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(74) Agents: VIKSNINS, Ann, S. et al.; Schwegman, Lundberg, Woessner & Kluth, P.O. Box 2938, Minneapolis, MN 55402 (US).

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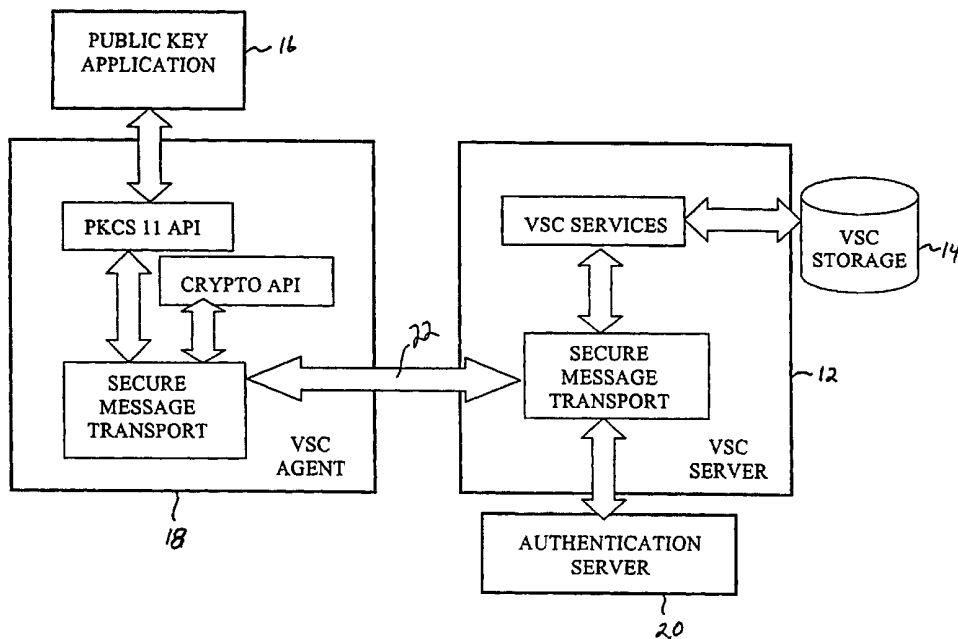
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(71) Applicant: SECURE COMPUTING CORPORATION  
[US/US]; 2675 Long Lake Road, Roseville, MN 55113 (US).

(72) Inventors: SMITH, Lawrence; 3620 Concord Boulevard, Concord, CA 94519 (US). LEVENBERG, Richard; 3346 Helen Lane, Lafayette, CA 94549 (US).

(54) Title: VIRTUAL SMART CARD SYSTEM AND METHOD



(57) Abstract: A public key authentication system and method for use in a computer system having a plurality of users. The system includes a virtual smart card server, storage connected to the virtual smart card server, and a virtual smart card agent connected to the virtual smart card server. The storage includes a plurality of virtual smart cards, wherein each virtual smart card is associated with a user and wherein each smart card includes a private key. The virtual smart card agent authenticates the user and accesses the authenticated user's virtual smart card to obtain the user's private key.

WO 01/18635 A3

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 00/24352

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 G06F1/00 H04L29/06				
According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>				
Minimum documentation searched (classification system followed by classification symbols) IPC 7 G06F H04L				
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 practical, search terms used) EPO-Internal, WPI Data, PAJ				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	EP 0 936 530 A (SIEMENS NIXDORF INF SYST) 18 August 1999 (1999-08-18) abstract; figure 1 column 2, line 30 - line 38 column 3, line 22 - line 28 column 3, line 50 -column 4, line 11	1-5,8,9		
Y	column 6, line 18 -column 7, line 5 column 9, line 25 - line 50 column 11, line 1 -column 12, line 50 column 15, line 44 - line 58	6,7		
A	---	14		
Y	US 5 418 854 A (KAUFMAN CHARLES W ET AL) 23 May 1995 (1995-05-23) the whole document	6,7		
A	---	14		
--- -/--				
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.				
<input checked="" type="checkbox"/> Patent family members are listed in annex.				
° Special categories of cited documents :				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;">                     "A" document defining the general state of the art which is not considered to be of particular relevance                      "E" earlier document but published on or after the international filing date                      "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)                      "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                 </td> <td style="width: 50%; border: none; vertical-align: top;">                     "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                      "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                      "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.                      "&amp;" document member of the same patent family                 </td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "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) "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	"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 "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 "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. "&" document member of the same patent family
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "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) "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	"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 "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 "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. "&" document member of the same patent family			
Date of the actual completion of the international search  <p style="text-align: center;">19 December 2000</p>	Date of mailing of the international search report  <p style="text-align: center;">26. 04. 2001</p>			
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  <p style="text-align: center;">POWELL D.</p>			

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 00/24352

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 495 533 A (LINEHAN MARK H ET AL) 27 February 1996 (1996-02-27) ---	
A	EP 0 862 105 A (XCERT SOFTWARE INC) 2 September 1998 (1998-09-02) -----	

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 00/24352

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional 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 an additional fee, this Authority did not invite payment of any additional fee.
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.:

1-9, 14-16

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-9,14-16

Augmenting the level of security of a virtual smart card by means of collaboration with a second server

2. Claims: 10-13

Verifying a digital certificate used for accessing a key

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/US 00/24352

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0936530 A	18-08-1999	NONE	
US 5418854 A	23-05-1995	US 5497421 A	05-03-1996
US 5495533 A	27-02-1996	NONE	
EP 0862105 A	02-09-1998	US 5922074 A	13-07-1999
		AU 5627898 A	03-09-1998
		CA 2230304 A	28-08-1998
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