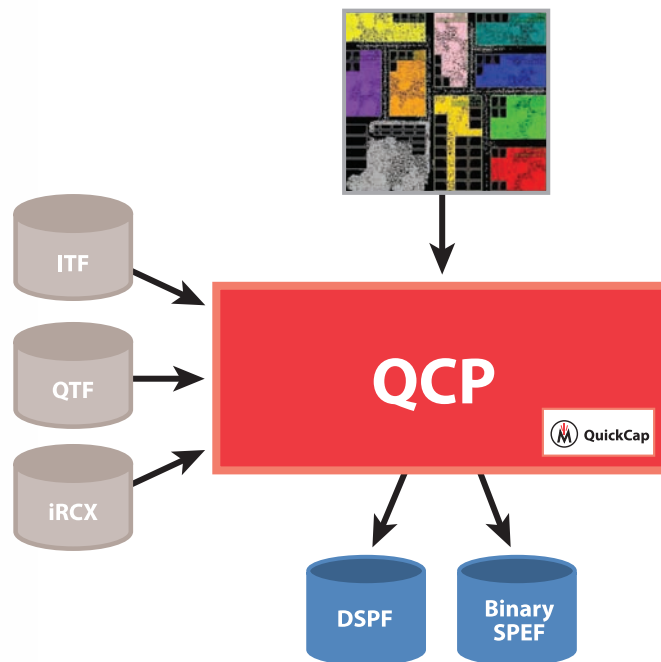


QCP™

QCP is Magma's next-generation standalone extraction tool that provides the performance boost and accuracy required for designs at 40 nm and below. Built on a new architecture, QCP provides significant performance gains that eliminate the extraction bottleneck in timing closure. Its elegant multi-corner extraction solution scales well with the explosion in the number of PVT corners required for sign-off. With QuickCap® integrated under the hood, designers can dial-in the capacitance accuracy required for analyzing critical nets.

- Fast, high-capacity extraction enables QCP to run the industry's largest designs quickly. It provides a scalable architecture that provides excellent scaling on servers with up to 32 CPUs.
- Efficient multi-corner extraction capability supports extraction of multiple PVTs with only a small incremental increase in runtime and memory as additional corners are added.
- To support 28 nm design, QCP incorporates new foundry requirements such as via etch, double etch tables and additional via rules, providing accuracy to within 1 to 2 percent of QuickCap, the gold standard for capacitance extraction.
- QCP is tightly integrated with Tekton™, Magma's next-generation static timing analysis (STA) tool, enabling faster timing ECO iterations. QCP generates binary SPEF files that reduce STA runtimes.
- Integration of QuickCap provides 3D field-solver accuracy for critical paths.



Design teams continue to struggle with timing closure. As designs continue to grow in size and complexity, extraction runtimes are increasing, which in turn increases the time required to reach timing closure. Meanwhile, as design teams migrate to new technology nodes they must contend with an increasing number of process, voltage and temperature (PVT) corners that must be thoroughly analyzed as part of the chip sign-off process.

Designers need an extraction solution that reduces the timing closure bottleneck by meeting the challenges of the new process effects and growing number of extracted corners.

QCP™

QCP was architected to meet these challenges. It provides the fastest extraction solution with the highest accuracy. QCP provides near-linear scalability on multi-processor machines, enabling design teams to reduce runtimes and speed timing closure. It also addresses the multi-corner PVT problem that design teams face today and the emerging challenges at 28 nanometer (nm) by enabling additional corners to be extracted with minimal overhead to single-PVT corner extraction runtimes. By combining the modeling of effects observed at 28 nm with the tight integration of QuickCap, QCP sets the standard for accuracy.

Fast, High-Capacity Extraction

Parasitic extraction is a key component within the timing closure process. QCP's scanline and tile-based architecture enables extraction for the largest designs in the industry. QCP's architecture provides scalable performance by fully utilizing multi-CPU hardware. It shows excellent scaling on up to 32 CPUs per machine. On 8-CPU and 16-CPU platforms, QCP can provide between 6 and 10.5 times faster performance, respectively.

Efficient Multi-Corner Extraction

With the advent of the 28 nm process node, it is common to have to extract five corners and as many as 20 parasitic corners. QCP's multi-corner extraction solution enables designers to quickly and efficiently generate SPEF files. As additional corners are extracted by QCP, runtimes

increase only incrementally compared to the single-corner extraction runtime. Like runtime, extracting additional corners only requires an incremental amount of additional memory.

Modeling of 28-nm Effects

QCP incorporates modeling for 40 nm and below. The scanline algorithm enables high accuracy for coupling between nets and ensures coupling symmetry by construction. QCP provides accuracy within 1 to 2 percent of QuickCap, the gold standard for capacitance extraction. To support 28 nm, QCP incorporates new foundry requirements such as via etch, double etch tables and additional via rules.

Tight Integration to Tekton

Built on the same architecture as Tekton, Magma's STA tool, QCP generates binary-SPEF (BSPEF) files which can be read directly into Tekton. This enables Tekton to read and annotate QCP-generated BSPEF files very quickly.

Integrated Quickcap for Critical Path Extraction

QCP tightly integrates Magma's QuickCap NX, enabling modeling for advanced devices. Designers have the option of enabling Dynamic QuickCap Integration (DQI) for critical nets that require 3D modeling. For situations where many nets require DQI, designers have the option of using multi-CPU or multi-machine processing to provide the performance needed to handle the advanced accuracy requirements.

TECHNOLOGY FEATURES:

- Fast, high capacity extraction
- Highly scalable multi-CPU solution
- Efficient multi-corner extraction
- Tight integration to Tekton
- Captures effects of 28 nm
- Integrated QuickCap (DQI) for critical path extraction

Inputs

- LEF/DEF, GDS II
- Volcano™ (Magma format)
- ITF, QuickCap technology file, iRCX

Outputs

- SPEF, Binary SPEF

Platform

- 64-bit Linux

