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NOTICE OF ALLOWANCE AND FEE(S) DUE

24221 7590 12/09/2020
LOUIS VENTRE, JR
2483 OAKTON HILLS DRIVE
OAKTON, VA 22124-1530

Table with 2 columns: EXAMINER (PATEL, HARESH N), ART UNIT (2493), PAPER NUMBER (1077)

DATE MAILED: 12/09/2020

Table with 5 columns: APPLICATION NO. (17/026,282), FILING DATE (09/20/2020), FIRST NAMED INVENTOR (John Almeida), ATTORNEY DOCKET NO. (almeida282), CONFIRMATION NO. (1077)

TITLE OF INVENTION: VIRUS IMMUNE COMPUTER SYSTEM AND METHOD

Table with 7 columns: APPLN. TYPE (nonprovisional), ENTITY STATUS (SMALL), ISSUE FEE DUE (\$600), PUBLICATION FEE DUE (\$0.00), PREV. PAID ISSUE FEE (\$0.00), TOTAL FEE(S) DUE (\$600), DATE DUE (03/09/2021)

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.

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NOTICE OF ALLOWANCE AND FEE(S) DUE

24221 7590 11/16/2020
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OAKTON, VA 22124-1530

Table with 2 columns: EXAMINER, ART UNIT, PAPER NUMBER. Values: GRACIA, GARY S, 2491

DATE MAILED: 11/16/2020

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Values: 16/767,580, 05/27/2020, John Almeida, almeida580, 2091

TITLE OF INVENTION: STORING AND USING MULTIPURPOSE SECRET DATA

Table with 7 columns: APPLN. TYPE, ENTITY STATUS, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE. Values: nonprovisional, SMALL, \$600, \$0.00, \$0.00, \$600, 02/16/2021

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.

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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.



US010817623B2

(12) **United States Patent**
Almeida

(10) **Patent No.:** **US 10,817,623 B2**

(45) **Date of Patent:** **Oct. 27, 2020**

(54) **VIRUS IMMUNE COMPUTER SYSTEM AND METHOD**

USPC 713/189
See application file for complete search history.

(71) Applicant: **John Almeida**, Plano, TX (US)

(56) **References Cited**

(72) Inventor: **John Almeida**, Plano, TX (US)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

- 7,233,997 B1 * 6/2007 Leveridge G06F 21/33 709/217
- 2002/0077177 A1 * 6/2002 Elliott A63F 13/71 463/40
- 2003/0177422 A1 * 9/2003 Tararoukhine H04L 63/0442 714/48
- 2004/0105546 A1 * 6/2004 Chernyak H04L 9/3093 380/259
- 2006/0002562 A1 * 1/2006 Berenstein H04L 9/0825 380/278
- 2006/0036861 A1 * 2/2006 Chernyak H04L 9/0841 713/171

(21) Appl. No.: **16/801,520**

(22) Filed: **Feb. 26, 2020**

(65) **Prior Publication Data**

US 2020/0210627 A1 Jul. 2, 2020

Related U.S. Application Data

(62) Division of application No. 15/839,450, filed on Dec. 12, 2017, now Pat. No. 10,614,254.

(51) **Int. Cl.**

- H04L 9/06** (2006.01)
- H04L 9/08** (2006.01)
- G06F 21/62** (2013.01)
- G06F 21/72** (2013.01)
- H04L 9/00** (2006.01)
- G06F 21/60** (2013.01)
- G06F 21/73** (2013.01)
- G06F 21/57** (2013.01)

(52) **U.S. Cl.**

CPC **G06F 21/72** (2013.01); **G06F 21/57** (2013.01); **G06F 21/602** (2013.01); **G06F 21/6209** (2013.01); **G06F 21/73** (2013.01); **H04L 9/006** (2013.01)

(58) **Field of Classification Search**

CPC G06F 21/72; G06F 21/73; G06F 21/57; G06F 21/602; G06F 21/6209; H04L 9/006

(Continued)

