

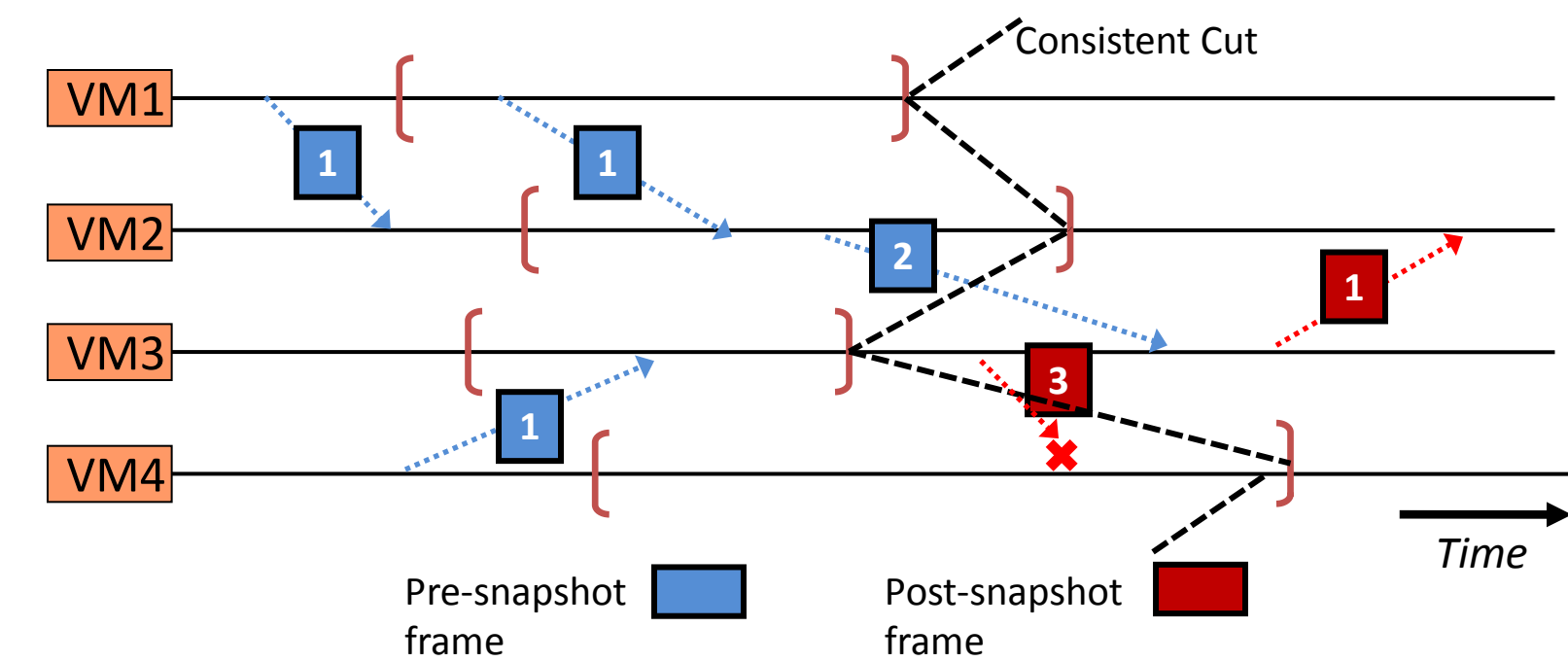
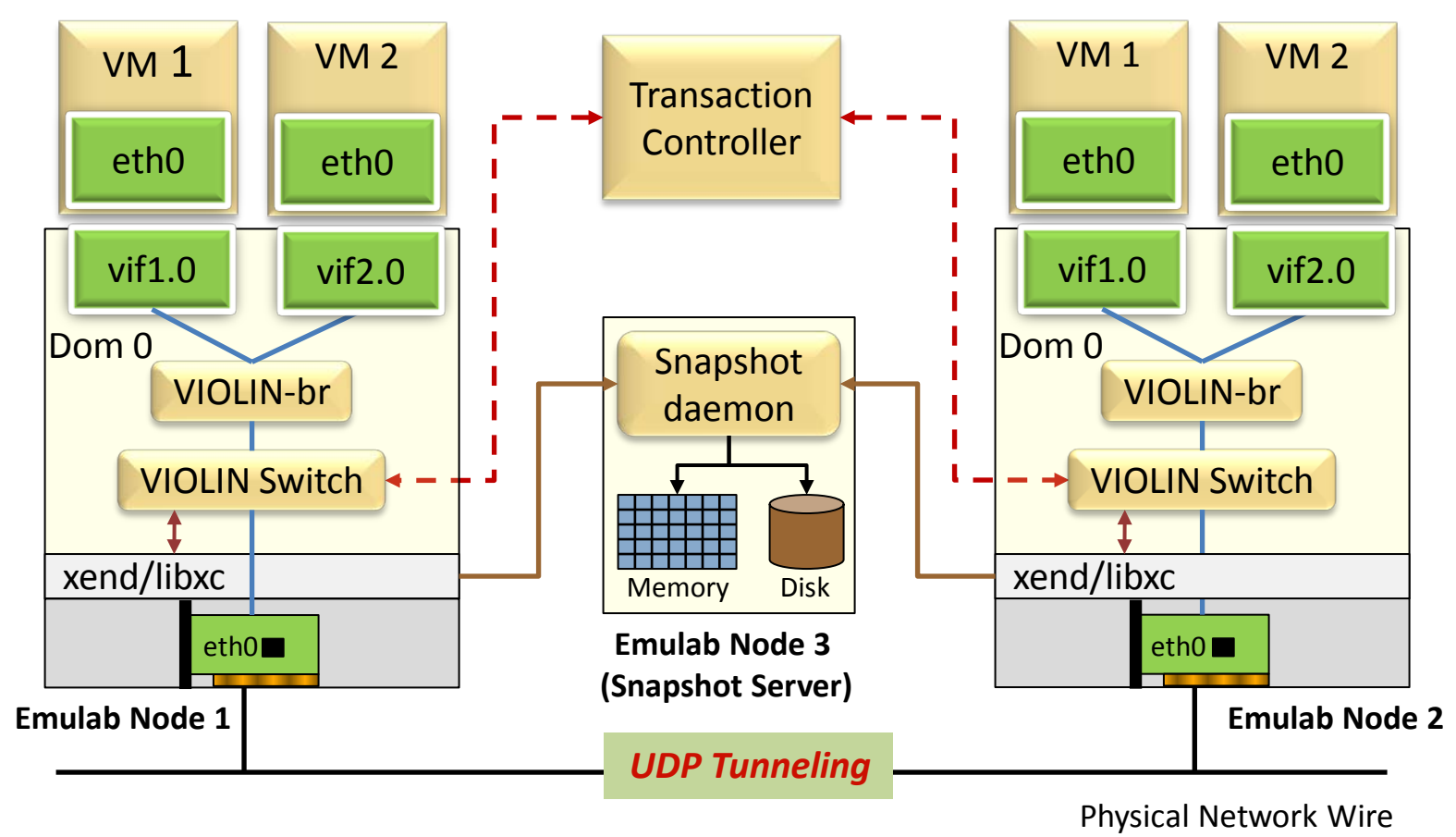
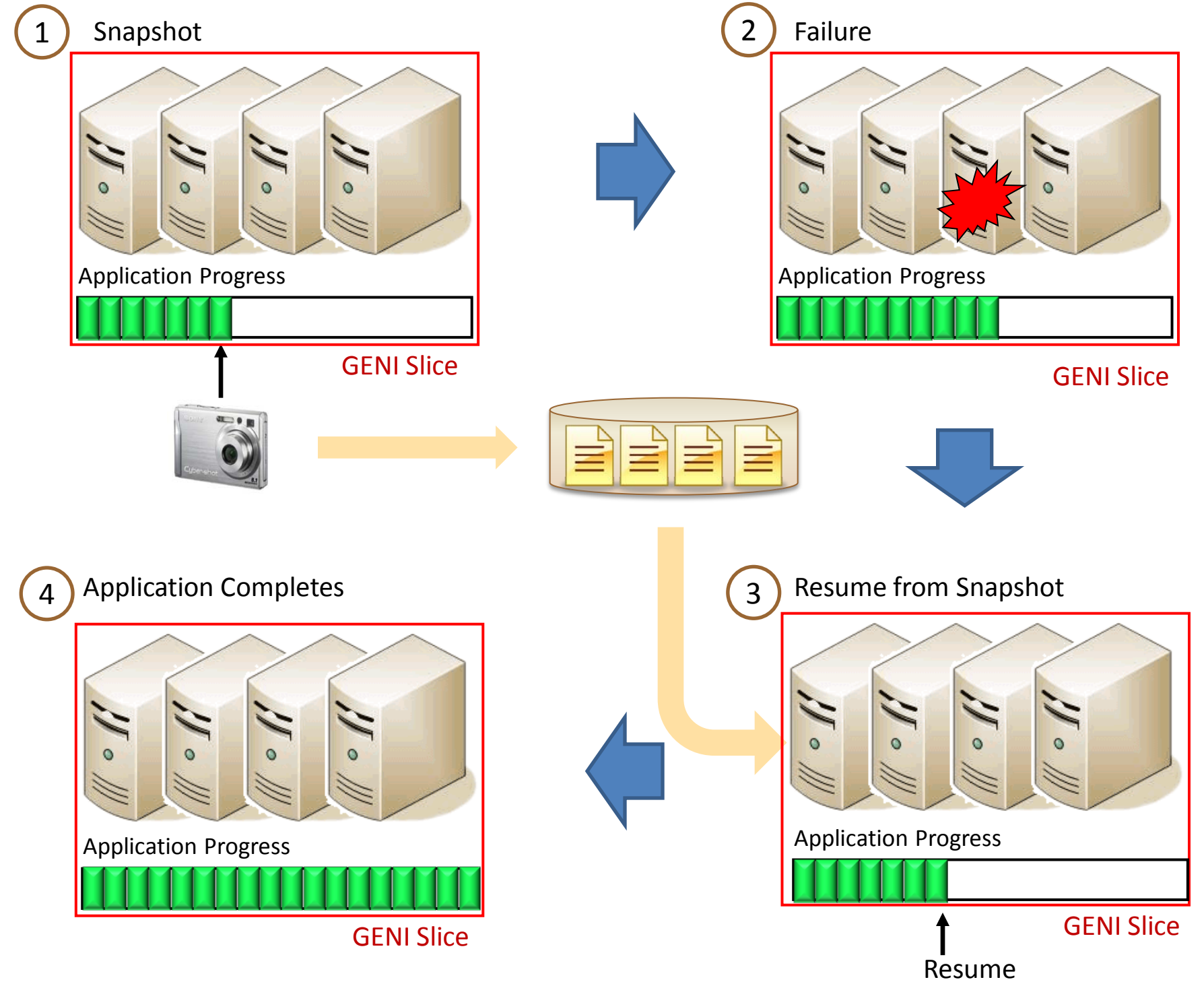
Distributed Suspend and Resume for GENI Experiments

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Motivation

- Provide *live snapshot capability* to **GENI Slices** for:
 - Fault Tolerance**
 - Debugging**
 - Slice Management**
- Minimal disruption to application performance
- Transparent to the applications and guest OSes
- Non-stop execution of the application (“Live Snapshot” capability)



Current VIOLIN Based Approach

- Leverage **VM live migration** capability to copy VM’s memory image
 - Requires multiple iterations, but minimal disruption to VM execution
- Mattern’s distributed snapshot algorithm**
 - Guarantees causal consistency for messages exchanged during snapshot process
- Message coloring is handled by VIOLIN switches

OpenFlow Based Design

- Use out of the box Xen features such as **live VM migration** and **Remus**
- Snapshot servers act as the target of migrations and store VM images
- OpenFlow** is used for :
 - Packet delivery rule enforcement
 - Packet coloring
 - Packet buffering
- Transaction manager to coordinate tasks among VM Servers, Snapshot Servers and OpenFlow Controllers
- Demonstration** of the new design will be shown during **GENI-alpha** plenary sessions at **GEC9**

