# PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

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# PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

| Date of mailing *(day/month/year)* | 14 MAY 2018 |
|---|---|

| Applicant's or agent's file reference | FOR FURTHER ACTION |
|---|---|
| 3997-85-PCT | See paragraph 2 below |

| International application No. | International filing date *(day/month/year)* | Priority date *(day/month/year)* |
|---|---|---|
| PCT/US18/21170 | 06 March 2018 (06.03.2018) | 06 March 2017 (06.03.2017) |

International Patent Classification (IPC) or both national classification and IPC
IPC - H04L 12/26 (2018.01)
CPC - H04L 43/08, 41/0813; H04N 17/004

Applicant SONIFI SOLUTIONS, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

| Name and mailing address of the ISA/US | Date of completion of this opinion | Authorized officer |
|---|---|---|
| Mail Stop PCT, Attn: ISA/US<br>Commissioner for Patents<br>P.O. Box 1450, Alexandria, Virginia 22313-1450<br>Facsimile No. 571-273-8300 | 22 April 2018 (22.04.2018) | Shane Thomas<br>PCT Helpdesk: 571-272-4300<br>PCT OSP: 571-272-7774 |

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**Box No. I Basis of this opinion**

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a)).

3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

   a. ☐ forming part of the international application as filed:

      ☐ in the form of an Annex C/ST.25 text file.

      ☐ on paper or in the form of an image file.

   b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

   c. ☐ furnished subsequent to the international filing date for the purposes of international search only:

      ☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).

      ☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

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**Box No. V** **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

1. Statement

| | | | |
|---|---|---|---|
| Novelty (N) | Claims | NONE | YES |
| | Claims | 1-20 | NO |
| Inventive step (IS) | Claims | NONE | YES |
| | Claims | 1-20 | NO |
| Industrial applicability (IA) | Claims | 1-20 | YES |
| | Claims | NONE | NO |

2. Citations and explanations:

Claims 1-20 lack novelty under PCT Article 33(2) as being anticipated by US 2016/0099849 A1 to EDGECAST NETWORKS, INC. (hereinafter "EgdeCast").

As per claim 1, EdgeCast discloses a method for obtaining network diagnostic information within a hospitality environment, the method comprising: receiving application identification information at a diagnostic device (users can define custom metrics (application identification information) usable to identify applications to be executed on user devices (diagnostic device) that monitor content download performance associated with environments (hospitality environment) where content is monetized; paragraphs [0021], [0023], [0024], [0032], [0051]); retrieving a diagnostic application based on the application identification information (users define custom metrics (application identification information) in order to adapt client applications, and edge servers distribute the customer specified configurations to appropriate client applications, where an adapted client application is downloaded to the user device; paragraphs [0022], [0024], [0047]); obtaining site configuration information (a configuration can be provided to a client application, where the configuration information (site configuration information) obtained via a content distributor platform includes geo coordinates (site configuration), device type and platform type (site configuration); paragraphs [0033], [0041]); configuring the diagnostic application with the site configuration information (the monitoring system provides different configurations to a same client application at different times in order to dynamically reconfigure the client application, the configuration information being obtained via a content distributor platform; paragraphs [0033], [0041]); obtaining the network diagnostic information (network related metrics (diagnostic information) monitored (obtain) and reported by client applications include 'number of media requests', 'transfer duration' and 'number of bytes transferred'; paragraphs [0024], [0027]); and providing the network diagnostic information to a remote monitoring server (the big data platform exposes client-side metrics, including network related metrics, to an external content provider customer for review, where the provider customer has a user device (remote monitoring server) and is a provider of content; paragraphs [0016], [0019], [0024], [0027]).

As per claim 2, EdgeCast discloses the method of claim 1. Additionally, EdgeCast discloses, wherein the diagnostic device is a local player device communicatively coupled to an output device (the client application is a media player application that can be run on a media player user device (diagnostic device) that is connected via a server computer system to an output device; paragraphs [0022], [0075]).