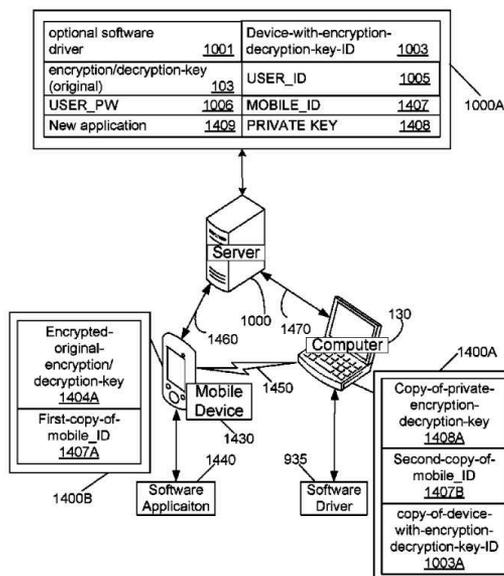
Primary Examiner — Haresh N Patel

(74) *Attorney, Agent, or Firm* — Louis Ventre, Jr.

(57) **ABSTRACT**

A method and apparatus prevents hacker code from infecting an application program by requiring decryption of the application program prior to running the application program on a computer. The method includes steps of: providing a storage device that is a separate unit from components necessary to operate the computer; storing a symmetric private key on the storage device; using the symmetric private key to produce an encrypted application program upon first installation; thereafter decrypting that part of the encrypted application program needed implement a command to run the application program; precluding the computer from running any part of the application program that has not been first encrypted with the symmetric private key; and, decrypting, on the fly, only those follow-on parts of the encrypted application program needed to perform functions called for during operation of the application program.

3 Claims, 23 Drawing Sheets





US010346608B2

(12) **United States Patent**
Almeida

(10) **Patent No.:** **US 10,346,608 B2**
(45) **Date of Patent:** **Jul. 9, 2019**

(54) **VIRUS IMMUNE COMPUTER SYSTEM AND METHOD**

(56) **References Cited**

(71) Applicant: **John Almeida**, Plano, TX (US)
(72) Inventor: **John Almeida**, Plano, TX (US)
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

U.S. PATENT DOCUMENTS

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6,212,635 B1* 4/2001 Reardon G06F 21/34
380/30
6,941,284 B2 9/2005 DeFilippo et al.
(Continued)

(21) Appl. No.: **16/008,779**

OTHER PUBLICATIONS

(22) Filed: **Jun. 14, 2018**

Korean Intellectual Property Office, International Search Report on PCT/US2018/051196 (identical daughter application of U.S. Appl. No. 16/008,779), dated Jan. 3, 2019, 3 pgs., PCT/ISA/210, Republic of Korea.

(65) **Prior Publication Data**

US 2019/0180027 A1 Jun. 13, 2019

(Continued)

Related U.S. Application Data

(63) Continuation-in-part of application No. 15/839,450, filed on Dec. 12, 2017, and a continuation-in-part of application No. 16/005,399, filed on Jun. 11, 2018.

Primary Examiner — Yonas A Bayou

(74) *Attorney, Agent, or Firm* — Louis Ventre, Jr.

(51) **Int. Cl.**
G06F 21/56 (2013.01)
G06F 21/51 (2013.01)
G06F 8/61 (2018.01)
H04L 9/08 (2006.01)
G06F 9/445 (2018.01)

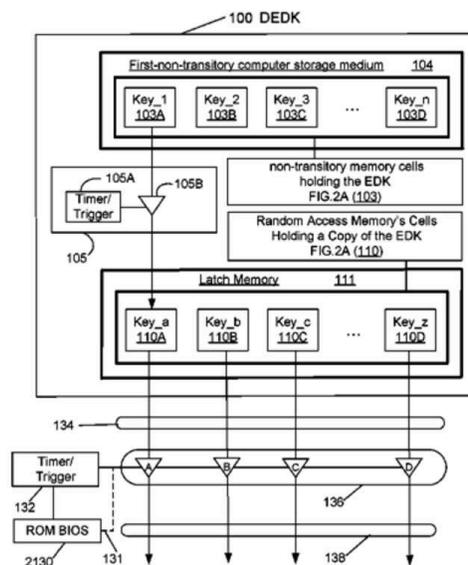
(57) **ABSTRACT**

A method and apparatus prevents hacker code from infecting an application program by requiring decryption of the application program prior to running the application program on a computer. The device is preferably a computer system that includes a dongle, or a separate unit that is connected or connectable to the computer. A security program decrypts a first key with a second key stored on the dongle. When a new application is installed the first time on the computer, the security program uses a decrypted first key to encrypt whatever is installed such that the encrypted application program is the only installed version of the application program on any non-transitory computer readable memory accessible by the computer. When a command is given to startup the application program, whatever code is needed for startup is first decrypted using the decrypted first key.

