  [ "\"Sogou Explorer/1\"", "\"6378\"", "\"0.0\"", "\"1\"",
  ] ] }
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/browsers?date=2013-05-10&user-agent=Chrome/26' { "columnNames": [ "\"User Agent\"", "\"Median Time (ms)\"", "\"MoE (ms)\"", "\"Measurements\"" ], "data": [
  [ "\"Chrome/26\"", "\"1378\"", "\"1720.725420589072\"", "\"1484\"",
  ] ] }
```

bandwidth Query Type examples

The following query,

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/bandwidth?date=2013-05-10'
```

Will get the response:

```
{ "chartTitle": "Bandwidth Blocks", "chartTitleSuffix": null, "datasetName": "RumBandwidth", "reportType": "RumBandwidth", "resultName": "RumBandwidth", "series": { "series": [ { "name": "RumBandwidth", "aPoints": [ { "x": "512 Kbps - 2 Mbps", "y": 681, "label": "512 Kbps - 2 Mbps" }, { "x": "10-100 Mbps", "y": 657, "label": "10-100 Mbps" }, { "x": "2-6 Mbps", "y": 637, "label": "2-6 Mbps" }, { "x": "6-10 Mbps", "y": 227, "label": "6-10 Mbps" }, { "x": "64-512 Kbps", "y": 150, "label": "64-512 Kbps" }, { "x": "100-1000 Mbps", "y": 139, "label": "100-1000 Mbps" }, { "x": "Less than 64 Kbps", "y": 4, "label": "Less than 64 Kbps" } ], "pointCount": 7, "statistics": { "yMin": 4.0, "yMax": 681.0, "ySum": 2495.0, "yAvg": 356.43 } } ] }
```

This second example shows how to drilldown by the bandwidth block "Less than 64 Kbps."

The following query,

```
curl -H "Authentication: da7be4d72030656559f3e41a98924a6b2a544730"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/bandwidth?date=2013-05-10&bandwidth-block=0'
```

```
{
  "chartTitle": "Bandwidth  
Blocks",
  "chartTitleSuffix": null,
  "datasetName": "RumBandwidth",
  "reportType": "RumBandwidth",
  "resultName": "RumBandwidth",
  "series": {
    "series": [
      {
        "name": "RumBandwidth",
        "aPoints": [
          {
            "x": "Less than 64 Kbps",
            "y": 4,
            "label": "Less than 64 Kbps"
          }
        ],
        "pointCount": 1,
        "statistics": {
          "yMin": 4.0,
          "yMax": 4.0,
          "ySum": 4.0,
          "yAvg": 4.0
        }
      }
    ]
  }
}
```

The following query,

Will get the response:

```
{ "columnNames": [ "Test Name\\", "Median Time (ms)\\", "MoE  
(ms)\\", "Measurements\\" ], "data": [ \\\"B  
Test\\\\\", \\\\\"2099\\\\\\\", \\\\\"6113.775304072621\\\\\\\", \\\\\"58\\\\\\\"]\\\", \\\"A  
Test\\\\\\\", \\\\\"2149\\\\\\\", \\\\\"2890.118864183374\\\\\\\", \\\\\"53\\\\\\\"]\\\" ] }
```

This query type is used for navigation timing, custom timers, and custom metrics. The response contains the navigation timing (such as PageLoad, DNS, DomLoad, etc.), up to ten custom timers and up to ten custom metrics that are specified for the domain. For example, if one custom timer is specified as "my timer 1" and two custom metrics are specified as "Conversion Rate" and "Revenue" for the domain soasta.com, the following query".

```
curl -H "Authentication: a9568d983584b2858cf34188f5cd285dfe11f6b0"
'<CloudTest URL>/concerto/mpulse/api/soasta.com/timers-
metrics?date=2013-05-10'
```

[illegible]

metrics-by-dimension Query and Response

```
curl -H "Authentication: 3c1ddf98e45eb714f9f60d78165181b49f0bbcea"
'<CloudTest URL>/concerto/mpulse/api/jho-test.com/metrics-by-
dimension?date=2013-05-08&dimension=page_group'
```

```
{ "columnNames": [ "\Page Group\","\Conversion
Rate","\Revenue\","\data": [ \["\\\"Home\\\",\\\"100\\\",\\\"0\\\"\\\",
\["\\\"Products\\\",\\\"120\\\",\\\"10\\\"\\\", ... ,
\["\\\"Support\\\",\\\"20\\\",\\\"0\\\"\\\" ] }
```

Aggregates API Country/Region Codes

The following country and region codes are valid for the mPulse Aggregates API

By Country

AW Aruba
AF Afghanistan
AO Angola
AI Anguilla
AL Albania
AX Aland
AD Andorra
AE United Arab Emirates
AR Argentina
AM Armenia
AS American Samoa
AQ Antarctica
TF Fr. S. Antarctic Lands
AG Antigua and Barb.
AU Australia
AT Austria
AZ Azerbaijan
BI Burundi
BE Belgium
BJ Benin
BF Burkina Faso
BD Bangladesh
BG Bulgaria
BH Bahrain
BS Bahamas
BA Bosnia and Herz.
BL St-Barthélemy
BY Belarus

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BZ Belize
BM Bermuda
BO Bolivia
BR Brazil
BB Barbados
BN Brunei
BT Bhutan
BW Botswana
CF Central African Rep.
CA Canada
CH Switzerland
CL Chile
CN China
CI Côte d'Ivoire
CM Cameroon
CD Dem. Rep. Congo
CG Congo
CK Cook Is.
CO Colombia
KM Comoros
CV Cape Verde
CR Costa Rica
CU Cuba
CW Curaçao
KY Cayman Is.
CY Cyprus
CZ Czech Rep.
DE Germany
DJ Djibouti
DM Dominica
DK Denmark
DO Dominican Rep.
DZ Algeria

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FK Falkland Is.
FR France
FO Faeroe Is.
FM Micronesia
GA Gabon
GB United Kingdom
GE Georgia
GG Guernsey
GH Ghana
GI Gibraltar
GN Guinea
GM Gambia
GW Guinea-Bissau
GQ Eq. Guinea
GR Greece
GD Grenada
GL Greenland
GT Guatemala
GU Guam
GY Guyana
HK Hong Kong
HM Heard I. and McDonald Is.
HN Honduras
HR Croatia
HT Haiti

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IE Ireland
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IQ Iraq
IS Iceland
IL Israel
IT Italy
JM Jamaica
JE Jersey
JO Jordan
JP Japan
KZ Kazakhstan
KE Kenya
KG Kyrgyzstan
KH Cambodia
KI Kiribati
KN St. Kitts and Nevis
KR Korea
KW Kuwait
LA Lao PDR
LB Lebanon
LR Liberia
LY Libya
LC Saint Lucia
LI Liechtenstein
LK Sri Lanka
LS Lesotho
LT Lithuania
LU Luxembourg

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LV Latvia
MO Macao
MF St-Martin
MA Morocco
MC Monaco
MD Moldova
MG Madagascar
MV Maldives
MX Mexico
MH Marshall Is.
MK Macedonia
ML Mali
MT Malta
MM Myanmar
ME Montenegro
MN Mongolia
MP N. Mariana Is.
MZ Mozambique
MR Mauritania
MS Montserrat
MU Mauritius
MW Malawi
MY Malaysia
NA Namibia
NC New Caledonia
NE Niger
NF Norfolk Island
NG Nigeria
NI Nicaragua
NU Niue
NL Netherlands
NO Norway
NP Nepal

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NR Nauru
NZ New Zealand
OM Oman
PK Pakistan
PA Panama
PN Pitcairn Is.
PE Peru
PH Philippines
PW Palau
PG Papua New Guinea
PL Poland
PR Puerto Rico
KP Dem. Rep. Korea
PT Portugal
PY Paraguay
PF Fr. Polynesia
QA Qatar
RO Romania
RU Russia
RW Rwanda
EH W. Sahara
SA Saudi Arabia
SD Sudan
SS S. Sudan
SN Senegal
SG Singapore
GS S. Geo. and S. Sandw. Is.
SH Saint Helena
SB Solomon Is.
SL Sierra Leone
SV El Salvador
SM San Marino
SO Somalia

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S1 Somaliland
PM St. Pierre and Miquelon
RS Serbia
ST São Tomé and Príncipe
SR Suriname
SK Slovakia
SI Slovenia
SE Sweden
SZ Swaziland
SX Sint Maarten
SC Seychelles
SY Syria
TC Turks and Caicos Is.
TD Chad
TG Togo
TH Thailand
TJ Tajikistan
TM Turkmenistan
TL Timor-Leste
TO Tonga
TT Trinidad and Tobago
TN Tunisia
TR Turkey
TV Tuvalu
TW Taiwan
TZ Tanzania
UG Uganda
UA Ukraine
UM U.S. Minor Outlying Is.
UY Uruguay
US United States
UZ Uzbekistan
VA Vatican

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VC St. Vin. and Gren.
VE Venezuela
VG British Virgin Is.
VI U.S. Virgin Is.
VN Vietnam
VU Vanuatu
WF Wallis and Futuna Is.
WS Samoa
YE Yemen
ZA South Africa
ZM Zambia
ZW Zimbabwe

By Country/Region

Use only the last two characters of the region codes from among the following.
For example, `BG` instead of `AF.BG` should be used for Badghis, Afghanistan.

`AF.BG` Badghis
`AF.HR` Hirat
`AF.BM` Bamyan
`AF.BK` Balkh
`AF.FB` Faryab
`AF.JW` Jawzjan
`AF.GR` Ghor
`AF.SP` Sari Pul
`AF.FH` Farah
`AF.HM` Hilmand
`AF.NM` Nimroz
`AF.OZ` Uruzgan
`AF.KD` Kandahar
`AF.ZB` Zabul
`AF.GZ` Ghazni
`AF.KT` Khost
`AF.PK` Paktika
`AF.BD` Badakhshan

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AF.NR Nuristan
AF.KR Kunar
AF.KZ Kunduz
AF.NG Nangarhar
AF.TK Takhar
AF.BL Baghlan
AF.KB Kabul
AF.KP Kapisa
AF.PV Parwan
AF.LA Laghman
AF.LW Logar
AF.PV Parwan
AF.SM Samangan
AF.VR Wardak
AF.PT Paktya
AO.LN Lunda Norte
AO.LS Lunda Sul
AO.ML Malanje
AO.BO Bengo
AO.CN Cuanza Norte
AO.CS Cuanza Sul
AO.LU Luanda
AO.UI Uíge
AO.ZA Zaire
AO.CB Cabinda
AO.BI Bié
AO.BG Benguela
AO.CC Cuando Cubango
AO.CU Cunene
AO.HM Huambo
AO.HL Huíla
AO.MX Moxico
AO.NA Namibe

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AL.DU Durrës
AL.FI Fier
AL.SD Shkodër
AL.KK Kukës
AL.VR Vlorë
AL.KE Korçë
AL.BE Berat
AL.EB Elbasan
AL.GK Gjirokastrë
AL.DB Dibër
AL.LZ Lezhë
AL.DU Durrës
AX.EC Finström
IR.HG Hormozgan
AE.RK Ras Al Khaymah
AE.UQ Umm Al Qaywayn
AE.FU Fujairah
AE.FU Neutral Zone
AE.AJ Ajman
AE.SH Sharjah
AE.AZ Abu Dhabi
AE.DU Dubai
AR.SC Santa Cruz
AR.TF Tierra del Fuego
AR.SJ San Juan
AR.CH Chubut
AR.MZ Mendoza
AR.NQ Neuquén
AR.DF Ciudad de Buenos Aires
AR.LP La Pampa
AR.RN Río Negro
AR.SL San Luis
AR.CB Córdoba

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AR.CT Catamarca
AR.JY Jujuy
AR.LR La Rioja
AR.SA Salta
AR.SE Santiago del Estero
AR.TM Tucumán
AR.CC Chaco
AR.FM Formosa
AR.CN Corrientes
AR.ER Entre Ríos
AR.SF Santa Fe
AR.MN Misiones
AM.AG Aragatsotn
AM.AV Armavir
AM.SH Shirak
AM.TV Tavush
AM.AR Ararat
AM.GR Gegharkunik
AM.KT Kotayk
AM.LO Lori
AM.ER Erevan
AM.SU Syunik
AM.VD Vayots Dzor
PG.WE Western
AU.JB Jervis Bay Territory
AU.NT Northern Territory
AU.WA Western Australia
AU.CT Australian Capital Territory
AU.NS New South Wales
AU.SA South Australia
AU.VI Victoria
AU.QL Queensland
AU.TS Tasmania

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AT.VO Vorarlberg
AT.BU Burgenland
AT.ST Steiermark
AT.KA Kärnten
AT.OO Oberösterreich
AT.SZ Salzburg
AT.TR Tirol
AT.NO Niederösterreich
AT.WI Wien
AZ.QZ Qazax
AZ.QZ Qazax
AZ.AF Agstafa
AZ.DS Daskasan
AZ.GD Gadabay
AZ.GA Ganca
AZ.XR Xanlar
AZ.GR Goranboy
AZ.KA Kalbacar
AZ.MI Mingacevir
AZ.QZ Qazax
AZ.SM S?mkir
AZ.SX Samux
AZ.TO Tovuz
AZ.YV Yevlax
AZ.BA Baki
AZ.AR Abseron
AZ.AM Agdam
AZ.AS Agdas
AZ.AU Agsu
AZ.AB Bayramli
AZ.AA Astara
AZ.BR Barda

AZ.BQ Beylaqan
AZ.BS Bilasuvar
AZ.CB Cabrayil
AZ.CL Calilabad
AZ.DV Davaci
AZ.FU Füzuli
AZ.GY Göyçay
AZ.IM Imisli
AZ.IS Ismayilli
AZ.KU Kurdamir
AZ.NE Astara
AZ.MA Masalli
AZ.LE Lerik
AZ.NE Neftçala
AZ.QO Qobustan
AZ.SY Siyazan
AZ.ST Saatli
AZ.SB Sabirabad
AZ.SL Salyan
AZ.SI Samaxi
AZ.SQ Sumqayit
AZ.UC Ucar
AZ.XI Xizi
AZ.YR Yardimli
AZ.ZR Zardab
AZ.AC Agcabadi
AZ.BL Balakan
AZ.QA Qabala
AZ.OG Oguz
AZ.QX Qax
AZ.SK Saki
AZ.QB Quba
AZ.QR Qusar

AZ.XZ Xaçmaz
AZ.ZQ Zaqatala
AZ.XD Xocavand
AZ.SU Lankaran
AZ.QD Qubadli
AZ.SU Susa
AZ.TA Tartar
AZ.XC Xocali
AZ.ZG Zangilan
AZ.SD Sederek
AZ.OR Ordubad
AZ.SR Sarurr
AZ.BB Babak
AZ.CF Culfa
AZ.NX Naxçıvan
AZ.SH Sahbuz
BI.CA Cankuzo
BI.KR Karuzi
BI.RT Rutana
BI.RY Ruyigi
BI.BB Bubanza
BI.BR Bururi
BI.CI Cibitoke
BI.GI Gitega
BI.KY Kayanza
BI.MA Makamba
BI.NG Ngozi
BI.KI Kirundo
BI.MY Musinga
BI.BM Bujumbura Mairie
BI.MV Muramvya
BE.BU Brussels
BE.VB Flemish Brabant

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BE.OV East Flanders
BJ.BO Borgou
BJ.AL Alibori
BJ.CL Collines
BJ.AQ Atlantique
BJ.LI Littoral
BJ.CF Kouffo
BJ.OU Ouémé
BJ.ZO Zou
BJ.PL Plateau
BJ.CF Mono
BJ.AK Atakora
BJ.DO Donga
BF.KP Kompienga
BF.GM Gourma
BF.HO Houet
BF.KN Kénédougou
BF.BW Banwa
BF.KS Kossi
BF.BA Balé
BF.MO Mou Houn
BF.OD Oudalan
BF.SM Soum
BF.NY Nayala
BF.SR Sourou
BF.BM Bam
BF.BK Boulkiemdé
BF.KW Kourwéogo
BF.BZ Bazéga
BF.KA Kadiogo
BF.OB Oubritenga
BF.PA Passoré
BF.ZM Zondoma

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BF.SG Sanguié
BF.SS Sissili
BF.ZR Ziro
BF.LO Loroum
BF.YT Yatenga
BF.NM Namentenga
BF.ST Sanmatenga
BF.BL Boulgou
BF.KL Koulpélogo
BF.GZ Ganzourgou
BF.KR Kouritenga
BF.NR Nahouri
BF.ZW Zoundwéogo
BF.BB Bougouriba
BF.IO Ioba
BF.TU Tuy
BF.LE Léraba
BF.KM Komoé
BF.PO Poni
BF.GG Gnagna
BF.KJ Komondjari
BF.SE Séno
BF.YG Yagha
BF.TA Tapoa
BD.DA Dhaka
BD.KH Khulna
BD.BA Barisal
BD.CG Chittagong
BD.SY Sylhet
BD.RJ Rajshahi
BG.SL Sliven
BG.KK Haskovo
BG.SZ Stara Zagora

BG.PZ Pazardzhik
BG.PD Plovdiv
BG.SM Smolyan
BG.KZ Kardzhali
BG.SG Grad Sofiya
BG.SF Sofia
BG.PN Pernik
BG.GB Gabrovo
BG.LV Lovech
BG.PV Pleven
BG.VT Veliko Tarnovo
BG.MT Montana
BG.VR Vratsa
BG.KY Kyustendil
BG.VD Vidin
BG.BR Burgas
BG.YA Yambol
BG.RG Razgrad
BG.TU Targovishte
BG.SH Shumen
BG.DO Dobrich
BG.VN Varna
BG.SI Silistra
BG.RS Ruse
BG.BL Blagoevgrad
BA.BF West Bosnia
BA.BF Una-Sana
BA.BF Central Bosnia
BA.BF West Herzegovina
BA.BF Herzegovina-Neretva
BA.BF Tuzla
BA.SR Serbian Republic
BA.BF Zenica-Doboj

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BA.BF Sarajevo
BA.BF Bosnian Podrinje
BA.SR Posavina
BA.SR Posavina
BY.BR Brest
BY.HO Homyel'
BY.MA Mahilyow
BY.VI Vitsyebsk
BY.HR Hrodna
BY.MI Minsk
BZ.BZ Belize
BZ.CY Cayo
BZ.CZ Corozal
BZ.OW Orange Walk
BZ.SC Stann Creek
BZ.TO Toledo
BO.CB Cochabamba
BO.CQ Chuquisaca
BO.EB El Beni
BO.LP La Paz
BO.OR Oruro
BO.PA Pando
BO.PO Potosí
BO.SC Santa Cruz
BO.TR Tarija
BR.GO Goiás
BR.SP São Paulo
BR.PE Pernambuco
BR. Acre
BR.AM Amazonas
BR.MA Maranhão
BR.PA Pará
BR. Rondônia

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BR.TO Tocantins
BR.DF Distrito Federal
BR.MS Mato Grosso do Sul
BR.MG Minas Gerais
BR.MT Mato Grosso
BR.RS Rio Grande do Sul
BR.PR Paraná
BR.SC Santa Catarina
BR.CE Ceará
BR.PI Piauí
BR.AL Alagoas
BR.BA Bahia
BR.ES Espírito Santo
BR.PB Paraíba
BR.RJ Rio de Janeiro
BR.RN Rio Grande do Norte
BR.SE Sergipe
BR.RR Roraima
BR.AP Amapá
BB.CC Christ Church
BB.AN Saint Andrew
BB.GE Saint George
BB.JM Saint James
BB.JN Saint John
BB.JS Saint Joseph
BB.LU Saint Lucy
BB.MI Saint Michael
BB.PE Saint Peter
BB.PH Saint Philip
BB.TH Saint Thomas
BN.BE Belait
BN.BM Brunei and Muara
BN.TE Temburong

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BN.TU Tutong
BT.CK Chhukha
BT.DA Daga
BT.HA Ha
BT.PR Paro
BT.GA Gasas
BT.SM Samchi
BT.TM Thimphu
BT.PN Punakha
BT.BU Bumthang
BT.CR Chirang
BT.GE Geylegphug
BT.LH Lhuntshi
BT.TY Tashi Yangtse
BT.SG Shemgang
BT.TO Tongsa
BT.WP Wangdi Phodrang
BT.MO Mongar
BT.PM Pemagatsel
BT.SJ Samdrup Jongkhar
BT.TA Tashigang
BW.GH Ghanzi
BW.KG Kgalagadi
BW.NW North-West
BW.CE Central
BW.KL Kgatleng
BW.KW Kweneng
BW.SE South-East
BW.SO Southern
CF.BG Bangui
CF.BK Basse-Kotto
CF.LB Lobaye
CF.HS Mambéré-Kadéï

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CF.SE Sangha-Mbaéré
CF.NM Nana-Mambéré
CF.OP Ouham-Pendé
CF.BB Bamingui-Bangoran
CF.KB Nana-Grébizi
CF.KG Kémo
CF.UK Ouaka
CF.AC Ouham
CF.VK Vakaga
CF.HK Haute-Kotto
CF.HM Haut-Mbomou
CF.MB Mbomou
CA.MB Manitoba
CA.SK Saskatchewan
CA.AB Alberta
CA.BC British Columbia
CA.NU Nunavut
CA.NT Northwest Territories
CA.YT Yukon
CA.ON Ontario
CA.QC Québec
CA.NB New Brunswick
CA.NS Nova Scotia
CA.NF Newfoundland and Labrador
CA.PE Prince Edward Island
CH.GE Genève
CH.JU Jura
CH.NE Neuchâtel
CH.AG Aargau
CH.LU Lucerne
CH.NW Nidwalden
CH.VS Valais
CH.AR Appenzell Ausserrhoden

