cxReveal User Manual

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IBM Tealeaf cxReveal User Manual

Use this manual to learn how to search for, retrieve, and replay customer sessions. This can help customer support representatives improve their troubleshooting skills, and improve overall customer experience.

Overview

IBM® Tealeaf® cxReveal enables support representatives in the call center to rapidly search for, retrieve, and replay customer sessions to enhance customer issue troubleshooting and improve overall customer experience.

Note: IBM Tealeaf cxReveal is licensed to support up to five search fields for each type of search (Active Session, Closed Sessions, All Sessions), excluding the following search fields: All Text, Text in Response or Text in Request. This limit applies to the IBM Tealeaf cxReveal capability provided natively through the Tealeaf Portal or to searches run through the IBM Tealeaf cxReveal API.

IBM Tealeaf cxReveal is accessed through the Tealeaf Portal and runs entirely within your web browser. It requires no additional software installation.

Search

IBM Tealeaf cxReveal provides two methods of searching for sessions:

Database Search: As soon as Tealeaf detects a new session, it is accessible for search through the IBM Tealeaf cxReveal database. Based on session attributes, such as the user login identifier, which is defined by Tealeaf users, you can search for individual sessions as soon as they are detected by Tealeaf.

Note: Tealeaf recommends using the Search database for more immediate and more efficient searches for sessions. Searching for sessions through the Tealeaf Canisters must be reserved for generalized searches that cannot be easily satisfied by session attribute search.

- See “Searching Sessions by Session Attribute” on page 16.

Canister Search: IBM Tealeaf cxReveal users can be enabled to complete session searches against the Tealeaf Canisters. This search method is most useful for exploratory searches.

- When you search for sessions, you specify the search through a search template, modify search options and fields, and then run the search. See “Searching for Sessions” on page 6.
- After you run a search, IBM Tealeaf cxReveal provides several methods for analyzing search results and finding the appropriate search sessions. See “Search Results” on page 12.

Both search methods are accessed through the Tealeaf Portal.

Replay

If you find a session that you would like to see as it occurred during the visitor experience, you can replay the session through your web browser.

- See "CX Browser Based Replay" in the *IBM Tealeaf cxImpact User Manual*.

Tealeaf also provides a standalone desktop application for finding and reviewing sessions, which may be installed on your desktop.

- For more information, see the "RealiTea Viewer (RTV) User Manual" in the *IBM Tealeaf RealiTea Viewer User Manual*.

Quick Start Guide

To get started with IBM Tealeaf cxReveal, you can review the following sections, which provide an overview.

Getting started

The first steps to using cxReveal are installing the program and logging in to the Tealeaf Portal.

Install

The ability to search by session attribute requires a separate installation and configuration of the Windows pipeline to capture these attributes and the IBM Tealeaf cxReveal database in which to store them.

- See "cxReveal Installation" in the *IBM Tealeaf cxReveal Administration Manual*.
- See "Configuring Session Attribute Search" in the *IBM Tealeaf cxReveal Administration Manual*.

Login

To access IBM Tealeaf cxReveal, you must log in to the Tealeaf Portal by using your IBM Tealeaf cxReveal account.

- After you log in, IBM Tealeaf cxReveal commands are available through the Search menu.

  Note: If you do not know the login to access the Tealeaf Portal, contact your Tealeaf administrator.

Note: Your user account might or might not require a menu bar. Tealeaf administrators can configure access to the Portal menu bar as needed. See "cxReveal User Administration" in the *IBM Tealeaf cxReveal Administration Manual*.

Session search

Through IBM Tealeaf cxReveal, you can search active and completed sessions.

- An *active session* is a visitor experience with the web application that is still on-going. You can monitor visitors while they are browsing the web application.
- A *completed session* is a session that the visitor is no longer experiencing. The visitor has either left the web application or has otherwise interrupted activity for a sufficient length of time.
- You can also complete a search of both active and completed sessions by using a *All Sessions search template*.

Note: IBM Tealeaf cxReveal is licensed to support up to five search fields for each type of search (Active Session, Closed Sessions, All Sessions), excluding the following search fields: All Text, Text in Response or Text in Request. This limit applies to the IBM Tealeaf cxReveal capability provided natively through the Tealeaf Portal or to searches run through the IBM Tealeaf cxReveal API.

To begin searching sessions, select **Search** in the Portal menu. Then, select the type of session for which to search.

Session attribute search

IBM Tealeaf cxReveal also supports the ability to search for sessions as soon as they are detected by Tealeaf by using a preconfigured set of session attributes as your search terms.

Using a search template of IBM Tealeaf cxReveal type, you can specify values for session attributes, such as the visitor's login ID, on which to search for their sessions.

Note: Searching for session attributes requires the installation of the IBM Tealeaf cxReveal database and additional configuration. See "Configuring Session Attribute Search" in the *IBM Tealeaf cxReveal Administration Manual*.

- Depending on your web application and how Tealeaf is configured to monitor it, these session attributes can be defined by Tealeaf event at any time during the session. For more information, contact your Tealeaf administrator.

Sessions List
After you run your search, the list of matching sessions is displayed in the Sessions List.

- To replay a session, click the Camera icon in the same row as the session you wish to view.
  - See "CX Browser Based Replay" in the *IBM Tealeaf cxImpact User Manual*.
- To see session information, click the ***i*** icon in the same row as the session you wish to view.

Event information is displayed as a series of icons in the Events column. To get more information about the event, move the mouse over it.

See “Search Results” on page 12.

Replay

You can replay sessions through your browser. In Browser Based Replay, you can use the Navigation pane on the left side of the screen to select individual pages.

When a page is selected from the list:

- The triggered events on the page are displayed in the Events pane.
- The names and values of the form fields in the page are displayed in the Form Fields pane. Form field values are highlighted in the main window.
- The page itself is displayed in the main window.
- Click Start Replay in the main window to view the selected replay.
- See "CX Browser Based Replay" in the *IBM Tealeaf cxImpact User Manual*.

BBR commands
The following commands can be used to increase ease of use for Browser Based Replay:

Command
Description

Refresh icon
Refresh the contents of the list of pages (active sessions only).

Page List icon
Toggle display of the list of pages for the session.

Hide
Hide the left panes.

Options drop-down
Select display and other options in the submenus. See "BBR Options" in the *IBM Tealeaf cxImpact User Manual*.

Start Replay
Start replay of the session from the current page.

Previous
Step to the previous page in the session.

Next
Step to the next page in the session.

Request
Display request view. See "Browser Based Replay Interface" in the *IBM Tealeaf cxImpact User Manual*.

Replay
Display replay view. See "Browser Based Replay Interface" in the *IBM Tealeaf cxImpact User Manual*.

Response
Display response view. See "Browser Based Replay Interface" in the *IBM Tealeaf cxImpact User Manual*.

Overlays drop-down
Select a IBM Tealeaf cxOverstat overlay to display.

Note: This menu is available only if IBM Tealeaf cxOverstat is licensed. See "cxOverstat User Manual" in the *IBM Tealeaf cxOverstat User Manual*.

Annotations icon
Click to add annotations to the page. Button is highlighted if the current page contains annotations.

Close icon
Close the session replay.

- See "Browser Based Replay Interface" in the *IBM Tealeaf cxImpact User Manual*.

cxReveal Overview dashboard

The IBM Tealeaf cxReveal Overview dashboard provides a top-down perspective on search metrics and other activities of IBM Tealeaf cxReveal users, and also summary view of the overall health of your site.

- To access the dashboard, select **Dashboards** > **IBM Tealeaf cxReveal Overview** in the Portal menu.

Note: This dashboard is available in read-only format to all Tealeaf licensees of the IBM Tealeaf cxReveal product. Configuring the dashboard requires the IBM Tealeaf cxView license.

Using the Dashboard

In the dashboard, you can see individual components such as: searches with results, sessions returned, sessions replayed and searches without results..

- **“Usage Summary Tab” on page 4** - Provides summary information about user activities, such as searches, returned results, and replays.

On the displayed dashboard, you can access controls to switch the dashboard, email a snapshot of it, or open it in a remote window. For individual dashboard components, you can refresh the data, view the detail report from which the data originated and, if you have the appropriate permissions, edit the dashboard component.

- See "Using Dashboards" in the *IBM Tealeaf cxView User Manual*.

If you license IBM Tealeaf cxView, you can configure the components that are displayed in the dashboard.

- See "Configuring Dashboards" in the *IBM Tealeaf cxView User Manual*.

Usage Summary Tab

The Usage Summary tab provides summary information about user activities, such as searches, returned results, and replays.

Usage Metrics Summary - Today
This chart summarizes by IBM Tealeaf cxReveal user group the counts of searches with and without positive results, sessions that are returned, and sessions that are replayed of those returned sessions for today.

Details on each metric are displayed in the components below this chart.

- See “User Searches” on page 5.
- See “Sessions Replayed” on page 6.

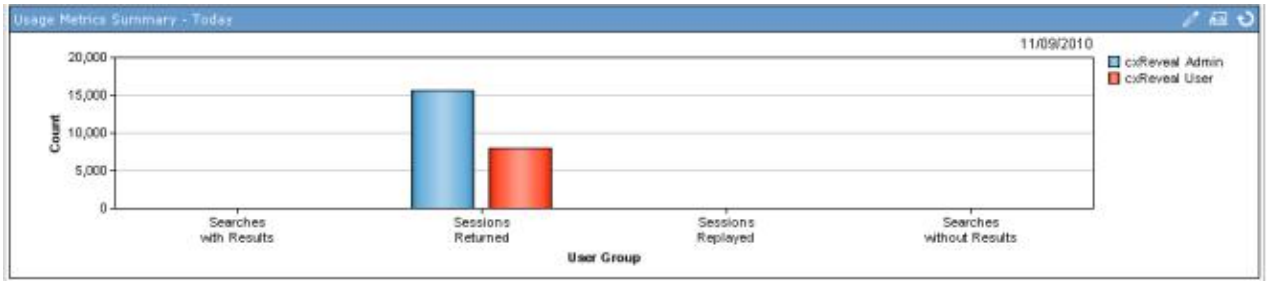

Figure 1. Usage Metrics Summary

Usage Metrics by user - Today

In the Usage Summary Tab, you can review counts and computations of IBM Tealeaf cxReveal usage metrics, by individual user, as well as the user's most recent activities.

Field
Description

User
The IBM Tealeaf cxReveal user.

Searches
Number of searches run today. See “User Searches” on page 5.

Searches with Results
Number of searches today that returned a positive number of results.

Sessions Returned
Total number of sessions that are returned in today's searches. See "Monitoring User Activity" in the *IBM Tealeaf cxImpact Administration Manual*.

Sessions Replayed
Total number of sessions that are replayed from returned searches. See “Sessions Replayed” on page 6.

Search Effectiveness %
Search effectiveness is computed as the number of sessions that are returned per run search for the user. See “Search Effectiveness” on page 6.

Search Efficiency %
Search efficiency computes how efficiency is the user in returning the minimum number of results per search. See "Monitoring User Activity" in the *IBM Tealeaf cxImpact Administration Manual*.

Replay Use %
This metric computes the number of replays that are run per search. See “Replay Use” on page 6.

Searches without Results
Number of searches that are run by the user that did not return a positive number of results.

Last Login
Timestamp of last login for the user.

Last Search
Timestamp of last search for the user.

Last Replay
Timestamp of last replay for the user.

User Searches

Over the preceding four weeks, you can review the number of searches that are run by each IBM Tealeaf cxReveal user group.

- To see the report data, click the View Report Data icon in the corner of the dashboard component. For more information about this report, see "Monitoring User Activity" in the *IBM Tealeaf cxImpact Administration Manual*.

Search Effectiveness
The Search Effectiveness component charts the effectiveness of searches each day over the preceding four weeks by each IBM Tealeaf cxReveal user group.

- To see the report data, click the View Report Data icon in the corner of the dashboard component. For more information about this report, see "Monitoring User Activity" in the *IBM Tealeaf cxImpact Administration Manual*.

Sessions Replayed
This component indicates the number of daily sessions that are replayed by each IBM Tealeaf cxReveal user group over the preceding four weeks.

- To see the report data, click the View Report Data icon in the corner of the dashboard component. For more information about this report, see "Monitoring User Activity" in the *IBM Tealeaf cxImpact Administration Manual*.

Replay Use
This percentage chart indicates the replays that are run per session as a percentage for each day over the preceding four weeks for each IBM Tealeaf cxReveal user group.

- To see the report data, click the View Report Data icon in the corner of the dashboard component. For more information about this report, see "Monitoring User Activity" in the *IBM Tealeaf cxImpact Administration Manual*.

User inactivity for annotations - Today
Annotations can be added to individual active and completed sessions as a useful mechanism for tracking customer service workflows. This report identifies the most recent annotation events (add, edit, or delete) for individual IBM Tealeaf cxReveal users during the day.

Field
Description

`Username`
The IBM Tealeaf cxReveal user.

`Last Event Occurrence`
Timestamp of when the user last added, edited, or removed an annotation.

`Last Portal Activity`
Timestamp of when the user last used the Portal.

Searching for Sessions

You can access IBM Tealeaf cxReveal search facilities through the Search menu in the Tealeaf Portal. Depending on the type of search you want to make, make your selection in the Search menu and configure the displayed options before you run the search.

Note: IBM Tealeaf cxReveal is licensed to support up to five search fields for each type of search (Active Session, Closed Sessions, All Sessions), excluding the following search fields: All Text, Text in Response or Text in Request. This limit applies to the IBM Tealeaf cxReveal capability provided natively through the Tealeaf Portal or to searches run through the IBM Tealeaf cxReveal API.

Selecting and modifying search options

On the Portal search page, you can specify the search terms to find the sessions for which you are looking and apply various search options to narrow the range of potential results.

Depending on data volume and system performance, search can be a resource-intensive process. Using the available search tools to refine your search terms as much as possible generates better quality results with a fewer number of sessions in the returned list.

- After you specify a search, you can save the search for later use. When you load a search, you can specify different criteria and change the generated results.

Search template

When you begin a search, you can specify your search criteria, which are available to you through a search template. A search template defines the type of search you are performing and the available terms that you can use to specify a search. A search template also contains a predefined set of fields and initial values to help you to create better search results that are based on your Tealeaf solution and it's data.

- The name of the currently selected template is displayed as a hyperlink just below the toolbar.
- Below the listed search template, you can review the dates for currently available session data. By default, session search is configured to search only today's sessions.
- To change the search range, select a different range from the Search Range drop-down.
- Search templates can be defined by a Tealeaf administrator.

Search template types

There are three types of search templates available depending upon the type of search you choose to conduct.

Search templates are defined and organized according to the type of search you are running:

- *Active:* For searches of active sessions, the available templates are listed under the Active heading. Since active sessions have not been indexed yet, the available search fields are typically a subset of the available search fields for completed sessions.
- *Completed:* For searches of sessions that are completed and indexed, the available templates are listed under the Active heading. These search templates can be configured to search for data that is inserted or otherwise modified after the session completes.
- *All Sessions:* These templates can be used to search both active and completed sessions. When a search is run, one query examines the active sessions, and another query is formed to search the completed sessions.

Note: Search templates and session list templates are defined by your Tealeaf administrator. For more information about configuring search templates, see "Configuring Search Templates" in the IBM Tealeaf cxImpact Administration Manual.

Selecting a search template

You can search active, completed or all sessions. To change the current search template, complete the following steps.

Procedure

1. To select a different template, click the hyperlink or click **Select Template** in the toolbar.
2. The list of available templates is displayed in the Template selector.
   - Templates that are listed in the template selector are based on your template permissions. These permissions are defined per template per group.
   - To view the list by search template type, click the**View by Labels** check box.
   - To view the list in alphabetical order, clear the **View by Labels** check box.
3. Select the template to use.
4. To use the selected search template, click **Select**.
5. The search fields are updated based on your selection.

Changing the session list template

Similar to the search template, a session list template is a predefined set of fields that are used to display sessions that are returned in a search.

About this task

For each matching session, the session list template defines the fields of data that pertains to the session to show in the Portal.

Procedure

1. Perform your search.
2. In the displayed results, select a different template from the Session List Template drop-down in the upper-right corner.
3. The Session List is automatically updated to display the fields that are configured for the session list template for each of the matching sessions.

Results

Changing the preceding session list template applies only to the current search.

- A Tealeaf administrator can assign a default session list template to each search template. For more information about configuring search templates, see "Configuring Search Templates" in the *IBM Tealeaf cxImpact Administration Manual*.

Other search criteria

In addition to the search terms you define for your search, you can refine your search by defining the search range, scope and options.

Search Range

You can configure the date range to search for matching sessions.

Above the search criteria pane is the Search Range drop-down, from which you can select or specify a range. Next, to it is displayed the dates of session data available on the currently selected Canister.

From the Search Range drop-down, you can select the range of dates in which sessions are examined for matches. The following options are explained here:

Search Range Option
Description

`Latest 5 Minutes`
Searches the most recent five minutes of sessions that are indexed among the available date-time range (completed sessions only).

`Latest Hour`
Searches the most recent hour of sessions that are indexed among the available date-time range (completed sessions only).

`<Specify>`
Specify your own search range. See “Specifying a search range” on page 8.

Specifying a search range

You can specify a range, including time and date, within which to conduct a search.

About this task

To specify your own range:

Procedure

1. To specify your own date and time range, select **Specify**.
2. Enter the From and To dates and times.
   - When you specify a time, you can use the arrow keys and TAB and ENTER to make your selection. To cancel the time configuration, press ESC.
3. The specified range is applied when you run your search. For more information, see running your search.

Results

See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Search scope
You can define the scope of the search regarding matching criteria across pages within a session.

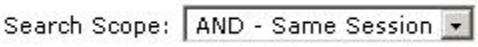

Figure 2. Search Scope

Option
Description

`AND - Same Session`
Match all fields across all pages.

`AND - Same Page`
Match all fields in a single page.

Note: Above option is only available for Completed search templates.

Note: And on Same Page searches cannot include negative operators on search criteria.

`OR - Any Session`
Match any fields across any pages.

See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Search options
Each search template contains a list of options that can be configured.

Depending on the type of search template that you select, the following options are displayed:

Option
Description

`Search Time Zone`
(Completed only) For Completed searches, you can select the time zone to use for your search. When a different time zone is selected, the date and times that are applied to the search are defined about the selected time zone.

- By default, the applied time zone is the local time zone for the Tealeaf user.

`Session List Template`
Select the session list template to use with the current search.

- To use the one auto-assigned with the base search template, select `<Default>`.
- See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

`Sort Results By`
The method by which to sort the returned sessions. This setting also determines the order in which sessions are matched against the search, which can impact the sessions that are returned if the search is canceled.

- The available options vary depending on whether you are using an Active or Completed search template.

`Search Servers`
Select one or more servers whose Search Servers are queried when the search is run.

`Automatic Search Timeout`
(Completed only) The length in time that the search must run before stopping and returning any matched sessions.

- By default, this value is set to 90 seconds.

`Automatic Stop Limit`
(Completed only) The maximum number of sessions that are found before the search is stopped and any matches are returned.

- This value is applied to each server. So, if your search is spanning four servers, the maximum limit is defined as four times this value.

- See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.
- For more information about customizing search templates, see "Configuring Search Templates" in the *IBM Tealeaf cxImpact Administration Manual*.

Managing searches

You can manage searches by saving or opening searches.

Saving searches

You can manage information by saving searches.

Procedure

1. To save the currently specified search, click the **Save** ( ) icon in the toolbar.
2. In the Save Search dialog, enter a name for the search.
3. If you want to share the search, click the **Save** check box.

   Note: Saved searches are available to all Portal users.
4. To save the search, click **Save**.
   - To cancel the save, click **Cancel**.

Opening searches

You can access information by opening saved searches.

About this task

To open a saved search:

Procedure

1. Click the **Open** ( ) icon in the toolbar.
2. The Saved Searches dialog is displayed.
3. Select the search to open, and then click **Load**. The search fields and left navigation pane are populated with the criteria of the saved search.
   - Searches that are shared with you are marked with a shared ( ) icon.
   - To edit the properties of a search you saved, select it and click **Edit**.

     Note: You cannot edit a search that is shared with you.
   - To delete a saved search, select it and click **Delete**.

     Note: You cannot delete a search that is shared with you.

Building and submitting a search

Through session search, you can search active, completed, or both types of sessions that are based on a set of criteria that you define.

You can select a search template and build your search by making selections in the Search Fields pane. When you specify your search, you must define your terms as narrowly as possible. If you can identify

unique characteristics of the session segment, then your search results are returned faster and are of better quality.

For more information about searching for sessions, see "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Note: You can include up to five terms in a IBM Tealeaf cxReveal search. This limitation does not apply to All Text, Text in Request, and Text in Response fields.

Search Template

A *search template* defines the type of search you are performing and the available terms that you can use to specify a search. Search templates can be defined by a Tealeaf administrator.

Selecting Dates

Below the listed search template, you can review the dates for currently available session data. By default, session search is configured to search only today's sessions.

Related tasks

Searching Session Data

Specifying and submitting a search

After you select a search template to use, you can specify the search terms to include in the search and the criteria of each term. After this process is complete, you can submit your search.

Field Types

In the Field Selection panel, the search terms available in the currently selected search template are organized into groups. These groups can be defined in the search template.

To add a field to the search, click a field type in the Field Selection panel. Then, click the link to the field. The field name and a text box are added to the Search Configuration Window. To remove a field from the list, click the X next to its name. If a field does not have an X next to its name, the field is required by the template and cannot be removed. It must be populated to run a search.

The groups that are used in the default templates are listed.

Search Field Group
Description

`Basic Search Fields`
Search for text in the request or response or events. In completed sessions, you can search for event values.

`Session Info`
Information pertaining to the visitor's session is recorded and maintained by Tealeaf so that you can search on it.

- Annotations added to the sessions by Tealeaf users can be available for search.

`Page Info`
Page-level information that is captured by Tealeaf can be searched by using the search fields in this group.

See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Search Configuration Window

When you select a search term, it is displayed in the main panel. The Search Configuration Window represents the fields that you select to include in the search and any criteria for the field.

After a field is added to the Search Configuration Window, you must specify the criteria for the search term. Depending on the type of search field, you might be required to specify extra criteria, including values for the fields and any search operators to apply. You can also select whether the defined term is included or not included in the text field.

Note: Empty search fields are not applied to the search.

See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Search Scope
From the Search Scope drop-down, you can select how the populated search fields are logically bound in the search.

Option
Description

`AND - Same Session`
All given fields must match against a session.

`AND - Same Page`
(Completed only) All given fields must match against a single page in a session.

`OR - Any Session`
Any given field must match against the session.

Submitting a search
When you have added all fields, specified operators, and entered field values for your search, click **Search** to submit.

Note: Depending on the search terms and values that you specified, the search can take a while to return results. Define your search terms as narrowly as possible.

As your search is being processed, a search status dialog displays progress.

- To stop the search at any time, click **Stop Search**. Any retrieved search results are displayed in the session list.
- To cancel the search without returning results, click **Cancel Search**.

After a search is completed, the results are downloaded and collated for display. Depending on the number of sessions that are returned, it can take a while for these processes to complete. They cannot be canceled.

Search results are displayed as a list of sessions. See "Search Results" in the *IBM Tealeaf cxReveal User Manual*.

Search Results
In the Session List screen, you can review the list of sessions that are returned from your search. The retrieved sessions are displayed in tabular form in the session list. You can use the controls above the session list to sort or otherwise change the displayed sessions.

Types of searches

IBM Tealeaf cxReveal supports session searches and database searches.

Session Searches: These searches examine individual Canisters (Processing Servers) for matching sessions by using a wide range of criteria.

Note: Session searches are most useful for completing exploratory or discovery searches when the results are not well-known at the time of search.

Note: For IBM Tealeaf cxReveal users, completed searches do not generate session segments, since most searches retrieve few sessions. IBM Tealeaf cxReveal admin users, however, can generate session segments that are based on run or reviewed searches by other IBM Tealeaf cxReveal users. See "Managing Session Segments" in the IBM Tealeaf cxResults User Manual.

- Session searches use search templates from IBM Tealeaf cxImpact. For more information about specifying these types of searches, see "Searching Session Data" in the IBM Tealeaf cxImpact User Manual.

Database Searches: Optionally, IBM Tealeaf cxReveal can be configured to capture session attribute information as soon as it is detected and to insert it into a high-speed database for immediate retrieval.

Note: Database searches are most useful for locating specific sessions for replay.

- Database search requires additional configuration. See "Configuring Session Attribute Search" in the IBM Tealeaf cxReveal Administration Manual.
- For more information about specifying IBM Tealeaf cxReveal database searches, see Searching Sessions by Session Attribute.

Toolbar

The search toolbar is located at the top of the page.

Figure 3. IBM Tealeaf cxReveal Search Toolbar

The following tools are displayed from left to right in the toolbar.

