ConEx Concepts and Use Cases
draft-ietf-conex-concepts-uses-02

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IETF-81 ConEx

27-Jul-2011

Overview

- Lest we Forget: Top Level Goal

- Status

- Changes to draft since Mar-11

- Mailing List Reaction/Contribution

- Deployment Arrangements

- Next steps

Lest we Forget: Top Level Goal

- Leave reader with one take-away message
  - what ConEx is good for
- and understanding of why

- wg chose traffic management
  - LEDBAT & QoS use-cases are consequences
  - other use-cases must not confuse main message

Status

- late
  - chartered to submit to IESG Mar 11
  - draft-02 posted 11 Jul

- new editing team
  - Bob Briscoe & Rich Woundy
- f2f hand-over meetings (where possible)
  - keep the body, change the first impression
- new structure & new text pasted to list & bashed
  - through June/Jul

Changes to draft since Mar-11

- Structural Changes

- Abstract & Intro

- Concepts, incl. Non-Goals & Misconceptions

- Other Use-cases

- Deployment Arrangements (discussed later)

Structural Changes

- Introduced Traffic Mgmt in Intro (see next slide)
- Definitions → Concepts (incl. formal definitions)
- Added "Non-Goals & Misconceptions" under Concepts*
- Use-cases
  - 3 main use-cases reframed as one (traffic mgmt) with 2 consequences
  - Statistical Multiplexing over Differing Timescales → Concepts
  - "Other Use-Cases" section created for brief mentions of others
  - "Accounting for Congestion" → Other/interconnection
- Self-congestion, moved from Intro → Potential Issues
- Information Security → Security Considerations

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* plan to move again

Current Structure

1. Introduction
2. Concepts
3. Traffic Management
4. Exposing Congestion
5. ConEx Use-Cases
6. Deployment Arrangements
7. Potential Issues or Non-Issues
8. Security Considerations

Abstract & Intro

- Doc as entry-point to ConEx documentation


```
  .---------.                                              .---------.
 |Transport|                                              |Transport|
 | Sender  |     .                                        |Receiver |
 |         |   /|_____    |         |
 |      ,-<---------------Congestion-Feedback-Signals--<--------.    |
 |      |  |/                                          |    |   |    |
 |      |  |\          Transport Layer Feedback Flow   |    |   |    |
 |      |  | \    _____|    |   |    |
 |      |  |  \ '                                           |   |    |
 |      |  |   \ '      .----------.          .             |   |    |
 |      |  |    \|_____|          |_____|\            |   |    |
 |      |  |     |  IP Layer |     |  Data Flow \           |   |    |
 |      |  |     |          |(Congested)|       \          |   |    |
 |      |  |     |          | Network  |--Congestion-Signals--->-'   |
 |      |  |     |          | Device   |         \|         |   |    |
 |      |  |     |          |          |          /|        |   |    |
 |      '----------->-- (new)-IP-Layer-ConEx-Signals-------->|       |
 |      |  |     |          |          |         / |         |       |
 |      |  |     |_____|          |_____|/          |       |
 |      |  |                |          |        |/           |       |
  '---------'                '----------'        '           '---------'

     Figure 1: Where the ConEx Protocol Fits in the Internet Architecture
```
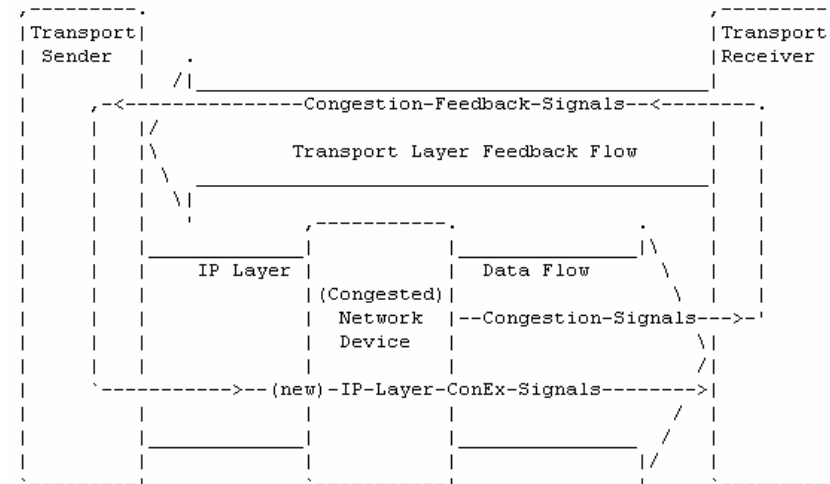
- Summarised abstract-mech

- Focused to reflect traffic mgmt story in body
- Deferred definition of congestion →§2
- Deferred overprovisioning argument →§2
- Avoided justifying Traffic Mgmt, just "it exists"

Concepts

- Concepts
  - preceded definitions with explanatory text on main concepts (next slide)
  - congestion definition now consistent with abstract-mech

