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17/148,824	04/20/2021	10986217	PMOR0120L	1073

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ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

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APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Confirmation No.: 1073
Robert Paul Morris	Examiner: Syed ALI
Application No.: 17/148,824	Art Unit: 2468
File Date: 2021-01-14	Docket No.: PMOR0120L
Title: METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION	Date: Mar 11, 2021

EXAMINER INTERVIEW

Date of Interview	Feb 23, 2021
Type of Interview	Email
Name of Participants	Patrick Caldwell, Syed ALI
Exhibit shown?	Appendix A
Claims Discussed	Independent Claims
Prior Art Discussed	
Substance of Interview	Sent potential amendments to the Examiner which could be entered in exchange for an allowance.
Agreement Reached?	Yes

For Filing

From: Patrick E. Caldwell <pcaldwell@thecaldwellfirm.com>
Sent: Tuesday, February 23, 2021 4:10 PM
To: syed.ali@uspto.gov
Subject: 17/148,824 PMOR0120L Proposed Amendment
Attachments: PMOR0120L_ProposedAmendment_20210223.docx

Examiner Ali,

Please consider the attached proposed amendment, which may be entered in exchange for an allowance.

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Thanks,
Patrick

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CLAIMS

1. (Currently Amended) An apparatus, comprising:

a non-transitory memory storing instructions; and

one or more processors in communication with the non-transitory memory, wherein the one or more processors execute the instructions to:

receive first information on which at least a first duration for detecting a first type of time period is based;

generate a first packet including a first parameter field identifying first metadata for use in determining a second duration for detecting the first type of time period;

set up a first connection, by sending, from ~~[[the]]~~a first node to a second node, the first packet to provide the first metadata to the second node, for use by the second node in determining the second duration for detecting the first type of time period;

in response to detecting, based on the first duration and by the first node during at least a portion of the first connection including at least a portion of the first connection set up, a first time period of the first type of time period, at least partially close the first connection; and

in response to detecting, based on the second duration and by the first node after the first duration is changed to the second duration, a second time period of the first type of time period, at least partially close the first connection;

wherein the apparatus is configured such that: during the second time period of the first type of time period, an empty packet is sent without causing a timer utilized to detect the second time period to be reset;

wherein the apparatus is configured such that:

the first time period and the second time period are started in response to at least one of a received packet or a sent packet,

during the at least portion of the first connection including the at least portion of the first connection set up, the detection of the first time period of the first type of time period is based on the first duration, by being based on whether, during the first duration after the first time period is started, no packet is received and processed to keep the first connection active, and

after the first duration is changed to the second duration, the detection of the second time period of the first type of time period is based on the second duration, by being based on whether, during the second duration after the second time period is started, no packet is received and processed to keep the first connection active;

wherein the apparatus is configured such that the first connection set up further includes, in addition to (a-1) sending the first packet:

(a-2) after sending the first packet and without any other communication between the first node and the second node after (a-1) and before (a-2), receiving, at the first node from the second node, a second packet, and

(a-3) after receiving the second packet and without any other communication between the first node and the second node after (a-2) and before (a-3), sending, from the first node to the second node, a third packet.

2. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the first duration is not negotiated between the first and second nodes during the first connection set up, and the second duration is negotiated between the first and second nodes during the first connection set up for the first connection.
3. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the first duration is not negotiated during the first connection set up between the first and second nodes for the first connection, and the second duration is negotiated between the first and second nodes for the first connection.
4. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the first time period is only capable of being detected during the first connection set up.
5. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the second time period is capable of being detected at a time at least one of: during the first connection set up, or thereafter during the first connection.
6. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the first duration is used and the second duration is not used, for detecting the first type of time period until being changed to the second duration.
7. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the first type of time period includes an idle time period.
8. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that only one of the first time period or the second time period is detected for the first connection.
9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Original) The apparatus of Claim 1, wherein the apparatus is configured to, in response to detecting the first time period of the first type of time period, unilaterally at least partially close the first connection.

13. (Original) The apparatus of Claim 1, wherein the apparatus is configured to, in response to detecting the first time period of the first type of time period, at least partially close the first connection, without signaling the second node in relation to the detection of the first time period after detecting the first time period.

14. (Original) The apparatus of Claim 1, wherein the apparatus is configured to, in response to detecting the first time period of the first type of time period, at least partially close the first connection, by releasing, by the first node, a first resource allocated for the first connection.

15. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the second duration is capable of being different from the first duration.

16. (Original) The apparatus of Claim 15, wherein the apparatus is configured such that the second duration is different from the first duration.

17. (Original) The apparatus of Claim 15, wherein the apparatus is configured such that the second duration is the same as the first duration, despite being capable of being different from the first duration.

18. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that:

the first packet is not a synchronize (SYN) packet;

the first connection is not a Transmission Control Protocol (TCP) extension connection, and the first connection is not a TCP extension connection that involves a TCP extension; and

the first type of time period does not include a user timeout period.

19. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that an idle timeout attribute is utilized for the first type of time period, and a user timeout attribute, that is separate from the idle timeout attribute, is utilized for controlling communication of one or more acknowledgment packets.

20. (Cancelled)

21. (Currently Amended) The apparatus of Claim [[20]]1, wherein the apparatus is configured such that the first type of time period is started in response to the received packet.

22. (Currently Amended) The apparatus of Claim [[20]]1, wherein the apparatus is configured such that the first type of time period is started in response to the sent packet.

23. (Currently Amended) The apparatus of Claim [[20]]1, wherein the apparatus is configured such that, after the first duration is changed to the second duration, the detection of the second time period of the first type of time period is based on the second duration, by being only based on whether, for the second duration after the second time period of the first type of time period is started, no packet is received and processed to keep the first connection active.

24.-28. (Cancelled)

29. (Currently Amended) The apparatus of Claim 1, wherein the apparatus is configured [[to]] such that the first connection is not a Transmission Control Protocol (TCP) extension connection, and the first connection is not a TCP extension connection that involves a TCP extension.

30. (Currently Amended) The apparatus of Claim 1, wherein the apparatus is configured [[to]] such that the first type of time period does not include a user timeout period.

31. (New) The apparatus of Claim 1, wherein the apparatus is configured to: in response to detecting, based on a third duration, a third time period, at least partially close the first connection.

32. (New) The apparatus of Claim 31, wherein the third duration is determined based on a first algorithm that is different from a second algorithm on which a determination of the second duration is based.

33. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is detected based on the third duration, by being detected when no acknowledgement packet is received by the first node in the first connection and processed as an acknowledgement, during the third duration, for a sent packet sent by the first node in the first connection.

34. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is detected based on the third duration, by being detected when an expected acknowledgement packet is not received by the first node in the first connection, during the third duration, for a sent packet sent by the first node in the first connection.

35. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is detected only in response to an acknowledgement packet not

being received, for the third duration, in the first connection for a sent packet sent in the first connection.

36. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is detected in response to no acknowledgement packet being received in the first connection and processed as an acknowledgement for a sent packet sent in the first connection.

37. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the first packet also includes data, separate from the first metadata, for use in determining the third time period.

38. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is detected utilizing a timer that is not utilized to detect the first time period nor the second time period.

39. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the first duration is not negotiated between the first and second nodes during the first connection set up, the second duration is negotiated during the first connection set up between the first and second nodes for the first connection, and the third duration of the third time period is negotiated during the first connection set up between the first and second nodes for the first connection.

40. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is an acknowledgment timeout period during which an expected acknowledgment for a sent packet is not received.

41. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is a second type of time period.

42. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third duration is determined using the first parameter field identifying the first metadata.
43. (New) The apparatus of Claim 42, wherein the apparatus is configured such that the third duration is determined based on the second duration.
44. (New) The apparatus of Claim 42, wherein the apparatus is configured such that the second duration is determined based on the third duration.
45. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is detected based on the third duration, by being detected when no acknowledgement packet is detected, by the first node during the third duration, as being received and processed as an acknowledgement in the first connection to acknowledge a sent packet of a plurality of sent packets sent by the first node, where the third duration starts for each of the plurality of sent packets when at least one of the plurality of sent packets is sent, and where a single timer and a single timeout variable are utilized for detecting the third time period in connection with the plurality of sent packets.
46. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third duration is determined using a second parameter field identifying second metadata, where the second parameter field is communicated in the first connection.
47. (New) The apparatus of Claim 46, wherein the apparatus is configured such that the second duration is determined using the first parameter field identifying the first metadata, and the second parameter field identifying the second metadata.
48. (New) The apparatus of Claim 31, wherein the apparatus is configured such that:

the third time period is detected in response to no acknowledgement packet being received in the first connection and processed, during the third duration that starts in response to a sent packet being sent in the first connection, to acknowledge the sent packet;

the first duration is not capable of being negotiated between the first and second nodes during the first connection set up, the second duration is capable of being negotiated between the first and second nodes for the first connection, and the third duration of the third time period is capable of being negotiated between the first and second nodes for the first connection;

the third time period is a second type of time period, and is an acknowledgment timeout period; and

the third duration is determined using the first parameter field identifying the first metadata.

49. (New) The apparatus of Claim 31, wherein the apparatus is configured such that at least one packet is received in connection with at least one of the first time period or the second time period, but is not received and processed to keep the first connection active, as a result of the at least one packet being un-processable.

50. (New) The apparatus of Claim 31, wherein the apparatus is configured such that at least one packet is received in connection with at least one of the first time period or the second time period, but is not received and processed to keep the first connection active, as a result of the at least one packet being discarded, wherein the apparatus is configured such that the at least one packet is a duplicate packet, or a packet not to be processed.

51. (New) The apparatus of Claim 31, wherein the apparatus is configured such that at least one packet is received during at least one of the first time period or the

second time period, but is not received and processed to keep the first connection active, as a result of the at least one packet not being received in a manner so as to be processed by a software component.

52. (New) The apparatus of Claim 33, wherein at least one of:

the apparatus is at least one component of the first node;

the first node is at least one component of the apparatus;

the first node includes a device, including a network interface, that is a component of the apparatus;

the first node includes a network interface that is a component of the apparatus;

the apparatus includes a web server;

the timer includes a hardware timer;

the timer includes a software timer;

the empty packet is sent without causing the timer utilized to detect the second time period to be reset, by resetting a first software timer-related component not utilized to detect the second time period, without resetting a second software timer-related component utilized to detect the second time period;

the empty packet is sent without causing the timer utilized to detect the second time period to be reset, by resetting a first software timer-related component not utilized to detect the second time period, without resetting a second software timer-related component utilized to detect the second time period, where the first software timer-related component and the second software timer-related component utilize a same hardware timer-related component;

the empty packet is sent without causing the timer utilized to detect the second time period to be reset, by resetting a first software timer-related component not utilized to

detect the second time period, without resetting a second software timer-related component utilized to detect the second time period, where the first software timer-related component and the second software timer-related component do not utilize a same hardware timer-related component;

the first packet is an initial non-TCP packet;

the first packet is first-in-time;

the first parameter field is part of a data portion in the first packet;

the first parameter field is part of a header of the first packet;

the first packet is informational;

the first connection includes one or more features of TCP, and one or more features not of TCP;

the first packet includes one or more features of a TCP packet, and one or more features not of a TCP packet;

the first connection includes one or more features of a TCP connection, and one or more features not of a TCP connection;

the first information includes first idle information;

the first information does not include first idle information;

the first information is received based on a previous header;

the first information is not based on a previous header;

the first information is received from a component of the apparatus;

the first information is received from a component of the first node;

the first information is received from an entity separate from the apparatus;

the first duration for detecting the first type of time period is based on the first information, by the first information identifying the first duration;

the first duration for detecting the first type of time period is based on the first information, by the first information specifying the first duration;

the first duration for detecting the first type of time period is based on the first information, by the first information identifying at least one generator for generating the first duration;

only the first duration for detecting the first type of time period is based on the first information;

the first connection includes (a-1), (a-2), and (a-3);

the second duration of the second time period is different from the duration of the first time period;

the second duration of the second time period is the same as the duration of the first time period;

the third duration of the third time period is different from the duration of the first time period;

the third duration of the third time period is the same as the duration of the first time period;

the third duration of the third time period is different from the duration of the second time period;

the third duration of the third time period is the same as the duration of the second time period;

the first packet also includes data for use in determining the first time period;

the first idle information includes a first value representative of the first duration of the first time period, and a second value representative of the second duration of the second time period;

the first idle information includes a first value representative of the first duration of the first time period, and identification of a generator for generating a second value representative of the second duration of the second time period;

the first idle information includes identification of a generator for generating a first value representative of the first duration of the first time period, and for generating a second value representative of the second duration of the second time period;

the first idle information includes identification of a first generator for generating a first value representative of the first duration of the first time period, and identification of a second generator for generating a second value representative of the second duration of the second time period;

the first time period is detected in a first use scenario without the second nor third time periods being detected, the second time period is detected in a second use scenario without the first nor third time periods being detected, the third time period is detected in a third use scenario without the first nor second time periods being detected, and neither the first, second, nor third time periods are detected in a fourth use scenario;

the first duration of the first time period is determined based on the first idle information, after identifying the first idle information;

the first duration of the first time period is determined based on the first idle information, before setting up the first connection;

the first duration of the first time period is determined based on the first idle information, during setting up the first connection;

the first duration of the first time period is determined based on the first idle information, after setting up the first connection;

the first time period is triggered by one or more non-duration-related criteria that triggers the second time period;

the first time period is triggered by the same one or more non-duration-related criteria that triggers the second time period;

the first time period is triggered by different one or more non-duration-related criteria than that which triggers the second time period;

the first time period is that during which no packet is received in the first connection nor expected to be received;

the first time period is that during which no packet is received in the first connection;

the third time period is triggered by one or more non-duration-related criteria that triggers the second time period;

the third time period is triggered by the same one or more non-duration-related criteria that triggers the second time period;

the third time period is triggered by different one or more non-duration-related criteria than that which triggers the second time period;

the third time period is that during which no packet is received in the first connection nor expected to be received;

the third time period is that during which no packet is received in the first connection;

the first metadata is based on the first idle information;

the change occurs while detection of the first time period is attempted;

the change occurs via a negotiation;

the second time period is a changed version of the first time period;

the second time period is a changed instance of the first time period;

the first time period and the second time period have at least one additional difference, in addition to duration, despite both being of the first type of time period;

the first time period and the second time period do not have at least one additional difference, in addition to duration;

the second time period is determined based on the first idle information;

the first duration of the first time period is negotiated between the first and second nodes for the first connection, during the first connection set up;

the first connection set up includes all communications that precede completion of the first connection set up;

the duration of the second time period is determined based on the first idle information;

the duration of the third time period is determined based on the first idle information;

the first and second time periods are of a same duration;

the first and second time periods are of a different duration;

the first and second time periods are different instances of the same type of time period;

the first and second time periods are of the same type of time period, but are applied at different times during the first connection;

the first duration of the first time period is determined by being negotiated;

the second duration of the second time period is determined by being negotiated;

the third duration of the third time period is determined by being negotiated;

the first metadata is also for use in determining the second duration of the second time period;

the first metadata is not for use in determining the second duration of the second time period;

the first metadata is also for use in determining the third duration of the third time period;

the first metadata is not for use in determining the third duration of the third time period;

the first metadata describes a definition of at least one duration;

the first metadata defines at least one duration;

the first metadata includes at least one duration;

the first metadata describes a definition of at least one time period;

the first metadata describes other data that defines at least one duration;

the first metadata describes other data that defines at least one time period;

the first metadata describes other criteria-related data that defines at least one time period;

the first metadata describes duration data that defines at least one time period;

the first metadata describes duration criteria-related data that defines at least one time period;

the at least portion of the first connection includes only a subset of setting up the first connection;

the at least portion of the first connection includes an entirety of setting up the first connection;

the at least portion of the first connection set up includes one or more packet exchanges that occur after the first packet is sent;

the at least portion of the first connection set up includes one or more packet exchanges that occur after the first packet is sent prior to completion of the first connection set up;

the first, the second, and third packets are non-TCP;

the first, the second, and third packets are non-TCP by not being required by any TCP standard specification;

the first time period is detected based on the first duration, by being detected when packet activity or a lack thereof meets one or more criteria for a span of the first duration;

the second time period is detected based on the second duration, by being detected when packet activity or a lack thereof meets one or more criteria for a span of the second duration;

the empty packet includes a ping;

the empty packet includes an empty acknowledgement packet;

the first type of time period includes an idle time period type;

the first and second time periods of the first type of time period differ only in duration;

the first and second time periods of the first type of time period are capable of differing in duration, but may have a same duration;

the first and second time periods of the first type of time period are capable of differing only in duration, but may have a same duration;

the first and second time periods of the first type of time period differ in duration and at least one criteria involving packet activity or a lack thereof over a duration span;

the first and second time periods of the first type of time period are capable of differing in duration and further differ in at least one criteria involving packet activity or a lack thereof over a duration span;

the first packet includes a portion of data sent at any layer;

the first packet includes a frame;

the first packet is a non-TCP frame;

the first time period is started in response to a received packet and the second time period are started in response to a sent packet;

the first time period is started in response to a sent packet and the second time period are started in response to a received packet;

the first time period is started in response to a received packet and the second time period are started in response to a received packet;

the first time period is started in response to a sent packet and the second time period are started in response to a sent packet;

the first time period and the second time period are started in response to different packets;

the first time period and the second time period are started in response to different types of packets;

non-TCP refers to not being required by any TCP standard specification;

non-TCP refers to not being required by any TCP current specification;

non-TCP refers to not being required in a particular context by any TCP standard specification; or

non-TCP refers to not being required in a particular context by any TCP current specification.

53. (New) The apparatus of Claim 1, wherein the apparatus is configured such that at least one packet is received in connection with at least one of the first time period or

the second time period, but is not received and processed to keep the first connection active, as a result of the at least one packet being discarded by a software component.

54. (New) The apparatus of Claim 1, wherein the apparatus is configured such that the first time period is one: during which, no packet is communicated by being neither sent nor received by the apparatus in the first connection to keep the first connection active.

55. (New) The apparatus of Claim 1, wherein the apparatus is configured such that the second time period is one: during which, no packet is communicated by being neither sent nor received by the apparatus in the first connection to keep the first connection active.

56. (New) The apparatus of Claim 1, wherein the apparatus is configured such that the first time period is one: during which, no packet is sent by the apparatus in the first connection to keep the first connection active.

57. (New) The apparatus of Claim 1, wherein the apparatus is configured such that the second time period is one: during which, no packet is sent by the apparatus in the first connection to keep the first connection active.

58. (New) The apparatus of Claim 1, wherein the first node includes a network interface for sending the first packet, and the apparatus includes one or more software components of the first node where the one or more software components of the first node are executed using hardware that does not include the network interface, the one or more software components of the first node including a first software component in communication with the network interface, and a second software component in communication with the first software component such that the first software component performs functionality after packet receipt by the network interface and before packet processing by the second software component, where at least one of the first time period or the second time period is one during which, no packet is received and

processed to keep the first connection active, by no packet being received in a manner so as to be processed by the second software component to keep the first connection active.

59. (New) The apparatus of Claim 58, wherein at least one of:

- the first software component includes a packet handler software component to process at least one packet that has been determined to be valid according to at least one other software component that implements a non-Transmission Control Protocol (TCP);
- the first software component and the second software component implement the non-TCP;
- at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active;
- at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because it is a discarded packet;
- at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because it is a duplicate packet;
- at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because it is a corrupt packet;
- at least one additional packet is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection

active, where the at least one packet is not received in the manner so as to be processed by the second software component because it is a lost packet;
at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because the at least one packet does not pass processing by at least one software component that implements the non-TCP;

at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because the at least one packet does not pass processing by the first software component;

at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because the at least one packet is discarded so as to prevent receipt in the manner so as to be processed by the second software component;

at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because the at least one packet is discarded at any layer so as to prevent receipt in the manner so as to be processed by the second software component;

at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component

because the at least one packet is discarded by at least one software component that implements the non-TCP; or

at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because the at least one packet is discarded by the first software component.

60. (New) An apparatus, comprising:

a non-transitory memory storing instructions means; and

one or more processors means in communication with the non-transitory memory, wherein the one or more processors means execute the instructions means to:

receive first information on which at least a first duration for detecting a first type of time period is based;

generate a first packet including a first parameter field identifying first metadata for use in determining a second duration for detecting the first type of time period;

set up a first connection, by sending, from [[the]]a first node to a second node, the first packet to provide the first metadata to the second node, for use by the second node in determining the second duration for detecting the first type of time period;

in response to detecting, based on the first duration and by the first node during at least a portion of the first connection including at least a portion of the first connection set up, a first time period of the first type of time period, at least partially close the first connection; and

in response to detecting, based on the second duration and by the first node after the first duration is changed to the second duration, a second time period of the first type of time period, at least partially close the first connection;

wherein the apparatus is configured such that, during the second time period of the first type of time period, an empty packet is sent without causing a timer utilized to detect the second time period to be reset;

wherein the apparatus is configured such that: the first time period and the second time period are started in response to at least one of a received packet or a sent packet; and during the at least portion of the first connection including the at least portion of the first connection set up, the detection of the first time period of the first type of time period is based on the first duration, by being based on whether, during the first duration after the first time period is started, no packet is received and processed to keep the first connection active; and based on the first duration being changed to the second duration, the detection of the second time period of the first type of time period is based on the second duration, by being based on whether, during the second duration after the second time period is started, no packet is received and processed to keep the first connection active;

wherein the apparatus is configured such that the first connection set up further includes, in addition to (a-1) sending the first packet:

(a-2) after sending the first packet and without any other communication between the first node and the second node after (a-1) and before (a-2), receiving, at the first node from the second node, a second packet, and

(a-3) after receiving the second packet and without any other communication between the first node and the second node after (a-2) and before (a-3), sending, from the first node to the second node, a third packet.

61. (New) A method, comprising:

at a first node:

receiving first information on which at least a first duration for detecting a first type of time period is based;

generating a first packet including a first parameter field identifying first metadata for use in determining a second duration for detecting the first type of time period;

setting up a first connection, by:

sending, from the first node to a second node, the first packet to provide the first metadata to the second node, for use by the second node in determining the second duration for detecting the first type of time period,

after sending the first packet and without any other communication between the first node and the second node to set up the first connection after sending the first packet, receiving, at the first node from the second node, a second packet, and

after receiving the second packet and without any other communication between the first node and the second node to set up the first connection after receiving the second packet, sending, from the first node to the second node, a third packet;

based on detecting, as a function of the first duration and by the first node during at least a portion of the first connection including at least a portion of the first connection set up, a first time period of the first type of time period, at least partially closing the first connection, where a start of the first time period is detected based on at least one packet being sent or received during the at least

portion of the first connection including the at least portion of the first connection set up, and the detection of the first time period of the first type of time period is a function of the first duration, by being a function of whether, during the first duration after the first time period is started, no packet is received and processed to keep the first connection active;

based on detecting, as a function of the second duration and by the first node after a use of the first duration is changed to a use of the second duration, a second time period of the first type of time period, at least partially closing the first connection, where a start of the second time period is detected based on at least one packet being sent or received after the use of the first duration is changed to the use of the second duration, and the detection of the second time period of the first type of time period is a function of the second duration, by being a function of whether, during the second duration after the second time period is started, no packet is received and processed to keep the first connection active; and

during the second time period of the first type of time period, sending an empty packet without causing a reset of a timer utilized to detect the second time period.

62. (New) The method of Claim 61, and further comprising:

based on detecting, as a function of a third duration, a third time period, at least partially closing the first connection.

63. (New) The method of Claim 62, wherein:

the third time period is detected based on no acknowledgement packet being received in the first connection and processed, during the third duration that starts

based on a sent packet being sent in the first connection, to acknowledge the sent packet;

the first duration is not capable of being negotiated between the first and second nodes during the first connection set up, the second duration is capable of being negotiated between the first and second nodes for the first connection, and the third duration of the third time period is capable of being negotiated between the first and second nodes for the first connection;

the third time period is a second type of time period, and is an acknowledgment timeout period; and

the third duration is determined using the first parameter field identifying the first metadata.

64. (New) The method of Claim 63, wherein the first duration is not negotiated between the first and second nodes during the first connection set up, and the second duration is negotiated between the first and second nodes during the first connection set up for the first connection.

65. (New) The method of Claim 64, wherein the first duration is used and the second duration is not used, for detecting the first type of time period until being changed to the second duration.

66. (New) The method of Claim 65, wherein:
the first packet is not a synchronize (SYN) packet;
the first connection does not involve a Transmission Control Protocol (TCP) extension; and
the first type of time period does not include a user timeout period.

67. (New) The method of Claim 66, wherein the first type of time period includes an idle time period, and the empty packet includes an empty acknowledgement packet.

68. (New) The method of Claim 66, wherein an idle timeout attribute is utilized for the first type of time period, and a user timeout attribute, that is separate from the idle timeout attribute, is utilized for controlling communication of one or more acknowledgment packets, and wherein the use of the first duration is changed to the use of the second duration after the first connection set up.

69. (New) The method of Claim 66, wherein the first node includes a network interface for sending the first packet, and an apparatus of the first node includes one or more software components including a first software component in communication with the network interface, and a second software component in communication with the first software component for performing processing to keep the first connection active, such that the first software component performs functionality after packet receipt by the network interface and before packet processing by the second software component to keep the first connection active, where the first time period and the second time period are each one during which, no packet is received and processed to keep the first connection active, by no packet being received in a manner so as to be processed by the second software component to keep the first connection active.

70. (New) The method of Claim 69, wherein the first software component and the second software component at least partially implement a TCP-variant or a non-TCP.

71. (New) The method of Claim 69, wherein at least one packet is received during at least one of the detected first time period or the detected second time period, but is not received and processed to keep the first connection active, as a result of the at least one packet not being received in the manner so as to be processed by the second software component to keep the first connection active.

72. (New) The method of Claim 69, wherein at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component to keep the first connection active.

73. (New) The method of Claim 72, wherein the at least one packet is not received in the manner so as to be processed by the second software component to keep the first connection active because it is at least one of: an un-processable packet, or a discarded packet.

74. (New) The method of Claim 72, wherein the at least one packet is not received in the manner so as to be processed by the second software component to keep the first connection active because it is a lost packet.

75. (New) The method of Claim 72, wherein the at least one packet is not received in the manner so as to be processed by the second software component to keep the first connection active because the at least one packet is discarded by at least one software component that at least partially implements a TCP-variant or a non-TCP.

76. (New) The method of Claim 72, wherein the at least one packet is not received in the manner so as to be processed by the second software component to keep the first connection active because the at least one packet is discarded by the first software component.

77. (New) The method of Claim 65, wherein:

the start of the first time period is detected based on the at least one packet being sent during the at least portion of the first connection including the at least portion of the first connection set up; and

the start of the second time period is detected based on the at least one packet being sent after the use of the first duration is changed to the use of the second duration.

78. (New) The method of Claim 65, wherein:

the start of the first time period is detected based on the at least one packet being received during the at least portion of the first connection including the at least portion of the first connection set up; and

the start of the second time period is detected based on the at least one packet being received after the use of the first duration is changed to the use of the second duration.

79. (New) The method of Claim 65, wherein: the third time period is detected based on the third duration, by being detected when no acknowledgement packet is detected, by the first node during the third duration, as being received and processed as an acknowledgement in the first connection to acknowledge a sent packet of a plurality of sent packets sent by the first node, where the third duration starts for each of the plurality of sent packets when at least one of the plurality of sent packets is sent, and where a single timer and a single timeout variable are utilized for detecting the third time period in connection with the plurality of sent packets.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Robert Paul Morris

Application No.: 17/148,824

File Date: 2021-01-14

Title: METHODS, SYSTEMS, AND COMPUTER
PROGRAM PRODUCTS FOR SHARING
INFORMATION FOR DETECTING AT LEAST ONE
TIME PERIOD FOR A CONNECTION

Confirmation No.: 1073

Examiner: Syed ALI

Art Unit: 2468

Docket No.: PMOR0120L

Date: Mar 11, 2021

**COMMENTS ON STATEMENT OF REASONS FOR
ALLOWANCE UNDER 37 C.F.R. § 1.104(e)**

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Examiner:

In response to the Notice of Allowance dated 03/10/2021, please enter the following
remarks.

Remarks:

The Examiner has stated the following in the Examiner's Statement of Reasons for Allowance:

The following is an examiner's statement of reasons for allowance: The limitation(s) of "after receiving the second packet and without any other communication between the first node and the second node to set up the first connection after receiving the second packet, sending, from the first node to the second node, a third packet; based on detecting, as a function of the first duration and by the first node during at least a portion of the first connection including at least a portion of the first connection set up, a first time period of the first type of time period, at least partially closing the first connection, where a start of the first time period is detected based on at least one packet being sent or received during the at least portion of the first connection including the at least portion of the first connection set up, and the detection of the first time period of the first type of time period is a function of the first duration, no packet is received and processed to keep the first connection active; a use of the first duration is changed to a use of the second duration, a second time period of the first type of time period, at least partially closing the first connection, where a start of the second time period is detected based on at least one packet being sent or received after the use of the first duration is changed to the use of the second duration, and the detection of the second time period of the first type of time period is a function of the second duration, by being a function of whether, during the second duration after the second time period is started, no packet is received and processed to keep the first connection active; and during the second time period of the first type of time period, sending an empty packet without causing a reset of a timer utilized to detect the second time period." are not disclosed or suggested by the prior art of record taken alone or in combination when considered in context of the environments of claims 1, 60 and 61. Therefore, the claims are distinguished over the prior art of record and held as allowable.

