



BC-1503
Arquitetura de Computadores



Universidade Federal do ABC

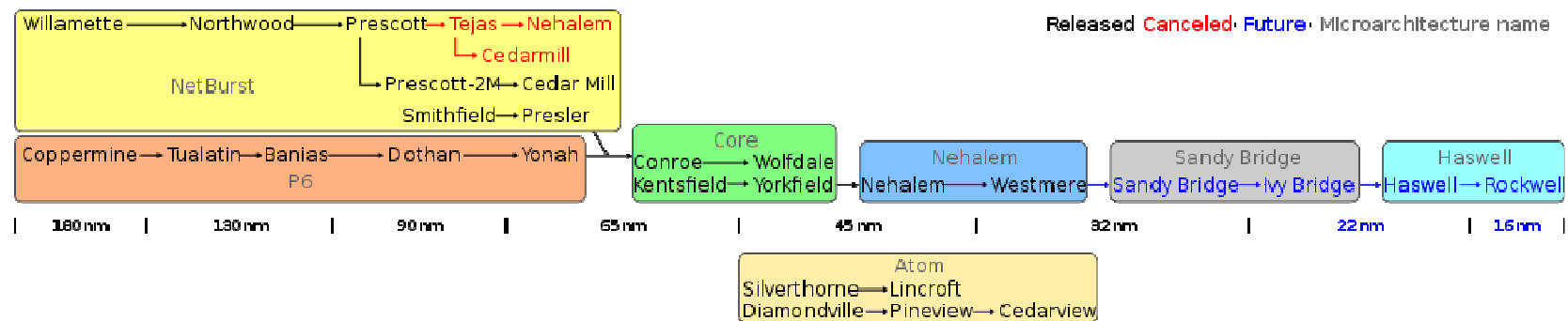
Microprocessadores 2

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2º Quadrimestre, 2014



Evolução das Microarquiteturas Intel





Microarchitectures	P5	P5 based cores		[hide]
		800 nm	P5	
		600 nm	P54C	
		350 nm	P54CS • P55C	
		250 nm	Tillamook	
	P6	P6 / Pentium M / Enhanced Pentium M based cores		[hide]
		500 nm	P6	
		350 nm	P6 • Klamath	
		250 nm	Mendocino • Dixon • Tonga • Covington • Deschutes • Katmai • Drake • Tanner	
		180 nm	Coppermine • Coppermine T • Timna • Cascades	
		130 nm	Tualatin • Banias	
		90 nm	Dothan • Stealey	
		65 nm	Tolapai • Yonah • Sossaman	
	NetBurst	NetBurst based cores		[hide]
		180 nm	Willamette • Foster	
		130 nm	Northwood • Gallatin • Prestonia	
		90 nm	Tejas and Jayhawk • Prescott • Smithfield • Nocona • Irwindale • Cranford • Potomac • Paxville	
		65 nm	Cedar Mill • Presler • Dempsey • Tulsa	
	Core	Core / Penryn based cores		[hide]
		65 nm	Merom-L • Merom • Conroe-L • Allendale • Conroe • Kentsfield • Woodcrest • Clovertown • Tigerton	
		45 nm	Penryn • Penryn-QC • Wolfdale • Yorkfield • Wolfdale-DP • Harpertown • Dunnington	
	Bonnell	Bonnell based cores		[hide]
		45 nm	Silverthorne • Diamondville • Pineview • Lincroft • Tunnel Creek • Sodaville	
	Nehalem	Nehalem / Westmere based cores		[hide]
		45 nm	Clarksfield • Lynnfield • Jasper Forest • Bloomfield • Gainestown (Nehalem-EP) • Beckton (Nehalem-EX)	
		32 nm	Arrandale • Clarkdale • Gulftown (Westmere-EP)	
	Sandy Bridge	Sandy Bridge / Ivy Bridge based cores		[hide]
		32 nm	Sandy Bridge	
	Future	Larrabee • Haswell / Rockwell		

