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(71) Applicant: **CISCO TECHNOLOGY, INC.** [US/US]; 170 West Tasman Drive, San Jose, California 95134 (US).

(72) Inventors: **VASSEUR, Jean-philippe**; 94 Adams Street, Dunstable, Massachusetts 01827 (US). **PREVIDI, Stefano, B.**; Via Citta' della Pieve, 88, I-00191 Roma (IT).

(74) Agents: **BARBAS, Charles, J.** et al.; CESARI AND MCKENNA, LLP, 88 Black Falcon Avenue, Boston, Massachusetts 02210 (US).

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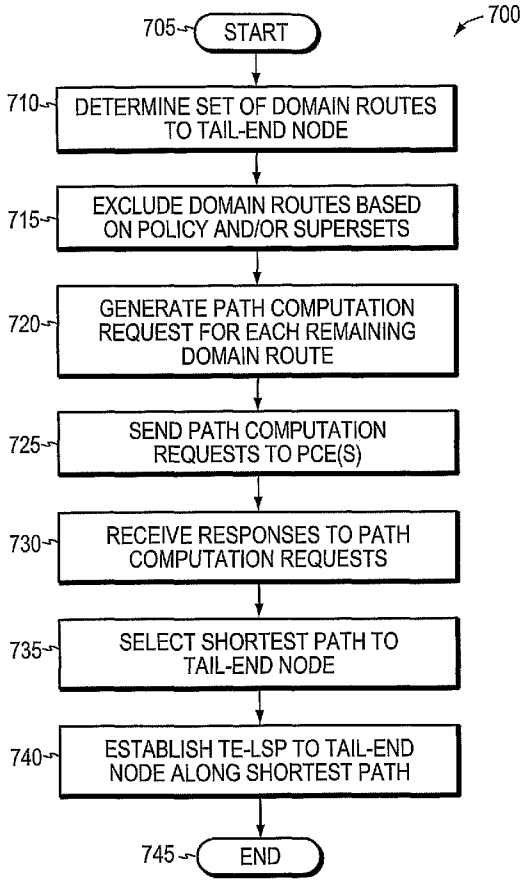
(54) Title: COMPUTATION OF A SHORTEST INTER-DOMAIN TE-LSP ACROSS A SET OF AUTONOMOUS SYSTEMS



(57) **Abstract:** A technique calculates a shortest path for a traffic engineering (TE) label switched path (LSP) from a head-end node in a local domain to a tail-end node of a remote domain in a computer network. The novel path calculation technique determines a set of different remote domains through which the TE-LSP may traverse to reach the tail-end node (e.g., along "domain routes"). Once the set of possible routes is determined, the head-end node sends a path computation request to one or more path computation elements (PCEs) of its local domain requesting a computed path for each domain route. Upon receiving path responses for each possible domain route, the head-end node selects the optimal (shortest) path, and establishes the TE-LSP accordingly.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US06/06811

A. CLASSIFICATION OF SUBJECT MATTER
IPC: **G06F 15/173**(2006.01)

USPC: 709/238
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)
U.S. : 709/238

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 practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2002/0145981 A1 (KLINKER et al.) 10 October 2002 (10.10.2002), entire document.	1, 4, 10, 13, 18 and 19 --- 2, 3, 5-9, 11, 12, 14-18
X	US 2003/0021232 A1 (DUPLAIX et al.) 30 January 2003 (30.01.2003), entire document.	20
Y	US 6,542,469 B1 (KELLEY et al.) 01 April 2003 (01.04.2003), entire document.	6, 9, 15 and 18
Y	US 2004/0148150 A1 (ASHAR et al.) 29 July 2004 (29.07.2004), entire document.	7 and 16
Y, P	US 6,982,975 B1 (ARAMAKI et al.) 03 January 2006 (03.01.2006), entire document.	8 and 17
Y	AWDUCHE, D. et al. RFC 3209, entitled RSVP-TE: Extensions to RSVP for LSP Tunnels. December 2001, pages 1-43.	3 and 12

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

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"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

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Date of the actual completion of the international search	Date of mailing of the international search report
26 March 2007 (26.03.2007)	03 APR 2007
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer William Dixon Telecia D. Roberts for Telephone No. (571) 272-1600

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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	WALTON, D. et al. Network Working Group Internet Draft entitled Advertisement of Multiple Paths in BGP (draft-walton-bgp-add-paths-01.txt). November 2002, pages 1-11.	5 and 14
Y	US 5,600,638 A (BERTIN et al.) 04 February 1997 (04.02.1997), entire document.	2 and 11

Continuation of B. FIELDS SEARCHED Item 3:
EAST: US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB
Search terms: "optimal path", "head-end router", "superset", "LSP tunnel", "shortest path", paths, routes, selecting, optimal, network, eliminate, "response timer"