In response, applicant respectfully points out that features of at least some of the independent claims (e.g., 1, 60, and 61) are not necessarily the same as those the Examiner has highlighted above. For example, Claim 1 includes “after receiving the second packet and without any other communication between the first node and the second node after (a-2) and before (a-3), sending, from the first node to the second node, a third packet,” in the context claimed.

As additional, non-exhaustive examples, Claims 1, 60, and 61 recite the following, respectively:

1. An apparatus, comprising:

a non-transitory memory storing instructions; and

one or more processors in communication with the non-transitory memory, wherein the one or more processors execute the instructions to:

receive first information on which at least a first duration for detecting a first type of time period is based;

generate a first packet including a first parameter field identifying first metadata for use in determining a second duration for detecting the first type of time period;

set up a first connection, by sending, from a first node to a second node, the first packet to provide the first metadata to the second node, for use by the second node in determining the second duration for detecting the first type of time period;

in response to detecting, based on the first duration and by the first node during at least a portion of the first connection including at least a portion of the first connection set up, a first time period of the first type of time period, at least partially close the first connection; and

in response to detecting, based on the second duration and by the first node after the first duration is changed to the second duration, a second time period of the first type of time period, at least partially close the first connection;

wherein the apparatus is configured such that: during the second time period of the first type of time period, an empty packet is sent without causing a timer utilized to detect the second time period to be reset;

wherein the apparatus is configured such that:

the first time period and the second time period are started in response to at least one of a received packet or a sent packet,

during the at least portion of the first connection including the at least portion of the first connection set up, the detection of the first time period of the first type of time period is based on the first duration, by being based on whether, during the first duration after the first time period is started, no packet is received and processed to keep the first connection active, and

after the first duration is changed to the second duration, the detection of the second time period of the first type of time period is based on the second duration, by being based on whether, during the second duration after the second time period is started, no packet is received and processed to keep the first connection active;

wherein the apparatus is configured such that the first connection set up further includes, in addition to (a-1) sending the first packet:

(a-2) after sending the first packet and without any other communication between the first node and the second node after (a-1) and before (a-2), receiving, at the first node from the second node, a second packet, and

(a-3) after receiving the second packet and without any other communication between the first node and the second node after (a-2) and before (a-3), sending, from the first node to the second node, a third packet.

60. An apparatus, comprising:

a non-transitory memory storing instructions means; and

one or more processors means in communication with the non-transitory memory, wherein the one or more processors means execute the instructions means to:

receive first information on which at least a first duration for detecting a first type of time period is based;

generate a first packet including a first parameter field identifying first metadata for use in determining a second duration for detecting the first type of time period;

set up a first connection, by sending, from a first node to a second node, the first packet to provide the first metadata to the second node, for use by the second node in determining the second duration for detecting the first type of time period;

in response to detecting, based on the first duration and by the first node during at least a portion of the first connection including at least a portion of the first connection set up, a first time period of the first type of time period, at least partially close the first connection; and

in response to detecting, based on the second duration and by the first node after the first duration is changed to the second duration, a second time period of the first type of time period, at least partially close the first connection;

wherein the apparatus is configured such that, during the second time period of the first type of time period, an empty packet is sent without causing a timer utilized to detect the second time period to be reset;

wherein the apparatus is configured such that: the first time period and the second time period are started in response to at least one of a received packet or a sent packet; and during the at least portion of the first connection including the at least portion of the first connection set up, the detection of the first time period of the first type of time period is based on the first duration, by being based on whether, during the first duration after the first time period is started, no packet is received and processed to keep the first connection active; and based on the first duration being changed to the second duration, the detection of the second time period of the first type of time period is based on the second duration, by being based on whether, during the second duration after the second time period is started, no packet is received and processed to keep the first connection active;

wherein the apparatus is configured such that the first connection set up further includes, in addition to (a-1) sending the first packet:

(a-2) after sending the first packet and without any other communication between the first node and the second node after (a-1) and before (a-2), receiving, at the first node from the second node, a second packet, and

(a-3) after receiving the second packet and without any other communication between the first node and the second node after (a-2) and before (a-3), sending, from the first node to the second node, a third packet.

61. A method, comprising:

at a first node:

receiving first information on which at least a first duration for detecting a first type of time period is based;

generating a first packet including a first parameter field identifying first metadata for use in determining a second duration for detecting the first type of time period;

setting up a first connection, by:

sending, from the first node to a second node, the first packet to provide the first metadata to the second node, for use by the second node in determining the second duration for detecting the first type of time period,

after sending the first packet and without any other communication between the first node and the second node to set up the first connection after sending the first packet, receiving, at the first node from the second node, a second packet, and

after receiving the second packet and without any other communication between the first node and the second node to set up the first connection after receiving the second packet, sending, from the first node to the second node, a third packet;

based on detecting, as a function of the first duration and by the first node during at least a portion of the first connection including at least a portion of the first connection set up, a first time period of the first type of time period, at least partially

closing the first connection, where a start of the first time period is detected based on at least one packet being sent or received during the at least portion of the first connection including the at least portion of the first connection set up, and the detection of the first time period of the first type of time period is a function of the first duration, by being a function of whether, during the first duration after the first time period is started, no packet is received and processed to keep the first connection active;

based on detecting, as a function of the second duration and by the first node after a use of the first duration is changed to a use of the second duration, a second time period of the first type of time period, at least partially closing the first connection, where a start of the second time period is detected based on at least one packet being sent or received after the use of the first duration is changed to the use of the second duration, and the detection of the second time period of the first type of time period is a function of the second duration, by being a function of whether, during the second duration after the second time period is started, no packet is received and processed to keep the first connection active; and

during the second time period of the first type of time period, sending an empty packet without causing a reset of a timer utilized to detect the second time period.

Clearly, at least some of the independent claims are not necessarily limited to the features that the Examiner has noted in the Examiner's Statement of Reasons for Allowance, as noted above (by way of example only). Instead, each of the claims should only be limited by the language existing therein.

Further, although Applicant agrees with the Examiner's conclusion that these claims are allowable, Applicant notes that the claims may be allowable for reasons other than those identified by the Examiner and does not concede that the Examiner's characterizations of the

Application No.: 17/148,824
Date: Mar 11, 2021
Comments on Statement of Reasons for Allowance

terms of the claims and the prior art are correct. Each of the claims stands on its own merits and is patentable because of the combination it recites and not because of the presence or absence of any one particular element.

The Examiner's Statement was not prepared by Applicant and only contains the Examiner's possible positions in one or more reasons for allowability. Thus, any interpretation with respect to the Examiner's Statement of Reasons for Allowance should not be imputed to the Applicant.

Respectfully submitted,



Dated: 11 Mar 2021
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Electronic Patent Application Fee Transmittal				
Application Number:	17148824			
Filing Date:	14-Jan-2021			
Title of Invention:	METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION			
First Named Inventor/Applicant Name:	Robert Paul Morris			
Filer:	Patrick Edgar Caldwell			
Attorney Docket Number:	PMOR0120L			
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	1202	40	100	4000
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
UTILITY APPL ISSUE FEE	1501	1	1200	1200
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				5200

Electronic Acknowledgement Receipt	
EFS ID:	42161132
Application Number:	17148824
International Application Number:	
Confirmation Number:	1073
Title of Invention:	METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION
First Named Inventor/Applicant Name:	Robert Paul Morris
Customer Number:	92045
Filer:	Patrick Edgar Caldwell
Filer Authorized By:	
Attorney Docket Number:	PMOR0120L
Receipt Date:	11-MAR-2021
Filing Date:	14-JAN-2021
Time Stamp:	22:50:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$5200
RAM confirmation Number	E20213AM51273260
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The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	PMOR0120L_fee-transmittal_vF_11-Mar-2021.pdf	107347	no	1
			68ef09af7ea53616e4c19e8770731f17e5f9025e		
Warnings:					
Information:					
2	Applicant summary of interview with examiner	PMOR0120L_ExaminerInterview_vF_11-Mar-2021.pdf	6622803	no	31
			7407a3d41c7dfcb1dfc0530333c8edebe6ffb3fd4		
Warnings:					
Information:					
3	Post Allowance Communication - Incoming	PMOR0120L_Comments-L_vF_11-Mar-2021.pdf	183648	no	9
			0f54a51c494d61f2f1a87d86d867a8f665ec9b37		
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	31953	no	2
			717ad566bb8c6f6abe57bf58ccb0efb18f28bbd9		
Warnings:					
Information:					
Total Files Size (in bytes):			6945751		

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

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Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

92045 7590 03/10/2021
The Caldwell Firm, LLC
PO Box 59655
Dept. SVIPGP
Dallas, TX 75229

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/148,824	01/14/2021	Robert Paul Morris	PMOR0120L	1073

TITLE OF INVENTION: METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREY. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	06/10/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
ALI, SYED	2468	709-201000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). 0 Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached. 0 "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. Use of a Customer Number is required.	2. For printing on the patent front page, list (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 1 Patrick E. Caldwell, Esq. 2 The Caldwell Firm, LLC 3 _____
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3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.8(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

JENAM TECH, LLC

Longview TX

Please check the appropriate assignee category or categories (will not be printed on the patent) : 0 Individual ☒ Corporation or other private group entity 0 Government

4a. Fees submitted: ☒ Issue Fee ☒ Publication Fee (if required) ☐ Advance Order - # of Copies _____

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5. Change in Entity Status (from status indicated above)

0 Applicant certifying micro entity status. See 37 CFR 1.29

0 Applicant asserting small entity status. See 37 CFR 1.27

0 Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Patrick Caldwell/

Date 11 Mar 2021

Typed or printed name Patrick Caldwell

Registration No. 44580



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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NOTICE OF ALLOWANCE AND FEE(S) DUE

92045 7590 03/10/2021
The Caldwell Firm, LLC
PO Box 59655
Dept. SVIPGP
Dallas, TX 75229

EXAMINER

ALI, SYED

ART UNIT

PAPER NUMBER

2468

DATE MAILED: 03/10/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/148,824	01/14/2021	Robert Paul Morris	PMOR0120L	1073

TITLE OF INVENTION: METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	06/10/2021

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

92045 7590 03/10/2021
The Caldwell Firm, LLC
PO Box 59655
Dept. SVIPGP
Dallas, TX 75229

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

_____ (Typed or printed name)
_____ (Signature)
_____ (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/148,824	01/14/2021	Robert Paul Morris	PMOR0120L	1073

TITLE OF INVENTION: METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT
LEAST ONE TIME PERIOD FOR A CONNECTION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	06/10/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
ALI, SYED	2468	709-201000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

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NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

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17/148,824	01/14/2021	Robert Paul Morris	PMOR0120L	1073
92045	7590	03/10/2021	EXAMINER	
The Caldwell Firm, LLC PO Box 59655 Dept. SVIPGP Dallas, TX 75229			ALI, SYED	
			ART UNIT	PAPER NUMBER
			2468	

DATE MAILED: 03/10/2021

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b) (2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 17/148,824	Applicant(s) Morris, Robert Paul	
	Examiner SYED ALI	Art Unit 2468	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Communication received on 01/14/2021.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are See Continuation Sheet. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov**.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892) 2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____. 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____.	5. ☒ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
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/SYED ALI/ Examiner, Art Unit 2468	
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Continuation of 3. The allowed claim(s) is/are: 1-8,12-19,21-23 and 29-79

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application is being examined under the pre-AIA first to invent provisions.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Patrick E. Caldwell (Reg. No. 44580) on 02/23/2021. The application has been amended as follows:

1. (Currently Amended) An apparatus, comprising:

a non-transitory memory storing instructions; and

one or more processors in communication with the non-transitory memory, wherein the one or more processors execute the instructions to:

receive first information on which at least a first duration for detecting a first type of time period is based;

generate a first packet including a first parameter field identifying first metadata for use in determining a second duration for detecting the first type of time period;

set up a first connection, by sending, from [[the]]a first node to a second node, the first packet to provide the first metadata to the second node, for use by the second node in determining the second duration for detecting the first type of time period;

in response to detecting, based on the first duration and by the first node during at least a portion of the first connection including at least a portion of the first connection set up, a first time period of the first type of time period, at least partially close the first connection; and

in response to detecting, based on the second duration and by the first node after the first duration is changed to the second duration, a second time period of the first type of time period, at least partially close the first connection;

wherein the apparatus is configured such that: during the second time period of the first type of time period, an empty packet is sent without causing a timer utilized to detect the second time period to be reset;

wherein the apparatus is configured such that:

the first time period and the second time period are started in response to at least one of a received packet or a sent packet,

during the at least portion of the first connection including the at least portion of the first connection set up, the detection of the first time period of the first type of time period is based on the first duration, by being based on whether, during the first duration after the first time period is started, no packet is received and processed to keep the first connection active, and

after the first duration is changed to the second duration, the detection of the second time period of the first type of time period is based on the second duration, by being based on whether, during the second duration after the second time period is started, no packet is received and processed to keep the first connection active;

wherein the apparatus is configured such that the first connection set up further includes, in addition to (a-1) sending the first packet:

(a-2) after sending the first packet and without any other communication between the first node and the second node after (a-1) and before (a-2), receiving, at the first node from the second node, a second packet, and

(a-3) after receiving the second packet and without any other communication between the first node and the second node after (a-2) and before (a-3), sending, from the first node to the second node, a third packet.

2. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the first duration is not negotiated between the first and second nodes during the first connection set up, and the second duration is negotiated between the first and second nodes during the first connection set up for the first connection.
3. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the first duration is not negotiated during the first connection set up between the first and second nodes for the first connection, and the second duration is negotiated between the first and second nodes for the first connection.
4. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the first time period is only capable of being detected during the first connection set up.
5. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the second time period is capable of being detected at a time at least one of: during the first connection set up, or thereafter during the first connection.

6. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the first duration is used and the second duration is not used, for detecting the first type of time period until being changed to the second duration.
7. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the first type of time period includes an idle time period.
8. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that only one of the first time period or the second time period is detected for the first connection.
9. (Cancelled)
10. (Cancelled)
11. (Cancelled)
12. (Original) The apparatus of Claim 1, wherein the apparatus is configured to, in response to detecting the first time period of the first type of time period, unilaterally at least partially close the first connection.
13. (Original) The apparatus of Claim 1, wherein the apparatus is configured to, in response to detecting the first time period of the first type of time period, at least

partially close the first connection, without signaling the second node in relation to the detection of the first time period after detecting the first time period.

14. (Original) The apparatus of Claim 1, wherein the apparatus is configured to, in response to detecting the first time period of the first type of time period, at least partially close the first connection, by releasing, by the first node, a first resource allocated for the first connection.

15. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that the second duration is capable of being different from the first duration.

16. (Original) The apparatus of Claim 15, wherein the apparatus is configured such that the second duration is different from the first duration.

17. (Original) The apparatus of Claim 15, wherein the apparatus is configured such that the second duration is the same as the first duration, despite being capable of being different from the first duration.

18. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that:

the first packet is not a synchronize (SYN) packet;

the first connection is not a Transmission Control Protocol (TCP) extension connection, and the first connection is not a TCP extension connection that involves a TCP extension; and

the first type of time period does not include a user timeout period.

19. (Original) The apparatus of Claim 1, wherein the apparatus is configured such that an idle timeout attribute is utilized for the first type of time period, and a user timeout attribute, that is separate from the idle timeout attribute, is utilized for controlling communication of one or more acknowledgment packets.

20. (Cancelled)

21. (Currently Amended) The apparatus of Claim [[20]]1, wherein the apparatus is configured such that the first type of time period is started in response to the received packet.

22. (Currently Amended) The apparatus of Claim [[20]]1, wherein the apparatus is configured such that the first type of time period is started in response to the sent packet.

23. (Currently Amended) The apparatus of Claim [[20]]1, wherein the apparatus is configured such that, after the first duration is changed to the second duration, the detection of the second time period of the first type of time period is based on the

second duration, by being only based on whether, for the second duration after the second time period of the first type of time period is started, no packet is received and processed to keep the first connection active.

24.-28. (Cancelled)

29. (Currently Amended) The apparatus of Claim 1, wherein the apparatus is configured [[to]] such that the first connection is not a Transmission Control Protocol (TCP) extension connection, and the first connection is not a TCP extension connection that involves a TCP extension.

30. (Currently Amended) The apparatus of Claim 1, wherein the apparatus is configured [[to]] such that the first type of time period does not include a user timeout period.

31. (New) The apparatus of Claim 1, wherein the apparatus is configured to: in response to detecting, based on a third duration, a third time period, at least partially close the first connection.

32. (New) The apparatus of Claim 31, wherein the third duration is determined based on a first algorithm that is different from a second algorithm on which a determination of the second duration is based.

33. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is detected based on the third duration, by being detected when no acknowledgement packet is received by the first node in the first connection and processed as an acknowledgement, during the third duration, for a sent packet sent by the first node in the first connection.

34. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is detected based on the third duration, by being detected when an expected acknowledgement packet is not received by the first node in the first connection, during the third duration, for a sent packet sent by the first node in the first connection.

35. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is detected only in response to an acknowledgement packet not being received, for the third duration, in the first connection for a sent packet sent in the first connection.

36. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is detected in response to no acknowledgement packet being received in the first connection and processed as an acknowledgement for a sent packet sent in the first connection.

37. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the first packet also includes data, separate from the first metadata, for use in determining the third time period.

38. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is detected utilizing a timer that is not utilized to detect the first time period nor the second time period.

39. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the first duration is not negotiated between the first and second nodes during the first connection set up, the second duration is negotiated during the first connection set up between the first and second nodes for the first connection, and the third duration of the third time period is negotiated during the first connection set up between the first and second nodes for the first connection.

40. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is an acknowledgment timeout period during which an expected acknowledgment for a sent packet is not received.

41. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is a second type of time period.

42. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third duration is determined using the first parameter field identifying the first metadata.

43. (New) The apparatus of Claim 42, wherein the apparatus is configured such that the third duration is determined based on the second duration.

44. (New) The apparatus of Claim 42, wherein the apparatus is configured such that the second duration is determined based on the third duration.

45. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third time period is detected based on the third duration, by being detected when no acknowledgement packet is detected, by the first node during the third duration, as being received and processed as an acknowledgement in the first connection to acknowledge a sent packet of a plurality of sent packets sent by the first node, where the third duration starts for each of the plurality of sent packets when at least one of the plurality of sent packets is sent, and where a single timer and a single timeout variable are utilized for detecting the third time period in connection with the plurality of sent packets.

46. (New) The apparatus of Claim 31, wherein the apparatus is configured such that the third duration is determined using a second parameter field identifying second metadata, where the second parameter field is communicated in the first connection.

47. (New) The apparatus of Claim 46, wherein the apparatus is configured such that the second duration is determined using the first parameter field identifying the first metadata, and the second parameter field identifying the second metadata.

48. (New) The apparatus of Claim 31, wherein the apparatus is configured such that:

the third time period is detected in response to no acknowledgement packet being received in the first connection and processed, during the third duration that starts in response to a sent packet being sent in the first connection, to acknowledge the sent packet;

the first duration is not capable of being negotiated between the first and second nodes during the first connection set up, the second duration is capable of being negotiated between the first and second nodes for the first connection, and the third duration of the third time period is capable of being negotiated between the first and second nodes for the first connection;

the third time period is a second type of time period, and is an acknowledgment timeout period; and

the third duration is determined using the first parameter field identifying the first metadata.

49. (New) The apparatus of Claim 31, wherein the apparatus is configured such that at least one packet is received in connection with at least one of the first time period or the second time period, but is not received and processed to keep the first connection active, as a result of the at least one packet being un-processable.

50. (New) The apparatus of Claim 31, wherein the apparatus is configured such that at least one packet is received in connection with at least one of the first time period or the second time period, but is not received and processed to keep the first connection active, as a result of the at least one packet being discarded, wherein the apparatus is configured such that the at least one packet is a duplicate packet, or a packet not to be processed.

51. (New) The apparatus of Claim 31, wherein the apparatus is configured such that at least one packet is received during at least one of the first time period or the second time period, but is not received and processed to keep the first connection active, as a result of the at least one packet not being received in a manner so as to be processed by a software component.

52. (New) The apparatus of Claim 33, wherein at least one of:
the apparatus is at least one component of the first node;
the first node is at least one component of the apparatus;

the first node includes a device, including a network interface, that is a component of the apparatus;

the first node includes a network interface that is a component of the apparatus;

the apparatus includes a web server;

the timer includes a hardware timer;

the timer includes a software timer;

the empty packet is sent without causing the timer utilized to detect the second time period to be reset, by resetting a first software timer-related component not utilized to detect the second time period, without resetting a second software timer-related component utilized to detect the second time period;

the empty packet is sent without causing the timer utilized to detect the second time period to be reset, by resetting a first software timer-related component not utilized to detect the second time period, without resetting a second software timer-related component utilized to detect the second time period, where the first software timer-related component and the second software timer-related component utilize a same hardware timer-related component;

the empty packet is sent without causing the timer utilized to detect the second time period to be reset, by resetting a first software timer-related component not utilized to detect the second time period, without resetting a second software timer-related component utilized to detect the second time period, where the first software timer-related component and the second software timer-related component do not utilize a same hardware timer-related component;

the first packet is an initial non-TCP packet;

the first packet is first-in-time;

the first parameter field is part of a data portion in the first packet;

the first parameter field is part of a header of the first packet;

the first packet is informational;

the first connection includes one or more features of TCP, and one or more features not of TCP;

the first packet includes one or more features of a TCP packet, and one or more features not of a TCP packet;

the first connection includes one or more features of a TCP connection, and one or more features not of a TCP connection;

the first information includes first idle information;

the first information does not include first idle information;

the first information is received based on a previous header;

the first information is not based on a previous header;

the first information is received from a component of the apparatus;

the first information is received from a component of the first node;

the first information is received from an entity separate from the apparatus;

the first duration for detecting the first type of time period is based on the first information, by the first information identifying the first duration;

the first duration for detecting the first type of time period is based on the first information, by the first information specifying the first duration;

the first duration for detecting the first type of time period is based on the first information, by the first information identifying at least one generator for generating the first duration;

only the first duration for detecting the first type of time period is based on the first information;

the first connection includes (a-1), (a-2), and (a-3);

the second duration of the second time period is different from the duration of the first time period;

the second duration of the second time period is the same as the duration of the first time period;

the third duration of the third time period is different from the duration of the first time period;

the third duration of the third time period is the same as the duration of the first time period;

the third duration of the third time period is different from the duration of the second time period;

the third duration of the third time period is the same as the duration of the second time period;

the first packet also includes data for use in determining the first time period;

the first idle information includes a first value representative of the first duration of the first time period, and a second value representative of the second duration of the second time period;

the first idle information includes a first value representative of the first duration of the first time period, and identification of a generator for generating a second value representative of the second duration of the second time period;

the first idle information includes identification of a generator for generating a first value representative of the first duration of the first time period, and for generating a second value representative of the second duration of the second time period;

the first idle information includes identification of a first generator for generating a first value representative of the first duration of the first time period, and identification of a second generator for generating a second value representative of the second duration of the second time period;

the first time period is detected in a first use scenario without the second nor third time periods being detected, the second time period is detected in a second use scenario without the first nor third time periods being detected, the third time period is detected in a third use scenario without the first nor second time periods being detected, and neither the first, second, nor third time periods are detected in a fourth use scenario;

the first duration of the first time period is determined based on the first idle information, after identifying the first idle information;

the first duration of the first time period is determined based on the first idle information, before setting up the first connection;

the first duration of the first time period is determined based on the first idle information, during setting up the first connection;

the first duration of the first time period is determined based on the first idle information, after setting up the first connection;

the first time period is triggered by one or more non-duration-related criteria that triggers the second time period;

the first time period is triggered by the same one or more non-duration-related criteria that triggers the second time period;

the first time period is triggered by different one or more non-duration-related criteria than that which triggers the second time period;

the first time period is that during which no packet is received in the first connection nor expected to be received;

the first time period is that during which no packet is received in the first connection;

the third time period is triggered by one or more non-duration-related criteria that triggers the second time period;

the third time period is triggered by the same one or more non-duration-related criteria that triggers the second time period;

the third time period is triggered by different one or more non-duration-related criteria than that which triggers the second time period;

the third time period is that during which no packet is received in the first connection nor expected to be received;

the third time period is that during which no packet is received in the first connection;

the first metadata is based on the first idle information;

the change occurs while detection of the first time period is attempted;

the change occurs via a negotiation;

the second time period is a changed version of the first time period;

the second time period is a changed instance of the first time period;

the first time period and the second time period have at least one additional difference,

in addition to duration, despite both being of the first type of time period;

the first time period and the second time period do not have at least one additional difference, in addition to duration;

the second time period is determined based on the first idle information;

the first duration of the first time period is negotiated between the first and second nodes for the first connection, during the first connection set up;

the first connection set up includes all communications that precede completion of the first connection set up;

the duration of the second time period is determined based on the first idle information;

the duration of the third time period is determined based on the first idle information;

the first and second time periods are of a same duration;

the first and second time periods are of a different duration;

the first and second time periods are different instances of the same type of time period;

the first and second time periods are of the same type of time period, but are applied at different times during the first connection;

the first duration of the first time period is determined by being negotiated;

the second duration of the second time period is determined by being negotiated;

the third duration of the third time period is determined by being negotiated;

the first metadata is also for use in determining the second duration of the second time period;

the first metadata is not for use in determining the second duration of the second time period;

the first metadata is also for use in determining the third duration of the third time period;

the first metadata is not for use in determining the third duration of the third time period;

the first metadata describes a definition of at least one duration;

the first metadata defines at least one duration;

the first metadata includes at least one duration;

the first metadata describes a definition of at least one time period;

the first metadata describes other data that defines at least one duration;

the first metadata describes other data that defines at least one time period;

the first metadata describes other criteria-related data that defines at least one time period;

the first metadata describes duration data that defines at least one time period;

the first metadata describes duration criteria-related data that defines at least one time period;

the at least portion of the first connection includes only a subset of setting up the first connection;

the at least portion of the first connection includes an entirety of setting up the first connection;

the at least portion of the first connection set up includes one or more packet exchanges that occur after the first packet is sent;

the at least portion of the first connection set up includes one or more packet exchanges that occur after the first packet is sent prior to completion of the first connection set up;

the first, the second, and third packets are non-TCP;

the first, the second, and third packets are non-TCP by not being required by any TCP standard specification;

the first time period is detected based on the first duration, by being detected when packet activity or a lack thereof meets one or more criteria for a span of the first duration;

the second time period is detected based on the second duration, by being detected when packet activity or a lack thereof meets one or more criteria for a span of the second duration;

the empty packet includes a ping;

the empty packet includes an empty acknowledgement packet;

the first type of time period includes an idle time period type;

the first and second time periods of the first type of time period differ only in duration;

the first and second time periods of the first type of time period are capable of differing in duration, but may have a same duration;

the first and second time periods of the first type of time period are capable of differing only in duration, but may have a same duration;

the first and second time periods of the first type of time period differ in duration and at least one criteria involving packet activity or a lack thereof over a duration span;

the first and second time periods of the first type of time period are capable of differing in duration and further differ in at least one criteria involving packet activity or a lack thereof over a duration span;

the first packet includes a portion of data sent at any layer;

the first packet includes a frame;

the first packet is a non-TCP frame;

the first time period is started in response to a received packet and the second time period are started in response to a sent packet;

the first time period is started in response to a sent packet and the second time period are started in response to a received packet;

the first time period is started in response to a received packet and the second time period are started in response to a received packet;

the first time period is started in response to a sent packet and the second time period are started in response to a sent packet;

the first time period and the second time period are started in response to different packets;

the first time period and the second time period are started in response to different types of packets;

non-TCP refers to not being required by any TCP standard specification;

non-TCP refers to not being required by any TCP current specification;

non-TCP refers to not being required in a particular context by any TCP standard specification; or

non-TCP refers to not being required in a particular context by any TCP current specification.

53. (New) The apparatus of Claim 1, wherein the apparatus is configured such that at least one packet is received in connection with at least one of the first time period or

the second time period, but is not received and processed to keep the first connection active, as a result of the at least one packet being discarded by a software component.

54. (New) The apparatus of Claim 1, wherein the apparatus is configured such that the first time period is one: during which, no packet is communicated by being neither sent nor received by the apparatus in the first connection to keep the first connection active.

55. (New) The apparatus of Claim 1, wherein the apparatus is configured such that the second time period is one: during which, no packet is communicated by being neither sent nor received by the apparatus in the first connection to keep the first connection active.

56. (New) The apparatus of Claim 1, wherein the apparatus is configured such that the first time period is one: during which, no packet is sent by the apparatus in the first connection to keep the first connection active.

57. (New) The apparatus of Claim 1, wherein the apparatus is configured such that the second time period is one: during which, no packet is sent by the apparatus in the first connection to keep the first connection active.

58. (New) The apparatus of Claim 1, wherein the first node includes a network interface for sending the first packet, and the apparatus includes one or more software

components of the first node where the one or more software components of the first node are executed using hardware that does not include the network interface, the one or more software components of the first node including a first software component in communication with the network interface, and a second software component in communication with the first software component such that the first software component performs functionality after packet receipt by the network interface and before packet processing by the second software component, where at least one of the first time period or the second time period is one during which, no packet is received and processed to keep the first connection active, by no packet being received in a manner so as to be processed by the second software component to keep the first connection active.

