

Network Function Fault Isolation in a Single Address Space

Mohan Kumar*, Steffen Maass*, Prof. Taesoo Kim

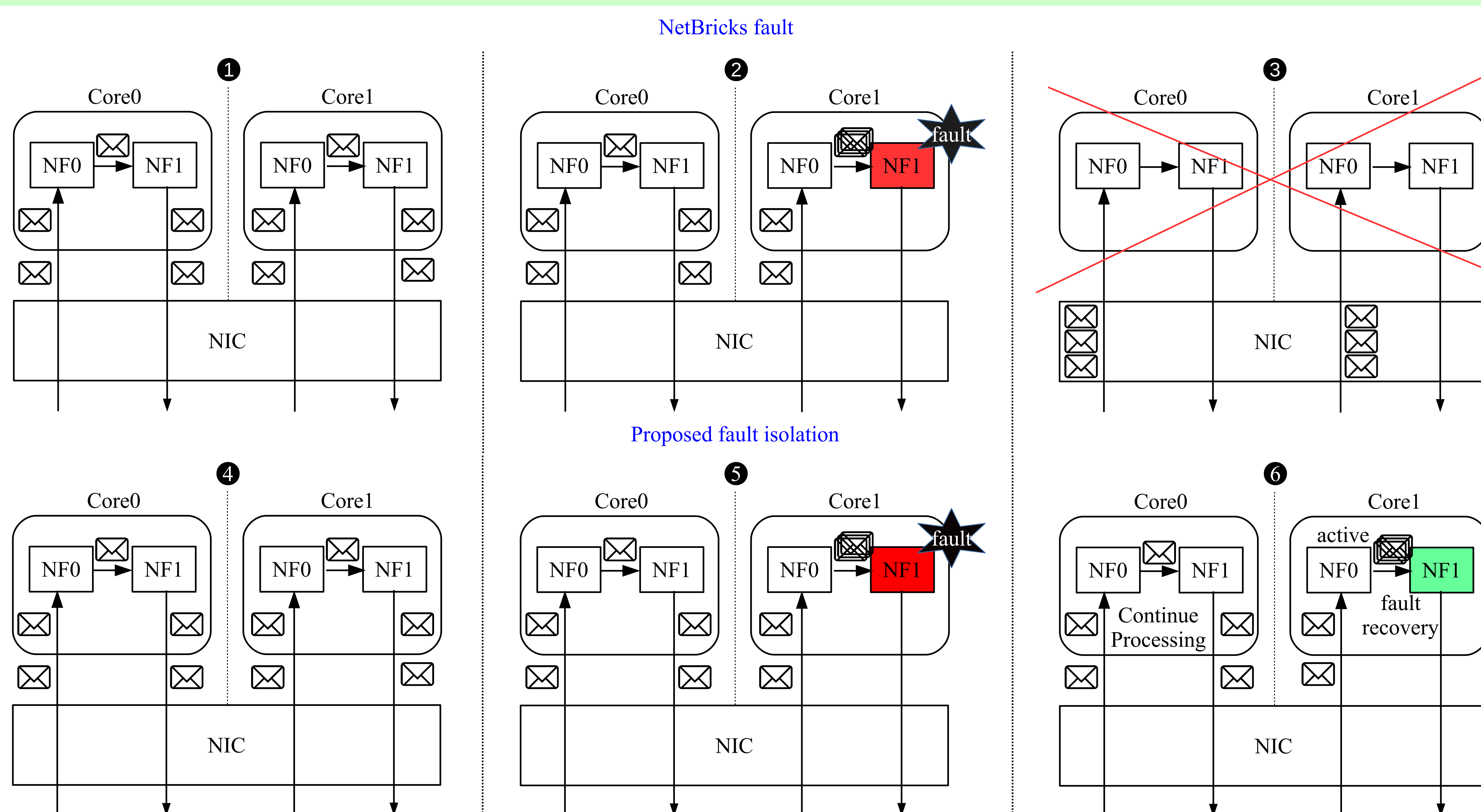
Georgia Institute of Technology

*Student

- **Virtualized vs un-virtualized** network functions
 - **Virtualized NFs - VMs and Containers:**
 - ⇒ Provides performance, memory, and fault isolation.
 - ⇒ Incurs substantial overheads - packet copying, context switching.
 - **Un-virtualized NFs - NetBricks framework - running in single address space:**
 - ⇒ Provides performance, memory isolation using language features.
 - ⇒ Provides 4-6X performance with chaining.
 - ⇒ Running in single address space - should provide fault isolation.

Software based fault isolation with per NF fine-grained fault domains:

- ⇒ Fault domains created using address space.
- ⇒ Signal handlers capture and isolate faults *per NF*.



- Operating systems have no mechanism for *fault isolation in single address space*.
- Dynamic NF addition for chaining – address space isolation?
- In a single chain, fault isolation at function-level granularity.