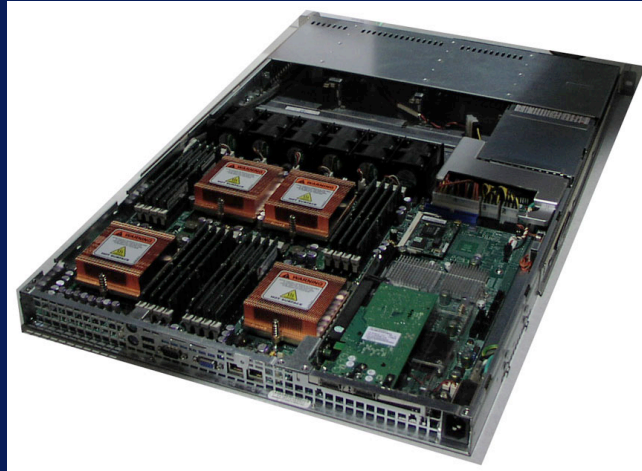
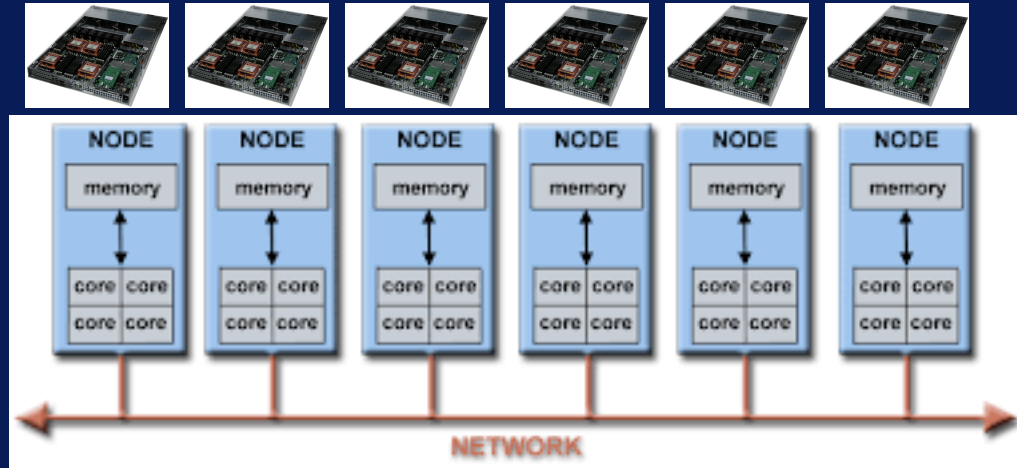


Scalable Computing over the Internet

Single Compute Node



Parallel Computer



SDSC Gordon

Expensive

Commodity Cluster



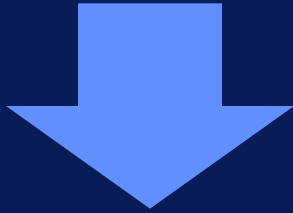
Commodity Cluster



Affordable

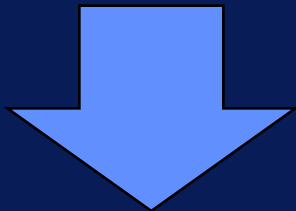
Less-specialized

Commodity Cluster



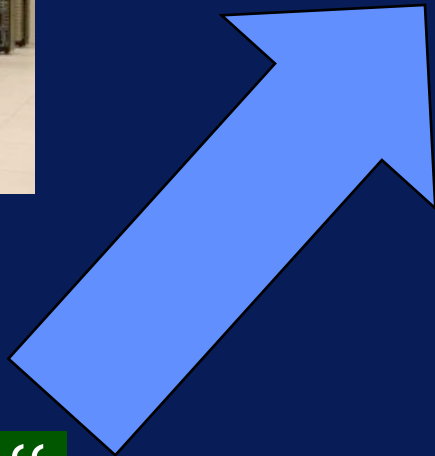
**“Distributed computing”
over the Internet**