Tool
Description

`Reset`
Reset the search to the default fields and values that are specified in the search template.

`Save Search`
Save the current search. See "Selecting and Modifying Search Options" in the *IBM Tealeaf cxReveal User Manual*.

`Open Saved Search`
Open a search that is been previously saved. See "Selecting and Modifying Search Options" in the *IBM Tealeaf cxReveal User Manual*.

`Link to Search`
Display a URL to the specified search. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Select Template
Click to select a different search template, which enables searching for a different type of session: active, completed, or all sessions. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Search Options
Click to open search options. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Session List

The Session List contains all sessions that matched the search criteria that you specified.

- Just below the Portal menu, the navigation bar displays the pathway that leads to the current page. To jump to another page in the navigation bar, click one of the other links in the breadcrumb trail.
- Below the breadcrumb trail, a set of commands is available. See “Session List Commands” on page 15.

Each row represents a different session that matches your specified search conditions.

- In the leftmost column, a blue circle marker indicates that the session is an active session. For more information about the displayed fields, see “Session List Fields” on page 14.
- To sort the session results by any displayed column, click the column header. To reverse the order of sorting, click the header again.
- To group results according to a column, drag the column header to the blue bar above the displayed headers. The displayed sessions are organized according to the column.
- To review details on an event, move the mouse over its icon. The tooltip is displayed.
  - Additional detail on the execution of a specific event within the session can be retrieved from the **QuickView** page. See “Session List Icons” on page 15.

- The list of sessions can be displayed across multiple pages. Use the page links at the bottom of the list to browse to other pages in the list.
- Optionally, you can download the displayed sessions or session list data. You can display the list of sessions in a different session list template, which can contain other useful fields of information that can be downloaded. See “Session List Commands” on page 15.

For more information about session lists, see "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Displayed Session Limits
By default, IBM Tealeaf cxReveal searches are limited to a total of 100 returned sessions.

- This limit can be configured by Tealeaf administrators. See "cxReveal Settings" in the *IBM Tealeaf cxReveal Administration Manual*.
- Another limit to the number of sessions is defined per search template. Typically, this value is much higher than 100. Therefore, the base setting is applied. See "Configuring Search Templates" in the *IBM Tealeaf cxImpact Administration Manual*.

The search results can indicate that more than 100 sessions have been found. Only the first 100 are displayed and accessible through the Portal.

Note: To display sessions that are not returned in the initial search, you can sort the results by the Hit column or the Session Time column and then refine the search criteria to retrieve results only between the last session in the current list and the limit that is specified in the search configuration.

Session List Fields
By default for completed session search, the following fields are displayed in the session list:

- For more information about the displayed icons, see “Session List Icons” on page 15.

Field
Description

Session Time
The time and date for the most recent page in the session.

Duration
The duration in seconds of the session.

Login ID
The login identifier, if applicable, that was used during the recording of the session.

Events
Any Tealeaf events that were triggered during the session. For more information about a session event, move your mouse over its icon.

Hits
The number of hits in the session.

Session List Commands
The following sections describe the available commands in the session list page.

Session List Icons
At the top of the session list and in each row of the session list, you can select one of the following command icons.

Table 1. Session List Icons		
Icon	**Command**	**Description**
	Replay	To replay a session, select it, and click the Camera icon next to it. Depending on your group permissions, user permissions, or both, you can choose to replay the selection in the browser or in the IBM Tealeaf CX RealiTea Viewer if it is installed on your local desktop and enabled in your Tealeaf solution. • For more information about browser replay, see "CX Browser Based Replay" in the *IBM Tealeaf cxImpact User Manual*. • RTV is a stand-alone application that must be installed on your local desktop. For more information about browser replay, see "RealiTea Viewer (RTV) User Manual" in the *IBM Tealeaf RealiTea Viewer User Manual*.
	Page List	View the page list for the session. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.
	QuickView	View the events and any related dimensional data for each event firing in the session. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.
	Session Info	View session properties. Depending on the type of session, the session properties vary: • For active sessions, the session properties include all possible session attributes regardless of whether they are populated with values. • For completed sessions, the session properties include session attributes that are populated with values. Fields that are not populated with data from the session are excluded.
	Event Tester	Send the selected event to the Event Tester as sample data. See "Event Tester" in the *IBM Tealeaf Event Manager Manual*.

Exporting Search Results
You can export your search results to a file, which can be imported and into another application.

To export all sessions that are displayed in the session list, click **Export**, then select one of the following options:

Export option	Description
Export to RTV	Download a file that can be opened in the IBM Tealeaf CX RealiTea Viewer (RTV) later to retrieve the session list.
Export to Excel	Download the session list to Excel (XML) format.
Export to PDF	Download the session list to PDF format.
Export to Digital Analytics	Download the session list for integration into Digital Analytics. For more information, see "IBM Digital Analytics Integration Solution" in *IBM Tealeaf cxConnect for Web Analytics*.

See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Session List Template selector
You can select a different session list in which to display the current list of sessions. Make your selection from the available templates in the Session List Template drop-down in the upper-right corner of the session list.

- Session list templates can be configured by a Tealeaf administrator and associated by default with a specific search template. See "Configuring Search Templates" in the *IBM Tealeaf cxImpact Administration Manual*.
- IBM Tealeaf cxReveal session list templates can display more data that is tracked in the IBM Tealeaf cxReveal search database. See "Configuring Session Attribute Search" in the *IBM Tealeaf cxReveal Administration Manual*.

Additional search results information
More information about the way search results are displayed.

- **Search Server:** At the bottom of the Session List, you can review the Tealeaf servers that were searched for these results. To see the search results from each search server, click **Show Server Results Distribution**. For each server, you can see how many sessions were found, how many were returned, and the elapsed time to complete the search.
- **Search Query:** The specific search query that was passed to the search engine for execution is also listed. This search query can be inserted into All Text search fields, modified, and submitted as needed. Copy the text and paste it into the appropriate field for modification.
- **Search Range:** The timestamps that indicate the range of session data that is used to specify the search are listed at the bottom of the search results.
- **Sub-Search:** When a session is loaded in Browser-Based Replay, you can configure and complete a search for additional search strings to locate the specific hits in the session where these search strings are located. This sub-search capability enables search for text strings, request variables, or request variable values.

Searching Sessions by Session Attribute

Through session attribute search, IBM Tealeaf cxReveal users may search for sessions that are based on session attribute information that is captured by Tealeaf and recorded in the IBM Tealeaf cxReveal database.

For example, if visitors to your web application must log in to use it, IBM Tealeaf cxReveal can be configured to capture the login identifier and store it in the IBM Tealeaf cxReveal database, as soon as the identifier is detected in the session data. If the value for the login identifier is captured in the first hit to (typically) `SessionAttribute00`, then the user's session is available as soon as that hit is captured and processed by Tealeaf. Through session attribute search, IBM Tealeaf cxReveal users can have immediate access to active sessions, which facilitates managing customer support inquiries and other customer-focused activities.

Note: Searching by session attribute is a component of cxReveal, a separately licensable component of the Tealeaf CX platform. For more information, for more information, please contact your IBM Tealeaf representative.

This information describes how to configure and run searches for sessions by using session attribute information.

Overview of Session Attribute Search

To run a session attribute search, you use a search template of IBM Tealeaf cxReveal type to specify the session attributes and their values that match the session or sessions for which you are looking. As in standard Portal search, you can configure the appropriate date range, and also other options.

When the search is run, the Portal queries the IBM Tealeaf cxReveal database through the Tealeaf Data Service for matching values to the specified session attributes. The search is run against a single, high-performance database that contains only the session attribute information and the data that is required to locate the sessions among the Canisters in the Tealeaf system. Thus, search results are returned much faster.

Note: Before you begin searching by session attribute, your Tealeaf solution must be configured to capture session attributes, which can require additional installation and configuration. See "Configuring Session Attribute Search" in the *IBM Tealeaf cxReveal Administration Manual*.

- A session record is written to the database as soon as the first session attribute is detected in the capture stream. So, the session can be available for search through session attribute search as soon as the first hit is processed by Tealeaf.

Search results from a session attribute search are displayed in a standard session list. From the session list, you can replay the session in Browser-Based Replay or the IBM Tealeaf CX RealiTea Viewer, if installed.

Differences between cxImpact Search and cxReveal Search

An IBM Tealeaf cxImpact search queries the Tealeaf Search Server, which queries the appropriate Canisters in the Tealeaf environment for sessions.

Depending on the type of session:

- *Active sessions:* Search Server examines the Short Term Canister, which is an in-memory database on the Processing Server.
- *Completed sessions:* Search Server examines the Long Term Canister, which is a disk-based on the Processing Server.

A single search of multiple Canisters across Active and Completed sessions can create multiple searches that are run by Search Server. This process can take a while to return results.

By contrast, IBM Tealeaf cxReveal session attribute search makes a single query of a single database.

- If including Canister data is enabled in session attribute searches, queries are passed to Search Server to run against each Canister to retrieve relevant session information. Since these queries retrieve summary information about the session, they are still faster than IBM Tealeaf cxImpact search.
- The maximum number of returned sessions is limited to `100`. Results are returned based on the last use of the session, which is recorded as a timestamp in the database record. More recent Last Use values are listed first.
  - For completed sessions, the Last Use value is the time when the session was closed.
  - For active sessions, the Last Use value records the last time the database record was updated with a new or changed session attribute.

Since a session attribute search queries a database, the accepted wildcards and the available comparison operators are different. They are described in more details.

Note: The IBM Tealeaf cxReveal database stores only the latest value of each session attribute for a given session. You cannot use session attribute search to track changes in values of session attributes

throughout the session. For example, searching for a specific URL is unlikely to return results, unless the latest or last URL of a session is a match.

Note: Session attribute search in IBM Tealeaf cxReveal is best utilized for searching all sessions by using a well-known session attribute for purposes of retrieving and replaying the session. Typically, this session attribute is the identifier of the visitor to your site.
IBM Tealeaf cxImpact search is more appropriate for exploratory or generalized searches. IBM Tealeaf cxImpact searches request and retrieve a larger volume of data, which is helpful if you are unsure of your wanted session or hit.

Selecting cxReveal search templates

Session attribute searches can use any session list template of IBM Tealeaf cxImpact type or IBM Tealeaf cxReveal type. However, to query the IBM Tealeaf cxReveal database, a search template of IBM Tealeaf cxReveal type is required.

About this task

- A IBM Tealeaf cxReveal search template cannot be used for IBM Tealeaf cxImpact searches.
- See "Configuring Session Attribute Search" in the *IBM Tealeaf cxReveal Administration Manual*.

If IBM Tealeaf cxReveal is not configured to access Canister data, only session attributes that are marked for tracking in the IBM Tealeaf cxReveal database can be retrieved by using a IBM Tealeaf cxReveal search template. This data includes the IBM Tealeaf cxReveal session attribute fields, first use, last use, Canister Name, Tealeaf session ID, and session ID.

- For more information about marking session attributes for tracking and search, see "TEM Session Attributes Tab" in the *IBM Tealeaf Event Manager Manual*.
- See "Configuring Session Attribute Search" in the *IBM Tealeaf cxReveal Administration Manual*.

After IBM Tealeaf cxReveal search templates are configured, you can select them through the Portal in the usual manner.

Procedure

1. From the Portal menu, select **Search** and then select the type of search to complete: *Active Sessions*, *Completed Sessions*, or *All Sessions*.
2. The Portal search screen is displayed.
   - See "Searching Session Data" in the *IBM TealeafcxImpact User Manual*.
3. Based on your menu selection, the default search template of the selected search type is displayed in the main panel.
4. To select a different search template, click **Change...** next to the name of the current search template.
5. In the Template Selector, select one of the IBM Tealeaf cxReveal search templates.
   - In the Template Selector, you can select a IBM Tealeaf cxReveal template for any type of search. The Portal search screen is automatically updated to use that template.

     Note: Unless there is a specific reason to limit your searches to active sessions or completed sessions, you must select a search template of IBM Tealeaf cxReveal type for All Sessions. Session attribute searches by using this search template make a single query to the same database. In IBM Tealeaf cxImpact, All Sessions searches require multiple queries of different components of the Tealeaf system.
   - For more information about the names of your IBM Tealeaf cxReveal search templates, contact your Tealeaf administrator.
6. If you want, you can select a different session list template in which to display search results. See “Selecting a Session List Template” on page 19.
7. Specify your search scope from the Available Dates. Available dates differ from those dates available through IBM Tealeaf cxImpact search. See “Available Dates” on page 19.

8. The available search terms are displayed in the main panel. See “Specifying Search Terms” on page 19.

Selecting a Session List Template

Similar to a search template, a session list template is required for displaying the returned results from a search.

About this task

The default session list template setting that is specified for IBM Tealeaf cxImpact does not apply. That session list template applies only to drill-down searches from reports in the Portal. See "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual*.

You can select a session list template through the Portal.

Procedure

1. In the Portal search screen, select the search template to use.
2. From the Session List Template drop-down, select a session list template.
3. When your search is run, sessions returned in the search results are displayed in the selected session list template.
   - See “Search Results” on page 12.

Specifying Search Terms

In the main panel, you can select one or more of the available terms to use in your search.

Note: The IBM Tealeaf cxReveal database retains only the last stored value for each session attribute. It does not keep a historical record of values that have are assigned to each attribute.

- Session attributes are stored as text data.
  - You cannot perform numeric comparisons on them.
  - To retrieve date information that is stored in session attributes, you must know the exact format of the date value that is stored in them.

    Note: If a session attribute does contain numeric data, you can be able to locate instances of specific values. Do not enter the exact value. Enter the integer value or as many consecutive digits of which you are certain. Then, apply the `like` operator. Depending on how many digits you specify, you are likely to return a hit. However, you can also return other unwanted results.
- If no search terms are specified, the submitted search queries the specified date range for all sessions, active, or completed, depending on the type of selected template.

Session attribute searches are specified in the same manner as searches by using other types of search templates.

- See “Building and submitting a search” on page 10.

Available Dates

The Available Dates indicate the session data that is stored in the IBM Tealeaf cxReveal database. It does not reflect the available dates in the Canisters.

Note: For optimal search performance, specify a narrow date range when you define your search terms.

- Be sure to specify the appropriate date range.

cxReveal Comparison Operators

IBM Tealeaf cxReveal search templates support the following operators.

When you specify a search term by using a IBM Tealeaf cxReveal template, you can apply one of the following operators to the search criterion in the textbox.

Operator
Description

`equals`
Entered value exactly matches the most recent recorded value for the selected session attribute. Not case-sensitive matching.

`does not equal`
Entered value does not exactly match the most recent recorded value for the selected session attribute. Not case-sensitive matching.

`like`
Entered value is similar to most recent recorded value for the selected session attribute. Submitted value can be partially matched to the selected attribute.

- This operator is not available if MD5 hashing is applied to the search field.

`not like`
Entered value is not similar to most recent recorded value for the selected session attribute. Submitted value does not partially match the selected attribute.

- This operator is not available if MD5 hashing is applied to the search field.

Modify Search Options
As needed, you can change options for your search by using the left panel of the Portal search screen.

The following options are available for IBM Tealeaf cxReveal searches:

- `Sort Results By`
- `Search Servers`
- `Automatic Search Timeout`
- `Automatic Stop Limit`

See “Selecting and modifying search options” on page 6.

Running searches

After you specify your search terms and search options to run your search, click **Search**.

The Search Status dialog updates you on the progress of your search. When results are found, they are displayed in the selected session list.

- For more information about troubleshooting issues, see "Troubleshooting - cxReveal" in the *IBM Tealeaf Troubleshooting Guide*.

Search results

When search results are returned, they are displayed in the selected session list template.

- The maximum number of returned sessions is `100` by default.
- By default, search results are returned based on the value of the Last Use column.

Note: The IBM Tealeaf cxReveal database retains only the last stored value for each session attribute. It does not keep a historical record of values that are assigned to each attribute. Search results display only the latest value that is inserted into the database.

The session list can contain multiple entries for the same session. These *session fragments* can split entries for the values of session attributes. If you believe two entries in the session list come from the same session, refer to the timestamp for each entry to determine the final values for the session attributes.

- At replay time, session fragments can be reassembled into a single complete session. See "BBR Options" in the *IBM Tealeaf cxImpact User Manual*.

For more information about search results in IBM Tealeaf cxReveal, see “Search Results” on page 12.

In the session list, you can scan the results to find the matching session. Links are available in the left column to review the list of pages, review session information, or replay the session through your browser or through RTV.

- For more information about replay through your browser, see "CX Browser Based Replay" in the *IBM Tealeaf cxImpact User Manual*.
- Replay through RTV requires installing the RTV application on your desktop system. See "RealiTea Viewer (RTV) User Manual" in the *IBM Tealeaf RealiTea Viewer User Manual*.

Browser Based Replay

The cxImpact Browser Based Replay (BBR) feature enables users to replay visitor sessions directly through a web browser.

You can use the Browser Based Replay interface to review in real time all pages in visitor sessions as they are displayed to the user. Or, you can quickly step through selected pages to identify issues that occurred during the session.

The following terms are frequently used:

Replay

A *replay* is the display of the visitor's experience with your web application. By assembling all of the requests, responses, and related data in the sequence of the visitor session, the Tealeaf system can replay the session through Browser-Based Replay to accurately mimic the visitor experience.

You can replay both active sessions and completed sessions.

Additionally, users with Admin authorization can view page load details in real-time to assist with diagnostics and to help identify specific files that might be the cause of discrepancies in fidelity.

For information about how to use real-time logging of Replay Server, see "Using real-time page load logging information for session diagnostics" in the *IBM Tealeaf cxImpact Administration manual*.

For information about how to configure the Replay Server to use real-time logging, see "Replay Server Configuration" in the *IBM Tealeaf CX Configuration manual*.

Active session

An *active session* is a visitor session with the web application to which the visitor is adding pages right now by browsing the website.

During replay of active sessions, BBR automatically refreshes active sessions on a periodic basis. When an active session is refreshed, the currently displayed page is not refreshed. When UI events are part of the current page, a refresh can cause replay to jump to the previous standard page and disrupt the replay.

Completed session

A *completed session* is a visitor session that the visitor has completed or abandoned or that has been timed out by Tealeaf.

Browser Based Replay runs entirely within the Portal and requires no additional software installation for Tealeaf users.

Note: BBR maintains and forwards to your browser the required Set-Cookie headers to properly replay a session. To ensure that the Portal cookies are maintained, Tealeaf resends them at the end of each request. If the maximum number of permitted cookies is exceeded, the oldest cookies in your browser are discarded, which enables BBR replay and your Portal session to be sustained.

BBR is an alternative to Tealeaf's IBM Tealeaf CX RealiTea Viewer (RTV) desktop application, which must be installed on each user's desktop system as an advanced search and replay system.

Primary functions of Browser Based Replay

You can use BBR to complete the following functions:

- Replay visitor sessions or track live visitor sessions as they occur.

  - Replaying active sessions as they occur enables you to provide real-time customer support for customers and to diagnose web application issues that you are personally experiencing.
- Show visitor input, such as entered text, selected menu options, and clicked links or buttons.
- Track activities that occur on different views of a dynamic page.
- View the raw request and response data.
- Drill down into session details.

Browser Based Replay overview

You can use Browser Based Replay (BBR) to perform a variety of functions that can help you analyze the experience that customers have when they visit your website.

You can use BBR to complete the following functions:

- Replay visitor sessions or track live visitor sessions as they occur.
  - Replaying active sessions as they occur enables you to provide real-time customer support for customers and to diagnose web application issues that you are personally experiencing.
- Show visitor input, such as entered text, selected menu options, and clicked links or buttons.
- Track activities that occur on different views of a dynamic page.
- View the raw request and response data.
- Drill down into session details.

Opening Browser Based Replay to access sessions

You can open Browser Based Replay to access a list of active sessions, completed sessions, or a list of all (active and completed) sessions

Opening Browser Based Replay for active sessions

You can open BBR to access a list of active visitor sessions.

About this task

To open Browser Based Replay for active sessions:

Procedure

1. Select **Active** > **Sessions** in the Tealeaf Portal menu.
2. Next to the session you want to replay, click the **Replay** icon ( ).
3. In the popup dialog, select **Browser**.

   The session that you selected is opened in Browser Based Replay in a new browser window.

   See "Listing Active Sessions" in the *IBM Tealeaf cxImpact User Manual* for information about the display window that contains the active sessions.

Opening Browser Based Replay for completed sessions

You can open BBR to access a list of completed visitor sessions.

About this task

To open Browser Based Replay for completed sessions:

Procedure

1. Select **Search** > **Completed Sessions** in the Tealeaf Portal menu.
2. Select a Completed search template.
3. Specify the search criteria for which you are looking.

4. Next to the session you want to replay, click the **Replay** icon ( ).
5. In the popup dialog, select **Browser**.
6. The selected session is opened in BBR in a new browser window.

Session replay

You can examine pages as they are displayed to the visitor and replay the visitor's experience through your web browser.

For best replay results, replay the session in the same browser that was used to create the session. This information is displayed along the **User Agent Information Bar** under **Best Replayed Using**.

Note: Replay of sessions across multiple browser tabs or multiple browser windows is not supported.

Note: BBR cannot set cookies that are intended to be captured as part of the visitor experience. If cookies are integral to replay, you must use the IBM Tealeaf CX RealiTea Viewer desktop application instead.

Replaying a page

You can use Browser Based Replay to replay a page and view how the visitor saw the page.

About this task

To view a page as the visitor saw it:

Procedure

1. Select the page in the Navigation pane.
2. In the toolbar, click **Replay** (Replay).

Replaying a session

You can use Browser Based Replay to replay a visitor session in its entirety.

About this task

To replay the visitor session in its entirety:

Procedure

1. Select the page at which to begin the replay in the Navigation pane.
2. Click the **Start Replay** (Start Replay) icon in the toolbar.
3. You can choose to replay the session as it was captured or to delay each page a preset number of seconds.

Results

During replay, a counter at the top of the page indicates how many seconds remain in the replay of the current page.

- To stop replay at any time, click the **Pause** (Stop Replay) icon in the toolbar. The currently replaying page remains in the Content Pane for further exploration.

Replaying sessions from mobile visitors

If you have licensed and enabled the IBM Tealeaf CX Mobile module, BBR supports the replay of user interface events that are captured from the visitor's mobile browser.

To render sessions that are captured from mobile devices for display in the web browser, the Tealeaf Replay Server uses an embedded renderer that is based on the Chromium engine. For best results in replay of mobile-based sessions, use the Chrome browser in Browser-Based Replay.

The IBM Tealeaf CX Mobile module is a separately licensed module of the IBM Tealeaf CX platform. for more information, please contact your IBM Tealeaf representative.

Note: If IBM Tealeaf CX Mobile module has not been licensed, there are limitations that are applied to replay of sessions in BBR.

The manner in which you work with mobile device sessions in BBR is basically the same as it is for non-mobile device sessions.

When you replay sessions from a mobile device in BBR, a graphical representation of the device is displayed in the viewing area.

You can set the toggle for **Options** > **Resize View to Match Session** to enable or disable various functions when replaying a mobile device session. For a description of the functionality that you can enable or disable by toggling the **Resize View to Match Session** option, see "Options menu" in the *IBM Tealeaf cxImpact User Manual*.

Note: The option to resize the view to match the session is enabled by default.

The visitor interactions with the mobile application are depicted graphically. For example, if the visitor tapped two times on a UI element on the mobile application screen, BBR depicts this action on the screen in the viewing area as follows:

Mobile device gestures in BBR

When a visitor interacts with your mobile-based web site, mobile app, or native hybrid app using a touch device (for example, a smart phone or tablet), you can replay the *gestures* from that experience in BBR.

The capability to capture and replay mobile device gestures (for example, `tap` and `swipe` gestures) gives you insight into interactions that are specific to a mobile device user's experience.

Note: If there is no mobile licence, gesture Replay is not supported.

Being able to view mobile device gestures in BBR can help you identify and troubleshoot customer pain points and address design flaws in your web site or application that otherwise might have gone unnoticed. For example, lets say your business has a mobile banking application for your customers. A customer accesses the banking application from their mobile device to view their account balance. After viewing their account balance, the customer wants to go back to the application's home page to perform a different transaction. The user taps the logo in the top of the account balance page several times, assuming that the logo functions as a link to the home page. However, the application developer for the mobile app did not code the logo to link to the home page. As a result, the user is frustrated and confused about how to navigate back to the home page. By having access to mobile device gestures in BBR, you can see where the visitor struggled (multiple taps on the logo) and you can share this information with the mobile app developer.

Note: Highlighting in BBR is not supported for mobile gestures (type11 messages).

