



オープンソース技術者のための AMD 最新テクノロジーアップデート

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CPUおよびプラットフォーム ロードマップアップデート



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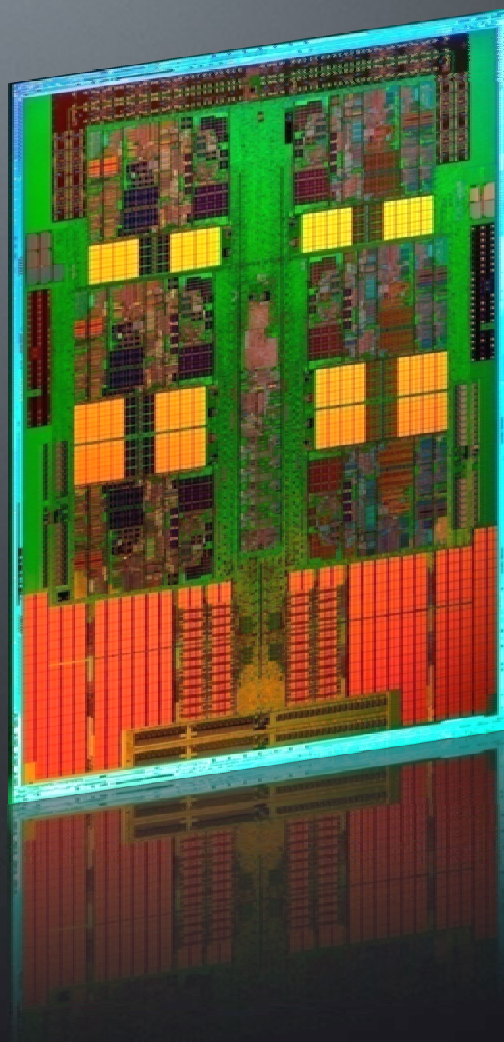
Happy 6th Birthday AMD Opteron™ Processor



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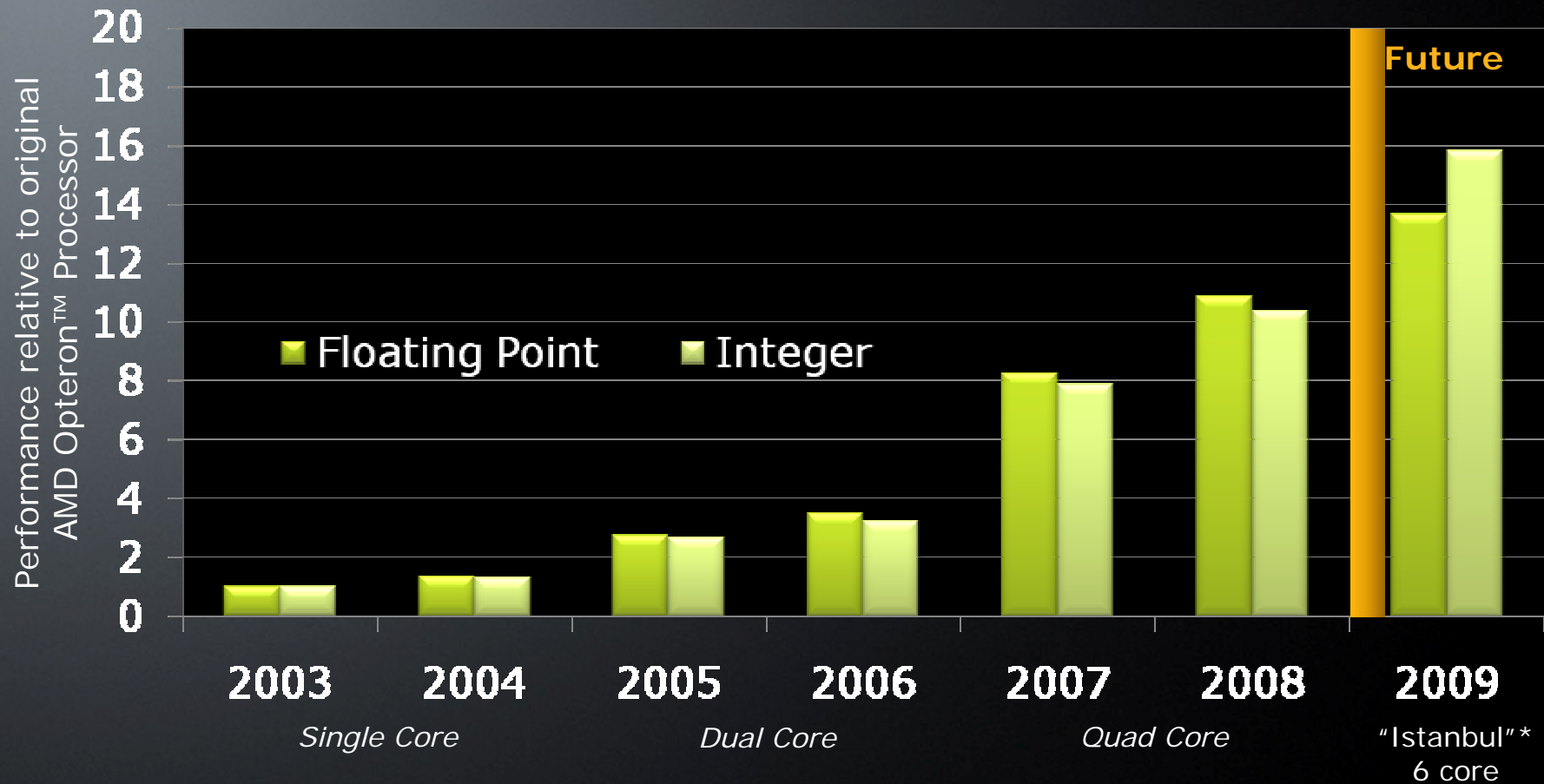
6コア“Istanbul”：完全な進捗状況