59. (New) The apparatus of Claim 58, wherein at least one of:

- the first software component includes a packet handler software component to process at least one packet that has been determined to be valid according to at least one other software component that implements a non-Transmission Control Protocol (TCP);
- the first software component and the second software component implement the non-TCP;
- at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active;
- at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first

connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because it is a discarded packet;

at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because it is a duplicate packet;

at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because it is a corrupt packet;

at least one additional packet is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because it is a lost packet;

at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because the at least one packet does not pass processing by at least one software component that implements the non-TCP;

at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because the at least one packet does not pass processing by the first software component;

at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because the at least one packet is discarded so as to prevent receipt in the manner so as to be processed by the second software component;

at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because the at least one packet is discarded at any layer so as to prevent receipt in the manner so as to be processed by the second software component;

at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component

because the at least one packet is discarded by at least one software component that implements the non-TCP; or

at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component, in the first connection to keep the first connection active, where the at least one packet is not received in the manner so as to be processed by the second software component because the at least one packet is discarded by the first software component.

60. (New) An apparatus, comprising:

a non-transitory memory storing instructions means; and

one or more processors means in communication with the non-transitory memory, wherein the one or more processors means execute the instructions means to:

receive first information on which at least a first duration for detecting a first type of time period is based;

generate a first packet including a first parameter field identifying first metadata for use in determining a second duration for detecting the first type of time period;

set up a first connection, by sending, from [[the]]a first node to a second node, the first packet to provide the first metadata to the second node, for use by the second node in determining the second duration for detecting the first type of time period;

in response to detecting, based on the first duration and by the first node during at least a portion of the first connection including at least a portion of the first connection set up, a first time period of the first type of time period, at least partially close the first connection; and

in response to detecting, based on the second duration and by the first node after the first duration is changed to the second duration, a second time period of the first type of time period, at least partially close the first connection;

wherein the apparatus is configured such that, during the second time period of the first type of time period, an empty packet is sent without causing a timer utilized to detect the second time period to be reset;

wherein the apparatus is configured such that: the first time period and the second time period are started in response to at least one of a received packet or a sent packet; and during the at least portion of the first connection including the at least portion of the first connection set up, the detection of the first time period of the first type of time period is based on the first duration, by being based on whether, during the first duration after the first time period is started, no packet is received and processed to

keep the first connection active; and based on the first duration being changed to the second duration, the detection of the second time period of the first type of time period is based on the second duration, by being based on whether, during the second duration after the second time period is started, no packet is received and processed to keep the first connection active;

wherein the apparatus is configured such that the first connection set up further includes, in addition to (a-1) sending the first packet:

(a-2) after sending the first packet and without any other communication between the first node and the second node after (a-1) and before (a-2), receiving, at the first node from the second node, a second packet, and

(a-3) after receiving the second packet and without any other communication between the first node and the second node after (a-2) and before (a-3), sending, from the first node to the second node, a third packet.

61. (New) A method, comprising:

at a first node:

receiving first information on which at least a first duration for detecting a first type of time period is based;

generating a first packet including a first parameter field identifying first metadata for use in determining a second duration for detecting the first type of time period;

setting up a first connection, by:

sending, from the first node to a second node, the first packet to provide the first metadata to the second node, for use by the second node in determining the second duration for detecting the first type of time period,

after sending the first packet and without any other communication between the first node and the second node to set up the first connection after sending the first packet, receiving, at the first node from the second node, a second packet, and

after receiving the second packet and without any other communication between the first node and the second node to set up the first connection after receiving the second packet, sending, from the first node to the second node, a third packet;

based on detecting, as a function of the first duration and by the first node during at least a portion of the first connection including at least a portion of the

first connection set up, a first time period of the first type of time period, at least partially closing the first connection, where a start of the first time period is detected based on at least one packet being sent or received during the at least portion of the first connection including the at least portion of the first connection set up, and the detection of the first time period of the first type of time period is a function of the first duration, by being a function of whether, during the first duration after the first time period is started, no packet is received and processed to keep the first connection active;

based on detecting, as a function of the second duration and by the first node after a use of the first duration is changed to a use of the second duration, a second time period of the first type of time period, at least partially closing the first connection, where a start of the second time period is detected based on at least one packet being sent or received after the use of the first duration is changed to the use of the second duration, and the detection of the second time period of the first type of time period is a function of the second duration, by being a function of whether, during the second duration after the second time period is started, no packet is received and processed to keep the first connection active; and

during the second time period of the first type of time period, sending an empty packet without causing a reset of a timer utilized to detect the second time period.

62. (New) The method of Claim 61, and further comprising:

based on detecting, as a function of a third duration, a third time period, at least partially closing the first connection.

63. (New) The method of Claim 62, wherein:

the third time period is detected based on no acknowledgement packet being received in the first connection and processed, during the third duration that starts based on a sent packet being sent in the first connection, to acknowledge the sent packet;

the first duration is not capable of being negotiated between the first and second nodes during the first connection set up, the second duration is capable of being negotiated between the first and second nodes for the first connection, and the third duration of the third time period is capable of being negotiated between the first and second nodes for the first connection;

the third time period is a second type of time period, and is an acknowledgment timeout period; and

the third duration is determined using the first parameter field identifying the first metadata.

64. (New) The method of Claim 63, wherein the first duration is not negotiated between the first and second nodes during the first connection set up, and the second duration is negotiated between the first and second nodes during the first connection set up for the first connection.

65. (New) The method of Claim 64, wherein the first duration is used and the second duration is not used, for detecting the first type of time period until being changed to the second duration.

66. (New) The method of Claim 65, wherein:
the first packet is not a synchronize (SYN) packet;
the first connection does not involve a Transmission Control Protocol (TCP) extension; and
the first type of time period does not include a user timeout period.

67. (New) The method of Claim 66, wherein the first type of time period includes an idle time period, and the empty packet includes an empty acknowledgement packet.

68. (New) The method of Claim 66, wherein an idle timeout attribute is utilized for the first type of time period, and a user timeout attribute, that is separate from the idle

timeout attribute, is utilized for controlling communication of one or more acknowledgment packets, and wherein the use of the first duration is changed to the use of the second duration after the first connection set up.

69. (New) The method of Claim 66, wherein the first node includes a network interface for sending the first packet, and an apparatus of the first node includes one or more software components including a first software component in communication with the network interface, and a second software component in communication with the first software component for performing processing to keep the first connection active, such that the first software component performs functionality after packet receipt by the network interface and before packet processing by the second software component to keep the first connection active, where the first time period and the second time period are each one during which, no packet is received and processed to keep the first connection active, by no packet being received in a manner so as to be processed by the second software component to keep the first connection active.

70. (New) The method of Claim 69, wherein the first software component and the second software component at least partially implement a TCP-variant or a non-TCP.

71. (New) The method of Claim 69, wherein at least one packet is received during at least one of the detected first time period or the detected second time period, but is not received and processed to keep the first connection active, as a result of the at least

one packet not being received in the manner so as to be processed by the second software component to keep the first connection active.

72. (New) The method of Claim 69, wherein at least one packet is received by the network interface, but is not received in the manner so as to be processed by the second software component to keep the first connection active.

73. (New) The method of Claim 72, wherein the at least one packet is not received in the manner so as to be processed by the second software component to keep the first connection active because it is at least one of: an un-processable packet, or a discarded packet.

74. (New) The method of Claim 72, wherein the at least one packet is not received in the manner so as to be processed by the second software component to keep the first connection active because it is a lost packet.

75. (New) The method of Claim 72, wherein the at least one packet is not received in the manner so as to be processed by the second software component to keep the first connection active because the at least one packet is discarded by at least one software component that at least partially implements a TCP-variant or a non-TCP.

76. (New) The method of Claim 72, wherein the at least one packet is not received in the manner so as to be processed by the second software component to keep the

first connection active because the at least one packet is discarded by the first software component.

77. (New) The method of Claim 65, wherein:

the start of the first time period is detected based on the at least one packet being sent during the at least portion of the first connection including the at least portion of the first connection set up; and

the start of the second time period is detected based on the at least one packet being sent after the use of the first duration is changed to the use of the second duration.

78. (New) The method of Claim 65, wherein:

the start of the first time period is detected based on the at least one packet being received during the at least portion of the first connection including the at least portion of the first connection set up; and

the start of the second time period is detected based on the at least one packet being received after the use of the first duration is changed to the use of the second duration.

79. (New) The method of Claim 65, wherein: the third time period is detected based on the third duration, by being detected when no acknowledgement packet is detected, by the first node during the third duration, as being received and processed as an acknowledgement in the first connection to acknowledge a sent packet of a plurality of sent packets sent by the first node, where the third duration starts for each of the plurality of sent packets when at least one of the plurality of sent packets is sent, and where a single timer and a single timeout variable are utilized for detecting the third time period in connection with the plurality of sent packets.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance: The limitation(s) of "after receiving the second packet and without any other communication between the first node and the second node to set up the first connection after receiving the second packet, sending, from the first node to the second node, a third packet;

based on detecting, as a function of the first duration and by the first node during at least a portion of the first connection including at least a portion of the first connection set up, a first time period of the first type of time period, at least partially closing the first connection, where a start of the first time period is detected based on at least one packet being sent or received during the at least portion of the first connection including the at least portion of the first connection set up, and the detection of the first time period of the first type of time period is a function of the first duration, no packet is received and processed to keep the first connection active; a use of the first duration is

changed to a use of the second duration, a second time period of the first type of time period, at least partially closing the first connection, where a start of the second time period is detected based on at least one packet being sent or received after the use of the first duration is changed to the use of the second duration, and the detection of the second time period of the first type of time period is a function of the second duration, by being a function of whether, during the second duration after the second time period is started, no packet is received and processed to keep the first connection active; and during the second time period of the first type of time period, sending an empty packet without causing a reset of a timer utilized to detect the second time period.." are not disclosed or suggested by the prior art of record taken alone or in combination when considered in context of the environments of claims 1, 60 and 61. Therefore, the claims are distinguished over the prior art of record and held as allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SYED ALI whose telephone number is (571)270-3681. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Asad Nawaz can be reached on 571-272-3988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SYED ALI/
Examiner, Art Unit 2468

<i>Examiner-Initiated Interview Summary</i>	Application No. 17/148,824	Applicant(s) Morris, Robert Paul		
	Examiner SYED ALI	Art Unit 2468	AIA (First Inventor to File) Status No	Page 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
SYED ALI	Examiner	Telephonic
PATRICK CALDWELL (REG.44580)	Attorney	

Date of Interview: 23 February 2021

Issues Discussed:

Proposed Amendment(s)

The Examiner contacted the Applicant's Representative, Patrick Caldwell, regarding possible ways to place the application in condition for allowance. Specifically, by incorporating the subject matter from the dependent claims 25 and 28 into independent claims, the cited art of record would be overcome. An agreement was made with Applicant's representative

/SYED ALI/ Examiner, Art Unit 2468	
Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04 Please further see: MPEP 713.04 Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b) 37 CFR § 1.2 Business to be transacted in writing	

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Notice of References Cited	Application/Control No. 17/148,824	Applicant(s)/Patent Under Reexamination Morris, Robert Paul	
	Examiner SYED ALI	Art Unit 2468	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20050152286-A1	07-2005	Betts, Craig	H04L45/04	370/255
*	B	US-20050135248-A1	06-2005	Ahuja, Sadhna	H04L47/28	370/235
*	C	US-8549135-B1	10-2013	Yazdani; Navid	H04L47/35	709/224
*	D	US-20070106811-A1	05-2007	Ryman; Paul Adam	H04L29/06027	709/230
*	E	US-20070106810-A1	05-2007	Ryman; Paul Adam	H04L29/06027	709/230
	F					
	G					
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FOREIGN PATENT DOCUMENTS

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NON-PATENT DOCUMENTS

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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
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Issue Classification 	Application/Control No. 17/148,824	Applicant(s)/Patent Under Reexamination Morris, Robert Paul
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CPC					
Symbol				Type	Version
H04L	/	69	/	16	F
					2013-01-01

CPC Combination Sets						
Symbol			Type	Set	Ranking	Version
	/		/			

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	70	
/SYED ALI/ Examiner, Art Unit 2468	25 February 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	7

<i>Issue Classification</i> 	Application/Control No. 17/148,824	Applicant(s)/Patent Under Reexamination Morris, Robert Paul
	Examiner SYED ALI	Art Unit 2468

INTERNATIONAL CLASSIFICATION			
CLAIMED			
H04L		29	06
NON-CLAIMED			

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	70	
/SYED ALI/ Examiner, Art Unit 2468	25 February 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	7

Issue Classification 	Application/Control No. 17/148,824	Applicant(s)/Patent Under Reexamination Morris, Robert Paul
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☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1		11	17	21	22	31	33	41	43	51	52	61	62	71
2	2	9	12	18	22	23	32	34	42	25	52	53	62	63	72
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8	8	15	18		28	30	38	40	48	49	58	59	68	69	78
	9	16	19	20	29	31	39	41	49	50	59	60	69	70	79
	10		20	21	30	32	40	42	50	51	60	61	70		

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	70	
/SYED ALI/ Examiner, Art Unit 2468	25 February 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	7

<i>Search Notes</i> 	Application/Control No. 17/148,824	Applicant(s)/Patent Under Reexamination Morris, Robert Paul
	Examiner SYED ALI	Art Unit 2468

CPC - Searched*		
Symbol	Date	Examiner
(H04L029/06.cpc. G06F9/50.cpc. G06F9/5027.cpc. H04L69/18.cpc. H04L69/16.cpc.)	02/25/2021	SA

CPC Combination Sets - Searched*		
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US Classification - Searched*			
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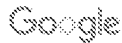
Search Notes		
Search Notes	Date	Examiner
EAST, (USPAT, USPGPUB, EPO, USOCR, FERS, JPO, DERWENT, IBM_TDB) -See search history printout	02/25/2021	SA
Inventor search in EAST - See search history printout	02/25/2021	SA
Assignee search in EAST - See search history printout	02/25/2021	SA
Inventor name search for ODP	02/25/2021	SA
101 and 112 compliance check	02/25/2021	SA
NPL (google and IP.com)	02/25/2021	SA

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Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	(H04L029/06.cpc. G06F9/50.cpc. G06F9/5027.cpc. H04L69/18.cpc. H04L69/16.cpc.)	02/25/2021	SA

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duration empty packet time period active reset TCP


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www.google.com/patents/US7609640

Methods and applications for avoiding slow-start restart in ...

Grant · Filed Dec 19, 2003 · Issued Oct 27, 2009 · Sadhna Ahuja · Nokia Corporation
 Upon receipt of the acknowledgement message the TCP sender will restart measurement of the idleness period and, as such the "slow-start restart" is avoided.
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www.google.com/patents/US20110213820

Methods, systems, and computer program products for sharing ...

App. · Filed Feb 27, 2010 · Published Sep 1, 2011 · Robert Paul Morris · Robert Paul Morris
 The method further includes generating a TCP packet including a first idle time period header identifying metadata for the first idle time period ...
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www.google.com/patents/US9565716

Method and apparatus for closing a transmission control ...

Grant · Filed Dec 3, 2013 · Issued Feb 7, 2017 · Feng Qian · At&T Intellectual Property I, L.P.
 FIN and RST packets that close TCP connections are often delayed by timeout ... immediately exits the protection period and becomes fully active by resetting ...
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www.google.com/patents/WO2005062548A1?cl=en

Methods and applications for avoiding slow-start restart in ...

App. · Filed Dec 13, 2004 · Published Jul 7, 2005 · Sadhna Ahuja · Nokia Corporation
 Upon receipt of the acknowledgement message the TCP sender will restart measurement of the idleness period and, as such the "slow-start restart" is avoided
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www.google.com/patents/US7027393

TCP optimized single rate policer

Grant · Filed Mar 2, 2001 · Issued Apr 11, 2006 · David R. Cheriton · Cisco Technology, Inc.
 Furthermore, because the token generation rate is r , the maximum number of packets that can enter the network in any interval of time length t is $rt+b$. Thus, the ...
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www.google.com/patents/US7299280

Method and apparatus for TCP with faster recovery

Grant · Filed Oct 16, 2002 · Issued Nov 20, 2007 · Mario Gerla · The Regents Of University Of California
 The estimate of the end-to-end bandwidth share is used the reset a congestion window and a slow start threshold whenever packet loss is indicated such as ...
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www.google.com/patents/US7085855

Data transfer control device and electronic equipment

Grant · Filed Oct 12, 2000 · Issued Aug 1, 2006 · Daisuke Sato · Seiko Epson Corporation
 The command is canceled by using a signal that is active during the bus reset period to mask a signal that goes active when a command is issued. When a ...
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www.google.com/patents/EP1169826B1?cl=en

Enhanced acknowledgement pacing device and method for tcp ...

Grant · Filed Oct 6, 1999 · Issued Feb 24, 2010 · Sudhir Dixit · Nokia Corporation

An enhanced acknowledgement pacing device (500) and method for TCP connections is disclosed. The invention includes a link layer entity (528) for receiving

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www.google.com/patents/US6101193

Packet scheduling scheme for improving short time fairness ...

Grant · Filed Sep 10, 1997 · Issued Aug 8, 2000 · Yoshihiro Ohba · Kabushiki Kaisha Toshiba

A packet scheduling scheme which is capable of improving the fairness characteristic in a short time scale by suppressing the burstiness of traffic compared with ...

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www.google.com/patents/US20040192312

Communication system for voice and data with wireless TCP ...

App. · Filed Jul 16, 2002 · Published Sep 30, 2004 · Jia-Ru Li · Jia-Ru Li

At the client end, the TCP reassembles the individual packets and waits until ... The system 1 shows also less data failures and less session time-outs than ... A client computer application triggers its local TCP to initiate an active ... For a transmission over a network, the TCP packs a segment in an IP packet and in a frame.

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www.google.com/patents/US20030123481

Enhancements for TCP performance enhancing proxies

App. · Filed Nov 13, 2002 · Published Jul 3, 2003 · Jason Neale · Ems Technologies, Inc.

This time period may be almost twice as long as the detection period for loss of the first ... It receives FP packet shells, completes the empty FP header fields and ...

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www.google.com/patents/WO2004017604A9?cl=en

Tcp-splitter: reliable packet monitoring methods for high ...

App. · Filed Aug 11, 2003 · Published Jun 3, 2004 · David V Schuehler · Univ St Louis

stopping monitoring a flow which is idle for at least the assigned period of time. 60. A method for controlling traffic on a network said method comprising: monitoring ...

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www.google.com/patents/US8311049

Method and device for scheduling packets for routing in a ...

Grant · Filed Nov 15, 2005 · Issued Nov 13, 2012 · James Roberts · France Telecom

a priority load value, corresponding to the volume of said priority packets transmitted during a period divided by the duration of that period, in one particular ...

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www.google.com/patents/US9026680

Source packet bridge

Grant · Filed Sep 24, 2012 · Issued May 5, 2015 · Jerrold V. Hauck · Apple Inc.

Alternatively, the first port extracts a time stamp from the data stream and calculates an offset using a cycle timer value from the bus connected to the first port.

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www.google.com/patents/US7403542

Method and system for processing network data packets

Grant · Filed Jul 15, 2003 · Issued Jul 22, 2008 · Michael I. Thompson · Qlogic Corporation

A system for transmitting and receiving TCP/IP data packets using a hardware engine is ... which specifies frame length, broadcast, multicast, unicast and length of

the ... Host 104 updates the producer pointer when it places new entries of empty ...
time (RTT), the congestion window value is reset back to one segment and a ...
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www.google.com/patents/EP0495036A1?cl=en

Dynamic encoding rate control minimizes traffic congestion ...

App. · Filed Jul 17, 1991 · Published Jul 22, 1992 · Michael G. Hluchyj · Codex Corporation

The duration of congestion is proportional to the time of active motion. During the congestion, the video quality is degraded due to packet loss and increased
Overview · Related · Discuss

www.google.com/patents/US7898958

Communication system

Grant · Filed Apr 26, 2007 · Issued Mar 1, 2011 · Yi Wu · Nokia Corporation

An acknowledgement packet is transmitted from the second node to the first ... At S1 of the algorithm the TCP sink monitors an uplink buffer in the device 16 at the ... If there are no ACK packets blocked in the uplink buffer for a predefined period, ... the acknowledgment packet is sent in response to after a predetermined time
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www.google.com/patents/US7002988

Methods and systems for communicating SS7 messages over ...

Grant · Filed Jun 6, 2000 · Issued Feb 21, 2006 · Robby Darren Benedyk · Tekelec

The TALI interface also includes SYNC and LENGTH fields for facilitating extraction of individual message packets over a stream-oriented connection
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www.google.com/patents/WO2000052881A2?cl=en

Method and apparatus for load distribution

App. · Filed Feb 29, 2000 · Published Sep 8, 2000 · Shimon Muller · Sun Microsystems, Inc.

In addition to the inefficient transfer of data (e.g., one packet's data at a time), the ... is similar to a TCP end-to-end connection but is generally shorter in duration. ... is a start state, possibly characterized by the initialization or resetting of NIC 100. ... whether an active flow is associated with the flow key derived from the packet ...
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www.google.com/patents/US6236643

Multiport data switch having variable maximum packet length

Grant · Filed Dec 18, 1997 · Issued May 22, 2001 · Denise Kerstein · Advanced Micro Devices, Inc.

On a tagged port that receives/transmits a VLAN tagged frame, the maximum packet length criterion first level is expanded by the number of bytes required for ...
Overview · Related · Discuss

www.google.com/patents/CA2548966C?cl=en

Increasing tcp re-transmission process speed

Grant · Filed Dec 6, 2004 · Issued Jun 1, 2010 · Vadim Makher-Vaks · International Business Machines Corporation

The invention reduces memory bandwidth, latency, error recovery using TCP retransmit and provides for a "graceful recovery" from an empty receive queue. ... header 126 is immediately followed by MPA length field 114 and DDP/RDMA ... of a FAST connection to a SLOW connection after the long period of time, e.g., five ...
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www.google.com/patents/WO2006071560A2?cl=en

Network packet capture distributed storage system

App. · Filed Dec 16, 2005 · Published Jul 6, 2006 · Jeffrey V. Merkey · Solera Networks, Inc.

This invention comprises a method an apparatus for infinite Network Packet ... via either a SPAN port (101) router configuration or via an optical splitter (102). ... a

consolidated time indexed capture stream to support asymmetrically routed ... The INPCS does not require the configuration of a protocol stack, such as TCP/IP ...
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www.google.com/patents/US20080049632

System and method for adjusting the window size of a TCP ...

App. · Filed May 31, 2007 · Published Feb 28, 2008 · Amar N. Ray · Ray Amar N
For example, PIP sequence or bin packets may be generated at time periods that include 1, 5, and 15 minutes. The modified Y.1731 performance measurement ...
Overview · Related · Discuss

www.google.com/patents/US7161976

Transmit and receive window synchronization

Grant · Filed Dec 31, 2001 · Issued Jan 9, 2007 · Xiaolin Lu · Texas Instruments Incorporated
A system for synchronizing sender sliding windows and receiver sliding windows employed in wireless packet communication is provided. The sender sliding ...
Overview · Related · Discuss

www.google.com/patents/US7809847

Network interface device that can transfer control of a TCP ...

Grant · Filed Jan 4, 2005 · Issued Oct 5, 2010 · Laurence B. Boucher · Alacritecth, Inc.
Fortunately, TCP performs a Maximum Segment Size negotiation at connection establishment time, which should prevent IP fragmentation in nearly all TCP ...
Overview · Related · Discuss

www.google.com/patents/US7711844

TCP-splitter: reliable packet monitoring methods and ...

Grant · Filed Aug 15, 2002 · Issued May 4, 2010 · David V. Schuehler · Washington University Of St. Louis
The method also includes removing an embedded stream-oriented protocol frame including a header and a data packet from the received IP frame with at least ...
Overview · Related · Discuss

www.google.com/patents/US20040158640

Transferring control of a TCP connection between devices

App. · Filed Apr 30, 2003 · Published Aug 12, 2004 · Clive Philbrick · Philbrick Clive M.
... network to receive from the computer a Transport Control Protocol (TCP) connection, the device receiving from the network at least one packet associated with ...
Overview · Related · Discuss

www.google.com/patents/US9712289

Transmission control protocol/internet protocol (TCP/IP) ...

Grant · Filed Jun 12, 2012 · Issued Jul 18, 2017 · Jacob W. Jorgensen · Intellectual Ventures I LLC
A packet-centric wireless system includes: a wireless base station communicating via a transmission control protocol/internet protocol (TCP/IP) to a first data ...
Overview · Related · Discuss

www.google.com/patents/US20140136653

Dash client and receiver with download rate acceleration

App. · Filed Jan 19, 2013 · Published May 15, 2014 · Michael George Luby · Qualcomm Incorporated
The TCP receiver window size for a given TCP connection might be based on the ... an end of a quiescent period wherein no active HTTP requests over the TCP connections have been present for a pre-determined duration time period. ... Some receivers might be programmed so that an "empty buffer" is a condition where ...
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www.google.com/patents/US6665292

Transmission and reception of TCP/IP data over a wireless ...

Grant · Filed Oct 20, 1999 · Issued Dec 16, 2003 · Steven H. Bradshaw · Tachyon, Inc.
Use of a field in the DVB header to indicate the location of the start of a new TCP/IP data packet supports variable location of TCP/IP data within a DVB frame, ...
Overview · Related · Discuss

www.google.com/patents/US6633540

Real-time traffic shaper with keep-alive property for ...

Grant · Filed Jul 2, 1999 · Issued Oct 14, 2003 · Vilho I. Rissanen · Nokia Internet Communications, Inc.
If the RT and BE queues 330A-330B are empty, resetting counters p1 and p2 and the scheduled transmission time of the next packet. The second function ...
Overview · Related · Discuss

www.google.com/patents/WO2011102312A1?cl=en

Packet transfer device, communication system, processing ...

App. · Filed Feb 14, 2011 · Published Aug 25, 2011 · 智士 内田 · 日本電気株式会社
The disclosed packet transfer device is provided with a processing rule ... a predetermined time elapses after reception of the SYN packet and when a ... a certain period can be more actively reduced from the processing rule storage unit 013a, ... which a flow end determination is performed using a TCP RST (reset) flag will ...
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www.google.com/patents/US7369537

Adaptive Voice-over-Internet-Protocol (VoIP) testing and ...

Grant · Filed Apr 3, 2003 · Issued May 6, 2008 · Debra C. Kirchhoff · Global Ip Solutions, Inc.
Transport methods include direct client-to-client connections using TCP or UDP to an arbitrary port or well-known port 80 or 443, and indirect using a voice-proxy ...
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www.google.com/patents/WO2001017171A1?cl=en

Transmission and reception of tcp/ip data over a wireless ...

App. · Filed Aug 24, 2000 · Published Mar 8, 2001 · Karl E. Moerder · Tachyon, Inc.
Transmission of TCP/IP data over a satellite link from a hub station to a plurality of ... by a "time to live" field 436 which is a counter used to limit packet lifetimes.
Overview · Related · Discuss

www.google.com/patents/US20010033581

Packet switch, scheduling device, drop control circuit, ...

App. · Filed Mar 20, 2001 · Published Oct 25, 2001 · Kenichi Kawai · Kenichi Kawai
An output buffer section assembles a variable-length packet from fixed-length ... that has a congestion control function like TCP (Transmission Control Protocol). ... each of tokens of active QoS classes each time when a unit time has passed; ... for one frame has been completed, the multicast address is returned to the empty ...
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www.google.com/patents/US7792026

Method of calculating a time period to wait for missing data ...

Grant · Filed Feb 17, 2006 · Issued Sep 7, 2010 · Xin Wang · Alcatel-Lucent Usa Inc.
Description translated from - a "hole" is a missing data packet sent by the sending unit which finally arrives at the receiving unit; a "hole_duration" is a time duration ...
Overview · Related · Discuss

www.google.com/patents/US20080002576

System and method for resetting counters counting network ...

App. · Filed May 31, 2007 · Published Jan 3, 2008 · Michael Bugenhagen · Bugenhagen Michael K
For example, PIP sequence or bin packets may be generated at time periods that include 1, 5, and 15 minutes. The modified Y.1731 performance measurement

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www.google.com/patents/US20040064578

Fast-path apparatus for receiving data corresponding to a ...

App. · Filed Sep 27, 2002 · Published Apr 1, 2004 · Laurence Boucher · Alacritech, Inc.
Sequencers pertaining to higher protocol layers can additionally be provided. The fly-by sequencer 178 is reset by the packet control sequencer 176 and given ...
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www.google.com/patents/US9306818

Method for calculating statistic data of traffic flows in ...

Grant · Filed Jul 17, 2014 · Issued Apr 5, 2016 · Greg Aumann · Celios Software Ltd
In order to obtain these metrics, the CEM system in the data network requires real-time traffic flow analysis for a customer. Thus, every period for ...
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www.google.com/patents/US7535907

TCP engine

Grant · Filed Sep 2, 2005 · Issued May 19, 2009 · Muhammad R. Hussain · Qavium Networks, Inc.
This work queue entry also indicates the number of buffers 500 used to store the packet data and the total packet length in bytes. The format of the buffer pointer ...
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www.google.com/patents/US5600651

Binary logarithmic arbitration method for carrier sense ...

Grant · Filed Apr 7, 1995 · Issued Feb 4, 1997 · Mart L. Molle · Molle; Mart L.
The counters are incremented after each collision, and are reset after a successful transmission of a burst of packets or after a sufficient delay in transmission.
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www.google.com/patents/US20040162992

Internet privacy protection device

App. · Filed Feb 19, 2003 · Published Aug 19, 2004 · Vikash Sami · Sami Vikash Krishna
Packet filters can examine and make rules based on any or all of the following: the IP protocol type such as TCP, UDP, ICMP; the source IP address for any type ...
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www.google.com/patents/US6356951

System for parsing a packet for conformity with a ...