Gestures are enabled in the supported frameworks as follows:

Table 2. Enabling gestures reference table

Framework	Method for enabling	For more information see
iOS	Gestures are enabled in the `TLFConfigurableItems.plist` file in each application in which you want to capture gestures.	*IBM Tealeaf CX Mobile iOS Logging Framework Guide*
Android	Gestures are enabled in the `mainActivity.jar file` in each application in which you want to capture gestures UIC.	*IBM Tealeaf CX Mobile Android Logging Framework Guide*

Table 2. Enabling gestures reference table (continued)		
Framework	**Method for enabling**	**For more information see**
Java™-based web application	Gestures are enabled in the `TealeafSDK.js` file configuration object.	*IBM Tealeaf CX UI Capture j2 Guide*

Analyzing gesture events in BBR

When you replay sessions from a mobile device in BBR, a graphical representation of a mobile device is displayed in the viewing area.

Like standard BBR, you can replay the customer's session from beginning to end, or you can go through the session one page at a time by clicking the UI events in the Navigation pane.

The gestures are displayed graphically on the graphical representation of the device.

Additionally, you can review the request and response message formats.

Searching for gesture events in sessions

You can use the **Search** function in Tealeaf Portal to search sessions that contain gesture events and unresponsive gesture events.

Note: When searching sessions for gesture or unresponsive gesture events, keep in mind that gesture event you are searching for might have been renamed by a Tealeaf user.

Note: To enable unresponsive events, you must have an IBM Tealeaf CX Mobile license.

For more information about searching for Events in a session, see "Events" in *Specifying your search fields*.

Unresponsive gestures in BBR

If a mobile device user performs a gesture (for example, a **Tap** or a **Swipe**) and the application does not respond, the gesture is categorized as "unresponsive".

Being able to identify unresponsive gestures easily in BBR can help you troubleshoot usability or design issues in the mobile device application.

In BBR, unresponsive gestures are identified with specific icons that denote unresponsiveness. See *Gesture events captured* for a list of gestures and their associated icons.

Session timeouts in Browser Based Replay

If a BBR session has been idle for 30 minutes, it is timed out by the server.

If you fail to browse to new pages within the timeout period, you must close and reload the session in BBR to continue navigating.

Check the session identifier and the page you were on before you click **Close**.

Finding pages to view in Browser Based Replay

You can view specific pages in Browser Based Replay.

In the Navigation pane, you can review the pages from the current session that apply to the current mode. For example, if you are currently in Replay mode, only pages that can possibly be replayed in BBR are displayed in the Navigation pane.

- To see a list of all pages in the session, click the **Page List** (Page List) icon in the toolbar.

- To jump to a page, click the Blue Arrow icon in the leftmost column of the Page List.

Managing the BBR interface

You can change the Browser Based Replay interface to display the most relevant content needed to find pages and replay sessions.

About this task

The Browser Based Replay includes controls for managing the data that is displayed in the interface.

The information in this topic explains the controls available to you for managing the BBR interface.

Procedure

- To hide the display of the entire sidebar, click the **Hide** (Hide) icon in the BBR toolbar.
- To display the sidebar when it is hidden, select **Options** > **Options** > **Show Sidebar** from the BBR toolbar.
- To close a subpane, click the **X** icon in its corner.

  Note: You cannot close the Navigation pane. To hide it, close the entire sidebar.
- To redisplay a hidden pane, you can enable it through the **Options** > **Options** sub-menu
- To minimize a sub-pane, click the Minimize icon in its corner. The other panes expand to occupy their space.

Searching Archived Sessions for Text

Through BBR, you can search completed sessions for text that you see during replay. This mechanism is useful for matching the results of active sessions to activities that are already processed by the Tealeaf system.

About this task

Procedure

1. To search completed sessions for a text string, select **Options** > **Search Completed Sessions** from the BBR toolbar.
2. In the dialog box, enter the text for which to search.
   - To copy text to the dialog box, select it in the Content pane. Then, in the dialog box, click **Copy Selected Text**.
3. To search for the entered text, click **Search**.
   - All available Canisters are searched across the available dates.
   - Submitting a search closes the current replay.
   - To cancel the search in progress, click **Stop Search**. Any retrieved results are displayed.

Sharing sessions for replay with other Tealeaf users

You can share your sessions for replay with other Tealeaf users.

About this task

The sessions that you share are accessed by other Tealeaf users through a URL on the Tealeaf server.

You can share sessions by email or by copying and pasting the session link URL.

Emailing sessions for replay to other Tealeaf users

You can email your sessions for replay to other Tealeaf users.

About this task

To send the URL of the session by email:

Procedure

1. Select **Options** > **Sessions** > **Send Link by Email** from the BBR toolbar.
2. Enter the email addresses of the individuals who must receive the email. Separate each email address by a comma. Do not include spaces or carriage returns.

   Note: The list of email addresses is authenticated against known users of the Tealeaf system.
3. Enter a title for the replay session. This title is displayed as the display text for the URL link.
4. If needed, you can include a message with your replay link.
   - You do not need to include the URL in the message.
5. To send the message, click **OK**.

Copying session links

You can copy and paste session replay links.

About this task

If needed for other purposes, you can retrieve and copy the URL of a session for replay to the clipboard of your local desktop for pasting elsewhere.

Procedure

1. Select **Options** > **Session** > **Copy Link To Session** from the BBR toolbar.
2. The link is displayed in an address bar at the top of the BBR window. To copy it, press CTRL + C.
3. Paste it as needed.
4. To close the address bar, click the**X** on the right side of the screen.

Creating Event Data from BBR

Through the context menu in Replay, Request, or Response mode, you can create events that are based on your selections in BBR.

About this task

Based upon the selected text, a hit attribute is created, and an event definition is pre-populated with values to accurately identify the selected text in the session data.

Note: As a precaution before you begin you must verify that there are no unsaved changes in the Tealeaf Event Manager.

Procedure

1. Select the text. This text might be an HTML element in Replay mode, a name-value pair in Request mode, a header in Response mode, or another text selection.
2. Right-click the selection and select one of the following options:

Table 3. Context menu option descriptions	
Option	**Description**
Create New Event from selection...	When text is selected, this context menu command is available for creating an event from the selected text. The Tealeaf Event Manager is pre-populated with values to match the selected text.
Create New Hit Attribute from selection...	When text is selected, this context menu command is available for creating a hit attribute that uses the selected text as the pattern to match. The Tealeaf Event Manager is pre-populated with values to match the selected text. **Note:** Hit attributes that are created from BBR match on a fixed text string. Since these attributes always return the same value, they are not permitted to be used to populate dimensions.

3. The Tealeaf Event Manager is opened, with the new definition pre-populated with detection parameters to identify the selection.
4. Continue specifying the event or hit attribute.
5. To save changes, click **Save Draft**.

   Note: If you click **Cancel** to cancel an event creation, the hit attribute to match the event is already saved as a draft. You must delete the drafted hit attribute through the Hit Attributes tab or revert all changes, which remove all local, drafted changes through the Tealeaf Event Manager.
6. To commit your changes to the server, click **Save Changes**.
7. The event and hit attribute data are created.

Configuring the replay server or associated proxy server

You can configure the replay server or associated proxy server.

Replay server configurations

Tealeaf administrators can create and configure Replay Server instances through the Portal Management page.

Multiple Replay Servers can be deployed to distribute the BBR rendering load among multiple servers.

Replay rules configuration in BBR

Tealeaf administrators can configure the replay rules that are applied to Browser-Based Replay through the Replay Server configuration in the **Portal Management** page.

Proxy configuration

If a proxy is in use to broker connections between BBR users and the Replay Server and the origin server, review and complete the following configuration changes.

ESI tag support in BBR

BBR provides partial support of the ESI include tags, which are a form of partial dynamic page caching, without additional configuration.

See "RealiTea Viewer - Replay Rules" in the *IBM Tealeaf RealiTea Viewer User Manual*.

Browser Based Replay interface

The Browser Based Replay interface is composed of four panes and includes a toolbar and multiple statistical bars through which you can control replay and review session data.

The main areas of the Browser Based Replay interface are:

- Toolbar - The area at the top of the page contains controls and displays for replaying sessions.
- Content Pane - The large window on the right side. It displays replayed hits, parsed requests, and raw responses.

- Page Statistics - Statistics that are related to the currently displayed page.
- Sidebar - The left sidebar contains multiple panes that enable review of the session pages, events, and form field data. This page can be toggled for display. See "BBR Options" in the *IBM Tealeaf cxImpact User Manual*.
  - Navigation Pane - The list of pages within the session that can be replayed. Click an entry to display it in the content window. Red text indicates a hit that either returned an error, such as HTTP 400+ or 500+, or a request that the user canceled before it finished loading.
  - Events Pane - The events that fired for the currently selected hit. Each event links to an event chart report for that event.
  - Form Fields Pane - The posted form fields and parsed URL fields that are associated with the hit. These values are used to highlight the form fields that the visitor submitted.
- Session Statistics - At the bottom of the page, you can review statistics about the current session.

UI Components

- Toolbar - The area at the top of the page contains controls and displays for replaying sessions.
- Content Pane - The large window on the right side. It displays replayed hits, parsed requests, and raw responses.
  - Page Statistics - Statistics that are related to the currently displayed page.
- Sidebar - The left sidebar contains multiple panes that enable review of the session pages, events, and form field data. This page can be toggled for display. See "BBR Options" in the *IBM Tealeaf cxImpact User Manual*.
  - Navigation Pane - The list of pages within the session that can be replayed. Click an entry to display it in the content window. Red text indicates a hit that either returned an error, such as HTTP 400+ or 500+, or a request that the user canceled before it finished loading.
  - Events Pane - The events that fired for the currently selected hit. Each event links to an event chart report for that event.
  - Form Fields Pane - The posted form fields and parsed URL fields that are associated with the hit. These values are used to highlight the form fields that the visitor submitted.
- Session Statistics - At the bottom of the page, you can review statistics about the current session.

Browser Based Replay toolbar

The Browser Based Replay toolbar is located under the menu bar. It includes control icons and buttons for working with the session.

The toolbar can be configured for individual groups or users.

Browser Based Replay toolbar provides the following controls and display options:

Table 4. Browser Based Replay Toolbar controls

Control	Description
	The **Refresh List** icon is displayed for active sessions only. Click the **Refresh List** icon to display any new pages that the visitor has added to their session since the last time you loaded or refreshed the page list.
	Click the **Page List** icon to open a window that lists all pages in the current replay session. Blue arrows indicate pages that can be viewed in BBR. Click the blue arrow to view the associated page. If Tealeaf is configured to capture UI Events, BBR can be configured to display them in the Page List, marked with a UI icon. Display of UI Events can be toggled.

Table 4. Browser Based Replay Toolbar controls (continued)	
Control	**Description**
Hide	The **Hide** button collapses the three panes on the left sidebar. To reopen the panes, select **View** > **Show** > **Sidebar**.
Start Replay	Switches to the Content pane and begins an automatic playback of the session from the page that is currently selected in the Navigation pane, timed to match the original visitor's view times. When you click **Start Replay**, the **Page Delay Time** window is displayed. In the **Page Delay Time** window, set a delay time for the pages. You can choose to replay the session as it was captured (`Auto`) or to delay each page a preset number of seconds. **Note:** When set to `Auto`, replay accurately reflects how long the visitor waited between completing recorded actions on the site. To begin replay, click **Start**. The label on the toolbar button changes to **Stop Replay**, and a timer is displayed to the left of the button to count down the seconds between each hit in the recorded session.
First	When you click **First**, the **Navigation List** scrolls to the first page in the list. The first row is highlighted and the first page loads.
Last	When you click **Last**, the **Navigation List** scrolls to the last page in the list. The last row is highlighted and the last page loads.
Previous	Steps backward through the navigation list, displaying the replay, request, or response view in the Content pane, depending on the currently selected view.
Next	Steps forward through the navigation list, displaying the replay, request, or response view in the Content pane, depending on the currently selected view.
Request	Displays the headers in the request that are sent by the visitor's browser to the Web server.
Response	Provides BBR users the ability to view (in different modes) the information that is sent by the web server in response to the client's request. You can use the **Response view** to view the response in an HTML format, an indexed response, or as a hexadecimal display of the response.
Replay	Shows the web page display as seen by the visitor.
	Click the **Annotations** icon to add annotations to the current page.

Page List

Figure 4. Page List

Click the Page List button to open a window that lists all pages in the current replay session. Blue arrows indicate pages that can be viewed in BBR. Click the blue arrow to view the associated page.

If Tealeaf is configured to capture UI Events, BBR can be configured to display them in the Page List, marked with a UI icon. Display of UI Events can be toggled.

Refresh List (Active sessions only)

This button is displayed only during replay of an active session. Click it to display any new pages that the visitor has added to their session since the last time you loaded or refreshed the page list.

Hide

This button collapses the three panes on the left sidebar. To open them, select **View** > **Show** > **Sidebar**.

Overlays menu

If IBM Tealeaf cxOverstat is licensed and Tealeaf is capturing data, the Overlays menu is available.

Note: IBM Tealeaf cxOverstat is a separately licensable product that is used to monitor usability aspects of your web application. for more information, please contact your IBM Tealeaf representative.

Note: The Overlays menu may not be available for all BBR sessions.

Annotations

Click to add annotations to the current page.

Start Replay

Switches to the Content pane and begins an automatic playback of the session from the page that is currently selected in the Navigation pane, timed to match the original visitor's view times.

When you start replay, you can choose to replay the session as it was captured (`Auto`) or to delay each page a preset number of seconds:

Figure 5. Page Delay Time

- When set to `Auto`, replay accurately reflects how long the visitor waited between completing recorded actions on the site.

To begin replay, click **Start**. The label on the toolbar button changes to **Stop Replay**, and a timer is displayed to the left of the button to count down the seconds between each hit in the recorded session.

Previous / Next

Steps backward or forward through the navigation list, displaying the replay, request, or response view in the Content pane, depending on the currently selected view.

Close Session

Ends the current BBR session and closes the browser window.

Content Pane
This pane displays the replayed hit, the request headers sent from the visitor's browser to the website server, or the raw HTML of the response that is sent from the website server to the visitor's browser.

- To change the content pane, click the Replay, Request, or Response button in the toolbar.

Figure 6. Content Pane

- If highlighting is enabled, the modified form fields and selected links are highlighted in green on the page in Replay view.
- When Replay Shield is enabled, your mouse-driven interactions with the Content pane are disabled, which prevents accidental execution of any JavaScript that might be triggered.

User Agent Information Bar
If IBM Tealeaf CX Mobile is licensed, user agent information can be inserted in a title bar above the replay pane.

Just above the content pane, you can review any available information that Tealeaf has detected and extracted from the user agent string that is submitted by the visitor's device to the web server that delivered the session.

Note: This information is available only if the IBM Tealeaf CX Mobile module is licensed and properly configured.

A *user agent* is any device that is used to browse a web application. Most user agents self-report a unique string that identifies the exact brand and model of the device. This string is used to query a public standard for additional information about the device.

In the table below, you can review the content of each field, its source, and how it can be accessed.

Table 5. User Agent Information Bar		
Item	**Source Request Field**	**Description**
`Browser`	`TLT_BROWSER`	Visitor browser type • This value is also available in the Tealeaf System Hit Attribute `Browser`.
`Browser Platform`	`TLT_BROWSER_PLATFORM`	The mobile device platform
`Best Replayed Using`	`TLT_BROWSER_VERSION`	The X.0 version of the browser
`Traffic Type`	`TLT_TRAFFIC_TYPE`	The type of traffic, as identified by extended user agent parsing • This data is also captured in the Traffic Type dimension.
`Replay Renderer`		The type of renderer that is used by Replay Server to render the session • The type of renderer is determined by the configured renderer types and the browser from which the session was originally experienced.

Display views
You can display session data in various views.

- Replay view shows the web page display as seen by the visitor.
- Request and Response views show the request and response interactions between the browser and Web server

You can use Load Page Details to review individual objects.

Replay View
In Replay view, the web page is displayed as seen by the visitor.

Note: In Replay view, interactions with screen objects in the session that are interactive on the origin web application are forbidden. This restriction limits unwanted interactions and tracking by the source web application.

- Next to the Start Replay button, you can see a counter of the number of seconds before the page is advanced to the next one, and the Content pane is updated.

If UI Capture is enabled, the display of UI events in Replay view can be toggled.

- To avoid confusion, UI events are always displayed in Request and Response views. See "BBR Options" in the *IBM Tealeaf cxImpact User Manual*.
- For more information about UI Capture, see "UI Capture for Ajax Quick Start Guide" in the *IBM Tealeaf UI Capture for Ajax Quick Start Guide*.

If you license and enabled the IBM Tealeaf CX Mobile module, BBR supports the replay of user interface events that are captured from the visitor's mobile browser.

Note: The IBM Tealeaf CX Mobile module is a separately licensed module of the IBM Tealeaf CX platform. for more information, please contact your IBM Tealeaf representative.

- For more information about enabling, see "Overview of CX Mobile" in the *IBM Tealeaf CX Mobile User Manual*.

- For more information about data that is acquired from mobile devices, see "Overview of CX Mobile" in the *IBM Tealeaf CX Mobile User Manual*.
- See "Search and Replay for Mobile Web" in the *IBM Tealeaf CX Mobile User Manual*.
- For more information about IBM Tealeaf CX Mobile, see "Tealeaf CX Mobile User Manual" in the *IBM Tealeaf CX Mobile User Manual*.

Replay view context menu
In Replay view, the following commands are available in the right-click context menu.

Table 6. Replay view context menu commands

Command	Description
View Document Source	View the source code for the selected document of the current response.
View Element Source	View the source code for the element that is currently selected on the page.
Add Annotation	Add an annotation for the current selection.
Create New Event from selection...	When text is selected, this context menu command is available for creating an event from the selected text. The Tealeaf Event Manager is pre-populated with values to match the selected text.
Create New Hit Attribute from selection...	When text is selected, this context menu command is available for creating a hit attribute that uses the selected text as the pattern to match. The Tealeaf Event Manager is pre-populated with values to match this selection.
Test Response Modify Rules	In Replay view, you can review and test the response modification rules that are applied to the current page.
Examine Cookies...	Review the cookies that are stored for the current session, which you can copy to the clipboard as needed.

Request view
You can use the Request view to display in the Content pane the headers from the requests that are sent by the visitor's browser to the web server.

From the Request view content pane, you can view messages submitted through the client application.

Viewing step attributes
If you deploy one of the Tealeaf client frameworks to submit events from the client application to Tealeaf, you can use the Request view to review submitted messages.

About this task

To access step attributes:

Procedure

From within the Content pane, click **Click here to view Step Attributes** .

Note: If you do not have access to the Event Manager, you cannot create step attributes.

Results

The raw JSON messages are displayed in the `[RequestBody]` section.

Request view context menu
In Request view, the following commands are available in the right-click context menu.

Note: Context menu commands are only available in Request view if some text is selected.

Note: These options are available only if you have access to the Tealeaf Event Manager. See "Tealeaf Event Manager" in the *IBM Tealeaf Event Manager Manual*.

Command
Description

Create New Event from selection...
When text is selected, this context menu command is available for creating an event from the selected text. The Tealeaf Event Manager is pre-populated with values to match the selected text. See "CX Browser Based Replay" in the *IBM Tealeaf cxImpact User Manual*.

Create New Hit Attribute from selection...
When text is selected, this context menu command is available for creating a hit attribute to match the selected text. The Hit Attributes tab of the Tealeaf Event Manager is pre-populated with values to match this selection. See "CX Browser Based Replay" in the *IBM Tealeaf cxImpact User Manual*.

Create New Event from Step Attribute...
When IBM Tealeaf CX UI Capture for AJAX is deployed, you can create events to detect the presence of data that is submitted in JSON messages for capture by Tealeaf.

- Any required step attributes are automatically created for you.
- See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.

Create New Step Attribute from...
When IBM Tealeaf CX UI Capture for AJAX is deployed, you can create attributes to capture data that is submitted in JSON messages for capture by Tealeaf.

- See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.

Remove Page from Replay based on request field
If needed, you can remove the displayed page from replay based on the values in a request field. See “BBR replay rules” on page 64.

Response view
The **Response view** provides BBR users the ability to view (in different modes) the information that is sent by the web server in response to the client's request.

You can use the **Response view** to view the response in an HTML format, an indexed response, or as a hexadecimal display of the response.

Response view context menu
In Response view, the following commands are available in the right-click context menu.

Note: Context menu commands are only available in Response view if some text is selected.

Table 7. Response view context menu commands

Command	Description
Create New Event from selection...	When text is selected, this context menu command is available for creating an event from the selected text. The Tealeaf Event Manager is pre-populated with values to match the selected text.
Create New Hit Attribute from selection...	When text is selected, this context menu command is available for creating a hit attribute to match the selected text. The Hit Attributes tab of the Tealeaf Event Manager is pre-populated with values to match this selection.

Table 7. Response view context menu commands (continued)	
Command	**Description**
Create Response Modify Rule	You can create and review the response modification rules that are applied to the current page. After the rule is applied, the Response Modify Rule is applied and the session is reloaded.
Test Response Modify Rules	You can review and test the response modification rules that are applied to the current page.

Page Load Details

You can review the individual objects that are referenced and loaded for a page after session replay completes or interactively during session replay.

Reviewing page load details after session replay

To review the page load details for a page after Session Replay has completed:

1. From the navigation area, select the page for which you want to review the load details.
2. From the menu option drop down list, select **View** > **Page Load Details**.

   The **Page Load Details** window is displayed.

Note: Page Load Details are not provided for DOM captured pages.

Reviewing page load details during session replay

To review page load details during session replay:

1. Load the session for viewing.
2. While the session is replaying, select **Page Load Details** from the **Processing** window.

   The **Page Load Details** window is displayed.

Working with the Page Load details window

The time, in seconds, that it took to render the page is displayed at the top of the **Page Load Details** window.

The **Page Load Details** window can be used to review all of the content that is requested from an individual page and whether the replay client was successful in loading it. It displays all of the requests to get the resources for a page. If a resource fails to load, the page might not render correctly.

Having access to real-time PLD gives users insight into the workings of the HTTP interactions (as it pertains to getting the resources for a page) that occur in the client / server architecture. The details presented in the window are an account of the interaction between the renderer and Replay Server or the Remote Host.

You can size the columns and scroll vertically and horizontally to optimize content viewing.

If you are using a TLI Server, you can identify the objects in the page that were retrieved from a TLI file. In the Source column, any entry that includes `TLI` indicates that Replay Server either retrieved it from the TLI Server or from the TLI cache that is maintained on the Replay Server. See "Managing Static Archives" in the *IBM Tealeaf cxImpact Administration Manual*.

The column definitions for the Page Load details window are as follows:

Table 8. Page Load Details window - Column Definitions	
Heading	**Description**
Page	A numeric identifier created by the Replay server. The number indicates the order in which the page was captured by IBM Tealeaf during the visitor session. The number corresponds to the number that is displayed in the Navigation panel in the BBR user interface.
State	Indicates the page load status in text and icon format. A page load state of `Done` with a green icon indicates that the page loaded with no errors or informational messages. Other page load statuses include: • `Other` with a yellow icon • `Fail` with a red icon • `Info` with a yellow icon
Code	Indicates the HTTP status code of the request. Valid values are any standard HTTP status. The codes displayed coincide with the page load status as follows: **200** The page load request succeeded. The **State** column cell displays `Done` with a green icon. **404** The page load request failed. The **State** column cell displays `Fail` with a red icon. **0** The page load request succeeded with informational messages. The **State** column cell displays `Info` with a yellow icon. For HTTP status codes other than `404`, `200`, and `0` the **State** column cell displays `Other` with a yellow icon.
Load Time	The time in seconds it took for the renderer to receive a particular resource.
Content	The Content column specifies the MIME or Content-type of the content received. MIME is a standard identifier that indicates the *type of data* that a file contains. For example, the content might be `text/html`, `text/plain`, or `text/javascript`.
Method	Indicates the HTTP method type. This will almost always be `GET` or `POST`.

Table 8. Page Load Details window - Column Definitions (continued)	
Heading	**Description**
Source	The source of the loaded page. Valid values include: • Session A value of `Session` indicates that the content that was found within the session. • RemoteHost A value of `RemoteHost` indicates the content was not found within the session, thus getting it from the original source. • Info A value of `Info` indicates the content is of an informative nature.
URL	The content URL or resource URL.
Error Message	Displays the error message text for a page when there are socket connection errors. If the page load resulted in information logging only (as denoted by the value `Info` in the **Source** column), the **Error Message** cell will be empty.
Error code	Displays the code if a socket connection error occurs when the page is loading. If the page load resulted in information logging only (as denoted by the value `Info` in the **Source** column), the **Error code** cell will be empty.

You can right-click in the **Page Load Details** window to access operations from the context menu.

Page Load Details context menu
In the **Load Details** window, the following commands are available in the right-click context menu.

Note: The available context menu commands may change depending on the currently selected content in the **Page Load Details** window.

