

Office Action Summary	Application No.	Applicant(s)	
	11/022,599	NATCHU, VISHNU	
	Examiner	Art Unit	
	Xavier Szewai Wong	2462	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 21st May 2009.
- 2a) This action is **FINAL**.
- 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-40 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-40 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Response to Arguments

Arguments filed on 21st May 2009 are not persuasive.

Applicant argues that **Zikan**, in general, does not suggest “processing a single flow, whereby only the statistics and behavior of that one flow are used to determine its outcome (pg. 4).” Nonetheless, the limitations of independent claims **1** and **21**, in *no where* in the claims do the arguments presented above reflect such “narrowed down” limitations. Even, *en arguendo*, that said “narrowed down” limitations are present, col. 8 lines 48-50 of **Zikan** clearly states “an overall flow in a particular arc typically is a conglomeration of one or more separate flows,” in other words, the arc flow can be one single flow (emphasis added). Such (each one / single) arc flow is governed by a penalty and merit function $E_{\alpha,\beta}(f)$ as explained in col. 10 lines 29-30.

Applicant also argues that the penalty function of **Zikan** does not suggest “dropping a packet or enforcing an increased drop rate on the flow” as the applicant’s invention performs (pg. 7). Again, *no where* in the limitations of claim 1 (or claim 21) mentions such “narrowed down” limitations of “dropping packets” or “increasing drop rates.” Claim 1 (and claim 21) *merely* states “a determination that the flow is exhibiting undesirable behaviour, forcing a penalty on the flow.” Clearly, the **Zikan** penalty and merit function teaches the limitations above.

In response to applicant's argument above that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., **dropping a packet or enforcing an increased drop rate on the flow**) are not recited in the rejected claim(s). Although the claims are

interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicants also argue that claims **4, 10, 24** and **30** are not clearly taught by **Zikan** (pg. 3).

Claims **4, 10, 24** and **30** contains the **same** limitations, thus, the examiner combined the rejections and *asserts* that the best reference, **Zikan**, at the time of the previous action dated 20th December 2007 has been applied and fully explained, and therefore, in full compliance with 37 CFR 1.104(c)(2). Even so, the examiner hereby re-states the rejection as shown below:

Claims **4, 10, 24** and **30**: **Zikan** clearly teaches the penalty is enforced when a congestion condition is encountered (abstract, lines 3-6: penalty and merit function to reduce costs of congestion).

Regarding claims 1-20, the Examiner notes the claims are directed to statutory subject matter, per paragraphs 0025-0027 of the Applicant's specification, because it is implied that a misbehaving flow manager, comprising processors, determines the behavior characteristics of a packet flow.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **1, 2, 4 – 10, 21, 22** and **24 – 30** are rejected under 35 U.S.C. 102(b) as being anticipated by **Zikan et al (US 6,310,881 B1)**.

Consider claims **1** and **21**, **Zikan** et al disclose a dynamic load balancer (e.g. MFM) for processing a flow which comprises of a series of information packets (col. 2 ln. 45-49), the balancer comprising means for: maintaining a set of behavioral statistics, which are updated as information packets belong to the flow are processed, for the flow (col. 2 ln. 47-51; col. 5 ln. 26-29); determining, based upon the behavioral statistics, whether the flow is exhibiting undesirable behavior (col. 2 ln. 47-51; col. 5 ln. 30-37); enforcing, in response to the determination of undesirable behavior, a penalty on the flow (col. 3 ln. 2-6; col. 5 ln. 37-41).

Consider claims **5** and **25**, **Zikan** et al disclose a dynamic load balancer (e.g. MFM) for processing a flow which comprises of a series of information packets (col. 2 ln. 45-49), the balancer comprising means for: maintaining a set of behavioral statistics, which are updated as information packets belong to the flow are processed, for the flow (col. 2 ln. 47-51; col. 5 ln. 26-29); computing, based upon the behavioral statistics, an expression $E_{\alpha,\beta}(f)$ (e.g. badness factor) to provide indication of whether the flow is exhibiting undesirable behavior (col. 9 ln. 40-65).

Consider claims **2** and **22**, as applied to claims **1** and **21**, **Zikan** et al teach means for the penalty has an effect of correcting the flow's behavior such that the flow exhibits less undesirable behavior (*merit function & flow optimization*: col. 3 ln. 2-5; col. 4 ln. 19-20; col. 10 ln. 20-28).

Consider claims **4**, **10**, **24** and **30**, as applied to claims **1**, **8**, **21** and **28**, **Zikan** et al teach that the invention is to solve, among other misbehaviors/faults, congestion in a network (col. 2 ln. 1-6; *abstract*); the penalty function is enforced when a misbehavior/fault, such as a congestion, is encountered (col. 5 ln. 30-41; col. 9 ln. 62-65).

Consider claims **6** and **26**, as applied to claims **5** and **25**, **Zikan** et al teach means for the $E_{\alpha,\beta}(f)$ (e.g. badness factor) providing an indication of a degree to which the flow is behaving undesirably (col. 9 ln. 40-67).

