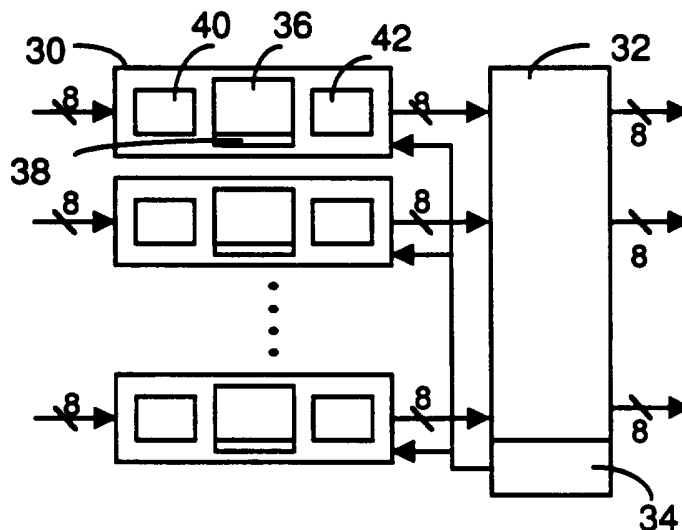




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁵ : H04L 12/56, H04Q 11/04</p>	<p>A3</p>	<p>(11) International Publication Number: WO 93/07699 (43) International Publication Date: 15 April 1993 (15.04.93)</p>
<p>(21) International Application Number: PCT/CA92/00431 (22) International Filing Date: 30 September 1992 (30.09.92) (30) Priority data: 770,214 3 October 1991 (03.10.91) US (71) Applicant: NORTHERN TELECOM LIMITED [CA/CA]; World Trade Center of Montreal, 380 St. Antoine Street West, 8th Floor, Montreal, Quebec H2Y 3Y4 (CA). (72) Inventors: GRIMBLE, Kenneth, Norman ; 126 Grandview Road, Nepean, Ontario K2H 8B1 (CA). ANDERSON, Keith, Douglas ; 14 Oakley Avenue, Nepean, Ontario K2B 6M6 (CA).</p>		<p>(74) Agent: TOYOOKA, Yoshiharu; Northern Telecom Limited, Patent Department, P.O. Box 3511, Station "C", Ottawa, Ontario K1Y 4H7 (CA). (81) Designated States: CA, JP, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, SE). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 10 June 1993 (10.06.93)</p>

(54) Title: BROADBAND INPUT BUFFERED ATM SWITCH



(57) Abstract

Broadband ATM switches for switching ATM packetized data in timeslots are disclosed. In one embodiment, the switch includes input buffer means, a space switch for connecting input ports and output ports at successive timeslots and a system scheduler. The timeslot utilization processing is carried out by using a contained addressable memory. A bit map is provided for registering the timeslot utilization of the input ports and the output ports. An encoder means determines the earliest commonly available timeslot for connecting input ports and their requested output ports. There is further disclosed an architecture in which groups of input ports share common buffer memories and in which the system scheduler processes grouped inputs, thus taking advantage of the architecture's similar characteristics and advantages to those of the common memory switch.

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INTERNATIONAL SEARCH REPORT

International Application No **PCT/CA 92/00431**

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ⁶				
According to International Patent Classification (IPC) or to both National Classification and IPC Int. Cl. 5 H 04 L 12/56 H 04 Q 11/04				
II. FIELDS SEARCHED				
Minimum Documentation Searched ⁷				
Classification System	Classification Symbols			
Int. Cl. 5	H 04 L H 04 Q G 06 F			
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸				
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹				
Category ^o	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³		
X	ELECTRONICS LETTERS vol. 27, no. 7, 28 March 1991, GB pages 555 - 557 , XP227077 H. OBARA THE WHOLE DOCUMENT * ---	1,2		
A	EP,A,0298793 (SERVEL ET AL) 11 January 1989 see abstract; claim 1 ---	3		
A	INT. CONFERENCE ON COMMUNICATIONS 87 vol. 1, June 1987, US pages 373 - 377 S. GOHARA ET AL SECTION 4 * -----	1		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; border: none;"> ^o Special categories of cited documents :¹⁰ "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%; vertical-align: top; border: none;"> "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 "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 </td> </tr> </table>			^o Special categories of cited documents : ¹⁰ "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 "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
^o Special categories of cited documents : ¹⁰ "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 "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			
IV. CERTIFICATION				
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report			
13-01-1993	06.05.93			
International Searching Authority	Signature of Authorized Officer			
EUROPEAN PATENT OFFICE				

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA92/00431

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:

For further information see Form PCT/ISA/206 sent on 26.02.93

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.:

1-6

Remark on Protest

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

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.**

CA 9200431
SA 64983

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 03/05/93. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A- 0298793	11-01-89	FR-A- 2617302 DE-A- 3869853	30-12-88 14-05-92
