

Client Success Story

Huawei Wireless uses SLX to identify the power efficiency gain from deploying the sophisticated power management Dynamic Voltage Frequency Scaling in a multicore System on a Chip



Huawei Wireless designs and develops complex multicore Systems on Chips (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

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 Dynamic Voltage Frequency Scaling (DVFS) to achieve a possible power efficiency gain. However, it was not possible to identify and estimate the possible power efficiency gain, using the current processes and design methodology.

Solution:

Silexica's SLX uses an advanced architectural modeling technique with power models, which enables users to analyze, optimize and implement multicore software not only for performance but also for power and energy consumption. SLX 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 SLX, Huawei Wireless was able to identify that an implementation of DVFS would reduce the peak power by over 30% and furthermore improve the power efficiency by over 30%. The results have influenced the direction of Huawei for the development of the next generation of baseband stations.

“ We have been working with Silexica on power modeling analysis for some time now and are consistently happy with the quality of the estimates produced by SLX 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 SLX. ”

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