Microarquiteturas Intel: P6

Sexta geração P
x86 de 1995 até 2000
500 nm a 180 nm
Pentium Pro
Pentium III

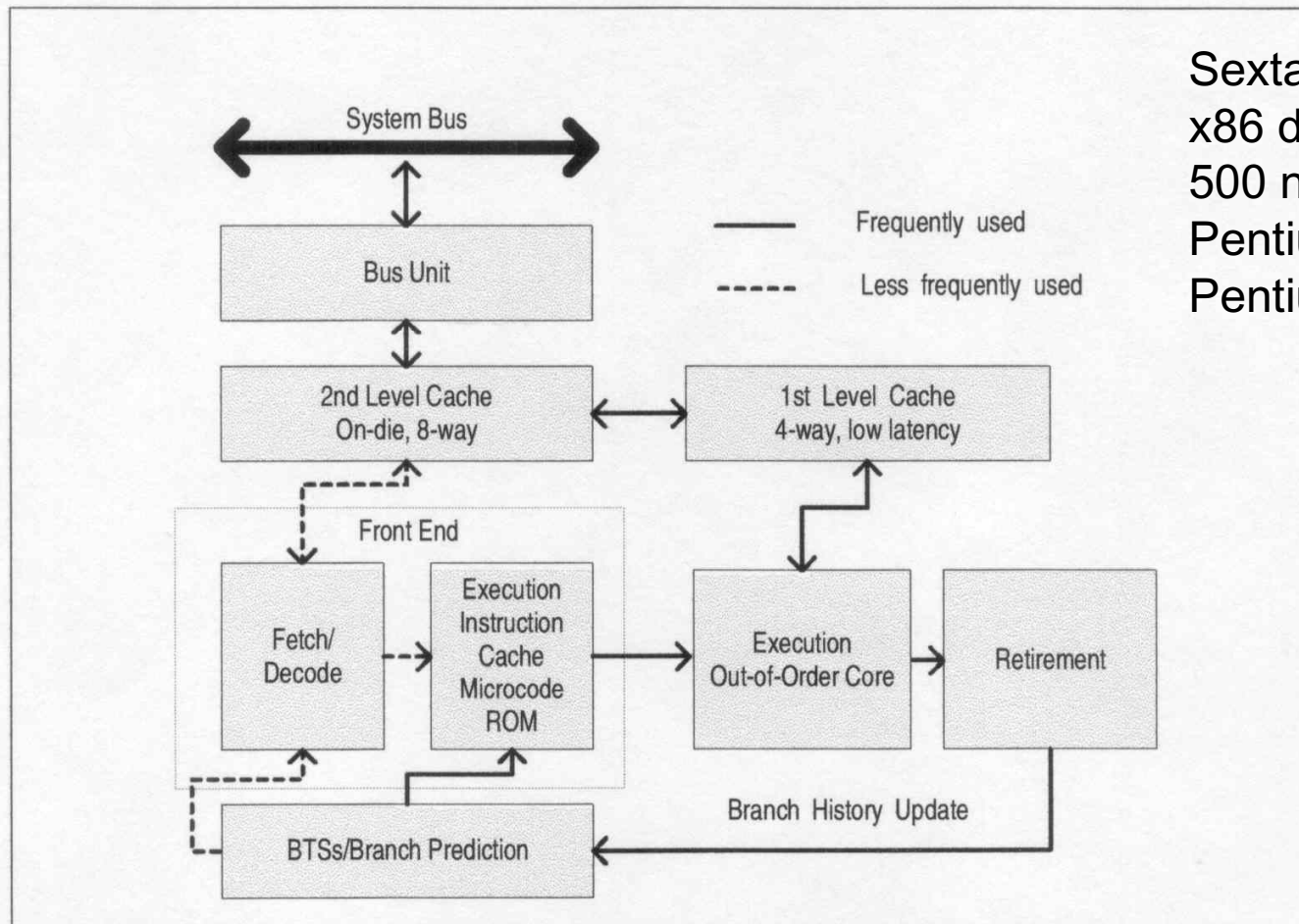
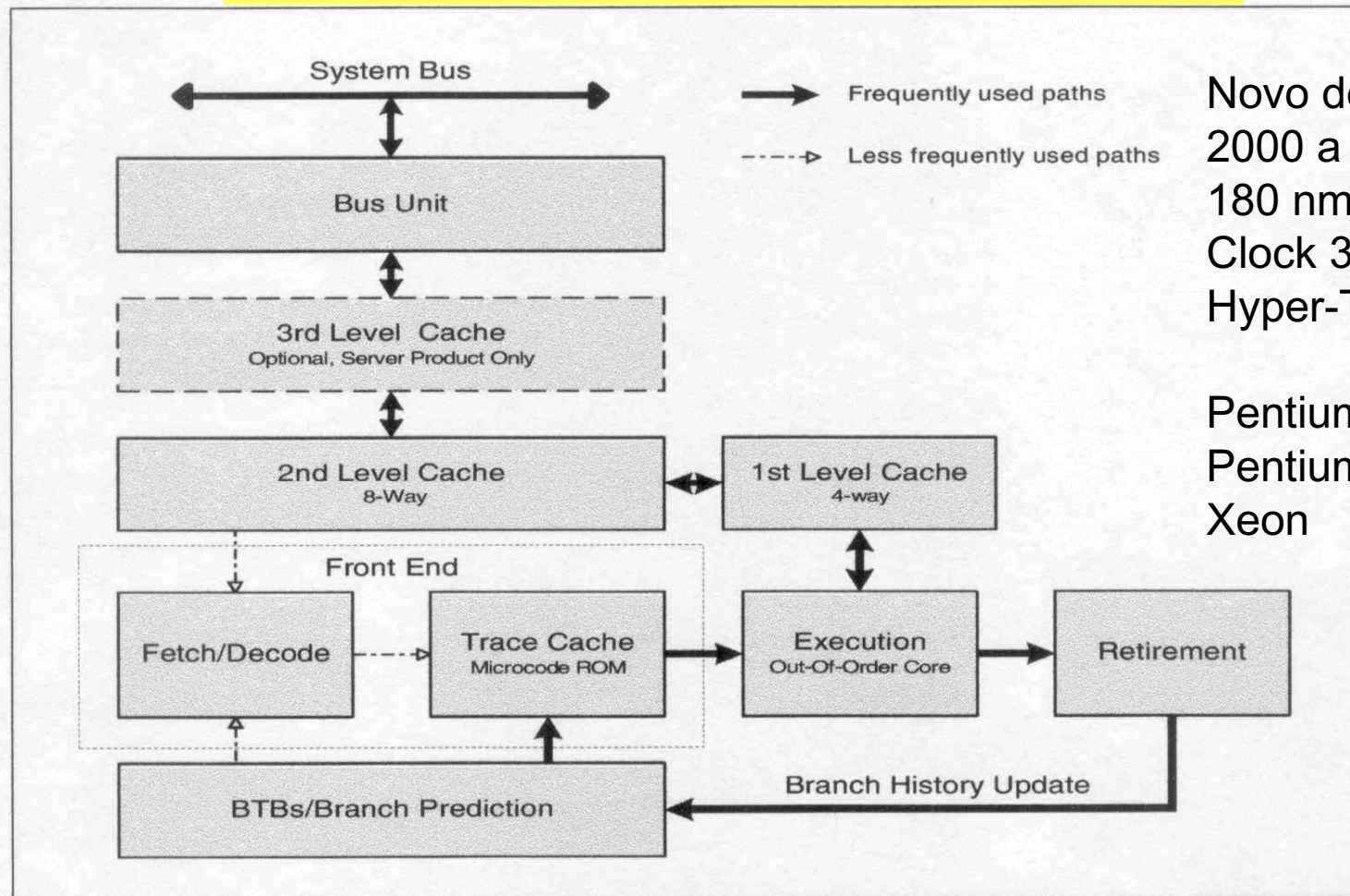


