`Prerequisites

All the described scenarios require a release, official build of Mozilla Firefox. Behaviors may change when using debug builds due to different compiler directives.

Required .mozconfig lines

The following lines are required to be in .mozconfig for Telemetry to behave correctly (to simulate official releases). For further information, see the [Telemetry documentation](#).

export MOZILLA_OFFICIAL=1
export MOZ_TELEMETRY_REPORTING=1

Preferences

[See the in-tree docs](#).

- ~~*datareporting.healthreport.service.enabled* - If true, records base Telemetry data. Otherwise, completely disables telemetry recording.~~
- ~~*toolkit.telemetry.enabled* - If true, record the extended Telemetry data. Please note that base Telemetry data needs to be enabled as well and we need to be in an official build or in test mode. This preference is controlled through the `Preferences` dialog.~~
- ~~*datareporting.healthreport.uploadEnabled* - Send the data we record if user has consented to FHR. This preference is controlled through the `Preferences` dialog.~~
- ~~*toolkit.telemetry.archive.enabled* - Allow pings to be archived locally.~~
- ~~*toolkit.telemetry.cachedClientID* - Contains a cached client ID after the first Firefox execution.~~

Directories

Telemetry data is stored in the following directories:

- *Pending pings* - "<profile-dir>/saved-telemetry-pings".
- *Pings archive* - "<profile-dir>/datareporting/archived".
- Aborted-sessions/Session data - "<profile-dir>/datareporting".
  - <profile-dir>/datareporting/aborted-session-ping
  - <profile-dir>/datareporting/session-state.json

Ping archiving

When archiving is enabled through the relative preference, pings are also stored locally in the user profile directory, in `<profile-dir>/datareporting/archived`.

Archiving enabled, failure to write to disk

If the ping fails to archive (due to I/O errors), the error is logged. Ping sending operations must not be compromised by an archival failure.

Ping Generation

For a comprehensive and up to date list of pings, please see the in-tree docs.

~~Main Ping~~
~~This section describes how to main pings are generated.~~

~~Environment change~~
~~Changes in the Environment (e.g. a restartless addon being enabled/disabled) trigger a new subsession: a main ping is sent with the reason "environment-changed". This ping must contain the environment the change happened in (i.e. the old environment).~~

~~An environment change happening close to midnight (within 15 minutes) must reschedule the daily ping to the next midnight.~~

~~An environment change ping must also be saved as an aborted-session ping.~~

~~Daily~~
~~Daily pings are generated close to midnight (within 15 minutes) if the user is not idle and no daily ping was already sent. Daily pings break subsessions. No daily ping should be generated if the subsession was alive for only 10 minutes.~~

~~Saved session~~
~~This is generated when shutting down Firefox along with the shutdown ping. It doesn't have a "main" ping type, although it is main ping. It does not start a new subsession and contains measurements for the whole browser session (kept for historical reasons, just for a transition period).~~

~~Shutdown~~
~~Shutdown pings are saved on clean shutdowns. They don't generate a new subsession and marks the end of a session.~~

~~Aborted session~~
~~An aborted session ping is saved every 5 minutes into the profile directory overwriting the previous aborted session ping.~~

Subsessions chaining/validity
All the subsession pings belonging to the same session should build a complete subsession chain without any holes. Some testing criteria:

- *Subsession chaining*: Ping[x].info.previousSubsessionId = Ping[x-1].info.subsessionId
- *Counter monotonically increasing*: Ping[x].info.profileSubsessionCounter = Ping[x-1].info.profileSubsessionCounter + 1

- *Length matching*: Ping[x].info.subsessionStartDate = Ping[x-1].info.subsessionStartDate + Ping[x-1].info.subsessionLength
- *Dates monotonically increasing*: Ping[x].info.subsessionStartDate > Ping[x-1].info.subsessionStartDate >= Ping[x-1].info.sessionStartDate

Ping Submission
This section describes the different ping submission scenarios.