- Executing months ahead of schedule
- In collaboration with GLOBALFOUNDRIES: first tapeout to production
- World's only six-core processor with Direct Connect Architecture
- 30% more performance than previous generation at same power
- 2P, 4P, 8P
- June 2009 planned launch with OEMs



“Istanbul”：同じ熱設計枠でさらなる性能アップ



30% more performance at same power

*“Istanbul” data is based on AMD projections



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AMD Opteron™ プロセッサ: 6年目に6コアに

Next Gen Server Architecture

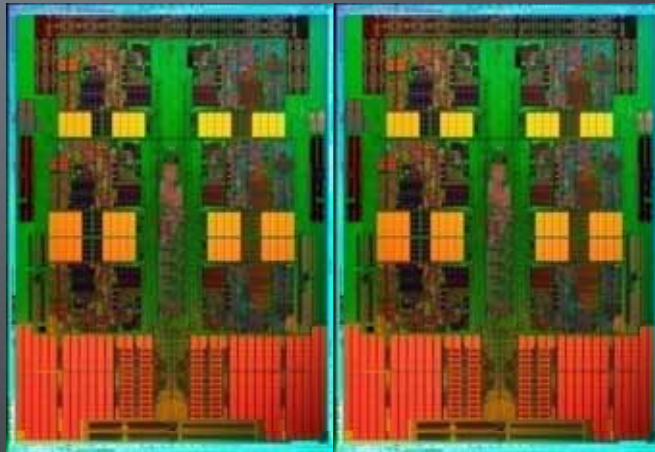
The Next Chapter: DCA 2.0

	2009	2010
CPU	6 cores	Direct Connect Architecture 2.0
Memory	2 Channel Integrated Controller	
I/O	3 HyperTransport Links with HT Assist	
Virtualization	AMD-V	AMD-V 2.0
Energy Efficiency	AMD-P	AMD-P 2.0
Time to Benefit	Common Socket & Power Envelope 2P, 4P, 8P	Usage-based platform design



Direct Connect Architecture 2.0

System architecture defines the performance of the server



- 3x core increase
- 2x memory channels
- 3.3x memory speeds
- 1.9x HT bandwidth
- 2.2x cache