Grant · Filed Mar 1, 1999 · Issued Mar 12, 2002 · Denton E. Gentry, Jr. · Sun Microsystems, Inc.
The network interface parses one or more headers of a received packet in order to ... and may be reset to reassert a flow's validity every time a portion of a flow's ...
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www.google.com/patents/US8358580

System and method for adjusting the window size of a TCP ...

Grant · Filed Dec 8, 2009 · Issued Jan 22, 2013 · Amar N. Ray · Centurylink Intellectual Property LLC
A method for adjusting the window size of a TCP packet on a packet network is ... Over time, mobile telephone networks were developed to enable subscribers to ... packets 1904 increasing in length after each of the network communications ... utilize the information contained in a PIP packet to actively determine the best ...
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www.google.com/patents/US8441927

System and method for implementing periodic early discard in ...

Grant · Filed Jan 13, 2011 · Issued May 14, 2013 · Andrea Francini · Alcatel Lucent

For any combination of number of TCP connections and distribution of the ... the queue occupancy within a pre-defined range for extended periods of time. ... in presence of TCP traffic, the length of a queue can be stabilized by selection of an ... The PED scheme aims at tracking the (unknown) ideal packet drop frequency, ...
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www.google.com/patents/US20120327778

Systems and methods for prioritizing and scheduling packets ...

App. · Filed Jun 22, 2011 · Published Dec 27, 2012 · Kenneth Stanwood · Cygnus Broadband, Inc.
 One embodiment maximizes user QoE for video applications by dynamically managing scheduling weights is provided that incorporates the notions of "duration ...
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www.google.com/patents/US8107410

Map-triggered dump of packets in satellite communication system

Grant · Filed Mar 20, 2009 · Issued Jan 31, 2012 · Dennis Patrick Connors · Viasat, Inc.
 Since it is desirable to concatenate all packets that arrive at the user terminal since the last piggyback ... Publication of US8107410B2. Status: Active ... The handshake interval is the round trip time between the terminal and the central ... This process implies that all packets arriving to an empty output queue will experience a ...
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www.google.com/patents/US6141749

Methods and apparatus for a computer network firewall with ...

Grant · Filed Sep 12, 1997 · Issued Oct 31, 2000 · Michael John Coss · Lucent Technologies Inc.
 The firewall can also be configured to utilize "stateful" packet filtering which involves caching rule processing results for one or more packets, and ...
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www.google.com/patents/US20120281536

Systems and methods for detection for prioritizing and ...

App. · Filed Jul 13, 2012 · Published Nov 8, 2012 · David Gell · Cygnus Broadband, Inc.
 Scheduling parameters may also incorporate notions of "duration neglect" and "recency effect" in an end-user's perception of video quality in order to manage ...
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www.google.com/patents/US7620057

Cache line replacement with zero latency

Grant · Filed Oct 18, 2005 · Issued Nov 17, 2009 · Eli Aloni · Broadcom Corporation
 Upon transmission of the packet, a retransmission timeout (RTO) timer 292 is set, and is then reset each time another TCP packet is sent on the same connection.
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www.google.com/patents/US8521901

TCP burst avoidance

Grant · Filed Dec 22, 2008 · Issued Aug 27, 2013 · Ashwani Wason · Citrix Systems, Inc.
 If the time interval is less than the pre-configured delay time, then this packet is a candidate for delayed delivery to the upstream TCP/IP Stack Layer. In this case ...
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www.google.com/patents/US20020196778

Method and structure for variable-length frame support in a ...

App. · Filed Nov 26, 2001 · Published Dec 26, 2002 · Michel Colmant · Michel Colmant
 Many data transmission protocols and technologies used in such networks, such as TCP/IP and Ethernet, use variable-length packets for transmission. Often ...
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US9560126

Stateless load balancing of connections

Grant · Filed May 6, 2013 · Issued Jan 31, 2017 · Jeroen van Bommel · Alcatel Lucent
The TCP response packet may be a TCP Reset (RST) packet for causing the client to close the TCP connection and initiate a TCP reconnection, a TCP FIN packet ...
Overview · Related · Discuss

www.google.com/patents/US6862622

Transmission control protocol/internet protocol (TCP/IP) ...

Grant · Filed Jul 9, 1999 · Issued Mar 1, 2005 · Jacob W. Jorgensen · Van Drebbel Mariner LLC
The packet-centric protocol can be transmission control protocol/internet ... and TCP rate reset by preferentially selecting UDP packets of real time IP flows such ...
Overview · Related · Discuss

www.google.com/patents/US6807156

Scalable real-time quality of service monitoring and ...

Grant · Filed Nov 7, 2000 · Issued Oct 19, 2004 · Andras Veres · Telefonaktiebolaget Lm Ericsson (Publ)
The QoS metrics include, for example, packet loss internally and externally to the monitoring point, detection of stalled periods and estimation of path delay. ... is that active delay measurements require considerable time and resources. ... a subscriber will only be monitored if there is an empty record in the hash table, that is, ...
Overview · Related · Discuss

www.google.com/patents/US7089326

Fast-path processing for receiving data on TCP connection ...

Grant · Filed May 6, 2002 · Issued Aug 8, 2006 · Laurence B. Boucher · Alacritech, inc.
In one embodiment, generation of a response to a TCP/IP packet received onto the network interface device is accelerated by determining the TCP and IP ...
Overview · Related · Discuss

www.google.com/patents/WO2015114466A2?cl=en

Buffer sizing for multi-hop networks

App. · Filed Jan 27, 2015 · Published Aug 6, 2015 · Basem Shihada · King Abdullah University Of Science And Technology
Packet-switched networks implement buffers to accommodate transient traffic bursts. ... Transmission control protocol/internet protocol (TCP/IP) communications are ... the queue drain time is outside the range for at least two consecutive periods. ... the probability the node receives a packet for relay when the buffer is empty.
Overview · Related · Discuss

www.google.com/patents/US7870268

Method, system, and program for managing data transmission ...

Grant · Filed Sep 15, 2003 · Issued Jan 11, 2011 · Harlan T. Beverly · Intel Corporation
The source imposes a plurality of message limits, each message limit ... and access the payload data in the TCP/IP packets received at the network adaptor.
Overview · Related · Discuss

www.google.com/patents/US20050157756

Database block network attached storage packet joining

App. · Filed Jan 21, 2004 · Published Jul 21, 2005 · John Ormond · John Ormond
For example, the I/O request data packets are joined into the frames and each data packet is transmitted in a frame after a delay of no more than a certain time ...
Overview · Related · Discuss

www.google.com/patents/US7409450

Transmission control protocol/internet protocol (TCP/IP) ...

Grant · Filed Feb 28, 2005 · Issued Aug 5, 2008 · Jacob W. Jorgensen · Van Drebbel Mariner LLC

in one embodiment, a system comprises a wireless MAC layer mediating local retransmission of lost packets without signaling TCP lost packets and without ...
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/CA2752468A1?cl=en

System and method of pacing real time media transmission ...

App. · Filed Sep 16, 2011 · Published Mar 21, 2012 · Sebastien Cote · Vantrix Corporation

The microburst controller is further configured to determine duration of a window period and a packet count limit for the window period, and the ...

[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/EP2820823A1?cl=en

Improved dash client and receiver with buffer water-level ...

App. · Filed Feb 26, 2013 · Published Jan 7, 2015 · Qiang Gao · Qualcomm Incorporated

[0057] A presentation time is a time period over which media is expected to play out or ... buffer, for example measured in bytes or presentation time duration.

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www.google.com/patents/US7359380

Network protocol processing for routing and bridging

Grant · Filed Jun 24, 2003 · Issued Apr 15, 2008 · Thomas A. Maufer · Nvidia Corporation

In a UDP or TCP packet, there are IP Source and Destination Addresses in the IP ...

Notably, if a plurality of packets is received in a short span of time, such ...

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www.google.com/patents/WO1987001545A1?cl=en

Packet switched local network with priority random splitting ...

App. · Filed Aug 13, 1986 · Published Mar 12, 1987 · Jian Cheng Huang · Eastman Kodak Company

A session is the time period required to transmit all the data packets that arrived during the ... The r duration period for the feedback signal is called an empty slot.

[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US20070237079

Binned duration flow tracking

App. · Filed Mar 30, 2006 · Published Oct 11, 2007 · Bradley Whitehead · Alcatel

Binned Duration Flow Tracking (BDFT) system and method of the invention track the duration of packet flows by measuring the time between the first and the last ...

[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US20050027858

System and method for measuring and monitoring performance ...

App. · Filed Jul 13, 2004 · Published Feb 3, 2005 · Poul Henrik Sloth · Premitech A/S

TCP/IP is a connection-oriented protocol; this means that a connection is kept between two parties for a period of time. The two parties that communicate are ...

[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US20070038753

Transmission Control Protocol/Internet Protocol (TCP/IP) - ...

App. · Filed Aug 10, 2006 · Published Feb 15, 2007 · Jacob Jorgensen · Van DrebbeL Mariner LLC

The packet-centric protocol can be transmission control protocol/internet protocol (TCP/IP). The packet-centric protocol can be a user datagram protocol/internet ...

[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US20150117207

Backhaul management of a small cell using a light active ...

App. · Filed Oct 27, 2014 · Published Apr 30, 2015 · Andrei Dragos Radulescu · Qualcomm Incorporated
 As such, light active estimation mechanism for backhaul management at a ... of BALM component 324 may enable small cell base station 320 to limit the data rate ... include TCP handshake signaling, e.g., a SYN packet or a reset (RST) packet. ... d(x, y empty)) between the calculated time delay and a first sample time delay ...
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US20080126553

Fast-path apparatus for transmitting data corresponding to a ...

App. · Filed Jun 25, 2007 · Published May 29, 2008 · Laurence B. Boucher · Alacritech, Inc.
 The hardware logic 171 processes the headers of a given packet at one time as packet bytes pass through the hardware, by categorizing selected header bytes.
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US7173943

Protocol analyzer and time precise method for capturing ...

Grant · Filed Feb 26, 2002 · Issued Feb 6, 2007 · Howard Borchew · Computer Access Technology Corporation
 An apparatus and method for selecting and recording multi-directional communication packet traffic in a compact manner in realtime while ...
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US6606301

Method and apparatus for early random discard of packets

Grant · Filed Mar 1, 1999 · Issued Aug 12, 2003 · Shimon Muller · Sun Microsystems, Inc.
 The datagram may then be provided to the destination entity in a highly efficient manner. For example, rather than providing data from one packet at a time (and ...
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US20060013204

Methods and systems for communicating SS7 messages over ...

App. · Filed Jul 19, 2005 · Published Jan 19, 2006 · Robby Benedyk · Tekelec
 The keep-alive timer is reset every time a TCP segment is received. ... Such a long timeout period wastes resources on the machine that is waiting for data from ...
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/CN105359468A?cl=en

Link transfer, bit error detection and link retry using flit ...

App. · Filed Dec 5, 2014 · Published Feb 24, 2016 · M-S 比列特拉 · 英特尔公司
 Method, apparatus, and systems for Link Transfer, bit error detection and link retry using flit bundles asynchronous to link Fabric Packets. A first type of packet ...
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US7116636

Data rate adjuster using transport latency

Grant · Filed May 15, 2001 · Issued Oct 3, 2006 · Stephen K. Vernon · Northrop Grumman Corporation
 If some packets remain in the buffers, the processor proceeds to step 118 which determines whether the first stored packet has reached its time limit. If not, the ...
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US7167926

TCP/IP offload network interface device

Grant · Filed Nov 7, 2001 · Issued Jan 23, 2007 · Laurence B. Boucher · Alacritech, Inc.
 The host can then pass this list of addresses and length off to the INIC. ... we don't yet have an IP address) to complete the process of making the interface active.
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US20070038752

Quality of Service (QoS) - aware wireless Point to ...

App. · Filed Aug 10, 2006 · Published Feb 15, 2007 · Jacob Jorgensen · Van Drebber Mariner Llc

No. 11/068,719, filed Feb. 28, 2005, entitled TRANSMISSION CONTROL PROTOCOL/INTERNET PROTOCOL (TCP/IP) PACKET-CENTRIC WIRELESS POINT TO ...

[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US7027389

Fast failure detection using RTT time considerations on a ...

Grant · Filed Dec 11, 2000 · Issued Apr 11, 2006 · Randall R. Stewart · Cisco Technology, Inc.

For each packet received from a non-local node, the local node sets the counter to 0 and starts a new RTT-based time interval. The local node then increments ...

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www.google.com/patents/US5892924

Method and apparatus for dynamically shifting between ...

Grant · Filed Jan 31, 1996 · Issued Apr 6, 1999 · Thomas Lyon · Ipsilon Networks, Inc.

The present invention provides a method for transmitting packets between an ... other switching technologies such as for example fast packet switching, frame relay, ... which includes a memory element provides information on every active virtual ... adjacency protocol sets the Sequence Number to zero when the link is reset

[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US7177941

Increasing TCP re-transmission process speed

Grant · Filed Dec 11, 2003 · Issued Feb 13, 2007 · Giora Biran · International Business Machines Corporation

The invention reduces memory bandwidth, latency, error recovery using TCP retransmit and provides for a "graceful recovery" from an empty receive queue. ... and points to a DDP/RDMA header 124 of an MPA frame 109 that it travels in. ... 160 of a newly received DDP segment 162 is referenced by an MPA length field 164 ...

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www.google.com/patents/US7394762

Congestion control in data networks

Grant · Filed Apr 21, 2004 · Issued Jul 1, 2008 · Douglas Leith · National University Of Ireland Maynooth

For example, the value of β may be set as the value of the round-trip time of data traversing the link or based on the minimum of the mean inter-packet time.

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www.google.com/patents/US6975629

Processing packets based on deadline intervals

Grant · Filed Feb 16, 2001 · Issued Dec 13, 2005 · Andrew M. Welin · Texas Instruments Incorporated

This limit is proportional and roughly equal to interval (length of frame, e.g. 20 milliseconds) divided by the number of active channels per processing element (PE) ...

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www.google.com/patents/US7554976

Method and system for transferring a packet stream to RDMA

Grant · Filed May 13, 2005 · Issued Jun 30, 2009 · Shuangtong Feng · Microsoft Corporation

Disclosed are methods for handling RDMA connections carried over packet stream connections. In one aspect, I/O completion events are distributed among a ...

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www.google.com/patents/US9681450

Radio resource signaling during network congestion in a ...

Grant · Filed Nov 14, 2012 · Issued Jun 13, 2017 · Sundararaman Shiva · Apple inc.
The mobile wireless device repeats transmitting and discarding until a radio resource is allocated or the pending data packet buffer is empty. A retry interval ...
Overview · Related · Discuss

www.google.com/patents/US20100039938

Congestion and delay handling in a packet data network

App. · Filed Oct 19, 2009 · Published Feb 18, 2010 · Mats Sagfors · Telefonaktiebolaget Lm Ericsson (Publ)
A method of managing a data packet queue in a buffer associated with the radio ... data packets which the TCP sender may have in "flight" at any given time.
Overview · Related · Discuss

www.google.com/patents/US20020186660

Adaptive control of data packet size in networks

App. · Filed Jun 12, 2001 · Published Dec 12, 2002 · Murat Bahadiroglu · Bahadiroglu Murat I.
Under these conditions, this response by TCP/IP will initiate a repeated cycle wherein ... the packets are sent, whereupon the window size will be reset to one as there are ... control, that is, what process is able to transmit and for what length of time. ... inc. System and method for an active video electronic programming guide.
Overview · Related · Discuss

www.google.com/patents/US20040111523

Tcp/udp acceleration

App. · Filed Nov 2, 2001 · Published Jun 10, 2004 · Howard Hall · Howard Hall
A method for accelerating TCP/UDP packet switching. The method involves determining whether exception processing is necessary; if not, the packet is ...
Overview · Related · Discuss

www.google.com/patents/US8738800

Data structures and state tracking for network protocol ...

Grant · Filed Dec 3, 2007 · Issued May 27, 2014 · Thomas A. Maufer · Nvidia Corporation
In a connection using TCP ("a TCP connection"), namely, where TCP packets are ... of an active connection is used for address translation for routing to a Local device. ... If at 105, packet 101 is not a re-inserted packet, namely, this is the first time ... and whether there is a length error for a frame used for such a MAC address.
Overview · Related · Discuss

www.google.com/patents/US7664868

TCP/IP offload network interface device

Grant · Filed Jan 23, 2007 · Issued Feb 16, 2010 · Laurence B. Boucher · Alacritech, Inc.
The device provides a fast-path that avoids protocol processing for most messages, greatly accelerating data transfer and offloading time-intensive processing ...
Overview · Related · Discuss

www.google.com/patents/US20060031374

Packet switch and method thereof dependent on application ...

App. · Filed Sep 2, 2005 · Published Feb 9, 2006 · Leonard Lu · Transtech Networks Usa, inc.
In yet another aspect of the invention, a switching method dependent on Layer 7 content avoids delayed binding in a new TCP session. Layer 7 content is not ...
Overview · Related · Discuss

www.google.com/patents/US20050050358

Method and apparatus for defending against SYN packet ...

App. · Filed Sep 29, 2003 · Published Mar 3, 2005 · Dong Lin · Dong Lin

A SYN packet bandwidth Distributed Denial-of-Service (DDoS) attack is defended ...
 intercepted SYN packets in a separate queue from other TCP packet queues.
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US8811160

System and method for routing data on a packet network

Grant · Filed Jan 22, 2013 · Issued Aug 19, 2014 · Robert J. Morrill · Centurylink Intellectual Property Llc
 Here, packets of TCP connection may be being arbitrarily transmitted partially over a ... a time duration (e.g., 1 second) and a number of real-time data packets ...
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www.google.com/patents/US7567570

Reliable transport of TDM data streams over packet networks

Grant · Filed Mar 19, 2002 · Issued Jul 28, 2009 · John Grass · Network Equipment Technologies, Inc.
 The TDM data frame 24 having an assigned sequence number is put into a packet 26 and sent towards the destination across the packet network 32. At this time, a ...
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www.google.com/patents/US8099474

Hardware-accelerated high availability integrated networked ...

Grant · Filed Sep 21, 2009 · Issued Jan 17, 2012 · Roger Thorpe · Promise Technology, Inc.
 Implementation of the PIE-fx 148 and other system components enables acceleration of TCP/IP packet processing alone as well as acceleration of iSCSI ...
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US8045563

Dynamically adjusted credit based round robin scheduler

Grant · Filed Dec 27, 2007 · Issued Oct 25, 2011 · Jay J. Lee · Celco Partnership
 This is the duration of time for each period that will be used to compute the average packet size. The average moving average constant, β , should also be set. In ...
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www.google.com/patents/US7324540

Network protocol off-load engines

Grant · Filed Dec 31, 2002 · Issued Jan 29, 2008 · Sriam R. Vangal · Intel Corporation
 The engine 100 allocated to the current connection completes TCP processing for the duration of the segment, while other active engines are temporarily idle, ...
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US9712445

System and method for routing data on a packet network

Grant · Filed Jul 10, 2014 · Issued Jul 18, 2017 · Robert J. Morrill · Centurylink Intellectual Property Llc
 Alternatively, the amount of time a communications path or resource is not in a transmission state may be utilized to determine bandwidth and data packets ...
[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/CN103069871A?cl=en

Radio resource signaling during network congestion in a ...

App. · Filed Jul 5, 2011 · Published Apr 24, 2013 · S-V-什瓦 · 苹果公司
 The mobile wireless device repeats transmitting and discarding until a radio resource is allocated or the pending data packet buffer is empty. A retry interval ...
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www.google.com/patents/US7801046

Method and system for bandwidth control on a network ...

Grant · Filed Apr 26, 2008 · issued Sep 21, 2010 · Anders D. Persson · Oracle America, Inc.

... a current time period, receiving a plurality of incoming packets for a receive ring, ... incoming packets to a host when a duration of the current time period elapses, ... a destination port, a protocol type (e.g., Transmission Control Protocol (TCP)), ... preset number of interrupts and the counter for the time period may be reset.

[Overview](#) · [Related](#) · [Discuss](#)

www.google.com/patents/US7248579

System and method for providing a link state database (LSDB) ...

Grant · Filed Oct 15, 2002 · issued Jul 24, 2007 · Barry D. Friedman · Cisco Technology, Inc.

According to the OSPF standard, only one DBD packet may be outstanding at any given time. In conventional resynchronization techniques, ...

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www.google.com/patents/DE102015119377B4?cl=en

Verfahren zur Kommunikation von Komponenten in einem ...

Grant · Filed Nov 10, 2015 · issued Jun 29, 2017 · Wolfgang Diestelkamp · GreenStone Energy GmbH

Unlike TCP, which works stream-oriented, UDP is packet-oriented. Data is sent via TCP in protocol-determined, dynamically-dependent, variable-sized packets.

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	50,612	(G06F9/5027.cpc. H04L69/18.cpc. H04L69/16.cpc.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:26
L2	3	((("JENAM") near3 ("TECH") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2021/02/24 21:26
L3	1,565	((("MORRIS") near3 ("Robert"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2021/02/24 21:26
L4	6,858,681	identi\$5 near5 metadata near10 idle nea33time period	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:44
L5	4,045,561	identi\$5 near5 metadata near10 idle nea3 time near5 period	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:44
L6	16,698	keep\$1alive	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:44
L7	291	L1 and idle near3 time near5 period	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:45
L8	129	L7 and TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:45
L9	18	L8 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:45

L10	18	L9 and timeout	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:45
L11	11	L10 and modify\$3 near10 metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:45
L12	488,855	(transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:45
L13	1,979,093	(Internet near2 Protocol (IP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:45
L14	413,447	L12 and L13	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:45
L15	18	metadata with (duration span extant) with (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:45
L16	4,424	TCP near10 active	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:45
L17	1,954	L16 and TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:45
L18	254	L17 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:45
L19	13	L18 and modify\$3 near10 metadata	US-PGPUB; USPAT; USOCR;	OR	ON	2021/02/24 21:45

			FPRS; EPO; JPO			
L20	265	(identifying analyz\$3 classify\$3 selecting establish\$3) with metadata with (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:46
L21	41	L20 and (other diverse distinct distant various different) same algorithm	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:46
L22	273	L14 and Time\$1out near5 Option	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:47
L23	962	(inactive passive sluggish) near10 (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:47
L24	129	L7 and TCP near3 (PDU frame packet)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 21:56
L25	610,105	(other diverse distinct distant various different) same algorithm	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 22:05
L26	27,456	(Keep-alive keep adj alive)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 22:05
L27	48,941	TCP near3 (PDU frame packet)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 22:05
L28	497	L6 and TCP near10 active	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 22:25

L29	147	L28 and idle near3 time	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 22:25
L30	147	L29 and packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 22:25
L31	95	L30 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 22:25
L32	91	L31 and TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 22:25
L33	91	L32 and (parameter field)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/02/24 22:25
S1	0	"17079397"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/01 20:53
S2	10	"20050063304"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 09:43
S3	6,702,938	identi\$5 near5 metadata near10 idle nea33time period	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 10:09
S4	3,965,776	identi\$5 near5 metadata near10 idle nea3 time near5 period	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 10:09
S5	14	identi\$5 near5 metadata near10 idle near3 time near5 period	US-PGPUB; USPAT; USOCR;	OR	ON	2020/12/02 10:09

			FPRS; EPO; JPO			
S6	3	((("JENAM") near3 ("TECH") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2020/12/02 10:11
S7	1,558	((("MORRIS") near3 ("Robert"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/12/02 10:12
S8	49,313	(G06F9/5027.cpc. H04L69/18.cpc. H04L69/16.cpc.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 11:12
S9	289	S8 and idle near3 time near5 period	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 11:13
S10	189	S9 and TCP	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 11:13
S11	129	S9 and TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 11:14
S12	18	S11 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 11:15
S13	18	S12 and timeout	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 11:15
S14	11	S13 and modify\$3 near10 metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 11:16
S15	11	S14 and keep\$1alive	US-PGPUB; USPAT; USOCR;	OR	ON	2020/12/02 11:16

			FPRS; EPO; JPO			
S16	4,363	TCP near10 active	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 11:18
S17	1,929	S16 and TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 11:18
S18	242	S17 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 11:18
S19	13	S18 and modify\$3 near10 metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 11:19
S20	11	S19 and keep\$1alive	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 11:19
S21	16,266	keep\$1alive	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 12:13
S22	483	S21 and TCP near10 active	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 12:14
S23	139	S22 and idle near3 time	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 12:14
S24	139	S23 and packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 12:15

S25	87	S24 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 12:16
S26	83	S25 and TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 12:16
S27	83	S26 and (parameter field)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 12:16
S28	78	S27 and connect\$3 near5 established	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 12:17
S29	78	S28 and time\$1out	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 12:17
S30	4	"12714063"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 12:19
S31	1	"16229540"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 12:34
S32	0	"17079397"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 13:16
S33	15	12/714063	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 13:17
S34	1	"71732959".FMID.	US-PGPUB; USPAT; FPRS; JPO	OR	OFF	2020/12/02 13:17

S35	44,064	TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 21:03
S36	1,698	S35 and (Keep-alive keep adj alive)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 21:07
S37	523	S36 and (time-out time adj out)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 21:07
S38	130	S37 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2020/12/02 21:08
S39	3	((("JENAM") near3 ("TECH") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2021/01/20 23:03
S40	0	"17079397"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:03
S41	57,918	(H04L029/06.cpc. G06F9/50.cpc. G06F9/5027.cpc. H04L69/18.cpc. H04L69/16.cpc.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:05
S42	18,327	idle near3 time near5 period	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:06
S43	1,392	keep-alive near3 packets	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:06
S44	40	S42 and S43	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:06

S45	484,430	(transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:08
S46	1,956,364	(Internet near2 Protocol (IP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:09
S47	409,971	S45 and S46	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:09
S48	271	S47 and Time\$1out near5 Option	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:10
S49	949	(inactive passive sluggish) near10 (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:18
S50	1,882	(idle inactive passive sluggish) near10 (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:19
S51	2,972	(duration span extant) with (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:24
S52	18	metadata with (duration span extant) with (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:25
S53	287	(identifying analyz\$3 classify\$3 selecting establish\$3) with (duration span extant) with (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:28
S54	601,936	(other diverse distinct distant various different) same algorithm	US-PGPUB; USPAT; USOCR;	OR	ON	2021/01/20 23:31

			FPRS; EPO; JPO			
S55	56	S53 and S54	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:31
S56	56	S45 and S55	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:31
S57	23	metadata with (duration span extant) with (other diverse distinct distant various different) same algorithm	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:32
S58	10,158	non near5 (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:32
S59	5	non near5 (transmission adj control adj protocol (TCP)) same Time\$1out near5 Option	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:33
S60	11	(idle inactive passive sluggish) near10 (transmission adj control adj protocol (TCP)) with (revis\$3 repair\$3 adjust\$3 adapt\$3 twik\$3 correct\$3 modify\$3) near10 metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:42
S64	262	(identifying analyz\$3 classify\$3 selecting establish\$3) with metadata with (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:46
S65	41	S64 and (other diverse distinct distant various different) same algorithm	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:47
S66	41	S64 and (other diverse distinct distant various different) same algorithm	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:47

S67	4,398	TCP near10 active	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:56
S68	1,943	S67 and TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:56
S69	249	S68 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:56
S70	13	S69 and modify\$3 near10 metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:56
S71	11	S70 and keep\$1alive	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:56
S72	16,510	keep\$1alive	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:57
S73	491	S72 and TCP near10 active	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:57
S74	143	S73 and idle near3 time	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:57
S75	143	S74 and packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:57
S76	91	S75 and metadata	US-PGPUB; USPAT; USOCR;	OR	ON	2021/01/20 23:57

			FPRS; EPO; JPO			
S77	87	S76 and TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:57
S78	87	S77 and (parameter field)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:57
S79	82	S78 and connect\$3 near5 established	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:57
S80	44,440	TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:57
S81	1,717	S80 and (Keep-alive keep adj alive)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:57
S82	529	S81 and (time-out time adj out)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:57
S83	134	S82 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/20 23:57
S84	3	((("JENAM") near3 ("TECH") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2021/01/20 23:57
S85	1,562	((("MORRIS") near3 ("Robert"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2021/01/20 23:58
S86	484,766	(transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR;	OR	ON	2021/01/22 11:55

			FPRS; EPO; JPO			
S87	1,957,298	(Internet near2 Protocol (IP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:55
S88	410,270	S86 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:55
S89	1,563	((("MORRIS") near3 ("Robert"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2021/01/22 11:55
S90	3	((("JENAM") near3 ("TECH") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2021/01/22 11:55
S91	44,459	TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:55
S92	1,718	S91 and (Keep-alive keep adj alive)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:55
S93	530	S92 and (time-out time adj out)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:55
S94	135	S93 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:55
S95	263	(identifying analyz\$3 classify\$3 selecting establish\$3) with metadata with (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:55
S96	57,932	(H04L029/06.cpc. G06F9/50.cpc. G06F9/5027.cpc. H04L69/18.cpc. H04L69/16.cpc.)	US-PGPUB; USPAT; USOCR;	OR	ON	2021/01/22 11:56

			FPRS; EPO; JPO			
S97	4,400	TCP near10 active	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:56
S98	1,944	S97 and TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:56
S99	250	S98 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:56
S100	13	S99 and modify\$3 near10 metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:56
S101	11	S100 and keep\$1alive	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:56
S102	41	S95 and (other diverse distinct distant various different) same algorithm	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:56
S103	11	(idle inactive passive sluggish) near10 (transmission adj control adj protocol (TCP)) with (revis\$3 repair\$3 adjust\$3 adapt\$3 twik\$3 correct\$3 modify\$3) near10 metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:56
S104	10,160	non near5 (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S105	49,954	(G06F9/5027.cpc. H04L69/18.cpc. H04L69/16.cpc.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57

