PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT6252876

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
MARVELL TECHNOLOGY SWEDEN AB	12/02/2011

RECEIVING PARTY DATA

Name:	MARVELL INTERNATIONAL LTD.
Street Address:	CANON'S COURT
Internal Address:	22 VICTORIA STREET
City:	HAMILTON
State/Country:	BERMUDA
Postal Code:	HM 12

PROPERTY NUMBERS Total: 1

Property Type	Number
Patent Number:	7397798

CORRESPONDENCE DATA

Fax Number: (248)641-0270

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 2486411600
Email: hprovost@hdp.com
Correspondent Name: HARNESS, DICKEY & PIERCE, P.L.C.
Address Line 1: P.O. BOX 828
Address Line 4: BLOOMFIELD HILLS, MICHIGAN 48303

ATTORNEY DOCKET NUMBER:	MP4566WOUS
NAME OF SUBMITTER:	HOLLY PROVOST
SIGNATURE:	/Holly Provost/
DATE SIGNED:	08/17/2020

Total Attachments: 43
source=Agreement-Marvell Technology Sweden AB to MIL (EXECUTED)_Redacted#page1.tif
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ASSET PURCHASE AGREEMENT

between

MARVELL TECHNOLOGY SWEDEN AB

as Seller

and

MARVELL INTERNATIONAL LTD.

as Purchaser

December 2, 2011

THIS AGREEMENT is made the 2 day of December 2011

BETWEEN

MARVELL TECHNOLOGY SWEDEN AB, a limited liability company incorporated under the laws of the Kingdom of Sweden, under the registration number 556864-1285 (the "Seller"), formerly known as Xelerated NewCo AB; and

MARVELL INTERNATIONAL LTD., a limited liability company incorporated under the laws of Bermuda, under the registration number EC29736 and with Foreigner's Identification Number (NIE) N4131052E (the "Buyer").

RECITALS

A. On December __, 2011, the Buyer purchased the shares of Seller pursuant to the Share Purchase Agreement;

B. The Seller is the owner of certain business assets relating to the business of the Seller (the "Seller Assets");.

C. The Seller has agreed to sell and transfer, and the Buyer has agreed to purchase, some of the Seller Assets upon the terms and conditions of this agreement.

NOW IT IS AGREED as follows:

1. AGREEMENT TO SELL AND PURCHASE

1.1 The Seller sells, and the Buyer purchases free from any charge, pledge, assignment, title retention, lien, trust, right of set off or other third party right, claim or encumbrance:

1.1.1 with full title guarantee the following assets:

(a) All patents and utility models and applications (including provisional applications) and all reissues, divisions, renewals and extensions described under Schedule 1.1.1.a (hereinafter, the "**Patents**").

The parties acknowledge that the know-how required for the use of the Patents, together with all technology, including, all information related to, constituting or disclosing, and all tangible copies and embodiments in any media of, technology, including techniques, designs, design rules, confidential information, trade secrets, inventions (whether or not patented or patentable), discoveries, improvements, algorithms, routines, methods, software, files, databases, data compilations, technical data, works of authorship,

processes, devices, prototypes, schematics, breadboards, net lists, mask works, test methodologies, and hardware development tools are transferred jointly with the Patents.

(b) All trade names, logos, trademarks and service marks, whether or not registered, including all rights, and trademark and service mark registrations and applications, including all marks registered in the Swedish Patent and Trademark Office and the trademark offices of other nations throughout the world, and all rights therein provided by international treaties or conventions, and all the goodwill associated therewith, as described under Schedule 1.1.1.b (hereinafter, the "**Trademarks**").

(c) The known in-process technology (hereinafter, the "**In-Process R&D**").

The Seller shall give or procure to be given to the Buyer all such written information and other assistance that the Buyer may reasonably require for the effective transfer of the In-Process R&D.

(d) The list of customers included under Schedule 1.1.1.d (hereinafter, the "**List of Customers**").

The Patents, the Trademarks, the In-Process R&D and the Customer List shall be, hereinafter, jointly referred to as the **Assets**.

1.2 The sale and purchase of each of the Assets is interdependent and shall be completed simultaneously.

2. PURCHASE PRICE

[redacted]

3. WARRANTIES

3.1 The Buyer enters into this agreement on the basis of, and in reliance on, the following warranties (the "**Warranties**"):

(i) The Seller has good and marketable title to each Asset, and each Asset is legally and beneficially owned by the Seller. There are no encumbrances over any of the Assets and the Seller has not agreed to create any encumbrances over the Assets or any part of them, except as expressly set out in this agreement.

(ii) The Seller is the sole legal and beneficial owner of (or applicant for) the Patents and Trademarks, free from encumbrances and all other rights exercisable by third parties, except as expressly set out in this agreement.

(iii) The Patents and Trademarks are valid, subsisting and enforceable, and nothing has been done or not been done as a result of which any of them has ceased or might cease to be valid, subsisting or enforceable, except as expressly set out in this agreement.