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CH.SG Sankt Gallen
CH.TI Ticino
CH.GL Glarus
CH.GR Graubünden
CH.SH Schaffhausen
CH.SH Schaffhausen
CH.SZ Schwyz
CH.TG Thurgau
CH.UR Uri
CH.ZH Zürich
CH.ZG Zug
CH.FR Fribourg
CH.VD Vaud
CH.BS Basel-Landschaft
CH.BE Bern
CH.BS Basel-Stadt
CH.NW Obwalden
CH.AI Appenzell Innerrhoden
CL.AI Aisén del General Carlos Ibáñez del Campo
CL.MA Magallanes y Antártica Chilena
CL.TA Tarapacá
CL.AN Antofagasta
CL.AT Atacama
CL.CO Coquimbo
CL.RM Región Metropolitana de Santiago
CL.VS Valparaíso
CL.AR La Araucanía
CL.AR Los Ríos
CL.BI Bío-Bío
CL.LI Libertador General Bernardo O'Higgins
CL.LL Los Lagos
CL.ML Maule
CN.GS Gansu

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CN.QH Qinghai
CN.GX Guangxi
CN.GZ Guizhou
CN.CQ Chongqing
CN.BJ Beijing
CN.FJ Fujian
CN.AH Anhui
CN.GD Guangdong
CN.XZ Xizang
CN.XJ Xinjiang
CN.HA Hainan
CN.NX Ningxia
CN.SA Shaanxi
CN.SX Shanxi
CN.HU Hubei
CN.HN Hunan
CN.SC Sichuan
CN.YN Yunnan
CN.HB Hebei
CN.HE Henan
CN.LN Liaoning
CN.SD Shandong
CN.TJ Tianjin
CN.JX Jiangxi
CN.JS Jiangsu
CN.SH Shanghai
CN.ZJ Zhejiang
CN.JL Jilin
CN.NM Inner Mongol
CN.HL Heilongjiang
CI.DE Denguéle
CI.BF Bafing
CI.DH.BA Dix-Huit Montagnes

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CI.WR Worodougou
CI.MR.ZU Marahoué
CI.FR Fromager
CI.SB.LA Sud-Bandama
CI.BS.SO Bas-Sassandra
CI.ZA Zanzan
CI.VB Vallée du Bandama
CI.AG.AV Agnéby
CI.NC.BG N'zi-Comoé
CI.LG.AB Lagunes
CI.LC.TM Lacs
CI.SC Sud-Comoé
CM.EN Extrême-Nord
CM.LT Littoral
CM.NW Nord-Ouest
CM.CE Centre
CM.ES Est
CM.AD Adamaoua
CM.NO Nord
CM.OU Ouest
CM.SW Sud-Ouest
CM.SU Sud
CY.NI Nicosia
CY.FA Famagusta
CD.EQ Équateur
CD.HC Orientale
CD.BN Bandundu
CD.KC Kasai-Occidental
CD.BC Bas-Congo
CD.KN Kinshasa City
CD.KV Sud-Kivu
CD.KR Kasai-Oriental
CD.KT Katanga

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CG.CO Cuvette-Ouest
CG.BO Bouenza
CG.LI Likouala
CG.SA Sangha
CG.PO Pool
CG.CU Cuvette
CG.KO Kouilou
CG.LE Lékoumou
CG.NI Niari
CG.PL Plateaux
CO.AM Amazonas
CO.AN Antioquia
CO.BY Boyacá
CO.CO Córdoba
CO.ST Santander
CO.LG La Guajira
CO.SA San Andrés y Providencia
CO.CL Caldas
CO.CU Cundinamarca
CO.CU Bogota
CO.QD Quindío
CO.RI Risaralda
CO.TO Tolima
CO.CQ Caquetá
CO.CA Cauca
CO.HU Huila
CO.NA Nariño
CO.PU Putumayo
CO.VC Valle del Cauca
CO.AT Atlántico
CO.BL Bolívar
CO.CE Cesar
CO.CH Chocó

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CO.MA Magdalena
CO.SU Sucre
CO.AR Arauca
CO.NS Norte de Santander
CO.CS Casanare
CO.GV Guaviare
CO.GN Guainía
CO.ME Meta
CO.VP Vaupés
CO.VD Vichada
CR.CA Cartago
CR.HE Heredia
CR.LI Limón
CR.PU Puntarenas
CR.SJ San José
CR.AL Alajuela
CR.GU Guanacaste
CU.CF Cienfuegos
CU.IJ Isla de la Juventud
CU.PR Pinar del Río
CU.SS Sancti Spíritus
CU.CA Ciego de Ávila
CU.CM Camagüey
CU.GU Guantánamo
CU.GR Granma
CU.HO Holguín
CU.LT Las Tunas
CU.SC Santiago de Cuba
CU.CH Ciudad de la Habana
CU.LH La Habana
CU.MA Matanzas
CU.VC Villa Clara
CY.LA Larnaca

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CY.NI Nicosia
CY.PA Paphos
CY.FA Famagusta
CY.LI Limassol
CZ.KK Karlovarský
CZ.CK Jihoceský
CZ.JK Vysocina
CZ.SK Prague
CZ.SK Stredoceský
CZ.LK Liberecký
CZ.HK Královéhradecký
CZ.VK Moravskoslezský
DE.NW Nordrhein-Westfalen
DE.BW Baden-Württemberg
DE.HE Hessen
DE.HB Bremen
DE.NI Niedersachsen
DE.TH Thüringen
DE.HH Hamburg
DE.SH Schleswig-Holstein
DE.RP Rheinland-Pfalz
DE.SL Saarland
DE.BY Bayern
DE.BE Berlin
DE.ST Sachsen-Anhalt
DE.SN Sachsen
DE.MV Mecklenburg-Vorpommern
DJ.AS Ali Sabieh
DJ.DB Djibouti
DJ.DK Dikhil
DJ.OB Obock
DJ.TA Tadjourah
DM.AN Saint Andrew

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DM.DA Saint David
DM.GO Saint George
DM.JN Saint John
DM.JH Saint Joseph
DM.LU Saint Luke
DM.MA Saint Mark
DM.PK Saint Patrick
DM.PL Saint Paul
DM.PR Saint Peter
DK.MJ Midtjylland
DK.SD Syddanmark
DK.ND Nordjylland
DK.HS Hovedstaden
DK.SL Sjælland
DO.ST Santiago
DO.SR Santiago Rodríguez
DO.VA Valverde
DO.JU San Juan
DO.SD Santo Domingo
DO.SZ Sánchez Ramírez
DO.PM San Pedro de Macorís
DO.MC Monte Cristi
DO.PP Puerto Plata
DO.DA Dajabón
DO.ES Espaillat
DO.BR Bahoruco
DO.BH Barahona
DO.IN Independencia
DO.EP La Estrelleta
DO.PN Pedernales
DO.AZ Azua
DO.VE La Vega
DO.MN Monseñor Nouel

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DO.PV Peravia
DO.JO San José de Ocoa
DO.DU Duarte
DO.HM Hato Mayor
DO.MP Monte Plata
DO.MT María Trinidad Sánchez
DO.SM Samaná
DO.CR San Cristóbal
DO.NC Distrito Nacional
DO.SE El Seybo
DO.AL La Altagracia
DO.RO La Romana
DZ.AR Adrar
DZ.AT Aïn Témouchent
DZ.OR Oran
DZ.SB Sidi Bel Abbès
DZ.TL Tlemcen
DZ.BC Béchar
DZ.NA Naâma
DZ.TN Tindouf
DZ.AN Annaba
DZ.ET El Tarf
DZ.JJ Jijel
DZ.SK Skikda
DZ.IL Illizi
DZ.TM Tamanghasset
DZ.EB El Bayadh
DZ.GR Ghardaïa
DZ.LG Laghouat
DZ.OG Ouargla
DZ.AL Alger
DZ.BM Boumerdès
DZ.TO Tizi Ouzou

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DZ.TP Tipaza
DZ.AD Ain Defla
DZ.CH Chlef
DZ.MC Mascara
DZ.MG Mostaganem
DZ.RE Relizane
DZ.SD Saïda
DZ.TR Tiaret
DZ.TS Tissemsilt
DZ.BB Bordj Bou Arréridj
DZ.BJ Béjaïa
DZ.BL Blida
DZ.BU Bouira
DZ.BS Biskra
DZ.DJ Djelfa
DZ.MD Médéa
DZ.MS M'Sila
DZ.SF Sétif
DZ.BT Batna
DZ.CO Constantine
DZ.GL Guelma
DZ.KH Khenchela
DZ.ML Mila
DZ.OB Oum el Bouaghi
DZ.SA Souk Ahras
DZ.TB Tébessa
EC.AZ Azuay
EC.EO El Oro
EC.LJ Loja
EC.ZC Zamora Chinchipe
EC.GA Galápagos
EC.BO Bolívar
EC.CN Cañar

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EC.CT Cotopaxi
EC.GU Guayas
EC.LR Los Rios
EC.MN Manabi
EC.CB Chimborazo
EC.MS Morona Santiago
EC.NA Orellana
EC.PI Pichincha
EC.PA Pastaza
EC.TU Tungurahua
EC.ES Esmeraldas
EC.CR Carchi
EC.IM Imbabura
EC.SU Sucumbios
EG.GH Al Gharbiyah
EG.IS Al Isma`iliyah
EG.MF Al Minufiyah
EG.QH Al Qahirah
EG.QL Al Qalyubiyah
EG.SQ Ash Sharqiyah
EG.SW As Suways
EG.DQ Ad Daqahliyah
EG.BS Bur Sa`id
EG.DT Dumyat
EG.MT Matruh
EG.BH Al Buhayrah
EG.FY Al Fayyum
EG.IK Al Iskandariyah
EG.JZ Al Jizah
EG.MN Al Minya
EG.BN Bani Suwayf
EG.KS Kafr ash Shaykh
EG.AN Aswan

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EG.AT Asyut
EG.QN Qina
EG.SJ Suhaj
EG.BA Al Bahr al Ahmar
EG.JS Janub Sina'
EG.SS Shamal Sina'
SA.TB Tabuk
ER.GB Gash Barka
ER.AN Anseba
ER.DU Debub
ER.SK Semenawi Keyih Bahri
ER.MA Maekel
ER.DK Debubawi Keyih Bahri
ES.CT Cataluña
ES.AR Aragón
ES.NA Comunidad Foral de Navarra
ES.VC Comunidad Valenciana
ES.MU Región de Murcia
ES.CE Ceuta
ES.CE Melilla
ES.AS Principado de Asturias
ES.GA Galicia
ES.EX Extremadura
ES.LO La Rioja
ES.PV País Vasco
ES.AN Andalucía
ES.PM Islas Baleares
ES.CM Castilla-La Mancha
ES.CB Cantabria
ES.CL Castilla y León
ES.MD Comunidad de Madrid
EE.HA Harju
EE.IV Ida-Viru

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EE.JR Järva
EE.JN Jõgeva
EE.LV Lääne-Viru
EE.TA Tartu
EE.HI Hiiu
EE.LN Lääne
EE.PR Pärnu
EE.PL Põlva
EE.RA Rapla
EE.VG Valga
EE.VD Viljandi
EE.VR Võru
EE.SA Saare
ET.AM Amhara
ET.TI Tigray
ET.AF Afar
ET.SN Southern Nations, Nationalities and Peoples
ET.GA Gambela Peoples
ET.AA Addis Ababa
ET.BE Benshangul-Gumaz
ET.AA Addis Ababa
ET.SO Somali
ET.DD Dire Dawa
ET.HA Harari People
FJ.CE Central
FJ.CE Eastern
FJ.W Northern
FJ.W Western
FJ.RO Rotuma
FR.RA Rhône-Alpes
GF.CY French Guiana
FR.BN Basse-Normandie
FR.BT Bretagne

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FR.PT Poitou-Charentes
FR.PL Pays de la Loire
FR.AQ Aquitaine
FR.CE Corse
FR.PR Provence-Alpes-Côte-d'Azur
FR.LU Languedoc-Roussillon
FR.MP Midi-Pyrénées
FR.AU Auvergne
FR.BG Bourgogne
FR.CN Centre
FR.HT Haute-Normandie
FR.IF Île-de-France
FR.LM Limousin
FR.CG Champagne-Ardenne
FR.NP Nord-Pas-de-Calais
FR.PI Picardie
FR.FC Franche-Comté
FR.AA Alsace
FR.LE Lorraine
FO.OS Eysturoyar
GA.ES Estuaire
GA.OI Ogooué-Ivindo
GA.WN Wouleu-Ntem
GA.MO Moyen-Ogooué
GA.NG Ngounié
GA.NY Nyanga
GA.OM Ogooué-Maritime
GA.HO Haut-Ogooué
GA.OL Ogooué-Lolo
GB.EA East Ayrshire
GB.ED East Dunbartonshire
GB.ER East Renfrewshire
GB.GG Glasgow

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GB.IC Inverclyde
GB.ED North Ayrshire
GB.NN North Lanarkshire
GB.RF Renfrewshire
GB.SA South Ayrshire
GB.SL South Lanarkshire
GB.WD West Dunbartonshire
GB.AR Aberdeen
GB.AS Aberdeenshire
GB.MO Moray
GB.FK Falkirk
GB.ZG Stirling
GB.CC Clackmannanshire
GB.AG Angus
GB.DU Dundee
GB.FI Fife
GB.EL East Lothian
GB.EB Edinburgh
GB.ML Midlothian
GB.WH West Lothian
GB.BO Scottish Borders
GB.TW Tyne and Wear
GB.DA Darlington
GB.DH Durham
GB.HP Hartlepool
GB.MB Middlesbrough
GB.RC Redcar and Cleveland
GB.ZT Stockton-on-Tees
GB.NB Northumberland
GB.HA Hampshire
GB.ZH Southampton
GB.WM West Midlands
GB.MK Milton Keynes

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GB.GC Gloucestershire
GB.BU Buckinghamshire
GB.BD Bedfordshire
GB.HT Hertfordshire
GB.BN Bath and North East Somerset
GB.BS Bristol
GB.NS North Somerset
GB.SJ South Gloucestershire
GB.SM Somerset
GB.DO Devon
GB.BK Berkshire
GB.BM Bournemouth
GB.DS Dorset
GB.BM Poole
GB.CM Cambridgeshire
GB.KH Kingston upon Hull
GB.NE North East Lincolnshire
GB.NL North Lincolnshire
GB.DE Derby
GB.DB Derbyshire
GB.BA Barking and Dagenham
GB.XB Bexley
GB.BE Brent
GB.BZ Bromley
GB.CN Camden
GB.CY Croydon
GB.EG Ealing
GB.EF Enfield
GB.GR Greenwich
GB.HF Hammersmith and Fulham
GB.HU Hounslow
GB.IT Islington
GB.KC Kensington and Chelsea

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GB.ME Merton
GB.RB Redbridge
GB.RU Richmond upon Thames
GB.SU Sutton
GB.TH Tower Hamlets
GB.WF Waltham Forest
GB.WW Wandsworth
GB.WE Westminster
GB.LI Lincolnshire
GB.BF Belfast
GB.LD Derry
GB.OM Omagh
GB.AM Armagh
GB.NM Newry and Mourne
GB.BB Banbridge
GB.CR Craigavon
GB.DN Dungannon
GB.LB Lisburn
GB.AN Antrim
GB.MF Magherafelt
GB.BL Ballymena
GB.LR Larne
GB.CF Carrickfergus
GB.NW Newtownabbey
GB.ND North Down
GB.DW Down
GB.CL Coleraine
GB.BY Ballymoney
GB.LM Limavady
GB.CS Castlereagh
GB.CI Carmarthenshire
GB.PE Pembrokeshire
GB.MS Merseyside

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GB.HL Halton
GB.CH Cheshire
GB.CO Cornwall
GB.PO Powys
GB.BJ Bridgend
GB.CP Caerphilly
GB.MT Merthyr Tydfil
GB.RT Rhondda, Cynon, Taff
GB.CA Cardiff
GB.VG Vale of Glamorgan
GB.NP Neath Port Talbot
GB.SW Swansea
GB.YK York
GB.TK Telford and Wrekin
GB.BW Blackburn with Darwen
GB.LA Lancashire
GB.EY East Riding of Yorkshire
GB.DI Denbighshire
GB.FL Flintshire
GB.WX Wrexham
GB.AY Anglesey
GB.CW Conwy
GB.GD Gwynedd
GB.BG Blaenau Gwent
GB.MM Monmouthshire
GB.NO Newport
GB.TF Torfaen
GB.SB Strabane
GB.FE Fermanagh
GB.ND Ards
GB.DG Dumfries and Galloway
GB.CU Cumbria
GB.NY North Yorkshire

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GB.DO Plymouth
GB.TB Torbay
GB.EX Essex
GB.SF Suffolk
GB.NF Norfolk
GB.BH Brighton and Hove
GB.HV Havering
GB.TR Thurrock
GB.ES East Sussex
GB.MW Medway
GB.SS Southend-on-Sea
GB.MO Moray
GB.HI Highland
GB.AB Argyll and Bute
GB.AR Shetland Islands
GB.WS West Sussex
GB.NA Northamptonshire
GB.WR Warwickshire
GB.OX Oxfordshire
GB.LU Luton
GB.HD Hillingdon
GB.KT Kingston upon Thames
GB.SR Surrey
GB.SN Swindon
GB.WL Wiltshire
GB.IW Isle of Wight
GB.PS Portsmouth
GB.PB Peterborough
GB.LC Leicester
GB.RL Rutland
GB.NG Nottingham
GB.NT Nottinghamshire
GB.HK Hackney

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GB.HY Haringey
GB.HR Harrow
GB.LT Lambeth
GB.LW Lewisham
GB.NH Newham
GB.SQ Southwark
GB.WI Eilean Siar
GB.MY Moyle
GB.WT Warrington
GB.HE Herefordshire
GB.WC Worcestershire
GB.ST Staffordshire
GB.SO Stoke-on-Trent
GB.SP Shropshire
GB.WY West Yorkshire
GB.MN Manchester
GB.SY South Yorkshire
GB.KE Kent
GE.AB Abkhazia
GE.AJ Ajaria
GE.GU Guria
GE.SZ Samegrelo-Zemo Svaneti
GE.IM Imereti
GE.KA Kakheti
GE.MM Mtskheta-Mtianeti
GE.RK Racha-Lechkhumi-Kvemo Svaneti
GE.TB Tbilisi
GE.KK Kvemo Kartli
GE.SJ Samtskhe-Javakheti
GE.SD Shida Kartli
GH.NP Northern
GH.UE Upper East
GH.UW Upper West

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GH.AH Ashanti
GH.BA Brong Ahafo
GH.CP Central
GH.EP Eastern
GH.WP Western
GH.AA Greater Accra
GH.TV Volta
GM.MC Maccarthy Island
GM.UR Upper River
GM.BJ Banjul
GM.LR Lower River
GW.BS Bissau
GW.BL Bolama
GW.CA Cacheu
GW.OI Oio
GW.QU Quinara
GW.BA Bafatá
GW.GA Gabú
GW.TO Tombali
GQ.AN Annobón
GQ.CS Centro Sur
GQ.KN Kié-Ntem
GQ.LI Litoral
GQ.WN Wele-Nzás
GQ.BN Bioko Norte
GQ.BS Bioko Sur
GR.II Ionioi Nisoí
GR.AT Attiki
GR.PP Peloponnisos
GR.GW Dytiki Ellada
GR.MW Dytiki Makedonia
GR.TS Thessalia
GR.EP Ipeiros

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GR.AN Voreio Aigaio
GR.GC Stereá Elláda
GR.CR Kriti
GR.MC Kentriki Makedonia
GR.MA Ayion Oros
GR.MT Anatoliki Makedonia kai Thraki
GR.AS Notio Aigaio
GL.VG Pituffik
GL.VG Kommuneqarfik Sermersooq
GL.VG Kommune Kujalleq
GL.VG Qeqqata Kommunia
GL.NG Nationalparken
GL.NG Qaasuitsup Kommunia
GT.BV Baja Verapaz
GT.HU Huehuetenango
GT.PE Petén
GT.QZ Quezaltenango
GT.RE Retalhuleu
GT.SM San Marcos
GT.AV Alta Verapaz
GT.CM Chimaltenango
GT.ES Escuintla
GT.GU Guatemala
GT.SU Suchitepéquez
GT.SA Sacatepéquez
GT.SO Sololá
GT.TO Totonicapán
GT.PR El Progreso
GT.SR Santa Rosa
GT.IZ Izabal
GT.CQ Chiquimula
GT.JA Jalapa
GT.JU Jutiapa

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GT.ZA Zacapa
GT.QC Quiché
GY.MA Mahaica-Berbice
GY.PT Potaro-Siparuni
GY.UT Upper Takutu-Upper Essequibo
GY.UD Upper Demerara-Berbice
GY.BA Barima-Waini
GY.PM Pomeroon-Supenaam
GY.EB East Berbice-Corentyne
GY.DE Demerara-Mahaica
GY.ES Essequibo Islands-West Demerara
GY.CU Cuyuni-Mazaruni
SV.UN La Unión
HN.AT Atlántida
HN.CL Colón
HN.FM Francisco Morazán
HN.GD Gracias a Dios
HN.IB Islas de la Bahía
HN.OL Olancho
HN.YO Yoro
HN.VA Valle
HN.CM Comayagua
HN.CR Cortés
HN.IN Intibucá
HN.LP La Paz
HN.SB Santa Bárbara
HN.CP Copán
HN.LE Lempira
HN.OC Ocotepeque
HN.CH Choluteca
HN.EP El Paraíso
HR.DN Dubrovacko-Neretvanska

