Avoid ErrorHook E_OS_DISABLED_INT

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Application Note AN-ISC-8-1149

Author(s)	Birke, Holger

Restrictions	Customer confidential - MSR4 only

Abstract	This application note describes how to avoid ErrorHook E_OS_DISABLED_INT

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1.0 Overview

This note describes how to avoid the issue E_OS_DISABLEDINT notified by the OS ErrorHook() callout.

1.1 Problem Description

The CAN Driver uses the OS APIs `GetCounterValue()` and `GetElapsedValue()` to handle asynchronous state transitions. These calls will be done out of the context of `Can_SetControllerMode()` within some EXCLUSIVE_AREA from:

- CAN Driver (CAN_EXCLUSIVE_AREA_6)
- CAN Interface (CANIF_EXCLUSIVE_AREA_0)
- CANSM (CANSM_ EXCLUSIVE_AREA_1, CANSM_ EXCLUSIVE_AREA_4)
- COMM (COMM_ EXCLUSIVE_AREA_1)

If the integrator choose `Global Interrupt Lock` for these `EXCLUSIVE_AREA`s the OS will issue `E_OS_DISABLEDINT` by the `ErrorHook()` callout.

Note:	The issue only appears when you use **Global Interrupt Lock** for particular `EXCLUSIVE_AREA`.

2.0 Solution

There are different solutions for this problem. The integrator has to decide which one fits best to the project-specific needs. The descriptions of the `EXCLUSIVE AREA` have to be checked for limitations.

2.1 Do Not Use OS Timer

When the above described `AREA`s have to use `Global Interrupt Lock`, no OS timer can be used. Use the CAN Driver feature instead.

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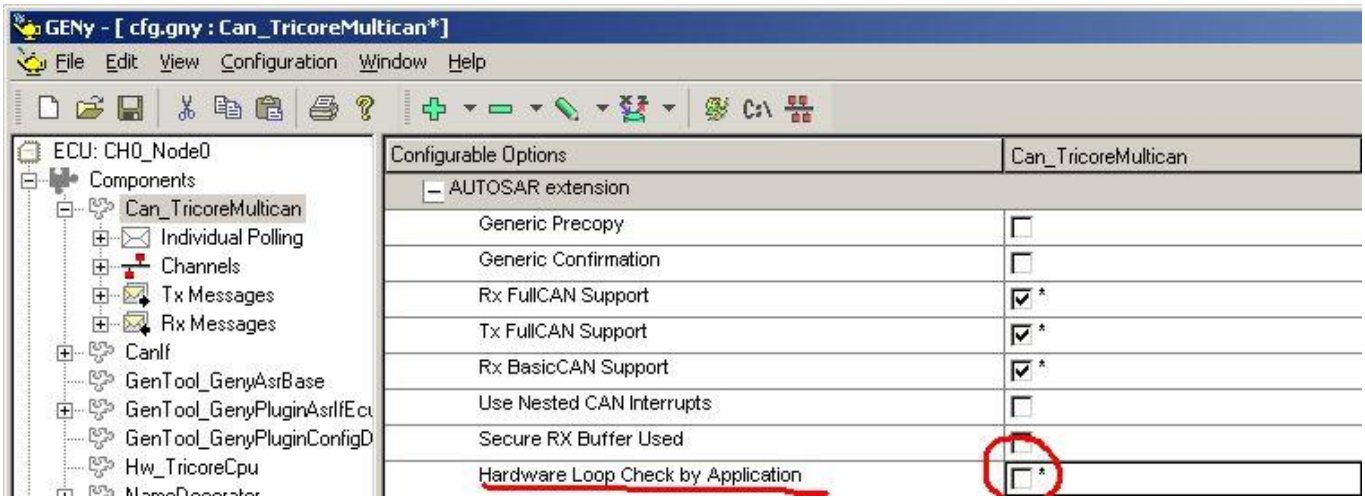

