

# DCCP Generalized Connections

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<draft-kohler-dccp-mobility-02.txt> by Eddie Kohler

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# Overview

- Support for address binding and rebinding in DCCP connections
  - Add and remove addresses over connection lifetime
  - Example uses: multihoming, mobility
- Basic idea: *Generalized Connections (Gencon)*
  - Multiple transport connections (different addresses, ports, seqnos)
  - Shared application sockets
    - Appears as one connection to app
  - Transport “component” connections associated with Gencon through simple cryptographic protocol

# Draft status

- draft-kohler-dccp-mobility-02.txt, June 25, 2006
- First implementable draft
  - Removed prior motivation
    - Too mobility specific
  - Specified a crypto suite: RSA-SHA512
    - RSASSA-PKCS1-v1\_5 signature scheme, SHA-512 hash function [RFC3447]
    - Used to verify two components are part of the same Gencon
  - Improved error handling
    - Added Prefer message to prefer one component connection for sending data
- Where should we go from here?

# Why Handle This at the Transport Layer?

- Multi-homing is relevant use case for multi-access wireless hand-sets
  - Wireless Wide-Area link (e.g., GPRS) is usually available most of the time
  - Wireless LAN access can be short-lived
  - Several access interfaces available at the same time
- Multi-homing on transport layer has nice characteristics
  - Requires support only at the end hosts
  - Supports simultaneous use of IPv4 and IPv6
  - Multiple parallel paths per connection
  - Path selection can be made independently for each flow
  - Transport is made aware of different connection paths
- Often the location of server is fixed and known
- Does not conflict with IP-layer mobility or shim-layer multi-homing

# Possible Steps Forward

- Could be Experimental RFC for new DCCP Gencon option
  - To allow experimentations on the idea
- Are there reasons *not* do this?
  - Does it break something?
- One possible experimentation scenario
  - Voice-over-IP using wireless host with multiple access links
  - Path #1: slow and expensive, stable (WWAN)
  - Path #2: fast and inexpensive, typically unstable (WLAN)
  - Prefer path #1 for signaling (SIP/SCTP)
  - Prefer path #2 for data (RTP/DCCP)
  - Congestion control characteristics on the two paths are completely different
    - Component connections handle separate congestion control for both paths

# Questions

- Does it work with NATs?
  - It should if basic DCCP does
- Architectural implications?
  - DCCP's unreliability helps a lot
  - Generalized connections are a simple, clean mechanism
  - Not so different from SCTP add-ip
- Relationship with HIP?
  - This is not IPsec key negotiation protocol
  - Does not require use of IPsec
  - Could be used on top of HIP
- Relationship with shim6?
  - This is not about site multi-homing for IPv6
  - Could be used on top of shim6
- Relationship with Mobile IP?
  - Could be used on top of Mobile IPv4 and Mobile IPv6