HR.SB Šibensko-Kninska
HR.SD Splitsko-Dalmatinska
HR.ZD Zadarska
HR.KZ Krapinsko-Zagorska
HR.KA Karlovačka
HR.LS Licko-Senjska
HR.PG Primorsko-Goranska
HR.SM Sisacko-Moslavacka
HR.ZG Zagrebacka
HR.GZ Grad Zagreb
HR.IS Istarska
HR.SP Brodsko-Posavska
HR.OB Osječko-Baranjska
HR.SP Brodsko-Posavska
HR.VS Vukovarsko-Srijemska
HR.VP Viroviticko-Podravska
HR.BB Bjelovarska-Bilogorska
HR.KK Koprivničko-Križevačka
HR.ME Međimurska
HR.VA Varaždinska
HR.GZ Grad Zagreb
HT.GR Grand'Anse
HT.NI Nippes
HT.NO Nord-Ouest
HT.SD Sud
HT.AR L'Artibonite
HT.CE Centre
HT.NE Nord-Est
HT.ND Nord
HT.OU Ouest
HT.SE Sud-Est
HU.VA Vas

HU.BA Baranya
HU.GS Győr-Moson-Sopron
HU.SO Somogy
HU.VE Veszprém
HU.ZA Zala
HU.BU Budapest
HU.BK Bács-Kiskun
HU.FE Fejér
HU.KE Komárom-Esztergom
HU.PE Pest
HU.TO Tolna
HU.NO Nógrád
HU.BZ Borsod-Abaúj-Zemplén
HU.SZ Szabolcs-Szatmár-Bereg
HU.BE Békés
HU.CS Csongrád
HU.HB Hajdú-Bihar
HU.HE Heves
HU.JN Jász-Nagykun-Szolnok
ID.AC Aceh
ID.KI Kalimantan Timur
ID.JR Jawa Barat
ID.JT Jawa Tengah
ID.BE Bengkulu
ID.BT Banten
ID.JK Jakarta Raya
ID.KB Kalimantan Barat
ID.LA Lampung
ID.SL Sumatera Selatan
ID.BB Bangka-Belitung
ID.BA Bali
ID.JI Jawa Timur
ID.KS Kalimantan Selatan

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ID.NT Nusa Tenggara Timur
ID.SE Sulawesi Selatan
ID.SR Sulawesi Barat
ID.KR Kepulauan Riau
ID.GO Gorontalo
ID.JA Jambi
ID.KT Kalimantan Tengah
ID.IB Irian Jaya Barat
ID.SU Sumatera Utara
ID.RI Riau
ID.SW Sulawesi Utara
ID.LA Maluku Utara
ID.SB Sumatera Barat
ID.YO Yogyakarta
ID.MA Maluku
ID.NB Nusa Tenggara Barat
ID.SG Sulawesi Tenggara
ID.ST Sulawesi Tengah
ID.PA Papua
IN.CH Chandigarh
IN.DL Delhi
IN.HP Himachal Pradesh
IN.HR Haryana
IN.JK Jammu and Kashmir
IN.AP Andhra Pradesh
IN.KL Kerala
IN.LD Lakshadweep
IN.OR Orissa
IN.DN Dadra and Nagar Haveli
IN.KA Karnataka
IN.MH Maharashtra
IN.AN Andaman and Nicobar
IN.AS Assam

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IN.MN Manipur
IN.NL Nagaland
IN.ML Meghalaya
IN.PB Punjab
IN.RJ Rajasthan
IN.UP Uttar Pradesh
IN.UT Uttaranchal
IN.JH Jharkhand
IN.WB West Bengal
IN.BR Bihar
IN.SK Sikkim
IN.CT Chhattisgarh
IN.MP Madhya Pradesh
IN.PY Puducherry
IN.GA Goa
IN.AR Arunachal Pradesh
IN.MZ Mizoram
IN.TR Tripura
IE.WD Waterford
IE.LH Louth
IE.GY Galway
IE.MO Mayo
IE.MH Meath
IE.OY Offaly
IE.WH Westmeath
IE.WX Wexford
IE.WW Wicklow
IE.DN Dublin
IE.KE Kildare
IE.KK Kilkenny
IE.LS Laoighis
IE.TY Tipperary
IE.KY Kerry

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IE.LK Limerick
IE.RN Roscommon
IE.SO Sligo
IE.DL Donegal
IE.LM Leitrim
IE.LD Longford
IE.CE Clare
IE.CW Carlow
IE.CK Cork
IE.CN Cavan
IR.KB Kohgiluyeh and Buyer Ahmad
IR.BS Bushehr
IR.ES Esfahan
IR.FA Fars
IR.GO Golestan
IR.MN Mazandaran
IR.SM Semnan
IR.TH Tehran
IR.YA Yazd
IR.CM Chahar Mahall and Bakhtiari
IR.KZ Khuzestan
IR.LO Lorestan
IR.IL Ilam
IR.HG Hormozgan
IR.AR Ardebil
IR.MK Markazi
IR.QM Qom
IR.HD Hamadan
IR.ZA Zanjan
IR.QZ Qazvin
IR.WA West Azarbaijan
IR.EA East Azarbaijan
IR.BK Kermanshah

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IR.GI Gilan
IR.KD Kordestan
IR.KJ South Khorasan
IR.KV Razavi Khorasan
IR.KS North Khorasan
IR.SB Sistan and Baluchestan
IR.KE Kerman
IQ.DA Dihok
IQ.TS At-Ta'mim
IQ.AR Arbil
IQ.NI Ninawa
IQ.SD Sala ad-Din
IQ.NA An-Najaf
IQ.KA Karbala'
IQ.BG Baghdad
IQ.BA Al-Basrah
IQ.MU Al-Muthannia
IQ.QA Al-Qadisiyah
IQ.DQ Dhi-Qar
IQ.MA Maysan
IQ.WA Wasit
IQ.SU As-Sulaymaniyah
IQ.DI Diyala
IQ.AN Al-Anbar
IQ.BB Babil
IS.VF.AB Reykhólahreppur
IS.VF Vestfirðir
IS.VF.SD Árneshreppur
IS.VF.VB Vesturbyggð
IS.VF.IS Ísafjarðarbær
IS.AL.AS Sveitarfélagið Hornafjörður
IS.AL Austurland
IS.AL.SM Austur-Hérað

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IS.NV Norðurland vestra
IS.NE.AY Akureyri
IS.NV.SG Akrahreppur
IS.NV.VH Húnaþing vestra
IS.NE.NT Kelduneshreppur
IS.NE Hálshreppur
IS.SL Biskupstungnahreppur
IS.SU Suðurnes
IS.SL Suðurland
IS.SL.VS Mýrdalshreppur
IS.VL.AK Akranes
IS.VF.SD Bæjarhreppur
IS.HO Höfuðborgarsvæði
IS.VL Vesturland
IS.VL.SH Eyja- og Miklaholtshreppur
IL.HD HaDarom
IL.HA Haifa
IL.HM HaMerkaz
IL.HZ HaZafon
IL.TA Tel Aviv
IL.JM Jerusalem
IT.FV Friuli-Venezia Giulia
IT.TT Trentino-Alto Adige
IT.VN Veneto
IT.ER Emilia-Romagna
IT.LG Liguria
IT.SD Sardegna
IT.TC Toscana
IT.BC Basilicata
IT.CI Calabria
IT.CM Campania
IT.ML Molise
IT.PU Apulia

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IT.SC Sicily
IT.AB Abruzzo
IT.LZ Lazio
IT.MH Marche
IT.UM Umbria
IT.PM Piemonte
IT.VD Valle d'Aosta
IT.LM Lombardia
JM.CL Clarendon
JM.HA Hanover
JM.MA Manchester
JM.SE Saint Elizabeth
JM.SJ Saint James
JM.TR Trelawny
JM.WE Westmoreland
JM.KI Kingston
JM.PO Portland
JM.SN Saint Ann
JM.SC Saint Catherine
JM.SM Saint Mary
JM.SD Saint Andrew
JM.ST Saint Thomas
JO.AQ Aqaba
JO.MA Mafrq
JO.AM Amman
JO.AT Tafilah
JO.MN Ma`an
JO.IR Irbid
JO.AJ Ajlun
JO.JA Jarash
JO.BA Balqa
JO.MD Madaba
JO.KA Karak

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JO.AZ Zarqa
JP.HS Hiroshima
JP.OY Okayama
JP.SM Shimane
JP.TT Tottori
JP.YC Yamaguchi
JP.SG Saga
JP.FO Fukuoka
JP.KM Kumamoto
JP.MZ Miyazaki
JP.EH Ehime
JP.KG Kagawa
JP.KC Kochi
JP.OT Oita
JP.TS Tokushima
JP.AI Aichi
JP.GF Gifu
JP.IS Ishikawa
JP.ME Mie
JP.NN Nagano
JP.SZ Shizuoka
JP.TY Toyama
JP.HK Hokkaido
JP.FI Fukui
JP.HG Hyogo
JP.KY Kyoto
JP.NR Nara
JP.OS Osaka
JP.SH Shiga
JP.WK Wakayama
JP.CH Chiba
JP.IB Ibaraki
JP.KN Kanagawa

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JP.ST Saitama
JP.TC Tochigi
JP.TK Tokyo
JP.YN Yamanashi
JP.AK Akita
JP.AO Aomori
JP.FS Fukushima
JP.IW Iwate
JP.MG Miyagi
JP.NI Niigata
JP.YT Yamagata
JP.NS Nagasaki
JP.KS Kagoshima
JP.ON Okinawa
JP.GM Gunma
KZ.AT Aqtöbe
KZ.QS Qostanay
KZ.QO Qyzylorda
KZ.AR Atyrau
KZ.WK West Kazakhstan
KZ.AM Aqmola
KZ.QG Qaraghandy
KZ.NK North Kazakhstan
KZ.PA Pavlodar
KZ.EK East Kazakhstan
KZ.AA Almaty
KZ.MG Mangghystau
KZ.SK South Kazakhstan
KZ.ZM Zhambyl
KE.CO Coast
KE.CE Central
KE.NA Nairobi
KE.NY Nyanza

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KE.NA Eastern
KE.WE Western
KE.NE North-Eastern
KG.GB Bishkek
KG.GB Chuy
KG.YK Ysyk-Köl
KG.NA Naryn
KG.BA Batken
KG.DA Jalal-Abad
KG.TL Talas
KG.OS Osh
KH.OM Bântéay Méanchey
KH.BA Batdâmbâng
KH.KK Kaôh Kong
KH.PO Pouthisat
KH.SI Siemréab
KH.OC Otdar Mean Chey
KH.PL Krong Pailin
KH.KM Kâmpóng Cham
KH.KG Kâmpóng Chhnang
KH.KN Kândal
KH.KS Kâmpóng Spœ
KH.KT Kâmpóng Thum
KH.PP Phnom Penh
KH.PY Prey Vêng
KH.PH Preah Vihéar
KH.ST Stœng Trêng
KH.KH Krâchéh
KH.MK Môndól Kiri
KH.RO Rôtânôkiri
KH.KP Kâmpôt
KH.Cambodia Kep

KH.KA Krong Preah Sihanouk
KH.SR Svay Rieng
KH.TA Takêv
KP.KW Kangwon-do
KP.KS Kaesong
KR.GB Chungcheongbuk-do
KR.IN Inch'on-gwangyoksi
KR.KW Gangwon-do
KR.SO Seoul
KR.KG Gyeonggi-do
KR.CB Jeollabuk-do
KR.KJ Gwangju
KR.KN Kyongsang-namdo
KR.GN Chungcheongnam-do
KR.TJ Daejeon
KR.TG Daegu
KR.KN Gyeongsangnam-do
KR.KJ Kwangju-gwangyoksi
KR.PU Busan
KR.UL Ulsan
KR.TG Taegu-gwangyoksi
KR.CJ Jeju
RS.KP Gnjilane
RS.PZ Prizren
RS.PE Đakovica
RS.KM Kosovska Mitrovica
RS.KO Pristina
KW.KU Al Asimah
KW.FA Al Farwaniyah
KW.AH Al Ahmadi
KW.JA Al Jahrah
KW.HW Hawalli
LA.BK Bokeo

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LA.LM Louang Namtha
LA.XA Xaignabouri
LA.CH Champasak
LA.SL Saravan
LA.SV Savannakhét
LA.VT Vientiane [prefecture]
LA.VI Vientiane
LA.XS Xaisômboun
LA.XI Xiangkhoang
LA.HO Houaphan
LA.LP Louangphrabang
LA.OU Oudômxai
LA.PH Phôngsali
LA.BL Bolikhamxai
LA.KH Khammouan
LA.AT Attapu
LA.XE Xékong
LB.BI Beqaa
LB.AS North Lebanon
LB.BA Beirut
LB.JL Mount Lebanon
LB.NA An Nabatiyah
LB.JA South Lebanon
LR.RG River Gee
LR.GP Gbapolu
LR.GK GrandKru
LR.MY Maryland
LR.SI Sinoe
LR.BM Bomi
LR.BG Bong
LR.MG Grand Bassa
LR.CM Grand Cape Mount
LR.LF Lofa

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LR.MO Montserrado
LR.MG Margibi
LR.NI Nimba
LR.RI River Cess
LR.GD GrandGedeh
LY.GD Ghadamis
LY.JU Al Jufrah
LY.KF Al Kufrah
LY.MB Al Marqab
LY.SH Ash Shati'
LY.GT Ghat
LY.MQ Murzuq
LY.MI Misratah
LY.SB Sabha
LY.MI Zlitan
LY.JI Al Jifarah
LY.NQ An Nuqat al Khams
LY.ZA Az Zawiyah
LY.MZ Mizdah
LY.BW Bani Walid
LY.TN Tajura' wa an Nawahi al Arba
LY.MB Tarhunah
LY.YJ Yafran-Jadu
LY.HZ Al Hizam Al Akhdar
LY.JA Al Jabal al Akhdar
LY.AJ Ajdabiya
LY.BA Benghazi
LY.SR Surt
LY.QB Al Qubbah
LY.BU Al Butnan
LK.KY Kandy
LK.MT Matale
LK.NW Nuwara Eliya

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LK.AP Ampara
LK.BC Batticaloa
LK.PR Polonnaruwa
LK.TC Trincomalee
LK.AD Anuradhapura
LK.VA Vavuniya
LK.MB Mannar
LK.MP Mullaitivu
LK.JA Jaffna
LK.KL Kilinochchi
LK.KG Kurunegala
LK.PX Puttalam
LK.RN Ratnapura
LK.GL Galle
LK.HB Hambantota
LK.MH Matara
LK.BD Badulla
LK.MJ Moneragala
LK.KE Kegalle
LK.CO Colombo
LK.GQ Gampaha
LK.KT Kalutara
LS.BE Berea
LS.MS Maseru
LS.MH Mohale's Hoek
LS.QT Quthing
LS.BB Butha-Buthe
LS.LE Leribe
LS.MK Mokhotlong
LS.QN Qacha's Nek
LS.TT Thaba-Tseka
LS.MF Mafeteng
LT.AS Alytaus

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LT.KS Kauno
LT.MA Marijampoles
LT.PA Panevezio
LT.SH Šiauliai
LT.TG Taurages
LT.UN Utenos
LT.VI Vilniaus
LT.KP Klaipedos
LT.TL Telšiai
LU.DI Diekirch
LU.GR Grevenmacher
LU.LU Luxembourg
LV.BL Balvi
LV.KR Kraslava
LV.LU Ludza
LV.Latgale Latgale
LV.SA Saldus
LV.AL Aluksne
EE.VG Valga
LV.Zemgale Zemgale
LV.BU Bauska
LV.CE Vidzeme
LV.DG Daugavpils
LV.DO Dobeles
LV.GU Gulbene
LV.JG Jelgava
LV.JK Jekabpils
LV.LM Limbaži
LV.MA Madona
LV.OG Ogre
LV.PR Preiļi
LV.Riga Riga

LV.TA Talsi
LV.TU Tukums
LV.VM Valmiera
LV.Kurzeme Kurzeme
LV.LP Liepaja
LV.VN Ventspils
MA.TO Tanger - Tétouan
MA.FB Fès - Boulemane
MA.TH Taza - Al Hoceima - Taounate
MA.GB Gharb - Chrarda - Béni Hssen
MA.CO Chaouia - Ouardigha
MA.GC Grand Casablanca
MA.RZ Rabat - Salé - Zemmour - Zaer
MA.MT Meknès - Tafilalet
MA.TD Tadla - Azilal
MA.OR Oriental
MA.SM Souss - Massa - Draâ
MA.MK Marrakech - Tensift - Al Haouz
MA.DA Doukkala - Abda
MA.LB Laâyoune - Boujdour - Sakia El Hamra
MA.GE Guelmim - Es-Semara
MA.OD Oued el Dahab
MD.BR Briceni
MD.DO Donduseni
MD.ED Edinet
MD.OC Ocnita
MD.RS Rîscani
MD.BT Balti
MD.DR Drochia
MD.FA Falesti
MD.GL Glodeni
MD.SI Sîngerei
MD.UG Ungheni

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MD.CH Cahul
MD.TA Taraclia
MD.GA Gagauzia
MD.CV Chisinau
MD.DB Dubasari
MD.AN Anenii Noi
MD.BA Basarabeasca
MD.CN Cantemir
MD.CA Calarasi
MD.CS Cimislia
MD.CR Criuleni
MD.FL Floresti
MD.CU Cainari
MD.DU Grigoriopol
MD.DB Transnistria
MD.HI Hîncesti
MD.IA Ialoveni
MD.LE Leova
MD.NI Nisporeni
MD.OH Orhei
MD.RZ Rezina
MD.RZ Rezina
MD.SD Soldanesti
MD.ST Straseni
MD.TE Telenesti
MD.CU Causeni
MD.BD Bender
MD.SV Stefan Voda
MD.SD Camenca
MD.SO Soroca
MG.AV Antananarivo
MG.AS Antsiranana
MG.FI Fianarantsoa

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MG.MA Mahajanga
MG.TM Toamasina
MG.TL Toliary
MX.BN Baja California
MX.BS Baja California Sur
MX.CA Coahuila
MX.CH Chihuahua
MX.DU Durango
MX.SI Sinaloa
MX.SO Sonora
MX.ZA Zacatecas
MX.NL Nuevo León
MX.SL San Luis Potosí
MX.TM Tamaulipas
MX.AG Aguascalientes
MX.CL Colima
MX.JA Jalisco
MX.MC Michoacán
MX.NA Nayarit
MX.CM Campeche
MX.OA Oaxaca
MX.PU Puebla
MX.TB Tabasco
MX.TL Tlaxcala
MX.DF Distrito Federal
MX.GJ Guanajuato
MX.GR Guerrero
MX.HI Hidalgo
MX.MX México
MX.MR Morelos
MX.QE Querétaro
MX.VE Veracruz
MX.CP Chiapas

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MX.QR Quintana Roo
MX.YU Yucatán
MK.RE Resen
MK.VV Vevcani
MK.TL Bitola
MK.DM Demir Hisar
MK.OD Ohrid
MK.PE Skopje
MK.PN Southwestern
MK.PP Prilep
MK.PT Probistip
MK.RV Radovis
MK.KZ Kriva Palanka
MK.RM Vardar
MK.AJ Saraj
MK.SS Sopiste
MK.NA Northeastern
MK.ST Štip
MK.SU Studenici
MK.CI Cair
MK.SL Sveti Nikole
MK.VE Veles
MK.VC Vraneštica
MK.ZK Zelenikovo
MK.ZE elino
MK.AR Aracinovo
MK.LI Lipkovo
MK.BU Butel
MK.CA Caška
MK.CE Centar
MK.ZR Eastern
MK.CH Cešinovo-Obleševo

MK.CS Cucer Sandevo
MK.DK Demir Kapija
MK.DE Dolneni
MK.GB Gazi Baba
MK.GR Gradsko
MK.LO Lozovo
MK.KN Konce
MK.IL Ilinden
MK.KB Karbinci
MK.KX Karpoš
MK.AV Kavadartsi
MK.AD Aerodrom
MK.VD Skopje
MK.OC Kocani
MK.KY Kratovo
MK.KG Krivogaštani
MK.KS Kruševo
MK.UM Kumanovo
MK.MD Brod
MK.MG Pelagonia
MK.NG Negotino
MK.NV Novatsi
MK.GP Gjorce Petrov
MK.ZA Zajas
MK.CZ Centar upa
MK.DB Debar
MK.DR Southwestern
MK.KH Kicevo
MK.MR Mavrovo and Rostusa
MK.OS Oslomej
MK.TR Tearce
MK.ET Tetovo
MK.VH Polog

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MK.VJ Bogovinje
MK.BN Brvenica
MK.GT Gostivar
MK.JG Jegunovce
MK.RU Southeastern
MK.VA Valandovo
MK.VL Vasilevo
MK.BG Bogdanci
MK.BS Southeastern
MK.GV Southeastern
MK.NS Novo Selo
MK.SD Dojran
MK.NI Vinitsa
MK.BR Berovo
MK.DL Delcevo
MK.MK Makedonska Kamenica
MK.PH Phecevo
ML.TB Timbuktu
ML.KD Kidal
ML.GA Gao
ML.KK Bamako
ML.KY Kayes
ML.SK Sikasso
ML.MO Mopti
ML.SG Ségou
MM.KH Kayah
MM.KN Kayin
MM.MD Mandalay
MM.BA Bago
MM.YA Yangon
MM.MO Mon
MM.RA Rakhine
MM.CH Chin

