

rohc

Robust Header Compression

51th IETF August 2001
London

Chairs:

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51st IETF: Agenda (from 30000 feet)

- ◆ 1. WG chair admonishments
- ◆ 2. Real agenda

- ✓ Blue sheets
- ✓ Scribe

Hello! This is an IETF Working Group

- ◆ **We are here to make the Internet work (Fred Baker)**
 - ▲ Together! (Harald Alvestrand)
- ◆ **Rough Consensus and Running Code (Dave Clark)**
- ◆ **Working Group is controlled by**
 - ▲ IETF Process (RFC2026, RFC2418) – *read it!*
 - ▲ Area Directors (ADs): Alison Mankin, Scott Bradner
 - ▲ Charter (<http://www.ietf.org/html.charters/rohc-charter.html>) -- *read it!*
 - ▲ Working Group Chairs: Mikael Degermark, Carsten Bormann
 - ▲ Technical Advisor: Erik Nordmark
- ◆ **Work is done on email list rohc@cdt.luth.se**
 - ▲ And on IETF meetings, interim meetings, informal meetings, ...
 - ▲ Mailing list is official channel, though

RFC 2026: Internet Standards Process

- ◆ **Standards track RFCs:**
 - ▲ **WG consensus (as judged by WG chairs)**
 - ▲ **WG last call**
 - ▲ **IESG approval (based on AD recommendation)**
 - ▲ **Quality control!**
 - ▲ **IETF last call**
- ◆ **Informational RFCs**
- ◆ **BCP (best current practice) RFCs**

RFC 2026: IPR issues (1)

- ◆ (10.2) No contribution that is subject to any requirement of confidentiality or any restriction on its dissemination may be considered [...]
- ◆ Where the IESG knows of rights or claimed rights [...] the IETF Executive Director shall attempt to obtain from the claimant [...] a written assurance that upon approval by the IESG of the relevant Internet standards track specification(s), any party will be able to obtain the right to implement, use and distribute the technology [...] based upon the specific specification(s) under **openly specified, reasonable, non-discriminatory** terms.

RFC 2026: IPR issues (2)

- ◆ **Contributions (10.3.1(6)):**
“The contributor represents that he has disclosed the existence of any proprietary or intellectual property rights in the contribution that are reasonably and personally known to the contributor.”
- ◆ **I.e., if you know of a patent application for a technology you are contributing, you have to tell.
Or just shut up entirely!**

ROHC: Charter (4) Goals and Milestones

- ◆ Mar: I-D on Requirements for IP/UDP/RTP HC.
- ◆ May: I-D of layer-2 design guidelines.
- ◆ May: I-D(s) proposing IP/UDP/RTP HC schemes.
- ◆ May: I-D of Requirements for IP/TCP HC.
- ◆ Jun: Requirements for IP/UDP/RTP HC submitted to IESG (Inf.)
- ◆ **Jul: Requirements for IP/TCP HC submitted to IESG (Inf.)**
- ◆ Jul: Resolve possibly multiple IP/UDP/RTP HC schemes into a single scheme.
- ◆ **Aug: I-D on IP/TCP header compression scheme.**
- ◆ Sep: Layer-2 design guidelines submitted to IESG (Inf.) ➔ TCP g/l
- ◆ Sep: IP/UDP/RTP HC scheme submitted to IESG (PS)
- ◆ **Dec: IP/TCP HC scheme submitted to IESG (PS)**
- ◆ Jan: Possible recharter of WG to develop additional HC schemes.

Done
in last-call
Working
To do

51st IETF: Agenda (Thu)

- ◆ **1530 Chair admonishments and agenda (10)**
- ◆ **1540 WG document status (15)**
- ◆ **1555 Input from ROHC Bay-Cough**
 - ▲ **1555 Results from Roke Manor _____ Bormann (10)**
 - ▲ **1605 Discussion/Implications (10)**
- ◆ **1615 0-byte**
 - ▲ **1615 Document status Jonsson (5)**
 - ▲ **1620 CDMA2000 and GERAN mappings Jonsson (5)**
 - ▲ **1625 Discussion (10)**
- ◆ **1635 TCP**
 - ▲ **1635 requirements issues & discussion Chairs (30)**
 - ▲ **1705 Draft updates; discussion; merging? Authors (30)**

51st IETF: Agenda (Fri)

- ◆ **0900 Signalling Compression**
 - ▲ 0900 Overview/Taxonomy _____ **Chairs (10)**
 - ▲ 0910 Proposal Shootout **Authors (35)**
 - ▲ 0945 Discussion **(30)**
 - ▲ 1015 Requirements **(20)**
 - ▲ 1035 Way forward **(10)**
- ◆ **1045 Way to Draft Standard**
 - ▲ 1045 Carving up the standard **(10)**
 - ▲ 1055 ROHC MIB discussion **Quittek (20)**
- ◆ **1115 Rechartering** **(15)**

