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Schneider et al.

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(54) **DISTRIBUTED ADMINISTRATION OF ACCESS TO INFORMATION**

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(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

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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(22) Filed: **Mar. 4, 1998**

Related U.S. Application Data

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(51) **Int. Cl.**⁷ **G06F 15/16**; G06F 9/00

(52) **U.S. Cl.** **709/229**; 713/201

(58) **Field of Search** 709/225, 229; 713/201; 345/335, 969, 741-743

(56) **References Cited**

U.S. PATENT DOCUMENTS

- 4,956,769 A * 9/1990 Smith 707/1
- 5,012,405 A * 4/1991 Nishikado et al. 707/8
- 5,263,157 A * 11/1993 Janis 707/1
- 5,263,158 A * 11/1993 Janis 711/163
- 5,263,165 A * 11/1993 Janis 707/1

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

WO WO 96 05549 A 2/1996 G06F/1/00

OTHER PUBLICATIONS

Computer Dictionary, 2d ed., Microsoft Press, Redmond, Washington, p. 215, Oct. 1993.*

(List continued on next page.)

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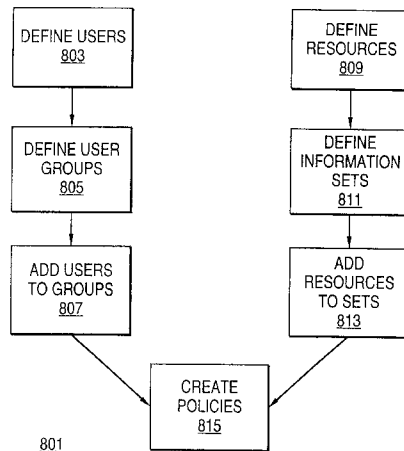
(57) **ABSTRACT**

A scalable access filter that is used together with others like it in a virtual private network to control access by users at clients in the network to information resources provided by servers in the network. Each access filter use a local copy of an access control data base to determine whether an access request made by a user. Changes made by administrators in the local copies are propagated to all of the other local copies. Each user belongs to one or more user groups and each information resource belongs to one or more information sets. Access is permitted or denied according to of access policies which define access in terms of the user groups and information sets. The rights of administrators are similarly determined by administrative policies. Access is further permitted only if the trust levels of a mode of identification of the user and of the path in the network by which the access is made are sufficient for the sensitivity level of the information resource. If necessary, the access filter automatically encrypts the request with an encryption method whose trust level is sufficient. The first access filter in the path performs the access check and encrypts and authenticates the request; the other access filters in the path do not repeat the access check.

48 Claims, 31 Drawing Sheets

U.S. PATENT DOCUMENTS

- 5,652,787 A * 7/1997 O'Kelly 379/112
- 5,720,033 A * 2/1998 Deo 713/200
- 5,787,427 A * 7/1998 Benantar et al. 707/9
- 5,787,428 A * 7/1998 Hart 707/9



5,796,951 A *	8/1998	Hamner et al.	709/223
5,826,010 A *	10/1998	Joseph et al.	713/200
5,835,726 A *	11/1998	Shwed et al.	709/229
5,859,978 A *	1/1999	Sonderegger et al.	709/226
5,862,325 A *	1/1999	Reed et al.	709/201
5,898,830 A *	4/1999	Wesinger, Jr. et al.	713/201
5,931,917 A *	8/1999	Nguyen et al.	709/250
5,941,947 A *	8/1999	Brown et al.	709/225
5,991,807 A *	11/1999	Schmidt et al.	709/225
6,085,191 A *	7/2000	Fisher et al.	707/9
6,105,027 A *	8/2000	Schneider et al.	707/9
6,178,505 B1 *	1/2001	Schneider et al.	713/168
6,253,251 B1 *	6/2001	Benantar et al.	709/315

OTHER PUBLICATIONS

Edwards, K., "Policies and Roles in Collaborative Applications," Proc. of the ACM 1996 Conf. on Computer Supported Cooperative Work, pp. 11–20, Nov. 1996.*

Lampson, B., et al., "Authentication in Distributed Systems: Theory and Practice," Proc. of the 13th ACM Symp. on Operating Systems Principles, pp. 165–182, Oct. 1991.*

Gladney, H., "Access Control for Large Collections," ACM Trans. on Information Systems, vol. 15, No. 2, pp. 154–194, Apr. 1997.*

Shen, H., et al., "Access Control for Collaborative Environments," Conf. Proc. on Computer-Supported Collaborative Work, ACM, pp. 51–58, Nov. 1992.*

Reiter, M., et al., "Integrating Security in a Group Oriented Distributed System," Proc. of Research in Security & Privacy, 1992, IEEE, pp. 18–32, May 1992.*

Toy, M., "AT&T's Electronic Mail Service for Government Users—FTS2000MAIL," Globecom '92, IEEE, vol. 2, pp. 950–957, Dec. 1992.*

Che-fun Yu, Access control and authorization plan for customer control of network services, in: *IEEE Global Telecommunications Conference and exhibition, Conference Record*, vol. 2, pp. 862–869.