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MM.AY Ayeyarwady
MM.MG Magway
MM.SH Shan
MM.TN Tanintharyi
MM.KC Kachin
MM.SA Sagaing
ME.BA Bar
ME.UL Ulcinj
ME.BU Budva
ME.CE Cetinje
ME.RO Rođaje
ME.PV Plav
ME.HN Herceg Novi
ME.KT Kotor
ME.AN Andrijevica
ME.BE Berane
ME.BP Bijelo Polje
ME.DA Danilovgrad
ME.KL Kolašin
ME.MK Mojkovac
ME.NK Nikšić
ME.PU Plužine
ME.PL Pljevlja
ME.PG Podgorica
ME.TI Tivat
ME.SA Šavnik
ME.ZA Zabljak
MN.BO Bayan-Ölgiy
MN.DG Dornogovi
MN.OG Ömnögovi
MN.HN Hentiy
MN.AR Arhangay
MN.BH Bayanhongor

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MN.DZ Dzavhan
MN.GA Govi-Altay
MN.HD Hovd
MN.HG Hövsgöl
MN.UV Uvs
MN.BU Bulgan
MN.ER Orhon
MN.DU Dundgovi
MN.SL Selenge
MN.OH Övörhangay
MN.DA Darhan-Uul
MN.TO Töv
MN.GS Govisumber
MN.UB Ulaanbaatar
MN.DD Dornod
MN.SB Sühbaatar
MZ.TE Tete
MZ.MN Manica
MZ.CD Cabo Delgado
MZ.NS Niassa
MZ.NM Nampula
MZ.GA Gaza
MZ.SO Sofala
MZ.ZA Zambezia
MZ.IN Inhambane
MZ.MP Maputo
MR.TZ Tiris Zemmour
MR.BR Brakna
MR.DN Dakhlet Nouadhibou
MR.IN Inchiri
MR.NO Nouakchott
MR.TR Trarza
MR.AS Assaba

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MR.GD Guidimaka
MR.GO Gorgol
MR.AD Adrar
MR.HC Hodh ech Chargui
MR.HG Hodh el Gharbi
MR.TG Tagant
MW.CT Chitipa
MW.CT Chitipa
MW.KS Kasungu
MW.MZ Mzimba
MW.NA Nkhata Bay
MW.NK Nkhotakota
MW.RU Rumphu
MW.MA Machinga
MW.DE Dedza
MW.DO Dowa
MW.LI Lilongwe
MW.MG Mangochi
MW.MC Mchinji
MW.NU Ntcheu
MW.NI Ntchisi
MW.SA Salima
MW.BA Balaka
MW.CK Chikwawa
MW.CR Chiradzulu
MW.TH Thyolo
MW.NS Nsanje
MW.ZO Zomba
MW.BL Blantyre
MW.MW Mwanza
MW.MJ Mulanje
MW.PH Phalombe
MY.PK Perak

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MY.PG Pulau Pinang
MY.PG Pulau Pinang
MY.KH Kedah
MY.PL Perlis
MY.PL Perlis
MY.JH Johor
MY.KN Kelantan
MY.ME Melaka
MY.NS Negeri Sembilan
MY.PH Pahang
MY.SL Selangor
MY.TE Trengganu
MY.SA Sabah
MY.SK Sarawak
NA.KA Karas
NA.HA Hardap
NA.KH Khomas
NA.KU Kunene
NA.ER Erongo
NA.OD Otjozondjupa
NA.OS Omusati
NA.ON Oshana
NA.OW Ohangwena
NA.OH Omaheke
NA.OK Kavango
NA.OT Oshikoto
NA.CA Caprivi
NC.IL Îles Loyauté
NC.SU Sud
NC.NO Nord
NE.DF Diffa
NE.AG Agadez
NE.MA Maradi

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NE.ZI Zinder
NE.DS Dosso
NE.NI Niamey
NE.TH Tahoua
NG.BO Borno
NG.AB Abia
NG.AK Akwa Ibom
NG.IM Imo
NG.RI Rivers
NG.BY Bayelsa
NG.BE Benue
NG.CR Cross River
NG.TA Taraba
NG.KW Kwara
NG.LA Lagos
NG.NI Niger
NG.OG Ogun
NG.ON Ondo
NG.EK Ekiti
NG.OS Osun
NG.OY Oyo
NG.AN Anambra
NG.BA Bauchi
NG.GO Gombe
NG.DE Delta
NG.ED Edo
NG.EN Enugu
NG.EB Ebonyi
NG.KD Kaduna
NG.KO Kogi
NG.PL Plateau
NG.NA Nassarawa
NG.JI Jigawa

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NG.KN Kano
NG.KT Katsina
NG.SO Sokoto
NG.ZA Zamfara
NG.YO Yobe
NG.KE Kebbi
NG.AD Adamawa
NG.FC Federal Capital Territory
lake Nicaragua
NI.AS Atlántico Sur
NI.CA Carazo
NI.GR Granada
NI.JI Jinotega
NI.AN Atlántico Norte
NI.LE León
NI.MN Managua
NI.MS Masaya
NI.CI Chinandega
NI.ES Estelí
NI.MD Madriz
NI.MT Matagalpa
NI.NS Nueva Segovia
NI.BO Boaco
NI.CO Chontales
NL.NB Noord-Brabant
NL.UT Utrecht
NL.ZH Zuid-Holland
NL.NH Noord-Holland
NL.DR Drenthe
NL.FR Friesland
NL.GE Gelderland
NL.GR Groningen
NL.LI Limburg

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NL.OV Overijssel
NL.FL Flevoland
NL.ZE Zeeland
NO.FI Finnmark
NO.NO Nordland
NO.TR Troms
SJ.SV Svalbard
NO.MR Møre og Romsdal
NO.ST Sør-Trøndelag
NO.AA Aust-Agder
NO.HO Hordaland
NO.RO Rogaland
NO.SF Sogn og Fjordane
NO.VA Vest-Agder
NO.AK Akershus
NO.BU Buskerud
NO.HE Hedmark
NO.OP Oppland
NO.OS Oslo
NO.TE Telemark
NO.VF Vestfold
NO.OF Østfold
NO.NT Nord-Trøndelag
NP.PM Gorkha
NP.MP Banke
NP.PM Dhawalagiri
NP.MP Karnali
NP.PM Lumbini
NP.SP Mahakali
NP.SP Achham
NP.MM Bhaktapur
NP.MM Janakpur
NP.MM Narayani

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NP.PW Sagarmatha
NP.PW Bhojpur
NP.PW Mechi
NP.MP Rapti
NZ.MW Manawatu-Wanganui
NZ.GI Gisborne
NZ.HB Hawke's Bay
NZ.AU Auckland
NZ.BP Bay of Plenty
NZ.CA Canterbury
NZ.MA Marlborough
NZ.NO Northland
NZ.TK Taranaki
NZ.WC West Coast
NZ.OT Otago
NZ.SO Southland
OM.DA Ad Dakhliyah
OM.WU Al Wusta
OM.SH Ash Sharqiyah
OM.JA Dhofar
OM.ZA Al Dhahira
OM.BA Al Batnah
OM.MU Musandam
OM.MA Muscat
PK.BA Baluchistan
PK.JK Azad Kashmir
PK.IS F.C.T.
PK.NA Northern Areas
PK.TA F.A.T.A.
PK.PB Punjab
PK.SD Sind
PK.NW N.W.F.P.
PA.CH Chiriquí

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PA.CC Coclé
PA.CL Colón
PA.HE Herrera
PA.LS Los Santos
PA.SB Panama
PA.VR Veraguas
PA.DR Darién
PA.SB Kuna Yala
PA.BC Bocas del Toro
PA.NB Ngöbe Buglé
PA.EM Emberá
PE.LB Lambayeque
PE.PI Piura
PE.TU Tumbes
PE.AP Apurímac
PE.AR Arequipa
PE.CS Cusco
PE.MD Madre de Dios
PE.CL Callao
PE.MQ Moquegua
PE.TA Tacna
PE.AN Ancash
PE.CJ Cajamarca
PE.HC Huánuco
PE.LL La Libertad
PE.PA Pasco
PE.SM San Martín
PE.UC Ucayali
PE.AM Amazonas
PE.LO Loreto
PE.AY Ayacucho
PE.LR Lima Province
PE.HV Huancavelica

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PE.IC Ica
PE.JU Junín
PE.LR Lima
PH.TT Tawi-Tawi
PH.BO Bohol
PH.CB Cebu
PH.GU Guimaras
PH.NR Negros Oriental
PH.SQ Siquijor
PH.ND Negros Occidental
PH.BS Basilan
PH.ZN Zamboanga del Norte
PH.ZS Zamboanga del Sur
PH.ZS Zamboanga Del Sur
PH.MD Misamis Occidental
PH.SU Sulu
PH.AK Aklan
PH.AQ Antique
PH.AQ Antique
PH.CP Capiz
PH.II Iloilo
PH.GU Guimaras
PH.MC Occidental Mindoro
PH.MC Occidental Mindoro
PH.MC Occidental Mindoro
PH.PL Palawan
PH.RO Romblon
PH.AL Albay
PH.CN Camarines Norte
PH.CS Camarines Sur
PH.CT Catanduanes
PH.MB Masbate
PH.SR Sorsogon

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PH.AB Abra
PH.BN Batanes
PH.CG Cagayan
PH.AP Apayao
PH.IN Ilocos Norte
PH.IS Ilocos Sur
PH.AU Aurora
PH.IB Isabela
PH.IF Ifugao
PH.MT Mountain Province
PH.NV Nueva Vizcaya
PH.QR Quirino
PH.BA Bataan
PH.TR Tarlac
PH.NE Nueva Ecija
PH.PM Pampanga
PH.BG Benguet
PH.ZM Zambales
PH.LU La Union
PH.PN Pangasinan
PH.CV Cavite
PH.BT Batangas
PH.BU Bulacan
PH.LG Laguna
PH.RI Rizal
PH.MM Metropolitan Manila
PH.MQ Marinduque
PH.MC Occidental Mindoro
PH.MR Oriental Mindoro
PH.QZ Quezon
PH.LN Lanao del Norte
PH.LS Lanao del Sur
PH.SF Lanao Del Sur

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PH.MG Maguindanao
PH.SF Shariff Kabunsuan
PH.NC North Cotabato
PH.SK Sultan Kudarat
PH.BI Biliran
PH.ES Eastern Samar
PH.LE Leyte
PH.SM Samar
PH.SL Southern Leyte
PH.NS Northern Samar
PH.AN Agusan del Norte
PH.AS Agusan del Sur
PH.BK Bukidnon
PH.CM Camiguin
PH.DV Davao del Norte
PH.CL Compostela Valley
PH.DI Dinagat Islands
PH.SS Surigao del Sur
PH.MN Misamis Oriental
PH.DS Davao Del Sur
PH.DO Davao Oriental
PH.SG Sarangani
PH.SC South Cotabato
PH.SG Sultan Kudarat
PG.EG Enga
PG.ES East Sepik
PG.MD Madang
PG.SA Sandaun
PG.CH Chimbu
PG.EH Eastern Highlands
PG.GU Gulf
PG.NS North Solomons
PG.SH Southern Highlands

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PG.WH Western Highlands
PG.WE Western
PG.CE Central
PG.EN East New Britain
PG.MN Manus
PG.MB Milne Bay
PG.MR Morobe
PG.CE National Capital District
PG.NI New Ireland
PG.NO Northern
PG.WN West New Britain
PL.WN Warmian-Masurian
PL.PM Pomeranian
PL.DS Lower Silesian
PL.ZP West Pomeranian
PL.LB Lubusz
PL.WP Greater Poland
PL.KP Kuyavian-Pomeranian
PL.SL Silesian
PL.LD Łódź
PL.MZ Masovian
PL.SK Świętokrzyskie
PL.PD Podlachian
PL.LU Lublin
PL.PK Subcarpathian
PL.OP Opole
PL.MA Lesser Poland
KP.WB Hwanghae-bukto
KP.WN Hwanghae-namdo
KP.PY P'yongyang
KP.PY Namp'o-si
KP.HG Hamgyong-bukto
KP.KW Kangwon-do

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KP.KS Kaesong
KP.CH Chagang-do
KP.HN Hamgyong-namdo
KP.PB P'yongan-bukto
KP.PN P'yongan-namdo
KP.YG Ryanggang
PT.AC Azores
PT.MA Madeira
PT.AV Aveiro
PT.LE Leiria
PT.VC Viana do Castelo
PT.BE Beja
PT.EV Évora
PT.FA Faro
PT.LI Lisboa
PT.PA Portalegre
PT.SA Santarém
PT.BR Braga
PT.BA Bragança
PT.CB Castelo Branco
PT.CO Coimbra
PT.GU Guarda
PT.PO Porto
PT.VI Viseu
PT.VR Vila Real
PY.AG Alto Paraguay
PY.BQ Boquerón
PY.CN Concepción
PY.CR Cordillera
PY.PH Presidente Hayes
PY.SP San Pedro
PY.AS Asunción
PY.GU Guairá

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PY.MI Misiones
PY.NE Ñeembucú
PY.PG Paraguari
PY.AM Amambay
PY.AA Alto Paraná
PY.CG Caaguazú
PY.CZ Caazapá
PY.CY Canindeyú
PY.IT Itapúa
QA.DA Ad Dawhah
QA.RA Ar Rayyan
QA.WA Al Wakrah
QA.JB Jariyan al Batnah
QA.GH Al Ghuwayriyah
QA.JU Al Jumayliyah
QA.KH Al Khawr
QA.MS Madinat ach Shamal
QA.US Umm Salal
RO.DJ Dolj
RO.GJ Gorj
RO.MH Mehedinti
RO.OT Olt
RO.TR Teleorman
RO.BI Bucharest
RO.CL Calarasi
RO.DB Dâmbovita
RO.GR Giurgiu
RO.IL Ialomita
RO.CT Constanta
RO.AR Arad
RO.BH Bihor
RO.CS Caras-Severin
RO.TM Timis

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RO.BT Botosani
RO.AB Alba
RO.BN Bistrita-Nasaud
RO.CJ Cluj
RO.HD Hunedoara
RO.MM Maramures
RO.MS Mures
RO.SJ Salaj
RO.SM Satu Mare
RO.AG Arges
RO.SB Sibiu
RO.VL Vâlcea
RO.BV Brasov
RO.CV Covasna
RO.HR Harghita
RO.IS Iasi
RO.NT Neamt
RO.PH Prahova
RO.SV Suceava
RO.BC Bacau
RO.BR Braila
RO.BZ Buzau
RO.GL Galati
RO.VS Vaslui
RO.VN Vrancea
RU.TO Tomsk
RU.AD Adygey
RU.KC Karachay-Cherkess
RU.IN Ingush
RU.KB Kabardin-Balkar
RU.NO North Ossetia
RU.ST Stavropol'
RU.KN Kaliningrad

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RU.MM Murmansk
RU.NG Novgorod
RU.PS Pskov
RU.LN Leningrad
RU.SP City of St. Petersburg
RU.BR Bryansk
RU.SM Smolensk
RU.KI Karelia
RU.VO Arkhangel'sk
RU.IV Ivanovo
RU.KT Kostroma
RU.NZ Nizhegorod
RU.TV Tver'
RU.VO Vologda
RU.YS Yaroslavl'
RU.KG Kaluga
RU.KS Kursk
RU.LP Lipetsk
RU.MS Moskovsskaya
RU.MS Moskva
RU.OL Orel
RU.RO Rostov
RU.TL Tula
RU.VG Volgograd
RU.BL Belgorod
RU.KD Krasnodar
RU.MR Mordovia
RU.PZ Penza
RU.RZ Ryazan'
RU.TB Tambov
RU.VL Vladimir
RU.VR Voronezh
RU.BK Bashkortostan

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RU.CL Chelyabinsk
RU.KU Kurgan
RU.NN Nenets
RU.YN Yamal-Nenets
RU.KO Komi
RU.KV Kirov
RU.ME Mariy-El
RU.SV Sverdlovsk
RU.UD Udmurt
RU.AS Astrakhan'
RU.CV Chuvash
RU.KL Kalmyk
RU.OB Orenburg
RU.SA Samara
RU.SR Saratov
RU.TT Tatarstan
RU.UL Ul'yanovsk
RU.KM Khanty-Mansiy
RU.OM Omsk
RU.TY Tyumen'
RU.AL Altay
RU.GA Gorno-Altay
RU.KE Kemerovo
RU.KK Khakass
RU.NS Novosibirsk
RU.CN Chechnya
RU.DA Dagestan
RU.EN Evenk
RU.IR Irkutsk
RU.KY Krasnoyarsk
RU.TM Taymyr
RU.TU Tuva
RU.BU Buryat

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RU.UB Ust-Orda Buryat
RU.AB Aga Buryat
RU.AM Amur
RU.CT Chita
RU.PR Primor'ye
RU.CK Chukot
RU.YV Yevrey
RU.KH Khabarovsk
RU.MG Maga Buryatdan
RU.SL Sakhalin
RU.MM Murmansk
RU.KP Komi-Permyak
RU.PE Perm'
RU.KA Kamchatka
SA.NJ Najran
SA.RI Ar Riyad
SA.SH Ash Sharqiyah
SA.MD Al Madinah
SA.QS Al Quassim
SA.HA Ha'il
SA.TB Tabuk
SA.HS Al Hudud ash Shamaliyah
SA.JF Al Jawf
SA.BA Al Bahah
SA.AS `Asir
SA.JZ Jizan
SA.MK Makkah
SD.BN Blue Nile
SD.RS Red Sea
SD.WD West Darfur
SD.SD South Darfur
SD.KH Khartoum
SD.GZ Gezira

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SD.GD Gedarif
SD.RN River Nile
SD.NO Northern
SD.WN White Nile
SD.SI Sennar
SD.ND North Darfur
SD.KS South Kordufan
SD.KN North Kordufan
SD.KA Kassala
SD.NB North Bahr-al-Ghazal
SD.EB Lakes
SD.WE West Equatoria
UG.MY Central Equatoria
SD.UN Upper Nile
SD.JG Jungoli
SD.WH Unity
SD.WR Warap
SD.WB West Bahr-al-Ghazal
SD.EE East Equatoria
SN.DK Dakar
SN.DB Diourbel
SN.FK Fatick
SN.LG Louga
SN.SL Matam
SN.TH Thiès
SN.KD Kolda
SN.ZG Ziguinchor
SN.TC Tambacounda
SB.ML Malaita
SB.RB Rennell and Bellona
SB.GC Central
SB.GC Guadalcanal
SB.IS Isabel

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SB.TE Temotu
SB.CH Choiseul
SB.MK Makira
SL.SO Southern
SL.WE Western
SL.NO Northern
SL.EA Eastern
SV.AH Ahuachapán
SV.CA Cabañas
SV.CU Cuscatlán
SV.LI La Libertad
SV.PA La Paz
SV.SO Sonsonate
SV.SS San Salvador
SV.UN La Unión
SV.MO Morazán
SV.SM San Miguel
SV.SV San Vicente
SV.US Usulután
SV.CH Chalatenango
SV.SA Santa Ana
SO.BR Bari
SO.BK Bakool
SO.BY Bay
SO.GE Gedo
SO.JD Jubbada Dhexe
SO.SH Shabeellaha Hoose
SO.BN Banaadir
SO.GA Galguduud
SO.HI Hiiraan
SO.SD Shabeellaha Dhexe
SO.MU Mudug
SO.NU Nugaal

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SO.JH Jubbada Hoose
RS.JC Južno-Backi
RS.JN Južno-Banatski
RS.SD Srednje-Banatski
RS.PI Pirotski
RS.BO Borski
RS.ZL Zlatiborski
RS.ZC Zapadno-Backi
RS.SC Severno-Backi
RS.SN Severno-Banatski
RS.BR Branicevski
RS.SM Sremski
RS.MR Moravicki
RS.NS Nišavski
RS.PD Podunavski
RS.PM Pomoravski
RS.RN Pomoravski
RS.RS Raški
RS.TO Toplicki
RS.BG Grad Beograd
RS.KB Kolubarski
RS.MA Macvanski
RS.SU Šumadijski
RS.PC Pčinjski
RS.JA Jablanicki
RS.ZJ Zajecarski
SR.NI Nickerie
SR.BR Brokopondo
SR.MA Marowijne
SR.PR Para
SR.SI Sipaliwini
SR.CM Commewijne
SR.CR Coronie

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SR.PM Paramaribo
SR.SA Saramacca
SR.WA Wanica
SK.BL Bratislavský
SK.BC Banskobystrický
SK.ZI ilinský
SK.NI Nitriansky
SK.TC Trenčiansky
SK.TA Trnavský
SK.KI Košický
SK.PV Prešov
SI.LJ.VL Velike Lašce
SI.SA.VE Velenje
SI.SA.VI Vitanje
SI.LJ.VO Vodice
SI.LJ.VR Vrhnika
SI.KO.VU Vuzenica
SI.ZS Zasavska
SI.SA.ZR Zreče
SI.GO.BL Bled
SI.GO.BO Bohinj
SI.SP.CE Cerklje
SI.GO.GV Gorenja Vas-Poljane
SI.SP.ID Idrija
SI.GO.KR Kranj
SI.GO.KG Kranjska Gora
SI.GO.NA Naklo
SI.GO Gorenjska
SI.GO.SL Škofja Loka
SI.SP.TO Tolmin
SI.GO.TR Tric
SI.GO.ZE Železniki
SI.GO.ZI Ziri

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SI.SP.AJ Ajdovščina
SI.SP.BO Bovec
SI.SP.BR Brda
SI.JP.DI Divaca
SI.JP.HK Hrpelje-Kozina
SI.JP.IZ Izola
SI.SP.KA Kanal
SI.SP.KO Kobarid
SI.JP.KM Komen
SI.JP.KP Koper
SI.SP.MK Miren-Kostanjevica
SI.JP.PI Piran
SI.JP.SE Sežana
SI.SP.VI Vipava
SI.PM.BE Beltinci
SI.PD.DO Dornava
SI.PD.GO Gorišnica
SI.PD.DO Dornava
SI.PM.KO Kobilje
SI.PM.MT Moravske Toplice
SI.PM Pomurska
SI.PM.OD Odranci
SI.PD.OR Ormoz
SI.PM.SJ Sveti Jurij
SI.PM.TU Turnišče
SI.PD.ZA Zavrc
SI.PM.SA Šalovci
SI.PM.KU Kuzma
SI.PD.CE Cerkevjak
SI.PD.BE Benedikt
SI.PD.SA Sveta Ana
SI.PM.HO Hodoš