- Added Non-Goals & Misconceptions
  1. not fine-grained congestion control by operator
  2. enforcing per-flow fairness considered harmful
  3. not substituting for capacity planning
  4. not eliminating all congestion
  - not included: ultisation vs congestion

Main Concepts

- accountability
  - too little capacity meets too much
  - congestion
    - a property of the link or path
  - congestion-volume
    - a property of the traffic
    - per user, per network
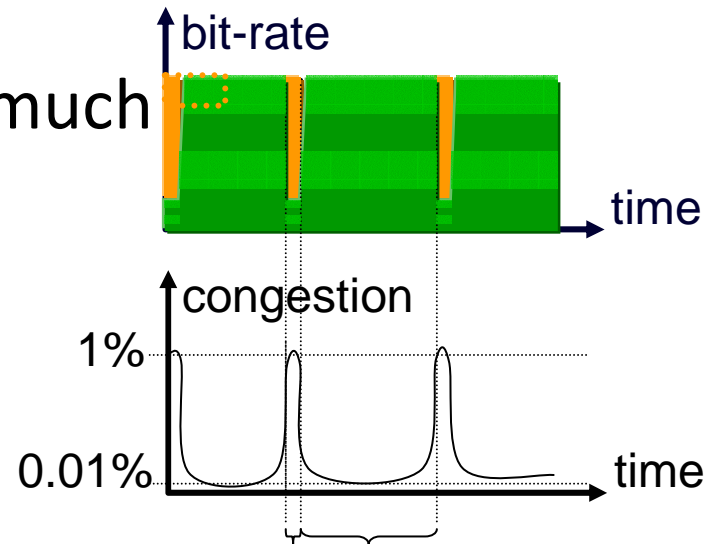
- user's contribution to congestion

congestion-volume = bits marked or dropped

Use-cases

- 3 main use-cases reframed as one: traffic management
  - with 2 consequential use-cases:
    - incentivises LEDBAT
    - informs intra-class QoS

- Statistical Multiplexing over Differing Timescales
  - a property of ConEx used in the other use-cases
    - belongs under Concepts
  - introduced a little in Intro & under Traffic mgmt
    - still need a brief explanation of this under Concepts too

- "Other Use-Cases" section created to contain
    - Preventing congestion collapse
    - Inform Inter-Operator Contracts
    - Inform Capacity Provisioning

Mailing List response/contribution

- Full reviews: Nandita, Alissa, Mikael
- Substantial continuous reviews
  - Michael M, John L, Toby, Phil, Georgios, Dave McD
- Re-rewrite of Intro
  - and diagram bashing
- Mechanism
  - tradeoff: concrete explanation vs prejudging decisions
- Terminology
  - freedom ↰ blame ↰
  - transport sender/receiver
  - traffic management
- Structuring main use-cases as sequential
- Non-Goals nearer end
  - advert in "Concepts"
- Improved structure…

Proposed Structure

1. Introduction
2. Concepts
    1. Definitions
3. Core Use Case: Informing Congestion Mana
    1. History
    2. Existing Approaches
    3. Drawbacks of Existing Approaches
    4. Use Case Description
4. Other Use Cases
    1. Creating Incentives for Scavenger Transports
    2. Supporting Intra-Class Quality of Service
    3. Preventing Congestion Collapse
    4. Informing Inter-Operator Contracts
    5. Informing Capacity Provisioning
5. Deployment Arrangements (see next slide)
6. Commercial Secrecy as a Potential Deployment Barrier
7. Non-Goals
8. Security Considerations, [...etc]

Current Structure (-06)
1. Introduction
2. Concepts
    1. Definitions
3. Traffic Management
4. Exposing Congestion
5. ConEx Use-Cases
    1. Inform the Operator's Traffic Management
    2. Consequence: Incentivise Scavenger Transports
    3. Consequence: User-Controlled Intra-Class QoS
    4. Other Use-Cases
6. Deployment Arrangements
7. Potential Issues or Non-Issues
8. Security Considerations, [...etc]

- Alissa Cooper becomes doc editor (prize for proposing this :)
- outstanding issue:
  - introduce downstream congestion & ECN early (§2) or late (e.g. §4.4)?

Deployment Arrangements

- Recall top level goal
  - one take-away message on what ConEx is good for
    and understanding of why…
    …and believable initial deployment

- in Prague we promised to add this

- made an attempt, but it won't work, it can't work
  - deployment is about mechanism components
  - a huge lump to add to a doc that was avoiding mechanism

- alternative proposal, 3 informational drafts:
  1. ConEx Concepts and Use-Cases
  2. ConEx Abstract Mechanism
  3. ConEx Single Network Deployment Scenarios
     - #2 is prerequisite for #3
     - brief section in #1 summarising and pointing to #3

Next Steps

- wordsmith Concepts

- transplant out deployment arrangements
  - leave a signpost to it in a dedicated small section

- wordsmith use-cases

- modus operandi
  - one section at a time to mailing list

- aim for WGLC around Nov 11?