Commodity Cluster



**“Distributed computing”
over the Internet**

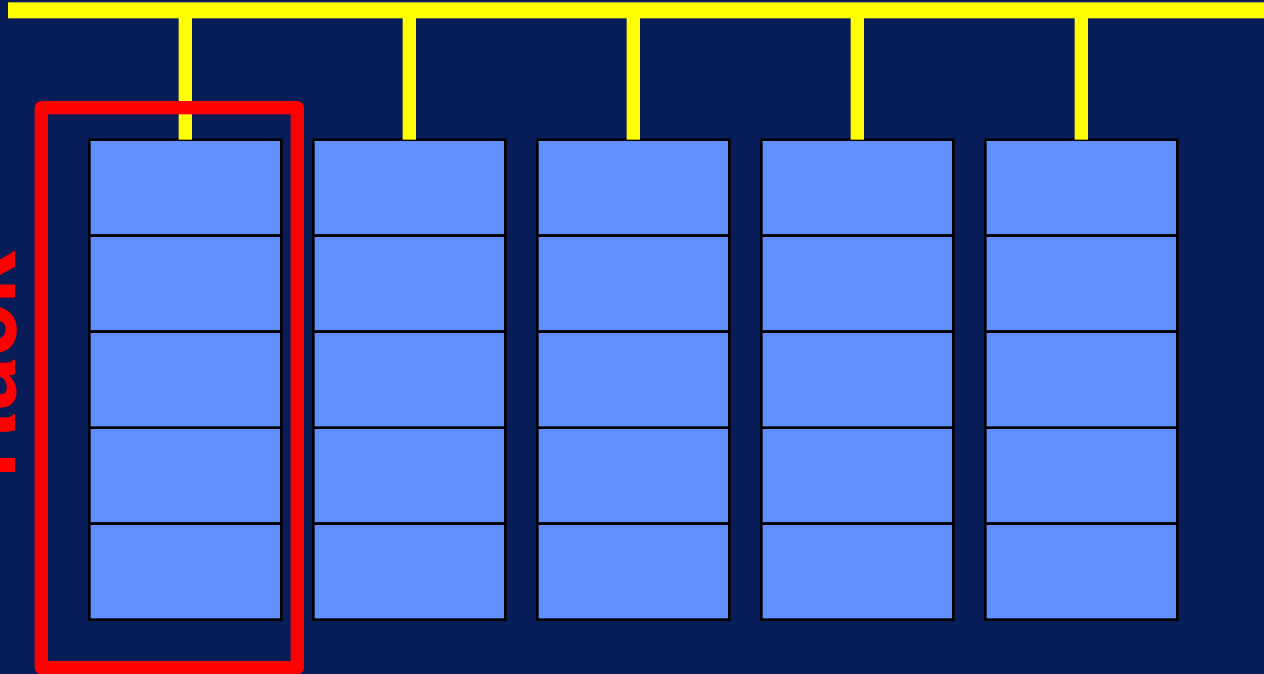
**Reduced
computing cost**



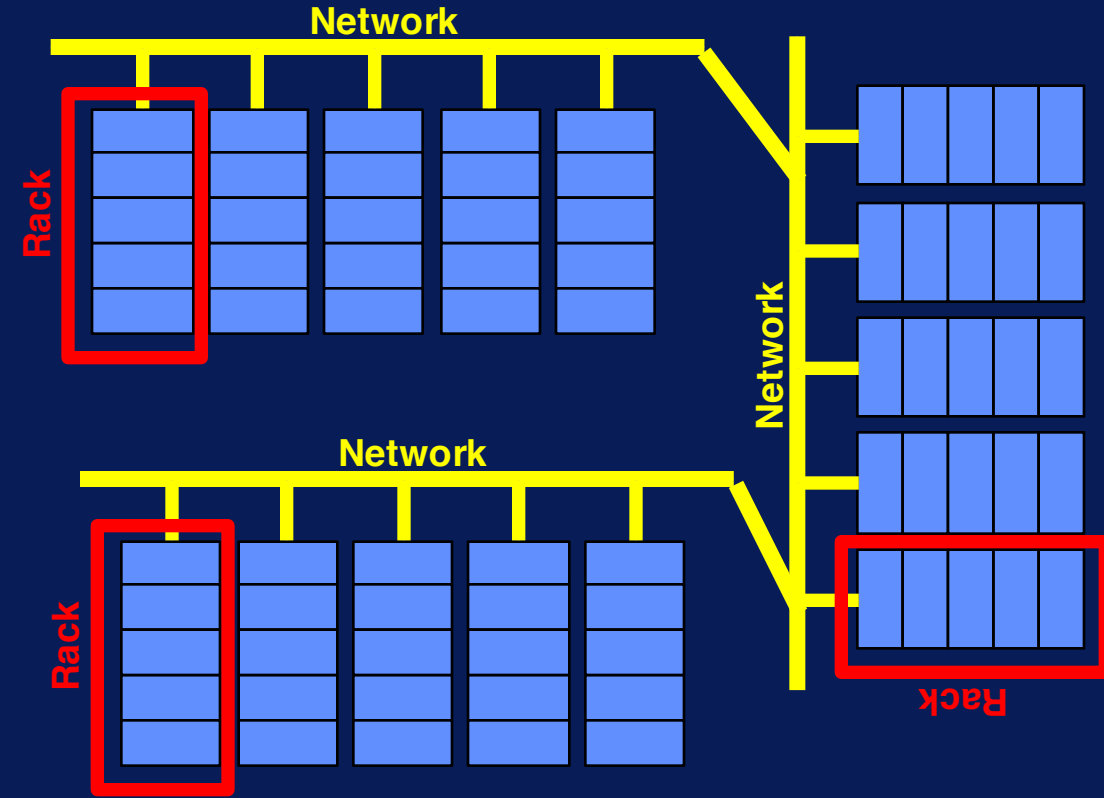
