Subject: Your WTR2006 paper 17450
From: WTR2006 <lda@det.ua.pt>
Date: Mon, 3 Apr 2006 18:04:11 -0300 (BRT)
To: pregnier@ufba.br
CC: "George Lima" <gmlima@ufba.br>

Dear Paul Regnier:

Congratulations, your paper entitled "Deterministic Integration of Hard
and Soft Real-Time Communication over Shared-Ethernet" was accepted for
the Main track of WTR 2006. There were 25 submissions to this track and
from these the Program Committee selected 12 full-length papers.

Please, be aware of the deadline for the camera-ready version, which is
May 3rd, FIRM. Ensure that the proper format and length are respected.
Also, make sure to register in time. Check the WTR and SBRC websites for
details (both are accessible from http://www.ieeta.pt/lse/wtr2006/)

The reviews are below or can be found at
https://submissoes.sbc.org.br/PaperShow.cgi?m=17450.

Generally, the reviews are extensive and constructive. We trust that you
will address the reviewers comments in the camera-ready version of your
paper.

Looking forward to seeing you in Curitiba!

Luis Almeida, TPC Chair, WTR 2006

------Reviews--------

===== Review =====

*** Originality and Contribution: (.): 1: Poor - No discernable
contribution to the field 2: Fair - Minor contribution 3: Average -
Small but clear contribution 4: Very good - Significant contribution 5:
Excelent - Major contribution to the field

Evaluation=Very good - Significant contribution (4)

*** Technical strenght: (.): 1: Poor 2: Fair 3: Average 4: Very good 5:
Excelent

Evaluation=Very good (4)

*** Paper organization and presentation: (.): 1: Unacceptable 2: Poor 3:
Average 4: Good 5: Excellent

Evaluation=Good (4)

*** Recommendation for this paper: (.): 1: Strong Reject - I have strong
arguments against acceptance 2: Weak Reject - I will not fight strongly
against it 3: Weak Accept - I will not fight strongly in favour of
acceptance 4: Must Accept - I have strong arguments in favor of
acceptance

Evaluation=Must Accept - I have strong arguments in favor of acceptance (4)

*** What are the major strengths of this paper? (What are the major strengths of this paper?): O artigo está bem escrito. O modelo computacional é apresentado para o protocolo proposto.

*** What are the major weakness of this paper? (What are the major weakness of this paper?): O artigo não apresentou um modelo analítico que onde se possa calcular o pior caso para uma determinada configuração, mostrando os tempos esperados (uma vez que ainda não existem implementações). O artigo não mostra o que resta exatamente do CSMA 1-persistente do ethernet.

*** Other comments to authors: (Other comments to authors:): O artigo poderia colocar também a influência (que aparentemente é inexistente) das filas que podem ser formadas em switches, além do impacto do tráfego normal de uma rede local (para compartilhar a rede RT com a de dados convencional).

===== Review =====

*** Originality and Contribution: (.): 1: Poor – No discernable contribution to the field 2: Fair – Minor contribution 3: Average – Small but clear contribution 4: Very good – Significant contribution 5: Excelent – Major contribution to the field

Evaluation=Average – Small but clear contribution (3)

*** Technical strenght: (.): 1: Poor 2: Fair 3: Average 4: Very good 5: Excelent

Evaluation=Fair (2)

*** Paper organization and presentation: (.): 1: Unacceptable 2: Poor 3: Average 4: Good 5: Excellent

Evaluation=Average (3)

*** Recommendation for this paper: (.): 1: Strong Reject – I have strong arguments against acceptance 2: Weak Reject – I will not fight strongly against it 3: Weak Accept – I will not fight strongly in favour of acceptance 4: Must Accept – I have strong arguments in favor of acceptance

Evaluation=Weak Accept – I will not fight strongly in favour of acceptance (3)

*** What are the major strengths of this paper? (What are the major strengths of this paper?): The novelty of the protocol proposed. The interest of the real-time communications over Ethernet.

*** What are the major weakness of this paper? (What are the major weakness of this paper?): The protocol is not described with enough clarity and lacks a deeper analysis. The paper should include a numerical example to validate the assumptions.

*** Other comments to authors: (Other comments to authors:): This paper proposes a dual mechanism based in a TDMA and a virtual token passing to handle hard real-time and soft real-time messages in shared Ethernet. The protocol uses a sequence of Windows alternatively reserved for the hard and the soft messages. The hard messages window includes a reserved part that can be reclaimed on-line by the nodes. The paper is well written and reasonably organized. The subject is relevant for the workshop. Although there are claims that shared Ethernet is outdated, I still consider the subject promising but it is the obligation of the

