
How to design and implement the desirable degree of confidence, correctness, and reliability under different circumstances?

Formal Methods can be used to increase the reliability, robustness, and ensure correctness of the software and hardware systems.

Large-Scale Systems
- Can host over 100,000 servers.
- 1/10/100 Gb/s links
- Storage, Processing, and Web Services
- Complex applications are running

Z3 Solver
- Z3 is a high-performance theorem prover.
- Developed at Microsoft Research.
- It is an automated satisfiability checker.
- Z3 checks whether a set of formulas is satisfiable in the built-in theories.

SMT-LIB
- Automated deduction
- Satisfy the formula with theoretical logic of interest

HLPN Model of Open Nebula Cloud Management Platform

Average Thermal Signature of the Pods using FCFS

Verification of Open Nebula

Verification time comparison of the scheduling approaches

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