(52) **U.S. Cl.**
CPC **G06F 21/51** (2013.01); **G06F 8/61** (2013.01); **G06F 9/445** (2013.01); **G06F 21/56** (2013.01); **H04L 9/0894** (2013.01); **G06F 2221/033** (2013.01)

(58) **Field of Classification Search**
CPC . G06F 21/51; G06F 8/61; G06F 9/445; G06F 21/56; G06F 2221/033; H04L 9/0894
See application file for complete search history.

16 Claims, 27 Drawing Sheets





US010592697B1

(12) **United States Patent**
Almeida

(10) **Patent No.:** **US 10,592,697 B1**
(45) **Date of Patent:** ***Mar. 17, 2020**

(54) **VIRUS IMMUNE COMPUTER SYSTEM AND METHOD**

(71) Applicant: **John Almeida**, Plano, TX (US)

(72) Inventor: **John Almeida**, Plano, TX (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **16/326,805**

(22) PCT Filed: **Sep. 19, 2018**

(86) PCT No.: **PCT/US2018/051665**

§ 371 (c)(1),
(2) Date: **Feb. 20, 2019**

(87) PCT Pub. No.: **WO2019/118036**

PCT Pub. Date: **Jun. 20, 2019**

Related U.S. Application Data

(63) Continuation-in-part of application No. 15/839,450, filed on Dec. 12, 2017, and a continuation-in-part of application No. 16/005,399, filed on Jun. 11, 2018.

(51) **Int. Cl.**
G06F 21/72 (2013.01)
G06F 21/57 (2013.01)

(Continued)

(52) **U.S. Cl.**
CPC **G06F 21/72** (2013.01); **G06F 21/57** (2013.01); **G06F 21/602** (2013.01);
(Continued)

(58) **Field of Classification Search**
None
See application file for complete search history.

(56) **References Cited**

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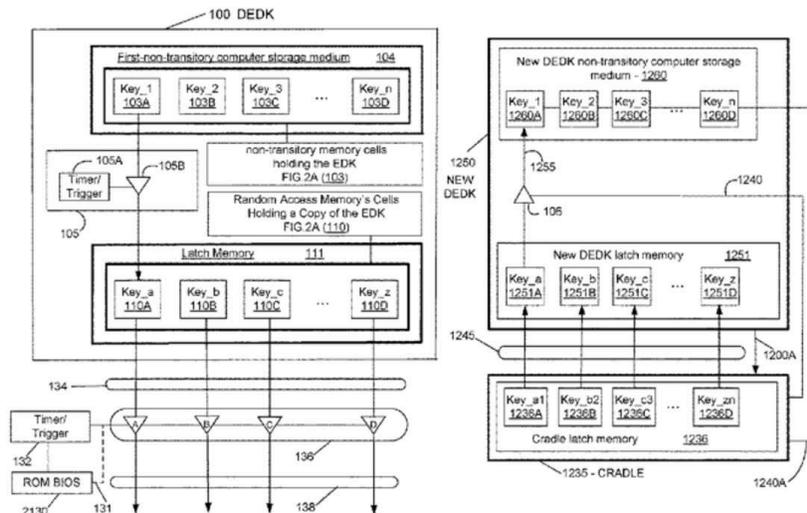
Primary Examiner — Kambiz Zand
Assistant Examiner — Arezoo Sherkat

(74) *Attorney, Agent, or Firm* — Louis Ventre, Jr.