Figure 1 – GENy: Hardware Loop Check by Application

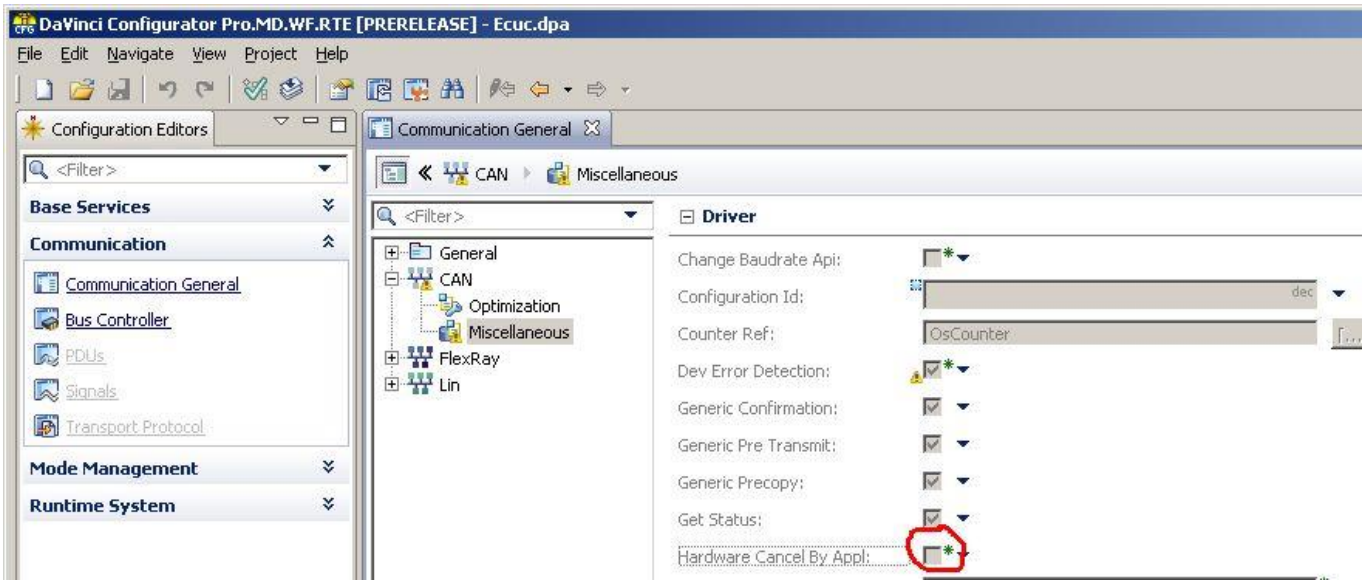

Figure 2 –DaVinci Configurator: Hardware Cancel By Appl.

This feature provides an additional API called instead of the OS timer and has to be implemented by the integrator. Refer to the CAN Driver Technical Reference for detailed description of the API.

This API can either

- Use free running timer or
- Use counter loop (wait dedicated amount of loop calls to secure timing)

Attention:	This additional API is called for every **Hardware Loop**, not only for state transitions. So the worst case scenario has to be taken into account for timeout (see CAN Driver Technical Reference)

2.2 Do Not Lock Global Interrupts

It is possible to use a user defined callback function to handle the EXCLUSIVE AREAs.

