CLAIMS

What is claimed is:

1. A data storage and retrieval system for non-contiguous medical device data, the system comprising:

(i) a medical device~~,~~ connectable ~~to~~, via a computer network~~,~~ that is subject to occasional gaps in connectivity, to a media server the ~~computer network, and~~medical device configured to automatically repeatedly capture status information about the medical device and send messages containing the repeatedly captured status information, via the computer network, to the media server;

(ii) a network connectivity log coupled to the media server, the network connectivity log configured to automatically record:

(a) times at which the medical device connects to the computer network and

(b) times at which the medical device disconnects from the computer network;

(iii) a data store coupled to the media server and containing a media file, the data store configured to automatically:

store digital media data in ~~a~~the media file of the data store; and

provide a requested portion, less than all, of the ~~stored~~ media file of the data store in response to a provision request, wherein the provision request includes an index, relative to an end of the media file, that corresponds to the requested portion;

(iv) ~~a~~ the media server, connectable via the computer network to the ~~computer network~~medical device, and configured to automatically:

(a) receive the messages from the medical device via the computer network;

(b) store status information from the received messages into the media file of the data store, ~~wherein~~such that the media server stores status information from consecutive received messages ~~is stored~~ contiguously, in ~~the data store, notwithstanding~~time order, in the media file with time gaps caused by the occasional gaps in connectivity of the computer network between the medical device and the ~~computer network;~~ media server;

(c) receive a status request ~~that~~ for status information stored in the media file, the status request includes a status information time at which the requested status information was captured at the medical device;

(d) access the network connectivity log and calculate an index, relative to an end of the media file, ~~where the requested status information is stored, taking into account the occasional gaps in connectivity between the medical device and the computer network as represented in the network connectivity log;~~ wherein the media server is configured to calculate the index by:

(1) locating a connect-disconnect pair in the network connectivity log that includes the status information time,

(2) calculating a first offset from the media file beginning to a media file segment beginning at the medical device connect time of the connect-disconnect pair,

(3) calculating a second offset from the media file segment beginning to the status information time, and

(4) adding together the first offset and the second offset;

(e) request, from the data store via a provisional request, a portion of the ~~stored~~ media file beginning at the calculated index; and

(f) provide, in response to the status request, the portion of the ~~stored~~ media file beginning at the calculated index returned from the data store.

2. A system according to claim 1, wherein:

the data store is further configured to:

store digital media data in at least one archive file of the data store;

when the media file stores a predetermined amount of digital media data, copy the digital media data stored in the media file to the at least one archive file; and

provide a requested portion, which is less than all, of the ~~stored~~at least one archive file in response to ~~a~~an archive provision request, wherein the archive provision request includes an index, relative to an end of the at least one archive file, that corresponds to the requested portion~~;~~ of the at least one archive file;

the network connectivity log is further configured to automatically record, for each period of connectivity ~~to~~of the computer network, information identifying one of the media file and the at least one archive file ~~where the digital media data is stored~~; and

the media server is further configured to:

access the network connectivity log and calculate an archive index, relative to an end of the at least one archive file, ~~where~~wherein the ~~requested status information~~ media server is ~~stored, taking into account~~configured to calculate the ~~occasional gaps in connectivity between the medical device and the computer network as represented~~archive index by:

(1) locating a connect-disconnect pair in the network connectivity log that includes the status information time,

(2) calculating a third offset from the at least one archive file beginning to an archive segment beginning at the medical device connect time of the connect-disconnect pair,

(3) calculating a fourth offset from the archive segment beginning to the status information time, and

(4) adding together the third offset and the fourth offset;

request, from the data store via an archive provisional request, a portion of the ~~stored~~at least one archive file beginning at the calculated archive index; and

provide the portion of the ~~stored~~at least one archive file beginning at the calculated ~~index~~archive index returned from the data store.

3. A system according to ~~any previous~~ claim 1, wherein the media server is further configured to automatically cause display of a pop-up message when a message indicates the medical device requires attention.

4. A system according to claim 3, wherein the pop-up message comprises a URL of a web page that contains additional information about the status of the medical device.

5. A system according to ~~any previous~~ claim 1, further comprising an outgoing e-mail server configured to send an e-mail message when a message from the medical device indicates the medical device requires attention.

6. A system according to claim 5, wherein the e-mail message comprises a URL of a web page that contains additional information about the status of the medical device.

7. A method for storing and retrieving non-contiguous medical device data, the method comprising:

connecting a medical device ~~to~~, via a computer network~~,~~ that is subject to occasional gaps in connectivity, to ~~the computer network~~a media server;

automatically repeatedly capturing, by the medical device, status information about the medical device and sending, by the medical device, messages containing the repeatedly captured status information, via the computer network, to the media server;

automatically recording in a network connectivity log, coupled to the media server,

(a) times at which the medical device connects to the computer network and

(b) times at which the medical device disconnects from the computer network;