Consider claims **7**, **8**, **27** and **28** as applied to claims **6**, **7**, **26** and **27**, **Zikan** et al teach means for determining, based on the $E_{\alpha,\beta}(f)$ (e.g. badness factor), a penalty to impose and enforce on the flow (col. 3 ln. 2-6; col. 5 ln. 37-41; col. 9 ln. 40-65).

Consider claims **9** and **29**, as applied to claims **8** and **28**, **Zikan** et al teach means for the penalty has an effect (enforcing) of correcting the flow's behavior such that the flow exhibits less undesirable behavior (*merit function & flow optimization*: col. 3 ln. 2-5; col. 4 ln. 19-20); therefore, causing $E_{\alpha,\beta}(f)$ (e.g. badness factor) to improve (*maximization of merit functions*: col. 10 ln. 20-28).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims **3, 12, 13, 14, 18, 23, 32, 33, 34** and **38** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Zikan et al (US 6,310,881 B1)** in view of **Skirmont (US 6,252,848 B1)**.

Consider claims **3, 13, 14, 23, 33** and **34**, as applied to claims **1, 8, 13, 21, 28** and **33**, **Zikan et al** teach the penalty imposed involve lost packets (drop rate; col. 4 ln. 16-20). However, **Zikan et al** may not have *explicitly* mentioned an increased drop rate such that a misbehaving flow has a higher probability of being dropped than flows that do not exhibit undesirable misbehavior. **Skirmont** teaches means for assigning not well-behaved flows to higher drop probabilities and therefore, creating an increased drop rate, than a flow that is well-behaved (col. 4 ln. 64-67). It would have been obvious to one of ordinary skill in the art at the time the invention was created to apply the teachings of **Skirmont** to the penalty function of **Zikan et al** for penalty enforcement on misbehaving flows.

Consider claims **12** and **32**, as applied to claims **8** and **28**, **Zikan et al** teach the claimed invention except may not have *explicitly* mentioned the penalty is determined and enforced on the flow even when no congestion condition is encountered. **Skirmont** mentions a Random Early Detection (RED) algorithm comprising means for allowing the dropping of packets *without regard* to the characteristics (e.g. congestion) of a flow (col. 5 ln. 21-24). It would have been obvious to one of ordinary skill in the art at the time the invention was created to incorporate the RED algorithm as mentioned by **Skirmont** to the load balancer of **Zikan et al** for improving network flow performance.

Consider claims **18** and **38**, as applied to claims **5** and **25**, **Zikan et al** teach the claimed invention except may not have *explicitly* mentioned the behavioral statistics comprising an average size for the information packets of a flow. **Skirmont** teaches in figure 2 an average

queue (flow) size is taken into account when deciding a drop probability (col. 4 ln. 26-34). It would have been obvious to one of ordinary skill in the art at the time the invention was created to apply the teachings of **Skirmont** to the penalty function of **Zikan** et al for enforcing flow traffic.

Claims **11** and **31** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Zikan** et al (US 6,310,881 B1) in view of **Afanador** (US 6,167,041).

Consider claims **11** and **31**, as applied to claims **8** and **28**, **Zikan** et al disclose the claimed invention except may not have *explicitly* mentioned no penalty is enforced on a flow unless a congestion is encountered, regardless of how undesirably the flow is behaving. **Afanador** teaches that only offending queues (flows) are penalized in time of congestion (col. 8 ln. 25-33). It would have been obvious to one of ordinary skill in the art at the time the invention was created to apply the teachings of **Afanador** to the penalty function of **Zikan** et al for fair penalization of flows.

Claims **15**, **16**, **17**, **35**, **36** and **37** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Zikan** et al (US 6,310,881 B1) in view of **Scifres** et al (US 7,113,990 B2).

Consider claims **15**, **16**, **17**, **35**, **36** and **37**, as applied to claims **1**, **5**, **16**, **25** and **36**, **Zikan** et al teach the claimed invention except may not have *explicitly* mentioned the behavioral statistics comprising: T for an amount of total information contained in all of the information packets belonging to a flow, an L for how long the flow has been existing, and using T/L to obtain R, which is a rate for information transfer of the flow. **Scifres** et al teach a flow volume

32 (e.g. T) is divided by a time period 46 (e.g. L) to obtain an average flow rate (e.g. R) (col. 5 ln. 9-13). It would have been obvious to one of ordinary skill in the art at the time the invention was created to apply the calculation method as taught by Scifres et al to the penalty function of Zikan et al for flow restriction and allocation.

Claims 19, 20, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zikan et al (US 6,310,881 B1) in view of Kejriwal et al (US 6,934,250 B1).

