(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
20 May 2010 (20.05.2010)

PCT

(10) International Publication Number
WO 2010/056582 A3

(51) International Patent Classification:
H04L 12/28 (2006.01) *H04L 7/00* (2006.01)

(21) International Application Number:
PCT/US2009/063325

(22) International Filing Date:
5 November 2009 (05.11.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/114,558 14 November 2008 (14.11.2008) US
12/412,589 27 March 2009 (27.03.2009) US

(71) Applicant *(for all designated States except US)*: **NORTEL NETWORKS LIMITED** [CA/CA]; 2351 Boulevard Alfred-Nobel, St-Laurent, Québec H4S 2A9 (CA).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **FEDYK, Donald** [US/US]; 220 Hayden Road, Groton, Massachusetts 01450 (US).

(74) Agent: **GORECKI, John**; P.O. Box 553, Carlisle, Massachusetts 01741 (US).

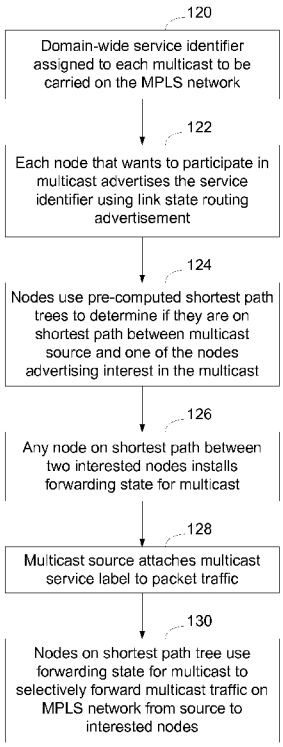
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM,

[Continued on next page]

(54) Title: SERVICE INSTANCE APPLIED TO MPLS NETWORKS

Figure 6



(57) Abstract: Domain-wide unique node identifiers and domain-wide unique service identifiers are distributed within a MPLS domain using routing system LSAs. Nodes on the MPLS network compute shortest path trees for each destination and install unicast forwarding state based on the calculated trees. Nodes also install multicast connectivity between nodes advertising common interest in a common service identifier. Rather than distributing labels to be used in connection with unicast and multicast connectivity, the nodes deterministically calculate the labels. Any number of label contexts may be calculated. The labels may either be domain wide unique per unicast path or per multicast, or may be locally unique and deterministically calculated to provide forwarding context for the associated path. Multicast and unicast paths may be congruent, although this is not a requirement.

WO 2010/056582 A3

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

Published:

— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:
5 August 2010

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/063325

A. CLASSIFICATION OF SUBJECT MATTER

H04L 12/28(2006.01)i, H04L 7/00(2006.01)i

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 : H04B, H04L, H04W

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

KOREAN UTILITY MODELS AND APPLICATIONS FOR UTILITY MODELS SINCE 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS, DELPHION, ESPACENET & Keywords : service instance, MPLS network, routing advertisement, network element, synchronized view of topology, unique service identifier, second MPLS network, forwarding state and similar terms.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2006-0203747 A1 (GREGORY WRIGHT et al.) 14 September 2006 See abstract, claims 1-4 and figure 1.	1-19
A	US 2008-0019385 A1 (ROBERT SULTAN et al.) 24 January 2008 See abstract, claim 1 and figure 1.	1-19
A	US 2007-0076719 A1 (DAVID ALLAN et al.) 05 April 2007 See abstract, claims 1-3 and figure 1.	1-19
A	EP 1187405 A1 (NORTEL NETWORKS LIMITED) 13 March 2002 See abstract, claim 1 and figure 1.	1-19

☐ 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 application or patent 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 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	Date of mailing of the international search report
15 JUNE 2010 (15.06.2010)	**15 JUNE 2010 (15.06.2010)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

KIM Dae Sung

Telephone No. 82-42-481-8237

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2009/063325

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006-203747 A1	14.09.2006	NONE	
US 2008-0019385 A1	24.01.2008	US 2008-0159309 A1	03.07.2008
		WO 2008-080368 A1	10.07.2008
US 2007-0076719 A1	05.04.2007	CN 101371525 A	18.02.2009
		EP 1943783 A1	16.07.2008
		WO 2007-038853 A1	12.04.2007
EP 1187405 A1	13.03.2002	CA 2351774 A1	28.12.2001
		DE 60103338 D1	24.06.2004
		DE 60103338 T2	23.09.2004
		EP 1187405 B1	19.05.2004
		US 06886043 B1	26.04.2005