Run more VMs
per server

Virtualize more of
your applications

More than 2x performance,
similar power

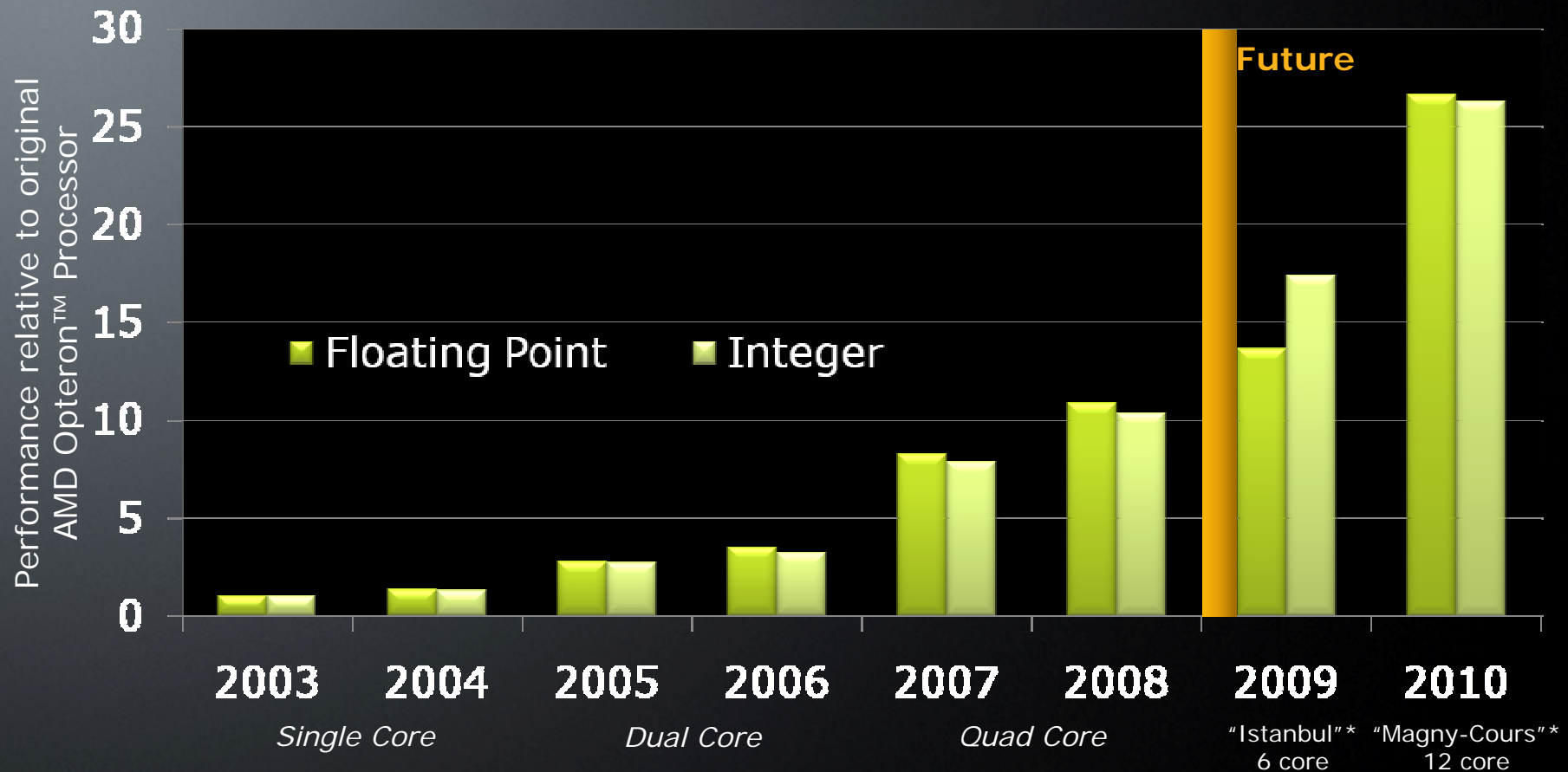
Based on comparison of "Shanghai" to "Magny-Cours"



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AMD
The future is fusion

“Magny-Cours” と DCA 2.0による性能の向上



Biggest absolute performance-per-watt uplift in 2010

*“Istanbul” and “Magny-Cours” data is based on AMD projections



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すべての価格帯で充実した機能を提供、最大価値を実現

AMD-V™ スイート

- Rapid Virtualization Indexing
- Tagged TLB
- Extended Migration
- Asymmetric Migration

AMD-P スイート

- AMD Smart Fetch technology
- AMD Power Cap technology
- AMD CoolCore™ technology

*Each feature suite available across full
AMD Opteron™ Processor family*



すべての価格帯で充実した機能を提供、最大価値を実現

AMD-V 2.0

- AMD-Vi (IOMMU)
- Rapid Virtualization Indexing
- Tagged TLB
- Extended Migration
- Asymmetric Migration

AMD-P 2.0

- APML
- AMD Smart Fetch technology
- AMD Power Cap technology
- AMD CoolCore™ technology