S106	291	S105 and idle near3 time near5 period	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S107	129	S106 and TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S108	18	S107 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S109	18	S108 and timeout	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S110	11	S109 and modify\$3 near10 metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S111	287	(identifying analyz\$3 classify\$3 selecting establish\$3) with (duration span extant) with (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S112	950	(inactive passive sluggish) near10 (transmission adj control adj protocol (TCP))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S113	16,533	keep\$1alive	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S114	492	S113 and TCP near10 active	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S115	144	S114 and idle near3 time	US-PGPUB; USPAT; USOCR;	OR	ON	2021/01/22 11:57

			FPRS; EPO; JPO			
S116	144	S115 and packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S117	92	S116 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S118	88	S117 and TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S119	88	S118 and (parameter field)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S120	83	S119 and connect\$3 near5 established	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 11:57
S121	4,400	TCP near10 active	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 12:00
S122	1,944	S121 and TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 12:00
S123	250	S122 and metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 12:00
S124	13	S123 and modify\$3 near10 metadata	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 12:00

S125	129	S106 and TCP near3 packet	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	ON	2021/01/22 12:01
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Doc code: IDS

PTO/SB/08a (02-18)

Doc description: Information Disclosure Statement (IDS) Filed

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17148824
	Filing Date	
	First Named Inventor	Robert Paul Morris
	Art Unit	
	Examiner Name	
	Attorney Docket Number	PMOR0120L

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17148824
	Filing Date	
	First Named Inventor	Robert Paul Morris
	Art Unit	
	Examiner Name	
	Attorney Docket Number	PMOR0120L

1	Postel, J. "The TCP Maximum Segment Size and Related Topics," Network Working Group, RFC 879, available at https://tools.ietf.org/html/rfc879
2	Postel, John(ed.), Editor; "Transmission Control Protocol - DARPA Internet Protocol Specification", RFC 793, USC/ Information Sciences Institute, http://tools.ietf.org/rfc/rfc793.txt , September 1981
3	Protocol Enhancements for Intermittently Connected Hosts, Schütz et al., ACM SIGCOMM Computer Communication Review, Vol. 35, Number 2, July 2005, published in July 2005.
4	Real-Time Transport Protocol (RTP) Payload Format and File Storage Format for the Adaptive Multi-Rate (AMR) and Adaptive Multi-Rate Wideband (AMR-WB) Audio Codecs (aka Framing Parameters for GAN) ("RFC 3267"), published in June 2002, available at https://tools.ietf.org/html/rfc3267 .
5	Requirements for Internet Hosts - Communication Layers RFC 1122 ("RFC 1122"), published in October 1989, available at https://tools.ietf.org/html/rfc1122 .
6	Roskind, Jim "Multiplexed Stream Transport Over UDP," QUIC, 12/2/2013, 51 pages
7	S. Bradner "IETF Working Group Guidelines and Procedures," Network Working Group, RFC 2418, Sept 1998
8	S. Bradner, "The Internet Standards Process -- Revision 3" Network Working Group, RFC 2026
9	Stream Control Transmission Protocol (SCTP) – ("SCTP") RFC 2960, R. Stewart et al., published in October 2000, available at https://tools.ietf.org/html/rfc2960 .
10	Sun Blade 1000 and Sun Blade 2000 Getting Started Guide, Part No. 816-3216-10, published in January 2002, available at https://docs.oracle.com/cd/E19127-01/blade1000.ws/816-3216-10/816-3216-10.pdf .
11	T Bova et al. "Reliable UDP Protocol" (Internet-Draft for the Internet Engineering Task Force, dated Feb 25, 1999

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	17148824
Filing Date	
First Named Inventor	Robert Paul Morris
Art Unit	
Examiner Name	
Attorney Docket Number	PMOR0120L

12	TCP Abort Timeout Option (draft-eggert-tcpm-tcp-abort-timeout-option-00), published April 14, 2004, available at https://tools.ietf.org/html/draft-eggert-tcpm-tcp-abort-timeout-option-00
13	TCP User Timeout Option RFC 5482, published in March 2009, available at https://tools.ietf.org/html/rfc5482
14	TCP/IP Illustrated, Volume 1: The Protocols, W. Richard Stevens, published in 1994.
15	The Federal Networking Council, The Networking and Information Technology Research and Development Program, Oct 10, 1997, available at https://www.nitrd.gov/historical/fnc-material.aspx
16	Transmission Control Protocol RFC 793, published in September 1981, available at https://tools.ietf.org/html/rfc793 .

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	First Named Inventor	Robert Paul Morris
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	Examiner Name	
	Attorney Docket Number	PMOR0120L

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

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See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

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A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Patrick Caldwell/	Date (YYYY-MM-DD)	2021-02-23
Name/Print	Patrick Caldwell	Registration Number	44580

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Bibliographic Data

Application No: 17/148,824

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged:

/SYED ALI/

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Initials

Title:

METHODS, SYSTEMS, AND COMPUTER PROGRAM
PRODUCTS FOR SHARING INFORMATION FOR DETECTING
AT LEAST ONE TIME PERIOD FOR A CONNECTION

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
01/14/2021	709	2468	PMOR0120L
RULE			

APPLICANTS

JENAM TECH, LLC, Longview, TX,

INVENTORS

Robert Paul Morris, Madison, GA, UNITED STATES

CONTINUING DATA

This application is a CON of 16914267 06/26/2020

16914267 is a CON of 16368811 03/28/2019 PAT 10742774

16368811 is a CON of 16040522 07/19/2018 PAT 10375215

16040522 is a CON of 15915047 03/07/2018 PAT 10075564

15915047 is a CON of 15694802 09/03/2017 PAT 9923995

15694802 is a CIP of 14667642 03/24/2015ABN

14667642 is a CIP of 13477402 05/22/2012ABN

13477402 is a CON of 12714454 02/27/2010 PAT 8219606

FOREIGN APPLICATIONS

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Doc code: IDS

PTO/SB/08a (02-18)

Doc description: Information Disclosure Statement (IDS) Filed

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Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	
	1	6371852	A	1994-12-06	Altanasio et al.	Entire Document	
	2	6495480	A	1996-02-27	Yoshida	Entire Document	
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	7	6704786	B1	2004-03-09	Gupta et al.	Entire Document	
	8	6757248	B1	2004-06-29	Li et al.	Entire Document	

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18	7035214	B1	2006-04-25	Seddigh et al.	Entire Document
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	1	20050054347	A1	2005-03-10	Kakani	
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	3	20050135248	A1	2005-06-23	Ahuja et al.	Entire Document

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Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² i	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1	1242882	EP	A2	2002-09-25	Hankinson et al.	Entire Document	
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NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	"A Border Gateway Protocol 4 (BGP-4)" RFC 1771, published in March 1995, available at https://tools.ietf.org/html/rfc1771 .	

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☒ A certification statement is not submitted herewith.**SIGNATURE**

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Signature	/Patrick Caldwell/	Date (YYYY-MM-DD)	2021-02-23
Name/Print	Patrick Caldwell	Registration Number	44580

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Doc Code: DIST.E.FILE Document Description: Electronic Terminal Disclaimer - Filed		PTO/SB/25 PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce
Electronic Petition Request	TERMINAL DISCLAIMER TO OBTAIN A PROVISIONAL DOUBLE PATENTING REJECTION OVER A PENDING "REFERENCE" APPLICATION AND TERMINAL DISCLAIMER TO OBTAIN A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	
Application Number	17148824	
Filing Date	14-Jan-2021	
First Named Inventor	Robert Morris	
Attorney Docket Number	PMOR0120L	
Title of Invention	METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION	
☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action ☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.		
Owner	Percent Interest	
Jenam Tech, LLC	100 %	
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☐ A sole inventor

☐ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application

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Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 17148824

Filing Date: 14-Jan-2021

Applicant/Patent under Reexamination: Morris

Electronic Terminal Disclaimer filed on February 23, 2021

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Electronic Acknowledgement Receipt	
EFS ID:	42002519
Application Number:	17148824
International Application Number:	
Confirmation Number:	1073
Title of Invention:	METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION
First Named Inventor/Applicant Name:	Robert Paul Morris
Customer Number:	92045
Filer:	Patrick Edgar Caldwell
Filer Authorized By:	
Attorney Docket Number:	PMOR0120L
Receipt Date:	23-FEB-2021
Filing Date:	14-JAN-2021
Time Stamp:	18:55:51
Application Type:	Utility under 35 USC 111(a)

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	Filing Date	
	First Named Inventor	Robert Paul Morris
	Art Unit	
	Examiner Name	
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Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	
	1	6371852	A	1994-12-06	Attanasio et al.	Entire Document	
	2	6495480	A	1996-02-27	Yoshida	Entire Document	
	3	6412006	B2	2002-06-25	Naudus	Entire Document	
	4	6273622	B1	2001-08-14	Ben-David	Entire Document	
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	Examiner Name		
	Attorney Docket Number	PMOR0120L	

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	16	7876678	B2	2011-01-25	Ong	Entire Document
	17	7002917	B1	2006-02-21	Saleh	Entire Document
	18	7035214	B1	2006-04-25	Seddigh et al.	Entire Document
	19	7050940	B2	2006-05-23	Basso et al.	Entire Document

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	1	20050054347	A1	2005-03-10	Kakani	
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	Examiner Name	
	Attorney Docket Number	PMOR0120L

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	1	1242882	EP	A2	2002-09-25	Hankinson et al.	Entire Document	
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NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	"A Border Gateway Protocol 4 (BGP-4)" RFC 1771, published in March 1995, available at https://tools.ietf.org/html/rfc1771 .	

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29	Internet Domain Survey, January 2010, Internet Systems Consortium available at https://downloads.isc.org/www/survey/reports/2010/01/
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33	Jim Roskind, QUIC Quick UDP Internet Connections, Multiplexed Stream Transport Over UDP, 11/7/2013 (first draft earlier), available at https://www.ietf.org/proceedings/88/slides/slides-88-tsvarea-10.pdf
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41	NetEx/IP™ for UNIX Systems Release 6.0 Software Reference Manual, published in 2004, available at http://www.netexsw.com/nesi/support/ReleasedDocs/Hxx0IP/man-hunxip-03.pdf .
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17148824
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	First Named Inventor	Robert Paul Morris
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	Attorney Docket Number	PMOR0120L

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Patrick Caldwell/	Date (YYYY-MM-DD)	2021-02-23
Name/Print	Patrick Caldwell	Registration Number	44580

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)

Approved for use through 11/30/2020. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17148824
	Filing Date	
	First Named Inventor	Robert Paul Morris
	Art Unit	
	Examiner Name	
	Attorney Docket Number	PMOR0120L

U.S.PATENTS							Remove	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	17148824
	Filing Date	
	First Named Inventor	Robert Paul Morris
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	Examiner Name	
	Attorney Docket Number	PMOR0120L

1	Postel, J. "The TCP Maximum Segment Size and Related Topics," Network Working Group, RFC 879, available at https://tools.ietf.org/html/rfc879	
2	Postel, John(ed.), Editor; "Transmission Control Protocol - DARPA Internet Protocol Specification", RFC 793, USC/ Information Sciences Institute, http://tools.ietf.org/rfc/rfc793.txt , September 1981	
3	Protocol Enhancements for Intermittently Connected Hosts, Schütz et al., ACM SIGCOMM Computer Communication Review, Vol. 35, Number 2, July 2005, published in July 2005.	
4	Real-Time Transport Protocol (RTP) Payload Format and File Storage Format for the Adaptive Multi-Rate (AMR) and Adaptive Multi-Rate Wideband (AMR-WB) Audio Codecs (aka Framing Parameters for GAN) ("RFC 3267"), published in June 2002, available at https://tools.ietf.org/html/rfc3267 .	
5	Requirements for Internet Hosts - Communication Layers RFC 1122 ("RFC 1122"), published in October 1989, available at https://tools.ietf.org/html/rfc1122 .	
6	Roskind, Jim "Multiplexed Stream Transport Over UDP," QUIC, 12/2/2013, 51 pages	
7	S. Bradner "IETF Working Group Guidelines and Procedures," Network Working Group, RFC 2418, Sept 1998	
8	S. Bradner, "The Internet Standards Process -- Revision 3" Network Working Group, RFC 2026	
9	Stream Control Transmission Protocol (SCTP) – ("SCTP") RFC 2960, R. Stewart et al., published in October 2000, available at https://tools.ietf.org/html/rfc2960 .	
10	Sun Blade 1000 and Sun Blade 2000 Getting Started Guide, Part No. 816-3216-10, published in January 2002, available at https://docs.oracle.com/cd/E19127-01/blade1000.ws/816-3216-10/816-3216-10.pdf .	
11	T Bova et al. "Reliable UDP Protocol" (Internet-Draft for the Internet Engineering Task Force, dated Feb 25, 1999	

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	Filing Date		
	First Named Inventor	Robert Paul Morris	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	PMOR0120L	

12	TCP Abort Timeout Option (draft-eggert-tcpm-tcp-abort-timeout-option-00), published April 14, 2004, available at https://tools.ietf.org/html/draft-eggert-tcpm-tcp-abort-timeout-option-00
13	TCP User Timeout Option RFC 5482, published in March 2009, available at https://tools.ietf.org/html/rfc5482
14	TCP/IP Illustrated, Volume 1: The Protocols, W. Richard Stevens, published in 1994.
15	The Federal Networking Council, The Networking and Information Technology Research and Development Program, Oct 10, 1997, available at https://www.nitrd.gov/historical/fnc-material.aspx
16	Transmission Control Protocol RFC 793, published in September 1981, available at https://tools.ietf.org/html/rfc793 .

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

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	Filing Date	
	First Named Inventor	Robert Paul Morris
	Art Unit	
	Examiner Name	
	Attorney Docket Number	PMOR0120L

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Signature	/Patrick Caldwell/	Date (YYYY-MM-DD)	2021-02-23
Name/Print	Patrick Caldwell	Registration Number	44580

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal				
Application Number:		17148824		
Filing Date:		14-Jan-2021		
Title of Invention:		METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION		
First Named Inventor/Applicant Name:		Robert Paul Morris		
Filer:		Patrick Edgar Caldwell		
Attorney Docket Number:		PMOR0120L		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
STATUTORY OR TERMINAL DISCLAIMER	1814	1	170	170
Total in USD (\$)				170

Electronic Acknowledgement Receipt	
EFS ID:	42002470
Application Number:	17148824
International Application Number:	
Confirmation Number:	1073
Title of Invention:	METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION
First Named Inventor/Applicant Name:	Robert Paul Morris
Customer Number:	92045
Filer:	Patrick Edgar Caldwell
Filer Authorized By:	
Attorney Docket Number:	PMOR0120L
Receipt Date:	23-FEB-2021
Filing Date:	14-JAN-2021
Time Stamp:	18:50:42
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 170
RAM confirmation Number	E20212MI51033572
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	PMOR0120L_IDS_Coversheet_vF_23-Feb-2021.pdf	56395	no	2
			6c2f30bfb2fd8cd50c1996b6e1f175c8ac2f07f		
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	PMOR0120L_IDS20210223_1_OF_2_vF.pdf	1057613	no	13
			d76849457e21f8859507febd7e152d1bdf0598ed		
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	PMOR0120L_IDS20210223_2_OF_2_vF.pdf	1054177	no	5
			027ec2f5f30a625d12d60b2379c311bde274544c		
Warnings:					
Information:					
A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.					
4	Fee Worksheet (SB06)	fee-info.pdf	30079	no	2
			e58747400129bca8754e263361b1382737e97db4		
Warnings:					
Information:					
Total Files Size (in bytes):			2198264		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Confirmation No.: 1073
Robert Paul Morris	Examiner: Syed ALI
Application No.: 17/148,824	Art Unit: 2468
File Date: 2021-01-14	Docket No.: PMOR0120L
Title: METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION	Date: Feb 23, 2021

**INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §§ 1.56 AND 1.97(b)**

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Examiner:

The reference(s) listed in the attached PTO Form 1449, cop(ies) of which is attached (when necessary), may be material to examination of the above-identified patent application. Applicants submit the reference(s) in compliance with their duty of disclosure pursuant to 37 CFR §§ 1.56 and 1.97. The Examiner is requested to make the reference(s) of official record in this application.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that the reference(s) indeed constitutes prior art.

Application No.: 17/148,824
Date: Feb 23, 2021
Information Disclosure Statement

Additionally, one or more patents (e.g. 9923995, 9923996, 10069945, 10075564, 10075565, 10375215, 10306026, 10742774) are (or were) the subject of litigation (EDTX 4:19-cv-00250; EDTX 4:19-cv-00249; EDTX 4:20-cv-00279; WDTX 6:20-cv-00453). Additionally, one or more patents (e.g. 9923995) are the subject of pending Inter Partes Review (IPR2020-00742; IPR2020-00845), both of which have been instituted. Further, Claims 25, 26, and 28 of 9923995 have been disclaimed.

This Information Disclosure Statement is believed to be filed within three months of the filing date of a national application other than a continued prosecution application, within three months of the date of entry of the national stage in an international application, before the mailing of a first Office action on the merits, or before the mailing of a first Office action after the filing of a request for continued examination. Accordingly, it is believed that no fees are due in connection with the filing of this Information Disclosure Statement.

Respectfully submitted,



Dated: 23 Feb 2021
The Caldwell Firm, LLC
PO Box 59655
Dallas, Texas 75229-0655
Telephone: (214) 734-2313
pcaldwell@thecaldwellfirm.com

Patrick E. Caldwell, Esq.
Reg. No. 44,580

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**Courtesy Reminder for
Application Serial No: 17/148,824**

Attorney Docket No: PMOR0120L

Customer Number: 92045

Date of Electronic Notification: 02/11/2021

This is a courtesy reminder that new correspondence is available for this application. If you have not done so already, please review the correspondence. The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

An email notification regarding the correspondence was sent to the following email address(es) associated with your customer number:

pcaldwell@thecaldwellfirm.com

eofficeaction@appcoll.com

To view your correspondence online or update your email addresses, please visit us anytime at **<https://ppair-my.uspto.gov/pair/PrivatePair>**.

If you have any questions, please email the Electronic Business Center (EBC) at **EBC@uspto.gov** or call 1-866-217-9197.



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UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

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Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/148,824	01/14/2021	Robert Paul Morris	PMOR0120L	1073
92045	7590	02/10/2021	EXAMINER	
The Caldwell Firm, LLC PO Box 59655 Dept. SVIPGP Dallas, TX 75229			ART UNIT	PAPER NUMBER
			2457	
			NOTIFICATION DATE	DELIVERY MODE
			02/10/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eofficeaction@appcoll.com

pcaldwell@thecaldwellfirm.com

<i>Decision Granting Request for Prioritized Examination (Track I)</i>	Application No. 17/148,824	Applicant(s) Morris, Robert Paul	
	Examiner CHERYL P GIBSON BAYLOR	Art Unit OPET	AIA (FITF) Status No
1. THE REQUEST FILED <u>14 January 2021</u> IS GRANTED . The above-identified application has met the requirements for prioritized examination A. ☒ for an original nonprovisional application (Track I). B. ☐ for an application undergoing continued examination (RCE). 2. The above-identified application will undergo prioritized examination. The application will be accorded special status throughout its entire course of prosecution until one of the following occurs: A. filing a <u>petition for extension of time</u> to extend the time period for filing a reply; B. filing an <u>amendment to amend the application to contain more than four independent claims, more than thirty total claims</u>, or a multiple dependent claim; C. filing a <u>request for continued examination</u> ; D. filing a notice of appeal; E. filing a request for suspension of action; F. mailing of a notice of allowance; G. mailing of a final Office action; H. completion of examination as defined in 37 CFR 41.102; or I. abandonment of the application. Telephone inquiries with regard to this decision should be directed to CHERYL GIBSON BAYLOR at (571)272-3213. In his/her absence, calls may be directed to Petition Help Desk at (571) 272-3282.			
/CHERYL GIBSON BAYLOR/ Paralegal Specialist, OPET			



UNITED STATES PATENT AND TRADEMARK OFFICE

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Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
17/148,824	01/14/2021	2447	2820	PMOR0120L	30	1

CONFIRMATION NO. 1073

FILING RECEIPT



0000000122922646

92045

The Caldwell Firm, LLC
PO Box 59655
Dept. SVIPGP
Dallas, TX 75229

Date Mailed: 01/28/2021

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Robert Paul Morris, Madison, GA;

Applicant(s)

JENAM TECH, LLC, Longview, TX;

Power of Attorney: The patent practitioners associated with Customer Number 92045

Domestic Priority data as claimed by applicant

This application is a CON of 16/914,267 06/26/2020
which is a CON of 16/368,811 03/28/2019 PAT 10742774
which is a CON of 16/040,522 07/19/2018 PAT 10375215
which is a CON of 15/915,047 03/07/2018 PAT 10075564
which is a CON of 15/694,802 09/03/2017 PAT 9923995
which is a CIP of 14/667,642 03/24/2015 ABN
which is a CIP of 13/477,402 05/22/2012 ABN
which is a CON of 12/714,454 02/27/2010 PAT 8219606

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 01/26/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/148,824**

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No

Title

METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING
INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION

Preliminary Class

709

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative,

page 2 of 4

this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 17/148,824	
APPLICATION AS FILED - PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	320
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	700
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	800
TOTAL CLAIMS (37 CFR 1.16(i))	30	minus 20 = * 10				x 100 =	1000
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1	minus 3 = *				x 480 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	2820
APPLICATION AS AMENDED - PART II							
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)
	Total (37 CFR 1.16(i))	*	**	=	x	=	x
	Independent (37 CFR 1.16(h))	*	***	=	x	=	x
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE		TOTAL ADD'L FEE
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)
	Total (37 CFR 1.16(i))	*	**	=	x	=	x
	Independent (37 CFR 1.16(h))	*	***	=	x	=	x
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE		TOTAL ADD'L FEE
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.							

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date
16/040,522	2018-07-19

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)



I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

92045

OR



I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:



The address associated with the above-mentioned Customer Number

OR



The address associated with Customer Number:

OR

Firm or Individual Name				
Address				
City		State		Zip
Country				
Telephone		Email		

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Jenam Tech, LLC



Inventor or Joint Inventor (title not required below)



Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)



Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)



Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature	/Andrew Gordon/	Date (Optional)	
Name	Andrew Gordon		
Title	Manager, Jenam Tech, LLC		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.



Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION		
First Named Inventor/Applicant Name:		Robert Paul Morris		
Filer:		Patrick Edgar Caldwell		
Attorney Docket Number:		PMOR0120L		
Filed as Large Entity				
Filing Fees for Track I Prioritized Examination - Nonprovisional Application under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY APPLICATION FILING	1011	1	320	320
UTILITY SEARCH FEE	1111	1	700	700
UTILITY EXAMINATION FEE	1311	1	800	800
REQUEST FOR PRIORITIZED EXAMINATION	1817	1	4200	4200
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	1202	10	100	1000
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
PROCESSING FEE, EXCEPT PROV. APPLS.	1830	1	140	140
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				7160

Electronic Acknowledgement Receipt	
EFS ID:	41644883
Application Number:	17148824
International Application Number:	
Confirmation Number:	1073
Title of Invention:	METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION
First Named Inventor/Applicant Name:	Robert Paul Morris
Customer Number:	92045
Filer:	Patrick Edgar Caldwell
Filer Authorized By:	
Attorney Docket Number:	PMOR0120L
Receipt Date:	14-JAN-2021
Filing Date:	
Time Stamp:	12:39:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$7160
RAM confirmation Number	E20211DC40138093
Deposit Account	505939
Authorized User	Patrick Caldwell
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	PMOR0120L_ADS_vF_14-Jan-2021.pdf	1874156	no	9
			43c1757775a38b494688f5b60f352af8085ec280		
Warnings:					
Information:					
2		PMOR0120L_Application_vF_14-Jan-2021.pdf	198196	yes	56
			81eb05b15b433205e91610abde42fd2eaaab684f7		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	47	
	Claims		48	55	
	Abstract		56	56	
Warnings:					
Information:					
3	Oath or Declaration filed	PMOR0120L_PMOR0120_Declaration_SIGNED_vF.PDF	150646	no	2
			b478bda089f473365224cf9162bfff589800b21a1		
Warnings:					
Information:					
4	Drawings-only black and white line drawings	PMOR0120L_PMOR0120_Drawings_vF.pdf	97990	no	8
			02433b955f97655d0d6a61a5069f40fb812be22f		
Warnings:					
Information:					
5	TrackOne Request	PMOR0120L_TRK1_vF_14-Jan-2021.pdf	149167	no	2
			2e0f9bd9c0ba47cbc91e67a496942ed058b7edd		

Warnings:					
Information:					
6	Power of Attorney	PMOR0120L_PMOR_POA_Jena mTech.pdf	163219	no	1
			cfd7c375c3077909b6bd840eb26820aa375 c9e5		
Warnings:					
Information:					
7	Fee Worksheet (SB06)	fee-info.pdf	39924	no	2
			06102001da302c5cbb866c665694b033c42 c68ab		
Warnings:					
Information:					
Total Files Size (in bytes):			2673298		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	PMOR0120L
		Application Number	
Title of Invention	METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2:

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Inventor Information:

Inventor	1				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Robert	Paul	Morris			
Residence Information (Select One) • US Residency Non US Residency Active US Military Service						
City	Madison	State/Province	GA	Country of Residence	US	
Mailing Address of Inventor:						
Address 1	751 Markhams Dr					
Address 2						
City	Madison	State/Province	GA			
Postal Code	30650	Country i	US			
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.						
Add						

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	92045		
Email Address	pcaldwell@thecaldwellfirm.com	Add Email	Remove Email

Application Information:

Title of the Invention	METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION		
Attorney Docket Number	PMOR0120L	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)		Suggested Figure for Publication (if any)	

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	PMOR0120L
		Application Number	
Title of Invention	METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION		

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☒ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	92045		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16914267	2020-06-26

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		PMOR0120L	
		Application Number			
Title of Invention	METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION				

Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16914267	Continuation of	16368811	2019-03-28	10742774	2020-08-11
Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16368811	Continuation of	16040522	2018-07-19	10375215	2019-08-06
Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16040522	Continuation of	15915047	2018-03-07	10075564	2018-09-11
Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15915047	Continuation of	15694802	2017-09-03	9923995	2018-03-20
Prior Application Status		Abandoned		Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
15694802	Continuation in part of	14667642	2015-03-24		
Prior Application Status		Abandoned		Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
14667642	Continuation in part of	13477402	2012-05-22		
Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13477402	Continuation of	12714454	2010-02-27	8219606	2012-07-10
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.					Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)¹ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	PMOR0120L
		Application Number	
Title of Invention	METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION		

Application Number	Country ^j	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)	Remove

Additional Foreign Priority Data may be generated within this form by selecting the [Add](#) button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013. NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	PMOR0120L
		Application Number	
Title of Invention	METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION		

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METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING
INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A
CONNECTION

RELATED APPLICATIONS

[0001] This application is a continuation of, and claims priority to U.S. Patent Application No. 16/914,267 entitled “METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AN IDLE TCP CONNECTION,” filed on 06-26-2020, which in turn is a continuation of, and claims priority to U.S. Patent Application No. 16/368,811 entitled “METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AN IDLE TCP CONNECTION,” filed on 03-28-2019, which in turn is a continuation of, and claims priority to U.S. Patent Application No. 16/040,522, now US Patent Number 10,375,215, entitled “METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AN IDLE TCP CONNECTION,” filed on 07-19-2018, which in turn, is a continuation of, and claims priority to U.S. Patent Application No. 15/915,047, now U.S. Patent No. 10,075,564, entitled “METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AN IDLE TCP CONNECTION,” filed on 03-07-2018 which, in turn, is a continuation of, and claims priority to U.S. Patent Application No. 15/694,802, now U.S. Patent No. 9,923,995, entitled “METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING

INFORMATION FOR DETECTING AN IDLE TCP CONNECTION,” filed on 09-03-2017 which, in turn, is a continuation-in-part of, and claims priority to U.S. Patent Application No. 14/667,642, entitled “METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SELECTING A RESOURCE BASED ON A MEASURE OF A PROCESSING COST,” filed on 03-24-2015 which, in turn, is a continuation-in-part of and claims priority to U.S. Patent Application No. 13/477,402, entitled “METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AN IDLE TCP CONNECTION,” filed 05-22-2012 which is a continuation of and claims priority to U.S. Patent Application No. 12/714,454, now U.S. Patent No. 8,219,606, entitled “METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AN IDLE TCP CONNECTION,” filed 02-27-2010.

[0002] U.S. Patent Application No. 12/714,454, entitled “METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AN IDLE TCP CONNECTION,” filed 02-27-2010 is incorporated herein by reference in its entirety for all purposes.

[0003] This application is related to the following commonly owned U.S. Patent Applications, the entire disclosure of which is incorporated by reference herein in its entirety for all purposes: Application No. 12/714,063 (Docket No 0110) filed on 2010/02/26, entitled “Methods, Systems, and Program Products for Detecting an Idle TCP Connection”.

