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(54) Title: PROTECTING COMPUTING SYSTEMS FROM UNAUTHORIZED PROGRAMS

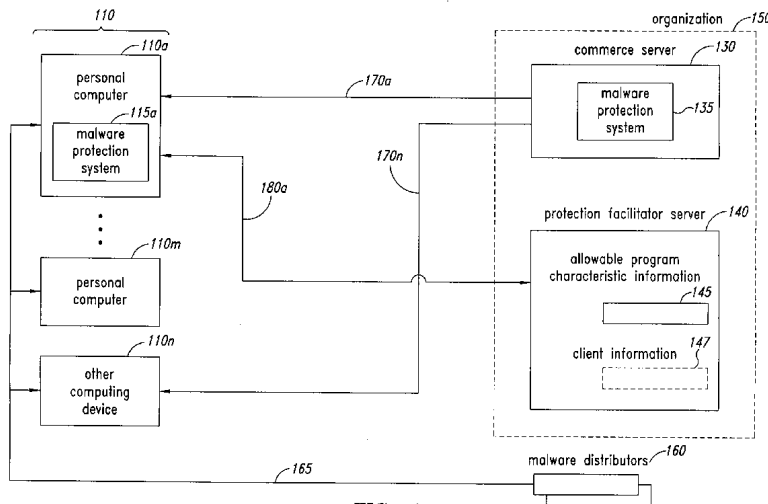


FIG. 1

(57) Abstract: A method, system, and computer-readable medium are described for assisting in protecting computing systems from unauthorized programs, such as by preventing computer viruses and other types of malware programs from executing during startup of a computing system and/or at other times. In some situations, computing system protection is provided by executing programs only if they have been confirmed as being authorized, which may be determined in various ways. Figure 1 illustrates various computing systems using some of the described techniques. In particular, various client computing systems 110 include personal computers 110a-110m and one or more other computing devices 110n, as well as one or more malware distributor systems 160 that attempt to install malware on the client computing systems via various communications 165.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/45352

A. CLASSIFICATION OF SUBJECT MATTER

IPC: **G06F 9/00,15/177**
G06F 11/00,12/14,12/16,15/18;G08B 23/00

USPC: 713/2;726/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 713/2; 726/22

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST - US_PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 5,809,230 (PERIERA) 15 Sep. 1998 (15.09.1998), col. 5 lines 25-54; col. 10 lines 48 to col. 11 line 10)	1 ----- 2-34
Y	US 5,421,006 (JABLON et al) 30 May 1995 (30.05.1995), abstract; col. 10-12; col. 17 and col. 18	2-34

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

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INTERNATIONAL SEARCH REPORT

International application No.

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Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
 2. As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of any additional fees.
 3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

 4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-34
- Remark on Protest**
- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
 - The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
 - No protest accompanied the payment of additional search fees.

BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Group 1, claims 1-34 are directed toward preventing unwanted programs from executing at startup.

Group 2, claims 35-40, are directed toward preventing execution of malware programs by identifying if the program is malware.

Group 3, claims 41-48, are directed toward preventing unwanted changes affecting a computer system.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group 1, claims 1-34 are directed toward preventing unwanted programs from executing at startup.

Group 2, claims 35-40, are directed toward preventing execution of malware programs by identifying if the program is malware.

Group 3, claims 41-48, are directed toward preventing unwanted changes affecting a computer system.

The inventions listed as Groups 1-3 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Group 1 is directed toward preventing unwanted programs from executing at startup, while group 2 prevents execution of malware by program and characteristic identification, while Group 3 is directed toward preventing unwanted changes affecting a computer system by utilizing target identifiers..