3.2 The Seller warrants to the Buyer that each Warranty is true and accurate.

3.3 If at any time the Seller becomes aware that a Warranty has been breached or is untrue or has a reasonable expectation that any of those things might occur, it shall immediately:

3.3.1 notify the Buyer in sufficient detail to enable the Buyer to make an accurate assessment of the situation; and

3.3.2 if requested by the Buyer, use its reasonable endeavours to prevent or remedy the notified occurrence.

3.4 Each of the Warranties is separate and, unless expressly provided to the contrary, is not limited by reference to any other Warranty or anything in this agreement.

3.5 The Buyer acknowledges and agrees that at the date of this agreement it has no actual knowledge of any breach of Warranty.

4. SELLER'S LIABILITY

4.1 The Seller undertakes to indemnify and hold the Buyer harmless against all the damages (including professional fees and costs but excluding loss of profits) which may be suffered or incurred by the Buyer and which arise directly or indirectly in connection with a breach of a Warranty.

4.2 Any payment made in respect of a claim under this clause shall include any amount necessary to ensure that, after taxation of the payment, the Buyer is left with the same amount it would have had if the payment had not been subject to taxation.

5. APPORTIONMENTS AND PREPAYMENTS

5.1 All periodical charges and periodical outgoings related to the Assets shall be apportioned on a time basis, so that such part of the relevant charges attributable to the period ending on the date hereof shall be borne by the Seller and such part of the relevant charges attributable to the period commencing on the day immediately following the date hereof shall be borne by the Buyer.

5.2 Any sum due between the parties pursuant to this clause shall be paid in cash within 10 calendar days of receipt:

5.2.1 if to the Seller, to such bank account as the Seller may notify to the Buyer; and

5.2.2 if to the Buyer, to such bank account as the Buyer may notify to the Seller.

6. VALUE ADDED TAX

6.1 The Purchase Price is exclusive of VAT (if any).

6.2 The present transfer of Assets shall be deemed as out of the scope of Swedish VAT and shall not be subject to VAT in Sweden, as the transfer shall be located for VAT at recipient's site in Bermuda.

7. FURTHER ASSURANCE

7.1 Giving full effect to the sale and purchase of the Assets in each and all of the relevant jurisdictions may require the fulfilment of local formalities such as the filing and recording of the present transfer in the relevant registries. In this sense, the parties undertake to execute and file for registration such instruments as are necessary or desirable to document and to transfer title to the Assets from Seller to Buyer in each and all of the relevant jurisdictions.

7.2 The Seller shall promptly execute and deliver all such documents, and do all such things, as the Buyer may from time to time require, for the purpose of giving full effect to the provisions of this agreement.

8. ASSIGNMENT

No party may assign any of its rights under this agreement without the prior written consent of the other party.

9. WHOLE AGREEMENT

This agreement, and any documents referred to in it, constitute the whole agreement between the parties and supersede any previous arrangement, understanding or agreement between them relating to the subject matter they cover.

10. VARIATION AND WAIVER

10.1 A variation of this agreement shall be in writing and signed by or on behalf of each party.

10.2 Any waiver of any right under this agreement is only effective if it is in writing and signed by the waiving or consenting party and it applies only in the circumstances for which it is given and shall not prevent the party who has given the waiver or consent from subsequently relying on the provision it has waived.

10.3 No failure to exercise or delay in exercising any right or remedy provided under this agreement or by law constitutes a waiver of such right or remedy or shall prevent any future exercise in whole or in part thereof.

10.4 No single or partial exercise of any right or remedy under this agreement shall preclude or restrict the further exercise of any such right or remedy.

10.5 Unless specifically provided otherwise, rights arising under this agreement are cumulative and do not exclude rights provided by law.

11. COSTS

11.1 All costs and expenses in connection with the negotiation, preparation, execution and performance of this agreement, and any documents referred to in it, shall be borne by the party that incurred the costs.

12. NOTICE

12.1 A notice given under this agreement:

12.1.1 shall be in writing in the English language (or be accompanied by a properly prepared translation into English);

12.1.2 shall be sent for the attention of the person, and to the address, e-mail or fax number, given in this clause (or such other address, e-mail, fax number or person as the relevant party may notify to the other party); and

12.1.3 shall be:

(a) delivered personally; or

(b) delivered by commercial courier; or

(c) sent by fax; or

(d) sent by e-mail; or

(e) sent by pre-paid first-class post or recorded delivery; or

(f) (if the notice is to be served by post outside the country from which it is sent) sent by airmail.

12.2 The addresses for service of notice are:

12.2.1 **Marvell Technology Sweden AB**

Address: c/o Marvell Switzerland Sarl
Route Pallatex, 17
CH 1163 Etoy, Switzerland

For the attention of: Director

Phone number: 41-21-8210039

Fax number: 41-79-2022303

12.2.2 **Marvell International Ltd**

Address: Canon's Court
22 Victoria Street
Hamilton HM 12, Bermuda

For the attention of: General Manager

Phone number: (441) 296-6395

Fax number: (441) 295-3328

12.3 A notice is deemed to have been received:

12.3.1 if delivered personally, at the time of delivery; or

12.3.2 if delivered by commercial courier, at the time of signature of the courier's receipt; or

12.3.3 if sent by fax upon receipt of a confirmation of transmission slip; or

12.3.4 if sent by e-mail upon receipt of confirmation of delivery; or

12.3.5 if sent by pre-paid first class post or recorded delivery, 48 hours from the date of posting; or

12.3.6 if sent by airmail, five days from the date of posting.