Consider claims 19, 20, 39 and 40, as applied to claims 5 and 25, Zikan et al disclose the claimed invention except may not have *explicitly* mentioned means for receiving and determining whether to forward a particular information packet to a destination; updating, in response to a determination to forward the particular packet, a set of behavioral statistics to reflect processing of the particular packet; and updating regardless of. Kejriwal et al teach means for a policing embodiment determines whether a received packet is to be rejected (discarded) or enqueued (forwarded out of a processor pipeline) to a destination based on a length indicator (packet conforming or non-conforming information); as a statistics table 921 is being written based on the information of the packet, *either* rejected or forwarded. (col. 24 ln. 30-43 & 47-65; fig. 9 @ 917,922,924,950 → fig. 5A).

Conclusion

This action is made **FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xavier Wong whose telephone number is 571-270-1780. The examiner can normally be reached on Monday through Friday 8:30 am - 6:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Xavier Szewai Wong/
x.s.w
30th October 2009

/Donald L Mills/
Primary Examiner, Art Unit 2462

Search Notes 	Application/Control No. 11022599	Applicant(s)/Patent Under Reexamination NATCHU, VISHNU
	Examiner Xavier Szewai Wong	Art Unit 2462

SEARCHED			
Class	Subclass	Date	Examiner
370	229-236	10.30.09	XSW

SEARCH NOTES		
Search Notes	Date	Examiner
EAST image, class and keyword search in USPAT, US-PGPUB, DERWENT, EPO, JPO, and IBM_TDB (please see search history)	10.30.09	XSW
Inventor Name and Assignee search in PALM and EAST	10.30.09	XSW

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3	(Natchu near Vishnu).in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/10/30 19:05
L2	10012	370/229-236.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/10/30 19:05
L3	29960275	@rlad < "20041222" @ad < "20041222"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/10/30 19:05
L4	7769	L3 and L2	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/10/30 19:05
L5	0	(Caspian Sable).as. and (penal\$6 with (flow traffic)).clm.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/10/30 19:07
S1	3	(Natchu near Vishnu).in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/12/16 19:08
S2	2644	370/229,232,234.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/12/16 19:08
S3	3271	370/233,235,236.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/12/16 19:09
S4	27325885	@rlad < "20041222" @ad < "20041222"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/12/16 19:09

S5	4692	(S2 S3) and S4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/12/16 19:11
S6	2255	S2 and S4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/12/16 19:11
S7	2885	S3 and S4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/12/16 19:11
S8	448	(S2 and S3) and S4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/12/16 19:11

EAST Search History (Interference)

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3	(Natchu near Vishnu).in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/10/30 19:05
L2	10012	370/229-236.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/10/30 19:05
L3	29960275	@rlad < "20041222" @ad < "20041222"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/10/30 19:05
L4	7769	L3 and L2	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/10/30 19:05
L5	18	L4 and (penal\$5 with (flow packet frame traffic stream)) same (statistic\$5 behavi \$6 histor\$5)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/10/30 19:11
L6	1	L4 and (penal\$5 with (single one) adj (flow packet frame traffic stream))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/10/30 19:30
L7	9	L4 and (penal\$5 same (single one) adj (flow packet frame traffic stream))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/10/30 19:38

EAST Search History (I nterference)

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Table with columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO., EXAMINER, ART UNIT, PAPER NUMBER, NOTIFICATION DATE, DELIVERY MODE. Includes application details for Vishnu Natchu and examiner Wong, Xavier S.

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATENT@WEST-ASSOCIATES.NET
SJWEST@ASTOUND.NET
PATENT@WESTPATENTLAW.COM

Interview Summary	Application No. 11/022,599	Applicant(s) NATCHU, VISHNU	
	Examiner Xavier Szewai Wong	Art Unit 2462	

All participants (applicant, applicant's representative, PTO personnel):

(1) Xavier Wong. (3) Vishnu Natchu.
(2) Sara Pfeffer. (4) _____.

Date of Interview: 5th March 2010.

Type: a) Telephonic b) Video Conference
c) Personal [copy given to: 1) applicant 2) applicant's representative]

Exhibit shown or demonstration conducted: d) Yes e) No.
If Yes, brief description: _____.

Claim(s) discussed: new proposed claim.

Identification of prior art discussed: Zikan et al, US 6310881 B2.

Agreement with respect to the claims f) was reached. g) was not reached. h) N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: discussed invention in general; the examiner recommended further clarification on "behavioral statistics", "heuristically determining said flow" and "penalty" phrases; the applicant will file amendment for further consideration by the examiner.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

	/Xavier Szewai Wong/ AU 2462 Patent Examiner
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Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Request for Continued Examination (RCE) Transmittal	Application Number	11022599
	Filing Date	12/22/2004
	First Named Inventor	Natchu
	Art Unit	2462
	Examiner Name	Xavier Wong
	Attorney Docket Number	SABLE-01008US