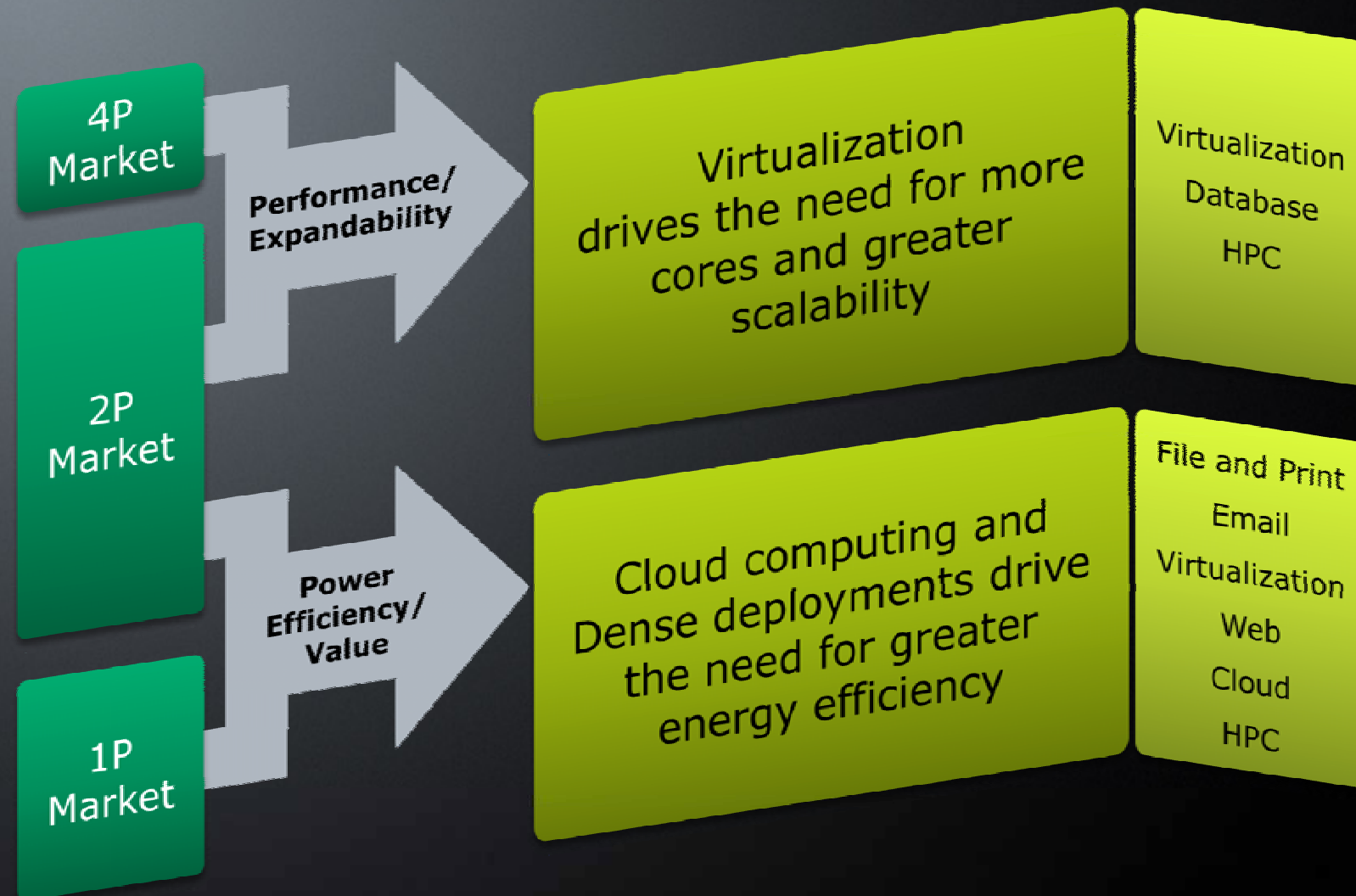
*Each feature suite available across full
AMD Opteron™ Processor family*



