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12/000,961 19 December 2007 (19.12.2007) US(71) Applicant (for all designated States except US): **ALCA-TEL LUCENT** [FR/FR]; 54, rue la Boétie, F-75008 Paris (FR).

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[Continued on next page]

(54) Title: RESILIENT PPP/ML-PPP SERVICES OVER MULTI-CHASSIS APS PROTECTED ROUTERS

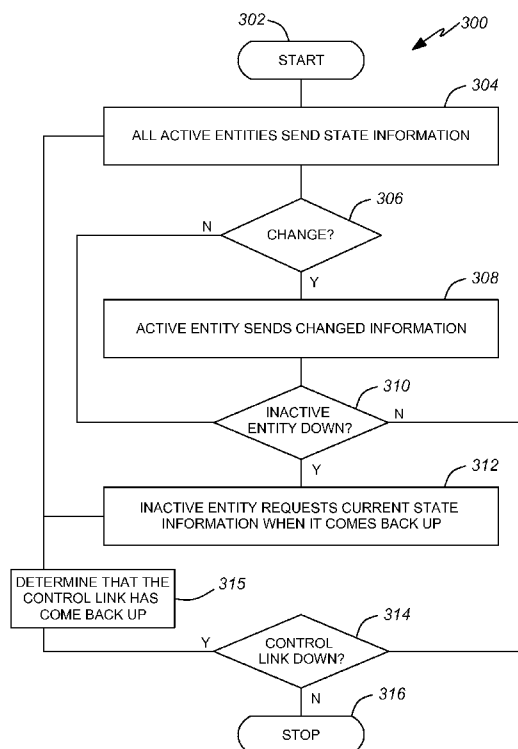


FIG. 3

(57) Abstract: A system and method for resilient communication services under multi-chassis APS protected routers, including one or more of the following: an add-drop multiplexer; a working chassis; a plurality of working lines of communication between the add-drop multiplexer and the working chassis; a protection chassis; a plurality of protection lines of communication between the add-drop multiplexer and the protection chassis; and a multi-chassis APS control link between the working chassis and the protection chassis, wherein a plurality of active entities in the working chassis having state information send their state information to parallel inactive entities in the protection chassis by way of the multi-chassis APS, ones of said active entities send changed state information to parallel ones of said inactive entities through said multi-chassis APS control link upon a state change in said ones of said active entities, and ones of said inactive entities that were down request current state information from said active entities through said multi-chassis APS control link when said ones of said inactive entities that were down come back up after being down.



(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
NE, SN, TD, TG).

— *before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
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## INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2008/055676

A. CLASSIFICATION OF SUBJECT MATTER  
 INV. H04J3/08 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)

H04J 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, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 580 709 B1 (GORSHE STEVEN SCOTT [US] ET AL) 17 June 2003 (2003-06-17)	1,13,26
Y	column 13, line 47 - column 14, line 61  column 15, line 43 - column 17, line 30 -----	2-12, 14-24
Y	US 2005/180429 A1 (GHAHREMANI CHARLIE [US] ET AL) 18 August 2005 (2005-08-18) paragraph [0065] - paragraph [0082] -----	2-12, 14-24
Y	US 2004/100899 A1 (MAHAMUNI ATUL B [US]) 27 May 2004 (2004-05-27) paragraph [0031] - paragraph [0042]; figure 3  -----  -/--	25

☒ Further documents are listed in the continuation of Box C.

☒ See patent family 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.

\*Z\* document member of the same patent family

Date of the actual completion of the international search

21 July 2009

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29/07/2009

Name and mailing address of the ISA/

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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.
Y	US 2006/198296 A1 (MAJEE SUMANDRA [US] ET AL) 7 September 2006 (2006-09-07) paragraph [0050] - paragraph [0060]; figure 3 -----	25
A	US 7 170 854 B1 (ORRELL JASON P [US] ET AL) 30 January 2007 (2007-01-30) column 4, line 23 - column 5, line 39 -----	1-24,26
T	"Types and characteristics of SDH network protection architectures; G.841 (10/98)" ITU-T STANDARD IN FORCE (I), INTERNATIONAL TELECOMMUNICATION UNION, GENEVA, CH, no. G.841 (10/98), 1 October 1998 (1998-10-01), XP017401080 the whole document -----	1-24,26

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IB2008/055676

### Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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 No. III Observations where unity of invention is lacking (Continuation of item 3 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 allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
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.:

#### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ 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: 1-24,26

System and method for resilient communication services in a multi-chassis automatic protection switching router comprising working (active) and inactive (stand-by) entities wherein said working entities send status information to said inactive entities and the inactive entities request status information to the active entities after switching back from a down state.

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2. claim: 25

Method for resilient communication services in a multi-chassis automatic protection switching router comprising working (active) and inactive (stand-by) entities wherein said working entities send sequence numbers to said inactive entities and the inactive entities send back acknowledgments for every received sequence number.

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No

PCT/IB2008/055676

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6580709	B1	17-06-2003	NONE	
US 2005180429	A1	18-08-2005	NONE	
US 2004100899	A1	27-05-2004	AU 2003276499 A1 WO 2004049609 A1	18-06-2004 10-06-2004
US 2006198296	A1	07-09-2006	NONE	
US 7170854	B1	30-01-2007	NONE	