Address to:
Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. **Submission required under 37 CFR 1.114** Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

a. Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

i. Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

ii. Other _____

b. Enclosed

i. Amendment/Reply

ii. Affidavit(s)/Declaration(s)

iii. Information Disclosure Statement (IDS)

iv. Other _____

2. **Miscellaneous**

a. Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

b. Other _____

3. **Fees** The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

a. The Director is hereby authorized to charge the following fees, any underpayment of fees, or credit any overpayments, to Deposit Account No. _____

i. RCE fee required under 37 CFR 1.17(e)

ii. Extension of time fee (37 CFR 1.136 and 1.17)

iii. Other _____

b. Check in the amount of \$ _____ enclosed

c. Payment by credit card (Form PTO-2038 enclosed)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED			
Signature	/Sara Dirvianskis/	Date	April 13, 2010
Name (Print/Type)	Sara Dirvianskis	Registration No.	62613

CERTIFICATE OF MAILING OR TRANSMISSION	
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.	
Signature	Date
Name (Print/Type)	

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	11022599			
Filing Date:	22-Dec-2004			
Title of Invention:	Mechanism for identifying and penalizing misbehaving flows in a network			
First Named Inventor/Applicant Name:	Vishnu Natchu			
Filer:	Sara Elizabeth Dirvianskis			
Attorney Docket Number:	SABLE-01008			
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2202	3	26	78
Independent claims in excess of 3	2201	3	110	330
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Extension - 2 months with \$0 paid	2252	1	245	245
Miscellaneous:				
Request for continued examination	2801	1	405	405
Total in USD (\$)				1058

Electronic Acknowledgement Receipt

EFS ID:	7408876
Application Number:	11022599
International Application Number:	
Confirmation Number:	8956
Title of Invention:	Mechanism for identifying and penalizing misbehaving flows in a network
First Named Inventor/Applicant Name:	Vishnu Natchu
Customer Number:	43490
Filer:	Sara Elizabeth Dirvianskis
Filer Authorized By:	
Attorney Docket Number:	SABLE-01008
Receipt Date:	13-APR-2010
Filing Date:	22-DEC-2004
Time Stamp:	20:18:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$1058
RAM confirmation Number	6238
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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1	Amendment After Final	20100413- SABLE-01008_ROA_finalSDP. pdf	166785 0d65940c6ffdf62d8f3f20eb979bd4a412f6e3c5	no	27
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	20100413- SABLE-01008_RCE_transmittal. pdf	127398 11511b0280f8678b62a10fda98dda235434b09ec	no	1
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
3	Fee Worksheet (PTO-875)	fee-info.pdf	35266 36012a891b14ba5497520a636196d7c21dc70b5b	no	2
Warnings:					
Information:					
Total Files Size (in bytes):				329449	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application
Inventor(s): Natchu, Vishnu
Appln. No.: 11/022,599
Confirm. No.: 8956

PATENT APPLICATION

Art Unit: 2462
Examiner: Wong, Xavier S.

Filed: December 22, 2004
Title: MECHANISM FOR IDENTIFYING AND
PENALIZING MISBEHAVING FLOWS
IN A NETWORK

Customer No. 43490

RESPONSE TO OFFICE ACTION UNDER 37 C.F.R. §1.111

Mail Stop Amendment
Commissioner for Patents
P.O. 1450
Alexandria, VA 22313-1450

Sir:

This RESPONSE is in reply to the Office Action mailed November 13, 2009. The time for response was set for three months and ended on February 13, 2010. A two-month extension of time is hereby requested and the required fee submitted. A Request for Continued Examination is also hereby requested and the required fee submitted herewith. Additionally, the application has been amended to include three additional independent claims, and the required fee for these claims is submitted herewith. This response, filed April 13, 2010, is therefore timely.

Summary of Examiner Interview

On March 5, 2010, a telephonic interview with Examiner Wong was conducted specifically regarding the Office Action mailed on November 13, 2009. The cited prior art was discussed and compared to the present application. Amendments were proposed that were seen to possibly overcome the Zikan reference. This RESPONSE therefore sets forth new claims based on the aforementioned discussion.

Remarks

These remarks are in response to the Office Action mailed November 13, 2009. The total number of claims submitted for consideration is forty three (43).

Amendments to the Claims

Applicant respectfully amends the claims as follows. A clean copy of the amended claims is included in Appendix A.

What is claimed is:

1. (Original) A machine implemented method for processing a flow, the flow comprising a series of information packets, the method comprising:

maintaining a set of behavioral statistics for the flow, wherein the set of behavioral statistics are updated as information packets belonging to the flow are processed;
determining, based at least partially upon the set of behavioral statistics, whether the flow is exhibiting undesirable behavior; and
in response to a determination that the flow is exhibiting undesirable behavior, enforcing a penalty on the flow.

2. (Original) The method of claim 1, wherein enforcing the penalty has an effect of correcting the flow's behavior such that the flow exhibits less undesirable behavior.

3. (Original) The method of claim 1, wherein enforcing the penalty comprises:

imposing an increased drop rate on the flow such that the information packets belonging to the flow have a higher probability of being dropped than information packets belonging to other flows that do not exhibit undesirable behavior.

4. (Original) The method of claim 1, wherein the penalty is enforced when a congestion condition is encountered.

