Is there a Sudoku puzzle with 16 hints?

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Can we choose 16 to make a puzzle?
A possible attack

\[
\binom{81}{16} = 33,594,090,947,249,085 \quad \text{(quadrillions)}
\]

\(\implies\) do not even think about trying all!

Idea: We do not have to try all choices.

We need constraints that the selection of 16 has to fulfill.
Any set of 16 hints cannot avoid all of the yellow positions. Because this Sudoku problem has more than one solution.
The Plan

- Find lots of unavoidable sets.
- Solve the constraint satisfaction problem to find all subsets of 16 positions intersecting all unavoidable sets.
- For each solution run a Sudoku solver and find another as the known solution.
- Repeat the same for all other 5,472,730,538 (billions) essentially different filled Sudoku grids.

Problems:

- Have a program to find 513 unavoidable sets in < 0.1s.
- Find all 767 solutions for 16-subsets in 21min.
- Have a Sudoku solver which solves a Sudoku in \( \approx 28\mu s \) or \( \approx 45000 \) clock cycles.
- This needs an estimated amount of \( 6.9 \cdot 10^{12} \) CPU seconds (218659 million years)!

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