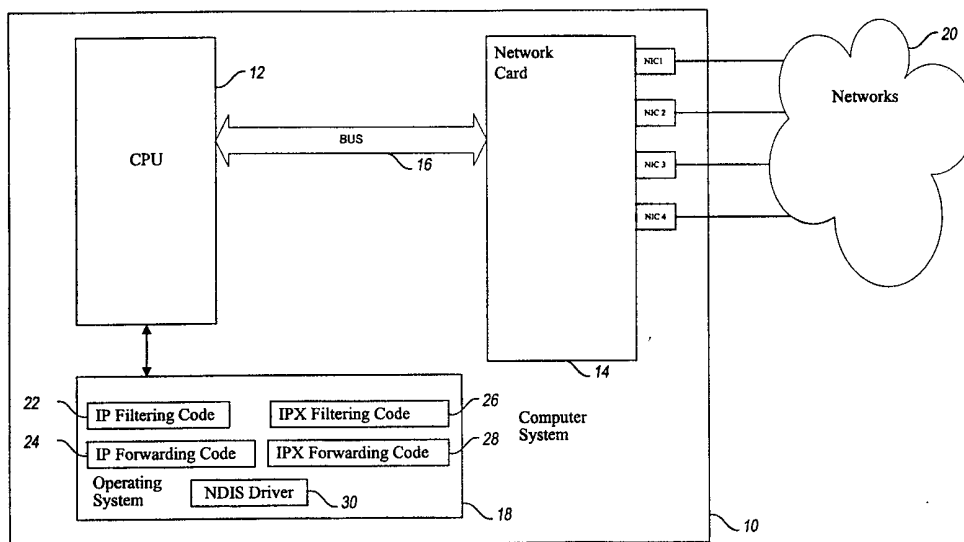




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/US98/14135 (22) International Filing Date: 8 July 1998 (08.07.98) (30) Priority Data: 08/891,020 10 July 1997 (10.07.97) US (71) Applicant: MICROSOFT CORPORATION [US/US]; One Microsoft Way, Redmont, WA 98052-6399 (US). (72) Inventors: KHAKI, Mohamed, J.; 1812 223rd Place N.E., Redmond, WA 98053 (US). PALL, Gurdeep, Singh; 220 Waverly Way, Kirkland, WA 98033 (US). (74) Agents: PIRIO, Maurice, J. et al.; Seed & Berry LLP, 6300 Columbia Center, 701 Fifth Avenue, Seattle, WA 98104-7092 (US).</p>	<p>(81) Designated States: JP, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> (88) Date of publication of the international search report: 1 April 1999 (01.04.99)</p>	

(54) Title: FAST-FORWARDING AND FILTERING OF NETWORK PACKETS IN A COMPUTER SYSTEM



(57) Abstract

A computer system facilitates concurrent filtering and fast-forwarding of network packets. The computer system includes a network card for interfacing with multiple computer networks, and the network adapter is able to fast-forward network packets that it receives to other network destinations without assistance from the main central processing in the computer system. A fast-forwarding cache is stored on the network card to facilitate such fast-forwarding. Network packets that are not fast-forwarded are processed by the main central processing of the computer system that may apply filtering to the network packets and route network packets accordingly. The main central processing unit provides routing information to the network card so that subsequently received network packets can be transmitted to the network destinations without intervention by the main central processing unit.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/14135

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 6 H04L12/46 H04L29/06

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 6 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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 35988 A (3COM CORP) 14 November 1996 see page 2, line 26 - page 4, line 8 see page 13, line 9-31 see page 16, line 1 - page 19, line 8 see page 59, line 19 - page 61, line 4 see page 69, line 2 - page 76, line 24 see page 77, line 14 - page 80, line 5 ---	1-3
X	TOLLY K ET AL: "IBM'S ROUTEXPANDER/2: LOW COST, LIMITED ACCESS" DATA COMMUNICATIONS, vol. 22, no. 5, 21 March 1993, pages 67-69, XP000356047	22-24, 26
A	see page 67, right-hand column, line 11 - page 68, middle column, line 3 see page 68, middle column, line 10 - right-hand column, line 16 --- -/--	4, 13

Further documents are listed in the continuation of box C. Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
7 January 1999	21/01/1999

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;">Dupuis, H</p>
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INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>WO 97 10662 A (MADGE NETWORKS LTD) 20 March 1997 see page 3, line 4-9 see page 4, line 33 - page 5, line 16 see page 9, line 23 - page 10, line 12 ---</p>	9,18
A	<p>"THIS ROUTER'S FEATURE SET SPELLS FLEXIBILITY" DATA COMMUNICATIONS, vol. 22, no. 12, 1 September 1993, pages 45-46, XP000393715 see page 46, middle column, line 13-34 ---</p>	22,24
A	<p>JANECEK J ET AL: "EFFECTIVENESS OF BRIDGING IN MULTIPROTOCOL LANS" MICROPROCESSING AND MICROPROGRAMMING, vol. 37, no. 1 / 05, 1 January 1993, pages 205-208, XP000329277 see page 205, right-hand column, line 5-10 see page 207, left-hand column, line 2-33 -----</p>	25

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 98/14135

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9635988 A	14-11-1996	US 5592622 A	07-01-1997
		US 5802278 A	01-09-1998
		AU 5736696 A	29-11-1996
		GB 2316843 A	04-03-1998
		US 5828835 A	27-10-1998
WO 9710662 A	20-03-1997	EP 0792544 A	03-09-1997