certain described embodiments provide for additional limitations on the extent to which user identifying information is made available.

According to ~~an~~ a first aspect of the present invention, there is provided a method for recording information within first-party cookies on a web browser, for example wherein the web browser does not allow access to third-party cookies, including propagating recorded information from a second cookie associated with a second domain to a first cookie associated with a first domain, wherein the first cookie and the second cookie are each first-party cookies, such that a first web resource of the first domain and a second web resource of the second domain each have access to the recorded information via its associated first-party cookie, wherein the web browser does not allow access to third-party cookies.

The recorded information may be propagated to the first cookie during a current communication instance between the web browser and the first web resource of the first domain. The recorded information may be propagated to the first cookie in dependence on a determination of the absence of the first cookie.

The recorded information may be propagated via an intermediary, the intermediary being propagation information accessible to the web browser during the current communication instance.

According to an embodiment, the method comprises instructing the web browser, during the current communication instance, to communicate to a propagation server associated with a propagation domain different to the first domain, and receiving from the propagation server the propagation information such that the web browser is enabled to record as a first cookie the recorded information. The web browser may initiate the current communication instance via a communication to a first web server requesting content for display, the first web server associated with a first domain server and both said servers may be associated with the first domain, and the instruction to the propagation server may be received from the first domain server. The first web server may provide the content for display to the web browser in dependence on the recorded information after propagation of the recorded information from the second cookie to the first cookie. As part of the instruction, the web browser may provide information stored in a propagation cookie to the propagation server, and the propagation information may be based on the information stored in a propagation cookie. The information stored in a propagation cookie and the propagation information may be the same or the propagation information may be an encoded representation of the information stored in a propagation cookie. The propagation information may be generated according to propagation

rules available to the propagation server, the propagation rules may be applied to the information stored in a propagation cookie. The propagation rules may be stored within the propagation cookie and provided to the propagation server as part of the instruction. The propagation information may be provided to the web browser in association with an instruction received from the propagation server, such that the web browser may be caused to communicate with the first domain server and provide the propagation information with the instruction. The web browser may receive an instruction from the first domain server, in response to providing the propagation information to the first domain server, to set the first cookie comprising the recorded information.

According to an embodiment, the intermediary is stored as web page specific data, and comprising: instructing the web browser to communicate with a first domain server, the web browser providing the web page specific data to the first domain server with the instruction; and receiving from the first domain server an instruction to set the first cookie with the recorded information, wherein the recorded information is equal to or derived from the web page specific data, wherein the instruction is received from a first web server in response to a request for content for display made by the web browser, wherein the first web server is associated with the first domain server, and wherein both said servers are associated with the first domain. The web page specific data may be set during a previous communication instance with the second domain server of the second domain. The web page specific data may not be accessible to executable code when run on the web browser and may be accessible to a first domain server when set by a communication with the second domain, and preferably is only accessible by an external server. The web page specific data may be stored in an ETag associated with a web page provided to the web browser before the instruction is sent to the web browser.

The first domain and second domain may be determined to be related domains for which propagation is allowed before allowing propagation for the recorded information from the second cookie to the first cookie.

The web browser may not allow access to third-party cookies.

According to ~~another~~ a second aspect of the present invention, there is provided a domain server configured for communication with web browsers for facilitating propagation of recorded information between first-party cookies associated with different domains, the domain server configured to: receive a communication from a web browser due to ~~a redirection~~ an instruction provided to the web browser from a first web server associated with the first domain to communicate with the domain server; and

determine whether a first cookie is present with the communication, the first cookie associated with the first domain, and wherein, in response to determining that there is not a first cookie present, the domain server is configured to: obtain from the web browser propagation information, the propagation information derived from recorded information of a second cookie associated with a second domain, wherein the recorded information is derivable from the propagation information; determine the recorded information from the propagation information; and instruct the web browser to record in a first cookie the recorded information, wherein the web browser in communication with the domain server does not allow access to third-party cookies.

The domain server may be configured to instruct the web browser to communicate with the first web server to enable generation of content for the web browser utilising the recoded first cookie.

In an embodiment, the domain server is further configured to, when obtaining the intermediary information: instruct the web browser to communicate with a propagation server associated with a propagation domain different to the first domain, wherein the propagation information is provided to the web browser from the propagation server in response to the instruction; and receive the propagation information from the web browser after the web browser is instructed to communicate again with the domain server. The propagation information may be generated according to propagation rules available to the propagation server, and the propagation rules may be applied to the information stored in a propagation cookie. The propagation rules may be stored within a propagation cookie stored in the web browser.