Figure 2-1. The P6 Processor Micro-Architecture with Advanced Transfer Cache Enhancement



Microarquitecturas Intel: Netburst

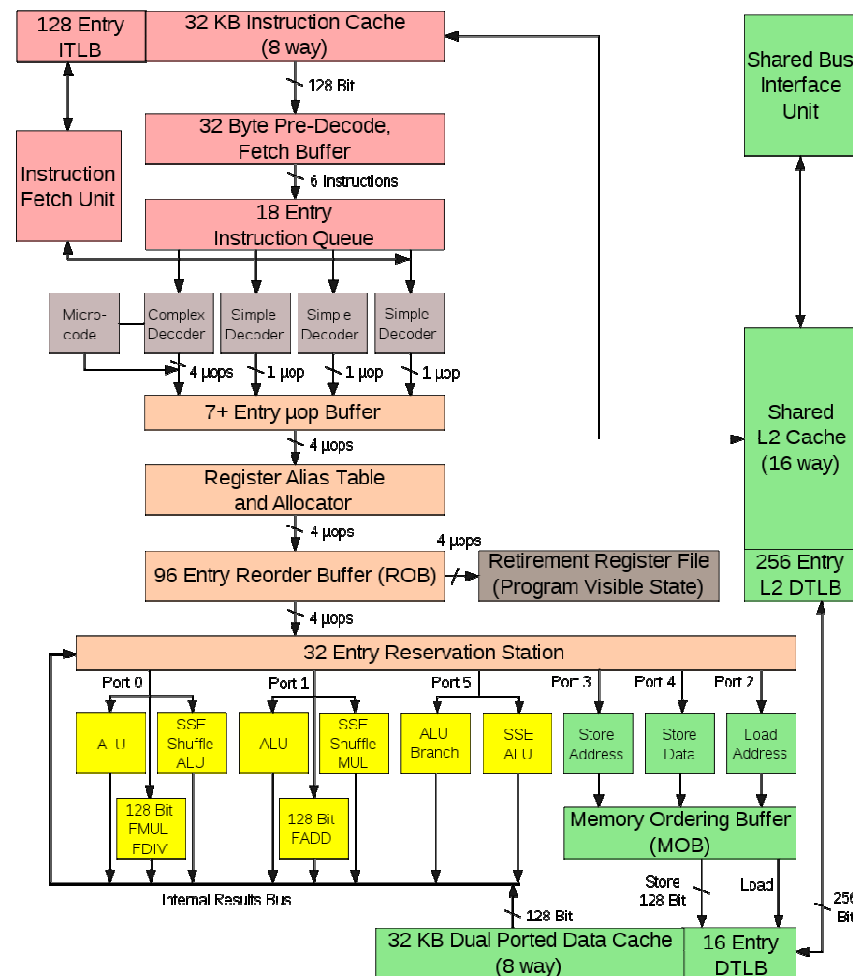


Novo design
2000 a 2006
180 nm a 65 nm
Clock 3GHz
Hyper-Threading

Pentium 4
Pentium D
Xeon

Figure 2-2. The Intel NetBurst Micro-Architecture

Microarquitecturas Intel: Core



Intel Core 2 Architecture

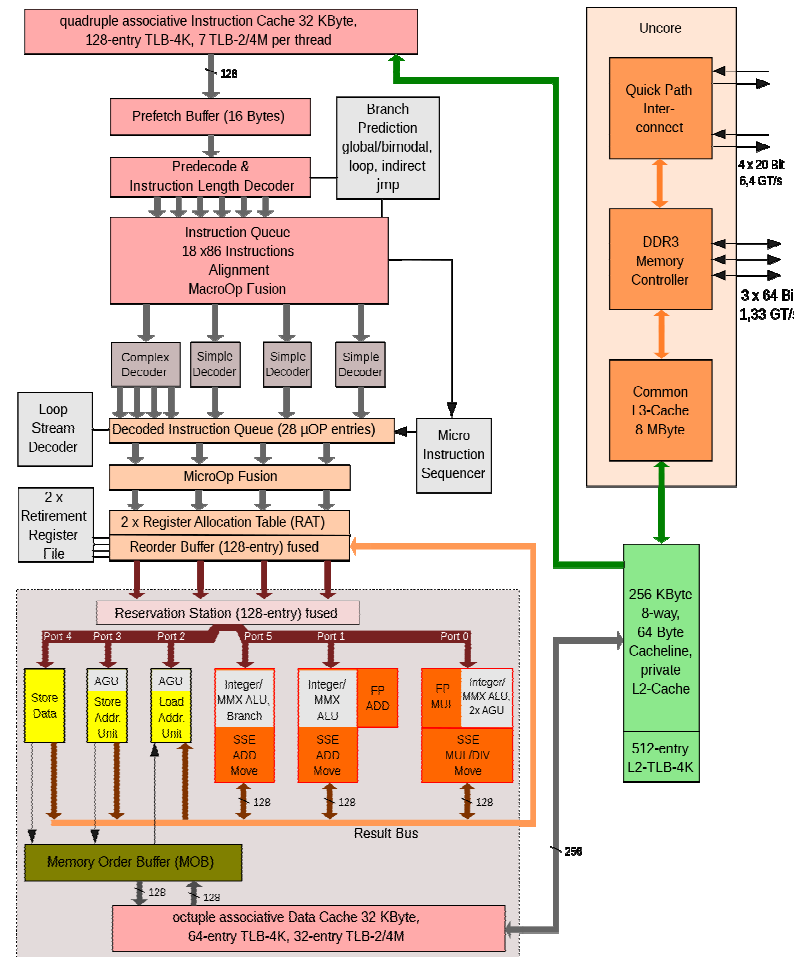
Retorno do P6
Modernização do
Pentium M
Dual core

2006 a 2008
65 nm a 45 nm
Clock 2 GHz

Core 2
Xeon

Microarquitecturas Intel: Nehalem (Core i)

Intel Nehalem microarchitecture



GT/s: gigatransfers per second

Novo Design
Multicore nativo (até 8)
com Hyperthreading (16)