Table 9. Page Load Details - Context menu commands	
Command	**Description**
`Host/Port Remap`	Using host/port remapping, you can redirect BBR to retrieve content from a different host name and port from the origin server. This feature prevents unnecessary retrieval from the origin server during replay.
`Copy URL to clipboard`	This option allows you to copy the URL to your clipboard so you can paste it elsewhere.
`Open URL`	This option allows you to open the selected URL in a new browser.

`QueryData`	If the URL contains query parameters, they are listed as name-value pairs in this sub-menu.
	For example, if the URL was `www.test.com/?type=JSON&reload=false`, then the sub-menu displayed would be:
	`type=JSON`
	`reload=false`

`Request Headers`	Mouse-over to view name-value pairs in the header of the request. Select one to open an edit window from which you can copy values.

Table 9. Page Load Details - Context menu commands (continued)	
Command	**Description**
`Response Headers`	Mouse-over to view name-value pairs in the header of the response. Select one to open an edit window from which you can copy values.
`View Response Text`	When the selected object is an AMF hit, this option decodes the binary object and displays it in text form in Notepad.exe.
`Add Block URL Rule`	Use this command to remove a resource. Sometimes resources are not critical for the page to render correctly, and if the resource impacts page load performance in a negative manner, you can use this command to write a "Add block url rule".

Page statistics

Page statistics provide statistical data as it relates to page processing.

Page statistics are displayed above the Topic pane.

Table 10. Page statistics descriptions	
Statistic	**Description**
Gen Time	Time that is required to generate the page, in seconds.
Net Trip	The time that is required to transmit the page across the network to the visitor's browser, in seconds.
Round Trip	The time that is required to transmit both the request and the response, in seconds.
Response Size	The size of the page that is delivered to the visitor (the response), in bytes.
Status Code	Any HTTP status code that is generated by the hit.

Table 10. Page statistics descriptions (continued)	
Statistic	**Description**
Capture	**Note:** This information pertains to functionality available in IBM Tealeaf version 9.0.2 Fix Pack 1. For information about the fix pack, contact your IBM Tealeaf representative. Per hit selected, **Capture** indicates the "type" of capture, which has an impact on how Replay processes the capture in BBR. When configuring capture with the UISDK, users specify on a per-page-basis, the capture type. By exposing this information to BBR users, users can easily associate the page with a capture type. Knowing the capture type of a page can expedite the process for changing the capture type if need be. Valid values for **Capture** are as follows: • `DOM` The UISDK captures the DOM of the page and PCA captures the post made by the UISDK. For pages that have a capture type of `DOM`, there is no rendering on the replay server. Tealeaf uses the captured DOM to display a page in BBR. • `Diff` The UISDK captures the Diff, and PCA then captures the post made by the UISDK. For pages that have a capture type of `Diff`, there is no rendering on the replay server. Tealeaf uses the Diff from the captured DOM to display a page in BBR. • `Network` Classic capture, where the PCA captures the request and response of the page. For pages that have a capture type of `Network` , Tealeaf uses the Rendering Engines inside Replay to display the page in BBR. For information about DOM Capture and DOM Diff, see "DOM Capture and Replay" in the *IBM Tealeaf cxImpact User Manual*. For information about configuring DOM capture and DOM Diff capture, see "Configuring settings and features with the Configuration wizard" in the *IBM Tealeaf CX UIC SDK 4.1 Guide*.

Navigation Pane

The Navigation pane displays the pages and their related sub-pages in the order in which they were experienced by the visitor.

- If the Content pane is in Replay view, only the hits that can be visibly replayed are displayed.
- If the Content pane is in Request or Response view, all hits are displayed.

muir/portal/Replay.aspx?server=MUIR.TEALEAF.COM%3a19000&resultSetId=RS_20120719-170815-000&resultSetIndex=6&canister=CANISTER.dbs\LSSN_20120716_MUIR.dat&sessionid=1457462

Navigation

Hide

Filter By

Page	Title	Time Stamp	Gen Time	Net Trip	Round Trip	Response Size	Status
1	Home page	07/16/2012 14:12	0.553	0.010	0.563	24,597b	200
	ScreenView: LOAD root	07/16/2012 14:12	0.000	0.001	0.001	270b	200
	ScreenView: LOAD root root	07/16/2012 14:12	0.000	0.001	0.001	270b	200
	xpath: [["HTML",0],["BODY",0],["DIV",0],["DIV",0],["C	07/16/2012 14:12	0.000	0.000	0.001	270b	200
2	Customer Login	07/16/2012 14:12	0.522	0.009	0.532	15,888b	200
	ScreenView: LOAD root	07/16/2012 14:12	0.000	0.001	0.001	270b	200
	ScreenView: LOAD root root	07/16/2012 14:12	0.000	0.001	0.001	270b	200
	xpath: [["HTML",0],["BODY",0],["DIV",0],["DIV",0],["C	07/16/2012 14:12	0.000	0.000	0.001	270b	200
4	Customer Login	07/16/2012 14:12	0.486	0.008	0.495	15,888b	200
5	Home page	07/16/2012 14:13	0.521	0.009	0.531	24,597b	200
6	Nine West Women's Lucero Pump	07/16/2012 14:13	2.438	0.030	2.468	37,960b	200
	ScreenView: LOAD root	07/16/2012 14:13	0.000	0.000	0.001	270b	200
	ScreenView: LOAD root root	07/16/2012 14:13	0.000	0.000	0.001	270b	200
	id: attribute502 value: event: click 6	07/16/2012 14:13	0.000	0.000	0.001	270b	200
	id: attribute502 value: 43 event: change 6	07/16/2012 14:13	0.000	0.000	0.001	270b	200
	id: attribute502 value: 43 event: click 6	07/16/2012 14:13	0.000	0.000	0.001	270b	200
8	Shopping Cart	07/16/2012 14:13	1.254	0.024	1.278	57,813b	200
9	Checkout	07/16/2012 14:13	1.114	0.031	1.145	89,485b	200
10	http://m.straussandplesser.com/index.php/checkout/o	07/16/2012 14:13	0.405	0.001	0.406	2b	200
11	http://m.straussandplesser.com/index.php/checkout/o	07/16/2012 14:13	0.694	0.001	0.695	1,538b	200
12	http://m.straussandplesser.com/index.php/checkout/o	07/16/2012 14:13	0.448	0.001	0.450	4b	200
13	http://m.straussandplesser.com/index.php/checkout/o	07/16/2012 14:13	0.512	0.000	0.513	1,330b	200
14	http://m.straussandplesser.com/index.php/checkout/o	07/16/2012 14:13	0.575	0.002	0.578	5,465b	200
15	http://m.straussandplesser.com/index.php/checkout/o	07/16/2012 14:13	0.484	0.000	0.485	1,777b	200
16	http://m.straussandplesser.com/index.php/checkout/o	07/16/2012 14:13	0.662	0.001	0.663	3,644b	200
17	http://m.straussandplesser.com/index.php/checkout/o	07/16/2012 14:13	0.489	0.001	0.490	2,024b	200
18	http://m.straussandplesser.com/index.php/checkout/o	07/16/2012 14:13	1.593	0.000	1.594	30b	200
19	Strauss and Plesser	07/16/2012 14:13	0.529	0.009	0.538	17,236b	200

Session First Use: 07/16/2012 14:12:48 Session Last Use: 07/16/2012 14:14:24 Hit Count: 19 Last Update: 07/19/2012 10:08:28

Figure 7. Navigation List

The preceding image displays a partially expanded set of pages and sub-pages.

- The page or sub-page that is displayed in the content pane is highlighted in blue.
- Next to some pages in the Navigation List, you may see carets to expand the page. Click the caret to display the sub-pages for the selected page.

In the preceding image, you can see the Navigation List that is expanded to display all of the available columns.

- As needed, you can click and drag the right side of pane to display additional columns of information.
- A set of tools is available in the toolbar above the pane.

Navigation pane hierarchy

In the Page column, you can see how the pages are organized in a hierarchy. The currently displayed page is highlighted. To display a page in the **Content** pane, select it in the Navigation pane.

Right-click any entry in the Navigation pane to open a menu.

To see a full list of all pages in the session, click the Page List icon in the toolbar.

Structure of hierarchy

Note: ScreenView nodes are visible only in Replay view.

- In Request and response view, UI events are listed in physical order of occurrence under a page.

```
+ Page
    + ScreenView
    + ScreenView
```

```
        + UI Event
        + UI Event
    + ScreenView
        + UI Event
```

Definitions

Table 11. Navigation pane hierarchy

Icon	Term	Description
2	Page	A page is defined as any hit (request and response pair) in which the returned response is in a text-based format, such as HTML, XML, or plain text. If a page is not displayed during replay, none of the underlying events is displayed either. A page can be hidden by replay rule, by ReqCancelled failure, or by another means. Redirect pages are not displayed by BBR. The page number is listed next to the icon. These numbers can differ if the session is fragmented. • Pages that are numbered with two dashes (- -) can indicate UI hits, pages that are served from a caching server, or non-pages such as redirects. – UI events are positioned beneath the page where they were detected. • Pages that are followed by an asterisk and a number in parenthesis, for example *(110), indicate that was a cached back page was hit. The number in parenthesis is the previous page hit. • If you want, you can display the hit number, instead of the page number, in the first column. To toggle display of hit numbers, select **Options drop-down** > **Options** > **Use Hit Numbers in Navigation List**. – When the above is selected, hit numbers are displayed for all objects in Request and Response view and only for pages in Replay view.

Table 11. Navigation pane hierarchy (continued)		
Icon	**Term**	**Description**
2 continued	Page	• The title of the UI event provides some information about the event that occurred. • If the session is captured by using a Logging Framework from IBM Tealeaf CX Mobile for Mobile App, there are no page numbers, as sessions for mobile native application sessions do not contain viewable pages. Red text indicates a hit that either returned an error, such as HTTP 400+ or 500+, or a request that the visitor canceled before it completed loading.
	Caret	Click to display the sub-page that is associated with this page.
	ScreenView	A Tealeaf-specific term, a ScreenView is defined as a state or stage of a single URL. Some web applications can contain multiple sets of user interaction objects that are referenced from the same URL. For example, a page on your web application may contain multiple tabs, in each of which the visitor performs separate discrete actions. For tracking purposes, you can group user actions by the tab in which they occurred by using the Tealeaf Screen Views. • Screen Views are displayed in BBR only. These subpages are not available for display in RTV. ScreenView tracking requires the deployment of a Tealeaf client framework. For more information:

Table 11. Navigation pane hierarchy (continued)		
Icon	**Term**	**Description**
UI	UI Event	A UI event is any user interface event that is captured from the visitor's client by using one of the Tealeaf client frameworks. For mobile native and AJAX-based applications, for example, some user interactions do not generate a request and corresponding response from the server. Using Tealeaf client frameworks, you can capture these types of user interface events and actions and submit them for capture and processing to Tealeaf. **Note:** Click events are fired after the HTML for the rendered page is stored. For the last click event on the page, the click event can be delayed until any configured UI custom highlighting is applied. **Note:** Orientationchange, touchstart, touchend, and scroll UI Events do not replay if you did not installed or configured the CX Mobile licence. Although they are present in the session data, events of the following types are not displayed in the Navigation List: • `load`, `unload`, `attention`, `scroll`, and `resize`. • ClientState events that are submitted from UI Capture UI event tracking requires the deployment of a Tealeaf client framework. For more information:

Navigation pane columns

By default, the navigation pane is sized to show only some of the available columns on the left side of the screen. As needed, you can click and drag the right side of the navigation pane to display the other columns of information.

Table 12. Navigation pane columns descriptions	
Column	**Description**
Page	The page and its associated subpages.
Title	Title of the page as reported in the data
Time Stamp	The time stamp when the page was captured
Gen Time	The time that it took to generate the response
Net Trip	The network transit time to send the response
Round Trip	The network transit time to send the request and return the response

Table 12. Navigation pane columns descriptions (continued)	
Column	**Description**
Response Size	The size of the response in bytes
Status	The HTTP status code for the response. A status code of `200` means that all is well

Navigation pane tools
The following tools are available in the Navigation pane toolbar.

Table 13. Navigation pane tools		
Icon	**Tool**	**Description**
	Page List	Click to display the full list of pages in the session, with additional details.
	Hide	Click to hide the left navigation pane. • To show the pane again, select **Options drop-down** > **Options** > **Show Sidebar**.
	Filter By	Click to select filtering options for the Navigation pane, as they are specified in Sub-Search.

Additional panes
The following panes can also be displayed on the left side of BBR below the Navigation pane.

- Events Pane
- Form Fields Pane

The options to toggle the display of the above panes are available through the **Options** menu.

Navigation pane context menu commands
The following menu commands are available in the context menu for the Navigation pane.

When you select a page or subpage in the Navigation pane, the following options can be displayed:

Table 14. Navigation pane context menu command descriptions	
Command	**Description**
Replay	Display selected page in Replay view. **Note:** This option is not available in Request and Response view if the selected page or subpage cannot be replayed.
Request	Display selected page in Request view.
Response	Display selected page in Response view.

Navigation context menu commands for Administrators

For Tealeaf administrators, the following items are displayed in the context menu accessible through the Navigation pane.

Note: To configure replay rules, you must be a member of one of the following admin groups:

- `Admin Group`
- `cxReveal Admin`

- `cxView Admin`

Using replay rules, you can apply changes to the content before it is displayed in the screen. Replay rules can be used to remove pages from replay, suppress display of replayed pages, and more.

Note: Replay rules that are configured in BBR are saved to the replay server, where they are applied to all Tealeaf users during replay. These replay rules do not apply to a specific user or to a specific session.

Tealeaf administrators can also configure replay rules by using the **Portal Management** page.

For more information about replay rules in general, see RealiTea Viewer - Replay Rule.

Table 15. Navigation pane context menu commands for Administrators

Command	Description
Remove this page from replay	Marks the selected page to not be displayed in Replay view. While the page is still displayed in the Navigation pane, it does not display replay. To add the page back into replay, right-click the page after the one that is removed in Navigation pane and select **Delete rule which removes this page from replay...**.
Delete rule which removes this page from replay...	If a replay rule is applied to the page to remove it from replay, you can this option to revert the removal from replay.
Treat this page as Highlight Only	You can instruct BBR to treat this page as containing highlighting information only. The previous page in the Navigation list is displayed, and the content of the selected page is applied as highlighting to the page.
Treat this page as a Popup Page	You can create a replay rule that instructs BBR to treat this page as a pop-up window. During replay, a pop-up window can interrupt the flow of replay and can cause some page data to fail to display.
Add Custom UI Event Highlighting...	When a UI Event entry is selected in the Navigation List, you can apply custom highlighting to the selected element by specifying a JavaScript function.
Ignore Element	There might be occasions where processing a UI Event adds no value to the replay. For such occasions, you can use the **Ignore Element** option to remove the UI Event from Navigation list in BBR. When you right-click an element in the Navigation pane and select, **Ignore Element**, the **UI Event Element Ignore** dialog is displayed. The field on the **UI Event Element Ignore** dialog is prefilled with the regular expression pattern identifying the UI element. To have replay ignore UI Elements matching the regular expression pattern, click **OK**. **Note:** You cannot use the **Ignore Element** option to remove ScreenViews.
Open URL in browser	This option allows you to open the selected URL in a new browser.
Copy URL to clipboard	This option allows you to copy the URL to your clipboard so you can paste it elsewhere.

Events pane

The Events pane displays a list of all events that are logged for the currently selected page.

Events are listed in the order of execution. The Events pane is visible only when the Content pane is in Replay view.

For each line in an event listing:

- *Event (n)* - This line identifies the sequence in the session when the event fired, after which is listed the event name.
  - The `Icon:` value indicates the file name of the icon that is displayed in session lists and other reports for this event.
  - You can display a chart that shows the counts of the event occurrences for any day. Right-click the event entry and select **Show Report**.
- *Event Occurrences in Session (n)* - Indicates the number of instances of the event on the page.
- *Value[Type] (n)* - The recorded value of the event, including an indicator of the type of value recorded (`Numeric` or `Text`).
- *ReportGroup (n)* - Parent node a report group that is associated with the event. The number in parentheses is the report group identifier.
  - The report group `No Dimension Report Group` is displayed as `No Dimension Report Group`, and always has a report group index of `1`.
  - *Fact(n)[Type] (n)* - Indicates the fact into which the indicated value is recorded. Multiple listings of the fact indicate that values were recorded more than once.
    - Beneath facts in report group other than `No Dimension Report Group`, you can review the dimensions and their applicable values.

Charting Event reports

When an event is selected, you can optionally generate an event chart of the report that is displayed in BBR.

About this task

To chart an Event report:

Procedure

- Right-click the event entry in the Events pane and select **Show Report**.

  The displayed chart shows the counts of the selected event for each hour of the current day.
- To change the size of the chart, click and drag from the lower-right corner of the chart display.

  To revert to the default size, minimize the chart and then expand it again through the toolbar.
- To change the selected focus period, click the Calendar icon in the chart's toolbar.
- You might specify a focus period that extends across multiple dates. Click the start date, and then click the end date.
- You might also display data from a comparison range.
- To hide the report, click the Minimize icon in the toolbar.
- To close the report, click the **X** icon in the toolbar.

Form Fields pane

During replay, if the page displayed in the Content pane contains form fields, you can review the form field names and the values that are entered by the visitor in the Form Fields pane.

Form field names are listed in alphabetical order.

Values of `true`/`false` typically indicate that a check box or radio button was selected or cleared.

The Form Fields pane is visible only when the Content pane is in Replay view.

Form Fields menu
The following commands are available in the menu when items are listed in the Form Fields.

Table 16. Form field commands	
Command	**Description**
Search Completed Sessions	Search the available completed sessions for the form field name.
Create New Event from	Create an event that detects the form field name in the session data.
Create New Hit Attribute from	Create a hit attribute that detects the form field name in the session data. The Hit Attributes tab of the Tealeaf Event Manager is pre-populated with values to match this item.

Session statistics
Session statistics provide statistical data as it relates to session processing.

Session statistics are displayed at the bottom of the window.

Table 17. Session statistics	
Statistic	**Description**
Session First Use	The first date and time stamp of the session.
Session Last Use	The last date and time stamp of the session.
Hit Count	The number of hits in the session.
Last Update	The date and time stamp of the last time that Browser Based Replay was updated with session information, which is useful for identifying the currency of your session data. For active sessions, this information updates when the page and navigation lists are refreshed.

Tracking Interactions through BBR

As sessions are currently being experienced by visitors to your web application, you can use Browser-Based Replay to track how they evolve in real time. You can select the pages of active sessions like the pages of a completed session. As needed, you can refresh the list of pages to see where the visitor is browsing in the web application.

- In the Session List in the Portal, active sessions are denoted with a blue circle marker in the leftmost column.

During replay, items that are displayed in the Events and Form Fields panes can be highlighted in the session.

- You can also add annotations to active sessions.

Shadow Browsing Live Sessions
If needed, you can follow along in real time as a visitor explores the website. This "shadow browsing" feature enables close support of your customers and the tracking of activities that are otherwise causing problems with the web application.

Note: Shadow browsing applies to active sessions only.

- To update the list of session pages through Browser-Based Replay, click the Refresh icon ( ). Results of the refresh are displayed so that you can monitor the changes in the page list.
- During replay, active sessions are automatically refreshed every 60 seconds.

Replay Highlighting
During replay, you can monitor the visitor's clicked or entered data.

When replay highlighting is enabled, the elements that the visitor interacted with are highlighted by a green border in Browser Based Replay.

Each type 4 message corresponds to a user action such as a `click` on a **button** or `text change` in a **text box**.

Highlighting elements makes it easier to monitor and track clicked buttons, selected links, and any form data entered by the web site visitor.

Replay highlighting and mobile gestures

Traditional highlighting in BBR is not supported for mobile gestures (type11 messages).

Unlike type 4 messages, most type 11 messages do not contain UI element information related to user actions such as `swiping` or `pinching`, because those actions are not performed on an element, but rather on an area of the mobile device screen.

For several mobile gestures, Tealeaf collects data from the area of the mobile device screen that the visitor interacts with, not on the underlying UI element. Because of the fundamental difference in how mobile device users interact with your web site or application, Tealeaf does not apply the traditional green highlight border to indicate when a gesture occurred. Instead, Tealeaf represents Gestures from a mobile device by displaying animated hand icons on the Replay view.

Note: Only Type 11 gestures are shown with the hand icons. If a Type 4 UI event is captured, and highlighting is enabled, Tealeaf uses the regular green border for mobile sessions.

Adding annotations
You can annotate specific pages during replay through BBR.

About this task

For example, if you are assisting a customer with a problem, you can mark the page where the problem occurred for resolution by your web development team.

Any BBR user can add annotations.

Note: You cannot add annotations to a TLA session that you loaded into BBR.

To annotate a session page:

Note: You cannot add annotations to UI events pages, which are inserted by the Tealeaf IBM Tealeaf CX UI Capture for AJAX.

Note: After an annotation is added, it cannot be removed.

Procedure

1. In BBR, select the page that you want to annotate.
2. In the toolbar, click the **Annotations** ( ) icon.

   The Annotations dialog is displayed.
3. To add an annotation:
   a) Enter the text of the annotation in the textbox at the bottom of the dialog.
      - You can select from preselected values by using the drop-down indicator next to the textbox.
      - Tealeaf administrators can configure the list of preselected values.

b) Then, click **Add Annotation**.

4. The annotation text, your Tealeaf user ID, and the Time Stamp when it was added are displayed in the Annotations popup.

Results

Annotations are stored with the session data as annotation text and the author of the annotation, like they are displayed in the Annotations dialog.

You can search for annotations through the Tealeaf Portal.

Availability of Annotations through Search
After you add, edit, or delete an annotation, the session is queued for re-indexing. When the session is re-indexed, changes to its annotations are now available for search.

- If multiple changes are made to a single session, each change is queued. If possible, the indexer re-indexes all changes at the same time.

Note: Depending on the length of the queue at the time annotation changes are saved, it can take a few minutes before the changes are available through search of completed sessions.

Note: Since annotations must be indexed for search, you cannot search for annotations in active sessions.

Locating Annotations
After you finish adding annotations, you can locate annotations in the session through the **Navigation** panel, where a small yellow icon ( ) is displayed next to the Title of any page that has been annotated.

- In the BBR toolbar, the **Annotation** button is also highlighted when you select the page in the**Navigation** panel that contains the annotation.

Finding search results in BBR
If you load the session in Browser-Based Replay from a session list of search results, you can identify the pages where search terms are found through the**Navigation** panel.

Next to the Title of pages that contains search hits is displayed a small red flag icon ( ).

BBR Replay of Client User Interface Events
If you install and deploy the UI Capture JavaScripts into your web application, Browser-Based Replay supports replay of client user interface events.

About this task

- UI Capture enables the capture of user interface events that occur on your visitor's client browsers that would otherwise not be detected by Tealeaf. These events are submitted to Tealeaf for capture, analysis, and replay. In BBR, replay of client user interface events is managed by Replay Server, instead of your browser. Replay Server renders the user interface event inside the browser control on the server and then delivers the finished rendering to your browser for display.

For example, suppose UI Capture captures a client user interface event in which the following actions occur:

Procedure

1. User selects a drop-down menu. Menu is displayed.
2. User makes a selection from the menu.

Results

In BBR, the captured UI event is displayed as a static page in which the user makes the selection from the menu.

Sub-Search in BBR

After you locate a session and opened it for replay in BBR, you can search the text contents of the session to filter the displayed list of hits. Through Sub-Search, you specify one or more search terms to examine text or specified fields in the request of the session that is currently loaded in Browser Based Replay.

- Search terms can be strings or numeric values.
- For numeric values, ranged searches are supported.

When the Sub-Search is run, the Navigation List is filtered to display only the hits in the session that match the Sub-Search criteria. Then, you can use the**Hit Details** window to further review the matches to locate the specific hit of interest.

- The maximum number of items or occurrences that are returned in a Sub-Search is 10,000. There can be multiple items that are returned for an individual hit.

Searching for Sessions

Sub-Search operates only on sessions that are loaded into Browser Based Replay. Before you begin, you must locate and replay a session.

- For more information about loading a TLA session file directly into BBR, see "Session menu" in the *IBM Tealeaf cxImpact User Manual*.

Running a sub-search

Running a sub-search involves defining the search and then running it.

About this task

To run a sub-search of a session that is loaded in BBR:

Procedure

1. Sselect **Options** > **Sub-Search**.

   The **Sub-Search** window is displayed.
2. To enable a search field, click the leftmost check box for a row, or make a selection in the first column of options.
3. To specify a search field:
   a) Specify the columns in the search field:
      1) Column 1: Select a search location from the drop-down list. Depending on the field you select, the Column 3 drop-down list is populated with all available values in the session.
      2) Column 2: Select the field operator. The available operators depend on the type of location that is selected for Sub-Search.
      3) Column 3: Enter or select the text string for which to search in the available location, by using the specified operator.
         - For text-only fields, you enter the value for which to search.
         - For other fields, you select the value for which to search from the drop-down list.
         - Wildcards and regular expressions are not supported.

   b) To match only items in the session data that match the search term exactly, click the **Match Case** checkbox.
4. To add multiple search terms:
   a) Specify the appropriate search operator in the drop-down in the upper-right corner:

Table 18. Search operator descriptions

Search operators	Description
OR	Any match of the specified search terms yields a matching hit.