WG documents in publication: RTP ROHC

- ◆ **Published:**
 - ▲ **RFC3095: Framework and four profiles**
(was: draft-ietf-rohc-rtp-09.txt)
 - ▲ **RFC3096: RTP requirements**
(was: draft-ietf-rohc-rtp-requirements-05.txt)
- ◆ **Already part of 3GPP Release 4**
 - ▲ **Alongside with R99's inclusion of RFC2507 (*not* RFC2508!)**
- ◆ **Adopted by 3GPP2**
 - ▲ **Release C end 2001**

Lower layer guidelines

- ◆ **draft-ietf-rohc-rtp-lower-layer-guidelines-01.txt**
- ◆ **Completed WG last-call in December**
- ◆ **Still stalled**
 - ▲ **AD input: Prescriptive text not in style for Informational**
 - ▲ **Did not attempt IETF last-call (to avoid stall for RTP ROHC!)**
- ◆ **How to proceed?**
 - ▲ **1) submit as BCP**
 - well, not really based on wide-spread experience
 - ▲ **2) edit and submit as informational**
 - who does this?
 - ▲ **3) punt and reuse material in implementers guide**

ROHC over PPP

- ◆ **draft-ietf-rohc-over-ppp-02.txt**
- ◆ **Son-of-2509 (PPP negotiation in IPCP)**
 - ▲ **Makes ROHC immediately useful in PPP world**
 - ▲ **Also: Example for negotiation needed by other types of links**
- ◆ **Changes from –01**
 - ▲ **Explicitly allow multiple instances of IP-Compression-Protocol**
- ◆ **Final touches:**
 - ▲ **Define merging rules for IPCP and IPV6CP option results**
- ◆ **WG last-call –03 next week**

ROHC Implementers' Guide?

- ◆ **Could take up lessons from Interop Events**
- ◆ **(Could take up L2 guidelines. No.)**

- ◆ **At Draft Standard level, could move some of the material into one of the Standards Track documents**

- ◆ **Who?**
 - ▲ **Mikael Degermark, Péter Krémer**

LLAROHC – way forward?

- ◆ **Relatively simple extension to ROHC**
- ◆ **Mapping for CDMA2000 defined, GERAN forthcoming**
- ◆ **Would be most useful in September 3GPP2 release**
- ◆ **Last-call LLAROHC now**
 - ▲ **draft-ietf-rohc-rtp-0-byte-requirements-00.txt ➔ Informational**
 - ▲ **draft-jonsson-rohc-lla-rtp-01.txt++ ➔ PS**
- ◆ **Another revision on CDMA2000 mapping**
 - ▲ **Add GERAN**
 - ▲ **Try September 2001 for draft-ietf-rohc-lla-mapping-00.txt**
 - ▲ **➔ Informational**

TCP ROHC requirements

- ◆ **Already on ROHC charter!**
 - ▲ **But we didn't get around to it, yet**

- ◆ **There is no TCP HC out there that does SACK, ECN, ...**
 - ▲ **The world is looking at ROHC to fix this**
 - ▲ **Attempt to be future-proof!**

- ➔ **ROHC TCP *must* be applicable in the wide Internet**
 - ▲ **Encumbered solutions won't cut it!**

ROHC TCP Requirements

- ◆ **Link properties != RTP**
 - ▲ No residual errors, but may have packet loss
- ◆ **Should work well for short-lived TCP transfers**
 - ▲ In particular, for sequences of connections between same pair of hosts
- ◆ **Must deal with current and future TCPs**
 - ▲ SACK, timestamp, ECN, Diffserv, SYN/FIN/Initial TCP negotiation, etc
- ◆ **Robustness:**
 - ▲ Should not disable [might even help] TCP mechanisms
 - ▲ fast retransmit, fast repair, New Reno, etc
 - ▲ **MUST NOT** generate damaged headers (that can pass TCP checksum!)
 - ▲ TCP sequence numbers and IP ID less predictable
 - ▲ Solve known problems with TCP Checksum
 - ▲ Window scale option – satellite links (loss of 64K undetectable)
 - ▲ window field decrement + seq no increment (rfc1144)

ROHC TCP Requirements Issues

- ◆ **What level of link-layer retransmission?**
 - ▲ **A: Some** ➔ scheme should work well with persistent link-layer retransmission, but also with higher link-layer loss rates
- ◆ **Should we expect residual bit errors?**
 - ▲ **A: No**, but there is a non-zero probability, and we should make sure we don't increase it
- ◆ **Reordering between compressor and decompressor?**
 - ▲ **A: Yes**. How much?
 - ▲ **Need to fix framework in the process** (reordering between CIDs is fine already, but need to work on reordering within)
 - ▲ **Q: TCP ACK acceleration? Probably not.**

TCP – way forward?

- ◆ **Freeze –02 requirements document**
- ◆ **Add TCP Model document**
 - ▲ **What kinds of TCP exchanges do we expect; point to traces**
 - ▲ **Not a “benchmark”, but a checklist**
 - ▲ **Present at Salt Lake City TSVWG**
- ◆ **Need lower-layer guidelines document?**
 - ▲ **How much L2 reliability is good for you?**
 - ▲ **See PILC ARQ document!**
- ◆ **Start work on merging TCP schemes**
 - ▲ **State management**
 - ▲ **Assume EPIC for encoding?**

Signaling compression – make it a WG item?