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SI.PM.GD Grad
SI.PD.DE Destrnik
SI.LJ.DP Dobrova-Polhov Gradec
SI.LJ.DM Domožale
SI.LJ.KA Kamnik
SI.LJ.KC Kocevje
SI.PD.LE Lenart
SI.NO.LD Loška Dolina
SI.SA.LU Luce
SI.PD.MJ Majšperk
SI.DO.NM Novo Mesto
SI.SA.BS Bistrica ob Sotli
SI.KO.PO Podvelka
SI.GO.PR Preddvor
SI.PD.PT Ptuj
SI.KO.RK Ravne na Koroškem
SI.LJ.RI Ribnica
SI.PD.RU Ruše
SI.SA.SC Šentjur pri Celju
SI.PD.SB Slovenska Bistrica
SI.PD.VI Videm
SI.SA.VO Vojnik
SI.SA Savinjska
SI.LJ.KM Komenda
SI.PD.OP Oplotnica
SI.PD.HA Hajdina
SI.PD.MD Marjeta na Dravskem Polju
SI.PD.HS Hoče-Slivnica
SI.PD.TV Trnovska Vas
SI.PD.ZE Žetale
SI.PD.PO Podlehnik
SI.KO.PR Prevalje
SI.PD.SD Selnica ob Dravi

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SI.PD.LP Lovrenc na Pohorju
SI.LJ.TR Trzin
SI.GO.JZ Jezersko
SI.DO.ZU u emberk
SI.SA.DR Dobrna
SI.SA.TA Tabor
SI.SA.VR Vransko
SI.DO.MP Mirna Pec
SI.SA.PR Prebold
SI.SA.PL Polzela
SI.LJ.KS Kostel
SI.LJ.KC Kocevje
SI.SA.BR Braslovce
SI.LJ.SO Sodrazica
SI.LJ.HO Horjul
SI.SA.SL Solcava
SI.SA.DJ Dobje
SI.LJ.DB Dobrepolje
SI.NO.BL Bloke
SI.SA.PD Podcetrtek
SI.PD.MB Maribor
SI.KO.RP Ribnica na Pohorju
SI.GO.JS Jesenice
SI.GO.ZV Zirovnica
SI.SP.Goriška
SI.SP.SV Šempeter-Vrtojba
SI.PM.CR Crenšovci
SI.PM.LE Lendava
SI.PM.LJ Ljutomer
SI.PM.KR Krizevci
SI.PM.VE Verzej
SI.PD.SS Sveti Andra v Slovenskih Goricah
SI.PM.RZ Razkrižje

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SI.PM.VP Velika Polana
SI.PM.DO Dobrovnik
SI.PD.MK Markovci
SI.PM.CA Cankova
SI.PM.GR Gornja Radgona
SI.PM.GP Gornji Petrovci
SI.PM.GP Gornji Petrovci
SI.PM.RD Radenci
SI.PM.RO Rogašovci
SI.LJ.BO Borovnica
SI.PS.BR Brezice
SI.LJ.BR Brezovica
SI.SA.CE Celje
SI.GO.CG Cerklje na Gorenjskem
SI.NO.CE Cerknica
SI.KO.CK Crna na Koroškem
SI.DO.CR Crnomelj
SI.LJ.DL Dol pri Ljubljani
SI.KO.DR Dravograd
SI.PD.DU Duplek
SI.SA.GG Gornji Grad
SI.LJ.GR Grosuplje
SI.ZS.HR Hrastnik
SI.ZS.Trbovlje
SI.LJ.IG Ig
SI.NO.IB Ilirska Bistrica
SI.LJ.IV Ivancna Gorica
SI.PD.KI Kidricevo
SI.SA.KO Kozje
SI.PS.Spodnjeposavska
SI.PD.KU Kungota
SI.SA.LA Laško
SI.LJ.LI Litija

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SI.LJ.Osrednjeslovenska
SI.SA.LJ.Ljubno
SI.LJ.LO.Logatec
SI.LJ.LP.Loški Potok
SI.LJ.LU.Lukovica
SI.LJ.MD.Medvode
SI.LJ.MN.Mengeš
SI.DO.CR.Metlika
SI.KO.ME.Mežica
SI.KO.MI.Mislinja
SI.LJ.MO.Moravce
SI.SA.MO.Mozirje
SI.KO.MU.Muta
SI.SA.NA.Nazarje
SI.PD.PE.Pesnica
SI.NO.Notranjsko-kraška
SI.SP.PO.Postojna
SI.PD.RF.Race-Fram
SI.SA.RA.Radece
SI.KO.RD.Radlje ob Dravi
SI.SA.RS.Rogaška Slatina
SI.SA.RO.Rogatec
SI.DO.SM.Semic
SI.GO.SE.Šencur
SI.PD.SE.Šentilj
SI.DO.SN.Šentjernej
SI.PS.SE.Sevnica
SI.DO.SK.Škocjan
SI.LJ.SK.Škofljica
SI.KO.Koroška
SI.SA.SK.Slovenske Konjice
SI.SA.SJ.Šmarje pri Jelšah
SI.SA.SP.Šmartno ob Paki

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SI.SA.SS Šoštanj
SI.PD Podravska
SI.SA.ST Štore
SI.ZS.TR Trbovlje
SI.DO.TR Trebnje
SE.GV Gävleborg
SE.JO Jönköping
SE.KA Kalmar
SE.KO Dalarna
SE.KR Kronoberg
SE.OR Örebro
SE.ÖG Östergötland
SE.SD Södermanland
SE.VM Västmanland
SE.HA Halland
SE.VR Värmland
SE.JA Jämtland
SE.NB Norrbotten
SE.VN Västernorrland
SE.VB Västerbotten
SE.GT Gotland
SE.ST Stockholm
SE.UP Uppsala
SE.BL Blekinge
SE.VG Västra Götaland
SE.SN Skåne
SZ.HH Hhohho
SZ.LU Lubombo
SZ.MA Manzini
SZ.SH Shiselweni
SY.LA Lattakia (Al Ladhiqiyah)
SY.TA Tartus
SY.RA Ar Raqqa

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SY.HL Aleppo (Halab)
SY.HM Hamah
SY.HI Homs (Hims)
SY.ID Idlib
SY.HA Hasaka (Al Haksa)
SY.DY Dayr Az Zawr
SY.SU As Suwayda'
SY.DI Damascus
SY.QU Quneitra
SY.DR Dar`a
TD.BT Bet
TD.HD Hadjer-Lamis
TD.KA Kanem
TD.LC Lac
TD.BA Batha
TD.BI Wadi Fira
TD.GR Guéra
TD.OD Ouaddaï
TD.LO Logone Occidental
TD.LR Logone Oriental
TD.ME Mayo-Kebbi Est
TD.TA Tandjilé
TD.MA Mandoul
TD.SA Salamat
TG.PL Plateaux
TG.MA Maritime
TG.KA Kara
TG.CE Centre
TG.SA Savanes
TH.MH Mae Hong Son
TH.CP Chumphon
TH.NT Nakhon Si Thammarat
TH.PU Phuket

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TH.PG Phangnga
TH.RN Ranong
TH.ST Surat Thani
TH.KR Krabi
TH.PL Phatthalung
TH.SA Satun
TH.SG Songkhla
TH.TG Trang
TH.YL Yala
TH.CR Chiang Rai
TH.CM Chiang Mai
TH.LG Lampang
TH.LN Lamphun
TH.NA Nan
TH.PY Phayao
TH.PR Phrae
TH.PS Phitsanulok
TH.SO Sukhothai
TH.UD Uttaradit
TH.KN Kanchanaburi
TH.KP Kamphaeng Phet
TH.PC Phichit
TH.PH Phetchabun
TH.SH Suphan Buri
TH.TK Tak
TH.UT Uthai Thani
TH.AT Ang Thong
TH.CN Chai Nat
TH.LB Lop Buri
TH.NN Nakhon Nayok
TH.PB Prachin Buri
TH.NS Nakhon Sawan
TH.PA Phra Nakhon Si Ayutthaya

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TH.PT Pathum Thani
TH.SB Sing Buri
TH.SR Saraburi
TH.BM Bangkok Metropolis
TH.NO Nonthaburi
TH.NP Nakhon Pathom
TH.PE Phetchaburi
TH.PK Prachuap Khiri Khan
TH.RT Ratchaburi
TH.SP Samut Prakan
TH.SS Samut Sakhon
TH.SM Samut Songkhram
TH.SI Si Sa Ket
TH.UR Ubon Ratchathani
TH.AC Amnat Charoen
TH.YS Yasothon
TH.CB Chon Buri
TH.CC Chachoengsao
TH.CT Chanthaburi
TH.SK Sa Kaeo
TH.RY Rayong
TH.TT Trat
TH.BR Buri Ram
TH.CY Chaiyaphum
TH.KK Khon Kaen
TH.KL Kalasin
TH.MS Maha Sarakham
TH.NR Nakhon Ratchasima
TH.RE Roi Et
TH.SU Surin
TH.LE Loei
TH.NK Nong Khai
TH.SN Sakon Nakhon

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TH.UN Udon Thani
TH.NB Nong Bua Lam Phu
TH.NF Nakhon Phanom
TH.MD Mukdahan
TH.NW Narathiwat
TH.PI Pattani
TJ.BK Gorno-Badakhshan
TJ.KL Khatlon
TJ.RR Tadjikistan Territories
TJ.LE Leninabad
TM.BA Balkan
TM.AL Ahal
TM.DA Tashauz
TM.LE Chardzhou
TM.MA Mary
TP.DL Dili
TP.LQ Liquica
TP.AM Ambeno
TP.AL Aileu
TP.AN Ainaro
TP.BC Baucau
TP.BB Bobonaro
TP.CL Cova Lima
TP.ER Ermera
TP.MT Manatuto
TP.MF Manufahi
TP.VQ Viqueque
TP.BT Lautem
TT.DM Diego Martin
TT.SI Siparia
TT.TP Arima
TT.SN Sangre Grande
TT.MR Mayaro/Rio Claro

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TT.SL San Juan/Laventille
TT.PT Princes Town
TT.CT Couva/Tabaquite/Talparo
TT.PD Penal/Debe
TT.PF Point Fortin
TT.TP Tunapuna/Piarco
TT.SF San Fernando
TT.CH Chaguanas
TT.PS Port of Spain
TN.TO Tozeur
TN.MN Manubah
TN.BJ Béja
TN.BA Ben Arous (Tunis Sud)
TN.BZ Bizerte
TN.JE Jendouba
TN.NB Nabeul
TN.TU Tunis
TN.KF Le Kef
TN.KS Kassérine
TN.GB Gabès
TN.GF Gafsa
TN.SZ Sidi Bou Zid
TN.SF Sfax
TN.SL Siliana
TN.MH Mahdia
TN.MS Monastir
TN.KR Kairouan
TN.SS Sousse
TN.ZA Zaghuan
TN.ME Médenine
TN.KB Kebili
TN.TA Tataouine
TR.AY Aydin

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TR.IZ Izmir
TR.BK Balıkesir
TR.CK Çanakkale
TR.ED Edirne
TR.KL Kırklareli
TR.TG Tekirdağ
TR.BC Bilecik
TR.BU Bursa
TR.IB İstanbul
TR.KC Kocaeli
TR.SK Sakarya
TR.BL Bolu
TR.ES Eskişehir
TR.KS Kastamonu
TR.AL Antalya
TR.AF Afyon
TR.BD Burdur
TR.DN Denizli
TR.IP Isparta
TR.KU Kütahya
TR.MN Manisa
TR.MG Muğla
TR.AD Adıyaman
TR.EG Elazığ
TR.KM K. Maras
TR.ML Malatya
TR.IC Mersin
TR.KH Kırşehir
TR.KY Kayseri
TR.NV Nevşehir
TR.HT Hatay
TR.AM Amasya
TR.CM Çorum

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TR.GI Giresun
TR.OR Ordu
TR.SP Sinop
TR.SV Sivas
TR.SS Samsun
TR.TT Tokat
TR.AV Artvin
TR.EM Erzurum
TR.EN Erzincan
TR.RI Rize
TR.TB Trabzon
TR.AG Agri
TR.BG Bingöl
TR.DY Diyarbakir
TR.MS Mus
TR.BT Bitlis
TR.AN Ankara
TR.CI Çankiri
TR.ZO Zinguldak
TR.KO Konya
TR.KR Karaman
TR.US Usak
TR.GA Gaziantep
TR.SU Sanliurfa
TR.AA Adana
TR.KK Kinkkale
TR.NG Nigde
TR.AK Aksaray
TR.YZ Yozgat
TR.GU Gümüşhane
TR.BB Bayburt
TR.KA Kars
TR.MR Mardin

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TR.BM Batman
TR.SI Siirt
TR.SR Sirnak
TR.TC Tunceli
TR.HK Hakkari
TR.VA Van
TW.KH.KC Kaohsiung City
TW.TW.PT Pingtung
TW.TW.TN Tainan City
TW.TW.HS Hsinchu City
TW.TW.HH Hsinchu
TW.TW.IL Yilan
TW.TW.CL Keelung City
TW.TW.ML Miaoli
TW.TP.TC Taipei City
TW.TW.TP New Taipei City
TW.TW.TY Taoyuan
TW.TW.CG Changhua
TW.TW.CH Chiayi
TW.TW.CS Chiayi City
TW.TW.HL Hualien
TW.TW.NT Nantou
TW.TW.TG Taichung City
TW.TW.YL Yunlin
TW.TW.TT Taitung
TW.TW.PH Penghu
TW.FK.KM Kinmen
TZ.MB Mbeya
TZ.RK Rukwa
TZ.ZS Zanzibar South and Central
TZ.MW Mwanza
TZ.SH Shinyanga
TZ.TB Tabora

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TZ.KR Kagera
TZ.KM Kigoma
TZ.DS Dar-Es-Salaam
TZ.MO Morogoro
TZ.PN Kaskazini-Pemba
TZ.PS Kusini-Pemba
TZ.PW Pwani
TZ.ZN Kaskazini-Unguja
TZ.ZW Zanzibar West
TZ.DO Dodoma
TZ.IR Iringa
TZ.LI Lindi
TZ.MT Mtwara
TZ.RV Ruvuma
TZ.SD Singida
TZ.AS Arusha
TZ.MY Manyara
TZ.KL Kilimanjaro
TZ.MA Mara
TZ.TN Tanga
UG.KN Kalangala
UG.JI Jinja
UG.KU Kumi
UG.KD Kaberamaido
UG.KY Kayunga
UG.IN Iganga
UG.KX Kamuli
UG.LI.KO Kyoga
UG.RO.BL Bulamogi
UG.BD.BD Budaka
UG.BK.BS Busiki
UG.SR Soroti
UG.MN Mukono

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UG.PL Pallisa
UG.SE Sembabule
UG.MI Mpigi
UG.AD Adjumani
UG.AW.AU Arua Municipality
UG.OK.KB Koboko
UG.BL Bujenje
UG.GL Gulu
UG.NE Nebbi
UG.MY Moyo
UG.YU Yumbe
UG.MH Maracha
UG.KM Kampala
UG.KG Kiboga
UG.NA Nakasongola
UG.WA Wakiso
UG.LW.BM Bamunanika
UG.MD Mubende
UG.TY.BS Busujju
UG.NK Nakaseke
UG.TG Kitgum
UG.AC Apac
UG.GL.AW Aswa
UG.LA Lira
UG.DO.DK Dokolo
UG.PD Pader
UG.MC Masindi
UG.OY.OA Oyam
UG.BN Bundibugyo
UG.HO Hoima
UG.BR Kabarole
UG.KJ Kyenjojo
UG.KI Kibale

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UG.KP Kapchorwa
UG.BW.KO Kongasis
UG.SI.BD Budadiri
UG.ME.BN Bungokho
UG.MF Manafwa
UG.BG Bugiri
UG.BU Busia
UG.BJ.BN Bunyole
UG.MG Mayuge
UG.TR Tororo
UG.KK.UU Usuk
UG.KF.JE Jie
UG.AM Amuria
UG.AB Kaabong
UG.AI.LB Labwor
UG.MT Moroto
UG.NP Nakapiripirit
UG.RA Rakai
UG.MA Masaka
UG.BS Bushenyi
UG.KS Kasese
UG.KE Kamwenge
UG.IB.IA Ibanda
UG.NG.BK Bukanga
UG.RR Mbarara
UG.NT Ntungamo
UG.RK Rukungiri
UG.RR.KS Kashari
UG.KA Kabale
UG.KR Kisoro
UG.UU Kanungu
UA.KR Crimea
UA.MY Mykolayiv

UA.CH Chernihiv
UA.RV Rivne
UA.CV Chernivtsi
UA.IF Ivano-Frankivs'k
UA.KM Khmel'nyts'kyy
UA.LV L'viv
UA.TP Ternopil'
UA.ZK Transcarpathia
UA.VO Volyn
UA.CK Cherkasy
UA.KH Kirovohrad
UA.KV Kiev
UA.MY Odessa
UA.VI Vinnytsya
UA.ZT Zhytomyr
UA.SM Sumy
UA.DP Dnipropetrovs'k
UA.DT Donetsk
UA.KK Kharkiv
UA.LH Luhans'k
UA.PL Poltava
UA.ZP Zaporizhzhya
UY.SA Salto
UY.SO Soriano
UY.CL Cerro Largo
UY.DU Durazno
UY.RV Rivera
UY.TA Tacuarembó
UY.TT Treinta y Tres
UY.CA Canelones
UY.FD Florida
UY.LA Lavalleja
UY.MA Maldonado

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UY.RO Rocha
UY.CO Colonia
UY.SJ San José
UY.AR Artigas
UY.FS Flores
UY.PA Paysandú
UY.RN Río Negro
US.MA Massachusetts
US.MN Minnesota
US.MT Montana
US.ND North Dakota
US.HI Hawaii
US.ID Idaho
US.WA Washington
US.AZ Arizona
US.CA California
US.CO Colorado
US.NV Nevada
US.NM New Mexico
US.OR Oregon
US.UT Utah
US.WY Wyoming
US.AR Arkansas
US.IA Iowa
US.KS Kansas
US.MO Missouri
US.NE Nebraska
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US.IL Illinois
US.IN Indiana
US.KY Kentucky
US.NC North Carolina
US.OH Ohio
US.TN Tennessee
US.VA Virginia
US.WI Wisconsin
US.WV West Virginia
US.DE Delaware
US.DC District of Columbia
US.MD Maryland
US.NJ New Jersey
US.NY New York
US.PA Pennsylvania
US.ME Maine
US.MI Michigan
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VE.FA Falcón
VE.AP Apure
VE.BA Barinas
VE.ME Mérida
VE.TA Táchira
VE.TR Trujillo
VE.TR Trujillo
VE.ZU Zulia
VE.CO Cojedes
VE.CA Carabobo
VE.LA Lara
VE.PO Portuguesa
VE.YA Yaracuy
VE.AM Amazonas
VE.BO Bolívar
VE.AN Anzoátegui
VE.AR Aragua
VE.DF Distrito Capital
VE.DP Dependencias Federales
VE.GU Guárico
VE.MO Monagas
VE.MI Miranda
VE.NE Nueva Esparta
VE.SU Sucre
VE.DA Delta Amacuro
VN.QN Quang Ninh
VN.TN Tây Ninh

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VN.DB Dien Bien
VN.TY Thái Nguyên
VN.LO Lào Cai
VN.LS Lang Son
VN.TH Thanh Hóa
VN.TQ Tuyên Quang
VN.YB Yên Bái
VN.HO Hòa Bình
VN.HD Hai Duong
VN.TY Thái Nguyên
VN.BN Bac Ninh
VN.VC Vinh Phúc
VN.HA Hà Tây
VN.NB Ninh Bình
VN.HM Hà Nam
VN.ND Nam Định
VN.PT Phú Thọ
VN.BG Bac Giang
VN.TB Thái Bình
VN.NA Nghe An
VN.QB Quang Bình
VN.KH Khánh Hòa
VN.LD Lam Dong
VN.NT Ninh Thuan
VN.PY Phú Yên
VN.BI Bình Duong
VN.BP Bình Phuoc
VN.BD Bình Định
VN.QG Quang Ngãi
VN.QT Quang tri
VN.TT Thua Thien-Hu
VN.DA Đà Nang
VN.BV Ba Ria-Vung Tau

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VN.DT Đồng Tháp
VN.HC Hồ Chí Minh city
VN.KG Kiên Giang
VN.LA Long An
VN.BR Bến Tre
VN.BL Bạc Liêu
VN.CM Cà Mau
VN.ST Sóc Trăng
VN.TV Trà Vinh
VN.VL Vĩnh Long
VN.CB Cao Bằng
VN.HG Hà Giang
VU.TR Torba
VU.SN Sanma
VU.TF Tafea
VU.ML Malampa
VU.PM Penama
VU.SE Shefa
YE.SD Sa`dah
YE.HU Al Hudaydah
YE.MW Al Mahwit
YE.DH Dhamar
YE.HJ Hajjah
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YE.LA Lahij
YE.TA Ta`izz
YE.MR Al Mahrah
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YE.SH Shabwah
YE.MA Ma'rib
YE.SN Sana'a
YE.HD Hadramawt
YE.AD `Adan
ZA.NC Northern Cape
ZA.WC Western Cape
ZA.NW North West
ZA.FS Orange Free State
ZA.GT Gauteng
ZA.MP Mpumalanga
ZA.NP Limpopo
ZA.NL KwaZulu-Natal
ZA.EC Eastern Cape
ZM.LP Luapula
ZM.NO Northern
ZM.CE Central
ZM.CO Copperbelt
ZM.EA Eastern
ZM.EA Eastern
ZM.LS Lusaka
ZM.NW North-Western
ZM.SO Southern
ZM.WE Western
ZW.MC Mashonaland Central
ZW.HA Harare
ZW.MN Matabeleland North
ZW.MI Midlands
ZW.ME Mashonaland East
ZW.MA Manicaland
ZW.MS Matabeleland South
ZW.BU Bulawayo
ZW.MV Masvingo

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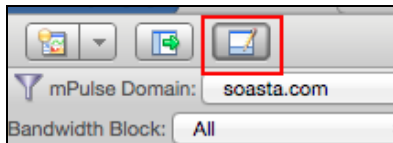
ZW.MW Mashonaland West

mPulse Analytics

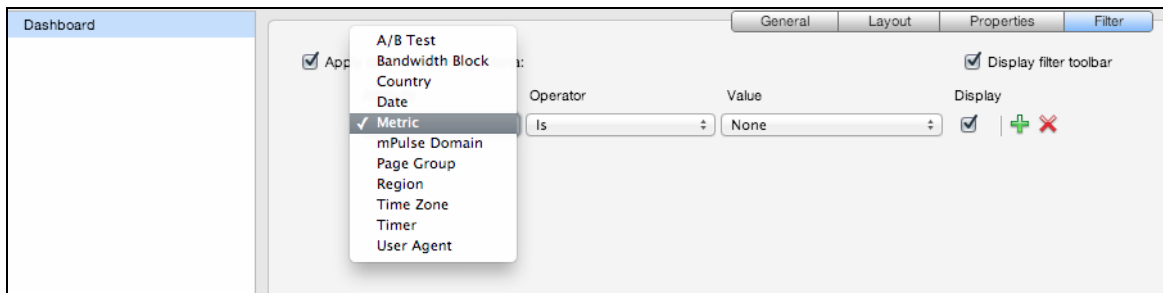
This release introduces new mPulse Navigation (or Default) Timers, Custom Timers, and Custom Metrics, as well as extending Time Zone support to the dashboard level (previously Time Zone support was provided only per widget).