13. SEVERANCE

13.1 If any provision of this agreement (or part of a provision) is found by any court or administrative body of competent jurisdiction to be invalid, unenforceable or illegal, the other provisions shall remain in force.

13.2 If any invalid, unenforceable or illegal provision would be valid, enforceable or legal if some part of it were deleted, the provision shall apply with whatever modification is necessary to give effect to the commercial intention of the parties.

14. INTERPRETATION

14.1 Clause, schedule and paragraph headings do not affect the interpretation of this agreement.

14.2 A reference to a clause or a schedule is a reference to a clause of, or schedule to, this agreement and a reference to a paragraph is to a paragraph of the relevant schedule.

14.3 A reference to a company shall include any company, corporation or other body corporate, wherever and however incorporated.

14.4 Words in the singular include the plural and in the plural include the singular.

14.5 A reference to one gender includes a reference to the other gender.

14.6 A reference to a particular statute, statutory provision or subordinate legislation is a reference to it as it is in force from time to time, taking account of any amendment or re-enactment and includes any statute, statutory provision or subordinate legislation which it amends or re-enacts and subordinate legislation for the time being in force made under it provided that, as between the parties, no such amendment or re-enactment shall apply for the purposes of this agreement to the extent that it would impose any new or extended obligation, liability or restriction on, or otherwise adversely affect the rights of, any party.

14.7 Where the words include(s), including or in particular are used in this agreement, they are deemed to have the words "without limitation" following them.

14.8 Where the context permits, other and otherwise are illustrative and shall not limit the sense of the words preceding them.

15. COUNTERPARTS

This agreement may be executed in any number of counterparts, each of which is an original and which together have the same effect as if each party had signed the same document.

16. LANGUAGE

If this agreement is translated into any language other than English, the English language text shall prevail.

17. GOVERNING LAW AND JURISDICTION

17.1 This agreement and any disputes or claims arising out of or in connection with its subject matter are governed by and construed in accordance with the law of Bermuda.

17.2 The parties irrevocably agree that any dispute or claim that arises out of or in connection with this agreement shall be settled by the courts of the city of Hamilton, Bermuda.

This document is executed and is defined and takes effect on the date stated at the beginning of it.

MARVELL TECHNOLOGY SWEDEN AB
Patrick Clement
Director

MARVELL INTERNATIONAL Ltd
Carol Feathers
General Manager

MARVELL TECHNOLOGY SWEDEN AB
Patrick Clement
Director

MARVELL INTERNATIONAL Ltd
Carol Feathers
General Manager

SCHEDULE 1.1.1.a

List of Patents

SCHEDULE 1.1 W TO ASSET PURCHASE AGREEMENT

LIST OF TRANSFERRED IP

Registered Patents

IP Type	Case Type	Case Title	Country/Region	Registration Date	Registration Number
Patent	Normal	PISC/Sweden	Sweden	2003-11-25	0100221-1
Patent	Normal	DIRECTED GRAPH COMPILING/Sweden	Sweden	2003-12-02	0200383-8
Patent	Normal	TUNNEL DETUNNEL MECHANISM/Sweden	Sweden	2004-12-21	0201020-5
Patent	PCT National Entry	PISC/United States of America	United States of America	2006-03-07	7,010,673
Patent	PCT National Entry	DYNAMIC DEEP INSPECTION/United States of America	United States of America	2008-07-08	7,397,798
Patent	PCT National Entry	PISC/China	China	2009-05-27	ZL01822285.4
Patent	EP Validation	COUPLED TOKEN BUCKETS/DE	Germany	2009-10-07	2036267
Patent	EP Validation	COUPLED TOKEN BUCKETS/GB	United Kingdom	2009-10-07	2036267
Patent	PCT National Entry	ASYMMETRICAL ENGINE/CN	China	2009-12-16	ZL200580044572.9
Patent	PCT National Entry	ACCESS-PUNKT/United States of America(1)	United States of America	2010-01-05	7644190
Patent	PCT National Entry	INSTRUCTION PIPELINING/United States of America(1)	United States of America	2010-01-05	7644256
Patent	PCT National Entry	DIRECTED GRAPH COMPILING/United States of America	United States of America	2010-02-09	7661100

Patent	EP Validation	PISC/DE	Germany	2010-03-31 1360602
Patent	EP Validation	PISC/FR	France	2010-03-31 1360602
Patent	EP Validation	PISC/GB	United Kingdom	2010-03-31 1360602
Patent	EP Validation	PISC/IE	Ireland	2010-03-31 1360602
Patent	EP Validation	PISC/ES	Spain	2010-03-31 1360602
Patent	EP Validation	PISC/IT	Italy	2010-03-31 1360602
Patent	EP Validation	PISC/NL	Netherlands	2010-03-31 1360602
Patent	EP Validation	PISC/BE	Belgium	2010-03-31 1360602
Patent	PCT National Entry	INSTRUCTION PIPELINING/China	China	2010-05-26 ZL200480002783.1
Patent	PCT National Entry	COUPLED TOKEN BUCKETS/CN	China	2011-07-06 ZL200780023260.9

Patent Families

Patent Family Report enclosed.