Architecture of a Commodity Cluster

Network

Rack

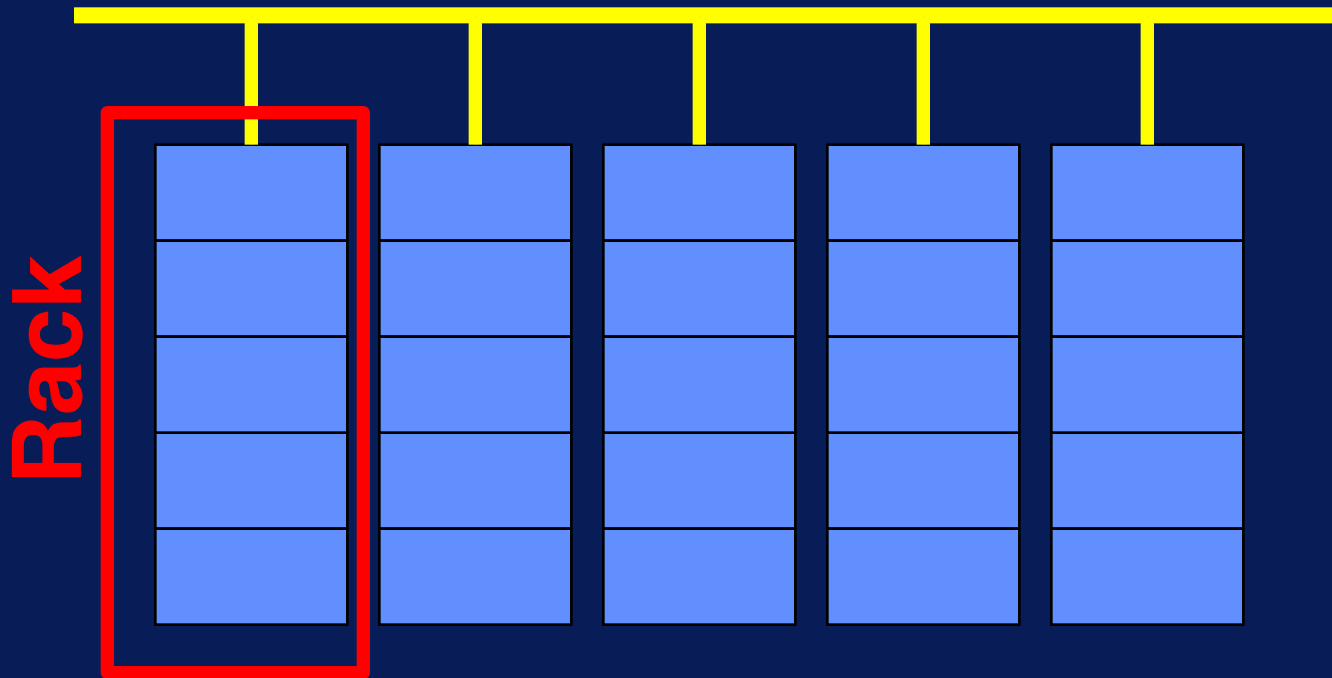


Distributed Computing

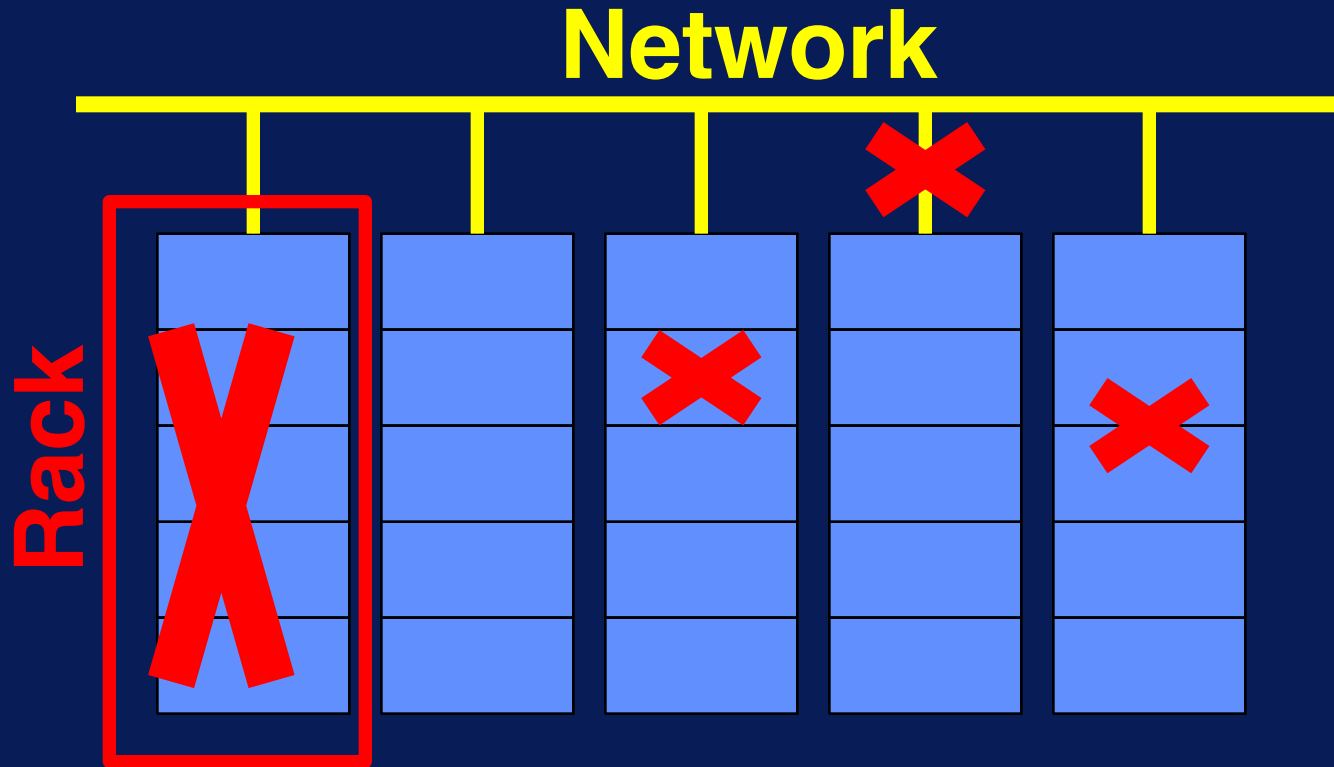


Enables data-parallelism