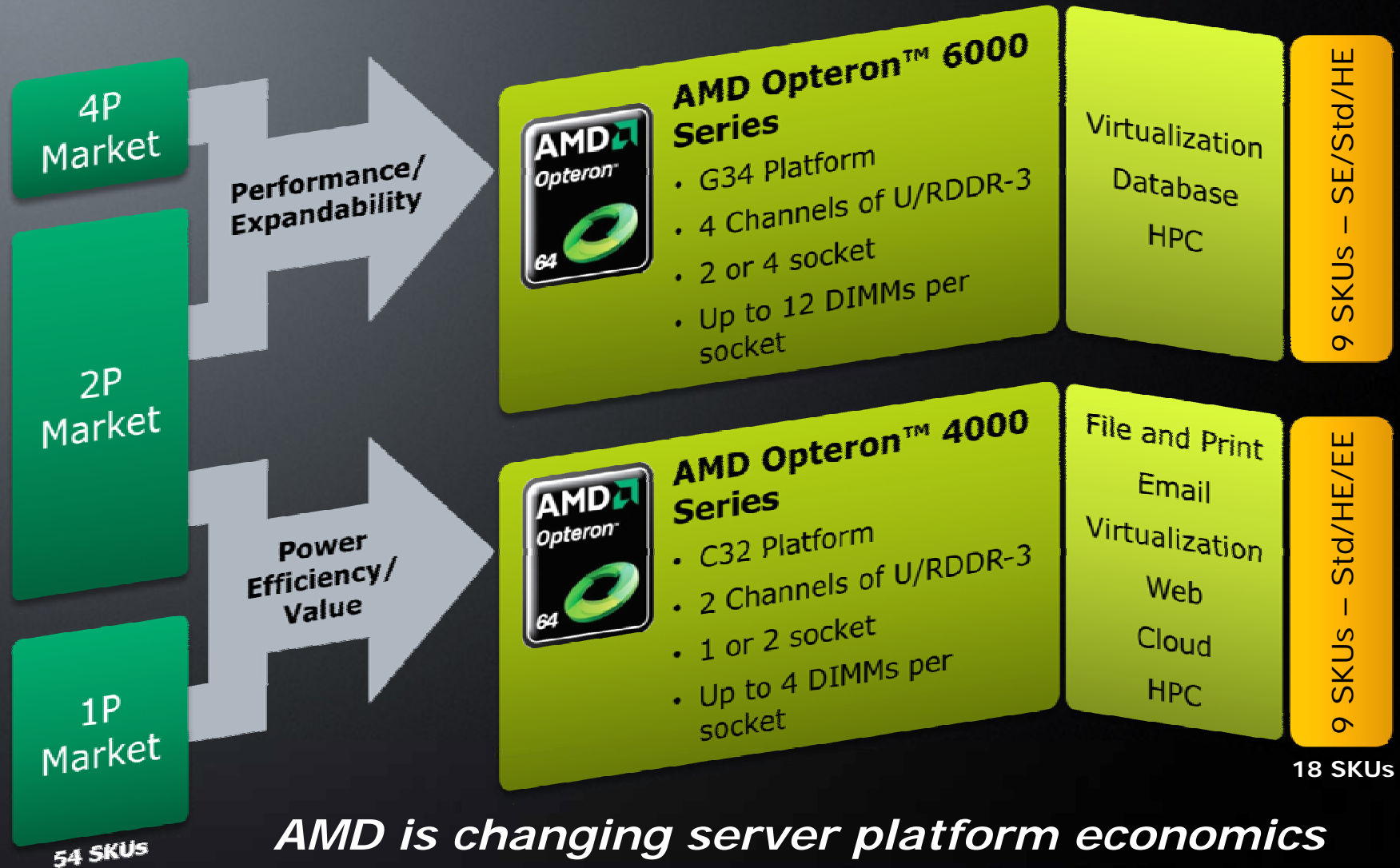
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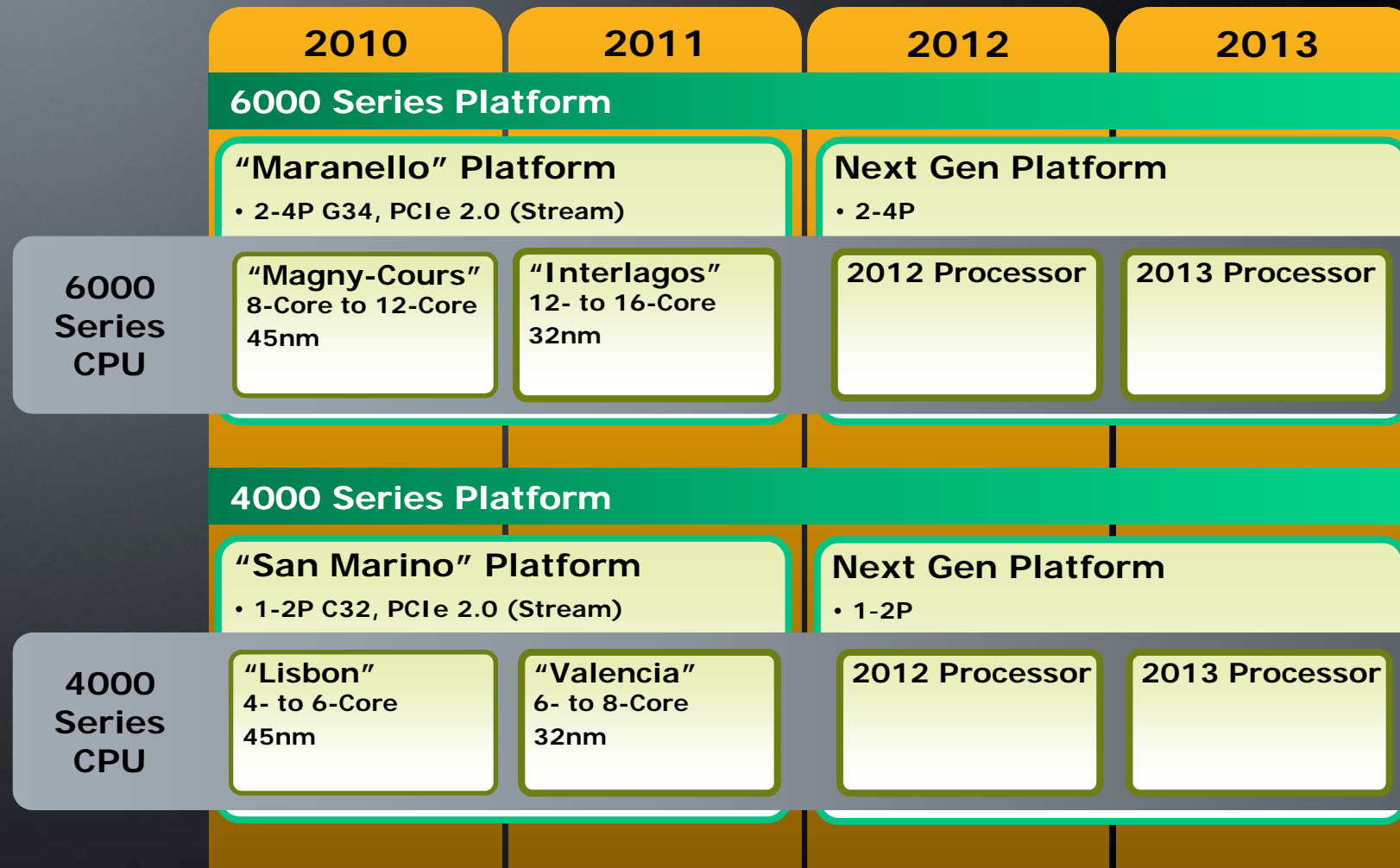
顧客にとっての価値の変化が市場構造を変革