Pending Patent Applications

IP Type	Case Type	Case Status	Case Sub Status	Case Title	Country/Region	Filing Date	Application Number
Patent	Normal	Pending	Examination	ACCESS BUFFER/CN	China	2011-01-17	201110008984.4

2/

			Requested				
Patent	Normal	Pending	To be Abandoned	ACCESS BUFFER/SE	Sweden	2010-01-18	1050051-0
Patent	Normal	Pending	Examination not Requested	ACCESS BUFFER/TW	Taiwan	2011-01-17	100101674
Patent	Normal	Pending	Examination not Requested	ACCESS BUFFER/US	United States of America	2011-01-12	13/005,479
Patent	Provisional	Pending		ACCESS BUFFER/US Provisional	United States of America	2010-01-18	61/295795
Patent	Normal	Pending		ASYMMETRICAL ENGINE/PCT	International Patent-PCT	2005-12-20	PCT/SE2005/001969
Patent	Normal	Pending		ASYMMETRICAL ENGINE/Taiwan	Taiwan	2005-09-20	094132516
Patent	PCT National Entry	Pending		ASYMMETRICAL ENGINE/US	United States of America	2005-12-20	11/722,470
Patent	Normal	Pending		COUPLED RESOURCE SHAPERS/US	United States of America	2011-06-28	13/170427
Patent	PCT National Entry	Nat. Phase		COUPLED TOKEN BUCKETS/EP	European Patent	2007-06-12	07730098.6
Patent	Normal	Pending		COUPLED TOKEN BUCKETS/PCT	International Patent-PCT	2007-06-12	PCT/EP2007/055777
Patent	Normal	Pending	Examination Requested, Published	COUPLED TOKEN BUCKETS/TW	Taiwan	2006-06-22	096122167

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Patent	PCT National Entry	Pending	Published	COUPLED TOKEN BUCKETS/US	United States of America	2007-06-12	12/306,029
Patent	Normal	Pending	To be Abandoned	DRAM CONTROLLER/SE	Sweden	2010-01-18	1050044-5
Patent	Normal	Pending	Examination Requested	DRAM SCHEDULER/CN	China	2011-01-17	201110008985.9
Patent	Normal	Pending	Examination not Requested	DRAM SCHEDULER/TW	Taiwan	2011-01-17	100101673
Patent	Normal	Pending		DRAM SCHEDULER/US	United States of America	2011-01-12	13/005,473
Patent	Provisional	Pending		DRAM SCHEDULER/US Provisional	United States of America	2010-01-18	61/295794
Patent	PCT National Entry	Pending	Examination Requested	DYNAMIC PRIORITY SCHEDULING/CN	China	2009-04-21	200980124948.5
Patent	Normal	Pending	Published	DYNAMIC PRIORITY SCHEDULING/PCT	International Patent-PCT	2009-04-21	PCT/EP2009/054742
Patent	Normal	Pending	Published	DYNAMIC PRIORITY SCHEDULING/TW	Taiwan	2009-04-23	098113512
Patent	PCT National Entry	Pending		DYNAMIC PRIORITY SCHEDULING/US	United States of America	2009-04-21	12/989,631
Patent	Provisional	Pending		DYNAMIC PRIORITY SCHEDULING/US Provisional	United States of America	2008-04-24	61/047,681
Patent	PCT National	Pending	Examination	INTEGRATED PACKET	China	2009-05-29	200980119421 3

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LEGAL#730099v2

	Entry		Requested	SWITCH/CN			
Patent	PCT National Entry	Pending	Examination Requested	INTEGRATED PACKET SWITCH/EP	European Patent	2009-05-29	09753951.4
Patent	Normal	Pending		INTEGRATED PACKET SWITCH/PCT	International Patent-PCT	2009-05-29	PCT/EP2009/056592
Patent	Normal	Pending	Published	INTEGRATED PACKET SWITCH/TW	Taiwan	2009-05-27	098117841
Patent	PCT National Entry	Pending	Examination not Requested	INTEGRATED PACKET SWITCH/US	United States of America	2009-05-29	12/994,951
Patent	Provisional	Pending		INTEGRATED PACKET SWITCH/US Provisional	United States of America	2008-05-30	61/057,614
Patent	Normal	Pending	To be Abandoned	PACKET BUFFER/SE	Sweden	2010-01-18	1050043-7
Patent	Normal	Pending	Examination not Requested	PACKET BUFFER/TW	Taiwan	2011-01-17	100101672
Patent	Provisional	Pending		PACKET BUFFER/US Provisional	United States of America	2010-01-18	61/295792
Patent	Normal	Pending		PACKET BUFFER/WO	International Patent-PCT	2010-12-22	PCT/EP2010/070545
Patent	PCT National Entry	Nat. Phase	Opposition Period Ended	PISC/EP	European Patent	2001-05-21	01941347.5
Patent	Normal	Pending		PRE-CLASSIFIER/US	United States of America	2011-03-18	13/052336