- Custom Timers can be set via the Timer attribute wherever they have been defined (i.e. by a Domain Admin), and appear with Default Timers in the Dashboard Edit Panel, Filter tab, Value drop-down.
- Custom Metrics can be set via the Metric attribute wherever they have been defined (i.e. by a Domain Admin), and once added appear in the Dashboard Edit Panel, Filter tab, Value drop-down.

As with any dashboard settings, click the Toggle Dashboard Edit Mode button on the toolbar to access dashboard and widget properties including for custom filters (i.e. whether for timers or metrics).



- For dashboards, select the Filter tab and then choose Metric and, or Timer to set .



- For widgets, select the widget in the dashboard by clicking its title.

Globe Control Panel

The Globe Dashboard now features a new, transparent control panel that replaces the widget-level lower panel Globe settings in the Italia release.

For globe-specific settings, these new controls present easier, inline control. The legend appears in the lower left and controls are in the top-right corner.



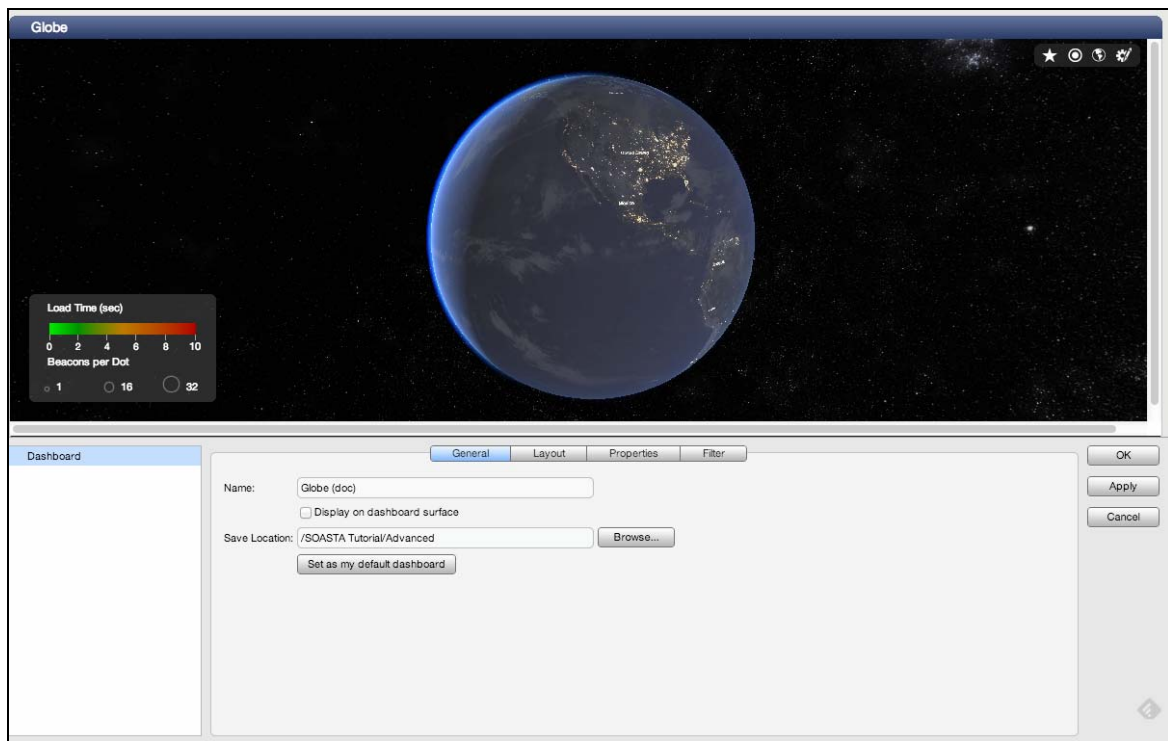
Four control icons now represent all the lower panel Globe settings: Location (Star icon), Beacon (Target icon), Globe (Globe icon) and General (Gear icon with edit).

New Globe Widget Filtering

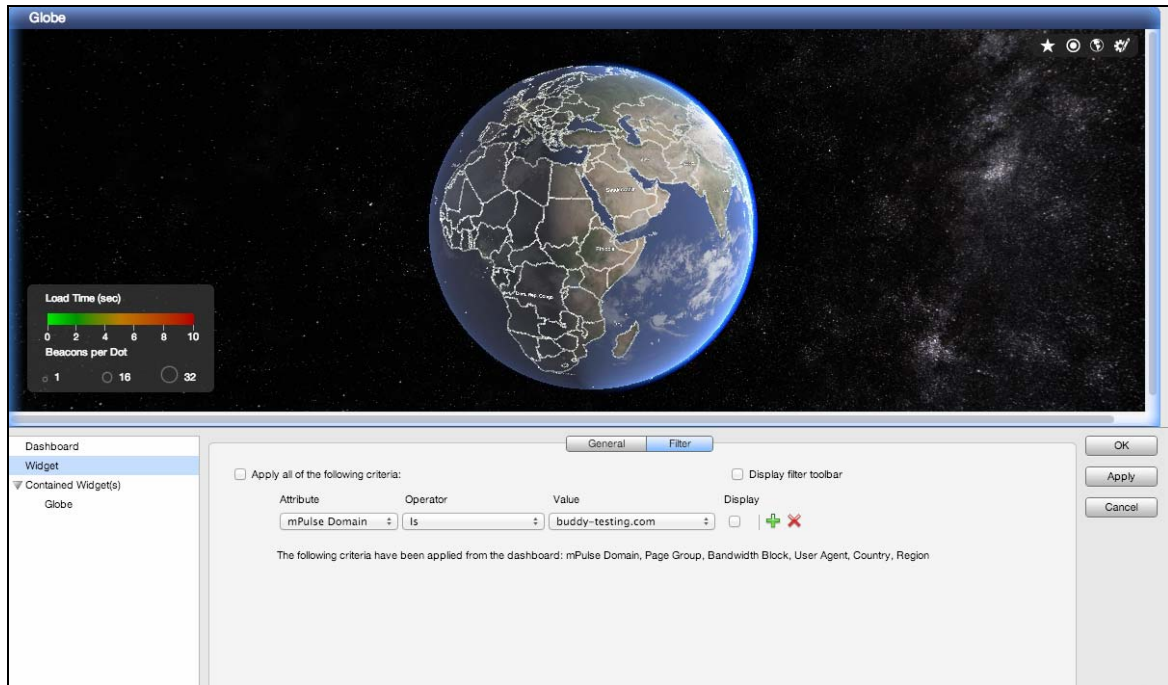
The Globe widget is now fully filterable in the manner of all other SOASTA widgets. In the prior release, the Globe was only filterable as a dashboard.

This means that the Globe widget can now live alongside other widgets in a custom dashboard. As with other dashboards, click the Toggle Dashboard Edit Mode button on the dashboard toolbar to edit settings and then click the Globe title bar to select it. .

TIP: If the Globe system dashboard hasn't been cloned, a prompt will appear to assign a name for this custom version. The Edit Panel appears exactly as it does in other dashboards.



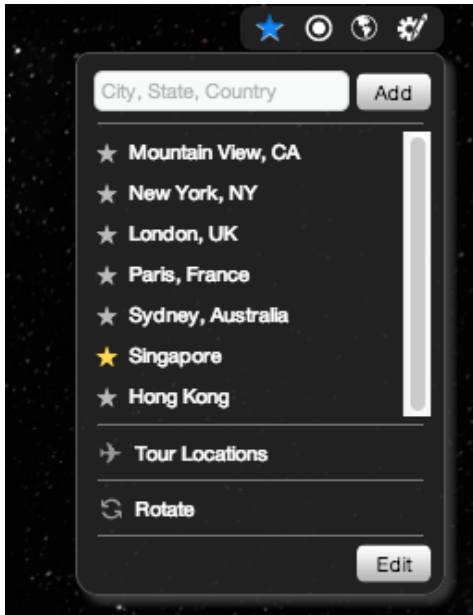
With widget selected on the left, you can use the four tabs: General and Filter tabs to apply criteria.



Using Location in the Globe Control Panel

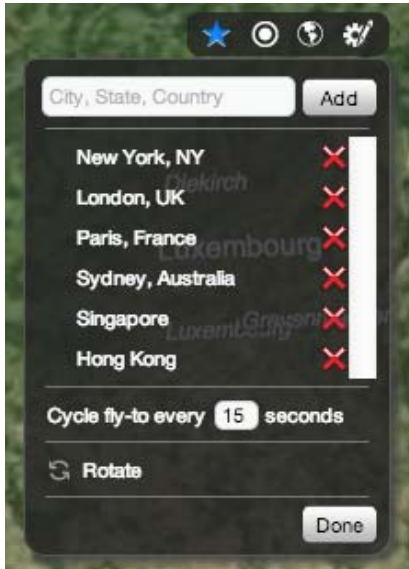
Favorite locations are now located in the Locations dropdown (Star icon) rather than on the surface Legend of the prior release. As a result of this move, both the locations to fly-to and the ability to edit them are in one location.

1. Click the Star icon to access location settings in the Location drop-down.



2. Click any listed location to fly-to its given location on the Globe.
 - To add a new location, enter it into the entry field and click the Add.
 - Click any default or custom location to fly to (out if you're already zoomed into a location, in if you're at satellite view) to the desired location. The defaults are Mountain View, CA; New York, NY; London, UK; Paris, France; Sydney, Australia; Singapore, and Hong Kong.

- To tour all of the locations, click the new Tour Locations command in the Locations drop-down. When you do so, the Globe will visit each of the favorite locations in the order listed.
- To rotate the globe at a steady rate, click Rotate. The globe background rotates along with the globe itself for increased realism.



- To cycle fly-to every n seconds, click Edit to enter Edit mode and enter the number of seconds as an integer.
- To delete one or more favorite locations, click the Edit button. Click the Delete icon to remove any of the locations listed. Click Done to exit Edit mode.

Using Beacon Settings in the Globe Control Panel

Beacon settings are now located in the Beacon dropdown (Target icon) rather than with the surface Legend of the prior release.



- Beacon Marker Color settings are unchanged from the prior release, with the exception of tweaks to the color ranges (detailed below).
 - By default, green beacons are matched lighter to darker with the 0 seconds through 3 second range. The default higher range was 2 seconds in the Italia release. Change the top number of this range according to need.
 - By default, yellow beacons are matched lighter to darker from the top of the green range (3 seconds by default, 2 in the prior release) through 5 seconds. If the prior range has been changed then the start of this range resumes at that point (so, for example if green now ends at 6 then the yellow range will start at 6). Be sure to adjust the subsequent ranges accordingly.
 - By default, red beacons are matched lighter to darker from the top of the yellow range and anything higher.
- Beacon Size settings are unchanged from the prior release. Use the beacon size slider to control the size display of beacon data from small to large.
- Beacon Lifespan is unchanged from the prior release. This setting controls the duration of the beacon pulse's appearance on the globe.

Using Globe Settings in the Globe Control Panel

The Globe's Base Imagery settings are now located in the Globe dropdown (Globe icon) in addition to the lower panel editor Imagery section. Additional Imagery settings are found in the General drop-down (as well as in the lower panel).

Choose from among the Base Imagery globes shown in the Globe drop-down.



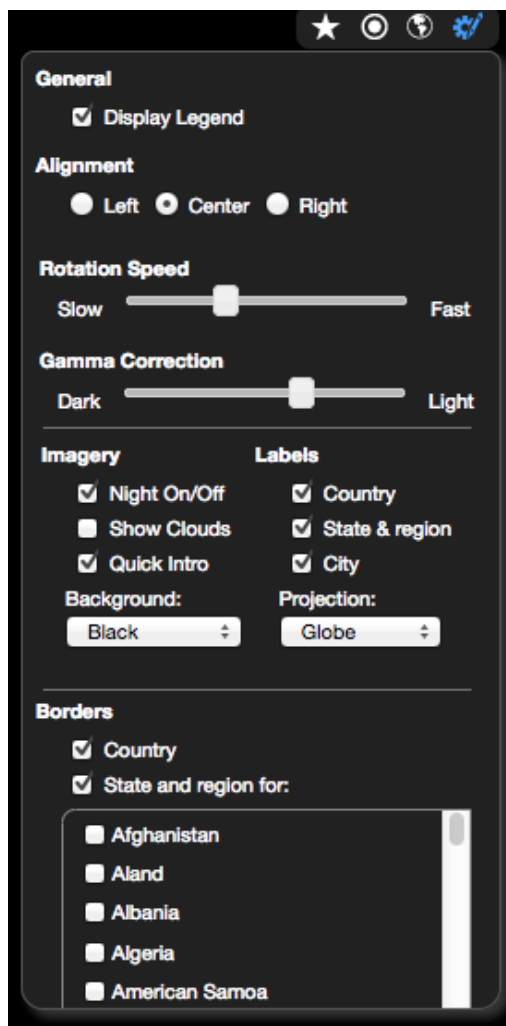
- **Blue Marble** (the classic global nickname for our planet displays Earth as if from a satellite or a traveling spacecraft)
- **MapQuest Street** (MapQuest globe with political boundaries and other features including street plotting my MapQuest)
- **MapQuest Aerial** (MapQuest's aerial globe)
- **mPulse Dark** (mPulse Dark shows darkened land masses)
- **mPulse Light** (mPulse Light shows white land masses)

TIP: Additional Imagery settings are presented in the General drop-down and are also still found in the lower panel

Using General Settings in the Globe Control Panel

General settings are now found in the General drop-down (as well as in the lower panel). Additional Imagery settings are also found in this menu.

- Check/uncheck Display Legend to toggle the legend on the Globe surface
- Use the rotation speed to control the rate at which the globe spins.
- Use gamma correction to control the dark to light range of the Globe display itself.
- Use additional Imagery settings to control night (on/off), toggle clouds, use a quick intro (on globe launch)
- Use the background settings to control the background for the globe itself.



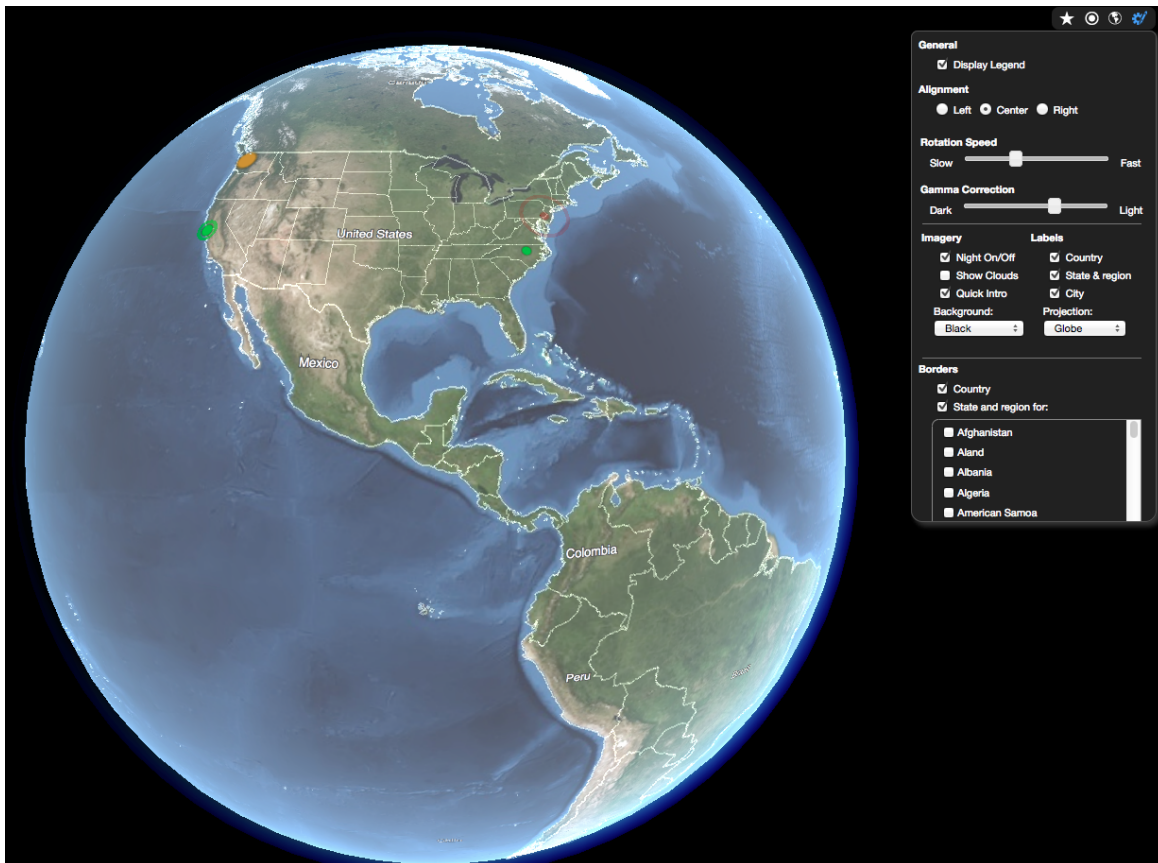
Choose from among Starfield (shows a black background in a field of stars), White, Black (with no stars), and Transparent (for combining with other charts and interpolating data).

- Use Labels to toggle place name labels (check/uncheck). City labels are not shown by default. Check Show city labels if you prefer to show them. Additional labels will display on zoom.
- Use Borders to toggle (check/uncheck) political borders, which are not shown by default. Check Show country borders or Show state and region borders for: to enable them. Note that state and region borders are only applicable to one country at a time. Check any countries whose borders you'd like to show.
- Use Projection to select between 3D Globe view and

2D Columbus (e.g. "flat earth" map projection) modes.

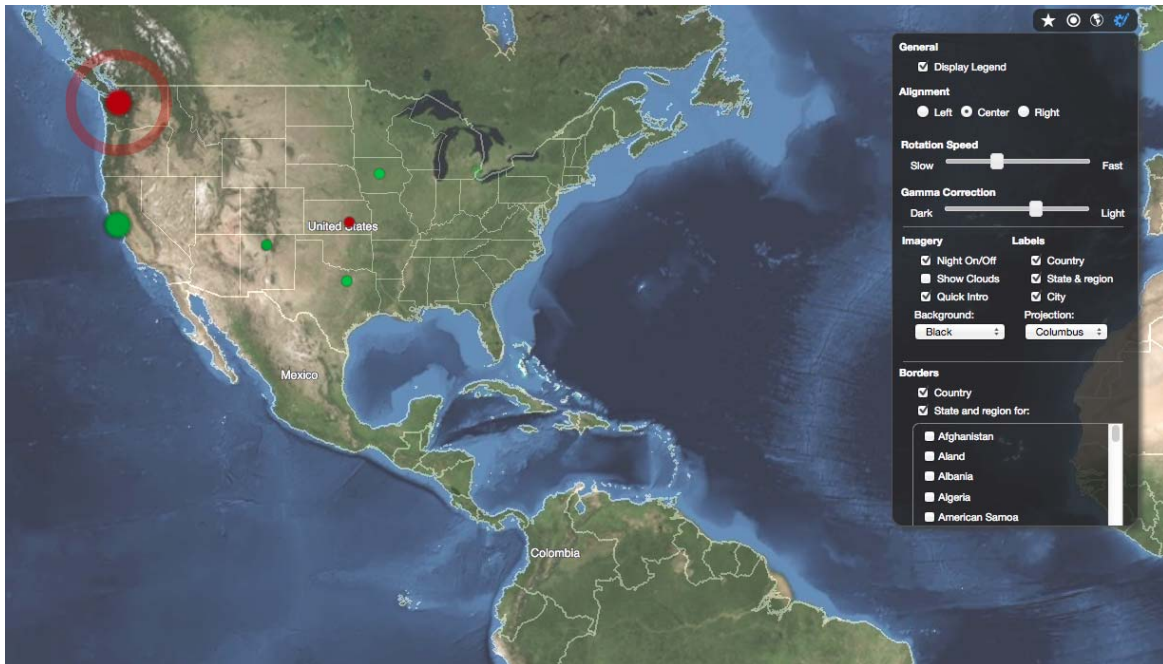
This is new to this release and permits the user to view all of the Earth as if projected onto a flat surface as is common on two-dimensional maps.