No networking
When there is no network connection available, pings should be saved to the pending pings directory "<profile-dir>/saved-telemetry-pings".

Network available, FHR upload enabled
Ping should be sent to the server when Firefox restarts or when trying to send a new ping. Pending pings should also be deleted from the pending pings directory.

Network available, FHR upload disabled
Nothing is sent or deleted from the pending pings directory.

Timeouts/Sudden connection loss
In the event of connection timeouts/connection loss while sending the pings, the should be saved as pending pings and Telemetry should behave as in the "**No networking**" case.

Test cases
TBD.

Ping archiving

ID	ARCH1
Purpose	Verify that no ping is archived if the relative preference is disabled.
Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to false in about:config. - Set *toolkit.telemetry.telemetry.enabled* to true in about:config. - Close Firefox - Delete the content of <profile-dir>/datareporting/archived - Start Firefox - Drag restartless.xpi into the Firefox window and accept the installation. - Wait for the installation to complete. - Close Firefox.

Expected Outcome	<profile-dir>/datareporting/archived should not contain any subdirectory.

ID	ARCH2
Purpose	Verify that about:telemetry correctly reports the archived pings.
Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.telemetry.enabled* to true in about:config. - Close Firefox - Delete the content of <profile-dir>/datareporting/archived - Start Firefox - Drag restartless.xpi into the Firefox window and accept the installation. - Wait for the installation to complete. - Open about:telemetry and TODO. - Close Firefox.
Expected Outcome	The environment changed ping should be shown as archived.

ID	ARCH3
Purpose	Verify that the archived ping contains the same data as the pending ping.
Actions	- Do not start the gzip server. - Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.telemetry.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* - Close Firefox - Delete the content of <profile-dir>/datareporting/archived - Start Firefox - Drag restartless.xpi into the Firefox window and accept the installation. - Wait for the installation to complete. - Wait for the ping to be received by the gzip server. - Close Firefox.
Expected Outcome	The ping archived in <profile-dir>/datareporting/archived/<date> should have the same content of the related one (matching UUID) in <profile-dir>/saved-telemetry-ping.

ID	ARCH4

Purpose	Verify that failed archiving operations correctly log the error and do not interfere with sending pings.
Special Requirements	Linux
Actions	- Start the gzip server on port 3785. - Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.telemetry.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* - Close Firefox - Delete the content of <profile-dir>/datareporting/archived - Change the permission of <profile-dir>/datareporting/archived to read-only for the owner. - Delete the content of <profile-dir>/saved-telemetry-ping - Start Firefox - Drag restartless.xpi into the Firefox window and accept the installation. - Wait for the installation to complete. - Wait for the ping to be received by the gzip server. - Close Firefox.
Expected Outcome	● The browser console should mention the failed archiving operation. ● <profile-dir>/saved-telemetry-ping should not contain the ping. ● The ping which was being archived should be received by the server.

ID	ARCH5
Purpose	Verify that pending, expired pings do not get sent.
Actions	- Do not start the gzip server. - Start Firefox with a fresh profile. - Set *toolkit.telemetry.telemetry.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* - Close Firefox - Delete the content of <profile-dir>/saved-telemetry-ping - Start Firefox - Drag restartless.xpi into the Firefox window and accept the installation. - Wait for the installation to complete. - Close Firefox. - Change to creation date of the files in <profile-dir>/saved-telemetry-ping (Linux / Windows) to more than 2 weeks earlier.

	- Start the gzip server on port 3785. - Start Firefox.
Expected Outcome	● <profile-dir>/saved-telemetry-ping should not contain the ping after Firefox is started. ● The pings should not be received by the server.

Ping Generation

Main Ping

Environment Change

ID	GEN1
Purpose	1. Verify that installing a restartless addon triggers an environment change ping. 2. Verify that main pings with an environment changed reason contain the environment the change happened in (the previous environment).
Actions	
Expected Outcome	● The ping must be received by the server. ● The ping must contain the old environment (without the installed addon). ● The ping must be archived.