Table 18. Search operator descriptions (continued)	
Search operators	**Description**
AND	All of the specified search terms must occur on a hit to yield a matching hit.
AND on same page	All of the specified search terms must occur on a single request or response to yield a matching hit.

b) Click the checkbox next to the following row in list.

c) Specify each column for the search term, as described above.

5. Click **Filter** to run the search.

   Note: If you receive a data retrieval error when you run your search or attempt to review the hit details, the BBR session can time out. In the BBR window, select the address bar and press ENTER to refresh the session. Your filter operation can now work. If the issue persists, contact your Tealeaf administrator.

Results

When the results are returned, the Navigation List is filtered to show only the matching hits.

To review the details of the matching hits, click **Hit Details**.

Running a sub-search

After you have defined the criteria for your sub-serach, you can run it.

To run the Sub-Search, click **Filter**.

- When the results are returned, the Navigation List is filtered to show only the matching hits.
- To review the details of the matching hits, click **Hit Details**.

Note: If you receive a data retrieval error when you run your search or attempt to review the hit details, the BBR session can time out. In the BBR window, select the address bar and press ENTER to refresh the session. Your filter operation can now work. If the issue persists, contact your Tealeaf administrator.

Available locations for Sub-Search

In Sub-Search, you can specify the following locations for which to search for the specified string.

- This list includes more fields than the session's request fields that are indexed for search.

  Note: To filter the list, begin typing the name of the section in the request where the field you want is located. For example, entering `env` in the textbox limits the list to only the `[env]` fields of the request.

Location

Description

`Full Response Text`

Search the entire response of each hit for the specified text.

Note: You can use this search field to search for specific error conditions that are emitted from your web server to the visitor. For example, you can search for error messages that generated when Replay Server was unable to properly render the page. Enter `Error rendering this page!` in this textbox.

`Request Text`

Search the indexed fields in the request of each hit for the specified text.

`All Text`

Search all available name-value pairs in the request and response text of each hit.

`HitType`

Selected field is listed in the `[HitType]` section of the request. This data is gathered and generated by Tealeaf.

TLFID_*
Available fields for an instance of an event and its associated dimension values that are recorded in the hit.

appdata
Selected field is listed in the `[appdata]` section of the request. This data is inserted by user-defined actions that are completed in the Windows pipeline.

ExtendedUserAgent
Selected field is listed in the `[ExtendedUserAgent]` section of the request. This data is inserted by the Tealeaf Reference session agent for user agent detection.

env
Selected field is listed in the `[env]` section of the request. This data is gathered and generated by Tealeaf.

iamie
Selected field is listed in the `[iamie]` section of the request. This data is gathered and generated by Tealeaf.

timestamp
Selected field is listed in the `[timestamp]` section of the request.

- This section contains timestamp information that is gathered and generated by the IBM Tealeaf CX Passive Capture Application.

urlfield
Selected field is listed in the `[urlfield]` section of the request. This data is gathered and generated by Tealeaf.

HTTP_*
These values represent headers that are submitted from the client.

- Some headers can be submitted by the IBM Tealeaf CX UI Capture for AJAX solution.

TRANSFER_ENCODING
The transfer encoding defines the encoding character set used by the web server to generate the response.

Event data fields
For each event that occurred in the session, you can search for the event occurrence's value or for specific dimension values that are associated with the event. The fields that contain event data available in Sub-Search correspond to entries inserted into the request when an event occurs.

The request data is in the following format:

Example Field
Description

TLFID_375TLFactValue
The Tealeaf event with internal identifier 375 was recorded. This field contains its recorded value.

TLFID_375/TLDim1
This field contains the plain-text value of dimension 1, recorded when event 375 occurred.

TLFID_375/TLDimHash1
This field contains the hashed value of dimension 1, recorded when event 375 occurred.

- Hashed dimension fields are stored to enable search for dimension values that are longer than 32 characters. This data is not user-readable.

Available operators for search location
You can use search operators to refine your search of the location.

The following operators can be used:

Note: Depending on the type of data that is specified for the search term, some of the following operators might be available.

Table 19. Search operators	
Operator	**Description**
contains	Search location contains the specified string.
does not contain	Search location does not contain the specified string.
matches	Search location matches the specified string.
does not match	Search location does not match the specified string.
less than/equal to	For numeric values, the search location contains at least one value that is less than or equal to the specified numeric value.
greater than/equal to	For numeric values, the search location contains at least one value that is greater than or equal to the specified numeric value.
between	For numeric values, the search location contains at least one value that is between the two specified values.

Considerations and limitations for running sub-searches on active sessions

There are limitations and things to consider before running a sub-search on active sessions.

For example:

- The search is applied against only the pages, ScreenViews, and UI events that are currently listed in the Navigation list.
- Before you define a Sub-Search against an active session, you must refresh the list of pages by using the **Refresh** button in the toolbar.
- Any actions that are not applied to a session until it is completed are not searchable in the session.

  Events that are triggered on the `Last Hit` or `End of Session` trigger cannot be displayed in an active session and are therefore not searchable

Filtered Results

After a Sub-Search is specified and run, the Navigation List is filtered to display only the matching hits.

Table 20. Filtered Results

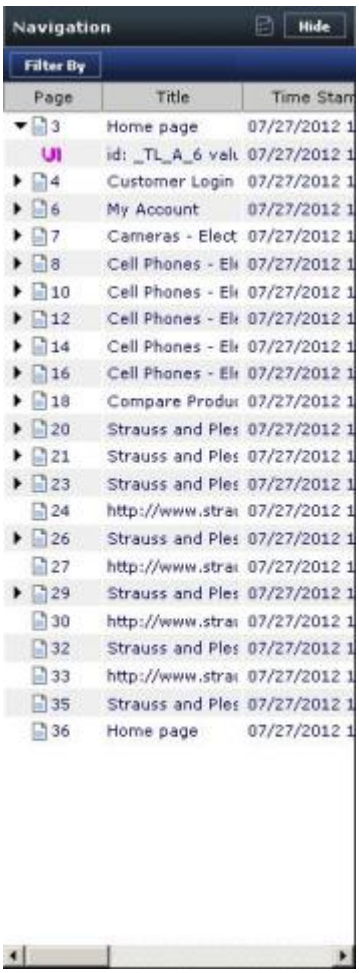

Figure 8. Nav List before Sub-Search

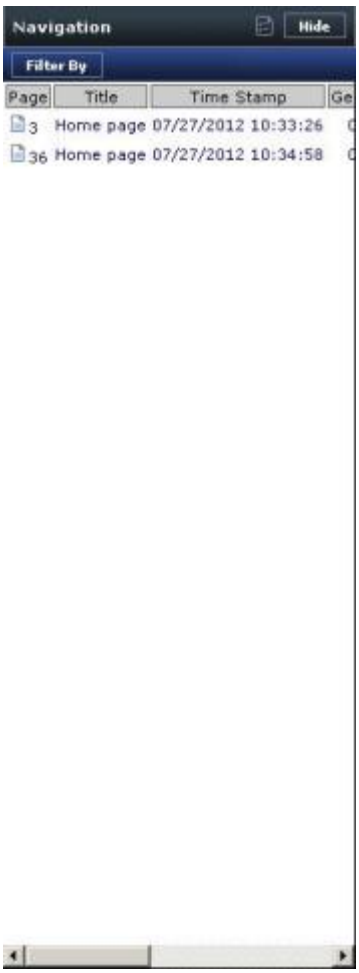

Figure 9. Nav List after Sub-Search

Note: To refresh this list, you must re-execute the search.

Note: The filtered list is a flat list. ScreenViews and UI events can be included in the list of hits.

You can use the **Previous** and **Next** icons in the toolbar above the main panel to step through the filtered list of hits.

Navigation list toolbar

Table 21. Navigation List toolbar

Icon	Title	Description
	Page List	Opens the page list. See "Browser Based Replay Interface" in the *IBM Tealeaf cxImpact User Manual*.
Hide	Hide	Hide the **Navigation List** panel. • To re-display the Navigation List, select **View** > **Show** > **Sidebar**. See "View menu" in the *IBM Tealeaf cxImpact User Manual*.

Table 21. Navigation List toolbar (continued)		
Icon	**Title**	**Description**
Filter By	Filter By	Filter the Navigation List by the item that is selected in the drop-down.

Navigation List toolbar

Table 22. Navigation List toolbar		
Icon	**Title**	**Description**
	Page List	Opens the page list. See "Browser Based Replay Interface" in the *IBM Tealeaf cxImpact User Manual*.
Hide	Hide	Hide the **Navigation List** panel. • To re-display the Navigation List, select **View** > **Show** > **Sidebar**. See "View menu" in the *IBM Tealeaf cxImpact User Manual*.
Filter By	Filter By	Filter the Navigation List by the item that is selected in the drop-down.

Filtering the Navigation List

The following options are available in the **Filter By** drop-down.

Option
Description

All Pages menu
Show all pages in the Navigation List. This view is the default one.

Expand All Pages
Switch to All Pages view and expand all pages, UI events, and screen views in the Navigation List.

Collapse All Pages
Switch to All Pages view and collapse all pages, UI events, and screen views in the Navigation List.

Subsearch menu
Options pertaining to a filtered navigation list.

Search List
Show list of pages after the Subsearch filter is applied.

Hits Detail
Show details on the hits that match the filter conditions. See “Reviewing hit details from sub-search results” on page 56.

Reviewing hit details from sub-search results

In the Hit Details popup, you can review the details of the hits that match the Sub-Search results.

About this task

- To jump to the occurrence, double-click the row in which it is listed. The**Hit Details** window closes, and BBR displays the matching page, ScreenView, or UI event where the Sub-Search match occurs, in the current view: Request, Response, or Replay.

Sub-Search Hit Details. Matching occurrences found: 10000

Page	Location	Term	
3	Request Text	tl	TLTSID=956E025D060F67413A5D4B1B67793DE5
3	Request Text	tl	TLTHID=8E1859618A496471EE2EB6C1DEB14BD3
3	Request Text	tl	TLTUID=A13C5523FB53AC1D7B44FE6F280D866B
3	Request Text	tl	TLT_URL=/store/defaultpage
3	Request Text	tl	TLT_SERVER=206.169.17.19
3	Request Text	tl	TLT_HOST_NAME=www.straussandplesser.com
3	Request Text	tl	TLT_APPLICATION_NAME=store
3	Request Text	tl	HTTP_COOKIE=magento=fu38lw4bzubmyxzvhui2oc
3	Request Text	tl	HTTP_COOKIE=magento=fu38lw4bzubmyxzvhui2oc
3	Request Text	tl	HTTP_COOKIE=magento=fu38lw4bzubmyxzvhui2oc
3	Request Text	tl	HTTP_COOKIE=magento=fu38lw4bzubmyxzvhui2oc
3	Request Text	tl	HTTP_SET_COOKIE=TLTHID=2F46F398527C105209
3	Request Text	tl	TLapiArrivalTimeEx=2008-07-15T19:58:41.9046542
3	Request Text	tl	ReqTTLB=0

Figure 10. Hit Details of matching Sub-Search hits

Column
Description

Page
The page in the full session where the match was found

Note: Values of `-1` in this column indicate that the page cannot be displayed.

`Location`
The location in the hit where the match was found

`Term`
The search term that was found

`Context`
The byte number in the request or response where the matching text was found, followed by the contextual information that surrounds the matching string

Note: You can use the text of the Context column to locate other sessions with the same text pattern:

1. Highlight the text of interest. Do not highlight the byte number.
2. To copy the text, press `CTRL + C`. The text is copied.
3. To go to the **Search** page, select **Search** > **Completed Sessions** from the Portal menu.
4. Paste the text into the appropriate field.
   - See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Hit Details context menu
The following menu commands are available in the context menu from the **Hit Details** window.

Table 23. Hit Details context menu options	
Command	**Description**
Replay	Display selected page in Replay view.
Request	Display selected page in Request view.
Response	Display selected page in Response view.

When you select a page in the **Hit Details** window, the following options may be displayed:

For Tealeaf administrators, the following items can also be displayed in the context menu.

Note: To configure replay rules, you must be a member of one of the following admin groups:

- "CX User Administration" in the *IBM Tealeaf cxImpact Administration Manual*: `Admin Group`
- "cxReveal User Administration" in the *IBM Tealeaf cxReveal Administration Manual*: `cxReveal Admin`
- "cxView User Administration" in the *IBM Tealeaf cxImpact Administration Manual*: `cxView Admin`

Using replay rules, you can apply changes to the content before it is displayed in the screen. Replay rules can be used to remove pages from replay, suppress display of replayed pages, and more.

Note: Replay rules that are configured in BBR are saved to the replay server, where they are applied to all Tealeaf users during replay. These replay rules do not apply to a specific user or to a specific session.

Tealeaf administrators can also configure replay rules through the **Portal Management** page.

Table 24. Hit Details context menu - Administrator options	
Command	**Description**
Remove this page from replay	Marks the selected page to not be displayed in Replay view. While the page is still displayed in the**Hit Details** window, it does not appear during replay. To add the page back into replay, right-click the page after the one that has been removed in the Hit Details window and select **Delete rule which removes this page from replay...**
Treat this page as Highlight Only	You can create a replay rule that instructs BBR to treat this page as containing highlighting information only. The previous page in the list is displayed, and the content of the selected page is applied as highlighting to the page.
Treat this page as a Popup Page	You can create a replay rule that instructs BBR to treat this page as a popup window. During replay, a popup window can interrupt the flow of replay and can cause some page data to fail to display.

Sub-Search in RTV
You can also complete searches within sessions through the IBM Tealeaf CX RealiTea Viewer, the desktop client for searching and replaying sessions.

BBR Options

You can change view, replay, and interface options for Browser Based Replay. Through the Options menu, you can configure the BBR interface and enable or display BBR features.

- To open the Options menu, select the Options drop-down ( ) in the BBR toolbar.

Options menu

The **Options** menu provides options for controlling the content displayed in the interface. A check mark to the left of an option indicates that the option is enabled.

Table 25. Descriptions of Menu options

Option	Description
UI Events	Controls the level of UI Events displayed in the Navigation pane of the BBR interface. Options for **UI Events** include: • **Show All** Show all UI Events. Select this option to show a list of all of the UI Events for each page in the session. When you select this option, every UI Event for each page in the session is displayed in the Navigation pane in BBR. • **Hid All** Hide all UI Events. Select this option to collapse the list of UI Events in the Navigation pane, so that only the pages (not the associated UI Events) are shown. • **Only Show Last** Show the last UI Event of the session only. Select this option to show only last UI Event of the session in the Navigation pane. • **Show ScreenView Load / Unload** Sh (Replay view only) Shows the UI events in the Navigation pane.
Page Numbering	Controls what type (Page, Hit, or Timestamp) of numbering is displayed in the Navigation pane. Options for **Page Numbering** include: • **Use Page Numbers** Shows the page numbers in the Navigation pane. • **Use Hit Numbers** Shows the hit numbers in the Navigation pane. • **Use Timestamp** Shows timestamp in the Navigation pane.
Page Naming	Controls what value (**URL**, **TLT_URL**, or **Page Title**) to show for the pages displayed in the Navigation pane.

Table 25. Descriptions of Menu options (continued)	
Option	**Description**
Sort	Sorts the UI events in the Navigation pane by timestamp. By default, **Sort** > **Use Timestamp** is disabled (unchecked). **Note:** When enabled, **Sort** > **Use Timestamp** persists for the life of the session only. Logging out will reset the option to its default (disabled). For information about using this option, see Sorting events by timestamp.
Replay Rules	Controls options for working with replay rules. Options for **Replay Rules** include: • **Edit Rules Profile** The **Edit Rules Profile** option displays the **Rules Profile Editor** that you can use to view your list of existing rules. You can add rules, delete rules, edit rules, rename rules, and view properties. You can also edit the raw XML for the rules and view the rules history. • **Suggest Rules** The **Suggest Rules** option opens a dialog with suggested rules for the loaded session.
Advanced	Provides the following options: • **Merge Session Fragments** When enabled, you can configure and execute the merging of session fragments. • **Report JavaScript Errors** When enabled, Javascript errors are reported to the BBR user.
Subsearch	Search the displayed session for one or more strings.
Search Completed Sessions	Opens free text search of completed sessions. You can copy and paste text from the Content pane to search in completed sessions.

Table 25. Descriptions of Menu options (continued)	
Option	**Description**
Resize View to Match Sessions	**Note:** You must have an IBM Tealeaf CX Mobile license to use this opton. You can toggle this option to be enabled (check mark) or disabled (no check mark). • Enabling **Resize Replay Pane to Match Session** When **Resize Replay Pane to Match Session** is enabled, the following functionality (if present) is applied to the replay page: in BBR – scale (zoom-in/out) – scroll animation – gestures For example, `type11` messages – mobile keyboard • Disabling **Resize Replay Pane to Match Session** When **Resize Replay Pane to Match Session** is disabled, only scroll animation functionality (if present) is applied to the replay page in BBR. All other functionality is disabled.

Options Sub-Menu

The following options are available in **Options menu** > **Options**.

Option
Description

Show Sidebar
Toggles display of the sidebar that contains the Navigation, Events, and Form Fields panes.

Show Events
Toggles display of the Events pane.

- This pane can be displayed in Replay view only. See "Browser Based Replay Interface" in the *IBM Tealeaf cxImpact User Manual*.

Show Form Fields
Toggles display of the Form Fields pane.

- This pane can be displayed in Replay view only. See "Browser Based Replay Interface" in the *IBM Tealeaf cxImpact User Manual*.

UI Events
If UI events are present in the session, this sub-menu contains display options for them. See “Toggling Display of UI Events” on page 62.

Enable Highlighting
Enables or disables form field and link highlighting, and also the population of user input.

Use Hit Number in Navigation List
When enabled, hit numbers are displayed in the navigation list, and UI event hits, if present, are marked with the hit number, too.

- If this option is disabled, page numbers are used instead. UI events are not numbered.
- When fragment merging is enabled, hit numbers are prefaced by an indicator as to which fragment the hit belongs. See “Merging session fragment overrides” on page 63.

Use Default Page Name in List
When enabled, select the default page name in the navigation list. You can choose between **Show URL**, **Show TLT_URL**, and **Show Page Title**.

Merge Session Fragments
For completed sessions: refreshes the session, looking for session fragments that may be part of the current session. See "Merging session fragment overrides" on page 63.

Report Javascript Errors
Displays errors that are produced by the page. If this option is disabled, page errors are not displayed.

Resize Replay Pane to Match Session
When enabled, BBR automatically resizes the replay pane to match the screen dimensions and positioning of the web client that is used by the visitor. This option is enabled by default.

Note: This option is only enabled if you have an IBM Tealeaf CX Mobile license.

Edit Rules Profile
You can use the **Rules Profile Editor** to view your list of existing rules. You can add rules, delete rules, edit rules, rename rules, and view properties. You can also edit the raw XML for the rules and view the rules history.

The **Rules Profile Editor** in Browser-Based Replay supports the following rules:

- Host or Domain
- IgnoreURL
- PopupURL
- Host Remap
- Portal Remap
- Host Protocol
- ResponseMod
- HighlightonlyURL
- Custom UI Highlight Rule
- BlockedURL
- PatchResponseWtihPostValue
- Whitelist Rule
- Mobile Mod Rule
- IgnoreReqVar for Matching URL

Suggest Rules
When enabled, you can view and apply suggested rules for a Microsoft AJAX-based session.

Toggling Display of UI Events
If UI events are present in the replayed session, then the UI Events sub-menu contains the following options:

Note: If you disable the display of UI events in Browser-Based Replay, you must log out of the Portal and login again to be able to re-enable them.

Note: In UI event hits, all of the important data is stored in the request, and the response is irrelevant to replay. For UI event hits in which the reported status code can cause problems in replay, BBR treats the page as Status Code 200, which indicates that all is well. For example, if the TealeafTarget page reports a Status Code 404 (Not Found) error, BBR treats the page as a Status Code 200, which allows replay to continue despite an issue with a page that is not ever replayable. The true status code value reported from the server is stored in the `[env]` section of the request.

Option
Description

Show All UI Events
(Replay view only) Display UI events in the Navigation list.

- To avoid confusion, UI events are always displayed in Request view or Response view.

  Note: To capture UI events, Tealeaf UI Capture must be implemented in your environment. See "UI Capture for Ajax Guide" in the *IBM Tealeaf UI Capture for AJAX Guide*.

Only Show Last UI Event
For each page, show only the last UI event in the Navigation list. When the UI event is selected, the page is displayed, and all previous UI events for the page are applied to it to generate the final page rendering.

Hide All UI Events
(Replay view only) Display UI events in the Navigation list.

- To avoid confusion, UI events are always displayed in Request view or Response view.

Show ScreenView LOAD/UNLOAD
(Replay view only) Display UI events in the Navigation list.

- To avoid confusion, UI events are always displayed in Request view or Response view.

Merging session fragment overrides
You can use the **Merge Session Fragment Overrides** menu option to manage session fragmentation.

About this task

Ideally, a session is stored in a single Canister file on a single server. However, session timeouts, data storage, and other factors can contribute to the fragmentation of sessions, in which the entire session is stored in multiple files in multiple locations.

Note: These settings override the default Replay Server behaviors and apply only to the current session being replayed in BBR. They are not retained from replay to replay. As a result, replay behaviors can vary between BBR and RTV.

You can configure the Replay Server to automatically merge fragments of a requested session into a single session for replay. When configured to do so, the Replay Server acquires all fragments of a session from a set of selected Canisters within a specified time range. This range is specified as a number of hours before to a number of hours after the main session fragment.

Note: When the merging of session fragments is enabled, the request is submitted to Search Server, which attempts to fulfill it by gathering the requested fragments. In situations where Search Server is unable to gather the session information, it returns the main session fragment, which enables partial replay of the session. No session information is available for the fragment.

The default options for merging fragments can be configured through the Portal.

Merging session fragments is enabled and disabled for users at the group level.

By using the **Merge Session Fragment Overrides** menu option, you can specify new settings for the merging of session fragments for the session that is currently loaded in BBR.

To manage session fragmentation:

Procedure

1. From the menu bar, select **Options** > **Advanced** > **Merge Session Fragments**

   The **Merge Session Fragments** window opens, displaying the current merge session fragment settings.
2. Change the current merge session fragment settings as needed.

   `Merge Session Fragments`
   Enable or disable merging of session fragments for the current session. When enabled, the following settings are applied to the current session only.

Note: To restore the default settings, reload the session.

`Session Merge Timespan Radius (Hours)`
Specify the number of hours in front of and behind the selected session fragment in which to search for other fragments in the session.

`Session Merge Search Servers`
Select the servers across which search server searches to find and assemble session fragments into a complete session.

To search across all currently available servers, click the **All Servers** check box.

3. Click **OK** to apply the changes.

Results

The fragmentation settings for the session are changed.

Configuring BBR Replay Rules

Tealeaf administrators can configure the replay rules that are applied to Browser-Based Replay through the **Managing Tealeaf Servers** page.

- See "BBR Replay Rules" in the *IBM Tealeaf cxImpact User Manual*.

BBR replay rules

To enable the highest fidelity replay without impacting the origin server or servers of your web application, you can configure and deploy replay rules.

A *replay rule* is a modification to the session data during replay so that the replay looks as close as possible to the original experience of your web application's visitor. For example:

- The captured session data can contain references to a server that is not available from where Tealeaf users are replaying the session. So, you must configure a replay rule to modify URLs pointing to the origin server to point to a different server.
- If the session is from an application that requires authentication, an unauthenticated Tealeaf user can generate a significant number of Status Code 401 - Access Denied errors during replay. Using a replay rule, you can instruct BBR to ignore or remove these pages during replay.
- The session can reference an external JavaScript file, which you may or may not want to reference during replay. You can configure replay rules to suppress the JavaScript file or to modify it so that it works effectively during session replay.

There are many more uses for replay rules. In the sections below, you can review the replay rules that can be configured through the Replay Server to be applied to all Browser Based Replay sessions.

Note: Replay rules do not change the stored session data. They are applied only during replay by the Replay Server to the data that is passed to Browser Based Replay for display to the Tealeaf user.

Note: The quality of session replay is dependent upon the nature of the web application. Websites that employ sophisticated display technologies or rely on client user interaction events can require significant customization of the common replay profile and replay rules.