2008 a 2011
45 nm a 32 nm
Clock 2 GHz
Hyperthreading
L3
Quick Path Interconnect

Core i3, i5, i7
Xeon



Microarquiteturas Intel: Sandy Bridge (Core i)

Evolução do Nehalem
Multicore (até 8) com
Hyperthreading (16)

A partir 2011
32 nm a 22 nm
Retorno Clock 3 GHz
Inclui GPU

Core i3, i5, i7 segunda geração
Xeon

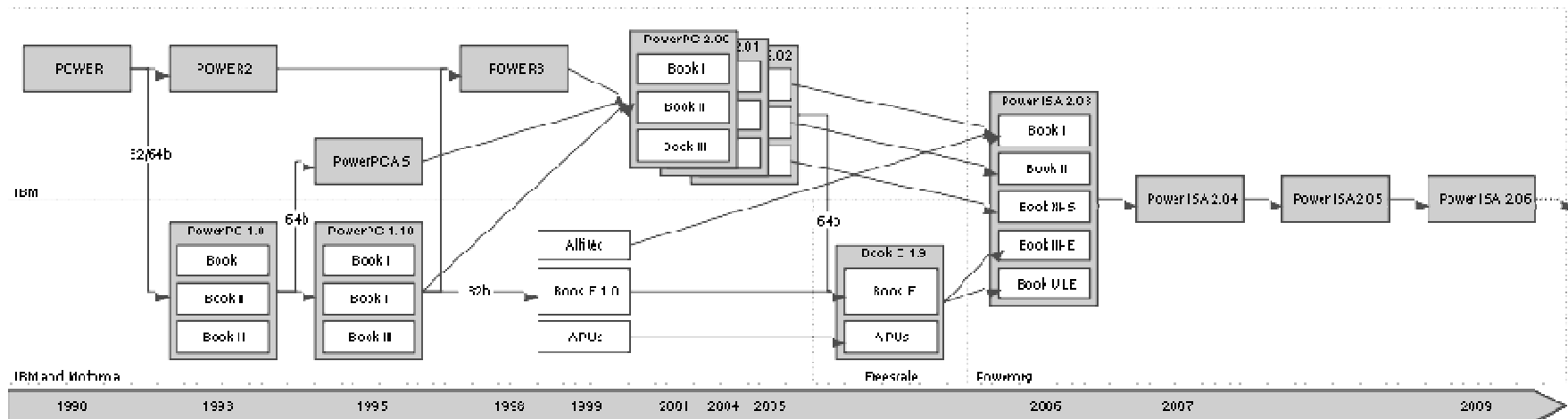


Microarquitetura PowerPC

	PowerPC	Apple - IBM - Motorola		RISC Multi-chip		Origem: IBM RS/6000 (1990)
1992	Power G1	IBM - Motorola	32	66MHz		Apple Macintosh
1993	Power G2 (PowerPC 1.0)	IBM - Motorola	32 - 64	90MHz		Sistemas Embarcados: carros, aeronaves, ASIMO
1997	Power G3 (PowerPC 2.0)	IBM - Motorola	32	366MHz	260n	Macintosh, Powerbook, Nintendo, Roteadores
1999	Power G4 (PowerPC 2.0)	IBM - Motorola	32	500MHz		VMX (Streaming SIMD Extensions) XBOX 360
2003	G5 (PowerPC 970)	IBM	64	2.5GHz	90n	Saída Motorola: Freescale, AMC

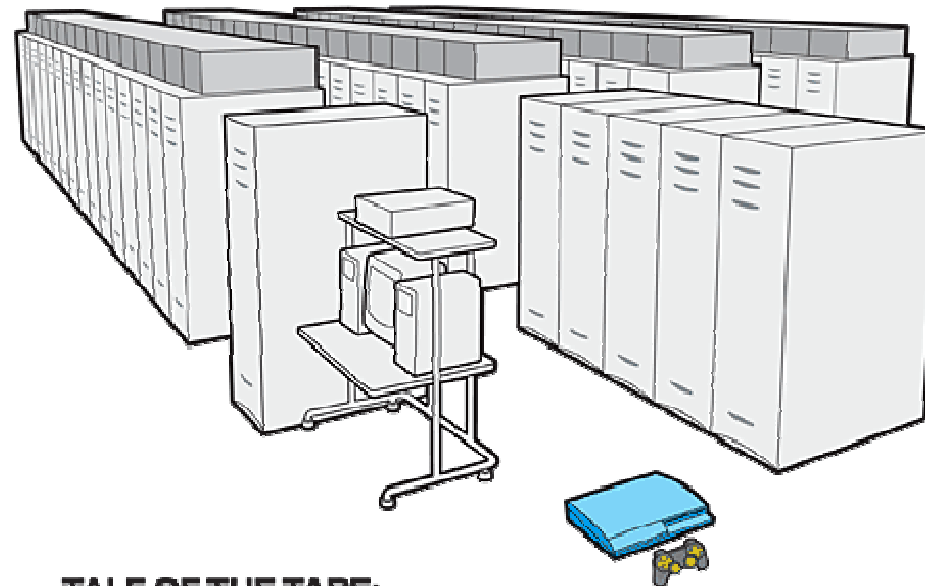
2005	Saída da Apple: Intel					
2006	PowerISA 2.03	Power.org				
2007	PowerISA 2.04	Power.org				
2009	PowerISA 2.05	Power.org				

