

Distributed MultiThreaded Checkpointing (DMTCP)

NSCI: SI2-SSE: Extensible Model to Support Scalable Checkpoint-Restart ...

Save running computation and restart (possibly on different computers)

Several Use Cases:

- 1 ***Checkpoint Many Times / Restart Once:*** Save and restart long-running computation (in case of computer crash); **EXAMPLE: MPI for HPC**
- 2 ***Checkpoint Once / Restart Many Times:***

Execute long-running initialization once and checkpoint —
Then restart many times

EXAMPLE (Emulation of new CPU chips by Intel):

Start an operating system using hardware emulator, checkpoint, and restart many times to check common applications (e.g., office suite)

- 3 ***Checkpoint Once / Restart Many Places:***

EXAMPLE (formal verification): Explore many paths in parallel

DMTCP transparently supports a wide range of environments:

MPI, InfiniBand, CUDA/GPU, Distributed Software, ...