

WELCOME TO ERLANG

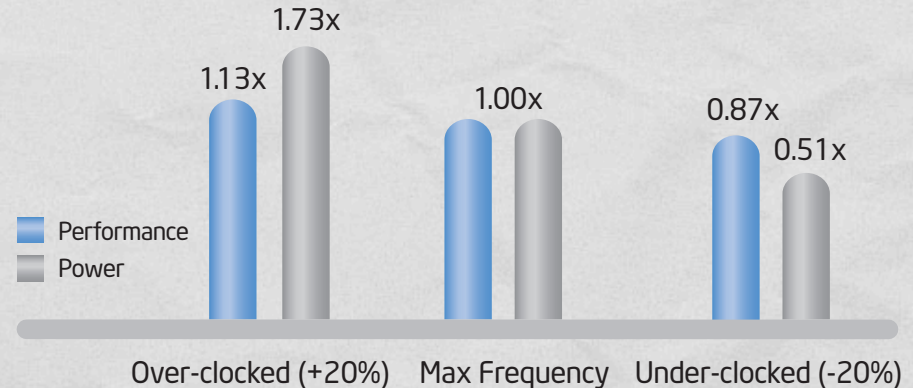
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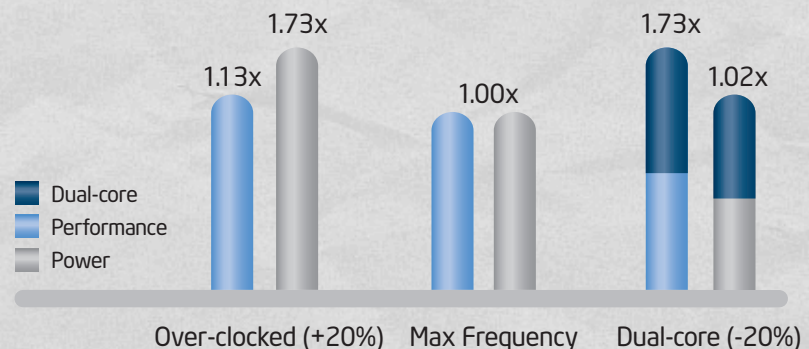
MULTI-CORE PROCESSORS ARE THE FUTURE

- Improvements in CPU performance historically came from clock rate
- Power consumption grows faster than clock rate
- Multi-core processors are the answer

Under-Clocking
Relative single-core frequency and Vcc



Multi-Core Energy-Efficient Performance
Relative single-core frequency and Vcc



INTEL'S PROJECTIONS

- 80 cores by 2011
- 1000 cores within a decade

PROGRAMMING WITH
EXPLICIT THREADS WILL
NOT BE SUFFICIENT TO
DEVELOP FOR
THOUSANDS OF CORES

WHAT'S THE SOLUTION?

- Some argue that languages designed to be parallelized are the answer
 - Erlang
 - Fortress
 - Actor



<http://www.avertinghumanextinction.org>

ERLANG

- Agner Krarup Erlang
 - Mathematician, statistician, and engineering
 - Pioneered *traffic engineering* and *queueing theory*
- Erlang prog. language developed at Ericsson



ERLANG IS...

- Functional
 - “Side effects and concurrency don’t mix.”
- “Concurrency oriented”
 - Concurrency in the language not the OS
 - Model the world using “parallel processes that ... interact ... by exchanging messages”

ERLANG IS...

- Strongly typed like Haskell
 - But unlike Haskell, it is *dynamically* typed
- Eager
 - Unlike Haskell, which is lazy
- Reliant on pattern matching
- **Not** whitespace sensitive

DOWNLOAD AND INSTALL AND TEST ERLANG

- Instructions (and local copy of installer for Windows):
 - <http://www.rose-hulman.edu/class/csse/resources/Erlang>

ACK! THE SHELL ISN'T RESPONDING

- Did you remember the period at the end of the statement?
 - Try typing `.` followed by *enter*
- Did you start but not close a quote?
 - Close it
- Totally wedged?
 - Try Ctrl-Break (Ctrl-C on Unixen)