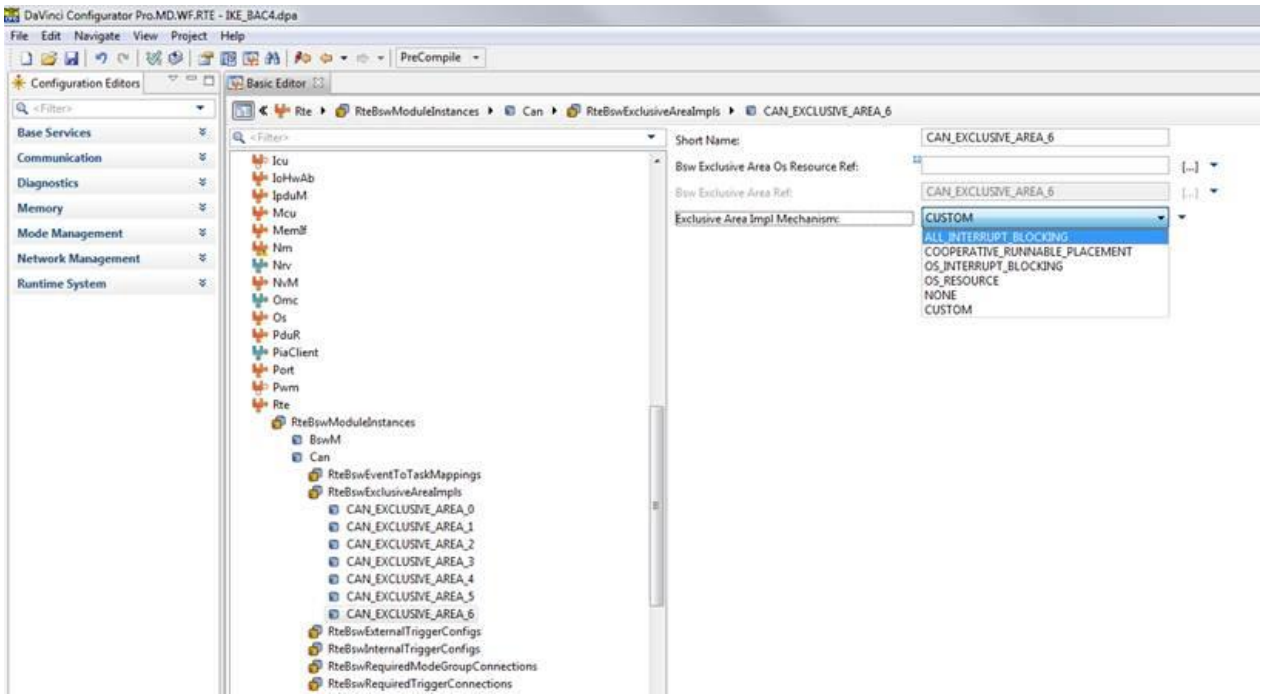

Figure 3 – DaVinci Configurator Exclusive Areas

Dependent on the conditions described in the technical references for these AREAs, it is possible to use:

- No interrupt locks when the CAN Driver is used in polling mode, and all **MainFunctions** are called in same context.
- CAN interrupt locks (from CAN Driver BSWM: `Can_DisableControllerInterrupts()`, `Can_EnableControllerInterrupts()`), and all **MainFunctions** are called in same context.
- OS resources to lock **MainFunctions** and use additional CAN interrupt locks or CAN polling configuration.

Attention:	Make sure that all conditions described in the technical references for the upper described AREAs are fulfilled.

3.0 Contacts

Germany
and all countries not named below:

Vector Informatik GmbH
Ingersheimer Str. 24
70499 Stuttgart
GERMANY
Phone: +49 711-80670-0
Fax: +49 711-80670-111
E-mail: info@de.vector.com

France, Belgium, Luxemburg:

Vector France S.A.S.
168, Boulevard Camélinat
92240 Malakoff
FRANCE
Phone: +33 1 42 31 40 00
Fax: +33 1 42 31 40 09
E-mail: information@fr.vector.com

Sweden, Denmark, Norway,
Finland, Iceland:

VecScan AB
Theres Svenssons Gata 9
41755 Göteborg
SWEDEN
Phone: +46 31 764 76 00
Fax: +46 31 764 76 19
E-mail: info@se.vector.com

United Kingdom, Ireland:

Vector GB Ltd.
Rhodium, Central Boulevard
Blythe Valley Park
Solihull, Birmingham
West Midlands B90 8AS
UNITED KINGDOM
Phone: +44 121 50681-50
Fax: +44 121 50681-69

E-mail: info@uk.vector.com

China:

Vector Automotive Technology
(Shanghai) Co., Ltd.
Sunyoung Center
Room 1701, No.398 Jiangsu Road
Changning District
Shanghai 200050
P.R. CHINA
Phone: +86 21 6432 53530
Fax: +86 21 6432 5308
E-mail: info@cn.vector.com

India:

Vector Informatik India Pvt. Ltd.
4/1/1/1, Sutar Icon, Sus Road,
Pashan, Pune - 411 021
INDIA

Phone: +91 20 2587 2023
Fax: +91 20 2587 2025

E-mail: info@in.vector.com

USA, Canada, Mexico:

Vector CANtech, Inc.
39500 Orchard Hill Place, Suite 550
Novi, MI 48375
USA

Phone: +1 248 449 9290
Fax: +1 248 449 9704
E-mail: info@us.vector.com

Japan:

Vector Japan Co. Ltd.
Tennozu Yusen Bldg. 16F
2-2-20 Higashi-shinagawa,
Shinagawa-ku,
Tokyo 140-0002
JAPAN
Phone: +81 3 5769 7800
Fax: +81 3 5769 6975
E-mail: info@jp.vector.com

Korea:

Vector Korea IT Inc.
5F, Gomoas bldg.
12 Hannam-daero 11-gil, Yongsan-gu
Seoul, 140-889
REPUBLIC OF KOREA

Phone: +82 2 807 0600
Fax: +82 2 807 0601
E-mail: info@kr.vector.com