Patent	Normal	Pending		SCHEDULER NODE/EP	European Patent	2011-05-18	11166496.7
Patent	Provisional	Pending		Scheduler Node/US Provisional	United States of America	2011-05-18	61/487518
Patent	Normal	Pending		TM-to-TM/GB	United Kingdom	2011-06-30	1111106.9
Patent	Provisional	Pending		TM-to-TM/US Provisional	United States of America	2011-06-30	61/503022
Patent	PCT National Entry	Pending		TUNNEL DETUNNEL MECHANISM/United States of America(1)	United States of America	2003-04-03	10/510167

Report created by:
Jakob.Carlstrom@xelerated.com
Date:
13 Sep 2011 15:02:55

ACCESS BUFFER

IP Type	Patent
Earliest Priority	18 Jan 2010
PCT Publ No	
Number of Cases	5
Actual Cost (SEK)	0.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Livne, Sarig; Sukonik, Vitaly

Cases

Pend. CN ACCESS BUFFER/CN

Pend. SE ACCESS BUFFER/SE

Pend. TW ACCESS BUFFER/TW

Pend. US ACCESS BUFFER/US [illegible]

Pend. US ACCESS BUFFER/US (1)

Invention Description

The invention relates to a method and an access buffer (200) for controlling access to one or more memory device (106) based on memory write and read requests received, and to a memory controller comprising such an access buffer. The buffer comprises write FIFO queues ("Wr FIFOs") configured to store a memory address and data to be written to the address. The buffer comprises a search unit (208) configured to receive a read request comprising a memory address and an attribute, the search unit is configured to search the write FIFOs for a memory address corresponding to the address of the read request, and if a corresponding address is found, the search unit has found a hit request and is configured to retrieve the data stored in the write FIFO and to cancel the memory write request, whereby the requested data can be read without accessing the memory device.

Note

This invention is related to DRAM SCHEDULER

ACCESS POINT

IP Type	Patent
Earliest Priority	19 Jul 2002
PCT Publ No	WO 2004/010288
Number of Cases	4
Actual Cost (SEK)	0.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Bodén, Thomas; Nordmark, Gunnar; Svensson, Lars-Olof

Cases

Dead SE ACCESS-PUNKT/Sweden
Rep. US ACCESS-PUNKT/United States of America(1)
Dead US ACCESS-PUNKT/US Provisional
Dead WO ACCESS-PUNKT/PCT

Invention Description

A pipeline in a processor comprises an access point providing simultaneous access to one or more devices for data processing. The access point comprises a FIFO buffer for responses and a synchronization mechanism.

Note

ASYMMETRICAL ENGINE

IP Type	Patent
Earliest Priority	22 Dec 2004
PCT Publ No	WO2006/068595
Number of Cases	6
Actual Cost (SEK)	0.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Bodén, Thomas; Carlström, Jakob

Cases

Reg.	CN ASYMMETRICAL ENGINE/CN
Dead	SE ASYMMETRICAL ENGINE/Sweden
Pend	TW ASYMMETRICAL ENGINE/Taiwan
Pend.	US ASYMMETRICAL ENGINE/US
Dead	US ASYMMETRICAL ENGINE/US Provisional
Pend.	WO ASYMMETRICAL ENGINE/PCT

Invention Description

Packet rate shaping at the entry to a processing pipeline where shaper decrements correspond to (temporal) costs in the pipeline reduces buffering needs in the pipeline.

Note

COUPLED RESOURCE SHAPERS

IP Type	Patent
Earliest Priority	28 Jun 2011
PCT Publ No	
Number of Cases	1
Actual Cost (DEK)	0.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Bodén, Thomas; Carlström, Jakob

Cases

Pend. US COUPLED RESOURCE SHAPERSUS

Invention Description

An arbiter scheduling packets entering a programmable pipeline accounts for empty slots to ensure that control messages entering the programmable pipeline do not cause overflow in the input queues or output queues of engines accessed from the programmable pipeline.

Note

COUPLED TOKEN BUCKETS

IP Type	Patent
Earliest Priority	22 Jun 2006
PCT Publ No	WO2007/147756
Number of Cases	9
Actual Cost (SEK)	2,722.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Carlström, Jakob

Cases

Reg.	CN COUPLED TOKEN BUCKETS/CN
Reg.	DE COUPLED TOKEN BUCKETS/DE
NatP.	EP COUPLED TOKEN BUCKETS/EP
Reg.	GB COUPLED TOKEN BUCKETS/GB
Dead	SE COUPLED TOKEN BUCKETS/Sweden
Publ.	TW COUPLED TOKEN BUCKETS/TW
Pend.	US COUPLED TOKEN BUCKETS/US
Dead	US COUPLED TOKEN BUCKETS/US Provisional
Pend	WO COUPLED TOKEN BUCKETS/PCT

Invention Description

A plurality of token bucket traffic shapers regulate admittance of packets to a processing pipeline (packet rate shaping and bit rate shaping). One token bucket level is set dependent on the level of another token bucket. This reduces the size of bursts of data entering the processing pipeline, reducing the requirement for buffering.