(57) **ABSTRACT**

A method and apparatus prevents hacker code from infecting an application program by requiring decryption of the application program prior to running the application program on a computer. The method includes steps of: providing a security device that is a separate unit from components necessary to operate the computer; storing a symmetric private key on the security device; using the device symmetric private key to produce an encrypted application program upon first installation; thereafter decrypting that part of the encrypted application program needed implement a command to run the application program; and, decrypting, on the fly, only those follow-on parts of the encrypted application program needed to perform functions called for during operation of the application program.

21 Claims, 23 Drawing Sheets





US010614232B2

(12) **United States Patent**
Almeida

(10) **Patent No.: US 10,614,232 B2**
(45) **Date of Patent: Apr. 7, 2020**

(54) **STORING AND USING MULTIPURPOSE SECRET DATA**

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713/194
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365/185.11
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(Continued)

(71) Applicant: **John Almeida**, Plano, TX (US)

(72) Inventor: **John Almeida**, Plano, TX (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 102 days.

FOREIGN PATENT DOCUMENTS

EP 0816967 B1 9/2007

(21) Appl. No.: **16/126,204**

OTHER PUBLICATIONS

(22) Filed: **Sep. 10, 2018**

Korean Intellectual Property Office, Written Opinion of the International Searching Authority on PCT/US2019/047743, a CIP of this '204 application, dated Dec. 6, 2019, 189 Cheongsa-ro, Seo-gu, Daejeon, 35208, Republic of Korea.

(65) **Prior Publication Data**

US 2020/0082100 A1 Mar. 12, 2020

(Continued)

(51) **Int. Cl.**

G06F 11/30 (2006.01)
G06F 21/60 (2013.01)
H04L 9/08 (2006.01)
G06F 8/61 (2018.01)
G06F 21/62 (2013.01)

Primary Examiner — Samson B Lemma

(74) Attorney, Agent, or Firm — Louis Ventre, Jr.

(52) **U.S. Cl.**

CPC **G06F 21/602** (2013.01); **G06F 8/61** (2013.01); **G06F 21/6218** (2013.01); **H04L 9/0861** (2013.01)

(57) **ABSTRACT**

A system and method improves digital security in a computer by adding an electronic circuit. The electronic circuit stores sensitive data in an un-erasable state such that the sensitive data may not be altered. The electronic circuit limits transfer of the sensitive data only once after each power-up or after each reset of the computer. The electronic circuit prevents access to the sensitive data by an authorized program. The electronic circuit utilizes its own storage medium and a random access memory, the latter of which can receive and store the sensitive data from the non-transitory computer storage medium. The method includes hosting on the computer a software driver and a copy-of-copy of first security key obtained from the sensitive data stored on the electronic circuit. The software driver is operable to install a software module on the computer using the copy-of-copy of first security key to encrypt each installed file.

(58) **Field of Classification Search**

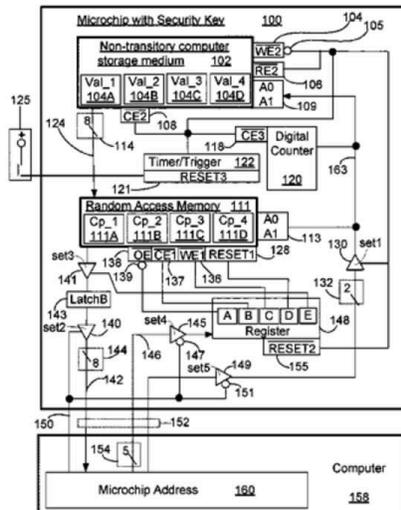
CPC G06F 21/602; G06F 21/6218; G06F 21/72; G06F 21/85; G06F 8/61; H04L 9/0861; H04L 63/0435
USPC 713/193
See application file for complete search history.

(56) **References Cited**

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4,847,902 A 7/1989 Hampson
6,151,678 A * 11/2000 Davis G06F 21/305
714/36

20 Claims, 13 Drawing Sheets





US010614254B2

(12) **United States Patent**
Almeida

(10) **Patent No.:** **US 10,614,254 B2**
(45) **Date of Patent:** **Apr. 7, 2020**

(54) **VIRUS IMMUNE COMPUTER SYSTEM AND METHOD**

(56) **References Cited**

(71) Applicant: **John Almeida**, Plano, TX (US)

(72) Inventor: **John Almeida**, Plano, TX (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 372 days.