◆ Pro:

- ▲ It's needed! (Call setup time will be bad without it)
- ▲ Fits in ROHC framework *if* done hop-by-hop
 - ▲ No changes to end systems, more redundancy to look at
- ▲ Hop-by-hop makes it easier to compress between calls

◆ Hmm:

- ▲ Might be better done end-to-end (or in SIP proxy)
 - ▲ What about IPCOMP, TCPFILTER and friends?
- ▲ Not really header compression (do we care?)
- ▲ Is hop-by-hop still useful once SIP gets secure?

◆ Con:

- ▲ IPRs?

Signaling compression – hbh vs. e2e

- ◆ **E2e means UE to P-CSCF, *not* UE to UE/phone**
- ◆ **Hbh means UE to first IP node in RAN**
- ◆ **Hbh (link-layer) issues:**
 - ▲ **Security – but almost the same problem applies with “e2e”**
 - ▲ **Handover requires work**
 - ▲ **Need to require certain SIP port usage**
 - ▲ **ROHC contexts are unidirectional so far – need mechanisms for bidirectionality**
- ◆ **E2e (transport-/app-layer) issues:**
 - ▲ **How to negotiate compression algorithm? SRV???**
 - ▲ **Link layer has negotiation scheme already**
 - ▲ **Need ROHC for IP/UDP compression, anyway**

Signaling compression – way forward?

- ◆ **Agree e2e vs. hbh**
 - ▲ Do e2e now
- ◆ **Merge requirements documents**
 - ▲ Issue: memory size?
- ◆ **Generate signaling Model document**
 - ▲ What kinds of SIP exchanges do we expect
 - ▲ Not a “benchmark”, but a checklist
- ◆ **Start work on merging and simplifying schemes**
 - ▲ Start with an apparently unencumbered scheme

Rechartering: Goals and Milestones (1)

- ◆ **ROHC-over-PPP**
 - ▲ **WG last-call –03 August 2001, submit September 2001**
- ◆ **Lower-layer Guidelines: submit for Informational RFC**
 - ▲ **WG last-call (again) –02 August 2001**
- ◆ **Implementers' Guide: –00 in September**
- ◆ **0-byte IP/UDP/RTP**
 - ▲ **Try for 3GPP2 deadline (September 2001)**
 - ▲ **Requirements and Assumptions: I-D May 2001**
 - ▲ **Solution ID (LLA) –01: July 2001**
 - ▲ **WG last-call LLAROHC –00 August 2001, submit August 2001**
 - ▲ **Informational ID (CDMA2000/GERAN): September 2001**
 - ▲ **WG last-call October 2001**

Rechartering: Goals and Milestones (2)

◆ Signaling compression

- ▲ Shoot for 3GPP R'5 deadline (RFC in December 2001)
- ▲ Focus on call-setup time and in-call stealing issue (SIP/SDP)
- ▲ Requirements and assumptions draft: merge August 2001
 - ▲ Include draft-hannu-rohc-signaling-cellular-02.txt as problem stmt
- ▲ **Start merging solutions documents now!**
- ▲ WG last-call October 2001
- ▲ Test interoperability November 2001

Rechartering: Goals and Milestones (3)

◆ TCP: new dates

- ▲ Requirements and assumptions frozen: August 2001 (London)
 - ▲ Call-for-freeze to ROHC, PILC, TSVWG
- ▲ TCP model document: –00 Sep, –01 for SLC (November 2001)
- ▲ draft-ietf-rohc-tcp-00.txt: September 2001
- ▲ WG last-call March 2002, submit April 2002

Slip some more?

◆ EPIC

- ▲ Need to be done before TCP if we want to use it for that
- ▲ Separate notation document draft-ietf-rohc-epic-00: August 2001
- ▲ Decide: Interoperable implementations by Dec 2001?

Rechartering: Goals and Milestones (4)

- ◆ **ROHC over reordering channels?**
 - ▲ Do some of the work in TCP
- ◆ **MIB**
 - ▲ draft-ietf-rohc-mib-00: October 2001
 - ▲ WG last-call Jan 2002, submit Feb 2002
- ◆ **Draft standard by 2Q2002**
 - ▲ Separate documents (Framework, 4 profiles): October 2001
 - ▲ Merge implementers' guide: Feb 2002
 - ▲ WG last-call Apr 2002, submit May 2002
- ◆ **SCTP**
 - ▲ Start collecting requirements now, revisit in SLC

Rechartering (5)

- ◆ Remember: This all has to go through the ADs...

Back-burner:

- ◆ **UDP-lite profile?**
 - ▲ Try for 3GPP deadline (December 2001)? **No.**
 - ▲ Requirements, Specification: I-Ds April 2001
 - ▲ WG last-call August 2001, submit September 2001

AOB

Two other drafts re ROHC:

- ◆ **draft-minaburo-parameters-00.txt**
 - ▲ **Negotiates use of a feedback option for link quality feedback**
- ◆ **draft-kenward-seamoby-ct-rohc-reqs-00.txt**
 - ▲ **Context Transfer Considerations for ROHC**