BACKGROUND

[0004] Various implementations of the transmission control protocol (TCP) in network nodes support a number of options that are not negotiated or even communicated between or among any of the nodes. Some of these options are included in the specification of the TCP while others are not. For example, the TCP keep-alive option is supported by a number of implementations of the TCP. It is not, however, part of the TCP specification as described in "Request for Comments" (RFC) document RFC 793 edited by John Postel, titled "Transmission Control Protocol, DARPA Internet Program Internet Protocol Specification" (September 1981), which is incorporated here in its entirety by reference. One, both, or neither node including an endpoint in a TCP connection may support a keep-alive option for the connection. Each node supports or does not support keep-alive for a TCP connection based on each node's requirements without consideration for the other node in the TCP connection.

[0005] With respect to the keep-alive option, some argue that it is unnecessary and that it can waste network bandwidth. Some of these critics point out that a keep-alive packet can bring down a TCP connection. Further, since nodes including endpoints in a TCP connection do not cooperate in supporting the keep-alive option, the nodes may operate in opposition to one another and/or may waste resources by duplicating function, according to critics of the keep-alive option.

[0006] Proponents of the keep-alive option claim there is a benefit to detecting a dead peer/partner endpoint sooner. A node providing TCP keep-alive can also indirectly

detect when a network is so congested that two nodes with endpoints in a TCP connection are effectively disconnected. Proponents argue that keep-alive can keep an inactive TCP connection open. For example, some network nodes such as firewalls are configured to close TCP connections determined to be idle or inactive in order to recover resources. Keep-alive can prevent this. This is good from the perspective of the node sending keep-alive packets, but the keep-alive packets might cause the firewall to waste resources and possibly block or terminate TCP connections with other nodes.

[0007] TCP keep-alive and the debate of its benefits and faults have been around for decades. To date no mechanism to allow two TCP connection endpoints to cooperate in supporting the keep-alive option has been proposed or implemented. The broader issue of enabling cooperation and negotiation between nodes in a TCP connection in detecting and managing idle, underactive, and/or dead TCP connections remains unaddressed.

[0008] Accordingly, there exists a need for methods, systems, and computer program products for sharing information for detecting an idle TCP connection.

SUMMARY

[0009] The following presents a simplified summary of the disclosure in order to provide a basic understanding to the reader. This summary is not an extensive overview of the disclosure and it does not identify key/critical elements of the invention or delineate the scope of the invention. Its sole purpose is to present some concepts

disclosed herein in a simplified form as a prelude to the more detailed description that is presented later.

[0010] In various embodiments, a method, apparatus, and computer program product are provided to: receive first information on which at least a first duration for detecting a first type of time period is based; generate a first packet including a first parameter field identifying first metadata for use in determining a second duration for detecting the first type of time period; set up a first connection, by sending, from the first node to a second node, the first packet to provide the first metadata to the second node, for use by the second node in determining the second duration for detecting the first type of time period; in response to detecting, based on the first duration and by the first node during at least a portion of the first connection including at least a portion of the first connection set up, a first time period of the first type of time period, at least partially close the first connection; and in response to detecting, based on the second duration and by the first node after the first duration is changed to the second duration, a second time period of the first type of time period, at least partially close the first connection.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Objects and advantages of the present invention will become apparent to those skilled in the art upon reading this description in conjunction with the accompanying drawings, in which like reference numerals have been used to designate like or analogous elements, and in which:

[0012] Fig. 1 is a block diagram illustrating an exemplary hardware device included in and/or otherwise providing an execution environment in which the subject matter may be implemented;

[0013] Fig. 2 is a flow diagram illustrating a method for sharing information for detecting an idle TCP connection according to an aspect of the subject matter described herein;

[0014] Fig. 3 is a flow diagram illustrating another method for sharing information for detecting an idle TCP connection according to another aspect of the subject matter described herein;

[0015] Fig. 4a and Fig. 4b show a block a diagram illustrating an arrangement of components for sharing information for detecting an idle TCP connection according to a further aspect of the subject matter described herein;

[0016] Fig. 5 is a block diagram illustrating an arrangement of components for sharing information for detecting an idle TCP connection according to still another aspect of the subject matter described herein;

[0017] Fig. 6 is a network diagram illustrating an exemplary system for sharing information for detecting an idle TCP connection according to an aspect of the subject matter described herein;

[0018] Fig. 7 is a message flow diagram illustrating an exemplary data and execution flow for sharing information for detecting an idle TCP connection according to an aspect of the subject matter described herein; and

[0019] Fig. 8 is a diagram illustrating a structure for a packet transmitted via a network according to an aspect of the subject matter described herein.

DETAILED DESCRIPTION

[0020] An exemplary device included in an execution environment that may be configured according to the subject matter is illustrated in Fig. 1. An execution environment includes an arrangement of hardware and, optionally, software that may be further configured to include an arrangement of components for performing a method of the subject matter described herein.

[0021] An execution environment includes and/or is otherwise provided by one or more devices. An execution environment may include a virtual execution environment including software components operating in a host execution environment. Exemplary devices included in or otherwise providing suitable execution environments for configuring according to the subject matter include personal computers, notebook computers, tablet computers, servers, hand-held and other mobile devices, multiprocessor devices, distributed devices, consumer electronic devices, and/or network-enabled devices. Those skilled in the art will understand that the components illustrated in Fig. 1 are exemplary and may vary by particular execution environment.

[0022] Fig. 1 illustrates hardware device **100** included in execution environment **102** which includes instruction-processing unit (IPU) **104**, such as one or more microprocessors; physical IPU memory **106** including storage locations identified by addresses in a physical memory address space of IPU **104**; persistent secondary storage **108**, such as one or more hard drives and/or flash storage media; input device adapter **110**, such as key or keypad hardware, keyboard adapter, and/or mouse adapter; output device adapter **112**, such as a display or audio adapter for presenting information to a user; a network interface, illustrated by network interface adapter **114**, for communicating via a network such as a LAN and/or WAN; and a communication mechanism that couples elements **104-114**, illustrated as bus **116**. Elements **104-114** may be operatively coupled by various means. Bus **116** may comprise any type of bus architecture, including a memory bus, a peripheral bus, a local bus, and/or a switching fabric.

[0023] IPU **104** is an instruction execution machine, apparatus, or device. Exemplary IPUs include one or more microprocessors, digital signal processors (DSP), graphics processing units (GPU), application-specific integrated circuits (ASIC), and/or field programmable gate arrays (FPGA).

[0024] IPU **104** may access machine code instructions and data via one or more memory address spaces in addition to the physical memory address space. A memory address space includes addresses identifying locations in an IPU memory. IPU **104** may have more than one IPU memory. Thus, IPU **104** may have more than one memory

address space. IPU **104** may access a location in an IPU memory by processing an address identifying the location. The processed address may be in an operand of a machine code instruction and/or may be identified in a register or other portion of IPU **104**.

[0025] Fig. 1 illustrates virtual IPU memory **118** spanning at least part of physical IPU memory **106** and at least part of persistent secondary storage **108**. Virtual memory addresses in a memory address space may be mapped to physical memory addresses identifying locations in physical IPU memory **106**. An address space for identifying locations in a virtual IPU memory is referred to as a virtual memory address space; its addresses are referred to as virtual memory addresses; and its IPU memory is known as a virtual IPU memory or virtual memory. The term IPU memory may refer to physical IPU memory **106** and/or virtual IPU memory **118** depending on the context in which the term is used.

[0026] Various types of memory technologies may be included in physical IPU memory **106**. Exemplary memory technologies include static random access memory (SRAM) and/or dynamic RAM (DRAM) including variants such as dual data rate synchronous DRAM (DDR SDRAM), error correcting code synchronous DRAM (ECC SDRAM), and/or RAMBUS DRAM (RDRAM). Physical IPU memory **106** may include volatile memory as illustrated in the previous sentence and/or may include nonvolatile memory such as nonvolatile flash RAM (NVRAM) and/or read-only memory (ROM).

[0027] Persistent secondary storage **108** may include one or more flash memory storage devices, one or more hard disk drives, one or more magnetic disk drives, and/or one or more optical disk drives. Persistent secondary storage may include removable media. The drives and their associated computer-readable storage media provide volatile and/or nonvolatile storage for computer readable instructions, data structures, program components, and other data for execution environment **102**.

[0028] Execution environment **102** may include software components stored in persistent secondary storage **108**, in remote storage accessible via a network, and/or in an IPU memory. Fig. 1 illustrates execution environment **102** including operating system **120**, one or more applications **122**, other program code and/or data components illustrated by other libraries and subsystems **124**.

[0029] Execution environment **102** may receive user-provided information via one or more input devices illustrated by input device **128**. Input device **128** provides input information to other components in execution environment **102** via input device adapter **110**. Execution environment **102** may include an input device adapter for a keyboard, a touch screen, a microphone, a joystick, a television receiver, a video camera, a still camera, a document scanner, a fax, a phone, a modem, a network adapter, and/or a pointing device, to name a few exemplary input devices.

[0030] Input device **128** included in execution environment **102** may be included in device **100** as Fig. 1 illustrates or may be external (not shown) to device **100**. Execution environment **102** may include one or more internal and/or external input devices.

External input devices may be connected to device **100** via corresponding communication interfaces such as a serial port, a parallel port, and/or a universal serial bus (USB) port. Input device adapter **110** receives input and provides a representation to bus **116** to be received by IPU **104**, physical IPU memory **106**, and/or other components included in execution environment **102**.

[0031] Output device **130** in Fig. 1 exemplifies one or more output devices that may be included in and/or may be external to and operatively coupled to device **100**. For example, output device **130** is illustrated connected to bus **116** via output device adapter **112**. Output device **130** may be a display device. Exemplary display devices include liquid crystal displays (LCDs), light emitting diode (LED) displays, and projectors. Output device **130** presents output of execution environment **102** to one or more users. In some embodiments, an output device is a device such as a phone, a joystick, and/or a touch screen. In addition to various types of display devices, exemplary output devices include printers, speakers, tactile output devices such as motion producing devices, and other output devices producing sensory information detectable by a user.

[0032] A device included in or otherwise providing an execution environment may operate in a networked environment communicating with one or more devices (not shown) via one or more network interfaces. The terms “communication interface” and “network interface” are used interchangeably. Fig. 1 illustrates network interface adapter **114** as a network interface included in execution environment **102** to operatively couple

device **100** to a network. The terms “network node” and “node” in this document both refer to a device having a network interface operatively coupled to a network.

[0033] Exemplary network interfaces include wireless network adapters and wired network adapters. Exemplary wireless networks include a BLUETOOTH network, a wireless 802.11 network, and/or a wireless telephony network (e.g., a cellular, PCS, CDMA, and/or GSM network). Exemplary wired networks include various types of LANs, wide area networks (WANs), and personal area networks (PANs). Exemplary network adapters for wired networks include Ethernet adapters, Token-ring adapters, FDDI adapters, asynchronous transfer mode (ATM) adapters, and modems of various types. Exemplary networks also include intranets and internets such as the Internet.

[0034] Fig. 2 is a flow diagram illustrating a first method for sharing information for detecting an idle TCP connection according to an exemplary aspect of the subject matter described herein. Fig. 3 is a flow diagram illustrating a second method for sharing information for detecting an idle TCP connection according to an exemplary aspect of the subject matter described herein. Fig. 4a is a block diagram illustrating a system for sharing information for detecting an idle TCP connection according to the first method in Fig. 2. Fig. 4b is a block diagram illustrating a system for sharing information for detecting an idle TCP connection according to the second method in Fig. 3. It is expected that many, if not most, systems configured to perform one of the methods illustrated in Fig. 2 and Fig. 3 will also be configured to perform the other method.

[0035] A system for sharing information for detecting an idle TCP connection according to the method illustrated in Fig. 2 includes an execution environment, such as execution environment **102** in Fig. 1, including an instruction processing unit, such as IPU **104**, configured to process an instruction included in at least one of an idle time period policy component **450**, a packet generator component **452**, and a net out-port component **454**, a idle time period monitor component **456**, and a connection state component **458** illustrated in Fig. 4a.

[0036] A system for sharing information for detecting an idle TCP connection performing the method illustrated in Fig. 3 includes an execution environment, such as execution environment **102** in Fig. 1, including an instruction processing unit, such as IPU **104**, configured to process an instruction included in at least one of a net in-port component **460**, an idle time period option handler component **462**, an option attribute handler component **464** illustrated in Fig. 4b.

[0037] Components illustrated in Fig. 4a may be adapted for performing the method illustrated in Fig. 2 in a number of execution environments. Components illustrated in Fig. 4b may be adapted for performing the method illustrated in Fig. 3 in a number of execution environments. Fig. 5 is a block diagram illustrating adaptations and/or analogs of the components of Fig. 4a and Fig. 4b in exemplary execution environment **502** including or otherwise provided by one or more nodes. The method depicted in Fig. 2 and the method depicted in Fig. 3 may be carried out by some or all of the exemplary components and/or their analogs.

[0038] The components illustrated in Fig. 4 and Fig. 5 may be included in or otherwise may be combined with some or all of the components of Fig. 1 to create a variety of arrangements of components according to the subject matter described herein.

[0039] Fig. 6 illustrates first node **602** and second node **604** as exemplary devices included in and/or otherwise adapted for providing a suitable execution environment, such as execution environment **502** illustrated in Fig. 5, for an adaptation of the arrangement of components in Fig. 4a and an adaptation of the arrangement of components in Fig. 4b. As illustrated in Fig. 6, first node **602** and second node **604** are operatively coupled to network **606** via respective network interfaces enabling first node **602** and second node **604** to communicate. Fig. 7 is a message flow diagram illustrating an exemplary exchange of messages within and between first node **602** and second node **604** according to the subject matter described herein.

[0040] As stated, the various adaptations of the arrangements of components in Fig. 4a and in Fig. 4b described herein are not exhaustive.

[0041] In Fig. 5, execution environment **502** illustrates a network application **504** operating in a node configured to communicate with one or more other nodes via the TCP supported by TCP layer component **506**. For example, first node **602** may be included in and/or provide execution environment **502**. Network application **504** may be a first application configured to communicate with an application operating in second node **604** via network **606**. Second node **604** may be included in and/or provide another instance of execution environment **502**. The operation of both first node **602** and second

node **604** are described with respect to execution environment **502**. For ease of illustration, both first node **602** and second node **604** are configured with adaptations of the arrangement in Fig 4a and the arrangement in Fig. 4b. As such, the description of components and corresponding operations with respect to execution environment **502** in Fig. 5 is applicable to both first node **602** and second node **604** in Fig. 6.

[0042] In Fig. 5, network interface card (NIC) **508** is an exemplification of a network interface illustrated in Fig. 1 by network interface adapter **114**. NIC **508** includes a physical layer component **510** operatively coupling execution environment **502** to one or more physical media for carrying communication signals. The media may be wired, such as an Ethernet LAN operating over CAT 6 cabling, or may be wireless such as an 802.11n LAN. Other exemplary physical layer protocols and corresponding media are identified above.

[0043] NIC **508** may also include a portion of link layer component **512**. Link layer component **512** may provide for communication between two nodes in a point-to-point communication and/or two nodes in a local area network (LAN). Exemplary link layers and, their protocols have been described above including FDDI, ATM, and Ethernet. A portion of link layer component **512** is external to NIC **508**. The external portion may be realized as a device driver for NIC **508**.

[0044] Link layer component **512** may receive data formatted as one or more internet protocol (IP) packets from internet protocol (IP) layer component **514**. Link layer component **512** packages data from IP layer component **514** according to the particular

link layer protocol supported. Analogously, link layer component **512** interprets data, received as signals transmitted by the physical media operatively coupled to physical layer component **510**, according to a particular link layer protocol supported. Link layer component **512** may strip off link layer specific data and transfer the payload of link layer transmissions to IP layer component **514**.

[0045] IP layer component **514** illustrated in Fig. 5 is configured to communicate with one or more remote nodes over a LAN and/or a network of networks such as an intranet or the Internet. IP layer component **514** may receive data formatted as TCP packets from TCP layer component **506**. IP layer component **514** packages data from TCP layer component **506** into IP packets for transmission across a network. The network may be and/or may include an internet. Analogously, IP layer component **514** interprets data, received from link layer component **512** as IP protocol data and detects IP packets in the received data. IP layer component **514** may strip off IP layer specific data and transfer the payload of one or more IP packets to TCP layer component **506**.

[0046] In Fig. 5, IP layer component **514** is operatively coupled to TCP layer component **506**. TCP layer component **506** is configured to provide a TCP connection over network **606** for sending and/or receiving packets included in the TCP connection between two nodes exemplified by first node **602** and second node **604**.

[0047] In a TCP connection including first node **602** and second node **604**, first node **602** may include a first TCP connection endpoint and second node **604** may include a second TCP connection endpoint. The first and second TCP connection endpoints

identify the TCP connection. The TCP connection may have other identifiers, in addition to the included endpoints.

[0048] Components of execution environment **502**, in an aspect, may interoperate with TCP layer component **506** directly. In another aspect, one or more components, such as network application **504**, may interoperate with TCP layer component **506** indirectly. Network application **504** may exchange data with TCP layer component **506** via sockets component **518** and/or an analog of sockets component **518**. Alternatively or additionally, network application **504** may communicate with a remote node via an application protocol layer illustrated by application protocol layer component **520**. Many application protocols currently exist and new application protocols will be developed. Exemplary application layer protocols include hypertext transfer protocol (HTTP), file transfer protocol (FTP), and extensible messaging and presence protocol (XMPP).

[0049] TCP layer component **506** in Fig. 5 may receive data from any of various sources for transmitting in corresponding TCP connections to various corresponding identified TCP connection endpoints in one or more network nodes. Fig. 5 illustrates application in-port (app in-port) component **522** providing an interface component for receiving data to transmit in a TCP connection. Fig. 5 illustrates TCP layer component **506** includes packet generator component **552** configured to package data received by application in-port component **522** for transmitting in one or more TCP packets. The one or more TCP packets are provided to IP layer component **514** via net out-port component **554** exemplifying an output interface component.

[0050] Analogously, TCP layer component **506** interprets data received from IP layer component **514** via net in-port component **560**. The data is interpreted as TCP data and TCP packets are detected in the received data by net in-port component **560** and/or packet handler component **516**. Fig. 5 illustrates TCP layer component **506** includes packet handler component **516** to strip off and/or otherwise process TCP layer specific data. Packet handler component **516** interoperates with application out-port (app out-port) component **524** to transfer data in the TCP packet included in a TCP data stream to sockets component **518**, application protocol layer **520**, network application **504**, and/or other components associated with the local endpoint of the TCP connection. Detailed information on the operation of TCP is included in RFC 793.

[0051] With reference to the method illustrated in Fig. 2, block **202** illustrates the method includes receiving, by a first node, first idle information for detecting a first idle time period during which no TCP packet including data in a first data stream sent in the TCP connection by a second node is received by the first node. Accordingly, a system for sharing information for detecting an idle TCP connection includes means for receiving, by a first node, first idle information for detecting a first idle time period during which no TCP packet including data in a first data stream sent in the TCP connection by a second node is received by the first node. For example, as illustrated in Fig. 4a, idle time period policy component **450** is configured for receiving, by a first node, first idle information for detecting a first idle time period during which no TCP packet including

data in a first data stream sent in the TCP connection by a second node is received by the first node.

[0052] Fig. 5 illustrates idle time period (ITP) policy component **550** as an adaptation of and/or analog of ITP policy component **450** in Fig. 4a. One or more idle time period policy components **550** operate in execution environment **502**.

[0053] Message **702** in Fig. 7 illustrates a communication including and/or otherwise identifying idle information received by ITP policy component **550**. Message **702** may take various forms in various aspects. Exemplary forms for message **702** include a function/method invocation, a message passed via a message queue, data transmitted via a pipe, a message received via a network, and/or a communication via a shared location in IPU memory and/or secondary storage.

[0054] Idle information may be received from a configuration storage location for TCP layer component **506** in an IPU memory and/or in secondary storage **108**. The configured idle information may be maintained and/or otherwise managed by settings service component **526** configured to maintain and/or manage various options or settings for TCP layer component **506** and/or one or more TCP connections.

[0055] In an aspect, network application **504** provides idle information to ITP policy component **550** via settings service component **526** interoperating with sockets component **518**. Sockets component **518** and/or TCP layer component **506** may support TCP options applicable globally for some or all TCP connections and/or may support

TCP options on a per connection basis. Per connection TCP options may override global TCP options if global options are also supported. In another aspect, idle information may be received from and/or otherwise received based on information via application protocol layer **520**, via sockets component **518**, and/or directly from network application **504**.

[0056] Application protocol layer **520** may provide idle information to ITP policy component **550** via settings service component **526** and, optionally, via sockets component **518**. Idle information provided by application protocol layer **520** may be based on data received from network application **504**, based on a particular configuration of application protocol layer **520**, and/or received from a user and/or administrator of one or both of network application **504** and application protocol layer **520**.

[0057] In an aspect, the idle information received may be based on a previous ITP header identified in a packet in the TCP connection received by first node **602** from second node **604**. The previous packet may be received by net in-port component **560**. The previous ITP header may be detected by ITP option handler component **562** interoperating with packet handler component **516**. Idle information may be identified and/or otherwise determined by ITP option handler component **562**. ITP policy component **550** may interoperate with ITP option handler component **562** to receive the idle information.

[0058] Idle information received, determined, and/or otherwise identified may include and/or identify a duration of time for detecting an idle time period. The duration may be specified according to various measures of time including seconds, minutes, hours, and/or days.

[0059] Alternatively or additionally, idle information may include and/or identify a generator for determining a duration of time for detecting an idle time period. An exemplary generator may include a formula, an expression, a function, a policy, and/or other mechanism for generating and/or otherwise identifying a duration of time.

[0060] In an aspect, one or more algorithms for generating a duration of time for detecting an idle time period may be associated with identifiers. The algorithm identifiers may be standardized within a group of nodes including first node **602** and second node **604**. The received idle information may include and/or reference an algorithm identifier. First node **602** and second node **604** may each maintain an association between one or more of the algorithm identifiers and a duration generator such as a function and/or a class configured to perform the identified algorithm.

[0061] A duration generator may determine the duration of time for detecting an idle time period based on one or more attributes accessible to one or both of first node **602** and second node **604**. Exemplary attributes include a measure of network latency, a measure of network congestion, an indication of the availability of a particular resource, a user specified attribute, a security attribute, an energy usage attribute, a user attribute

such as role of the user, and/or a measure of bandwidth supported by NIC **508** and/or a physical network medium operatively coupled to NIC **508**.

[0062] Alternatively or additionally, idle information may include a parameter such as one or more of the attributes identified in the previous paragraph for use in a duration generator for determining a duration of time for measuring and/or otherwise detecting an idle time period.

[0063] A TCP connection may be identified by its endpoints. First node **602** and/or second node **604** may include an endpoint of the TCP connection. Alternatively or additionally, first node **602** and/or second node **604** may include a proxy endpoint representing an endpoint in a TCP connection. Nodes, that provide a network address translation (NAT) service, are exemplary nodes including proxy endpoints.

[0064] A node including a TCP connection endpoint is referred to as a host. Hosts are typically user devices and/or servers that typically operate at the edge of a network. While endpoints of most TCP connections are not typically included in network nodes for relaying, routing, and/or otherwise forwarding TCP packet data within a network such as routing nodes and switching nodes. Such network nodes may include one or more connection endpoints for one or more respective TCP connections. It should be understood that the term “host” refers to a role played by a device in a network. First node **602** and/or second node **604** may play the role of a host in a TCP connection and/or may be proxy nodes.

[0065] A node is referred to as being in or included in a TCP connection when the node includes an endpoint of the connection and/or includes a proxy for a connection endpoint, referred to as a proxy endpoint. A proxy endpoint and an endpoint in a TCP connection may be in the same node or in different nodes.

[0066] In Fig. 5, connection state component **558** may maintain state information for one or more TCP connection endpoints and/or proxy endpoints of corresponding TCP connections included in an instance of an execution environment, such as execution environment **502**, included in and/or provided by first node **602** or second node **604**.

[0067] First node **602** and/or second node **604** may play a role of a proxy node for a node including a TCP connection endpoint. First node **602** and/or second node **604** may include a proxy endpoint representing an endpoint in a TCP connection. A proxy node forwards TCP packet data, sent by a host including a TCP connection endpoint, to another host including a corresponding connection endpoint represented by a proxy endpoint included in the proxy node and vice versa. Exemplary proxy nodes in addition to including routing and/or switching capabilities may include a bridge, a hub, a repeater, a gateway, and a firewall.

[0068] In an aspect, a TCP keep-alive option, a TCP user timeout, a retransmission timeout, an acknowledgment timeout, and/or another timeout associated with a TCP connection may be modified based on the first idle information.

[0069] For example, in Fig. 5, ITP policy component **550** operating in first node **602** may modify an attribute of a TCP keep-alive option provided by one or more keep-alive components that may include settings service component **526**. Modifying a keep-alive attribute may include creating the attribute, deleting the attribute, and/or modifying the attribute. ITP policy component **550** may interoperate with settings service component **526**, connection state component **558**, and/or a keep-alive option handler component (not shown) to detect the existence and state of one or more keep-alive attributes in determining whether a keep-alive option is active and/or in identifying its current state.

[0070] In response to identifying the idle information, ITP policy component **550** may activate, disable, and/or modify the state of the keep-alive option via interoperation with one or more of settings service component **526**, connection state component **558**, and/or a keep-alive option handler. Thus, in response to identifying the idle information, ITP policy component **550** may prevent and/or alter the time a keep-alive packet is sent to second node **604** from first node **602**.

[0071] Alternatively or additionally, ITP policy component **550** operating in first node **602** may modify an attribute associated with an acknowledgment timeout configured for TCP layer component **506**. Modifying an acknowledgment timeout attribute may include creating the attribute, deleting the attribute, and/or modifying the attribute. ITP policy component **550** may interoperate with settings service component **526**, connection state component **558**, and/or an acknowledgment option handler component (not shown) to detect the existence and state of one or more packet acknowledgment attributes. In

response to identifying the idle information, ITP policy component **550** may modify the state of the packet acknowledgment option. Thus, in response to identifying the idle information, ITP policy component **550** may prevent and/or alter the time an acknowledgment is sent in a packet in a TCP connection.

[0072] Returning to Fig. 2, block **204** illustrates the method further includes generating a TCP packet including a first idle time period header identifying metadata for the first idle time period based on the first idle information. Accordingly, a system for sharing information for detecting an idle TCP connection includes means for generating a TCP packet including a first idle time period header identifying metadata for the first idle time period based on the first idle information. For example, as illustrated in Fig. 4a, packet generator component **452** is configured for generating a TCP packet including a first idle time period header identifying metadata for the first idle time period based on the first idle information.

[0073] Fig. 5 illustrates packet generator component **552** as an adaptation of and/or analog of packet generator component **452** in Fig. 4a. One or more packet generator components **552** operate in execution environment **502**.

[0074] Packet generator component **552** in Fig. 5 may receive idle information and/or information based on the received idle information from ITP policy component **550**. Whether and when packet generator component **552** receives information for including an idle time period (ITP) header in a TCP packet may depend on a current state of the associated TCP connection. In Fig. 5, ITP policy component **550** may interoperate with

connection state component **558** to determine whether and when to provide information to packet generator component **552** for including an ITP header in a TCP packet.

[0075] In an aspect, an ITP header may be included in a packet exchanged during setup of TCP connection. RFC 793 describes a “three-way handshake” for establishing a TCP connection. The synchronization requires each side to send it's own initial sequence number and to receive a confirmation of it in acknowledgment from the other side. Each side must also receive the other side's initial sequence number and send a confirming acknowledgment.

[0076] 1) A --> B SYN my sequence number is X

[0077] 2) A <-- B ACK your sequence number is X

[0078] 3) A <-- B SYN my sequence number is Y

[0079] 4) A --> B ACK your sequence number is Y

[0080] Because steps 2 and 3 can be combined in a single message this is called the three way (or three message) handshake.

[0081] Other message exchanges may be used in setting up a TCP connection as those skilled in the art will understand. Such other exchanges are not currently supported by the TCP as described in RFC 793. The specified “three-way handshake” and other patterns of message exchange for setting up a TCP connection include packets that are considered to be in the TCP connection for purposes of this disclosure.

Including an ITP header may be restricted to packets exchanged in connection setup, excluded from packets exchanged during connection establishment, or allowed in one or more packets exchanged during connection establishments and in packets exchanged after connection setup.

[0082] In an aspect, when connection state component **558** and/or ITP policy component **550** determine an ITP header should be included in a TCP packet based on received idle information, packet generator component **552** may include the ITP header in a next TCP packet generated in response to data received via application in-port component **522** for sending to first node **602**. In another aspect, packet generator component **552** may send the ITP header in a TCP packet in the TCP connection with no data included in the TCP data stream sent by first node **602** to second node **604**. Such a packet is referred to as an empty Packet generator component **554** may send the empty TCP packet when TCP layer component **506** has no for data from an application in second node **604** to send in the TCP data stream to first node **602**.

[0083] Packet generator component **552** may generate a packet according to the TCP specifications and may include a header identified as an ITP header in accordance with specifications for including TCP option headers in a TCP packet. See RFC 793 for more details. Fig. 8 illustrates a format or structure for a TCP packet **802** as described in RFC 793. Each “+” character in Fig. 8, indicates a bit-boundary. TCP packet **802** specifies a location and format for including a source port **804** portion including an identifier for an endpoint of the TCP connection for a sending node and a destination port **806** including

an identifier for a corresponding endpoint of the TCP connection in a receiving node. IP packet **810** illustrates a format for an IP packet header for an IP packet including TCP packet data. Source address **812** specifies a location and format in an IP header for including a network address identifying a network interface of the sending node, and destination address **814** identifying a network interface for the receiving node. A network address and a port number identify a connection endpoint in a network. Two endpoints identify a TCP connection.