U.S. PATENT DOCUMENTS

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4,847,902 A 7/1989 Hampson
6,212,635 B1 4/2001 Reardon
6,941,284 B2 9/2005 DeFilippo et al.
7,228,436 B2 6/2007 Kawaguchi

(Continued)

FOREIGN PATENT DOCUMENTS

(21) Appl. No.: **15/839,450**

JP 2016048951 A 4/2016

(22) Filed: **Dec. 12, 2017**

OTHER PUBLICATIONS

(65) **Prior Publication Data**

US 2019/0180056 A1 Jun. 13, 2019

Korean Intellectual Property Office, Written Opinion of the International Searching Authority on PCT/US2018/051665, a CIP of this '450 application, dated Feb. 12, 2019, 189 Cheongsu-ro, Seo-gu, Daejeon, 35208, Republic of Korea.

(Continued)

(51) **Int. Cl.**

H04L 9/06 (2006.01)
H04L 9/08 (2006.01)
H04L 9/32 (2006.01)
G06F 21/72 (2013.01)
H04L 9/00 (2006.01)
G06F 21/60 (2013.01)
G06F 21/73 (2013.01)
G06F 21/62 (2013.01)
G06F 21/57 (2013.01)

Primary Examiner — Haresh N Patel

(74) Attorney, Agent, or Firm — Louis Ventre, Jr.

(57) **ABSTRACT**

A method and apparatus prevents hacker code from infecting an application program by requiring decryption of the application program prior to running the application program on a computer. The method includes steps of: providing a storage device that is a separate unit from components necessary to operate the computer; storing a symmetric private key on the storage device; using the symmetric private key to produce an encrypted application program upon first installation; thereafter decrypting that part of the encrypted application program needed implement a command to run the application program; precluding the computer from running any part of the application program that has not been first encrypted with the symmetric private key; and, decrypting, on the fly, only those follow-on parts of the encrypted application program needed to perform functions called for during operation of the application program.

(52) **U.S. Cl.**

CPC **G06F 21/72** (2013.01); **G06F 21/57** (2013.01); **G06F 21/602** (2013.01); **G06F 21/6209** (2013.01); **G06F 21/73** (2013.01); **H04L 9/006** (2013.01)

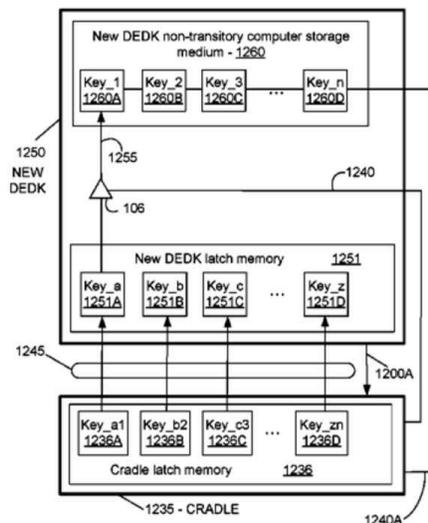
(58) **Field of Classification Search**

CPC H04L 9/006; G06F 21/72; G06F 21/73; G06F 21/57; G06F 21/602; G06F 21/6209

USPC 713/189

See application file for complete search history.

10 Claims, 23 Drawing Sheets





US010642970B2

(12) **United States Patent**
Almeida

(10) **Patent No.:** **US 10,642,970 B2**
(45) **Date of Patent:** **May 5, 2020**

(54) **VIRUS IMMUNE COMPUTER SYSTEM AND METHOD**

(56) **References Cited**

(71) Applicant: **John Almeida**, Plano, TX (US)

(72) Inventor: **John Almeida**, Plano, TX (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 212 days.

U.S. PATENT DOCUMENTS

4,757,534 A 7/1988 Matyas et al.
4,847,902 A 7/1989 Hampson
6,212,635 B1 4/2001 Reardon
6,941,284 B2 9/2005 DeFilippo et al.
(Continued)

FOREIGN PATENT DOCUMENTS

JP 2016048951 A 4/2016

OTHER PUBLICATIONS

Korean Intellectual Property Office, Written Opinion of the International Searching Authority on PCT/US2018/051665, the PCT counterpart of this '399 application, Feb. 12, 2019, 189 Cheongsaro, Seo-gu, Daejeon, 35208, Republic of Korea.

