Sam Schieder mayer 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 10 11 12 13 14 15 16 16 16 17 18 18 18 19 120 120 120 -10 12 13 14 15 15 15 16 17 17 17 18 19 19 19 110 io i1 i2 i3 i4 nop nop is ib nop nop i7 i8 nop nop i9 E io i 1 i 2 i 3 i 4 nop nop i 5 i b nop nop i 7 i 8 nop nop Μ W io i1 i2 i3 i4 rop nap is ib rop nap i7 i8 rop nap i9 ito cycle instruction retired Reason i0: 16: 10, 0 10:161 00 D i1: 16: 15,43 1:2:16: r5,43 i2:16; r6, 43 il: 16, 43 i3: 16: r7, 43 i3: 16: r7,43 i4: 11 -1, -0,0 i4111 r1, r0,0 K- 10 10 is: st r5, r1, 0 i1, i4 nop (stall bubble) is has a RAW dependency 11 ib: 1d r1, r0, 2 on it , no forwarding is enabled 12 isist rs, r1,0 i7: st r6, r1, 1 ← i6 13 ib:11 r1, r0,2 i8: 1d r1, r0, 4 14 i7 has a RAW dependency i9: st r7, r1, 1 --- 18 nop (stall bubble) 25 i10: Lalt _ on i 6, no forwarding is enabled 16 i7: st r6, r1, 1 i8: 1d r1, r0, 4 nop (stall bubble) 18 i9 has a RAW dependency 19 ____ on it, no forwarding is enabled ig: st r7, r1, 1 20 ilo: Lalt 21