Note

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DIRECTED GRAPH COMPILING

IP Type	Patent
Earliest Priority	8 Feb 2002
PCT Publ No	WO 03/067431
Number of Cases	3
Actual Cost (SEK)	1,716.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Bodén, Thomas; Gerell, Peter

Cases

Reg.	SE DIRECTED GRAPH COMPILING/Sweden
Reg.	US DIRECTED GRAPH COMPILING/United States of America
Dead	WO DIRECTED GRAPH COMPILING/PCT

Invention Description

Linking of programs to the instruction memory of a processing pipeline. The program is divided into sequences. These sequences and their dependency relations form a directed graph. A longest execution path through the graph is determined. Sequences can be moved and NOPs can be entered to make two execution paths the same length.

Note

DRAM SCHEDULER

IP Type	Patent
Earliest Priority	18 Jan 2010
PCT Publ No	
Number of Cases	5
Actual Cost (SEK)	0.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Livne, Sarig; Sukonik, Vitaly; Wordin, Bengt

Cases

Pend. CN DRAM SCHEDULER/CN
Pend. SE DRAM CONTROLLER/SE
Pend. TW DRAM SCHEDULER/TW
Pend. US DRAM SCHEDULER/US Provisional
Pend. US DRAM SCHEDULER/US(1)

Invention Description

The present invention relates to a method and an access scheduler (300) for scheduling access to a memory device (106), and to a memory controller comprising such an access scheduler. The access scheduler comprises a first hierarchical level comprising; at least one bank timer (302) configured to set a mask bit for each bank of the memory device when a FIFO associated with the bank is accessed and at least one first level arbiter (304) configured to select an access request from one FIFO and to propagate eligibility information regarding the one FIFO to a next hierarchical level. The access scheduler also comprises a fourth hierarchical level comprising a fourth level arbiter (318) configured to receive propagated eligibility information; and to select a request based on the propagated eligibility information.

Note

This invention is related to ACCESS BUFFER

DYNAMIC DEEP INSPECTION

IP Type	Patent
Earliest Priority	21 May 2001
PCT Publ No	WO/02/096043
Number of Cases	2
Actual Cost (SEK)	0.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Bodén, Thomas; Nordmark, Gunnar; Svensson, Lars-Olof; Westlund, Pär

Cases

Reg. US DYNAMIC DEEP INSPECTION/United States of America

Dead WO DYNAMIC DEEP INSPECTION/PCT

Invention Description

A stage in a processing pipeline keeps certain data while other data proceeds to the following stage. This enables a stage to keep execution context while receiving packet data from deeper in the packet, permitting the processing pipeline to process data deeper in the packet.

Note

DYNAMIC PRIORITY SCHEDULING

IP Type	Patent
Earliest Priority	24 Apr 2008
PCT Publ No	WO 2009/130218
Number of Cases	6
Actual Cost (SEK)	0.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Carlström, Jakob; Livne, Sarig

Cases

Pend. CN DYNAMIC PRIORITY SCHEDULING/CN
Pend. SE DYNAMIC PRIORITY SCHEDULING/SE
Pend. TW DYNAMIC PRIORITY SCHEDULING/TW
Pend. US DYNAMIC PRIORITY SCHEDULING/US Provisional
Pend. US DYNAMIC PRIORITY SCHEDULING/US(1)
Pend. WO DYNAMIC PRIORITY SCHEDULING/PCT

Invention Description

In a hierarchical packet scheduler of a traffic manager, a node in the hierarchy is assigned the highest priority of any eligible entity in its sub-tree, ensuring low scheduling latency for high-priority packets.

Note

INSTRUCTION PIPELINING

IP Type	Patent
Earliest Priority	28 Jan 2003
PCT Publ No	
Number of Cases	5
Actual Cost (SEK)	0.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Bodén, Thomas; Nordmark, Gunnar

Cases

Reg. CN INSTRUCTION PIPELINING/China
Dead SE INSTRUCTION PIPELINING/Sweden
Reg. US INSTRUCTION PIPELINING/United States of America(1)
Dead US INSTRUCTION PIPELINING/US Provisional
Dead WO INSTRUCTION PIPELINING/PCT

Invention Description

In a processing pipeline operations are pipelined over multiple stages. One stage commences the execution of an operation or completes the execution of an operation commenced by a previous stage.

Note

INTEGRATED PACKET SWITCH

IP Type	Patent
Earliest Priority	30 May 2008
PCT Publ No	WO 2009/144296
Number of Cases	7
Actual Cost (EER)	4,464.00
Portfolio Path	/Xeferated/Patents/Patents
In Folder	Patents
Products	
Inventors	Bodén, Thomas; Carlström, Jakob; Nordmark, Gunnar; Persson, Mattias; Sukonik, Vitaly

Cases

Pend. CN INTEGRATED PACKET SWITCH/CN
Publ. EP INTEGRATED PACKET SWITCH/EP
Dead SE INTEGRATED PACKET SWITCH/SE
Publ. TW INTEGRATED PACKET SWITCH/TW
Pend. US INTEGRATED PACKET SWITCH/US Provisional
Pend. US INTEGRATED PACKET SWITCH/US(1)
Pend. WO INTEGRATED PACKET SWITCH/PCT

Invention Description

A method of and a network processor unit for processing packets in a network, the network processor comprising: communication interface, at least one processing means, and an embedded switch which is configured to analyze and store received packets, to send a first part of the packet to the processing means for processing, to receive the processed first part of the packet from the processing means and to reassemble and transmit the packet.