顧客にとっての価値の変化が市場構造を変革



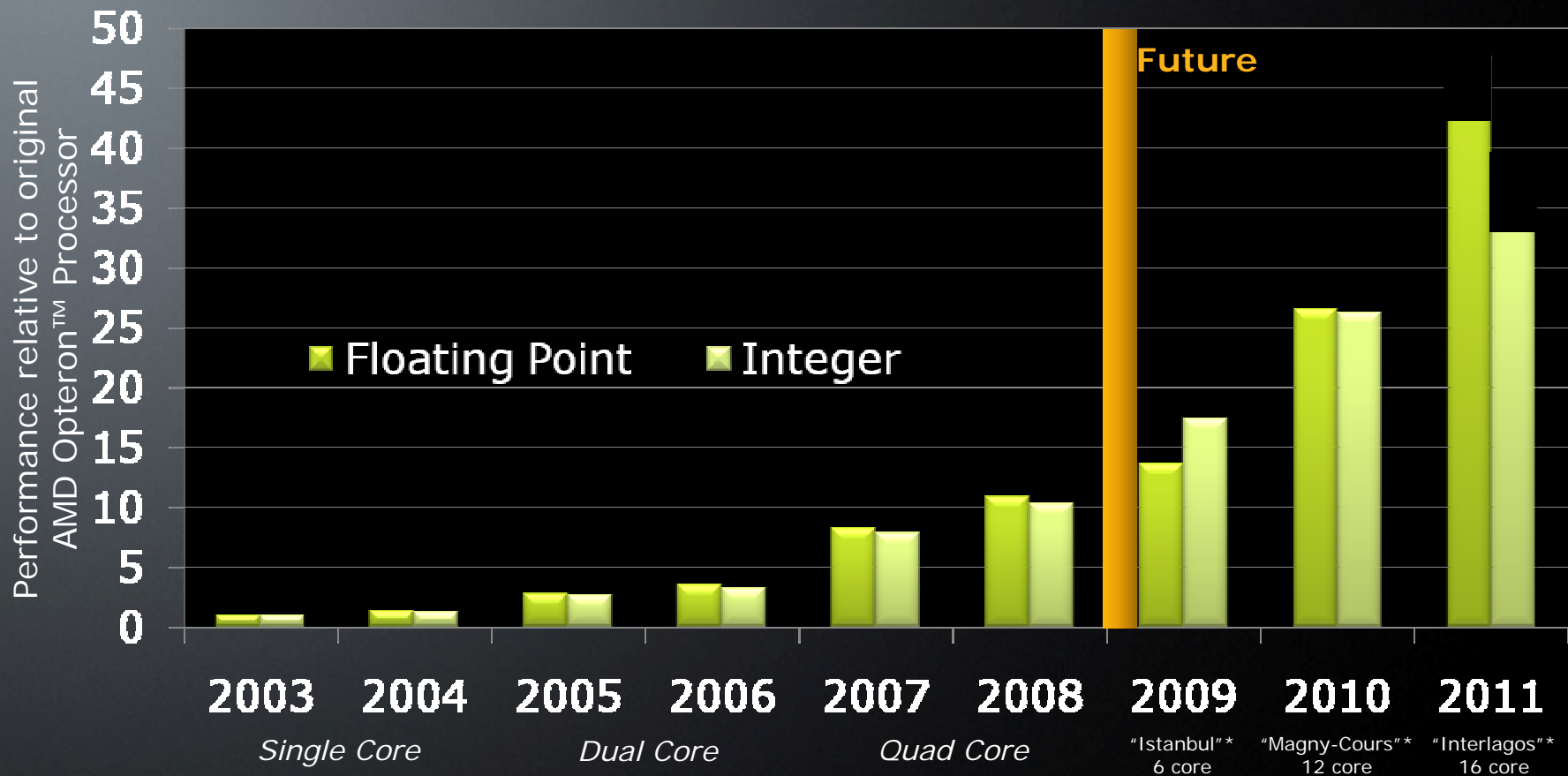
マルチイヤー・サーバープラットフォーム戦略



*Roadmap subject to change without notice



継続的かつ類を見ない性能の向上



"Bulldozer" goes to "11"

*"Istanbul", "Magny-Cours" and "Interlagos" data is based on AMD projections



開発者のためにAMDが提供している情報



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情報ソース : AMD Developer Central (http://developer.amd.com/)