	Cell Broadband Engine	Sony - IBM - Toshiba				Origem: PowerPC (G4)
2005	Cell BE	IBM	32	3.2GHz	90n	Playstation 3: 9 core
2008	PowerXCell 8i	IBM	32		65n	IBM Roadrunner, primeiro supercomputador a atingir 1 Petaflops (12,240 Cell)





Cell: Supercomputador x PS3



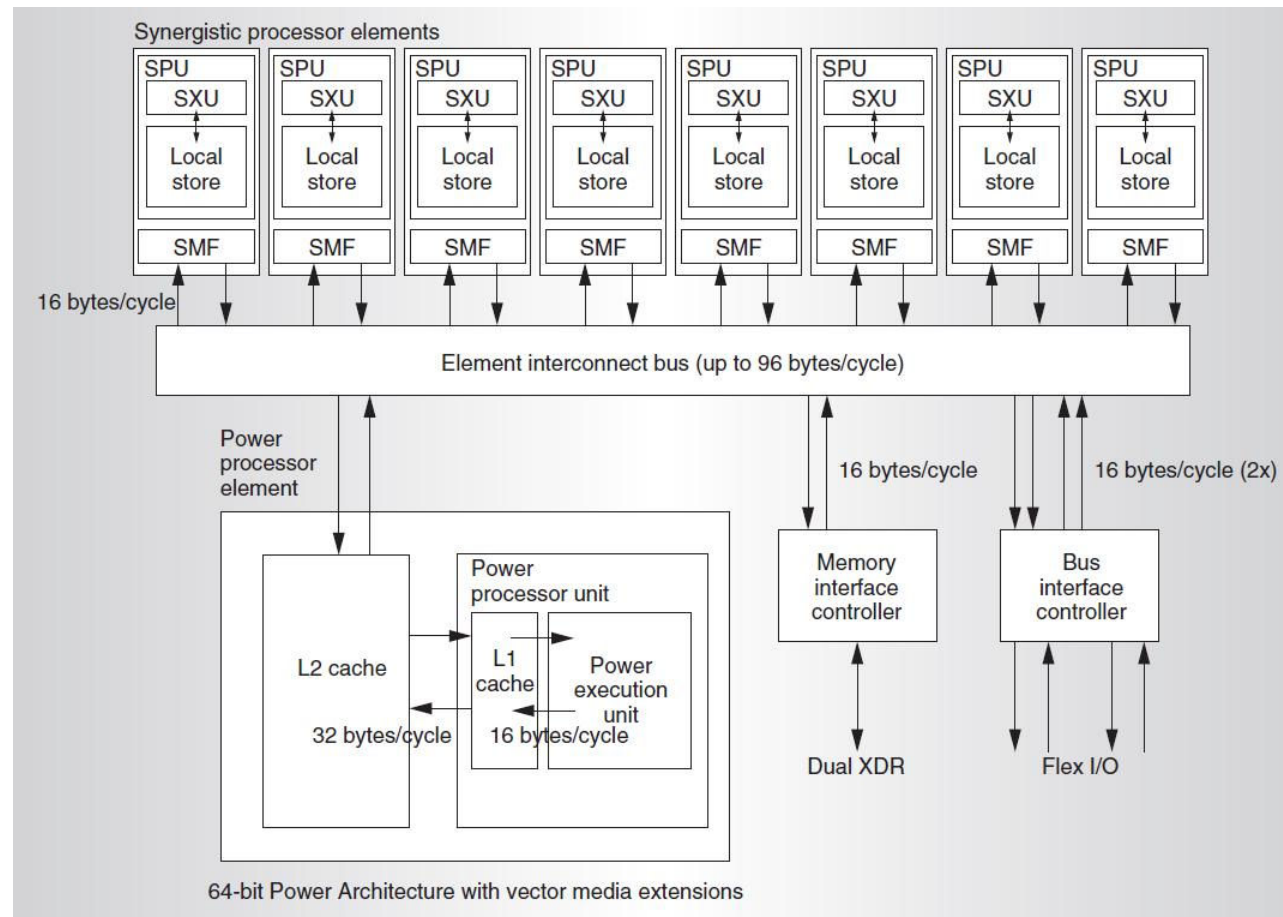
**TALE OF THE TAPE:
SUPERCOMPUTER
VS. GAME CONSOLE**

	SANDIA LAB'S ASCI RED	SONY PLAYSTATION 3
DATE OF ORIGIN	1997	2006
PEAK PERFORMANCE	1.8 teraflops	1.8 teraflops*
PHYSICAL SIZE	150 square meters	0.08 square meter
POWER CONSUMPTION	800 000 watts	<200 watts

