

CPU Core IPC Enhancements

• **Advanced branch prediction**

- 32B instruction fetch
- Sideband Stack Optimizer
- Out-of-order load execution
- TLB Optimizations
- Data-dependent divide latency
- More Fastpath instructions
 - CALL and RET-Imm instructions
 - Data movement between FP & INT
- Bit Manipulation extensions
 - LZCNT/POPCNT
- SSE extensions
 - EXTRQ/INSERTQ,
 - MOVNTSD/MOVNTSS

▶ **Dedicated 512-entry Indirect Predictor**

▶ **Double return stack size**

▶ **More branch history bits and improved branch hashing**