

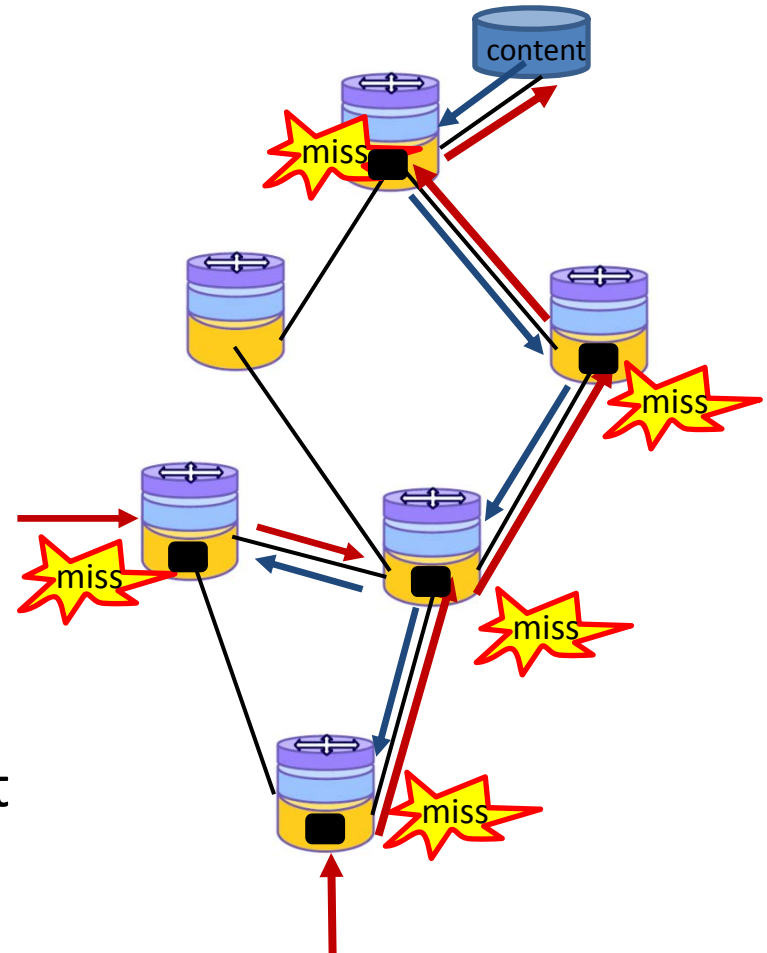
In-network storage: caching analysis



Jim Kurose
Department of Computer Science
University of Massachusetts
Amherst MA USA

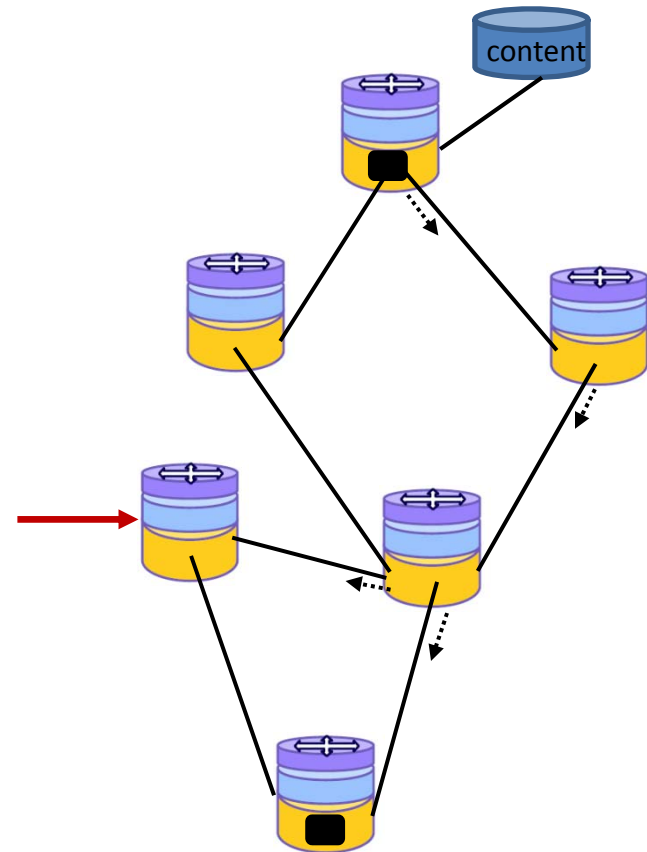
In-network storage, caching analysis

- MF-R3/GSTAR , CCN other content-centric architectures: in-network caching
- **Goal:** analyze *networks* of caches
 - request routed to known location, miss stream forwarded, content returned (and cached, with replacement)
- modeling content caches: significant differences from:
 - queueing networks
 - blocking (circuit-switched) networks



In-network storage, caching analysis

- previously:
 - *content breadcrumbs*: storage-aware routing to content caches elsewhere
 - *approximate fixed point analysis* of networks of caches
- currently: does steady state depend on initial conditions (ergodicity)?
 - existence of non-ergodic cases (replacement policy, topology, cache size)
 - sufficient conditions for ergodicity
 - topology (trees)
 - from individual ergodicity to system ergodicity



In-network storage, caching analysis

- ergodicity (continued):
 - random replacement: ergodic
 - class of non-protective policies: all ergodic
- future
 - anycast routing to multiple custodians: power-of-2-choices advantages?
 - mobility
 - policy

