Quick Failover Algorithm in SCTP
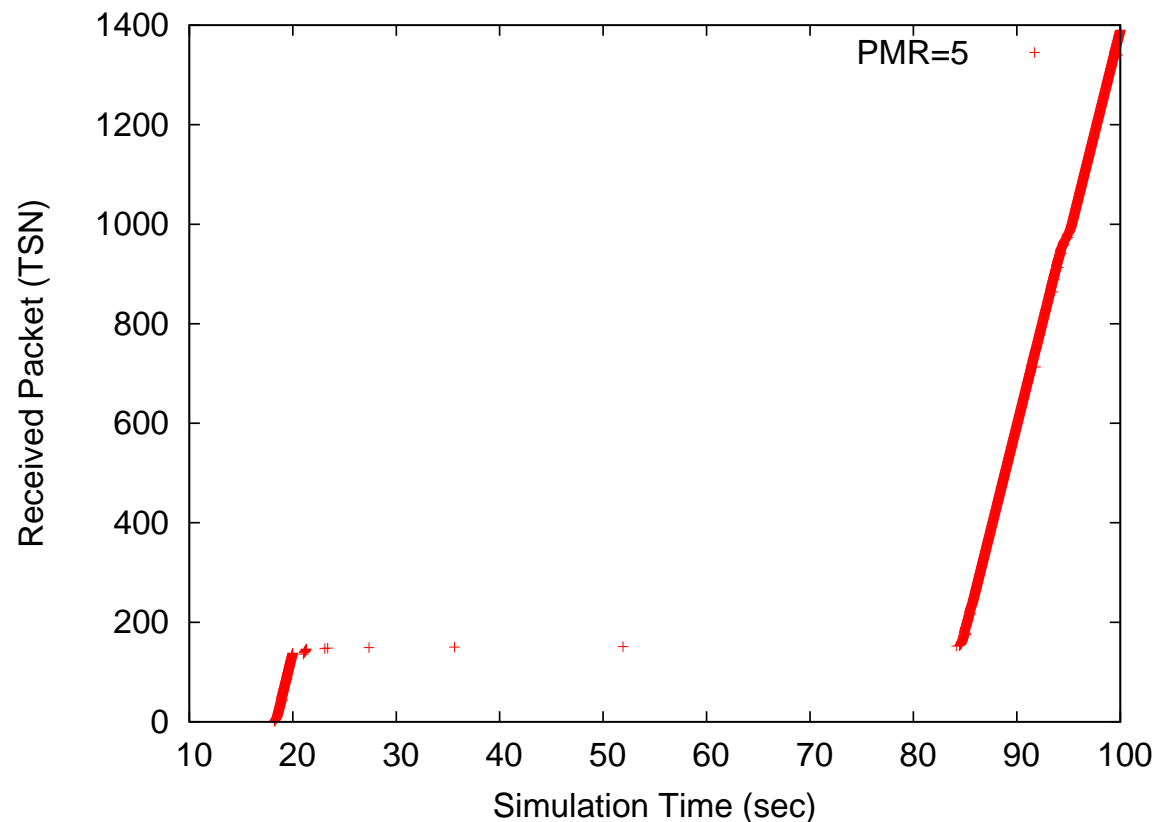
draft-nishida-tsvwg-sctp-failover

Yoshifumi Nishida, WIDE Project
Preethi Natarajan, CISCO systems

What is Quick Failover?

□ A solution for failover issue in SCTP
  ○ SCTP needs 30-60 secs to failover in standard settings

Issues in SCTP Failover

□ SCTP needs 6 consecutive timeouts before failover
　○ Path.Max.Retrans is recommended to be 5 in RFC4960

A is sending data to B and B has two address B1, B2 (B1 is primary)
when primary becomes unavailable at 20 sec, it takes 60 secs to
restart data transmission. (Path.Max.Retrans = 5)

SCTP Path Management

□ SCTP marks path inactive when errcount > PMR
  ○ Failover happens after path is marked as inactive