5. (Original) A machine implemented method for processing a flow, the flow comprising a series of information packets, the method comprising:

maintaining a set of behavioral statistics for the flow, wherein the set of behavioral statistics are updated as information packets belonging to the flow are processed; and computing, based at least partially upon the set of behavioral statistics, a badness factor for the flow, wherein the badness factor provides an indication of whether the flow is exhibiting undesirable behavior.

6. (Original) The method of claim 5, wherein the badness factor also provides an indication of a degree to which the flow is behaving undesirably.

7. (Original) The method of claim 6, further comprising:

determining, based at least partially upon the badness factor, a penalty to impose on the flow.

8. (Original) The method of claim 7, further comprising: enforcing the penalty on the flow.

9. (Original) The method of claim 8, wherein enforcing the penalty on the flow causes the flow to exhibit less undesirable behavior, thereby, causing the badness factor of the flow to improve.

10. (Original) The method of claim 8, wherein the penalty is enforced on the flow when a congestion condition is encountered.

11. (Original) The method of claim 8, wherein no penalty is enforced on the flow unless a congestion condition is encountered, regardless of how undesirably the flow is behaving.

12. (Original) The method of claim 8, wherein the penalty is determined and enforced on the flow even when no congestion condition is encountered.

13. (Original) The method of claim 8, wherein determining the penalty comprises:

determining an increased drop rate to impose on one or more information packets belonging to the flow.

14. (Original) The method of claim 13, wherein enforcing the penalty comprises:

imposing the increased drop rate on the flow such that the information packets belonging to the flow have a higher probability of being dropped than information packets belonging to other flows that do not exhibit undesirable behavior.

15. (Original) The method of claim 5, wherein the set of behavioral statistics comprises a measure T of how much total information has been contained in all of the information packets belonging to the flow that have been forwarded up to a current point in time.

16. (Original) The method of claim 5, wherein the set of behavioral statistics comprises a measure L of how long the flow has been in existence up to a current point in time.

17. (Original) The method of claim 16, wherein the set of behavioral statistics comprises a rate R of information transfer for the flow, wherein R is derived by dividing T by L.

18. (Original) The method of claim 5, wherein the set of behavioral statistics comprises an average size for the information packets belonging to the flow.

19. (Original) The method of claim 5, wherein maintaining the set of behavioral statistics comprises:

receiving a particular information packet belonging to the flow;
determining whether to forward the particular information packet to a destination; and
in response to a determination to forward the particular information packet to the destination, updating the set of behavioral statistics to reflect processing of the particular information packet.

20. (Original) The method of claim 5, wherein maintaining the set of behavioral statistics comprises:

receiving a particular information packet belonging to the flow; and

updating the set of behavioral statistics to reflect processing of the particular information packet, regardless of whether the particular information packet is discarded or forwarded to a destination.

21. (Original) A misbehaving flow manager (MFM) for processing a flow, the flow comprising a series of information packets, the MFM comprising:

means for maintaining a set of behavioral statistics for the flow, wherein the set of behavioral statistics are updated as information packets belonging to the flow are processed;

means for determining, based at least partially upon the set of behavioral statistics, whether the flow is exhibiting undesirable behavior; and

means for enforcing, in response to a determination that the flow is exhibiting undesirable behavior, a penalty on the flow.

22. (Original) The MFM of claim 21, wherein enforcing the penalty has an effect of correcting the flow's behavior such that the flow exhibits less undesirable behavior.

23. (Original) The MFM of claim 21, wherein the means for enforcing the penalty comprises:

means for imposing an increased drop rate on the flow such that the information packets belonging to the flow have a higher probability of being dropped than information packets belonging to other flows that do not exhibit undesirable behavior.

24. (Original) The MFM of claim 21, wherein the penalty is enforced when a congestion condition is encountered.

25. (Original) A misbehaving flow manager (MFM) for processing a flow, the flow comprising a series of information packets, the MFM comprising:

means for maintaining a set of behavioral statistics for the flow, wherein the set of behavioral statistics are updated as information packets belonging to the flow are processed; and

means for computing, based at least partially upon the set of behavioral statistics, a badness factor for the flow, wherein the badness factor provides an indication of whether the flow is exhibiting undesirable behavior.

26. (Original) The MFM of claim 25, wherein the badness factor also provides an indication of a degree to which the flow is behaving undesirably.

27. (Original) The MFM of claim 26, further comprising:

means for determining, based at least partially upon the badness factor, a penalty to impose on the flow.

28. (Original) The MFM of claim 27, further comprising: means for enforcing the penalty on the flow.

29. (Original) The MFM of claim 28, wherein enforcing the penalty on the flow causes the flow to exhibit less undesirable behavior, thereby, causing the badness factor of the flow to improve.

30. (Original) The MFM of claim 28, wherein the penalty is enforced on the flow when a congestion condition is encountered.

31. (Original) The MFM of claim 28, wherein no penalty is enforced on the flow unless a congestion condition is encountered, regardless of how undesirably the flow is behaving.