As per claim 3, EdgeCast discloses the method of claim 2. Additionally, EdgeCast discloses, further comprising: executing, at startup, a default application at the local player device (when a default or customer specified configuration is generated, that configuration is uploaded to a monitoring system origin site, where the configurations are disseminated to the default client applications to be run by the media player for which a startup time is monitored; paragraphs [0022], [0028], [0045], [0046]); determining a status of the local player device (monitored player state metrics include 'Playing', 'Paused', 'Loading' and 'Stopped'; paragraphs [0024], [0025]); and retrieving the diagnostic application based on the determined status (edge servers distribute configurations based on player device status metrics to appropriate client applications, where the updated client application can be downloaded to the media player user device; paragraphs [0022], [0024], [0025], [0047]).

As per claim 4, EdgeCast discloses the method of claim 3. Additionally, EdgeCast discloses, wherein the status of the local player device is based on the local player device being inactive for a specified period of time (monitored playback metrics include Playback Start Time, Playback Type, Startup Time, Duration Watched, Number of Dropped Video Frames and Number of Stalls; paragraphs [0024], [0028]).

As per claim 5, EdgeCast discloses the method of claim 1. Additionally, EdgeCast discloses, further comprising: determining whether the diagnostic device has communicated with the remote monitoring server within a specified period of time (the edge servers are used as a distributed framework to collect monitoring results, via client beacon data having a specified reporting frequency, from different sets of user devices, and the distributed architecture provides redundancy and failover for the task of collecting monitoring results, where edge servers pass complied and processed monitoring results to the external content provider customer for review; paragraphs [0018], [0019]); and providing a communication to an entity if the diagnostic device has not communicated with the remote monitoring server within the specified period of time (the edge servers collect monitoring results via client beacon data, having a specified reporting frequency, from different sets of user devices, and a distributed architecture provides redundancy and failover for the task of collecting monitoring results, where edge servers pass processed monitoring results to the external content provider customer reviewer, and for any detected issue, an alert can be issued to a system administrator to take proper corrective action; paragraphs [0018], [0019], [0066]).

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**Supplemental Box**

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As per claim 6, EdgeCast discloses the method of claim 1. Additionally, EdgeCast discloses, wherein a frequency at which the diagnostic device provides the network diagnostic information to the remote monitoring server is based on the site configuration information (the client application periodically sends, via interval based beaconing, sets of beacon data back to the edge server which reports metrics to the external provider customer reviewer, where the interval based beaconing frequency and the metrics reported at each reporting interval are specified as part of the client application configuration, and the big data platform can adjust the reporting granularity (site configuration) if anomalies are detected; paragraphs [0019], [0045], [0066]).

As per claim 7, EdgeCast discloses the method of claim 1. Additionally, EdgeCast discloses, further comprising: providing a status of the diagnostic device to a requesting device (the big data platform processes any received client beacon data which provides player status to make the data searchable; paragraphs [0025], [0062]); and receiving the diagnostic application based on the determined status (edge servers distribute configurations based on player device status metrics to appropriate client applications, where the updated client application can be downloaded to the media player user device; paragraphs [0022], [0024], [0025], [0047]).

As per claim 8, EdgeCast discloses a communication system, comprising: a first server (an edge server is provided; paragraph [0017]); a remote monitoring server (an external content provider customer having a user device (remote monitoring server) is provided, where the provider customer is a provider of content; paragraphs [0016], [0019], [0024]); a local player, wherein the local player is in communication with the first server (a media player application is executed on a media player that communicates with the edge server; paragraphs [0018], [0022]); and an output device (the server includes output devices; paragraph [0071]), wherein, the local player provides a status message to the first server (the edge servers collect client beacon data comprising monitoring results and player status metrics from media player user devices; paragraphs [0018], [0022], [0025]), the local player receives application identification information from the first server, the application identification information identifying a diagnostic application to launch (users can define custom metrics (application identification information) usable to identify applications to be executed on media player user devices (diagnostic device) that monitor content download performance; paragraphs [0021], [0022], [0024], [0051]), the local player retrieves site configuration information (a configuration can be provided to a media player client application, where the configuration information (site configuration information) obtained via a content distributor platform includes geo coordinates (site configuration), device type and platform type (site configuration); paragraphs [0022], [0033], [0041]), the local player obtains network diagnostic information (network related metrics (diagnostic information) monitored (obtain) and reported by media player client applications include 'number of media requests', 'transfer duration' and 'number of bytes transferred'; paragraphs [0022], [0024], [0027]), and the local player provides the network diagnostic information to the remote monitoring server (the big data platform processes the player device client-side metrics, which correspond to network-related metrics, for internal analytics and exposes the compiled client-side metrics to an external content provider customer for review, where the provider customer has a user device (remote monitoring server) and is a provider of content; paragraphs [0016], [0019], [0022], [0024], [0027]).