authors to sustain the interest of the work.- The proposed protocol tries to isolate hard from soft traffics by using different windows, claiming that they have different requirements, which is true. However the paper has several problems, namely: a) The description of the protocol is not sufficiently clear and the notation used is hard to understand. b) The paper uses some wrong assumptions from related work. c) The paper does not evaluate the impact of the protocol on the parameter specification of traffic flows. d) The paper doesnt present (numerical) results. Considering a), it is not clear in the paper how messages are scheduled in the windows, particularly in Wh. It seems that more than one message can be transmitted in each window but, from the last part of the paper, it seems that 2 is the proposed number. Before explaining clearly the protocol, the authors enter immediately in implementation details, which difficult the understanding. Using pi and delta and other odd variable notations adds further difficulty. The IFG tolerance in the timers seems also excessive and will certainly lead to significant variation in the window length. Assumptions made about Carreiros work are wrong. The referred 111usec are specific of the hardware used (time to decode a frame) and are not characteristic of automation systems. Interleaving soft and presumably long messages with hard real-time ones will certainly lead to a very large token rotation time (not deduced in the paper). This will limit strongly the minimum period of hard messages and it may make the protocol unsuitable for industrial applications. To avoid the previous impressions a numerical example would be mandatory. Additionally there are several points in the paper that deserve improvement: The state of the art is rather short. Although not for Ethernet, other dual ring schemes should be referred even if they show some differences, e.g. the proposeb by Lo Bello for Profibus. The reservation mechanism for Wr is not properly described. The interest for the envisaged applications is not evident (and is not discussed). Fault-tolerance issues are also scratched but in a confusing way. The synchronization of the Ws window seems difficult as it will be used by systems with OS which make not easy to guarantee the timeliness in the access. So, how to implement the protocol in such systems is not evident.

===== Review =====

*** Originality and Contribution: (.): 1: Poor - No discernable contribution to the field 2: Fair - Minor contribution 3: Average - Small but clear contribution 4: Very good - Significant contribution 5: Excelent - Major contribution to the field

Evaluation=Fair - Minor contribution (2)

*** Technical strenght: (.): 1: Poor 2: Fair 3: Average 4: Very good 5: Excelent

Evaluation=Fair (2)

*** Paper organization and presentation: (.): 1: Unacceptable 2: Poor 3: Average 4: Good 5: Excellent

Evaluation=Average (3)

*** Recommendation for this paper: (.): 1: Strong Reject - I have strong arguments against acceptance 2: Weak Reject - I will not fight strongly against it 3: Weak Accept - I will not fight strongly in favour of acceptance 4: Must Accept - I have strong arguments in favor of acceptance

Evaluation=Weak Reject - I will not fight strongly against it (2)

*** What are the major strengths of this paper? (What are the major strengths of this paper?): The whole section 3 describing DoRiS is well formalized. This section is the core of the paper. The added protocol is assumed to ne inserted on top of the Standard' s MAC sublayer.

*** What are the major weakness of this paper? (What are the major weakness of this paper?): CSMA/CD is not deterministic. Consequently, to be used in hard real-time applications some modifications have to be made. These, however, must not require hardware alterations in order to use standard commercial devices. The two main lines open are: 1) To manage the system in a master-slave mode. 2) To use an implicit (virtual, by silence) token passing in a real bus/virtual ring topology. Although the first one is as reliable as the original CSMA/CD, the authors discard it on the grounds of problems of scalability and performance. They should explain the rejection better. The authors adhere instead to the second line. The required strict synchronization is its main implementation problem. However, the authors just skip it by arguing a sort of Fermat´ s lack of space. Since available commercial Ethernet devices are relatively inexpensive, some consideration should be given to the cost of actually assembling two real LANs to cope separately with hard and soft messages vis-a-vis the reliability of the whole system. The soft network would be pure CSMA. The two possible models should be exhaustively explored for the hard one. As it is at present, the paper is at most a candidate for the WiP session.

*** Other comments to authors: (Other comments to authors:): You have traversed less than half way to a mature paper. To devise a protocol that does not modify but it is added to the CSMA/CD standard is relatively easy. Installing it and making it work is the difficult part. The main problems will be in the synchronization aspects. Also, having in mind that releases and deadlines of real-time tasks are in the applications over the communications protocol, travel time through the protocol layers in both directions (including the substantial addition over the MAC sublayer) would probably be a non negligible overhead. The paper would be publishable only after experimental (not simulated) testing.

===== Review =====

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Evaluation=Average – Small but clear contribution (3)

*** Technical strenght: (.): 1: Poor 2: Fair 3: Average 4: Very good 5: Excelent

Evaluation=Fair (2)

*** Paper organization and presentation: (.): 1: Unacceptable 2: Poor 3: Average 4: Good 5: Excellent

Evaluation=Average (3)

*** Recommendation for this paper: (.): 1: Strong Reject – I have strong arguments against acceptance 2: Weak Reject – I will not fight strongly against it 3: Weak Accept – I will not fight strongly in favour of acceptance 4: Must Accept – I have strong arguments in favor of acceptance

Evaluation=Weak Accept - I will not fight strongly in favour of acceptance (3)

*** What are the major strengths of this paper? (What are the major strengths of this paper?): A small and well defined problem.
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*** What are the major weakness of this paper? (What are the major weakness of this paper?): The solution makes lots of assumptions (some reasonable, some a bit tougher). The paper fails to paint the full picture, in particular what happens with processing overhead caused by soft messages on (RT-)tasks, and could be better organised. (see the main text)

*** Other comments to authors: (Other comments to authors:): The paper describes a solution to sharing real-time and non-real-time messages on an Etherenet network with low latency for the RT messages.

In general the English is very good, but thew presentation could be improved considerably, by properly introducing the variable used.

I sort of found out what N_T really represents 2-3 pages after it was first used.

One thing I was missing was the discussion of overhead caused by receiving no RT messages, which had to be decoded due to being broadcast to all nodes.

A major drawback of your approach is that in the worst case scenario one node has to wait for 2 rounds before being able to transmit (the first round until it can put out a reservation message, with that being in the next round.

You should clearly state that.

Also I'm missing evaluation. E.g. What are the overheads?

Have you implemented anything of it, or is it theory only. If the latter, what's preventing it from being implemented.