(Continued)

Primary Examiner — Haresh N Patel

(74) *Attorney, Agent, or Firm* — Louis Ventre, Jr.

(65) **Prior Publication Data**

US 2019/0180026 A1 Jun. 13, 2019

Related U.S. Application Data

(63) Continuation-in-part of application No. 15/839,450, filed on Dec. 12, 2017.

(51) **Int. Cl.**

H04L 9/06 (2006.01)
H04L 9/08 (2006.01)
H04L 9/32 (2006.01)
G06F 21/51 (2013.01)
G06F 21/56 (2013.01)
G06F 21/54 (2013.01)
G06F 8/61 (2018.01)

(52) **U.S. Cl.**

CPC **G06F 21/51** (2013.01); **G06F 8/61** (2013.01); **G06F 21/54** (2013.01); **G06F 21/56** (2013.01); **H04L 9/0894** (2013.01); **G06F 2221/033** (2013.01)

(58) **Field of Classification Search**

CPC H04L 9/006; G06F 21/72; G06F 21/73; G06F 21/57; G06F 21/602; G06F 21/6209
USPC 713/189

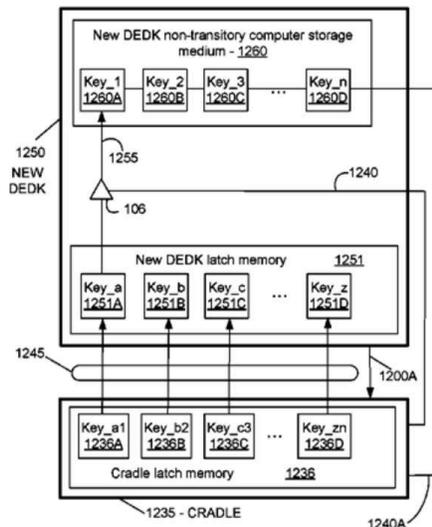
See application file for complete search history.

(57)

ABSTRACT

A method and apparatus prevents hacker code from infecting an application program by requiring decryption of the application program prior to running the application program on a computer. The method includes steps of: providing a security device that is a separate unit from components necessary to operate the computer; storing a symmetric private key on the security device; using the device symmetric private key to produce an encrypted application program upon first installation; thereafter decrypting that part of the encrypted application program needed implement a command to run the application program; and, decrypting, on the fly, only those follow-on parts of the encrypted application program needed to perform functions called for during operation of the application program.

11 Claims, 22 Drawing Sheets





US010664588B1

(12) **United States Patent**
Almeida

(10) **Patent No.:** **US 10,664,588 B1**
(45) **Date of Patent:** ***May 26, 2020**

(54) **VIRUS IMMUNE COMPUTER SYSTEM AND METHOD**

USPC 713/190
See application file for complete search history.

(71) Applicant: **John Almeida**, Plano, TX (US)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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This patent is subject to a terminal disclaimer.

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(Continued)

(57) **ABSTRACT**

(51) **Int. Cl.**

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G06F 9/445 (2018.01)
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A method and apparatus prevents hacker code from infecting an application program by requiring decryption of the application program prior to running the application program on a computer. The device is preferably a computer system that includes a dongle, or a separate unit that is connected or connectable to the computer. A security program decrypts a first key with a second key stored on the dongle. When a new application is installed the first time on the computer, the security program uses a decrypted first key to encrypt whatever is installed such that the encrypted application program is the only installed version of the application program on any non-transitory computer readable memory accessible by the computer. When a command is given to startup the application program, whatever code is needed for startup is first decrypted using the decrypted first key.

(52) **U.S. Cl.**

CPC **G06F 21/51** (2013.01); **G06F 8/61** (2013.01); **G06F 9/445** (2013.01); **G06F 21/56** (2013.01); **G06F 21/575** (2013.01); **H04L 9/0822** (2013.01); **H04L 9/0825** (2013.01); **H04L 9/0894** (2013.01); **G06F 2221/033** (2013.01)

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