Note

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LOOK ASIDE

IP Type	Patent
Earliest Priority	19 Jul 2002
PCT Publ No	WO 2004/010287
Number of Cases	4
Actual Cost (SEK)	0.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Ericsson, Lars; Roos, Joachim; Svensson, Lars-Olof

Cases

Dead SE LOOK ASIDE/Sweden
Dead US LOOK ASIDE/US [illegible]
Dead US LOOK ASIDE/US Provisional
Dead WO LOOK ASIDE/PCT

Invention Description

An interface engine for a processing pipeline receives a request code from the processing pipeline. The interface engine preferabaly executes a program selected by the request code, and sends a request to an external device and receives a response which it sends back to the processing pipeline.

Note

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PACKET BUFFER

IP Type	Patent
Earliest Priority	18 Jan 2010
PCT Publ No	
Number of Cases	7
Actual Cost (BBK)	0.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Carlström, Jakob; Livne, Sarig; Sukonik, Vitaly; Tamir, Rafi

Cases

NatF. CN PACKET BUFFER/CN
NatF. EP PACKET BUFFER/EP
Pend SE PACKET BUFFER/SE
Pend. TW PACKET BUFFER/TW
Pend. US PACKET BUFFER/US Provisional
NatF. US PACKET BUFFER/US (1)
Pend. WO PACKET BUFFER/WO

Invention Description

A packet buffer in a network processor flexibly interconnects the processing blocks using packet-by-packet addressing and providing selective packet drop in case of congestion.

Note

PISC

IP Type	Patent
Earliest Priority	25 Jan 2001
PCT Publ No	WO 02/059767 A1
Number of Cases	13
Actual Cost (SEK)	32,294.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Bodén, Thomas; Holm, Peter; Roos, Joachim; Svensson, Lars-Olof; Westlund, Pär

Cases

Reg. BE PISC/BE
Reg. CN PISC/China
Reg. DE PISC/DE
Natl P. EP PISC/EP
Reg. ES PISC/ES
Reg. FI PISC/FI
Reg. GB PISC/GB
Reg. IE PISC/IE
Reg. IT PISC/IT
Reg. NL PISC/NL
Reg. SE PISC/Sweden
Reg. US PISC/United States of America
Dead WO PISC/PCT

Invention Description

The invention is a stage in a processing pipeline, comprising a storage unit and at least one logic unit. A stage executes operations on a block of data. The storage contains at least one instruction.

Note

PRE-CLASSIFIER

IP Type: Patent	
Earliest Priority: 18 Mar 2011	
PCT Publ No:	
Number of Cases: 1	
Actual Cost (SEK): 0.00	
Portfolio Path: /Xelerated/Patents/Patents	
In Folder: Patents	
Products:	
Inventors: Bäck, Johan; Carlström, Jakob; Nilsson, Ronny; Westlund, Pär; Zeffer, Håkan	

Cases

Pend US PRE-CLASSIFIERUS

Invention Description

A pre-classifier of an input port flexibly combines information received with the packet, information originating from the receive interface and information flexibly extracted from the packet header or payload; classifies this combined information; and generates packet attributes used for queuing, buffering, and processing based on the combined information and on the classification result.

Note

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SCHEDULER NODE

IP Type	Earliest Priority	PCT Publ No	Number of Cases
Patent	18 May 2011		2

Actual Cost (SEK)
0.00

Portfolio Path
/Xelerated/Patents/Patents

In Folder
Patents

Products

Inventors
Livne, Sarig; Ophir, Einat; Sukonik, Vitaly

Cases
Pend. EP SCHEDULER NODE/EP
Pend. US Scheduler Node/US Provisional

Invention Description

The node functionality in the scheduler of a traffic manager is realized by a function that maps input signals and node state to output signals. A function profile is selected per node via a configurable pointer. The content of the profile table is also configurable.

Note

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TM-to-TM

IP Type	Patent
Earliest Priority	30 Jun 2011
PCT Publ No	
Number of Cases	2
Actual Cost (SEK)	0.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Carlström, Jakob; Dunaevsky, Mark; Livne, Sarig; Sukonik, Vitaly

Cases

Pend. GB TM-to-TM/GB

Pend. US TM-to-TM/US Provisional

Invention Description

Queue state such as RED drop probability in a traffic manager is communicated to another traffic manager using messages. Messages are generated and sent for queues where a relevant metric indicates the biggest change since last message. The invention makes it possible to make drop decisions at the message-receiving traffic manager based on queue state at the message-sending traffic manager.

