Nehalem Fetch and Decode

32KB L1 Instruction Cache

Instruction Fetch

16 Bytes Block

IA-32/Intel 64
Instruction

Predecoder

Inst. | Inst. | Inst. | Inst. | Inst. | Inst.

up to 6 Instructions

Instruction Queue
(18-entry)

Macro-Fusion

Inst. | Inst. | Inst. | Inst. | Inst.

up to 5 Instructions

Decoders

uCode ROM

Complex Decoder | Simple Decoder | Simple Decoder | Simple Decoder

up to 4 uOPs

uOP
uOP
uOP
uOP

uOP | uOP | uOP

4 uOPs

(Fused)
Micro-operation

Loop Stream Detector

Loop Stream Detector Buffer
(28 uOPs)