The screenshot shows the AMD Developer Central website in a Windows Internet Explorer browser. The browser's address bar displays the URL <http://developer.amd.com/Pages/default.aspx>. The website header features the AMD logo with the tagline "The future is fusion" and the text "AMD Developer Central // Code Faster, Faster Code". Navigation links include Home, Register, and Login, along with a search box. A main navigation menu contains links for Home, Drivers & Downloads, CPU Tools, GPU Tools, Partner Tools, Tech Zones, Docs & Articles, Samples & Demos, Community, and Programs. The main content area is divided into several sections: a large green banner for the "Barcelona" Zone (now "Shanghai" Zone) with a sub-headline "You can't actually see it, but there's lots of software support in there!"; a "What's New" section with four items, including "Featured Item: Just Released: x86 Open64 Compiler Suite v.4.2.2" and "Just released: AMD CodeAnalyst Performance Analyzer v2.9 Beta for Windows"; an "AMD_Unprocessed" section with three items, including "AMD_Unprocessed: True competition spurs innovators to innovate faster and price lower"; a "Quick Links" section with links to RenderMonkey, AMD CodeAnalyst Performance Analyzer, ATI Radeon HD 3000 Series Real-Time Demo, GPU Tools, Videos, Drivers & Downloads, and CPU Tools; and "Forums" and "Blogs" sections. The browser's status bar at the bottom shows "Done", "Trusted sites", and "100%".



提供ツールの一例： AMD CodeAnalyst™ Performance Analyzer

各種Linux、Windows共にサポート

The screenshot displays the AMD CodeAnalyst Performance Analyzer interface. On the left, a sidebar shows a tree view with 'Profile Results' selected. The main window shows a 'Module View - Session.tbo' window with a bar chart. The chart shows the following data:

Module Path	Percentage
/home/pjd/CodeAnalyst/Linux/art/art_base	93.55%
/no-vmlinux	0.00%
/liblibc-2.5.so	
/usr/lib/zorg/modules/linuxadew.so	
/usr/lib/zorg/modules/linuxadew.so	

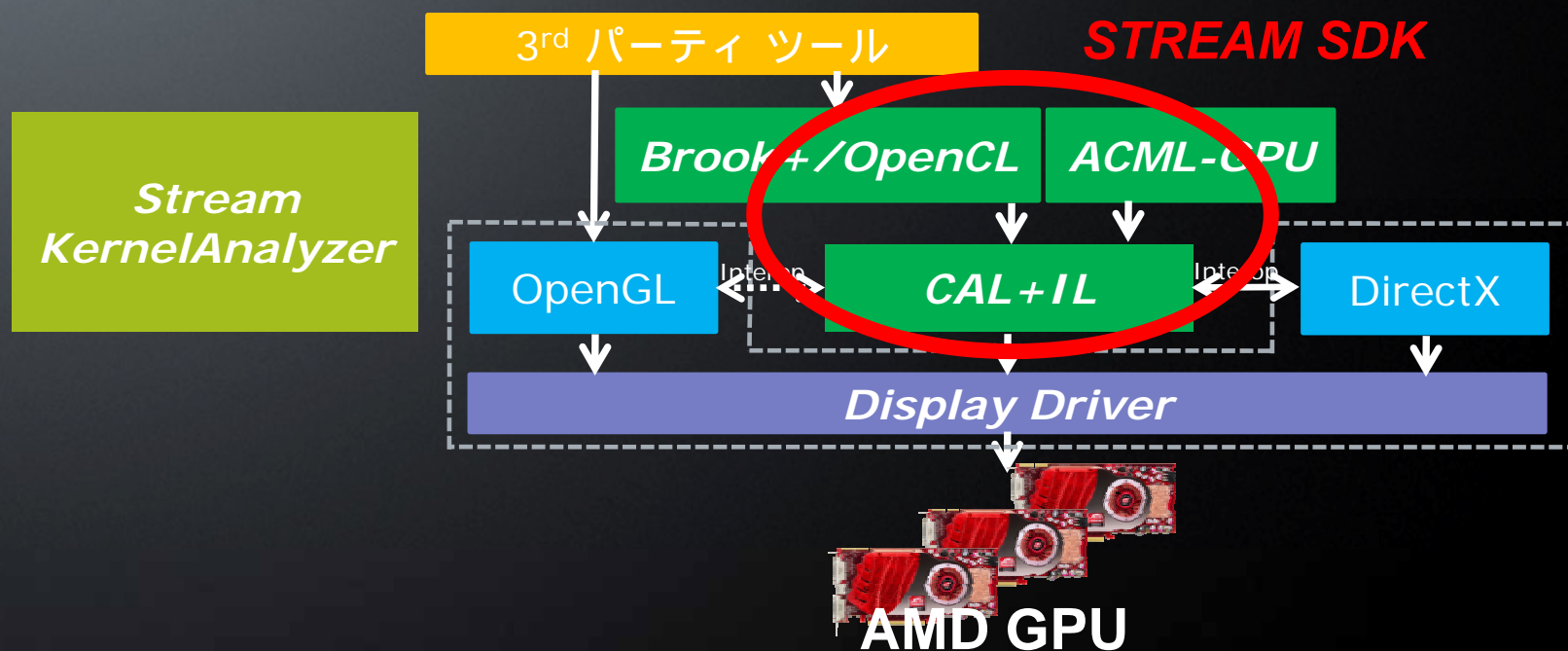
The AMD logo and tagline 'The future is fusion' are visible in the bottom right corner of the screenshot.