Ways to access and work with replay rules

Replay rules that apply to BBR can be configured in the following locations:

- Replay Server

  Through the **Portal Management** page, you can select the master Replay Server and configure replay rules through the GUI. Changes to the replay rules from the master Replay Server are automatically forwarded to any slave Replay Servers, so that all servers are using the same set of rules.
- Browser-Based Replay

When you have a session that is loaded into BBR, you can use the context menus to create replay rules that are based on specific, highlighted data in the currently loaded session.

- **IBM Tealeaf CX RealiTea Viewer**

  If you must configure replay rules that are not supported through the BBR or Replay Server interfaces, you can download and install the IBM Tealeaf CX RealiTea Viewer desktop application, which can be used to search and replay sessions from your local desktop. When changes are made to replay rules through RTV, they can be synchronized with the BBR replay rule set.

- Configuration File

  For Tealeaf users who are comfortable working with XML, you can configure replay rules in the native XML format by accessing the configuration file on the master Replay Server.

  Note: Tealeaf does not recommend configuring replay rules through the XML file, as no data validation is completed on the edited file. Where possible, use the user interface methods for configuring replay rules.

To create or modify replay rules for BBR, you must have access to the **Portal Management** page (**Tealeaf** > **Portal Management** in the Portal menu). For more information, contact your Tealeaf administrator.

You must have command-line write permissions on the server that hosts the Replay Server.

BBR replay rules and RTV

In many cases, the original replay rule was developed for use with the IBM Tealeaf CX RealiTea Viewer. RTV is a desktop application for locating and replaying sessions.

Note: Many of the sections in the BBR replay rules area reference corresponding content in the *IBM Tealeaf RealiTea Viewer (RTV) User Manual*.

Overview

About this task

Replay rules that apply to BBR can be configured in the following locations:

Procedure

1. Replay Server: Through the **Portal Management** page, you can select the master Replay Server and configure replay rules through the GUI. Changes to the replay rules from the master Replay Server are automatically forwarded to any slave Replay Servers, so that all servers are using the same set of rules.
2. Browser-Based Replay: When you have a session that is loaded into BBR, you can use the context menus to create replay rules that are based on specific, highlighted data in the currently loaded session.
3. **IBM Tealeaf CX RealiTea Viewer:** If you must configure replay rules that are not supported through the BBR or Replay Server interfaces, you can download and install the IBM Tealeaf CX RealiTea Viewer desktop application, which can be used to search and replay sessions from your local desktop. When changes are made to replay rules through RTV, they can be synchronized with the BBR replay rule set.
4. Configuration File: For Tealeaf users who are comfortable working with XML, you can configure replay rules in the native XML format by accessing the configuration file on the master Replay Server.

   Note: Tealeaf does not recommend configuring replay rules through the XML file, as no data validation is completed on the edited file. Where possible, use the user interface methods for configuring replay rules.

Required Access

Note: To create or modify replay rules for BBR, you must have access to the **Portal Management** page (**Tealeaf** > **Portal Management** in the Portal menu). For more information, contact your Tealeaf administrator.

Although it is not recommended, you can configure replay rules in XML format by using the configuration file that is available on the Replay Server.

You must have command-line write permissions on the server that hosts the Replay Server.

RTV

In many cases, the original replay rule was developed for use with the IBM Tealeaf CX RealiTea Viewer. RTV is a desktop application for locating and replaying sessions.

Many of the sections in the BBR replay rules area reference corresponding content in the Realitea Viewer manual.

Replay rule types

Tealeaf supports the following types of replay rules.

In the table below, you can determine whether the rule is supported for configuration through the Replay Server, BBR, or RTV.

- Links are provided to additional documentation on each replay rule type. In some cases, the best documentation is available in the "RealiTea Viewer (RTV) User Manual" in the *IBM Tealeaf RealiTea Viewer User Manual*.

Table 26. Replay Rule Types

Rule Name	XML Node	Description
Popup Page	PopupURL	PopupURL marks pages as popup, so they are not used for highlighting. This rule is available in the BBR **Rule Profile Editor**.
Remove this page from Replay		You can create a regular expression to match URLs that you do not wish to display in the Navigable Pages List or during replay.
HighlightonlyURL	`HighlightOnlyUrl`	For AJAX-based pages, you can configure a page to apply highlighting only to the content retained from the previous page. In this manner, you can simulate the application and the capture of UI events. This rule is available in the BBR **Rule Profile Editor**.

Table 26. Replay Rule Types (continued)		
Rule Name	**XML Node**	**Description**
Ignore ReqVar for URL Match	`IgnoreReqVarForURLMatch`	During replay, the replay client attempts to match requests to responses in the session data. In some cases, you can improve matching by providing a URL pattern, which is used to remove request variables, such as timestamp information, from the set that is used to match the request to the response. This rule is available in the BBR **Rule Profile Editor**.
ResponseMod	`ResponseModify`	ResponseModify rules are used to complete special modifications to the response to enhance the replay that is displayed to the Tealeaf user. For example, you can configure a ResponseModify rule to disable JavaScript used to break their pages out of frames. This rule is available in the BBR **Rule Profile Editor**.

Table 26. Replay Rule Types (continued)		
Rule Name	**XML Node**	**Description**
RequestMod	`RequestModify`	The Request Modify rule is useful for fixing anomalies in data or fixing custom content not handled by Replay. For example, you can use the Request Modify rule to modify the URL of a page or make corrections to incorrect data in the JSON UISDK. The Replay server can then load the modified data and perform its task. This rule is available in the BBR **Rule Profile Editor**. Here are the parameters defined: **URL** This is a regular expression defining which URLs this rule is to be applied to. **Reqvar(optional)** The name portion of a name/value pair in the request to evaluate. **Value** A regular expressions. If the expression matches the value for reqvar the rule is applied. **Pattern** A regular expression used to match the text in the request to be replaced. **Replacement** This is a literal string that will replace the text matched by the pattern. Meta-characters (e.g. \r, \n, \t) are converted tothe corresponding characters prior to replacement. **Occurrences** One of the following values: • **`First`** - Replaces only the first occurrence of pattern • **`All`** - Replaces all occurrences of pattern
External File Modification	`ExternFileModify`	ExternFileModify rules can be configured to complete additional processing to external files that can interfere with replay. This rule is available in the BBR **Rule Profile Editor**.

Table 26. Replay Rule Types (continued)		
Rule Name	**XML Node**	**Description**
Dynamic Response Modification Rules	`DynResponseMod`	When replaying a session that includes data that is delivered from a third party, the contents from the third party must be associated with a specific request. If the third-party content is required to accurately represent the customer's experience, a dynamic response modification rule must be configured to acquire the content at replay time.
Dynamic External File Modification Rules	`DynExternalFileMod`	If the main page loaded into RTV references a separate file that is not part of the session, the file may require modification before it is loaded into RTV. For example, if a JavaScript file referenced by a page in a session contains a domain reference, that reference can result in a JavaScript error during replay. You can design dynamic external file modification rules to apply to the referenced JavaScript file that modify the file before it is loaded into RTV.
Remove this page from Replay	`IgnoreURL`	IgnoreURL removes pages that should not be replayable from the Viewable Pages list. This rule is available in the BBR **Rule Profile Editor**.
Host Remap	`RemapHost`	RemapHost remaps the host that is named in the HostProfile node to some other host. For example, you can use this mapping to replay session data from a backup server, instead of the origin server, which can impact usage metrics. This rule is available in the BBR **Rule Profile Editor**.
Portal Remap	`RemapPort`	RemapPort remaps the port number of the host that is named in the HostProfile node to some other port number. This rule is available in the BBR **Rule Profile Editor**.

Table 26. Replay Rule Types (continued)		
Rule Name	**XML Node**	**Description**
Host Protocol	`Protocol`	Protocol forces the protocol to a specific value: auto, http, https. This rule is available in the BBR **Rule Profile Editor**.
Frame Rule	`FrameRule`	FrameRule is used to force a URL to alway load into particular frame
BlockedURL	`BlockRemoteURL`	If needed, you can specify a URL or set of URLs that are prevented from reaching out to the origin server. If the replay client is unable to locate the response in the session data, no effort is made to reach the origin server for the missing content. This rule is available in the BBR **Rule Profile Editor**.
New Host	`HostProfile`	Add a host to monitor. The name of the host must be the full domain name of it (for example, www.example.com. Each host has its own set of profile rules, so you must add or copy rules from any existing host to the new one. This rule is available in the BBR **Rule Profile Editor**.
Whitelist Rule	`whitelistName`	By default, the Replay Server operates in Blacklist mode, in which all URLs are permitted to contact the origin server. In many environments, this ability to touch the origin server during replay is not desirable or even permitted. In Whitelist mode, you can configure URL patterns that are permitted to contact the origin server, and all other URLs are blocked. This rule is available in the BBR **Rule Profile Editor**.

Table 26. Replay Rule Types (continued)		
Rule Name	**XML Node**	**Description**
Custom UI Event Highlighting	`UIElementCustomHighlight`	Replay Rule for UI Events: For the selected UI event, you can add or modify custom highlighting rules. These rules can be used when the element being highlighted needs special handling, such as calling a javascript function for some custom control. They can also be used for debugging or alerting purposes when specific user actions or values is displayed in a session. This rule is available in the BBR **Rule Profile Editor**.
Ignoring UI Elements during Replay	`Replay Rule for UI Events`	Replay Rule for UI Events: You can choose to ignore selected UI elements during session replay. When this option is selected, the UI Event Element Ignore dialog is displayed with the regular expression pattern to identify the UI element.
Keystroke Breakouts	`Replay Rule for UI Events`	Replay Rule for UI Events: UI Capture supports the capture of Intellisense keystrokes as UI events. Keystrokes applied with UI elements, such as textboxes and form fields, are bundled together into a single UI event for capture. To support appropriate replay of the visitor experience, RTV can be configured to break out these aggregated keystroke events into individual UI events for each keystroke. When keystrokes are broken out in RTV, you can see the characters that are displayed in the order that the visitor entered them.
Remap URL		You can use the remapping URL feature to remap the URL of content external to the captured pages of a session to a new destination. Remapping URLs is commonly used in situations where the external content is not available or accessible from the original site, and a copy is made on another server to which you can remap the URL.

Table 26. Replay Rule Types (continued)		
Rule Name	**XML Node**	**Description**
PatchResponseWithPostValue	`PatchResponseWith PostValue`	This rule allows you to set up patterns in the request, from which values are grabbed. These values are patched in the response. This work is handled by the plug-ins, since the type of the data can vary, and each plug-in best knows its data type. This rule has several attributes. `requestValue` - Use this attribute for query string values, or values where the plug-in parses and 'flattens' the request into name-value pairs. This is a simple string match, not a regex. Use this attribute or `requestPattern`, not both. `requestPattern` - Use this attribute for request body values. This is a regex pattern, which is used on the raw request body as a whole. Use this attribute or `requestValue`, not both. When `responsePattern` is empty, this pattern is used as the response replacement pattern. `responsePattern` (optional) - Use this attribute when the response replacement pattern needs to differ from `requestPattern`. You can also use this rule when a value in a query string needs to be patched into a jsonp response. The `responsePattern` attribute is used to specify what to replace in the response. This rule is available in the BBR **Rule Profile Editor**.
MobileMod Rule	`MobileMod`	MobileMod Rule corrects the dimensions of mobile devices that are based on user agent information during Replay. This rule is available in the BBR **Rule Profile Editor**.

Replay Rule Configuration through the Replay Server

The Replay Server supports the creation of a custom set of replay rules to apply to BBR sessions. These rules are managed by the master Replay Server, which publishes them on request to the other slave Replay Servers.

If you are deploying white lists in an environment with multiple Replay Servers, additional configuration is required.

Editing replay rules for domains monitored by Tealeaf

You edit replay rules for domains that are monitored by Tealeaf:

About this task

To edit replay rules for domains that are monitored by Tealeaf:

Procedure

1. In the Portal menu, select **Tealeaf** > **Portal Management**.
2. The **Portal Management** page is displayed. In the left navigation panel, click the **Manage Servers** link.
3. Select the master Replay Server.

   Note: You can configure replay rules only on the master Replay Server, which provides rules to all slave servers.
4. Click **Rules** in the toolbar. This option is available only for the master Replay Server.
5. The **Replay Rule Domains** panel is displayed at the bottom of the screen.
   - To add a domain, enter the domain in the space that is provided and click **Add**. Use the following format for the domain name:

     ```
     www.<domain_name>.com
     ```
   - To edit the replay rules for an existing domain, select the domain, and click the **Edit** link.
   - To delete replay rules for a domain, select the domain, and click the **Delete** link.

Editing, deleting, and loading properties for replay rules

You can edit, delete, and load properties for replay rules.

About this task

When you edit replay rules, you can populate new rules by using the following commands.

Procedure

- To add a rule, complete the appropriate properties and click **Add**
- To delete a rule, click the **Delete** link next to its name.
- To load the properties from the rule into the appropriate text boxes for editing, click the **Load** link.

  Saving a loaded rule replaces it.

  When you enter URLs for replay rules, protocol identifiers, such as `http://` or `https://`, are not needed. You can specify the protocol to use for all replay rules or allow the Portal to resolve.

  Port identifiers such as `:8080` and `:443`, are not applicable and must not be entered.

Selecting the protocol

You can select the Protocol in use from the drop-down.

Set this value to `Auto` so that replay server detects the appropriate protocol to use.

Ignored URLs
You can configure the Replay Server to ignore specific URLs during replay. URLs matching the parameters that are specified here are not displayed during replay.

Property
Description

URL
The URL to ignore. This value is concatenated with the value for the domain to produce the full path to be ignored.

- The URL can include the wildcard character (`*`) to represent a pattern of URLs, such as `/home/*`.

`Request variable`
Optionally, you can specify a variable in the request with which to match a URL. Matches of this variable are not replayed.

`Request Variable Value`
Optionally, you can specify a value for the `Request variable` in the request with which to match a URL. Matches of this value are not replayed.

Highlight Only URLs
The Replay Server can be configured to highlight only the URLs that match the parameters that are specified here.

Property
Description

URL
The URL to be highlighted. This value is concatenated with the value for the domain to produce the full path.

- The URL can include the wildcard character (`*`) to represent a pattern of URLs, such as `/home/*`.

`Request variable`
Optionally, you can specify a variable in the request with which to match a URL. Matches of this variable are highlighted.

`Request Variable Value`
Optionally, you can specify a value for the `Request variable` in the request with which to match a URL. Matches of this value are highlighted.

Custom UI Event Actions
Through the **Portal Management** page, you can create and apply custom UI event highlighting rules.

Property
Description

`Element ID`
Enter the identifier for the element on which to apply the custom highlighting.

`Script`
Copy and paste the script function into this textbox to apply to the selected element identifier.

For more information about how to specify these rules, see "Custom UI Event Highlighting" on page 79.

Host / port remapping
You can add a host to track and map the port for the selected host.

About this task

Procedure

- To add a host to track, enter the host name in the **Host** text box and click **Set**.
- To map a port for the selected host, enter the port to map and then enter the port to which it is mapped and click **Add**.

Table 27. Host and port property descriptions	
Property	**Description**
Host	This host name is used instead of the host pulled from the domain of the session. Since the host is used for the <base> to indicate the source of the content, this value can be used to remap the content in the session to a site other than the original site For example, if the original site is obscured by proxies, this setting can be used to remap to a static, available resource. It can also be used to map to an available server within the proxy from which images and other content can be loaded.
Port	The port to remap.
Maps To	The port to which remapped traffic is delivered.

Modifying content in the response

If you want, you can modify content in the response by using simple search-and-replace.

Table 28. Response properties	
Property	**Description**
URL	The URL whose response you want to modify.
Pattern	The pattern for which to search in the response. The pattern can be specified as a regular expression. Special regular expression characters (such as (or)) must be escaped by using a backslash. For example: `\(`
Replacement	The replacement text for the found pattern.
Replace	The occurrences for which to make the replacement.

White List Rules

By default, the Replay Server operates in Blacklist mode, in which all URLs are permitted to contact the origin server. In many environments, this ability to touch the origin server during replay can not be desirable or even permitted.

In Whitelist mode, you can configure URL patterns that are permitted to contact the origin server, and all other URLs are blocked.

Note: Whitelist mode must be enabled in each Replay Server in your environment.

Whitelist and Blacklist mode rules apply only if the Replay Server is not able to satisfy the request for content from its local cache of objects or from a TLI Server that is deployed in your environment.

Regular expressions

When you enable Whitelist mode for the Replay Server, you can specify the set of URLs that are permitted to contact the origin server through the **Portal Management** page. Using regular expressions, you can specify a set of URL patterns that are permitted to query the origin server during replay. For the listed URL or URLs, the Replay Server references the data that is stored on the origin server during replay.

- The URLs that do not match the whitelist are effectively blacklisted, which can be used to protect the source application from triggering web analytics metrics and Tealeaf data counts, among other things.

  Note: Poorly specified regular expressions can significantly affect server performance. See "Regular Expressions in the RealiTea Viewer" in the *IBM Tealeaf RealiTea Viewer User Manual*.

Property
Description

`Pattern`
The pattern in URLs for the selected server. Matching URLs are permitted to contact with the origin server. The pattern can be specified as a regular expression.

- Special regular expression characters (such as `(` or `)`) must be escaped by using a backslash. For example:

  ```
  \(
  ```

- If the pattern value is empty, the default pattern is used. This pattern causes Replay Server to contact the origin server for image and static content, which is not stored as part of the session data.

  ```
  \.(jpg|jpeg|gif|css|js)$
  ```

Replay rule configuration in BBR
You can configure browser based (BBR) replay rules in the navigation list, main panel, load details, or Options menu.

Applying replay rules from the Navigation list
You can apply replay rules from the context menu in the Navigation list.

Depending on the current selection in the Navigation List, you can apply the following replay rules to the current page.

Table 29. Replay rules context menu options

Context menu option	Description
Remove this page from replay	For Administrators only, this option marks the selected page to not be displayed in Replay view. **Note:** The page continues to be displayed in the Navigation pane. To add the page back into replay, right-click the page after the one that is removed in Navigation pane and select **Delete rule which removes this page from replay....**
Treat this page as Highlight Only	Treats the selected page as containing highlighting information only. The previous page in the Navigation list is displayed, and the content of the selected page is applied as highlighting to the page.
Treat this page as a Popup Page	If needed, you can mark pages as popup pages so that BBR can adjust to improve replay performance.
Add Custom UI Event Highlighting?	When a UI Event entry is selected in the Navigation List, you can apply custom highlighting to the selected element by specifying a JavaScript function.

Table 29. Replay rules context menu options (continued)	
Context menu option	**Description**
Ignore Element	Choose this option to ignore selected elements during session replay. When you right-click an element in the Navigation pane and select, **Ignore Element** from the context menu, the selected element is removed from the Navigation pane.

Treat this page as a Popup Page
A *popup page* is considered to be any page that the web application forces to be rendered in a new browser window. During replay, BBR can have some difficulties in displaying popup content, user interactions, and subsequent hits if it does not know that specific pages are popup pages.

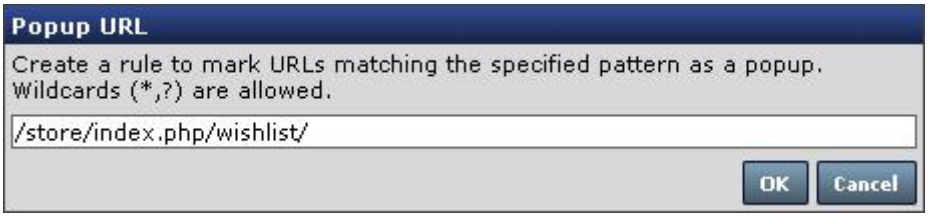

Figure 11. Treat URL as a Popup Page

When this option is selected in the context menu, the URL of the current page is automatically specified for you. As needed, you can use wildcards (* or ?) to specify a set of URLs as popups.

Applying replay rules from the Request, Response or Replay view
You can configure replay rules through the context menus in BBR.

In Request, Response or Replay view, you can select an item, right-click, and select one of the following options.

Table 30. Replay rules context menus from Request, Response or Replay view	
Option	**Description**
Remove page from Replay based on request field	Based on a field included in the request, you can selectively remove the page from display during replay. **Note:** This selection is available only if text is selected in Request view.
Test Response Modify Rules	Through this dialog, you can review and test any response modify rules that are applicable to the current page. **Note:** This selection is available in Response view only.
UI Event Custom Highlight	When a UI event is selected in the Navigation List, you can add or modify custom highlighting rules to be applied to the user interface event. **Note:** This selection is available through the context menu when you select a UI event in the Navigation List.
Host/Port Remapping	From the Load Details screen, you can configure host/port remapping rules.

Removing pages from replay based on a request field
Through BBR, you can choose to remove one or more pages that are based on the URL pattern, request variable parameters, or both. By removing pages that are based on request variables, you can significantly remove the replay experience.

Note: Pages that are removed from replay are not removed from the session data. You can still search for and report on these pages.

Note: If your site responds to multiple HTTP_HOST values, you must manually edit the profile to ensure that the ignore rule is correctly recorded against all `server_name` values.

For example, you can choose to remove from replay pages that are permanently moved or are redirect pages, which are determined based on specific values for the `StatusCode` request variable.

Note: This selection is available only if text is selected in Request view.

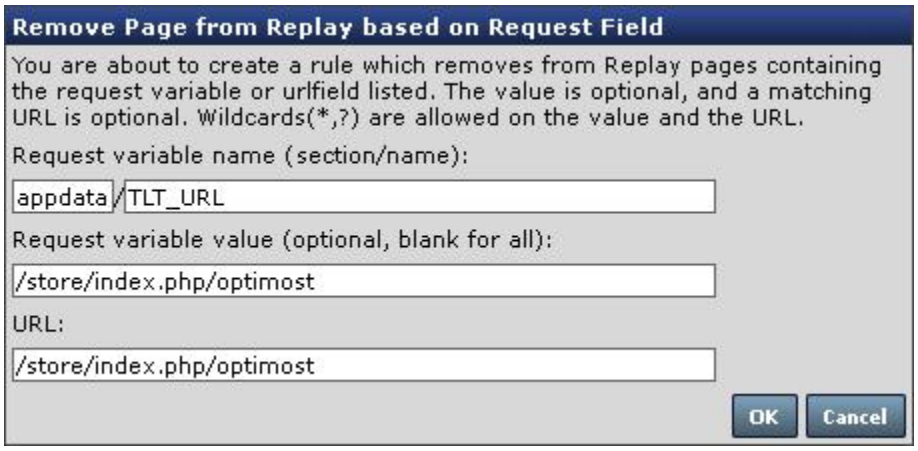

Figure 12. Remove pages from replay based on a request field

`StatusCode=301` indicates a page is moved permanently. In the example, when the URL matches `/store/index.php/electronics/cellphones/` and the `StatusCode` request variable in the `[env]` section is set to `301`, then the page is removed from replay.

In the preceding dialog, you can specificy exact values, and also patterns of values.

Parameter
Description

`Request variable name`
In these fields, you must specify the request variable section and variable name on which to match pages for removal from BBR replay.

- The request variable section must be specified.
- Wildcards are not permitted.

`Request variable value`
For additional specification, you can enter a specific value for the request variable on which to match. In the previous example, a request variable value must be included, or all hits that contain `StatusCode` entries are dropped from replay, which would remove all valid hits that are returned from the web server.

- Specifying this parameter is optional. If it is not specified, all values are matched.
- When you specify values, you can use the standard wildcards: ? to replace a single character, and * to replace multiple characters.

URL
You can use this field to specify whether the replay rule is applied to a specific URL or a pattern of URLs. If this value is not specified, the replay rule is applied across the entire domain.

- Specifying this parameter is optional. If it is not specified, all values are matched.
- When you specify values, you can use the standard wildcards: ? to replace a single character, and * to replace multiple characters.

Testing BBR Response Modify rules
Through BBR, you can review the Response Modify rules that are applied to the current page and test them as needed by using the current hit as test data.

About this task

Note: This selection is available in Response view only.

Note: Through BBR, you can review rules only. Response Modification rules are created through the **Portal Management** page.

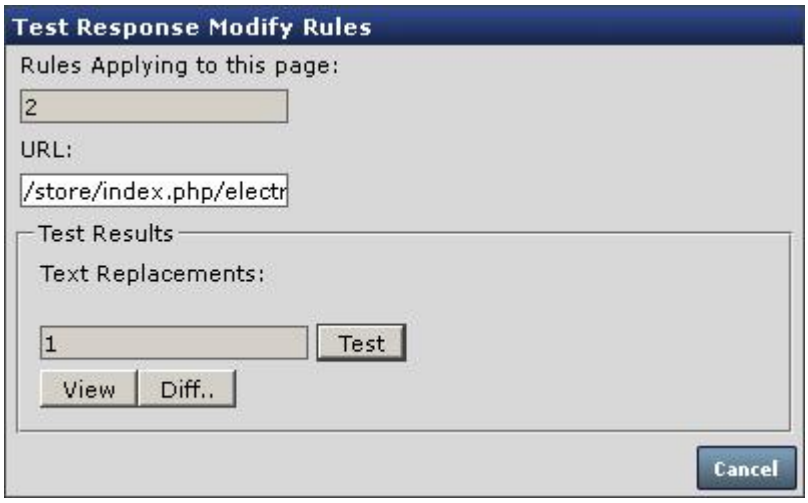

Figure 13. Test Response Modify rules

In the Test Response Modify Rules dialog, you can review the number of rules that are applied to current URL and then complete tests by using those rules and review the test results.