In the screenshot below, projection is set to the default, Globe mode.



When projection is set to Columbus the globe switches to flat earth (at whatever level of zoom was already in effect).

Note that animation continues when projection is set to Columbus, just as it would in globe mode.



Metric Analysis Dashboard

A new Metric Analysis system dashboard is introduced in this release. This dashboard is for users who define new custom metrics such as Conversion rate, Number of items sold, total sales in dollars, and number of comments are all examples of things users might track with a custom metric. As with any system dashboard, you will be prompted to clone the dashboard when you attempt to change its settings—when this occurs simply give your new custom Metric Analysis dashboard a new name.

Note: System dashboards are provided out-of-the-box whenever a new tenant is created and cannot be modified; however, they can be cloned, renamed, and then modified.



The following widgets are included in this new system dashboard.

Timers and Metrics (New Widget)

This new summary widget presents configured timers and metrics for the given Domain.



To select from among possible timers and metrics, click Toggle Dashboard Edit Panel, and then select the widget by name in the lower panel Edit Panel tree. Check each box you'd like to show in the dashboard or uncheck those you'd like to remove.

Dashboard

Widget

▼ Contained Widget(s)

Timers and Metrics

General

- ☒ Page Views
- ☒ Sessions
- ☒ Bounce Rate

Navigation Timing

- ☐ DNS Resolution Time
- ☐ TCP Connect Time
- ☐ SSL Handshake Time
- ☐ Time to First Byte
- ☐ DOM Loading Time
- ☐ DOM Ready Time
- ☐ Front End Time
- ☐ Load Time

General and Navigation Timing metrics are provided here by default (although the latter are not checked for widget display by default).

Other timers and metrics will appear if the Domain Admin has defined a custom entry for them. Note that the plugin code for the given custom timer or metric must be distributed into pages for data to be collected.

Dashboard

Widget

▼ Contained Widget(s)

Timers and Metrics

☐ TCP Connect Time

☐ SSL Handshake Time

☐ Time to First Byte

☐ DOM Loading Time

☐ DOM Ready Time

☐ Front End Time

☐ Load Time

Custom Timers

- ☒ MapImageLoad

Custom Metrics

- ☒ LandGrab Score
- ☒ LG Coins
- ☒ Index
- ☒ Game Created

TIP: The Timers and Metrics widget also appears in the Widget Selection Panel, Widget Types, RUM list and can be added to custom dashboards.

Metric vs. Page Load Time (Combined Widget)

This combined widget appears in the Metric Analysis dashboard and compares a given metric (shown on the left margin) vs. Page Load Time. The metric in display is shown as a red line and appears on the X-axis (below). This widget doesn't appear in the RUM list of widgets, but is created by combining Metric Over Time and Page Load Time.



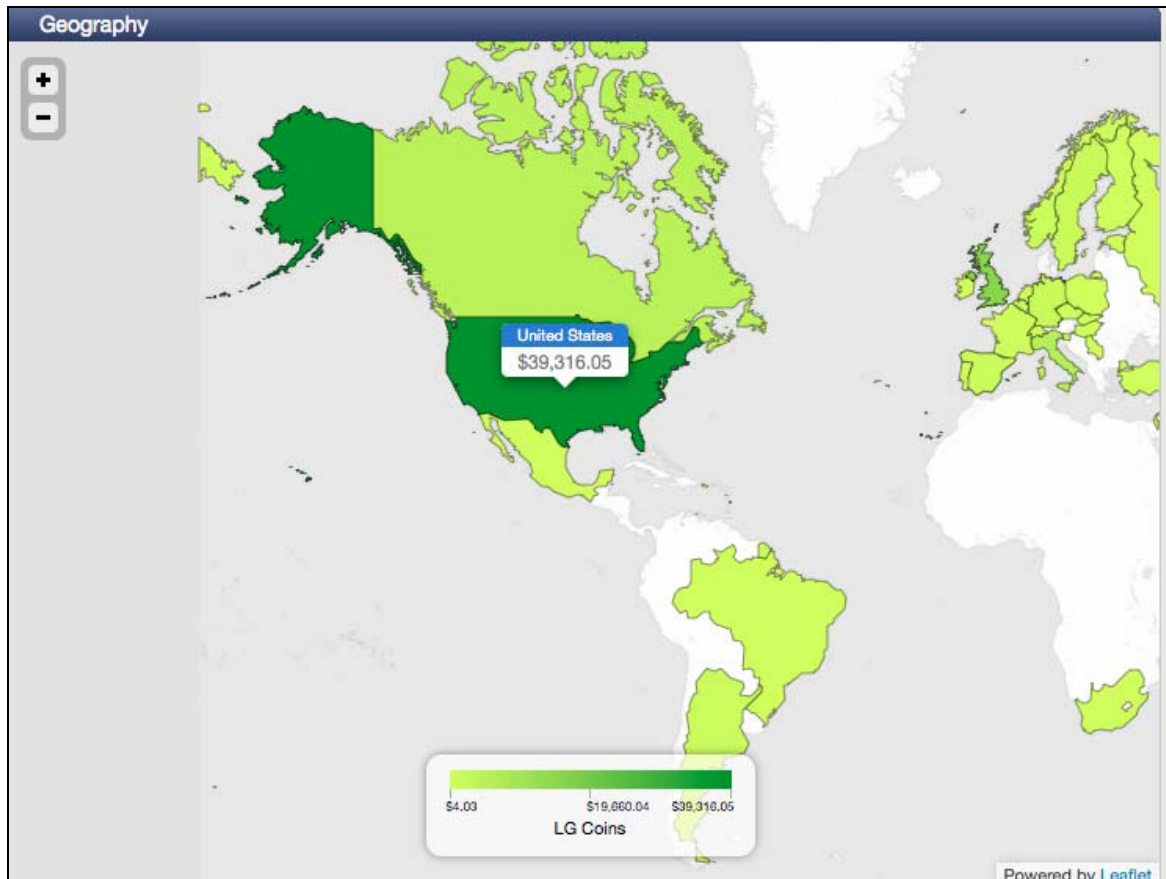
Select from the configured metrics using the Dashboard-toolbar Metric drop-down. This selection applies to the entire dashboard.

Country: All	Region: All
None	Metric: Bounce Rate

Note: Alternately, if a second Metric attribute is defined at the dashboard level then the last metric defined at the dashboard level will be shown. Typically, it will not be necessary to define more than one Metric attribute for the dashboard since the Value drop-down makes it easy to drop select the value to display.

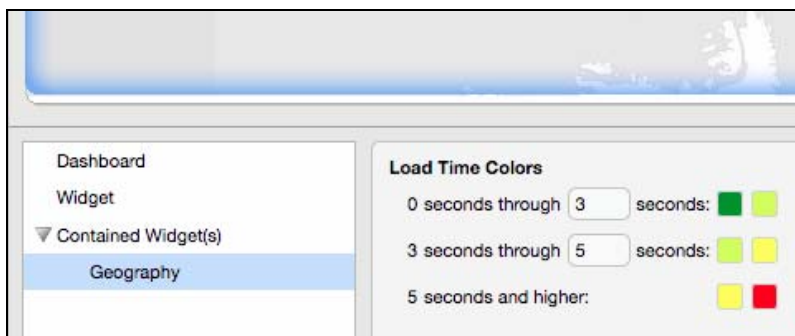
Geography (with new Custom Metric Popups)

The Geography widget is included in the Metric Analysis dashboard and will display popups for the custom metric selected at the dashboard level as data for that metric arrives. The Custom Metric Legend also appears to indicate the color range for the given metric.

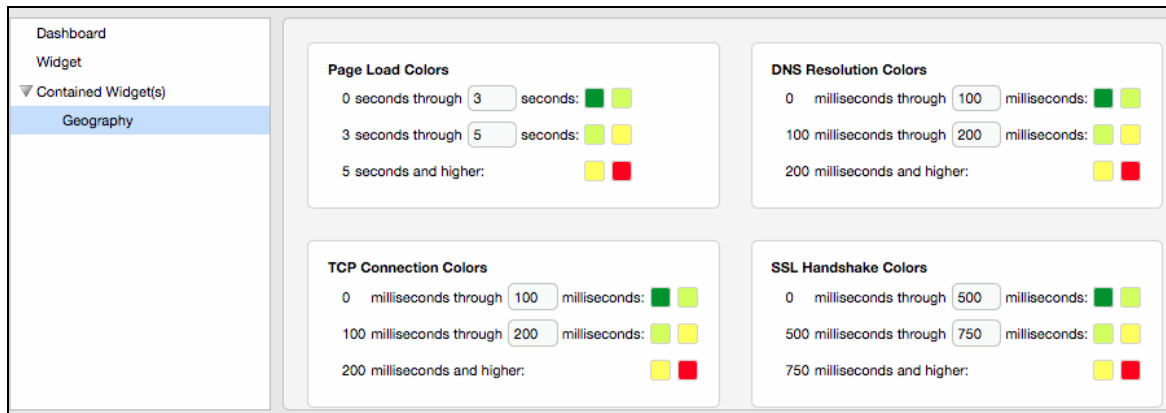


New Geography Widget Settings

In the prior release, the Geography widget settings included only those settings related to the Page Load metric (i.e., Load Time Colors).



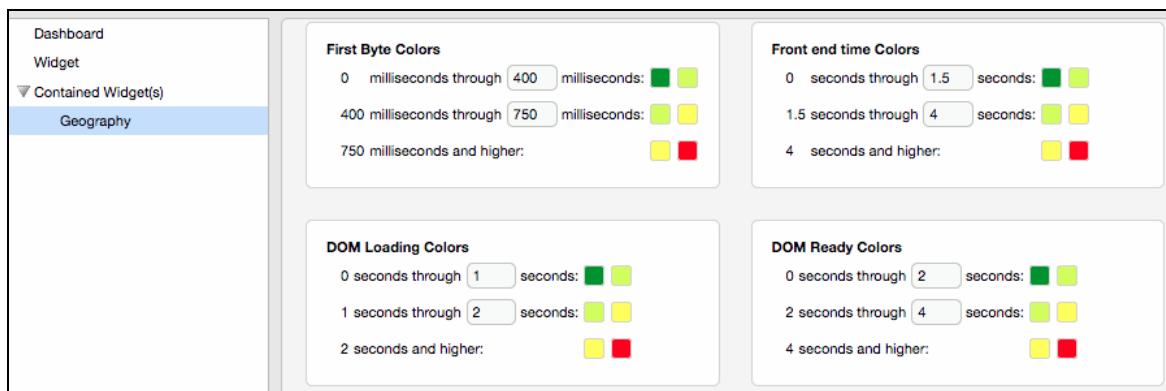
Now, the Geography widget has settings that correspond to the Default Timer Attribute filters discussed above.



Set the color range that corresponds to the length of time for any of the following timer attribute filters:

- **Page Load Colors** – Set the color range for the default timer on page load time (renamed, was "Load Time Colors" in the prior release)
- **DNS Resolution Colors** -- Set the color range for the default timer on DNS resolution (e.g. the time it takes to resolve a DNS name to its IP address)
- **TCP Connection Colors** -- Set the color range for the default timer on the Transmission Control Protocol (TCP) connections in a session.
- **SSL Handshake Colors** -- Set the color range for the default timer on SSL Handshake.

Scroll down to view the remaining color range options.



- **First Byte Colors** – Set the color range for the default timer on the first byte received in a session.
- **Front end Time Colors** – Set the color range for the default timer on front-end time. Frontend time is client-side time such as the additional time it takes to fully render any content.
- **DOM Loading Colors** – Set the color range for the default timer on loading the DOM (e.g. after the client has finished loading all window frames, objects, and images).

- **DOM Ready Colors** – Set the color range for the default timer on the DOM ready status. This event represents the moment when the browser has fully processed the DOM structure of the HTML document.

Page Groups (by Custom Metric)

The Page Groups widget is included in the Metric Analysis dashboard with a breakdown for each custom metric by page group defined for the given Domain.

Page Groups			
Page Group ▼	LandGrab Score	LG Coins	Index
ViewLogs	31,874,780		\$840.71
ViewCards	192,274,097		\$8,589.89
ViewBoard	1,012,575,597		\$46,085.13
StatsBoard	1,637,916		\$54.05
Registrar	1,117,605		\$47.40
ReferAFriend	28,999		\$7.81
RealtimeBoard	141,961,438		\$5,669.99
PurchasePremium	28,999		\$7.81
Notifications	0		\$0.26
NewGame	7,437,228		\$363.55
Messages	35,651,239		\$2,383.64
Marketplace	1,392,549		\$73.77
MapBrowser	101,536		\$12.30
LoginServlet	0		\$0.00
LandGrabCoins	156,158		\$20.16
Home	480,596,029		\$22,536.77
HistoryPlayback	6,153,982		\$825.61
GameSelection	342,001		\$32.87
GameSearch	4,054,525		\$42.10

Configure the display by opening the Edit Panel and then selecting the Page Groups widget in the tree. Check or uncheck the Metric(s) to show.

Dashboard

Widget

▼ Contained Widget(s)

Page Groups

Dimension

Page Group

Metrics

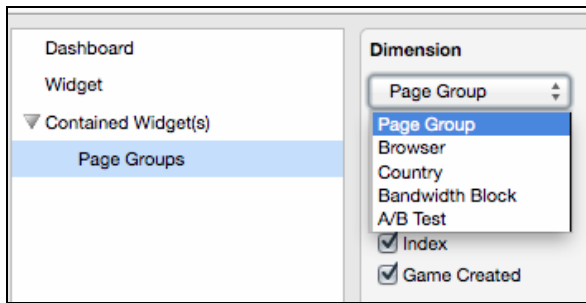
☒ LandGrab Score

☒ LG Coins

☒ Index

☒ Game Created

Optionally, you can also select a different Dimension to display here.

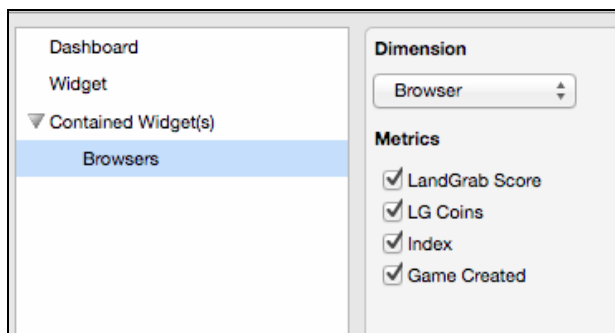


Browsers (by Custom Metric)

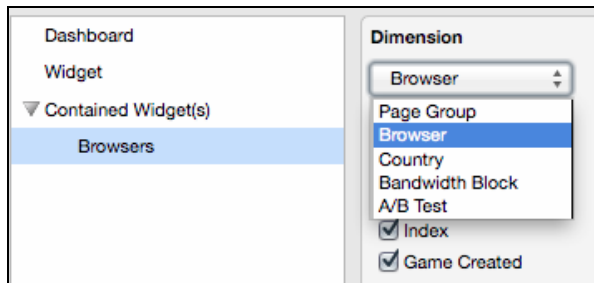
The Browser widget is included in the Metric Analysis dashboard with a breakdown for each custom metric by browser for the given Domain.

Browsers		
Browser	LandGrab Score	LG Coins
Safari/6	54,658,764	\$4,330.69
Safari/5	31,030,294	\$2,321.59
Opera/12	79,551	\$30.96
Mobile Safari/6	82,349,094	\$2,824.35
Mobile Safari/5	24,047,206	\$911.86
IE/9	55,247,475	\$2,433.49
IE/8	6,808,257	\$331.89
IE/7	6,163,053	\$258.37
IE/10	1,943,900	\$380.68
Iceweasel/10	14,140	\$4.47
Firefox/9	17,784,669	\$1,113.21
Firefox/8	6,835,257	\$294.12
Firefox/4	46,214	\$17.08
Firefox/3	420,680	\$503.60

Configure the display by opening the Edit Panel and then selecting the Page Groups widget in the tree. Check or uncheck the Metric(s) to show.



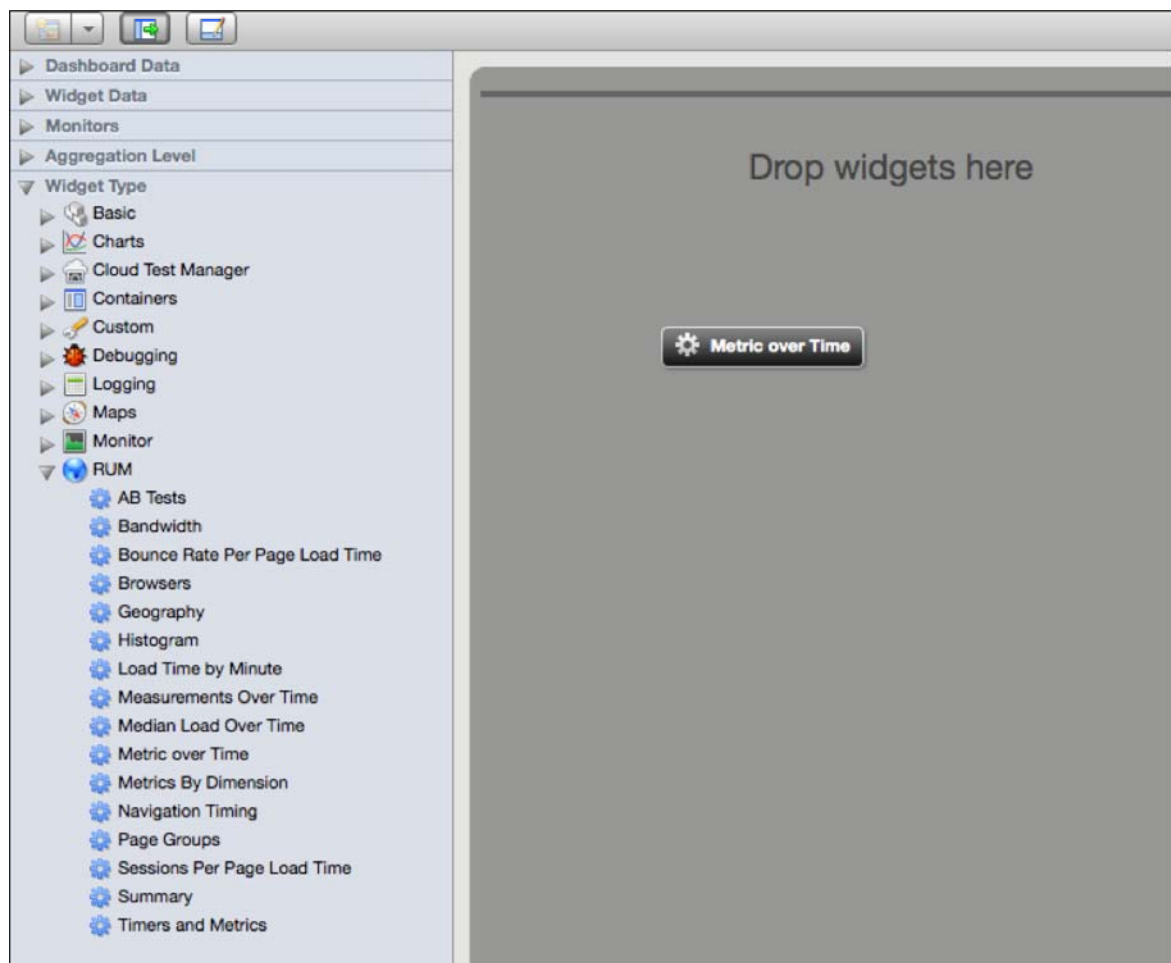
Optionally, you can also select a different Dimension to display here.



Metric over Time (New Widget)

The Metric over Time widget is a new widget and also appears in the Metric Analysis system dashboard. This widget will compare the dashboard-level metric selection over time. Other dimensions can be selected in this widget's options.

In addition to appearing in the Metric Analysis system dashboard (see above), This widget can be added to any custom dashboard from the Widget Selection Panel, Widget Types, RUM list.



Once added to an empty dashboard, the widget appears with the dashboard-filtered metric measured over time.



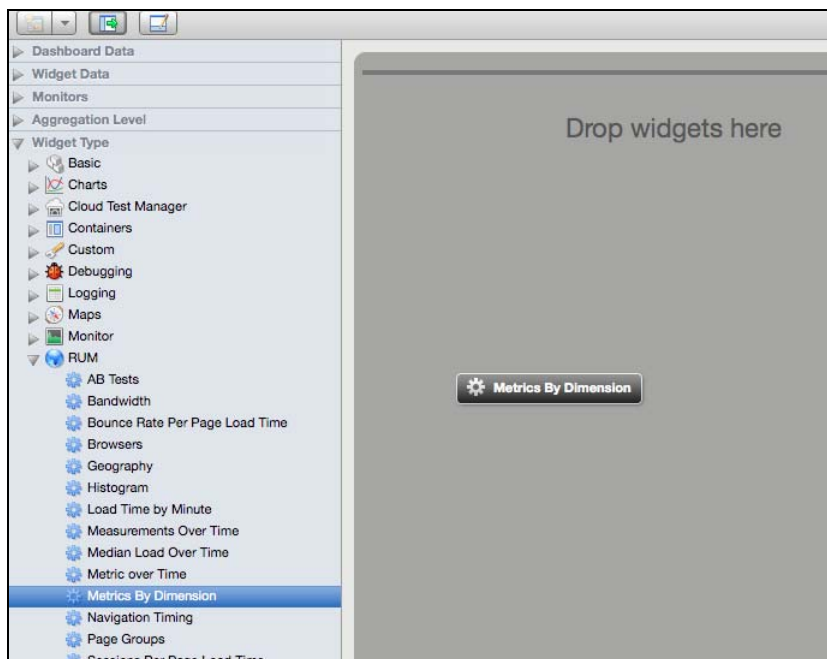
Other New mPulse Widgets

The following additional widgets are new to this release but do not appear in the Metric Analysis system dashboard.

