

Optimization of Embedded Linux systems without FPU

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Approved for public release; distribution is unlimited.



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Embedded Software

- **Low cost**
 - **GNU Tools and Linux OS**
 - **Multi-architecture support**
- **With or without GUI**
- **High performance expectations**
- **Long battery life expectations**
- **May run with or without FPA/FPU**
 - **ARM vs. XScale**

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Software FPE vs. FPU

- **FPU/FPA**
 - NetWinder Floating Point Emulator (NWFPE)
 - Fast Floating Point Emulator (FastFPE)
- **Software FPE**

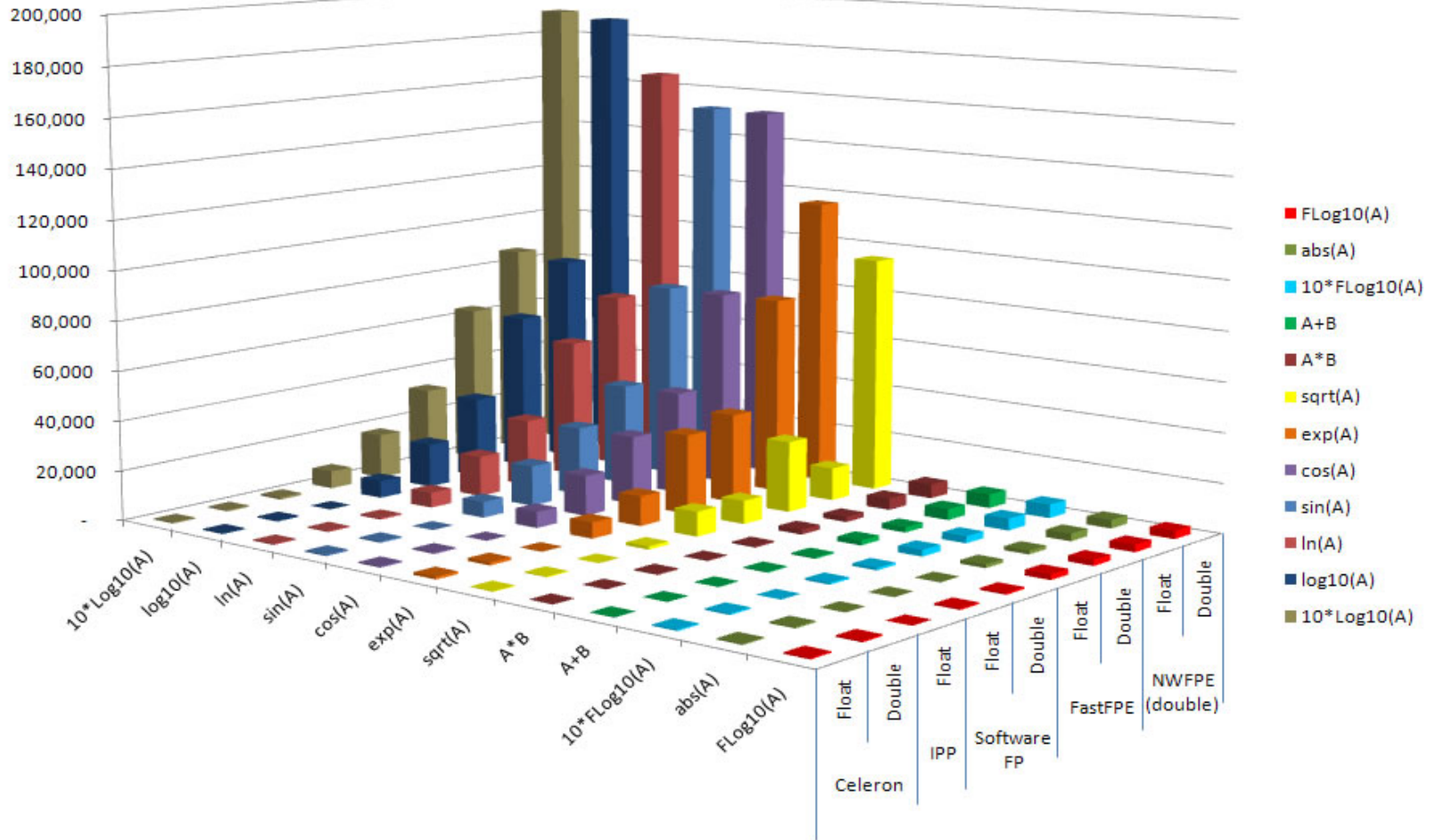
Call: Add two floats	FPU/FPA	FPE
Disassembly	<code>ldfs f0, [r3, #0]</code> <code>ldfs f1, [r1, #0]</code> <code>adfs f0, f0, f1</code> <code>stfs f0, [r2, #0]</code>	<code>ldr r0, [sl, r4, asl #2]</code> <code>ldr r1, [r8, r4, asl #2]</code> <code>bl __addsf3</code> <code>str r0, [r5, r4, asl #2]</code>

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Performance Chart



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