~~storing, in a data store, digital media data in a media file;~~

~~providing, by the data store, a requested portion, less than all, of the stored media file in response to a provision request, wherein the provision request includes an index, relative to an end of the media file, that corresponds to the requested portion;~~

receiving, by ~~a~~the media server, the messages from the medical device via the computer network;

storing, by the media server, status information from the received messages into ~~the data store, wherein~~a media file of a data store coupled to the media server, such that the media server stores status information from consecutive received messages ~~is stored~~ contiguously, in time order, in the ~~data store, notwithstanding the~~ media file with time gaps caused by the occasional gaps in connectivity of the computer network between the medical device and the ~~computer network;~~ media server;

receiving, by the media server, a status request ~~that includes a~~for status information stored in the media file, the status request includes a status information time at which the requested status information was captured at the medical device;

accessing, by the media server, the network connectivity log and calculating an index, relative to an end of the media file, ~~where the requested status information is stored, taking into account the occasional gaps in connectivity between the medical device and the computer network as represented in the network connectivity log;~~ wherein the media server is configured to calculate the index by:

(1) locating a connect-disconnect pair in the network connectivity log that includes the status information time,

(2) calculating a first offset from the media file beginning to a media file segment beginning at the medical device connect time of the connect-disconnect pair,

(3) calculating a second offset from the media file segment beginning to the status information time, and

(4) adding together the first offset and the second offset;

requesting, by the media server from the data store using a provision request, a portion of the ~~stored~~ media file beginning at the calculated index; and

providing, by the media server in response to the status request, the portion of the ~~stored~~ media file beginning at the calculated index returned from the data store.

8. A method according to claim 7, further comprising:

storing digital media data in at least one archive file of the data store;

when the media file stores a predetermined amount of digital media data, copying the digital media data stored in the media file to the at least one archive file;

~~providing a requested portion, less than all, of the stored archive file in response to a provision request, wherein the provision request includes an index, relative to an end of the archive file, that corresponds to the requested portion;~~

for each period of connectivity ~~to~~of the computer network, automatically recording, in the network connectivity log, information identifying one of the media file and the at least one archive file ~~where the digital media data is stored~~;

accessing, by the media server in response to the status request, the network connectivity log and calculating an archive index, relative to an end of the at least one archive file, ~~where~~wherein the ~~requested status information~~media server is ~~stored, taking into account the occasional gaps in connectivity between~~configured to calculate the ~~medical device and the computer network as represented~~archive index by:

(1) locating a connect-disconnect pair in the network connectivity log that includes the status information time,

(2) calculating a third offset from the at least one archive file beginning to an archive segment beginning at the medical device connect time of the connect-disconnect pair,

(3) calculating a fourth offset from the archive segment beginning to the status information time, and

(4) adding together the third offset and the fourth offset;

requesting, by the media server from the data store via an archive provisional request, a portion of the ~~stored~~at least one archive file beginning at the calculated archive index; and

providing, by the media server, the portion of the ~~stored~~at least one archive file beginning at the calculated ~~index~~archive index returned from the data store.

9. A method according to claim ~~7 or 8,~~7, further comprising automatically causing, by the media server, display of a pop-up message when a message indicates the medical device requires attention.

10. A method according to claim 9, wherein the pop-up message comprises a URL of a web page that contains additional information about the status of the medical device.

11. A method according to ~~any one of claims 7-10,~~claim 7, further comprising automatically sending, by an outgoing e-mail server, an e-mail message when a message from the medical device indicates the medical device requires attention.

12. A method according to claim 11, wherein the e-mail message comprises a URL of a web page that contains additional information about the status of the medical device.

13. A non-transitory computer-readable medium encoded with instructions that, when executed by a processor, establish processes for performing a computer-implemented method for storing and retrieving non-contiguous medical device data, the processes comprising:

a process configured to connect a medical device ~~to~~, via a computer network~~,~~; subject to occasional gaps in connectivity, to ~~the computer network~~a media server;

a process configured to automatically repeatedly capture, by the medical device, status information about the medical device and send, by the medical device, messages containing the repeatedly captured status information, via the computer network, to the media server;

a process configured to automatically record in a network connectivity log, coupled to the media server,

(a) times at which the medical device connects to the computer network and

(b) times at which the medical device disconnects from the computer network;

a process configured to store, in a data store, digital media data in a media file of the data store;

a process configured to provide, by the data store, a requested portion, less than all, of the ~~stored~~ media file in response to a provision request, wherein the provision request includes an index, relative to an end of the media file, that corresponds to the requested portion;

a process configured to receive, by ~~a~~the media server, the messages from the medical device via the computer network;

a process configured to store, by the media server, status information from the received messages into the media file of the data store, ~~wherein~~such that the media server stores status information from consecutive received messages ~~is stored~~ contiguously, in time order, in the ~~data store, notwithstanding~~media file with time gaps caused by the occasional gaps in connectivity of the computer network between the medical device and the ~~computer network;~~ media server;

a process configured to receive, by the media server, a status request ~~that~~for status information stored in the media file, the status request includes a status information time at which the requested status information was captured at the medical device;

a process configured to access, by the media server, the network connectivity log and calculate an index, relative to an end of the media file, ~~where the requested status information is stored, taking into account the occasional gaps in connectivity between the medical device and the computer network as represented in the network connectivity log;~~ wherein the media server is configured to calculate the index by:

(1) locating a connect-disconnect pair in the network connectivity log that includes the status information time,

(2) calculating a first offset from the media file beginning to a media file segment beginning at the medical device connect time of the connect-disconnect pair,

(3) calculating a second offset from the media file segment beginning to the status information time, and

(4) adding together the first offset and the second;

a process configured to request, by the media server from the data store via a provisional request, a portion of the ~~stored~~ media file beginning at the calculated index; and

a process configured to provide, by the media server in response to the status request, the portion of the ~~stored~~ media file beginning at the calculated index. returned from the data store.