Metrics by Dimension (New Widget)

The Metrics by Dimension widget will compare the dashboard-level metric selection over time. Other dimensions can be selected in this widget's options.

In addition to appearing in the Metric Analysis system dashboard (see above), This widget can be added to any custom dashboard from the Widget Selection Panel, Widget Types, RUM list.



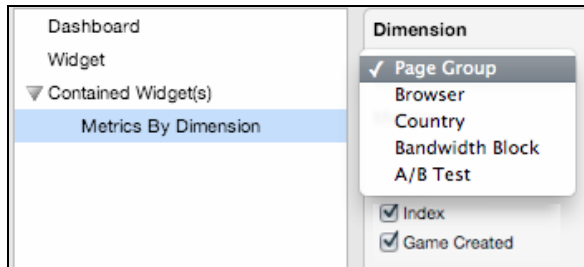
Once added, choose the default dimension (Page Group, Browser, Country, Bandwidth Block, or A/B Test). The selected dimension becomes the left most column.

Metrics By Dimension				
Page Group ▼	LandGrab Score	LG Coins	Index	Game Created
ViewLogs	9,975,847	\$579.43	0	0%
ViewCards	202,089,823	\$15,250.32	0	0%
ViewBoard	952,191,403	\$65,109.87	0	0%
SuperRewards	59,637	\$89.58	0	0%
StatsBoard	25,003,965	\$839.06	0	0%
Registrar	761,878	\$91.02	0	0%
RealtimeBoard	147,159,013	\$9,098.97	0	0%
Notifications	0	\$34.68	0	0%
NewGame	29,328,967	\$1,160.26	0	0%

The selected default dimension appears in the first column, Then, choose any number of custom metrics for the additional columns (2-n) using the lower panel. Blue text in each row represents a clickable link to drill into data.

Selecting Custom Metrics by Dimension

Custom metric widgets can be configured to show any dimension by accessing the Edit Panel and then selecting the widget name in the tree and then using the Dimension dropdown to make an alternate selection.

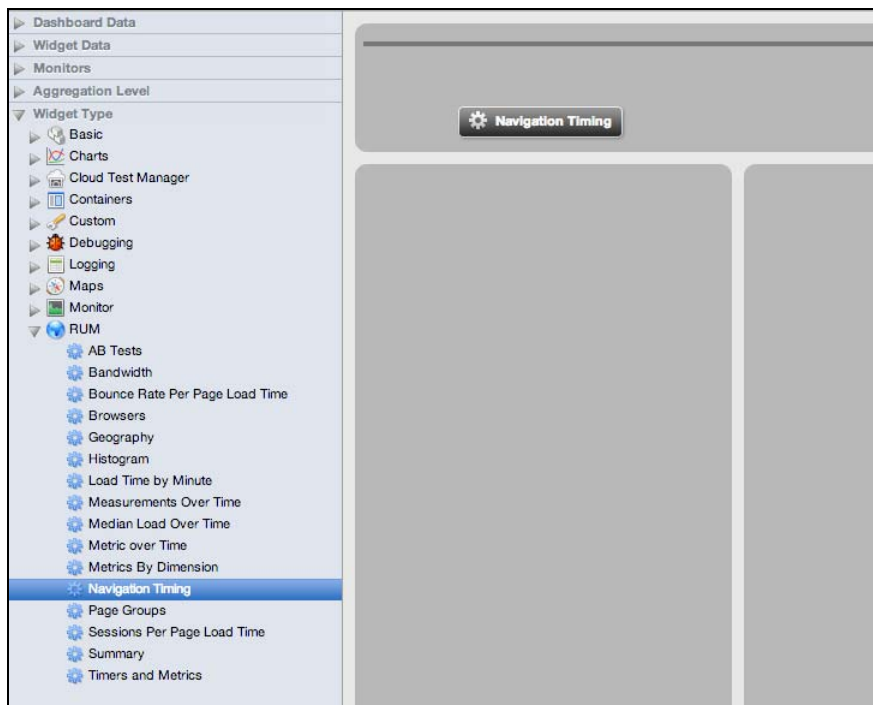


The Dimension dropdown appears in the Browsers, Page Groups, and Metrics by Dimension widget lower panel options, Dimension drop-down. If Metrics are also defined, they appear here in the Metrics section (i.e. Index and Game Created in the shot above are both custom metrics available to this widget).

Navigation Timing (New Widget)

The Navigation Timing widget will compare the dashboard-level navigation timing selection over time. Other navigation timers can be selected in this widget's options.

This widget can be added to any custom dashboard from the Widget Selection Panel, Widget Types, RUM list.

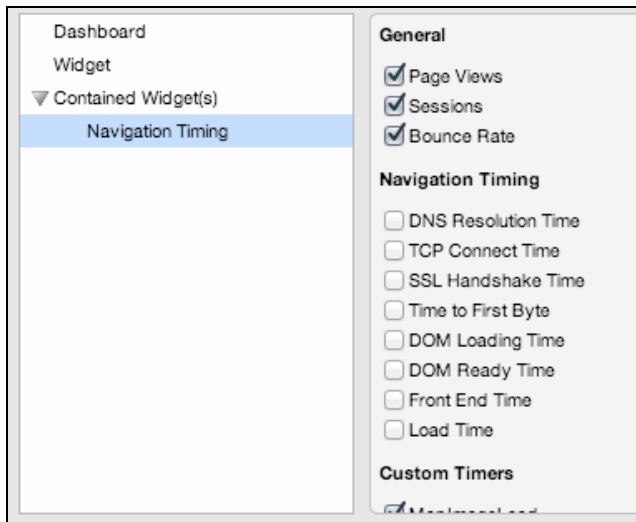


Once added to an empty dashboard, the widget appears with null values. If it is added to an existing dashboard, some timers may be on by default.



Selecting Navigation Timers

Navigation timers are found in the widget filters node when the widget title bar is selected. Click Toggle Dashboard Edit Mode on the dashboard toolbar and then select the Navigation Timing widget by name in the Edit Panel tree.



Check any timer in the navigation timing section to add it to the Navigation Timing widget. New timers are added to the right of existing timers.

Bugs Fixed

53559: TouchTest iOS records UIScrollView 'Scroll' but won't find control on replay; [\[requires new TouchTest Driver\]](#)

A Swipe right on the first item in the display in an iOS native app would record as 'Scroll' on 'UIScrollView' but didn't playback as expected.

53557: Android R.id and TouchTestId are the same for TouchTest

The computed locator for R.id R.id (from XML Layout) and touchTestId (id='toto') should be handled in the same way.

- R.id is the default TouchTestId
- TouchTestId can be set to override any R.id

Previously, the XML View Hierarchy displayed only TouchTestID now it also gets the R.id from XML layout.

53549: Set touchtestid on table view in Titanium SDK [\[requires new TouchTest Driver\]](#)

TouchTest would set the touchTestId on the wrong view on the iOS side of a cross-platform test (as has been seen in similar cases for text field). The touchTestId is now set on the UITableView on the iOS side. For cross-OS scrolling, testers should use scrollToVisible on the same touchTestId.

53532: scrollToVisible isn't waiting for the gesture to complete [\[requires new TouchTest Driver\]](#)

A waitForGestureComplete on a scrollToVisible in a given composition would complete in 0 ms, thus making the wait ineffective as it takes time for the scroll to happen.

53431: NTLM Authentication at the Target level throws a Java exception

This Java exception would occur when realm parsing unexpectedly failed in a clip whose underlying target used NTLM authentication.

53429: Loading of Seed Data is incomplete in certain scenarios

If there is less seed data available than asked for, what data there is, is distributed proportionally, but evenly, among all of the servers. If the data doesn't divide evenly among the servers, some data will not be used, as each server gets an equal slice.

In the case of a single server, the mathematics were still being gone through, which, if the disparity between the requested and the actual was large enough, could result in some rounding, resulting in a row or two not being used.

The computations have been changed for the single server case only to bypass the computations and just give all available rows to the single server.

Note that in the multi-server case it is still possible for some seed data rows to not be used if the number of seed data rows available is less than requested and what is available doesn't divide evenly among all of the servers. This is expected.

53406: Android manage memory related error while taking screenshot
[\[requires new TouchTest Driver\]](#)

A screenshot capture would fail with a memory-related error. This fix allows Android TouchTestDriver to handle memory errors and display a proper message instead of crashing the app.

53399: Android TTD ConcurrentModificationException terminates the app
[\[requires new TouchTest Driver\]](#)

A problem with ConcurrentModificationException animation would terminate the app during a recording session.

53379: Unable to get value of the property 'style': object is null or undefined; JS line 763

This JavaScript error happened when clicking the "Show Details" link in the Invalid Server List dialog.

53354: TouchTest Web (Android) displays only part of website

A web site that rendered correctly in other mobile browsers on the EVO 4g and the Galaxy S3 was only partly rendered by the TouchTest Web viewer for Android.

53353: type action does not play back in TouchTest Web (Android)

The Type command failed to replay a type action's textfield entry causing the TouchTest Web clip to fail with a "Device has timed out" error.

53348: Android TouchTestDriver crashes on requestFeature() must be called before adding content [\[requires new TouchTest Driver\]](#)

Android TouchTestDriver would crash when requestFeature() was called before setContentView().

53447: Appcelerator: Unable to record clip on iOS Device webView [\[requires new TouchTest Driver\]](#)

Recording would unexpectedly fail with a "device agent timed out" error on an iOS device running a Titanium Studio default app

53317: Android TTD SocketTimeoutException may crash the app [\[requires new TouchTest Driver\]](#)

This Android TouchTestDriver SocketTimeoutException null pointer error will no longer crash the app.

53262: TouchTest Agent layout issue on Android Phone

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A layout issue would scramble the appearance of TouchTest Agent on some Android devices.

53254: New Taps don't work on Android ICS and lower recording [\[requires new TouchTest Driver\]](#)

New Taps didn't work on the Galaxy S3 device as expected. This fix adds compatibility to API 15 and also adds a fallback in Instrumentation.

53209: Beacon count in per-minute tooltip should be a whole number

Per-minute tooltips in some mPulse charts unexpectedly showed decimal place of precision, but a partial beacon never occurs in this view.

53191: Region filters for non-US/Canada are ignored

Filtering the mPulse Dashboard by regions in countries other than the US or Canada didn't work as expected.

53148: Android Spinners are broken at recording [\[requires new TouchTest Driver\]](#)

Taps on spinners were broken in Android. For example, neither the initial tap that opened a spinner, or the initial tap in the spinner itself was recorded.

53141: Locator ID not present in Android is present on iPhone [\[requires new TouchTest Driver\]](#)

A Locator recorded in an iPhone app unexpectedly failed to appear in an Android app.

53113: Repository name of domain prevents pairing sub-domains

Because the repository name of a domain and the domain attribute were linked users were prevented from collecting data for multiple domain/sub-domain pairs. For example, x.mydomain.com, y.mydomain.com, and z.mydomain.com could easily be setup as 'mydomain.com', but if in some cases the user wanted to use only two of those three domains the collected data couldn't be aggregated to this preference. Now, the "domain" attribute is unlinked from the domain's name in the repository so they can be different.

53077: Target XML Info not being shown for target

The XML button in the Target Editor, WSDL view lower panel has been removed for this release.

53052: Clip fails to verify and wait on relevant elements

A clip failed on verifyElementVisible for a title, as well as missing a waitForElement visible, and therefore missed a subsequent tap. Now, the Titanium Android plugin will now weave jars present in Titanium modules as well.

53050: WebDoubleClick Action in iOS Hybrid webView does not work

Double-clicks in TouchTest Web didn't work as expected.

53034: Date couldn't be parsed

Selecting a past date when no time zone filter existed would cause this JavaScript error.

52913: Listeners are not injected on View Update

TouchTest wasn't adding listeners to the views when the view updates in an Android app, which meant that when the new page loaded, text watcher wasn't injected into the Edit Text elements and recording *type* was unsuccessful. Listeners are now injected into all views added to a ViewGroup dynamically.

52888: iOS App Quits Recording [\[requires new TouchTest Driver\]](#)

There was a crash happening due to an invalid selector sent to a class (e.g. a method not found exception).

52851: Result Details Widget has a scrolling issue

The box panels in the Result Details widget lacked enough vertical scrolling to be of use.

52826: Uploading Binary Data should clear out previous value in data section

After uploading binary data in the data section of a POST the prior binary data content wasn't auto-cleared.

52821: Filter to Australia = dashboard never finishes loading

Setting a Globe filter to 'Australia' would cause dashboard loading to take an inordinately long time.

52721: Global Property list didn't auto-refresh after adding a property

After creating a Global Property List using the dialog box provided, the Property list didn't update as expected.

52707: Post Operations for Assets not showing up on Recording to Clip Conversion

Recorded messages with OAuth authentication weren't properly matching existing targets.

52700: Exception: No row with the given identifier exists

This error occurred while deleting a tenant.

52605: Dashboards in Composition mode using Fill Window layout get cut off

When viewing a dashboard in Composition mode, the bottom of the Edit Panel in widgets that take up the whole window when the dashboard is in "Fill Window" layout—such as the Waterfall Dashboard—would get cut off by a few pixels. Changing to "Fill Width and Scroll" layout would make these widgets show up correctly in normal mode, but the Edit Panel was still cut off.

52593: Uncaught TypeError: Cannot read property 'enabled' of null; JS line 1390

Additional null checking was added to detect further occurrences of this issue.

52531: No input into the location landings search input

The TouchTestID was added to the wrong view for the TiUISearchBar element. Now, If an instance of TiUISearchBar is encountered, the TouchTestID is set on the EditText child.

52526: Uncaught TypeError: Cannot call method 'onResize' of undefined; JS line 2498

Additional null checking code has been added to detect further occurrences of this Dashboard Edit Mode null check error.

52455: Possible clip creation error when recording into clip

An HTTP clip recorded in the Clip Editor resulted in a Maestro error when Play in Test Composition was selected.

52450: Android playback not working with iOS recording [[requires new TouchTest Driver](#)]

A number of taps in a given app that were recorded in iOS wouldn't playback in the same app on Android.

52448: Android TouchTestDriver type wrongly recorded

The recorded output of a given login didn't match expectation and included an invalid tap.

52412: Cannot call method 'getAppActionTargetImgSrc' of undefined

This error occurred if the user clicked Undo after adding a new app action from the Clip Editor lower panel, Action list.

52270: TouchTestDriver didn't pick the correct webView [[requires new TouchTest Driver](#)]

The TouchTestDriver didn't pick the correct webView to send the touchup, thus resulting in a failed clip.

52043: HTML view in Result Details gets cut off

Content in the Result Details, HTML view (lower panel) was unexpectedly cut off.

51887: Unparseable date: "3 April 2013"

This date error occurred after the user disabled dashboard animations in the lower panel property editor (e.g. Edit Panel, Property tab).

51820: UI doesn't show Servers or Locations when your license is TouchTest-only

Users with TouchTest-only licenses were unexpectedly unable to view Central > Servers and Central > Locations lists.

51612: TypeError: this.m_aDataset is null; JS line 5857

This focus error occurred after a chart had gone away (e.g. it was removed from the dashboard).

51607: 'Float32Array' non è definito; JS line 2546

This error occurred while opening the Globe dashboard in Internet Explorer 9.

51588: TypeError: 'null' is not an object (evaluating 'gl.getExtension'); JS line 2307

This happened in Safari if WebGL was disabled, and you close the globe tab after attempting to open it.

51536: \$(...) is null; JS line 2880

This null error happened while in dashboard Edit mode. Additional null checking has been added on the DOM element.

51422: \$(...) is null; JS line 834

This null error happened loading the Result Details dashboard when the DOM element for it didn't exist.

51242: Can't clear out a Clip's description

Attempts to delete clip property description text unexpectedly failed (e.g. even after saving, closing, and reopening the clip).

50754: Cannot Save Clip in Firefox

This issue was experienced in Windows Vista, which was resolved by upgrading to Windows 7.

50703: TypeError: \$(...) is null; JS line 389

This syntax error happened in the Result Details dashboard.

50457: Cannot call method 'loseContext' of null

This error occurred in the Bounce Rate Per Page Load Time widget.

50376: Pressing Alt during a Functional Web Recording causes Java Exception

After browser recording was started, pressing the Alt key would cause a Java exception that would occur on every other action after until the Clip Editor tab was closed.

50242: TouchTest Agent User Name extends into Build section

This layout issue was seen in the recently updated TouchTest Agent login screen.

50198: AutoStopTime fails if value contains trailing space

While configuring the AutoStopTime composition property, the auto-stop time would fail with this error if there were one or more trailing spaces after the time value (e.g. "1500000 " vs., "1500000").

49708: Deleting Grids from Library view as a non-admin user

A non-Admin user was incorrectly able to delete a Grid in the Central > Library view.

49657: Uncaught TypeError: Cannot read property 'offsetHeight' of null; JS line 10566

An offset height error occurred in the Globe dashboard, Edit Panel, Properties tab.

49434: Cannot call method 'getBackgroundColor' of null

This error occurred in the Dashboard Edit Panel, Properties tab. Additional null checking has been added.

49250: this.m_oMap.MapView is undefined; JS line 10954

This error occurred in the Globe dashboard. Additional null checking has been added on stop.

49203: TypeError: e is null; JS line 1341

This Dashboard Editor error likely occurred while resizing the browser. Additional null checking has been added for element during resize.

48947: NotFoundError: DOM Exception 8

On the Results Quick Menu, clicked the Number for the current page, then clicked the Next Page arrow.

48883: NullPointerException in getSiteAdministration()

This null pointer exception happened in CloudTest Lite while trying to access the Site Administration list.

48410: TypeError: h is undefined; JS line 5348

This error occurred in the Globe dashboard.

48395: c.cells[0] is undefined; JS line 678

This JavaScript error would occur while getting the label in an Analysis widget.

48371: Uncaught TypeError: Cannot read property 'offsetHeight' of null; JS line 10457

This error likely occurred while resizing the browser window. Additional null checking has been added in resizing code.

48298: Repository should handle RS "does not exist" error when deleting monitors

An error would occur after deleting a monitor if the Results Service wasn't reachable. This also fixes the same error for monitoring server groups and domains.

48286: Uncaught TypeError: Cannot read property 'style' of null; JS line 1873

Additional null checking was added to detect further occurrences of this issue.

48261: TypeError: e is undefined; JS line 1409

This error occurred after removal of a customized widget from the Dashboard.

48162: a.cells[0] is undefined; JS line 182

48066: logElement accessor is returning empty string

The logElement accessor is always returning empty string because it's being called on TTNativeElement, but the implementation is on TTNativeViewElement.

47998: Cannot read property 'south' of undefined

This bounding error occurred in the Globe dashboard. Sanity check code has been added on bounding box data.

47983: Cannot set property 'display' of undefined

This error occurred after removal of a customized widget from the Dashboard.

47976: TypeError: \$("map_canvas") is null; JS line 10407

This offset height error liked occurred while resizing the browser when the Globe dashboard was in display.

47934: Error after clicking Filter in Clips list

Additional null checking code has been added to detect further occurrences of this filtering error.

47839: Uncaught TypeError: Cannot read property 'style' of null; JS line 41

Additional null checking has been added on the Resize event.

47810: CloudTest Appliance Administration on appliance shipped prior to Introduction

A root install application was made available for appliance users with appliances shipped prior to the introduction of this utility.

47770: Cannot read property 'offsetWidth' of null

Additional null checking was added to detect further occurrences of this issue.

47702: java.lang.NullPointerException

This null pointer exception happened after the user changed a mobile target to use no mobile app, then made a new clip and tried to manually add the app-less target.

47561: Cannot read property 'widgetLocationID' of undefined

Additional null checking has been added to detect further occurrences of this Dashboard error.

47533: Cannot set property 'innerHTML' of null

Do a null check if the user has closed the dialog before the XHR returned.

47336: Uncaught TypeError: Cannot read property 'style' of null; JS line 10331

Additional null checking was added to detect further occurrences of this issue.

47314: Cannot read property 'tagName' of undefined

Additional null checking has been added on the DOM timing event.

47168: Invalid Folder ID specified

An invalid folder ID was encountered, possibly because another user had deleted the folder. Now, if an invalid folder ID is specified, return null so we can find the place in JS.

46943: DWR proxy message add

A user-unfriendly DWR error related to proxy settings was seen. A new user-friendly message will now display in the event of a proxy error.

46621: Cannot read property 'length' of undefined

This error occurred while clicking into an empty mPulse Globe, Favorite Location field.

46584: Using the default HTTP recording name is not allowed

While doing HTTP recording on CloudTest Lite, the default recording name returned an error message

46138: HTTP request failed

A user-unfriendly error occurred when a HTTP request failed in the Result Details dashboard. A better message will now appear in such a case.

45798: JSON.parse: unexpected character; JS line 143

Additional logging has been added to detect further occurrences of this issue.

