

CLIENT SUCCESS

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Huawei Wireless uses Silexica tools to identify the power efficiency gain from deploying the sophisticated power management (DVFS) in multicore SoCs

Huawei Wireless designs and develops complex multicore SoCs to meet the power and performance requirements for the next generation of wireless standards (4.5G/5G). Since 2014, the baseband SoC design team at Huawei has partnered with Silexica on system level power estimation and optimization for multicore SoCs in order to investigate the power efficiency gain from advanced power management. Working with Silexica tools has achieved significant improvement in both, performance and power efficiency over traditional approaches.



- Telecommunications equipment, Networking equipment, Semiconductor
- Over 170.000 employees, around 76.000 engaged in R&D (2016)
- More than \$75 Billion in Sales (2016)
- Huawei built more than 1.500 networks with telecom carriers
- Huawei products and services have been deployed in more than 140 countries
- Huawei serves 45 of the world's 50 largest telecommunications operators

"We have been working with Silexica on power modeling analysis for some time now and are consistently happy with both, the quality of the estimates produced by their tool and the professionalism of the team that is working with us. We hope to continue this partnership and make a significant impact on our SoC exploration phase with this tool."

Alan Gatherer
CTO Baseband SoC
Huawei USA

Client challenges:

The complexity of system design has skyrocketed in the past few years. When the Huawei wireless team started designing the multicore SoC architecture for the next generation of baseband stations, they faced a huge challenge in meeting the requirements of performance and power efficiency to globally distribute parallel wireless standards (4.5G/5G) on the SoCs. Huawei wanted to use a power management technique called DVFS (Dynamic Voltage Frequency Scaling) to achieve a possible power efficiency gain. However, it was not possible to identify and estimate the possible power efficiency gain, using the current tooling and design methodology.

Solution:

- Silexica's SLX Tool Suite uses an advanced architectural modeling technique with power models, which enables users to develop and optimize multicore software not only for performance but also for power and energy consumption.
- The SLX Tool Suite contains power-aware automatic software mapping & scheduling for multicores, in order to drastically shorten the time to evaluate the power efficiency change for different distributions of software on multicore SoCs. On top of that, it proposes the ideal distribution solution to meet requirements for any specific system design.

Results:

Using Silexica's SLX Tool Suite, Huawei Wireless was able to identify that an implementation of DVFS would reduce the peak power by more than 30% and furthermore improve the power efficiency by more than 30%. The results impacted the further direction of Huawei within the development for the next generation of baseband stations.