



- Composition across providers implies path could stretch across the wide-area
  - For instance, the picture shows a service involving a text-source such as email, and a text-to-speech engine
- Wide-area Internet path availability is not great (studies by Labovitz, et.al.)
- This means poor availability for the composed service
- Make use of service replicas to *dynamically* switch from one service instance to another
- We have shown two things:
  - Quick failure detection makes sense (within about 2sec), using aggressive heart-beats
  - Scalable messaging – when 1000s of client sessions have to be restored simultaneously, system does not break down due to message flood
  - More details in SPECTS'02 paper
- The graph shows an experiment we ran across the wide-area, across 8 hosts
  - These hosts represent university hosts in US, commercial end-points, as well as trans-continental links
  - There are two client sessions of the composed text-to-speech application: one with recovery mechanism enabled, one without
  - X-axis shows time, as the sessions proceed
  - Y-axis shows the loss-percentage of audio packets received at the end-client, computed over 5sec intervals
  - The session without any recovery mechanism sees an outage of over 15sec
  - Due to recovery, the green line recovers in about 3.6sec (within bounds of end-client buffering)
- We have also studied algorithms for load-balancing across service replicas, in this context of dynamic session recovery to improve availability