As per claim 9, EdgeCast discloses the communication system of claim 8. Additionally, EdgeCast discloses, wherein the local player executes a default application at startup (when a default or customer specified configuration is generated, that configuration is uploaded to a monitoring system origin site, where the configurations are disseminated to the default client applications to be run by the media player for which a startup time is monitored; paragraphs [0022], [0028], [0045], [0046]), and wherein the local player receives the application identification information from the first server based on a status message (edge servers distribute configurations based on player device status metrics to appropriate client applications, where the updated client application can be downloaded to the media player user device; paragraphs [0022], [0024], [0025], [0047]).

As per claim 10, EdgeCast discloses the communication system of claim 9. Additionally, EdgeCast discloses, wherein the status message indicates an amount of time that the local player has been inactive (monitored playback metrics include Playback Start Time, Playback Type, Startup Time, Duration Watched, Number of Dropped Video Frames and Number of Stalls; paragraphs [0024], [0028]).

As per claim 11, EdgeCast discloses the communication system of claim 8. Additionally, EdgeCast discloses, wherein the first server requests a status from the local player (the edge servers issue configurations to control the reporting from user devices which provide corresponding monitoring results and status metrics to the edge servers; paragraphs [0018], [0022], [0025]), and wherein the status indicates an amount of time that the local player has been inactive (monitored playback metrics include Playback Start Time, Playback Type, Startup Time, Duration Watched, Number of Dropped Video Frames and Number of Stalls; paragraphs [0024], [0028]).

As per claim 12, EdgeCast discloses the communication system of claim 8. Additionally, EdgeCast discloses, wherein the remote monitoring server determines whether the local player has communicated with the remote monitoring server within a specified period of time (the edge servers are used as a distributed framework to collect monitoring results, via client beacon data having a specified reporting frequency, from different sets of user devices, and the distributed architecture provides redundancy and failover for the task of collecting monitoring results, where edge servers pass complied and processed monitoring results to the external content provider customer reviewer; paragraphs [0018], [0019]), and if the local player has not communicated with the remote monitoring server within the specified period of time, the remote monitoring server provides a notification to a receiving entity (the edge servers collect monitoring results via client beacon data, having a specified reporting frequency, from different sets of user devices, and a distributed architecture provides redundancy and failover for the task of collecting monitoring results, where edge servers pass processed monitoring results to the external content provider customer reviewer, and for any detected issue, an alert can be issued to a system administrator to take proper corrective action; paragraphs [0018], [0019], [0066]).

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As per claim 13, EdgeCast discloses the communication system of claim 8. Additionally, EdgeCast discloses, wherein a frequency at which the local player provides the network diagnostic information to the remote monitoring server is based on the site configuration information (the client application periodically sends via interval based beaconing sets of beacon data back to the edge server, where the interval based beaconing frequency and the metrics reported at each reporting interval are specified as part of the client application configuration, and the big data platform can adjust the reporting granularity (site configuration) if anomalies are detected; paragraphs [0045], [0066]).

As per claim 14, EdgeCast discloses a computer-readable device comprising executable instructions, which when executed by one or more processors (instructions recorded on a non-transitory computer-readable storage medium are executed by one or more processors to perform actions indicated in the instructions; paragraph [0070]), cause the one or more processors to: receive application identification information at a diagnostic device (users can define custom metrics (application identification information) usable to identify applications to be executed on user devices (diagnostic device) that monitor content download performance; paragraphs [0021], [0023], [0024], [0051]); retrieve a diagnostic application based on the application identification information (users define custom metrics (application identification information) in order to adapt client applications, and edge servers distribute the customer specified configurations to appropriate client applications, where an adapted client application is downloaded to the user device; paragraphs [0022], [0024], [0047]); obtain site configuration information (a configuration can be provided to a client application, where the configuration information (site configuration information) obtained via a content distributor platform includes geo coordinates (site configuration), device type and platform type (site configuration); paragraphs [0033], [0041]); configure the diagnostic application with the site configuration information (the monitoring system provides different configurations to a same client application at different times in order to dynamically reconfigure the client application, the configuration information being obtained via a content distributor platform; paragraphs [0033], [0041]); obtain network diagnostic information (network related metrics (diagnostic information) monitored (obtain) and reported by client applications include 'number of media requests', 'transfer duration' and 'number of bytes transferred'; paragraphs [0024], [0027]); and provide the network diagnostic information to a remote monitoring server (the big data platform exposes client-side metrics, including network related metrics, to an external content provider customer for review, where the provider customer has a user device (remote monitoring server) and is a provider of content; paragraphs [0016], [0019], [0024], [0027]).