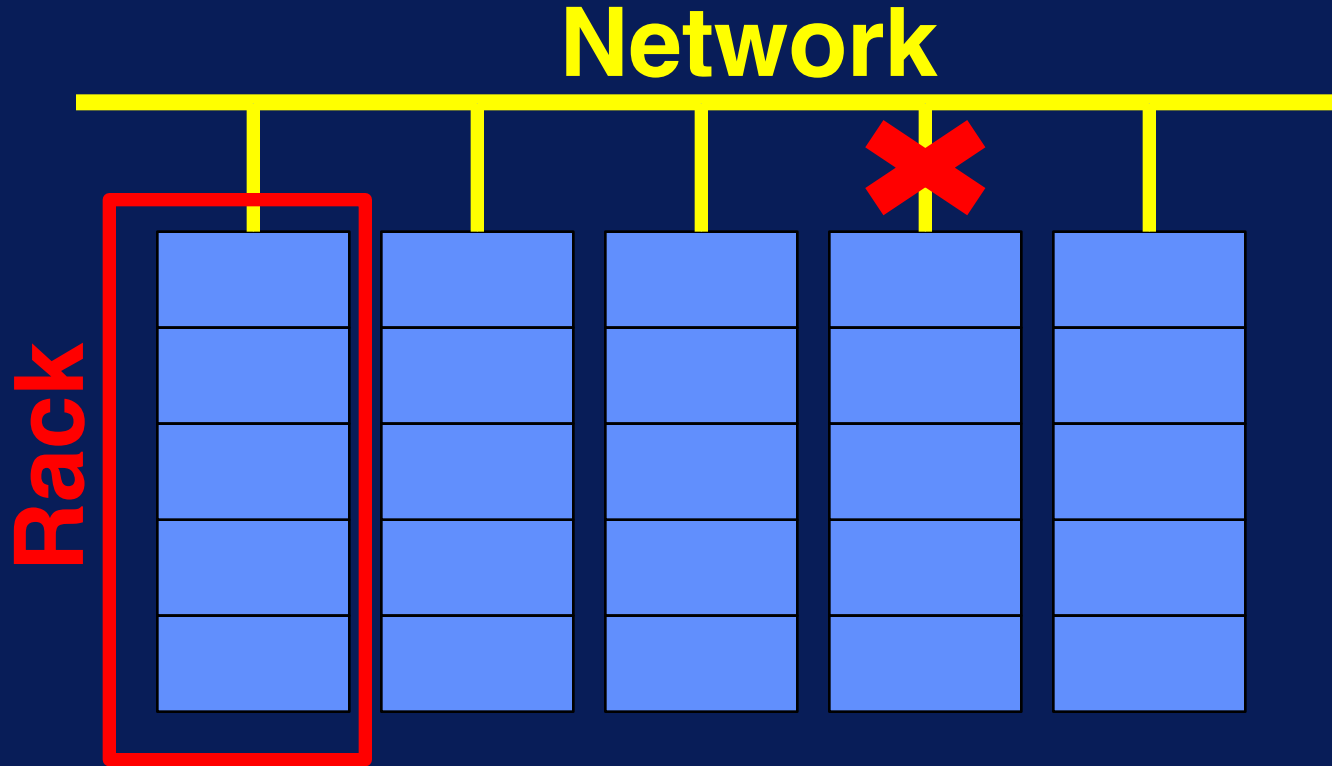
Network



Common failures in commodity clusters



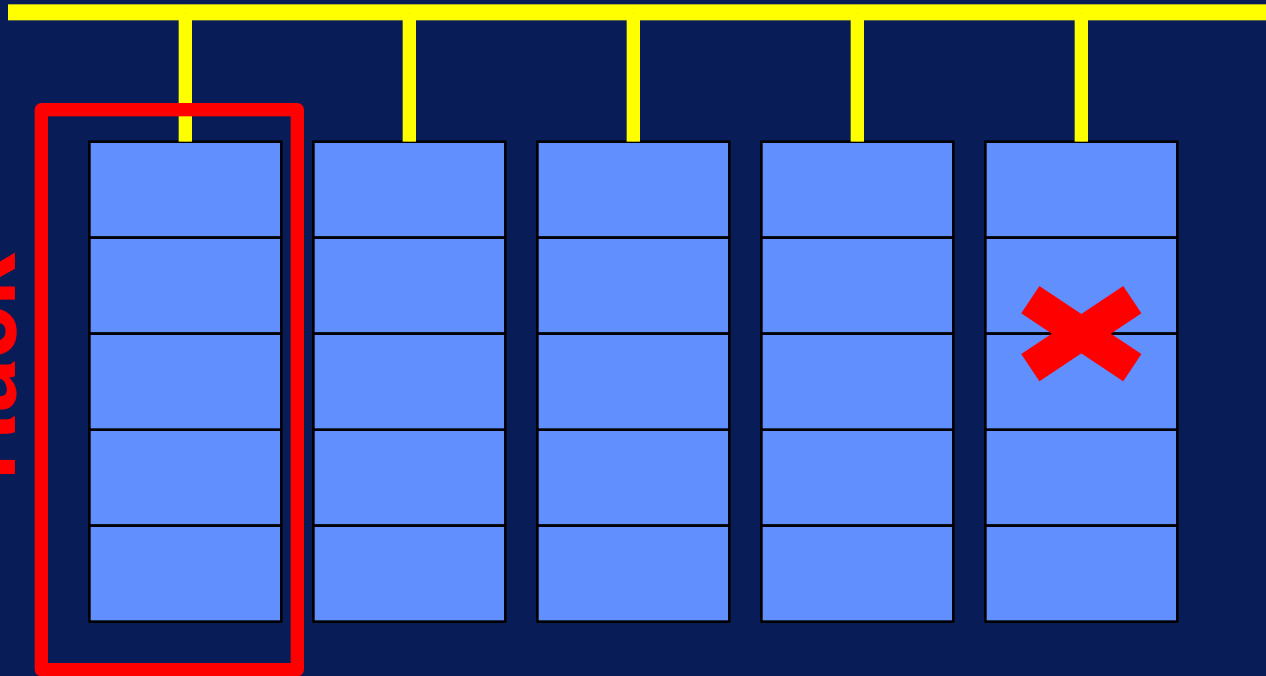
Common failures in commodity clusters



