

# APOLLO Core - Superscalar

## Overview

APOLLO core is a **pipelined** CPU, so that it can use **2 pipes**.

APOLLO core can use Instructions **Fusing** whenever possible.

APOLLO core can use Instructions **Bonding** whenever possible.

With Pipeline, **Fusing** and **Bonding**, the core can executes **up to 4 instructions per clock cycle**.

## Description

Feature	Pipe 1	Pipe 2	Notes
All instructions	X	-	Pipe2 can not execute all instructions.
1 cycle instructions	X	X	Pipe2 can only do instructions which finish in 1 single clock.
More than 1 cycle instructions	X	-	Pipe2 can not do MOVEM, CMPM, MOVE (mem),(mem), MUL, DIV, for example.
8-bytes instructions	X	X	Pipe2 can do instructions of length 8 bytes.
More than 8-bytes instructions	X	-	Pipe2 can max do instructions of length 8 bytes.
Flags dependant-instructions	X	-	Pipe2 is never allowed to depend of flags created by Pipe1.
<b>Fuse</b> two instructions	X	X	Both pipes can fuse two instructions whenever it is possible.
<b>Bond</b> two instructions	X	X	Both pipes can bond two instructions whenever it is possible.

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