To test applicable Response Modify rules:

If the Rules Applying to this Page count is greater than 0, you can:

Procedure

1. In the Test Response Modify Rules dialog, click **Test**.
2. If changes are applied to the response based on the tested rules, the number of changes is listed under Test Results.
   - To view the modified response, click **View**.
   - To view a text-based diff display of the changes, click **Diff...**.

Custom UI Event Highlighting
For the selected UI event, you can add or modify custom highlighting rules. These rules can be used when the selected element requires special handling, such as calling a JavaScript function for a custom control. Custom highlighting rules can also be used for debugging or alerting purposes when specific user actions or values are displayed in a session.

Note: Custom UI event highlighting applies to UI events captured from the visitor's browser through UI Capture.

Option
Description

`Element ID`
The element ID is pre-populated with the unique identifier for the selected event through element ID or XPath.

- You can modify the**Element ID** field to use a regular expression, if needed, for matching multiple elements.

function
In the dialog, you can specify the function that is evaluated by BBR for purposes of highlighting this element. During evaluation, no setting of values, highlighting or clicking is performed.

- Tealeaf provides a set of references that you can use in your JavaScript function.

Note: Custom UI event highlighting works exactly like the RTV version.

Applying replay rules from the Load Details screen
When the Load Page Details screen is displayed, you can configure the following rules from the context menu.

Host-Port Remapping
You can configure BBR to pull static content that is referenced in the session data from a different host, port, and protocol as needed.

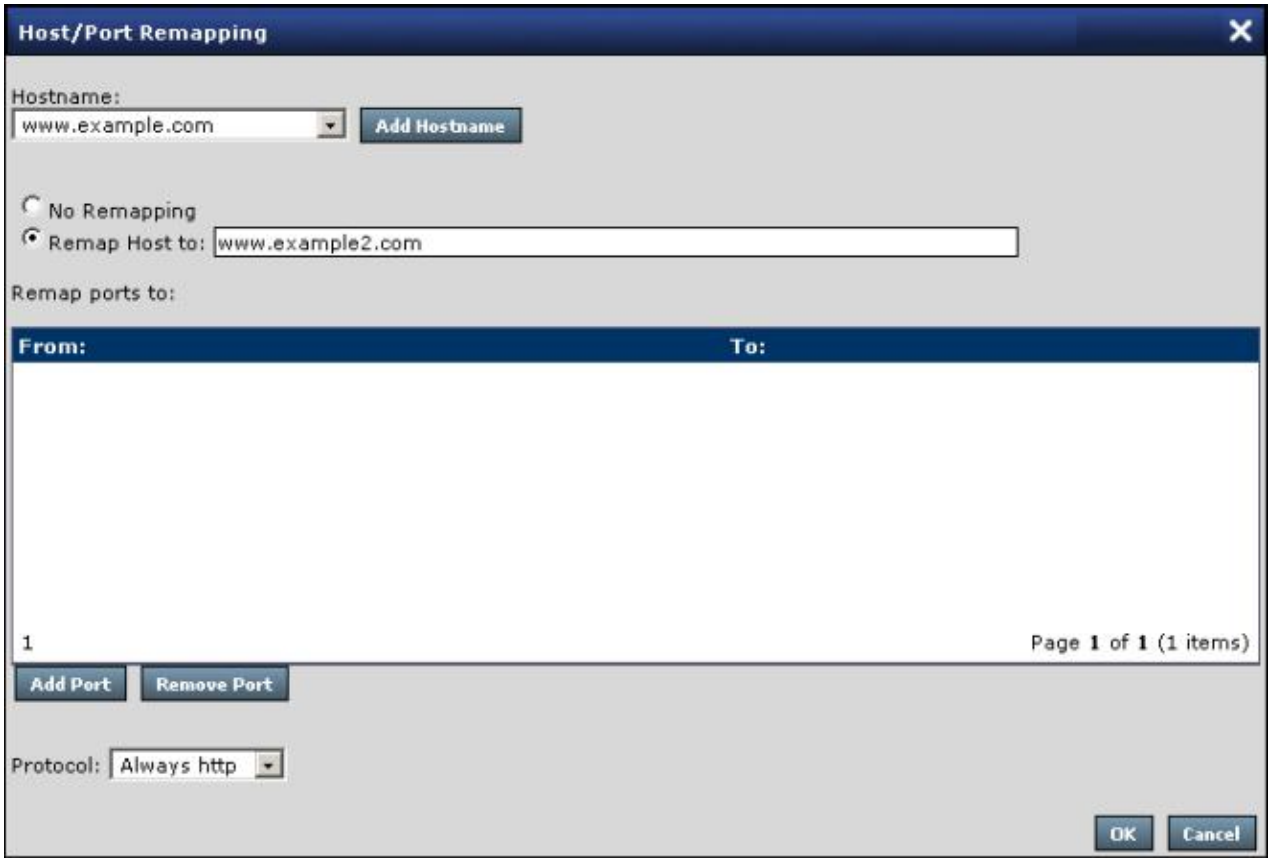

Figure 14. Host/Port Remap

In the preceding screen, you can specify how host names and port numbers in the session data are translated to other values. You can also specify an explicit HTTP/HTTPS protocol to use.

Hostname: Select the host name from the list of available ones.

- To add a host name, click **Add Hostname**. Enter the host name in the form of `www.example.com`.
- To complete no remapping for the selected host name, click the **No Remapping** check box. This setting enables the remapping of port numbers and protocols without redirecting to a new server.
- To remap the host to a different one, click the **Remap Host to** check box and enter a new host name in the form of `www.example2.com`.

Remaps ports to: For the selected host name, you can remap ports that are detected in the session data to new ports on the destination host.

- To add a port number to remap, click **Add Port**. Enter the port to remap from and the port to which to remap. Click **OK**.
  - To remap to the default HTTP port, set the remapped value to `0`.
- To remove a port remapping, select it in the list and click **Remove Port**.

Protocol: For the selected host name, you can change the protocol to use when you contact the remap host: `Auto` (default), `Always http`, or `Always https`.

Host/Port remapping is also supported in replay through IBM Tealeaf CX RealiTea Viewer.

Replay Rule Configuration in RTV
If you install the IBM Tealeaf CX RealiTea Viewer on your local desktop, you can create replay during replay from data that is displayed in request or replay view.

Note: Replay rules that are created in RTV are applied to the local application only by default. If you use RTV to create replay rules, you can choose to synchronize your RTV replay rules with those rules maintained in the Replay Server for BBR. See "Synching RTV Profile with BBR" in the *IBM Tealeaf RealiTea Viewer User Manual*.

RTV can be configured to auto-suggest rules for AJAX-based replay.

Replay Rule Configuration File
Through the Replay Rules text file, you can use control host and port remapping, custom page modification, and the fields in the session's requests that are used for the URL, host name, and more.

- The `RequestMapping` node contains a standard set of entries that are found in the session requests and rarely must be modified.
- For an example replay rule profile, see "Example Profile" in the *IBM Tealeaf RealiTea Viewer User Manual*.

Note: Tealeaf recommends using the **Portal Management** page to configure BBR replay rules, as some data validation is completed before rules are permitted to be defined.

The replay configuration is an XML file in the following location on the Replay Server:

```
<Tealeaf_install_directory>\System\ReplayServerProfile.xml
```

Host and port remapping and other custom page modifications are applied to sessions based on their host names. For example, to customize sessions from `www.sample.com`, the following node must be displayed in `ReplayServerProfile.xml`:

```
<HostProfile name="www.sample.com">
```

Within the `HostProfile` node, the follow entries control remapping:

```
<!-- RemapMode values: off, on, null -->
<RemapMode value='on' />
<RemapHost value="www.sample2.com" />
<!-- There can be multiple RemapPort nodes -->
<RemapPort valueIn="49191" valueOut="80" />
```

RemapMode toggles remapping, or it remaps a host to a null host, which can always return a 404 status code on any request.

- With `RemapMode` enabled, the `RemapHost` node specifies the host name to which to remap.

RemapPort is used to remap port numbers to other numbers. This value is needed when images or other page elements are available on a port other than the port number that appears in the captured data.

IgnoreURL specifies the URLs that must not be displayed in the NavList. It supports the asterisk wildcard (`*`). In the following example, any URL matching `/path.axd` with query parameters is ignored:

```
<IgnoreURL value="/path.axd?*" />
```

ResponseMod is used to apply regular expressions to response pages to alter them as might be required for replay. For example, you might use it to disable a JavaScript that forces a page to break from a FRAMESET if it finds itself in one. The `ResponseMod` node has the following attributes:

```
<ResponseModify url=".*" pattern="top.location != location"
replacementString="0" occurrences="first" id="7"/>
```

PopupURL Similar to IgnoreURL rules, PopupURL rules can be used to identify popup pages. BBR includes these pages in the NavList and displays them in the main replay window.

```
<PopupURL value="/path/popup.asp?*" id="3"/>
```

Note: PopupURL behavior is different in RTV. See "RealiTea Viewer - Profile Options" in the *IBM Tealeaf RealiTea Viewer User Manual*.

ExternalFileModify These rules are used to modified external files that are referenced in the response. In the following example, an external JavaScript file is modified in order to change the value of `this.fadeDuration` from `.8` to `.001`, which causes the fade for the page to be much shorter.

```
<ExternalFileModify id="409"
  url="/path/Details.js\?cache=.*"
  pattern="this.fadeDuration = .8;"
 replacementString="this.fadeDuration = .001;"
occurrences="all"/>
```

Special rules

Special rules are rules that you can apply to manage special or unusual situations in replay.

On-Demand privacy rule configuration

As needed, you can configure privacy rules to be applied to sensitive data only during replay, which enables the original session to retain the data for search and reporting purposes.

These privacy rules can be configured to block or mask sensitive data without affecting the stored session.

On-Demand Privacy rules are applied through Search Server.

Replay rules and UI capture
If you deploy IBM Tealeaf CX UI Capture for AJAX by using the XML method of submitting client-side events, you must configure special rules to make replay work effectively.

Note: If you deploy a Tealeaf client framework solution to capture interactions for a Javascript-based or AJAX-based web application, you must develop and apply replay rules.

As needed, you can configure a replay rule to disable UI Capture during replay.

Disabling UI Capture

As needed, you can configure a replay rule to disable UI Capture during replay.

Step-based eventing

Through *step-based eventing*, you can create Tealeaf events of these user interface events that are generated by your rich internet application.

On the traditional, HTML-based web, user actions typically triggered a single responding action from the web server. When you clicked a button, a form was submitted. When you clicked a link, a new page was loaded. For applications built on this framework, an individual event might occur only once per page.

In rich internet applications, however, this paradigm was altered. Many user interactions on a page do not change the page itself. In fact, a user can complete the same action of interest multiple times. For example, suppose that your web application enables the entry of multiple addresses from a single form. When **Submit** is clicked, the address data is submitted, and the form is cleared, enabling another entry. In this case, the same event, `SubmitAddress`, can occur multiple times on the same page. In Tealeaf, you want to be able to track all of these occurrences, instead of just the first one.

Note: A primary usage for step-based eventing is to track events that may occur multiple times on a single page.

With *step-based eventing*, you can create Tealeaf events of these user interface events that are generated by your rich internet application. In addition to creating events from individual hits, you can also create events from steps, which are individual user actions that are captured from the client application and submitted to Tealeaf by using one of Tealeaf's client frameworks.

- A step can be considered a "subhit" of a hit; a step reflects a discrete, trackable user action, or a server-side action that does not result from a user action (such as a redirect).
- Steps are captured by a client framework, which is bundled together, and submitted as JSON messages to Tealeaf. These messages are then inserted into a designated section of the request of the parent hit.

Step-based eventing enables the capture of multiple events from a single page of your client application.

Note: Step-based eventing requires licensing, installation, and configuration of one of the Tealeaf client frameworks, including IBM Tealeaf CX UI Capture for AJAX, IBM Tealeaf Android SDK, and IBM Tealeaf iOS SDK. Beginning in Release 8.5, new versions these frameworks are required to enable step-based eventing. For more information, contact Tealeaf Professional Services.

Note: IBM Tealeaf CX UI Capture for AJAX is only available to legacy users.

This information provides background information about client framework-generated steps and step-based eventing.

Technical definition of a step

A *step* is defined as a specially formatted JSON message that is submitted by the Tealeaf client frameworks to represent a session state of a form field.

- Step messages can contain any type of data. The data depends on the specific client framework that is sending the message.
- A step contains UI events from a single session only.
- In Tealeaf, these messages are submitted in JSON format and are not easy to decipher in raw format.

Overview

An overview of step-based events, including prerequisites, limitations, message types, and example messages.

Prerequisites and limitations using for step-based eventing

There are several prerequisites that must be met in order to create step-based events.

Use the information here to determine what prerequisites need to be met.

To create step-based events, the following components are required:

- Tealeaf Release 8.5 or later
- PCA Build 33xx. Tealeaf recommends using PCA Build 3330 at a minimum.

  Note: Since PCA Build 3330, there were bug fixes and new features that can be of interest to you, including the ability to capture IPv6 addresses and support for new Linux platforms. See "Release Notes - PCA" in the *IBM Tealeaf Release Notes - Passive Capture Application*.

  You must be able to configure the capture of the `application/json` POST data types through the IBM Tealeaf CX Passive Capture Application.
- One or more of the Tealeaf capture solutions:

Table 31. Pre-Requisites

Solution	Description	Documentation
IBM Tealeaf CX UI Capture for AJAX	Used to capture client-side user interface events for AJAX-based applications	"UI Capture for Ajax Guide" in the *IBM Tealeaf UI Capture for Ajax Guide*
IBM Tealeaf Android SDK	Used to capture client-side from Android-based mobile native applications	"Tealeaf Android Logging Framework Reference Guide" in the *IBM Tealeaf Android Logging Framework Reference Guide*
IBM Tealeaf iOS SDK	Used to capture client-side from iOS-based mobile native applications	"Tealeaf iOS Logging Framework Reference Guide" in the *IBM Tealeaf iOS Logging Framework Reference Guide*

Limitations for using step-based eventing

The maximum length for selected values of text for attributes and events is 256 characters.

Note: Distance and Sequence events operate on hits, not steps. As a result, the distance between events on multiple steps of the same hit evaluates to zero (`0`).

Limitations

The maximum length for selected values of text for attributes and events is 256 characters.

Sequence and distance events

Note: Distance and Sequence events operate on hits, not steps. As a result, the distance between events on multiple steps of the same hit evaluates to zero (`0`).

Technical definition

A *step* is defined as a specially formatted JSON message that is submitted by the Tealeaf client frameworks to represent a session state of a form field.

- Step messages can contain any type of data. The data depends on the specific client framework that is sending the message.
- A step contains UI events from a single session only.

- In Tealeaf, these messages are submitted in JSON format and are not easy to decipher in raw format.

Message types
Events that are captured from client frameworks are bundled together and submitted as a set of messages.

A *message* from a client framework is what defines a single step in Tealeaf, which is a single event that is identified and captured by a client framework.

Multiple messages can represent a single action of the visitor. For example, clicking a radio button might result in two messages of different types: one for the click event and one for change event.

Note: If you do not want to double count actions, use both the event type AND the ID/name when you create events for a specific action. If you look only for `ID = checkout method` for example, then this event fires twice when you only wanted it to fire once.

The volume of messages can depend on the configured logging level, which is defined in the client frameworks.

You can review the raw format of a submitted set of JSON messages and the format in which they are displayed after processing in Tealeaf. For examples, see Example message: Raw request body and Example message: Formatted request body.

Table 32. Client framework and associated documentation resource

Client framework	Documentation
IBM Tealeaf CX UI Capture for AJAX	UI Capture does not support dynamic logging levels.
IBM Tealeaf Android SDK	"Tealeaf Android Logging Framework Configuration File" in the *IBM Tealeaf Android Logging Framework Reference Guide*
IBM Tealeaf iOS SDK	"Tealeaf iOS Logging Framework Installation and Implementation" in the *IBM Tealeaf iOS Logging Framework Reference Guide*

Example message: Raw request body

The `[RequestBody]` following information includes a sample raw request, which contains a set of JSON messages.

Note: In the raw request, the following entry is a single paragraph. You cannot use this section to create step-based attributes.

- While it is possible to create hit attributes from the `[RequestBody]` section, it is not recommended, as this format might change over time.


```
[RequestBody]
{"version":"0.0.0.4","serialNumber":1,"sessions":[{"id":"ID14H2M3S663R0.36228193
267311725","startTime":1326837723663,"timezoneOffset":480,"messages":[{"type":2,
"offset":2226,"count":1,"context":{"type":"LOAD","name":"root","renderTime":
2226}},{"type":6,"offset":2230,"count":2,"exception":{"description":"Unable to
get value of the property 'nodeValue': object is null or undefined",
"url":"http://straussandplesser.com/store/js/coremetrics/eluminate.js",
"line":1}},{"type":4,"offset":24878,"count":3,"event":{"type":"click"},"target":
{"id":"[['main'],['DIV',1],['DIV',0],['TABLE',0],['TR',0],['TD',0],['DIV',0],
['P',0],['A',0]]","idType":-2,"type":"A"}},
{"type":2,"offset":24880,"count":4,"context":{"type":"UNLOAD","name":"root"}}]}]}
```


After the messages were passed through Tealeaf, the raw request is stored in the `[RequestBody]` section of the request, which is viewable through Request View in BBR.

Example message: Formatted request body

When the JSON messages are received, Tealeaf reformats them into a more legible format, which is listed here.

This information is available at the bottom of the request, which is formatted for view in Request View in BBR.

Click to view expanded example messages.


```
{
    "version": "0.0.0.4",
    "serialNumber": 1,
    "sessions": [
        {
            "id": "ID14H2M3S663R0.36228193267311725",
            "startTime": 1326837723663,
            "timezoneOffset": 480,
            "messages": [
                {
                    "type": 2,
                    "offset": 2226,
                    "count": 1,
                    "context": {
                        "type": "LOAD",
                        "name": "root",
                        "renderTime": 2226
                    }
                },

                {
                    "type": 6,
                    "offset": 2230,
                    "count": 2,
                    "exception": {
                        "description": "Unable to get value of the property
                        'nodeValue': object is null or undefined",
                        "url":"http://straussandplesser.com/store/js/
                         coremetrics/eluminate.js",
                        "line": 1
                    }
                },

                {
                    "type": 4,
                    "offset": 24878,
                    "count": 3,
                    "event": {
                        "type": "click"
                    },
                    "target": {
                        "id":
                        "[['main'],['DIV',1],['DIV',0],['TABLE',0],
                         ['TR',0],['TD',0],['DIV',0],['P',0],['A',0]]",
                        "idType": -2,
                        "type": "A"
                    }
                },

                {
                    "type": 2,
                    "offset": 24880,
                    "count": 4,
                    "context": {
                        "type": "UNLOAD",
                        "name": "root"
                    }
                }
            ],
        }
    ]
}
```

In the preceding example, the content after the following string is a set of four separate messages:

```
"messages": [
```

Each message is demarcated by a set of curly brackets.

- Data that is defined at the same level as `messages` (such as `serialNumber` or `timezoneOffset`) is considered environmental data.

Each step message constitutes a single step.

- Step-triggered events can fire per message step.
- In the preceding example, there are four-step messages. As a result, step-triggered events can fire up to four times on this hit.

Note: Each step-triggered event also has access to the hit attribute data of its parent hit and the environmental data included for reference in each step.

When you create step attributes, the value that is extracted is the contents between the colon (`:`) and the final comma (`,`) on the line.

Suppose you want to monitor exception messages that are submitted from the client framework. In the example above, the data is in the following area.

- In the following example, message data that was present in the previous example but is not relevant to the example is replaced with the `<omitted>` string.

```
"sessions": [
    {
    <omitted>
            "messages": [
           <omitted>
                {
                    "type": 6,
                    "offset": 2230,
                    "count": 2,
                    "exception": {
                        "description": "Unable to get value of the property
                        'nodeValue': object is null or undefined",
                        "url": "http://straussandplesser.com/store/js/
                                              coremetrics/eluminate.js",
                        "line": 1
```

In the preceding example, you can see that the exception message is stored in the `description` value. To reference this value in step-based eventing, when you create the step attribute to monitor the above, the node in the tree is referenced by using the following structure:

```
sessions[0].message.exception.description
```

The naming structures for the `sessions` and `messages` nodes are changed, and the `type` identifier is omitted.

Note: When you create step attributes through BBR, you use the menu, which automatically pre-populates the attribute with the appropriate reference within the Event Manager. These steps are described later.

Example messages

You can review the raw format of a submitted set of JSON messages and the format in which they are displayed after processing in Tealeaf.

Raw request body

The `[RequestBody]` following information includes a sample raw request, which contains a set of JSON messages.

Note: In the raw request, the following entry is a single paragraph. You cannot use this section to create step-based attributes.

- While it is possible to create hit attributes from the `[RequestBody]` section, it is not recommended, as this format might change over time.


```
[RequestBody]
{"version":"0.0.0.4","serialNumber":1,"sessions":[{"id":"ID14H2M3S663R0.36228193
267311725","startTime":1326837723663,"timezoneOffset":480,"messages":[{"type":2,
"offset":2226,"count":1,"context":{"type":"LOAD","name":"root","renderTime":
2226}},{"type":6,"offset":2230,"count":2,"exception":{"description":"Unable to
get value of the property 'nodeValue': object is null or undefined",
"url":"http://straussandplesser.com/store/js/coremetrics/eluminate.js",
"line":1}},{"type":4,"offset":24878,"count":3,"event":{"type":"click"},"target":
{"id":"[['main'],['DIV',1],['DIV',0],['TABLE',0],['TR',0],['TD',0],['DIV',0],
['P',0],['A',0]]","idType":-2,"type":"A"}},
{"type":2,"offset":24880,"count":4,"context":{"type":"UNLOAD","name":"root"}}]}]}
```


After the messages were passed through Tealeaf, the raw request is stored in the `[RequestBody]` section of the request, which is viewable through Request View in BBR.

Formatted request body
When the JSON messages are received, Tealeaf reformats them into a more legible format, which is listed here.

- This information is available at the bottom of the request, which is formatted for view in Request View in BBR.

Click to view expanded example messages.


```
{
    "version": "0.0.0.4",
    "serialNumber": 1,
    "sessions": [
        {
            "id": "ID14H2M3S663R0.36228193267311725",
            "startTime": 1326837723663,
            "timezoneOffset": 480,
            "messages": [
                {
                    "type": 2,
                    "offset": 2226,
                    "count": 1,
                    "context": {
                        "type": "LOAD",
                        "name": "root",
                        "renderTime": 2226
                    }
                },

                {
                    "type": 6,
                    "offset": 2230,
                    "count": 2,
                    "exception": {
                        "description": "Unable to get value of the property
                        'nodeValue': object is null or undefined",
                        "url":"http://straussandplesser.com/store/js/
                         coremetrics/eluminate.js",
                        "line": 1
                    }
                },

                {
                    "type": 4,
                    "offset": 24878,
                    "count": 3,
```

```
                    "event": {
                        "type": "click"
                    },
                    "target": {
                        "id":
                        "[['main'],['DIV',1],['DIV',0],['TABLE',0],
                         ['TR',0],['TD',0],['DIV',0],['P',0],['A',0]]",
                        "idType": -2,
                        "type": "A"
                    }
                },

                {
                    "type": 2,
                    "offset": 24880,
                    "count": 4,
                    "context": {
                        "type": "UNLOAD",
                        "name": "root"
                    }
                }
            ],
        }
    ]
}
```

In the preceding example, the content after the following string is a set of four separate messages:

```
"messages": [
```

Each message is demarcated by a set of curly brackets.

- Data that is defined at the same level as `messages` (such as `serialNumber` or `timezoneOffset`) is considered environmental data.

Each step message constitutes a single step.

- Step-triggered events can fire per message step.
- In the preceding example, there are four-step messages. As a result, step-triggered events can fire up to four times on this hit.

Note: Each step-triggered event also has access to the hit attribute data of its parent hit and the environmental data included for reference in each step.

When you create step attributes, the value that is extracted is the contents between the colon (`:`) and the final comma (`,`) on the line.

Suppose you want to monitor exception messages that are submitted from the client framework. In the example above, the data is in the following area.