32. (Original) The MFM of claim 28, wherein the penalty is determined and enforced on the flow even when no congestion condition is encountered.

33. (Original) The MFM of claim 28, wherein the means for determining the penalty comprises:

means for determining an increased drop rate to impose on one or more information packets belonging to the flow.

34. (Original) The MFM of claim 33, wherein the means for enforcing the penalty comprises:

means for imposing the increased drop rate on the flow such that the information packets belonging to the flow have a higher probability of being dropped than information packets belonging to other flows that do not exhibit undesirable behavior.

35. (Original) The MFM of claim 25, wherein the set of behavioral statistics comprises a measure T of how much total information has been contained in all of the information packets belonging to the flow that have been forwarded up to a current point in time.

36. (Original) The MFM of claim 25, wherein the set of behavioral statistics comprises a measure L of how long the flow has been in existence up to a current point in time.

37. (Original) The MFM of claim 36, wherein the set of behavioral statistics comprises a rate R of information transfer for the flow, wherein R is derived by dividing T by L.

38. (Original) The MFM of claim 25, wherein the set of behavioral statistics comprises an average size for the information packets belonging to the flow.

39. (Original) The MFM of claim 25, wherein the means for maintaining the set of behavioral statistics comprises:

means for receiving a particular information packet belonging to the flow;

means for determining whether to forward the particular information packet to a destination; and

means for updating, in response to a determination to forward the particular information packet to the destination, the set of behavioral statistics to reflect processing of the particular information packet.

40. (Original) The MFM of claim 25, wherein the means for maintaining the set of behavioral statistics comprises:

means for receiving a particular information packet belonging to the flow; and
means for updating the set of behavioral statistics to reflect processing of the particular information packet, regardless of whether the particular information packet is discarded or forwarded to a destination.

41. (New) A machine-implemented method for processing a single flow, the flow comprising a plurality of packets, and the method comprising:

creating a flow block as the first packet of a flow is processed by a single router;
said flow block being configured to store payload-content-agnostic behavioral statistics pertaining to said flow;
said router updating said flow block with the payload-content-agnostic behavioral statistics as packets belonging to said flow are processed by said router;
said router heuristically determining whether said flow exhibits undesirable behavior by comparing at least one of said payload-content-agnostic behavioral statistics to at least one pre-determined threshold value; and
upon determination by said router that said flow exhibits undesirable behavior, enforcing, relative to at least one packet, a penalty;
wherein said payload-content-agnostic behavioral statistics for said flow are calculated by said router without requiring use of inter-router data.

42. (New) A computer-readable medium having computer-executable instructions for performing a method to process a single flow, the flow comprising a plurality of packets, and the method comprising:

creating a flow block as the first packet of a flow is processed by a single router;
said flow block being configured to store payload-content agnostic behavioral statistics
about said flow;
said router updating said flow block with the flow's behavioral statistics as packets
belonging to said flow are processed by said router;
said router heuristically determining whether said flow is exhibiting undesirable behavior
by comparing at least one of said behavioral statistics to at least one pre-determined
threshold value; and
upon determination by said router that said flow is exhibiting undesirable behavior,
enforcing, relative to at least one packet belonging to said flow, a penalty;
wherein said behavioral statistics for said flow are calculated by said router and
independent of inter-router data.

43. (New) An article of manufacture comprising:

a computer-readable medium having stored thereon a data structure;
a first field containing data representing a flow block;
a second field containing data representing payload-content-agnostic behavioral statistics
about a flow;
a third field containing data representing pre-determined behavior threshold values;
a fourth field containing data representing the results of a heuristic determination of
whether said flow exhibits undesirable behavior determined by comparing said
behavioral statistics to said pre-determined threshold values;
a fifth field containing data representing at least one penalty to be enforced against at
least one packet upon determination that said flow exhibits undesirable behavior.

Response to Rejections under 35 USC §102

As previously stated in an earlier response: the Office Action mistakenly asserts that the dynamic load balancer in Zikan et al. is equivalent to the misbehaving flow manager (MFM) of the present application. Conversely, these two components have different functions and utilize different types of information, as described below. And while the result of the method taught in Zikan is improved routing capabilities (col. 1, ln 17-20; col. 2, ln 52-59), in the present invention “processing a packet my, but does not necessarily, involve forwarding the packet to another router.” [detailed description of present application, hereinafter “Natchu”, para 29]

Claim 1 teaches “a machine implemented method for processing a flow...” This is a method for processing a single flow, whereby only the statistics and behavior of that one flow are used to determine its outcome. [Natchu, para 30-31] By contrast, the Zikan method teaches a network traffic direction system comprising several router modules that, by communicating with each other, determine changes in the overall communication system and adapt accordingly. [See FIGs. 1, 2A, 2B] Thus, the Zikan reference teaches multiple nodes that acquire information from multiple sources and make changes to groups of flows, whereas the present invention is directed to a method for processing one flow at a time based on information from only that one flow.