In an embodiment, the intermediary is stored as web page specific data, and wherein the domain server is further configured to: identify the web page specific data from the communication from the web browser; and communicate an instruction to set the first cookie with the recorded information, wherein the recorded information is equal to or derived from the web page specific data. The web page specific data may be set during a previous communication instance with a second domain server of a second domain. The web page specific data may not be accessible to executable code when run on the web browser and may be accessible to the first domain server when set by a communication with the second domain, and preferably is only accessible by an external server. The web page specific data may be stored in an ETag associated with a web page provided to the web browser before the instruction is communicated. The recorded information may be only propagated from the

second cookie to the first cookie when the second domain is identified as being related to the first domain.

The web browser in communication with the domain server may not allow access to third-party cookies.

According to a third aspect of the present invention, there is provided a network system for facilitating propagation of recorded information between first-party cookies associated with different domains on a web browser in communication with the network system, the system comprising:

one or more domain servers, each domain server according to the second aspect;

a propagation server associated with a propagation domain different to that of the, or each, domain server,

wherein each domain server is configured to, when obtaining the intermediary information:

instruct the web browser to communicate with the propagation server associated with a propagation domain different to the first domain; and

receive the propagation information from the web browser after the web browser is instructed to communicate again with the domain server by the propagation server, and

wherein the propagation server is configured to:

determine the propagation information based on information provided from the web browser with the instruction.

~~According to yet another aspect of the present invention, t~~There is provided a network system for facilitating propagation of recorded information between first-party cookies associated with different domains on a web browser in communication with the network system, the system comprising: one or more domain servers, wherein each domain server is configured to: receive a communication from a web browser due to a redirection instruction provided to the web browser from a web server associated with the domain; determine whether a first cookie is present with the communication, the first cookie associated with the domain; in response to determining that there is not a first cookie present, obtain from the web browser propagation information, the propagation information derived from recorded information of a second cookie associated with second domain, the second domain associated with another of

the domain servers, wherein the recorded information is derivable from the propagation information; determine the recorded information from the propagation information; and instruct the web browser to record in a first cookie the recorded information.

Optionally, the network system comprises a propagation server associated with a propagation domain different to the first domain, and wherein each domain server is further configured to, when obtaining the intermediary information: instruct the web browser to communicate with the propagation server associated with a propagation domain different to the first domain; and receive the propagation information from the web browser after the web browser is instructed to communicate again with the domain server by the propagation server, and wherein the propagation server is configured to: determine the propagation information based on information provided from the web browser with the instruction. The information may comprise, if present, that stored in a propagation cookie readable by the propagation server. The propagation server may be configured to generate the propagation information according to propagation rules available to the propagation server, and the propagation rules may be applied to the information stored in a propagation cookie. The propagation rules may be stored within a propagation cookie stored in the web browser and may therefore be received by the propagation server via the communication from the web browser. In a case where a propagation cookie is not present, the propagation server may be configured to determine a

Claims:

1. A method for recording information within first-party cookies on a web browser, including propagating recorded information from a second cookie associated with a second domain to a first cookie associated with a first domain, wherein the first cookie and the second cookie are each first-party cookies, such that a first web resource of the first domain and a second web resource of the second domain each have access to the recorded information via its associated first-party cookie, wherein the web browser does not allow access to third-party cookies.

2. A method as claimed in claim 1, wherein:

the recorded information is propagated to the first cookie during a current communication instance between the web browser and the first web resource of the first domain; and/or

the recorded information is propagated to the first cookie in dependence on a determination of the absence of the first cookie.

~~3. A method as claimed in claim 1 or claim 2, wherein the recorded information is propagated to the first cookie in dependence on a determination of the absence of the first cookie.~~

~~4. A method as claimed in any one of claims 1 to 3, wherein the recorded information is propagated via an intermediary, the intermediary being propagation information accessible to the web browser during the current communication instance.~~

~~5~~3. A method as claimed in either claim ~~4~~1 or claim 2, comprising instructing the web browser, during the current communication instance, to communicate to a propagation server associated with a propagation domain different to the first domain, and receiving from the propagation server ~~the~~ propagation information such that the web browser is enabled to record as a first cookie the recorded information, wherein the propagation information accessible to the web browser during the current communication instance.

~~64~~. A method as claimed in claim ~~53~~, wherein the web browser initiates the current communication instance via a communication to a first web server requesting content for display, the first web server associated with a first domain server wherein both said servers are associated with the first domain, and wherein the instruction to the propagation server is received from the first domain server, preferably wherein the first web server provides the content for display to the web browser in dependence on the recorded information after propagation of the recorded information from the second cookie to the first cookie.