ID	GEN2
Purpose	Verify that disabling a restartless addon, 10 minutes to midnight, reschedules the daily ping for the next day.
Actions	
Expected Outcome	

ID	GEN3
Purpose	Verify that changing a watched preference triggers an environment changed ping.
Actions	
Expected Outcome	● The ping must be received by the server. ● The ping must be archived.

ID	GEN4

Purpose	Verify that enabling/disabling a restartless addon within 5 minutes results in a single environment changed ping (throttling).
Actions	
Expected Outcome	● A single environment-changed ping must be received by the server. ● The ping must be archived.

Daily

ID	GEN5
Purpose	Verify that a main ping with daily reason is generated when close to midnight.
Actions	
Expected Outcome	● The ping must be received by the server. ● The ping must be archived.

ID	GEN6
Purpose	Verify that a main ping with daily reason is generated (overdue) if the computer sleeps from 20 minutes to midnight to 1am.
Actions	
Expected Outcome	The ping must be received by the server.

ID	GEN7
Purpose	Verify that no daily pings are generated for overly short subsessions.
Actions	
Expected Outcome	● The ping must not be received by the server. ● The ping must not be saved as pending. ● The ping must not be archived.

Saved Session

ID	GEN8
Purpose	Verify that a clean Firefox shutdown generates a saved-session ping (with the right type, reason and data).

Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.telemetry.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* - Close Firefox - Delete the content of <profile-dir>/saved-telemetry-ping - Start the gzip server on port 3785. - Start Firefox and wait for it to load. - Close Firefox **(#1)**. - Start Firefox **(#2)**.
Expected Outcome	● The ping must be saved as pending **(#1)**. ● The ping must be archived **(#1)**. ● The ping must be received by the server when Firefox restarts **(#2)**.

Shutdown

ID	GEN9
Purpose	Verify that a clean Firefox shutdown generates a main ping with a shutdown reason.
Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.telemetry.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* - Close Firefox - Delete the content of <profile-dir>/saved-telemetry-ping - Start the gzip server on port 3785. - Start Firefox and wait for it to load. - Close Firefox **(#1)**. - Start Firefox **(#2)**.
Expected Outcome	● The ping must be saved as pending **(#1)**. ● The ping must be archived **(#1)**. ● The ping must be received by the server when Firefox restarts **(#2)**.

Aborted session

ID	GEN10

Purpose	Verify that a very short aborted session (< 1 minute) triggers an aborted-session ping sent with sane data after Firfox is restarted.
Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.telemetry.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* - Close Firefox - Delete the content of <profile-dir>/saved-telemetry-ping - Start the gzip server on port 3785. - Start Firefox. - Kill the Firefox process after 10-15 seconds. - Start Firefox **(#1)**. - Wait for more than a minute **(#2)**. - Close Firefox.
Expected Outcome	● The ping must be saved as pending when Firefox restarts **(#1)**. ● The ping must be received by the server when a new submission is triggered, the user is idle or Firefox restarts **(#2)**. ● The received ping must contain sane data. ● The ping must not be archived.

ID	GEN11
Purpose	Verify that a longer aborted session (> 5 minutes) triggers a main ping with an aborted-session reason when Firefox is restarted.
Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.telemetry.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* - Close Firefox - Delete the content of <profile-dir>/saved-telemetry-ping - Start the gzip server on port 3785. - Start Firefox. - Kill the Firefox process after 7-8 minutes. - Start Firefox **(#1)**. - Wait for more than a minute **(#2)**. - Close Firefox.
Expected Outcome	● The ping must be saved as pending when Firefox restarts **(#1)**. ● The ping must be received by the server when a new submission is triggered, the user is idle or Firefox restarts **(#2)**. ● The received ping must contain sane data.

	● The ping must not be archived.