[0084] Fig. 8 also illustrates a format for an exemplary ITP header **820**. A KIND location is specified for including an identifier indicating that the option is an idle time period (ITP) option in an ITP header. Identifiers for option headers are currently under the control of the Internet Assigned Numbers Authority (IANA). Length field **824** identifies a length of an ITP header. An ITP data field **826** is specified for including ITP header information for detecting an idle time period as described herein

[0085] Those skilled in the art will recognize given this disclosure that an ITP header may have other suitable formats and may be included in a TCP packet in structures and locations other than those specified for TCP options in RFC 793. An equivalent or analog of an ITP header may be included in a footer of a protocol packet in an extension and/or variant of the current TCP.

[0086] ITP data field **826** in Fig. 8 may include and/or otherwise identify metadata for the first idle time period. For example, an ITP data field in a packet may include and/or otherwise identify one or more of a duration of time for detecting an idle time period, a

duration generator for determining a duration of time for detecting an idle time period, and a parameter for use in a duration generator for determining a duration of time for measuring and detecting an idle time period.

[0087] Message **704** in Fig. 7 illustrates an invocation and/or other access to packet generator component **552** for generating a TCP packet including an ITP header based on received idle information.

[0088] Returning to Fig. 2, block **206** illustrates the method further includes sending the TCP packet in the TCP connection to the second node to provide the metadata for the first idle time period to the second node. Accordingly, a system for sharing information for detecting an idle TCP connection further includes means for sending the TCP packet in the TCP connection to the second node to provide the metadata for the first idle time period to the second node. For example, as illustrated in Fig. 4a, the net out-port component **454** is configured for sending the TCP packet in the TCP connection to the second node to provide the metadata for the first idle time period to the second node.

[0089] Fig. 5 illustrates net out-port component **554** as an adaptation of and/or analog of net out-port component **454** in Fig. 4a. One or more net out-port components **554** operate in execution environment **502**. Net out-port component **554** is illustrated operatively coupled to packet generator component **552**. Net out-port component **554** may receive TCP packet data from packet generator component **552** and interoperate with IP layer component **514** to send the TCP packet in one or more IP packets via

network **606** to second node **604**. Message **706.1** in Fig. 7 illustrates a TCP packet including an ITP header sent by first node **602** and received by second node **604**.

[0090] In one aspect, an ITP header may be sent to make sending one or more TCP keep-alive packets by a partner node in the connection unnecessary. A receiver of a packet including an ITP header, such as second node **604**, may keep a TCP connection alive based on information in the ITP header.

[0091] In another aspect, first node **602** may set a keep-alive timeout attribute based on a duration of the first idle time period identified in the first idle information and/or in the metadata provided to second node **604**. For example, first node **602** may monitor a time period during which no non-empty packets are sent or received in the TCP connection. A keep-alive option handler and/or keep-alive component (not shown) operating in first node **602** may set a keep-alive timer according to the timeout attribute, with a duration that will result in the keep-alive timer expiring before an idle time period can occur. In response to detecting a keep-alive timeout, which may be indicated by the expiration of the keep-alive timer, the keep-alive option handler and/or keep-alive policy component may provide information to packet generator component **552** to generate a TCP keep-alive packet. The packet generator component **552** may provide the generated packet to net out-port component **554** for sending the TCP keep-alive packet to second node **604** to determine whether the TCP connection is active and/or to keep the TCP connection active.

[0092] In another aspect, ITP policy component **550** operating in first node **602** may set a timer, analogous to the keep-alive timer described in the previous paragraph that expires before an time period can occur. In response the timer expiring, ITP policy component **550** may provide idle information to packet generator component **552** to generate a TCP packet including a second ITP header. Content of the second ITP header may be based on the first idle information received, data received from second node **604**, information received from a network application that may be from a user, and/or on any information accessible to TCP layer component **506** in execution environment **502** in first node **602**. The TCP packet generated by packet generator component **552** is provided to IP layer component **514** via net out-port component **554** to send to second node **604** in the TCP connection. Along with sending the message, first node **602** may reset and/or otherwise restart detection of the first idle time period. Thus, a second ITP header may be sent in a second TCP packet by first node **602** to second node **602** along with restarting detection of the first idle time period. Alternatively, first node **602** may reset and initiate detection of an idle time period with a different duration than the previous idle time period, based on the idle information for generating the second ITP header.

[0093] Returning to Fig. 2, block **208** illustrates the method further includes detecting the first idle time period based on the first idle information. Accordingly, a system for sharing information for detecting an idle TCP connection further includes means for detecting the first idle time period based on the first idle information. For example, as

illustrated in Fig. 4a, the idle time period monitor component **456** is configured for idle time period monitor.

[0094] Fig. 5 illustrates idle time period monitor component **556** as an adaptation of and/or analog of idle time period monitor component **456** in Fig. 4a. One or more idle time period monitor components **556** operate in execution environment **502**.

[0095] In an aspect, in response to receiving the first idle information, ITP policy component **550** may store a value representing a duration of time in a configuration storage location. Alternatively, or additionally, ITP policy component **550** may invoke a duration generator to determine a duration of time for detecting the idle time period. The duration generator may be preconfigured for the TCP connection and/or may be identified based on the idle information received. As described, the invoked generator may be invoked with a parameter included in and/or otherwise identified based on the received idle information.

[0096] ITP policy component **550** may interoperate with ITP monitor component **556** to identify the duration for detecting the idle time period. ITP monitor component **556**, in various aspects, may receive information including and/or otherwise identifying a duration of time, a duration generator, and/or a parameter for a duration generator. ITP monitor component **556** may initiate and/or restart a process for detecting an idle time period. In an aspect, ITP monitor component **556** detects and/or otherwise identifies a beginning of a potential idle time period based on one or more specified events.

[0097] In an aspect, detecting the first idle time period by ITP monitor component **556** may include detecting a time period in the idle time period during which first node **602** has received acknowledgment for all data sent via the TCP connection in the TCP data stream by first node **602** to second node **604**. Further, the first idle time period may include a time period during which first node **602** has sent one or more TCP packets to second node **604** to acknowledge all data received in a TCP data stream in the TCP connection from second node **604** to first node **602**. Detecting the first idle time period by ITP monitor component **556** may include detecting that all received data has been acknowledged and/or that all sent data has been acknowledged.

[0098] In an aspect, ITP policy component **550** may include a policy with a rule indicating that an idle time period cannot begin while a TCP packet sent by first node **602** remains unacknowledged by second node **604**. ITP policy component **550** may prevent ITP monitor component **556** from initiating detection of an idle time period while unacknowledged data exists. In a further aspect, a time duration may be associated and/or included in the policy identifying a limit to a period of waiting to receive acknowledgment of TCP packet data sent by first node **602**. In one aspect, waiting for lack of an acknowledgment for an empty packet does not delay detection of an idle time period, while in another aspect ITP monitor component **556** will not initiate detection while an empty packet remains unacknowledged.

[0099] In an aspect, idle information, received by a node may be included in and/or otherwise based on a previous idle time period header identified in a previous TCP

packet received in the TCP connection by the node from a remote node prior to sending an ITP header based on the idle information by the node. For example, the first idle information received by ITP policy component **550** in first node **602** may be based on an idle time period header included a TCP packet in the TCP connection sent by second node **604** and received by first node **602** prior to sending the first TCP packet by first node **602**. The exchange of ITP headers may include a negotiation between first node **602** and second node **604**.

[00100] A duration of time may be identified based on the idle information received by ITP policy component in first node **602**. A timer may be set according to the identified duration. Detecting the first idle time period may include and/or otherwise may be based on detecting the timer expiration. ITP monitor component **556** may set a timer configured to expire in a time duration identified based on the first idle information received by ITP policy component **550**. The identified duration may be longer, shorter, or equal to a duration of the idle time period. ITP monitor component **556** may use multiple timers. ITP monitor component **556** may recalculate and/or otherwise generate a new idle duration based on the idle information at one or more times during detection of the first idle time period. That is, a duration of an idle time period may be static and/or may be dynamic, changing based on attribute information accessible during the detection process and/or based on one or more duration generators.

[00101] Message **710.1** illustrates a call and/or other communication between ITP monitor component **556** and a timer component in first node **602** to set a timer included

in detecting an idle time period. Prior to the setting the timer, first node **602** and second node **602** may be active in exchanging TCP packets as illustrated by messages including message **706.2** through message **706.n**. Those skilled in the art will recognize that detection of an idle time period may not include explicitly and/or directly using a timer. ITP monitor component **556** may monitor other events as a proxy or indirect mechanism for initiating detection and detecting an idle time period.

[00102] ITP monitor component **556** may detect one or more events configured to indicate that an idle time period has occurred. For example, expiration of a timer or multiple associated timers may be interpreted by ITP monitor component **556** as marking an occurrence of the first idle time period. Message **710.2** illustrates ITP monitor component **556** receiving information identifying expiration of a timer for detecting the first idle time period.

[00103] In a further aspect, in response to detecting the expiration of a timer set as described above, a TCP keep-alive packet may be sent by first node **602** to determine whether the TCP connection is action and/or to keep the TCP connection active. When the keep-alive packet is sent, an acknowledgment timer may be set. If a timeout of the acknowledgment timer is detected indicating no TCP packet has been received acknowledging the keep-alive packet, the first idle time period may be detected in response to and/or otherwise based on the timeout of the acknowledgment timer.

[00104] In Fig. 5, ITP policy component **550** in first node **602** may provide a duration identified based on the received idle information to a keep-alive monitor component (not

shown). The keep-alive monitor component may configure a keep-alive timer to expire based on the identified duration. In response to detecting expiration of the keep-alive timer, ITP monitor component **556** may invoke packet generator component **552** to generate a TCP keep-alive packet. First node **602** may send the TCP packet to second node **604**. The TCP keep-alive packet may be sent to prevent detection of an idle time period by second node **604** and/or may otherwise be sent to detect by first node **602** whether the TCP connection is active.

[00105] First node **602** may set an acknowledgment timer associated with sending the packet. If the acknowledgment timer expires before a TCP packet is received from second node **602** acknowledging the packet sent, ITP monitor component **556** may detect the idle time period in response to and/or otherwise based on expiration of the acknowledgment timer.

[0100] Receiving a packet from second node **604** included in the TCP connection is an event that, in various aspects, may directly and/or indirectly indicate the beginning of a potential idle time period. A potential idle time period may begin at some specified point during and/or after processing a received TCP packet. In one aspect, an empty TCP packet may be received while a potential idle time period is being monitored. That is, a beginning of the potential idle time period has been detected. In response to receiving the empty TCP packet, monitoring of the current potential time period may be aborted. Further, in response to receiving the empty TCP packet, a beginning of a next potential idle time period may be detected.

[0101] In Fig. 5, ITP policy component **550** and ITP monitor component **556** may operate to reset and/or initiate detection of an idle time period in response to receiving an empty TCP packet. First node **602** may receive an empty packet. In response, ITP monitor component **556** may receive an event and/or other indication to reset detection of an idle time period. Resetting the detecting process may be based on whether or not a received empty TCP packet matches a specified condition. ITP option handler component **562** may be configured to determine whether a received empty TCP packet matches the condition. If ITP option handler component **562** determines the empty packet matches the condition, ITP monitor component **556** may be instructed to reset and/or restart detection of the first idle time period including detecting the beginning of a next potential time period.

[0102] The condition may match received TCP packets including ITP headers and/or other TCP option headers. A condition may match a port number and/or other field in TCP packet. A condition may further be based on a network address in an IP header including the TCP packet.

[0103] In a further aspect, first node **602** may receive via network **606** from second node **604** a TCP packet in the TCP connection including an second ITP header. Message **706.2** in Fig. 7 illustrates the TCP packet sent by second node **604**. ITP option handler component **562** may identify the second ITP header received from second node **604**. The identified second ITP header may be for detecting by first node **602** an idle time period, during which no TCP packet in the TCP connection is received, by the first

node **602** that includes data in the first TCP data stream from second node **604**. The first idle time period may be detected by ITP monitor component **556** in first node **602** based on the second ITP header and based on the received idle information. The second ITP header received in the TCP packet from second node **604** may be based on the first ITP header in the TCP packet sent in the TCP connection by first node **602** to second node **604**.

[0104] In some aspects, the first node and second node **604** may continue to exchange ITP headers. Information in the exchanged ITP headers may be based on ITP headers received in the TCP connection and/or on data accessible locally to one or both of the nodes. In some aspects, the exchange may be a negotiation while in other the exchange may simply be informational.

[0105] Returning to Fig. 2, block **210** illustrates the method further includes deactivating the TCP connection in response to detecting the first idle time period. Accordingly, a system for sharing information for detecting an idle TCP connection further includes means for deactivating the TCP connection in response to detecting the first idle time period. For example, as illustrated in Fig. 4a, the connection state component **458** is configured for deactivating the TCP connection in response to detecting the first idle time period.

[0106] Fig. 5 illustrates connection state component **558** as an adaptation of and/or analog of connection state component **458** in Fig. 4a. One or more connection state components **558** operate in execution environment **502**.

[0107] When ITP monitor component **556** in first node **602** detects an idle time period, ITP monitor component **556** may provide an indication to connection state component **558**. The indication may indicate that the idle time period for the TCP connection has been detected and/or otherwise may instruct connection state component **558** and/or other components in TCP layer component **506** to deactivate the TCP connection. Message **712** in Fig. 7 illustrates a communication to deactivate the TCP connection communicated in response to detecting the idle time period.

[0108] Deactivating the TCP connection may include closing the TCP connection. A TCP connection may be closed using a three-way handshake packet exchange described in RFC 793. Deactivating the TCP connection may include sending a TCP packet by the detecting node to reset the TCP connection. According to RFC 793, first node **602** may send a TCP packet including a reset (RST) bit set to “1” to indicate a connection reset. Deactivating the TCP connection may include, alternatively or additionally, releasing a resource allocated for maintaining and/or activating the TCP connection.

[0109] With respect to the method illustrated in Fig. 3, block **302** illustrates the method includes receiving, by a second node from a first node, a first transmission control protocol (TCP) packet in a TCP connection. Accordingly, a system for sharing information for detecting an idle TCP connection includes means for receiving, by a second node from a first node, a first transmission control protocol (TCP) packet in a TCP connection. For example, as illustrated in Fig. 4b, the net in-port component **460** is

configured for receiving, by a second node from a first node, a first transmission control protocol (TCP) packet in a TCP connection.

[0110] Fig. 5 illustrates net in-port component **560** as an adaptation of and/or analog of net in-port component **460** in Fig. 4b. One or more net in-port components **560** operate in execution environment **502**.

[0111] As described above, net in-port component **560** in Fig. 5 may operate in an instance of execution environment **502** and/or an analog included in and/or including second node **604**. The TCP packet, illustrated by message **706.1** in Fig. 7 and described above, may be received by net in-port component **560** in second node **604**. The TCP packet may include data in a second TCP data stream sent by first node **602** to second node **604** to deliver to a user of TCP layer component **506** in second node **604** such as network application **504**. Alternatively, the TCP packet may be an empty TCP packet. The received TCP packet may be a packet included in setting up the TCP connection as described above.

[0112] Returning to Fig. 3, block **304** illustrates the method further includes detecting a first idle time period header, in the first packet, identifying metadata for a first idle time period, detectable by the first node, during which no TCP packet including data in a first TCP data stream sent in the TCP connection by the second node is received by the first node. Accordingly, a system for sharing information for detecting an idle TCP connection includes means for detecting a first idle time period header, in the first packet, identifying metadata for a first idle time period, detectable by the first node,

during which no TCP packet including data in a first TCP data stream sent in the TCP connection by the second node is received by the first node. For example, as illustrated in Fig. 4b, idle time period option handler component **462** is configured for detecting a first idle time period header, in the first packet, identifying metadata for a first idle time period, detectable by the first node, during which no TCP packet including data in a first TCP data stream sent in the TCP connection by the second node is received by the first node.

[0113] Fig. 5 illustrates idle time period option handler component **562** as an adaptation of and/or analog of idle time period option handler component **462** in Fig. 4b. One or more idle time period option handler components **562** operate in execution environment **502**.

[0114] In Fig. 5, ITP option handler component **562** is operatively coupled to packet handler component **516**. The TCP packet, including the ITP header sent by first node **602**, may be received, and identified as a TCP packet by net in-port component **560** operating in second node **604**. As illustrated in Fig. 5, net in-port component **560** and/or an analog of net in-port component **560** may provide and/or otherwise identify the received packet to packet handler component **516**. Packet handler component **516** may detect various portions of the TCP packet according to the TPC packet **802** structure as illustrated in Fig. 8. Alternatively, packet handler component **516** may provide some or all of the packet to various components in TCP layer component **506** to identify portions

of the packet according to the TCP specification and/or according to a particular implementation.

[0115] The ITP header sent by first node **602** may be received by and/or otherwise identified by ITP option handler component **562**. Message **708** in Fig. 7 exemplifies activation of ITP option handler component **562** for detecting the ITP header in the TCP packet received from first node **602** by second node **604**.

[0116] In various aspects, ITP option handler component **562** operating in second node **604** may detect and/or otherwise determine a duration of time for associated with detection of the idle time period by first node **602**, a duration generator, and/or a parameter for a duration generator. The first idle time period header may identify metadata including and/or identifying for detection of the first idle time period by first node **602** a duration of time, a generator for determining a duration of time, and/or an input for determining a duration of time.

[0117] Returning to Fig. 3, block **306** illustrates the method yet further includes modifying, based on the metadata, by the second node a timeout attribute associated with the TCP connection. Accordingly, a system for sharing information for detecting an idle TCP connection includes means for modifying, based on the metadata, by the second node a timeout attribute associated with the TCP connection. For example, as illustrated in Fig. 4b, the option attribute handler component **464** is configured for modifying, based on the metadata, by the second node a timeout attribute associated with the TCP connection.

[0118] Fig. 5 illustrates option attribute handler component **564** as an adaptation of and/or analog of option attribute handler component **464** in Fig. 4b. One or more option attribute handler components **564** operate in execution environment **502**.

[0119] In an aspect, ITP option handler component **562** may one or more attribute option handler components **564** to modify one or more corresponding attributes of a keep-alive option, a TCP user timeout, a retransmission timeout, an acknowledgment timeout, and another timeout associated with the TCP connection, in response to identifying the ITP header. The modifying may be based on the content of the ITP header.

[0120] For example, ITP option handler component **562** in second node **604** may interoperate with a keep-alive attribute option handler component **564** directly and/or indirectly via settings service component **526**, connection state component **558**, and/or a keep-alive policy component (not shown) to detect the existence and state of one or more keep-alive attributes in determining whether the keep-alive option is active and/or the state of the keep-alive option.

[0121] In response to identifying the idle time period header, ITP option handler component **562** may activate, disable, and/or modify the state of the keep-alive option via interoperation with the keep-alive attribute option handler. Thus, in response to identifying the idle information, attribute option handler component **564** may prevent and/or alter the time a keep-alive packet is sent by second node **604** to first node **602**.

[0122] Alternatively or additionally, an attribute option handler component **564** may modify an attribute associated with a packet acknowledgment option provided by TCP layer component **506** in first node **602**. Modifying a packet acknowledgment attribute may include creating the attribute, deleting the attribute, and/or modifying the attribute. Attribute option handler component **564** may interoperate with settings service component **526**, connection state component **558**, and/or an acknowledgment policy component (not shown) to detect the existence and state of one or more packet acknowledgment attributes. In response to identifying the idle information, attribute option handler component **564** may modify the state of the packet acknowledgment option. Thus, in response to identifying the idle information, attribute option handler component **564** may prevent and/or alter the time an acknowledgment is sent in a packet data from second node **604** to first node **602** in the TCP connection.

[0123] As described herein an ITP header for detecting an idle time period for a TCP connection may serve a number of purposes. A first node in a TCP connection may via an ITP header inform and/or otherwise identify to a second node in the connection one or more durations for detecting an idle time period by one or both nodes. Given multiple purposes, one or more types of ITP headers may be supported and/or an ITP header may be structured to support one or more of the described services. An exchange of ITP headers may be informational and/or may be included in negotiation between two nodes included in a TCP connection. When used in a negotiation, an ITP header may be included in a negotiation protocol that has an identifiable end during a portion of the

existence of a TCP connection or may be included in a negotiation that may remain ongoing throughout the existence of a TCP connection. Those skilled in the art will recognize the list of services in this paragraph is not exhaustive.

[0124] It should be understood that the various components illustrated in the various block diagrams represent logical components that are configured to perform the functionality described herein and may be implemented in software, hardware, or a combination of the two. Moreover, some or all of these logical components may be combined, some may be omitted altogether, and additional components may be added while still achieving the functionality described herein. Thus, the subject matter described herein may be embodied in many different variations, and all such variations are contemplated to be within the scope of what is claimed.

[0125] To facilitate an understanding of the subject matter described above, many aspects are described in terms of sequences of actions that may be performed by elements of a computer system. For example, it will be recognized that the various actions may be performed by specialized circuits or circuitry (e.g., discrete logic gates interconnected to perform a specialized function), by program instructions being executed by one or more instruction processing units, or by a combination of both. The description herein of any sequence of actions is not intended to imply that the specific order described for performing that sequence must be followed.

[0126] Moreover, the methods described herein may be embodied in executable instructions stored in a computer readable medium for use by or in connection with an

instruction execution machine, system, apparatus, or device, such as a computer-based or processor-containing machine, system, apparatus, or device. As used herein, a "computer readable medium" may include one or more of any suitable media for storing the executable instructions of a computer program in one or more of an electronic, magnetic, optical, electromagnetic, and infrared form, such that the instruction execution machine, system, apparatus, or device may read (or fetch) the instructions from the computer readable medium and execute the instructions for carrying out the described methods. A non-exhaustive list of conventional exemplary computer readable media includes a portable computer diskette; a random access memory (RAM); a read only memory (ROM); an erasable programmable read only memory (EPROM or Flash memory); optical storage devices, including a portable compact disc (CD), a portable digital video disc (DVD), a high definition DVD (HD-DVD.TM.), a Blu-ray.TM. disc; and the like.

[0127] Thus, the subject matter described herein may be embodied in many different forms, and all such forms are contemplated to be within the scope of what is claimed. It will be understood that various details may be changed without departing from the scope of the claimed subject matter. Furthermore, the foregoing description is for the purpose of illustration only, and not for the purpose of limitation, as the scope of protection sought is defined by the claims as set forth hereinafter together with any equivalents thereof entitled to.

[0128] All methods described herein may be performed in any order unless otherwise indicated herein explicitly or by context. The use of the terms "a" and "an" and "the" and similar referents in the context of the foregoing description and in the context of the following claims are to be construed to include the singular and the plural, unless otherwise indicated herein explicitly or clearly contradicted by context. The foregoing description is not to be interpreted as indicating any non-claimed element is essential to the practice of the subject matter as claimed.

I CLAIM:

1. An apparatus, comprising:

a non-transitory memory storing instructions; and

one or more processors in communication with the non-transitory memory, wherein the one or more processors execute the instructions to:

receive first information on which at least a first duration for detecting a first type of time period is based;

generate a first packet including a first parameter field identifying first metadata for use in determining a second duration for detecting the first type of time period;

set up a first connection, by sending, from the first node to a second node, the first packet to provide the first metadata to the second node, for use by the second node in determining the second duration for detecting the first type of time period;

in response to detecting, based on the first duration and by the first node during at least a portion of the first connection including at least a portion of the first connection set up, a first time period of the first type of time period, at least partially close the first connection; and

in response to detecting, based on the second duration and by the first node after the first duration is changed to the second duration, a second time period of the first type of time period, at least partially close the first connection.

2. The apparatus of Claim 1, wherein the apparatus is configured such that the first duration is not negotiated between the first and second nodes during the first connection set up, and the second duration is negotiated between the first and second nodes during the first connection set up for the first connection.

3. The apparatus of Claim 1, wherein the apparatus is configured such that the first duration is not negotiated during the first connection set up between the first and second nodes for the first connection, and the second duration is negotiated between the first and second nodes for the first connection.

4. The apparatus of Claim 1, wherein the apparatus is configured such that the first time period is only capable of being detected during the first connection set up.

5. The apparatus of Claim 1, wherein the apparatus is configured such that the second time period is capable of being detected at a time at least one of: during the first connection set up, or thereafter during the first connection.
6. The apparatus of Claim 1, wherein the apparatus is configured such that the first duration is used and the second duration is not used, for detecting the first type of time period until being changed to the second duration.
7. The apparatus of Claim 1, wherein the apparatus is configured such that the first type of time period includes an idle time period.
8. The apparatus of Claim 1, wherein the apparatus is configured such that only one of the first time period or the second time period is detected for the first connection.
9. The apparatus of Claim 1, wherein the apparatus is configured such that, during the at least portion of the first connection including the at least portion of the first connection set up, the detection of the first time period of the first type of time period is based on the first duration, by being based on whether another packet is not received for the first connection set up for the first duration.
10. The apparatus of Claim 1, wherein the apparatus is configured such that, during the at least portion of the first connection including the at least portion of the first connection set up, the detection of the first time period of the first type of time period is

based on the first duration, by being based on whether, for the first duration, no packet is received and processed to keep the first connection active.

11. The apparatus of Claim 1, wherein the apparatus is configured such that, after the first duration is changed to the second duration, the detection of the second time period of the first type of time period is based on the second duration, by being based on whether, for the second duration, no packet is received in the first connection and processed to keep the first connection active.

12. The apparatus of Claim 1, wherein the apparatus is configured to, in response to detecting the first time period of the first type of time period, unilaterally at least partially close the first connection.

13. The apparatus of Claim 1, wherein the apparatus is configured to, in response to detecting the first time period of the first type of time period, at least partially close the first connection, without signaling the second node in relation to the detection of the first time period after detecting the first time period.

14. The apparatus of Claim 1, wherein the apparatus is configured to, in response to detecting the first time period of the first type of time period, at least partially close the first connection, by releasing, by the first node, a first resource allocated for the first connection.

15. The apparatus of Claim 1, wherein the apparatus is configured such that the second duration is capable of being different from the first duration.

16. The apparatus of Claim 15, wherein the apparatus is configured such that the second duration is different from the first duration.

17. The apparatus of Claim 15, wherein the apparatus is configured such that the second duration is the same as the first duration, despite being capable of being different from the first duration.

18. The apparatus of Claim 1, wherein the apparatus is configured such that:

the first packet is not a synchronize (SYN) packet;

the first connection is not a Transmission Control Protocol (TCP) extension connection, and the first connection is not a TCP extension connection that involves a TCP extension; and

the first type of time period does not include a user timeout period.

19. The apparatus of Claim 1, wherein the apparatus is configured such that an idle timeout attribute is utilized for the first type of time period, and a user timeout attribute, that is separate from the idle timeout attribute, is utilized for controlling communication of one or more acknowledgment packets.

20. The apparatus of Claim 1, wherein the apparatus is configured such that the first type of time period is started in response to at least one of a received packet or a sent packet.

21. The apparatus of Claim 20, wherein the apparatus is configured such that the first type of time period is started in response to the received packet.

22. The apparatus of Claim 20, wherein the apparatus is configured such that the first type of time period is started in response to the sent packet.

23. The apparatus of Claim 20, wherein the apparatus is configured such that, after the first duration is changed to the second duration, the detection of the second time period of the first type of time period is based on the second duration, by being only based on whether, for the second duration after the second time period of the first type of time period is started, no packet is received and processed to keep the first connection active.

24. The apparatus of Claim 23, wherein the apparatus is configured such that, during the second time period of the first type of time period, an empty packet is sent without causing a timer utilized to detect the second time period to be reset.

25. The apparatus of Claim 1, wherein the apparatus is configured such that, during the second time period of the first type of time period, an empty packet is sent without causing a timer utilized to detect the second time period to be reset.

26. The apparatus of Claim 1, wherein the apparatus is configured to such that:

the first connection set up further includes, in addition to (a-1) sending the first packet:

(a-2) after sending the first packet and without any other communication between the first node and the second node after (a-1) and before (a-2), receiving, at the first node from the second node, a second packet, and

(a-3) after receiving the second packet and without any other communication between the first node and the second node after (a-2) and before (a-3), sending, from the first node to the second node, a third packet

27. The apparatus of Claim 1, wherein the apparatus is configured to such that: the first time period and the second time period are started in response to at least one of a received packet or a sent packet; and during the at least portion of the first connection including the at least portion of the first connection set up, the detection of the first time period of the first type of time period is based on the first duration, by being based on whether, during the first duration after the first time period is started, no packet is received and processed to keep the first connection active; and based on the first duration being changed to the second duration, the detection of the second time period of the first type of time period is based on the second duration, by being based on whether, during the second duration after the second time period is started, no packet is received and processed to keep the first connection active.

28. The apparatus of Claim 27, wherein the apparatus is configured to such that the first connection set up further includes, in addition to (a-1) sending the first packet:

(a-2) after sending the first packet and without any other communication between the first node and the second node after (a-1) and before (a-2), receiving, at the first node from the second node, a second packet, and

(a-3) after receiving the second packet and without any other communication between the first node and the second node after (a-2) and before (a-3), sending, from the first node to the second node, a third packet.

29. The apparatus of Claim 1, wherein the apparatus is configured to such that the first connection is not a Transmission Control Protocol (TCP) extension connection, and the first connection is not a TCP extension connection that involves a TCP extension.

30. The apparatus of Claim 1, wherein the apparatus is configured to such that the first type of time period does not include a user timeout period.

