The Hermes Standard
for "M-to-M" in SMT Assembly

The Hermes Standard Change Proposal

When already connected to a downstream machine, reject new connection attempts

Voting meeting:
13th of November (Productronica / Munich)

Requesting company:
ASM AS GmbH

Service description tag:

- (Revision of V1.0)

Description:

Currently, the standard states in chapter 2.3:

If a downstream machine is already connected to the lane, the connection is replaced by the new connection at the next appropriate moment. In this case, a Notification message shall be sent before closing the old connection.

Experience has shown that this strategy is bad when a configuration error does occur and multiple downstream machines try to connect to the same upstream host: In a rapid sequence, each client will replace the other, resulting in high processor and network load on all machines involved. On top of that, message windows and trace buffers will quickly 0verflow, making it difficult to analyse the situation.

It is better make the new connection fail quickly and describe the reasons in the Notification message. An operator can then take the appropriate action, e.g. shut down the machine holding the current connection.

There is the potential disadvantage that an old dangling connection will block a new connection, but this is mitigated by the CheckAlive messages, which will quickly detect this situation.

Use cases:

Configuration errors or rogue equipment leading to multiple connection attempts.

Functionality / communication sequences:

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New / changed XML messages:

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Proposed changes to standard:

2   Technical concept

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2.3 Connecting, handshake and detection of connection loss

After booting, the downstream machine starts cyclic connection attempts to the configured upstream machines. When a connection is established, the downstream machine starts sending a ServiceDescription message whereupon the upstream machine answers with its own ServiceDescription. This ServiceDescription message contains the lane ID of the sending machine related to this TCP connection. It also contains a list of features which are implemented by the client. The features of the Hermes specification 1.0 have to be supported by any implementation and shall not be included explicitly.

If a downstream machine is already connected to the lane, this connection will be retained. A Notification message shall be sent to the new connection before it is closed. ~~If a downstream machine is already connected to the lane, the connection is replaced by the connection at the next appropriate moment. In this case, a Notification message shall be sent before closing the old connection.~~

After exchanging the handshake messages, both machines may begin to send BoardAvailable/ MachineReady messages (see section 2.4).

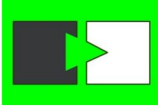# 3   Message definition

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3.5 Notification

The Notification message is sent by both machines before a connection is terminated, e.g. after protocol errors or before shutdown. It could also be used for general notification purposes.

Notification	Type	Range	Optional	Description
◆NotificationCode	int	1 .. n	no	A notification code of the list below. Notification codes above 1000 are not defined by this protocol and may be used by the application
◆Severity	int	1 .. 4	no	A severity of the list below
◆Description	string	any string	no	An English textual description of the notification.

The following NotificationCodes are defined:
1   Protocol error (invalid transition in the state machine, see section 2.6)
2   ~~Connection reset because of incoming connection~~ Connection refused because of an established connection
3   Connection reset because of changed configuration
4   Configuration error
5   Machine shutdown

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Possible values for Severity:
1. Fatal error
2. Error
3. Warning
4. Info

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