提供ツールの一例： STREAM SDK



各種Linux、Windows共にサポート
(残念ながらStream KernelAnalyzerはWindowsのみ……)



提供ツールの一例： STREAM Kernel Analyzer



Stream KernelAnalyzer - optimized_matmult.br - Brook+

File Edit Help

Source Code

```

Function optimized_matmult
61 // Declaring and initializing accumulators
62 float4 accumulator1 = zero;
63 float4 accumulator2 = zero;
64 float4 accumulator3 = zero;
65 float4 accumulator4 = zero;
66 float4 accumulator5 = zero;
67 float4 accumulator6 = zero;
68 float4 accumulator7 = zero;
69 float4 accumulator8 = zero;
70
71 // Row number of output position
72 int i = instance().y;
73
74 // Column number of output position
75 int j = instance().x;
76
77 int k = 0;
78 for(; k < loopVar0; ++k)
79 {
80 // Fetching values from A
81 float4 A11 = A1[+1][b1]; float4 A22 = A2[i][k];
82 float4 A33 = A3[+1][b1]; float4 A44 = A4[i][k];
            
```

Compile

Compiler

Disable Address Virtualization

Warning Levels 0

Warning as Errors

Object Code

Format Radeon HD 4870 (rv770) Assembly

```

----- Disassembly -----
00 ALU: ADDR (32) CNT (37)
0 x: MOV R28.x, 0.0f
  y: ADD T0.y, R0.y, -0.5
  z: ADD T0.z, R0.x, -0.5
  t: MOV R28.y, 0.0f
1 x: MOV R29.x, 0.0f
  y: MOV R29.y, 0.0f
  z: MOV R28.z, 0.0f
  w: MOV R28.w, 0.0f
  t: MOV R29.z, 0.0f
2 x: MOV R30.x, 0.0f
  y: MOV R30.y, 0.0f
  z: MOV R30.z, 0.0f
  w: MOV R29.w, 0.0f
  t: MOV R30.w, 0.0f
3 x: MOV R31.x, 0.0f
  y: MOV R31.y, 0.0f
  z: MOV R31.z, 0.0f
  w: MOV R31.w, 0.0f
  t: MOV R32.x, 0.0f
4 x: MOV R33.x, 0.0f
            
```

→

ソースコードから
ハードウェアごとの
アセンブリコード
もしくはILコード
を表示

Name	GPR	Scratch Reg	Avg	Est Cycles	ALU:Fetch	BottleNeck	Thread#Clock	Throughput
Radeon HD 2900	37	0	131.75	32.07	32.07	32.07	0.50	370 M Threads#Sec
Radeon HD 2400	37	0	19.00	527.00	61.33	61.33	0.07	52 M Threads#Sec
Radeon HD 2600	37	0	8.00	175.67	20.44	20.44	0.20	157 M Threads#Sec
Radeon HD 3870	37	0	8.00	131.75	32.07	32.07	0.50	387 M Threads#Sec
Radeon HD 4870	37	0	8.00	52.70	12.83	12.83	1.25	935 M Threads#Sec
Radeon HD 4670	37	0	8.00	65.88	10.80	10.80	0.74	555 M Threads#Sec
FireStream 9170	37	0	8.00	131.75	32.07	32.07	0.50	387 M Threads#Sec
FireStream 9250	37	0	8.00	52.70	12.83	12.83	1.25	780 M Threads#Sec
FireStream 9270	37	0	8.00	52.70	12.83	12.83	1.25	935 M Threads#Sec

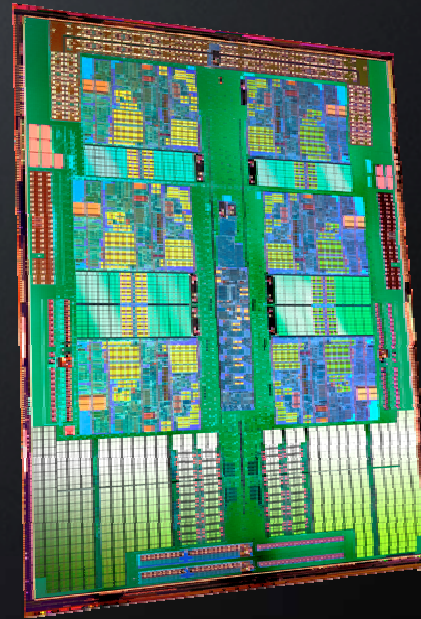
ハードウェアごとに
推定性能値を表示



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Thank You !!
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