Common failures in commodity clusters

Network

Rack

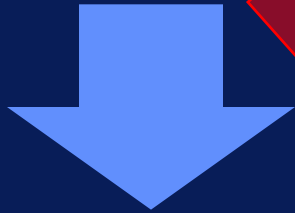




Failure → Complete Restart

Failure

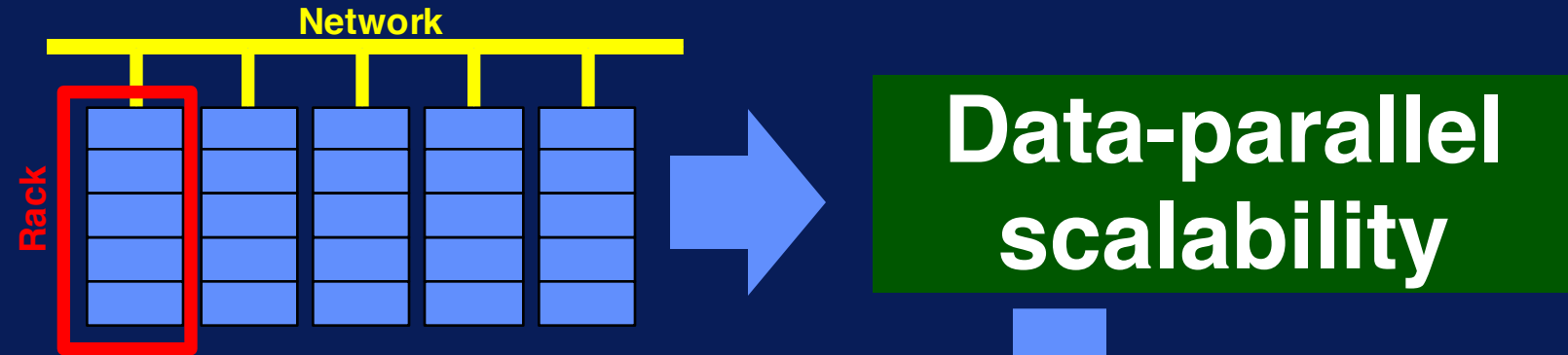
Complete Restart



**Redundant
data storage**



**Data-parallel
job restart**



Potential for node-level system failures

**Redundant
data storage**

**Data-parallel
job restart**