* For GPU; CPU adds another 0.2 teraflops

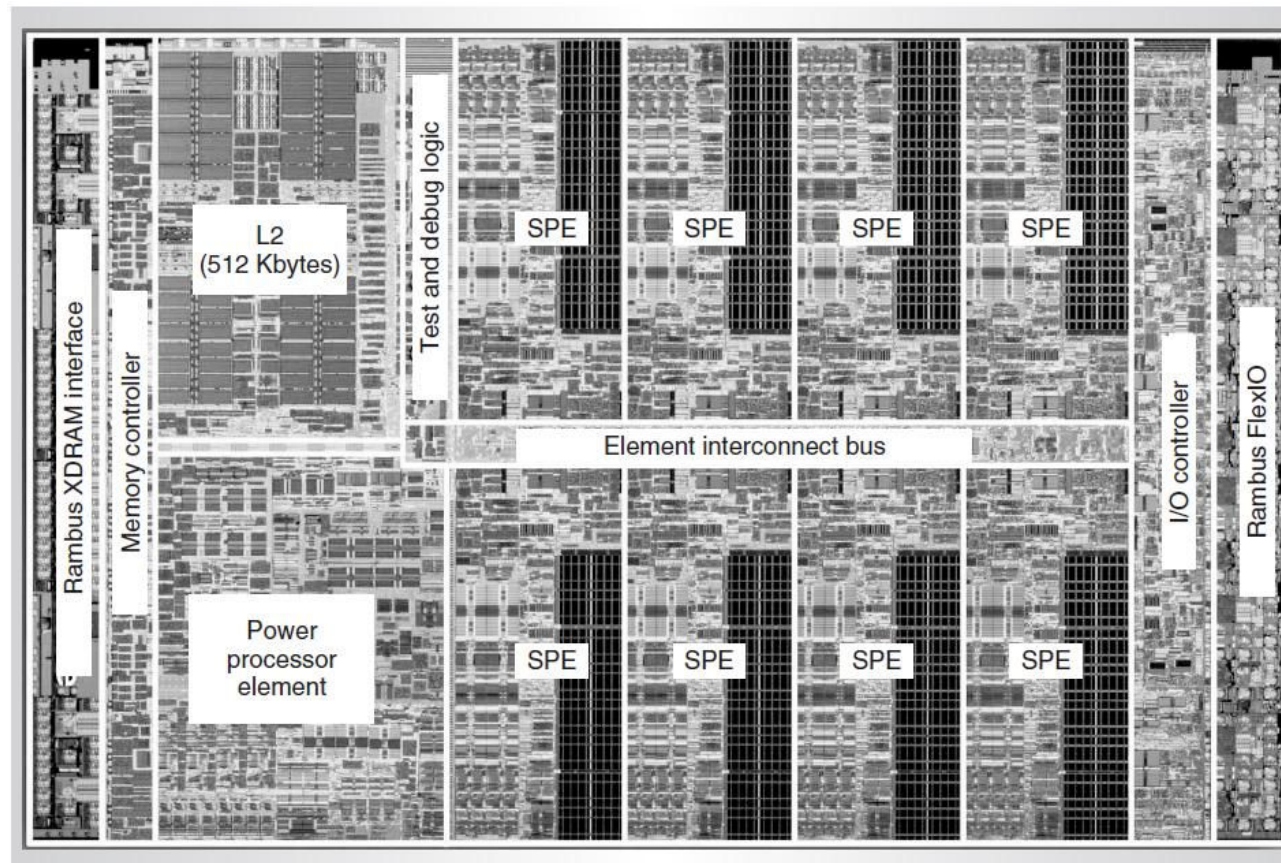


Cell: microarquitetura



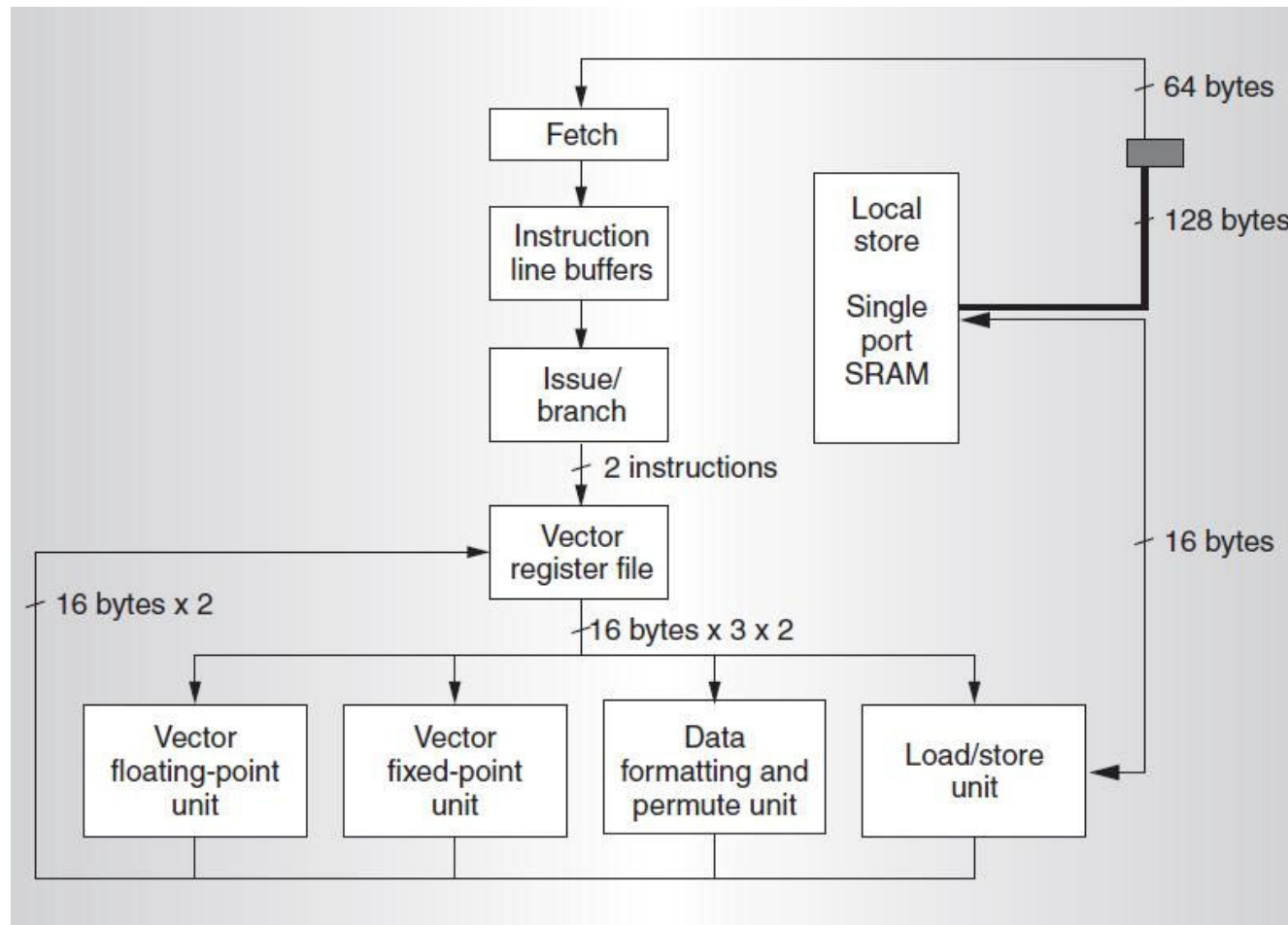


Cell: chip





Cell: Synergistic Processor Element





Exercício



EXERCÍCIO DE PESQUISA DE MICROPROCESSADOR

A partir do material de aula de Microprocessadores 2, pesquise a evolução dos processadores da linha Intel a partir do **Pentium** até os dias atuais.

- Não copie texto da Internet.
- Escreva com as suas próprias palavras.
- Prepare um documento pdf contendo o texto e figuras.
- Obrigatório: indicar as referencias bibliográficas.
- Postar o arquivo na atividade do Tidia-ae.