PCT/US98/04522, Partial international search, with indications of relevance of the references cited above. (PCT/US98/04522 has the same Specification as the application in which this IDS is being filed).

CheckPoint FireWall-1™ White Paper, Version 2.0—Jun. 1995. <http://www.integralis.co.uk/checkpnt/firewall/white>.

Checkpoint FireWall-1, <http://www.metadigm.co.uk/fwl/>. 1996 Metadigm Ltd.

Commercial Firewalls and Related FW Products, <http://hp735c.csc.cuhk.hk/firewall.html>. Mar. 23, 1996.

Five Domains of Network Security, Technical Overview of the Eagle, <http://www.raptor.com/T22NZ.Z56DAM.BF3AQD.F2>.

Firewalls and Security Related Information, <http://www.na-cisa.nato.int/FWVENDOR.HTM>.

* cited by examiner

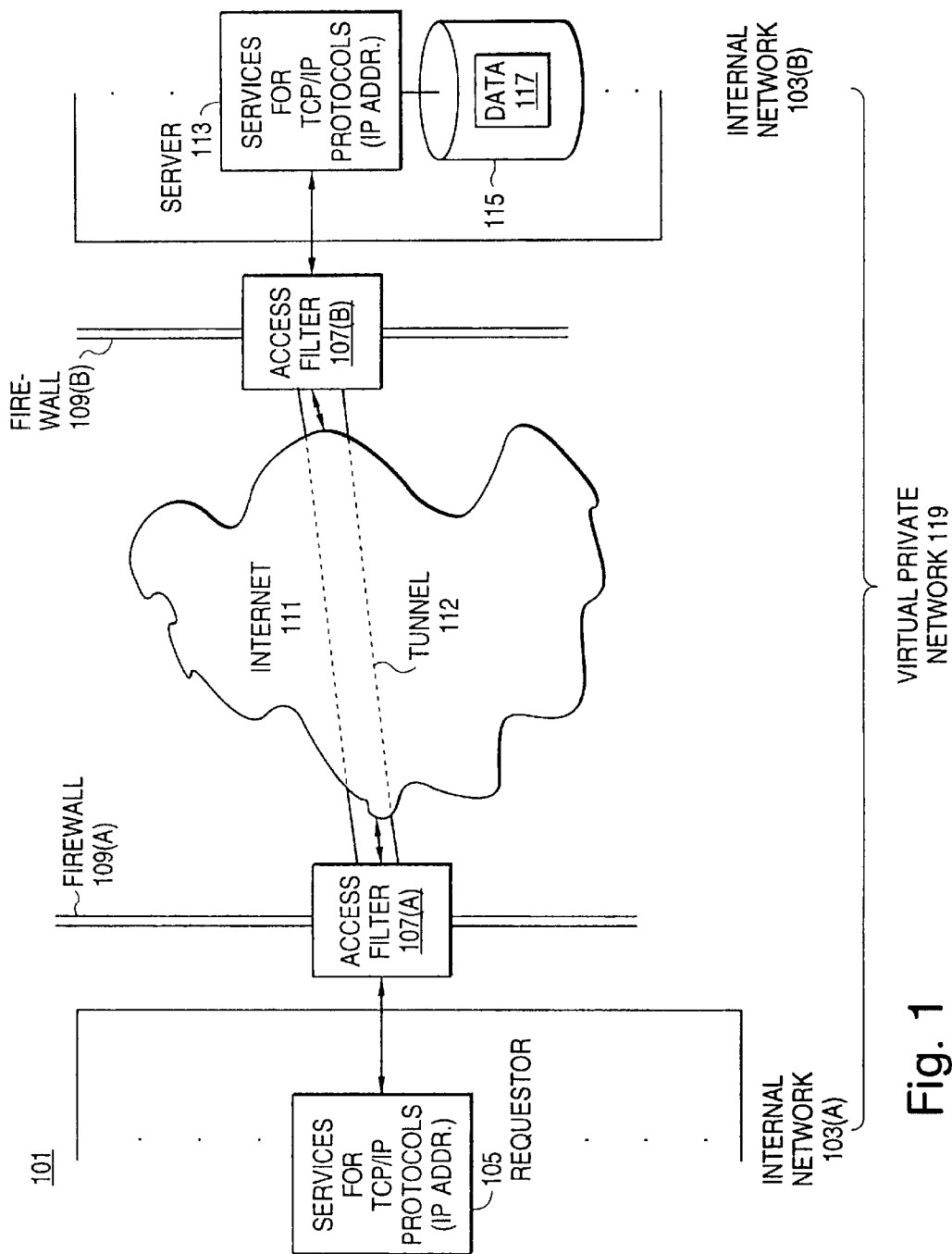


Fig. 1

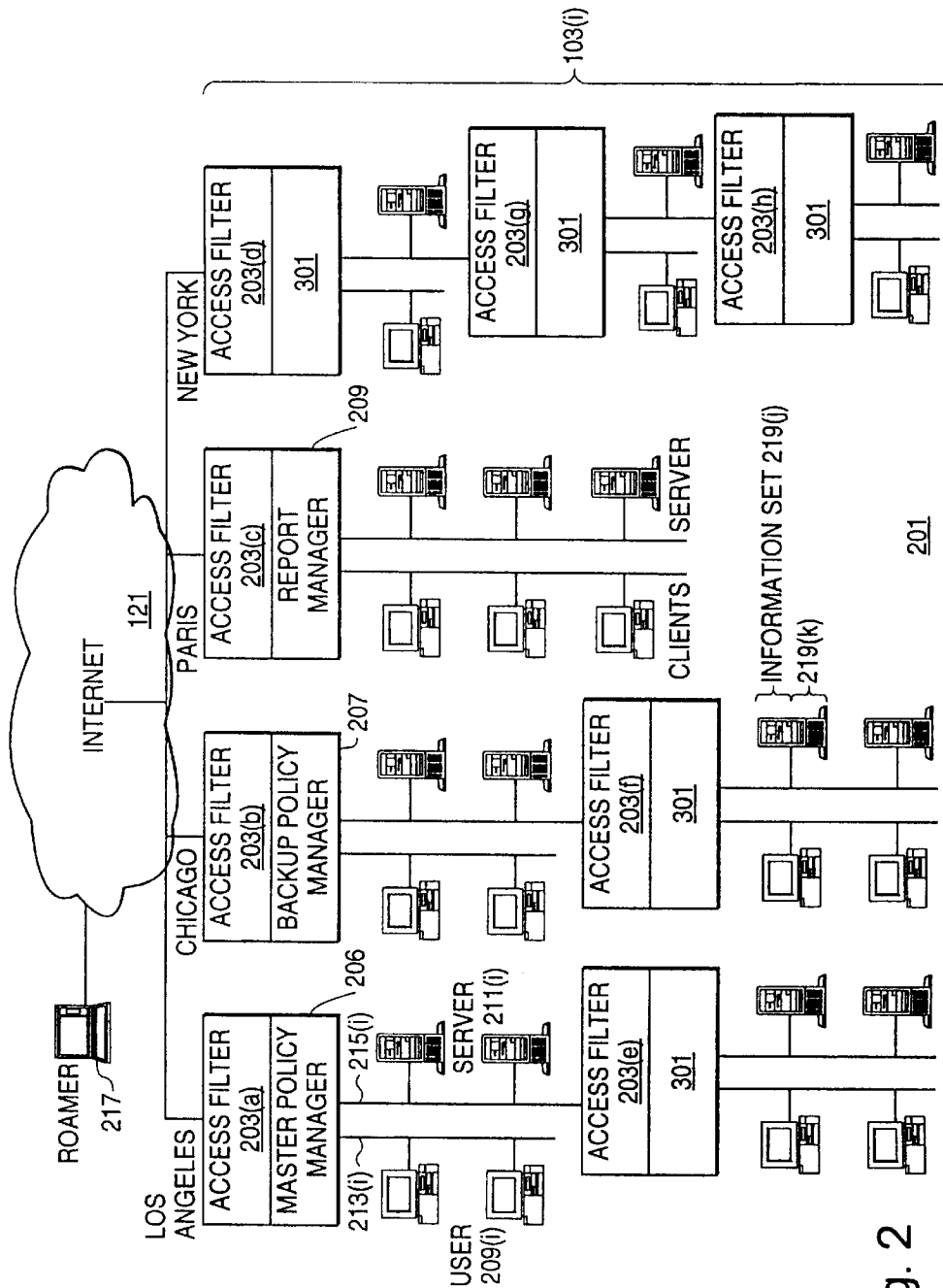


Fig. 2

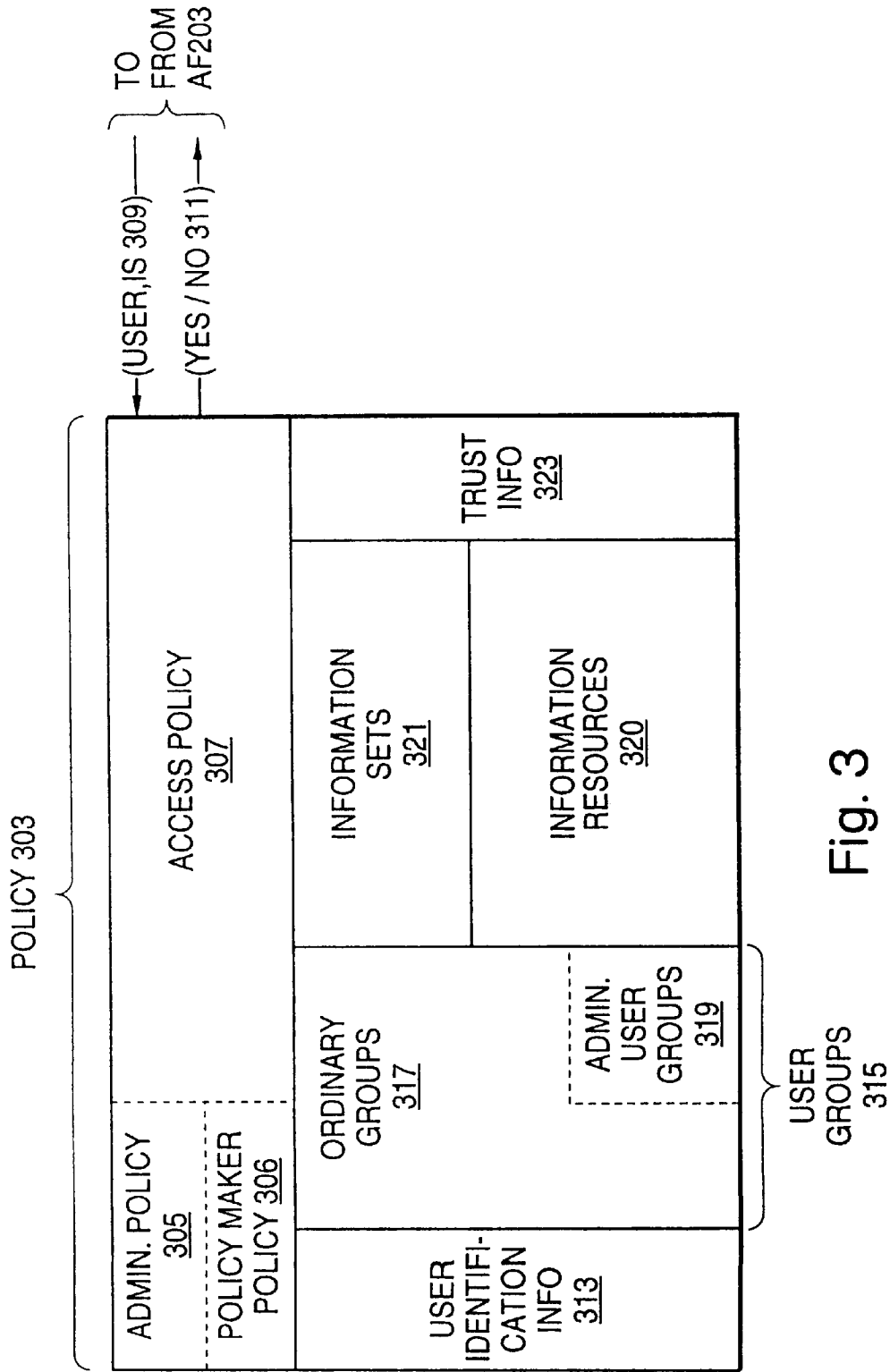


Fig. 3

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