ID	GEN12
Purpose	Verify that starting Firefox after a clean shutdown does not trigger a main ping with an aborted-session reason.
Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.telemetry.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* - Close Firefox - Delete the content of <profile-dir>/saved-telemetry-ping - Start the gzip server on port 3785. - Start Firefox. - Wait 10-15 seconds. - Close Firefox **(#1)**. - Start Firefox. - Wait for more than a minute **(#2)**. - Close Firefox.
Expected Outcome	● No aborted-session ping should be saved as pending **(#1)**. ● No aborted-session ping should be received by the server when Firefox restarts **(#2)**.

Ping Submission

Preferences

ID	SUBM1
Purpose	Verify that no ping is sent if the FHR upload preference is set to false.
Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* in about:config. - Disable FHR (don't touch the Telemetry part) in the Preferences->Data Choices page. - Close Firefox - Delete the content of <profile-dir>/saved-telemetry-ping - Start the gzip server on port 3785. - Start Firefox. - Drag restartless.xpi into the Firefox window and accept the installation. - Wait for the installation to complete. - Close Firefox.

Expected Outcome	● The ping must not be received by the server. ● The ping must not be saved as pending. ● The ping must be archived.

ID	SUBM2
Purpose	Verify that no pending ping is sent if the FHR upload preference is set to false.
Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* in about:config. - Close Firefox. - Start Firefox. - Wait more than a minute. - Close Firefox. - Start the gzip server on port 3785. - Start Firefox. - Quickly disable FHR (don't touch the Telemetry part) in the Preferences->Data Choices page. - Wait for more than a minute. - Drag restartless.xpi into the Firefox window and accept the installation. - Wait for the installation to complete. - Close Firefox.
Expected Outcome	● The ping must not be received by the server. ● The ping must not be removed from the pending pings directory.

ID	SUBM3
Purpose	Verify that pending pings are sent to the server when Firefox starts.
Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* in about:config. - Enable FHR and Telemetry in the Preferences->Data Choices page. - Close Firefox. - Start Firefox. - Wait more than a minute. - Close Firefox. - Start the gzip server on port 3785. - Start Firefox.

	- Wait for more than a minute. - Drag restartless.xpi into the Firefox window and accept the installation. - Wait for the installation to complete. - Close Firefox.
Expected Outcome	● The pending pings must be received by the server. ● The pending pings must be removed from the pending pings directory.

ID	SUBM4
Purpose	Verify that pending pings are sent to the server when user is idle.
Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* in about:config. - Enable FHR and Telemetry in the Preferences->Data Choices page. - Close Firefox. - Start Firefox. - Wait for more than a minute. - Drag restartless.xpi into the Firefox window and accept the installation. - Wait for the installation to complete. - Start the gzip server on port 3785. - Don't use the PC/VM for more than 5 minutes. - Close Firefox.
Expected Outcome	● The pending pings must be received by the server. ● The pending pings must be removed from the pending pings directory.

ID	SUBM5
Purpose	Verify that pending pings are sent to the server when a new ping is sent.
Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* in about:config. - Enable FHR and Telemetry in the Preferences->Data Choices page. - Close Firefox. - Start Firefox. - Wait for more than a minute.

	- Start the gzip server on port 3785.
	- Drag [restartless.xpi](#) into the Firefox window and accept the installation.
	- Wait for the installation to complete.
	- Don't use the PC/VM for more than 5 minutes.
	- Close Firefox.
Expected Outcome	● The ping must be received by the server.
	● The pending pings must be received by the server.
	● The pending pings must be removed from the pending pings directory.

Networking

ID	SUBM6
Purpose	Verify that pings are saved as pending if there is no network connection before sending takes place.
Actions	- Start Firefox with a fresh profile.
	- Set *toolkit.telemetry.archive.enabled* to true in about:config.
	- Set *toolkit.telemetry.server* to http://127.0.0.1:3785 in about:config.
	- Enable FHR and Telemetry in the Preferences->Data Choices page.
	- Close Firefox..
	- Start Firefox.
	- Wait for more than a minute.
	- Drag [restartless.xpi](#) into the Firefox window and accept the installation.
	- Wait for the installation to complete.
	- Close Firefox.
Expected Outcome	● The ping must be saved to the pending pings directory.