As per claim 15, EdgeCast discloses the computer-readable device of claim 14. Additionally, EdgeCast discloses, wherein the diagnostic device is a local player device communicatively coupled to an output device (the client application is a media player application that can be run on a media player user device (diagnostic device) that is connected via a server computer system to an output device; paragraphs [0022], [0075]).

As per claim 16, EdgeCast discloses the computer-readable device of claim 15. Additionally, EdgeCast discloses, wherein the executable instructions cause the one or more processors to: execute, at startup, a default application at the local player device (when a default or customer specified configuration is generated, that configuration is uploaded to a monitoring system origin site, where the configurations are disseminated to the default client applications to be run by the media player for which a startup time is monitored; paragraphs [0022], [0028], [0045], [0046]); determine a status of the local player device (monitored player state metrics include 'Playing', 'Paused', 'Loading' and 'Stopped'; paragraphs [0024], [0025]); and retrieve the diagnostic application based on the determined status (edge servers distribute configurations based on player device status metrics to appropriate client applications, where the updated client application can be downloaded to the media player user device; paragraphs [0022], [0024], [0025], [0047]).

As per claim 17, EdgeCast discloses the computer-readable device of claim 16. Additionally, EdgeCast discloses, wherein the status of the local player device is based on the local player device being inactive for a specified period of time (monitored playback metrics include Playback Start Time, Playback Type, Startup Time, Duration Watched, Number of Dropped Video Frames and Number of Stalls; paragraphs [0024], [0028]).

As per claim 18, EdgeCast discloses the computer-readable device of claim 14. Additionally, EdgeCast discloses, wherein the executable instructions cause the one or more processors to: determine whether the diagnostic device has communicated with the remote monitoring server within a specified period of time (the edge servers are used as a distributed framework to collect monitoring results, via client beacon data having a specified reporting frequency, from different sets of user devices, and the distributed architecture provides redundancy and failover for the task of collecting monitoring results, where edge servers pass complied and processed monitoring results to the external content provider customer reviewer; paragraphs [0018], [0019]); and provide a communication to an entity if the diagnostic device has not communicated with the remote monitoring server within the specified period of time (the edge servers collect monitoring results via client beacon data, having a specified reporting frequency, from different sets of user devices, and a distributed architecture provides redundancy and failover for the task of collecting monitoring results, where edge servers pass processed monitoring results to the external content provider customer reviewer, and for any detected issue, an alert can be issued to a system administrator to take proper corrective action; paragraphs [0018], [0019], [0066]).

As per claim 19, EdgeCast discloses the computer-readable device of claim 14. Additionally, EdgeCast discloses, wherein a frequency at which the diagnostic device provides the network diagnostic information to the remote server is based on the site configuration information (the client application periodically sends, via interval based beaconing, sets of beacon data back to the edge server which reports metrics to the external provider customer reviewer, where the interval based beaconing frequency and the metrics reported at each reporting interval are specified as part of the client application configuration, and the big data platform can adjust the reporting granularity (site configuration) if anomalies are detected; paragraphs [0019], [0045], [0066]).

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As per claim 20, EdgeCast discloses the computer-readable device of claim 14. Additionally, EdgeCast discloses, wherein the executable instructions cause the one or more processors to: provide a status of the diagnostic device to a requesting device (the big data platform processes any received client beacon data which provides player status to make the data searchable; paragraphs [0025], [0062]); and receive the diagnostic application based on the determined status (edge servers distribute configurations based on player device status metrics to appropriate client applications, where the updated client application can be downloaded to the media player user device; paragraphs [0022], [0024], [0025], [0047]).

Claims 1-20 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.