Claim 1 of the present application also teaches “maintaining a set of behavioral statistics for the flow, wherein the set of behavioral statistics is updated as information packets belonging to the flow are processed.” This claim is directed to processing a single flow. Information pertaining to each packet belonging to a single flow is collected by the misbehaving flow manager (MFM), and each set of behavioral statistics contains information from only one flow. [Natchu, para 35; FIGs. 3-4] By contrast, the dynamic load balancer of Zikan is “configured to determine flows based on the home and neighbor potentials,” and “uses information collected by

the neighborhood supervisor unit 214 of the home router module 130 from the neighboring router modules 130.” [col. 2, ln 45-47; col. 5, ln 34-37; see also col. 17, ln 18-29]

In claim 1 of the present application, “the set of behavioral statistics is updated as information packets belonging to [a single] flow are processed.” Additionally, statistics for each flow processed by a router are separate and distinct, and the statistics for one flow are not used to determine the outcome of another flow. [Natchu, para 29-30; FIGs. 3-4] By contrast, the dynamic load balancer of Zikan “adjusts the routing tables of the router table unit 218 based upon the information collected [from neighboring router modules] in order to optimize overall utilization of the data communication system served by the network traffic director system 110.” [col. 5, ln 34-41] “The dynamic load balancer unit 216 uses information from the neighborhood supervisor unit 214 to determine parameters that the routing table unit 218 then uses to prepare routing table data.” [col. 7, ln 63-66] The method for determining these parameters and optimizing traffic flow is discussed in columns 8-11 of Zikan.

Mathematically, the method is expressed in column 9, lines 45-50 of Zikan, and “the expression $E_{\alpha,\beta}(f)$ incorporates factors associated with individual OD/QoS combinations for each arc “ab” over all the arcs in a data communication system.” [col. 10, ln 29-31] An “arc” is defined as a direction that a packet can travel along a link, and “for typical flow conditions in a data communication system, an overall flow in a particular arc typically is a conglomeration of one or more separate flows.” [col. 8, ln 12-14, 48-50] Thus, in the Zikan reference, the method used to optimize traffic flow in a communication system incorporates information from several flows, whereas the method in the present application utilizes information from a single flow. [See also col. 17, ln 39-46]

Claim 1 of the present application includes “determining, based at least partially upon the set of behavioral statistics, whether the flow is exhibiting undesirable behavior.” Therefore, once all statistics for a single flow are collected, the MFM decides how to treat that particular flow (e.g., whether to drop all or part of it, etc.) [Natchu, para 30] By contrast, the dynamic load balancer 216 in Zikan collects information from “router modules scattered throughout a data communication system” via the neighborhood supervisor unit 214. [col. 15, ln 43-44, 61-63] The information collected within a predetermined period of time is then analyzed and compared to the information collected from the previous time period. If certain parameters have changed or been reached, the dynamic load balancer subsequently updates its associated routing table. [col. 19, ln 12-25] Therefore, while the system in Zikan collects information during a predetermined time period and compares it with information from another time period, the method of the present invention collects information for a single flow, without time limits, and does not compare it to statistics for another flow.

The method of claim 1 in the present application also comprises, “in response to determination that the flow is exhibiting undesirable behavior, enforcing a penalty on the flow.” In the present invention, any given penalty imposed is applied to only a single flow; the decision to enforce a penalty is not carried out on multiple flows at a time. [Natchu, para 31-32; FIGs. 3, 5] Moreover, in the present invention a penalty can include dropping a packet or enforcing an increased drop rate on the flow [Natchu, para 31-32, 41-44].

By contrast, the penalty function involved in the Zikan system is actually a measure of undesirable influences affecting the flow of communication in the entire data communication system. [col. 9, ln 62-65] This penalty function requires consideration of a multitude of factors relating to a plurality of flows within the data system. “The solution to the optimization of the

uniquely formulated [penalty function] over all the component flows...results in solutions of flow $f_{j,ab}$ for each OD/QoS combination “j” for each arc “ab” in the data communication system.” [col. 10, ln 52-58] Moreover, Zikan does not teach a penalty function that includes dropping a flow or increasing the drop rate for a flow. Instead, the penalty function of Zikan determines the presence of undesirable influences in the data communication system that may be remedied by changing parameters stored in routing tables. Thus, the penalty function does not impose an action on a single flow as the result of that single flow’s behavior.

For the foregoing reasons, claim 1 is not anticipated by Zikan and Applicant respectfully requests that the rejection to claim 1 be withdrawn.

Claim 21 was also rejected as being anticipated by Zikan. The elements of claim 21 parallel those of claim 1. Thus, the arguments made above with respect to claim 1 rejections also apply to the rejection of claim 21 under §102(b), and Applicant respectfully requests that the rejection to claim 21 be withdrawn.

Rejections to Claims 5 & 25 Under §102(b)

Claim 5 teaches a method that comprises “maintaining a set of behavioral statistics for the flow, wherein the set of behavioral statistics is updated as information packets belonging to the flow are processed.” These same elements are also present in claim 1. Therefore, the aforementioned arguments with respect to the rejection of claim 1 under §102(b) are likewise applicable to these elements of claim 5, and Applicant asserts that Zikan does not anticipate these elements.