□ SCTP terminate association when errcount > AMR
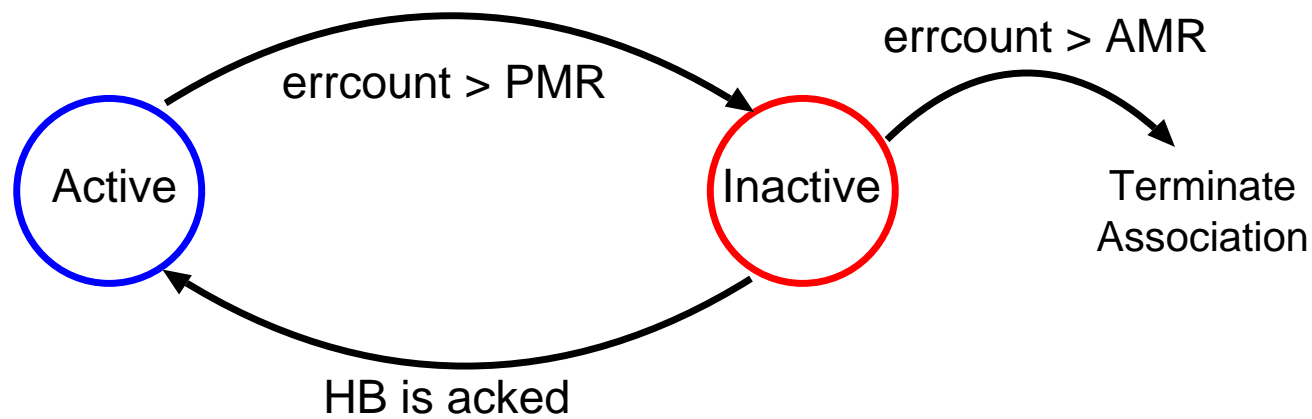
Quick Failover

□ Introduce an intermediate state

○ When path is in PF, SCTP can utlize secondary path

▷ Send HB to the primary and if HB ack returns, it quickly fallback to active
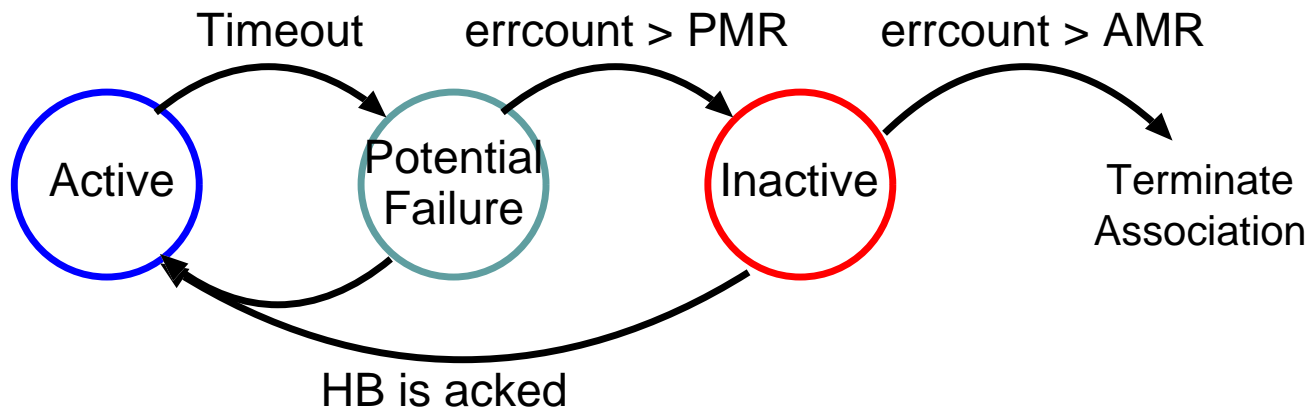
Quick Failover Summary

- Use secondary path quickly in case of path failure
- Simple and sender only logic
- Research results indiacate it's useful and harmless
- No need to change current PMR, AMR, HB.Interval
  - ▷ No need to change applications or OS's settings
- It can be applied to both RFC4960 and CMT proposal
  - ▷ draft-tuexen-tsvwg-sctp-multipath
- Behavior is configurable
  - ▷ Apps can preserve original behavior if they want

Do We Really Need This?

□ We have several choices
- ○ Do nothing. 30-60 secs delay can be acceptable
- ○ Expect developers and sysadmins to solve this
  - ▷ Tuning several parameters will work in some situations
- ○ Update the spec to support PF
  - ▷ No requriment for app developers or sysadmins
  - ▷ Give consistent behavior to users

PMR = 0 Solution

☐ Setting PMR=0 can also be a solution for this

☐ But,

○ We'll still need to update RFC4960 to some extent

▷ Recommended value for PMR

▷ Behavior in dormant state

▷ Relationship between PMR and AMR

△ RFC4960 states 'users should avoid having the value of Association.Max.Retrans larger than the summation of the 'Path.Max.Retrans'

▷ May need to add special logic for sending HB