~~7. A method as claimed in claim 6, wherein the first web server provides the content for display to the web browser in dependence on the recorded information after propagation of the recorded information from the second cookie to the first cookie.~~

~~8~~5. A method as claimed in claim ~~6 or claim 7~~4, wherein, as part of the instruction, the web browser provides information stored in a propagation cookie to the propagation server, and wherein the propagation information is based on the information stored in a propagation cookie.

~~9~~6. A method as claimed in claim ~~8~~5, wherein:

the information stored in ~~a~~ the propagation cookie and the propagation information ~~is~~ are the same or wherein the propagation information is an encoded representation of the information stored in ~~a~~ the propagation cookie.

~~10~~7. A method as claimed in claim ~~8~~5, wherein the propagation information is generated according to propagation rules available to the propagation server, wherein the propagation rules are applied to the information stored in a propagation cookie, preferably wherein the propagation rules are stored within the propagation cookie and provided to the propagation server as part of the instruction.

~~11. A method as claimed in claim 10, wherein the propagation rules are stored within the propagation cookie and provided to the propagation server as part of the instruction.~~

~~12~~8. A method as claimed in any one of claims ~~6~~ 4 to ~~11~~7, wherein the propagation information is provided to the web browser in association with an instruction received from

the propagation server, such that the web browser is caused to communicate with the first domain server and provides the propagation information with the instruction, preferably wherein the web browser receives an instruction from the first domain server, in response to providing the propagation information to the first domain server, to set the first cookie comprising the recorded information.

~~13. A method as claimed in claim 12, wherein the web browser receives an instruction from the first domain server, in response to providing the propagation information to the first domain server, to set the first cookie comprising the recorded information.~~

~~14. A method as claimed in claim 4, wherein the intermediary is stored as web page specific data, and comprising:~~

~~instructing the web browser to communicate with a first domain server, the web browser providing the web page specific data to the first domain server with the instruction; and~~

~~receiving from the first domain server an instruction to set the first cookie with the recorded information, wherein the recorded information is equal to or derived from the web page specific data,~~

~~wherein the instruction is received from a first web server in response to a request for content for display made by the web browser,~~

~~wherein the first web server is associated with the first domain server, and wherein both said servers are associated with the first domain.~~

~~15. A method as claimed in claim 14, wherein the web page specific data is set during a previous communication instance with the second domain server of the second domain.~~

~~16. A method as claimed in claim 14 or claim 15, wherein the web page specific data is not accessible to executable code when run on the web browser and is accessible to a first domain server when set by a communication with the second domain, and preferably is only accessible by an external server.~~

~~17. A method as claimed in claim 15 or claim 16, wherein the web page specific data is stored in an ETag associated with a web page provided to the web browser before the instruction is sent to the web browser.~~

~~18~~9. A method as claimed in any one of claims 1 to ~~17~~8, wherein the first domain and second domain are determined to be related domains for which propagation is allowed before allowing propagation for the recorded information from the second cookie to the first cookie.

~~19~~10. A domain server configured for communication with web browsers for facilitating propagation of recorded information between first-party cookies associated with different domains, the domain server configured to:

receive a communication from a web browser due to an instruction provided to the web browser from a first web server associated with the first domain to communicate with the domain server; and

determine whether a first cookie is present with the communication, the first cookie associated with the first domain,

and wherein, in response to determining that there is not a first cookie present, the domain server is configured to:

obtain from the web browser propagation information, the propagation information derived from recorded information of a second cookie associated with a second domain, wherein the recorded information is derivable from the propagation information;

determine the recorded information from the propagation information; and

instruct the web browser to record in a first cookie the recorded information,

wherein the web browser in communication with the domain server does not allow access to third-party cookies.

~~20~~11. A domain server as claimed in claim ~~19~~10, further configured to instruct the web browser to communicate with the first web server to enable generation of content for the web browser utilising the recoded first cookie.

~~21~~12. A domain server as claimed in claim ~~19~~ 10 or claim ~~20~~11, further configured to, when obtaining the intermediary information:

instruct the web browser to communicate with a propagation server associated with a propagation domain different to the first domain, wherein the propagation information is provided to the web browser from the propagation server in response to the instruction; and

receive the propagation information from the web browser after the web browser is instructed to communicate again with the domain server.

~~22~~13. A domain server as claimed in claim ~~21~~12, wherein the propagation information is generated according to propagation rules available to the propagation server, wherein the propagation rules are applied to the information stored in a propagation cookie, preferably wherein the propagation rules are stored within a propagation cookie stored in the web browser.

