

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
13 September 2001 (13.09.2001)

PCT

(10) International Publication Number
WO 01/67662 A3

(51) International Patent Classification⁷: H04L 12/42, 12/56

(21) International Application Number: PCT/IB01/01251

(22) International Filing Date: 8 March 2001 (08.03.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/523,375 10 March 2000 (10.03.2000) US

(71) Applicant and

(72) Inventor: HASHIMOTO, Noriaki [JP/JP]; 2231-3, Angyoryo, Negishi, Kawaguchi-shi, Saitama-ken 333-0834 (JP).

(74) Agent: OSHIKIRI, Kanenori; Shiroyama Sogo Law Office, 8th Floor, Takebashi Yasuda Bldg., 3-13, Kandan-ishiki-cho, Chiyoda-ku, Tokyo 101-0054 (JP).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

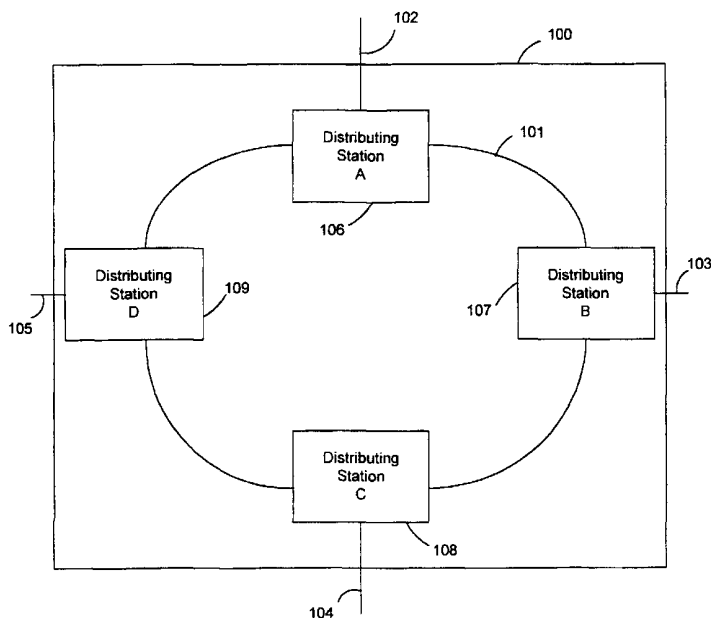
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: METHOD AND SYSTEM FOR OPERATION OF A RESILIENT CLOSED COMMUNICATION NETWORK WITHOUT A DEDICATED PROTECTION NETWORK SEGMENT



(57) Abstract: A method and system for operation of a resilient closed communication network without a dedicated protection network segment. The method uses a resilient closed communication network with at least one communication ring. The method includes the steps of receiving a data packet from a first external network at a first distributing station connected to the network, identifying a second distributing station connected to the network from which the data packet is to be forwarded to a second external network, and determining functioning routes from the first distributing station to the second distributing station. The method also includes the steps of selecting an optimal route among the functioning routes and sending the data packet from the first distributing station to the second distributing station using the optimal route. The system includes a first communication ring and at least two distributing stations interconnected by the first communication ring. The distributing station includes means for receiving a data packet from an external network or from

another distributing station, means for identifying a destination distributing station for the data packet. It further includes means for appending the identification number for the destination distributing station to the data packet, means for determining functioning routes to the destination distributing station, and means for selecting an optimal route among the functioning routes. Finally, it also includes means for forwarding the data packet to the external network after removing the identification number from the data packet if the identification number of the distributing station is the same as the identification number appended to the data packet, or otherwise to a next distributing station based on the optimal route.



WO 01/67662 A3



(88) **Date of publication of the international search report:** 13 June 2002 *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.*

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 01/01251

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 H04L12/42 H04L12/56

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)
 IPC 7 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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	EP 0 957 611 A (AT & T CORP) 17 November 1999 (1999-11-17) column 2, line 45 -column 3, line 1 column 3, line 25 - line 37 column 4, line 42 - line 44 column 4, line 52 -column 5, line 2 column 5, line 9 - line 17 column 5, line 25 - line 44 claims 1,2,4,9-12 figures 2-5 --- -/--	1, 10 2-9, 11-31, 65-76

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- *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

21 March 2002

Date of mailing of the international search report

03/04/2002

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

Lai, C

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 01/01251

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	US 5 826 038 A (NAKAZUMI SEIJI) 20 October 1998 (1998-10-20) abstract column 1, line 38 -column 2, line 34 claims 1,3 figure 3 -----	1,10 2-9, 11-31, 65-76

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 32-64,77-112,

The redundant definitions of the invention given in the independent claims overlap to a large extent, thereby rendering the whole set of claims not concise.

In view of the large number and also the wording of the claims presently on file, which render it difficult, if not impossible, to determine the matter for which protection is sought, the present application fails to comply with the clarity and conciseness requirements of Article 6 PCT (see also Rule 6.1(a) PCT) to such an extent that a meaningful search is impossible.

Consequently, the search has been carried out for those parts of the application which do appear to be clear (and concise), namely the method and the network claimed in claims 1-31 and 65-76.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 01/01251

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0957611	A	17-11-1999	EP	0957611 A2	17-11-1999
US 5826038	A	20-10-1998	JP	8079290 A	22-03-1996
			US	6304557 B1	16-10-2001