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(71) Applicant: **IP FABRICS, INC.** [US/US]; 14964 NW Greenbrier Parkway, Beaverton, OR 97006 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **MYERS, Glenford J.** [US/US]; 3260 NW 112th PL, Portland, OR 97229 (US). **SCHWADERER, Curtis A.** [US/US]; 4738 92nd Ct., Urbandale, IA 50322 (US). **GRAVES, Kevin L.** [US/US]; 8360 SW Shamut Drive, Beaverton, OR 97007 (US). **CASSING, David T.** [US/US]; 14543 NE Mulligan Ct., Aurora, OR 97002 (US). **IMEL, Michael T.** [US/US]; 11323 SW Lynnridge Ave., Portland, OR 97225 (US).

(74) Agent: **FORDENBACHER, Paul J.**; Silicon Forest Patent Group, 11876 NW Tyler Ct., Portland, OR 97209 (US).

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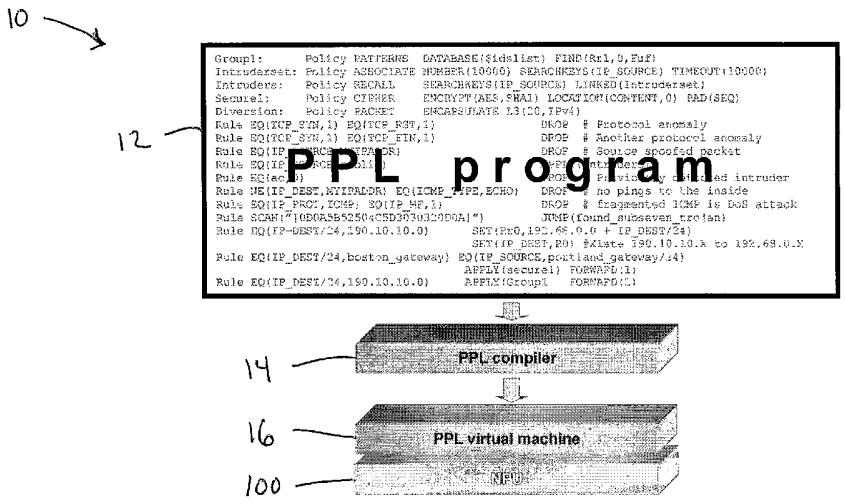
(54) Title: DATA PLANE TECHNOLOGY INCLUDING PACKET PROCESSING FOR NETWORK PROCESSORS



(57) Abstract: Methods and apparatus for abstracting network processors using a virtual machine (16). The virtual machine approach substantially abstracts the network processor, letting the application developer focus all attention on packet processing. The NPU-based (100) virtual machine (16) provides the functionality of a pipelined engine, N-way parallelism, or both. A high-level functional language (12, 14) is provided for expressing a wide variety of packet processing applications. The high-level functional language provides primitives in the form of instructions such as, but not limited to, tracking a connection or session, removing an outer header, translating an IP address, encrypting a packet, and scanning the payload for a regular expression.

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INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G 06 F 9/455 (2006.01)
USPC - 718/1
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. : 718/1; 717/114, 118, 148, 149

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
U.S. Patent and Trademark Office Patent Full-Text and Full-Page Database; PUBWEST- PGPB, USPT, EPAB, JPAB.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,282,702 B1 (UNGAR) 28 August 2001 (28.08.2001); entire document.	1-20
A	US 6,665,725 B1 (DIETZ et al) 16 December 2003 (16.12.2003); abstract, figure 15.	1-20
A	US 6,788,980 B1 (JOHNSON) 07 September 2004 (07.09.2004); abstract.	1-20
A	US 2004/0064578 A1 (BOUCHER et al.) 01 April 2004 (01.04.2004); abstract.	1-20
A	US 2003/0195989 A1 (GREENBLAT) 16 October 2003 (16.10.2003); entire document.	1-20

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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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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: Blaine R. Copenheaver Telephone No. 571-272-7774

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