ABSTRACT

In various embodiments, a method, apparatus, and computer program product are provided to: receive first information on which at least a first duration for detecting a first type of time period is based; generate a first packet including a first parameter field identifying first metadata for use in determining a second duration for detecting the first type of time period; set up a first connection, by sending, from the first node to a second node, the first packet to provide the first metadata to the second node, for use by the second node in determining the second duration for detecting the first type of time period; in response to detecting, based on the first duration and by the first node during at least a portion of the first connection including at least a portion of the first connection set up, a first time period of the first type of time period, at least partially close the first connection; and in response to detecting, based on the second duration and by the first node after the first duration is changed to the second duration, a second time period of the first type of time period, at least partially close the first connection.

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**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN
APPLICATION DATA SHEET (37 CFR 1.76)**

**Title of
Invention**

**METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING
INFORMATION FOR DETECTING AN IDLE TCP CONNECTION**

As the below named inventor, I hereby declare that:

This declaration
is directed to:

☒

The attached application, or

☐

United States application or PCT international application number _____
filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001
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Inventor: Robert Paul Morris

Date (Optional) : _____

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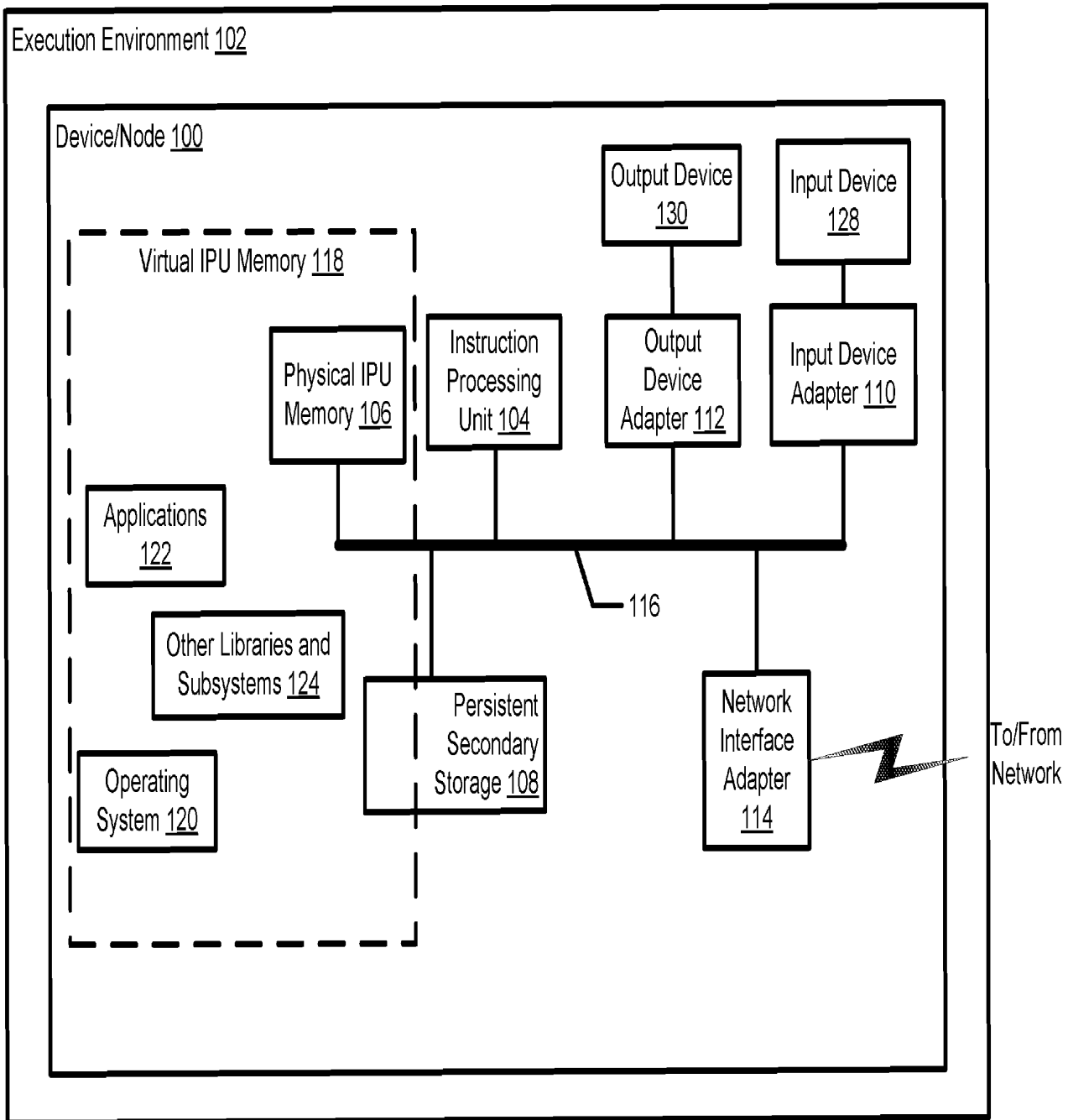
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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Fig. 1

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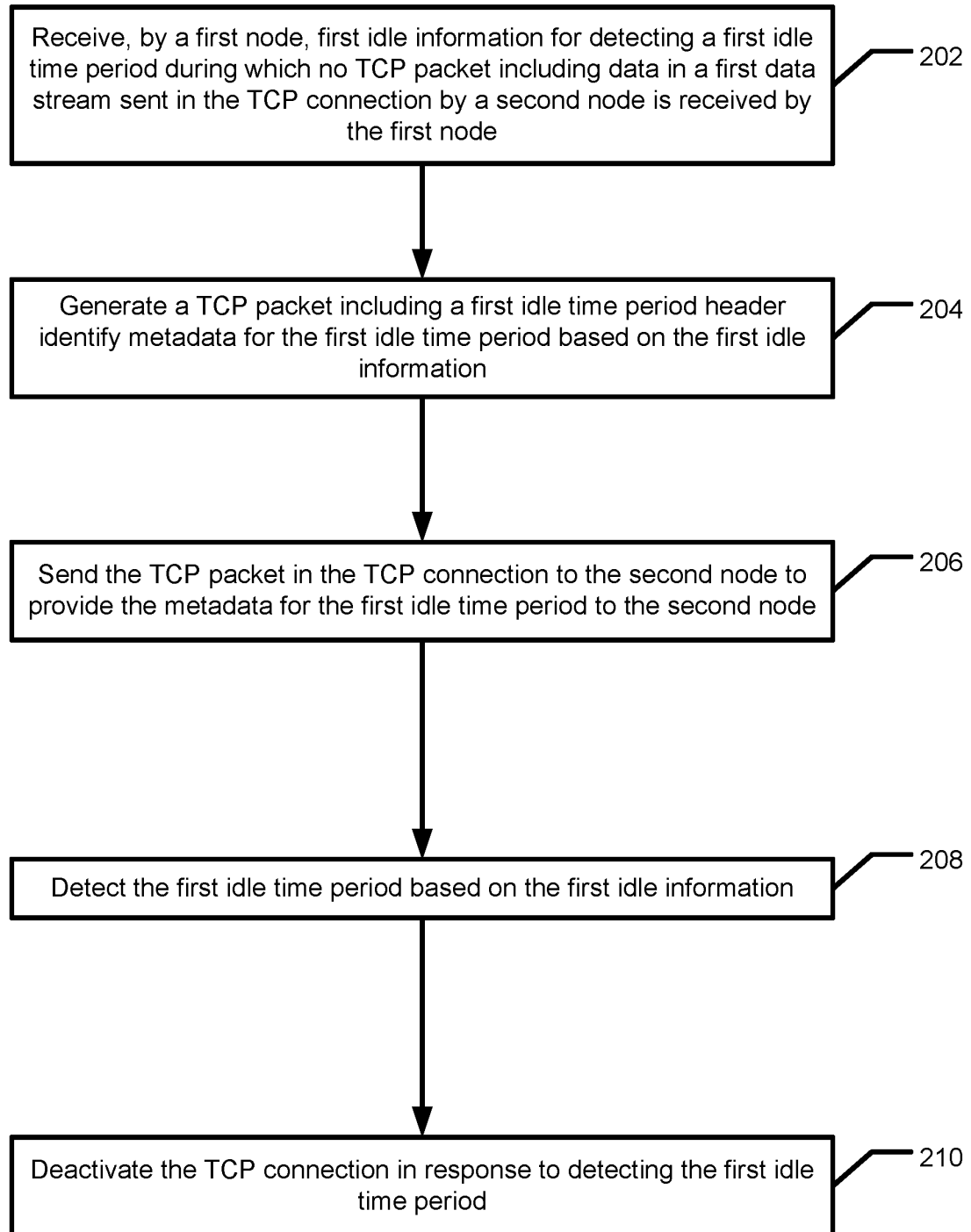


Fig. 2

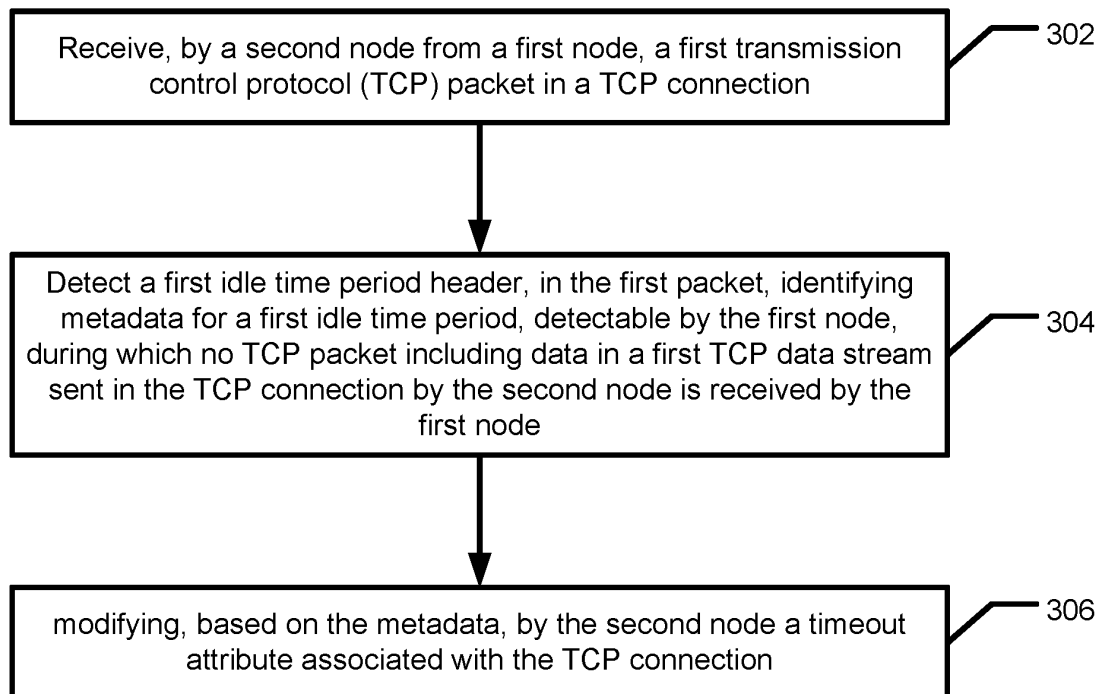


Fig. 3

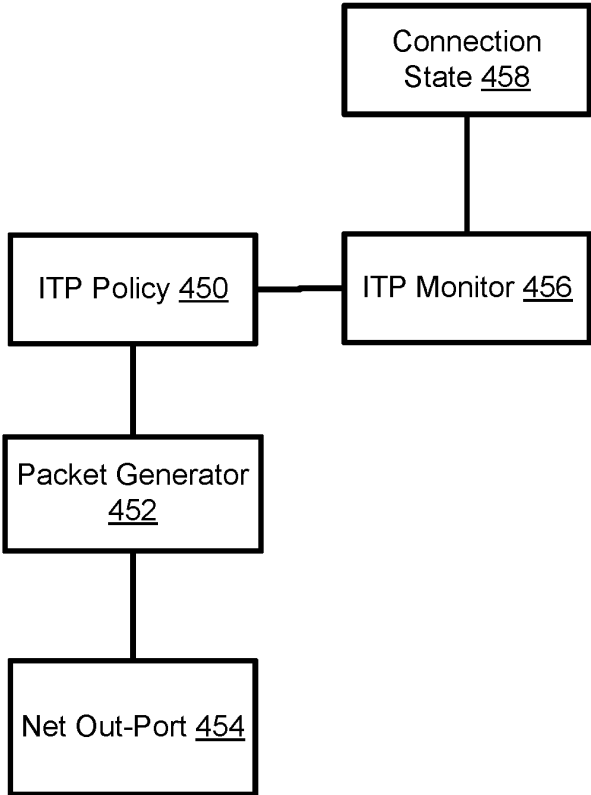


Fig. 4a

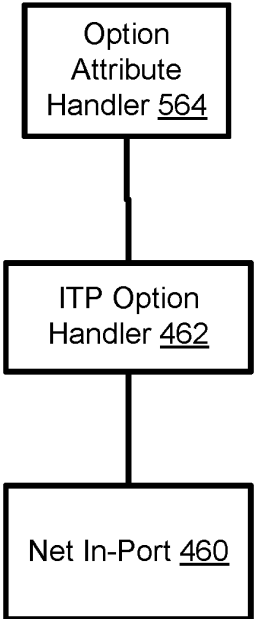


Fig. 4b

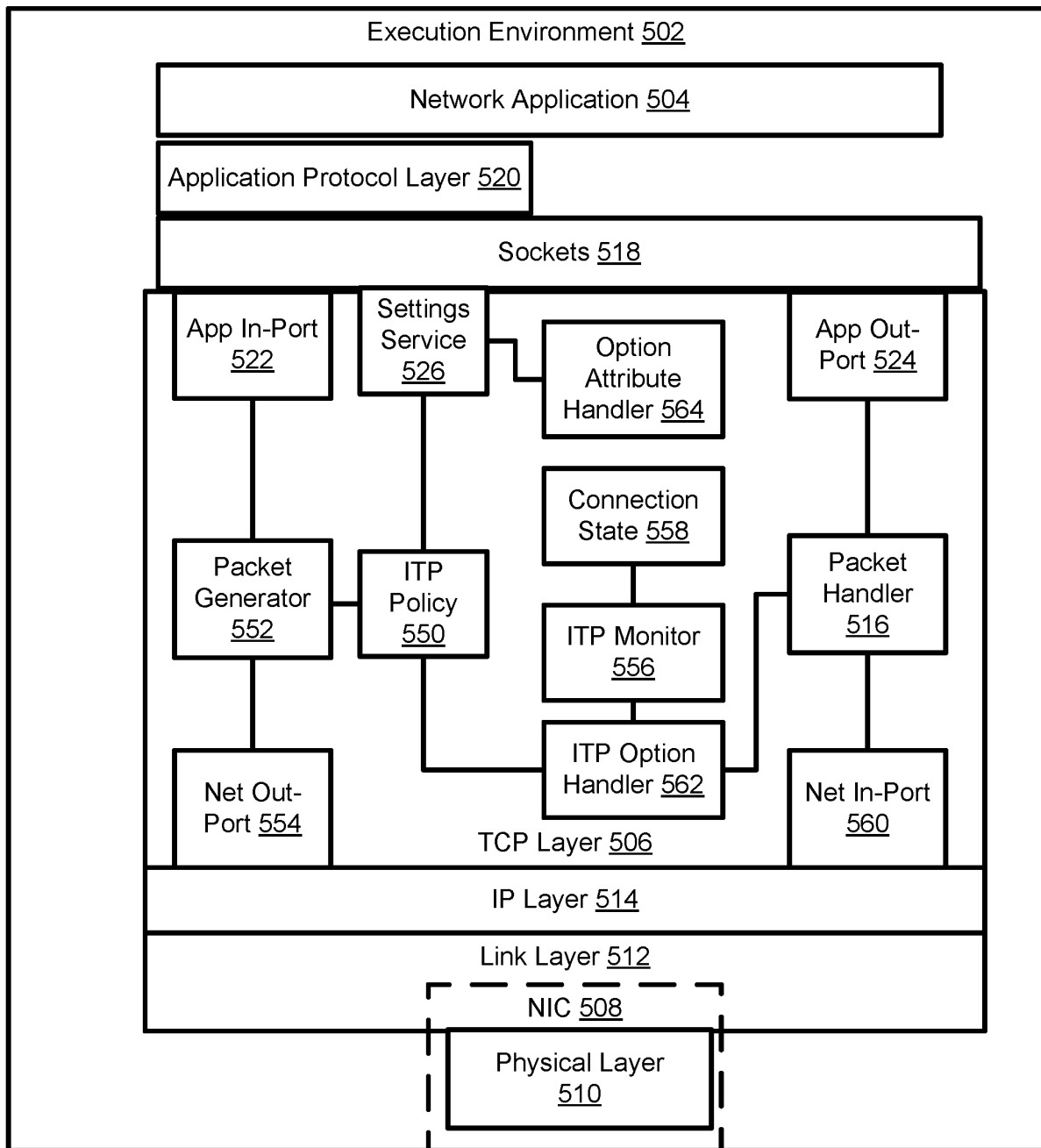


Fig. 5

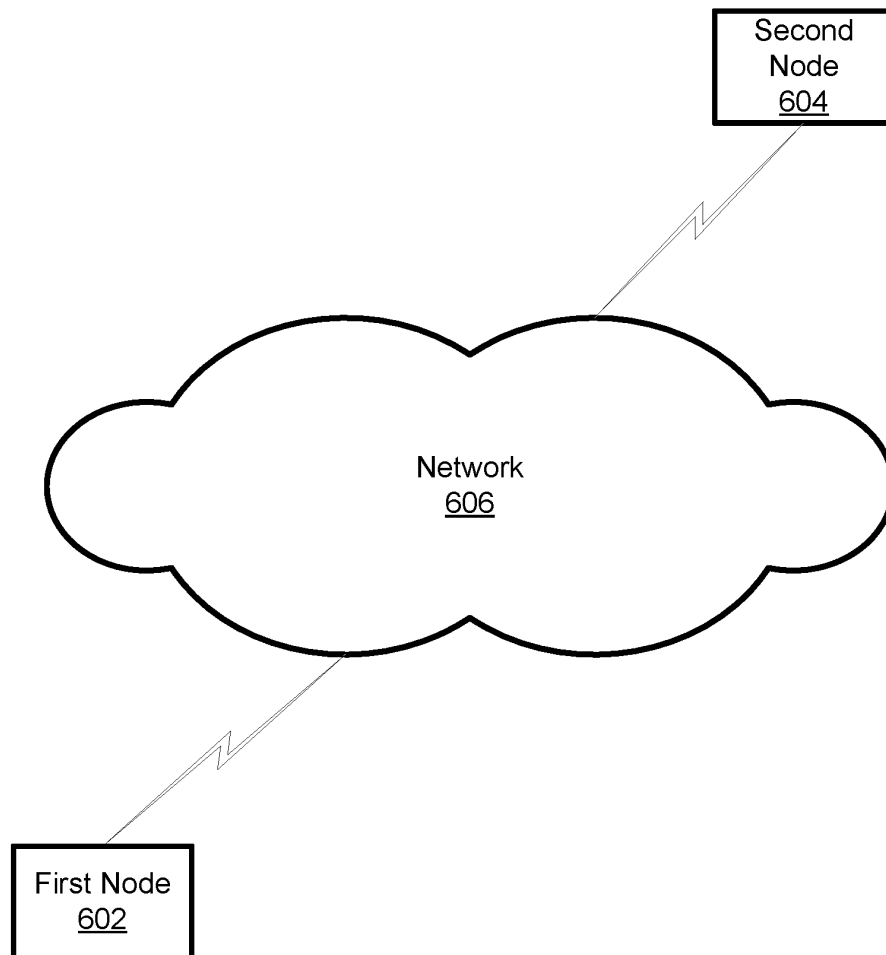


Fig. 6

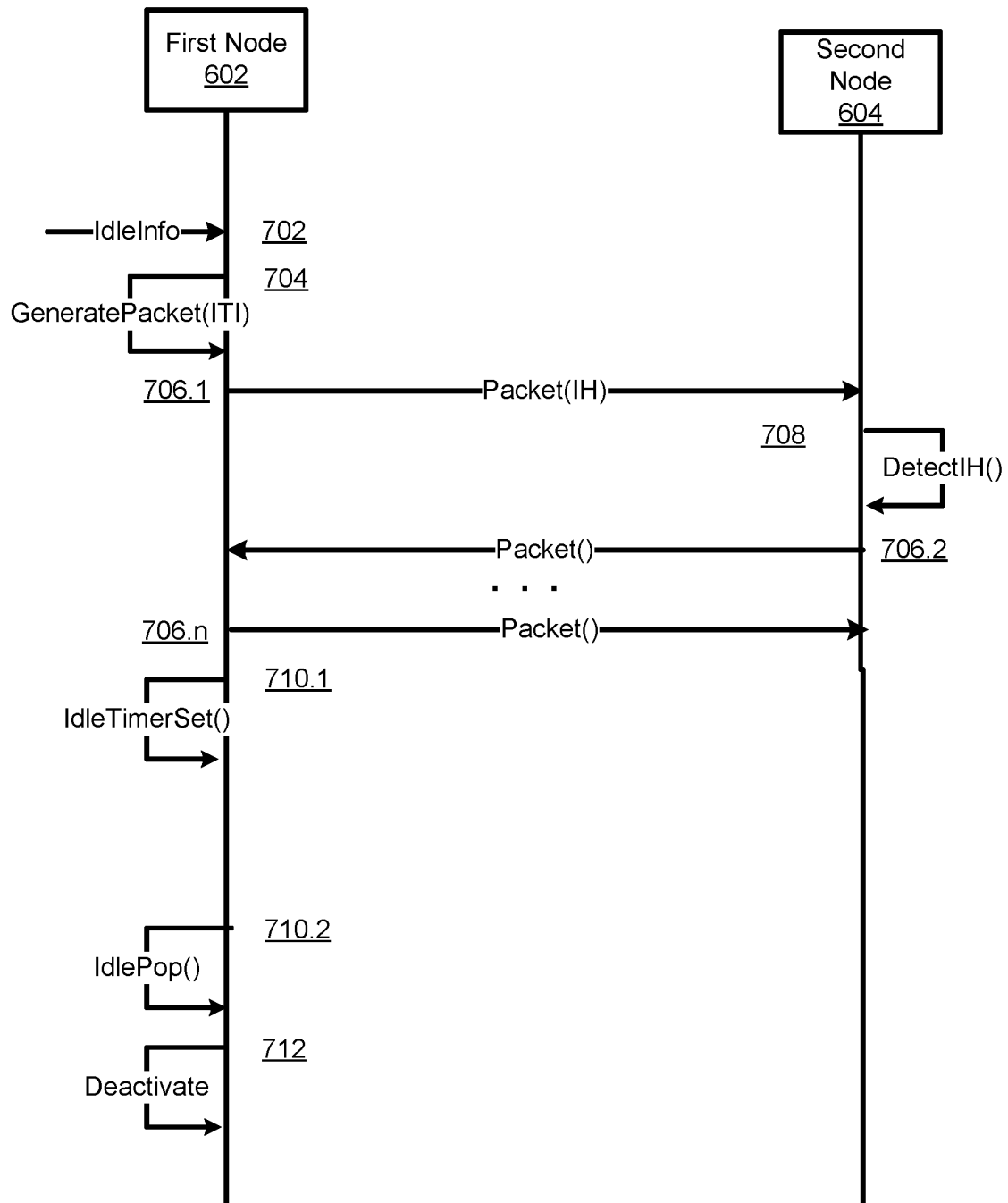
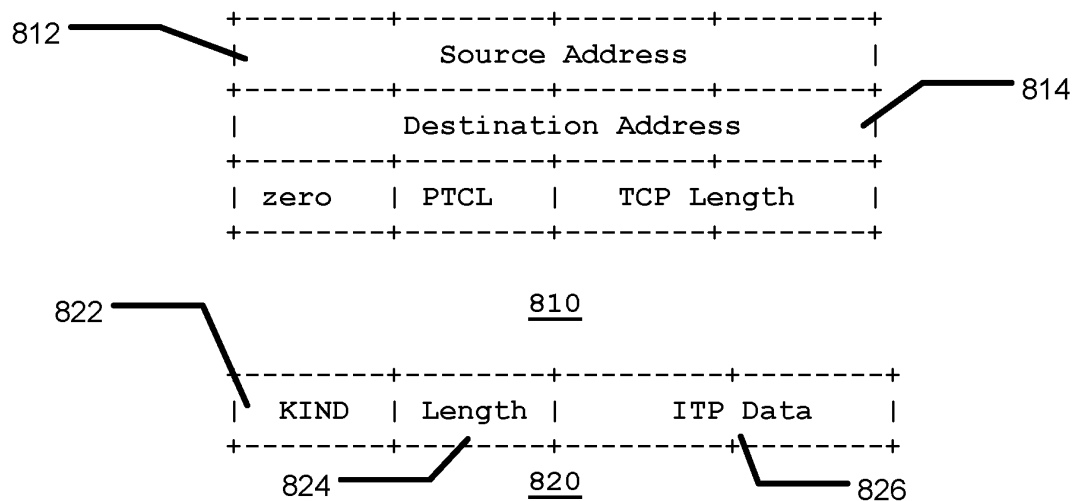
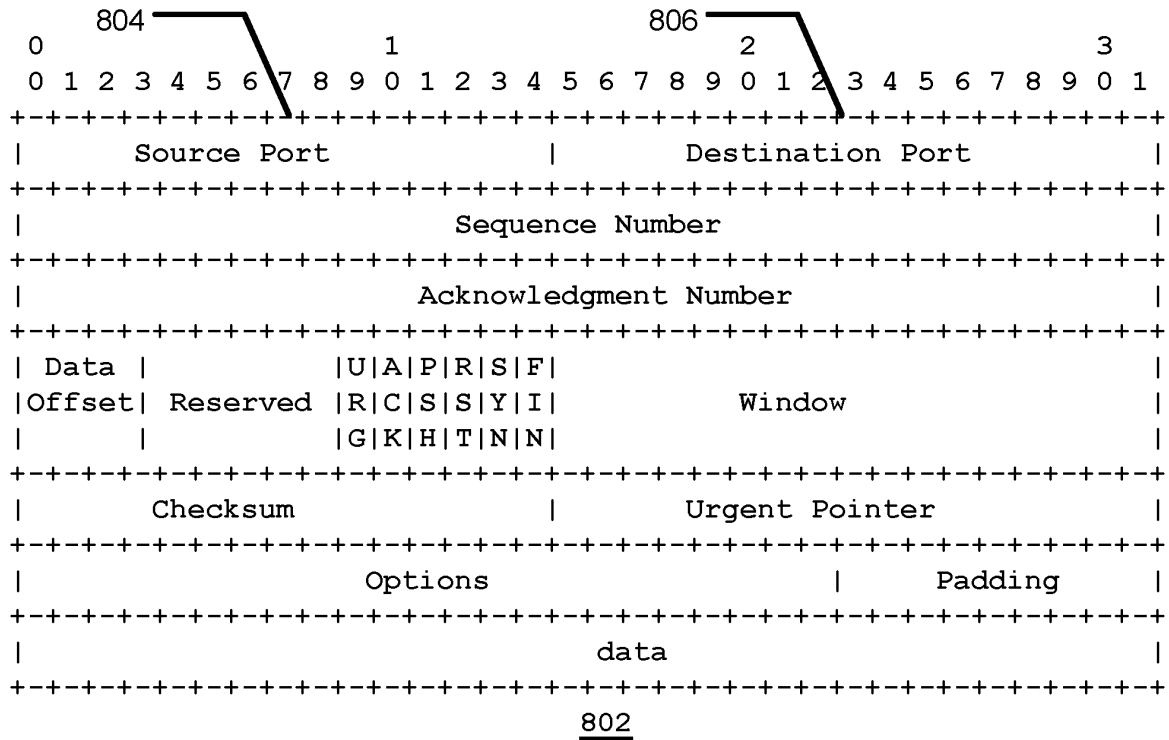


Fig. 7



Figures are adapted from RFC 793

Fig. 8

**CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION
UNDER 37 CFR 1.102(e) (Page 1 of 1)**

First Named Inventor:	Robert Paul Morris	Nonprovisional Application Number (if known):	
Title of Invention:	METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR SHARING INFORMATION FOR DETECTING AT LEAST ONE TIME PERIOD FOR A CONNECTION		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i)(1) and the prioritized examination fee set forth in 37 CFR 1.17(c) have been filed with the request. The publication fee requirement is met because that fee, set forth in 37 CFR 1.18(d), is currently \$0. The basic filing fee, search fee, and examination fee are filed with the request or have been already been paid. I understand that any required excess claims fees or application size fee must be paid for the application.
2. I understand that the application may not contain, or be amended to contain, more than four independent claims, more than thirty total claims, or any multiple dependent claims, and that any request for an extension of time will cause an outstanding Track I request to be dismissed.
3. The applicable box is checked below:
 - I. ☒ **Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)**
 - i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.
---OR---
 - (b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.
 - ii. An executed inventor's oath or declaration under 37 CFR 1.63 or 37 CFR 1.64 for each inventor, or the application data sheet meeting the conditions specified in 37 CFR 1.53(f)(3)(i) is filed with the application.
 - II. ☐ **Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)**
 - i. A request for continued examination has been filed with, or prior to, this form.
 - ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
 - iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
 - iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
 - v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature /Patrick Caldwell/	Date 1/14/2021
Name (Print/Typed) Patrick Caldwell	Practitioner Registration Number 44580
Note: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required.*	
☐ *Total of _____ forms are submitted.	

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.