Claim 5 also teaches “computing, based at least partially upon the set of behavioral statistics, a badness factor for the flow, wherein the badness factor provides an indication of

whether the flow is exhibiting undesirable behavior.” The badness factor taught by the present application employs a set of behavioral statistics for a single flow, and its resulting calculation is utilized by the MFM to determine whether a penalty should be enforced on the flow. [Natchu, para 30, 41]

By contrast, the expression $E_{\alpha,\beta}(f)$ in Zikan necessarily requires computation of data from all flows in a communication system in order to assess the state of the system as a whole. “The solution for data flows also optimizes the following uniquely formulated expression $E_{\alpha,\beta}(f)$ involving a substantially quadratic function of data flows in a data communication system.” [col. 9, ln 40-44] “The expression $E_{\alpha,\beta}(f)$ incorporates factors associated with individual OD/QoS combinations for each arc “ab” over all the arcs in a data communication system.” [col. 10, ln 29-31] Moreover, once $E_{\alpha,\beta}(f)$ is computed, any changes made are applied to a group of flows in the system; there is no drop-rate penalty enforced on an individual flow.

For the foregoing reasons, claim 5 is not anticipated by Zikan and Applicant respectfully requests that the rejection to claim 5 be withdrawn.

Claim 25 was also rejected as being anticipated by Zikan. The elements of claim 25 parallel those of claim 5. Thus, the arguments made above with respect to claim 1 rejections also apply to the rejection of claim 25 under §102(b), and Applicant respectfully requests that the rejection to claim 25 be withdrawn.

Rejections to Claims 2, 4, 6-10, 22, 24, 26-30 Under §102(b)

Claims 2, 4, 6-10, 22, 24, and 26-30 were also rejected under §102(b) as being anticipated by Zikan. Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. 37 CFR 1.75. As shown above, claims 1, 5,

21, and 25 are not anticipated by Zikan. Claims 2 & 4 depend from claim 1; claims 6-10 depend from claim 5; claims 22 & 24 depend from claim 21; and claims 26-30 depend from claim 25. Therefore, Applicant respectfully requests that these rejections be withdrawn as well.

Response to Rejections under 35 USC §103

Claims 3, 12-14, 18, 23, 32-34, and 38 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zikan et al in view of Skirmont. Claims 11 and 31 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zikan et al in view of Afanador. Claims 15-17, 35-37 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zikan et al in view of Scifres et al. Claims 19-20, 39-40 were rejected under §103(a) as being unpatentable over Zikan in view of Kejriwal et al.

Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. 37 CFR 1.75. Claim 3 is dependent on independent claim 1 and therefore includes all the limitations of claim 1. Claims 12-14, 18 are dependent on independent claim 5 and therefore include all the limitations of claim 5. Claim 23 is dependent on independent claim 21 and therefore includes all the limitations of claim 21. Claims 32-34, 38 are dependent on independent claim 25 and therefore include all the limitations of claim 25. As explained above with respect to the §102 rejections, independent claims 1, 5, 21, and 25 are not anticipated by Zikan. It follows that claims 3, 12-14, 18, 23, 32-34, and 38 are not anticipated by Zikan in view of any combination of references. Therefore, Applicant respectfully requests that the rejections to these claims be withdrawn.

Conclusion

Applicant respectfully asserts that the cited references do not render the claims unpatentable, either singularly or in combination. In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application should be allowed and a Notice of Allowance is earnestly solicited. The Examiner is respectfully requested to telephone the undersigned if she can assist in any way in expediting the issuance of a patent.

Respectfully submitted,

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Appendix A: Clean Copy of Amended Claims

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Response to Final Office Action

What is claimed is:

1. (Original) A machine implemented method for processing a flow, the flow comprising a series of information packets, the method comprising:

maintaining a set of behavioral statistics for the flow, wherein the set of behavioral statistics are updated as information packets belonging to the flow are processed;
determining, based at least partially upon the set of behavioral statistics, whether the flow is exhibiting undesirable behavior; and
in response to a determination that the flow is exhibiting undesirable behavior, enforcing a penalty on the flow.

2. (Original) The method of claim 1, wherein enforcing the penalty has an effect of correcting the flow's behavior such that the flow exhibits less undesirable behavior.

3. (Original) The method of claim 1, wherein enforcing the penalty comprises:

imposing an increased drop rate on the flow such that the information packets belonging to the flow have a higher probability of being dropped than information packets belonging to other flows that do not exhibit undesirable behavior.

4. (Original) The method of claim 1, wherein the penalty is enforced when a congestion condition is encountered.

5. (Original) A machine implemented method for processing a flow, the flow comprising a series of information packets, the method comprising:

maintaining a set of behavioral statistics for the flow, wherein the set of behavioral statistics are updated as information packets belonging to the flow are processed; and