- In the following example, message data that was present in the previous example but is not relevant to the example is replaced with the `<omitted>` string.

```
"sessions": [
    {
    <omitted>
            "messages": [
           <omitted>
                {
                    "type": 6,
                    "offset": 2230,
                    "count": 2,
                    "exception": {
                        "description": "Unable to get value of the property
                        'nodeValue': object is null or undefined",
                        "url": "http://straussandplesser.com/store/js/
                                                coremetrics/eluminate.js",
                        "line": 1
```

In the preceding example, you can see that the exception message is stored in the `description` value. To reference this value in step-based eventing, when you create the step attribute to monitor the above, the node in the tree is referenced by using the following structure:

```
sessions[0].message.exception.description
```

The naming structures for the `sessions` and `messages` nodes are changed, and the `type` identifier is omitted.

Note: When you create step attributes through BBR, you use the menu, which automatically pre-populates the attribute with the appropriate reference within the Event Manager. These steps are described later.

Step-based objects

In Tealeaf, you can create two types of objects to monitor events that are captured from a client framework and passed as messages to Tealeaf:

- *Step attributes* are hit attributes that acquire its data from a step. Step attributes are specified in a slightly different manner but complete an identical function.
- *Step-based events* are standard Tealeaf events that are configured to fire on one of the steps triggers. As conditions, they can use any standard type of Tealeaf condition, and also step attributes.

Default step objects

Tealeaf provides a number of step-based events and attributes for use in step-based eventing.

- For more information about provided step attributes, see "Pattern Objects Reference" in the *IBM Tealeaf Event Manager Manual*.
- For more information about provided step-based eventing, see "EES Reference - Tealeaf Event Reference" in the *IBM Tealeaf Event Manager Manual*.

Step trigger types

To support step-based eventing, the Event Manager now provides two more trigger types:

Trigger
: **Description**

`Every Step`
: Event is evaluated with other events in each step.

`After Every Step`
: Event is evaluated after every step is evaluated.

  Note: This trigger is rarely used.

In the previous example, any event triggered to fire on `Every Step` is checked for each combination of JSON `message` and environmental data. In the previous example, any `Every Step` event is checked for the load, unload, exception, and other data message.

Note: Step attributes are permitted to reference objects from the parent hit. As a result, you can reference hit attributes in step events, but not vice versa.

In the event definition, the trigger can be selected from the Evaluate drop-down:

Figure 15. Available event triggers

Available triggers are displayed in the order of evaluation. For a particular hit with underlying steps, each `Every Hit` event is evaluated first, followed by each `Every Step` event and `After Every Step` event. Then, the `After Every Hit` events are evaluated.

Note: The events that fire on each trigger determine the availability of data. An event can use data from any event that fired before the current event. In a multi-hit session, the `After Every Hit` trigger fire on the previous hit before the events configured to fire on `Every Hit` from the next hit. The same applies to step-based triggers.

The order of firing is more accurately displayed as a nested structure:

```
* First Hit of Session
    * Every Hit
        * Every Step
        * After Every Step
    * After Every Hit
    * Last Hit
* End of Session
```

Considerations for using the `After Every Step` trigger

In almost all cases, when you create step attributes, you are interested in the current context of the session. You create attributes to monitor the current data that is available as of the current step. As a result, the `After Every Step` trigger is rarely used.

In the example below, the `After Every Step` trigger is used. This scenario mirrors the `After Every Hit` trigger usage, except that it applies to steps instead of hits.

The `After Every Step` trigger is useful when you must compare the current state with the previous state. For example, suppose you want to know whether users clicked the same object twice in a row.

- To test this scenario, you must know both the object currently being click, and the previously clicked object. If the events that track both the current and previous states fire on the same trigger, they are updated at the same time and therefore always have the same value.
- However, if the previous state event fires just after the current state value by using the `After Every Step` trigger, the previous state event is not updated when the current state event fires. Therefore, you can compare the current state with the previous state by using an event that fires on the `Every Step` trigger.

Note: Form messages contain the `currState` and `prevState` properties within a step. The `currState` property refers to the final value of the form field after editing, and `prevState` refers to the default value before editing. These references do not work for testing if the same action occurred twice, since the default value can be reset to blank each time it is accessed.

Privacy
To manage blocking or masking of sensitive data, Tealeaf provides privacy mechanisms to manage specific data before it is transmitted to Tealeaf.

Note: Application of privacy blocking or masking in the PCA or in the Windows pipeline requires complex regular expressions, which can cause significant performance degradation if improperly specified. Tealeaf strongly recommends using the privacy solution that is provided with your client framework to manage sensitive data.

Browser based replay and step-based events
In Browser based replay, steps are displayed as subpages to the main page on which they occurred.

Any triggered events are displayed beneath them.

During replay, steps can be displayed in a more user-friendly format.

Note: Replay of step-based events in RTV is not supported.

A single web action can require multiple attributes and events to track. You can create multiple attributes, which are inputs to a single compound event to track a single user action.

Navigable Pages List

Using the Request view of BBR, you can create hit attributes and events for steps.

When you load a session that contains JSON-based steps into BBR, the Navigable Pages List looks like:

In the preceding image, the step that is captured from the visitor's user interface are indicated by the `UIEvent` label. In the preceding example, each instance also lists the range of user interface events captured. `UIEvent: 1 -4` indicates that the specific step includes 4 individual user interface events.

Figure 16. BBR Navigable Pages List

Navigable Pages List

The Navigable Pages list shows the events that were captured in a user's session. You can use the events to create hit attributres and events for steps.

Through the request view of BBR, you can create hit attributes and events for steps. When you load a session that contains JSON-based steps into BBR, the Navigable Pages List looks like:

A step that is captured from the visitor's user interface is indicated by the `UIEVENT` label. Each instance also lists the range of user interface events captured. `UIEVENT: 1 -4` indicates that the specific step includes 4 individual user interface events.

Viewing formatted JSON messages

When one of the UIEvent steps is selected, you can review the JSON messages that are submitted as part of the step.

About this task

Note: Any BBR user can view the formatted client framework messages. To create attributes and events from them, you must have access permissions to the Tealeaf Event Manager.

Procedure

1. Click **Request** in the toolbar to display the request data.
2. Click one of the `UIEvent` entries in the Navigable Pages List.
3. The raw JSON messages are displayed in the `[RequestBody]` section.
4. However, this information is not easy to read. To review the JSON messages in a more legible format, click the **Click here to view Step Attributes** link at the top of the request pane.
5. The list of JSON messages are broken out into separate lines for easier reading.
   - Each selectable item is a name-value pair that is highlighted when you move your mouse over it.
   - Null values can be selected for creation of step-based attributes.
   - Hit and event objects that you create search for the values for the specified JSON item.

Event manager processing of step-based event objects

You can create step attributes through Request view in Browser Based Replay.

Note: Creation of step attributes is not supported in RTV.

When you create objects through Browser Based Replay, the Event Manager checks to see if the selected content is already referenced in an existing event object. If so, the Event Manager selects that object for you to edit.

In some cases, the selected event object is provided by Tealeaf and is therefore not editable. For example, Tealeaf provides the `CUI Hit` hit attribute, which references the contents of the `HTTP_X_TEALEAF` request variable. When you choose to create attributes or events from the values of this request variable, the Event Manager selects the `CUI Hit` attribute for you to edit. This hit attribute cannot be edited.

Note: If you want to create more step attributes and events from session data for which attributes or events are already created, you must create them manually through the Event Manager.

Note: There is a known issue in which the PCA fails to properly recognize UTF-8 encoding in data that is submitted from client frameworks, and the data can be mangled in the stored session, causing issues in eventing and search.

Note: The following information applies to IBM Tealeaf version 9.0A only.

9.0A can properly recognize UTF-8 encoding in data that is submitted from client frameworks.

Permissions for creating step-based event objects

To create step attributes, you must have permissions to access the Tealeaf Event Manager, where event-related objects are created in the Portal.

To test access, select **Configure** > **Event Manager**

Required access

Note: To create step attributes, you must have permissions to access the Tealeaf Event Manager, where event-related objects are created in the Portal.

To test access, select **Configure** > **Event Manager**.

BBR step attribute context menu
Use the BBR step attribute context menu to create a new event from a step attribute or to create a new step attribute.

About this task

Note: To access the BBR step attribute context menu, you must have access to the Event Manager.

Procedure

1. Select a page from the page navigation list in BBR.
2. Right-click a name-value pair in the formatted JSON message.
3. From the context menu, select one of the following options:
   - **Create New Event from Step Attribute selection** to create a step-based event and any necessary hit attribute to gather the data.
   - **Create New Step Attribute from selection** to create a step attribute.

Creating a step attribute
When you select a JSON item in BBR and choose to create a step attribute, the Event Manager is opened in the browser window currently opened to the Portal.

The following dialog is displayed:

Note: Depending on your browser type and configuration, you can manually switch over to the **Portal** window.

Figure 17. Creating a step attribute

Step attributes are commingled with hit attributes. They do not belong to a special category. What defines an attribute as a step attribute are the properties that are listed.

Table 33. Key Properties:

Attribute Properties	Description
`Use Step Pattern`	For step attributes, the Use Step Pattern radio button is selected for you, which enables specification of the xpath to the node whose value you want to track. • When a step pattern is used to identify an attribute, the check is completed by using a case-sensitive search by default. If you choose to change the type of pattern tag to a step pattern, the existing case-sensitive settings are preserved.
`Step Attribute Path`	The Step Attribute Path value contains the node information to uniquely identify the JSON value to acquire in the attribute. For the preceding example, the path is: `.sessions[0].message.exception.description` This provides a unique path to the description value for the exception message that was submitted from a client framework to Tealeaf.

Note: You can complete the same Post-Match Operations on a step attribute that you can complete on a hit attribute.

Data format
The values of step attributes are always treated as text patterns. As a result, operators such as `equals` perform text-based comparisons, even if the captured value is a numeric or Boolean value.

Data availability
Like the hits that contain them, steps are processed in isolation from all other steps. For example, if you want to use data from step 1 for use on step 2, you must create an event to record the data from step 1 for later use.

- Since each step is associated with a parent hit, any hit attributes triggered on the parent hit are available for reference in each step of the hit.
- However, step attributes are available only within the single step that is being evaluated.
- If you want to use a hit attribute in a step attribute, the event trigger must be configured to be evaluated on one of the step triggers.
- Data from events that are triggered on previous steps is available in later steps.

Using data between step attributes
A step triggered event uses only data that is contained in the step in which it is triggered, which is a similar behavior to how hits are triggered.

To use data from step 1 in step 2, you must record the data from step 1 in an event and then reference the event in step 2.

For example, suppose your request data for a single hit looks like:

```
[appdata]
TLT_URL=/tealeaftarget.php
TLT_CUI_URL= /checkout

[StepAttributes]
                 {
                     "type": 4,
                     "offset": 8063,
```

```
                "count": 1,
                "event": {
                    "type": "change"
                },
                "target": {
                    "id":  firstname",
                    "idType": -1,
                    "type": "INPUT",
                    "dwell": 2196,
                    "currState": {
                        "value": "MyName"
                    }
                }
            },
            {
                "type": 4,
                "offset": 2293,
                "count": 2,
                "event": {
                    "type": "click"
                },
                "target": {
                    "id": "login:guest",
                    "type": "INPUT",
                    "subType": "radio",
                    "currState": {
                        "checked": true,
                        "value": "guest"
                    }
                }
            },
```


In the preceding data:

- `[appdata]` data is available through standard hit attributes.
- There are 2-step messages:
  - Step 1: The first step identifies the `change` client event, in which the `firstname` form field is set to `MyName`.
  - Step 2: The second step identifies the `click` client event, in which the `login.guest` element is set to `guest`.

A single step-triggered event cannot use data from both step 1 and step 2 at the same time. For example, you cannot create a step-triggered event that fires on the click message and records the value of the `firstname` value by using only step attributes.

To capture the value of Step 1 based on the condition of Step 2, you must:

- Create a step attribute to capture `firstname`'s value on Step 1.
- Create an event that records the value of the step attribute for Step 1.
- Create an event that fires on the click for guest and uses the value for the Step 1 event for the guest value.

Important notes on step-based eventing

- A single web action can require multiple attributes and events to track. You can create multiple attributes, which are inputs to a single compound event to track a single user action.

Capturing a specific value
By default, a step attribute captures all possible values for the selected JSON path. When the attribute is specified, any value that is detected for the node becomes the value for the attribute.

About this task

In some situations, you can gather in the step attribute only specified values. For example, suppose that you are tracking the following JSON path:

```
.sessions[0].message.clientState.event
```

By default, any step attribute can capture any instance of any value. So, your attribute can capture values such as `load`, `attention`, `resize`, or `scroll`. Suppose that you are interested in creating a step attribute to track only the `scroll` values. After you create the step attribute through BBR, you can complete the following modifications to the attribute definition through the Event Manager.

Procedure

1. Edit the step attribute.
2. Click the**Post Match Operations caret**.
3. Select the **User RegEx** check box.
4. In the RegEx textbox, enter:

   ```
   scroll
   ```

5. To save the change, click **Save Draft**.
6. To commit the change, click **Save Changes**.

Results

Now, the step attribute records only the instances of the `scroll` value for the specified JSON path.

As an alternative, you can specify a step attribute without using the RegEx portion. When you use the step attribute in an event, specify that the value of the step attribute equals `scroll`.

Creating a step event
When you select a JSON item in BBR and choose to create an event, the Event Manager is opened in the browser window currently opened to the Portal. The Event Wizard is displayed.

Note: Depending on your browser type and configuration, you can manually switch over to the **Portal** window.

The default event checks every step to see whether the JSON item is present and records the last occurrence in the event by default. Using this configuration, you can track the number of sessions in which the event occurred.

Note: If you cancel creation of a step-based event, you must revert the step attribute, if created, through the Hit Attributes tab.

Triggers for step objects
Step-based events can be evaluated on the `Every Step` and `After Every Step` trigger.

Triggers for compound events using step-based events as conditions
There are specific triggers that must be applied when compound events use step-based events as conditions.

Note: If you are creating an event with multiple conditions that uses one or more step-based events, you must set the event to be evaluated on `After Every Hit`. That trigger is evaluated after `Every Hit`, `Every Step`, and `After Every Step`, in that order.

Tracked Occurrences for step events
For any event that is triggered off step-based data, you must configure it to track occurrences at the individual hit level.

Note: Do not use session-level tracking, as those options operate only on the first or last hit of the session.

Condition step
When you create an event to track a JSON message item, the step attribute that is required to detect the name-value pair is also created in draft mode for you. For such scenarios, the Hit Attribute condition specifies the step attribute that the Event Manager has also created for you.

The Event Manager pre-populates the event definition with properties to identify the specific JSON item to track.

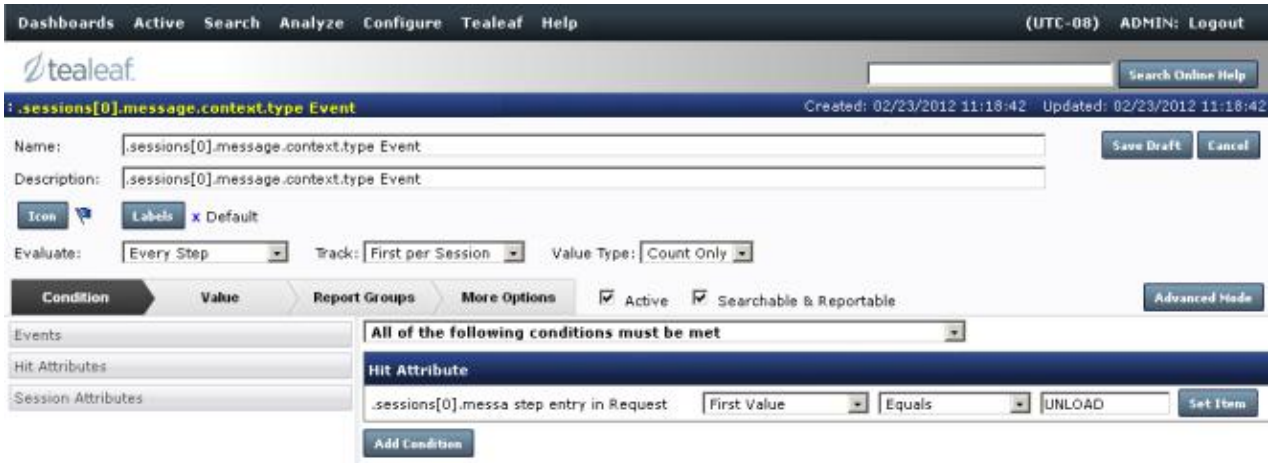

Figure 18. Creating a step-based event - Condition step

Note: For step attribute conditions, `Match Count` and `Last Value` value tests are not useful, as there is only one unique match and its value for a specified property on the hit.

Note: If you do not want to double count actions, use both the event type and the ID/name when you create events for a specific action.

- If you look only for `ID = checkout method`, then this event fires twice when you only wanted it to fire once. Suppose you want to track clicked objects. Each object has the event type `click`.
- To track clicks of a specific object, you must specify both the event type and object ID.
- If a step attribute with the same properties exists, the Event Manager uses the existing step attribute.
- As needed, you can add extra conditions to the event you are creating.

Table 34. Key Properties:

Attribute Properties	Description
Icon	You must select an identifying icon for your step-based events.

Table 34. Key Properties: (continued)	
Attribute Properties	**Description**
Labels	You can organize your step-based events into labels within the Event Manager.
`Evaluate`	Set the trigger to be either of the step-based triggers.
`Track`	Set the occurrences to track to monitor the first or last occurrence in the session or every occurrence. • If you want to track the number of sessions in which the event occurrence, set the value to `Last Occurrence`. • If you want to track each time that the event occurred in a session, set the value to `Every Occurrence`.
`Value Type`	Step-based events can track numeric or text values or the count of occurrences of the event.

Value step
The value of step-based events can be specified like any other event.

Figure 19. Creating a step-based event - Value step

Other steps
For step-based events, you can configure the other steps as you would any other event.

Advanced Mode
To see the native JavaScript created for your step-based event, click **Advanced Mode**.

Creating a dimension
After you create the step attribute, event, or both to track a value in a submitted message, you can create a dimension to record values from the event or attribute in the standard manner.

Note: Dimensions that are populated by step attributes or events can capture new values from multiple steps in a hit.

Support statement for creating step attributes and events in RTV
Creation of step attributes and events is not supported in RTV.

In request view, you can review the raw JSON messages in the `[RequestBody]` section of the request.

You can use RTV to save test TLA sessions, which can be loaded into the Event Tester to use as test data for step-based events.

In Event Tester

In the Event Tester, you can validate the triggering of step-based attributes and events. Step attributes and the events that are triggered from them are displayed as regular hit attributes and events in the test results.

Note: After you create step-based objects, it can take a few minutes before they are available for selection in the Event Tester.

Indexing and step-based events

Step-based event data is not indexed by default. You can, however, search for events through BBR and RTV.

It is possible to move data from one location in the request into another section which is automatically indexed for search.

Note: If you must index some JSON-based session data for search, you must use a privacy rule to insert the data into the `[appdata]` section. Creation of the rule requires configuration of a regular expression to locate the data. Regular expressions are considered an advanced configuration option, as if they are poorly specified, they can significantly impact system performance.

- For more information about configuring regular expressions, contact Tealeaf http://support.tealeaf.com.
- Use of privacy rules against JSON message data is likely to be supported in a later release.

Reference information about BBR and Events

Use the information here to find the IBM Tealeaf publications that contain information about BBR and Events.

Section
: **Description**

"CX Browser Based Replay" in the *IBM Tealeaf cxImpact User Manual*
: BBR documentation

"Browser Based Replay Interface" in the *IBM Tealeaf cxImpact User Manual*
: How to use BBR, including how to access request view

"TEM Hit Attributes Tab" in the *IBM Tealeaf Event Manager Manual*
: How to create hit attributes or step attributes in Event Manager

"TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*
: How to create events in Event Manager

"UI Capture for Ajax Guide" in the *IBM Tealeaf UI Capture for Ajax Guide*
: Reference guide for the IBM Tealeaf CX UI Capture for AJAX solution

"Tealeaf Android Logging Framework Reference Guide" in the *IBM Tealeaf Android Logging Framework Reference Guide*
: Reference guide for the IBM Tealeaf Android SDK

"Tealeaf iOS Logging Framework Reference Guide" in the *IBM Tealeaf iOS Logging Framework Reference Guide*
: Reference guide for the Tealeaf IOS Logging Framework

"Event Tester" in the *IBM Tealeaf Event Manager Manual*
: Portal-based Event Tester displays step-based attributes and events transparently

"Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*
: Searching for sessions through the Portal

"RealiTea Viewer - Request View" in the *IBM Tealeaf RealiTea Viewer User Manual*
: Request view page for RTV.

  Note: You cannot create step attributes through RTV.

"RealiTea Viewer - Session Search and Subsearch" in the *IBM Tealeaf RealiTea Viewer User Manual*
: Searching for sessions through RTV

"Configuring CX Indexing" in the *IBM Tealeaf CX Configuration Manual*
How sessions are indexed and how data is added for indexing

"Privacy Session Agent" in the *IBM Tealeaf CX Configuration Manual*
Session agent that is used to move content in the request

IBM Tealeaf documentation and help

IBM Tealeaf provides documentation and help for users, developers, and administrators.

Viewing product documentation

All IBM Tealeaf product documentation is available at the following website:

Tealeaf Customer Experience Support

Use the information in the following table to view the product documentation for IBM Tealeaf:

Table 35. Getting help

To view...	Do this...
Product documentation	On the IBM Tealeaf portal, go to **?** > **Product Documentation**.
IBM Tealeaf Knowledge Center	On the IBM Tealeaf portal, go to **?** > **Product Documentation** and select *IBM Tealeaf Customer Experience in the ExperienceOne Knowledge Center*.
Help for a page on the IBM Tealeaf Portal	On the IBM Tealeaf portal, go to **?** > **Help for This Page**.
Help for IBM Tealeaf CX PCA	On the IBM Tealeaf CX PCA web interface, select **Guide** to access the *IBM Tealeaf CX PCA Manual*.

Available documents for IBM Tealeaf products

The following table is a list of available documents for all IBM Tealeaf products:

Table 36. Available documentation for IBM Tealeaf products

IBM Tealeaf products	Available documents
IBM Tealeaf CX	• *IBM Tealeaf Customer Experience Overview Guide* • *IBM Tealeaf CX Client Framework Data Integration Guide* • *IBM Tealeaf CX Configuration Manual* • *IBM Tealeaf CX Cookie Injector Manual* • *IBM Tealeaf CX Databases Guide* • *IBM Tealeaf CX Event Manager Manual* • *IBM Tealeaf CX Glossary* • *IBM Tealeaf CX Installation Manual* • *IBM Tealeaf CX PCA Manual* • *IBM Tealeaf CX PCA Release Notes*

Table 36. Available documentation for IBM Tealeaf products (continued)	
IBM Tealeaf products	**Available documents**
IBM Tealeaf CX	• *IBM Tealeaf CX RealiTea Viewer Client Side Capture Manual* • *IBM Tealeaf CX RealiTea Viewer User Manual* • *IBM Tealeaf CX Release Notes* • *IBM Tealeaf CX Release Upgrade Manual* • *IBM Tealeaf CX Support Troubleshooting FAQ* • *IBM Tealeaf CX Troubleshooting Guide* • *IBM Tealeaf CX UI Capture j2 Guide* • *IBM Tealeaf CX UI Capture j2 Release Notes*
IBM Tealeaf cxImpact	• *IBM Tealeaf cxImpact Administration Manual* • *IBM Tealeaf cxImpact User Manual* • *IBM Tealeaf cxImpact Reporting Guide*
IBM Tealeaf cxConnect	• *IBM Tealeaf cxConnect for Data Analysis Administration Manual* • *IBM Tealeaf cxConnect for Voice of Customer Administration Manual* • *IBM Tealeaf cxConnect for Web Analytics Administration Manual*
IBM Tealeaf cxOverstat	*IBM Tealeaf cxOverstat User Manual*
IBM Tealeaf cxReveal	• *IBM Tealeaf cxReveal Administration Manual* • *IBM Tealeaf cxReveal API Guide* • *IBM Tealeaf cxReveal User Manual*
IBM Tealeaf cxVerify	• *IBM Tealeaf cxVerify Installation Guide* • *IBM Tealeaf cxVerify User's Guide*
IBM Tealeaf cxView	*IBM Tealeaf cxView User's Guide*
IBM Tealeaf CX Mobile	• *IBM Tealeaf CX Mobile Android Logging Framework Guide* • *IBM Tealeaf Android Logging Framework Release Notes* • *IBM Tealeaf CX Mobile Administration Manual* • *IBM Tealeaf CX Mobile User Manual* • *IBM Tealeaf CX Mobile iOS Logging Framework Guide* • *IBM Tealeaf iOS Logging Framework Release Notes*

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