~~23. A domain server as claimed in claim 22, wherein the propagation rules are stored within a propagation cookie stored in the web browser.~~

~~24. A domain server as claimed in claim 19 or claim 20, wherein the intermediary is stored as web page specific data, and wherein the domain server is further configured to:~~

~~identify the web page specific data from the communication from the web browser; and~~

~~communicate an instruction to set the first cookie with the recorded information, wherein the recorded information is equal to or derived from the web page specific data.~~

~~25. A domain server as claimed in claim 24, wherein the web page specific data is set during a previous communication instance with a second domain server of a second domain.~~

~~26. A domain server as claimed in claim 24 or claim 25, wherein the web page specific data is not accessible to executable code when run on the web browser and is accessible to the first domain server when set by a communication with the second domain, and preferably is only accessible by an external server.~~

~~27. A domain server as claimed in claim 25 or claim 26, wherein the web page specific data is stored in an ETag associated with a web page provided to the web browser before the instruction is communicated.~~

~~28~~14. A domain server as claimed in any one of claims ~~19~~ 10 to ~~27~~13, wherein the recorded information is only propagated from the second cookie to the first cookie when the second domain is identified as being related to the first domain.

~~29~~15. A network system for facilitating propagation of recorded information between first-party cookies associated with different domains on a web browser in communication with the network system, the system comprising:

one or more domain servers, ~~wherein~~ each domain server ~~is configured to:~~according to any one of claims 10 to 14;

a propagation server associated with a propagation domain different to that of the, or each, domain server,

wherein each domain server is configured to, when obtaining the intermediary information:

instruct the web browser to communicate with the propagation server associated with a propagation domain different to the first domain; and

receive the propagation information from the web browser after the web browser is instructed to communicate again with the domain server by the propagation server, and

wherein the propagation server is configured to:

determine the propagation information based on information provided from the web browser with the instruction.

~~receive a communication from a web browser due to an instruction provided to the web browser from a web server associated with the domain;~~

~~determine whether a first cookie is present with the communication, the first cookie associated with the domain;~~

~~in response to determining that there is not a first cookie present, obtain from the web browser propagation information, the propagation information derived from recorded information of a second cookie associated with second domain, the second domain associated with another of the domain~~

~~servers, wherein the recorded information is derivable from the propagation information;~~

~~determine the recorded information from the propagation information; and~~

~~instruct the web browser to record in a first cookie the recorded information,~~

~~wherein a web browser in communication with the system is assumed to or does not allow access to third-party cookies.~~

~~30. A network system as claimed in claim 29, further comprising a propagation server associated with a propagation domain different to the first domain, and wherein each domain server is further configured to, when obtaining the intermediary information:~~

~~instruct the web browser to communicate with the propagation server associated with a propagation domain different to the first domain; and~~

~~receive the propagation information from the web browser after the web browser is instructed to communicate again with the domain server by the propagation server,~~

~~and wherein the propagation server is configured to:~~

~~determine the propagation information based on information provided from the web browser with the instruction.~~

~~31~~16. A network system as claimed in claim ~~30~~15, wherein the information comprises, if present, that stored in a propagation cookie readable by the propagation server.

~~32~~17. A network system as claimed in claim ~~31~~16, wherein the propagation server is configured to generate the propagation information according to propagation rules available to the propagation server, wherein the propagation rules are applied to the information stored in a propagation cookie, preferably wherein the propagation rules are stored within a propagation cookie stored in the web browser and are therefore received by the propagation server via the communication from the web browser.

~~33. A network system as claimed in claim 32, wherein the propagation rules are stored within a propagation cookie stored in the web browser and are therefore received by the propagation server via the communication from the web browser.~~

~~34~~18. A network system as claimed in ~~any one of claims 31 to 33~~claim 16 or claim 17, wherein in a case where a propagation cookie is not present, the propagation server is configured to determine a value for a propagation cookie and to communicate an instruction to the web browser to set the value as a propagation cookie, and wherein the propagation information are generated in accordance with the newly determined value.

~~35. A network system as claimed in claim 29, wherein each domain server is further configured to:~~

~~identify web page specific data from the communication from the web browser; and~~

~~communicate an instruction to set the first cookie with the recorded information to the web browser,~~

~~wherein the recorded information is equal to or derived from the web page specific data.~~

~~36 A network system as claimed in claim 35, wherein the web page specific data is set during a previous communication instance with the second domain server.~~

~~37~~19. A network system as claimed in any one of claims ~~29~~ 15 to ~~36~~18, wherein the recorded information is only propagated from the second cookie to the first cookie when the second domain is identified as being related to the first domain.

~~38~~20. A network system as claimed in any one of claims ~~29~~ 15 to ~~37~~19, further comprising a web server for each domain server, wherein the web server is configured to instruct a web browser to communicate with its associated domain server, and wherein each web server shares a domain with its associated domain server.