Agenda Item: 4.2

From: Mikael Degermark, Chair, Robust header compression WG, IETF
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To: 3GPP RAN, 3GPP TSG S2
Cc: 3GPP TSG S1

Dear all,

This mail is intended as information to 3GPP about IETF (Internet Engineering Task Force) activities that might relate to 3GPP.

At the recent 46th IETF meeting in Washington DC, a BOF (Bird Of a Feather)
session called ROBHC was held to explore the needs and interest to form a new working group which would develop and standardize new header compression algorithms suitable for cellular usage.

The BOF revealed a large interest in the challenge of developing robust header compression algorithms suitable for cellular systems and several proposals to solutions were presented. At the end of the BOF there was a large consensus for forming a new working group. Thus, a new working group called ROBHC will be formed in the IETF. The attached preliminary charter outlines the scope and time plan for the ROBHC WG. Efforts has been made to align the time plan of the working group with the time line of 3GPP. Feel free to comment on the preliminary charter.

One of the things that were deemed important for the working group was co-ordination with 3GPP (and other standardization bodies), to ensure that its results will be useful. For that reason a 3GPP liaison person will be appointed in the robhc working group. This person will be responsible for the co-ordination of the ROBHC group's work with 3GPP.

Any views and comments to the new ROBHC group from relevant groups in the
3GPP would be greatly appreciated. Input concerning the proposed time plan and input of technical character, e.g., description of how a header compression scheme would fit into the 3GPP framework, would also be appreciated. As a starting point we have used the requirements put forth in the recent 3GPP Technical Report.

Best regards,

Mikael Degermark,
Chairman of the IETF working group ROBHC

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Robust Header Compression (robhc) WG Charter (preliminary outline)

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Description of Working Group
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There is a movement among several cellular telephony providers and vendors towards supporting IP applications over cellular, for example IP telephony and real-time video as well as common TCP-based applications such as www and email. This represents a huge potential user base for IP technology as the penetration of cellular telephony can be expected to be extensive.

Due to spectrum efficiency reasons, the IP/UDP/RTP headers of real-time packets will have to be compressed over the cellular link. It has been shown that existing header compression schemes (RFC-2508) do not perform well over cellular links, due to high error rates and long link roundtrip times. In essence, RFC-2508 will lose a link roundtrip worth of data each time a packet is lost over the link. Making the link reliable with an ARQ scheme is not always a viable alternative since that adds delay which can be intolerable, e.g., for interactive voice.

The situation is similar for IP/TCP headers. RFC-1144 header compression does not work well over lossy link. RFC-2507 IP header compression performs better than RFC-1144 over lossy links, but does not compress TCP options such as the SACK option or the Timestamp option. The WG might find it necessary to enhance existing header compression schemes for IP/TCP or to develop a new scheme.

The goal of the WG is to develop header compression schemes that perform well over links with high error rates and long roundtrip times. The schemes must perform well for cellular links built using technologies such as WCDMA, EDGE, and CDMA-2000. However, the scheme should also be applicable to other future link technologies with high loss and long roundtrip times. Ideally, it should be possible to compress over unidirectional links.

A robust header compression scheme must

* be lossless, i.e., a compressed header should be decompressed to be exactly like the original header.

* not produce any (or a near-trivial fraction) erroneous headers, i.e., decompressed headers not identical to the corresponding original headers.

* perform well when the end-to-end path involves more than one cellular link.

* support IPv4 and IPv6

Creating more thorough requirements documents will be the first task of the WG.

The working group shall maintain connections with other standardization organizations developing cellular technology for

IP, such as 3GPP and 3GPP-2, to ensure that its output fulfills their requirements and will be put to good use.

Goals
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Jan 2000 Requirements for IP/UDP/RTP header compression (internet-draft).

Jan 2000 WG liasion(s) appointed to interface with other standardization bodies.

Mar 2000 First version of layer-2 interface guidelines (internet-draft).

Mar 2000 Proposals for IP/UDP/RTP header compression schemes (internet drafts).

Mar 2000 Requirements for IP/TCP header compression (internet draft).

Jul 2000 Layer-2 interface guidelines to Informational.

Jul 2000 Requirements for IP/UDP/RTP header compression to Informational.

Jul 2000 First version of IP/UDP/RTP header compression spec (internet draft).

Jul 2000 First version of IP/TCP header compression spec.

Nov 2000 IP/UDP/RTP compression spec to Proposed Standard.

Nov 2000 IP/TCP compression spec to Proposed Standard.