Note

TUNNEL DETUNNEL MECHANISM

IP Type	Patent
Earliest Priority	4 Apr 2002
PCT Publ No	WO 03/085519
Number of Cases	4
Actual Cost (SEK)	3,164.00
Portfolio Path	/Xelerated/Patents/Patents
In Folder	Patents
Products	
Inventors	Bodén, Thomas; Nordmark, Gunnar; Svensson, Lars-Olof; Westlund, Pär

Cases

Reg.	SE TUNNEL DETUNNEL MECHANISM/Sweden
Pend.	US TUNNEL DETUNNEL MECHANISM/United States of America (1)
Dead	US TUNNEL DETUNNEL MECHANISM/US Provisional
Dead	WO TUNNEL DETUNNEL MECHANISM/PCT

Invention Description

A data packet in a processing pipeline has information reference to packet position and length. According to the invention, this information reference is changed to reflect changes of length or position of the packet. This enables adding or removing headers on a packet in a processing pipeline.

Note

ACCESS POINT family:

(1) US Provisional Application No. 60/398756 filed Sept. 5, 2002

(2) PCT Patent Application No. PCT/SE2003/001197 filed July 9, 2003, publication no. WO 2004/010288, published Jan 29, 2004

(3) Sweden Application No. 0202276-2 filed July 19, 2002

ASYMMETRICAL ENGINE family:

(1) US Provisional Application No. 60/643580 filed Jan. 3, 2005

(2) Sweden Application No. 0403128-2 filed Dec. 22, 2004

COUPLED TOKEN BUCKETS family:

(1) Sweden Application No. 0601389-0 filed Jun. 22, 2006

(2) US Provisional Application No. 60/817095 filed Jun. 29, 2006

DIRECTED GRAPH COMPILING family:

(1) PCT Patent Application No. PCT/SE2003/00199 filed Feb. 6, 2003, publication no. WO 2003/067431, published Aug. 14, 2003

DYNAMIC DEEP INSPECTION family:

(1) PCT Patent Application No. PCT/SE2001/01133 filed May 21, 2001, publication no. WO 2002/0960043, published Nov. 28, 2002

DYNAMIC PRIORITY SCHEDULING family:

(1) Sweden Application No. 0800949-0 filed Apr. 25, 2008

INSTRUCTION PIPELINING family:

(1) US Provisional Application No. 60/319941 filed Feb. 12, 2003

(2) PCT Patent Application No. PCT/SE2004/000103 filed Jan. 27, 2004

(3) Sweden Application No. 0300198-9 filed Jan. 28, 2003

INTEGRATED PACKET SWITCH family:

(1) Sweden Application No. 0801280-9 filed May 30, 2008

LOOK ASIDE family:

(1) PCT Patent Application No. PCT/SE2003/001196 filed July 9, 2003, publication no. WO 2004/010287, published Jan. 29, 2004

(2) US Patent Application No. 10/521586 filed July 9, 2003

(3) Sweden Application No. 0202277-0 filed July 19, 2002

(4) US Provisional Application No. 60/398575 filed July 26, 2002

PISC family:

(1) PCT Patent Application No. PCT/SE2001/01134 filed May 21, 2001, publication no. WO 2002/059767, published Aug. 1, 2002

TUNNEL DETUNNEL MECHANISM family:

(1) PCT Patent Application No. PCT/SE2003/00536 filed Apr. 3, 2003, publication no. WO 2003/085519, published Oct. 16, 2003

(2) US Provisional Application No. 60/371400 filed Apr. 11, 2002

SCHEDULE 1.1.1.b

List of Trademarks

Registered Trademarks

Trademark	Country	Filed	Reg.No.	Status	Class	Reg.Date
Xelerated	SWE	2000-08-17	348720	Active	9,38	2001-09-14
Xelerated	USA	2003-07-03	2,962,035	Active	9	2005-06-14
Xelerated	Int./China	2005-09-08	866817	Active	9	
Xelerated Packet Devices	SWE	2001-10-18	361042	Active	9,38,42	2003-05-16
Xelerator	SWE	2000-08-17	357256	Active	9,38	2002-07-26
Xelerator	USA	2000-10-25	3,113,328	Active	9,38	2006-07-11
Xelerator	Int./China	2005-09-08	865603	Active	9,38	

PISC – Packet Instruction Set Computer	SWE	2001-04-19	356517	Active	9	2002-06-20
PISC – Packet Instruction Set Computer	USA	2001-04-19	2,837,653	Active	9	2004-05-04
First-to-Forty	SWE	2001-02-21	356480	Active	9	2002-06-20
Wirespeed by Design	EU	2010-07	009219536	Active		2010-09-03
Xelerated Packet Devices	USA	2001-04-19	2,907,494	Closed	9	2004-12-07
First-to-Forty	USA	2001-02-21	2,835,752	Closed	9	2004-10-05
Wirespeed by Design	SWE	2009-09-22		Closed		
Xelerated Systems	USA	09/25/2000	76/134,524	Closed	9,38	

Registered Domain Names

Domain	Extension	Reg.Date
Xelerated	.com	06/15/2000
	.net	06/15/2000
	.se	04/24/2001
	.info	06/04/2002
	.biz	06/04/2002

Domain	Extension	Reg.Date
	.org	12/09/2005
	.eu	02/26/2006
Xeleratedpacketdevices	.com	12/07/2002
Xeleratednetworks	.com	9/14/2000
Xeleratedsystems	.com	9/14/2000

SCHEDULE 1.1.1.d

List of Customers