ID	SUBM7
Purpose	Verify that pings are saved as pending if there is sudden connection loss while sending is in progress.
Actions	- Start Firefox with a fresh profile.
	- Set *toolkit.telemetry.archive.enabled* to true in about:config.
	- Set *toolkit.telemetry.server* to http://127.0.0.1:3785 in about:config.
	- Enable FHR and Telemetry in the Preferences->Data Choices page.
	- Close Firefox.
	- Start the modified gzipServer on port 3785 (it should crash as soon as a connection attempt is made).
	- Start Firefox.

	- Wait for more than a minute. - Drag restartless.xpi into the Firefox window and accept the installation. - Wait for the installation to complete. - Close Firefox.
Expected Outcome	● The ping must be saved to the pending pings directory.

ID	SUBM8
Purpose	Verify that pings are saved as pending if there is a connection timeout to the server.
Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* in about:config. - Enable FHR and Telemetry in the Preferences->Data Choices page. - Close Firefox. - Start the modified gzipServer on port 3785 (it should not write a response but it should keep the connection open). - Start Firefox. - Wait for more than a minute. - Drag restartless.xpi into the Firefox window and accept the installation. - Wait for the installation to complete. - Close Firefox.
Expected Outcome	● The ping must be saved to the pending pings directory.

Data sanity

ID	SANI1
Purpose	Verify that a valid client ID is sent along with the ping with a fresh profile.
Actions	- Start Firefox with a fresh profile. - Set *toolkit.telemetry.archive.enabled* to true in about:config. - Set *toolkit.telemetry.server* to *http://127.0.0.1:3785* in about:config. - Enable FHR and Telemetry in the Preferences->Data Choices page. - Close Firefox. - Start the gzipServer on port 3785. - Start Firefox. - Wait for more than a minute.

	- Drag [restartless.xpi](#) into the Firefox window and accept the installation. - Wait for the installation to complete. - Close Firefox.
Expected Outcome	● The ping must be received by the server. ● The ping must contain a valid client ID (non empty UUID). ● The preference *toolkit.telemetry.cachedClientID* should contain the client sent with the ping.

ID	SANI2
Purpose	Verify that a valid client ID is sent along with the ping before Telemetry startup completes (cached client ID).
Actions	
Expected Outcome	● The ping must be received by the server. ● The ping must contain a valid client ID (non empty UUID). ● The preference *toolkit.telemetry.cachedClientID* should contain the client sent with the ping.

ID	SANI3
Purpose	1. Verify that no extended telemetry data is sent with pings when Telemetry is off. 2. Verify that base telemetry data (e.g. base histograms and measurements) is correctly sent when Telemetry is off.
Actions	
Expected Outcome	● The ping must be received by the server. ● The ping must contain base telemetry data and histograms (FHR equivalent). ● The ping must not contain extended telemetry data and histograms.

ID	SANI4
Purpose	Verify that subsessions can be chained without any "hole".
Actions	

Expected Outcome	● Pings must be received by the server.
	● All the pings belonging to the same session should verify the criteria from the "Session chaining" paragraph:
	    ○ Session chaining.
	    ○ Counter monotonically increasing.
	    ○ Length matching.

	○ Dates monotonically increasing. ● All the pings belonging to the same session should have the same client id.

Data sanity scenario should include:
- \> 2 restarts
- abort
- environment-change trigger
- daily trigger
- crossing days/months?
- triggering some well-understood histogram per subsession, e.g. SEARCH_COUNTS

Data sanity script checks:
- subsession chaining
- session/subsession counter monotony
- date fields monotonically increasing
- client id presence and value
- some environment sanity values
- some important session/subsession payload values
- …

Other things that need testing:
profile creationDate
profile reset keeps clientID and reports resetDate
hotfixVersion
environment "partner" block
environment "system" block
environment "device" block
environment "os" block (service packs)
environment "hdd" block
environment "gfx" block
activeExperiment
persona